January 18, 2024 (Corrected 1/29/2024)

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Comments submitted via email to lauren.whybrew@orcaa.org

Re: Comments on the Olympic Region Clean Air Agency's Preliminary Determination to Conditionally Approve Pacific Northwest Renewable Energy's Request to Construct a New Wood Pellet Manufacturing Facility at 411 Moon Island Road, Hoquiam, WA 98550

Dear Ms. Whybrew:

The National Parks Conservation Association, Earthjustice, and Olympic Park Advocates ("Conservation Organizations") submit the following comments on the Olympic Region Clean Air Agency's ("ORCAA") preliminary determination to conditionally approve Pacific Northwest Renewable Energy's ("PNWRE") request to construct a new wood pellet manufacturing facility ("Proposed Pellet Mill") at 411 Moon Island Road, Hoquiam, WA 98550. ORCAA's public notice explains that:

> If approved, the proposed facility will emit air pollution from combustion of woody biomass in an industrial furnace, from the drying of biomass feedstock, and from other wood processing activities. The facility will be a "Major Source" of air pollution [under Title V] because emissions of several air pollutants, including Oxides of Nitrogen (NO_x), Carbon Monoxide (CO), and Particulate Matter (PM), may exceed 100 tons per year or more.[1]

ORCAA's preliminary determination suggests that proposed pellet mill is not a "Major Stationary Source" as defined in 40 C.F.R. § 52.21(b) and not subject to the Prevention of Significant Deterioration ("PSD") permitting program required by WAC 173-400-700 through

[1] ORCAA Public Notice, *available at* https://www.orcaa.org/notices/notice-of-construction-pacific-northwest-renewable-energy-2/.

WAC 173-400-860.[2] ORCAA's preliminary determination further suggests that "[t]his conclusion will be assured through annual limits."[3]

As discussed in these comments, there are serious errors in the permit application and associated analysis. Contrary to ORCAA's preliminary determination, the proposed pellet mill is subject to the PSD major source construction permit requirements and case-by-case Maximum Achievable Control Technology determination air toxics requirements. Notably, using emission data collected from other wood pellet mills, the facility-wide potential to emit for several air pollutants greatly exceed the estimates in the application submitted by the permit applicant. The estimates in the table below are conservative because as discussed in these comments the permit applicant did not include all emitting sources, such as from the marine vessels, all emergency engines and other sources.

Table 1. Facility-Wide Potential Estimates: Permit Applicant's and Revised Based on Source Test Data from Wood Pellet Mills.

	VOC	**HAPs**	**CO**	**NOx**	**PM** (filterable)
Permit Applicant Estimate	67 TPY	1.32 TPY	185 TPY	230 TPY	108
Revised Estimate	215 TPY	40 TPY	493 TPY	113 TPY	108
Brief summary of the issue	The permit applicant failed to include VOC emission from: the five pellet storage silos (discussed in section I.B) and from the wet hammermills (discussed in section I.D).	The permit applicant failed to accurately and completely calculate HAP emissions. Discussed in sections I.D and I.E).	The permit applicant failed to include CO emissions from the five pellet storage silos. Discussed in section I.C.	The permit applicant applied an incorrect emission factor for calculating NOx emissions. Discussed in section II.A.	Because the proposed pellet mill is subject to PSD, fugitive emissions for PM (and the other pollutants) must also be included.

Based on the revised facility-wide potential to emit estimates, the proposed pellet mill would be:

- A major source of HAPs (and required to conduct a case-by-case Maximum Achievable Control Technology analysis)
- Trigger PSD major source requirements for CO emissions (at both the 100 TPY and 250 TPY thresholds)
- Trigger PSD major source requirements for VOCs (at the 100 TPY threshold)

[2] ORCAA, New Source Preliminary Determination to Approve, Wood Pellet Manufacturing Facility, Pacific Northwest Renewable Energy, LLC, No. 23NOC1606 (Nov. 30, 2023), at 30. ("Preliminary Determination"). (Attachment A).
[3] Preliminary Determination at 30.

- Trigger PSD major source requirements for NOx (at the 100 tpy threshold)
- Trigger PSD major source requirements for PM (at the 100 tpy threshold)

The List of Attachments appears at the end of these comments and are available to download at:

> https://drive.google.com/drive/folders/1cDkiqvefBZjz4AuYMWh6hiMzwfGI5uHA?usp=drive_link.

National Parks Conservation Association (NPCA) is a national organization whose mission is to protect and enhance America's National Parks for present and future generations. NPCA performs its work through advocacy and education. NPCA has over 1.5 million members and supporters nationwide, including more than 49,000 members and supporters in Washington state, with its main office in Washington, D.C., and 24 regional and field offices. NPCA is active nation-wide in advocating for strong air quality requirements to protect our parks, including submission of petitions and comments relating to visibility issues, regional haze SIPs, climate change and mercury impacts on parks, and emissions from individual power plants and other sources of pollution affecting National Parks and communities. NPCA's members live near, work at, and recreate in all the national parks and wilderness areas, including those that would be directly affected by emissions from the proposed new wood pellet mill.

Earthjustice is a non-profit public-interest environmental law organization that partners with community groups and non-profits to protect people's health, to preserve magnificent places and wildlife, to advance clean energy, and to combat climate change.

Olympic Park Advocates (OPA) is a 501(c)(3) nonprofit citizens conservation organization working to protect the beauty, integrity and biological diversity of Olympic National Park and the Olympic ecosystem. OPA was founded in 1948 to defend the Park against attacks on its spectacular old-growth rain forest valleys. Seventy-three years later, OPA's more than 240 Washington members recognize that having pristine air in Olympic National Park is necessary for the protection of this special place.

If granted, this permit would allow harmful amounts of pollution from this facility, degrading air quality in Olympic and Mount Rainier national parks and harming human health in nearby communities.

The Clean Air Act ("CAA" or "Act") requirements for new source construction are not met in PNWRE's permit application. Despite the Act's regional haze legal requirements to ensure reasonable progress at national parks and the federal and state permitting requirements for construction of new sources, PNWRE's permit application contains fundamental flaws. ORCAA must issue a denial of the request to construct unless PNWRE supplements its permit application with the missing information that complies with the legal requirements of ORCAA's regulations, the Act and federal regulations, and ORCAA and the Washington Department of Ecology require that the proposed new emissions meet all legal requirements.

Of significant concern are the proposed new air pollutant emissions that would contribute to regional haze pollution at nearby Olympic[4] and Mount Rainier National Parks[5], as well as contribute to local impacts. Olympic and Mount Rainier National Parks are designated as Class I air protection areas. National parks over 6,000 acres, like Olympic and Mount Rainier, and national wilderness areas over 5,000 acres that were in existence before August 1977 are designated as Class I areas, as defined by an amendment to the Clean Air Act. Olympic is approximately 75 km and Mount Rainier approximately 150 km in distance from the proposed

[4] Nitrogen deposition is a concern of the National Park Service at Olympic National Park ("… accumulation of nitrogen in mountain lakes influence water quality in Olympic National Park," *see* National Park Service, Olympic National Park, Environmental Factors, *available at* https://www.nps.gov/olym/learn/nature/environmentalfactors.htm. (Attachment B).

[5] "Mount Rainier National Park staff are very involved in the National Park Service's comprehensive air resources management program, designed to assess air pollution impacts and protect air quality related values. Air quality related values include scenic vistas; sensitive natural ecosystem processes, functions, and components; and cultural resources. … **Air Pollution at Mount Rainier** Mount Rainier National Park is located downwind of a number of urban and industrial areas to the northwest and southwest and is not isolated from the by-products of industrialization. Man-made air pollutants are transported long distances and have been detected through air quality monitoring programs. A number of stationary and mobile sources of pollutants affecting the park include a variety of sources in the Puget Sound region as far north as Vancouver, and as far south as Portland, Oregon. …**Visibility Impairment** Nearly two million visitors come to Mount Rainier each year to enjoy the scenery, but the view is often obscured by regional haze, especially in the summer. Haze is caused when sunlight encounters fine pollution particles in the air. Some light is absorbed by particles. Other light is scattered away before it reaches an observer. More pollutants result in more absorption and scattering of light, which reduce the clarity and color of what we see. … **Acid Deposition** As precipitation water passes through the air it reacts with carbon dioxide, sulfur oxides, and nitrogen oxides to form acids. These compounds then fall to the Earth in either dry form (such as gas and particles) or wet form (such as rain, snow, and fog). The park's lakes and streams are very sensitive to acidic deposition because the soils and bedrock cannot neutralize acids well. Acid deposition impacts aquatic organisms and ecosystems as well as terrestrial life through direct contact and by changing the chemical balance in the soil and increasing the acidity of lakes and streams. Water quality for approximately 20 of the major streams in the park have been inventoried along with approximately 48% of the park lakes. Of these, 10 stream sites have been documented as extremely sensitive, while lakes on the west and south sides of the park tend to be more sensitive. Spring snowmelt or late summer storms can cause highly acidic deposition events which can affect the aquatic ecology of these surface waters. … **Ozone** Plants can be sensitive to ozone at levels well under the national health standards for people. Lichens, mosses, and liverworts are often the most sensitive components of the vegetation within an ecosystem and can serve as early indicators of air pollution effects. Plants such as trees, shrubs, and herbaceous species are also injured by ozone which can damage leaves and needles and weaken the plants' ability to withstand disease and insect infestations. Clean air is defined as ozone concentrations ranging from 15 to 30 ppb (parts per billion). Elevated ozone levels (above 80 ppb) were measured at Longmire in the southwest section of Mount Rainier National Park during the summers of 1987 and 1988. Values above 80 ppb were not uncommon at an ozone monitor at Carbon River in the northwest corner of the park during 1989 to 1992 and there were a few readings above 100 ppb. Similar values have been measured at Tahoma Woods, while ozone levels at Paradise have, on some days, been the highest recorded in the state. High levels of ozone have also been measured in rural areas surrounding the park in Enumclaw (10 miles north of the park), Cedar River (30 miles north of the park), and Pack Forest (15 miles west of the park). Chlorotic foliar spotting on the foliage of ponderosa pine at Pack Forest has been reported and scientists hypothesized that ozone-sulfur dioxide synergism was responsible for the damage. Ozone impacts on sensitive vegetation in the Pacific Northwest have received little attention until recent years because of the relatively low levels of ozone in the area. Ozone sensitive species in Mount Rainier have recently been identified and are being monitored in selected areas. … **Air Toxics** Air Toxics is a term that includes persistent organic pollutants and heavy metals. … Air toxics also originate from local and regional sources. These contaminants … may accumulate in annual snowpack, particularly in higher elevation ecosystems. Once deposited, many pollutants, particularly persistent organic pollutants, accumulate and concentrate in foodwebs, threatening the viability of aquatic and terrestrial ecosystems. These air toxics are of particular concern because they remain in the environment a long time, can accumulate in the biological tissue of organisms, and are toxic to humans and wildlife." *Infra* n.6.

pellet mill. In addition to these parks, some of the surrounding U.S. Forest Service wilderness areas are also designated as Class I areas. Areas designated as Class I and are intended to receive the highest level of air-quality protection including being subject to the Prevention of Significant Deterioration (PSD) provisions under the Clean Air Act.[6]

Factual and Legal Background

The proposed pellet mill would be located on an approximately 60-acre parcel in the city of Hoquiam, Washington. The Proposed pellet mill is designed to produce, store, and export up to 440,800 short tons per year ("TPY") of wood pellets and is proposed to operate at least 8,000 hours per year. The proposed location is adjacent to the Willis Enterprises Moon Island Chip Mill ("Willis Enterprises") and near Terminal 3 at the Port of Grays Harbor.[7] An automated enclosed conveyor would draw pellets from the silos according to loading schedules and transport them via enclosed conveyor[8] to the neighboring Willis Enterprises' existing conveyors and marine vessel loadout facilities.[9]

ORCAA'S regulations provide that a Notice of Construction (NOC) Application is required for the Construction of any stationary source. The NOC must be approved by ORCAA, unless certain actions are involved (which do not apply the Proposed pellet mill).[10]

In order to receive approval from ORCAA, the proposed construction of the stationary source must meet certain requirements.[11] These requirements include the local/State Best

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[6] *See* National Park Service, Mount Rainier National Park, Air Quality, *available at* https://www.nps.gov/mora/learn/nature/airquality.htm. (Attachment C); *see also* National Park Service, Mount Rainier National Park, **Mount Rainier's Wilderness: A Defense against Climate Change**, *available at* https://www.nps.gov/mora/learn/nature/climatechange.htm.

[7] Preliminary Determination at 3.

[8] Port of Grays Harbor Wood Pellet Plant, Notice of Construction Permit Application (July 2023), at 3 ("A new conveyor would transport wood pellets from the silos and connect them to the existing Willis Enterprises conveyor system located on the Willis Enterprises chip mill site. Pellets would then be conveyed to the Port of Grays Harbor Terminal 3 for loading onto vessels.") ("Permit Application"). (Attachment D).

[9] Preliminary Determination at 11. (Willis Enterprises operates under an RC2-class ORCAA registration (source number 2112, file number 647), its classification means than it has reported potential to emit greater than or equal to 30 TPY of any combination of pollutants. The existing conveyors and vessel loadout facilities owned by Willis Enterprises are under a separate air permit and already registered with ORCAA.)

[10] Excerpt from EPA-approved SIP rules for ORCAA, 40 C.F.R. part 52.2470(c) Table 6 – Additional Regulations Approved for the Olympic Region Clean Air Agency (ORCAA) Jurisdiction, *available at* https://www.epa.gov/air-quality-implementation-plans/washington-sip-epa-approved-regulations-table-6-olympic-region. (Attachment E).
ORCAA Rule 6.1 Notice of Construction Required
(a) Approval of a Notice of Construction (NOC) Application required. It is unlawful for any person to cause or allow the following actions unless a Notice of Construction application has been filed with and approved by the Agency, except for those actions involving stationary sources excluded under Rule 6.1(b) and (c):
(1) Construction, installation, or establishment of any stationary source;
(2) Modification to any existing stationary source; or,
(3) Replacement or substantial alteration of emission control technology installed on an existing stationary source.

[11] ***ORCAA Rule 6.1.4 Requirements for Approval***
(a) Attainment or Unclassified area requirements. The following requirements apply to any new stationary source or modification proposed in an attainment or unclassified area:

Available Control Technology ("State-BACT").[12] ORCAA Rule 6.1.4(a)(2) and the Washington State Implementation Plan under 40 C.F.R. part 52.2470(c), Table 6, require a finding that a new source in an attainment area will employ State-BACT for all pollutants not previously emitted. State-BACT is defined in WAC 173-400-030(13) as:[13]

> [A]n emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under chapter 70A.15 RCW emitted from or which results from any new or modified stationary source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each pollutant.

Preliminary Determination at 25. Additionally, the emission limitations established through the State-BACT analysis must be met continuously.[14] The State-BACT emission limitation and compliance requirements mirror the Federal-BACT requirements for major sources.[15] *Moreover, while these comments generally focus on the flaws in "State-BACT" requirements, to the extent the proposed pellet mill is a major source for an air pollutant, the "State-BACT" issues are also relevant to the PSD BACT requirements.*

In 2001, EPA explained that it was not necessary to approve the Act's section 112(g) (case-by-case Maximum Achievable Control Technology (MACT) standards for the 188

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(1) The proposed new stationary source or modification will comply with all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, emission standards adopted under chapter 70A.15 RCW [Washington Clean Air Act] and applicable emission standards in ORCAA's Regulations.
(2) The proposed new stationary source or modification will employ BACT for all air pollutants not previously emitted or whose emissions would increase because of the new stationary source or modification. …
(4) If the proposed project is subject to WAC 173-400-700 through 750 [Review of Major Stationary Sources of Air Pollution, PSD permits] or WAC 173-400-800 through 860 [Major Stationary Source and Major Modification in a Nonattainment Area], Ecology has issued a final permit under those programs.
(5) If the proposed new stationary source or the proposed modification will emit any toxic air pollutants regulated under chapter 173-460 WAC [CONTROLS FOR NEW SOURCES OF TOXIC AIR POLLUTANTS], the stationary source meets all applicable requirements of that program."

[13] EPA Approved Regulations in the Washington SIP, *available at* https://www.epa.gov/sites/default/files/2017-02/documents/sip-wa-approved-regulations-ecology-table2.pdf. (Attachment F).
[14] *See* ORCAA Rule 1.4 Definitions. "'Emission standard' and 'emission limitation' means a requirement established under the FCAA or chapter 70.94 RCW [this chapter of Washington State law was recodified to 70A.15 RCW[14]] which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure *continuous emission reduction* and any design, equipment work practice, or operational standard promulgated under the FCAA or chapter 70.94 RCW."
[15] WAC 173-400-710(1) adopts the federal definition of BACT by reference; *see also* "WAC 173-400-030 (29) "Emission standard," "emission limitation" and "emission limit" means a requirement established under the Federal Clean Air Act or chapter 70.94 RCW which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction and any design, equipment work practice, or operational standard promulgated under the federal Clean Air Act or chapter 70.94 RCW."

hazardous air pollutants) delegation to this local air permitting agency because the Act directly confers on the permitting authority the obligation to implement section 112(g) and to adopt a program which conforms to the requirements of EPA's regulation. Therefore, the permitting authority need not apply for approval under section 112(l) in order to use its own program to implement section 112(g).[16]

ORCAA's rules contain the requirements for processing NOC applications and where a proposed project "does not meet the applicable approval requirements in Rule 6.1.3, then a final determination to deny approval and an Order to Deny Construction will be issued…"[17]

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[16] 66 Fed. Reg. 48,211, 48,212-48,213 (Oct. 19, 2001) ("Additionally, EPA is not delegating the regulations that implement CAA sections 112(g) and 112(j), codified at 40 CFR part 63, subpart B, to Ecology and the four local agencies. EPA recognizes that subpart B need not be delegated under the section 112(l) approval process. When promulgating the regulations implementing CAA section 112(g), EPA stated its view that "the Act directly confers on the permitting authority the obligation to implement section 112(g) and to adopt a program which conforms to the requirements of this rule. Therefore, the permitting authority need not apply for approval under section 112(l) in order to use its own program to implement section 112(g)" (see 61 FR 68397). Similarly, when promulgating the regulations implementing section 112(j), EPA stated its belief that "section 112(l) approvals do not have a great deal of overlap with the section 112(j) provision, because section 112(j) is designed to use the Title V permit process as the primary vehicle for establishing requirements" (see 59 FR 26447). Therefore, state or local agencies implementing the requirements under sections 112(g) and 112(j) do not need approval under section 112(l).")

[17] ***ORCAA Rule 6.1.2 Application Processing***

(f) Denial. If the Agency determines that a proposed project subject to approval of an NOC application does not meet the applicable approval requirements in Rule 6.1.3, then a final determination to deny approval and an Order to Deny Construction will be issued and served as provided for in these Regulations. Any Order to Deny Construction must:

(1) Be in writing;

(2) Set forth the objections in detail regarding the specific law or rule or rules of these Regulations that will not be met by the proposed project; and,

(3) Must be signed by the Executive Director of the Agency or an authorized representative.

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I. The Permit Application is Materially Incomplete.

A. The Proposed Pellet Mill Must be Classified as a Fuel Conversion Plant under the federal Clean Air Act Major Source Prevention of Significant Deterioration Permit Program.

The major source Prevention of Significant Deterioration ("PSD") permit requirements applicable to the proposed pellet plant are found in WAC 173-400-700 through 173-400-860. The State's PSD requirements, just like federal PSD regulations in 40 C.F.R. § 52.21, adopt by reference the definition of "major stationary source" in 40 C.F.R. § 51.21(b), which contains the list of 28 source categories for which the major source emissions threshold is 100 tons per year (TPY) of any individual regulated new source review (NSR) pollutant.[18] Sources not listed have a major source emissions threshold of 250 TPY. The relevant category on the list of 28 is "fuel conversion plant." EPA's regulations do not include a definition of "fuel conversion plant" nor do the State's.

The permit applicant and ORCAA suggest that wood pellet production is not among the 28 listed categories, and therefore the threshold for PSD applicability is 250 TPY and fugitive emissions are not included for comparison to the major-source threshold.[19] Neither the ORCAA nor the permit applicant provide any discussion or rationale for the assertion that none of 28 categories apply. ORCAA further suggests that "[t]his conclusion will be assured through annual limits. "[20] Neither the permit applicant nor ORCAA addressed the question of whether the proposed pellet plant should be considered a "fuel conversion plant" – one of the 28 listed categories – for PSD applicability purposes. As the agency in the State responsible for implementing EPA PSD permit program, Washington must reasonably interpret and apply the PSD regulations. Based on the below analysis, the pellet plant operations (and emissions units) associated with the process change of solidifying the wet woody biomass into pellets constitutes a fuel conversion plant.

Classifying the process of converting wood from one form to another as a process covered by "fuel conversion plants" is consistent with EPA's statement in the Cleveland Electric memo.[21] At the plant in question, Cleveland Electric proposed to produce fuel gas by means of gasifying municipal waste. EPA concluded that this process qualified as a fuel conversion plant and made the following statement: "Fuel conversion plants obviously include those plants which accomplish a change in state (e.g., solid to liquid to gas) for a fuel. This definition includes conversion of the following fuels: fossil (e.g., coal or oil shale); biomass (e.g., wood or peat);

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[18] WAC 173-400-720(4)(a)(vi).
[19] Permit Application at 6; Permit Application, Appendix A, NOC Application Forms and SEPA Documentation, Form 7, PSD Applicability Form at 3 ("Permit Application, Appendix A") (Attachment G); Preliminary Determination at 30.
[20] *Id.*
[21] EPA Memorandum from Edward J. Lillis, Chief Permits Programs Branch, AQMD, to George T. Czerniak, Chief Air Enforcement Branch, Region V, Applicability of Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) to the Cleveland Electric, Incorporated, Plant in Willoughby, Ohio (May 26, 1992), *available at* https://www.epa.gov/sites/default/files/2015-07/documents/clvlndel.pdf. ("Cleveland Electric Memo") (Attachment H).

and anthropogenic (e.g., municipal waste derived fuel and inorganic fuel). The majority of such sources are likely to accomplish these changes through either gasification, liquefaction, or solidification. .. . Generally, however, applicability for this source category is determined by whether a facility changes state (e.g., solid to gas) or form (e.g., process sawdust into a pellet) of a fuel"[22] and the change is permanent, not temporary.[23]

The proposed wood pellet mill is a "fuel conversion plant" under the PSD regulations. First, the proposed processes at the wood pellet mill would convert the wet raw wood material to a solid form, the pellets, which changes the state of the wood.[24] Moreover, in the drying line, natural gas, diesel, and propane are used as fuels for the furnace and hog fuel (wood bark) would be burned to produce energy for drying the wet raw wood material. Natural gas would be burned for RTO. The RCO for the four dry hammer mills and pellet coolers would burn natural gas. The essential features of the pellet mill use a process and change material from a wet, raw material to a solid form. The solidification processes that would be used to create the pellets also would use natural gas, diesel, and propane to start the furnace process, wood to fuel the furnace, and natural gas to power the control air pollution emissions at the RTO and RCO.

This interpretation is also consistent with EPA's statements in its July 31, 2003 letter.[25] In that analysis, while EPA communicated that the change in state in that instance was from a liquid to a gas, it concluded that the plant at issue was not a fuel conversion plant because the vaporization of liquid natural gas occurs without the need for chemical or process change. The permit applicant's process here of converting wet woody biomass to a solid form – the wood pellets – would not occur without a process, such as that proposed by the permit applicant. Moreover, in the 2003 letter, EPA provided a list of the types of fuel conversion plants under the

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[22] *Id.* at 3.

[23] EPA Letter from C.J. Sheehan, Office of Regional Counsel, EPA Region 6 to M. Cathey, Managing Director, El Paso Energy Bridge Gulf of Mexico (Oct. 28, 2003), *available at* https://www.epa.gov/sites/default/files/2015-07/documents/20031028.pdf. (Attachment I).

[24] *See* EPA Memorandum from Kent Berry, Director Policy Analysis Staff, U.S. EPA, to Asa B. Foster, Jr., Director, Air and Hazardous Materials Division, U.S. EPA Region IV, "Clarification of Sources Subject to Prevention of Significant Deterioration (PSD) Review" at 1 (Jan. 20, 1976), *available at* https://www.epa.gov/sites/default/files/2015-07/documents/phosphat.pdf (Explaining that "Fuel conversion plants are defined for purposes of PSD as those plants which accomplish a change in state for a given fossil fuel. The large majority of these plants are likely to accomplish these changes through coal gasification, coal liquefaction, or oil shale processing.") (Attachment J). Notably, EPA Memorandum did not say "all" of the fuel conversion plants accomplish the changes through the examples provided.); *see also* "Cleveland Electric Memo", at 3, ("The production of low heat value fuel gas at the Cleveland Electric facility also classifies the source as a fuel conversion plant. Fuel conversion plants obviously include those plants which accomplish a change in state (e.g., solid to liquid to gas) for a fuel. This definition includes conversion of the following fuels: fossil (e.g., coal or oil shale); biomass (e.g., wood or peat); and anthropogenic (e.g., municipal waste derived fuel and inorganic fuel). The majority of such sources are likely to accomplish these changes through either gasification, liquefaction, or solidification. The category of fuel conversion plants may include, but is not limited to, some types of sources within standard industrial classifications 1311, 2819, 2969, 2421, and 2999. Generally, however, applicability for this source category is determined by whether a facility changes the state (e.g., solid to gas) or form (e.g., process sawdust into a pellet) of a fuel. Therefore, the Cleveland Electric facility fits into the fuel conversion plant category as well.")

[25] EPA Memorandum from Racqueline Shelton, Group Leader, Integrated Implementation Group, to Guy Donaldson, Acting Chief, Air Permits Section, EPA Region 6, Request for Guidance on the Definition of Fuel Conversion Plants for Purposes of Prevention of Significant Deterioration (PSD) (July 31, 2003), *available at* https://www.epa.gov/nsr/guidance-definition-fuel-conversion-plants. (Attachment K).

PSD regulations and the list included "coal gasification, oil shale processing, conversion of municipal waste to fuel gas, processing of sawdust into pellets."[26]

The legislative history regarding the addition of "fuel conversion plant" to the definition of "major emitting facilities" shows that EPA recommended adding fuel conversion plants when the source category was added as one of the 100 TPY major source categories in the Clean Air Act Amendments of 1977. Yet the amendments did not include a definition for this source category. Rather, the legislative history made a one passing reference to the coal gasification, coal liquefication, and oil share processing "etc." to provide examples of the types of facilities that would be included.[27]

Wood is a type of fuel used in a wide variety of stationary source combustion activities. For example, the 1977 legislative history shows that when EPA reported to congress in how it collected emission inventory information from combustion activities at stationary sources, air pollutant emissions were reported by the type of fuel used in different applications.[28] Indeed, the use of wood as a fuel was included as a category for which emission inventory information was reported to EPA in all three areas of the stationary source combustion activities (residential, commercial and institutional, and industrial). Additionally, when the National Academy of Sciences provided its Report to congress during the 1977 legislative session, it explained that

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[26] *Id.* at 1-2.

[27] The legislative history is also instructive in considering whether the proposed wood pellet mill should be classified as a "fuel conversion plant." In August 1977, Congress adopted the Clean Air Act Amendments of 1977 with the statutory PSD section. The 1977 amendments included the PSD 100 TPY / 250 TPY two-tier concept in the definition of "major emitting facilities" along with a list of the source categories having a 100-TPY PSD major source threshold. EPA developed a list of 19 source categories to include in the list of sources subject to the 100-TPY threshold and EPA's list was an extract from the Research Corp. of New England, which had listed 190 types of sources. The "committee took 28, be printed in the RECORD at this point as an illustration of what the committee examined and the kinds of sources the committee intended to include and exclude…" 1976 WL 162302 (CAA77), 18, A&P 122 Cong. Record S12775, S12782] 1977 WL 173804 (CAA77), 1977 WL 173804 (CAA77), 20 (Aug. 2, 1976). Of the categories listed, 17 that were covered by EPA's regulation included the largest emitters of SO_2 and TSP on a nationwide basis at that time. The legislative history explains that the "fuel conversion plants, are fuel conversion plants (coal gasification and liquefication, oil shale processing, etc.) were included due to their significant growth potential…" 1977 WL 173804 (CAA77), 20 (Aug. 2, 1976), citing *Technical Support Document--EPA Regulations for Preventing the Significant Deterioration of Air Quality,* U.S. Environmental Protection Agency, Office of Air Quality Planning & Standards (Jan. 1975), at 27-28.; The listed categories included fuel conversion plants, but without any definition of the term. 42 U.S.C. § 7479(1). Pub.L. 95-95, Title I, § 127(a), Aug. 7, 1977, 91 Stat. 740.

[28] The legislative history includes two citations to the EPA Federal Register notice summarizing emission inventory data for fuel used in residential, commercial and institutional, and industrial applications. In all three applications, one of the types of fuel identified was "wood" (For the types of fuel used in residential applications, and commercial and institutional, EPA's emission inventory included: Anthracite Coal, Bituminous Coal, Distillate Oil, Residual Oil, Natural Gas, Wood, and Other. For the types of fuel used in industrial applications, EPA's emission inventory included: Anthracite Coal, Bituminous Coal, Coke, Distillate Oil, Residual Oil, Natural Gas, Wood, and Other.); 1971 WL 120521 (CAA77), 24, A&P CAA77 HEARINGS (20) (Part 7 OF 7), 514, citing APPENDIX D. (POLLUTANT) EMISSIONS INVENTORY SUMMARY, (EXAMPLE REGIONS AND WHERE EMISSION LIMITATIONS ARE DEVELOPED) ______________ AIR QUALITY CONTROL REGION--DATA REPRESENTATIVE OF CALENDAR YEAR; *see also* 1972 WL 121321 (CAA77), 62, A&P CAA77 HEARINGS (27B) (Part 6 OF 6), 883, citing FEDERAL REGISTER, VOL. 36, NO. 158-AUG. 14, 1971, Appendix D--(Pollutant) Emissions Inventory Summary, tons/yr. (or metric tons/yr.) (Example Regions) ________________________ Air Quality Control Region Data Representative of Calendar Year ___." (emphasis added).

"[t]he primary emissions for stationary sources are from fuel combustion" and included in the list of fuels used during combustion was "wood waste."[29] From the 1977 legislative history it is clear that "wood" and "wood waste" were considered a type of fuel.

Furthermore, it appears the only location in the 1977 legislative history where "fuel conversion plants" were referred to "fossil fuel conversion plants" was in testimony discussing the then "shortages in low-sulfur liquid fuel" and because of the shortages a particular category of conversion plants had "become increasingly dependent on coal to generate electricity."[30] Thus, it logically follows that in addition to the examples of "coal gasification," "coal liquefaction" and "oil shale processing" that fuel conversion plants must also include other sources used for fuel, notably wood.

Congress explicitly identified the major source category relevant here in the definition of "major emitting facility" as "fuel conversion plant." The major source category was neither identified as fossil fuel conversion plants nor is there anything in the legislative history to suggest congress intended that the category include only those plants that convert fossil fuels.[31]

Since EPA's proposed PSD regulations in 1973, to the list of source categories that is used today, the "fuel conversion plant" category has never been defined.[32] This list (still without

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[29] AIR QUALITY AND AUTOMOBILE EMISSION CONTROLA REPORT BY THE COORDINATING COMMITTEE ON AIR QUALITY STUDIES NATIONAL ACADEMY OF SCIENCES NATIONAL ACADEMY OF ENGINEERING PREPARED FOR THE COMMITTEE ON PUBLIC WORKS UNITED STATES SENATE PURSUANT TO S. Res. 135, APPROVED AUGUST 2, 1973, VOLUME 3, THE RELATIONSHIP OF EMISSIONS TO AMBIENT AIR QUALITY, SEPTEMBER 1974, SERIAL NO. 93-24, COMMITTEE ON PUBLIC WORKS," 1974 WL 162630 (CAA77), 70, A&P CAA77 COMM. PRINT 1974 (13D) (Part 3 OF 6), 17-18. (In addition to wood waste, the Academy's Report listed the following fuels: coal, fuel oil, natural gas, and liquified petroleum gas.)

[30] JOHN KRAUTKRAEMER, TESTIMONY OF THE ENVIRONMENTAL DEFENSE FUND AND THE COLORADO OPEN SPACE COUNCIL ON THE PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL POLLUTION OF THE SENATE COMMITTEE ON PUBLIC WORKS Denver, Colorado, February 15, 1977,1977 WL 173812 (CAA77), 3; also cited at 1977 WL 173811 (CAA77), 111.

[31] Interpretations of the regulation that have limited fuel conversion plants to only those that convert "fossil" fuel are unreasonably restrictive; s*ee e.g. see generally* EPA Letter from Gregg M. Worley, Chief Air Permits Section, EPA Region 4, to E.A. Veronica Barringer, Bureau of Air Quality, South Carolina Department of Health and Environmental Services, (June 4, 2007) *available at* https://www.epa.gov/sites/default/files/2015-07/documents/fuelcon2.pdf. (Attachment L); *see also* EPA Letter from Donald Dossett, P.E., Manager Stationary Source Unit, EPA Region 10, to Claudia Davis, Western Region Air Quality Manager, Oregon Department of Environmental Quality (Sept. 26, 2017), *available at* https://www.epa.gov/sites/default/files/2017-10/documents/jordcove.pdf. (Attachment M).

[32] When EPA added the term "major stationary source" to its PSD regulations it adopted the source categories from the Act, it did not add definitions. Prior to 1977 amendments to the Clean Air Act, EPA's 1973 proposed PSD regulations listed 16 source categories, that list did not include fuel conversion plants. 38 Fed. Reg. 18,986 (July 16, 1973). EPA's 1974's preamble that proposed amendments to PSD regulations mentioned that the list of sources subject to the permit program had been expanded to include the "fuel conversion plants" and noted that that source type include sources "such as coal gasification and oil shale plants." 39 Fed. Reg. 31,000, 31,003 (Aug. 27, 1974). EPA's statement was in a proposed action and thus not a final agency action. Furthermore, EPA's 1974 preamble statement "such as" merely provided examples of the types of sources that could be included as fuel conversion plants, it was neither limiting the types of fuel covered nor a definition. EPA promulgated the first set of PSD regulations in 1974 and these regulations contained "fuel conversion plants" as a listed source category but EPA did

a definition for fuel plant conversion) remains in current federal PSD regulated and is adopted by reference in the current Washington State PSD regulations.

ORCAA does not have authority to interpret and implement the PSD regulations. The PSD regulations applicable to wood pellet plant are in the SIP regulations that EPA approved for the Washington Department of Ecology to implement.[33] The PSD regulations are not part of ORCAA's EPA-approved SIP regulations. Notably, ORCAA Rule 1.4 explicitly explains that the local permitting agency does not have authority to implement the PSD regulations:

> **"Prevention of Significant Deterioration (PSD)"** means the program in WAC 173-400-700 to 173-400-750. Ecology is responsible for the PSD program for stationary sources in ORCAA's jurisdiction.

Instead, the PSD regulations fall under the Washington Department of Ecology's jurisdiction. Thus, ORCAA does not have authority to interpret the PSD regulations and answer the question of whether the proposed plant is a "fuel conversion plant." Furthermore, as discussed below, several of the regulated NSR pollutants exceed the 100 TPY threshold and at least one exceeds the 250 TPY threshold. Therefore, the permit applicant must seek a PSD permit from the State for this major stationary source under either the 100 or 250 TPY threshold. If ORCAA attempts to create emission limitations and associated monitoring, recordkeeping and reporting requirements to allow the proposed pellet mill to escape major source PSD permitting, ORCAA must nevertheless defer to the State in responding to this significant question raised during the public comment period of whether the proposed pellet mill constitutes a "fuel conversion plant." The State's proposed determination must be subject to the State's notice and comment process.

In addition to ORCAA's mischaracterization of the proposed pellet mill, as discussed below, the proposed approval order terms are not adequate to create synthetic minor emission limits and fail to include the required monitoring, recordkeeping and reporting requirements necessary for practical enforceability. Moreover, the permit applicant has not accurately calculated many of the air pollutants, including carbon monoxide ("CO") emissions. Using the correct emission factor from the stack test at another wood pellet mill, the potential criteria pollutant CO emissions exceed the 250 TPY PSD thresholds. Additionally, applying the 100 TPY PSD threshold, PM, NOx and VOC would be triggered for PSD review, along with greenhouse gases. ORCAA must deny the permit application. The permit applicant must apply to Washington for a PSD permit.

In summary, ORCAA lacks authority to consider and respond to this comment. It must defer to the State of Washington. Based on the above analysis the proposed wood pellet plant must classified as a fuel conversion plant because the proposed wood pellet plant would a process to solidify the wet woody biomass to the solid pellet form.

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not define the term. 39 Fed. Reg. 42,510, 45,516 (Dec. 5, 1974). In 1978, EPA promulgated the PSD regulations, which were pursuant to the Clean Air Act Amendments of 1977, and subsequently amended them in August 1980 in response to *Alabama Power Company v. Costle,* 636 F.2d 323 (D.C. Cir. 1979). The 1980 PSD regulations contained the 100-tpy source category list with fuel conversion plants as one of the categories but without a definition.

[33] WAC 173-400-700 to 173-400-750, *supra* n.13.

B. VOC Emissions from the Five Wood Pellet Storage Silos Are Not Included in the Permit Application.

The permit application does not include any VOC emissions from the silos that will store wood pellets. Thus, the permit application's State-BACT analysis ignores VOC emissions from the storage silos,[34] does not establish a State-BACT emission limit, and underestimates the proposed pellet mill's true potential to emit of VOCs. This is in contrast to existing source testing for wood pellet storage silos, conducted by the State of Georgia at the Georgia Biomass wood pellet plant.[35] The State of Georgia permitting agency, Georgia Environmental Protection Division ("Georgia EPD") formulated an emission factor for wood pellet storage and handling of 0.4 lb/ oven dried tons (ODT), which the agency requires wood pellet plants to use in calculating PTE, with limited recent exception.[36] This emission factor is based on direct emissions testing of the wood pellet storage silos at Georgia Biomass, an 825,000 TPY wood pellet plant located in Waycross, Georgia.[37] Based on the Georgia EPD emission factor, an additional 88 TPY of VOC emissions must be added to the proposed pellet mill's facility-wide emission inventory for the emissions from the five pellet silos (EP-10, EP-11, EP-12, EP-13 and EP-14), a State-BACT analysis conducted, and an emission limit established for the VOC emissions from the five pellet storage silos.[38] Thus, the revised estimate of facility-wide VOC should be 155 TPY. If the permit applicant wishes to use a lower emission factor, it can only do so after providing adequate justification, supported by credible evidence, demonstrating that the planned silos are not capable of emitting at the same rate as those tested at Georgia Biomass.

C. Carbon Monoxide Emissions from the Five Wood Pellet Storage Silos Are Not Included in the Permit Application.

According to the permit application, the proposed pellet mill's five pellet storage silos will not emit any carbon monoxide (CO).[39] This conclusion, however, contradicts numerous studies conducted over the past decade demonstrating that bulk storage of wood pellets is a significant source of CO emissions.[40] Tragically, numerous real-world incidents have confirmed

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[34] Permit Application at 23.

[35] Georgia EPD Memorandum re: Emission Factors for Wood Pellet Manufacturing (Jan. 29, 2013) (Attachment N) ("Georgia EPA Memo").

[36] *Id.* at 4; *see also* Georgia EPD, SIP Construction Permit and Title V Significant Modification Application Review for Hazlehurst Wood Pellets, at 5 (Sept. 2019) (explaining why Georgia EPD was making an exception to its normal requirement to utilize the 0.4 lb/ODT emission factor). (Attachment O).

[37] Georgia EPA Memo, *supra* n.35, at 5.

[38] Silo emissions, (440,800 ODT/yr * 0.4 lb/ODT) / 2,000 = 88 TPY VOC.

[39] Permit Application, Appendix C, Emission Calculations, at PDF 3. (Attachment P). ("Permit Application, Appendix C").

[40] Urban R. A. Svedberg, *et al.*, *Emissions of Hexanal and Carbon Monoxide from Storage of Wood Pellets, a Potential Occupational and Domestic Health Hazard*, 48 Ann. Occup. Hyg., No. 4, 339-349 (2004) (Attachment Q); Lydia Soto-Garcia, *et al.*, *Exposures to Carbon Monoxide from Off-Gassing of Bulk Stored Wood Pellets*, Center for Air Resources Engineering and Science, Clarkson University, Energy Fuels, 29, 218-226 (2015) (Attachment R); Mohamad Arifur Rahman, *et al.*, *Carbon Monoxide Off-Gassing From Bags of Wood Pellets*, 62 Annals of Work Exposures and Health, Issue 2, 248-252 (Dec. 25, 2017) (Attachment S) ("Rahman, *et al.*"); Jaya Shankar Tumuluru, *et al., Analysis on Storage Off-Gas Emissions From Woody, Herbaceous, and Torrefied Biomass*, 8 Energies 1745, 1751 (March 2, 2015) (Attachment T); Xingya Kuang, *et al.*, *Rate and Peak Concentrations of Off-Gas Emissions in Stored Wood Pellets—Sensitivities to Temperature, Relative Humidity, and Headspace*, 53 Ann. Occup. Hyg., No. 8,

this, with at least 14 fatal accidents due to carbon monoxide poisoning from bulk wood pellet storage since 2002.[41] The danger is so high that the New York State Department of Health has recommended that "signs should be posted at [wood pellet] storage areas to warn everyone about potential carbon monoxide hazards."[42]

Most critically, in terms of an emission factor, one study found that softwood pellets stored at 35º C (95º F) for two days had an emission factor of approximately 0.7 g/kg, which equates to 1.4 lb/ton of pellets.[43] This emission factor produces an emission rate at the proposed pellet mill of 308 tons of CO per year, well over either of PSD major-source thresholds (100 or 250) TPY. Wood pellets stored in silos frequently reach and maintain temperatures well above 35º C even when ambient temperatures are much lower, meaning this emission factor is likely applicable nearly year-round.

The additional CO emissions of 308 TPY must be added to the proposed pellet mill's facility-wide emission inventory estimate for CO of 185 TPY, a major source PSD BACT analysis conducted, a permit application submitted to the Washington Department of Ecology, and either an emission limit established by Washington Department of Ecology for the CO emissions from the five pellet storage silos or an approval order denial issued. Because ORCAA does not have authority to act on sources with potential to emit at levels subject to the major source PSD regulations, it must defer to the Washington Department of Ecology's determination for the CO emissions from the proposed pellet mill.

D. The Permit Application Fails to Include Emissions from and Propose Controls for the VOC and HAP Emissions from the Hammermills.

As discussed in the letter from SELC, the permit applicant proposes to operate wet (aka green) hammermills that will not be vented to any VOC controls.[44] Moreover, the permit applicant improperly listed these hammermills as not emitting any VOCs or HAPs. Most comparable wood pellet mills vent these units to the furnace or dryer RTO for VOC and HAP control. Furthermore, emission stack tests on uncontrolled wet hammermills[45] show the proposed wet hammermills will likely emit up to 60 tons of VOCs and six tons of HAPs (in addition to the emission rates calculated elsewhere in these comments). These emissions and controls must be included in a revised permit application.

789-796 (Aug. 5, 2009) (Attachment U) ("Kuang"); Wolfgang Stelte, Danish Technological Institute, *Guideline: Storage and Handling of Wood Pellets*, at 6 (Dec. 2012) (Attachment V) ("Stelte").

[41] Rahman, *et al.*, *supra* n.40, at 1.

[42] New York State Department of Health, Carbon Monoxide (CO) Hazards from Wood Pellet Storage, *available at* https://www.health.ny.gov/environmental/emergency/weather/carbon_monoxide/docs/pellets.pdf. (Attachment W).

[43] (440,800 ODT/yr * 1.4 lb/ton) / 2,000 lbs = 308 tpy CO; *see also* Kuang, *supra* n.40 at 792.

[44] Letter from Patrick J. Anderson, Southern Environmental Center, Heather Hillaker, Southern Environmental Law Center, to Lauren Whybrew, ORCAA, "Hazardous Air Pollutant (HAP) Deficiencies in Preliminary Determination for Pacific Northwest Renewable Energy LLC (PNWRE)," (Jan. 8, 2024). (Attachment X). ("SELC Letter").

[45] Enviva Pellets Wiggins, LLC, Air Emission Test Report (Oct. 31, 2013) (Attachment Y); Enviva Pellets Amory, LLC, Air Emission Test Report (Oct. 31, 2013) (Attachment Z).

E. The Permit Application Includes Woefully Inaccurate Emission Estimates for Hazardous Air Pollutants, Which Must be Revised and a Case-by-Case MACT Analysis Conducted.

As discussed in the comment letter submitted from SELC to ORCAA,[46] the permit application estimates plant-wide hazardous air pollutants ("HAP") at 1.32 TPY,[47] relying on EPA AP-42 emission factors that are specific to wood pellet plants and other inappropriate emission factors. This estimate is woefully inaccurate. The HAP pollutant emissions are of concern to NPCA not only because of the potential adverse impacts to the adjacent residential community and nearby elementary, middle and high schools (the proposed pellet mill is within a mile and a half of Emerson elementary school, Hoquiam middle school and Hoquiam high school), but because the HAPs that would be emitted at the greatest quantifies by the proposed pellet mill are also characterized as VOCs. By volume, the most significant HAPs emitted are all also VOCs, and include the following:

- Acrolein
- Acetaldehyde
- Formaldehyde
- Methanol
- Phenol
- Propionaldehyde

These particular VOC pollutants impact regional haze at the National Parks. Moreover, the National Park Service expresses concerns regarding the impacts of air toxic pollution at Mount Rainier National Park.[48]

Reliance on emissions factors is problematic because the EPA AP-42 emission factors do not reliably predict emissions from specific sources and should not be used to establish or demonstrate compliance with approval order limits. The emission factors were developed to provide *approximations* of average emissions from certain kinds of activities and equipment and were not intended to be used for permitting and enforcement.[49] Consequently, EPA has repeatedly cautioned that the AP-42 factors "are not likely to be accurate" and thus "[u]se of these factors as source-specific permit limits … is not recommended by EPA."[50]

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[46] SELC Letter.
[47] Permit Application, Appendix C at PDF 4.
[48] *See supra* n.5.
[49] EPA, A-42, *available at* https://www.epa.gov/system/files/documents/2024-01/introduction_2024.pdf. EPA explains that an AP-42 emission factor is "a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. These factors are usually expressed as the mass of the pollutant divided by a unit mass, volume, distance, or duration of the activity emitting the pollutant (e.g., kilograms of particulate matter emitted per megagram of coal burned). Such factors facilitate estimation of emissions from various sources of air pollution. In most cases, these factors are simply averages of all available data of acceptable quality, and are generally assumed to be representative of long-term averages for all facilities in the source category (i.e., a population average)." AP-42 (2024), Introduction at 1 (underlining in original), *available at* https://www.epa.gov/sites/default/files/2020-09/documents/c00s00.pdf.
[50] EPA, Reminder About Inappropriate Use of AP-42 Emission Factors, Publication No. EPA 325-N-20-001 at 1, (Nov. 2020) ("EPA AP-42 Enforcement Alert"), *available at* https://www.epa.gov/sites/default/files/2021-01/documents/ap42-enforcementalert.pdf.

The recent permit application for a proposed pellet mill in Longview ("Proposed Longview Pellet Mill") of similar size (450,00 oven dry metric tons (ODMT)/yr) submitted to Washington's Southwest Clean Air Agency includes a plant-wide HAP emission inventory of 48.90 TPY for all HAPs, and 22.55 TPY for the maximum of a single HAP.[51] The Proposed Longview Pellet Mill application explains that "HAP/TAP [toxic air pollutants under State law][52] and VOC emissions from the hammermills and pelletizers were updated [in the permit application] to use stack test data from a representative site, the ABE Facility in Gloster, MS." [53] The permit applicant further explained that it used "HAP/TAP emissions from the dryer use stack test data from the ABE Facility to supplement the AP-42 factors used in the Application." Furthermore, the permit applicant added "[a] safety factor of 25% … to the emission factors for conservatism … [all of which] … resulted in additional HAP/TAP being included in the emission calculations."[54]

The permit applicant for the proposed pellet mill must supplement its permit application with accurate HAP/TAP and VOC emission calculations, following the methodology used at the Proposed Longview Pellet Mill. Once the emission estimates are updated, the proposed pellet mill must be classified as a major source of HAPs under the federal Clean Air Act. The permit applicant must conduct the case-by-case MACT analysis required under the federal Clean Air Act. The permit applicant must also use the corrected emission inventory of TAP emissions rerun the TAP model analysis required by State law.[55]

F. The Calculations for NOx Emissions Must be Corrected.

The permit applicant erred in calculating the emission factor for NOx for the furnace emissions estimated for drying line emissions based on 52 lbs/hour for total PTE of 227.8 TPY.[56] This emission factor is based on the amount of wood in the dryer. This is improper; NOx is a product of combustion, and therefore the amount of wood being dried is not directly correlated to NOx emissions. In terms of the Enviva Greenwood testing,[57] the wood pellet furnace there operated at an average heat input of 135 MMBtu/hr during the testing,[58] and emitted NOx at a rate of 18.5 lb/hr.[59] Based on the emission testing at the Enviva Greenwood pellet mill, the proper emission factor therefore is 0.137 lb/MMBtu, not the 52 lbs/hour suggested by the permit applicant.

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[51] Letter from Jennifer Pohlman, Senior Consultant, Trinity Consultants, to Danny Phipps, Air Quality Engineer 1, Southwest Clean Air Agency, Completeness Determination for ADP Application CO-1057 dated August 25, 2022 (March 29, 2022) at PDF 18. (Attachment AA). ("SWCAA Letter").

[52] Preliminary Determination at 28 ("The Air Toxics Rule provides a multi-tiered, screening approach under WAC 173-460-080 to assess health impacts and demonstrate compliance with the ambient impact requirement under WAC 173-460-070, which is that TAP increases must be sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects.")

[53] SWCAA Letter at PDF 2.

[54] SWCAA Letter at PDF 2.

[55] Preliminary Determination at 2, 28-30.

[56] Permit Application, Appendix C, Table C-8a at PDF 14.

[57] Air Control Techniques, Air Emissions Test Report for Enviva Pellets Greenwood, at 20 (April 4, 2019) (Attachment BB) ("Enviva Greenwood Test Report").

[58] *Id.* at Appendix IG: Process Data, Table 4 at 212.

[59] *Id.* at 20.

The Preliminary Determination explains that the furnace will combust hog fuel to provide heat for the dryer and will have a maximum heat input capacity of 164.81 MMBtu/hr,[60] and the conditions of approval allow for heat rate at the furnace of 165 MMBtu/hr.[61] Based on the heat input, the furnace at the proposed pellet mill will emit 113 TPY of NOx.[62] The permit applicant must include all sources of NOx (*i.e.*, Regenerative Catalytic Oxidizer (”RCO”) emissions from the dry hammermill and pellet cooler (5.8 MMBtu/hr gas consumption[63]), Regenerative Thermal Oxidizer (“RTO”) emissions (20.2 MMBtu/hr gas consumption[64]), all emergency engines (e.g., emergency generators and fire water pumps), the marine vessels, and any other combustion sources not yet disclosed (e.g., propane vaporizer) at the proposed pellet mill and recalculate the total TPY of NOx.

II. The Permit Application is Missing Emitting Units and Emission Sources.

Once the missing emission units are added and the emission estimates corrected, ORCAA must re-evaluate applicability of the Act’s requirements. Once emissions from the missing emission units are added and the emission estimates corrected, ORCAA must evaluate applicability of the Act’s requirements, as well as whether the proposed pellet mill exceeds major source thresholds. ORCAA must provide the public with an opportunity to review and comment on the new information, or, if the proposed pellet mill exceeds major source thresholds, defer permitting authority to the Washington Department of Ecology.

A. The Permit Application Fails to Disclose and Use Accurate Methodology to Estimate NOx Emissions.

Proposed potential facility-wide NOx emissions are projected at 230 TPY from three emission units:

- Drying line (EP-04) (227.76 TPY)
- Emergency generator (GEN-01) (0.17 TPY)
- RCO at the dry hammer mill and pellet cooler (EP-08) (1.82 TPY)[65]

This projection is of concern because it is close to the threshold for PSD major source permitting, which is 250 TPY. The permit application fails to provide the supporting documentation necessary for the public to review and comment on the emission estimate for the drying line. For the projected 227.76 TPY from the drying line, the permit application indicates

[60] Preliminary Determination at 7.
[61] *Id.* at 33, (Recommended Conditions of Approval ¶ 2).
[62] We calculate this as follows: (0.137 lb/MMBtu * 1,650,000 MMBtu/year) / 2000 lbs/ton = 113 TPY of NOx from the furnace, while the remainder of known emissions from the proposed pellet mill would emit 17 TPY NOx (0.137 lb/MMBtu * (58,000 MMBtu/hr RCO + 20,200 MMBtu/hr RTO), for a total of 130 TPY NOx. This facility-wide NOx emission estimate does not include emissions from the emergency engines (because it appears the permit applicant did not include all the engines and did not use the BACT assumptions) and the permit applicant did not include NOx emissions from the marine vessels.
[63] Preliminary Determination, at 34, (Recommended Conditions of Approval ¶ 2).
[64] Preliminary Determination, at 33, (Recommended Conditions of Approval ¶ 2).
[65] Permit Application, Appendix C, Table C-1 at PDF 3.

that the "[e]mission rates are based on vendor data,"[66] however, there is neither a citation to where that vendor data can be located in the application nor does our review of the application find any vendor data. The public must be provided access to the "vendor data" in order to review and comment. The permit applicant must supplement the application with this missing information so that the public can fully evaluate the accuracy of the potential to emit estimate.

For emissions from the emergency generator, the permit application indicates that emissions are based on "EPA Tier 3 emission standards."[67] As discussed below, the Tier 3 engines are not representative of BACT controls.

Finally, the permit application explains that the projected emissions of 1.82 TPY NOx from the RCO at the dry hammer mill and pellet cooler were estimated based on EPA's AP-42 emission factors,[68] and the application used the emission factor for "Residential Furnaces" to estimate these emissions. The RCO is not a residential furnace, and the permit applicant does not explain why this generic emission factor for residential emission units is representative of emissions from the units at the proposed pellet mill. Furthermore, as discussed above, the permit applicant's reliance on emissions factors is problematic because AP-42 emission factors do not reliably predict emissions from specific sources and should not be used to establish or demonstrate compliance with approval order limits. EPA's 2020 Enforcement Alert further explained AP-42 emission factors should not be used to establish or determine compliance with source-specific emission limits because of impacts to 1-hour and short-term National Ambient Air Quality Standards (NAAQS).[69]

B. The Permit Application Does Not Appear to Include NOx Emissions for Several Sources.

The permit application does not appear to include estimates for NOx emissions from the combustion of gas in the estimates for the Dryer RTO.[70] Notably the emission estimates for those emission units include break-out tables for other pollutants that are created from combustions of gas (SO_2 and N_2O), however, NOx emissions are not identified and included in those tables. NOx emissions from combustion of gas must be added or the permit applicant must explain how they are included in the overall total estimate.

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[66] Permit Application, Appendix C, Table C-8a at PDF 14.
[67] Permit Application, Appendix C, Table C-12a at PDF 21.
[68] Permit Application, Appendix C, Table C-9a at PDF 17 ("Combustion emission factors are from AP-42, Table 1.4-1, No SCC – Uncontrolled, 7/98, and Table 1.2-2".)
[69] EPA, AP-42 Enforcement Alert at 1-2. ("With the advent of 1-hour and short-term National Ambient Air Quality Standards (NAAQS), permit limits must be able to account for short term fluctuations. AP-42 emission factors also do not account for short term variation in emissions as the emission factors are intended for use in developing area-wide annual or triannual inventories. In developing emission factors, test data are typically taken from normal operating conditions and generally avoid conditions that can cause short-term fluctuations in emissions. These short-term fluctuations in emissions can stem from variations in process conditions, control device conditions, raw materials, ambient conditions, or other similar factors. This means that if facilities use AP-42 emission factors as permit limits, facilities increase their chances of violating their short-term permit limits. It also increases the likelihood of a geographic area's noncompliance with the NAAQS.")
[70] Permit Application, Appendix C, at Table C-8a at PDF 14 (does not indicate if NOx emissions from gas combustions are included).

Furthermore, the permit applicant indicates that diesel engines will power the emergency fire pump,[71] however, there are no emission estimates for these engines identified in the permit application. In contrast, the permit application for the Longview Pellet Mill expressly includes NOx emissions from the engines that will support the fire pumps.[72] The missing information must be clarified, and emission estimates added as necessary.

C. The Permit Application Fails to Include Maritime Vessel Emissions from the Loadout Area, which is on Adjacent Property That Would Serve the Proposed Pellet Mill.

The permit applicant proposes to draw finished wood pellets from the storage silos and transport them via enclosed conveyor to the adjacent property owned by another company, Willis Enterprises. Once the wood pellets are on Willis Enterprises' property, the wood pellets would be moved via that company's existing conveyors and marine vessel loadout facilities.[73] Loadout of the wood pellet product is primarily planned to occur at the ship loadout facility on the adjacent owner's property.[74] The permit applicant explains that "[t]he Project would increase vessel traffic by approximately one ship every 5 to 6 weeks, or 10 per year." Emissions from vessels at berth ("dockside") that would load the wood pellets for transport[75] are considered primary emissions for estimating facility-wide emissions for applicability of the Clean Air Act requirements[76] because they are maritime emissions from operations related to the "ship loadout

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[71] The Vendor Information provided in Appendix D, expressly notes that unless expressly mentioned certain parts and services are not included in the quote, these items include "water pumps." Permit Application, Appendix D, Vendor Information at 70. ("Permit Application, Appendix D"). (Attachment CC). However, Appendix A indicates that the proposed pellet plant would include fire water pumps and generators. ("Stationary sources of diesel particulate matter (DPM) would be emitted at rates greater than regulatory *de minimis* levels by the emergency generator and diesel engines that power the <u>emergency fire water pumps</u>, but these sources would only operate during an emergency, and would fall within acceptable cancer risk and ORCAA thresholds.") Permit Application, Appendix A at PDF 30. (<u>emphasis added</u>). The permit applicant's apparent assertion that this emitting units and air pollution would be excused from permitting requirements is wrong. The emissions from all emitting units must be considered in the facility-wide emission inventory prepared to determine applicable requirements under the Act.

[72] *See e.g.* SWCAA Letter at PDF 17.

[73] Preliminary Determination at 11.

[74] Preliminary Determination at 11 ("PNWRE will also have the ability to deliver pellets via a truck unloading system; however, this system would be used only in special circumstances. PNWRE proposes no more than 10 loaded trucks per day and 32,000 tons per year of truck loadout utilization.")

[75] Permit Application, Appendix A at PDF 25 ("The processing of wood chips at the proposed facility includes … a ship loadout area.")

[76] EPA Draft NSR Workshop Manual at A-18 (Oct. 1990), *available at* https://www.epa.gov/nsr/nsr-workshop-manual-draft-october-1990 ("Secondary emissions do not include any emissions which come directly from a mobile source, such as emissions from the tailpipe of a motor vehicle or from the propulsion unit of a train or a vessel. This exclusion is limited, however, to only those mobile sources that are regulated under Title II of the Act (see 43 FR 26403 - note #9). Most off-road vehicles are not regulated under Title II and are usually treated as area sources. [As a result of a court decision in *NRDC v. EPA*, 725 F.2d 761 (D.C. Circuit 1984), emissions from vessels at berth ("dockside") not to be included in the determination of secondary emissions but are considered primary emissions for applicability purposes.]" ("NSR Workshop Manual.") That the vessel emissions generated in loading the pellets at the port should be included in the applicability determination comes from definitions in the Act. The Act's definition of "stationary source" requires the permitting agency authority to consider emissions from external combustion engine vessels in preconstruction and operating permits. 42 U.S.C. § 7602(z). That definition means "generally any source of an air pollutant except those emissions resulting directly from an internal combustion

area." The permit applicant must estimate air pollutant emissions from the vessel traffic and supplement the permit application.[77] Because emissions from the vessels will impact air quality at considerable distances from the proposed pellet mill and these impacts are not limited to just the area near the loading dock. The air quality modeling must consider maritime emissions associated with the project beyond those that occur close to the loading dock because they will have an impact on air quality concentrations.

D. Permit Application Fails to Include Emissions from the Transport of Finished Product from the Five Wood Pellet Silos to the Ship Loadout Area.

The permit application fails to disclose and quantify emission estimates from the transport of the finished product from the five wood pellet silos to the ship loadout area. This information must be quantified and included in a revised application. The preliminary determination explains that the adjacent property owner holds an existing air permit for its operations and that the permit applicant proposes to use the existing equipment at the adjacent property to transport the finished product to the ship loadout area. However, what is not disclosed is how the increase in operational capacity on the adjacent property impacts emissions. The proposed action does not quantify and disclose new emissions from operations at the adjacent property including emissions from moving the finished product to the ship loadout area and emissions from transferring the finished product to the marine vessels, notably other state permits for similar operations include a baghouse to control emissions are a ship loadout area. There is nothing in the proposed action to cover permit modifications for the existing source's operations. The permitting authority must clearly identify what owner/operator is responsible for emission from use of the equipment on the adjacent property that is proposed to be used by two separate legal entities, and how that information will be monitored, what records will be keep and how that information is reported to the permitting agency.

E. The Permit Application Fails to Include Any Emissions for Construction Activities.

The permit application explains that this is a new source and that substantial earth moving will be involved.[78] Emissions of air pollutants from construction differs from

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engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in section 216." CAA Section 216 definitions of "nonroad engine" and "nonroad vehicle" are limited to internal combustion engines. 42 U.S.C. §§ 7550(10), (11). Thus, the vessels powered by external combustion engines that arrive at the port and load the wood pellets would be a "stationary source" for permitting purposes. The air pollutant emissions from activities in support of the proposed pellet plant, including those for transporting the pellets from the proposed pellet mill for sale at other locations, including those from marine vessels propelled by external combustion engines, are considered stationary emissions of the proposed pellet mill for CAA Title I and Title V purposes.]

[77] In estimating criteria, HAP and TAP air emissions, the permit applicant must estimate the maximum number of marine vessels per year, including any operations for support (*e.g.*, tugs), including the total number of hours per call and hours spent beyond the loadout area. Air pollutants emitted from marine vessels are anticipated to include the following: NOx, CO, SO_2, PM_{10}, $PM_{2.5}$, VOC, HAPs, TAP, and CO_2e.

[78] For example, particulate emissions from the following activity must be included, "Grading will be needed to prepare the building site, and other site components. Approximately 110,279 cubic yards of material will be excavated at the Project Site, from within an area approximately 46.5 acres in size, associated with construction of

operation, and the permit application fails to disclose and quantify those emissions. The application must be revised to include these activities, the associated emission estimates. The approval order must include methods for control, as well as the associated monitoring, recording and reporting requirements.

III. The Permit Application Fails to Address the Act's Regional Haze Four-Factor Analysis Requirements.

Under 40 C.F.R. § 51.307(c), permitting agencies must ensure that new major sources or major modifications will be consistent with the Act's Regional Haze Program requirement to make reasonable progress toward the national visibility goal. As a result, permitting agencies must conduct Four-Factor Analyses for new major sources or major modifications to satisfy the Act's requirements. The Four-factor Analysis includes consideration of the following:

- Consider the costs of compliance,
- The time necessary for compliance,
- The energy and non-air quality environmental impacts of compliance, and
- The remaining useful life of any potentially affected sources.[79]

Washington's Department of Ecology, as the State's permitting agency approved by EPA to implement the permit program for new major sources, must ensure that for pollutants for which the proposed pellet mill is major, the 40 C.F.R. § 51.307(c) requirements are met. As the ORCAA is aware, EPA's program approval does not give it the authority to conduct these activities and make these determinations.

IV. The Proposed State-BACT Determinations are Flawed and Incomplete, and the Proposed Emission Limitations Fail to Reflect State-BACT.

A. The Permit Applicant Must Look Beyond a Search of EPA's RACT/BACT/LAER Clearinghouse Database to Identify State-BACT Control Technologies.

For two emitting units, the permit applicant explains that it only searched the EPA's RACT/BACT/LAER Clearinghouse ("RBLC") to identify emission control technologies for certain emitting units. These emitting units include the following:

- **NO_X BACT for Drying Line** (potential NOx emissions of 227.76 TPY)

  An RBLC search to identify NOx control technologies for hog fuel-fired or wet barkfired dryers at wood pellet facilities did not yield any results. Therefore, good

the facilities. A total of approximately 41.2 acres of the site will be graded to prepare the site." Permit Application, Appendix A at PDF 28.

[79] 42 U.S.C. § 7491(g)(1); 40 C.F.R. 51.308(f)(2)(i).

combustion practices, which is always available, is the only available control technology.[80]

- **SO_2 BACT for Drying Line** (potential SO2 emissions of 18.5 TPY)

  An RBLC search to identify SO_2 controls applied to hog fuel or wet bark combustion did not yield any results. Accordingly, good combustion practices, which are always available, are proposed to satisfy BACT for SO_2.[81]

The permit applicant only considered and proposed controls if they were found in the RBLC database. While EPA created the RBLC to be used as a database of air pollution technology information, it is not a comprehensive compilation. For example, there are numerous emission control projects in the U.S. that are not subject to the Act's major source permitting programs and therefore are not documented in the RBLC. Furthermore, not all permitting agencies routinely upload determinations. The RBLC is not a comprehensive and inclusive collection of permit applications and determinations. Permit applicants must look elsewhere. Indeed, ORCAA's fact sheet on BACT determinations recognizes the need for permit applicants to look beyond the RBLC. Though ORCAA cites the Clearinghouse as "one very good resource,"[82] it does not suggest it is the only resource. When conducting a federal BACT analysis for the major source permitting requirements – which are the same as the State-BACT elements – EPA explains that:

> Applicants are expected to identify all demonstrated and potentially applicable control technology alternatives. Information sources to consider include: EPA's BACT/LAER Clearinghouse and Control Technology Center; Best Available Control Technology Guideline – South Coast Air Quality Management District; control technology vendors; Federal/State/Local new source review permits and associated inspection/performance test reports; environmental consultants; technical journals, reports and newsletters (e.g., JAPCA and the McIvaine reports), air pollution control seminars; and EPA's New Source Review (NSR) bulletin board. The applicant should make a good faith effort to compile appropriate information from available information sources, including any sources specified as necessary by the permit agency.[83]

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[80] Permit Application at 19.
[81] Permit Application at 20.
[82] ORCAA, Instructions for Form 6, Best Available Control Technology (BACT) at 1, *available at* https://www.orcaa.org/wp-content/uploads/Form-6-BACT-Analysis-2018.pdf ("STEP 1: IDENTIFY AVAILABLE CONTROL TECHNOLOGIES: For the source, emissions unit, activity, or process requiring BACT, identify and list all "available" emissions control options for the pollutant in question. Available control options are those air pollution control technologies and techniques with a practical potential for application to the source, emissions unit, activity, or process. In general, any control option in commercial use in the U.S. at the time the analysis is performed should be included on the list of available control options. One very good resource for obtaining listings of control options in use for a particular source type is the U.S. EPA BACT/LAER Clearinghouse (RBLC) which can be viewed at http://cfpub.epa.gov/RBLC/.") (emphasis added) (Attachment DD).
[83] NSR Workshop Manual at B.11.

The permit applicant's search of just one location failed to identify all demonstrated and potentially applicable control technology alternatives. ORCAA's responsibility is to "review the background search and resulting list of control alternatives presented by the applicant to check that it is complete and comprehensive."[84] As discussed below, because there are control alternatives available, the permit applicant failed to perform its due diligence in searching. ORCAA must require the complete search.

B. The Proposed NOx Emission Limitations for the Dying Line Do Not Reflect State-BACT Requirements.

For NOx emissions from the drying line, the permit applicant merely proposes good combustion practices—which it asserts is the only available control technology—with NOx emissions not to exceed 52 lb/hr as BACT for the drying line. The permit applicant suggests that NOx emissions from the drying line would result in 227.76 TPY. The permit applicant failed to evaluate low NOx burner controls, which are used at other existing pellet mills to control NOx. For example, based on source test results at the Enviva Pellets Greenwood Facility and the emission factor developed for its use of low NOx burners, the permit applicant did not propose an emission limitation based on the maximum degree of reduction, as required by State-BACT.[85] A second example of the availability of low NOx burner technology for the wood pellet industry is the proposed Longview Pellet Mill, which proposes to install low NOx burners because it is a demonstrated control technology in pellet manufacturing facilities.[86]

C. It is Unclear Whether the Proposed PM Emission Limitations for Dry Hammer Mills and Pellet Line Meet the State-BACT Requirements.

The vendor information for the "Pelleting Line" indicates that there was a design change from cyclones to baghouses,[87] while the permit application indicates both control devices are planned, proposing "the combined use of cyclofilters and baghouses for controlling PM from the dry hammer mills and pellet line." [88] As this could impact the stringency of the emission limitations, this discrepancy must be clarified and corrected. Furthermore, the proposed determination must be supported by determinations and source tests conducted at other pellet mills.[89]

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[84] NSR Workshop Manual at B.11.

[85] For example, in terms of the Enviva Greenwood testing, the furnace there operated at an average heat input of 135 MMBtu/hr during the testing, and emitted NOx at a rate of 18.5 lb/hr. *See* Enviva Greenwood Test Report, at 20; *see also id.* at Appendix IG: Process Data, Table 4 at 212. The proper emission factor therefore is 0.137 lb/MMBtu, not the 52 lb/hr suggested by Port of Grays Harbor Wood Pellet Plan. (0.137 lb/MMBtu * 1,648,100) / 2000 lbs/ton = 129 tpy NOx.)

[86] *See* SWCAA Letter, at PDF 4.

[87] Permit Application, Appendix D at PDF 19.

[88] Permit Application at 22.

[89] *See e.g.* SWCAA Letter at PDF 6; *see also id.* at PDF 7.

D. The Proposed Emission Limitations for the Emergency Generator and Fire Pump Engines Do Not Reflect State-BACT Requirements.

The permit applicant explains that a 300-kilowatt backup emergency generator would be installed at the proposed pellet mill. The diesel-fired engine for this generator would be certified to meet the emissions standards of 40 CFR 60, Subpart IIII and would be fired with ultra-low-sulfur diesel only. Other than emergency use, backup emergency engines are limited by 40 C.F.R. 60, Subpart IIII to no more than 100 hours per year of operation for maintenance checks and readiness testing.[90] The permit applicant further proposes that BACT/tBACT[91] for all pollutants emitted from the generator would be good combustion practices, following manufacturer's instructions for maintenance, and compliance with the applicable conditions for emergency engines from 40 CFR 60, Subpart IIII.[92] As discussed above, the permit applicant indicates there will be diesel engine(s) to run the emergency fire pumps.

Given that State-BACT is supposed to be based on the maximum degree of emission reduction achievable and the fact that this would be a new pellet mill, all diesel engines must meet Tier 4 emission standards as State-BACT limits. Tier 4 engines are readily available and, given that Tier 4 engines achieve the lowest emission rates of NOx, PM, and CO, such engines must be considered State-BACT for the firewater pump, emergency generator, and any other diesel engines at the proposed pellet mill.

E. The Proposed SO_2 Requirements for the Drying Line Do Not Reflect State-BACT Requirements.

As discussed above, the permit applicant's RBLC search did not yield any results to identify SO_2 controls applied to hog fuel or wet bark combustion. The permit applicant must search for additional controls beyond "good combustion practices" and supplement the permit application with the results of those efforts, proposing source-specific BACT requirements for the SO_2 emissions.

F. State-BACT Determinations Must be Included for the Missing Emitting Units and Emission Sources.

As discussed above, there are emissions and emission units that are not in the permit application. State-BACT analyses must be prepared for all of these and included in a supplemental permit application.

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[90] Permit Application at 24.
[91] *Id.*
[92] *Id.* at 24.

G. State-BACT Emission Limitations are Continuous Requirements and All Operating Scenarios Must Have State-BACT Determinations.

The emission limitations established through the State-BACT analysis must be met continuously.[93] Despite these requirements, as discussed below, the permit application includes numerous alternative operating scenarios and the applicant fails to include proposed State-BACT emission limitations or work practices for these various scenarios. Thus, the permit application is incomplete.

First, the permit application does not include a proposed State-BACT analysis for the planned startups. It appears there was email correspondence from the permit applicant to ORCAA on these emissions, but that information is not available to the public. While ORCAA staff evaluated the permit applicant's emissions calculations and concurs with its assessment, the public cannot independently review that information. Though ORCAA explains it proposes startup constraints consistent with the cold startup descriptions provided by permit applicant, the public cannot access the adequacy of what ORCAA proposed without access to the underlying analysis.[94] Moreover, because the State-BACT emission limitations must be met continuously, the proposed pellet mill cannot be exempted from the State-BACT opacity limits, as is proposed.[95]

Second, during planned shutdowns, hot gases from both the furnace and dryer will be emitted through the emergency bypass stacks for these units until they are sufficiently cooled.[96] Alternative State-BACT emission limitations are not proposed during these events. The Preliminary Determination notes that it is "ORCAA's understanding" that the permit applicant "anticipates only two shutdowns of the furnace each year but assumed 10 for the air impacts analysis."[97] It is unclear what was assumed as inputs for the modeling for these events, as the modeling protocol was not disclosed as part of the public comment materials.

Third, during malfunctions and emergencies, the furnace automatically aborts to the furnace bypass stack in the event of a malfunction or emergency situation, like loss of power or failure of a critical piece of equipment.[98] Likewise, the dryer system automatically aborts to the dryer bypass stack due to similar events.[99] Whenever there is an abort, the furnace automatically switches to idle mode and emissions are exhausted through the bypass stack.[100] During malfunctions and emergencies, air emissions from the drying system may emit uncontrolled from the bypass stacks and exhaust through either of the bypass stacks is presumed to be in excess of

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[93] *See* ORCAA Rule 1.4 Definitions "'Emission standard' and 'emission limitation' means a requirement established under the FCAA or chapter 70.94 RCW [this chapter of Washington State law was recodified to 70A.15 RCW[93]] which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure *continuous emission reduction* and any design, equipment work practice, or operational standard promulgated under the FCAA or chapter 70.94 RCW."
[94] Preliminary Determination at 8.
[95] Preliminary Determination at 9.
[96] Preliminary Determination at 9.
[97] Preliminary Determination at 10.
[98] Preliminary Determination at 10.
[99] Preliminary Determination at 10.
[100] Preliminary Determination at 10.

the pollutant mass rate limits established in the approval order.[101] The permit applicant must not be excused from State-BACT requirements during these operations.

Fourth, the proposed pellet mill will also operate in a feedstock interruption mode, which is described as an idle-mode that may be triggered by a reduction or interruption of feedstock material to the dryer. Apparently, the permit applicant asserted in a communication with ORCAA that the furnace, dryer, dry hammer mills, and pellet coolers will all be exhausted through their respective air pollution control systems when there are feedstock interruptions,[102] but those communications were not made available as part of this public comment opportunity.

V. The Proposed Conditions of Approval Authorize Bypass of the Air Pollution Controls, Unlawfully Excusing the Proposed Pellet Mill from Continuous Compliance with Case-by-Case Maximum Achievable Control Technology (MACT).

Because the permit applicant intends to construct a major source of HAPS, a case-by-case MACT determination is necessary. The permit applicant has thus far proposed RTOs and RCOs to destruct the HAPs and achieve at least 95% and 96.3% destruction of VOCs. Unfortunately, the draft permit improperly allows the permit applicant to bypass air pollution controls that are required as MACT during periods of startup, shutdown and otherwise "as necessary," apparently referring to malfunctions ("SSM exemptions").[103]

These SSM exemptions are unlawful because they excuse the plant from continuous compliance with otherwise applicable emission limitations under Clean Air Act section 112. As explained by the D.C. Circuit in *Sierra Club v. EPA*, 551 F.3d 1019, 1027 (D.C. Cir. 2008), an emission limitation established under section 112 must be "continuous," and therefore, a source cannot be exempted from compliance at any point. Specifically, the court found that a MACT standard under section 112 is an "emission standard," and Clean Air Act section 302(k) defines "emission limitation" and "emission standard" as "a requirement established by the State or the Administrator which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis." *Id.* at 1021 (quoting 42 U.S.C. § 7602(k)); *see also* Clean Air Act § 112(g)(2)(B), 42 U.S.C. § 7412(g)(2) (providing that no new source may be constructed "unless the Administrator (or the State) determines that the maximum achievable control technology emission limitation under this section for new sources will be met," and instructing that if the Administrator has not established such emission limitation, it shall be established on a case-by-case basis). ORCAA's proposal to allow for bypass of the RTOs during periods of SSM is exactly the type of exemption from section 112 standards that the D.C. Circuit found to be unlawful. ORCAA must eliminate this unlawful exemption and ensure that the permit applicant is required to comply with section-112 standards at all times.

Additionally, ORCAA cannot excuse compliance with the numerical MACT limits by implementing a work practice standard. Under the plain language of the Act, work practice standards may only be implemented in two instances:

[101] Preliminary Determination at 10.
[102] Preliminary Determination at 10.
[103] Recommended Conditions of Approval, ¶¶ 9, 10 at 37-38.

A) When pollutants "cannot be emitted through a conveyance designed and constructed to emit or capture such pollutant;" or
B) When "the application of measurement methodology to a particular class of sources is not practicable due to technological and economic limitations."

42 U.S.C. § 7412(h)(1) and (2).The permit applicant has not demonstrated that it cannot route its emissions through a stack or measure those emissions during SSM events. Nor is it likely the permit applicant could do so. By the permit applicant's own admission, during startup and shutdown it will continue to vent emissions through a stack. Additionally, the permit applicant has not claimed that it would be infeasible to measure emissions while operating the bypass stacks. In fact, in a permit application for another pellet mill, that company states explicitly that emissions associated with bypass events "were calculated based on stack testing data from comparable Enviva facilities."[104]

VI. The Permit Applicant Must Prepare and Submit a Permit Application to the Department of Ecology for PSD BACT for CO and CO_2e Emissions.

Once all stack and fugitive emissions estimates have been obtained through detailed engineering analysis of each emissions unit using the best available data or estimating technique, which as discussed above has not been done, the next step is to compare the potential emissions of each of the pollutants from the proposed pellet mill to the 100 TPY PSD major source threshold. Moreover, the potential to emit of CO is greater than 250 TPY. Because the Proposed Pellet Plant is classified as a major source because of the estimated CO emissions, the entire source is classified as a major source.

Furthermore, because the CO emissions (and any other pollutants) trigger the PSD major source permitting requirements, the proposed pellet mill must also evaluate whether the proposed CO_2e emissions trigger the major source PSD requirements. CO_2e emissions from the proposed pellet mill are estimated at 163,592, which exceeds the PSD major source threshold of 100,000.[105] Therefore, the proposed pellet mill is subject to CO_2e BACT for the units with CO_2e emissions (*i.e.*, the Dry Hammer Mill and Pellet Cooler, and the Drying Line). The permit applicant must prepare and submit PSD BACT determinations to the Washington State Department of Ecology.

VII. The Permit Application Contains Deficient and Inaccurate Ambient Air Modeling.

A. The Permit Applicant Must Correct the Missing and Inaccurate Information and Rerun the AERMOD Model Using the Current Model Version.

Once the corrections to the inaccurate and missing emission estimates are made, the air dispersion model inputs must incorporate the changes to the criteria pollutants and the model

[104] Enviva Pellets Lucedale, Application for Initial State Permit to Construct, at 3.7.2 and 3.7.3. at 9 (Sept. 2018) (Attachment EE).
[105] Permit Application, Appendix C, Table C-1 at PDF 3.

must be rerun. Additionally, the permit applicant used version v22112 of AERMOD.[106] That version is outdated—the current EPA-approved version of AERMOD is v23132,[107] which must be used when the model is rerun for the proposed pellet mill. Notably, the current regulatory version of AERMOD will assist with evaluation of emissions from the marine vessels.[108]

Furthermore, the modeling protocol documents must be made available to the public. Much of the detailed information about the modeling analysis is not available to the public. For example, the Preliminary Determination notes that it is "ORCAA's understanding" that the permit applicant "anticipates only two shutdowns of the furnace each year but assumed 10 for the air impacts analysis."[109] It is unclear what was assumed as emission inputs in the modeling for these events, as the modeling protocol was not disclosed as part of the public comment materials.

B. Ambient Air Background Concentration Data Used Does Not Represent Current Conditions.

The Clean Air Act and implementing regulations establish a program for PSD permit applicant collection and submission of twelve months of ambient air quality monitoring data, for the year preceding the date of permit application, showing pollutant concentrations at the site of the proposed facility and in areas that may be affected by emissions from that facility.[110] These data may then be used, in conjunction with other information, to demonstrate the proposed facility's compliance with the NAAQS and PSD increments.[111] The permit applicant needs to collect ambient air quality measurements documenting baseline conditions representative of the current air quality at the project site, or otherwise demonstrate that it meets the applicable monitoring exemptions under the applicable regulations.[112] The permit applicant used ambient air quality estimations that fail to document current conditions.[113] The background concentration information was obtained from Idaho, which is described as "modeled and monitoring data from July 2014 through June 2017."[114] That data contains estimated values, is between six and nine

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[106] Permit Application, Appendix F, Model Inputs and Outputs, at PDF 3. (Attachment FF). ("Permit Application, Appendix F").
[107] EPA, Air Quality Dispersion Modeling - Preferred and Recommended Models, Memo on release of this version (Oct. 12, 2023), *available at https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models.* (Attachment GG).
[108] *Id.* at 4. ("Perhaps the most substantial update to AERMET is the addition of the Coupled Ocean Atmosphere Response Experiment (COARE) air-sea flux procedure for processing meteorological data representative of a marine boundary layer needed for modeling offshore sources.")
[109] Preliminary Determination at 10.
[110] 42 U.S.C. §7475(a)(7), (e); 40 C.F.R. § 52.21(m).
[111] *See* NSR Workshop Manual at C.16-21.
[112] 40 C.F.R. § 52.21(m)(1)(iv)("In general, the continuous air quality monitoring data that is required shall have been gathered over a period of at least one year and shall represent at least the year preceding receipt of the application, except that, if the Administrator determines that a complete and adequate analysis can be accomplished with monitoring data gathered over a period shorter than one year (but not to be less than four months), the data that is required shall have been gathered over at least that shorter period.")
[113] Permit Application at PDF 41.
[114] Permit Application at PDF 41 ("Background concentrations in Table 8 were obtained from NW-AIRQUEST. For each pollutant and averaging period, the concentration of the closest grid point to the proposed facility (coordinates 46.99, -123.89) was used."), citing Idaho DEQ, Background Concentrations 2014-2017, *available at* https://idahodeq.maps.arcgis.com/apps/MapSeries/index.html?appid=0c8a006e11fe4ec5939804b873098dfe.

years old, and does not represent current background ambient monitoring conditions. A permit applicant cannot substitute ambient data unless it is deemed "sufficiently representative of air quality in the targeted area — in terms of the sufficiency of the monitoring locales selected and the quality and currentness of the monitoring data — to legitimately be substituted for site-specific data."[115] The permit applicant has not complied with the baseline monitoring requirements because it has relied upon data which is out of date and no longer representative of baseline air quality conditions.

C. The Permit Application Fails to Include Modeling Runs for the Range of Operating Conditions.

Ambient impacts were estimated based on continuous operation and maximum PTE for all pollutants evaluated,[116] but the proposed pellet mill does not plan to operate in that manner. Other foreseeable operating scenarios include "cold" startup,[117] planned shutdowns,[118] and idle mode.[119] Additionally, based on email correspondence – which were not included in the materials available for public review – the permit applicant also plans bypass events where emission control technology is not in use.[120] For example, for the drying line, the vendor information includes a heat energy system with an emergency exhaust stack for bypass events.[121] Documentation provided by the permit applicant via email of emission estimates during the range of foreseeable operating scenarios (including the bypass events) was not included in the materials made available during this public comment period.[122] Thus, there is no way for the public to assess assertions that maximum PTE for all pollutants were evaluated and modeled.

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[115] *In re Vulcan Materials, LP*, 15 E.A.D. 163, 176 (EAB 2011); *see also In re Northern Michigan University,* 14 E.A.D. 283, 325 (EAB 2009), *citing* NSR Workshop Manual at C.18-19; *see also, e.g., In re Knauf Fiber Glass, GMBH,* 8 E.A.D 121, 145-48 (EAB 1999); *see also In re Haw. Elec. Light Co.*, 8 E.A.D. 66, 97-105 (EAB 1998); *see also In re Hibbing Taconite Co.*, 2 E.A.D. 838, 850-51 (EAB 1989).
[116] Preliminary Determination at 27, 29.
[117] Preliminary Determination at 14.
[118] Preliminary Determination at 9-10.
[119] Preliminary Determination at 10.
[120] Preliminary Determination at 8.
[121] Permit Application, Appendix D at PDF 36 ("**Emergency Abort Stack** To vent Dryer System gasses to atmosphere during upset operating conditions At times the Dryer System flue gas will need to be aborted to atmosphere during upset operating conditions; rather than sending these flue gasses to the Pollution Control Equipment or to the Heat Energy System. The Emergency Abort Stack provides the ability to vent gases to atmosphere during upset operating conditions. The control damper is air actuated and is fail safe; if there is a power outage or air failure the Emergency Abort Stack will automatically open."); *see also id.* at PDF 39. ("Mounted on top of the Furnace and includes automatic hydraulic damper. The purpose of the Emergency Stack is to open at high temperature and/or high pressure in the system and at power failures. It is fabricated from mild steel and refractory-lined for the first 5 feet above the furnace roof. The remainder of the stack is made of stainless steel and includes one pneumatically operated damper on top as a stack cap. Stack cap is made of stainless steel and also has refractory lining."); *see also id.* at PDF 27 ("Wet hammer mills feeding chain conveyor It receives the chips from the previous chain conveyor (pos 5.2.4). It includes two intermediate outlets to feech each of the wet hammer mills and a final outlet as emergency exit.")
[122] *See e.g.* Preliminary Determination at 8-9.

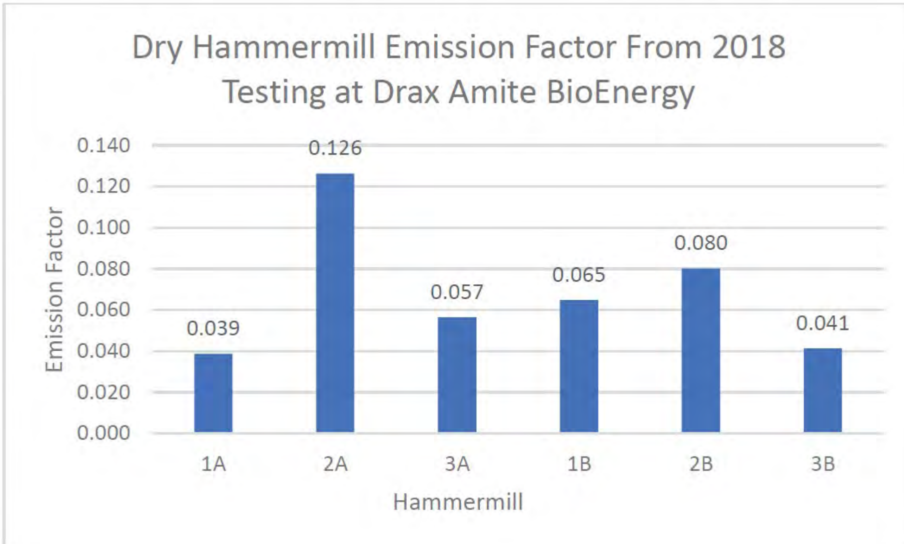
VIII. The Draft Approval Order's Terms and Conditions are Insufficient to Ensure Compliance with the Clean Air Act.

A. The Final Approval Order Must Contain When and How Often Stack Testing is Required.

The recommended conditions of approval fail to specify when and how often the permit applicant must conduct the initial and periodic stack tests in order to demonstrate compliance with the emission limits for PM10 (filterable and condensable), VOCs, CO, NOx, and HCl.[123] The recommended conditions fail to include testing for PM and PM2.5, which must also be added. The approval order must require simultaneous NOx and CO stack testing, otherwise the owner/operator can tune to reduce one and then the other.

Although we appreciate that ORCAA has specific test methods, the current compliance testing requirements are insufficient to ensure that the proposed pellet mill is in continuing compliance with its emission limits. In order to demonstrate continuous compliance, the conditions of approval must require both initial and periodic stack testing.[124] Emissions at wood pellet plants are highly variable, meaning that stack testing at a facility may indicate compliance one year and non-compliance the next. In fact, emissions from wood pellet plants have been shown to vary by more than 100% from one year to the next. For example, testing just a year apart on pellet coolers at a Georgia pellet plant produced an emission factor that was twice as high as the initial compliance testing, with no modification or other operating changes apparently responsible.[125] Additionally, where pellet plants have tested multiple identical units at the same time, those tests have shown a large variability in emissions. The Drax Amite wood pellet plant in Gloster, Mississippi, tested all six of its hammermills for VOC emissions,[126] and the results are below:

[123] Preliminary Determination, at 35, (Recommended Conditions of Approval ¶ 5).
[124] *See e.g., supra* n.14 (State-BACT continuous requirement); *see also supra* n.15.
[125] Compare August 28, 2014, stack tests on the pellet coolers at Hazlehurst Wood Pellets in Georgia (producing an emission factor of 0.30 lb/ODT), with testing at the same plant conducted on December 16, 2015 (producing an emission factor of 0.62 lb/ODT) (test excerpts at Attachment HH).
[126] Letter from Keith W. Turner, legal counsel for Amite Bioenergy, to Tim Aultman, Environmental Compliance & Enforcement Division, MDEQ (Nov. 5, 2018) (Attachment II).



These results highlight the variability even between identical units tested simultaneously. For example, the test for hammermill 2A demonstrated VOC emissions that were vastly higher than emissions from hammermill 1A, with no design or operational distinction responsible. In the present context, this graph shows how two consecutive tests could readily show emissions that are significantly lower than worst case emissions when the reality is that outside of those two tests emissions are much higher on average.

In order to demonstrate continuing compliance with its emission limits, the conditions of approval must subject the proposed pellet mill to annual compliance testing, with the initial compliance test occurring no later than 180 days after the initial start-up after the facility's construction and without the possibility of less frequent testing.[127] As a preliminary matter, ORCAA should incorporate a firm deadline for initial compliance testing into the conditions of approval as an enforceable condition, rather than setting such deadline at a later time, which would not be subject to public review and enforcement. ORCAA must also, at a minimum, amend the proposed conditions of approval to require annual source testing. North Carolina's Department of Environmental Quality decided to require annual stack testing—without the possibility of less frequent testing—at three Enviva plants undergoing modifications.[128] There is no reason why ORCAA should not require the same from the permit applicant for the proposed pellet mill.

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[127] *See supra* n.14; *see also supra* n.15.

[128] *See* North Carolina DEQ, Air Quality Permit No. 10365R03 for Enviva Pellets Hamlet, LLC, at Condition 2.2.A.2.d. at 12 (Jan. 14, 2019), *available at* https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and#enviva-pellets-hamlet (Attachment JJ); North Carolina DEQ, Air Quality Permit No. 10386R04 for Enviva Pellets Sampson, LLC, at Condition 2.2.A.1.e. at 14-15 (Oct. 2, 2019), *available at* https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-pellet-industry-permitting-actions-and#enviva-pellets-sampson (Attachment KK); North Carolina DEQ, Air Quality Permit No. 10203R06 for Enviva Pellets Northampton, LLC, at Condition 2.2.A.3.f. at 15-16 (Oct. 30, 2019), *available at* https://files.nc.gov/ncdeq/Air%20Quality/permits/2019_public_notice_documents/Enviva-Northampton---Final-Permit-Signed.pdf (Attachment LL).

Finally, ORCAA must include requirements to test not only the emission rate but the destruction efficiencies of the RTOs and RCOs. As discussed above, ORCAA must establish case-by-case MACT limits that are expressed as 95% VOC destruction for the dryer RTO, as well as 96% VOC destruction for the RCO. Merely testing the outlet of the RTO/RCO will not demonstrate whether the units are meeting the MACT limits. Instead, ORCAA must require the permit applicant to test both the inlets and outlets of these units in order to ensure compliance with the MACT limits.

B. The Approval Conditions Must Include Detailed Reporting Requirements.

The proposed approval conditions require recording many data points directly related to emissions, such as pellet production, dryer and green hammermill throughputs, start-up, shut-down, and malfunction occurrences, and control device parameters. However, they only require the permit applicant to report a selective minimum of this data to ORCAA.[129] Complete reporting is crucial to effective public oversight. It is difficult or downright impossible for members of the public to access this information without a reporting requirement, and the lack of access to these records seriously hinders citizen enforcement, which is a key component of the Clean Air Act. Given the documented history in this industry of numerous, serious exceedances in recent years, public oversight is especially important.[130] Accordingly, ORCAA must amend the conditional approval conditions to require the permit applicant to report the data points in its semi-annual reports.

Moreover, there are several important data points, including the emissions calculations and the facility's actual emissions of relevant criteria pollutants and hazardous air pollutants, as well as the facility's wood feedstock mix, which are completely excluded from both the recordkeeping and reporting requirements. In order for the emission limits to be considered enforceable, they must be accompanied by monitoring, recordkeeping, and reporting sufficient to ensure and verify compliance at all times.[131]

Finally, ORCAA must specifically include a requirement to monitor and report the heat input of the facility's furnaces in order to ensure compliance with the facility's NOx emission limits. As discussed above, complying with the wood pellet production limit and related monitoring is insufficient to ensure NOx emissions are met. ORCAA must remedy this by requiring monitoring, recordkeeping, and reporting of the heat input values and correlated NOx emissions.

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[129] Preliminary Determination, at 40, (Recommended Conditions of Approval ¶ 16).
[130] Environmental Integrity Project, Dirty Deception: How the Wood Biomass Industry Skirts the Clean Air Act (April 26, 2018), https://www.environmentalintegrity.org/wp-content/uploads/2017/02/Biomass-Report.pdf. (Attachment MM).
[131] U.S. EPA, Guidance Limiting Potential to Emit in New Source Permitting, at 17 (June 13, 1989), *available at* https://www3.epa.gov/airtoxics/pte/june13_89.pdf ("Specific test methods, compliance monitoring and recordkeeping and reporting requirements are necessary to make permit limitations enforceable as a practical matter."). (Attachment NN).

C. ORCAA Must Remove the Provisions that Provide for Director's Discretion.

Several provisions in the Recommended Conditions of Approval give ORCAA the authority to approve alternate or equivalent test methods that are not EPA-approved test methods.[132] ORCAA's proposal does not explain what criteria and process it would use to approve all the alternative methods allowed under the proposed conditions. ORCAA's alteration or elimination of EPA-required test methods can have no effect for purposes of federal law unless and until EPA ratifies those alternatives, including provisions for public notice and comment. Moreover, Section 113 of the Act allows EPA to enforce against "any requirement or prohibition of an applicable implementation plan or permit" and any "requirement or prohibition of any rule, order, waiver or permit promulgated, issued, or approved under [the Act]."[133] It is unclear whether an ORCAA approved alternative method using the proposed provisions would allow for EPA enforcement. Similar concerns are present for citizen suits under section 304.[134] ORCAA must remove these provisions.

D. ORCAA Must Require Implementation of Source-Specific Fugitive Dust Requirements.

Wood pellet plants generate a lot of fugitive dust, *i.e.*, airborne particulate matter. In fact, one of the most common air pollution complaints raised by residents of communities where wood pellet plants are located is the large amount of fugitive dust that escapes into surrounding neighborhoods.[135] For example, in 2017 Mississippi's Department of Environmental Quality issued a Notice of Violation to the Enviva plant in Amory, describing "multiple complaints over the past year pertaining to sawdust and smoke leaving the [Enviva Amory] facility impacting neighboring properties and vehicles."[136] A local alderman described the impacts on residents of his ward, who said "are wheezing, coughing and constantly washing dust of their vehicles generated by the Enviva pellet plant."[137] Additionally, residents living near Enviva's Northampton, North Carolina plant expressed frustration over dust, with one resident who lives across the street from the plant complaining about dust coating his car and house: "I have to wash [my house] every two to three months, my vehicle every two to three days."[138] Considering

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[132] *See e.g.* Preliminary Determination, at 36, (Recommended Conditions of Approval ¶ 6(e), which would allow for equivalent methods for testing PM10 and equivalent methods for testing formaldehyde and methanol).
[133] 42 U.S.C. §§ 7413(a)(1), (a)(3), (b)(1), (b)(2).
[134] See 42 U.S.C. § 7604(f) (defining the scope of citizen suit actions).
[135] For example, in 2014, residents of West Monroe, Louisiana publicized their ongoing concerns regarding large amounts of fugitive dust released from the Bayou Wood Pellet Plant. *See* Zach Parker, Homeowners Seek EPA's Help with Pollution Complaints, The Ouachita Citizen (Nov. 5, 2014), http://www.hannapub.com/ouachitacitizen/news/local_state_headlines/homeowners-seek-epa-s-help-with-pollution-complaints/article_5d11a19e-650b-11e4-8331-001a4bcf6878.html (Attachment OO).
[136] Mississippi Department of Environmental Quality, Notice of Violation for Enviva Pellets Amory at 1 (May 23, 2017) (Attachment PP).
[137] Monroe Journal, Amory Board of Alderman Discusses Deficit, Dust Complaints and a Tank at PDF 4 (Oct. 13, 2016)
(Attachment QQ).
[138] North Carolina DEQ, Enviva Northampton Public Hearing Audio, at 29:04 (dust complaint by Anthony Robinson) (Aug. 20, 2019), *available at* https://deq.nc.gov/about/divisions/air-quality/air-quality-permitting/wood-

the fact that the owner/operator of the proposed pellet mill does not have a track record in this industry, ORCAA should take a proactive stance to protect those living nearby from fugitive dust, those working and attending school at the three schools nearby the proposed pellet mill, as well as the airshed of the nearby airport.

Major sources of fugitive dust at wood pellet plants include wood handling, wood storage piles, conveyor transfer points, yard dust, haul road dust, and engine exhaust.[139] Health problems associated with exposure to particulate matter pollution primarily involve damage to the lungs and respiratory system due to inhalation. Specifically, the inhalation of dust particles can irritate the eyes, nose, and throat; cause respiratory distress, including coughing, difficulty breathing, and chest tightness; increase the severity of bronchitis, asthma, and emphysema; cause heart attacks and aggravate heart disease; and lead to premature death in individuals with serious lung or heart disease.[140] When exposed repeatedly over a longer time period, fugitive dust exposure can lead to severe illness such as cancer.[141] In addition to affecting human health, fugitive dust reduces visibility, affects surface water, reduces plant growth, and can be a nuisance.

The proposed conditional approval merely includes a provision requiring the permit applicant to have a "dust prevention plan," which is one of the eight plans required in the draft approval order.[142] Thus, there are no conditions for the public to review and comment on or enforce that will resolve the fugitive dust issues that come from operation of a wood pellet plant. To address these concerns and provide for the protection of nearby communities, ORCAA must amend the proposed conditional approval conditions to include actual stringent requirements tailored to wood pellet operations in order to prevent fugitive dust emissions from becoming airborne. These include requiring windbreaks or enclosed structures for storage piles, minimizing drop heights and transfer points, and watering or coverings where necessary.

E. The Opacity Monitoring is Not Effective to Detect and Remedy Excess Emissions.

The proposed approval conditions contain one method to monitor visible emissions in order to detect excess particulate matter emissions: the facility is required to conduct Method 9 tests for the drying line and pellet mill.

The requirement fails to specify when and how frequently testing must be conducted, so the provisions are vague and unenforceable. Additionally, testing requirements must be periodic because merely requiring initial compliance testing, and no Method 9 observation on any of the other units, would be insufficient to ensure compliance with the opacity limits. Visible emissions

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pellet-industry-permitting-actions-and; *see id.* at 2:02:19 (dust complaint by Sybaleen Auston) (discussing her family's history of COPD, asthma, and allergies, and stating that "[w]e deal with enough—the air we're breathing, the traffic from the trucks, the grit, dirt on the cars, homes"), 2:35:23 (dust complaint by Richard Harding) (discussing his health issues and stating, "I cannot deal with dust [from the plant]").

[139] British Columbia, Ministry of the Environment, Air Emissions Fact Sheet: Wood Pellet Manufacturing Facilities (July 2011) (Attachment RR).

[140] New Hampshire Department of Environmental Services, Environmental Fact Sheet, Fugitive Dust, *available at* https://www.des.nh.gov/land/roads/fugitive-dust (Attachment SS); *see also* Stelte, *supra* n.40, at 6.

[141] Stelte, *supra* n.40, at 6.

[142] Preliminary Determination, at 39-40, (Recommended Conditions of Approval ¶ 13).

are generally caused by malfunctions and poor operating practices; these issues are least likely to occur when the facility has been aware of the date of stack testing and been able to optimize operations in advance. Finally, nothing in the proposed approval order requires any Method 9 observations at any time for any unit other than the RTO and RCO.

In short, nothing in the proposed approval order requires this facility to take any specific measures to determine the degree of opacity and compliance with the 20% opacity limits. Merely requiring vague compliance by including the test method is not an effective or enforceable way to limit visible emissions and comply with the opacity standards.

ORCAA must require visible emissions monitoring that at least requires daily monitoring consistent with Method 9 that determines the degree of opacity and whether or not the facility is complying with the opacity limits. In particular, we encourage ORCAA to follow the method established by Georgia in the permit condition for a wood pellet mill set out below:[143]

[143] Georgia EPD, Draft Part 70 Operating Permit No. 2499-161-0023-V-02-4 for Hazlehurst Wood Pellets, at Condition 5.2.8 at 12-13 (Sept. 2019) (Attachment TT).

5.2.8 The Permittee shall perform daily checks of visible emissions from Log Storage/Handling, Debarking/Screening, Chipper, and Chip Piles (WOOD); Green Hammermills (GHM1&2); Furnace/Dryer RTO stack (S1), and the Dry Hammermill/Press/Cooler RCO stack (S2) while the underlying process equipment is operating at the normal, expected operating rate using the procedures below, except when atmospheric conditions or sun positioning prevent any opportunity to perform a VE check. The Permittee shall retain a record in a daily visible emissions (VE) log suitable for inspection or submittal.
[391-3-1-.02(6)(b)1]

a. Determine, in accordance with the procedures specified in paragraph d of this condition, if visible emissions are present at the discharge point to the atmosphere and record the results in the daily VE log. For sources that exhibit visible emissions, the Permittee shall comply with paragraph b of this condition.

b. For each check where a stack is determined to be emitting visible emissions, a qualified observer shall determine whether the emissions equal or exceed a 20% opacity action level, using the procedure specified in paragraph d of this condition. For the purposes of this condition a qualified observer is one that has met the certification requirements of EPA Method 9 – *Visual Determination of the Opacity of Emissions from Stationary Sources*. Also, this determination shall cover a period of six minutes. The results shall be recorded in the daily VE log. For sources that exhibit visible emissions of greater than or equal to the opacity action level of 20%, the Permittee shall comply with paragraph c of this condition.

c. For each occurrence that requires action in accordance with paragraph b of this condition, the Permittee shall determine the cause of the visible emissions and correct the problem in the most expedient manner possible. The Permittee shall note the cause of the visible emissions, raw material feed rate, and any other pertinent operating parameters as well as the corrective action taken, in the maintenance log.

d. The person performing the determination shall stand at a distance of at least three stack heights, which is sufficient to provide a clear view of the plume against a contrasting background with the sun in the 140 degree sector at his/her back. Consistent with this requirement, the determination shall be made from a position such that the line of vision is approximately perpendicular to the plume direction. Only one plume shall be in the line of sight at any time when multiple stacks are in proximity to each other.

F. The Proposed Approval Conditions Are Utterly Devoid of a Mechanism to Monitor Facility-Wide Emissions and Compliance with PTE Limits.

The proposed approval conditions contain conditions that include facility-wide annual limits.[144] Nothing in the draft approval order, however, explicitly requires the permit applicant to monitor its emissions or explain how the company shall do so. For instance, the conditions are silent on what emission factors the permit applicant shall use and which sources must be included in the plantwide calculation. In order to be enforceable, PTE limits such as those in the proposed approval conditions must be accompanied by appropriate monitoring, recordkeeping, and reporting such that compliance can be ascertained at any time.[145] While source testing and parametric monitoring are necessary aspects of such monitoring, they do nothing to monitor emissions on a rolling basis.

[144] Preliminary Determination, at 36, (Recommended Conditions of Approval ¶ 7).
[145] *In the Matter of Orange Recycling & Ethanol Prod. Facility, Pencor-Masada Oxynol,* LLC, Order on Petition No. II-2001-05 (April 8, 2002), at 7, *available at* https://www.epa.gov/sites/production/files/2015-08/documents/masada-2_decision2001.pdf.

EPA has explained the underlying principle behind the monitoring that must accompany practically enforceable PTE limits:

> In order to be considered practically enforceable, an emissions limit must be accompanied by terms and conditions that require a source to effectively constrain its operations so as to not exceed the relevant emissions threshold. <u>These terms and conditions must also be sufficient</u> to enable regulators and citizens to determine whether the limit has been exceeded and, if so, to take appropriate enforcement action.[146]

Without including an enumeration of the specific algorithms and emission factors the permit applicant shall use to monitor its emissions in between stack tests, the proposed conditions do not "enable regulators and citizens to determine whether" the facility is complying with the emission limits. Specifically, it is not clear whether the permit applicant will include emissions from insignificant activities (as is required by law[147]), or how the permit applicant must quantify emissions from sources like the handling and storage operations, for which there is no requirement to track throughput or emissions.

IX. ORCAA Cannot Rely on the Project's Invalid Determination of Non-Significance to Meet its SEPA Obligations.

On July 25, 2023, the City of Hoquiam issued a Determination of Non-Significance ("DNS") for PNWRE's proposal to build its industrial wood pellet facility, a decision that exempted the proposal from full review under the State Environmental Policy Act ("SEPA"), RCW 43.21C. The PNWRE DNS review was limited to the immediate environmental impacts of constructing and operating the facility; it is deeply flawed in at least two major respects: (1) it contains serious errors even in its limited calculations with respect to air pollution emissions at the facility, including greenhouse gases, VOCs, and HAPs, and (2) it fails to conduct a lifecycle greenhouse gas analysis of the direct and indirect greenhouse gas impacts of producing, transporting, and burning the wood pellets.

A. Legal Requirements.

SEPA "sets forth a state policy of protection, restoration and enhancement of the environment." *Polygon Corp. v. City of Seattle,* 90 Wn.2d 59, 63 (1978); RCW 43.21C.010. SEPA's policies and goals overlay and add to existing authorizations of all branches of government. RCW 43.21C.060. The purpose of an Environmental Impact Statement ("EIS") is to ensure that SEPA's policies are an integral part of the actions of state and local government such that the EIS is actually used by, and informs the decision of, those government agencies. WAC 197-11-400. "The primary function of an EIS is to identify adverse impacts to enable the

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[146] *Id.* (<u>emphasis added</u>); *see also In re Piedmont Green Power, LLC*, Order on Petition No. IV-2015-2, at 14 (Dec. 13, 2016), *available at* https://www.epa.gov/sites/production/files/2016-12/documents/piedmont_response2015.pdf.
[147] The definition of PTE does not make any exceptions for emissions deemed insignificant. 40 C.F.R. § 52.21(b)(4). In determining compliance with PTE limits, sources such as the proposed pellet mill must include all non-fugitive emissions.

decision-maker to ascertain whether they require either mitigation or denial of the proposal." *Victoria Tower P'ship v. City of Seattle,* 59 Wn. App. 592, 601 (1990).

SEPA and its implementing regulations explicitly require consideration of direct and indirect climate impacts. *See* RCW 43.21C.030(f) (directing agencies to "recognize the world-wide and long-range character of environmental problems"). Under SEPA, an agency must consider both the direct and "indirect" impacts of its decision. WAC 197-11-060(4)(d) ("Impacts include those effects resulting from growth caused by a proposal, as well as the likelihood that the present proposal will serve as a precedent for future actions."). "In assessing the significance of an impact, a lead agency shall not limit its consideration of a proposal's impacts only to those aspects within its jurisdiction, including local or state boundaries." WAC 197-11-060(4)(b); *Cheney v. City of Mountlake Terrace*, 87 Wn.2d 338, 344 (1976) ("Implicit in the statue is the requirement that the decision makers consider more than what might be the narrow, limited environmental impact of the immediate pending action. The agency cannot close its eyes to the ultimate probable environmental consequences of its current action.") For projects involving the transportation or use of fuels like wood pellets, SEPA (like its federal counterpart, NEPA) must consider the lifecycle impacts of producing, transporting, and using such fuels.[148] *Columbia Riverkeeper v. Cowlitz Cty.*, 2017 WL 10573749, at *7-10 (SHB Sept. 15, 2017) (EIS for methanol project invalid for failing to consider lifecycle GHG emissions); WAC 197-11-444(1)(b)(iii) (listing "climate" among elements of environment to be considered in SEPA).

B. The DNS Air Emission Calculations Are Wrong.

As discussed throughout these comments, the air emission calculations in the Application are wrong in numerous and significant ways. These same calculation errors and omissions are reflected in the DNS, leading to a major under-calculation of air emissions. These errors render the DNS invalid, and ORCAA must undertake a new and full environmental review before it considers the requested construction permit.

C. The DNS Did Not Disclose and Consider All Climate Impacts From Greenhouse Gas Emissions.

PNWRE failed to review all direct and indirect greenhouse gas emissions in its SEPA Checklist. NOC Application, Appendix A. The SEPA Checklist arrives at a total greenhouse gas emission estimate of 163,592 tons CO_{2e} annually. NOC Application Table 1. The calculations do not include truck emissions to and from wood sources, marine vessel transportation emissions to and from ports in Japan and Asia, and the ultimate burning of the fuel in industrial power plants.

This failure to calculate and consider the full lifecycle greenhouse gas emissions violates SEPA, and ORCAA cannot validly rely on such a flawed analysis. Because the DNS fails to account for the total expected greenhouse gas emissions caused by the PNWRE proposal, and because those emissions will have a significant and detrimental environmental impact, the DNS is invalid, and ORCCA cannot rely on it to issue the requested Notice of Construction Application.

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[148] NEPA and its implementing case law are used in Washington to discern the meaning of SEPA. *Kucer v. State Dep't of Transp.*, 140 Wn.2d 200, 215-16 (2000).

D. ORCAA Must Deny the NOC Application and Undertake Its Own Full SEPA Review of the Project's Air Emissions.

ORCAA cannot rely on this invalid DNR to meet its own SEPA obligations. Instead, ORCAA must deny the NOC Application and conduct its own SEPA review in an EIS that validly reviews the significant air pollution caused by this project, including all VOCs, HAPs, and greenhouse gas lifecycle emissions.

This would not be the first time that a Washington Clean Air Agency has needed to undertake its own analysis to comply with SEPA. Recently, the Puget Sound Clean Air Agency ("PSCAA") initiated and completed its own supplemental environmental review for a proposed liquefied natural gas terminal in Tacoma because the final EIS for that project did not consider lifecycle greenhouse gas emissions. *See* https://pscleanair.gov/636/PSE---LNG-Facility-Tacoma. PSCAA used the supplemental EIS in its review of the NOC Application. ORCAA must take similar steps here to comply with SEPA.

Conclusion

In short, ORCAA cannot validly finalize the proposed Approval Order. To issue an Approval Order with the recommended conditions of approval as proposed would not only be unlawful under the authority granted under the EPA-approved SIP and the federal Clean Air Act, but would conflict with the State's requirements for assessment and control of hazardous air pollutants. As discussed in these comments, the permit application is materially incomplete because the following are missing: the required PSD applicability determination for classification as a fuel conversion plant; and accounting for VOC and CO emissions from the five wood pellet storage silos. The permit application also includes a woefully inadequate estimate for HAPs, which must be revised, and a case-by-case MACT determination conducted. Furthermore, there are numerous emission units and emission sources missing from the permit application. The permit application fails to address the Act's regional haze requirements. Critically, the permit application's State-BACT determinations are flawed and incomplete. Those flawed determinations do not reflect State-BACT requirements.

Moreover, when the facility-wide potential to emit calculations are corrected and the missing units are added, the proposed pellet mill triggers major source PSD for several pollutants (at both the 100 TPY and 250 TPY thresholds). Based on the revised facility-wide potential to emit estimates and additional comments, the proposed pellet mill would be:

- A major source of HAPs (and required to conduct a case-by-case Maximum Achievable Control Technology analysis and determination)
- Trigger PSD major source requirements for CO emissions (at both the 100 TPY and 250 TPY thresholds)
- Trigger PSD major source requirements for VOCs (at the 100 TPY threshold)
- Trigger PSD major source requirements for NOx (at the 100 tpy threshold)
- Trigger PSD major source requirements for PM (at the 100 tpy threshold)

Since the proposed pellet mill appears to be a major stationary source and subject to the requirements of the PSD permit program, ORCAA's issuance of the proposed approval order would be contrary to the Congressional purposes of the PSD program to:

- Protect health and welfare;
- Preserve and protect the air quality in Washington's national parks;
- Insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources; and
- Assure that any decision to permit increased air pollution is made only after careful evaluation of all the consequences of such a decision.

Therefore, ORCAA must either deny the request for construction and withdraw its proposed Approval Order or require that the permit applicant submit a full and complete application addressing the myriad defects providing all required analysis and documentation. Should ORCAA (or Washington Department of Ecology) repropose an approval order, it must disclose all of the underlying information to the public.

Sincerely,

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NEW SOURCE
PRELIMINARY DETERMINATION to APPROVE:

Wood Pellet Manufacturing Facility

Pacific Northwest Renewable Energy, LLC

23NOC1606

November 30, 2023

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NOTICE OF CONSTRUCTION
PRELIMINARY DETERMINATION TO APPROVE

Olympic Region Clean Air Agency

Issued to:	**Pacific Northwest Renewable Energy, LLC**	**County:**	**Grays Harbor**
Location:	**411 Moon Island Road, Hoquiam**	**Source:**	**926**
		RC:	**OP1**
Application #:	**23NOC1606**	**File:**	**432**
Prepared on:	**November 30, 2023**		

1. Summary

Pacific Northwest Renewable Energy (PNWRE) seeks approval from Olympic Region Clean Air Agency (ORCAA) to construct a new wood pellet manufacturing facility at 411 Moon Island Road in Hoquiam, Washington. The proposed facility would emit air pollution from combustion of woody biomass and wood processing activities and, therefore, triggers approval by ORCAA through an air permit application prior to commencement of construction. PNWRE submitted an air permit application to ORCAA, which was determined complete on September 11, 2023. ORCAA staff reviewed PNWRE's application and concluded that the proposed facility meets criteria for approval in Washington and, therefore, may be conditionally approved. Recommended conditions of approval are detailed in Section 16 of this Preliminary Determination.

2. Regulatory Background

Pursuant to the Washington Clean Air Act under chapter 70A.15 of the Revised Code of Washington, ORCAA's Rule 6.1 and the Washington State Implementation Plan under 40 CFR part 52.2470(c)[1] require New Source Review (NSR) for new stationary sources of air pollution (referred to as new sources) in ORCAA's jurisdiction. NSR is also required prior to installing, replacing, or substantially altering any air pollution control technology. NSR generally refers to the process of evaluating air quality impacts and the likelihood of compliance with applicable air regulations and standards. NSR and approval of an air permit by ORCAA is required prior to commencing construction or modification of any new source or prior to installing, replacing, or substantially altering air pollution control technology. The goal of NSR is to assure compliance with applicable air regulations and standards, including equipment performance standards and ambient air quality standards.

[1] A State Implementation Plan (SIP) is a collection of regulations and documents used by a state, territory, or local air district to implement, maintain, and enforce the National Ambient Air Quality Standards, or NAAQS, and to fulfill other requirements of the federal Clean Air Act. The Clean Air Act requires the EPA to review and approve all SIPs. ORCAA's SIP was last approved by EPA in 1995.

NSR is initiated by a project proponent submitting an air permit application referred to as a Notice of Construction (NOC) application[2], which provides ORCAA information on the proposed project of sufficient detail to characterize air impacts. NOC applications are posted on ORCAA's website and may undergo a public notice and comment period if requested by the public or if emissions increases trigger an automatic public notice. Approval of a NOC in an attainment or unclassifiable area[3] is contingent on verifying a proposed project meets the following criteria from ORCAA's Rule 6.1 and the Washington State Implementation Plan under 40 CFR part 52.2470(c), Table 6:

1. ***Performance Standards*** – The new stationary source will likely comply with applicable air-performance standards such as federal new source performance standards (NSPS), national emission standards for hazardous air pollutants (NESHAPs), or any performance standards adopted under chapter 70A.15 RCW;
2. ***BACT*** – The new stationary source will employ "Best Available Control Technology" (BACT) to control all air pollutants emitted;
3. **RACT** – Replaced or substantially altered air pollution control technology meets the standard of "Reasonably Available Control Technology" (RACT) as defined in ORCAA Rule 1.4;
4. ***Ambient Air Quality*** – Emissions from the new stationary source will not cause or contribute to a violation of any ambient air quality standard;
5. ***Federal Air Permitting Requirements*** – The new stationary source secures all applicable federal air permits that may apply; and,
6. ***Air Toxics*** – If there are increases in toxic air pollutant (TAP) emissions, the requirements of Washington's Controls for New Sources of Toxic Air Pollutants under Chapter 173-460 WAC are met.

In this case, PNWRE is proposing to construct a new "greenfield" wood pellet manufacturing facility in Hoquiam, Washington. The proposed facility would rely on combustion of woody biomass as the primary source of heat, which results in air pollutant emissions. It would also include wood processing activities that generate dust. At the production rates proposed by PNWRE, air emission rates from both activities are significant and trigger the requirement to secure ORCAA's approval through a NOC application prior to commencement of construction.

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[2] There are two categories of NOC applications: Notice of Construction (NOC) and Notice of Construction Revision (NOR). NOCs are required for new or modified sources, new control technology, replacing an existing stationary source or control technology, and substantially altering control technology. NORs are required when an owner or operator requests a revision to an existing air permit issued by ORCAA.

[3] Unclassified area or "attainment area" means an area that has not otherwise been designated by EPA as nonattainment with ambient air quality standards for a particular regulated pollutant. Attainment area means any geographic area in which levels of a given criteria air pollutant (e.g., ozone, carbon monoxide, PM_{10}, $PM_{2.5}$, and nitrogen dioxide) meet the health-based National Ambient Air Quality Standards (NAAQS) for that pollutant. An area may be an attainment area for one pollutant and a nonattainment area for others.

3. Application Background

- Application received: July 20, 2023
- SEPA lead agency: City of Hoquiam
- SEPA determination: Determination of Non-Significance, #SEPA 2023-02, July 24th, 2023
- 1st Application addendum received: 8/11/2023 (requested 8/4/2023)
- 2nd Application addendum received: 9/6/2023 (requested 8/25/2023)
- Application declared complete: 9/11/2023
- Notification that natural gas will not be used as startup fuel: 9/27/2023
- 3rd Application addendum received: 10/25/2023 (requested 10/3/2023)

4. Description of Proposed Facility

PNWRE's NOC application thoroughly describes the proposed wood pellet manufacturing facility including equipment, operations, emissions units and air impacts. The following is a brief description of the facility and is intended as an overview.

4.1 Proposed Location

The proposed wood pellet manufacturing facility will be located on an approximately 60-acre parcel in the city of Hoquiam, Washington. The facility is designed to produce, store, and export up to 440,800 short tons per year (TPY) of wood pellets and is intended to operate at least 8,000 hours per year. The proposed location is adjacent to the Willis Enterprises Moon Island Chip Mill (Willis Enterprises) and near Terminal 3 at the Port of Grays Harbor.

Figure 1: Proposed Location

* Imagery ©2018 Google, Maps data ©2018 Google
** Annotated by ORCAA

4.2 Ambient Air Quality

ORCAA works cooperatively with the Washington State Department of Ecology (Ecology) and the regional United States Environmental Protection Agency (EPA) to measure criteria ambient air pollutants, meteorological parameters, and other air-related data. ORCAA is also a member of the Washington Air Monitoring Work Group, which makes recommendations to Washington Air Quality Managers Group regarding air monitoring programs, including ambient air monitoring site locations. ORCAA currently operates and maintains air monitoring equipment for measurement of three of the six criteria pollutants in various locations in its jurisdiction: particulate matter ($PM_{2.5}$), ozone (O_3), and carbon monoxide (CO).

ORCAA does not maintain any permanent monitors in Hoquiam but does operate a $PM_{2.5}$ monitor in nearby Aberdeen, WA. A temporary federal reference method (FRM) $PM_{2.5}$ monitor was installed at Harbor High School in Aberdeen between August 18, 2002, and December 29, 2003. No violations of the daily or annual $PM_{2.5}$ NAAQS were recorded during this time. As a permanent FRM was not installed in Aberdeen, the region is officially considered “unclassified” with regards to $PM_{2.5}$ attainment status. A nephelometer has been used to monitor $PM_{2.5}$ at Harbor High School in Aberdeen for the past 20 years. Nephelometer based $PM_{2.5}$ was verified by the previously mentioned FRM data during the period when both monitors were collocated in Aberdeen.

Because of the absence of FRM monitoring, Grays Harbor County is officially considered “unclassified” with respect to the National Ambient Air Quality Standards (NAAQS). However, based on the number and size of air pollution sources and other monitoring data, ambient air quality in Hoquiam and Aberdeen is assumed to be generally good. Areas that are unclassified with respect to the NAAQS are regulated the same way as areas officially classified as “attainment.”

4.3 Facility Overview

The facility is designed with three truck tippers; a chips cleaning line; two wet hammer mills; one hog fuel furnace and dryer; four dry hammer mills; 12 pellet mills; five wood pellet storage silos; and a covered conveyor system to deliver wood pellets to the existing Willis Enterprises conveyance system and ship loadout facility. Air pollution control systems are proposed for all point sources of air emissions. Descriptions of stationary sources of air emissions and air pollution controls proposed are summarized in the following table. The proposed emergency generator, Source ID GEN-01, will be less than 500 horsepower and therefore is categorically exempt from New Source Review per ORCAA Rule 6.1(c)(28)(ii). It is included in the table below for informational purposes only.

Table 1: Emissions Sources

Emission Source ID	Emission Source	Exhaust Rate (cfm)	Fugitive or Point?	Air Pollution Controls
TD-01	Truck Dumper – White Wood	N/A	Fugitive	Dust Control Plan: • 10 miles per hour (mph) speed limit for all mobile vehicles • Applying water where needed via water truck or other means • Using a vacuum truck as needed
TD-02	Truck Dumper – Chips			
TD-03	Truck Dumper – Hog Fuel			
SP-01	Storage Pile – White Wood			
SP-02	Storage Pile – Chips			
SP-03	Storage Pile – Hog Fuel			
VEH-01	Vehicle Traffic – Trucks			
VEH-02	Vehicle Traffic – Front End Loaders			
EP-01.1	Chip Cleaning Line	36,334	Point & Fugitive	Cyclo-filter capable of 10 mg/Nm3 (.0044 gr/scf)
EP-01.2	White Wood Disc Screening	N/A	Fugitive	None
EP-01.3	Hog Fuel Feed	N/A	Fugitive	None
EP-02	Wet Hammer Mill 1	10,219	Point	Cyclo-filter capable of 10 mg/Nm3 (.0044 gr/scf)
EP-03	Wet Hammer Mill 2	10,219	Point	Cyclo-filter capable of 10 mg/Nm3 (.0044 gr/scf)
EP-04	Drying Line (furnace, drum dryer)	103,229	Point	Cyclones (2 units in parallel) WESP RTO
EP-05	Dry Product Intermediate Storage 1	852	Point	Passive Filters
EP-06	Dry Product Intermediate Storage 2	852	Point	Passive Filters
EP-07	Dry Hammer Mills (4 units)	99,795	Point	Cyclo-filters (4 units serving dry hammer mills) Cyclo-Filters (2 units, one serving each pellet cooler) RCO (Serving exhaust from all)
EP-08	Pelletizers (12 units) Pellet Coolers (2 units)		Point	
EP-09	Milled Dry Product Intermediate Storage	852	Point	Silo vent filters
EP-10	Pellet Storage Silo #1	15,635	Point	Storage silo venting to maintain low pellet temperatures – equipped with silo vent filters
EP-11	Pellet Storage Silo #2	15,635	Point	
EP-12	Pellet Storage Silo #3	15,635	Point	
EP-13	Pellet Storage Silo #4	15,635	Point	
EP-14	Pellet Storage Silo #5	15,635	Point	
EP-15	Truck Loadout	N/A	Fugitive	Silo Filter and shrouded dump chute
GEN-01	Emergency Generator (<500 HP)[1]	N/A	Point	Tier 4

[1] Categorically exempt from New Source Review per ORCAA Rule 6.1(c)(28)(ii).

4.4 Raw Materials Processing

Raw materials for pellet production and fuel for the furnace will be delivered to the facility via truck and include:

- Forest Residuals consisting of chipped woody biomass from logging operations (referred to as "ground chips").
- Mill residuals consisting of sawdust and shavings (referred to as "white wood").
- Biomass fuel ("referred to as hog fuel"), which is an unrefined mix of coarse chips of bark and wood fiber used for fuel.

Trucks delivering raw materials will be emptied via gravity in dedicated truck tippers. The proposed facility includes 3 truck tippers. The biomass will empty into the yard where front-end loaders will move the material to outdoor storage piles. Approximately 1.7 acres will be dedicated to outdoor storage of fuel and raw material for wood pellet manufacturing. Front-end loaders will transfer raw materials and biomass fuel to dedicated walking-floor bins. A radial stacker/reclaimer system may be installed, which would eliminate fugitive dust and mobile source emissions from front-end loaders.

To minimize dust emissions from vehicle traffic in the yard, PNWRE proposes to implement a dust control plan. The plan will include a 10 miles per hour (mph) posted speed limit for all vehicles and heavy equipment, regularly applying water on road surfaces via water trucks or other means, and using a vacuum truck as needed. The walking floor bins are designed to move the materials to the next phase in their processing. The facility is designed with 3 walking floor bins, each dedicated to a specific raw material stream. From this point onward, all raw material handing processes are fully enclosed.

The walking floor bin for ground chips empties to the chip cleaning line. The chip cleaning line uses a series of scalper rolls to remove dirt, sand and other impurities from the ground chips. The chip cleaning line will also classify the chips by size. The smallest sizes, or fines, will be routed to the dryer feeding system, while the intermediate fraction will be sent to the wet hammer mills for size reduction. Overs are reclaimed and recycled. The chip cleaning line will be enclosed and equipped with a dust capture system that will exhaust through a cyclo-filter dust control unit. Cyclo-filter units are essentially cyclone separator units equipped with an integral fabric filter baghouse to remove particulate from the exhaust. PNWRE's application states that the cyclo-filters proposed for the facility will be capable of controlling particulate emissions down to 0.0044 grains per standard cubic foot of air (gr/scf).

The white wood walking floor bin will discharge to a disc screen that separates larger pieces for further sizing in the wet hammer mills. PNWRE expects the white wood material stream to be relatively free of dust and contaminants. No dust control system is proposed for the disc screen. The screened white wood will be sent to the dryer via conveyor while overs will be sent to wet hammer mills for further size reduction. The white wood disc screening unit is considered a point source of fugitive particulate emissions.

Hog fuel will be off-loaded in its own dedicated truck tipper and then transported via front end loader to a hog fuel pile, which will be uncovered and in the open. Front end loaders will also be used to move the hog fuel from the pile onto the hog fuel walking floor bin. Traffic-generated dust from front end loaders was accounted for in the review of air quality impacts. The hog fuel walking floor will transport hog fuel to the furnace fuel feed conveyor that empties to the furnace fuel metering bin.

4.5 Wet Hammer Mills

The proposed facility includes two wet hammer mills operating in parallel. They are referred to as "wet hammer mills" because they process materials upstream of the dryer. The purpose of the wet hammer mills is to reduce the size of the chips so the material can be more easily dried and milled into pellets. The wet hammer mills will be enclosed and airborne dust emissions will be captured by a pneumatic system and routed to dedicated cyclo-filters for particulate emissions control. The cyclo-filters serving the wet hammer mills will be capable of controlling particulate emissions down to 0.0044 grains per standard cubic foot of air (gr/scf).

4.6 Drying Line

The drying line includes the biomass furnace, drum dryer, and emissions control system. The furnace will combust hog fuel to provide heat for the dryer and will have a maximum heat input capacity of 164.81 million British thermal units per hour (MMBtu/hr), which is roughly 25.57 short tons per hour of hog fuel as received. Hog fuel will consist of ground forest slash from logging and forest management operations and hog fuel from local mill operations.

Wet raw materials will be staged in a metering bin before being fed to the drum dryer inlet. Hot flue gas from the furnace will be routed through the drum dryer to dry, by direct contact, the raw material from approximately 45 percent moisture to a target 10 percent final moisture. Dried material will then be conveyed pneumatically from the drum dryer discharge through a pair of high-efficiency cyclones operating in parallel that will separate the dried wood material from the moisture-rich exhaust gas stream. The dried material will then be conveyed pneumatically to a dry-product intermediate-storage silo.

The emissions control system for the drying line will consist of dual cyclones followed by a Wet Electrostatic Precipitator (WESP), and finally a Regenerative Thermal Oxidizer (RTO). The purpose of the dual cyclones is simply to separate the dried material stream from the wet exhaust. The WESP is a high efficiency particulate removal device and expected to remove upwards of 98% of the particulate matter (PM) from the exhaust gas stream. The RTO is a secondary combustion unit used to destroy organic gases through oxidation.

4.7 Furnace

The proposed biomass furnace is designed with four primary combustion zones to enable combustion of high moisture content fuel. Zone 1 is designed to dry out the fuel, with combustion occurring in the following zones. PNWRE claims this design accommodates the moisture in the biomass fuel, making a fuel pile cover unnecessary. The combustion chamber will have four zones of overlapping, moving grates. The primary combustion air enters the fuel bed from the under-fire air zone through slots between the grate bars. The combustion chamber is refractory lined. The chamber is designed with the top as a secondary combustion chamber. The furnace will also have a second, secondary combustion chamber to enable final combustion of remaining combustible gases from the Furnace.

The furnace will exhaust to the drum dryer and is designed to provide process heat at 752 F. After passing through the drum dryer, exhaust gases will pass through the pollution control system consisting of dual cyclones, a wet Electrostatic Precipitator (ESP), and finally, a Regenerative Thermal Oxidizer (RTO). Therefore, during normal operations, emissions from the furnace will ultimately exhaust through the RTO stack.

Ash will drop through the grates to four separate ash hoppers in the primary combustion chamber and a single ash hopper in the secondary combustion chamber. Ash hoppers will drop to a “submerged” ash conveyor that provides an air lock from the furnace. The ash conveyor drag chain will move ash to an enclosed ash storage bin.

4.8 Dryer Line Operating Scenarios

4.8.1 Normal, Steady-State Operation

During normal steady-state operation at design capacity of the facility, the drying line will exhaust through the WESP and RTO, and the pellet lines will exhaust through baghouses or cyclo-filters and the Regenerative Catalytic Oxidizer (RCO). Operating the drying line at design capacity (164.81 MMBtu/hr) will require roughly 23.2 metric tons per hour (mt/h) of hog fuel as received and produce dried material for roughly 51.1 mt/hr of pellet product.

The dryer system will have two emergency bypass stacks: One for the furnace and a separate stack for the dryer. When used, exhaust and emissions from these stacks bypass the air pollution control system (WESP + RTO) and are emitted directly to the atmosphere at approximately 50 feet above grade. The purpose of the bypass stacks is to provide for safe operation and temperature control during start-ups, shutdowns and unplanned malfunction and emergency events. Temperature control enables more gradual heating and cooling of the furnace refractory during these events, which is essential for assuring the integrity and long life of the refractory as well as other furnace and dryer components. Also, ability to control temperature provides a means to maintain refractory heat during minor malfunction events, thereby avoiding the need for a cold start.

4.8.2 Planned Startups

Planned startups are referred to as "cold startups" because they are initiated when the dryer system (furnace + drum dryer) has been shut down and has cooled to a temperature that requires gradual heating to safely bring the system up to operating temperatures. This is necessary to avoid thermally shocking and damaging the dryer system. The furnace bypass stack is open when combustion in the furnace is initiated, thereby bypassing both the drum dryer and the air pollution control system. PNWRE stated in an email correspondence to ORCAA that exhaust bypassing the air pollution control system during a cold startup will last only approximately 30 minutes during a normal cold startup, and that they anticipate no more than ten cold startups per year. Based on these constraints, and a reduced initial heat rate to the furnace of approximately 15% of the maximum furnace heat input rate (~ 25 MMBtu/hr), emissions rates were determined by PNWRE to be less than those during normal, steady state operations. ORCAA staff evaluated PNWRE's emissions calculations and concurs with this assessment. However, to assure startup emissions do not exceed these bounds in the future, ORCAA imposed startup constraints consistent with the cold startup descriptions provided by PNWRE.

ORCAA's understanding is that cold startup of the furnace will be initiated using approximately 25 pounds of dry wood, which will be augmented with approximately 15 gallons of diesel. The diesel is used as an accelerant. The clean/dry wood is placed on a bed of dry wood chips on the furnace grate, and is ignited using the diesel to help accelerate the combustion. The fire is manually ignited and allowed to burn while exhausting from the emergency bypass stack. During this time, the flue gas connection to the dryer is closed and the dryer ID fan runs at minimum speed with the drum turning and empty without material. After approximately 30 minutes, normal biomass fuel input to the furnace is initiated, the emergency stack of the furnace is closed, and the flue gas connection to the dryer is opened. By this time, the dryer system's air pollution controls (WESP and RTO) will be fully operational. Therefore, uncontrolled emissions through the bypass stack are only expected to last for 30 minutes during a normal cold startup. However, optimal combustion of the fuel is not achieved until the primary and secondary air in the furnace are fully functioning. Once a temperature of approximately 300° C (570° F) is reached, primary and secondary combustion air fans start operation at a low rate and then are gradually increased. From this point in the cold startup sequence, temperatures within the combustion chamber are increased in steps of approximately 120° F per hour until the normal fuel input rate is reached. The air ratio between primary and secondary combustion air are then adjusted until the working/operating temperature is achieved. PNWRE expects approximately 14 hours from cold start-up to achieving normal operating temperatures. However, bypass of the air pollution control system is only expected to last 30 minutes during the entire 14-hour cold startup period.

PNWRE does not expect the total duration of cold startup bypass (Exhaust bypassing the air pollution control systems during cold startups) to exceed 5 hours per year (10 startups @ 30 minutes per). Use of diesel during startups is expected to be less than 15 gallons per startup, and no more than 150 gallons per year. A propane torch may also be used to ignite the biomass during startups. Air emissions rates from combustion of wood and diesel during startups were quantified by PNWRE's Environmental consultant and found to be less than emissions rates during normal, steady state operations. Emissions from the bypass stack during a cold startup are likely to exhibit opacity and, therefore, BACT opacity limits imposed on the dryer system exempt emissions from the bypass stacks during cold startups. However, ORCAA's general opacity standard of 20% (ORCAA Rule 8.2) applies at all times including startup and shutdown as does the State's general opacity standard of 20% (WAC 173-400-040).

4.8.3 Planned Shutdowns

Planned shutdown from full production mode to a cold system takes about 14 hours. PNWRE stated in an email correspondence that air pollution control systems will be fully operational during a planned shutdown. Shutdowns are initiated by stopping fuel flow to the furnace fuel hopper. Actual fuel feed to the furnace stops after fuel hopper is emptied. Simultaneously with stopping fuel feed to the furnace, material input to the dryer system is ramped down until material infeed is completely stopped. It takes less than 30 minutes to empty the entire drum of material. The dryer system temperature will be controlled by a substitute cooling load (water injection into the drum). Until the fuel on the furnace grate is completely combusted, the furnace and dryer will exhaust through the air pollution control system consisting of the WESP and RTO. Only after fuel is completely combusted on the grate, primary and secondary combustion fans will be stopped and the flue gas connection to the dryer closed. As the combustion chamber cools down, hot gases will be exhausted through the emergency bypass stack of the furnace.

Cool down of the furnace is conducted at a rate of approx. 120° F per hour. Simultaneously, the dryer system ID fan will continue to run until the dryer system is cooled down. At this stage of the shutdown sequence, because neither fuel is being combusted nor material is being dried, hot gases from both the furnace and dryer will be emitted through the emergency bypass stacks for these units until they are sufficiently cooled. Therefore, during a planned shut-down, air pollution control systems for the drying system will be fully operational for the duration of time air pollution is being generated. Likewise, the RCO will be fully operational while air emissions are being generated by the hammer mills and pellet coolers during a planned shutdown. ORCAA's understanding is that PNWRE anticipates only two shutdowns of the furnace each year but assumed 10 for the air impacts analysis.

4.8.4 Malfunctions and Emergencies

The furnace automatically aborts to the furnace bypass stack in the event of a malfunction or emergency situation like loss of power or failure of a critical piece of equipment. Likewise, the dryer system automatically aborts to the dryer bypass stack due to similar events. Aborts and exhausting through either or both of the bypass stacks may be triggered by failsafe interlocks associated with the furnace, dryer, emissions control systems, or utility supply systems. Typically interlocks divert flue gas to both bypass stacks in the event of loss of utilities (electricity, water, compressed air or fuel), when monitoring conditions exceed safe operating ranges (temperature, pressure, flowrate) or in the event of a spark detection within the wood drying system and flue gas treatment areas. Whenever there is an abort, the furnace automatically switches to idle mode and emissions are exhausted through the bypass stack. Simultaneously, fuel feed to the furnace is reduced to the idle mode heat rate. During malfunctions and emergencies, air emissions from the drying system may emit uncontrolled through the bypass stacks. However, other than during planned startups and shutdowns of the drying system, exhaust through either of the bypass stacks is presumed to be in excess of the pollutant mass rate limits established in the air permit.

4.8.5 Feedstock Interruptions

Idle-mode may also be triggered by a reduction or interruption of feedstock material to the dryer. During these occurrences, idle-mode is triggered as a means to reduce the heat rate to the dryer in order to avoid excessive dryer temperatures and damage to the drying system. Also, in addition to preventing damage to the drying system, idle-mode avoids completely shutting down the furnace when feedstock input to the dryer is interrupted. Idle mode is initiated by reducing or stopping fuel feed into the furnace. The dryer system temperatures are reduced by substitute load (assumed water injection). Until feedstock input is resumed, the system continues to operate at a reduced heat rate. PNWRE stated in a communication with ORCAA that the furnace, dryer, dry hammer mills and pellet coolers will all be exhausted through their respective air pollution control systems when there are feedstock interruptions.

4.9 Pellet Mill

Dried material is then transferred by conveyor to into a dry-product intermediate-storage silo. The purpose of the intermediate-storage silo is to allow the dried material moisture content to homogenize; This helps provide a consistent raw material moisture content for the pelletizing process. The residency time of the dried materials in the intermediate-storage silo is approximately 2 hours and 50 minutes. The intermediate storage silo is passively vented through fabric filters.

A chain conveyor will be used to transfer dried material from the bottom of the intermediate-storage silo to four dry hammer mills operating in parallel. The dry hammer mills then mill the dried material into the desired size and consistency for pelletizing. Each dry hammer mill will exhaust through a cyclo-filter for recovering product and controlling particulate emissions. Exhaust streams from each dry hammer mill cyclo-filter will then be combined with exhaust streams from the pelletizing line and passed through a RCO for destruction of Volatile Organic Compounds (VOC) before emitting to the atmosphere. The RCO functions like an RTO to destroy VOC; however, the RCO uses a catalyst material rather than a ceramic material to achieve oxidation, and therefore can achieve efficient VOC destruction at lower temperatures.

Dried, milled material from the dry hammer mills and associated cyclo-filters will empty onto a chain conveyor which then conveys the milled product to a dry product intermediate-storage silo. The purpose of the dry intermediate-storage silo is to provide additional retention time for achieving homogenous moisture content, which is a key factor for achieving the desired quality in the final product. The intermediate-storage silo will be passively vented through a particulate filter.

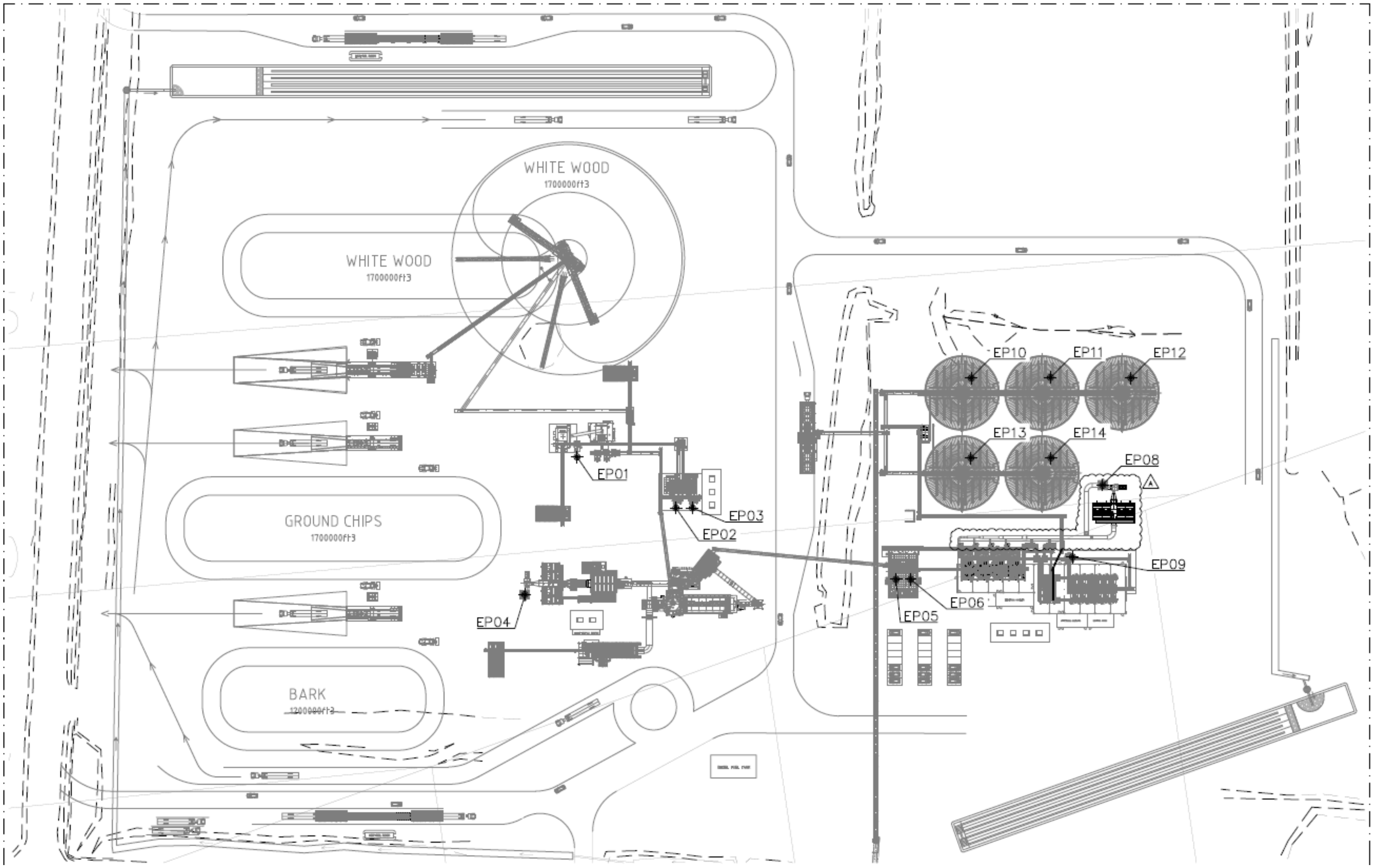
A chain conveyor will then transport the dried, milled material from the outlet of the intermediate-storage silo to the pellet mill hoppers, which independently feed the pellet mills. PNWRE proposes two pellet lines consisting of six pellet mills each, for a total of 12 pellet mills. In each pellet mill, rollers push the material through the holes of a die plate. Knives on the exterior of the die plate cut the wood pellets from the plate once the pellets achieve the required length. The temperature of a freshly produced pellet is around 200 degrees Fahrenheit (°F). Therefore, the two pellet lines will discharge into pellet coolers where the material will flow countercurrent to a stream of ambient air. The airflow reduces the temperature of the wood pellets at the point of pellet discharge. Each pellet cooler will be equipped with either a baghouse or cyclo-filter to remove dust from the exhaust stream before it goes to the RCO. The exhaust streams from the two pellet cooler baghouses will then be combined with the exhaust streams from the dry hammer mills and passed through the RCO for control of VOC before being emitted to the atmosphere.

4.10 Pellet Silos and Loadout

Cooled pellets will be conveyed from the pellet coolers to one of five pellet silos. The total combined capacity of the pellet silos is approximately 60,000 short tons. The silos will utilize aeration fans and venting to maintain low pellet temperature for final shipment. An automated enclosed conveyor will draw pellets from the silos evenly according to loading schedules and transport them via enclosed conveyor to the neighboring Willis Enterprises' existing conveyors and marine vessel loadout facilities. Willis Enterprises operates under an RC2-class ORCAA registration (source number 2112, file number 647). The existing conveyors and vessel loadout facilities owned by Willis Enterprises are under a separate air permit and already registered with ORCAA.

PNWRE will also have the ability to deliver pellets via a truck unloading system; however, this system would be used only in special circumstances. PNWRE proposes no more than 10 loaded trucks per day and 32,000 tons per year of truck loadout utilization.

Figure 2: General Facility Layout



* Figure from page 3 of PNWRE NOC application

5. Air Pollutant Emissions

Air pollutant emissions evaluated through this permitting action included Criteria Air Pollutants, Hazardous Air Pollutants (HAP), Toxic Air Pollutants (TAP) and Greenhouse Gases (GHG). Criteria Air Pollutants are air pollutants that have established National Ambient Air Quality Standards (NAAQS). EPA established and periodically reevaluates and updates NAAQS for six of the most common air pollutants— carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide— these are known as “criteria” air pollutants (or simply “criteria pollutants”). Based on ambient monitoring throughout the nation, areas are ranked in terms of whether or not the NAAQS are maintained. It is important to note that ground-level ozone is not an air pollutant directly emitted, but is created via photo-chemical reactions in the atmosphere involving volatile organic compounds (VOCs) and nitrogen oxides (NOx). Therefore, ozone is not included in any of the tables below because it is not directly emitted. However, ground-level ozone precursors (NOx and VOC) are quantified and included in the tables below.

HAP are those pollutants that are known or suspected by the EPA to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. There are 188 air pollutants that are regulated as HAP under the Clean Air Act. Facilities that have the potential to emit 10 tons or more per year of any single HAP or 25 tons per year or more of any combination of HAPs are regulated as “Major Sources” of HAP and subject to the Title V Air Operating Permit program. It is important to note that HAPs emitted as solids are a subset of and reflected in the PM, PM10 and PM2.5 emissions rates shown in the tables below. Likewise, HAP emitted as volatile gases are reflected in the in the VOC emissions rates shown below.

TAP, also known “air toxics,” are specific air pollutants regulated by Washington because they are known or suspected by the Department of Ecology to cause cancer or other serious health effects. Washington State regulates TAP through a State-wide regulation titled CONTROLS FOR NEW SOURCES OF TOXIC AIR POLLUTANTS, which is under Chapter 173-460 of the Washington Administrative Code (Washington Air Toxics Regulation). It is important to note that the list of TAP regulated by Washington contains more than 350 chemical compounds and substances. Most but not all of the federally listed HAPs are also listed and regulated as TAPs in Washington. However, there are 40 HAPs that are not listed as TAP. Emissions of individual TAPs were provided in PNWRE’s application. Section 12 addresses compliance with the Washington Air Toxics Regulation.

A comprehensive Potential to Emit analysis for the proposed facility was provided in PNWRE’s NOC application. The emissions inventory accounts for both point sources of emissions (stacks and equipment) and area sources of emissions (material piles, material handling, haul roads). All foreseeable operating scenarios were accounted for such as startup, shutdown, and “idle mode,” as well as normal, steady-state operation. Emissions estimates for normal operations were calculated based on fuel and production rates at maximum capacity for each operating scenario and assuming no down time.

5.1 Emissions During Normal Operations

ORCAA staff reviewed PNWRE's emissions calculations including verifying emissions factors, conversions, assumptions and equations used to calculate emissions from individual point and area sources. ORCAA staff concluded that PNWRE's emission estimates reflect maximum potential to emit of the facility and are appropriate for making regulatory determinations and estimating ambient air quality impacts. Therefore, the emissions rates and facility-wide emissions provided in PNWRE's NOC application were used in confirming applicability of relevant air regulations, evaluating projected air impacts, and establishing emissions limits.

Table 2 provides a Potential to Emit (PTE) summary for the proposed facility in terms of tons of pollutants emitted annually. PTE represents the highest amount an air pollutant could be emitted at the maximum design rates of each emissions source and assuming continuous operation. PTE estimates were used in determining applicability of relevant performance standards and air regulatory programs such as the Title V Air Operating Permits (Title V) and Prevention of Significant Determination (PSD) permitting programs. To ensure long term protection of air quality, PTE estimates were converted to annual emissions limits and included in the proposed conditions of approval detailed in section 16.

Table 3 provides a summary of emissions rates for criteria pollutant emissions and Greenhouse Gases (GHG) in terms of pounds per hour for each source. It is important to note that Hazardous Air Pollutants (HAP) and Toxic Air Pollutants (TAP) emissions rates are shown for normal, steady-state operations, and for potential alternative operating scenarios. Emission rates for normal, steady-state operations reflect the maximum hourly PTE with air emissions control systems fully functioning. To ensure that the performance of air pollution control systems do not degrade over time, emission rates for normal operations were converted to commensurate emission limits as appropriate, and included in the recommended conditions of approval detailed in section 16.

5.2 Startup Emissions Rates

Startup of the drying system will require exhausting emissions uncontrolled from the furnace bypass stack. PNWRE stated in their application that two cold start-ups are anticipated per year. However, the air quality analysis provided in the application conservatively assumes 10, 30-minute startups per year. The objective for startups is to gradually bring the furnace up to normal operating temperatures using clean startup fuels.

PNWRE stated in their application that startup of the furnace will be initiated using approximately 25 pounds of dry wood, which will be augmented with approximately 15 gallons of diesel and ignited using propane torches. The diesel is used as an accelerant. The clean/dry wood is placed on a bed of dry wood chips on the furnace grate, soaked with diesel and ignited using propane to help accelerate the combustion. The fire is manually ignited using propane torches and allowed to burn while exhausting from the emergency bypass stack. During this time, the flue gas connection to the dryer is closed and the dryer ID fan runs at minimum rpm with the drum turning and empty without material.

Table 2. Facility-Wide Potential Annual Emissions (tons per year (tpy))

Pollutant	Class	Point-Sources (tpy)	Area-Sources (tpy)	Facility-Wide Total (tpy)	Title V Major?	PSD Major?
PM	Criteria[a]	108	32	140	N/A	No
PM_{10}	Criteria[a]	88	10	98	No	No
$PM_{2.5}$	Criteria[a]	71	1	72	No	No
NO_X	Criteria[a]	230	Not emitted	230	Yes	No
CO	Criteria[a]	185	Not emitted	185	Yes	No
VOC[d]	Criteria[a]	67	Not emitted	67	No	No
SO_2	Criteria[a]	18	Not emitted	18	No	No
Lead	Criteria[a]	< 0.1 lbs/yr	Not emitted	< 0.1 lbs/yr	No	No
CO_2e	GHG[e]	163,592	Not emitted	163,592	N/A	No
Total HAP	Total HAP[b]	1.32	Not emitted	1.32	No	N/A
Formaldehyde (Highest individual HAP/TAP)	HAP[b] TAP[c]	0.31	Not emitted	0.31	No	N/A

Table Notes:

[a] EPA has established national ambient air quality standards (NAAQS) for six of the most common air pollutants—carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide—known as "criteria" air pollutants (or simply "criteria pollutants").

[b] HAP means Hazardous Air Pollutant. Hazardous Air Pollutants are those known to cause cancer and other serious health impacts and are regulated under the federal Clean Air Act. HAPs that are solids when emitted are reflected in the PM, PM_{10} and $PM_{2.5}$ annual emissions. HAP emitted as volatile organic compounds are reflected in the in the VOC annual emissions.

[c] TAP means any toxic air pollutant regulated in Washington and listed in WAC 173-460-150.

[d] VOC is regulated as a Criteria Air Pollutant because it is a precursor to Ground Level Ozone (O_3)

[e] GHG means Green House Gas. GHG are shown in terms of Carbon Dioxide Equivalents.

[f] Table acronyms: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; HAP = hazardous air pollutant; N/A = not applicable; NO_x = nitrogen oxides; PM = particulate matter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter; PSD = Prevention of Significant Deterioration; PTE = potential to emit; SO_2 = sulfur dioxide; TPY = tons per year; VOC = volatile organic compound

Table 3. PTE Hourly Emissions Rates, Normal Operation (pounds per hour (lb/hr))

Sources	PM	PM_{10}	$PM_{2.5}$	NO_x	CO	VOC	SO_2	CO_2e
Truck Dumpers (fugitive[a]): TD-01 (White Wood) TD-02 (Chips) TD-03 (Bark)	0.26	0.12	0.02					
Storage Piles (fugitive[a]): SP-01 (White Wood) SP-02 (Chips) SP-03 (Bark)	0.44	0.22	0.11					
Vehicle Dust (fugitive[a]): VEH-01 (Truck Traffic) VEH-02 (Loaders)	9.24	2.75	0.28					
Chip Cleaning Line (point[b]): EP-01 (Cyclo-filter)	6.81	1.70	0.29					
Wet Hammer Mills (point[b]): EP-01 (Cyclo-filter 1) EP-02 (Cyclo-filter 2)	3.83	0.96	0.16					
Drying Line (point[b]) EP-03	7.73	7.73	7.73	52.00	42.00	6.58	4.12	36,729
Dry Product Intermediate Storage (point[b]): EP-05 (Silo 1 Vent) EP-06 (Silo 2 Vent)	0.03	0.03	0.03					
Pellet Mill (point[b]): EP-07 (RCO[c])	2.12	1.90	1.90	0.41	0.18	8.61	0.00	529
Milled, Dry Product Intermediate Storage (point[b]): EP-08 (Silo Vent)	0.02	0.02	0.02					
Pellet Storage Silos (point[b]): EP-09 (Silo 1 Vent) EP-09 (Silo 2 Vent) EP-09 (Silo 3 Vent) EP-09 (Silo 4 Vent) EP-09 (Silo 5 Vent)	4.39	2.68	1.01					
Truck Loadout (fugitive[a]) LO-01 (Truck Loading)	0.01	0.00	0.00					
Emergency Generator (point[b]): GEN-01 (Generator Stack)	0.17	0.17	0.17	2.05	2.87	1.26	1.03	575

Table Notes:

[a] Fugitive, refers to fugitive sources of emissions and means air pollution emitted to that is not captured and is not emitted through a stack or vent. Examples of fugitive emissions include, but are not limited to, road dust from vehicle traffic, wind-blown dust from piles of materials, and volatiles that escape capture or containment systems like emission from leaks.

[b] Point, refers to point sources of emissions and means air pollution that is captured and emitted to the ambient air through a stack or vent.

[c] Table acronyms: TD = Truck Dumpers; SP = Storage Piles; VEH = Vehicle Traffic; EP = Emission Point; LO = Load Out; RCO =Regenerative Catalytic Oxidizer

[d]Pollutant acronyms: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; PM = particulate matter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter; VOC = volatile organic compound;

After approximately 30 minutes, normal biomass fuel input to the furnace is initiated, the emergency stack of the furnace is closed, and the flue gas connection to the dryer is opened. By this time, the dryer system air pollution controls (WESP and RTO) will be fully operational. Therefore, uncontrolled emissions through the bypass stack are only expected to last for 30 minutes during a normal cold startup. Startup continues from this point forward in the startup sequence with air pollution controls functional. However, optimal combustion of the fuel is not achieved until the primary and secondary air are fully functioning.

Once a temperature of approx. 300° C (570° F) is reached, primary and secondary combustion air fans start operation at a low rate and then are gradually increased. From this point in the cold startup sequence, temperatures within the combustion chamber are increased in steps of approximately 120° F per hour until the normal fuel input rate is reached. The air ratio between primary and secondary combustion air are then adjusted until the working/operating temperature is achieved. From cold start-up to operating temperature, PNWRE expects a cold startup to take about 14 hours.

Startup emission rate estimates are shown in Table 4 and were based on emissions factors from EPA's latest edition of Compilation of Air Pollutant Emissions Factors (AP-42). Startup emission rates from wood combustion were based on EPA AP-42 Chapter 1.10 Residential Wood Stoves utilizing emission factors for conventional stoves. Conventional stoves are enclosed wood-burning heaters that operate without catalytic combustors and have no emission reduction technology or design features. This scenario is similar to the piles of burning wood pieces within the enclosed furnace. Startup emission rates from diesel fuel used as an accelerant were based on EPA AP-42 Chapter 1.3 using emission factors for distillate oil-fired boilers and assuming ultra-low sulfur diesel.

Table 4. Uncontrolled Startup Emissions Rates (pounds per hour (lb/hr))

Sources	PM	PM_{10}	$PM_{2.5}$	NO_x	CO	VOC	SO_2	CO_2e
Drying Line (Furnace & Dryer)[a] EP-03	0.84	0.84	0.84	0.67	5.92	1.34	0.03	784

Table Notes:
[a] Includes uncontrolled emissions from combustion of dry wood and diesel for the initial 30-minutes during a cold startup.

5.3 Shutdown Emission Rates

Shut down from full production mode to a cold system takes about 14 hours. PNWRE stated in their application that air pollution control systems will be fully operational during a planned shutdown while fuel is still being combusted on the furnace grates. Shutdowns are initiated by stopping fuel flow to the furnace fuel hopper. Actual fuel feed to the furnace stops after fuel hopper is emptied. Simultaneously with stopping fuel feed to the furnace, material input to the dryer system is ramped down until material infeed is completely stopped. It takes less than 30 minutes to empty the entire drum of material. The dryer system temperature will be controlled by a substitute cooling load (water injection into the drum). Until the fuel on the furnace grate is completely combusted, the furnace and dryer will exhaust through the air pollution control system consisting of the cyclones, WESP and RTO. Only after fuel is completely combusted on the grate, primary and secondary combustion fans will be stopped and the flue gas connection to the dryer closed. As the combustion chamber cools down, hot gases will be exhausted through the emergency bypass stack of the furnace.

Cool down of the furnace is conducted at a rate of approx. 120^o F per hour. Simultaneously, the dryer system ID fan will continue to run until the dryer system is cooled down. At this stage of the shutdown sequence, because neither fuel is being combusted nor material is being dried, hot gases from both the furnace and dryer will be emitted through the emergency bypass stacks for these units until they are sufficiently cooled. Therefore, during a planned shut-down, air pollution control systems will be fully operational for the duration of time air pollution is being generated. Likewise, the RCO will be fully operational while air emissions are being generated by the hammer mills and pellet coolers during a planned shutdown.

6. Administrative Requirements for NOC Applications

NOC applications are subject to filing fees according to ORCAA Rule 3.3(b) and may incur additional NOC processing fees at an hourly rate according to ORCAA Rule 3.3(c). Applicable NOC filing fees for PNRE's NOC application were paid prior to ORCAA commencing processing of the application. Additional NOC processing fees may apply and will be determined and assessed prior to issuing a Final Determination and the Approval Order (a.k.a.: Air Permit).

NOC applications are subject to a 15-day public notice and an opportunity to request a 30-day public comment period. Public notice of PNRE's NOC application was posted on ORCAA's website on July 25, 2023. The time period for filing comments on the application and requests for a public comment period expired on August 9, 2023.

There were no requests for a public comment hearing during the application noticing period. However, the NOC application is subject to a mandatory public comment period per ORCAA Rule 6.1.3(b) as the proposed facility would cause a significant net increase in emissions of several air contaminants. Per ORCAA regulations, a public hearing may be scheduled if requested during the public comment period. However, anticipating a high level of public interest on the case, PNWRE proactively requested ORCAA to schedule a Public Hearing. Therefore, ORCAA will schedule and issue public notice for a public hearing after a preliminary determination has been made.

7. SEPA Review

The State Environmental Policy Act (SEPA) under Chapter 197-11 WAC is intended to provide information to agencies, applicants, and the public to encourage the development of environmentally sound proposals. The goal of SEPA is to assure that significant impacts are mitigated.

The City of Hoquiam served as the Lead Agency for this project and issued a Determination of Non-Significance (DNS) on July 25, 2023. The DNS lists an Air Permit issued by ORCAA as one of the permits required. Other permits listed in the DNS include:

- Department of Ecology – National Pollutant Discharge Elimination System Construction Stormwater Permit and Industrial Stormwater Permit
- FAA – Clearance Letter

- City of Hoquiam Building Permit
- City of Hoquiam Critical Areas Review
- Port of Grays Harbor – Approval of Operation Agreement and Lease Agreement

8. Criteria for Approval

ORCAA's Rule 6.1 and the Washington State Implementation Plan under 40 CFR part 52.2470(c), Table 6, establish the following general criteria for approving new stationary sources and modifications to existing stationary sources of air pollution in ORCAA's region:

1. ***Performance Standards -*** Any new stationary source or modification will likely comply with applicable air-performance standards such as the federal new source performance standards (NSPS), national emission standards for hazardous air pollutants (NESHAPs), and any performance standards adopted under chapter 70A.15 RCW;
2. ***BACT -*** The new or modified stationary source is controlled to a level that meets the standard of "Best Available Control Technology" (BACT);
3. ***Ambient Air Quality –*** Any increase in air emissions will not cause or contribute to violation of any ambient air quality standard;
4. ***Federal Air Permitting Requirements –*** All applicable federal air permits, if required, are secured;
5. ***Washington Air Toxics Regulations -*** If there are increases in toxic air pollutant (TAP) emissions, the requirements of Washington's Controls for New Sources of Toxic Air Pollutants under Chapter 173-460 WAC are met; and,
6. ***Public Outreach –*** Public notice and comment requirements in ORCAA's regulations and the Washington State Implementation Plan under 40 CFR part 52.2470(c), Table 6 are met.

The following sections provide more detail on each criterion.

9. Applicable Performance Standards (Summary)

ORCAA's Rule 6.1.4(a)(1) and the Washington State Implementation Plan under 40 CFR part 52.2470(c), Table 6, require a finding that any new or modified stationary source will likely comply with applicable state, federal and local performance standards for air emissions including emission standards adopted under chapter 70A.15 RCW, emissions standard of ORCAA, and federal emission standards including New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAP), and National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT standards). The performance standards in Table 5 were determined applicable to the new wood pellet manufacturing facility. The performance standards in Table 6 were determined relevant to the proposed wood pellet manufacturing facility, but inapplicable. A comprehensive list of applicable performance standards that apply to all stationary sources of air pollution to be located at the facility, as well as general air regulations and standards that apply, are included in the Appendix.

Table 5: General Requirements, Prohibitions, and Performance Standards

Title Citation	Brief Description (Consult rule/regulation for specific requirements)	discussion/determination
Air Operating Permit Program Chapter 173-401 WAC; ORCAA Rule 5.1	All sources subject to this regulation must have a permit to operate that assures compliance by the source with all applicable requirements. While chapter 173-401 WAC does not impose substantive new requirements, it does require that fees be imposed on sources and that certain procedural measures be adopted especially with respect to compliance.	The facility is projected to emit greater than 100 tons per year of NO_x and CO, which makes the facility a “major source” and subject to the Title V Air Operating Permit program.
Operating Permit Fees ORCAA Rule 3.2	Requires all facilities subject to the Air Operating Program to pay an annual fee to cover ORCAA’s costs of administering the program.	The facility is projected to emit greater than 100 tons per year of NO_x and CO, which makes the facility a “major source” and subject to the Title V Air Operating Permit program.
Interference or Obstruction ORCAA Rule 7.1	Prohibits willfully interfering with or obstructing the Executive Director or any Agency employee in performing any lawful duty.	Applies generally to all air pollution sources
False or Misleading Statements ORCAA Rule 7.2	Prohibits any person from willfully making a false or misleading statement to the Board or its representative as to any matter within the jurisdiction of the Board.	Applies generally to all air pollution sources
Unlawful Reproduction or Alteration of Documents ORCAA Rule 7.3	Prohibits reproducing or altering, or causing to be reproduced or altered, any order, registration certificate or other paper issued by the Agency if the purpose of such reproduction or alteration is to evade or violate any provision of these Regulations or any other law.	Applies generally to all air pollution sources
Display of Orders and Certificates ORCAA Rule 7.4	Any order or registration certificate required to be obtained by these Regulations shall be available on the premises designated on the order or certificate. In the event that the Agency requires order or registration certificate to be displayed, it shall be posted. No person shall mutilate, obstruct, or remove any order or registration certificate unless authorized to do so by the Board or the Executive Director.	Applies generally to all air pollution sources
RACT Requirement WAC 173-400-040(1)(c) ORCAA Rule 8.3	All emissions units are required to use reasonably available control technology (RACT).	Applies generally to all air pollution sources
Visible Emissions WAC 173-400-040(2) ORCAA Rule 8.2(a)	Prohibits emissions with opacity of greater than 20% for more than three (3) minutes in any one hour.	Applies generally to all air pollution sources
Sulfur Dioxide WAC 173-400-040(7)	No person shall cause or allow the emission from any emissions unit in excess of one thousand ppm of sulfur dioxide on a dry basis, corrected to seven percent oxygen for combustion sources, and based	Applies generally to all air pollution sources

Title Citation	Brief Description (Consult rule/regulation for specific requirements)	discussion/determination
	on the average of any period of sixty consecutive minutes.	
Control Equipment Maintenance and Repair ORCAA Rule 8.8	ORCAA Rule 8.8 requires that all air contaminant sources keep any process and/or air pollution control equipment in good operating condition and repair.	Applies generally to all air pollution sources
Fallout WAC 173-400-040(3) ORCAA Rule 8.3(e)	Prohibits particulate emissions from any source to be deposited, beyond the property under direct control of the owner or operator of the source, in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material was deposited.	Applies generally to all air pollution sources
Fugitive Emissions WAC 173-400-040(4)(a) ORCAA Rule 8.3(c)	The owner or operator of any emissions unit engaging in materials handling, construction, demolition, or other operation which is a source of fugitive emission shall take reasonable precautions to prevent the release of air contaminants from the operation.	Applies generally to all air pollution sources
Odor WAC 173-400-040(5) ORCAA Rule 8.5	ORCAA Rule 8.5 contains general requirements for controlling odors and a general prohibition of odors that unreasonably interfere with the use or enjoyment of a person’s property.	Applies generally to all air pollution sources
Emissions Detrimental to Persons or Property WAC 173-400-040(6) ORCAA Rule 7.6	Prohibits causing or allowing the emission of any air contaminant from any source if it is detrimental to the health, safety, or welfare of any person, or causes damage to property or business.	Applies generally to all air pollution sources
Concealment and Masking WAC 173-400-040(8) ORCAA Rule 7.5	Prohibits installation or use of any device or means to conceal or mask emissions of an air contaminant, which causes detriment to health, safety, or welfare of any person, or causes damage to property or business.	Applies generally to all air pollution sources
Fugitive Dust WAC 173-400-040(9)	The owner or operator of a source or activity that generates fugitive dust must take reasonable precautions to prevent that fugitive dust from becoming airborne and must maintain and operate the source to minimize emissions.	Applies generally to all air pollution sources
Excess Emissions Provisions WAC 173-400-107; WAC 173-400-108 ORCAA 8.7	Requires excess emissions be reported to the Agency as soon as possible and within 24 hours and establishes criteria qualifying excess emissions as unavoidable.	Applies generally to all air pollution sources
Record Keeping and Reporting. ORCAA Rule 8.11	Requires the following: 1. Maintenance of records on the nature and amounts of emissions and other related information as deemed necessary by ORCAA; 2. Reporting of emissions to ORCAA upon request.	Applies generally to all air pollution sources
Emission Standards for Combustion and Incineration units	Prohibits emissions from any combustion unit in excess of 0.1 grain/dscf. EPA test methods from 40 CFR Part 60 Appendix A shall be used should demonstration of compliance be required.	The furnace, RTO and RCO are combustion units and subject to the limit of these rules.

Title Citation	Brief Description (Consult rule/regulation for specific requirements)	discussion/determination
WAC 173-400-050(1) ORCAA Rule 8.3(a)	Measured concentrations for combustion and incineration units shall be adjusted for volumes corrected to seven percent oxygen, except when the permitting authority determines that an alternate oxygen correction factor is more representative of normal operations.	
Emission standards for general process units. WAC 173-400-060 ORCAA Rule 8.3(a)	Prohibits emissions from any process unit in excess of 0.1 grain/dscf. EPA test methods from 40 CFR Appendix A shall be used should demonstration of compliance be required.	The performance standards of these rules apply to all baghouses, cyclo-filters and other general process units proposed for the facility.
Washington State Reporting of Emissions of Greenhouse Gases Chapter 173-441 WAC	This rule establishes mandatory greenhouse gas (GHG) reporting requirements for owners and operators of certain facilities that directly emit GHG as well as for certain suppliers and electric power entities. For suppliers, the GHGs reported are the quantity that would be emitted from the complete combustion or oxidation of the products supplied.	Based on PNWRE's GHG potential to emit estimates and a strong likelihood that the facility will operate continuously, actual emissions will likely exceed the 10,000 metric tons CO2e or more per calendar year threshold. Therefore, reporting GHG per Chapter 173-441 WAC will likely be required.
Standards of Performance for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60 Subpart IIII	This New Source Performance Standard (NSPS) applies to manufacturers, owners, and operations of certain stationary compression-ignition (CI) internal combustion engines (ICEs).	PNWRE is proposing to operate a CI ICE emergency generator. Therefore, NSPS IIII is applicable to the CI ICE at the facility. PNWRE proposes to operate the CI ICE as an emergency engine as defined in this regulation and comply with the applicable performance standards.
National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines 40 CFR Part 63, Subpart ZZZZ	Subpart ZZZZ establishes national emission limitations and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions.	The proposed facility will include one diesel-fired emergency generator that meets the applicability criteria of this regulation.

Table 6: Inapplicable Requirements, Prohibitions, and Performance Standards

Regulation Title Citation	Applicability Criteria	Basis
Registration ORCAA Regulation 4	Requires facilities that are minor sources of emissions to register annually with ORCAA and pay annual registration fees.	PNWRE will be a major source of air pollution and subject to the Title V Air Operating Permit (AOP) program
Annual Registration Fees ORCAA Rule 3.1	Requires payment of annual registration fees to ORCAA based in part on air pollutants emitted during the previous year.	PNWRE will be a major source of air pollution and subject to the Title V Air Operating Permit (AOP) program
Initial Notification ORCAA Rule 4.3(a)&(b); 4.3(f)	Requires facilities subject to registration to register by submitting an initial notification with the information in ORCAA Rule 4.3(b) within 30 days from: 1) Commencement of operation of any new or recommissioned stationary source; 2) Change in ownership of existing registered stationary source. The notification must be signed by the owner or operator or by the agent appointed by the owner.	PNWRE will be a major source of air pollution and subject to the Title V Air Operating Permit (AOP) program
Administrative Change Notification ORCAA Rule 4.3(e); 4.3(f)	Requires facilities to notify ORCAA of any changes to administrative information within 30 days from the change taking place including, but not limited to, contact names, address, phone numbers, and permanent shut down or decommissioning of a stationary source. The notification must be signed by the owner or operator or by the agent appointed by the owner.	PNWRE will be a major source of air pollution and subject to the Title V Air Operating Permit (AOP) program
Annual and/or Periodic Reports ORCAA Rule 4.3(c)&(d); 4.3(f)	Requires stationary sources to submit reports with information directly related to the registration program when requested by the Agency within 30 days of receipt of the request. The submittal must be signed by the owner or operator or by the agent appointed by the owner.	PNWRE will be a major source of air pollution and subject to the Title V Air Operating Permit (AOP) program
Emission Standards for Combustion and Incineration units – Incinerators WAC 173-400-050(2)	For any incinerator, no person shall cause or allow emissions in excess of one hundred ppm of total carbonyls as measured by Source Test Method 14 procedures in Source Test Manual - Procedures for Compliance Testing, state of Washington, department of ecology, as of September 20, 2004, on file at ecology. "Incinerator" means a furnace used primarily for the thermal destruction of waste.	The biomass combusted in the furnace is a fuel and not regulated as a waste. Therefore, this rule does not apply.
Commercial and industrial solid waste incineration units WAC 173-400-050(4)	This rule applies to commercial and industrial solid waste incineration units constructed on or before November 30, 1999. A commercial and industrial solid waste incineration unit that commenced construction on or before November 30, 1999, that meets the applicability requirements in 40 C.F.R. 62.14510, must comply with the requirements in 40 C.F.R. Part 62, Subpart GGG (in effect on the date in WAC 173-400-025).	PNWRE's biomass furnace is not regulated as an incinerator because the biomass fuel is not classified as a solid waste. Therefore, this rule does not apply.

Other waste wood burners WAC 173-400-070(5)	This rule applies to waste wood burners and incorporates by reference federal standards for Commercial and Industrial Solid Waste Incineration units (CISWI) under 40 CFR Part 60 Subpart CCCC and 40 CFR Part 62 Subpart III. For purposes of this rule, "Waste wood" means, "… wood pieces or particles generated as a by-product or waste from the manufacturing of wood products…"	This rule does not apply because the biomass combusted in the proposed furnace does is not "waste wood," but will be purchased and combusted as a fuel to produce heat for a manufacturing process.
Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units 40 CFR 60 Subpart Db	The affected facility to which this subpart applies is each steam generating unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr).	Although the heat rate of the furnace exceeds 100 MMBtu/hr, by definition, the furnace is not a steam generating unit. Therefore, the performance standards under this subpart do not apply.
Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units 40 CFR Part 60 Subpart Dc	The affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).	The heat rate of the furnace exceeds 100 MMBtu/hr and is, therefore, outside the applicability slot of this performance standard. Also, by definition, the furnace is not a steam generating unit. Therefore, the performance standards under this subpart do not apply.
Standards of Performance for Commercial and Industrial Solid Waste Incineration Units 40 CFR Part 60 Subpart CCCC	This subpart establishes new source performance standards for commercial and industrial solid waste incineration units (CISWIs) and air curtain incinerators (ACIs). Commercial and industrial solid waste incineration unit (CISWI) means any distinct operating unit of any commercial or industrial facility that combusts, or has combusted in the preceding 6 months, any solid waste as that term is defined in 40 CFR part 241.	Per §241.2, traditional fuels that have not been discarded are not solid wastes, including cellulosic biomass (virgin wood). The traditional fuels definition further states that clean cellulosic biomass, defined in §241.2 to include forest-derived biomass such as bark and hogged fuel, is a fuel product. Therefore, the proposed fuel for the furnace is not solid waste and the furnace is not a CISWI.
National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products 40 CFR Part 63 Subpart DDDD	This subpart establishes national compliance options, operating requirements, and work practice requirements for hazardous air pollutants (HAP) emitted from plywood and composite wood products (PCWP) manufacturing facilities. Plywood and composite wood products (PCWP) manufacturing facility means a facility that manufactures plywood and/or composite wood products by bonding wood material (fibers, particles, strands, veneers, etc.) or agricultural fiber, generally with resin under heat and pressure, to form a panel, engineered wood product, or other product defined in § 63.2292.	The PNWRE facility will be an area source of HAP emissions. Therefore, 40 CFR Part 63 Subpart DDDD does not apply.

National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters 40 CFR Part 63 Subpart DDDDD	This subpart establishes national emission limitations and work practice standards for hazardous air pollutants (HAP) emitted from industrial, commercial, and institutional boilers and process heaters located at major sources of HAP.	The PNWRE facility will be an area source of HAP emissions. Therefore, the proposed facility is not subject to 40 CFR Part 63 Subpart DDDDD.
National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources 40 CFR Part 63, Subpart JJJJJJ	This subpart applies to industrial, commercial, or institutional boilers that are located at, or part of, an area source of hazardous air pollutants (HAP). A “boiler” is defined an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water.	The PNWRE facility will be an “Area Source” of HAP emissions. However, the facility does not include any boilers. Therefore, the performance standards under 40 CFR Part 63 Subpart JJJJJJ do not apply.
National Emission Standards for Hazardous Air Pollutants for Wood Preserving Area Sources 40 CFR Part 63 Subpart QQQQQQ	This subpart applies to wood preserving operations that are Area Sources of HAP emissions. Wood preserving is defined as means the pressure or thermal impregnation of chemicals into wood to provide effective long-term resistance to attack by fungi, bacteria, insects, and marine borers.	The PNWRE facility will not use any wood preservatives in the production of wood pellets. Therefore, the standards in Subpart QQQQQQ do not apply.
Federal- MANDATORY GREENHOUSE GAS REPORTING 40 CFR Part 98	This part establishes mandatory greenhouse gas (GHG) reporting requirements for owners and operators of certain facilities that directly emit GHG as well as for certain suppliers.	PNWRE will not emit GHG above the threshold requiring federal reporting. This determination relies on “netting out” biogenic CO2e emissions from combustion of biomass.

10. Best Available Control Technology (BACT)

ORCAA Rule 6.1.4(a)(2) and the Washington State Implementation Plan under 40 CFR part 52.2470(c), Table 6, require the finding that a new source or modification to an existing source of air pollution in an attainment or unclassifiable area will employ best available control technology for all pollutants (BACT) not previously emitted or whose emissions would increase as a result of the new source or modification.

New sources of air pollution and modifications to existing sources of air pollution are required to use BACT to control all pollutants not previously emitted, or those for which emissions would increase as a result of the new source or modification. BACT is defined in WAC 173-400-030 as, *“an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under chapter 70A.15 RCW emitted from or which results from any new or modified stationary source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each pollutant.”*

PNWRE's original NOC application and subsequent application addendums describe air pollution control technology proposed for all point, area, and fugitive sources of air emissions, and the expected level of control. The emissions levels and control efficiencies proposed meet ORCAA's presumed BACT control levels. These BACT levels may be assured through commensurate emissions limits established in the air permit issued by ORCAA, which is staff's recommendation. Air pollution control technologies and measures proposed and corresponding controlled emissions levels are described in the following table.

Table 7: BACT Summary

Emission Source ID	Emission Source	Air Pollution Control Technology & Methods	BACT Emissions Level
TD-01	Truck Dumper – White Wood	Dust Control Plan: • 10 miles per hour (mph) speed limit for all mobile vehicles • Applying water where needed • Using a vacuum truck as needed	General Opacity Standards
TD-02	Truck Dumper – Chips		
TD-03	Truck Dumper – Hog Fuel		
SP-01	Storage Pile – White Wood		
SP-02	Storage Pile – Chips		
SP-03	Storage Pile – Hog Fuel		
VEH-01	Vehicle Traffic – Trucks		
VEH-02	Vehicle Traffic – Front End Loaders		
EP-01.1	Chip Cleaning Line	Cyclo-filter	0.0044 gr/scf 0% opacity
EP-01.2	White Wood Disc Screening	Clean/wet feedstock	General Opacity Standards
EP-01.3	Hog Fuel Feed	Clean/wet feedstock	General Opacity Standards
EP-02	Wet Hammer Mill 1	Cyclo-filter	0.0044 gr/scf 0% opacity
EP-03	Wet Hammer Mill 2	Cyclo-filter	0.0044 gr/scf 0% opacity
EP-04	Drying Line (furnace, drum dryer)	Cyclones (2 units in parallel) WESP RTO	PM_{10}: 8.0 lbs/hr (filterable + condensable) NOx: 53 lbs/hr CO: 42 lbs/hr VOC: 7 lbs/hr HCl: 0.028 lbs/hr Hg: 0.0006 lbs/hr 5% opacity
EP-05	Dry Product Intermediate Storage 1	Silo Filters	0% opacity 98+ % filter efficiency
EP-06	Dry Product Intermediate Storage 2		
EP-07	Dry Hammer Mills (HM, 4 units)	Baghouse or Cyclo-filter (for each dry HM) Baghouse or Cyclo-filter (per each pellet cooler) RCO (serving exhaust from all)	PM_{10}: 2.0 lbs/hr (filterable + condensable) VOC: 8.6 lbs/hr 5% opacity
EP-08	Pelletizers (12 units) Pellet Coolers (2 units)		
EP-09	Milled Dry Product Intermediate Storage	Silo Filter	0% opacity 98+ % filter efficiency
EP-10	Pellet Storage Silo #1	Silo Filters	0% opacity 98+ % filter efficiency
EP-11	Pellet Storage Silo #2		
EP-12	Pellet Storage Silo #3		
EP-13	Pellet Storage Silo #4		
EP-14	Pellet Storage Silo #5		
EP-15	Truck Loadout	Silo Filter and shrouded dump	5% opacity 98+ % filter efficiency

11. Ambient Impact Analysis (Criteria Pollutants)

ORCAA's Rule 6.1.4(a)(3) and the Washington State Implementation Plan under 40 CFR part 52.2470(c), Table 6, require emissions from any new stationary source or modification not delay the attainment date of an area not in attainment, nor cause or contribute to a violation of any National Ambient Air Quality Standard (NAAQS).

PNWRE provided an Ambient Air Quality Analysis (AAQA) in their NOC application, which compares estimated maximum ground-level concentrations of regulated pollutants to the NAAQS for each regulated pollutant. PNWRE's NOC application includes a comprehensive description of the air dispersion modeling analysis performed. PNWRE relied on the AERMOD air dispersion model (Version 22112) to estimate ground-level concentrations. Ambient impacts were estimated based continuous operation and maximum Potential to Emit (PTE) for all pollutants evaluated. ORCAA staff reviewed PNWRE's AAQA, the emissions and other model input parameters, modeling methods, meteorological data, and background ambient air quality data used. Staff concluded that PNWRE's AAQA conservatively estimates ground-level impacts, and that results from the analysis are appropriate for comparing with the NAAQS. Results from PNWRE's analysis shown in the table below sufficiently demonstrates that emissions from the new facility will not cause or contribute to a violation of any Ambient Air Quality Standard (AAQS), which meets this approval criteria.

Table 8: Impacts Compared to NAAQS

Pollutant	Averaging Period	Modeled	Background	Total Impact	NAAQS	Exceeds NAAQS? (Yes/No)
PM_{10} (μg/m³)	24-hour	79.8	42.1	122	150	No
$PM_{2.5}$ (μg/m3)	24-hour	11.6	12.5	24.1	35	No
	Annual	3.86	5.1	8.96	12	No
NO_2 (ppb)	1-hour	68.6	15.1	83.7	100	No
	Annual	0.818	2.6	3.42	53	No
CO (ppm)	1-hour	0.381	1.04	1.42	35	No
	8-hour	0.0809	0.69	0.771	9	No
SO_2	Not modeled – Emissions less than significant emissions rates					
Lead	Not modeled – Emissions less than significant emissions rates					

12. Ambient Impact Analysis (Toxic Air Pollutants)

Washington's regulation titled Controls for New Sources of Toxic Air Pollutants (Air Toxics Rule) under Chapter 173-460 of the Washington Administrative Code applies to new stationary sources of Toxic Air Pollutants (TAP), including modifications to existing emissions units that increase TAP. The purpose of the Air Toxics Rule is to, "… maintain such levels of air quality as will protect human health and safety." The TAPs covered under the Air Toxics Rule include carcinogens and non-carcinogens

The Air Toxics Rule has two independent requirements for new sources and modifications that increase TAP emissions above de-minimis levels:

1) **tBACT:** The new or modified emission units must use Best Available Control Technology to control TAP emissions (WAC 173-460-040(3)(a)).

2) **Ambient Impact:** The NOC application must demonstrate that any increase in TAP from the new or modified emission units are sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects (WAC 173-460-070).

12.1 tBACT

The tBACT requirement applies to any new or modified emission units that triggers the Air Toxics Rule (results in a TAP increase above de-minimis levels), regardless of facility-wide or "net" TAP emissions. The term tBACT means Best Available Control Technology, as that term is defined in WAC 173-400-030, but applied to control of TAP (see BACT definition in Section 10).

Staff's conclusion is that the BACT emissions levels described above for particulate and VOC emissions meets the tBACT requirement for TAP emitted as particulate and TAP emitted as VOC, respectively. These tBACT levels may be assured through the VOC and PM_{10} emissions limits established in the air permit issued by ORCAA, which is staff's recommendation.

12.2 Ambient Impact Review

The Air Toxics Rule provides a multi-tiered, screening approach under WAC 173-460-080 to assess health impacts and demonstrate compliance with the ambient impact requirement under WAC 173-460-070, which is that TAP increases must be sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects.

The "First Tier Review" (Tier 1 Review) is a two-step process. First, the emissions increase of each TAP is compared to its unique Small Quantity Emission Rate (SQER). SQERs are listed for each TAP under WAC 173-460-150. An SQER is the level of emissions of a TAP below which dispersion modeling is not required to demonstrate compliance with the ambient impact requirement. TAP emissions increases used in this first step must be based on the maximum potential to emit considering control or reduction in emissions achievable using the air pollution control technology or methods proposed to meet the tBACT requirement. Any TAP with an increase below its SQER can be presumed to be in compliance with the ambient impact requirement. If this is the outcome, further analysis is not required for that TAP. However, TAPs with emissions increases above their SQER must undergo the second step of the Tier 1 Review.

The second step of the Tier 1 Review requires evaluating TAP impacts against Acceptable Source Impact Levels (ASIL) and is referred to as an ASIL Analysis. An ASIL is the adopted health-based concentration for a TAP below which can be presumed as meeting the ambient impact requirement of WAC 173-460-070. ASILs are provided for each TAP under WAC 173-460-150. An ASIL analysis typically involves using an ambient air dispersion model to estimate ambient concentrations resulting from TAP emissions increases and considering air dispersion and local meteorological characteristics of the source. If the modeled impact of the increase in emissions of a TAP does not exceed its corresponding ASIL, the ambient impact requirement of WAC 173-460-070 may be considered met and the First Tier Review is completed for that TAP.

Emissions rates used to support an ASIL Analysis must be based on the maximum potential to emit considering control or reduction in emissions achievable using the air pollution control technology or methods proposed to meet the tBACT requirement. In addition, the Air Toxics Rule allows TAP reductions from existing emission units not subject to review to be subtracted or “netted out” from TAP increases, provided the reductions are included in the approval order as enforceable voluntary emission limits and meet all the requirements of WAC 173-460-071. These requirements include:

(1) The voluntary emissions reductions must be enforceable through a regulatory order issued by the air permitting agency.
(2) The approval order enforcing the voluntary emissions reductions must include monitoring, recordkeeping, and reporting requirements sufficient to ensure the reductions are maintained.
(3) The agency’s preliminary determination to approve the voluntary emissions reductions are subject to a 30-day public notice and comment period and opportunity for a public hearing.

For pollutants with ambient concentrations found to be greater than their ASIL, a “Second Tier Review” (Tier 2 Review) by the Washington Department of Ecology (Ecology) is required. An application for a Tier 2 Review by Ecology is referred to a Tier 2 petition. Tier 2 petitions must include a Health Impacts Assessment (HRA) and estimated ambient TAP impacts based on refined air dispersion modeling. Ecology will not act on a Tier 2 petition unless a written preliminary determination on the NOC application for the new or modified TAP source and a draft approval order have been completed by the local agency with jurisdiction. Ecology’s review and approval of a Tier 2 petition is contingent on a finding that TAP impacts meet the ambient impact requirement of WAC 173-460-070 that increases in TAP emissions are sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects. If Ecology recommends denial of a Tier 2 petition, the permitting authority may not approve the project. The applicant then has the option of submitting a petition for a “Third Tier Review” (Tier 3 Review) by Ecology and a request for a risk management decision.

PNWRE conducted a Tier 1 Review of TAP according to the methods prescribed in Washington’s Air Toxics Rule. The Tier 1 review was based continuous operation and maximum PTE for all TAP emitted. PTE for most of the TAP expected to be emitted are below their respective SQER level and, therefore, do not require modeling for demonstrating compliance with the ambient impact requirement. Several TAP were found to be emitted above their respective SQER level. For these TAP, PNWRE applied the same modeling methodology as described above to estimate ground level impacts. Staff reviewed this analysis including PTE emission rate estimates, model input parameters, modeling methods, and meteorological data. Staff concluded that PNWRE’s ASIL analysis conservatively estimates ground-level TAP impacts, and that results from the analysis are appropriate for comparing with ASILs for each TAP evaluated. Results demonstrate that TAP emissions from the new facility will be sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects, which meets this approval criteria.

Table 9: ASIL Analysis

TAP Name	Averaging Period	ASIL ($\mu g/m^3$)	Projected Impact ($\mu g/m^3$)	Pass Tier 1 (Yes/No)
12-Dimethylbenz(a) anthracene	year	8.50E-06	1.42E-08	Yes
Acetaldehyde	year	3.70E-01	8.58E-03	Yes
Acrolein	24-hr	3.50E-01	4.09E-02	Yes
Benzene	year	1.30E-01	1.03E-02	Yes
Formaldehyde	year	1.70E-01	1.33E-02	Yes
Arsenic	year	3.00E-04	6.21E-06	Yes
Beryllium	year	4.20E-04	3.12E-07	Yes
Cadmium	year	2.40E-04	1.89E-06	Yes
Chromium hexavalent	year	4.00E-06	9.68E-07	Yes
Manganese	24-hr	3.00E-01	1.14E-02	Yes
Mercury	24-hr	3.00E-02	5.03E-04	Yes
Nickel	year	3.80E-03	1.05E-05	Yes

13. Requirements for Major Stationary Sources and Major Modifications to Major Stationary Sources

Projects that are major stationary sources and major modifications to major stationary sources as defined in 40 CFR 52.21(b) may be subject to permitting requirements under WAC 173-400-700 through 173-400-860.

Based on the facility's PTE, the pellet manufacturing facility proposed by PNWRE is not a "Major Stationary Source" as defined in 40 CFR 52.21(b) and not subject to the permitting program required by WAC 173-400-700 through WAC 173-400-860. Therefore, these permitting requirements do not apply. This conclusion will be assured through annual limits.

14. Title V Air Operating Permit (AOP) Implications

The State of Washington program pursuant to Title V of the federal Clean Air Act is governed under Chapter 173-401 WAC, the Washington Air Operating Permit Program. Chapter 173-401 WAC requires existing major stationary sources to operate in compliance with an approved Air Operating Permit (AOP). Major stationary sources are those stationary sources with a potential to emit which is greater than 100 tons per year of any criteria pollutant, greater than 10 tons per year of any hazardous air pollutants (HAP), or greater than 25 tons per year of any combination of HAP.

Based on the facility's PTE, the pellet manufacturing facility proposed by PNWRE is a "Major Stationary Source" as defined in Chapter 173-401 WAC. Specifically, the facility will be a major source of both NO_x and CO. Therefore, the facility will be subject to Title V of the federal Clean Air Act and will be required to submit a Title V Air Operating Permit (AOP) application within twelve months after commencing operation.

15. Environmental Justice Considerations

EPA defines Environmental Justice (EJ) as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The purpose of an EJ review in conjunction with an air permitting action is to ensure no group of people bear a disproportionate share of the negative environmental consequences as the result of the permitting action. Further, ORCAA strives to engage the affected community effectively and meaningfully regarding the permitting action, and to ensure compliance with obligations pursuant to Title VI of the Civil Rights Act.

With respect to factoring EJ into air permitting decisions, EPA Region 10 expects air agencies to:

- Identify overburdened communities;
- Engage with communities;
- Evaluate cumulative impacts; and,
- Use available authority to minimize emissions.

However, EPA Region 10 does not expect air agencies to use the Clean Air Act's authorities to address existing disproportional impacts to communities when implementing New Source Review in areas that are "attainment/unclassifiable" with respect to meeting the NAAQS.

The following subsections describe how these expectations from EPA Region 10 were met.

15.1 Identify Overburdened Communities

The initial step in an EJ review is to identify any affected populations or communities of concern and to identify whether they are disproportionally impacted.

ORCAA used EPA's environmental justice screening and mapping tool, EJScreen, to answer this first part of this question. An EJScreen Community Report was generated for Grays Harbor County. The Community Report estimates a minority population of 31%, with approximately 8% of the total population speaking Spanish and 1% speaking another non-English language at home. All demographic indicators were below the 80th percentile for the nation. Likewise, the Community Report indicates that Grays Harbor County is below the 80th percentile for all environmental indicators. Environmental indicators above the 80th percentile is an indication that a community is already disproportionately impacted. Therefore, ORCAA staff's conclusion is that the project impact area does not include any preexisting, overburdened communities. A copy of the Community Report with more detailed information will be filed as part of the supporting documentation for the project.

Pre-existing air quality impacts were evaluated based on ambient air quality monitoring data and designation of the area with respect to maintaining compliance with the NAAQS. If air quality in a geographic area meets or is cleaner than a national standard based on ambient air monitoring data, it is called an attainment area and designated "attainment/unclassifiable." Areas may also be presumed "attainment/unclassifiable" based on population density and air pollutant emissions being below certain thresholds. For this case, the project impact area and Grays Harbor County as a whole is designated "attainment/unclassifiable." Therefore, there are no preexisting nonattainment issues identified within the County. Furthermore, the ambient air quality analysis provided in PNWRE's application demonstrates that air emissions will not cause or contribute to any exceedance of a NAAQS. Therefore, ORCAA staff's conclusion is that there are no indications of any existing disproportional impacts to communities of concern within the project impact area.

15.2 Engage with Communities

A public hearing will be conducted on ORCAA's Preliminary Determination to approve PNWRE's application to construct the new pellet mill. ORCAA's current public noticing and outreach policies and procedures are sufficient to effectively provide notice for the public hearing and meaningfully engage with the community surrounding the proposed project site and include:

- Issuing a press release of the Public Notice.
- Posting the Public Notice, application, and ORCAA's Preliminary Determination on ORCAA's web site.
- Post Hard Copies – Post hard copies of the Public Notice and ORCAA's Preliminary Determination at a local location near the project site. For this case, copies will be posted at the nearest library, Hoquiam Timberland Library located at 420, 7th St. in Hoquiam.
- Emailing the Public Notice to environmental agencies, local tribal nations, organizations and advocacy groups, and persons and entities who have expressed interest in the case.

After the public hearing and considering all comments submitted on the case, ORCAA will prepare a written Responsiveness Summary. The Responsiveness summary will include a description of ORCAA's Final Determination as well as responses to questions and comments received during the comment period and public hearing. ORCAA's Responsiveness Summary will be forwarded to all persons and entities who submitted comments during the comment period and public hearing.

15.3 Evaluate Cumulative Impacts

The air permitting action for this case did not trigger a cumulative impacts analysis under either the Clean Air Act or the Washington Clean Air Act. However, with respect to air impacts alone, results from the Ambient Air Quality Analysis included in PNWRE's application do reflect background ambient concentrations for each criteria air pollutant evaluated. Also, the modeling protocol specified that air emissions from existing and planned facilities within the project impact area should be included in the analysis. However, because of the proposed location of new pellet mill, it was determined by PNWRE's environmental consultant that impacts of emissions from existing sources of air pollution are already reflected in the background concentrations used. Therefore, emissions from nearby sources of air pollution were not explicitly modeled. PNWRE's environmental consultant also determined that planned sources in the Grays Harbor area are not likely to cause significant impacts within the project impact area. Therefore, the air analysis can be considered a cumulative analysis with respect to the NAAQS.

15.4 Use Available Authority to Minimize Emissions

As described elsewhere in this report, ORCAA applied existing New Source Review authorities provided under the Clean Air Act and the Washington Clean Air Act to minimize emissions from the proposed new pellet mill. Principally among these authorities is the requirement to use BACT for controlling emissions. The BACT requirement was applied and corresponding BACT emissions limits are included in the air permit.

16. Recommended Conditions of Approval

The following conditions of approval were determined necessary for assuring compliance with applicable air regulations and standards and protecting air quality. Recommended conditions of approval will become effective once the Approval Order is issued:

1. **Approved Equipment.** The new wood pellet manufacturing facility as described in Notice of Construction application No. 23NOC1606, application addendums, and the associated Final Determination is approved for construction and operation subject to conditions in this Order of Approval.
   [Regulatory Basis: ORCAA Rule 6.1(a); ORCAA Rule 6.1.2(l); 40 CFR Part 52.2470(c), Table 6]

2. **Preapproval Required.** Prior approval by ORCAA may be required for the following as specified in ORCAA Rule 6.1:
   a) Construction, installation, or establishment of any stationary source;
   b) Modification to any existing stationary source;
   c) Replacement or substantial alteration of emission control technology installed on an existing stationary source; or,
   d) Deviations from the approved plans, drawings, data, and specifications of the stationary sources listed in the following table:

Source ID	Approved Stationary Sources	Approved Control Technologies and Measures
TD-01	Truck Dumper – White Wood (75' Back-On Truck Dump Platform)	Dust control plan
TD-02	Truck Dumper – Chips (75' Back-On Truck Dump Platform)	Dust control plan
TD-03	Truck Dumper – Hog Fuel (75' Back-On Truck Dump Platform)	Dust control plan
SP-01	Storage Pile – White Wood	Dust control plan
SP-02	Storage Pile – Chips	Dust control plan
SP-03	Storage Pile – Hog Fuel	Dust control plan
VEH-01	Vehicle Traffic – Trucks	Dust control plan
VEH-02	Vehicle Traffic – Front End Loaders	Dust control plan
EP-01.1	Chip Cleaning Line	Cyclo-filter
EP-01.2	White Wood Disc Screening	None
EP-01.3	Hog Fuel Feed	None
EP-02	Wet Hammer Mill 1	Cyclo-filter
EP-03	Wet Hammer Mill 2	Cyclo-filter
EP-04	Drying Line Emissions Units (EU): EU 04.1 – Furnace: • Fuel – Biomass • Start-up Fuel – Biomass + Diesel • 4 reciprocating grate zones • Heat rate 165 MMBtu/hr total • Under-fire and overfire air + secondary combustion zone EU 04.2 - Drum dryer: • Ø 20' by 90' long • Feedstock input - 85.5 ton/h @ 45% mc) • Operating temperature around 750°F • Operating airflow around 124,031 ACFM	Cyclones (2 units in parallel) Wet Electrostatic Precipitator: • Output Rating: 70 kilovolt, 1500 milliamp. • Input: 105 KVA, 460 V / 3-phase / 60 Hz. • 3 Fields and 621 Ø10'' tubes Regenerative Thermal Oxidizer: • 4 chambers • 20.2 MMBtu/hr gas consumption
EP-05	Dry Product Intermediate Storage Silo 1:	Silo vent filters

<table>
<tr><th>Source ID</th><th>Approved Stationary Sources</th><th>Approved Control Technologies and Measures</th></tr>
<tr><td></td><td>• Volume (gross) 45,732 ft^3</td><td></td></tr>
<tr><td>EP-06</td><td>Dry Product Intermediate Storage Silo 2:
• Volume (gross) 45,732 ft^3</td><td>Silo vent filters</td></tr>
<tr><td>EP-07</td><td>Dry Hammer Mills (DHM, 4 units):
• 15.5 ton/h design capacity each
• 900 HP each</td><td rowspan="2">Baghouses or Cyclo-filters (4 units, one for each dry HM):
• Each exhausting to RCO

Baghouses or Cyclo-filters (2 units, one per each pellet cooler):
• Each exhausting to RCO

Regenerative Catalytic Oxidizer (RCO):
• Controls exhaust from DHMs, Pelletizers, and Pellet Coolers
• Design Airflow = 29,500 ACFM from DHM + 76,000 ACFM from pelleting line
• 5.8 MMBtu/hr design natural gas consumption</td></tr>
<tr><td>EP-08</td><td>Pellet Mill Emissions Units (EU)

EU 08.1 - Pelletizers (12 units):
• 500 HP each
• 5.5 ton/h

EU 08.2 - Pellet Coolers (2 units)</td></tr>
<tr><td>EP-09</td><td>Milled Dry Product Intermediate Storage Silo
• Volume (gross) 45,732 ft3</td><td>Silo vent filters</td></tr>
<tr><td>EP-10</td><td>Pellet Storage Silo #1</td><td rowspan="5">Silo vent filters</td></tr>
<tr><td>EP-11</td><td>Pellet Storage Silo #2</td></tr>
<tr><td>EP-12</td><td>Pellet Storage Silo #3</td></tr>
<tr><td>EP-13</td><td>Pellet Storage Silo #4</td></tr>
<tr><td>EP-14</td><td>Pellet Storage Silo #5</td></tr>
<tr><td>EP-15</td><td>Truck Loadout</td><td>Silo Filter and shrouded dump chute</td></tr>
</table>

[Regulatory Basis: ORCAA Rule 6.1(a); ORCAA Rule 6.1.2(l); WAC 173-400-110(2); WAC 173-400-111(10)]

3. **Cyclo-filters and Baghouses.** In addition to applicable general emissions limits and standards, the following limits and standards apply to all cyclo-filters and baghouses emitting directly to the ambient air:
   a) Cyclo-filters and baghouses must be operating whenever the pellet plant is operating.
   b) All cyclo-filters and baghouses must be equipped with a working manometer to read pressure drop across the filters.
   c) Visible emissions must not exceed 0% opacity as measured in accordance with EPA 40 CFR Part 60 Appendix A Method 9.
   d) Total filterable emissions must not exceed 0.004 grains per standard cubic feet, 1-hour average, measured in accordance with EPA Method 5 in Appendix A to 40 CFR Part 60, or an alternative method approved by ORCAA.
   e) Baghouses and Cyclo-filters must exhaust through a vertical stack that provides suitable conditions for stack testing per Method 5.

   [Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

4. **Silo Vents.** In addition to applicable general emissions limits and standards, the following limits and standards apply to all silo vents:
   a) Silo vents must be equipped with suitable filters capable of at least 98% filtration efficiency for the size range of particles emitted.
   b) Filter efficiency must be confirmed and documented by appropriate certification and/or guarantees provided by the filter manufacturer.

c) Visible emissions from any silo vent must not exceed 0% opacity as measured in accordance with EPA 40 CFR Part 60 Appendix A Method 9.

[Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

5. **Drying Line.** In addition to applicable general emissions limits and standards, the following limits and standards apply to emissions from the drying line (furnace and drum dryer):
   a) Emissions from the RTO stack must not exceed the following limits:

Pollutant	Limit	Reference Test Methods
PM_{10} (filterable + condensable)	12.7 lbs/hr, 1-hr ave	EPA Methods 1-4, 5, 201, or 201A, plus EPA Reference Method 202 from 40 CFR Part 60 Appendix A-1, or equivalent methods agreed to in advance by ORCAA. Use of EPA Reference Method 5 assumes all filterable particulate is PM10.
NO_x	53 lbs/hr, 1-hr ave	EPA Methods 1-4, and 20 from 40 CFR Part 60 Appendix A, or an equivalent method agreed to in advance by ORCAA.
CO	42 lbs/hr, 1-hr ave	EPA Methods 1-4, and 10 from 40 CFR Part 60 Appendix, or an equivalent method agreed to in advance by ORCAA.
VOC (Per EPA's Wood Products Protocol 1)	8.92 lbs/hr, 1-hr ave	EPA Method 1-4, and 25A from 40 CFR Part 60 Appendix A, or equivalent method agreed to in advance by ORCAA. Concurrent testing for both methanol and formaldehyde. VOC must be determined using EPA Method OTM-26 (see condition 8). Formaldehyde and methanol testing methods (or equivalent methods agreed to in advance by ORCAA): • Methanol: EPA Method 308 or 320 from 40 CFR Part 63 Appendix A or NCASI method CI/WP-98.01 • Formaldehyde: EPA Method 316 or 320 from 40 CFR Part 63 Appendix A or NCASI Method CI/WP-98.01
HCl	0.028 lbs/hr, 1-hr ave	EPA Methods 1-4, and 26 or 26A (M26 or M26A) from 40 CFR part 60, appendix A–8.
Hg	0.0006 lbs/hr, 1-hr ave	EPA Methods 1-4, and 29, 30A, or 30B from 40 CFR Part 60, appendix A-8. For Method 29, collect a minimum of 4 dscm per run; for Method 30A or Method 30B, collect a minimum sample as specified in the method; for ASTM D6784 collect a minimum of 4 dscm.
Opacity	5%, 6-minute average	EPA Method 9 from 40 CFR Part 60 Appendix A.

   b) At all times, except during startup as allowed by condition 9, emissions from the furnace and dryer must exhaust through the air pollution control system consisting of the pair of cyclones, Wet Electrostatic Precipitator (WESP) and Regenerative Thermal Oxidizer (RTO).
   c) The WESP must be equipped with a means to continuously monitor and record VDC and mADC of each WESP field.
   d) The cake produced by the WESP decanter centrifuge must be properly disposed of and must not be recycled back into the furnace fuel feed system or in the pellet feedstock.
   e) All combustion chambers of the RTO must be equipped with thermocouples to continuously measure and record combustion chamber temperature.
   f) Except as provided by conditions 9 and 10, emissions exhausting through either the furnace or dryer bypass stacks are presumed to be in violation of the limits and standards of this condition.

   [Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

6. **Pellet Mill.** In addition to applicable general emissions limits and standards, the following limits and standards apply to emissions from the dry hammer mills, pelletizers and pellet coolers:

a) At all times, exhaust from the dry hammer mills must exhaust through their respective baghouses and the Regenerative Catalytic Oxidizer (RCO).
b) At all times, emissions from the pellet coolers must exhaust through their respective baghouses and the RCO.
c) All baghouses must be equipped with a working manometer to read pressure drop across the filters.
d) All combustion chambers of the RCO must be equipped with thermocouples to continuously measure and record combustion chamber temperature directly after the catalyst bed.
e) Emissions from the RCO stack must not exceed the following limits:

Pollutant	Limit	Reference Test Methods
PM_{10} (filterable + condensable)	2.0 lbs/hr, 1-hr ave	EPA Methods 1-4, 5, 201, or 201A, plus EPA Reference Method 202 from 40 CFR Part 60 Appendix A-1, or equivalent methods agreed to in advance by ORCAA. Use of EPA Reference Method 5 assumes all filterable particulate is PM10.
VOC (Per EPA's Wood Products Protocol 1)	8.6 lbs/hr, 1-hr ave	EPA Method 1-4, and 25A from 40 CFR Part 60 Appendix A, or equivalent method agreed to in advance by ORCAA. Concurrent testing for both methanol and formaldehyde. VOC must be determined using EPA Method OTM-26 (see condition 8). Formaldehyde and methanol testing methods (or equivalent methods agreed to in advance by ORCAA): • Methanol: EPA Method 308 or 320 from 40 CFR Part 63 Appendix A or NCASI method CI/WP-98.01 • Formaldehyde: EPA Method 316 or 320 from 40 CFR Part 63 Appendix A or NCASI Method CI/WP-98.01
Opacity	5%, 6-minute average	EPA Method 9 from 40 CFR Part 60 Appendix A.

[Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

7. **Facility-wide Annual Emissions Limits.** Facility-wide annual emissions must not exceed the following limits in terms of tons per consecutive 12-month period:

Pollutant	Facility-Wide Limit (tons/12-month period)	Compliance Determination Methods
PM_{10} (filterable + condensable)	98	Compliance determined by calculating tons of each pollutant based on ORCAA-approved emissions factors and the actual fuels combusted, tons of pellets produced, and operating schedule over the previous 12-month period according to condition 8.
NOx	230	
CO	185	
$VOC_{\text{as propane}}$	67	

[Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

8. **Monitoring Facility-Wide Emissions.** Compliance with facility-wide annual emissions must be determined monthly by calculating facility-wide total tons of each pollutant for the previous 12-consecutive month period as follows:
   a) For the drying line:
      i) PM10 and VOC emissions must be calculated based on emission factors in terms of pounds per oven dried ton of pellets (lb/ODT) determined through source testing, times the actual tons of pellets produced, or an alternative method of calculation approved by ORCAA. Emissions factors must be updated with each required source test.

ii) VOC emissions must be determined using EPA's Interim VOC Measurement Protocol for the Wood Products Industry – July 2007 (otherwise known as Other Test Method 26 or OTM-26) and includes quantification of the individual contributions of methanol and formaldehyde. VOC emissions calculated using this method are referred to as "WPP1 VOC".

iii) NOx and CO emissions must be determined using data from the NOx and CO continuous emission rate monitoring systems (CERMS) required by condition 11.

iv) Emissions from the dryer line during any period when pellets are not produced such as, but not limited to, startup, shutdown, and idle mode, must be included in the facility-wide total emissions.

b) For the pellet mill:

i) Emissions of NOx, CO, PM10 and VOC must be calculated based on emission factors in terms of pounds per oven dried ton of pellets produced (lb/ODT) determined through source testing, times the actual tons of pellets produced, or an alternative method of calculation approved by ORCAA. Emissions factors must be updated with each required source test.

ii) VOC emissions must be determined using EPA's Interim VOC Measurement Protocol for the Wood Products Industry – July 2007 (otherwise known as Other Test Method 26 or OTM-26) and includes quantification of the individual contributions of methanol and formaldehyde. VOC emissions calculated using this method are referred to as "WPP1 VOC".

iii) Emissions from the dryer line and pellet mill during any periods when pellets are not produced such as, but not limited to, startup, shutdown, and idle mode, must be included in the facility-wide total emissions.

c) PM10 emissions from process units (baghouses, cyclo-filters, silo vents) must be calculated based on 0.004 grains per standard cubic feet, and each unit's exhaust rate and the hours they operated, or an alternative method of calculation approved by ORCAA.

d) PM10 emissions from road dust created by traffic (front end loaders and trucks) must be calculated based on equations from AP-42 Section 13.2.2 and vehicle miles traveled at the facility by front end loaders and haul truck, or an alternative method of calculation approved by ORCAA.

e) PM10 emissions from process fugitive sources (truck dumpers, storage piles, chip screening) must be calculated based on equations from Particulate Matter Potential to Emit Emissions Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country (EPA Region 10, May 8, 2014) and actual production over the 12-month period, or an alternative method of calculation approved by ORCAA.

[Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

9. **Furnace/Dryer Startups.** In addition to applicable general emissions limits and standards, the following requirements apply to operation of the furnace and drum dryer during startups:

a) Cold startup must be initiated using clean, dry fuels including dry wood and ultra-low sulfur diesel.

b) Furnace exhaust during a startup may bypass the drying line air pollution control system through the furnace bypass stack provided:

  i) Bypass of the air pollution control system (cyclones, WESP, RTO) does not exceed 30 minutes during any single startup;
  ii) The number of startups that bypass the air pollution control systems and exhaust through the furnace bypass stack does not exceed 10 startups per each 12-month period;
  iii) Operation of the air pollution control system including the WESP and RTO are initiated so that these units are fully functional and ready to accept emissions from the furnace and dryer as soon as possible after a startup is initiated;
  iv) Exhausting through the air pollution control system is initiated as soon as possible after a startup is initiated.

c) A sufficient amount of clean dry fuel must be maintained at all times to minimize emissions during startups.

[Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

10. **Furnace/Dryer Planned Shutdowns.** In addition to applicable general emissions limits and standards, the following requirements apply to operation of the furnace and drum dryer during planned shutdowns:
    a) The air pollution control system must be fully functioning during a planned shutdown;
    b) Exhaust of hot gases through the furnace bypass stack during a planned shutdown may commence once there is no combustion occurring on the furnace grates;
    c) Exhaust of hot gases through the dryer bypass stack during a planned shutdown may commence once there is no combustion on the furnace grates and no material remaining in the drum dryer.

    [Regulatory Basis: ORCAA Rule 6.1.4(a)(2); WAC 173-400-113(2); WAC 173-460-040(3)]

11. **Dryer Line Emissions Monitoring.** Ongoing compliance with the drying line NOx and CO limits in condition 5a must be continuously monitored using continuous emission rate monitoring systems (CERMS) for measuring NOx and CO pollutant mass rates in lb/hr.
    a) The NOx and CO CERMS must meet applicable requirements from 40 CFR Part 60, Appendix B.
    b) The NOx and CO CERMS must meet applicable procedures and requirements from 40 CFR Part 60, Appendix F, including requirements and schedules for Relative Accuracy Test Audits (RATA).

    [Regulatory Basis: ORCAA Rule 6.1.4(a)(2)]

12. **Performance Testing.** The following requirements apply to performance testing including RATA of the NOx and CO CERMS:
    a) Performance testing must be conducted consistent with an ORCAA approved test plan.
    b) A test plan must be submitted to ORCAA for approval at least 45 days prior to conducting a required performance test.
    c) The test plan must describe:
       i) Air emissions test methods;
       ii) Target operating conditions for testing;
       iii) Performance indicators that will be monitored during the testing; and,
       iv) Methods for calculating emissions factors.

d) Performance testing must be conducted during operating conditions with highest emissions unless otherwise approved by ORCAA.
e) Compliance with each emissions limit must be determined from the average of three separate 1-hour test runs unless otherwise approved by ORCAA.
f) A test report must be submitted to ORCAA within 60-days of conducting any performance test.
g) The test report must include for each test run:
    i) The concentrations and pollutant mass rates in pounds per hour for each pollutant measured;
    ii) Emissions factors in terms of pounds of pollutant per oven dry ton of pellets produced;
    iii) The rate of pellet production;
    iv) Key operating indicators of the source and pollution control technology.
h) Performance testing of the RTO and RCO to demonstrate compliance with emissions limits and determine emissions factors must be completed within 180-days of commencing operation of the facility and repeated on a 5-year schedule thereafter.
i) RATA of the NOx and CO CERMS must be conducted concurrently with any required performance test of the RTO and according to the requirements from 40 CFR Part 60, Appendix F.
j) Testing for formaldehyde and methanol must be conducted concurrently with VOC testing.

[Regulatory Basis: ORCAA Rule 6.1.4(a)(2)]

13. **Operation and Maintenance Plan.** The owner or operator must devise and implement an operation and maintenance plan (O&M Plan) to minimize emissions from all sources and modes of operation at the facility. The O&M Plan must be submitted to ORCAA for approval within the first six months from commencement of operation of the facility. The O&M Plan must include, but is not limited to, the following elements:
    a) Dust prevention plan describing company policies for vehicle speed limits, application of dust suppressants to haul roads, minimizing material drop heights, surveying the facility for fugitive dust; procedures for minimizing for fugitives during truck loading; and minimizing visible dust during feedstock and fuel dumps;
    b) Cyclo-filter maintenance plan that describes how acceptable operating pressure drop ranges will be determined and applied, how and when cyclo-filters will be inspected, and how filters will be maintained;
    c) WESP maintenance plan that describes how acceptable performance indicators will be determined, how quality of flush water will be maintained, how centrifuge cake will be disposed of, and detailed startup and shutdown procedures;
    d) RTO maintenance plan that describes how RTO performance will be monitored, when thermocouples will be changed out, and detailed startup and shutdown procedures;
    e) RCO maintenance plan that describes how RCO performance will be monitored, how performance of the catalyst will be monitored and maintained, and detailed startup and shutdown procedures;
    f) Detailed startup and shutdown procedures for the furnace and dryer;
    g) How proper combustion in the furnace will be monitored and maintained;

h) Plan describing the means and methods for monitoring time emissions bypass air pollution control systems for both the dryer line and pellet mill.

[Regulatory Basis: ORCAA Rule 6.1.4(a)(2)]

14. **Emissions Inventory.** On an annual basis, the owner or operator must complete and submit to ORCAA an annual emissions inventory (inventory) of all regulated pollutants from all emissions units. Actual emissions must be based on actual operating data and ORCAA approved emission factors. The inventory must be accompanied by all associated calculations and data and must be certified by a Responsible Official as defined under WAC 173-401-200(27) as being true and accurate.
[Regulatory Basis: ORCAA Rule 8.11]

15. **Required Records.** The following records must be kept and made available when requested:
    a) The O&M plan required by condition 13;
    b) Manufacturer specifications for all cyclo-filters and baghouses as built identifying design air flow rates, pressure drops, and filtering efficiencies;
    c) Manufacturer specified or certified filtering efficiency for all silo vent filters;
    d) The number of truck dumps per day;
    e) Tons of pellets produced per day;
    f) Combustion chamber temperatures of the RTO and RCO;
    g) WESP KVA and MA of each of the three WESP fields;
    h) Number of occurrences, duration for each occurrence, and reason for emitting through either the furnace or drum dryer bypass stacks;
    i) The amount of diesel and clean, dry wood used during each cold startup;
    j) Daily record of the operating pressure drop across each baghouse and cyclo-filter;
    k) Monthly record of emissions calculations to demonstrate compliance with the emissions limits in condition 7; and,
    l) NOx and CO CERMS certification and quality assurance records.

    [Regulatory Basis: ORCAA Rule 8.11]

16. **Required Notifications, Reports and Applications.** The following notifications, reports, and applications must be submitted to ORCAA by the deadline specified:
    a) Any updates or revisions to the O&M plan required by condition 13 must be submitted to ORCAA for approval prior to implementing them;
    b) Notification by phone or email message of any complaint as soon as possible but in no case later than 24 hours of receiving the complaint;
    c) Title V Air Operating Permit (AOP) application within 12 months from commencing operation of the facility;
    d) Notification by phone or email of any emissions through the furnace or drum dryer bypass stacks as soon as possible but in no case later than 24 hours from initiation of the event;
    e) Notification of any excess emissions determined through the NOx or CO CERMS as soon as possible but in no case later than 24 hours from the beginning of each event; and,
    f) Performance testing results within 45-days of conducting any performance test.

    [Regulatory Basis: WAC 173-401-500; ORCAA Rule 8.11; ORCAA Rule 8.7; ORCAA Rule 5.1]

17. Preliminary Determination to Approve

This Final Determination documents ORCAA staff's determinations with respect to the applicable criteria of approval in ORCAA Rule 6.1 and the Washington State Implementation Plan under 40 CFR part 52.2470(c), Table 6. ORCAA staff recommends approval of PNWRE's proposal to construct a new wood pellet manufacturing facility, provided the conditions identified in Section 16 of this Preliminary Determination are implemented through an enforceable Order of Approval (AKA: Air Permit). Emissions calculations, modeling summary and other data supporting this Preliminary Determination are provided in the permit application.

~ end of section ~

Applicable General Performance Standards that apply to Pacific Northwest Renewable Energy (PNWRE) in Hoquiam, Washington

Title Citation	Brief Description (Consult rule/regulation for specific requirements)	Applies to
False or Misleading Statements ORCAA Rule 7.2	Prohibits any person from willfully making a false or misleading statement to the Board or its representative as to any matter within the jurisdiction of the Board.	Applies generally to all air pollution sources
Unlawful Reproduction or Alteration of Documents ORCAA Rule 7.3	Prohibits reproducing or altering, or causing to be reproduced or altered, any order, registration certificate or other paper issued by the Agency if the purpose of such reproduction or alteration is to evade or violate any provision of these Regulations or any other law.	Applies generally to all air pollution sources
Display of Orders and Certificates ORCAA Rule 7.4	Any order or registration certificate required to be obtained by these Regulations shall be available on the premises designated on the order or certificate. In the event that the Agency requires order or registration certificate to be displayed, it shall be posted. No person shall mutilate, obstruct, or remove any order or registration certificate unless authorized to do so by the Board or the Executive Director.	The Approval Order issued in conjunction with this NOC approval must be retained on site.
General Requirements WAC 173-400-040(1)(c) ORCAA Rule 8.3	All emissions units are required to use reasonably available control technology (RACT).	Applies generally to all air pollution sources.
Visible Emissions WAC 173-400-040(2) ORCAA Rule 8.2(a)	Prohibits emissions with opacity of greater than 20% for more than three (3) minutes in any one hour.	Applies generally to all air pollution sources
Sulfur Dioxide WAC 173-400-040(7)	No person shall cause or allow the emission from any emissions unit in excess of one thousand ppm of sulfur dioxide on a dry basis, corrected to seven percent oxygen for combustion sources, and based on the average of any period of sixty consecutive minutes.	Applies generally to facilities that emit Sulfur Dioxide.
Control Equipment Maintenance and Repair ORCAA Rule 8.8	ORCAA Rule 8.8 requires that all air contaminant sources keep any process and/or air pollution control equipment in good operating condition and repair.	Applies generally to all air pollution control devices.
Fallout WAC 173-400-040(3) ORCAA Rule 8.3(e)	Prohibits particulate emissions from any source to be deposited, beyond the property under direct control of the owner or operator of the source, in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material was deposited.	Applies generally to all air pollution sources.
Fugitive Emissions WAC 173-400-040(4)(a)	The owner or operator of any emissions unit engaging in materials handling, construction, demolition, or other operation which is a source of fugitive emission shall take reasonable precautions to prevent the release of air contaminants from the operation.	Applies generally to any activity that results in fugitive emissions.

Title **Citation**	**Brief Description** **(Consult rule/regulation for specific requirements)**	**Applies to**
ORCAA Rule 8.3(c)		
Odor WAC 173-400-040(5) ORCAA Rule 8.5	ORCAA Rule 8.5 contains general requirements for controlling odors and a general prohibition of odors that unreasonably interfere with the use or enjoyment of a person's property.	Applies generally to all air pollution sources.
Emissions Detrimental to Persons or Property WAC 173-400-040(6) ORCAA Rule 7.6	Prohibits causing or allowing the emission of any air contaminant from any source if it is detrimental to the health, safety, or welfare of any person, or causes damage to property or business.	Applies generally to all air pollution sources
Concealment and Masking WAC 173-400-040(8) ORCAA Rule 7.5	Prohibits installation or use of any device or means to conceal or mask emissions of an air contaminant, which causes detriment to health, safety, or welfare of any person, or causes damage to property or business.	Applies generally to all air pollution sources
Fugitive Dust WAC 173-400-040(9)	The owner or operator of a source or activity that generates fugitive dust must take reasonable precautions to prevent that fugitive dust from becoming airborne and must maintain and operate the source to minimize emissions.	Applies to any activity that results in fugitive dust.
Particulate Standards for Process units ORCAA Rule 8.3(a) WAC 173-400-060	Prohibits emissions from any process unit in excess of 0.1 grain/dscf. EPA test methods from 40 CFR Appendix A shall be used should demonstration of compliance be required.	Applies to generally to all stationary process units that exhaust to the atmosphere.
Particulate Standards for Combustion Units ORCAA Rule 8.3(a) WAC 173-400-050(1)	Prohibits emissions from any combustion unit in excess of 0.1 grain/dscf. EPA test methods from 40 CFR Part 60 Appendix A shall be used should demonstration of compliance be required.	Applies generally to all stationary combustion units that exhaust to the atmosphere.
Excess Emissions Provisions WAC 173-400-107; WAC 173-400-108 ORCAA 8.7	Requires excess emissions be reported to the Agency as soon as possible and within 24 hours and establishes criteria qualifying excess emissions as unavoidable.	Applies generally to all air pollution sources
Record Keeping and Reporting. ORCAA Rule 8.11	Requires the following: 1. Maintenance of records on the nature and amounts of emissions and other related information as deemed necessary by ORCAA; 2. Reporting of emissions to ORCAA upon request.	Required of all facilities registered with ORCAA.

Trinity Consultants
8705 SW Nimbus Ave, Ste 350, Beaverton, OR 97008 / P 503.713.5550 / trinityconsultants.com

March 29, 2023

Danny Phipps
Air Quality Engineer 1
Southwest Clean Air Agency
11815 NE 99th Street, Suite 1294
Vancouver, WA 98682
Danny@swcleanair.org

RE: Completeness Determination for ADP Application CO-1057 dated August 25, 2022

Dear Danny Phipps:

Pinnacle Renewable Holdings (USA) Inc., branded as part of Drax (Drax) submitted an Air Discharge Permit (ADP) application (the Application) to the Southwest Clean Air Agency (SWCAA) in July 2022 for a new greenfield wood pellet processing facility in Longview, WA (the Facility). This letter includes information on the following items: (a) a summary of major changes to the Facility's design from that represented in the Application;(b) a summary of emission calculations and modeling changes;(c) a response to the August 25, 2022 SWCCA completeness determination letter for ADP Application CO-1057; and (d) responses to questions posed during a September 9, 2022 call between SWCAA, Drax, and Trinity Consultants. The completeness determination letter and relevant SWCAA correspondence can be found in Attachment 1.

SUMMARY OF PROCESS CHANGES

Abort Stacks

The dryer and furnace each have separate abort stacks prior to any control devices, herein referred to as the dryer abort stack and furnace abort stack. The only time the dryer abort stack will be used is during upset conditions (i.e., power outages, when the wet electrostatic precipitator (WESP) is in fault mode) and will not operate more than four hours in a day. The furnace abort stack is prior to the dryer and will be used during upset conditions (i.e., when the temperature or pressure gets too high in the furnace) and during a low idle state when the dryer is not operating. The furnace and dryer abort stacks will not be used during startup or shutdown events unless there is an upset condition as previously described. Emission calculations now include emissions that will be released from each of these two stacks.

Hammermills and Pelletizers

Instead of the cyclones described in the Application, the particulate matter (PM) emissions from the pelletizers will be controlled by a baghouse; the exhaust from the baghouse will be routed to the regenerative catalytic oxidizer (RCO). Additionally, exhaust from the hammermills will be routed to a baghouse (as originally described in the Application) and then to the same RCO as the pelletizers in order to control PM and VOC emissions, respectively. Pelletizer and hammermill VOC, hazardous air pollutant (HAP), and Washington toxic air pollutant (TAP) emission factors are obtained from stack test results from the Drax facility in Gloster, MS (ABE Facility). Maximum emission factors in pounds per oven dried ton (lbs/ODT) are obtained from 2018 and 2021 stack testing at the ABE Facility. The stack tests used as the basis for the emission factors are provided in Attachment 2 of this letter. The ABE Facility routes emissions from both the hammermills and pelletizers to an RCO, similar to the Facility. The emission factors are divided by 2 to represent half of the RCO emissions for the hammermills and pelletizers. A 25% safety factor has been applied to the emission factors for conservatism.

Emergency Engines

The emergency engines will be installed with diesel particulate filters (DPFs) that will provide at least 90% control of diesel particulate matter. In the Application, Drax proposed that the engines would operate a maximum of 200 hours per year (hrs/yr) of operation. Drax is now proposing that the engines operate a maximum of 125 hrs/yr. These changes are reflected in the updated emission calculations in Attachment 2.

SUMMARY OF EMISSION CALCULATION AND MODELING CHANGES

A summary of changes made to the emission calculations between the Application submittal and current submittal is provided below. Updated emission calculations for the Facility are provided in Attachment 2.

- HAP/TAP and VOC emissions from the hammermills and pelletizers were updated to use stack test data from a representative site, the ABE Facility in Gloster, MS. Additionally, HAP/TAP emissions from the dryer use stack test data from the ABE Facility to supplement the AP-42 factors used in the Application. A safety factor of 25% is applied to the emission factors for conservatism. This resulted in additional HAP/TAP being included in the emission calculations.
- Emission calculations for the dryer abort, furnace abort, and furnace idle scenarios were added.
  - The calculations for these scenarios assume the same emission factor basis as normal operation, without controls. Emission factors for criteria pollutants are back calculated using the manufacturer's guarantee of control efficiency and the manufacturer's controlled emission factors. Emission factors for HAPs/TAPs are determined from AP-42 Section 1.6 – Wood Residue Combustion and the stack testing completed in Gloster, MS.
  - Hours of operation for the dryer and furnace abort stacks are based on the following:
    - Dryer Abort = 50 hrs/yr or 4 hours/day at maximum heat input;
    - Furnace Abort (upset conditions) = 360 hrs/yr or 24 hours/day at maximum heat input; and
    - Furnace Abort (idle conditions) = 500 hrs/yr or 24 hours/day at 50% heat input.
- Emissions of SO_2 from the combustion of wood residuals were added to the dryer emission calculations using the emission factors from AP-42 Section 1.6-Wood Residue Combustion at hourly capacity.
- An updated dryer vendor guarantee was provided to Drax after the Application submittal. The following changes were made and are reflected in the emission calculations in Attachment 2 and vendor guarantee in Attachment 3:
  - Emission factors for CO and NO_X were updated to 42 pounds per hour (lbs/hr) and 52 lbs/hr respectively;
  - The heat input for the regenerative thermal oxidizer (RTO) was updated to 8.8 million British thermal units (MMBtu/hr); and
  - The heat input for the RCO was updated to 2.2 MMBtu/hr.
- Emission factors for particulate matter associated with the emergency engines were updated to use the Tier II EPA standards (0.20 g/kW-hr) for nonroad compression-ignition engines. Additionally, the fire pump and generator will be controlled by a diesel particulate filter able to achieve at least 90% particulate control. Use of these units will be limited to 125 hrs/yr.
- TAP emissions from the Facility are compared to both the 1998 and 2019 TAP rules[1] to determine pollutants required to show compliance with the acceptable source impact level (ASIL). Pollutants, on

[1] WAC 173-460

either TAP list, are modeled if (a) emission rates are above the SQER or (b) if there is an assigned ASIL, but no assigned SQER for a given pollutant (1998 rule only).[2]

The air dispersion model incorporated the above emission rate changes. Additionally, the following updates were made. Updated model input files are provided in Attachment 4.

- New emission points for the dryer abort, furnace abort, and furnace idle were added to the air dispersion models.[3] Emissions from these sources and the emergency fire pump and generator are modeled in addition to the normal operating scenario with continuous operation (8,760 hrs/yr). For modeled short term results there are several available scenarios detailed below. Results are detailed for the highest modeled concentration from any given scenario. All scenarios assume the emergency fire pump and generator are operating at the same time as a given scenario for conservatism.
  - Normal – furnace exhaust is routed to the dryer, control devices associated with the dryer are operating, and all units are at full capacity.
  - FRNA – dryer is not operational (removal of source RTO), furnace is operating at maximum heat input and emissions are routed through the furnace abort stack.
  - FRNI – dryer is not operational (removal of source RTO), furnace is operating at 50% of maximum heat input and emissions are routed through the furnace abort stack.
  - RD – furnace is not operational (removal of source RTO), dryer is operating at maximum throughput and emissions are routed through the dryer abort stack. The dryer abort stack is limited to four hours of operation per day.
  - RD & FRN – emissions from dryer and furnace are routed to individual abort stacks, each at 100% capacity. The dryer abort stack is limited to four hours of operation per day.
  - Emissions from both the dryer and furnace abort stacks are included in the criteria pollutant and TAP models.
- With the addition of SO_2 emissions from wood combustion, a 1-hr SO_2 model was added to show compliance with the NAAQS.
- The inventory of TAPs modeled to show compliance with the ASIL expanded with the update to include the 2019 rule and the additional TAP emissions detailed in the previous section. All model results show compliance with the 2019 TAP rule.

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[2] This TAP analysis methodology is based on guidance from Danny Phipps (SWCAA) via email communication on February 3, 2023.

[3] Stack parameters (height and diameter) for the dryer and furnace abort stacks were obtained from Drax personnel via email communication on December 1, 2022. All other dispersion parameters were obtained from the dryer island mass balances included in Attachment 3.

AUGUST 25, 2022 SWCAA LETTER

The August 25, 2022 SWCAA letter is included in Attachment 1 of this letter. SWCAA's requests are provided in **bold text** while Drax's responses are in normal text.

1. **<u>Hammermill TAP Emissions</u>. In the submitted application Trinity stated that toxic air pollutant (TAP) emission factors with an EPA rating of C, D, or E were not evaluated. For this reason, TAP emissions for the Hammermills were not included as part of the application. The potential to emit for the Hammermills for volatile organic compounds (VOC) was calculated to be 151.91 tons per year. Based on the character of these emissions, it is likely that TAPs are emitted and Drax must produce an estimate of these emissions and perform the associated modeling.**

   Hammermill TAP emissions have been included in the updated emission calculations for the Facility. As discussed previously, emission factors from the ABE Facility are used to calculate emission estimates for the hammermill. Because these emissions are now being routed to the RCO, total annual VOC emissions are estimated to be 17.57 tons per year (tpy). These changes are reflected in the updated emission calculations in Attachment 2 and air dispersion modeling files in Attachment 4.

2. **<u>Best Available Control Technology (BACT) Analysis for the Rotary Dryer</u>. Trinity stated that the only reasonable control option for nitrogen oxides (NO_X) is good combustion controls/practices. More detail needs to be provided as to why additional controls for NO_X are not cost effective.**

   Drax will install and operate low NO_X burners on the furnace/rotary dryer. A low NO_X burner is a demonstrated control technology in pellet manufacturing facilities and is technically feasible for NO_x control. As such, the proposed burners will be classified as low NO_x burners and will constitute BACT for the dryer's NO_x emissions. A guarantee from the dryer vendor is included in Attachment 3.

   Please find below an updated top-down NO_X BACT analysis for the furnace/rotary dryer.

BACT Analysis for NO_X Emissions

Step 1: Identify All Available Control Technologies

NO_x emissions result primarily from thermal NO_X formation from nitrogen and oxygen in the combustion air. An RBLC search was performed to identify NO_X control technologies. The following technologies were identified for use on dryers of similar capacity to Drax's proposed dryer (≥100 MMBtu/hr):

- Low NO_x Burner (LNB)
- Good Combustion Controls/Practices

Drax considers these technologies to be available for the dryer.

Step 2: Eliminate Technically Infeasible Options

A LNB is a demonstrated control technology in pellet manufacturing facilities; as such, it is technically feasible for NO_x control.

Step 3: Rank Remaining Control Technologies by Effectiveness

The following control technologies are available and feasible to control NO_x emissions from the dryer:

1. LNB
2. Good Combustion Practices

Drax proposes LNB as BACT for the furnace/rotary dryer's NO_x emissions.

3. **<u>Alterative Operating Scenarios</u>. It is the understanding of SWCAA that in some cases, an electrostatic precipitator (ESP) cannot be utilized immediately upon startup. If the ESP is not actively controlling emissions, it is presumed that the regenerative thermal oxidizer (RTO) must be bypassed as well. Drax must come up with an estimate of the length of the startup period and emission factors must be provided for the startup period. Drax must also provide some assurance that ambient air quality standards will not be violated during this period. If there are similar alternative operating scenarios, they must be identified as well.**

   Before the dryer can be started and run, the WESP and RTO must be available. The WESP and RTO will function while the dryer is started up, such that PM and VOC emissions are controlled before exhausting to the atmosphere. Similarly, the WESP and RTO will operate during shutdown of the dryer. Additional information is included in a letter from the dryer vendor in Attachment 3.

4. **<u>Wood Species</u>. Emissions can vary dramatically based on the wood species burned. SWCAA requests information about what wood species will be burned at the processing facility, and how the wood species will impact emissions.**

   Drax will predominantly burn the wood species Spruce-Pine-Fir (SPF). The potential criteria pollutant emissions of the dryer are based on vendor guarantees, with the exception of SO_2, which is based on an emission factor from EPA's AP-42 and is not specific to the species of wood burned. SPF-specific emission factors could not be found for HAP/TAP emissions from a dryer comparable to Drax's proposed dryer for the Facility. AP-42 biomass combustion HAP/TAP emission factors are used. HAP/TAP emission factors from Drax's Gloster, MS facility were incorporated to supplement the AP-42 factors and are expected to be the most representative emission factors available.

5. **<u>Fugitive Emissions</u>. In the application, the truck tipper that processes wet material is assumed to have zero fugitive emissions and the ship loadout is estimated to have negligible emissions. SWCAA requests additional details including video of other facilities or descriptions of process enclosure which assure that these emissions will be minimal.**

   Please refer to the video for the truck tipper at the following link: BRUKS - Keystone Drive-over Truck Dumper Showcase Video.

   Refer to the emission calculations in Table C-8 as provided in Attachment 2 of this letter for quantified ship loadout emissions. The ship loadout system will use a Cleveland Cascade spout with a skirt to minimize fugitive emissions from loading pellets into ships.

6. **<u>BACT for particulate matter (PM) control at the Pelletizer</u>. Pelletizing potential PM emissions are estimated assuming an emission rate of 0.005 gr/dscf. This is considered BACT for dust collectors, however in this case a scrubber is used. Drax must provide analysis or a manufacturers guarantee demonstrating that the scrubber will meet the proposed emission standards.**

As described in the "Summary of Process Changes" section above, Drax proposes a baghouse to control PM emissions from the pelletizers rather than the cyclones described in the Application.

Among technically feasible options, Drax ranked the following technologies for further review: baghouse, WESP, dry ESP, scrubber, and cyclone. Baghouses, WESPs, and dry ESPs can generally be designed with control efficiencies up to 99.9% for PM emissions, while scrubbers can reach 95%.[4,5,6,7] Cyclones are primarily used to control particulate matter greater than 10 micrometers; accordingly, the control efficiencies are as follows: 90% for PM and PM_{10}, 40% for $PM_{2.5}$.[8] As such, cyclones alone are not considered BACT for control of particulate emissions from Pelletizers.

Due to its equally as high control efficiency as the other control technologies, Drax proposes the use of a baghouse as BACT for the pelletizer's PM emissions. Based on the BACT determination for dust collectors, use of a baghouse will achieve a limit of 0.005 gr/dscf.

7. <u>Operating Parameters</u>. The application does not specify essential operating parameters of the emission control devices. The following information, at minimum, must be provided:

a) Operating parameters for the cyclone scrubber that controls the pelletizer:

1. The minimum water recirculation rate; and

2. The maximum differential pressure.

b) Operating parameters for baghouses that control the truck tipper and the hammermills:

1. The maximum differential pressure.

c) Operating parameters for the ESP that controls the rotary dryer:

1. the minimum current level in each ESP field;

2. the minimum secondary voltage in each ESP field;

3. the minimum spark rate in each ESP field;

4. the minimum outlet temperature.

Drax will utilize a baghouse instead of a cyclone scrubber for control of the pelletizer emissions. The maximum differential pressure of the hammermill, pelletizer, and truck tipper baghouses are unknown as of the date of this letter.

Operating parameters of the ESP for the rotary dryer are as follows:

1. Minimum current level in each ESP field of 800 Milliampere (mA)
2. Minimum secondary voltage in each ESP field of 50 kilovolts (kV)
3. Minimum spark rate in each ESP field of 20 sparks per minute
4. Minimum outlet temperature of 160 •F

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[4] EPA, *Air Pollution Control Technology Fact Sheet, Fabric filter Pulse-jet cleaned type (also referred to as Baghouses)*, EPA-452/F-03-025. (https://www3.epa.gov/ttnchie1/mkb/documents/ff-pulse.pdf)

[5] EPA, *Air Pollution Control Technology Fact Sheet, Wet Electrostatic Precipitator (ESP)- Wire-Plate Type*, EPA-452/F-03-030. (https://www3.epa.gov/ttnchie1/mkb/documents/fwespwpl.pdf)

[6] EPA, *Air Pollution Control Technology Fact Sheet, Dry Electrostatic Precipitator (ESP)- Wire-Plate Type*, EPA-452/F-03-027. (https://www3.epa.gov/ttncatc1/dir1/fdespwpi.pdf)

[7] EPA, *Air Pollution Control Technology Fact Sheet, Packed-Bed/Packed-Tower Wet Scrubber*, EPA-452/F-03-015. (https://www3.epa.gov/ttncatc1/dir1/fpack.pdf)

[8] EPA, *Air Pollution Control Technology Fact Sheet, Cyclones*, EPA-452/F-03-005 (https://www3.epa.gov/ttnchie1/mkb/documents/fcyclon.pdf)

8. **<u>Sulfur dioxide (SO_2) Emissions</u>. No sulfur dioxide emissions are estimated for wood combustion. Drax must provide as estimate of sulfur dioxide emissions or provide data or rational explaining why this is not necessary.**

   SO_2 emissions for wood combustion at the furnace have been included using emission factors from AP-42 Table 1.6-2 for Wood Residue Combustion. These changes are reflected in the updated emission calculations in Attachment 2.

9. **<u>Design Criteria for Control Equipment.</u> More information is required regarding the design criteria of the ESP and the cyclone scrubber. The information provided in the application is not sufficient for SWCAA to evaluate whether the designed equipment can control emissions at the expected level. For each piece of control equipment on site Drax must provide the following information:**
   a) Make and model;
   b) Maximum rated load/capacity;
   c) Operating parameters associated with the equipment;
   d) Height, diameter, flow, and configuration of the ambient discharge point; and
   e) Manufacturer's control efficiency guarantees for relevant pollutants.

   Design criteria is included for each control device in the table below:

Table 1. Control Device Design Criteria

Control Device	Make and Model	Maximum Rated Load/ Capacity	Associated Operating Parameters	Height, Diameter, Flow, and Configuration of Discharge	Manufacturer's Control Efficiency Guarantees
RCO	TBD. 120,000 acfm RCO.	2.2 MMBtu/hr	Temperature: 120°F Particulate: ≤115 mg/Nm^3 Humidity: ≥5 vol% Gas Pressure: 20-40 psig	Height: 60 ft Diameter: 72 in Exhaust Stack	VOC: ≥94%
Hammermill Baghouse	Allied/Air-Cure 544RF12W	44,200 acfm	TBD	Height (above ground): 60 ft Diameter: 6.56 ft Flow: 19.7 ft/sec Exhaust Stack	PM: ≤0.005 gr/dscf
Pelletizer Baghouse	Allied/Air-Cure 544RF12W	76,000 acfm	TBD	Height (above ground): 60 ft Diameter: 6.56 ft Flow: 19.7 ft/sec Exhaust Stack	PM: ≤0.005 gr/dscf
Truck Tipper Baghouse	Donaldson Torit 200RP	27,700 acfm	TBD	Height (above ground): 41.7 ft Diameter: 2.99 ft Flow: 65.4 ft/sec	PM: ≤0.002 gr/dscf

Control Device	Make and Model	Maximum Rated Load/ Capacity	Associated Operating Parameters	Height, Diameter, Flow, and Configuration of Discharge	Manufacturer's Control Efficiency Guarantees
				Exhaust Stack	
WESP	TSI-WESP-936		Pressure: ±25" w.c. pH: 6-8 *See Question 7 for remaining parameters*	Centrifuge, routed to RTO Exhaust Stack	PM (front-half): ≥95%
RTO	TSI-RTO-4 CAN-11'x34;	8.8 MMBtu/hr	Gas Pressure: 20-40 psig Temperature: ≥1500°F Residence Time: ≥0.5 sec	Height: 60 ft Diameter: 90 in Exhaust Stack	VOC: ≥95%; PM (back-half): ≥95%

10. <u>Binding Agent</u>. The application does not cite the use of any binding agent in the pelletizing process. If binding agents are used in the process, Drax must submit chemical constituent data for each binding agent and provide an estimate of associated pollutant emissions.

There will not be any binding agent used in the pelletizing process.

11. <u>VOC Emissions from Stockpile Storage</u>. Drax estimated PM emissions from stockpile storage, however wood products can also produce VOCs. Drax must provide an estimate of VOC emissions from these stockpiles and provide a plan for minimizing these emissions.

Per a September 9, 2022 SWCAA email, it was determined that additional information was needed to ensure that odors from stockpiles would be minimized. The stockpiles will be on site for a continual rollover basis. Drax will target to maintain a half-month's supply necessary to operate the plant. At some points in the year (notably, winter and spring), Drax will increase this volume to address supply risks – potentially up to one month. Across its facilities, Drax typically only measures the temperatures of its grind piles on an as-needed basis to address concerns. Drax does not plan to measure pH.

12. <u>Compliance Assurance Monitoring</u>. The application describes emission units that have a control device and emit over 100 ton of a pollutant, prior to the control unit. These units meet the criteria under 40 cfr part 64 and a plan must be provided for continuous compliance assurance.

Per 40 CFR 64.5(b) and if applicable to the emission units at the facility, Compliance Assurance Monitoring (CAM) requirements are to be submitted as part of a Title V renewal application. Drax will evaluate applicability of the CAM requirements in the initial Title V application for the Facility.

SWCAA QUESTIONS FROM 9/9/2022 CONFERENCE CALL

SWCAA's questions from the September 9, 2022 conference call are provided in **bold text** while Drax's responses are in normal text.

1. **Did Drax evaluate the feasibility of installing a scrubber to control PM emissions from the hammermills?**

   Baghouses can generally be designed with control efficiencies up to 99.9% for PM emissions, while scrubbers can reach 95%.[9,10] To achieve the best available control efficiency, Drax is proposing the installation of a baghouse to control PM from the hammermills. The baghouse will achieve a grain loading limit of 0.005 gr/dscf.

2. **Would Drax prefer a large testing event every five years, or to test a smaller number of emission units each year?**

   Drax prefers to conduct a single testing event every five years.

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If you have any questions or comments about the information presented in this letter, please do not hesitate to call me at 253.867.5600 x4804.

Sincerely,

TRINITY CONSULTANTS

Jennifer Pohlman

Jennifer Pohlman
Senior Consultant

Attachments

cc: Wayne Kooy, Drax Group (Vancouver, BC)
Melissa Hillman, Trinity Consultants (Portland, Oregon)

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[9] EPA, *Air Pollution Control Technology Fact Sheet, Fabric filter Pulse-jet cleaned type (also referred to as Baghouses)*, EPA-452/F-03-025. (https://www3.epa.gov/ttnchie1/mkb/documents/ff-pulse.pdf)

[10] EPA, *Air Pollution Control Technology Fact Sheet, Packed-Bed/Packed-Tower Wet Scrubber*, EPA-452/F-03-015. (https://www3.epa.gov/ttncatc1/dir1/fpack.pdf)
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ATTACHMENT 1

SWCAA Letter and Relevant Email Correspondence

SWCAA
Southwest Clean Air Agency

11815 NE 99th Street, Suite 1294
Vancouver, WA 98682
(360) 574-3058
www.swcleanair.org

August 25, 2022

Wayne Kooy, Senior Environmental Manager
Drax Group
543 Granville Street, Suite 1100, Vancouver, BC V6C 1X8

RE: Completeness Determination for ADP Application CO-1057

Dear Mr. Kooy:

The Southwest Clean Air Agency (SWCAA) has received your Air Discharge Permit (ADP) application to install and operate a wood pellet processing facility, submitted by Trinity Consultants on your behalf. This application has been designated as ADP Application CO-1057.

SWCAA has determined, after review, that the application is incomplete under SWCAA 400-110(2). Additional information is needed before SWCAA can continue processing the application. Please provide the following no later than **September 30, 2022**:

- Hammermill TAP Emissions. In the submitted application Trinity stated that toxic air pollutant (TAP) emission factors with an EPA rating of C, D, or E were not evaluated. For this reason, TAP emissions for the Hammermills were not included as part of the application. The potential to emit for the Hammermills for volatile organic compounds (VOC) was calculated to be 151.91 tons per year. Based on the character of these emissions, it is likely that TAPs are emitted and Drax must produce an estimate of these emissions and perform the associated modeling.
- Best Available Control Technology (BACT) Analysis for the Rotary Dryer. Trinity stated that the only reasonable control option for nitrogen oxides (NO_x) is good combustion controls/practices. More detail needs to be provided as to why additional controls for NO_x are not cost effective.
- Alterative Operating Scenarios. It is the understanding of SWCAA that in some cases, an electrostatic precipitator (ESP) cannot be utilized immediately upon startup. If the ESP is not actively controlling emissions, it is presumed that the regenerative thermal oxidizer (RTO) must be bypassed as well. Drax must come up with an estimate of the length of the startup period and emission factors must be provided for the startup period. Drax must also provide some assurance that ambient air quality standards will not be violated during this period. If there are similar alternative operating scenarios, they must be identified as well.
- Wood Species. Emissions can vary dramatically based on the wood species burned. SWCAA requests information about what wood species will be burned at the processing facility, and how the wood species will impact emissions.
- Fugitive Emissions. In the application, the truck tipper that processes wet material is assumed to have zero fugitive emissions and the ship loadout is estimated to have negligible emissions. SWCAA requests additional details including video of other facilities or descriptions of process enclosure which assure that these emissions will be minimal.
- BACT for particulate matter (PM) control at the Pelletetizer. Pelletizing potential PM emissions are estimated assuming an emission rate of 0.005 gr/dscf. This is considered BACT for dust collectors, however in this case a scrubber is used. Drax must provide analysis or a

manufacturers guarantee demonstrating that the scrubber will meet the proposed emission standards.

- Operating Parameters. The application does not specify essential operating parameters of the emission control devices. The following information, at minimum, must be provided:
  a) Operating parameters for the cyclone scrubber that controls the pelletizer:
     1. The minimum water recirculation rate; and
     2. The maximum differential pressure.
  b) Operating parameters for baghouses that control the truck tipper and the hammermills:
     1. The maximum differential pressure.
  c) Operating parameters for the ESP that controls the rotary dryer:
     1. the minimum current level in each ESP field;
     2. the minimum secondary voltage in each ESP field;
     3. the minimum spark rate in each ESP field;
     4. the minimum outlet temperature.
- Sulfur dioxide (SO_2) Emissions. No sulfur dioxide emissions are estimated for wood combustion. Drax must provide as estimate of sulfur dioxide emissions or provide data or rational explaining why this is not necessary.
- Design Criteria for Control Equipment. More information is required regarding the design criteria of the ESP and the cyclone scrubber. The information provided in the application is not sufficient for SWCAA to evaluate whether the designed equipment can control emissions at the expected level. For each piece of control equipment on site Drax must provide the following information:
  a) Make and model;
  b) Maximum rated load/capacity;
  c) Operating parameters associate with the equipment;
  d) Height, diameter, flow, and configuration of the ambient discharge point; and
  e) Manufacturer's control efficiency guarantees for relevant pollutants.
- Binding Agent. The application does not cite the use of any binding agent in the pelletizing process. If binding agents are used in the process, Drax must submit chemical constituent data for each binding agent and provide an estimate of associated pollutant emissions.
- VOC Emissions from Stockpile Storage. Drax estimated PM emissions from stockpile storage, however wood products can also produce VOCs. Drax must provide an estimate of VOC emissions from these stockpiles and provide a plan for minimizing these emissions.
- Compliance Assurance Monitoring. The application describes emission units that have a control device and emit over 100 ton of a pollutant, prior to the control unit. These units meet the criteria under 40 cfr part 64 and a plan must be provided for continuous compliance assurance.

Should additional time for preparation of the above items be needed, SWCAA will grant any reasonable request. Please note that SWCAA may still request additional information to clarifying the application during the forthcoming permitting process. If you need further assistance or have any questions on this matter, please contact me at (360) 574-3058 ext. 124.

Sincerely,

Danny Phipps
Air Quality Engineer I

From: Danny Phipps
To: Jennifer Pohlman
Cc: Wayne Kooy; Melissa Hillman; Maddie Coates
Subject: RE: Drax Longview 2019 TAP Rule
Date: Friday, February 3, 2023 1:05:48 PM
Attachments: image002.png
image003.png

Good afternoon Jennifer,

My answers are below in Red. Let me know if you need further clarification beyond what it written below.

Thanks,

Danny Phipps, PE
Air Quality Engineer
Southwest Clean Air Agency
360-574-3058 x 124
danny@swcleanair.gov

Hours: Tuesday through Friday 7:00 am to 5:30 pm

From: Jennifer Pohlman <JPohlman@trinityconsultants.com>
Sent: Friday, February 3, 2023 9:40 AM
To: Danny Phipps <Danny@swcleanair.org>
Cc: Wayne Kooy <Wayne.Kooy@drax.com>; Melissa Hillman <MHillman@trinityconsultants.com>; Maddie Coates <Madison.Coates@trinityconsultants.com>
Subject: Drax Longview 2019 TAP Rule

Danny,

We completed a full comparison of TAP emissions from the Drax Longview site to the 2019 TAP rule and we are able to get all pollutants to pass the SQER/ASIL using the 2019 TAP rule. We just wanted to get confirmation from you on how we should proceed with the TAP comparison:

- Were you able to get confirmation that it is acceptable to compare to the 2019 SQERs and ASILs instead of or in addition to the 1998 thresholds? If so:
    - Should we use the 1998 rule and compare to the 2019 ASIL for pollutants which exceed the 1998 ASIL but have a higher ASIL in the 2019 rule? Or
    - Should we compare all TAP to the 2019 rule thresholds?

If a TAP is not listed in the 2019 rule, but it is in the 1998 list, then use the 1998 standard. For all other pollutants the 2019 ASIL should be used. Make a note of those that exceed the 1998 standard. In the technical support document of the permit I will reference the conversation with Gary Palcisko and the letter that was issued for Sierra Pacific.

Also, just a few miscellaneous items:

- Regarding modeling of emergency engines, would you agree that it is appropriate to model only projected operating hours for testing and maintenance, rather than using the PTE estimate of 200 hrs/yr (which includes emergency hours of operation)?

The PTE estimate should be used as it considers both estimated emergency usage and the operation and maintenance time.

- We wanted to follow-up on whether we can annualize emissions from the abort stacks for short-term modeling purposes.

Since those scenarios amount to almost 1,000 hours and are planned we have decided that it would not be appropriate to average them over the course of the year. Please model those as short term emissions (not annualized).

Please let us know if you have any questions.

Thank you,

Jennifer

Jennifer Pohlman
Senior Consultant
Trinity Consultants, Inc.

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ATTACHMENT 2

Updated Potential Emission Calculations and Stack Test Data

Table C-1a. Input Values

Total Pellet Throughput [1]	450,000	ODMT/yr
Hourly Pellet Throughput [1]	62	ODMT/hr
Total Dryer Throughput	450,000	ODMT/yr
Max Hourly Dryer Throughput [1]	62	ODMT/hr
Total Hammermill Throughput	450,000	ODMT/yr
Max Hourly Hammermill Throughput [1]	75	ODMT/hr
Total Pellet Cooler Throughput	450,000	ODMT/yr
Max Hourly Pellet Cooler Throughput [1]	75	ODMT/hr
Facility Operating Hours	8,760	hrs/yr
Controlled Hammermill VOC Emission Factor[3]	0.071	lb/ODT
Controlled Pellet Cooler VOC Emission Factor[3]	0.071	lb/ODT
RTO VOC Control Efficiency for Rotary Dryer	95%	
RTO CO Control Efficiency for Rotary Dryer	0%	
RCO VOC Control Efficiency for Pellet Cooler and Hammermill	95%	
RCO CO Control Efficiency for Pellet Cooler and Hammermill	0%	

[1] Maximum throughputs were provided to Trinity Consultants in process flow diagram on 12/21/2021.

[2] RTO and RCO control efficiencies per manufacturer specification sheets.

[3] Emission factors obtained from the Drax facility in Gloster, MS (ABE) stack testing. Maximum emission factors in lbs/ODT obtained from 2018 and 2021 stack testing. The ABE facility routes emissions from both the hammermill and pelletizer to the RCO similar to the proposed Longview facility. The emission factors are divided by 2 to represent half of the RCO emissions for each piece of equipment. A 25% safety factor has been included for conservatism.

Table C-1b. Conversion Factors

1	short ton	=	0.907	metric tonnes

Table C-2a. Facility-Wide Potential Emissions - Criteria Pollutant Summary

			Facility-Wide Potential Emissions (tpy)							
EU ID	**Emission Sources**	**Title V/PSD Fugitive?**	**PM**	**Total PM_{10}**	**Total $PM_{2.5}$**	**SO_2**	**NO_X**	**VOC**	**CO**	**CO_2e**
BIO	Biosizer	Yes	5.37E-03	2.54E-03	3.85E-04	--	--	--	--	--
RD	Biomass Rotary Dryer	No	21.90	21.90	21.90	20.55	227.76	65.70	183.96	178,574.43
DCS	Dry Chip Storage Tent	Yes	0.06	0.03	3.98E-03	--	--	--	--	--
HM1	Hammermill No. 1	No	7.52	7.52	7.52	--	--	17.57	--	--
HM2	Hammermill No. 2	No								
HM3	Hammermill No. 3	No								
HM4	Hammermill No. 4	No								
PC1	Pelletizer No. 1	No	12.93	12.93	12.93	--	--	17.57	--	--
PC2	Pelletizer No. 2	No								
PC3	Pelletizer No. 3	No								
PC4	Pelletizer No. 4	No								
PC5	Pelletizer No. 5	No								
PC6	Pelletizer No. 6	No								
PC7	Pelletizer No. 7	No								
PC8	Pelletizer No. 8	No								
PC9	Pelletizer No. 9	No								
PC10	Pelletizer No. 10	No								
PC11	Pelletizer No. 11	No								
PSS1	Pellet Storage Dome 1	No	0.04	0.02	2.54E-03	--	--	--	--	--
PSS2	Pellet Storage Dome 2	No	0.04	0.02	2.54E-03	--	--	--	--	--
SLS	Ship Loadout System	Yes	0.07	0.03	0.01	--	--	--	--	--
HR	Haul Roads	Yes	2.39	0.48	0.12	--	--	--	--	--
SP1	Wet Material Stockpile	Yes	0.38	0.18	0.03	--	--	--	--	--
ENG1	625 kW Emergency Generator	No	1.72E-03	1.72E-03	1.72E-03	5.55E-04	1.17	0.03	0.31	60.71
FWP1	164 kW Fire Pump Engine	No	4.52E-04	4.52E-04	4.52E-04	0.03	0.42	0.03	0.09	15.90
BAG2	Truck Tipper	No	1.80	1.80	1.80	--	--	--	--	--
RTO	Dryer RTO *(Emissions from Natural Gas Combustion)*	No	--	--	--	0.02	--	--	--	4,561.54
RCO	Pelletizer RCO *(Emissions from Natural Gas Combustion)*	No	0.07	0.07	0.07	0.01	0.94	0.05	0.79	1,140.38
RD - A	Biomass Rotary Dryer - Abort	No	2.50	2.50	2.50	0.12	1.30	7.50	1.05	1,230.18
FRN - A	Furnace - Abort	No	19.49	17.47	15.10	0.84	7.43	0.57	20.27	6,736.89
FRN	Furnace - Idle	No	13.54	12.13	10.49	0.59	5.16	0.40	14.08	4,678.40
		Total Point Source Emissions (Title V/PSD Regulated):	**79.8**	**76.4**	**72.3**	**22.2**	**244.2**	**109.4**	**220.6**	**196,998**
		Total Emissions (including fugitives):	**82.7**	**77.1**	**72.5**	**22.2**	**244.2**	**109.44**	**220.6**	**196,998**
		Title V Threshold:	**--**	**100.0**	**100.0**	**100.0**	**100.0**	**100.00**	**100.0**	**--**
		Title V Threshold Exceeded (Yes/No):	**No**	**No**	**No**	**No**	**Yes**	**Yes**	**Yes**	**No**
		PSD Threshold (tons/12-months):	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**100,000**
		PSD Threshold Exceeded[1] (Yes/No):	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**

[1] PSD for GHG is only exceeded if PSD is exceeded for another regulated pollutant.

Table C-2b. Facility-Wide Potential Emissions - HAP/TAP Summary

Pollutants	CAS #	HAP?	1998 TAP?	1998 TAP Class	2019 TAP?	Dryer Maximum Hourly Emissions (lb/hr)	Dryer Potential Annual Emissions (tpy)	RTO Maximum Hourly Emissions (lb/hr)	RTO Potential Annual Emissions (tpy)	RCO Maximum Hourly Emissions (lb/hr)	RCO Potential Annual Emissions (tpy)	Hammermill Maximum Hourly Emissions (lb/hr)	Hammermill Potential Annual Emissions (tpy)	Pelletizers Maximum Hourly Emissions (lb/hr)	Pelletizers Potential Annual Emissions (tpy)	Dryer - Abort Maximum Hourly Emissions (lb/hr)	Dryer - Abort Potential Annual Emissions (tpy)	Furnace - Abort Maximum Hourly Emissions (lb/hr)	Furnace - Abort Potential Annual Emissions (tpy)	Furnace - Idle Maximum Hourly Emissions (lb/hr)	Furnace - Idle Potential Annual Emissions (tpy)	Emergency Engines Maximum Hourly Emissions (lb/hr)	Emergency Engines Potential Annual Emissions (tpy)	Total Maximum Hourly Emissions (lb/hr)	Total Potential Annual Emissions (tpy)	1998 SQER[1] Averaging Period	1998 SQER[1] (lb/yr)	1998 SQER[1] (lb/hr)	2019 SQER Averaging Period	2019 SQER (lb/avg. period)	Modeling Required?
Acenaphthene	83-32-9	Yes - PAH	No	--	No	8.54E-06	3.74E-05	0	0	0	0	0	0	0	0	1.71E-04	4.27E-06	1.71E-04	3.07E-05	8.54E-05	2.14E-05	0	0	3.42E-04	9.38E-05	--	--	--	--	--	No
Acenaphthylene	208-96-8	Yes - PAH	No	--	No	4.69E-05	2.06E-04	0	0	0	0	0	0	0	0	9.39E-04	2.35E-05	9.39E-04	1.69E-04	4.69E-04	1.17E-04	0	0	1.88E-03	5.15E-04	--	--	--	--	--	No
Acetaldehyde	75-07-0	Yes	Yes	A	Yes	5.67E-01	2.06E+00	0	0	0	0	2.18E-03	5.41E-01	1.80E-01	5.41E-01	1.13E+01	2.83E-01	1.56E-01	2.80E-02	7.79E-02	1.95E-02	0	0	1.17E+01	3.47E+00	Annual	5.00E+01	--	year	6.00E+01	Yes
Acrolein	107-02-8	Yes	Yes	B	Yes	2.43E-01	8.82E-01	0	0	0	0	8.18E-04	2.03E-01	6.74E-02	2.03E-01	4.86E+00	1.21E-01	0	0	0	0	0	0	4.93E+00	1.41E+00	1-hr and Annual	1.75E+02	2.00E-02	24-hr	2.60E-02	Yes
Anthracene	120-12-7	Yes - PAH	No	--	No	2.82E-05	1.23E-04	0	0	0	0	0	0	0	0	5.63E-04	1.41E-05	5.63E-04	1.01E-04	2.82E-04	7.04E-05	0	0	1.13E-03	3.09E-04	--	--	--	--	--	No
Benz[a]anthracene	56-55-3	Yes - PAH	Yes	A	Yes	6.10E-07	2.67E-06	0	0	0	0	0	0	0	0	1.22E-05	3.05E-07	1.22E-05	2.20E-06	6.10E-06	1.53E-06	0	0	2.44E-05	6.70E-06	N/A	--	--	year	8.90E-01	No
Benzene	71-43-2	Yes	Yes	A	Yes	3.94E-02	1.73E-01	1.81E-05	7.94E-05	4.53E-06	1.98E-05	0	0	0	0	7.88E-01	1.97E-02	7.88E-01	1.42E-01	3.94E-01	9.85E-02	0	0	1.58E+00	4.33E-01	Annual	2.00E+01	--	year	2.10E+01	Yes
Benzo(a)pyrene	50-32-8	Yes - PAH	Yes	A	Yes	2.44E-05	1.07E-04	0	0	0	0	0	0	0	0	4.88E-04	1.22E-05	4.88E-04	8.78E-05	2.44E-04	6.10E-05	0	0	9.76E-04	2.68E-04	N/A	--	--	year	1.60E-01	Yes
Benzo(b)fluoranthene	205-99-2	Yes - PAH	Yes	A	Yes	9.39E-07	4.11E-06	0	0	0	0	0	0	0	0	1.88E-05	4.69E-07	1.88E-05	3.38E-06	9.39E-06	2.35E-06	0	0	3.75E-05	1.03E-05	N/A	--	--	year	8.90E-01	No
Benzo(g,h,i)perylene	191-24-2	Yes - PAH	No	--	No	8.73E-07	3.82E-06	0	0	0	0	0	0	0	0	1.75E-05	4.36E-07	1.75E-05	3.14E-06	8.73E-06	2.18E-06	0	0	3.49E-05	9.58E-06	--	--	--	--	--	No
Benzo(k)fluoranthene	207-08-9	Yes - PAH	Yes	A	Yes	3.38E-07	1.48E-06	0	0	0	0	0	0	0	0	6.76E-06	1.69E-07	6.76E-06	1.22E-06	3.38E-06	8.45E-07	0	0	1.35E-05	3.71E-06	N/A	--	--	year	8.90E-01	No
Chrysene	218-01-9	Yes - PAH	No	--	Yes	3.57E-07	1.56E-06	0	0	0	0	0	0	0	0	7.13E-06	1.78E-07	7.13E-06	1.28E-06	3.57E-06	8.92E-07	0	0	1.43E-05	3.92E-06	N/A	--	--	year	8.90E+00	No
Dibenzo(a,h)anthracene	53-70-3	Yes - PAH	Yes	A	Yes	8.54E-08	3.74E-07	0	0	0	0	0	0	0	0	1.71E-06	4.27E-08	1.71E-06	3.07E-07	8.54E-07	2.14E-07	0	0	3.42E-06	9.38E-07	N/A	--	--	year	8.20E-02	No
Fluoranthene	206-44-0	Yes - PAH	No	--	No	1.50E-05	6.58E-05	0	0	0	0	0	0	0	0	3.00E-04	7.51E-06	3.00E-04	5.41E-05	1.50E-04	3.75E-05	0	0	6.01E-04	1.65E-04	--	--	--	--	--	No
Fluorene	86-73-7	Yes - PAH	No	--	No	3.19E-05	1.40E-04	0	0	0	0	0	0	0	0	6.38E-04	1.60E-05	6.38E-04	1.15E-04	3.19E-04	7.98E-05	0	0	1.28E-03	3.50E-04	--	--	--	--	--	No
Formaldehyde	50-00-0	Yes	Yes	A	Yes	1.43E+00	5.17E+00	6.47E-04	2.83E-03	1.62E-04	7.09E-04	2.09E-03	5.18E-01	1.72E-01	5.18E-01	2.85E+01	7.13E-01	8.26E-01	1.49E-01	4.13E-01	1.03E-01	0	0	2.95E+01	7.18E+00	Annual	2.00E+01	--	year	2.70E+01	Yes
Hydrochloric acid	7647-01-0	Yes	Yes	B	Yes	1.78E-01	6.46E-01	0	0	0	0	4.54E-04	1.13E-01	3.75E-02	1.13E-01	3.56E+00	8.91E-02	0	0	0	0	0	0	3.60E+00	9.61E-01	1-hr and Annual	1.75E+02	2.00E-02	24-hr	6.70E-01	Yes
Indeno(1,2,3-c,d)pyrene	193-39-5	Yes - PAH	Yes	A	Yes	8.16E-07	3.58E-06	0	0	0	0	0	0	0	0	1.63E-05	4.08E-07	1.63E-05	2.94E-06	8.16E-06	2.04E-06	0	0	3.27E-05	8.97E-06	N/A	--	--	year	8.90E-01	No
Methanol	67-56-1	Yes	Yes	B	Yes	2.56E+00	9.29E+00	0	0	0	0	2.42E-02	5.99E+00	1.99E+00	5.99E+00	5.12E+01	1.28E+00	0	0	0	0	0	0	5.32E+01	2.26E+01	1-hr and Annual	4.37E+04	5.00E+00	24-hr	1.50E+03	Yes
Naphthalene	91-20-3	Yes - PAH	Yes	B	Yes	9.10E-04	3.99E-03	0	0	0	0	0	0	0	0	1.82E-02	4.55E-04	1.82E-02	3.28E-03	9.10E-03	2.28E-03	0	0	3.64E-02	1.00E-02	1-hr and Annual	2.28E+04	2.60E+00	year	4.80E+00	Yes
[3] Octachlorodibenzo-p-dioxins	3268-87-9	No	No	--	Yes	6.19E-07	2.71E-06	0	0	0	0	0	0	0	0	1.24E-05	3.10E-07	1.24E-05	2.23E-06	6.19E-06	1.55E-06	0	0	2.48E-05	6.80E-06	N/A	--	--	year	1.50E-02	No
[3] Pentachlorodibenzo-p-dioxins	40321-76-4	No	No	--	Yes	1.41E-08	6.17E-08	0	0	0	0	0	0	0	0	2.82E-07	7.04E-09	2.82E-07	5.07E-08	1.41E-07	3.52E-08	0	0	5.63E-07	1.55E-07	N/A	--	--	year	4.30E-06	Yes
Phenanthrene	85-01-8	Yes - PAH	No	--	No	6.57E-05	2.88E-04	0	0	0	0	0	0	0	0	1.31E-03	3.28E-05	1.31E-03	2.37E-04	6.57E-04	1.64E-04	0	0	2.63E-03	7.21E-04	--	--	--	--	--	No
Phenol	108-95-2	Yes	Yes	B	Yes	1.10E+00	4.00E+00	0	0	0	0	1.31E-02	3.24E+00	1.08E+00	3.24E+00	2.20E+01	5.51E-01	0	0	0	0	0	0	2.31E+01	1.10E+01	1-hr and Annual	1.05E+04	1.20E+00	24-hr	1.50E+01	Yes
Propionaldehyde	123-38-6	Yes	Yes	B	Yes	1.62E-01	5.88E-01	0	0	0	0	2.00E-03	4.96E-01	1.65E-01	4.96E-01	3.24E+00	8.10E-02	0	0	0	0	0	0	3.41E+00	1.66E+00	No SQER	--	--	24-hr	5.90E-01	Yes
Pyrene	129-00-0	Yes - PAH	No	--	No	3.47E-05	1.52E-04	0	0	0	0	0	0	0	0	6.94E-04	1.74E-05	6.94E-04	1.25E-04	3.47E-04	8.68E-05	0	0	1.39E-03	3.81E-04	--	--	--	--	--	No
Arsenic	7440-38-2	Yes	Yes	A	Yes	2.06E-04	9.04E-04	0	0	0	0	0	0	0	0	4.13E-03	1.03E-04	4.13E-03	7.43E-04	2.06E-03	5.16E-04	0	0	8.26E-03	2.27E-03	No SQER	--	--	year	4.90E-02	Yes
Beryllium	7440-41-7	Yes	Yes	A	Yes	1.03E-05	4.52E-05	0	0	0	0	0	0	0	0	2.06E-04	5.16E-06	2.06E-04	3.72E-05	1.03E-04	2.58E-05	0	0	4.13E-04	1.13E-04	No SQER	--	--	year	6.80E-02	Yes
Cadmium	7440-43-9	Yes	Yes	A	Yes	3.85E-05	1.69E-04	0	0	0	0	0	0	0	0	7.70E-04	1.92E-05	7.70E-04	1.39E-04	3.85E-04	9.62E-05	0	0	1.54E-03	4.22E-04	No SQER	--	--	year	3.90E-02	Yes
Chromium VI	18540-29-9	No	Yes	A	Yes	3.28E-05	1.44E-04	0	0	0	0	0	0	0	0	6.57E-04	1.64E-05	6.57E-04	1.18E-04	3.28E-04	8.21E-05	0	0	1.31E-03	3.61E-04	No SQER	--	--	year	6.50E-04	Yes
[2] Chromium III	16065-83-1	No	Yes	B	Yes	1.97E-04	8.63E-04	0	0	0	0	0	0	0	0	3.94E-03	0	3.94E-03	7.10E-04	1.97E-03	4.93E-04	0	0	7.88E-03	2.07E-03	1-hr and Annual	1.75E+02	2.00E-02	24-hr	7.40E-03	Yes
[2] Chromium II	7440-47-3	Yes	Yes	B	No	1.97E-04	8.63E-04	0	0	0	0	0	0	0	0	3.94E-03	9.85E-05	3.94E-03	7.10E-04	1.97E-03	4.93E-04	0	0	7.88E-03	2.16E-03	1-hr and Annual	1.75E+02	2.00E-02	--	--	No
Copper	7440-50-8	No	Yes	B	Yes	4.60E-04	2.01E-03	0	0	0	0	0	0	0	0	9.20E-03	2.30E-04	9.20E-03	1.66E-03	4.60E-03	1.15E-03	0	0	1.84E-02	5.05E-03	1-hr and Annual	1.75E+02	2.00E-02	1-hr	1.90E-01	No
Manganese	7439-96-5	Yes	Yes	B	Yes	1.50E-02	6.58E-02	0	0	0	0	0	0	0	0	3.00E-01	7.51E-03	3.00E-01	5.41E-02	1.50E-01	3.75E-02	0	0	6.01E-01	1.65E-01	1-hr and Annual	1.75E+02	2.00E-02	24-hr	2.20E-02	Yes
Mercury	7439-97-6	Yes	Yes	B	Yes	6.57E-04	2.88E-03	0	0	0	0	0	0	0	0	6.57E-04	1.64E-05	6.57E-04	1.18E-04	3.28E-04	8.21E-05	0	0	1.31E-03	3.09E-03	1-hr and Annual	1.75E+02	2.00E-02	24-hr	2.20E-03	Yes
Nickel	7440-02-0	Yes	Yes	A	Yes	3.10E-04	1.36E-03	0	0	0	0	0	0	0	0	6.19E-03	1.55E-04	6.19E-03	1.11E-03	3.10E-03	7.74E-04	0	0	1.24E-02	3.40E-03	Annual	5.00E-01	--	year	6.20E-01	Yes
Selenium	7782-49-2	Yes	Yes	B	Yes	2.63E-05	1.15E-04	0	0	0	0	0	0	0	0	5.26E-04	1.31E-05	5.26E-04	9.46E-05	2.63E-04	6.57E-05	0	0	1.05E-03	2.89E-04	1-hr and Annual	1.75E+02	2.00E-02	24-hr	1.50E+00	No
Zinc	7440-66-6	No	No	--	No	3.94E-03	1.73E-02	0	0	0	0	0	0	0	0	7.88E-02	1.97E-03	7.88E-02	1.42E-02	3.94E-02	9.85E-03	0	0	1.58E-01	4.33E-02	--	--	--	--	--	No
Diesel engine exhaust, particulate	200	No	No	--	Yes	0	0	0	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.48E-02	2.17E-03	3.48E-02	2.17E-03	--	--	--	year	5.40E-01	Yes
[3] Total Dioxins/Furans (2,3,7,8 TCDD Eqv.)	136677-09-3	No	Yes	A	No	1.43E-08	6.25E-08	0	0	0	0	0	0	0	0	2.85E-07	7.13E-09	2.85E-07	5.13E-08	1.43E-07	3.57E-08	0	0	5.71E-07	1.57E-07	No SQER	--	--	--	--	Yes
[4] TAP Total Polycyclic Aromatic Hydrocarbons (TAP - PAH)	130498-29-2	Yes - PAH	Yes	A	No	2.75E-05	1.21E-04	0	0	0	0	0	0	0	0	5.51E-04	0	5.51E-04	9.92E-05	2.75E-04	6.89E-05	0	0	1.10E-03	2.89E-04	No SQER	--	--	--	--	Yes
HAP Total Polycyclic Aromatic Hydrocarbons (HAP - PAH)	--	Yes - PAH	No	--	No	1.17E-03	5.12E-03	0	0	0	0	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.34E-02	0	2.34E-02	4.21E-03	1.17E-02	2.92E-03	0	0	4.68E-02	1.23E-02	--	--	--	--	--	No
																								Total HAP (tpy)	48.90						
																								Maximum Single HAP (tpy)	22.55						

[1] The SQER for each TAP is obtained from the 1998 and 2019 WAC 173-460 TAP lists.

[2] Chromium III and II are conservatively assumed to each be equal to the total chromium emissions, since the oxidation state of the emitted chromium compounds is not known.

[3] Dioxin and furan emissions are quantified using a toxic equivalency (TEQ) factor and considered as one TAP under the 1998 rule. The sum of these pollutant emissions are compared to the ASIL in the 1998 TAP rule in accordance with WAC 173-460-050(4)(b) adopted by SWCAA. Under the 2019 TAP rule, dioxins and furans are considered separate pollutants. Emissions are calculated separately and compared to the 2019 TAP rule. Pollutants reported individually have not been adjusted to 2,3,7,8 TCDD Eqv.

[4] Polyaromatic hydrocarbon (PAH) emissions for TAP consideration are quantified as the following PAHs and are considered as one TAP equivalent in potency to benzo(a)pyrene: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indenol(1,2,3-cd)pyrene, benzo(a)pyrene. The sum of these pollutant emissions are then compared to the ASIL 1998 TAP rule in accordance with WAC 173-460-050(4)(c) adopted by SWCAA. Since the TAP equivalent potency is not provided, it is assumed that it equals 1.

Table C-3a. Biomass Rotary Dryer Operating Parameters

Parameter	Value	Units
Max Hourly Throughput	68.3	ODT/hr
Max Annual Throughput	496,040	ODT/yr
Maximum Heat Input	187.7	MMBtu/hr
Wood and Wood Residuals Heating Value[1]	17.48	MMBtu/ODT
Maximum Annual Operation	8,760	hr/yr

[1] Wood and wood residuals heating value provided in 40 CFR Appendix Table C-1 to Subpart C of Part 98.

Table C-3b. Biomass Rotary Dryer Potential Emissions - Criteria Pollutants

Pollutant	Maximum Hourly Emissions[1] (lb/hr)	Potential Annual Emissions (tpy)
PM	5.00	21.90
PM_{10}	5.00	21.90
$PM_{2.5}$	5.00	21.90
SO_2 [2]	4.69	20.55
NO_X	52.00	227.76
VOC	15.00	65.70
CO	42.00	183.96

[1] Hourly emission rates from the RTO stack are obtained from vendor guarantees provided by TSI on September 9th, 2022.

[2] SO_2 emissions estimated using AP-42 Table 1.6-2 for Wood Residue Combustion. Emission factor is given in lb/MMBtu and converted to lbs/hr using the maximum heat input of the furnace.

Table C-3c. Biomass Rotary Dryer Potential Emissions - GHG

Fuel	Wood Drying CO_2 Emission Factor [1] (lb/ODT)	CO_2 Emissions (tpy)
Wood & wood residuals	720	178,574

[1] Wood drying emission factors for CO_2 are from AP-42 Table 10.6.1-2.

Table C-3d. Biomass Rotary Dryer Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	Biomass Combustion Emission Factor[1] (lb/MMBtu)	ABE Stack Test Factors[2] (lb/ODT)	Maximum Hourly Emissions[3,4] (lb/hr)	Potential Annual Emissions[3,4] (tpy)
Acenaphthene	83-32-9	Yes - PAH	No	9.10E-07	--	8.54E-06	3.74E-05
Acenaphthylene	208-96-8	Yes - PAH	No	5.00E-06	--	4.69E-05	2.06E-04
Acetaldehyde	75-07-0	Yes	Yes	8.30E-04	8.29E-03	5.67E-01	2.06E+00
Acrolein	107-02-8	Yes	Yes	--	3.55E-03	2.43E-01	8.82E-01
Anthracene	120-12-7	Yes - PAH	No	3.00E-06	--	2.82E-05	1.23E-04
Benzo(a)anthracene	56-55-3	Yes - PAH	Yes	6.50E-08	--	6.10E-07	2.67E-06
Benzene	71-43-2	Yes	Yes	4.20E-03	--	3.94E-02	1.73E-01
Benzo(a)pyrene	50-32-8	Yes - PAH	Yes	2.60E-06	--	2.44E-05	1.07E-04
Benzo(b)fluoranthene	205-99-2	Yes - PAH	Yes	1.00E-07	--	9.39E-07	4.11E-06
Benzo(g,h,i)perylene	191-24-2	Yes - PAH	No	9.30E-08	--	8.73E-07	3.82E-06
Benzo(k)fluoranthene	207-08-9	Yes - PAH	Yes	3.60E-08	--	3.38E-07	1.48E-06
Chrysene	218-01-9	Yes - PAH	No	3.80E-08	--	3.57E-07	1.56E-06
Dibenzo(a,h)anthracene	53-70-3	Yes - PAH	Yes	9.10E-09	--	8.54E-08	3.74E-07
Fluoranthene	206-44-0	Yes - PAH	No	1.60E-06	--	1.50E-05	6.58E-05
Fluorene	86-73-7	Yes - PAH	No	3.40E-06	--	3.19E-05	1.40E-04
Formaldehyde	50-00-0	Yes	Yes	4.40E-03	2.09E-02	1.43E+00	5.17E+00
Hydrochloric Acid	7647-01-0	Yes	Yes	--	2.61E-03	1.78E-01	6.46E-01
Indeno(1,2,3,c,d)pyrene	193-39-5	Yes - PAH	Yes	8.70E-08	--	8.16E-07	3.58E-06
Methanol	67-56-1	Yes	Yes	--	3.74E-02	2.56E+00	9.29E+00
Naphthalene	91-20-3	Yes - PAH	Yes	9.70E-05	--	9.10E-04	3.99E-03
Octachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[5]	3268-87-9	No	No	6.60E-08	--	1.86E-10	8.14E-10
Pentachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[5]	40321-76-4	No	No	1.50E-09	--	1.41E-08	6.17E-08
Phenanthrene	85-01-8	Yes - PAH	No	7.00E-06	--	6.57E-05	2.88E-04
Phenol	108-95-2	Yes	Yes	--	1.61E-02	1.10E+00	4.00E+00
Propionaldehyde	123-38-6	Yes	Yes	--	2.37E-03	1.62E-01	5.88E-01
Pyrene	129-00-0	Yes - PAH	No	3.70E-06	--	3.47E-05	1.52E-04
Arsenic	7440-38-2	Yes	Yes	2.20E-05	--	2.06E-04	9.04E-04
Beryllium	7440-41-7	Yes	Yes	1.10E-06	--	1.03E-05	4.52E-05
Cadmium	7440-43-9	Yes	Yes	4.10E-06	--	3.85E-05	1.69E-04
Chromium, Total	7440-47-3	Yes	Yes	2.10E-05	--	1.97E-04	8.63E-04
Chromium, Hexavalent[6]	18540-29-9	No	Yes	3.50E-06	--	3.28E-05	1.44E-04
Copper	7440-50-8	No	Yes	4.90E-05	--	4.60E-04	2.01E-03
Manganese	7439-96-5	Yes	Yes	1.60E-03	--	1.50E-02	6.58E-02
Mercury	7439-97-6	Yes	Yes	3.50E-06	--	6.57E-04	2.88E-03
Nickel	7440-02-0	Yes	Yes	3.30E-05	--	3.10E-04	1.36E-03
Selenium	7782-49-2	Yes	Yes	2.80E-06	--	2.63E-05	1.15E-04
Zinc	7440-66-6	No	No	4.20E-04	--	3.94E-03	1.73E-02
						Total HAP	**22.88**
						Maximum Individual HAP	**9.29**

[1] Emission factors for biomass (wood residue) combustion are uncontrolled and from AP-42, Section 1.6 (Wood Residue Combustion), Tables 1.6-3 and 1.6-4. Pollutants with an emission factor rating of C, D, or E are not included.

[2] Emission factors obtained from Drax ABE facility in Gloster, MS stack testing. Maximum emission factors in lbs/ODT from 2018 and 2021 stack testing. A 25% safety factor has been included for conservatism.

[3] Organic TAP are controlled by RTO. Control efficiency is provided by LDX Solutions for VOC compounds as: 95%

[4] TAP emitted as PM are controlled by WESP. A minimum control efficiency according to an EPA Air Pollution Control Technology Fact Sheet on WESP is: 95%

Because mercury is a liquid at ambient temperature, it is not emitted in the form of PM. Therefore, it is uncontrolled.

[5] Dioxin and furan emissions apply a toxic equivalency (TEQ) factor obtained from the 72 FR 26545 in accordance with the 1998 TAP rule WAC 173-460-050(4)(b) adopted by SWCAA. Emissions shown in this table are expressed as an equivalent emissions of 2,3,7,8 TCDD. https://www.govinfo.gov/content/pkg/FR-2007-05-10/pdf/E7-9015.pdf

Octachlorodibenzo-p-dioxins TEQ: 0.0003

Pentachlorodibenzo-p-dioxins TEQ: 1

[6] Because the emission factor for "Chromium, Total" has an "A" rating and it is likely that a portion is in the form of hexavalent chromium, it conservative to use the emission factor for "Chromium, Hexavalent" even though it has a "C" rating.

Table C-4a. RTO Burner Operating Parameters

Parameter		Units
Unit Heat Input	8.8	MMBtu/hr
Natural Gas Heating Value[1]	1,020	MMBtu/MMscf
Annual Operation	8,760	hr/yr
Potential Annual Fuel Usage[2]	75.6	MMscf/yr

[1] Natural Gas HHV is the average from the range listed in AP-42, Section 1.4.

[2] Potential Annual Fuel Usage calculated as follows:
Annual Fuel Usage (MMscf/yr) = Heat Input (MMBtu/hr) / Natural Gas HHV (MMBtu/MMscf) x Annual Operation (hr/yr)

Table C-4b. RTO Potential Emissions - Criteria Pollutants

Pollutant[1]	Natural Gas Uncontrolled Emission Factor (lb/MMscf)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
Total PM	--	--	--
PM_{10}	--	--	--
$PM_{2.5}$	--	--	--
SO_2	0.6	5.18E-03	2.27E-02
NO_X	--	--	--
VOC	--	--	--
CO	--	--	--
CH_4	2.3	1.98E-02	8.69E-02
N_2O	2.2	1.90E-02	8.31E-02
CO_2	120,000	1035	4535
CO_2e[2]	120,713	1041	4562

[1] Uncontrolled emission factors for natural gas combustion from AP-42, Section 1.4 - Natural Gas Combustion, Table 1.4-1, 1.4-2, 1.4-3, and 1.4-4. Emissions for CO, NO_X, VOC, and PM from the RTO are included in the dryer calculations.

[2] Global warming potential (GWP) for CH_4 is 25 and N_2O is 298 for estimating CO_2e emissions (40 CFR 98, Subpart A, Table A-1, effective January 1, 2014).

Table C-4c. RTO Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	Natural Gas Uncontrolled Emission Factor[1] (lb/MMscf)	Maximum Hourly Emissions [2] (lb/hr)	Potential Annual Emissions [2] (tpy)
Benzene	71-43-2	Yes	Yes	2.10E-03	1.81E-05	7.94E-05
Formaldehyde	50-00-0	Yes	Yes	7.50E-02	6.47E-04	2.83E-03
					Total HAP	**2.91E-03**
					Maximum Individual HAP	**2.83E-03**

[1] Uncontrolled emission factors for natural gas combustion from AP-42, Section 1.4 - Natural Gas Combustion, Table 1.4-1, 1.4-2, 1.4-3, and 1.4-4. Pollutants with an emission factor rating of C, D, or E are not included.

Table C-5a. RCO Burner Operating Parameters

Parameter		Units
Unit Heat Input	2.2	MMBtu/hr
Natural Gas Heating Value[1]	1,020	MMBtu/MMscf
Annual Operation	8,760	hr/yr
Potential Annual Fuel Usage[2]	18.9	MMscf/yr

[1] Natural Gas HHV is the average from the range listed in AP-42, Section 1.4.

[2] Potential Annual Fuel Usage calculated as follows:
Annual Fuel Usage (MMscf/yr) = Heat Input (MMBtu/hr) / Natural Gas HHV (MMBtu/MMscf) x Number of Burners x Annual Operation (hr/yr)

Table C-5b. RCO Potential Emissions - Criteria Pollutants

Pollutant	Natural Gas Uncontrolled Emission Factor[1] (lb/MMscf)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
Total PM	7.6	0.02	0.07
PM_{10}	7.6	0.02	0.07
$PM_{2.5}$	7.6	0.02	0.07
SO_2	0.6	1.29E-03	5.67E-03
NO_X	100	0.22	0.94
VOC	5.5	0.01	0.05
CO	84	0.18	0.79
CH_4	2.3	4.96E-03	0.02
N_2O	2.2	4.75E-03	0.02
CO_2	120,000	259	1134
CO_2e[2]	120,713	260	1140

[1] PM is equal to the sum of PM (condensable) and PM (filterable). PM_{10} and $PM_{2.5}$ are conservatively assumed to be equivalent to PM.

[2] Global warming potential (GWP) for CH_4 is 25 and N_2O is 298 for estimating CO_2e emissions (40 CFR 98, Subpart A, Table A-1, effective January 1, 2014).

Table C-5c. RCO Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	Natural Gas Uncontrolled Emission Factor[1] (lb/MMscf)	Maximum Hourly Emissions [2] (lb/hr)	Potential Annual Emissions [2] (tpy)
Benzene	71-43-2	Yes	Yes	2.10E-03	4.53E-06	1.98E-05
Formaldehyde	50-00-0	Yes	Yes	7.50E-02	1.62E-04	7.09E-04
					Total HAP	**7.28E-04**
					Maximum Individual HAP	**7.09E-04**

[1] Uncontrolled emission factors for natural gas combustion from AP-42, Section 1.4 - Natural Gas Combustion, Table 1.4-1, 1.4-2, 1.4-3, and 1.4-4. Pollutants with an emission factor rating of C, D, or E are not included.

Table C-6a. Hammermill Potential Emissions - VOC

EU ID	Emission Unit	Control Device	Potential Hourly Throughput (ODT/hr)	Potential Annual Throughput (ODT/yr)	Controlled VOC Emission Factor[1] (lb/ODT)	Potential Controlled VOC Emissions[2] (tpy)
HM1	Hammermill No. 1	RCO	82.67	496,040	7.09E-02	17.57
HM2	Hammermill No. 2					
HM3	Hammermill No. 3					
HM4	Hammermill No. 4					
					Total Emissions	**17.57**

[1] The hammermill VOC emission factor is the average value from 2013/2014 engineering testing performed on the Dry Classizizer units at the Pinnacle Aliceville facility (formerly Westervelt Aliceville). A 25% safety factor has been included for conservatism.

[2] Potential Emissions (tpy) = Emission Factor (lb/short ton) x Potential Annual Throughput (tpy) / 2000 (lb/short ton)

Table C-6b. Hammermill Potential Emissions - PM

EU ID	Emission Unit	Control Device	Potential Operation[1]	Exit Temperature	Exhaust Flow Rate[2]		Loading Rate[3]	Total PM[4]		Total PM_{10}[4,5]		Total $PM_{2.5}$[4,5]	
			(hr/yr)	(°F)	(acfm)	(scfm)	(gr./dscf)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
HM1	Hammermill No. 1	Baghouse	8,760	122	44,200	40,074	0.005	1.72	7.52	1.72	7.52	1.72	7.52
HM2	Hammermill No. 2												
HM3	Hammermill No. 3												
HM4	Hammermill No. 4												
							Total Emissions	**1.72**	**7.52**	**1.72**	**7.52**	**1.72**	**7.52**

[1] Potential operation assumed to be continuous.

[2] Exhaust flow rate (scfm) estimated for all hammermills. Exhaust flow converted to acfm assuming 50°C exhaust temperatures at 1 atm, with standard temperature of 68 °F.

[3] The grain loading rate is based on the BACT determination for dust collectors.

[4] Emissions of PM and PM_{10} are assumed to be equal to emissions of $PM_{2.5}$. These emissions are included as a conservative measure, as all of the particulate matter emitted is expected to be less than 2.5 microns.

[5] Potential hourly PM emissions (lb/hr) = Exhaust Grain Loading Rate (gr./dscf) x Exhaust Air Flow Rate (dscf/min) x (60 min/hr) x (lb/7,000 gr.)

Table C-6c. Hammermill Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	ABE Stack Test Factors[1] (lb/ODT)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
Acetaldehyde	75-07-0	Yes	Yes	2.18E-03	1.80E-01	5.41E-01
Acrolein	107-02-8	Yes	Yes	8.18E-04	6.76E-02	2.03E-01
Formaldehyde	50-00-0	Yes	Yes	2.09E-03	1.73E-01	5.18E-01
Hydrochloric Acid	7647-01-0	Yes	Yes	4.54E-04	3.76E-02	1.13E-01
Methanol	67-56-1	Yes	Yes	2.42E-02	2.00E+00	5.99E+00
Phenol	108-95-2	Yes	Yes	1.31E-02	1.08E+00	3.24E+00
Propionaldehyde	123-38-6	Yes	Yes	2.00E-03	1.65E-01	4.96E-01
					Total HAP	**11.11**
					Maximum Individual HAP	**5.99**

[1] Emission factors obtained from the Drax facility in Gloster, MS (ABE) stack testing. Maximum emission factors in lbs/ODT obtained from 2018 and 2021 stack testing. The ABE facility routes emissions from both the hammermill and pelletizer to the RCO similar to the proposed Longview facility. The emission factors are divided by 2 to represent half of the RCO emissions for each piece of equipment. A 25% safety factor has been included for conservatism.

Table C-7a. Pelletizing Potential Emissions - VOC

EU ID	Emission Unit	Control Device	Potential Hourly Pellet Throughput (ODT/hr)	Potential Annual Pellet Throughput (ODT/yr)	Controlled VOC Emission Factor[1] (lb/ODT)	Potential Controlled VOC Emissions[2] (tpy)
PC1	Pelletizer No. 1	RCO	82.45	496,040	7.09E-02	17.57
PC2	Pelletizer No. 2					
PC3	Pelletizer No. 3					
PC4	Pelletizer No. 4					
PC5	Pelletizer No. 5					
PC6	Pelletizer No. 6					
PC7	Pelletizer No. 7					
PC8	Pelletizer No. 8					
PC9	Pelletizer No. 9					
PC10	Pelletizer No. 10					
PC11	Pelletizer No. 11					
					Total Emissions	**17.57**

[1] The pellet cooler VOC emission factor is the average value from 2013/2014 engineering testing performed on the Dry Classisizer units at the Pinnacle Aliceville facility (formerly Westervelt Aliceville). A 25% safety factor has been included for conservatism.

[2] Potential Emissions (tpy) = Emission Factor (lb/short ton) x Potential Annual Throughput (tpy) / 2000 (lb/short ton)

Table C-7b. Pelletizing Potential Emissions - PM

EU ID	Emission Unit	Control Device	Potential Operation[1]	Exit Temperature	Exhaust Flow Rate[2]		Loading Rate[3]	Total PM[4,5]		Total PM_{10}[4,5]		Total $PM_{2.5}$[4,5]	
			(hr/yr)	(°F)	(acfm)	(scfm)	(gr./dscf)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
PC1	Pelletizer No. 1	Baghouse	8,760	122	76,000	68,905	0.005	2.95	12.93	2.95	12.93	2.95	12.93
PC2	Pelletizer No. 2												
PC3	Pelletizer No. 3												
PC4	Pelletizer No. 4												
PC5	Pelletizer No. 5												
PC6	Pelletizer No. 6												
PC7	Pelletizer No. 7												
PC8	Pelletizer No. 8												
PC9	Pelletizer No. 9												
PC10	Pelletizer No. 10												
PC11	Pelletizer No. 11												
							Total Emissions	**2.95**	**12.93**	**2.95**	**12.93**	**2.95**	**12.93**

[1] Potential operation assumed to be continuous.

[2] Exhaust flow rate (scfm) estimated for all pellet coolers. Exhaust flow converted to acfm assuming 50°C exhaust temperatures at 1 atm, with standard temperature of 68 °F.

[3] The grain loading rate is based on the BACT determination for dust collectors.

[4] Emissions of PM and PM_{10} are assumed to be equal to emissions of $PM_{2.5}$. These emissions are included as a conservative measure, as all of the particulate matter emitted is expected to be less than 2.5 microns.

[5] Potential hourly PM emissions (lb/hr) = Exhaust Grain Loading Rate (gr./dscf) x Exhaust Air Flow Rate (dscf/min) x (60 min/hr) x (lb/7,000 gr.)

Table C-7c. Hammermill Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	ABE Stack Test Factors[1] (lb/ODT)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
Acetaldehyde	75-07-0	Yes	Yes	2.18E-03	1.80E-01	5.41E-01
Acrolein	107-02-8	Yes	Yes	8.18E-04	6.74E-02	2.03E-01
Formaldehyde	50-00-0	Yes	Yes	2.09E-03	1.72E-01	5.18E-01
Hydrochloric Acid	7647-01-0	Yes	Yes	4.54E-04	3.75E-02	1.13E-01
Methanol	67-56-1	Yes	Yes	2.42E-02	1.99E+00	5.99E+00
Phenol	108-95-2	Yes	Yes	1.31E-02	1.08E+00	3.24E+00
Propionaldehyde	123-38-6	Yes	Yes	2.00E-03	1.65E-01	4.96E-01
					Total HAP	**11.11**
					Maximum Individual HAP	**5.99**

[1] Emission factors obtained from the Drax facility in Gloster, MS (ABE) stack testing. Maximum emission factors in lbs/ODT obtained from 2018 and 2021 stack testing. The ABE facility routes emissions from both the hammermill and pelletizer to the RCO similar to the proposed Longview facility. The emission factors are divided by 2 to represent half of the RCO emissions for each piece of equipment. A 25% safety factor has been included for conservatism.

Table C-8. Miscellaneous Sources Potential Emissions - PM

EU ID	Emission Unit[1]	Potential Annual Throughput (ODT/yr)	Emission Factor[2,3] PM (lb/ton)	PM_{10} (lb/ton)	$PM_{2.5}$ (lb/ton)	Potential Emissions PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
BIO	Biosizer/Scalper	496,040	1.1E-05	5.1E-06	7.8E-07	5.37E-03	2.54E-03	3.85E-04
DCS	Dry Chip Storage Tent	496,040	2.1E-04	1.0E-04	1.5E-05	5.56E-02	2.63E-02	3.98E-03
PSS1	Pellet Storage Silo 1	248,020	2.7E-04	1.3E-04	1.9E-05	3.55E-02	1.68E-02	2.54E-03
PSS2	Pellet Storage Silo 2	248,020	2.7E-04	1.3E-04	1.9E-05	3.55E-02	1.68E-02	2.54E-03
SLS	Ship Loadout System	496,040	2.7E-04	1.3E-04	1.9E-05	7.10E-02	3.35E-02	5.07E-03

[1] Total throughput at the facility is quantified in ODT/yr. To represent as-processed throughput weight, the value is adjusted based on moisture content specific to the process associated with the emission unit. All throughput will either go through the biosizer or a scalper so emissions from these process units are only quantified once.

[2] Emissions calculated using emission factor determined according to AP-42 Section 13.2.4 for aggregate handling and storage piles.

E (lb/ton) = $k\ (0.0032) \times (U/5)^{1.3}/(M/2)^{1.4}$

0.74 = k, PM size multiplier

0.35 = k, PM_{10} size multiplier

0.053 = k, $PM_{2.5}$ size multiplier

2.54 = U, mean wind speed (m/s) (average from 2007-2015) in Longview

50 = M, estimate for moisture content (%) of incoming material as described in manufacturer's proposal for RTO operation

6 = M, estimate for moisture content (%) of dry chips

5 = M, estimate for moisture content (%) of dry, finished product

[3] The VOC emission factor for chip storage in EPA AP-42 10.6.3, Table 10.6.3-7 is listed as "no data available"; therefore emissions are not quantified.

Table C-9. Paved Road Potential Emissions - PM

Paved Truck Route	PM Emission Factor, E [1] (lb/VMT)	PM_{10} Emission Factor, E [1] (lb/VMT)	$PM_{2.5}$ Emission Factor, E [1] (lb/VMT)	Maximum Loads Per Hour [2]	Maximum Loads Per Year [2]	Truck Route Maximum Round Trip Distance (mi)	Vehicle Miles Traveled per Hour (VMT/hr)	Vehicle Miles Traveled per Year (VMT/yr)	PM Emissions [3] (tpy)	PM_{10} Emissions [3] (tpy)	$PM_{2.5}$ Emissions [3] (tpy)
Between wet material stockpiles and process drop point	0.25	0.049	0.012	24.8	180,000	0.124	3.1	22,369	2.39	0.48	0.12

[1] Emission factor E is calculated according to AP-42 Section 13.2.1 for emissions from paved roads, equation 1:

E (lbs/VMT) = Paved Road Emission Factor, [$k * (sL)^{0.91} * (W)^{1.02}$]
0.011 = k, PM size multiplier (lb/VMT) from AP-42 Table 13.2.1-1.
0.0022 = k, PM_{10} size multiplier (lb/VMT) from AP-42 Table 13.2.1-1.
0.00054 = k, $PM_{2.5}$ size multiplier (lb/VMT) from AP-42 Table 13.2.1-1.

1.1 = sL, roadway surface silt loading (g/m^2) AP-42 13.2.1, Table 13-2.1-3. The silt loading value for corn wet mills is used because the wet material stockpile is expected to store materials with a similar texture and moisture content.
19.26 = W, average truck weight (tons)

[2] Vehicles per hour and vehicles per year are based on truck capacity and pile throughput values:

Truck Capacity: 5.51 tons
Max Hourly Throughput: 137 tons/hr
Max Annual Throughput: 992,080 tons/yr

[3] Emissions account for natural mitigation due to precipitation according to AP-42 Section 13.2.1 equation 2:

Annual emissions (tpy) = E * (1-P/4N)*[VMT/yr]/[lb/ton]
185.8 = P, mean number of days per year with measurable precipitation for Longview station, NOAA National Centers for Environmental Information 1981-2010 Climate Normals data
365 = N, number of days in period for annual rainfall mitigation effect

[4] Truck weight and vehicle capacity were provided to by Drax to Trinity via email on March 6, 2020.

Truck Weight: 33000 lb
Vehicle Capacity: 5 ODMT

Table C-10a. Material Handling Potential Emissions - PM

Pile	Throughput [1] (tons/hr)	(tons/yr)	PM Emissions [2] (lb/hr)	(tpy)	PM_{10} Emissions [2] (lb/hr)	(tpy)	$PM_{2.5}$ Emissions [2] (lb/hr)	(tpy)
Wet Material Stockpiles	137	992,080	1.48E-03	5.37E-03	7.00E-04	2.54E-03	1.06E-04	3.85E-04

[1] Maximum pile throughput is based on a total pellet production rate of 62 metric tonnes per hour and 450,000 metric tonnes per year, scaled by a factor of 2 to account for the additional weight of the material being stored wet.

[2] Emissions calculated using emission factor determined according to AP-42 Section 13.2.4 for aggregate handling and storage piles.

$E\ (lb/VMT) = k\ (0.0032) \times (U/5)^{1.3}/(M/2)^{1.4}$

0.74 = k, PM size multiplier
0.35 = k, PM_{10} size multiplier
0.053 = k, $PM_{2.5}$ size multiplier
2.54 = U, mean wind speed (m/s) (average from 2007-2015) in Longview
50 = M, estimate for moisture content (%) of incoming material as described in manufacturer's proposal for RTO operation

Table C-10b. Pile Wind Erosion Potential Emissions - PM

Pile	Area [1] (acres)	PM Emissions [2] (lb/hr)	(tpy)	PM_{10} Emissions [3] (lb/hr)	(tpy)	$PM_{2.5}$ Emissions [3] (lb/hr)	(tpy)
Wet Material Stockpiles	2.52	0.08	0.37	0.040	0.18	0.0061	0.027

[1] The wet material stockpiles are located on the north side of the facility in a conical shape. There will be two wet fiber storage piles and one hog storage pile. The three piles are expected to have similar dimensions. The pile diameters and heights were provided by Drax in a call on 3/7/2022.

[2] PM Emissions are calculated using emission factors determined according to Equation 2-12 from the EPA document "Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures" dated 9/1992.

$e_{TSP}\ (lb/acre\text{-}day) = 1.7 * (s/1.5) * [\ (365\text{-}p) / 235\ ] * (f/15)$

1 = s, silt content
185.8 = p, number of days with ≥ 0.01 in. precipitation per year
14.01 = f, percentage of time that the unobstructed wind speed exceeds 5.4 m/s (12 mph) at the mean pile height

[3] PM_{10} and $PM_{2.5}$ emissions are determined based on PM emissions using the ratios of the particle size multipliers for each particle size provided for Equation 1 in AP-42 Section 13.2.4.

Table C-12. Truck Tipping Potential Emissions - PM

EU ID	Emission Unit	Control Device	Potential Operation[1] (hr/yr)	Exit Temperature (°F)	Exhaust Flow Rate[2] (acfm)	Exhaust Flow Rate[2] (scfm)	Loading Rate[3] (gr./dscf)	Total PM[4] (lb/hr)	Total PM[4] (tpy)	Total PM_{10}[4,5] (lb/hr)	Total PM_{10}[4,5] (tpy)	Total $PM_{2.5}$[4,5] (lb/hr)	Total $PM_{2.5}$[4,5] (tpy)
BAG2	Truck Tipper	Baghouse	8,760	150	27,700	23,961	0.002	0.41	1.80	0.41	1.80	0.41	1.80
							Total Emissions	**0.41**	**1.80**	**0.41**	**1.80**	**0.41**	**1.80**

[1] Potential operation assumed to be continuous.

[2] Exhaust flow converted to scfm assuming 150°F exhaust temperatures at 1 atm, with standard temperature of 68°F.

[3] Exit temperature, exhaust flow rate, and loading rate obtained from vendor guarantee.

[4] Emissions of PM and PM_{10} are assumed to be equal to emissions of $PM_{2.5}$. These emissions are included as a conservative measure, as all of the particulate matter emitted is expected to be less than 2.5 microns.

[5] Potential hourly PM emissions (lb/hr) = Exhaust Grain Loading Rate (gr/dscf) x Exhaust Air Flow Rate (dscf/min) x (60 min/hr) x (lb/7,000 gr.)

Table C-11a. ULSD-Fired Emergency Engines Operating Parameters

EU ID	Emission Unit	Potential Operation (hr/yr)	Rated Engine Capacity (bhp)	(bkw)
ENG1	625 kW Emergency Generator	125	838	625
FWP1	164 kW Fire Pump Engine	125	220	164

Table C-11b. ULSD-Fired Emergency Engines Potential Emissions - Criteria Pollutants

Pollutant	Diesel Industrial Engines AP-42 Emission Factor[1]	Large Stationary Diesel Engines AP-42 Emission Factor[1]	FWP1 Emissions[2,3,4]		ENG1 Emissions[2,3,4]	
	(lb/MMBtu)	(lb/MMBtu)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Total PM	--	--	7.23E-03	4.52E-04	0.03	1.72E-03
Total PM_{10}	--	--	7.23E-03	4.52E-04	0.03	1.72E-03
Total $PM_{2.5}$	--	--	7.23E-03	4.52E-04	0.03	1.72E-03
SO_2	0.29	1.52E-03	0.45	0.03	0.01	5.55E-04
NO_X	4.41	3.20	6.79	0.42	18.77	1.17
VOC	0.36	0.09	0.55	0.03	0.53	0.03
CO	0.95	0.85	1.46	0.09	4.99	0.31
CO_2e[5]	165.20	165.60	254.41	15.90	971.39	60.71

[1] Emission factors for diesel industrial engines from AP-42, Table 3.3-1. Emission factors for large stationary diesel engines from AP-42, Table 3.4-1 and Table 3.4-2. HAP/TAP Pollutants with an emission factor rating of C, D, or E are not included.

[2] PM emissions for both units are estimated using Tier II EPA standards (0.20 g/kW-hr) for nonroad compression-ignition engines. Factors are given in units of g/kW-hr and are converted to lb/hr.

[3] An example of annual emissions calculations are shown below:

Emission Factor (lb/MMBtu) x Fuel Factor (MMBtu/bhp-hr) x Rated Capacity (bhp) x Annual Operation (hr/yr) / 2,000 (lb/ton)

Fuel Factor (MMBtu/bhp-hr) = 0.007

[4] Diesel particulate filters will be added to each emergency engine and will provide the following control efficiency for particulate matter: 90%

[5] CO_2 and CH_4 emission factors are from AP-42, Table 3.3-1. N_2O emission factor is from 40 CFR 98, Subpart C, Table C-2. Global warming potential (GWP) for CH_4 is 25 and N_2O is 298 for estimating CO_2e emissions (40 CFR 98, Subpart A, Table A-1).

Table C-13a. Biomass Rotary Dryer Abort Parameters

Parameter	Value	Units
Max Hourly Throughput	68.3	ODT/hr
Maximum Heat Input[1]	187.7	MMBtu/hr
Wood and Wood Residuals Heating Value[2]	17.48	MMBtu/ODT
Maximum Annual Operation	50	hr/yr

[1] Dryer abort heat input is assumed to be 100% of the maximum heat input for the unit.

[2] Wood and wood residuals heating value provided in 40 CFR Appendix Table C-1 to Subpart C of Part 98.

Table C-13b. Biomass Rotary Dryer Abort Potential Emissions - Criteria Pollutants

Pollutant	Maximum Hourly Emissions[1] (lb/hr)	Potential Annual Emissions (tpy)
PM	100.00	2.50
PM_{10}	100.00	2.50
$PM_{2.5}$	100.00	2.50
SO_2 [2]	4.69	0.12
NO_X	52.00	1.30
VOC	300.00	7.50
CO	42.00	1.05

[1] Hourly emission rates from the RTO stack are obtained from vendor guarantees provided by TSI on September 9th, 2022. Uncontrolled emissions for PM and VOC are backcalculated using the control efficiencies of the WESP and RTO provided by TSI.

WESP PM control efficiency:	95%
RTO VOC control efficiency:	95%

[2] SO_2 emissions estimated using AP-42 Table 1.6-2 for Wood Residue Combustion. Emission factor is given in lb/MMBtu and converted to lbs/hr using the maximum heat input of the furnace.

Table C-13c. Biomass Rotary Dryer Abort Potential Emissions - GHG

Fuel	Wood Drying CO_2 Emission Factor [1] (lb/ODT)	CO_2 Emissions (tpy)
Wood & wood residuals	720	1,230

[1] Wood drying emission factors for CO_2 are from AP-42 Table 10.6.1-2.

Table C-13d. Biomass Rotary Dryer Abort Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	Biomass Combustion Emission Factor[1] (lb/MMBtu)	ABE Stack Test Factors[2] (lb/ODT)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
Acenaphthene	83-32-9	Yes - PAH	No	9.10E-07	--	1.71E-04	4.27E-06
Acenaphthylene	208-96-8	Yes - PAH	No	5.00E-06	--	9.39E-04	2.35E-05
Acetaldehyde	75-07-0	Yes	Yes	8.30E-04	1.66E-01	1.13E+01	2.83E-01
Acrolein	107-02-8	Yes	Yes	--	7.11E-02	4.86E+00	1.21E-01
Anthracene	120-12-7	Yes - PAH	No	3.00E-06	--	5.63E-04	1.41E-05
Benzo(a)anthracene	56-55-3	Yes - PAH	Yes	6.50E-08	--	1.22E-05	3.05E-07
Benzene	71-43-2	Yes	Yes	4.20E-03	--	7.88E-01	1.97E-02
Benzo(a)pyrene	50-32-8	Yes - PAH	Yes	2.60E-06	--	4.88E-04	1.22E-05
Benzo(b)fluoranthene	205-99-2	Yes - PAH	Yes	1.00E-07	--	1.88E-05	4.69E-07
Benzo(g,h,i)perylene	191-24-2	Yes - PAH	No	9.30E-08	--	1.75E-05	4.36E-07
Benzo(k)fluoranthene	207-08-9	Yes - PAH	Yes	3.60E-08	--	6.76E-06	1.69E-07
Chrysene	218-01-9	Yes - PAH	No	3.80E-08	--	7.13E-06	1.78E-07
Dibenzo(a,h)anthracene	53-70-3	Yes - PAH	Yes	9.10E-09	--	1.71E-06	4.27E-08
Fluoranthene	206-44-0	Yes - PAH	No	1.60E-06	--	3.00E-04	7.51E-06
Fluorene	86-73-7	Yes - PAH	No	3.40E-06	--	6.38E-04	1.60E-05
Formaldehyde	50-00-0	Yes	Yes	4.40E-03	4.17E-01	2.85E+01	7.13E-01
Hydrochloric Acid	7647-01-0	Yes	Yes	--	5.21E-02	3.56E+00	8.91E-02
Indeno(1,2,3,c,d)pyrene	193-39-5	Yes - PAH	Yes	8.70E-08	--	1.63E-05	4.08E-07
Methanol	67-56-1	Yes	Yes	--	7.49E-01	5.12E+01	1.28E+00
Naphthalene	91-20-3	Yes - PAH	Yes	9.70E-05	--	1.82E-02	4.55E-04
Octachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[3]	3268-87-9	No	No	6.60E-08	--	3.72E-09	9.29E-11
Pentachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[3]	40321-76-4	No	No	1.50E-09	--	2.82E-07	7.04E-09
Phenanthrene	85-01-8	Yes - PAH	No	7.00E-06	--	1.31E-03	3.28E-05
Phenol	108-95-2	Yes	Yes	--	3.22E-01	2.20E+01	5.51E-01
Propionaldehyde	123-38-6	Yes	Yes	--	4.74E-02	3.24E+00	8.10E-02
Pyrene	129-00-0	Yes - PAH	No	3.70E-06	--	6.94E-04	1.74E-05
Arsenic	7440-38-2	Yes	Yes	2.20E-05	--	4.13E-03	1.03E-04
Beryllium	7440-41-7	Yes	Yes	1.10E-06	--	2.06E-04	5.16E-06
Cadmium	7440-43-9	Yes	Yes	4.10E-06	--	7.70E-04	1.92E-05
Chromium, Total	7440-47-3	Yes	Yes	2.10E-05	--	3.94E-03	9.85E-05
Chromium, Hexavalent[4]	18540-29-9	No	Yes	3.50E-06	--	6.57E-04	1.64E-05
Copper	7440-50-8	No	Yes	4.90E-05	--	9.20E-03	2.30E-04
Manganese	7439-96-5	Yes	Yes	1.60E-03	--	3.00E-01	7.51E-03
Mercury	7439-97-6	Yes	Yes	3.50E-06	--	6.57E-04	1.64E-05
Nickel	7440-02-0	Yes	Yes	3.30E-05	--	6.19E-03	1.55E-04
Selenium	7782-49-2	Yes	Yes	2.80E-06	--	5.26E-04	1.31E-05
Zinc	7440-66-6	No	No	4.20E-04	--	7.88E-02	1.97E-03
						Total HAP	**3.15**
						Maximum Individual HAP	**1.28**

[1] Emission factors for biomass (wood residue) combustion are uncontrolled and from AP-42, Section 1.6 (Wood Residue Combustion), Tables 1.6-3 and 1.6-4. Pollutants with an emission factor rating of C, D, or E are not included.

[2] Emission factors obtained from Drax ABE facility in Gloster, MS stack testing. Maximum emission factors in lbs/ODT from 2018 and 2021 stack testing. A 25% safety factor has been included for conservatism. Uncontrolled TAP emissions in the form of VOC are backcalculated using the control efficiencies of the RTO provided by TSI.

Control efficiency is provided by LDX Solutions for VOC compounds as: 95%

[3] Dioxin and furan emissions apply a toxic equivalency (TEQ) factor obtained from the 72 FR 26545 in accordance with the 1998 TAP rule WAC 173-460-050(4)(b) adopted by SWCAA. Emissions shown in this table are expressed as an equivalent emissions of 2,3,7,8 TCDD. https://www.govinfo.gov/content/pkg/FR-2007-05-10/pdf/E7-9015.pdf

Octachlorodibenzo-p-dioxins TEQ: 0.0003
Pentachlorodibenzo-p-dioxins TEQ: 1

[4] Because the emission factor for "Chromium, Total" has an "A" rating and it is likely that a portion is in the form of hexavalent chromium, it conservative to use the emission factor for "Chromium, Hexavalent" even though it has a "C" rating.

Table C-14a. Biomass Furnace Abort Parameters

Parameter	Value	Units
Maximum Heat Input[1]	187.7	MMBtu/hr
Maximum Annual Operation	360	hr/yr

[1] Furnace abort heat input is assumed to be 100% of the maximum heat input for the unit.

Table C-14b. Biomass Furnace Abort Potential Emissions - Criteria Pollutants

Pollutant	Emission Factors[1] (lb/MMBtu)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
CO	0.60	112.62	20.27
NO_X	0.22	41.29	7.43
VOC	0.02	3.19	5.74E-01
Filterable PM	0.56	105.11	18.92
Condensable PM	0.02	3.19	5.74E-01
Total PM	0.58	108.30	19.49
Total PM_{10}	0.52	97.04	17.47
Total $PM_{2.5}$	0.45	83.90	15.10
SO_2	0.03	4.69	8.45E-01
Lead	4.80E-05	9.01E-03	1.62E-03
CH_4	0.02	3.94	7.10E-01
N_2O	0.01	2.44	4.39E-01
CO_2	195.00	36,602	6588.27
CO_2e[2]	199.40	37,427	6736.89

[1] Emission factors from AP-42 Section 1.6 (Wood Residue Combustion), Tables 1.6-1 through 1.6-4 (09/03).

[2] Global warming potential (GWP) for CH_4 is 25 and N_2O is 298 for estimating CO_2e emissions (40 CFR 98, Subpart A, Table A-1, effective January 1, 2014).

Table C-14c. Biomass Furnace Abort Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	Biomass Combustion Emission Factor[1] (lb/MMBtu)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
Acenaphthene	83-32-9	Yes - PAH	No	9.10E-07	1.71E-04	3.07E-05
Acenaphthylene	208-96-8	Yes - PAH	No	5.00E-06	9.39E-04	1.69E-04
Acetaldehyde	75-07-0	Yes	Yes	8.30E-04	1.56E-01	2.80E-02
Anthracene	120-12-7	Yes - PAH	No	3.00E-06	5.63E-04	1.01E-04
Benzo(a)anthracene	56-55-3	Yes - PAH	Yes	6.50E-08	1.22E-05	2.20E-06
Benzene	71-43-2	Yes	Yes	4.20E-03	7.88E-01	1.42E-01
Benzo(a)pyrene	50-32-8	Yes - PAH	Yes	2.60E-06	4.88E-04	8.78E-05
Benzo(b)fluoranthene	205-99-2	Yes - PAH	Yes	1.00E-07	1.88E-05	3.38E-06
Benzo(g,h,i)perylene	191-24-2	Yes - PAH	No	9.30E-08	1.75E-05	3.14E-06
Benzo(k)fluoranthene	207-08-9	Yes - PAH	Yes	3.60E-08	6.76E-06	1.22E-06
Chrysene	218-01-9	Yes - PAH	No	3.80E-08	7.13E-06	1.28E-06
Dibenzo(a,h)anthracene	53-70-3	Yes - PAH	Yes	9.10E-09	1.71E-06	3.07E-07
Fluoranthene	206-44-0	Yes - PAH	No	1.60E-06	3.00E-04	5.41E-05
Fluorene	86-73-7	Yes - PAH	No	3.40E-06	6.38E-04	1.15E-04
Formaldehyde	50-00-0	Yes	Yes	4.40E-03	8.26E-01	1.49E-01
Indeno(1,2,3,c,d)pyrene	193-39-5	Yes - PAH	Yes	8.70E-08	1.63E-05	2.94E-06
Naphthalene	91-20-3	Yes - PAH	Yes	9.70E-05	1.82E-02	3.28E-03
Octachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[2]	3268-87-9	No	No	6.60E-08	3.72E-09	6.69E-10
Pentachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[2]	40321-76-4	No	No	1.50E-09	2.82E-07	5.07E-08
Phenanthrene	85-01-8	Yes - PAH	No	7.00E-06	1.31E-03	2.37E-04
Pyrene	129-00-0	Yes - PAH	No	3.70E-06	6.94E-04	1.25E-04
Arsenic	7440-38-2	Yes	Yes	2.20E-05	4.13E-03	7.43E-04
Beryllium	7440-41-7	Yes	Yes	1.10E-06	2.06E-04	3.72E-05
Cadmium	7440-43-9	Yes	Yes	4.10E-06	7.70E-04	1.39E-04
Chromium, Total	7440-47-3	Yes	Yes	2.10E-05	3.94E-03	7.10E-04
Chromium, Hexavalent[3]	18540-29-9	No	Yes	3.50E-06	6.57E-04	1.18E-04
Copper	7440-50-8	No	Yes	4.90E-05	9.20E-03	1.66E-03
Manganese	7439-96-5	Yes	Yes	1.60E-03	3.00E-01	5.41E-02
Mercury	7439-97-6	Yes	Yes	3.50E-06	6.57E-04	1.18E-04
Nickel	7440-02-0	Yes	Yes	3.30E-05	6.19E-03	1.11E-03
Selenium	7782-49-2	Yes	Yes	2.80E-06	5.26E-04	9.46E-05
Zinc	7440-66-6	No	No	4.20E-04	7.88E-02	1.42E-02
					Total HAP	**3.80E-01**
					Maximum Individual HAP	**1.49E-01**

[1] Emission factors for biomass (wood residue) combustion are uncontrolled and from AP-42, Section 1.6 (Wood Residue Combustion), Tables 1.6-3 and 1.6-4. Pollutants with an emission factor rating of C, D, or E are not included.

[2] Dioxin and furan emissions apply a toxic equivalency (TEQ) factor obtained from the 72 FR 26545 in accordance with the 1998 TAP rule WAC 173-460-050(4)(b) adopted by SWCAA. Emissions shown in this table are expressed as an equivalent emissions of 2,3,7,8 TCDD. https://www.govinfo.gov/content/pkg/FR-2007-05-10/pdf/E7-9015.pdf

Octachlorodibenzo-p-dioxins TEQ:	0.0003
Pentachlorodibenzo-p-dioxins TEQ:	1

[3] Because the emission factor for "Chromium, Total" has an "A" rating and it is likely that a portion is in the form of hexavalent chromium, it conservative to use the emission factor for "Chromium, Hexavalent" even though it has a "C" rating.

Table C-15a. Biomass Furnace Idle Parameters

Parameter	Value	Units
Maximum Heat Input[1]	93.9	MMBtu/hr
Maximum Annual Operation	500	hr/yr

[1] Furnace abort heat input is assumed to be 50% of the maximum heat input for the unit based on operational data from other Drax facilities.

Table C-15b. Biomass Furnace Idle Potential Emissions - Criteria Pollutants

Pollutant	Emission Factors[1] (lb/MMBtu)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
CO	0.60	56.31	14.08
NO_X	0.22	20.65	5.16
VOC	0.02	1.60	0.40
Filterable PM	0.56	52.56	13.14
Condensable PM	0.02	1.60	0.40
Total PM	0.58	54.15	13.54
Total PM_{10}	0.52	48.52	12.13
Total $PM_{2.5}$	0.45	41.95	10.49
SO_2	0.03	2.35	0.59
Lead	4.80E-05	4.50E-03	1.13E-03
CH_4	0.02	1.97	0.49
N_2O	0.01	1.22	0.31
CO_2	195.00	18,301	4575.19
CO_2e[2]	199.40	18,714	4678.40

[1] Emission factors from AP-42 Section 1.6 (Wood Residue Combustion), Tables 1.6-1 through 1.6-4 (09/03).

[2] Global warming potential (GWP) for CH_4 is 25 and N_2O is 298 for estimating CO_2e emissions (40 CFR 98, Subpart A, Table A-1, effective January 1, 2014).

Table C-15c. Biomass Furnace Idle Potential Emissions - HAP/TAP

Pollutant	CAS #	HAP?	TAP?	Biomass Combustion Emission Factor[1] (lb/MMBtu)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy)
Acenaphthene	83-32-9	Yes - PAH	No	9.10E-07	8.54E-05	2.14E-05
Acenaphthylene	208-96-8	Yes - PAH	No	5.00E-06	4.69E-04	1.17E-04
Acetaldehyde	75-07-0	Yes	Yes	8.30E-04	7.79E-02	1.95E-02
Anthracene	120-12-7	Yes - PAH	No	3.00E-06	2.82E-04	7.04E-05
Benzo(a)anthracene	56-55-3	Yes - PAH	Yes	6.50E-08	6.10E-06	1.53E-06
Benzene	71-43-2	Yes	Yes	4.20E-03	3.94E-01	9.85E-02
Benzo(a)pyrene	50-32-8	Yes - PAH	Yes	2.60E-06	2.44E-04	6.10E-05
Benzo(b)fluoranthene	205-99-2	Yes - PAH	Yes	1.00E-07	9.39E-06	2.35E-06
Benzo(g,h,i)perylene	191-24-2	Yes - PAH	No	9.30E-08	8.73E-06	2.18E-06
Benzo(k)fluoranthene	207-08-9	Yes - PAH	Yes	3.60E-08	3.38E-06	8.45E-07
Chrysene	218-01-9	Yes - PAH	No	3.80E-08	3.57E-06	8.92E-07
Dibenzo(a,h)anthracene	53-70-3	Yes - PAH	Yes	9.10E-09	8.54E-07	2.14E-07
Fluoranthene	206-44-0	Yes - PAH	No	1.60E-06	1.50E-04	3.75E-05
Fluorene	86-73-7	Yes - PAH	No	3.40E-06	3.19E-04	7.98E-05
Formaldehyde	50-00-0	Yes	Yes	4.40E-03	4.13E-01	1.03E-01
Indeno(1,2,3,c,d)pyrene	193-39-5	Yes - PAH	Yes	8.70E-08	8.16E-06	2.04E-06
Naphthalene	91-20-3	Yes - PAH	Yes	9.70E-05	9.10E-03	2.28E-03
Octachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[2]	3268-87-9	No	No	6.60E-08	1.86E-09	4.65E-10
Pentachlorodibenzo-p-dioxins (2,3,7,8 TCDD Eqv.)[2]	40321-76-4	No	No	1.50E-09	1.41E-07	3.52E-08
Phenanthrene	85-01-8	Yes - PAH	No	7.00E-06	6.57E-04	1.64E-04
Pyrene	129-00-0	Yes - PAH	No	3.70E-06	3.47E-04	8.68E-05
Arsenic	7440-38-2	Yes	Yes	2.20E-05	2.06E-03	5.16E-04
Beryllium	7440-41-7	Yes	Yes	1.10E-06	1.03E-04	2.58E-05
Cadmium	7440-43-9	Yes	Yes	4.10E-06	3.85E-04	9.62E-05
Chromium, Total	7440-47-3	Yes	Yes	2.10E-05	1.97E-03	4.93E-04
Chromium, Hexavalent[3]	18540-29-9	No	Yes	3.50E-06	3.28E-04	8.21E-05
Copper	7440-50-8	No	Yes	4.90E-05	4.60E-03	1.15E-03
Manganese	7439-96-5	Yes	Yes	1.60E-03	1.50E-01	3.75E-02
Mercury	7439-97-6	Yes	Yes	3.50E-06	3.28E-04	8.21E-05
Nickel	7440-02-0	Yes	Yes	3.30E-05	3.10E-03	7.74E-04
Selenium	7782-49-2	Yes	Yes	2.80E-06	2.63E-04	6.57E-05
Zinc	7440-66-6	No	No	4.20E-04	3.94E-02	9.85E-03
					Total HAP	**2.64E-01**
					Maximum Individual HAP	**1.03E-01**

[1] Emission factors for biomass (wood residue) combustion are uncontrolled and from AP-42, Section 1.6 (Wood Residue Combustion), Tables 1.6-3 and 1.6-4. Pollutants with an emission factor rating of C, D, or E are not included.

[2] Dioxin and furan emissions apply a toxic equivalency (TEQ) factor obtained from the 72 FR 26545 in accordance with the 1998 TAP rule WAC 173-460-050(4)(b) adopted by SWCAA. Emissions shown in this table are expressed as an equivalent emissions of 2,3,7,8 TCDD. https://www.govinfo.gov/content/pkg/FR-2007-05-10/pdf/E7-9015.pdf

Octachlorodibenzo-p-dioxins TEQ:	0.0003
Pentachlorodibenzo-p-dioxins TEQ:	1

[3] Because the emission factor for "Chromium, Total" has an "A" rating and it is likely that a portion is in the form of hexavalent chromium, it conservative to use the emission factor for "Chromium, Hexavalent" even though it has a "C" rating.

Table C-16a. Criteria Pollutant Model Results - NAAQS Comparison

Pollutant	Averaging Period	Design Concentration	Modeled Concentration (µg/m³)	Background Concentration (µg/m³)	Total Concentration (µg/m³)	NAAQS (µg/m³)	Above NAAQS?
PM_{10}	24-hr	H2H	25.2	53.1	78	150	No
$PM_{2.5}$	24-hr	H8H	8.3	19.1	27.4	35	No
	annual	Average	1.3	6.2	7	12	No
SO_2	1-hr	H4H	16	14.2	31	196	No
NO_2	1-hr	H8H	100	20.6	120	188	No
	annual	Average	3.8	67.9	72	100	No
CO	1-hr	H2H	1,816	1,371	3,187	40,000	No
	8-hr	H2H	812	956	1,768	10,000	No

Table C-17a. TAP Pollutant Model Results - 1998 and 2019 ASIL Comparison

Model ID	Pollutant	CAS #	Averaging Period	ASIL (µg/m³) 1998	ASIL (µg/m³) 2019	Results (µg/m³)	Above ASIL? 1998	Above ASIL? 2019
Annual_1	Acetaldehyde	75-07-0	Annual	0.45	0.37	5.52E-02	No	No
Annual_2	Benzene	71-43-2	Annual	0.12	0.13	3.49E-03	No	No
Annual_3	Formaldehyde	50-00-0	Annual	7.70E-02	0.17	0.11	Yes	No
Annual_4	Arsenic	7440-38-2	Annual	2.30E-04	3.00E-04	1.83E-05	No	No
Annual_5	Beryllium	7440-41-7	Annual	4.20E-04	4.20E-04	9.13E-07	No	No
Annual_6	Cadmium	7440-43-9	Annual	5.60E-04	2.40E-04	3.41E-06	No	No
Annual_7	Chromium VI	18540-29-9	Annual	8.30E-05	4.00E-06	2.91E-06	No	No
Annual_8	Nickel	7440-02-0	Annual	2.10E-03	3.80E-03	2.74E-05	No	No
Annual_9	Total Dioxins/Furans (2,3,7,8 TCDD Eqv.)	136677-09-3	Annual	3.00E-08	--	1.26E-09	No	No
Annual_10	TAP Total Polycyclic Aromatic Hydrocarbons (TAP - PAH)	130498-29-2	Annual	4.80E-04	--	2.36E-06	No	No
Annual_11	Benzo(a)pyrene	50-32-8	Annual	4.80E-04	1.00E-03	2.16E-06	No	No
Annual_12	Naphthalene	91-20-3	Annual	--	0.03	8.07E-05	No	No
Annual_13	Pentachlorodibenzo-p-dioxins	40321-76-4	Annual	--	2.60E-08	1.24E-09	No	No
Annual_14	Diesel engine exhaust, particulate	200	Annual	--	0.0033	3.08E-03	No	No
24-hr_1	Propionaldehyde	123-38-6	24-hr	--	8.0	0.26	No	No
24-hr_2	Acrolein	107-02-8	24-hr	0.02	0.35	0.31	Yes	No
24-hr_3	Hydrochloric Acid	7647-01-0	24-hr	7.0	9.0	0.22	No	No
24-hr_4	Manganese	7439-96-5	24-hr	0.40	0.30	0.09	No	No
24-hr_5	Phenol	108-95-2	24-hr	63	200	1.72	No	No
24-hr_6	Methanol	67-56-1	24-hr	870	20,000	3.29	No	No
24-hr_7	Mercury	7439-97-6	24-hr	0.33	0.03	2.01E-04	No	No
24-hr_8	Chromium III	16065-83-1	24-hr	--	0.10	1.21E-03	No	No

Acetaldehyde			
Description	ABE Stack Test 11/28/2018	ABE Stack Test 7/13/21	Maximum Results
Regenerative Thermal Oxidizer		0.350	0.350

Formaldehyde			
Description	ABE Stack Test 11/28/2018	ABE Stack Test 7/13/21	Maximum Results
Regenerative Thermal Oxidizer	0.5575	0.880	0.880

Hydrochloric acid			
Description	ABE Stack Test 11/28/2018	ABE Stack Test 7/13/21	Maximum Results
Regenerative Thermal Oxidizer		0.110	0.110

Methanol			
Description	ABE Stack Test 11/28/2018	ABE Stack Test 7/13/21	Maximum Results
Regenerative Thermal Oxidizer		1.580	1.580

Stack Test Emissions				
Pollutants	ABE			
	RTO			
	°F	lb/hr	ODT/hr	lb/ODT
Acetaldehyde	1,676	0.350	52.75	6.64E-03
Acrolein	1,676	0.150	52.75	2.84E-03
Formaldehyde	1,676	0.880	52.75	1.67E-02
Hydrochloric acid	1,676	0.110	52.75	2.09E-03
Methanol	1,676	1.580	52.75	3.00E-02
Phenol	1,676	0.680	52.75	1.29E-02
Propionaldehyde	1,676	0.100	52.75	1.90E-03

ATTACHMENT 3

Dryer Vendor Guarantee Letter

Drax September 9th, 2022
Monticello, Washington State

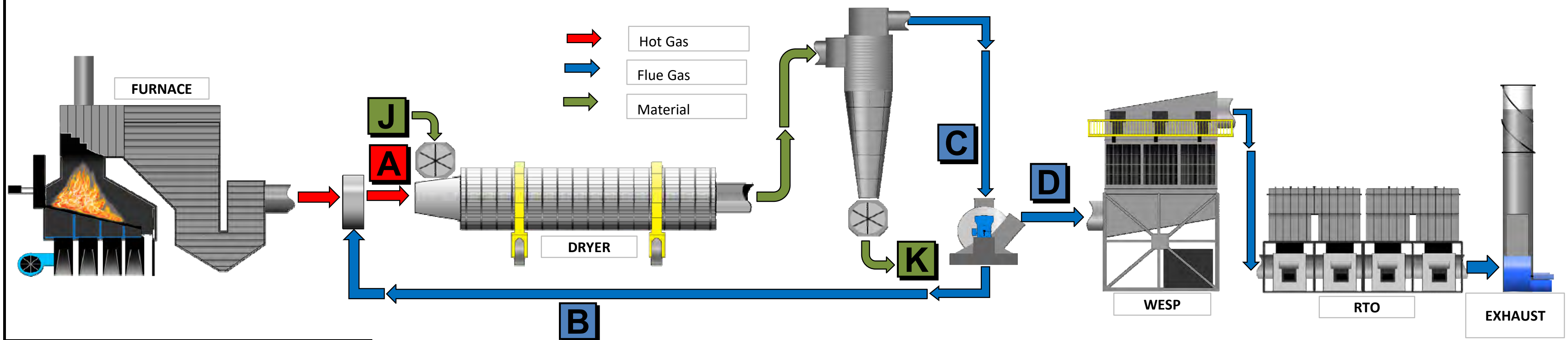
RE: Dryer Island Equipment Emissions

Drax will build a Pellet Plant located in Monticello, Washington State. The Pellet Plant will require a Dryer Island to dry wet-woody-biomass. The TSI Dryer Island consists of four (4) major pieces of equipment:

1) The Heat Energy System that burns wet-woody-biomass to generate heat for the Dryer System for the purpose of evaporating water from the wet-woody-biomass
    a. During the combustion process the Heat Energy System will generate primarily 'fuel-bound' NOx; fuel-bound NOx is generated from nitrogen that is present in the fuel itself
    b. The Heat Energy System will not generate much thermal NOx; thermal NOx is generated when heat within the system exceeds 2100°F and nitrogen from combustion air itself starts to turn into NOx
        i. The Heat Energy System will not exceed 1850°F operating temperature and thus generating thermal NOx to any meaningful levels will not occur
    c. A Heat Energy System that does not generate thermal NOx is considered a low-NOx Burner, since only NOx generated is from the fuel itself, which is inevitable; the only possible control a Burner has to control NOx is to control amount of thermal NOx
2) Before the Dryer Island can be started and run the WESP & the RTO must be available
    a. Therefore, the WESP & the RTO are always running when Dryer Island is starting up and flue gasses from the Dryer Island are cleaned from Particulate and VOCs prior to being exhausted to atmosphere
3) During shutdown of the Dryer Island the WESP and the RTO are running and still cleaning the flue gas from the Particulate and the VOCs prior to being exhausted to atmosphere
4) If during Dryer Island operations there is an upset operating condition the system will abort gasses to atmosphere via the Furnace Abort Stack and the Dryer System Abort Stack
    a. During this time feed to the Furnace and the Dryer System is stopped; therefore, the Furnace combustion is aborted and the Dryer System operations are slowly brought to a stop by aborting material to the Fire Dump

Best Regards,

Zlatko Savovic
Sales Director and Mechanical Engineer
TSI,Inc.
(425) 239-7490
zsavovic@tsi-inc.net



BTU/hr (sensible)	169,691,360
BTU/hr (HHV)	233,048,583
Fuel moisture conent	50.0
Fuel mt/hr (bone dry)	12.58
Fuel HHV (BTU/lb)	8,400

GAS FLOW EACH DRYER					
UNITS	A	B	C	D	E
ACFM	402,774	66,346	238,018	171,673	0
LBS/CUFT	0.023	0.049	0.049	0.049	
LBS/HR	548,749	193,614	694,599	500,986	
TEMP ^{o}C	621	113	116	113	

MATERIAL FLOW EACH DRYER		
UNITS	J	K
WET KG/HR	110,401	60,000
MC %WB	50.0	8.0
MC % DB	100.0	8.7
Metric Tons/Hr @ 6% mc wwb		60.00

TSI Single-Pass Recycle Dryer System

tsi
Lynnwood, Washington, 98036
425-771-1190

A PROPOSAL TO PROVIDE A

DRYER ISLAND & RCO

FOR

drax

Location: Monticello, Washington State

tsi

Responsible Innovation

Budget Proposal # 220906

Submitted September 6th, 2022

20818 44th Ave West, Ste 201
Lynnwood, WA 98036
United States of America

Contact:
Zlatko Savovic

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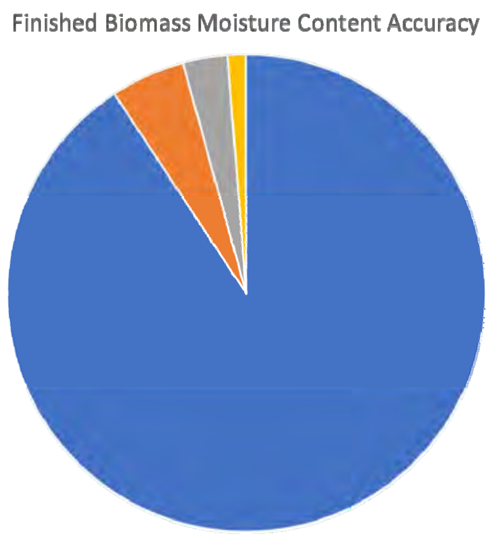
PROJECT REQUIREMENTS

- **Site Information**
  - Location: Washington State
  - Maximum Ambient Temperature (°F): 120
  - Minimum Ambient Temperature (°F): 20
  - Design based on Average Ambient Temperature (°F): 60
  - Site elevation above sea level: ≤50 feet

- **Dryer Island Design Conditions**
  - Incoming Biomass Moisture Content wet-weight-basis: ≤50.0%
  - Finished Biomass Moisture Content wet-weight-basis: 6.0%
    - 90% within ±1.0% of the target range
    - 95% within ±2.0% of the target range
    - 98% within ±3.0% of the target range
    - Below is a pie-chart representation of finished biomass moisture content characteristics



  -
  -
  - Wet-Woody-Biomass: 80% sawdust/shavings with up to 20% chips
    - Chips characteristics:
      - 100% will pass ¾" square mesh screen
  - Chip Density: 18 to 22 lbs/cuft (wet)
    - TSI estimates this density; density to be verified prior to project start and if needed a price adjustment will be made
    - Prior to order the Buyer needs to supply TSI with a 5-gallon sample for laboratory testing to be performed by TSI
  - Fuel Density: 12 to 22 lbs/cuft (OD)
    - TSI estimates this density; density to be verified prior to project start and if needed a price adjustment will be made
    - Prior to order the Buyer needs to supply TSI with a 5-gallon sample

for laboratory testing to be performed by TSI

- Fuel Moisture Content wet weight-basis: 40% to 50%
- Fuel Higher Heating Value: 7,800 Btu/lb to 8,600 Btu/lb
- Fuel required sizing:
    - 100% <6"
    - 90% <4"
    - 70% >2"
    - 25% <1"
    - 15% <1/2"
- Species: 100% Softwoods, 100% Hardwoods, and any mix in-between
- RTO Gas Pressure required (psig): 20 to 40
    - Minimum 15 psig at full flow

- **Regenerative Catalytic Oxidizer (RCO) Design Conditions**
    - There are two (2) options offered:
        - ≤120,000 ACFM
            - VOC (lbs/hr): 260
        - ≤76,500 ACFM
            - VOC (lbs/hr): 220
    - Temperature (°F): 120
    - Particulate (mg/Nm3): ≤115
    - Humidity (% by volume): ≥5
    - RCO Gas Pressure required (psig): 20 to 40
        - Minimum 15 psig at full flow

Client: Drax **Location: Monticello, WA**

Design Parameters:	Finished MC	Elevation	Chip Size
	6% ±1%	≤50'	≤3/8"

PRODUCTION MATRIX (dried metric tons/hr @ 6% moisture content wet-weight-basis)						
Infeed Moisture wet-weight-basis	Ambient Temperature					
	35°F	45°F	55°F	65°F	75°F	85°F
55%	48.2	49	49.7	50.7	51.1	51.4
50%	59.3	59.9	61	62.2	62.7	63
45%	72	72	72	72	72	72

Fuel Conditions for above noted calculations	
FUEL: (DRY %)	WOOD
CARBON %	49.48
HYDROGEN %	5.83
OXYGEN %	41.89
NITROGEN %	0.20
SULPHUR %	0.00
ASH %	2.60
TOTAL: (100)	100.00
FUEL HHV dry	8,400
FUEL MC %	50.00

EQUIPMENT SPECIFICATION – DRYER ISLAND

- **Heat Energy System**
  - Quantity: One (1)
  - Size: **80m2 Grate**
  - Fuel Moisture (wet-weight-basis): 35% minimum to 55% maximum
  - Number of Combustion Chambers: Two (2) - primary & secondary
  - Number of Wet-Ash Conveyors: Two (2)
  - Metering Bin capacity: Twenty (20) minutes
  - Abort Stack: included
  - Control Devices: Included
  - Deluge Nozzles: Included
  - Drives: Direct-coupled
  - Structural Steel support & access: Included
  - Structural Steel support & access finish: Painted
  - Scope of supply start: Metering Bin
    - Buyer responsible for feeding fuel into the Metering Bin
  - Scope of supply end: Wet Ash Conveyor discharge
    - Buyer responsible for supplying ash bin

- **Dryer System**
  - Quantity: One (1)
  - Dryer Drum Size: **Ø23' by 100' long** (nominal)
    - The Dryer Drum comprises nine (9) 10' long sections that are bolted together
    - Inlet to Outlet Seal nominal length is 100'
  - Hot Gas Isolation Gate: Included
  - Blending Duct Isolation Gate: Included
  - Metering Bin capacity: Forty-five (45) minutes
  - Infeed Airlock type: Feeder type (knife tipped)
  - Cyclone Airlock type: Feeder type (knife tipped)
  - Quantity of Cyclones: Two (2)
  - Cyclone Construction: ½" thick T1 for body/cone & 3/16" thick for hood
  - Quantity of Cyclone Airlocks: two (2)
  - Ductwork Expansion Joints: corrugated Stainless-Steel
  - Double-Ductwork: Included
    - Primary Double-Duct Heat Source: Air-Air Heat Exchanger
    - Backup Double-Duct Heat Source: Electrical Heater
  - ID Fan: 900 RPM
    - 900 RPM ID Fan provides for lower noise and is less susceptible to vibrations
    - Lower wear and maintenance
    - Materials of construction: Stainless-Steel for housing with Carbon-Steel external stiffeners; Carbon-Steel for shaft & wheel
  - ID Fan Expansion Joints: corrugated Stainless-Steel
  - Abort Stack: Included
  - Control Devices: Included
  - Explosion Panels: Included (NFPA certified)
  - Deluge Nozzles: Included

- Drives: Direct-coupled
- Structural Steel support & access: Included
- Structural Steel support & access finish: Painted
- Scope of supply start: Metering Bin
    - Buyer responsible for feeding chips into the Metering Bin
- Scope of supply end: Collection Screw
    - Buyer responsible for receiving dried chips from the Collection Screw

- **WESP**
    - Quantity: One (1)
    - Number of Ø10" tubes: **936**
    - Number of Fields: Four (4)
    - Centrifuge: included
    - Control Devices: Included
    - Drives: Direct-coupled
    - Structural Steel support & access: Included
    - Structural Steel support & access finish: Painted
    - Scope of supply start: Quench-Duct
        - Quench-Duct connects to the Dryer System's Abort Stack
    - Scope of supply end: Centrifuge
        - Buyer responsible for receiving 'sludge' from the Centrifuge

- **RTO**
    - Quantity: One (1)
    - Four (4) CAN RTO
        - **Each CAN measures 11' wide by 34' long by 8' tall**
    - Number of Combustion Chambers: Two (2)
    - Heat Recovery Media and Internal Refractory quantities (total ft3):
        - Saddle Lexco: 1,320
        - Corpac (Flexo type-28): 2,640
        - Monolith LA10-32: 2,640
        - Monolith NT40: 2,640
        - Internal Refractory: 6,200
    - Projected Gas Consumption: 8.8 mmBTU/hr
        - Projected gas consumption is based on following emissions entering the RTO:
            - VOC (lbs/hr): ≥350
            - CO (lbs/hr): ≥100
            - HAPs (lbs/hr): ≥100
            - Condensable PM (lbs/hr): ≥200
    - FD Fan: 900 RPM
        - 900 RPM ID Fan provides for lower noise and is less susceptible to vibrations
        - Lower wear and maintenance
        - Stainless-Steel construction
    - Control Devices: Included
    - Drives: Direct-coupled
    - Structural Steel support & access: Included
    - Structural Steel support & access finish: Painted

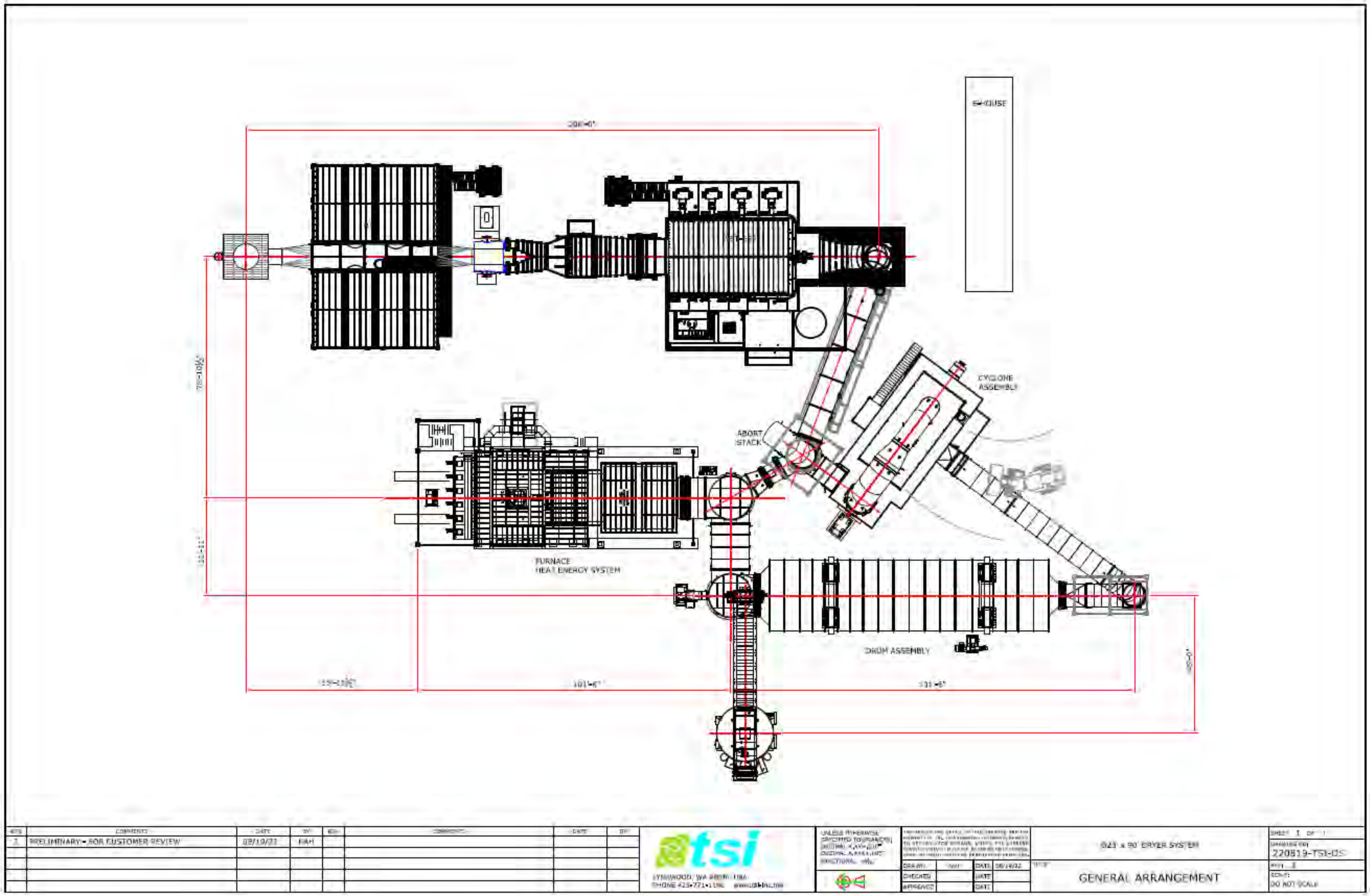
- Scope of supply start: Mist Eliminator Chamber
    - WESP discharge duct connects to the Mist Eliminator Chamber
- Scope of supply end: Exhaust Stack
    - Flue gas is exhausted to atmosphere via the Exhaust Stack
    - Height (ft): sixty (60)
    - Diameter (in): 90

EQUIPMENT SPECIFICATION – 120,000 ACFM RCO

- Four (4) CAN RCO
- **Each CAN measures 11’ wide by 26’ long by 8’ tall**
- Number of Combustion Chambers: Two (2)
- Heat Recovery Media and Internal Refractory quantities (total ft3):
  - Saddle Lexco: 1,000
  - Corpac (Flexo type-28): 2,000
  - Monolith LA10-32: 2,000
  - Monolith NT40: 2,000
  - Catalyst (6x6x4 blocks): 4,200
  - Internal Refractory: 5,400
- Projected Gas Consumption: 2.2 mmBTU/hr
  - Projected gas consumption is based on the following emissions entering the RTO:
    - VOC (lbs/hr): ≥260
    - Condensable PM (mg/Nm3): ≥115
- FD Fan: 900 RPM
  - 900 RPM ID Fan provides for lower noise and is less susceptible to vibrations
  - Lower wear and maintenance
  - Stainless-Steel construction
- Control Devices: Included
- Drives: Direct-coupled
- Structural Steel support & access: Included
- Structural Steel support & access finish: Painted
- Scope of supply start: Quench-Duct
  - Buyer responsible to connect Pelletizing Island flue gas to the Quench-Duct
  - Quench-Duct total length included (ft): 50
- Scope of supply end: Exhaust Stack
  - Flue gas is exhausted to atmosphere via the Exhaust Stack
  - Height (ft): sixty (60)
  - Diameter (in): 72

EQUIPMENT SPECIFICATION – 76,500 ACFM RCO (option)

- Two (2) CAN RCO
- **Each CAN measures 11' wide by 33' long by 8' tall**
- Number of Combustion Chambers: One (1)
- Heat Recovery Media and Internal Refractory quantities (total ft3):
    - Saddle Lexco: 640
    - Corpac (Flexo type-28): 1,280
    - Monolith LA10-32: 1,280
    - Monolith NT40: 1,280
    - Catalyst (6x6x4 blocks): 2,688
    - Internal Refractory: 3,200
- Projected Gas Consumption: 0.7 mmBTU/hr
    - Projected gas consumption is based on the following emissions entering the RTO:
        - VOC (lbs/hr): ≥220
        - Condensable PM (mg/Nm3): ≥115
- FD Fan: 900 RPM
    - 900 RPM ID Fan provides for lower noise and is less susceptible to vibrations
    - Lower wear and maintenance
    - Stainless-Steel construction
- Control Devices: Included
- Drives: Direct-coupled
- Scope of supply start: Quench-Duct
    - Buyer responsible to connect Pelletizing Island flue gas to the Quench-Duct
    - Quench-Duct total length included (ft): 50
- Scope of supply end: Exhaust Stack
    - Flue gas is exhausted to atmosphere via the Exhaust Stack
    - Height (ft): sixty (60)
    - Diameter (in): 60



DRYER ISLAND PRELIMINARY LAYOUT

EMISSIONS

- **Dryer Island**
  - Total Particulate (PM) (lbs/hr): ≤15 lbs/hr
  - Volatile Organic Compounds (VOC) (lbs/hr): ≤15 lbs/hr
  - Carbon Monoxide (CO) (lbs/hr): ≤42 lbs/hr
  - Nitrogen Oxide (NOx) (lbs/hr): ≤52 lbs/hr

- **RCO – 120,000 ACFM**
  - Total Particulate (PM) (lbs/hr): ≤14 lbs/hr
  - Volatile Organic Compounds (VOC) (lbs/hr): ≤13 lbs/hr or ≥95% destruction efficiency
  - Carbon Monoxide (CO) (lbs/hr): ≤14 lbs/hr
  - Nitrogen Oxide (NOx) (lbs/hr): ≤5 lbs/hr

- **RCO – 76,500 ACFM** (option instead of the 120,000 ACFM RCO)
  - Total Particulate (PM) (lbs/hr): ≤11 lbs/hr
  - Volatile Organic Compounds (VOC) (lbs/hr): ≤11 lbs/hr or ≥95% destruction efficiency
  - Carbon Monoxide (CO) (lbs/hr): ≤12 lbs/hr
  - Nitrogen Oxide (NOx) (lbs/hr): ≤4 lbs/hr

Notes:

- *Show above are projected emissions from the Dryer Island RTO Exhaust Stack*
- *Emissions measured via USEPA approved testing methods; emissions based on above noted design criteria & guaranteed production rates*
- *NOx emissions for Dryer Island are based on fuel nitrogen level at 0.22% bone dry basis*
  - *Higher nitrogen content within fuel will result in higher NOx emissions*

PROPOSAL SUMMARY

This Proposal is for a complete Dryer Island. The Dryer Island consists of one (1) Heat Energy System, one (1) Dyer System, one (1) Wet Electrostatic Precipitator (WESP), and one (1) Regenerative Thermal Oxidizer (RTO).

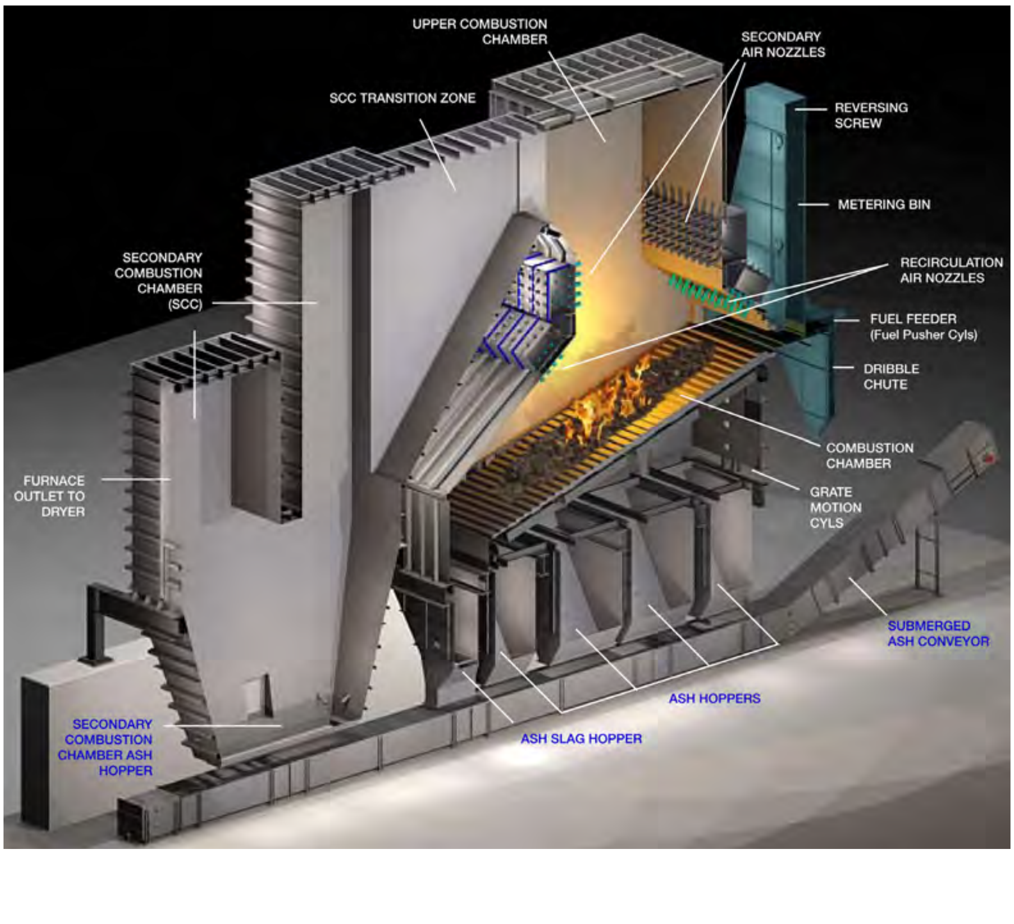
This Proposal also offers a Regenerative Catalytic Oxidizer (RCO) with a Disengagement Chamber located ahead of the RCO. The RCO treats flue gas from the Buyer's Pelletizing Island.

The following pages describe the purpose and operations of each unit.

Heat Energy System

The Heat Energy System receives wet fuel (bark or chips), combusts that fuel in an efficient manner, and delivers products of combustion to the Dryer System for purpose of drying wet-woody-biomass.

TSI Heat Energy System mechanical scope of supply begins immediately after the Buyer's fuel infeed conveyor to the Metering Bin. The bottom of the Metering Bin has hydraulic ram pushers that push fuel one the reciprocating grates, which are housed within the Primary Combustion Chamber. There are 4-zones of moving reciprocating grates. The 1st zone dries fuel to point of combustion; the 2nd and 3rd zones begin combustion; the 4th zone oscillates slowest to burn off most of the carbon before inorganics like ash and slag are discharged into the Wet Ash Conveyor. The Wet Ash Conveyor is sub-merged in water and provides an affective airlock that prevents ambient air leaking into the Heat Energy System. The Wet Ash Conveyor conveys ash and slag to a bin or bunker, provided by the Buyer, that is accessible via mobile equipment for periodic removal from the plant site. There are two combustion fans: the Primary Fan starts combustion and prevents grates from over-heating, while Secondary Fan completes combustion process in the Upper Combustion Chamber. Hot gas from the Upper Combustion Chamber enters the Secondary Combustion Chamber designed with a downward U-turn that will remove significant amount of fly ash and sparks from the gas stream prior to entry into the Dryer System. An Emergency Stack, which vents gases during upset conditions to atmosphere, is located on top of the Upper Combustion Chamber. The Combustion Chambers are lined with refractory and insulation materials.



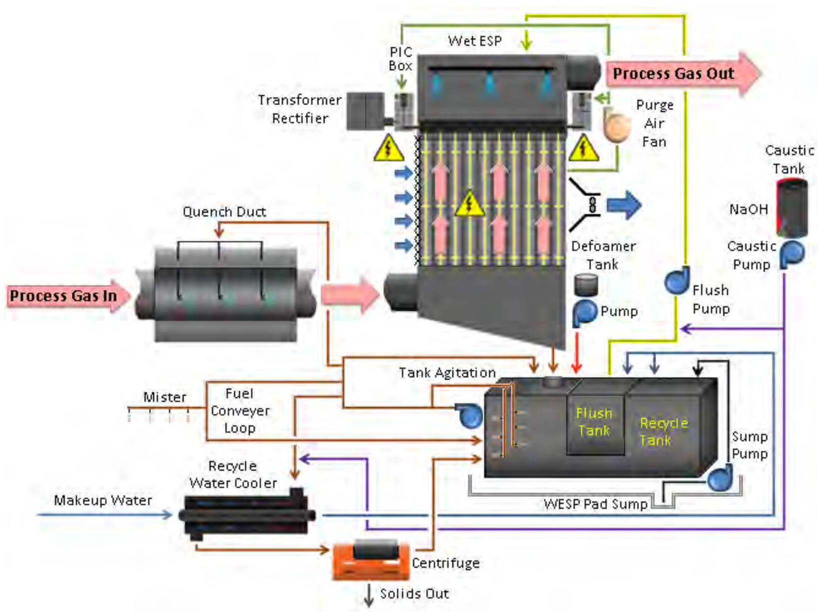
Dryer System

The Dryer System dries wet-woody-biomass to the moisture content required by the Buyer. TSI Dryer System mechanical scope of supply begins immediately after the Buyer's infeed to the Metering Bin. The Metering Bin stores and meters wet-material into the Dryer Drum via Infeed Airlock and Inlet Fitting. Hot Gas Ductwork connects the Heat Energy System to the Dryer System. Within the Hot Gas Ductwork are the Hot Gas Isolation Gate, the Dilution Bustle, and the Inlet Fitting. The Hot Gas Ductwork is lined with refractory and insulation materials. The Inlet Fitting processes mixed gas from the Dilution Bustle and the wet-woody-biomass into the Dryer Drum. The Dryer Drum is a 'convection-type' single-pass unit that is responsible for distributing and classifying each biomass particle to allow for its efficient drying. This is accomplished with utilization of a complex 'flighting system' within the Dryer Drum that has been perfected to an advanced stage. The Dryer Drum dries wet-woody-biomass to the required moisture content and exhausts flue-gas and dried biomass into the Material Duct. As dried biomass exits the Dryer Drum it is pneumatically conveyed via the Material Duct into the High Efficiency Cyclone(s). The High Efficiency Cyclone(s) removes dried biomass from the flue-gas stream, discharges dried biomass into Cyclone Airlock(s), and exhausts flue-gas stream out the top and into the Gas Duct towards the Induced Draft Fan (ID Fan). Dried biomass from the Cyclone Airlock(s) is received by the Collection Screw, which under normal operating conditions conveys dried biomass to the Buyer; during upset operating conditions the Collection Screw reverses direction and dumps material into the Buyer's Fire Dump. The ID Fan flow is controlled by a Variable Frequency Drive, which is governed by the pressure differential reading across the High Efficiency Cyclone(s). The temperature control at the outlet of the Drum is controlled by the Dilution Damper and this control loop ensures proper moisture content of the biomass. TSI Dryer Systems are equipped with advanced spark detects, temperature elements, and strategically positioned water deluge nozzles to enable water delivery throughout the system with and without the ID Fan running.

Wet Electrostatic Precipitator

The Wet Electrostatic Precipitator (WESP) removes particulate from the gas stream before the gas stream enters the Regenerative Thermal Oxidizer (RTO). There are two (2) types of particulates: the filterable ('front-half') particulate and condensable ('back-half') particulate. The WESP will remove ≥95% of the front-half particulate as well as any back-half particulate that condenses from the gas stream and into a water particle at temperature of 160°F to 180°F. Back-half particulate that doesn't condense will pass thru the WESP and burn-off within the RTO's combustion chamber.

Dryer flue-gas enters the WESP through the Quench-Duct, which includes recirculated water sprays that saturate the gas stream and condense some of the vaporous particulate. It also serves as a pre-filter by scrubbing out larger particulate and fiber carryover. The gas stream enters the bottom of the WESP through a common plenum and travels upward into parallel tube bundles. Each tube bundle is an array of Stainless-Steel collection tubes that have high voltage discharge electrodes suspended within them. The electrodes have a series of discs that create an intense electric field (Corona) when high voltage is applied. As the gas stream passes between the collection tubes and the discharge electrode, the suspended particles become negatively charged and are driven towards the grounded collection tube (precipitation). Each tube bundle is periodically and independently flushed with a dilute caustic solution to remove the particulate from the collection tube wall. The spent flush water flows by gravity into the recycle system via the recycle tank located underneath the WESP. This serves to make up the majority of the water that is evaporated in the quench duct. A portion of the recycle water is processed through a centrifuge to remove suspended solids. The solids are collected in a tote (by Buyer) for disposal (this is a non-toxic discharge that can be sent to a regular land fill). The collection tube walls stay wet, which aids in the cleaning process, by drawing ambient air across the exterior surface with small fans. This air cools the collection tubes and promotes condensation from the saturated gas stream on the inner surface. This condensation makes up the remainder of the balance of water evaporated in the quench duct. As the cleaned gas exits the tube bundle it passes through the electrode suspension grid into a common plenum and is then ducted down to grade level where it is directed to the RTO. The electrode grid is charged by a high voltage transformer rectifier and is suspended at external insulator boxes. The insulator boxes are purged using warm air from the tube bundle cooling air, thus keep the insulator dry and improving overall performance.



Regenerative Thermal Oxidizer

The Regenerative Thermal Oxidizer (RTO) receives particulate cleansed flue-gas from the WESP and combusts the uncondensed back-half Particulate (BHP), Volatile Organic Compounds (VOCs), Hazardous Air Pollutants (HAPs), and Carbon Monoxide (CO).

Cleansed flue-gas from the WESP first passes through the Mist Eliminator Chamber, which removes free water droplets. The flue-gas is then routed through a common duct manifold and into two of four Diverter Valves. The Diverter Valves enable the system to regularly reverse gas flow, which in combination with the heat recovery Media, provides an affective energy saving system. Flue-gas exits the inlet Diverter Valves and travels upward into the Hoppers. The Hoppers distribute gas into the inlet Heat Recovery Chambers, which contain Ceramic Media. This Media, which was heated from discharge gasses during the previous valve cycle, preheat flue-gas to approximately 1400^{o}F before the flue-gas enters the Combustion Chamber. The Combustion Chamber is maintained at a temperature of 1500°F by a Gas Burner. Within the Combustion Chamber hydrocarbons are converted to CO_2 and H_2O. Flue-gas exits through opposing heat recovery chambers, where the Media now acts as a heat sink and absorbs the thermal energy, cooling it to within 75°F to 100°F of the RTO inlet temperature, before discharging flue-gas into the Exhaust Stack. The Ceramic Media comes in a variety of types and specific selection depends on the application. The Diverter Valves continually reverse airflow based on a pre-programmed timer. By reversing the flow, the inlet chambers become the outlet chambers and vice versa. The chambers that have been heated by the exhausting flue-gas become a pre-heating media for the incoming flue-gas; while the chambers that have just been cooled by the incoming flue-gas can again be reheated by the exhausting gas. This heat recovery cycle makes the RTO ≥95% thermally efficient. Flue-gas is pushed through the RTO by a Forced Draft Fan (FD Fan) located between the Mist Eliminator Chamber and the RTO.

Regenerative Catalytic Oxidizer

The Regenerative Catalytic Oxidizer (RCO) receives flue gas from the Buyer's Pelletizing Island, which is laden with Volatile Organic Compounds (VOCs) and Particulate Matter (PM), combusts the VOCs and PM and exhausts cleansed gas stream to the atmosphere via the Exhaust Stack.

The Buyer's Pelletizing Island flue gas enters the Quench Duct where a series of water nozzles sprays the gas stream with recycled water, thus reducing dust emissions entering the Disengagement Chamber upstream of the RCO. The Disengagement Chamber removes ≥90% of the water droplets and particulate 60 micron and larger. The water is collected in a recycle tank at Disengagement Chamber bottom, from where it is pumped back to the Quench Duct. A slip stream of about 50 GPM is diverted to a centrifuge for particulate removal. Cleansed flue-gas from the Disengagement Chamber is routed through a common duct manifold and into two of four Diverter Valves. The Diverter Valves enable the system to regularly reverse gas flow, which in combination with the heat recovery Media, provides an affective energy saving system. Flue-gas exits the inlet Diverter Valves and travels upward into the Hoppers. The Hoppers distribute gas into the inlet Heat Recovery Chambers, which contain Ceramic Media. This Media, which was heated from discharge gasses during the previous valve cycle, preheat flue-gas to approximately 800ºF before the flue-gas enters the Burner Chamber. The Burner Chamber is maintained at a temperature of 850°F by a Gas Burner. Within the Catalytic Media itself is where the hydrocarbons are converted to CO_2 and H_2O. Flue-gas exits through opposing heat recovery chambers, where the Media now acts as a heat sink and absorbs the thermal energy, cooling it to within 35°F to 50°F of the RCO inlet temperature, before discharging flue-gas into the Exhaust Stack. The Ceramic Media comes in a variety of types and specific selection depends on the application. The Diverter Valves continually reverse airflow based on a pre-programmed timer. By reversing the flow, the inlet chambers become the outlet chambers and vice versa. The chambers that have been heated by the exhausting flue-gas become a pre-heating media for the incoming flue-gas; while the chambers that have just been cooled by the incoming flue-gas can again be reheated by the exhausting gas. This heat recovery cycle makes the RCO ≥95% thermally efficient. Flue-gas is pushed through the RCO by a Forced Draft Fan (FD Fan) located between the Disengagement Chamber and the RCO.

ITEM 01ENGINEERING

TSI engineers will work closely with the Buyer's engineer to properly lay-out the equipment, and to ensure proper interface with the Buyer's equipment upstream & downstream of the Dryer Island. As part of the Engineering package the Buyer will receive the following documents:

- Layouts
  - Plan view
  - Elevation views
- Foundation Load Drawings
- Motor List
- Device List
- Motor Location Drawings
- Device Location Drawings
- Fire Detection & Suppression Drawings
- Instrument Air Requirements
- PID Drawings
- Functional Description

ITEM 02 HEAT ENERGY SYSTEM

Shown below and on following pages are some of the major individual components that make up the Heat Energy System.

Flop Gate

The Flop Gate isolates fuel infeed equipment, like the conveyors, from the potential Furnace back-fires. The Flop Gate also eliminates air leakage into the Furnace during normal and upset operating conditions. The Flop Gate is located on top of the Metering Bin and it only opens when the Metering Bin fuel level reaches low level sensor. The Flop Gate blocks air (oxygen) from getting inside the Metering Bin during fuel feed upsets or when shutting down a Furnace which contributes to fires. It is operated pneumatically via pneumatic cylinders.

Flop Gate located on top of the Reversing Screw; the Reversing Screw is located on top of the Metering Bin

Reversing Screw

The Reversing Screw is located directly above the Metering Bin and directs fuel to both sides of the Metering Bin, thus ensuring even fuel distribution within the Metering Bin. It provides for even fuel feed onto the reciprocating grates, which is critical to ensuring proper fuel combustion. The Reversing Screw reverses direction based on low level sensors located on both sides at the bottom of the Metering Bin.

Reversing Screw

Metering Bin

The Metering Bin consists of fuel feed pushers that push fuel onto the 1st zone of the reciprocating grates located within the Primary Combustion Chamber. The Metering Bin holds fuel evenly with even density achieved due to the above-mentioned Reversing Screw, thus covering the entire grate area with fuel at a controlled fuel bed level. The complete grate area forms an active drying and combustion area. A double alarm system (level control furnace and level control fuel feeders) warns the Operator in case of interruptions of fuel supply. A gate valve and sprinkler system are installed for prevention of back burning into the Metering Bin.

Metering Bin
(Shown with Reversing Screw & Flop Gate located directly above it)

Reciprocating Grate Combustion Chamber

The Combustion Chamber constructed of a robust steel frame structure with moving and stationary grate frames. Reciprocating grate bars are carried by moving support frames. Stationary grate bars are supported by the structure frame. The reciprocating grate frames and grate bars are supported on ball bearings. There are four (4) zones of moving grates within the Furnace. Grates are fabricated from high heat resistant steel ASTM A297, Grade HD. Grates modulate from 10% to 100% and the Furnace has a 1:4 turndown ratio.

The grate bars are of high heat resistant alloy with cooling fins to prevent overheating; water cooling is not required. The grate bars are overlapping, thus preventing through fall of unburned fuel. A hydraulic power pack with pump operates the fuel feeders and grates.

The primary combustion air enters the fuel bed from the under-fire air zone through slots between the grate bars. The sides of the grate's assembly are cast steel side bars to protect the refractory of the furnace from abrasion by the moving grate bars.

The reciprocating grate bars are activated by hydraulic cylinders. The relative movement between stationary and moving grate bars causes the fuel to continually turn and convey along the grate to enhance the combustion process.

Complete Heat Energy System
(note: some items shown may not reflect actual that are offered within this Proposal)

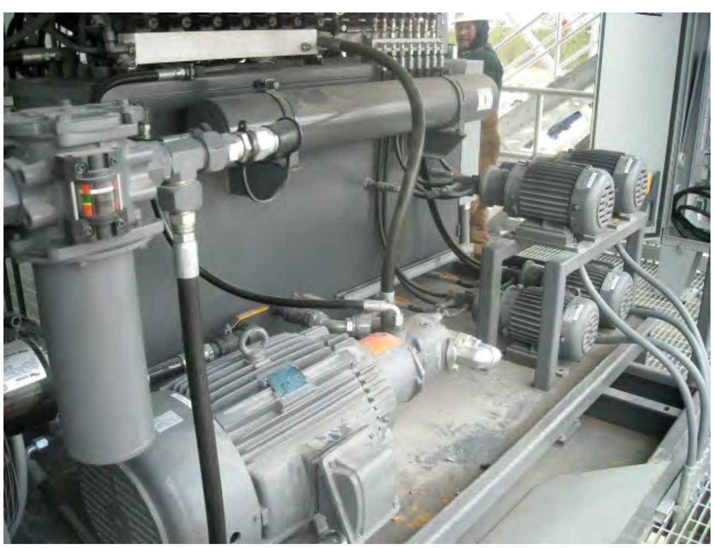
Hydraulic Power Pack

Hydraulics for ram feeder, shut off slide, grate cylinders, and the last grate section. Hydraulic Power Pack unit complete with one high-capacity hydraulic pump, complete with coupling, guard, three 4-way directional solenoid valves, tank trim, all components pre-piped, and mounted on a rigid tank.

Hydraulic Power Pack

Hydraulic Displacement Pumps

Hydraulic Displacement Pumps operate all four (4) grate sections of the Furnace and control the speed of the strokes based on firing rate and controlling the speed of the pumps. Each pump motor requires a variable frequency drive.



Hydraulic Displacement Pumps

Primary Air Fan

Forced draft fan with flanged inlet and outlet, inlet vane control damper, electric actuator with linkage and mounting bracket. The Primary Air Fan provides the primary combustion air into the under-fire air zones. Air is fed from under the grate bars and is controllable in each of the four sections.

Primary Air Fan (Under-fire Air)

Secondary Air Fan

Secondary Air Fan is a forced draft fan with flanged inlet and outlet, inlet vane control damper, electric actuator with linkage and mounting bracket. The Secondary Air Fan feeds the air over the fuel pile for complete combustion of fuel.

Secondary Air Fan (Over-fire Air)

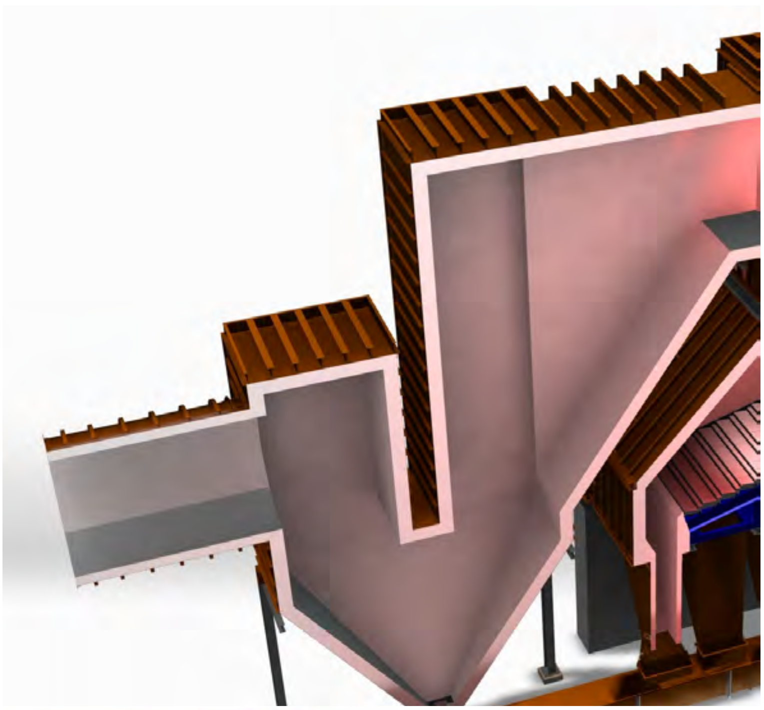
Casing and Combustion Air Ducts

Carbon-Steel construction for the complete chamber with external stiffening beams. Ducting for the Primary and Secondary Air Fans from the fans to the Furnace air boxes and headers.

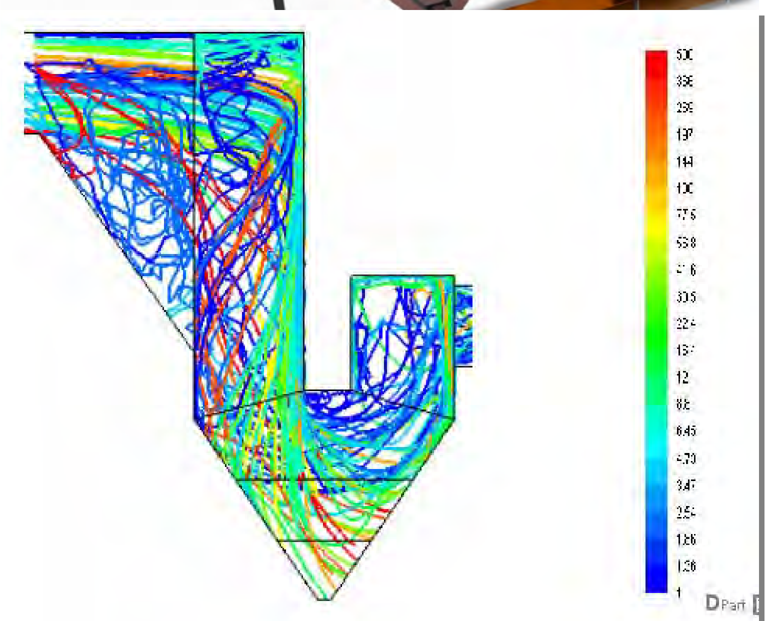
Furnace Ca sing & Combustion Air Ducts

Secondary Combustion Chamber

This chamber provides final combustion of the gases from the Furnace. The chamber also provides for mixing of the furnace gas with the Dryer System flue-gas. After mixing and blending, the gases are discharged to the Dryer ducting. The Chamber is refractory lined and includes a drop out chamber and flue-gas turn around design for maximum removal of fly ash in front of the Dryer. The chamber is designed with the top as a secondary combustion chamber to burn-out the carry over and the bottom as an ash drop-out in order to get clean burned-out gas that can be directly fed into the dryer.



Right: Secondary Combustion Chamber/Ash Dropout Chamber



CFD - Fluid modeling of Ash drop section.

Refractory

Internal refractory block insulation rated to 1900°F. Furnace material is plastic rated to 2700°F. Using low cement materials and installation to be done using shot-crete method. To be blown-in-place on site.

Note: Refractory design by TSI; supply/installation/cure-out offered under Refractory Works option below within this document.

Refractory shown with moving grates

Wet Ash Conveyor

The Wet Ash Conveyor of drag chain design, complete with gearbox and drive, collects ash from underneath the Heat Energy System's reciprocating grate as well as from the Secondary Combustion Chamber's ash drop out chute. The Wet Ash Conveyor is submerged in water and it provides an effective air lock to the Heat Energy System, thus preventing ambient air from infiltrating and making the Heat Energy System less energy efficient.

Typical Wet Ash Conveyor

Abort Stack

Mounted on top of the Furnace and includes a counter-weighted stack cap that is actuated via a pneumatic cylinder. The purpose of the Abort Stack is to open at high temperature and/or high pressure in the system as well as during plant power outages. It is fabricated from Carbon-Steel and refractory-lined for the first five (5) feet above the Furnace roof. The remainder of the stack is fabricated from Stainless-Steel. Stack cap is also refractory lined. During normal operating conditions the Abort Stack is kept closed via the pneumatic actuated damper; during a power outage when pneumatic air isn't available the stack-cap automatically opens due to the counter-weight.

Abort Stack

Video Camera and Monitor

An air-cooled video camera is provided at the rear end of the Furnace with a monitor to allow for visual inspection of the furnace combustion process from the operator Control Room.

Typical Grate fire

Control Devices

The following devices are supplied to control the Heat Energy System via PLC:

- Temperature Control Sensors
- Temperature Transmitters
- Zero Speed Switches
- Pressure Transmitters
- Proximity Switches (Capacitive and Inductive)
- Deluge Nozzles

Structural Steel

Purpose

To provide structural support for the Heat Energy System and to provide personnel access via stairs, ladders, and platforms.

Description

TSI supplies the support structures, stairs, ladders, and platforms from grade level as is typically required by the Heat Energy System. This includes access to areas requiring regular maintenance or monitoring by operating personnel. Stair access is provided to areas requiring maintenance on a daily or weekly basis; longer maintenance intervals will have ladder access. Client will have opportunity during system design to comment on access and add more if needed with an appropriate price adjustment.

Design Details

Assembly: Bolted and welded assembly.
Finish: Painted.

Typical Structural Steel (shown during construction)

ITEM 03 DRYER SYSTEM

Shown below and on following pages are some of the major individual components that make up the Dryer System.

Hot Gas Isolation Gate

Purpose

When activated, to hold back gasses generated by the Heat Energy System from entering the Dryer System, and together with the Blending Duct Isolation Gate, provide safe passage for plant maintenance personnel into the Dryer System.

Operation

The Hot Gas Isolation Gate is bolted between the Heat Energy System and the Blending Bustle. This gate together with the Blending Duct Isolation Gate enables plant personnel to seal off the Dryer System from the Heat Energy System. The Hot Gas Isolation Gate comprises a refractory lined housing assembly and a gate assembly that slides in the housing powered by two hydraulic cylinders. The gate center panel is a corrugated profile to allow for thermal expansion. The clearance between the frame of the gate and its housing is pressurized by a Seal Fan, to prevent leakage of hot gas into the Dryer System when the gate is in place, and thus enable for safe entry of plant personnel into the Dryer System.

Design Details

Materials of construction: Housing assembly is fabricated from Carbon-Steel plate for housing, with structural shapes for reinforcing; gate assembly is constructed from ¼” thick RA-253 reinforced floating structure.

Actuator: Twin hydraulic cylinders powered by a dedicated hydraulic power-pack and mounted external to the housing.

Seals: Seal fan.

Insulation: Two-layer refractory; low density layer with hard refractory face containing about 46% to 50% aluminum oxide.

Note: Refractory design by TSI; supply/installation/cure-out offered under Refractory Works option below within this document.

Blending

Purpose

To control the flow of Dryer System flue-gas back to the Dryer Drum via the Blending Bustle.

Operation

Blending consists of a duct that runs from the discharge of the ID Fan to the Blending Bustle; the Blending Bustle is located between the Hot Gas Isolation Gate and the Inlet Fitting. Within the duct is a Blend Damper that modulates the amount of flue-gas blended back to the Dryer Drum. This control loop modulates to hold the Dryer Drum outlet temperature set point, which determines the moisture content of the biomass exiting the Dryer Drum. The Blend Damper is operated automatically via the PLC Controls. Within the duct is also a Blending Duct Isolation Gate that together with the aforementioned Hot Gas Isolation Gate, when closed, provides safe passage for plant maintenance personnel into the Dryer System.

The Heat Energy System generates hot gas at about 1650°F. This temperature needs to be 'cooled' prior to contacting wet-woody-biomass within the Dryer Drum. One way to cool this temperature is to utilize ambient fresh air, which isn't energy efficient, and can impact significantly the production capacity of the Dryer System during cold weather. The preferred method of cooling the Heat Energy System's hot gas is with the warm humid Dryer System flue-gas.

The Dilution benefits are:

1) Year-round stable operations
2) Better product conditioning as 'warm humid' gas better dries woody biomass
3) Up to 50% lower gas flow and emissions to atmosphere or to the Emission Control Equipment
4) Up to 25% lower fuel consumption by the Heat Energy System

Blending Bustle

Purpose

To accept Blending gas and blend it back into the incoming hot gas stream generated by the Heat Energy System.

Operation

The Drying System is designed to recycle a portion of the spent gas back through the Dryer System. This has several advantages…

- The recycle gas is blended with the Heat Energy Systems hot gas to achieve optimal gas flow thru the Dryer System
- It reduces the overall oxygen level within the Dryer System thus making the system safer
- It increases the humidity of the gas stream thus increasing capacity of the gas to carry heat and facilitates the ability of the gas to transfer heat into the center of the wood chips without flash drying the surface
- It reduces volume of gas exhausted to atmosphere or emission control equipment
- It improves energy efficiency by about 25%

The design of the Blending Bustle is critical to good operation of the Dryer System. The re-entry point for the recycle gas is positioned as far away from the Dryer Drum Inlet as possible, giving the gasses time to mix before contacting wet-woody-biomass within the Dryer Drum. The design includes 'jetted-tubes' to create turbulence and promote gas mixing. By achieving well-blended gas ahead of the Dryer Drum inlet many problems associated with "hot streaks" in the gas can be avoided, thus minimizing emissions, fires, and improving quality of dried biomass.

Design Details

Materials of construction for chamber: ¼" thick Carbon-Steel.
Materials of construction for jetted-tubes: ¼" thick 310-Stainless-Steel.
Insulation: Two-layer refractory; low density layer with hard refractory face containing about 40% aluminum oxide.

Note: Refractory design by TSI; supply/installation/cure-out offered under Refractory Works option below within this document.

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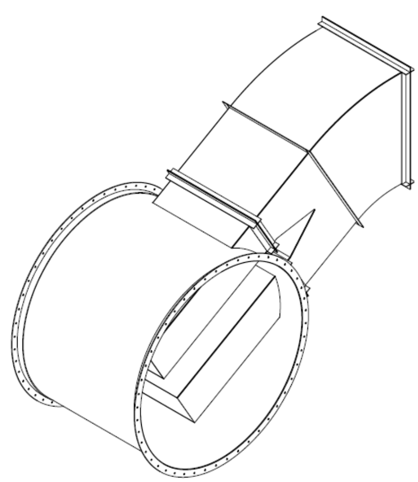
3D view of the recycle duct connecting to the Dilution Bustle; shown within the Dilution Bustle are the 'jetted-tubes' that crate turbulence and promote gas mixing prior to Dryer Drum



Inlet Fitting

Purpose

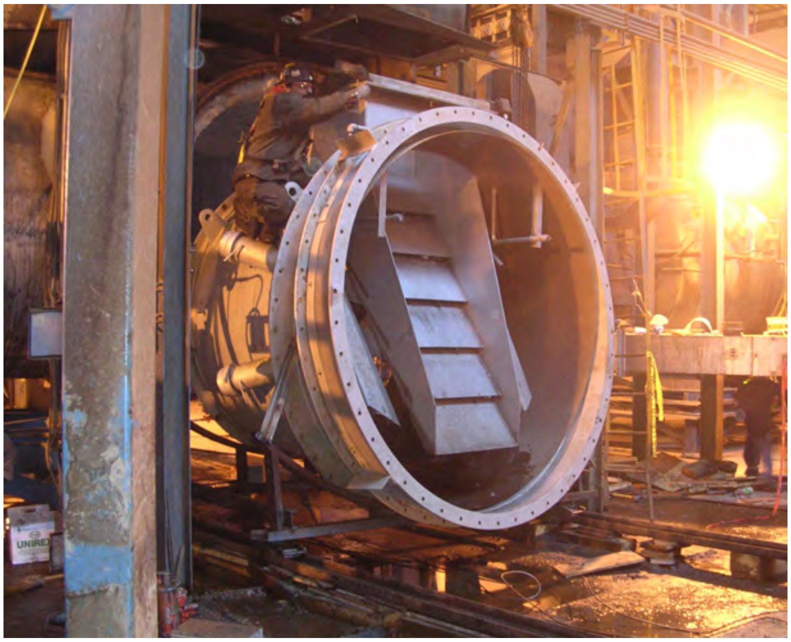
To act as a conduit for the transition of the homogeneous drying gas from the Blending Bustle into the Dryer Drum, and for the introduction of the wet-woody-biomass into the Dryer Drum.

Operation

The Inlet Fitting is a steel duct section with a flange mount for the Infeed Airlock, a louvered chute for the incoming material, tapped ports for injection nozzles, an access door, and a flange mount for the Dryer Drum Inlet Seal. The drying gas passes through the Inlet Fitting into the Dryer Drum. The louvered material chute angles down from the discharge of the Infeed Airlock through the gas stream delivering material into the throat of the Dryer Drum. The drying gas passes through the louvered chute also creating mixing turbulence. There are misting nozzles located within the Inlet Fitting; these provide the Dryer Operator with flexibility to simulate drying load.

Design Details

Materials of construction: ¼" thick Carbon-Steel.
Fittings: For pressure taps, cool-down or artificial load mist nozzles, and deluge nozzles as required by the fire suppression and system control schemes.
Insulation: Two-layer refractory; low density layer with hard refractory face containing about 40% aluminum oxide.
Note: Refractory design by TSI; supply/installation/cure-out offered under Refractory Works option below within this document.



Front view of the Inlet Fitting showing the louvered chute and cool-down nozzles

Purge Fan

Purpose

To purge combustible gas from the Dryer System in order to prevent explosions and fires.

Operation

During a power outage the fuel in the Heat Energy System will continue to smolder, as well as any 'pitch' buildup or biomass that may have accumulated within the Dryer System. This smoldering has the potential to fil up the Dryer System with combustible gas, which upon startup of the system, can cause an explosion due to fresh oxygen that is injected along with sparks coming from the Heat Energy System. To prevent this from occurring, the Purge Fan is connected to the Buyer's Back-up Power Generator and it turns on automatically when the main Dryer System ID Fan is offline. The Purge Fan injects fresh air into the system and purges any combustible gasses from the Dryer System via the Dryer System Abort Stack.

Purge Fan shown at grade level and with connecting duct to the Dryer System's Hot Gas Ductwork

Dilution Duct Isolation Gate

Purpose

To prevent hot gas entering the Dryer System back-wards via the dilution duct.

Operation

The Dilution Duct Isolation Gate is located in the dilution duct just prior to the Dilution Bustle. The Dilution Duct Isolation Gate is in the open position during normal operation. Under upset operating conditions and when the ID Fan stops, the Dilution Duct Isolation Gate will close and prevent hot gas from entering the back end of the Dryer System (the ID Fan, the Abort Stack, Cyclones, etc.). The Dilution Duct Isolation Gate comes equipped with a seal fan. The seal fan will pressurize the gate so hot gas cannot go around the metallic plate that make-up the Dilution Duct Isolation Gate. The seal fan will also purge free the dilution duct of potential for combustible gas buildup.

Design Details

Materials of construction: Housing assembly is fabricated from Carbon-Steel plate for housing, with structural shapes for reinforcing; gate assembly is constructed from ¼" thick Carbon-Steel reinforced floating structure.
Actuator: Twin hydraulic cylinders powered by a dedicated hydraulic power-pack and mounted external to the housing.
Seals: Seal fan.

Dilution Duct Isolation Gate just prior to the Dilution Bustle

Metering Bin

PURPOSE

To receive wet-woody-biomass from the Buyer, store that material, and meter wet material to the Conveyor.

OPERATION

The Metering Bin is located at grade level. The Buyer is responsible for feeding wet-woody-biomass into the Metering Bin; the Buyer is responsible for structurally supporting the Buyer's infeed conveyor due to Metering Bins structural inability to support the said infeed conveyor. The Metering Bin contains augers at bin bottom that are driven by variable frequency drives. These augers feed/meter biomass one the Conveyor. Above the augers is an agitator that distributes biomass evenly across the augers to ensure proper and constant feed.

DESIGN DETAILS

Materials of Construction: 3/16" thick Carbon-Steel for round silo; 304-Stainless-Steel for bottom ten (10) feet of the round silo contacting wet-woody-biomass; 304-Stainless-Steel base plate.

Augers: 3/8" thick 304-Stainless-Steel for housing and flights; 304-Stainless-Steel for pipe.

Rotor Discharge: 304-Stainless

Conveyor

Purpose

To receive wet-woody-biomass from the Metering Bin and convey that wet-woody-biomass into the Infeed Airlock.

Operation

The Conveyor receives wet-woody-biomass from the Metering Bin and conveys that biomass to the Infeed Airlock. The Conveyor is VFD driven and speeds up and slows down based on Metering Bin feed rate.

DESIGN DETAILS

Type: Drag-Chain design.
Drive: Direct coupled electric motor with gear reducer.
Materials of construction: Stainless-Steel for sides and top plate; bottom plate AR400; flights AR400.
Capacity: 300,000 lbs/hr @ 50% moisture content.
Fittings: To receive a speed switch.

Typical Drag-Chain Conveyor

Infeed Airlock

Purpose

To receive wet-woody-biomass from the Conveyor and discharge it onto the louvered chute of the Inlet Fitting.

Operation

The Infeed Airlock comprises a formed machined steel body with a rotating vane. The vane has eight pockets with knife tips. The design loading is based on achieving the optimum balance between minimizing the introduction of ambient air into the system and creating a maximum, non-plugging load in each pocket.

DESIGN DETAILS

Type: Eight-pocket, rotating vane; low-leakage, knife type.
Drive: Direct coupled electric motor with gear reducer.
Materials of construction: Carbon-Steel body with Brass tips.
Fittings: To receive a speed switch that monitors the rotation of the airlock.

Feeder-type Airlock shown installed and operating with direct coupled drive

Dryer Drum

Purpose

To receive wet-woody-biomass and drying gas, expose wet-woody-biomass to the drying gas in an efficient manner, and discharge flue-gas and dried material into the material duct.

Operation

The Dryer Drum consists of three major subassemblies: the drum, the trunnions, and the drive.

The drum is a cylindrical structure formed of rolled mild steel plate, reinforced with structural section channel, tee, and angle ribs, and external bands. The drum rides on two full diameter forged tracks. Drum's interior is a network of lifting flights and baffles, designed to shower material across the drum's cross-section as it rotates and to regulate the forward movement of material through the drum. Around the circumference of the drum are mounted segmented chain teeth sets, on which a roller chain rides. Drum rotation is affected by an electric motor and a gear reducer.

Drum's tires are supported on four trunnion wheels, arranged in opposed pairs at the two track locations. Each trunnion is cast and machined from nodular iron, with shafts riding in split pillow-block spherical roller bearings. Rear trunnion wheels are flanged to fix the location of the drum.

Seals are located at both ends of the drum and are designed to limit ambient air infiltration. Seals are mounted to adapter-taper fittings to insure alignment. Drive chain, trunnions wheels, and tracks are lubricated. The drum is clad with a corrugated skin, which creates an air gap that acts as an effective insulator.

Shown Ø13'x60' long Dryer Drum
(inboard location of tracks for reduced stress on the shell, the reinforcing channels throughout, and oversized trunnion wheels & tracks for long service life)

Design Details

DRUM

Materials of construction: 3/8” thick A572-Grade 50 Carbon-Steel plate for drum wall, with formed and welded channel structural members to reinforce the high strength weldment, using ¾” angle iron flanges to connect the sections. Forged tires are machined for bolted connection to the drum sections.

Drum rotational drive: NEMA B electric motor and parallel-shaft gear reducer.

Drum backup drive: A backup drive is provided to rotate the Drum during power outage situations.

Typical Dryer Drum section – pictured during installation
(note the ‘open’ flighting within the Drum; the flighting promotes chip individualization so each particle moves thru the Drum at its own pace; the open design also provides for easier maintenance as maintenance personnel can walk thru the length of the Drum)

TRUNNIONS
Type: Flat/flanged couple; idling.
Materials of construction: ASTM grade 60 cast nodular iron for wheels, mounted on mild steel base weldment structures.
Bearings: Pillow blocks with split housings; spherical, self-aligning roller elements.

SEALS
Type: Fiberglass belt with spring steel plates for support.

INSULATION
Type: Galvanized corrugated sheet metal with air gap between sheet metal and drum shell; insulation is designed by TSI, supplied/installed by the Buyer.

LUBRICATION
Type: Oiler.

SAFETY GUARDS
Type: Track guards that cover drum's tracks and trunnion wheels.

Ductwork

Purpose

To convey dried biomass and spent gas from the Dyer Drum discharge to the High Efficiency Cyclone(s), and to convey spent gas from the High Efficiency Cyclone(s) discharge to the ID Fan, and from the ID Fan either to the Dilution Bustle and Exhaust Stack (or Wet Electrostatic Precipitator).

Operation

The Ductwork is made from rolled Carbon-Steel. There are two (2) types of ducts: the material duct that conveys both spent gas and dried biomass and gas duct that conveys spent gas only. The material duct runs from the Dryer Drum discharge to the High Efficiency Cyclone(s) inlet. The gas duct runs from the High Efficiency Cyclone(s) discharge to the ID Fan, and from the ID Fan to the Dilution Bustle and to the Exhaust Stack or the Wet Electrostatic Precipitator.

DESIGN DETAILS

Type: Rolled Carbon-Steel with flanged connections.
Materials of Construction: ¼" thick for material duct and 3/16" for gas duct.
Elbows within Material Duct: ½" thick T1.
Expansion Joints: Corrugated Stainless-Steel.

Typical corrugated Stainless-Steel Expansion Joints

Double-Duct

Purpose

To keep inner walls of the Ductwork's gas ducts hotter than the condensable temperature of the complex hydrocarbons that evaporate from biomass during the drying process, thus prevent 'pitch' buildup.

Operation

The Double-Duct keeps the 'inner' walls of the gas duct hotter than the condensable temperature of complex hydrocarbons that evaporate from biomass during the drying process. This prevents hydrocarbons from condensing onto the 'inner' walls of the gas duct, which is commonly in the industry referred to as 'pitch' buildup. Pitch buildup is prone to fires, explosions, and while it accumulates it gradually reduces production capability of the Dryer Island due to restricting gas flow. It is costly and time consuming to manually clean 'pitch' buildup. Double-Duct does not completely eliminate 'pitch' buildup and manual cleaning is still necessary but at reduced intervals. Double-Duct is heated via Air-to-Air Heat Exchanger and is backed up by an Electrical Heater.

Zones:

1) Gas duct from Cyclone(s) discharge to ID Fan inlet
2) Abort Stack from bottom level to Abort Damper

Design Details

Materials of Construction: 3/16" Carbon-Steel.

Typical double-duct; please note the inner duct and outer duct

High Efficiency Cyclone(s)

Purpose

To separate dried biomass from the flue-gas and deliver dried biomass into Cyclone Airlock(s).

Operation

The High Efficiency Cyclone(s) accepts flue-gas and dried biomass from the incoming material duct. The inlet geometry features a tangential transition to the tub section with inlet angle between material duct and transition of fifteen (15) degrees. The Cyclone bottom cone is a relatively shallow angle for better efficiency at removing smaller particulate from the flue-gas. At the exit of the cone there is an oversized vortex breaker with anti-spin baffles to effectively stop the cyclonic action of the dried biomass and to evenly distribute dried biomass into Cyclone Airlock pockets, thus minimizing the risk of plugging and wear on the tips of the Cyclone Airlock. Flue-gas is drawn from the top of the Cyclone and into the gas duct. Explosion relief panels are located on top of the Cyclone.

Design Details

Access: A door on the gas inlet and gas outlet of the Cyclone.

Explosion Panels: NFPA certified explosion panels located at top of each Cyclone.

Cyclones are positioned directly on top of the Buyer's Fire Dump; underneath each Cyclone is a Cyclone Airlock; under Cyclone Airlocks are Collection Screws that process biomass under normal operating conditions to Buyer's process conveyor; under upset operating conditions Collection Screws reverse direction to dump biomass to Buyer's Fire Dump.

Oversized vortex breakers underneath the Cyclones

Cyclone Airlock

Purpose

To receive dried biomass from the High Efficiency Cyclone and discharge dried biomass to the Collection Screw.

Operation

The Cyclone Airlock comprises a formed machined steel body with a rotating vane. The vane has eight pockets with knife tips. The design loading is based on achieving the optimum balance between minimizing the introduction of ambient air into the system and creating a maximum, non-plugging load in each pocket.

Note: each Cyclone has a dedicated Cyclone Airlock

Advantages

- Lower emissions (any ambient air leakage upwards through the Cyclone Airlock will lift particulate removed by the Cyclone and exhaust to the WESP)
- Lower WESP loading (lower dust loading onto the WESP will result in less maintenance)
- Lower Dryer System operating oxygen levels (any ambient air leaked into the Dryer System will result in higher operating oxygen levels, which is detrimental for fires and sparks)
- Lower maintenance (knife tips are typically adjusted once/year, whereas rubber tips need to be replaced at least twice/year)

Design Details

Type: Eight-pocket, rotating vane; low-leakage, knife type.
Drive: Direct coupled electric motor with gear reducer.
Materials of construction: Carbon-Steel body with Brass tips.
Fittings: To receive a speed switch that monitors the rotation.

Cyclone Airlock underneath the vortex breaker operating with a direct coupled drive

Collection Screw

Purpose

To collect dried biomass from the Cyclone Airlock(s), and process dried biomass to the Buyer's take-away conveyor during normal operating conditions or to the Buyer's Fire Dump during upset operating conditions.

Operation

The Collection Screw is located underneath the Cyclone Airlock(s) and receives dried biomass from the Cyclone Airlock(s). The Collection Screw conveys biomass to the Buyer's take-away conveyor during normal operating conditions. During upset operating conditions the Collection Screw will reverse direction and dump biomass directly into the Buyer's Fire Dump. The tower holding the Cyclone(s), Cyclone Airlock(s), and the Collection Screw, is located directly on top of the Buyer's Fire Dump.

Design Details

Drive: Direct coupled electric motor with gear reducer.
Materials of construction: ½" thick Carbon-Steel body with ½" thick Carbon-Steel for screw.

Shown in the picture is the entire assembly of the Cyclones, Cyclone Airlocks, and Collection Screw all located direction above the Buyer's Fire Dump.

ID Fan

Purpose

To provide the motive force and requisite pressures through the Dryer System.

Operation

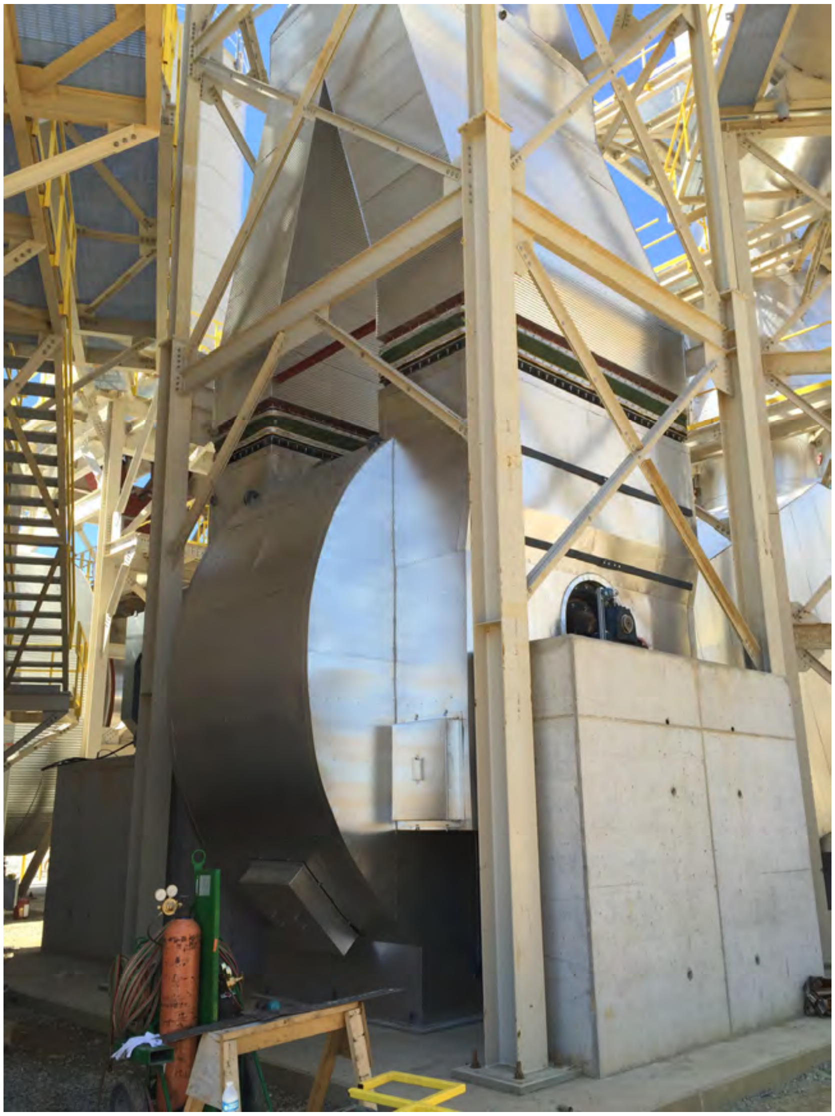
The ID Fan is positioned at grade level after the High Efficiency Cyclone and connects to Gas Ductwork on both the inlet and the outlet sides. It draws gas through the entire Dryer System prior to the inlet and then forces some gas back into the Dryer System via the Recycle Bustle and the reminder of the gas to the WESP. There are expansion joints located at both the inlet and the outlet of the ID Fan that accommodate for the thermal expansion of the Gas Ductwork, but also isolate the Ductwork from any potential vibrations originating with the ID Fan. The ID Fan flow is modulated via a Variable Frequency Drive and it is governed by the pressure differential reading across the High Efficiency Cyclones.

Design Details

Type: Single wheel, double inlet, single outlet, centrifugal, class IV.

Blade Shape: Radial Tip.

Access: Man-door for maintenance.



Typical ID Fan

Dilution & Stack Damper

Purpose

To control the flow of flue-gas to the Dilution Bustle or to the Pollution Control Equipment.

Design Details

Type: Opposed blade louver.
Actuator: BECK actuators.

Emergency Abort Stack

Purpose

To vent Dryer System flue-gas to atmosphere during upset operating conditions.

Operation

At times the Dryer System flue-gas will need to be aborted to atmosphere during upset operating conditions. The Emergency Abort Stack provides the ability to vent gases to atmosphere during upset operating conditions. The control damper is air actuated and is fail safe; if there is a power outage or air failure the Emergency Abort Stack will automatically open.

The Emergency Abort Stack is a 'free-standing-stack'.

Structural Steel

Purpose

To provide structural support for the Dryer System and to provide personnel access via stairs, ladders, and platforms.

Description

TSI supplies the support structures, stairs, ladders, and platforms from grade level as is typically required by the Dryer System. This includes access to areas requiring regular maintenance or monitoring by operating personnel. Stair access is provided to areas requiring maintenance on a daily or weekly basis; longer maintenance intervals will have ladder access. Client will have opportunity during system design to comment on access and add more if needed with an appropriate price adjustment.

Design Details

Assembly: Bolted and welded assembly.
Finish: Painted.

Typical Structural Steel (shown during construction)

Control Devices

Description

The following devices are included in order to control the Dryer System via PLC:

- Temperature Control Sensors
- Temperature Transmitters
- Pressure Transmitters
- Speed Switches
- Proximity Switches (Capacitive and Inductive)
- Plug Detectors
- Deluge Nozzles

Typical quick-disconnect removable nozzle

Spark Detection and Suppression

Purpose

To monitor the Dryer System for sparks and fires, and extinguish those sparks and fires.

Operation

The Spark Detection and Suppression monitors various locations within the TSI Dryer System. Deluge nozzles are linked to the spark detection devices and respond appropriately based on input. The deluge works in conjunction with the Collection Screw to abort material to the Buyer's Fire Dump. The Spark Detection and Suppression is integrated into the overall Dryer System controls with audible fire alarm, control panel display, and fire sequence relay.

Design Details

Type: Computerized spark detection and extinguishing system.

Suppression Equipment: Water suppression system complete with nozzles, valves, spark sensors, and control logic for automatic and manual operation; deluge valves are supplied that include Y-strainers to clean water from impurities, flow switches to indicate flow, ASCO solenoid valves to actuate flow, with manual by-pass.

Notes:

1) Fire detection & suppression by the Buyer.

2) TSI will supply Deluge Nozzles for the Dryer System with exception to the fast-acting suppression nozzles located between the Drum & Cyclone(s); Buyer responsible for supplying Deluge Valves (as described above complete with ASCO solenoid, manual by-pass, Y-strainers, and flow switches; heat tracing if required is by the Buyer) as specified by TSI along with pipework from Deluge Valves to the TSI supplied Deluge Nozzles (TSI will only supply Deluge Nozzles along with engineering drawings).

Typical Spare Detection Equipment at connecting chute

ITEM 04 WET ELECTROSTATIC PRECIPITATOR (WESP)

Shown below and on following pages are some of the major individual components that make up the WESP.

Required Water Quality for the WESP

The WESP utilizes water and a 50% solution of Sodium Hydroxide (NaOH) to flush out and clean the collection tubes. NaOH is injected directly into the flushing system to assist in the cleaning process. The NaOH injection will drive the pH of the flush water into the basic range (generally in the order of pH 10 – 12). The high pH is an essential element in maintaining clean surfaces within the WESP. By driving pH into basic range, $CaCO_3$ will precipitate out of the water causing buildup in the pump, piping, and nozzles. In order to mitigate the amount of hard water buildup in the system it is **required** that the incoming water hardness be at or below the level of "soft water". Below is a range that describes total water hardness.

- 0-60 ppm $CaCO_3$ – soft
- 60-120 ppm $CaCO_3$ – moderately hard
- 120-180 ppm $CaCO_3$ - hard
- >180 ppm $CaCO_3$ - very hard

Total water hardness of water delivered to the WESP should always remain below 60 to ensure trouble free operation.

The Water Treatment System is by the Buyer (below is WESP water requirement):

- pH: 6 – 8
- Conductivity (uS/cm): <1000
- COD (mg/l): <500
- Suspended Solids (mg/l): <100
- Water Hardness (°dh): <10 (preferably <5)
- Calcium (mg/l): <80 (preferably <40)
- Formaldehyde (mg/l): 0 (limit 10)
- Sulfates SO4: <100
- Chlorides (mg/l): <50

Required NaOH Quality for WESP

NaOH is manufactured with two distinct methods (Diaphragm and Membrane). Diaphragm grade caustic, while less expensive, has up to 100 times more-free NaCl in the solution. The introduction of NaCl can cause stress corrosion cracking as well as general corrosion on the internal surfaces of the wet ESP.

Membrane grade caustic has less NaCl. It is essential that the NaOH purchased for the WESP is membrane grade in order to prevent damage to the WESP. Additionally, because the recycle water is often sprayed back into the Heat Energy System, or the Dryer System, similar corrosion impacts might be realized there as well.

Quench-Duct

Purpose

The Quench-Duct sprays recycled water into the incoming Dryer System flue-gas stream, thereby saturating and cooling that gas stream to the wet-bulb temperature, and at same time removes larger particulate prior to the WESP.

Operation

The Quench-Duct is equipped with recycled water header, sprays, and nozzles to saturate the gas stream and scrub out larger front-half particulate (or filterable particulate) from the gas stream. Saturating the gas stream also allows the WESP to condense and remove some back-half particulate (or condensable particulate); back-half particulate that condenses at temperatures lower than the operating gas stream's wet-bulb temperature will not be captured by the WESP. Scrubbing the larger front-half particulate prior to the WESP allows the precipitator to operate cleaner and have higher efficiency for smaller front-half particulate.

Design Details

Design Pressure: ±25" w.c.
Materials of Construction: T-304L Stainless-Steel skin/piping/nozzles with Carbon-Steel externals.

Typical Inlet Quench Duct

Wet Electrostatic Precipitator

Purpose

The Wet Electrostatic Precipitator collects and removes fine particulate from the Dryer System flue-gas stream.

Design Details

Design Pressure: ±25” w.c.

Inlet Section:

- 3/16” thick T-304L Stainless-Steel internals with Carbon-Steel externals
- Flooded floor design which eliminates buildup on the bottom surface
- Turning vanes for even distribution of gas stream across tube sections

Collection Section:

- T-304L Stainless-Steel internals with Carbon-Steel externals
- 14-gauge x Ø10” collection tubes with ¼” thick tube sheet
- Carbon-Steel structural supports
- Carbon-Steel vane axial fans (one per tube bundle) to blow ambient air across the tube section, this promotes condensation on the internal surfaces of the collection tubes thus keeping the tube walls wet

Power Grid Housing:

- 3/16” thick T-304L Stainless-Steel internals with Carbon-Steel externals (stiffeners, brackets, etc.)
- T-304L Stainless-Steel flush header
- T-304L Stainless-Steel collection electrodes (rigid mast with concentric disk electrodes complete with triangular plate alignment mechanism for final alignment)
- T-304L Stainless-Steel power grid that is suspended from outboard porcelain insulators within Purged Insulator Compartments
- T-304L Stainless-Steel Purged Insulator Compartments with integrated purge air system (see further details in proposal), suspension bracket for high voltage insulator, and access hatch for easy access to each insulator.

Wet Electrostatic Precipitator

Power Grid and Discharge Electrodes

Flush Header within the Power Grid

High Voltage Power Supply

Purpose

The High Voltage Power Supply delivers DC rectified high voltage to the electrostatic fields of the WESP.

Description

The High Voltage Power Supply and its control panel are included. The Transformer Rectifier (T/R) will be located at the power grid level of the WESP and the control panel will be located in the owner supplied MCC room.

Design Details

Type: 3 phase, air cooled.
T/R: IP 65 (NEMA 4).
Control Panel: IP 54 (NEMA 12) to be located in the Dryer Island E-House.
Output Rating: 70 kV; as required milliamps.
Input Power: 460 V / 3-phase / 60 Hz.
High Voltage Transmission: Pipe in grounded duct.
Features: Control Panel with digital controller, KV and MA signal transmitters; remote start/stop function; grounding switch; key interlock system.

High Voltage Power Supply

Discharge Duct

Purpose

The Discharge Duct conveys particulate cleaned gas stream from top of the WESP to grade level to connect to the downstream RTO.

Description

The discharge duct will connect the top of the WESP to the RTO's Mist Eliminator Chamber located at grade level.

Design Details

Design Pressure: 25" w.c.
Discharge Duct: 3/16" thick T-304L Stainless-Steel internals with Carbon-Steel externals.

Discharge Duct shown

Quench Water Recycle

Purpose

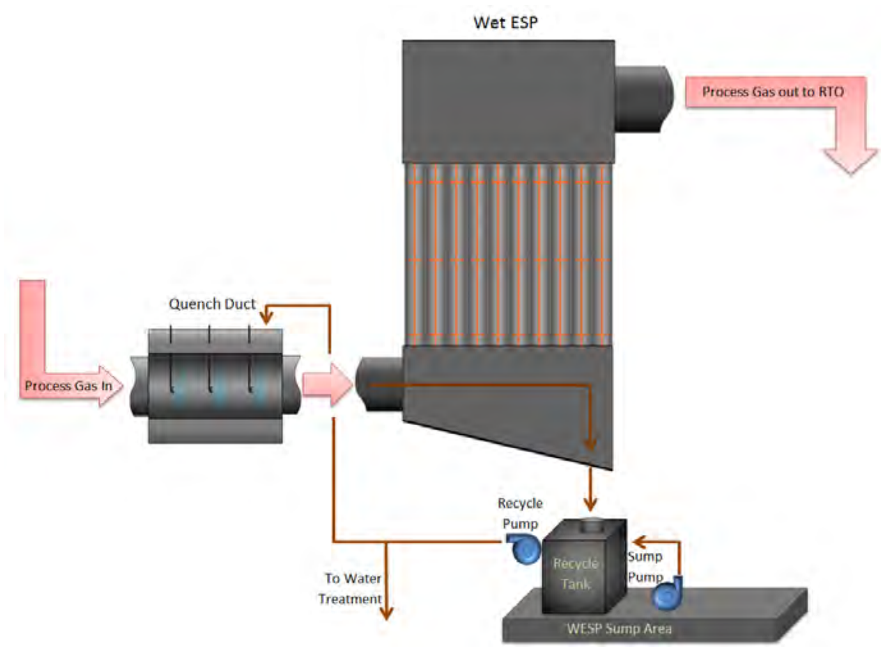
Quench Water Recycle delivers recycled water to the Quench-Duct and collects all water from the Wet Electrostatic Precipitator, including recycle water draining from the Quench Chamber and spent water and particulate from flushing of the WESP collection tubes.

Description

The Quench Water Recycle includes a recycle tank, a recycle pump, valves, strainers and all specialty fittings. The Quench Water Recycle periodically flushes independent electrical fields to wash away collected debris. Recycle water is sprayed (via the recycle pump) into the Quench Duct and spent recycle water will gravity drain back into the recycle tank located beneath the WESP. The Quench Water Recycle is controlled automatically by the Dryer Island PLC control system. Make up water requirements due to evaporation, or blow down, will be satisfied with flush water. PLC programming will control flush sequence based on recycle tank water level.

Design Details

Recycle Tank: Rectangular T-304L Stainless Steel tank with water dual jet agitation sprays.
Recycle Pump: ANSI centrifugal; T-316L Stainless Steel wet end.
Sump Pump: self-priming containment evacuation in the event of a spill.
Features: Includes all required nozzles, automatic and manual valves, and an oversized duplex strainer to prevent nozzles from plugging; piping and general fittings are to be supplied by the installation contractor.
Containment Area: Recycle tank is placed within a concrete curbed area to contain any spills from the tank, pumps, or strainers. The containment area is self-draining to a collection sump where the water can be pumped back into the recycle tank.



Flush

Purpose

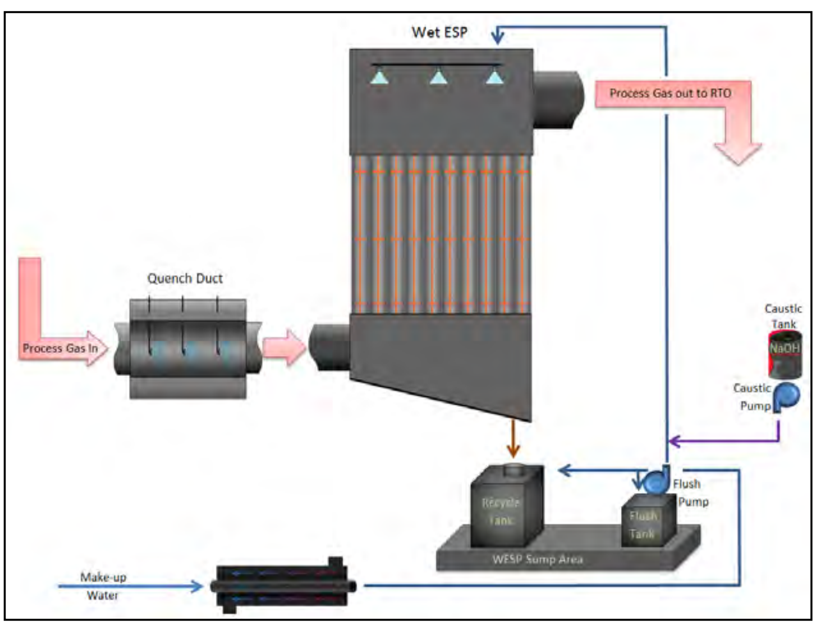
Flush delivers hot clean water to the collection tube of the WESP to rinse away collected particulate.

Description

Flush includes a flush tank (immersed within the recycle tank for heating purpose), a flush pump, valves, strainers, and all specialty fittings. Flush periodically flushes independent electrical fields to wash away collected debris. Flush is controlled by the PLC and is based on timers. A "pause" timer controls the time between flushes. A "duration" timer controls the duration of the Flush. If the recycle tank cannot accept Flush water the pause timer will be extended to allow evaporation to reduce the level of water within the tank. If the recycle tank is running low on water the pause timer will be advanced and trigger a Flush.

Design Details

Flush Tank: 2000 gallons immersed within the recycle-tank.
Flush Pump: Centrifugal style pump sized to deliver appropriate flow and head pressure to flush header and nozzles.
Nozzles: T-304L stainless steel maximum passage nozzles; arrangement insures proprietary overlapping pattern above each collection tube to guarantee adequate coverage to all tube surfaces.
Features: All required nozzles and internal headers are provided; one feed per WESP unit consisting of heated flush tank immersed in the recycle water for heat transfer purposes and a pump will be supplied; hot water with caustic added is more effective in removing sticky organic deposits from the collection tubes than cold water; piping and fittings are to be supplied by the installation contractor.



Typical Flush

Chemical Injection

Purpose

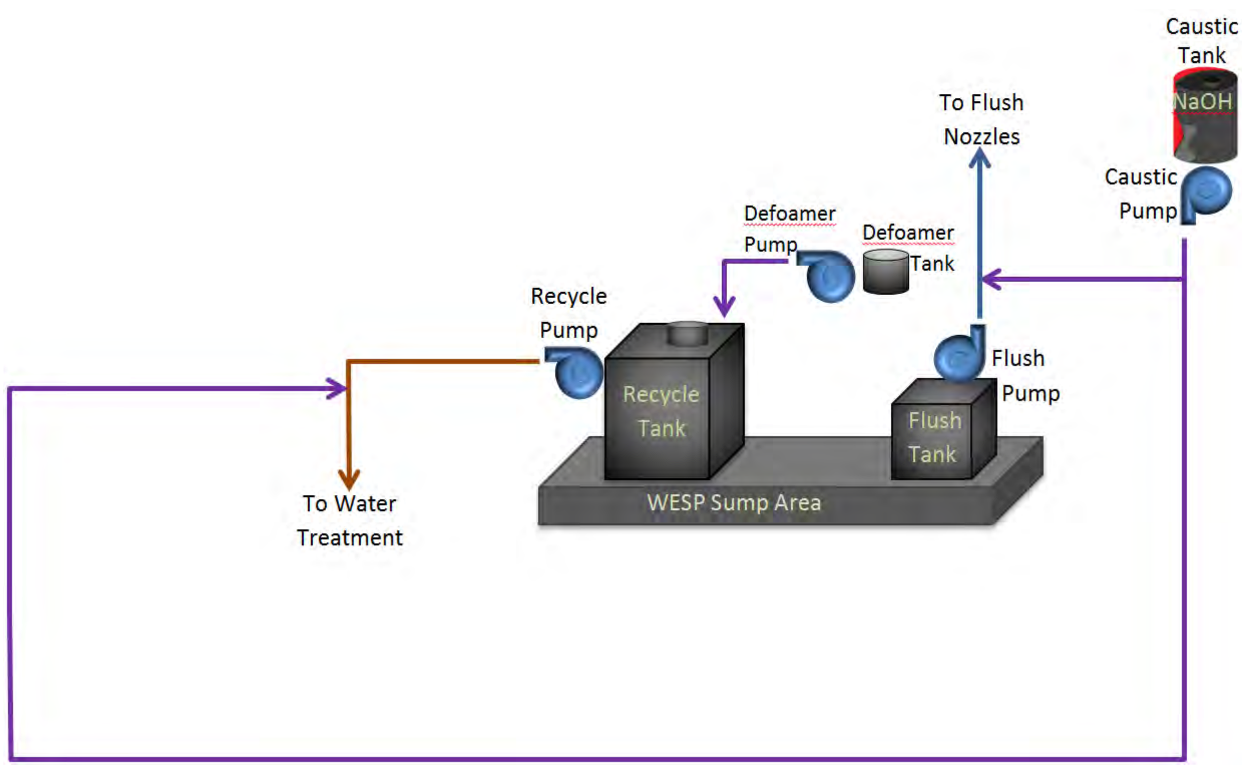
Chemical Injection delivers necessary chemicals (NaOH or Caustic and a defoaming agent) to the Recycle System and Flush System.

Description

The Chemical Injection is incorporated into the flush and recycle. Chemical Injection is designed to periodically inject sodium hydroxide (NaOH) directly into the flush water to aid in cleaning of the Wet ESP collection tubes. The flush and caustic systems will be controlled by the Dryer Island PLC. The Chemical Injection is also designed to inject a de-foaming agent into the water recirculation system to control foam when it occurs. The de-foaming system will be controlled at the PLC and also have the capability for manual control. The caustic and de-foaming system will be enclosed in a containment area. TSI will supply a Caustic Tank Pump that will receive and pump caustic from incoming trucks into the tank.

Design Details

NaOH Pump: Gear pump with 2 to 3 gallons per minute capacity (7.5 to 11.25 liters/minute).
De-foaming Pump: Gear pump with 2 to 3 gallons per minute capacity (7.5 to 11.25 liters/minute).
NaOH Tank: 6,500-gallon cross linked polyethylene with surface heaters.
De-foaming Agent: To be determined after startup; totes provided by chemical vendor.



Purge Air

Purpose

Purge Air delivers warm air to the insulator boxes to prevent contamination, which can cause arcing in the insulator boxes that will degrade WESP's performance, from the process gas stream.

Description

Purge Air includes a fan, heaters, and a duct network to deliver air to the insulator boxes. The fan will draw air from the outside surface of the tube section. Initially, electric resistance heaters located at each insulator box will be energized to supply the heat necessary to raise the temperature of the purge air. Once the WESP is warmed the heat will be gained from the tube section and the heaters will be de-energized.

Design Details

Fan: Centrifugal fan capable of supplying 1000 CFM per electrostatic power field
Heaters: Four (4) per power field; electric resistance 1.5 kW each

Purge Air Fan shown with connecting insulated ductwork

Decanter Centrifuge

Purpose

Decanter Centrifuge removes solids suspended in the process water, thus reducing concentration of solids in the water, therefore minimizing amount of water blow-down required by the WESP.

Description

The Decanter Centrifuge removes solids collected by the WESP. The Decanter Centrifuge is configured to treat a slipstream of up to 50 gallons per minute (187.5 liters/minute) of recycle water from the WESP. The cake produced by the Decanter Centrifuge is approximately 50% solids by weight; this discharge is typically land-filled. The centrate (cleaned water) gravity drains back to the recycle tank. A small blow-down stream of approximately two (2) gallons per minute (7.5 liters/minute) is necessary to control concentration of dissolved solids within WESP's water. The exact amount will be determined after start up based on dissolved solids level.

Design Details

Materials of Construction: 304L-Stainless-Steel for wetted parts.
Capacity: 50 gallons per minute (187.5 liters/minute).

Structural Steel

Purpose

To provide structural support for the WESP and to provide personnel access via stairs, ladders, and platforms.

Description

TSI supplies the support structures, stairs, ladders, and platforms from grade level as is typically required by the WESP. This includes access to areas requiring regular maintenance or monitoring by operating personnel. Stair access is provided to areas requiring maintenance on a daily or weekly basis; longer maintenance intervals will have ladder access. Client will have opportunity during system design to comment on access and add more if needed with an appropriate price adjustment.

Design Details

Assembly: Bolted and welded assembly.
Finish: Painted.

Piping Materials

Fresh Water Lines: threaded black iron
Chemical Lines (NaOH & Defoamer): Threaded black iron
Flush System Lines: Flanged black iron
Process Water Lines: Combination of flanged and threaded T-304 Stainless-Steel

Control Devices

Description

The following devices are included in order to control the WESP via PLC:

- Temperature Control Sensors
- Temperature Transmitters
- Zero Speed Switches
- Pressure Transmitters
- Proximity Switches (Capacitive and Inductive)
- Level Indicators
- PH Level Indicators

ITEM 05 REGENERATIVE THERMAL OXIDIZER (RTO)

Shown below and on following pages are some of the major individual components that make up the RTO.

Mist Eliminator Chamber

Purpose

To remove as much suspended water droplets from the gas stream as possible in order to minimize bed fouling and reduce heat requirement on the RTO burners.

Operation

The Mist Eliminator Chamber slows the incoming gas stream to required velocity to enable the mist eliminator modules to remove water droplets from the incoming gas stream. The modules are of chevron style. The mist eliminator modules are flushed routinely utilizing the WESP flush system and water drains back to the WESP sump.

Design Details

Materials of Construction: 3/16" thick 304-Stainless-Steel.
Operational Parameters: ±25" w.c. @ 150°F.
Access: One (1) access door on each side for internal inspection of both leading and trailing side of the modules.
Flush: Integrated into WESP Flush and includes leading edge and top-down flushing.

Mist Eliminator Chamber
(incoming gas stream from the left; discharge into the RTO to the right)

FD Fan

Purpose

To provide the motive force and requisite pressures through the WESP and the RTO.

Operation

The FD Fan is controlled by a variable frequency drive (VFD). The FD Fan modulates automatically via the PLC to maintain a static pressure set-point at the inlet to the WESP. The FD Fan induces gas flow thru the WESP and pushes gas flow thru the RTO.

Design Details

Materials of Construction: Stainless-Steel with external Carbon-Steel reinforcing structural members.

Design Conditions:

- Flow = Actual flow +10%
- Pressure = Actual Pressure +21%.

Bearings: Complete with vibration transmitters and temperature elements.

Expansion Joints: Stainless-Steel.

Inlet Manifold

Purpose

The Inlet Manifold distributes process gas to the Diverter Valves.

Design Details

Materials of Construction: 3/16” thick 304-Stainless-Steel.
Operational Parameters: ±25” w.c. @ 150°F.
Access: One (1) hinged and plug insulated access door for internal inspection.

Inlet and outlet manifold shown on either side of centered valve

Poppet Diverter Valves

Purpose

To control the flow direction of the flue-gas through the RTO media chambers.

Operation

The Poppet Diverter Valves are controlled by timers within the Programmable Logic Controller (PLC). At intervals of approximately three (3) minutes, pairs of Poppet Diverter Valves will simultaneously shift, reversing the flow direction of the process gas through the RTO. This allows the heat recovery beds to alternate between a heat source and a heat sink, thus allowing the RTO to recover approximately 95% of the thermal energy.

Design Details

Materials of Construction: 10-gauge 304-Stainless-Steel.
Operational Parameters: ±25” w.c. @ 150°F inlet and 250°F outlet.
Valve Trim Construction: Main-disk fabricated from 7-gauge thick Duplex-Stainless-Steel; support-disks fabricated from 10-gauge 304-Stainless-Steel; seat materials are 304-Stainless-Steel; seal arrangement is metal to metal sealing surfaces.
Access: One (1) hinged and plug insulated access door for internal inspection of valve and bottom side of the hopper.
Valve Actuation System: Parker 2A heavy duty pneumatic cylinder, adjustable end cushions at each end of travel; direct link with Parker linear alignment coupling, inductive proximity switches measuring actual valve shaft position, actuation time is 0.5 to 1.0 second full open to full close; each valve is pre-assembled and pre-wired to junction box.


Hopper Transitions

Purpose

The Hopper Transitions distribute flow evenly to the bottom surface of the heat recovery media.

Operation

The Hopper Transitions allow gasses exiting the Poppet Diverter Valve to slow down and spread out evenly across the bottom face of the media bed.

Design Details

Materials of Construction: 3/16” thick 304-Stainless-Steel.
Operational Parameters: ±25” w.c. @ 150°F inlet and 250°F outlet (excursions up to 600°F during bakeout).

Typical Hopper Transition

Heat Recovery Chamber

Purpose

To serve as a vessel for the heat recovery media.

Operation

The Heat Recovery Chamber houses the heat recovery media that enables the RTO to recover approximately 95% of the thermal energy. The Heat Recovery Chamber also houses the media support structure for the heat recovery media, sometimes referred to as the “cold face”.

Design Details

Materials of Construction: 3/16” thick 304L-Stainless-Steel reinforced outside with Carbon-Steel stiffeners.
Operational Parameters: ±25” w.c. @ 150°F inlet and 1500°F outlet; maximum operational temperature 1800°F.
Media Support Structure: Laser cut or high-def plasma slotted 316-Stainless-Steel plate (laser cutting or high-def plasma mitigates stress concentration due to cold working); maximum free passage of 70% open area; centered in Heat Recovery Chamber with no direct contact to outside walls; completely floating design to prevent stress concentrations while allowing for thermal expansion.
Access: Inspection access to the support structures is through the diverter valve; inspection access to top of heat recovery section is through combustion chamber access.
Note: Most vendors fabricate Heat Recovery Chamber from Carbon-Steel with mastic lining; when hot spots develop the mastic lining will burn off and leave the internal surfaces unprotected from oxidation long after hot spots are corrected; TSI fabricates Heat Recover Chambers from Stainless-Steel *to eliminate this potential issue.*

Media support beams
‘Norton Beam Style’

Combustion Chamber

Purpose

Emissions created by the Heat Energy System and the Dryer System, which were not removed by the WESP, are destroyed within the Combustion Chamber.

Operation

The Combustion Chamber houses a natural gas burner that regulates the internal temperatures of approximately 1500°F and greater. The Combustion Chamber is specifically designed to provide a minimum residence time of 0.5 seconds (along the flue-gas flow's "shortest path possible"). The combination of temperature and adequate residence time ensures that majority of the incoming hydrocarbons will be converted to CO_2 and H_2O. Volatile Organic Compounds (VOCs), Carbon Monoxide (CO), Hazardous Air Pollutants (HAPs), and Back-Half Particulate (BHP) are all destroyed within the Combustion Chamber.

Design Details

Materials of Construction: 3/16" thick 304-Stainless-Steel.
Operational Parameters: ±25" w.c.; normal operation 1500°F; maximum operational temperature 1800°F.
Access: One (1) access door on a davit in each combustion chamber.
Note: Most vendors fabricated Heat Recovery Chamber from Carbon-Steel with mastic lining; when hot spots develop the mastic lining will burn off and leave the internal surfaces unprotected from oxidation long after hot spots are corrected; TSI fabricates Heat Recover Chambers from Stainless-Steel *to eliminate this potential issue.*

Outlet Manifold

Purpose

The Outlet Manifold collects process gas from the RTO and delivers that process gas to the Exhaust Stack.

Design Details

Materials of Construction: 3/16” thick Carbon-Steel.
Operational Parameters: ±25” w.c. @ 450°F.
Access: One (1) hinged and plug insulated access door for internal inspection of outlet manifold.

Control Dampers

Purpose

The Control Dampers gas flow and fresh air flow thru the RTO.

Operation

There are three (3) control dampers within an RTO. They are the “blocking”, “fresh air”, and “bleed air” dampers. The blocking and fresh air dampers work together, isolating the RTO from the process gas, and allowing fresh air to enter the RTO. This is required during the burner ignition as well as the warm up cycle of the RTO, which must happen at a reduced airflow. When the blocking damper is closed the fresh air damper will be open and vice versa. The bleed air damper allows the discharge side of the RTO to vent during shutdown and outages; this serves as a vacuum break caused by the stack affect during those situations.

Design Details

Materials of Construction:

- Blocking: 304-Stainless-Steel butterfly valve with metal-to-metal seats and Carbon-Steel brackets and stiffeners; controlled by a pneumatic actuator.
- Fresh air: 304-Stainless-Steel butterfly valve with tadpole seats and Carbon-Steel brackets and stiffeners; controlled by a pneumatic actuator.
- Bleed air: Carbon-Steel with tadpole seats and Carbon-Steel brackets and stiffeners; controlled by a pneumatic actuator.

Exhaust Stack

Purpose

To exhaust treated process gas to atmosphere.

Design Details

Materials of Construction: Carbon-Steel.
Access: Sampling platform and ports at EPA required position, ladder from grade to platform, and will be free standing.

Internal Ceramic Refractory

Purpose

To protect the shell of the RTO from high internal temperatures

Operation

The Internal Ceramic Refractory is bolted to studs that are welded to the internal surface of the Heat Recovery and Combustion Chambers.

Design Details

Heat Recovery Sections: Minimum six (6) inch thick eight (8) pound density.
Combustion Chamber: Minimum eight (8) inch thick eight (8) pound density.
Type: Unifrax or equal; anchor-loc spun fiber ceramic modules.
Attachment Method: Welded/threaded stud; 304-Stainless-Steel.
Combustion Chamber Temperature: 1500°F.
Maximum Internal Temperature: 2200°F.
External Skin Temperature: ≤150°F at 70°F with 5 mph wind.

Heat Recovery Media

Purpose

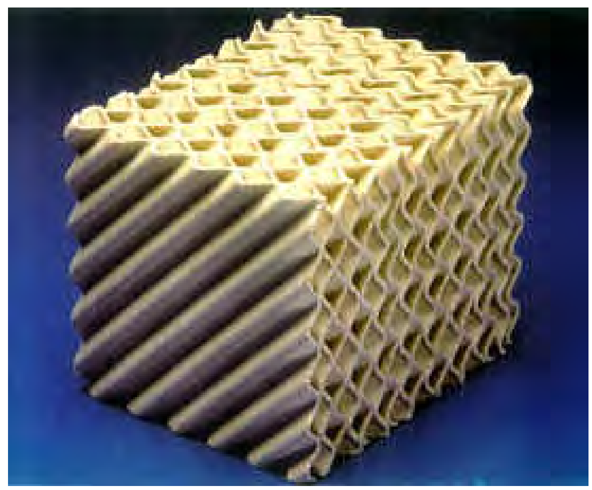
The Heat Recovery Media serves as the heat source and the heat sink to provide and store thermal energy provided by the burner system.

Operation

The Heat Recovery Media is cycled from the heat source to the heat sink by reversing the flow direction through the RTO. As “cool” process gas enters the “inlet” heat recovery bed the stored thermal energy is transferred and thus preheating the gas stream to within 100°F of the Combustion Chamber temperature. As hot process gas exits the Combustion Chamber the heat is transferred to the “outlet” heat recovery bed thus cooling gas stream to within 100°F of the actual gas stream inlet temperature into the RTO. Every three minutes the flow is reversed thus swapping inlet and outlet beds. The flow reversal is controlled by the Poppet Diverter Valves. There are many types of media available and below are some examples. Please see Equipment Specifications above for details on Heat Recover Media offered for this project.

Random Saddles

Corrugated



Monolith

Burner

Purpose

The Burner provides the necessary heat to maintain the Combustion Chamber temperature set-point.

Operation

Operating of the Burner is monitored by a microprocessor-based flame supervisory system manufactured by Honeywell. The flame supervisory system monitors all safety switches and ensures proper purge sequence during start-up. Once the Burner is lit and flame is proven, the supervisory system continues to monitor all safeties but the Burner control is handed to the PLC based control system. The Burner regulates to maintain Combustion Chamber's temperature set-point.

Design Details

Burners/Fuel Train/Flame supervisory:

- Burner - Maxon Kinemax burner
- Combustion Air Blower – Cincinnati or equal
- Fuel Train – Pre-piped and wired to junction box including (1 per RTO):
    - Maxon 5000 shutoff valves with position switches
    - Maxon Microratio (air/gas) proportioning valve with Beck actuator
    - United Electric low and high gas pressure switches
    - Pilot train
    - Scanner cooling air system pre piped
- Flame supervisory including:
    - Honeywell burner management
    - Honeywell UDC2000 high limit switches
    - Self-checking UV scanner
    - Dwyer pressure switches for proof of RTO and media bed minimum airflow

Structural Steel

Purpose

To provide structural support for the RTO and to provide personnel access via stairs, ladders and platforms.

Description

TSI supplies the support structures, stairs, ladders, and platforms from grade level as is typically required by the RTO. This includes access to areas requiring regular maintenance or monitoring by operating personnel. Typically, stair access is provided to areas requiring maintenance on a daily or weekly basis. Longer maintenance intervals will have ladder access.

Design Details

Assembly: Bolted and welded assembly.
Finish: Painted.

Control Devices

Description

The following devices are included in order to control the RTO via PLC:

- Temperature Control Sensors
- Temperature Transmitters
- Zero Speed Switches
- Pressure Transmitters
- Proximity Switches (Capacitive and Inductive)
- Flame Scanner(s)

ITEM 06 REGENERATIVE CATALYTIC OXIDIZER (RCO)

Shown below and on following pages are some of the major individual components that make up the RCO.

Quench-Duct

Purpose

The Quench-Duct sprays recycled water into the incoming Pelletizing Island flue-gas stream, thereby increasing the weight of the particles and allowing for their removal within the Disengagement Chamber.

Operation

The Quench-Duct is equipped with recycled water header, sprays, and nozzles to saturate the gas stream and scrub out larger front-half particulate from the gas stream. The Quench-Duct also increases weight of smaller particulate to enable for its removal within the Disengagement Chamber.

Design Details

Design Pressure: ±25” w.c.
Materials of Construction: T-304L Stainless-Steel skin/piping/nozzles with Carbon-Steel externals.

Disengagement Chamber

Purpose

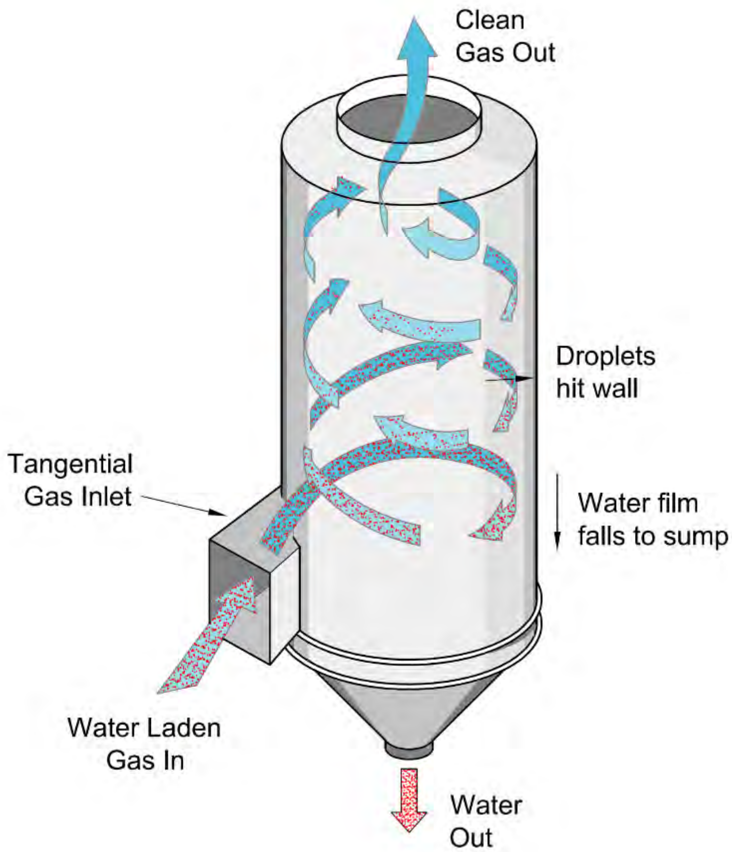
The Disengagement Chamber separates (by spinning out) water droplets and large dust particles from the gas stream prior to entry into the RCO.

Description

One Complete disengagement chamber will be provided. The units will be complete with a tangential inlet and integral cone bottom which will serve as a recycle tank for the recycle system.

Design Details

Materials of Construction: 304-Stainless-Steel.
Design Pressure: +/- 25” w.c.



Quench Water Recycle

Purpose

The Quench Water Recycle collects water from the Disengagement Chamber and delivers recycled water to the Quench-Duct.

Description

This Quench Water Recycle includes a recycle tank, a recycle pump, valves, strainers and all specialty fittings. Recycle water is sprayed via the recycle pump into the Quench-Duct and spent recycle water gravity drains back into the recycle tank. The Quench Water Recycle is controlled automatically by the PLC control system. Make up water requirements due to evaporation or blow down are satisfied with incoming fresh water.

Design Details

Recycle Tank: T-304L Stainless Steel, cone bottom.
Recycle Pump: ANSI centrifugal; T-316L Stainless Steel wet end.
Sump Pump: Self-priming containment evacuation in the event of a spill.
Features: Includes all required nozzles, automatic and manual valves, and an oversized duplex strainer to prevent nozzles from plugging; piping and general fittings are to be supplied by the installation contractor.
Containment Area: Recycle tank is placed within a concrete curbed area to contain any spills from the tank, pumps, or strainers. The containment area is self-draining to a collection sump where the water can be pumped back into the recycle tank.

Water Treatment

Purpose

Water Treatment manages levels of suspended and dissolved solids within the recycle tank.

Description

The Water Treatment consists of a decanter style Centrifuge for continuous removal of suspended particulate. Recycle water is routed to the Centrifuge where collected dust from the Disengagement Chamber is separated and emptied into a Buyer's tote. The Centrifuge minimizes amount of water blow-down required to maintain optimal levels of solids within the water, however some blow-down is still required. The blowdown water will be routed to the Furnace and Dryer System. By discharging a small amount of water, the dissolved solids are removed from Quench Water Recycle.

Design Details

Materials of Construction: 304L-Stainless-Steel for wetted parts.
Capacity: 50 gallons per minute (187.5 liters/minute).

FD Fan

Purpose

To provide the motive force and requisite pressures through the Quench-Duct, Disengagement Chamber, and the RCO.

Operation

The FD Fan is controlled by a variable frequency drive (VFD). The FD Fan modulates automatically via the PLC to maintain a static pressure set-point at the inlet to the Quench-Duct. The FD Fan induces gas flow thru the Quench-Duct and the Disengagement Chamber and pushes that gas flow thru the RCO.

Design Details

Materials of Construction: Stainless-Steel with external Carbon-Steel reinforcing structural members.
Design Conditions:

- Flow = Actual flow +10%
- Pressure = Actual Pressure +21%.

Bearings: Complete with vibration transmitters and temperature elements.
Expansion Joints: High temperature fabric.

Inlet Manifold

Purpose

The Inlet Manifold distributes process gas to the Diverter Valves.

Design Details

Materials of Construction: 3/16” thick 304-Stainless-Steel.
Operational Parameters: ±25” w.c. @ 150°F.
Access: One (1) hinged and plug insulated access door for internal inspection.

Inlet and outlet manifold shown on either side of centered valve

Poppet Diverter Valves

Purpose

To control the flow direction of the flue-gas through the RCO media chambers.

Operation

The Poppet Diverter Valves are controlled by timers within the Programmable Logic Controller (PLC). At intervals of approximately three (3) minutes, pairs of Poppet Diverter Valves will simultaneously shift, reversing the flow direction of the process gas through the RTO. This allows the heat recovery beds to alternate between a heat source and a heat sink, thus allowing the RCO to recover approximately 95% of the thermal energy.

Design Details

Materials of Construction: 10-gauge 304-Stainless-Steel.
Operational Parameters: ±25” w.c. @ 150°F inlet and 250°F outlet.
Valve Trim Construction: Main-disk fabricated from 7-gauge thick Duplex-Stainless-Steel; support-disks fabricated from 10-gauge 304-Stainless-Steel; seat materials are 304-Stainless-Steel; seal arrangement is metal to metal sealing surfaces.
Access: One (1) hinged and plug insulated access door for internal inspection of valve and bottom side of the hopper.
Valve Actuation System: Parker 2A heavy duty pneumatic cylinder, adjustable end cushions at each end of travel; direct link with Parker linear alignment coupling, inductive proximity switches measuring actual valve shaft position, actuation time is 0.5 to 1.0 second full open to full close; each valve is pre-assembled and pre-wired to junction box.

Hopper Transitions

Purpose

The Hopper Transitions distribute flow evenly to the bottom surface of the heat recovery media.

Operation

The Hopper Transitions allow gasses exiting the Poppet Diverter Valve to slow down and spread out evenly across the bottom face of the media bed.

Design Details

Materials of Construction: 3/16” thick 304-Stainless-Steel.
Operational Parameters: ±25” w.c. @ 150°F inlet and 250°F outlet (excursions up to 600°F during bakeout).

Typical Hopper Transition

Heat Recovery Chamber

Purpose

To serve as a vessel for the heat recovery media.

Operation

The Heat Recovery Chamber houses the heat recovery media that enables the RCO to recover approximately 95% of the thermal energy. The Heat Recovery Chamber also houses the media support structure for the heat recovery media, sometimes referred to as the “cold face”.

Design Details

Materials of Construction: 3/16” thick 304L-Stainless-Steel reinforced outside with Carbon-Steel stiffeners.

Operational Parameters: ±25” w.c. @ 120°F inlet and 750°F outlet; maximum operational temperature 1800°F.

Media Support Structure: Laser cut or high-def plasma slotted 304-Stainless-Steel plate (laser cutting or high-def plasma mitigates stress concentration due to cold working); maximum free passage of 70% open area; centered in Heat Recovery Chamber with no direct contact to outside walls; completely floating design to prevent stress concentrations while allowing for thermal expansion.

Access: Inspection access to the support structures is through the diverter valve; inspection access to top of heat recovery section is through combustion chamber access.

Note: Most vendors fabricate Heat Recovery Chamber from Carbon-Steel with mastic lining; when hot spots develop the mastic lining will burn off and leave the internal surfaces unprotected from oxidation long after hot spots are corrected; TSI fabricates Heat Recover Chambers from Stainless-Steel *to eliminate this potential issue.*

Media support beams
‘Norton Beam Style’

Burner Chamber

Purpose

The Burner Chamber maintains temperature of about 800°F within the catalyst media.

Operation

The Burner Chamber houses the natural gas burner that maintains internal temperatures off 850°F or greater. At this temperature the Burner Chamber typically is able to maintain a temperature of about 800°F within the catalyst media, within which incoming hydrocarbons will convert to CO_2 and H_2O.

Design Details

Materials of Construction: 3/16" thick 304-Stainless-Steel.
Operational Parameters: ±25" w.c.; normal operation 850°F; maximum operational temperature 1800°F.
Access: One (1) access door on a davit in each combustion chamber.
Note: Most vendors fabricated Heat Recovery Chamber from Carbon-Steel with mastic lining; when hot spots develop the mastic lining will burn off and leave the internal surfaces unprotected from oxidation long after hot spots are corrected; TSI fabricates Heat Recover Chambers from Stainless-Steel *to eliminate this potential issue.*

Outlet Manifold

Purpose

The Outlet Manifold collects process gas from the RCO and delivers that process gas to the Exhaust Stack.

Design Details

Materials of Construction: 3/16” thick Carbon-Steel.
Operational Parameters: ±25” w.c. @ 450°F.
Access: One (1) hinged and plug insulated access door for internal inspection of outlet manifold.

Control Dampers

Purpose

The Control Dampers gas flow and fresh air flow thru the RCO.

Operation

There are three (3) control dampers within an RTO. They are the “blocking”, “fresh air”, and “bleed air” dampers. The blocking and fresh air dampers work together, isolating the RTO from the process gas, and allowing fresh air to enter the RTO. This is required during the burner ignition as well as the warm up cycle of the RTO, which must happen at a reduced airflow. When the blocking damper is closed the fresh air damper will be open and vice versa. The bleed air damper allows the discharge side of the RTO to vent during shutdown and outages; this serves as a vacuum break caused by the stack affect during those situations.

Design Details

Materials of Construction:

- Blocking: 304-Stainless-Steel butterfly valve with metal-to-metal seats and Carbon-Steel brackets and stiffeners; controlled by a pneumatic actuator.
- Fresh air: 304-Stainless-Steel butterfly valve with tadpole seats and Carbon-Steel brackets and stiffeners; controlled by a pneumatic actuator.
- Bleed air: Carbon-Steel with tadpole seats and Carbon-Steel brackets and stiffeners; controlled by a pneumatic actuator.

Exhaust Stack

Purpose

To exhaust treated process gas to atmosphere.

Design Details

Materials of Construction: Carbon-Steel.
Access: Sampling platform and ports at EPA required position, ladder from grade to platform, and will be free standing.

Internal Ceramic Refractory

Purpose

To protect the shell of the RCO from high internal temperatures

Operation

The Internal Ceramic Refractory is bolted to studs that are welded to the internal surface of the Heat Recovery and Combustion Chambers.

Design Details

Heat Recovery Sections: Minimum six (6) inch thick eight (8) pound density.
Combustion Chamber: Minimum eight (8) inch thick eight (8) pound density.
Type: Unifrax or equal; anchor-loc spun fiber ceramic modules.
Attachment Method: Welded/threaded stud; 304-Stainless-Steel.
Combustion Chamber Temperature: 850°F.
Maximum Internal Temperature: 2200°F.
External Skin Temperature: ≤150°F at 70°F with 5 mph wind.

Heat Recovery Media & Catalyst

Purpose

The Heat Recovery Media serves as the heat source and the heat sink to provide and store thermal energy provided by the burner system.

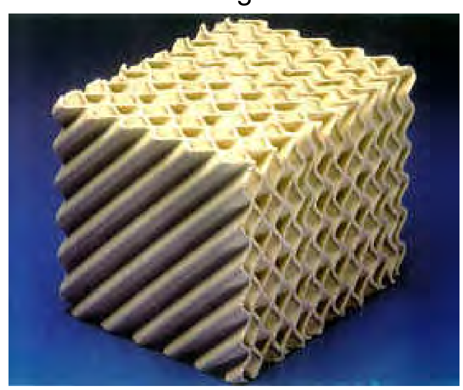
Operation

The Heat Recovery Media is cycled from the heat source to the heat sink by reversing the flow direction through the RCO. As “cool” process gas enters the “inlet” heat recovery bed the stored thermal energy is transferred and thus preheating the gas stream to within 50°F of the Combustion Chamber temperature. As hot process gas exits the Combustion Chamber the heat is transferred to the “outlet” heat recovery bed thus cooling gas stream to within 50°F of the actual gas stream inlet temperature into the RCO. Every three minutes the flow is reversed thus swapping inlet and outlet beds. The flow reversal is controlled by the Poppet Diverter Valves. There are many types of media available and below are some examples. Please see Equipment Specifications above for details on Heat Recover Media offered for this project.

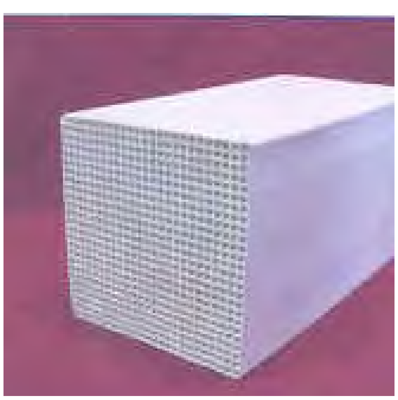
A layer (generally 4” thick) of precious metal catalyst will be added to the top of the media bed. Catalyst will allow the conversion of organic vapors to H_2O and CO_2 to occur at lower temperatures (generally around 800°F). The catalyst will be Applied Catalyst. It comes in 6”x6”x4” tall blocks similar to the monolith media yet coated with the precious metal.

Random Saddles

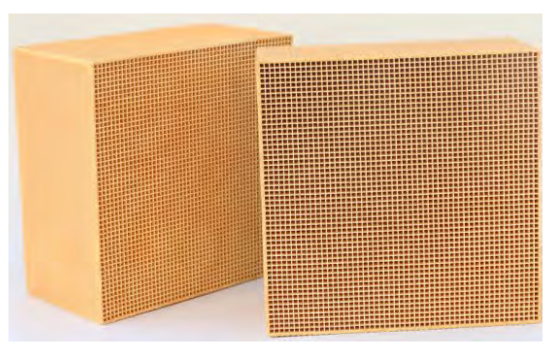
Corrugated



Monolith



Catalyst



Burner

Purpose

The Burner provides the necessary heat to maintain the Combustion Chamber temperature set-point.

Operation

Operating of the Burner is monitored by a microprocessor-based flame supervisory system manufactured by Honeywell. The flame supervisory system monitors all safety switches and ensures proper purge sequence during start-up. Once the Burner is lit and flame is proven, the supervisory system continues to monitor all safeties but the Burner control is handed to the PLC based control system. The Burner regulates to maintain Combustion Chamber's temperature set-point.

Design Details

Burners/Fuel Train/Flame supervisory:

- Burner - Maxon Kinemax burner
- Combustion Air Blower – Cincinnati or equal
- Fuel Train – Pre-piped and wired to junction box including (1 per RCO):
    - Maxon 5000 shutoff valves with position switches
    - Maxon Microratio (air/gas) proportioning valve with Beck actuator
    - United Electric low and high gas pressure switches
    - Pilot train
    - Scanner cooling air system pre piped
- Flame supervisory including:
    - Honeywell burner management
    - Honeywell UDC2000 high limit switches
    - Self-checking UV scanner
    - Dwyer pressure switches for proof of RCO and media bed minimum airflow

Structural Steel

Purpose

To provide structural support for the Quench-Duct, the Disengagement Chamber, and the RCO, and to provide personnel access via stairs, ladders and platforms.

Description

TSI supplies the support structures, stairs, ladders, and platforms from grade level as is typically required by the RCO. This includes access to areas requiring regular maintenance or monitoring by operating personnel. Typically, stair access is provided to areas requiring maintenance on a daily or weekly basis. Longer maintenance intervals will have ladder access.

Design Details

Assembly: Bolted and welded assembly.
Finish: Painted.

Control Devices

Description

The following devices are included in order to control the Quench-Duct, the Disengagement Chamber, and the RCO via PLC:

- Level Transmitters
- Temperature Control Sensors
- Temperature Transmitters
- Zero Speed Switches
- Pressure Transmitters
- Proximity Switches (Capacitive and Inductive)
- Flame Scanner(s)

ITEM 07 SYSTEM CONTROLS

PURPOSE

To provide for automatic operation of the Dryer Island and Pelletizing Island RCO.

OPERATION

Automatic operation of the equipment is controlled by four (4) PLCs (L83E programmable Logic Controller) and seven (7) Remote IO Cabinets. The operation of the equipment is monitored by the Operator via multiple HMI stations (Human Machine Interface) c/w monitors located in the Buyer's plant control room.

SCOPE OF SUPPLY

The scope of services covers one (1) Dryer Island that consists of a Heat Energy System, the Dryer System, the WESP, and the RTO; scope of services also covers one (1) RCO. The proposed Control System is based on L83E processor, Flex I/O, and Wonderware Intouch 2014 R2 C/w run time license. The following is the breakdown of scope of services:

- Drawing Lists
- PLC IO & Tag Assignment Lists
- IP Address Assignment Lists
- PLC to PLC Handshake List
- Utility and UPS Power Requirements
- Panel Location Drawings
- Design of Main processor PLC Cabinets and Remote I/O Field Panels
    - Panel Layout
    - I/O Schematics
- Coordination and interface with Burner Management System
- Coordination and interface with upstream and downstream PLC systems
- Control Cable List
- Final Record Drawings
- Control System Functional Requirement Document
- PLC Programming and HMI Development
    - PLC Inputs and Output signals.
    - Control Loops,
    - Drive Control Logic,
    - Interface as required between systems
    - PLC logic and documentation
    - Development of HMI screens
    - In-House Logic Testing
- PLC Network Diagram
- Quality Control
    - Review P&ID/Motor/Device Lists
    - PLC/HMI Testing FAT
    - Panel shop inspections and testing

- FAT & Post Fat Clean-up

- Commissioning Checkout
- Technical liaison with Pinnacle Pellets at TSI offices or offices in Vancouver, BC, Canada
- Attend weekly conference calls with all Stakeholders
- Four (4) main PLC panels: one (1) for the Heat Energy System, one (1) for the Dryer System, and one (1) for the WESP & RTO, and one (1) for the RCO
- Each main PLC panel located in Electrical Room, which has main CPU (1756-83E), communication modules and Flex IO modules.
- Seven (7) Remote Control Panels:
  - Two (2) for the Heat Energy System
  - Two (2) for the Dryer System
  - One (1) for the WESP
  - One (1) for the RTO
  - One (1) for the RCO
  - IO List, including interface with GreCon
  - Panel, Control Cable list
  - PLC Panel layout and BoM
  - IO Schematics and terminal layout.
- Control Narratives.
- PLC program (Studio 5000 Ver. 20).
- Master Alarm List.
- Two Wonderware Intouch HMI Runtime licences program (Wonderware InTouch 2014 R2).
- As-built.
- *Eighty (80) man-days for site service during commissioning & startup; two (2) programmers will be present on site; programming site service to be utilized at same time as Commissioning/Startup Site Service identified below with ITEM Site Service.*
- The current prevailing rate for programming staff is $2050/person/day and this includes all traveling and out of pocket expenses. A working day is calculated as up to ten (10) hours of onsite time. Travel days to and from site are each considered a working man-day.

DELIVERABLES

1. PLC Panel Fabrication drawings
2. Motor and Device List & Location
3. PIDs
4. Panel Location Drawings
5. PLC Panel IO Schematics
6. PLC IO List
7. IP Address list
8. PLC to PLC Handshake List
9. Control Cable List
10. Updated control narratives
11. PLC/HMI (Wonderware InTouch) Program & Configuration
12. FAT testing at Cogent Office.
13. Development of Commissioning Plan and Check sheets for PLC/HMI program and IO

14. Site Commissioning of PLC/HMI and IO
15. Final Record Drawings for PLC Panel Layout and IO Schematics

ASSUMPTIONS

- All Plant's PLC/HMI tag names based on TSI Numbering System
- PLC/HMI will be provided based on standard implemented at other Pellet Plants in North America
- Control Panel will be based on ControlLogix and Flex IO
- PLC panels will be provided similar to Standard PLC panels installed at other Pellet Plants in North America; each panel will have Flex IO (Rack, power supply, Ethernet adaptors).
- PLC Panel layout diagrams and IO Schematics will be similar to Standard PLC panels installed at other Pellet Plants in North America
- Motor Starters and Drives all come with EtherNet/IP interface.

BY OTHERS

- Fuel handling to the Heat Energy System's Metering Bin is by the Buyer
- Feedstock handling to the Dryer System's Metering Bin is by the Buyer
- Dry feedstock handling after the Dryer System's Collection Screw is by the Buyer
- The Buyer will provide main control room to accommodate TSI provided HMI stations

ITEM 08 SITE SERVICE

- The current prevailing rate for construction staff is $1450/person/day and this includes all traveling and out of pocket expenses. A working day is calculated as up to ten (10) hours of onsite time. Travel days to and from site are each considered a working man-day.
- The current prevailing rate for commissioning/startup/training staff is $1450/person/day and this includes all traveling and out of pocket expenses. A working day is calculated as up to ten (10) hours of onsite time. Travel days to and from site are each considered a working man-day.

Below is recommended Site Service:

- *Construction Site Service: three-hundred-ninety (390) total man-days*
    - *There are three-hundred-sixty (360) site-service man-days and thirty (30) travel days*
    - *Equipment installation starts from the time 1st equipment arrives to site until start of commissioning; TSI estimates this period will last six (6) months; TSI will require two (2) construction supervisors on site at the same time. During this time TSI crews will rotate. Travel days to and from site are each considered a working day*
    - *Down-days for weekends/holidays/weather/or any reasons not related to TSI are considered working days*

      Price: USD 565,500

- *Commissioning/Startup Site Service: Eighty-eight (88) total man-days*
    - *There are eighty (80) site-service man-days and eight (8) travel days*
    - *Two (2) TSI staff will be on site*
    - *Down-days for weekends/holidays/weather/or any reasons not related to TSI are considered working days*
    - *Start of commissioning site service is initiated by the Buyer; the Buyer must provide TSI with minimum four (4) week notice prior to the commissioning start date*

      Price: USD 127,600

- *24/7 Site Service post Commissioning: two-hundred (200) total man-days*
    - *There are one-hundred-eighty (180) site-service man-days and twenty (20) travel days*
    - *Two (2) TSI staff will be on site for 1st thirty (30) days per shift and one (1) TSI staff will be on site for 2nd thirty (30) days per shift*
        - *Total support is two (2) months*
    - *Down-days for weekends/holidays/weather/or any reasons not related to TSI are considered working days*
    - *Start of 24/7 Site Service will continue automatically following Commissioning Site Service*

      Price: USD 290,000

Notes:

1) *If additional working days are required by the Buyer, the Buyer can purchase those additional site service days at the rate shown above.*
2) *If the Buyer utilizes fewer site service days than the above, TSI will refund each fewer site service day to the Buyer at the rate shown above.*

ITEM 09 REFRACTORY WORKS

SCOPE

TSI offers to supply all manpower, lifting and hoisting equipment, and travel and living expenses, to install the refractory on the Heat Energy System and connecting hot gas ductwork between the Heat Energy System and Dryer Drum. TSI refractory installation crews will mobilize to site once Heat Energy System has been installed.

Items included in TSI installation package:

1) Heat Energy System refractory supply.
2) Heat Energy System refractory anchors supply.
3) Dryer System's hot gas ductwork refractory supply.
4) Dryer System's hot gas ductwork refractory anchor supply.
5) Heat Energy System anchor and refractory installation.
6) Dryer System hot gas ductwork anchor and refractory installation.
7) Heat Energy System refractory cure-out.
8) Dryer System refractory cure-out.
9) Refractory installation/cure-out 3rd party inspection.
10) Confined space area attendants and monitors.

Buyer's Responsibility:

1) Temporary electrical power supply and field wiring in the form of a 200 Amp 3-phase 480V power panel for welding machines and refractory cure-out equipment as well as a 110V power panel for electrical tools.
2) One (1) inch potable water line at 30 psi minimum stubbed at the installation area of refractory mixing.
3) Provide all weather and un-interrupted access to laydown areas for truck access, supplies, as well as storage of the same with suitable structure to support crane and forklift activity during inclement weather.
4) Installation of any equipment not listed above.
5) Winter package installation; the above installation is based on weather conditions at ≥6°C; if weather is <6°C then direct cost of additional items required (heaters/hoarding/fuel/etc.) will be borne by the Buyer with additional 10% added for processing; TSI will provide to Buyer the additional invoices due to winter installation.

Note: TSI and its sub-contractors are non-union; if unionized work is required then an adjustment to the price will be applied and paid by the Buyer.

ITEM 10 EQUIPMENT INSTALLATION

Items included in TSI installation package:

1) Receive and unload all TSI equipment; storage/laydown area must be next to Dryer Island (within 50' of the Dryer Island boundaries); if storage/laydown area is not near Dryer Island than appropriate adjustment to price will be made once full impact of storage/laydown area location is determined.
2) All mechanical and structural equipment installation relating to the following equipment:
    a. Heat Energy System
    b. Dryer System
    c. WESP
    d. RTO
    e. Disengagement Chamber/RCO
3) Dryer System Exhaust insulation supply and installation; 4" mineral wool with 0.034" embossed aluminum for cladding; the following equipment will be insulated:
    a. Material Ductwork from Drum discharge to Cyclones' inlet
    b. Cyclones
    c. Gas Ductwork from Cyclones' discharge to ID Fan
    d. ID Fan
    e. Process portion of the Abort Stack
    f. Dilution Ducts
4) RTO insulation supply & installation; 4" mineral wool with 0.034" embossed aluminum for cladding.
5) RCO insulation supply & installation; 4" mineral wool with 0.034" embossed aluminum for cladding.
6) RTO gas piping supply & installation; TSI will specify during engineering the location where Buyer must locate Natural Gas with lockable isolation valve; TSI will specify quantity & pressure at this location; TSI will supply piping & installation from this location to RTO Burner(s).
7) RCO gas piping supply & installation; TSI will specify during engineering the location where Buyer must locate Natural Gas with lockable isolation valve; TSI will specify quantity & pressure at this location; TSI will supply piping & installation from this location to RCO Burner(s).
8) WESP process piping supply & installation; typical USA process piping specification for Pellet Plants; Buyer to provide water stub-up with lockable isolation valve next the WESP as shown by TSI during the engineering phase of the project.
9) RCO Quench-Duct & Disengagement Chamber process piping supply & installation; typical USA process piping specification for Pellet Plants; Buyer to provide water stub-up with lockable isolation valve next the Disengagement Chamber as shown by TSI during the engineering phase of the project.
10) Dryer Island WESP & RCO Disengagement Chamber blow-down water to be piped overhead to Furnace/Dryer System.

11) Pneumatic instrument air lines supply & installation; the Buyer is required to provide and install the pneumatic air generator as per the Dryer Island & RCO equipment requirements; the location of this unit shell be within the boundaries of the Dryer Island as specified by TSI during the engineering phase of the project; from this generator TSI will supply & install all required pneumatic air lines to the Dryer Island & RCO devices.
12) Dryer Drum cladding insulation.
13) All hydraulic piping supply and installation and hydraulic oil supply.
14) Storage containers for all weather sensitive equipment supplied by TSI.
15) TSI will provide its own offices on site.
16) Mechanical installation of all TSI supplied devices.
17) Supply & install of all valves/piping/switches from the Buyer supplied stub-up pipe to the deluge nozzles located throughout the Heat Energy System and the Dryer System; this excludes if required the fast-acting spark detect piping; piping will be heat traced and insulated; during the engineering portion of this project TSI will specify location to the Buyer near the Furnace and near the Dryer System for the stub-up pipes; stub-ups supplied by the Buyer with manual shutoffs.

Shown above is the stub-up pipe with manual shutoff valve supplied & installed by the Buyer; above the manual valve is supplied and installed by TSI

Buyer's Responsibility:

1) Provide uninterrupted access to area of equipment installation, laydown areas, and connecting roads between these two areas as well as into the plant; any interruption during construction due to no fault of TSI (e.g. the Buyer shuts down the site due to another vendor's safety infractions, or any other reasons that prevent TSI from working uninterrupted or at lesser efficiency) will be paid by the Buyer; the price for this interruption can only be determined during construction period and once full scope of interruption is realized.
2) All underground & inground works to be completed prior to TSI installation crew's

installation start.

3) Supply & installation of spark detection (unless Buyer purchases this option from TSI shown within pricing pages).
4) Fire water piping supply & installation
5) Potable water and 100V power for TSI site office trailers.
6) Temporary electrical power supply and field wiring for 480V welding machines and 110V electrical tools.
7) Provide all weather and un-interrupted access to laydown areas for truck access, supplies, as well as storage of the same with suitable structure to support crane and forklift activity during inclement weather.
8) Toilets, washing area/ and drinking water.
9) Any prevention of site access for construction that prevents TSI installation crews from installing equipment.
10) Equipment lubrication supply and flushing
11) Provide all weather working surfaces around equipment erection area to provide safe access and working surfaces for cranes, man-lifts, and forklifts during inclement weather.
12) Creation and repair of roads, site drainage, lay down area, parking, and water service by the Buyer (TSI to hook up water service to its trailer; water hook up to be within reasonable proximity to TSI trailer).
13) Installation of any equipment not listed above.
14) Any Safety Coordinators if required are by the Buyer.

Note: TSI and its sub-contractors are non-union; if unionized work is required then an adjustment to the price will be applied and paid by the Buyer.

ITEM 11 ELECTRICAL WORKS

SCOPE

TSI offers to design, supply all manpower, lifting and hoisting equipment, and travel and living expenses, to electrically install and commission the Dryer Island and the RCO, and supply and install the E-House for the Dryer Island and the RCO. During first twenty (20) weeks of engineering TSI will determine the location of the E-House; this building will be located adjacent to the TSI Dryer Island. Deviation by Client from TSI drawings may result in an upcharge; this price impact will be determined once engineering is complete.

Electrical Works supply will be as per the TSI's North American Pellet Plant typical standards; deviation from these standards may reflect in change of price.

<u>Items included in TSI installation package:</u>

1) Electrical Engineering:
   a. Prefabricated steel electrical building (E-House)
   b. Power distribution gear (Panelboards, Transformers, Switchgear, etc.)
   c. Motor Control (MCCs and MV VFDs)
   d. All equipment within the E-House is installed, wired, and tested prior to shipment to the Buyer's plant site
      i. Medium Voltage equipment will be inspected and commissioned onsite prior to plant startup
   e. E-House comes complete with stairs & platforms, lighting, 32 tons of HVAC cooling, working desk, and power receptacles
   f. E-House is a two-piece unit that will ship separately and require reconnection at the plant site
      i. Section 1 will house the Low Voltage Gear (41'6" long by 15' wide)
      ii. Section 2 will house the Medium Voltage Gear (27' long by 15' wide)
      iii. Total E-House dimensions are 68'6" long by 15' wide
   g. Eaton Power Distribution Equipment is supplied (Eaton distribution panels, transformers, LV Switchboard, and MV Switchgear
   h. Rockwell Motor Control
      i. IntelliCENTER MCCs
      ii. Dryer System ID Fan, the RTO FD Fan, and the RCO FD Fan VFDs are PF7000 MV
      iii. Recommended spare parts are included
      iv. Rockwell commissioning services are included (5 days on-site)
   i. Diesel Backup Power Generator with Automatic Transfer Switch (ATS)
   j. Four (4) Transformer Rectifiers
   k. Power/Motor cable list
   l. Dryer Island and RCO Single Line Diagram and protection coordination and arc flash
   m. Control cable list
   n. Final Low Voltage distribution MCC review

o. Motor O/L and drive configuration reviews
p. Uninterrupted Power System & Distribution Panels
q. Electrical Distribution Panels
r. Cable Tray Layout
s. Heat loss calculations review on E-house
t. LDS requirements
u. BOP electrical requirements
v. MCC, motor schematics reviews

2) Prefabricated steel electrical building (E-House)
    a. Power distribution gear (Panelboards, Transformers, Switchgear, etc.)
    b. Motor Control (MCCs and MV VFDs)
    c. All equipment within the E-House is installed, wired, and tested prior to shipment to the Buyer's plant site
        i. Medium Voltage equipment will be inspected and commissioned onsite prior to plant startup
    d. E-House comes complete with stairs & platforms, lighting, 32 tons of HVAC cooling, working desk, and power receptacles
    e. E-House is a two-piece unit that will ship separately and require reconnection at the plant site
        i. Section 1 will house the Low Voltage Gear (41'6" long by 15' wide)
        ii. Section 2 will house the Medium Voltage Gear (27' long by 15' wide)
        iii. Total E-House dimensions are 68'6" long by 15' wide
    f. Eaton Power Distribution Equipment is supplied (Eaton distribution panels, transformers, LV Switchboard, and MV Switchgear
    g. Rockwell Motor Control
        i. IntelliCENTER MCCs
        ii. Dryer System ID Fan & RTO ID Fan VFDs are PF7000 MV
        iii. Recommended spare parts are included
        iv. Rockwell commissioning services are included (5 days on-site)
3) Diesel Backup Power Generator with Automatic Transfer Switch (ATS)
4) Four (4) Transformer Rectifiers
5) Integration/wiring of TSI supplied PLC enclosures
6) Supply and installation of network equipment for operator control room (CISCO compatible)
7) Supply and install all of the Dryer Island motors
8) TSI supplied starters will be installed in a prefabricated building in a fabrication shop, pre-wired and tested prior to shipping
9) Electrically install all motors, control devices, and wire all motors and control devices to the E-House
10) Network connections between HMI stations in main control room and PLC systems located in electrical room
11) Supply the Backup Power Generator with Automatic Transfer Switch
12) Install and wire the Backup Power Generator

13) Supply and install all necessary cable trays & junction boxes
14) Dryer Island lighting, power outlets, and welding outlets
15) Dryer Island emergency power stoppers supply/installation
16) Above ground lightning protection & grounding

Technical Specifications:

- Medium voltage switchgear (4160V) including feeders from main power distribution transformers
  - Eaton AMPGARD LBS Loadbreak Switch **or**
  - Eaton AMPGARD Main Breaker
- Low voltage power distribution center (480V) including feeders from main power distribution transformers
  - Eaton Pow-R Switchboard
- Low voltage MCC's including feeders from MCC to Motor c/w Ethernet/IP Interface
  - Allen-Bradley Centerline 2100
  - Motor starters (FVNR, FVR) c/w E300 Electronic Overload Relay
  - VFD – Rockwell – PF755 c/w line and load reactors
- MV VFDs will be standalone units, including feeders from MCC to Motor c/w Ethernet/IP Interface c/w Ethernet/IP Interface
  - Allen-Bradley PF6000
- UPS power supplies and associated transformers and panelboards
- Emergency power including generators, automatic transfer switches, associated distribution transformers and panelboards
- Panelboards and associated transformers for utilities
- Network Cabinets and Fiber Patch panels
- Low voltage Local Disconnect Switches for motors as indicated in motor list document
- 8 welding outlets
- PLC cabinets, local control panels, remote control panels as listed in panel list documents
- Power, control, data, and instrumentation tray cables, trays, wires and required miscellaneous hardware, as required for the completion of the entire installation of the drying island including electrical devices including sensors, instruments, actuators, solenoids, control and remote I/O panels, Ethernet.
- Supply and install all nameplates and/or safety signs (Arch Flash) as many as required by code regulations
- (power and data) all customer supplied PC's, monitors
- E-Stop stations and panels.
- Lighting Transformers and Panels
- Outdoor Lighting fixtures to provide process lighting for Dryer Island area.
- Outdoor Convenience Outlets (8) field mounted 120V convenience outlets.
- Heating and Ventilating Equipment for the electrical room / E-House
- One-(1) camera in the energy system for the purpose of viewing furnace fire
- Equipment bonding and connection to drying island loop

Prefabricated MCC Building shown next to Dryer Island

<u>Buyer's Responsibility:</u>

1) Temporary electrical power supply and field wiring for 480V welding machines and 110V electrical tools
2) Any Civil Works and underground works (underground conduits, underground lightning grid, and any other equipment underground)
3) Supply the Power Transformers and Power Disconnects for the E-House
4) Provide all weather and un-interrupted access to laydown areas for truck access, supplies, as well as storage of the same with suitable structure to support crane and forklift activity during inclement weather
5) Installation of any equipment not listed above
6) Primary Site Distribution
7) Main Power Distribution Transformers
8) Fire Alarm Systems
9) CCTV System
10) Power Factor Correction
11) Plant Lighting
12) Telephone system
13) Network cameras
14) Building fire alarm
15) Security gates
16) Main control room console

Note: TSI and its sub-contractors are non-union; if unionized work is required then an adjustment to the price will be applied and paid by the Buyer.

TSI: General Terms and Conditions

The following items are part of TSI's proposal. In accepting TSI's proposal the Buyer also accepts these terms and conditions. Should the proposal be modified in any way to meet the Buyer's requirements these terms and conditions will still apply unless specifically modified and agreed to by TSI.

Please note the following items are specifically excluded from TSI's scope of supply unless otherwise clearly specified in the body of the proposal:

1) Building and floor slabs, building lights, electrical fittings, fire walls, wall and roof penetrations etc.
2) Site preparation, equipment foundations, anchor bolts, conduits, and all related civil work (including any civil calculations if required)
3) Plant air, water, gas, temporary gas lines, and power during installation and start-up.
4) Control room, including any desk, furniture or environmental equipment.
5) Any local use or permit taxes or fees; any state or provincial taxes; any other taxes.
6) Any items of machinery or system components which are not specified in the contract scope of supply. Integration of buyer supplied items is the responsibility of the buyer.

In addition to the above exclusions, the following items are conditions of this proposal:

7) Design details as specified in the proposal may vary from completed project to accommodate updates or improvements in machine operation or construction; in such cases overall operational specification will not be negatively altered.
8) TSI does not warrant interface data provided by the Buyer, the Buyer's engineers or by other suppliers to the Buyer.
9) The Buyer is responsible for the costs of any tests required by the regulatory bodies.
10) TSI is not responsible for the cost of any performance tests or the costs of any subsequent tests if adjustments or modifications made to the equipment as a result of prior test results, whether or not TSI equipment was at fault. Performance tests may be required to set-up/tune the system.
11) TSI provides a limited warranty against defects in workmanship and materials for twelve (12) months from date of first use, or within twenty-four months within first installation of that part. Any parts replaced by TSI due to warranty will have the warranty extended on the replaced parts by another twelve (12) months. The cost of parts and shipping to site will be paid by TSI. Fitting on site of the replacement parts will be at the Buyer's expense. Additional charges for expedited shipping, if requested, will be at the Buyer's expense. This warranty specifically excludes tooling, consumable supplies, and wear items. It also excludes damage due to improper installation, use, or upset conditions not directly attributable to TSI equipment. Changing the operating settings or modifying the equipment without written TSI approval will invalidate the warranty.
12) Failure of the Buyer to pay according to the terms of the contract will invalidate the above warranty.
13) Chargeable equipment deficiencies that arise during installation or warranty claims should be documented and forwarded to TSI prior to remedial action and TSI should be given reasonable opportunity to either approve the remedy or otherwise make good the deficiency; failure by the Buyer to adhere to above requirement may invalidate TSI responsibility towards chargeable equipment deficiency.
14) TSI reserves the right to photograph and video the installed and operating equipment for use in future TSI marketing and promotional efforts.
15) Any information provided by TSI in the course of a project, including machine designs, operating software, and other parameters, remains the property of TSI and may not be divulged to any third party not directly involved with the TSI portion of the project without the written consent of TSI. Failure to observe this condition may result in damage to TSI's immediate and future business interests for which recompense will be sought.
16) Where written authority is required from TSI that written authority must come from the President of TSI unless other representatives have been nominated by TSI as part of the project.
17) TSI is not responsible for consequential losses or damages incurred as a result of equipment failure of improper operation.
18) The conditions set forth in this document (TSI: General Terms and Conditions) take precedence over other parts of documentation submitted by TSI. If there is a conflict between the body of a proposal and this document, the terms as specified in this document will apply.

ATTACHMENT 4

Modeling Files

ALERTS IN EFFECT

DISMISS

PARK CLOSURES

Hurricane Ridge Road Status 1/7, 5:00pm

Hurricane Ridge Road will be closed Monday 1/8/24 through Thursday 1/11/24. The road is scheduled to reopen on Friday 1/12/24, weather and road conditions permitting.

More (https://www.nps.gov/olym/planyourvisit/hurricane-ridge-in-winter.htm)

DANGER

Multiple Closures Due to Severe Incoming Weather

For visitor safety, the park has closed all campgrounds due to winter storm impacts, and visitors are strongly cautioned to closely monitor changing weather conditions when visiting the park. Closed areas will reopen when it is safe to do so.

More (https://forecast.weather.gov/MapClick.php?lat=48.0999&lon=-123.4264)

+ **3 more non-emergency alert notifications... (https://www.nps.gov/olym/planyourvisit/conditions.htm)**

Dismiss **View all alerts (https://www.nps.gov/olym/planyourvisit/conditions.htm)**

Environmental Factors

Environmental factors include everything that changes the local environment. This can include anything from natural forces like weather, **living park inhabitants (https://www.nps.gov/olym/learn/nature/environmentalfactors.htm#CP_JUMP_285470)**, or **human interactions (https://www.nps.gov/olym/learn/nature/environmentalfactors.htm#CP_JUMP_285479)** like non-biodegradable litter. Any time you visit the park, you have an influence!

Every experience you have with nature is uniquely yours. Even if you have been to the park every year, you can see the changes because the environment around us is constantly changing such as weather, time of year, time of day, death and new life, and more. These environmental factors can even vary based on the influence of individual **ecosystems and natural features (https://www.nps.gov/olym/learn/nature/naturalfeaturesandecosystems.htm)** around them. Enjoy the moments as they are, for they will never be exactly the same way again!

Clouds hang in a river valley below the snow-capped Olympic Mountains
NPS Photo

Some environmental changes are visible, such as a landslide caused by heavy rains. Other changes are not as easy to see. For example, some geologic change, like sediments becoming sedimentary rock, is too slow for the eye to see. Spending time in the park, one can find clues to the changes taking place right before us. While you may not be able to see a glacier move in real time, we witness the effects of these slow changes over time from climate change through studies and observation.

Natural Factors:

The landscapes of the National Park are in a state of constant change. As water, earth, wind, and fire work independently and together to shape and shift, there are a multitude of forces at work changing Olympic. Every moment of every day, the scenic details are being altered in ways both big and small. These are just a few examples of the many natural forces that are always shaping the land and influence ecosystems:

Water

One of the leading sources of change at Olympic National Park is water. Whether visitors are hiking to the river valleys and waterfalls or watching the waves along the coast, water is a driving force of nature throughout.

Sol Duc River flooding, 2006
NPS Photo

Erosion and Flooding

The many rivers are largely fed by annual snowmelt and rainfall, as well as the continual runoff from **glacial melt (https://www.nps.gov/olym/learn/nature/glaciers.htm)** coming from the high mountain peaks. Water erodes away the landscape, changing it as the flow follows the path of least resistance. As the waters gradually carve the banks along them, a phenomenon called 'river braiding' occurs. Channels of entertwined streams cut back and forth, widening the river valleys as they snake through. During the rainy season, typically November through March, the rivers swell with rain, often reaching well beyond their banks. This flooding brings with it fallen trees that are swept downstream or out to sea. Roads can even be at risk of being swept away, such as the Elwha road, whose bridges have been swept out before.

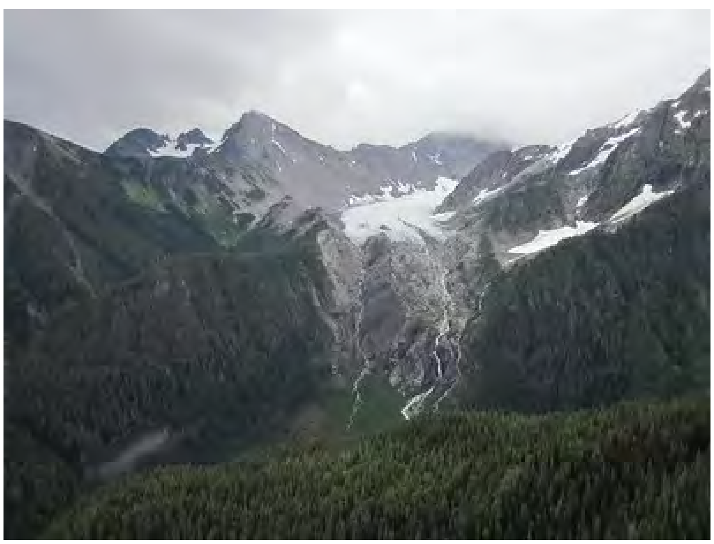
Tsunamis

While some changes occur over time, some can be much quicker. As you drive along the coast, you may see signs for a "Tsunami evacuation route" posted. Tsunamis are large, fast-moving waves. As the wave mass travels across the ocean, the wave and power behind it increases. Further out in the deep ocean, the waves can travel at 500 mph (800 kph). As it nears the shore, the wave condenses, slowing to 20-30 mph (30-50 kph), still faster than a human can run, but still containing the huge amount of power in what becomes a 10-100 ft (3-30 meter) tall wall of water as it hits land.

Today and Tomorrow

Changes will always be occuring throughout Olympic's waterways, but what will it look like in the future? Snowmelt is declining as temperatures increase. Glaciers are melting quickly. Rivers that flow heavily today may decline, leaving people and animals to adjust to a drier peninsula. The park studies **water quality (https://www.nps.gov/olym/learn/nature/waterquality.htm)** in order to ensure safety and understanding today and in the future.

Water is moving; changing. Rivers and glaciers carve out canyons and valleys. Ocean waves grind away cliff sides and create beaches of small rocks and shells. Water freezing in crevices splits cliffs into boulders and boulders into smaller rocks. Much of the natural beauty of the park is formed by water's nourishment. While parts of the peninsula lie in a rainshadow, the moss-laden rainforests found along the Hoh, Queets, and Quinault valleys accumulate an average of 138 inches of rainfall each year. Quenching the thirst of the forest allows for lush foliage to provide food and shelter for the wildlife of the park, as well as photo opportunities for visitors.



White Glacier receding, feeding the river valley below
NPS Photo

Earth

With mountain peaks, coastal spires, and literally everything in between, Olympic National Park is a geologic hub of yesterday, today, and tomorrow. The mountains are uplifting as the river valleys are being carved out. While much of geology moves too slowly to be witnessed in a single lifetime, some changes can occur in the blink of an eye. The changes can be drastic or minute, but every moment, this Earth and landscape are moving.

Subduction

The Olympic Peninsula lies in the subduction zone between two tectonic plates, the North American Plate and the Juan de Fuca Plate, where they converge. As one folds under, it pushes the Olympic Mountains higher. This action can shake the earth, causing Earthquakes, particularly to the South and the West in the Pacific Ocean. While earthquakes are rarely felt in the park, there is a faultline nearby, making them possible in the park and more common just a short distance away. Earthquakes shape and shift the earth on site. These are only one driving force of change! Some of these changes can cause residual damage as well.

Rock Slides

Tremors underneath the ground, as well as continual erosion, can cause sections of mountains to let go. When this happens, rock and debris may be sent cascading downhill in the form of a rock slide. Trees and trails can be swept away in an instance with nothing more than a bare scar left as a reminder of what once covered the hillside. When hiking along the hillsides of Olympic, remember to watch for loose ground and stay on trails to prevent erosion and stay safe.

Glaciers

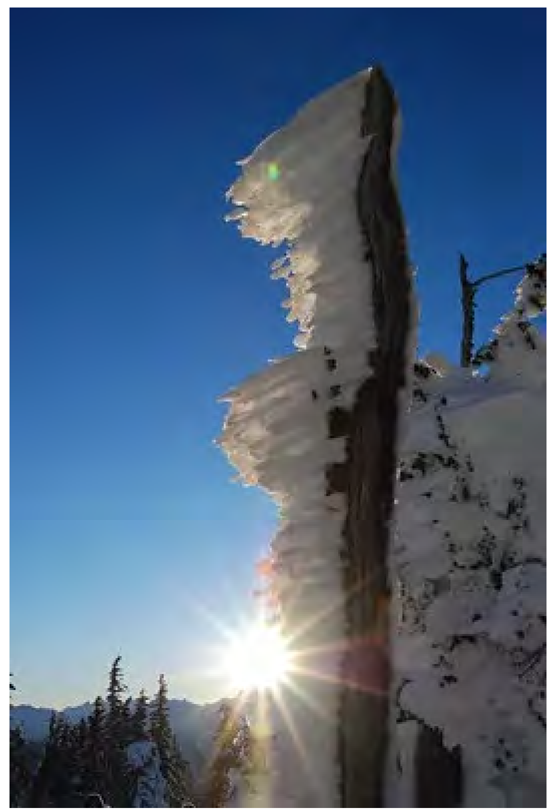
Glaciers in Olympic today are receding. As the force of these massive ice blocks moves over the land, it changes it. A glacier can grind the rock below its weight or leave behind debris from pebbles to erratics as large as a house. This constant glacial movement carves out valleys and rounds out saddles between peaks, leaving a noticeable mark on the land.

Today and Tomorrow

As mountains continue to rise and glaciers continue to recede, the shapes and figures of the geologic giants change each year. Visitors come from all around to witness the geology of Olympic. Whether it is for the snow-capped mountain peaks and rock spires that stand out against their backgrounds of open sky and ocean, or for the lush forests, ever influenced by the valleys and rocky soil, visitors witness the magic of influence from geologic change throughout the entire park. As you continue the journey of learning about the earth, remember to leave no stone unturned!

Wind

Can you picture the effects of wind? It may be a gentle breeze on your cheek, a gust that blows your hat off, or raging top-speed winds that can almost knock you to the ground. Wind can come in many forms, but will change the earth with every breath.



Rime ice on Hurricane Ridge on a sunny winter day
NPS Photo

Wind Storms

As the wind blows through the valleys, it can pick up strength. As more power is added, some gusts may become formidable forces that alter the land around them. Howling through the forests, the giant trees sway and bend with the winding wind. However, on occasion, these wind storms can be powerful enough to knock down lone trees or even entire swaths of forest, opening the dark floor to new beams of forgotten sunlight. Of course, no matter the devastating effects, the aftermath may allow for new growth to foster in an area once reigned by the giants of the forest.

Spreading Seeds and Other Things

Wind does not just destroy, but can help to spread life. Many plants rely on gusts to push their young seeds to new, fertile soil. This may even land atop a freshly fallen tree from a wind storm that can then become a nursery log as it nurtures the seeds from its nutrients. Wind is not only localized, but can carry with it stories in many forms. As fires rage even in other states, wind can carry the smoke across the region, clouding the skies and reducing air quality for miles.

Adapting to Wind

While wind can alter by destroying or creating, it can also alter by encouraging resistance through adaptations. One of the best examples is seen in the trees that can adapt to such a windy way of life. Some trees endure by bending to the wind's will and allowing their needles and branches to grow where the wind pushes them. Trees that are hundreds of years old may trick the eye as they stay low to the ground, their growth stunted, but their ability to keep from crashing down ever increased. These adaptations can be seen atop Hurricane Ridge, as the gnarled trunks of the evergreens have been twisted by the wind's might. There have been historic records of wind speeds reaching up to 80 mph (129 km/h), giving the ridge its name. With almost contant winds coming in from the ocean, coastal trees may adapt in a similar manner, becoming gnarled and twisted as they sway to the salty sea breeze.

Erosion

Wind may carry more than dust as it chips away and brings change to massive rocks that become smaller over time. This can be especially noticeable on the coastal shores as windswept sands blow past. When wind is contained or consistent, major erosion can be seen. From stripped rock faces to a gaping hole beneath a tree on the coast line, wind, often combined with other elements, can leave many a mark before blowing on by.

Today and Tomorrow

Wind presence and speed may vary by day, but its presence overall is a constant factor of change. As you return to the park or see photos over time, look for the changes that may be caused by the most fervent blows or the quietest whisper of the winds.

Mosses and lichen burning on a Red Alder
NPS Photo

Fire

Fire is a natural part of succession through ecosystems. Even in a rainforest, there is a dry season through the summer months where the land can become parched. Fire appears to scar the land, but, like all natural elements, it plays more than one role throughout the park.

A Forest Ablaze

After a fire ignites, it can smolder or spread with intensity. Many fires are started from lightning strikes. These are a natural occurance that changes the land. Some vegetation may get singed, while other plants may die from the heat and flames. Some plants have adaptations for fire resistence such as the Douglas Fir, whose extremely thick outer layer of bark can deter the flames from catching on its wood. While fire spreads, the smoke can be seen from miles away, allowing for onlookers to understand the current activity.

What Comes Next

Fire can cleanse an ecosystem, allowing for regeneration and regrowth on a now-blank canvas. Sun-loving trees will flourish in an open field and some flowers particularly love recently heated ground. What may have been old-growth stands can give way for a new generation of giants to begin their story and build a new forest home as they take visitors along with them.

Today and Tomorrow

Humans will always play a role. While many camping areas allow fires, not all do so be sure to plan ahead. Human-started fires have happened in the park, leaving unnatural scars in their wake. As these can spread rapidly, visitors are asked to fully extinguish any flame or ember before continuing to explore the ever-changing Olympics.

The Elements Together

Of course none of these natural factors are influencing the landscape alone. Erosion and deposition can come in many forms. Changes to the forest can come from fire, wind, or water changing course. No matter where you go in Olympic National Park or the world, the environment and its factors are interwoven, creating a tapestry that tells a story of the past, present, and, if you observe carefully, the future.

Plants and Animals

Roosevelt elk help some plants get sunlight by keeping others from growing too high or dense.
NPS Photo

Plants and animals are abundant throughout Olympic National Park, breathing color and life into every habitat. As they grow, they change their ecosystem along with themselves. Plants and animals will influence and can be influenced by each other, the geology and elements, and the people that visit.

Plants

Plants can change the park as they grow, and as they die. They provide shelter and food to animals, space for other plants like ferns and mosses, and nutrients even after death as nursery logs. Drift logs are washed in and out by the sea, changing the look and habitat of the coastline. The Olympic Peninsula is naturally a fertile landscape, however, not all species were originally here. **Nonnative plants (https://www.nps.gov/olym/learn/nature/nonnativespecies.htm)** have been brought in, both intentionally and by mistake. Some of these nonnatives can be **invasive (https://www.nps.gov/olym/learn/nature/invasiveplants.htm)**, as well, taking over the land that was once only home to the native foliage and blocking other species from thriving. Fungi, bacteria, and insects eat through dead plants, decomposing them and breaking down the nutrients. Elements can change plants from fire to windstorms. Plants can change the way these elements interact as well, from resisting the hot flames to blocking wind in dense forests. Plants like the old growth giants of the forest draw people to the park. Dense underbrush may naturally direct the designated trails that people are asked to stay on. The vibrant plants link the story of change through the Olympics with every twig and root.

Animals

Animals control and increase plant numbers and variety. Grazing deer and elk eat shrubbery, and their appetites greatly affect plant growth. If the number of large herbivores is too many, overgrazing may occur. Animals are also some of nature’s most useful seed dispersers and pollinators. Not only do insects like bees actively transfer pollen from one flower to the next, but birds and mammals will carry seeds unknowingly for miles, dispersing the undigestible ones in their droppings, which in turn provides ample fertilizer. Aside from the living foliage, animals change the habitat structure. As beavers construct their dams, the flow of rivers and streams are changed, often causing ponds and wetlands to develop, altering the aquatic landscape and allowing for different plants to move in. As animals roam, they make their mark on the land. Some animals dig dens, mark trees, roll in wallows on hillsides, make trails as they traverse, or build nests. Animals have been introduced and extirpated throughout Olympic's history, but they have always played a role in the changes of plants, geology, humans and other animals alike.

NPS staff and volunteers with coastal trash
NPS Photo

Human Effects:

The national parks are set aside for the benefit and enjoyment of the people as well as to preserve and protect the natural world. Within that balance, people play an important role. Humans influence their environment by simply being there. Any given moment in nature, a person may have a positive or negative affect on their surroundings. Throughout Olympic National Park, visitors can show their positive natural influence in many ways!

Utilizing Park Infrastructure

Park management is seen across the front country of Olympic. Roads, trails, and buidlings that people use and enjoy each day have an overall impact. Not only do they define where plants and animals can and cannot live, they direct visitors to specific parts of the landscape. Over 95% of Olympic National Park is designated **wilderness (https://www.nps.gov/olym/planyourvisit/wilderness.htm)**. As defined by the **1964 Wilderness Act (http://wilderness.org/article/wilderness-act)**, a wilderness is "...an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." While visitors may not create the roads or buildings, people often have a say on proposed changes to the parks.

What can you do to help?
Throughout the park, there are many designated parking spaces. Plan ahead to see where RVs and trailers may be restricted. Park in designated areas rather than on plants or blocking roadways. Utilize established roads for access. Camp in designated areas only. Enjoy the many visitor centers, facilities, and exhibits throughout the park! As it can be a very busy park, remember to pack your patience.

Traversing on Trails

Olympic National Park sees over 3 million visitors on average. With over 600 miles of trails designed to explore and view fantastic sights, there are numerous opportunities to explore areas close to the roads or far in the backcountry. Visitors love to see all there is to see in Olympic. Please remember to leave as little impact when exploring these natural spaces to protect the landscape and prevent social trails.
What is a social trail? A trail that is not designated or controlled, but has become distinct due to continual use.
Why are they disliked? Social trails destroy important vegetation and habitat. They can also lead other hikers astray from the main trail. As social trails are not maintained, they may pose dangers like rough terrain, fallen trees, and erosion.

What can you do to help?
Stay on trails. If you explore in an area without trails, such as the backcountry or tidepools, be sure to follow **Leave-No-Trace (https://www.nps.gov/olym/planyourvisit/wilderness-leave-no-trace.htm)** principles by not creating or following a distinct trail that may destroy the vegetation. Plan ahead and look online or ask a ranger for trail suggestions.

Safe Wildlife Interactions

Wildlife watching is just one of the many ways to enjoy the park. Olympic has a variety of wildlife from the forest to the ocean that can be seen throughout the year. Stay safe and informed by learning more about **wildlife spotting tips and tricks (https://www.nps.gov/olym/planyourvisit/wildlife-viewing.htm)**. Some are elusive, and others quite common, but National Park wildlife is meant to be *wild*. Feeding human food to animals can make them dependent and less able to forage on their own. Once accustomed to humans, larger animals like deer or bears can become dangerous in their **search for food (https://www.nps.gov/olym/planyourvisit/wilderness-food-storage.htm)**. While visitors don't want to get too close, be sure to respect the homes of the animals. Making noise is a great way to be safe, but scaring wildlife with loud noises or altering their habitat can affect where and how they live.

What can you do to help?

Very few issues between people and animals occur in Olympic thanks to visitors following a few simple rules. Be sure to use designated bear wires and bear-proof canisters when backcountry camping. Pack out what you pack in. Never leave food unattended, and leave all scented items in the car overnight. Know which parts of the park are **pet-friendly (https://www.nps.gov/olym/planyourvisit/pets.htm)**.

Not Littering

When people come to the park, they may hope to see mountains, rivers, glaciers, forests and oceans. These natural views can be impeded by trash or remains of those that came before. Leaving evidence of your time in nature can impede people, animals, and vegetation alike for years. Non-natural items that get into the ocean may be out of reach from helping hands, creating a greater danger for sealife to swallow or get caught in. One of Olympic's best community efforts revolves around **coastal cleanups (https://www.nps.gov/olym/getinvolved/supportyourpark/coastal-cleanups.htm)**! With over 3 million visitors per year on average, Olympic and its visitors work hard to maintain a natural ecosystem.

What can you do to help?

After exploring the park, take any trash you have with you or deposit it in a bear-proof trash can. If you see trash, please help the park by picking it up or letting a ranger know. Generations of visitors will thank today's stewards that keep this park pristine.

Not Taking or Leaving

Litter can be anything not naturally occuring in the ecosystem. From trash, to invasive seeds, to painted rocks, to fires left smoldering, people can prevent many issues that can occur. Taking plants, animals, and even rocks or twigs from the park ecosystems can kill them, leave a lack of food or shelter for animals, and lessen the beauty of the diverse ecosystems for other visitors. Remeber that with millions of visitors each year, Olympic is for all to enjoy and may not last should every person leave with a piece of it.

What can you do to help?

Know before you go: Check your shoes for **Nonnative Species (https://www.nps.gov/olym/learn/nature/nonnativespecies.htm)** and **Invasive Plants (https://www.nps.gov/olym/learn/nature/invasiveplants.htm)** that can be carried in from other locations. Remember your camera! Taking photos is a fantastic way to remember your experience in the park and inspire others from your experiences.

After exploring the park, take any trash you have with you or deposit it in a bear-proof trash can. If you see trash, please help the park by picking it up or letting a ranger know.

Helping Here and at Home

Some larger impacts can be made over time. Aside from litter or damage one may see, other impacts can sometimes go unnoticed. Whether in the park or at home, people may use lights, make noise, and use tools. Light pollution is minimized in many areas with downward facing lighting fixtures and automated lights. Olympic has a large part of its landscape that is far from roads and other infrastructure where people and cars create sound, and the density of the park's lush forests dampens natural noises as well. Sounds can change visitor and animal behaviours alike. Helping to keep the wilderness wild comes in a variety of ways, including maintaining natural nightskies and soundscapes.

What can you do to help?
If you stop on a trail, a fun exercise is to close your eyes and listen, counting the number of individual sounds you can hear. How many are natural? How many are caused by people? Imagine being an animal hunting or hiding in the forest, needing your keen sense of hearing at all times. If you visit a national park, look up at the night sky. Does it look different from the skies in a city near your home? Now imagine being a bird or bug that travels using the stars. Where would it be more difficult? By reducing light emissions and turning off lights and electronics when not in use, people can collectively reduce the amount of light that clouds the night skies.

Reducing Carbon Footprints

People all have a carbon footprint left behind based on the amount they use and produce. Automobiles and industry put tons of carbon dioxide into the atmosphere that can eventually cause worldwide temperatures to rise and **glaciers to melt (https://www.nps.gov/olym/learn/nature/glaciers.htm)**.

What can you do to help?
Thinking ahead can help to reduce your carbon footprint. While there are many ways to reduce a footprint, in the park, one simple way is to not idle your car for long periods of time.

Having Positive Impacts to Water Quality

Chemical runoff, sedimentation, and accumulation of nitrogen in mountain lakes influence water quality in Olympic National Park. Olympic is known for its blue rivers and lakes, deep salty coastline, and clear natural springs.

What can you do to help?
People consist of up to 60% water. Water is crucial to all living things. Visitors can help to protect water sources by camping at least 200 feet from water sources and avoiding washing dishes in waterways.

Thank you for leaving a positive impact!
What can you do to continue to help?

No matter where you are, you can have a positive impact. Check out more ideas to get involved and help Olympic and other natural spaces:

- Park Clean-Ups (https://www.nps.gov/olym/getinvolved/supportyourpark/coastal-cleanups.htm)
- Volunteer (https://www.nps.gov/olym/getinvolved/volunteer.htm)
- Get Involved (https://www.nps.gov/olym/getinvolved/index.htm)
- Plan Ahead (https://www.nps.gov/olym/planyourvisit/index.htm)
- Become a Jr. Ranger (https://www.nps.gov/olym/learn/kidsyouth/beajuniorranger.htm)
- Learn more:
  - Leave-No-Trace (https://www.nps.gov/olym/planyourvisit/wilderness-leave-no-trace.htm)
  - Help Stop the Spread of Invasive Species (https://www.nps.gov/olym/planyourvisit/stopinvasives.htm)

Windfalls from 2007 windstorm, Quinault
NPS Photo

Last updated: September 27, 2020

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Attachment BB

AIR EMISSION TEST REPORT
ENVIVA PELLETS GREENWOOD, LLC
Greenwood, South Carolina

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Emission Test Dates: December 4-5, 2018, January 16, 2019, and March 7, 2019
Report Date, April 4, 2019

Air Control Techniques, P.C.

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DEFINITIONS

Volatile Organic Compounds (VOC)—As used in this test report, volatile organic compounds mean total hydrocarbons measured in accordance with U.S. EPA Method 25A measured on a propane basis minus methane.

Organic Hazardous Air Pollutants—As used in this test report, organic hazardous air pollutants include only (1) methanol, (2) formaldehyde, and (3) acetaldehyde.

ACRONYMS

CEM	Continuous Emission Monitor
CPM	Condensable Particulate Matter
DHEC	South Carolina Department of Health and Environmental Conservation
DHM	Dry Hammermill
EPA	U.S. Environmental Protection Agency
FID	Flame Ionization Detector
FTIR	Fourier Transform Infrared Spectroscopy
HAPS	Hazardous Air Pollutants
ODT	Oven Dried Tons
OHAPS	Organic Hazardous Air Pollutants
RCO	Recuperative Catalytic Oxidizer
RTO	Regenerative Thermal Oxidizer
VOC	Volatile Organic Compounds as defined by DHEC

UNITS OF MEASURE

ACFM	Actual cubic feet per minute
DSCFM	Dry standard cubic feet per minute
gr./DSCF	Grains per dry standard cubic foot
in.	Inches
in. w.c.	Inches of water column
ppm	Parts per million
ppmvd	Parts per million volume, dry basis
ppmvw	Parts per million volume, wet basis
Lbs./hour	Pounds per hour

STANDARD CONDITIONS

Pressure	29.92 inches of mercury
Temperature	68 degrees Fahrenheit

SIGNIFICANT DIGITS AND DATA ROUNDING

All emissions data are expressed in a maximum of three digits and usually in two digits. All subordinate calculations used in calculating emissions are conducted carrying a minimum of five digits and usually nine digits. Significant digit and data rounding procedures are consistent with EPA policy.

AIR EMISSION TEST REPORT
ENVIVA PELLETS GREENWOOD, LLC

1. SUMMARY

1.1 Purpose and Scope

This air emission test report summarizes the procedures and results compiled at the Enviva Pellets Greenwood, LLC (Enviva) dry hammermill (DHM) and dryer regenerative thermal oxidizer (RTO) on December 4-5, 2018, on the pellet cooler RCO 2 stack on January 16, 2019, and on the pellet cooler RCO 1 stack on March 7, 2019. The stack and control device numbering used in this test plan are consistent with South Carolina DHEC permit 1240-0133-CBr1 and R2 and the Test Protocol approved by South Carolina DHEC on November 27, 2018.

Section 1.2 of this report provides a summary of the test results and the process operating conditions during the tests. Section 1.3 includes a list of the Enviva personnel, the DHEC test observers, and the Air Control Techniques, P.C. personnel on-site. Section 2 provides a summary of the emission test methods and the four sampling locations—Stacks S1, S3, S5, and S6. Section 3 includes the complete test results. Quality assurance data compiled during the test program are provided in Section 4 and the appendices. The supporting data and quality assurance information for the three test programs are provided in Appendix I for the December 2018 tests, Appendix II for the January 2019 tests, and Appendix III for the March 2019 tests.

Prior to the start of this emission test program, Air Control Techniques, P.C. conducted Method 320-based validation tests. The results of these tests confirmed the accuracy of Methods 320 and 321 for the measurement of methanol, formaldehyde, acetaldehyde, and hydrogen chloride in both combustion gas streams and systems handling ambient air. The results of these tests are summarized in a separate test report submitted to the South Carolina DHEC.

1.2 Test Results Summary

Dryer RTO System—The dryer RTO system includes a rotary dryer, a large diameter cyclone, a wet electrostatic precipitator (WESP), and a RTO. This system includes a 100-inch diameter 75-foot high stack. This stack was tested using U.S. EPA Reference Methods 2, 3A, 4, 5, 7E, 10, 25A, 202, 320, and 321. The Method 5 and 202 sampling trains were combined into a single unit. Table 1-1 provides a summary of the three test runs.

Table 1-1. Stack S1, Dryer/RTO Air Emissions

Pollutant	Method	Pounds/Hour	Pounds/ODT
Filterable Particulate	5	0.35	0.0053
Condensable Particulate	202	1.5	0.023
Nitrogen Oxides as NO2	7E	18.5	0.28
Carbon Monoxide	10	9.9	0.15
Volatile Organic Compounds as Propane	25A	5.2	0.079
Methanol	320	0.0	0.0
Acetaldehyde	320	0.0	0.0
Formaldehyde	320	0.33	0.0050
Hydrogen Chloride	321	0.0	0.0

There were no quality assurance issues in these dryer stack tests. Prior to this test program, Air Control Techniques, P.C. conducted a set of validation tests that demonstrated the accuracy of Method 320 for the three organic hazardous air pollutants (HAPs) and Method 321 for hydrogen chloride in the RTO stack.

The production rates in the dryer system during the three test runs ranged from 64.1 to 67.0 ODT/hour. The wood being processed was 75% softwood, and the remainder hardwood. Supporting data can be found in Appendix IG.

Dry Hammermill System—The Dry Hammermill (DHM) system includes a set of five cyclo-filters equipped with PTFE membrane filter bags. This system includes a 62.5-inch diameter 60-foot high stack (S3). This stack was tested using U.S. EPA Reference Methods 2, 3A, 4, 5, 25A, 202, 320, and 321. The Method 5 and 202 sampling trains were combined into a single unit. There were three one-hour test runs using this set of EPA test methods. Table 1-2 provides a summary of the three test runs.

Table 1-2. Stack S3, DHM Air Emissions

Pollutant	Method	Pounds/Hour	Pounds/ODT
Filterable Particulate	5	8.7	0.13
Condensable Particulate	202	0.20	0.0031
Volatile Organic Compounds as Propane	25A	35.4	0.55
Methanol	320	0.32	0.0049
Acetaldehyde	320	0.0	0.0
Formaldehyde	320	0.015	0.00023
Hydrogen Chloride	321	0.015	0.00023

There were no quality assurance issues in these tests. However, testing personnel noted that some large clumps of particulate matter were occasionally passing upward through the stack. These large clumps of material appeared to be solids that had accumulated on an inner surface of the cyclo-filter outlet ducts and/or on the lower portions of the stack during previous system maintenance periods. This condition biased the filterable particulate matter emissions to higher-than-normal levels. Post-test evaluation of the dry hammermill operating data indicated that they were not operating normally, which contributed to the higher than normal particulate matter test results.

Prior to this test program, Air Control Techniques, P.C. conducted a set of 320 validation tests to demonstrate the accuracy of Method 320 for the three organic hazardous air pollutants (HAPs) and Method 321 for hydrogen chloride for a DHM source that inherently has high oxygen concentrations, low moisture levels, and modest VOC levels. The production rates in the dry hammermill system during the three test runs ranged from 64.7 to 65.5 ODT/hour. The wood being processed was 75% softwood, and the remainder was hardwood.

Pellet Cooler Systems—Enviva has 5 pellet coolers. Two of the pellet coolers systems exhaust to RCO 2 serving Stack S6 on the north side of the Pellet Cooler Building. Three of the pellet cooler systems exhaust to RCO 1 serving Stack S5.

RCO 2 was tested on January 16, 2019 after the bypass damper was fixed. RCO 2 and the pellet cooler systems operated normally during these tests with the exception of four short-duration process interruptions during Run 5. The first two runs were voided due to sampling train leaks caused by the difficulty of moving the large Method 5/Method 202 sampling train in a space-constrained and awkwardly placed sampling port. The lift was repositioned after the second run allowing the operator better access for handling the Method 5/202 sampling train. The samples from all five runs were analyzed, and the results for Runs 3 through 5 are reported in Table 1-3. Only Runs 3, 4 and 5, which had successful post-test leak checks are being reported to demonstrate compliance. The data from Runs 1 and 2 are included in Appendix IIA and are provided only for informational purposes.

Table 1-3. Stack S6, Pellet Cooler RCO 2 Air Emissions

Pollutant	Method	Pounds/Hour	Pounds/ODT
Filterable Particulate	5	0.22	0.0086
Condensable Particulate	202	0.10	0.0041
Nitrogen Oxides	7E	0.15	0.0063
Carbon Monoxide	10	0.10	0.042
Volatile Organic Compounds as Propane	25A	1.2	0.047
Methanol	320	0	0
Acetaldehyde	320	0	0
Formaldehyde	320	0.059	0.0025
Hydrogen Chloride	321	0	0

RCO 1 serving Pellet Coolers 1 through 9 on the south side of the Pellet Cooler Building was tested on March 7, 2019. This test followed modifications to an induced draft fan and damper to eliminate small bypass emissions. The results of the tests on Stack S5 on RCO 1 are summarized in Table 1-4.

Table 1-4. Stack S5, Pellet Cooler RCO 1 Air Emissions

Pollutant	Method	Pounds/Hour	Pounds/ODT
Filterable Particulate	5	0.14	0.0036
Condensable Particulate	202	0.18	0.0046
Nitrogen Oxides	7E	0.26	0.0064
Carbon Monoxide	10	2.4	0.059
Volatile Organic Compounds as Propane	25A	1.4	0.035
Methanol	320	0.01	0.00026
Acetaldehyde	320	0.0	0.0
Formaldehyde	320	0.0	0.0
Hydrogen Chloride	321	0.0	0.0

1.3 On-Site Test Program Personnel

The Enviva Pellets Greenwood, LLC (Greenwood) Project Managers for this testing project were Bruce Peterson, Joe Harrell, and Wayne Franklin. They supervised collection of all process data.

The Air Control Techniques, P.C. project manager for the dryer and dry hammermill tests was John Richards. The Air Control Techniques, P.C. project manager for the pellet cooler RCO 1 and RCO 2 test programs was David Goshaw. Addresses and phone numbers of these individuals are provided below.

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Todd Brozell, P.E., QSTI, Jonas Gilbert, P.E., QSTI, Elias Gilbert, Tom Holder, QSTI, and Wallace Smith assisted John Richards and David Goshaw in one or more of the test programs.

Resolution Analytics, Inc. performed the analyses of all Method 5 and 202 samples. The project manager at this laboratory is Bruce Nemet.

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Resolution Analytics, Inc.
208 Technology Park Lane
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Telephone: (919) 346-5740

Mike Verzwyvelt was the South Carolina Department of Health and Environment on-site test observer. His contact information is listed below.

Michael Verzwyvelt
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Source Evaluation Section
S.C. Dept. of Health & Environmental Control
Telephone: (803) 898-1789 office

2. TEST METHODS

2.1 Test Locations

Dryer/RTO Stack (S1)—The Dryer/RTO stack is shown in Figure 2-1. There are four ports spaced 90 degrees apart. Each of the ports is six inches diameter.

Figure 2-1. Dryer stack S1

Air Control Techniques, P.C. performed a stratification test at the Dryer Stack. The test results determined that that the gas stream was unstratified. Accordingly, the CEM probe was mounted at a point that matched the approximate mean concentration.

The gas flow rate was measured in accordance with Method 2. Twenty-four traverse points were used—six sampling points on each of four traverses. The gas moisture content was measured using Method 4. A Method 3A analyzer was used to measure the oxygen and carbon dioxide concentration.

Prior to the compliance test runs, the cyclonic flow angles were checked. The average cyclonic angle was 0.8 degrees—well below the maximum allowed angle of 20 degrees. The S1 sampling port locations satisfied EPA Method 1 criteria.

DHM Stack (S3)—There are five fabric filters serving the five hammermills. The effluent gas streams from the five fabric filters combine into a single manifold leading to a single stack, S3, shown in Figure 2-2.

Figure 2-2. Hammermill building and stack

Stack S3 is 62.5 inches in diameter. There are four ports spaced 90 degrees apart. Each of the ports is five inches in diameter. The stack discharge point is 1.09 stack diameters upstream of the sampling ports, and the closest downstream disturbance is 4.8 stack diameters. Twenty-four sampling points (6 each on four traverses) were used for the Method 5/202 particulate matter tests. Twenty-four sampling points was also used for the Method 2 gas velocity traverses.

The CEM probe was mounted in the approximate center of the stack. A Method 3A analyzer was used to measure the oxygen concentration for all emission measurements.

RCO Stacks—The vertical sections of the exit ducts for the north side and south side RCOs provided the best sampling locations. Two ports were installed 90-degrees apart at the locations shown in Figures 2-3 through 2-5. With these two ports, it was possible to fully traverse the RCO exit ducts.

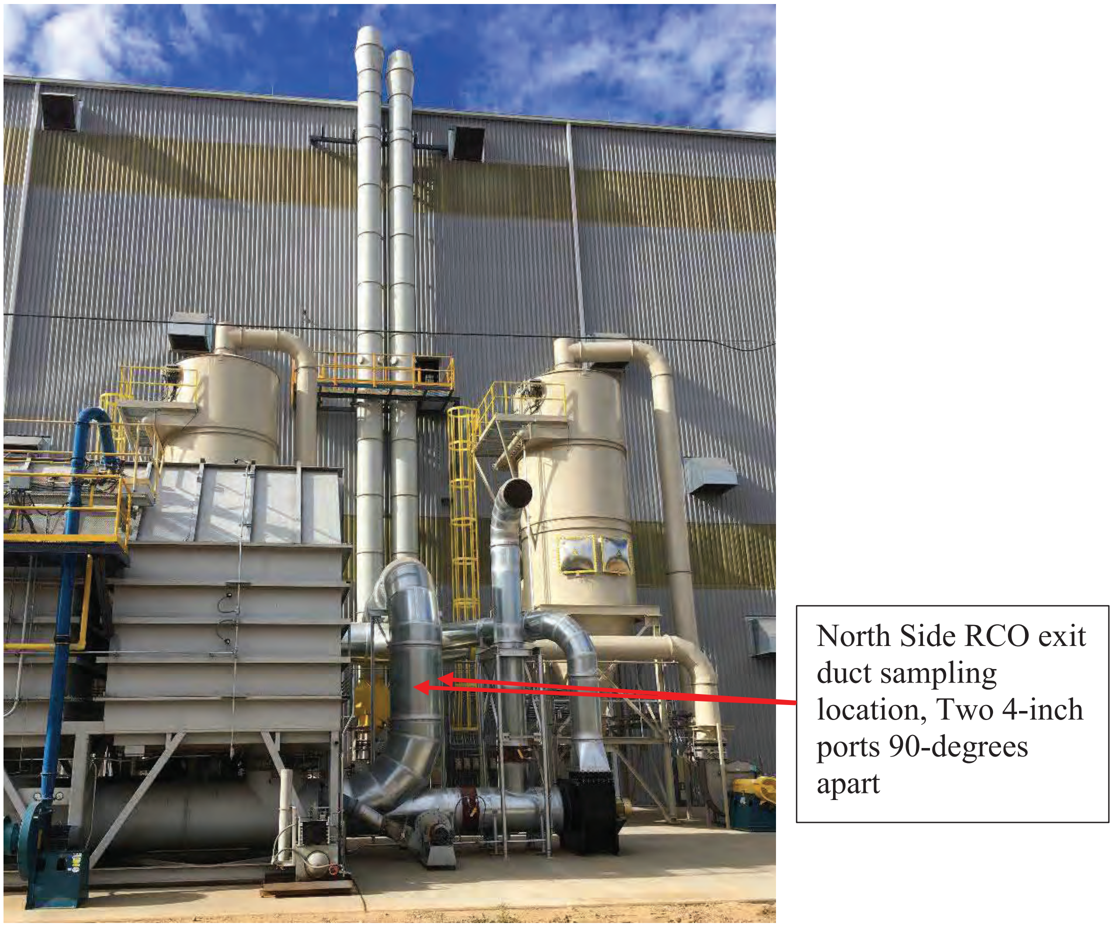


Figure 2-3. Vertical RCO 2 exit duct on the north side of the Pellet Cooler Building

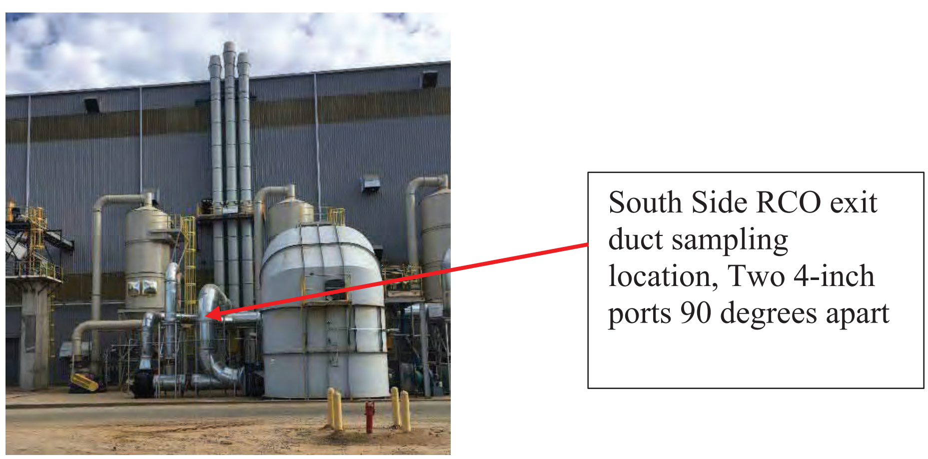


Figure 2-4. Vertical RCO 1 exit duct on the south side of the Pellet Cooler Building

The test crews at each of these two locations are shielded and sufficiently far from deflagration panels on the side walls of the fabric filters.

Due to the flow disturbances relatively close to the proposed sampling location, a total of 24 traverse points was used during the gas flow measurements.

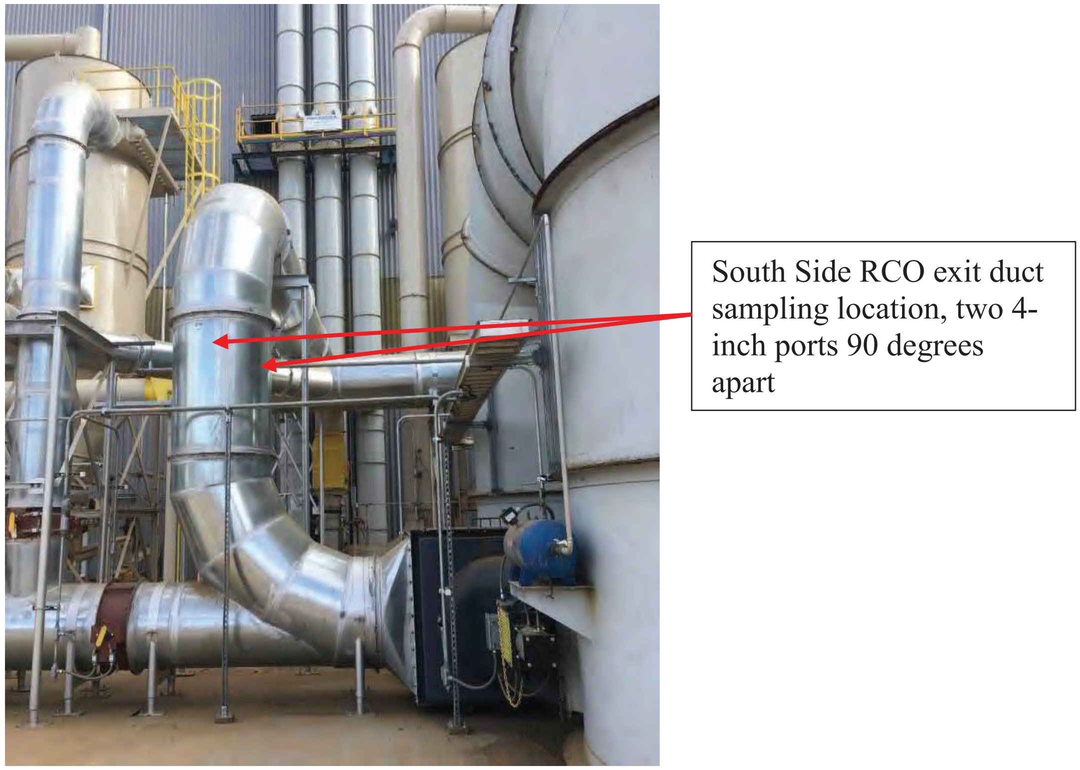


Figure 2-5. RCO 1 Exit Duct, South Side of the Pellet Cooler Building

2.2 Sampling Point Determination—EPA Method 1

The number and location of the traverse points used in the Method, 5/202 tests were determined according to the procedures outlined in U.S. EPA Reference Method 1. No traverse points were located within 1.0 inch of the stack wall.

2.3 Flue Gas Velocity and Volumetric Flow Rate—EPA Method 2

The flue gas velocity and volumetric flow rate during all of the emissions tests were determined according to the procedures outlined in U.S. EPA Reference Method 2. Velocity measurements were made using S-type Pitot tubes conforming to the geometric specifications outlined in Method 2. Accordingly, each Pitot tube was assigned a coefficient of 0.84. Velocity pressures were measured with fluid manometers. Effluent gas temperatures were measured with chromel-alumel thermocouples attached to digital readouts. A cyclonic flow check was performed at the sampling locations prior to testing.

2.4 Flue Gas Moisture Content—EPA Method 4

The flue gas moisture contents during each emissions test were determined in conjunction with each sampling train according to the sampling and analytical procedures outlined in EPA Method 4. The impingers were connected in series and contained reagents as listed in each of the method descriptions included in this protocol. The impingers were contained in an ice bath to assure condensation of the flue gas stream moisture. Any moisture that was not condensed in the impingers was captured in the silica gel; therefore, all moisture was weighed and entered into moisture content calculations.

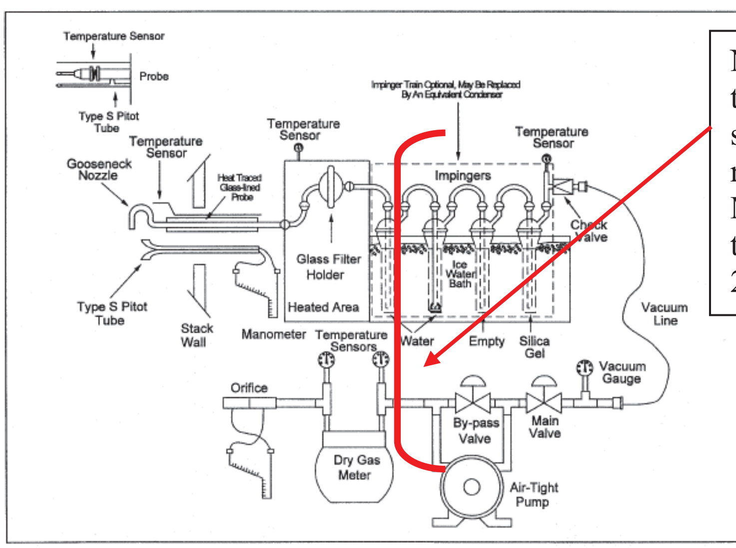
In addition to the Method 4 test results, Air Control Techniques, P.C. calculated the moisture content based on the average stack temperature at the sampling location. The calculated moisture content was compared with the measured value. The lower of the two moisture levels was used in the emission calculations.

2.5 Filterable and Condensable Particulate Matter—EPA Method 5 and Method 202

Air Control Techniques, P.C. used EPA Reference Methods 5 and 202 to determine filterable and condensable particulate matter emissions from the Dryer/RTO stack and from the Dry Hammermill stack. The testing was conducted in accordance with all applicable EPA sampling and quality assurance requirements. The test program consisted of a set of three one-hour test runs at both the Dryer/RTO Stack (S1) and the Dry Hammermill Stack (S3). The average of the three test runs at each source was computed.

Sample Collection—Samples were withdrawn isokinetically (100% ±10%) from the source using an EPA Method 5/202 sampling train. The duration of each test run was 60 minutes. The sampling train consisted of a stainless steel nozzle, a heated stainless steel lined probe with an S-type Pitot tube attached, a heated Method 5 filter, the Method 202 sampling train, and a metering console. The filterable particulate matter samples were collected on a glass fiber filter supported by a Teflon frit.

The Method 5 sampling train is shown in Figure 2-6. The four impingers used in the Method 4 moisture measurements were replaced with the Method 202 sampling train shown in Figure 2-7. A temperature sensor (not shown in Figure 2-3) was inserted into the filter housing in direct contact with the gas stream exiting the Method 5 filter.



Note: "Back half of the Method 5 sampling train was replaced with the Method 202 sampling train shown in Figure 2-7

Figure 2-6. Method 5 Sampling Train
(From Figure 5-1 of U.S. EPA Method 5, 40 CFR Part 60, Appendix A)

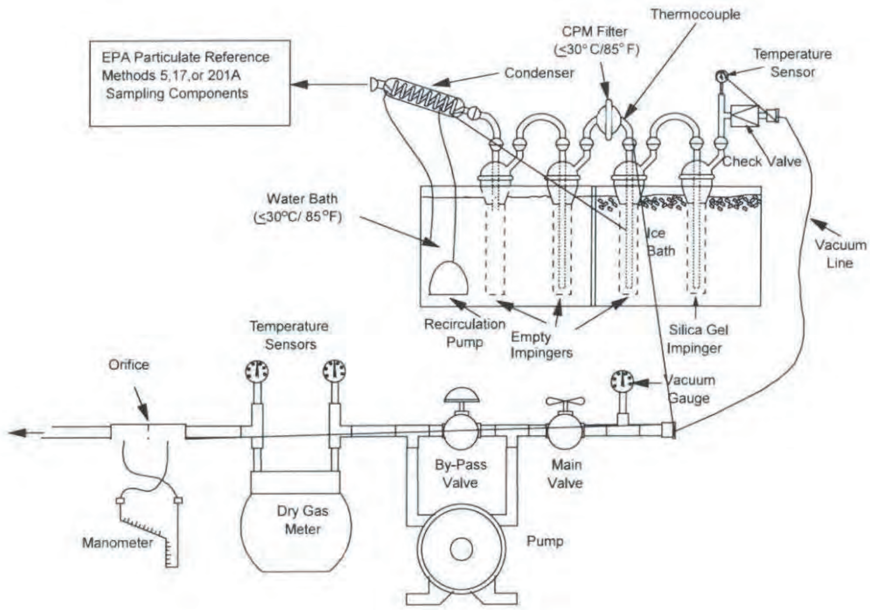


Figure 2-7. Method 202 Sampling Train Following the Method 5 Filter and Before Gas Stream Entry to the Main Valve and Dry Gas Meter

The EPA Method 202 sampling train included a water-cooled indirect heat exchanger, a knock-out impinger, an impinger that was initially dry, a Teflon membrane filter (CPM filter), and a pre-weighed silica gel impinger.

The initial knockout impinger and the initially dry impinger were maintained in a water bath at 65-85°F. The sample gas stream exiting the second impinger and entering the filter were at or below 85°F. Following each test run, the sampling train was purged with ultra-high purity nitrogen at a rate of 14 liters per minute for one hour to remove dissolved sulfur dioxide and other soluble gases.

Sample Recovery—The Method 5 filter was removed from the filter holder and placed in a uniquely identified petri dish. The petri dish was sealed for transport to the laboratory. Each impinger was weighed prior to and at the conclusion of each run. The weight gain due to moisture in the gas stream was summed and entered into moisture content calculations in accordance with EPA Reference Method 4. The nozzle, probe, and front half of the filter holder were rinsed and brushed with acetone and collected in a labeled glass jar.

The condenser, impingers, connecting glassware and front half of the CPM filter holder were rinsed with water and added to the collected purged water sample. All components were then rinsed with acetone and hexane and collected in a separate glass jar. The CPM filters were placed in uniquely identified petri dishes.

Sample Analysis - EPA Method 5 analytical procedures were used to analyze the filters and front-half acetone rinses for filterable particulate matter.

EPA Method 202 analytical procedures were used to analyze the back-half of the sampling train. The CPM filters were extracted with water and hexane. The inorganic extraction solvent rinses (water) were added to the collected water samples. The organic extraction solvent rinses (hexane) were added to the collected acetone/hexane rinse samples. The water samples were extracted with hexane, and the extraction solvent was combined with the acetone/hexane rinses. The organic fractions (acetone/hexane rinses and the hexane extraction solvent) were evaporated to dryness, desiccated, and weighted until consecutive weights agreed within ±0.5 mg. The inorganic fractions (water samples) were evaporated to near dryness and resuspended in 50 mL of deionized water. The sample was then titrated to a neutral pH using sodium hydroxide, evaporated to dryness, desiccated, and weighed until consecutive weights agree within ±0.5 mg. The total catch reported for each run was the sum of the organic and inorganic catches minus the field train blank catch weight or 2.0 mg, whichever was less.

As part of the Method 202 tests, Air Control Techniques, P.C. collected reagent blanks of the acetone, hexane, and deionized water used as rinse solvents. Air Control Techniques, P.C. also prepared and analyzed a field recovery blank and a proof blank. The field recovery blank and the proof blank were charged with 100 milliliters of degassed deionized water and assembled and recovered with components that had collected at least one test run.

2.6 Oxygen/Carbon Dioxide, Nitrogen Oxides, Carbon Monoxide, and Volatile Organic Compounds—EPA Methods 3A, 7E, 10, 18, and 25A

The sampling and analytical procedures for O_2/CO_2, CO, VOCs, and NOx at the Dryer/RTO Stack (S1) and for O2/CO2 and VOC at the Dry Hammermill Stack (S3) were conducted in accordance with EPA Methods 3A, 7E, 10, and 25A. The measurement system consisted of a sample acquisition system, the individual gas analyzers, and a data acquisition system (DAS).

The sample acquisition system included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a condenser, and a sample line leading to the continuous emission monitors in the mobile laboratory. All components of the sample acquisition system that contacted the sampled gas were constructed of Type 316 stainless steel or Teflon®. The sampled gas was continuously extracted from a central point within the duct at a constant rate (±10%) for the duration of each test run. Figure 2-8 provides a drawing of the CEM sampling system.

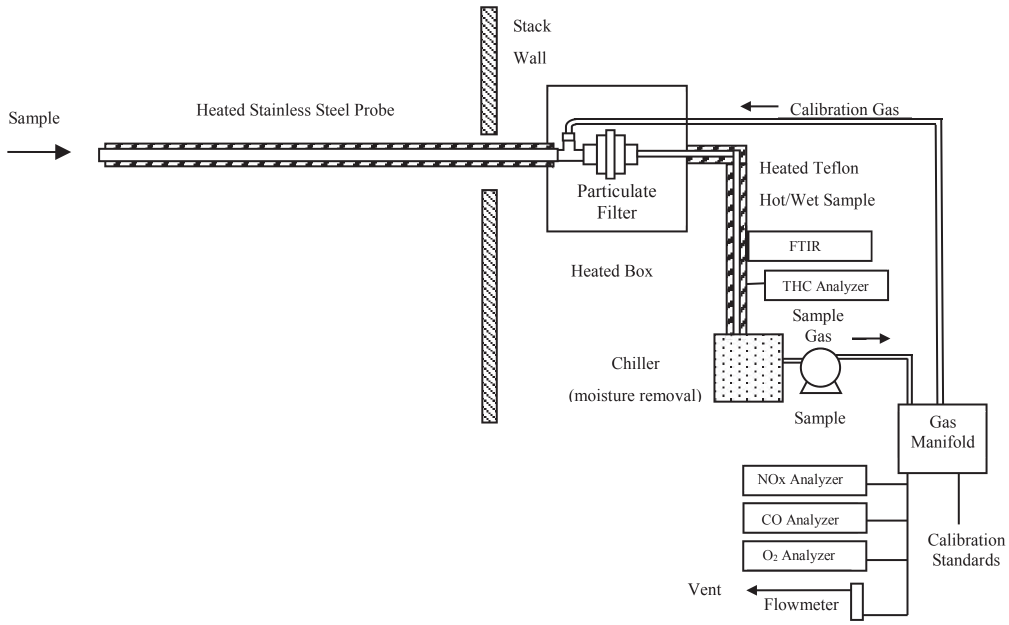


Figure 2-8. CEM Sampling System

A portion of the sample gas was routed through the distribution manifold board for delivery to the gas analyzers. The configuration of the sampling acquisition system allowed for the injection of gas standards directly to the analyzers or through the entire sampling system. All pretest and posttest calibration procedures were performed as outlined in the applicable EPA Reference Methods.

All of the gas standards were prepared according to the test methods using EPA Protocol procedures. Copies of the certificate of analysis documents for the gas standards used during the test program were available onsite and are provided in the emissions test report. The calibration gas concentrations are listed in Table 2-1 through 2-3. The analyzers used in this test program are listed in Table 2-4.

Table 2-1. Gas Cylinder Concentration Ranges, Dec. 4-5, 2018 Tests

Parameter	O_2, %	CO_2, %	CO, ppmvd	VOC, ppmvd as propane	NOx, Ppmvd
Zero Gas	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	NA	NA	NA	30.07	NA
Mid-Level Gas	11.05	9.95	226.4	52.38	48.0
High-Level Gas	21.99	18.22	450	85.84	89.5
Calibration Span	21.99	18.22	450	100	89.5

Table 2-2. Gas Cylinder Concentration Ranges, January 16, 2019 Tests					
Parameter	O_2, %	CO_2, %	CO, ppmvd	VOC, ppmvd as Propane	NOx, Ppmvd
Zero Gas	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	NA	NA	NA	25.5	NA
Mid-Level Gas	11.05	9.95	125.6	52.38	48.0
High-Level Gas	21.99	18.22	226.4	85.84	89.5
Calibration Span	21.99	18.22	450	100	89.5

Table 2-3. Gas Cylinder Concentration Ranges, March 7, 2019 Tests					
Parameter	O_2, %	CO_2, %	CO, ppmvd	VOC, ppmvd as Propane	NOx, ppmvd
Zero Gas	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	NA	NA	NA	25.7	NA
Mid-Level Gas	11.05	10.0	46.1	50.2	49.8
High-Level Gas	21.8	18.2	89.5	85.8	89.5
Calibration Span	21.8	18.2	100	100	89.5

Table 2-4. Test Program Analyzers				
Analyte	Manufacturer	Model	Measurement Principle	Range
O_2	California Analytical	200	Paramagnetic	25 %
CO_2	California Analytical	200	Gas Filter Correlation NDIR	20 %
VOC	California Analytical	200M	Flame Ionization	100 ppm
NOx	Teledyne/API	T200H	Chemiluminescent	100 ppm
CO	Teledyne/API	300 EM	NDIR	500 ppm

The CO and NOx emissions were calculated on a pound per hour basis. The NOx emissions were calculated based on the molecular weight of NO2.

Outputs from the individual emission monitors were connected to a computerized data acquisition system. Outputs from the analyzer were sent to a portable computer via a National Instruments™ FieldPoint controller. The signals were downloaded to a STRATA© software program every two seconds. The two-second readings were averaged for the duration of the test run.

Prior to the start of the emission tests, Air Control Techniques, P.C. conducted a stratification test in accordance with Section 8.1.2 of U.S. EPA Method 7E at the dryer/RTO sampling location. Sampling was conducted for a duration that exceeded twice the maximum system response time at each point. The point-to-point variations did not differ from the mean concentration by more than ±5% or 0.5 ppm. Accordingly, the gas streams were classified as unstratified, and sampling was conducted at a single point.

2.7 FTIR Sampling System

Sample gas was continuously passed through a sampling system, which included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a Teflon® heat-traced sample line, a MIDAC Fourier Transform Infrared (FTIR) spectrometer, a Teflon® heated-head pump, and a gas manifold board as shown in Figure 2-9. All components of the sample acquisition system that contacted the sampled gas were Type 316 stainless steel or Teflon®. All components of the sampling system and the FTIR cell were maintained at or above 180° C. Air Control Techniques, P.C. ensured that the sampling system contained no "cold spots" to prevent loss of the target analytes. The sampling rate was maintained at greater than 10 liters per minute.

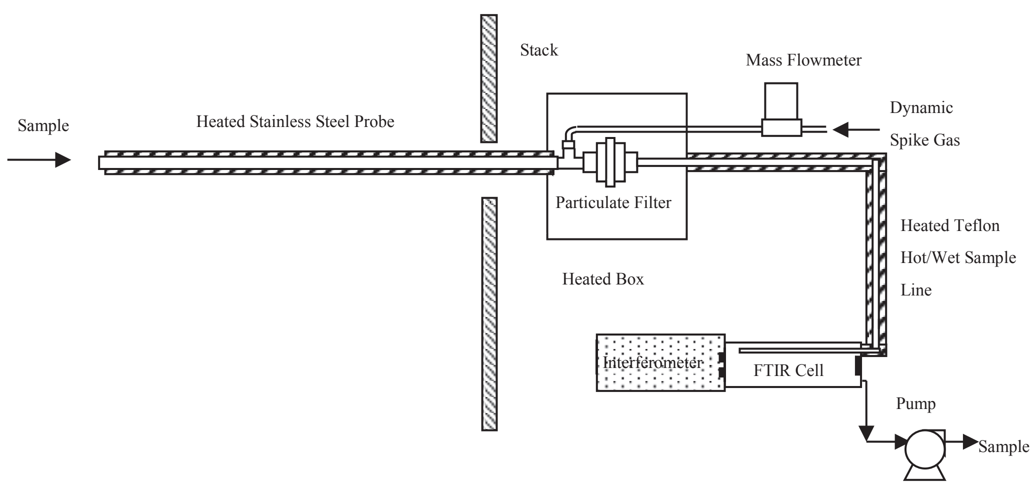


Figure 2-9. Method 320/321 Sampling System

The FTIR system included a MIDAC Corporation (Costa Mesa, CA) I-2001 spectrometer equipped with a heated, nominal 10-meter path absorption cell, a potassium bromide (KBr) beam splitter, zinc selenide (ZnSe) non-hygroscopic windows, and a liquid nitrogen-cooled Mercury Cadmium Telluride detector. Measurements were made using a MIDAC Model I-2001 high resolution Michelson interferometer with AutoQuant Pro V.4.0.0.136 software. Sampled gas was continuously passed through the sampling system, and sample spectra (based on 56 co-added interferograms) were recorded every minute. The system's nominal spectral resolution was 0.5 cm^{-1}. Samples and standards were analyzed at temperatures greater than 120°C and near ambient pressures.

The inside walls of the cells were polished stainless steel to minimize interaction of the sample with the cell walls, and the cell mirrors were bare gold. The gas pressure in the FTIR sample cell was monitored with a pressure transducer connected directly to the sample cell. The heated sample cell was wrapped in an insulating thermal jacket, and the temperature was controlled with type J thermocouples. The absorption cell volume was approximately 2 liters.

The FTIR system operated via a portable computer. A data archive storage system (USB Mass Storage Drive) was used for data backup. All interferograms, single beams, absorbance spectra, and background single beams were stored and archived. The Air Control Techniques, P.C. FTIR field operator documented the sampling parameters throughout the test program including the filename, time, cell pressure, cell temperature, spectra scan rate, corresponding background, and any relevant notes.

Spectral Analysis—Air Control Techniques used the program AutoquantPro™ Version 4.0.0.136 (©Midac Corporation) to collect and analyze all the infrared field data. The program allows the development and storage of analytical methods for analysis of spectral data (absorbance) files. The reference spectra used for these analyses were developed by MIDAC Corporation, EPA, and Air Control Techniques, P.C. One method for the task of determining the absorption path length and at least one additional method for determining the concentrations of the target compounds was developed for the test program.

Air Control Techniques, P.C. selected the analytical wavelengths and conducted analyses for analytical uncertainty and detection limit determination using reference spectra standards and prepared the computerized analytical programs for measuring HCl, methanol, formaldehyde, and acetaldehyde concentrations. The reference spectra used for these analyses were developed by EPA, Air Control Techniques, P.C., and the MIDAC Corporation. Prior to testing, an evaluation of possible analytical interferents (e.g., H2O, CO2, CO, pinenes) for the gas stream was determined. Reference spectra of the possible interferents were included in the modeling program to minimize analytical uncertainty and detection limits of the target compounds. Water spectra were recorded onsite with the FTIR instrument used for the field testing to simulate the actual gas stream moisture. The recorded water spectra were included as the primary spectra for modeling.

The sampling method was adjusted following the test program to minimize interferences, reduce the detection limits, and increase the measurement accuracy of the target compounds. The method adjustments included the addition of water spectra collected during the test program.

Minimum Detectable Concentrations—The practical minimum detectable concentration (MDC) is instrument, compound, and interference specific. The actual sensitivity of the FTIR measurement system for the individual target analytes depends upon the specific infrared absorptivity (signal) and wavelength, the analysis region for each target analyte, the amount of instrument noise, the concentration of unaccounted interfering compounds in the sample gas, and the amount of spectral overlap imparted by these compounds in the wavelength region(s) used for the quantification of the target analytes.

The detection limit is the lowest concentration of an analyte for which its overall fractional uncertainty is required to be less than its analytical uncertainty limit. The MDC was calculated based on the Standard Error of the Estimated Concentration, or SEC, also known as the Marginal Standard Deviation. The SEC is a measure of the residual spectrum after the scaled reference spectra have been removed from the sample spectrum. The remaining “residual noise” was referenced against each target compound reference spectrum again, and the resulting concentration is the SEC.

The SEC represents the uncertainty of the concentration values for the target analyte and is based on the error variance. The error variance for the case of a single reference spectrum is calculated as the square root of the sums of the squares of the residual spectrum (R) as shown in Equation 1, where *n* is the number of observations.

$$\sigma^2 = \frac{\sum_i R_i^2}{(n-1)} \qquad \text{Equation 1}$$

The SEC is calculated based on the error variance, the reference spectra concentration (C), and the spectrum (A).

$$SEC = \frac{\sigma\, C}{\sqrt{\sum_i \mathrm{A}_i^2}} \qquad \text{Equation 2}$$

The MDC values were calculated as two times the SEC, which provides greater than a 95% confidence interval.

Quality Assurance and Quality Control - A linearity test was performed on the detector. Calibration transfer standard (CTS) spectra were compared at three aperture settings. The CTS band areas agreed to within the uncertainty of the cylinder standard (±2%) and the RMSD noise in the system.

Air Control Techniques, P.C. conducted numerous on-site quality assurance checks including single beam backgrounds, CTS spectra tests, and dynamic analyte spiking. During testing, Air Control Techniques, P.C. conducted a quality assurance review of the spectral data. The review included visual inspection of the sample spectra against the reference spectra. Periodically, the target analyte concentrations were calculated separately and compared with the analytical results.

The FTIR extractive sampling system was leak checked from the probe to the pump outlet using a rotameter. A leak check was performed on the FTIR spectrometer cell under maximum vacuum and greater than ambient pressure for greater than two minutes. The cell leak was less than 4 percent of the cell volume.

Sample spectra were divided point-by-point by a 128-scan background recorded using UHP nitrogen. The single beam spectrum was constantly monitored, and a new background was generated at the beginning and end of each test day or if the signal transmittance (relative to the background) changed by 5 percent or more (absorbance = -0.02 to 0.02) in any analytical spectral region indicating component build-up on the optical surfaces or alignment-related baseline shifts.

CTS tests were performed prior to and following each test run. CTS spectra were collected at the sampling resolution using the same optical configuration as for sample spectra. A cylinder of 100.9 ppm ethylene in nitrogen served as the CTS. The CTS gas was introduced to the FTIR and allowed to reach steady state. The CTS was used to determine the effective cell path length based on comparisons of the "field" CTS spectra to a laboratory CTS spectrum recorded by MIDAC.

EPA Method 320, EPA Method 321, and the equivalent ASTM Standard D6348-03 specify several analytical uncertainty parameters that the analyst must calculate to characterize the FTIR system performance including root mean square (RMA) noise. The RMA noise is a measure of the instrument accuracy for the target analyte and is calculated as the root mean square deviation (RMSD) of the absorbance values in the analytical region(s) from the mean absorbance value in the same region(s). The RMSD in the noise should be less than one tenth of the minimum analyte peak absorbance of sample or MDC in the target analytical region.

3. SUMMARY AND DISCUSSIONS OF RESULTS

3.1 Dryer/RTO Test Results

Objectives and Test Matrix—The objective of the test program was to measure air emissions exiting the Dryer/RTO stack. A matrix of the test methods used in this test program is provided in Table 3-1.

Table 3-1. Dryer/RTO Tests

Stack	EPA Test Method	Target Analyte	Number of Runs	Run Times, Minutes	Analytical Measurement
S1 Dryer-RTO	Methods 1, 2, and 4	Stack Gas Volumetric Flow Rate	3	60	Velocity. Pressure, Gravimetric
	Method 3A	Oxygen and Carbon Dioxide	3	60	Paramagnetic and NDIR
	Method 5	Filterable Particulate Matter	3	60	Gravimetric
	Method 7E	Nitrogen Oxides as NO2	3	60	Chemiluminescence
	Method 10	Carbon Monoxide	3	60	NDIR
	Method 18	Methane	3	60	GC
	Method 25A	VOCs as Propane	3	60	FID
	Method 202	Condensable Particulate Matter	3	60	Gravimetric
	Method 320	Methanol, Formaldehyde, and Acetaldehyde	3	60	FTIR
	Method 321	HCl	3	60	FTIR

Summary of Results—The results of the particulate matter, VOC, CO, and NOx tests are summarized in Table 3-2. The VOC data are expressed as propane. The NOx data are expressed as NO2. Methane, a non-VOC compound detected by Method 25A, was measured using Method 18. All of the methane analyses were between the laboratory minimum detection limit and the limit of quantification. Accordingly, the methane data were considered to be negligible and were not subtracted from the Method 25A VOC data.

Table 3-2. Test Results Summary, Dryer/RTO Stack				
Parameter	Run 1	Run 2	Run 3	Average
Test date	12/5/2018	12/5/2018	12/5/2018	N/A
Test time	8:40-9:47	10:47-11:57	12:15-13:27	N/A
Production Rate, ODT/hour	67.0	64.1	64.7	65.3
Gas Flow Rate, DSCFM	74,759	71,425	74,025	73,403
Gas Flow Rate, ACFM	166,531	154,608	158,373	159,837
Oxygen Concentration, % dry	12.53	12.78	13.40	12.90
Carbon Dioxide Concentration, % dry	7.89	7.56	7.12	7.52
Stack Gas Moisture Concentration., %	39.49	38.68	37.17	38.45
Stack Temperature, °F	252.2	241.3	250.2	247.9
Filterable Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.57	0.34	0.13	0.35
Emission Factor, Lbs./ODT	0.0085	0.0053	0.0020	0.0053
Condensable Particulate Matter Emissions				
Emission Rate, Lbs./hour	1.7	1.5	1.3	1.5
Emission Factor, Lbs./ODT	0.025	0.023	0.021	0.023
Total Particulate Matter Emissions				
Emission Rate, Lbs./hour	2.3	1.8	1.5	1.9
Emission Factor, Lbs./ODT	0.034	0.028	0.023	0.028
Non-VOC Compounds				
Methane, ppm_{vd} as methane[1]	1.14	1.14	1.54	1.27
VOC Emissions as Propane				
Concentration, ppm_{vd} as propane	10.2	11.2	9.30	10.2
Emission Rate, Lbs./hour as propane	5.3	5.5	4.7	5.2
Emission, Lbs./ODT as propane	0.078	0.086	0.073	0.079
Carbon Monoxide Emissions				
Concentration, ppm_{vd}	29.2	35.4	27.9	30.8
Emissions, Lbs./hour	9.5	11.0	9.0	9.9
Emission Rate, Lbs./ODT	0.14	0.17	0.14	0.15
Nitrogen Oxide Emissions				
NOx Concentration, ppm_{vd}	38.5	34.4	32.6	35.2
Emissions, Lbs./hour as NO_2	20.6	17.6	17.3	18.5
Emission Rate, Lbs. NO_2/ODT	0.31	0.27	0.27	0.28

[1] All methane analyses were between the laboratory minimum detection limit and the limit of quantification.

Table 3-3 presents the HAP emissions data measured in accordance with Methods 320 and 321. All concentrations are expressed on a ppm dry basis (ppmvd).

Table 3-3. HAP Test Results, Dryer/RTO Stack

Parameter	Run 1	Run 2	Run 3	Average
Test date	12/5/2018	12/5/2018	12/5/2018	N/A
Test time	8:40-9:47	10:47-11:57	12:15-13:27	N/A
Production Rate, ODT/hour	67.0	64.1	64.7	65.3
Methanol Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Lbs./ODT	0.0	0.0	0.0	0.0
Formaldehyde Emissions				
Concentration, ppm_{vd}	0.97	0.98	0.89	0.95
Emission Rate, Lbs./hour	0.34	0.33	0.32	0.33
Emission Lbs./ODT	0.0051	0.0052	0.0049	0.0050
Acetaldehyde Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Lbs./ODT	0.0	0.0	0.0	0.0
HCl Emissions				
Emission Factor, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Lbs./ODT	0.0	0.0	0.0	0.0
Total HAP Emissions				
Emission Rate, Lbs./hour, 4 analytes	0.34	0.33	0.32	0.33
Emission Lbs./ODT	0.0051	0.0052	0.0049	0.0050

All of the HAPs emissions were low as expected due to the high operating temperature of the RTO.

3.2 Dry Hammermill Test Results

Objectives and Test Matrix—The objective of the test program was to measure air emissions exiting the Dry Hammermill Stack (S3). A matrix of the test methods used in this test program is provided in Table 3-4

Table 3-4. Dry Hammermill Stack Tests

Stack	EPA Test Method	Target Analyte	Number of Runs	Run Times, Minutes	Analytical Measurement
S3 DHM	Methods 1, 2, and 4	Stack Gas Volumetric Flow Rate	3	60	Velocity. Pressure, Gravimetric
	Method 3A	Oxygen and Carbon Dioxide	3	60	Paramagnetic and NDIR
	Method 5	Filterable Particulate Matter	3	60	Gravimetric
	Method 25A	VOCs as Propane	3	60	FID
	Method 202	Condensable Particulate Matter	3	60	Gravimetric
	Method 320	Methanol, Formaldehyde, and Acetaldehyde	3	60	FTIR
	Method 321	HCl	3	60	FTIR

Summary of Test Results—The results of the tests conducted at the dry hammermill stack (S3) are summarized in Tables 3-5 and 3-6.

Table 3-5. Test Results Summary, DHM Stack

Parameter	Run 1	Run 2	Run 3	Average
Test date	12/4/2018	12/4/2018	12/4/2018	N/A
Test time	9:15-10:23	11:17-12:25	13:04-14:12	N/A
Production Rate, ODT/hour	65.4	64.90	64.6	65.0
Gas Flow Rate, DSCFM	62,212	64,491	64,891	63,865
Gas Flow Rate, ACFM	68,874	72,432	72,790	71,365
Oxygen Concentration, % dry	20.97	20.94	20.91	20.94
Carbon Dioxide Concentration, % dry	0.12	0.12	0.11	0.12
Stack Gas Moisture Concentration., %	3.94	4.22	4.33	4.17
Stack Temperature, °F	102.0	108.5	107.1	105.9
Filterable Particulate Matter Emissions				
Emission Rate, Lbs./hour	9.7	9.5	6.9	8.7
Emission Factor, Lbs./ODT	0.15	0.15	0.11	0.13
Condensable Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.14	0.08	0.38	0.20
Emission Factor, Lbs./ODT	0.0021	0.0012	0.0059	0.0031
Total Particulate Matter Emissions				
Emission Rate, Lbs./hour	9.8	9.6	7.3	8.9
Emission Factor, Lbs./ODT	0.15	0.15	0.11	0.14
VOC Emissions as Propane				
Concentration, ppm_{vd} as propane	68.0	87.5	86.1	80.5
Emission Rate, Lbs./hour as propane	29.1	38.8	38.4	35.4
Emission, Lbs./ODT as propane	0.44	0.60	0.59	0.55

Table 3-6 presents the HAP emissions data measured in accordance with Methods 320 and 321. All concentrations are expressed on a ppm dry basis.

Table 3-6. HAP Test Results, Dry Hammermill Stack				
Parameter	Run 1	Run 2	Run 3	Average
Test date	12/4/2018	12/4/2018	12/4/2018	N/A
Test time	9:15-10-23	11:17-12:25	13:04-14:12	N/A
Production Rate, tons/hour	65.4	64.9	64.6	65.0
Methanol Emissions				
Concentration, ppm_{vd}	0.80	1.11	1.08	1.00
Emission Rate, Lbs./hour	0.25	0.36	0.35	0.32
Emission Rate, Lbs./ODT	0.0038	0.0055	0.0054	0.0049
Formaldehyde Emissions				
Concentration, ppm_{vd}	0.15	0.0	0.0	0.05
Emission Rate, Lbs./hour	0.045	0.0	0.0	0.015
Emission Rate, Lbs./ODT	0.00068	0.0	0.0	0.00023
Acetaldehyde Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.0	0.00
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.00
Emission Rate, Lbs./ODT	0.0	0.0	0.0	0.00
HCl Emissions				
Emission Factor, ppm_{vd}	0.13	0.0	0.0	0.04
Emission Rate, Lbs./hour	0.046	0.0	0.0	0.015
Emission Rate, Lbs./ODT	0.00070	0.0	0.0	0.00023
Total HAP Emissions				
Emission Rate, Lbs./hour, 4 analytes	0.35	0.36	0.35	0.35
Emission Rate, Lbs./ODT, 4 analytes	0.0052	0.0055	0.0054	0.0054

3.3 RCO 1 and RCO 2 Test Results

Objectives and Test Matrix—The objective of the test program was to measure air emissions exiting the Pellet Cooler Stacks S5 and S6. A matrix of the test methods used in this test program is provided in Table 3-7

Table 3-7. RCO 1 and RCO 2 Tests

Stack	EPA Test Method	Target Analyte	Number of Runs	Run Times, Minutes	Analytical Measurement
S5 and S6 Pellet Coolers	Methods 1, 2, and 4	Stack Gas Volumetric Flow Rate	3	60	Velocity. Pressure, Gravimetric
	Method 3A	Oxygen and Carbon Dioxide	3	60	Paramagnetic and NDIR
	Method 5	Filterable Particulate Matter	3	60	Gravimetric
	Method 7E	Nitrogen Oxides	3	60	Chemiluminescent
	Method 10	Carbon Monoxide	3	60	Infrared
	Method 18	Methane	3	60	GC
	Method 25A	VOCs as Propane	3	60	FID
	Method 202	Condensable Particulate Matter	3	60	Gravimetric
	Method 320	Methanol, Formaldehyde, and Acetaldehyde	3	60	FTIR
	Method 321	HCl	3	60	FTIR

The results of the tests conducted on the RCO 1 Stack on March 7, 2019 are summarized in Tables 3-8 and 3-9. The VOC, CO, and NOx data are expressed on a ppm dry basis. The VOC data are on a propane basis. The NOx data are on a NO2 basis.

Table 3-8. Test Results Summary, RCO 1, Pellet Cooler Stack S5

Parameter	Run 1	Run 2	Run 3	Average
Test date	3/7/19	3/7/19	3/7/19	N/A
Test time	9:10-10:15	11:08-12:22	13:04-14:18	N/A
Production Rate, ODT/hour	39.5	40.3	40.5	40.1
Gas Flow Rate, DSCFM	32,231	31,820	30,659	31,570
Gas Flow Rate, ACFM	39,708	41,200	41,040	40,650
Oxygen Concentration, % dry	20.7	20.6	20.53	20.64
Carbon Dioxide Concentration, % dry	0.0	0.0	0.01	0.00
Stack Gas Moisture Concentration., %	5.97	6.34	7.02	6.44
Stack Temperature, °F	155.7	184.5	201.5	180.6
Filterable Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.17	0.17	0.10	0.14
Emission Factor, Lbs./ODT	0.0043	0.0042	0.0024	0.0036
Condensable Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.19	0.14	0.22	0.18
Emission Factor, Lbs./ODT	0.0047	0.0035	0.0054	0.0046
Total Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.36	0.31	0.32	0.32
Emission Factor, Lbs./ODT	0.0090	0.0077	0.0078	0.0082
VOC Emissions as Propane				
Concentration, ppm_{vd} as propane	5.52	4.78	9.52	6.61
Emission Rate, Lbs./hour as propane	1.2	1.0	2.0	1.4
Emission, Lbs./ODT as propane	0.031	0.026	0.049	0.035
NOx Emissions				
Concentration, ppm_{vd}	1.03	1.21	1.16	1.13
Emission Rate, Lbs./hour as NO2	0.24	0.28	0.26	0.26
Emission, Lbs./ODT as NO2	0.0060	0.0069	0.0063	0.0064
CO Emissions				
Concentration, ppm_{vd}	16.68	17.93	16.73	17.11
Emission Rate, Lbs./hour	2.3	2.5	2.2	2.4
Emission, Lbs./ODT	0.059	0.062	0.055	0.059

Methane, a non-VOC compound detected by Method 25A, was measured using Method 18. All of the methane analyses were between the laboratory minimum detection limit and the limit of quantification. Accordingly, the methane data were considered to be negligible and were not subtracted from the Method 25A VOC data.

Table 3-9 presents the RCO 1 HAP emissions data measured in accordance with Methods 320 and 321. All concentrations are expressed on a ppm dry basis. All of the HAP concentrations were below the detection limits of Method 320 and 321.

Table 3-9. HAP Test Results, RCO 1, Pellet Cooler Stack S5				
Parameter	Run 1	Run 2	Run 3	Average
Test date	3/7/19	3/7/19	3/7/19	N/A
Test time	9:10-10:15	11:08-12:22	13:04-14:18	N/A
Production Rate, tons/hour	41.7	42.3	42.3	42.1
Methanol Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.19	0.07
Emission Rate, Lbs./hour	0.0	0.0	0.031	0.010
Emission Rate, Lbs./ODT	0.0	0.0	0.00077	0.00026
Formaldehyde Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Rate, Lbs./ODT	0.0	0.0	0.0	0.0
Acetaldehyde Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Rate, Lbs./ODT	0.0	0.0	0.0	0.0
HCl Emissions				
Emission Factor, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Rate, Lbs./ODT	0.0	0.0	0.0	0.0
Total HAP Emissions				
Emission Rate, Lbs./hour, 4 analytes	0.0	0.0	0.0	0.01
Emission Rate, Lbs./ODT, 4 analytes	0.0	0.0	0.0	0.00026

The results of the tests conducted on the RCO 2 Stack on January 16, 2019 are summarized in Tables 3-10 and 3-11. These tables summarize the data from Runs 3, 4, and 5. The data from Runs 1 and 2 were voided due to post-test leak check problems caused by the difficulty of moving the sampling train in a very space-constrained and awkwardly located sampling port. The data from Runs 1 and 2 are provided in Appendix IIA.

The VOC, CO, and NOx data are expressed on a ppm dry basis. The VOC data are on a propane basis. The NOx data are on a NO_2 basis.

Table 3-10. Test Results Summary, RCO 2, Pellet Cooler Stack S6				
Parameter	Run 3	Run 4	Run 5	Average
Test date	1/16/19	1/16/19	1/16/19	N/A
Test time	14:07-15:23	15:45-16:58	18:35-20:01	N/A
Production Rate, ODT/hour	25.1	25.2	22.90	24.4
Gas Flow Rate, DSCFM	22,698	22,867	22,202	22,589
Gas Flow Rate, ACFM	27,718	28,083	27,035	27,612
Oxygen Concentration, % dry	20.84	20.89	20.86	20.87
Carbon Dioxide Concentration, % dry	0.054	0.019	0.17	0.081
Stack Gas Moisture Concentration., %	5.12	5.02	4.54	4.90
Stack Temperature, °F	160.5	162.6	160.5	161.2
Filterable Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.31	0.25	0.080	0.22
Emission Factor, Lbs./ODT	0.012	0.010	0.0032	0.0086
Condensable Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.17	0.07	0.07	0.10
Emission Factor, Lbs./ODT	0.0069	0.0026	0.0029	0.0041
Total Particulate Matter Emissions				
Emission Rate, Lbs./hour	0.49	0.32	0.15	0.32
Emission Factor, Lbs./ODT	0.019	0.013	0.0064	0.013
VOC Emissions as Propane				
Concentration, ppm_{vd} as propane	7.30	7.93	7.03	7.42
Emission Rate, Lbs./hour as propane	1.1	1.2	1.1	1.2
Emission, Lbs./ODT as propane	0.045	0.049	0.047	0.047
NOx Emissions				
Concentration, ppm_{vd}	0.87	0.95	1.01	0.94
Emission Rate, Lbs./hour as NO_2	0.14	0.16	0.16	0.15
Emission, Lbs./ODT as NO_2	0.0056	0.0062	0.0070	0.0063
CO Emissions				
Concentration, ppm_{vd}	11.36	10.26	9.52	10.38
Emission Rate, Lbs./hour	1.1	1.0	0.92	1.0
Emission, Lbs./ODT	0.045	0.041	0.040	0.042

Methane, a non-VOC compound detected by Method 25A, was measured using Method 18. All of the methane analyses were between the laboratory minimum detection limit and the limit of quantification. Accordingly, the methane data were considered to be negligible and were not subtracted from the Method 25A VOC data.

There were four process-related interruptions during Run 5. The data summarized in Tables 3-10 and 3-11 include only periods when the process was operating at the indicated production rate.

Table 3-11 presents the HAP emissions data measured in accordance with Methods 320 and 321. All concentrations are expressed on a ppm dry basis.

Table 3-11. HAP Test Results, RCO 2, Pellet Cooler Stack S6				
Parameter	Run 3	Run 4	Run 5	Average
Test date	1/16/19	1/16/19	1/16/19	N/A
Test time	14:07-15:23	15:45-16:57	18:37-20:01	N/A
Production Rate, tons/hour	25.06	25.21	22.90	24.39
Methanol Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Rate, Lbs./ODT	0.0	0.0	0.0	0.0
Formaldehyde Emissions				
Concentration, ppm_{vd}	0.46	0.46	0.76	0.56
Emission Rate, Lbs./hour	0.049	0.050	0.080	0.059
Emission Rate, Lbs./ODT	0.0020	0.0020	0.0033	0.0025
Acetaldehyde Emissions				
Concentration, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Rate, Lbs./ODT	0.0	0.0	0.0	0.0
HCl Emissions				
Emission Factor, ppm_{vd}	0.0	0.0	0.0	0.0
Emission Rate, Lbs./hour	0.0	0.0	0.0	0.0
Emission Rate, Lbs./ODT	0.0	0.0	0.0	0.0
Total HAP Emissions				
Emission Rate, Lbs./hour, 4 analytes	0.05	0.05	0.08	0.059
Emission Rate, Lbs./ODT, 4 analytes	0.0019	0.0019	0.0034	0.0025

4.0 QUALITY ASSURANCE AND QUALITY CONTROL

4.1 Particulate Matter Tests, Methods 5 and 202

The Method 5/202 tests met all of the EPA quality assurance requirements. As indicated in Tables 4-1 through 4-4, the isokinetic sampling rates were well within the 90% to 110% range. The sampling train post leak checks were all zero at vacuums that exceeded the maximum run vacuum. The probe, filter, impinger exit, and CPM filter temperatures were all consistent with the EPA methods. The measured cyclonic flow angle in the dryer stack was 0.83 degrees—well within the less than 20 degree requirement specified in Method 1.

Table 4-1. Method 5/Method 202 Quality Assurance Objectives and Results, Dryer/RTO Stack S1

Parameter	Objectives	Test Run Values		
		Run 1	Run 2	Run 3
Number of traverse points	Method 1 criteria 24 points	24	24	24
Sample volume	>30 DSCF	43.54	38.80	38.24
Isokinetic sampling rate	90-110%	106.4	99.3	94.4
Post-test sample train leak check	<0.02 DSCF or 4% at maximum run vacuum	0	0	0
Probe temperatures	248±25°F	245-260	232-267	245-261
Filter temperatures	248±25°F	245-259	242-262	227-258
Maximum Impinger exit temperatures	<68°F	51	50	51
CPM filter exit temperature	65-85°F	69-77	69-79	69-79
Cyclonic flow angle	<20 degrees	0.83		

Table 4-2. Method 5/Method 202 Quality Assurance Objectives and Results, Dry Hammermill Stack S3

Parameter	Objectives	Test Run Values		
		Run 1	Run 2	Run 3
Number of traverse points	Method 1 criteria, 24 points	24	24	24
Sample volume	>30 DSCF	40.99	42.49	42.99
Isokinetic sampling rate	90-110%	101.1	101.1	101.6
Post-test sample train leak check	<0.02 DSCF or 4% at maximum run vacuum	0	0	0
Probe temperatures	248±25°F	255-261	238-264	252-262
Filter temperatures	248±25°F	235-259	247-258	252-261
Maximum Impinger exit temperatures	<68°F	50	54	53
CPM filter exit temperature	65-85°F	69-75	69-73	71-79
Cyclonic flow angle	<20 degrees	4.1		

Table 4-3. Method 5/Method 202 Quality Assurance Objectives and Results, Pellet Cooler Stack S5, RCO 1

Parameter	Objectives	Test Run Values		
		Run 1	Run 2	Run 3
Number of traverse points	Method 1 criteria, 24 points	24	24	24
Sample volume	>30 DSCF	47.74	47.50	46.50
Isokinetic sampling rate	90-110%	102.6	103.4	105.1
Post test sample train leak check	<0.02 DSCF or 4% at maximum run vacuum	0 @ 11	0 @ 9	0 @9.5
Probe temperatures	248±25°F	245-257	245-258	225-258
Filter temperatures	248±25°F	227-256	225-256	238-260
Maximum Impinger exit temperatures	<68°F	46	53	58
CPM filter exit temperature	65-85°F	70	80	80
Cyclonic flow angle	<20 degrees	3.04		

Table 4-4. Method 5/Method 202 Quality Assurance Objectives and Results, Pellet Cooler Stack S6, RCO 2				
Parameter	Objectives	Test Run Values		
		Run 3	Run 4	Run 5
Number of traverse points	Method 1 criteria, 24 points	24	24	24
Sample volume	>30 DSCF	44.807	45.544	43.969
Isokinetic sampling rate	90-110%	102.5	102.5	102.8
Post test sample train leak check	<0.02 DSCF or 4% at maximum run vacuum	0 @ 7	0 @ 12	0 @8
Probe temperatures	248±25°F	255-262	250-258	254-260
Filter temperatures	248±25°F	246-257	251-259	245-260
Maximum Impinger exit temperatures	<68°F	60	55	48
CPM filter exit temperature	65-85°F	75	77	75
Cyclonic flow angle	<20 degrees	2.71		

Method 202 Blanks—The Method 202 blank sample data for each of the three test periods are summarized in Table 4-5.

Table 4-5. Method 202 Blank Sample Analyses			
Sample	Milligrams		
	December 4-5	January 16	March 7
Proof Blank	1.4	1.8	1.2
Field Blank	1.9	2.0	1.1
Acetone Reagent	0.0 in 184 ml	0.2 in 196 ml	0.0 in 144 ml
Deionized Water	0.0 in 200 ml	0.6 in 200 ml	0.0 in 146 ml
Hexane Reagent	0.2 in 154 ml	0.5 in 190 ml	0.0 in 70 ml

All of the reagents used in the January 16, 2019 RCO 2 tests were slightly above the 1.0 ppm by weight value specified in Method 202. This was discussed with the laboratory. They indicated that these reagent blank values are in the same range as those in tests conducted by their other emission testing clients.

S-Type Pitot Tube Calibration—All S-Type Pitot tubes used in this project conformed to EPA guidelines concerning construction and geometry. Pitot tubes were inspected prior to use, and a Pitot tube coefficient of 0.84 was used.

Sample Nozzle Calibration—Glass nozzles were used for isokinetic sampling on the combined Method 5/Method 202 sampling trains. All nozzles were thoroughly cleaned, visually inspected, and calibrated according to the procedure outlined in Section 3.4.2 of EPA Publication No. 600/4-77-027b.

Temperature Monitor –The thermocouples used in this project was calibrated using the procedures described in Section 3.4.2 of EPA Publication No. 600/4-77-027b. Each temperature sensor was calibrated at a minimum of three points over the anticipated range of use against an NIST-traceable mercury in glass thermometer.

Dry Gas Meter Calibration—The dry gas meter was fully calibrated to determine the volume correction factor prior to field use. Post-test calibration checks were performed as soon as possible after the equipment has been returned to the shop. Pre-and post-test calibrations agreed within ±5 percent. The calibration procedure is documented in Section 3.3.2 of EPA Publication No. 600/4-77-237b.

Moisture Scale Calibration—The scale used at the test location to determine flue gas moisture content was calibrated using a standard set of weights.

4.2 Oxygen, Carbon Dioxide, Nitrogen Oxides, Volatile Organic Compound and Carbon Monoxide Tests, Methods 3A, 7E, 10, and 25A

Dryer/RTO Stack S1—Oxygen, carbon monoxide, nitrogen oxides, volatile organic compounds, and carbon monoxide were determined using EPA Methods 3A, 7E, 10, and 25A. These tests met all of the EPA quality assurance requirements for these methods. The quality assurance data are summarized in Tables 4-6 through 4-10 for the Dryer/RTO stack S1.

Table 4-6. Quality Assurance Results – Dryer/RTO Stack S1.
Oxygen

Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.00		
Mid, %	±2	0.00		
High, %	±2	0.20		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.20	0.10	0.20
Zero Bias (Post), %	±5	0.20	0.20	0.20
Up-scale Bias (Pre), %	±5	0.00	0.10	-0.10
Up-scale Bias (Post), %	±5	0.10	-0.10	0.20
Zero Drift, %	±3	0.00	0.10	0.10
Up-scale Drift, %	±3	0.10	0.20	0.20
Response Time, sec	N/A	35		

Table 4-7. Quality Assurance Results – Dryer/RTO Stack S1 Carbon Dioxide				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.50		
Mid, %	±2	0.30		
High, %	±2	0.20		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.00	0.00	0.00
Zero Bias (Post), %	±5	0.00	0.00	0.00
Up-scale Bias (Pre), %	±5	-0.20	0.10	0.70
Up-scale Bias (Post), %	±5	0.10	0.70	-0.20
Zero Drift, %	±3	0.00	0.00	0.00
Up-scale Drift, %	±3	0.40	0.50	0.90
Response Time, sec	N/A	40		

Table 4-8. Quality Assurance Results – Dryer/RTO Stack 1 Nitrogen Oxides				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.20		
Mid Level, %	±2	-0.20		
High Level, %	±2	0.00		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.10	0.30	0.40
Zero Bias (Post), %	±5	0.30	0.40	0.40
Up-scale Bias (Pre), %	±5	-0.60	-0.80	-0.70
Up-scale Bias (Post), %	±5	-0.80	-0.70	-3.20
Zero Drift, %	±3	0.2	0.20	0.00
Up-scale Drift, %	±3	0.2	0.10	2.40
Response Time, sec	N/A	35		

Table 4-9. Quality Assurance Results – Dryer/RTO Stack S1 Carbon Monoxide				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.10		
Mid, %	±2	0.50		
High, %	±2	0.00		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.10	0.10	0.10
Zero Bias (Post), %	±5	0.10	0.10	-0.10
Up-scale Bias (Pre), %	±5	0.10	-0.20	-0.20
Up-scale Bias (Post), %	±5	-0.20	-0.20	-0.10
Zero Drift, %	±3	0.00	0.00	0.20
Up-scale Drift, %	±3	0.30	0.00	0.10
Response Time, sec	N/A	35		

Table 4-10. Quality Assurance Results – Dryer/RTO Stack S1 VOCs				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.10		
Low, %	±5	0.80		
Mid, %	±5	-0.50		
High, %	±5	0.00		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.00	0.00	0.30
Zero Bias (Post), %	±5	0.00	0.30	0.30
Up-scale Bias (Pre), %	±5	0.00	0.20	0.10
Up-scale Bias (Post), %	±5	0.20	0.10	-0.10
Zero Drift, %	±3	0.00	0.20	0.00
Up-scale Drift, %	±3	0.20	-0.10	-0.10
Response Time, sec	N/A	25		

Dry Hammermill Stack S3—Oxygen, carbon dioxide and volatile organic compounds were determined using EPA Methods 3A and 25A. These tests met all of the EPA quality assurance requirements for these methods. The quality assurance data are summarized in Tables 4-11 through 4-13 for the Dry Hammermill stack S3.

Table 4-11. Quality Assurance Results – Dry Hammermill Stack S3
Oxygen

Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.10		
Mid, %	±2	0.20		
High, %	±2	0.10		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	1.50	0.60	0.80
Zero Bias (Post), %	±5	0.60	0.80	1.00
Up-scale Bias (Pre), %	±5	-0.50	-0.20	-0.10
Up-scale Bias (Post), %	±5	-0.20	-0.10	-0.30
Zero Drift, %	±3	1.00	0.20	0.20
Up-scale Drift, %	±3	0.40	0.00	0.10
Response Time, sec	N/A	30		

Table 4-12. Quality Assurance Results – Dry Hammermill Stack S3
Carbon Dioxide

Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.70		
Mid, %	±2	0.30		
High, %	±2	0.10		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	-0.10	0.00	0.00
Zero Bias (Post), %	±5	0.00	0.00	0.20
Up-scale Bias (Pre), %	±5	-0.30	0.20	0.20
Up-scale Bias (Post), %	±5	0.20	0.20	-0.10
Zero Drift, %	±3	0.10	0.00	0.20
Up-scale Drift, %	±3	0.30	0.00	0.20
Response Time, sec	N/A	35		

Table 4-13. Quality Assurance Results – Dry Hammermill Stack S3 VOCs				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.10		
Low, %	±5	0.10		
Mid, %	±5	0.00		
High, %	±5	-0.20		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.00	-0.10	0.00
Zero Bias (Post), %	±5	-0.20	0.00	0.20
Up-scale Bias (Pre), %	±5	0.00	-0.60	-0.50
Up-scale Bias (Post), %	±5	-0.60	-0.50	-0.10
Zero Drift, %	±3	-0.20	0.10	0.20
Up-scale Drift, %	±3	-0.60	0.10	0.40
Response Time, sec	N/A	30		

Pellet Cooler RCO 1 Stack S5—Oxygen, carbon monoxide, nitrogen oxides, volatile organic compounds, and carbon monoxide were determined using EPA Methods 3A, 7E, 10, and 25A. These tests met all of the EPA quality assurance requirements for these methods. The quality assurance data are summarized in Tables 4-14 through 4-18 for the Pellet Cooler Stack S5.

Table 4-14. Quality Assurance Results – Pellet Cooler RCO 1 Stack S5 Oxygen				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	-0.1		
Mid, %	±2	-0.2		
High, %	±2	0.2		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.1	0.3	0.6
Zero Bias (Post), %	±5	0.3	0.6	0.2
Up-scale Bias (Pre), %	±5	-0.3	-0.1	-0.4
Up-scale Bias (Post), %	±5	-0.1	-0.4	0.1
Zero Drift, %	±3	0.2	0.3	0.5
Up-scale Drift, %	±3	0.3	0.3	0.5
Response Time, sec	N/A	35		

Table 4-15. Quality Assurance Results –Pellet Cooler RCO 1 Stack S5 Carbon Dioxide				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0		
Mid, %	±2	0.6		
High, %	±2	0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.0	0.0
Zero Bias (Post), %	±5	0.0	0.0	0.0
Up-scale Bias (Pre), %	±5	-1.7	-1.6	-2.3
Up-scale Bias (Post), %	±5	-0.7	-2.3	-1.0
Zero Drift, %	±3	0.0	0.0	0.0
Up-scale Drift, %	±3	0.9	1.6	1.3
Response Time, sec	N/A	40		

Table 4-16. Quality Assurance Results – Pellet Cooler RCO 1 Stack S5 VOCs				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	2.1		
Mid, %	±5	-0.7		
High, %	±5	-0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	-0.4	-0.7	-0.3
Zero Bias (Post), %	±5	-0.7	-0.3	-0.6
Up-scale Bias (Pre), %	±5	0.1	0.3	0.8
Up-scale Bias (Post), %	±5	0.3	0.8	-0.8
Zero Drift, %	±3	-0.3	0.4	-0.3
Up-scale Drift, %	±3	0.1	0.5	-1.5
Response Time, sec	N/A	30		

Table 4-17. Quality Assurance Results – Pellet Cooler RCO 1 Stack S5 Nitrogen Oxides				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.1		
Mid Level, %	±2	-0.3		
High Level, %	±2	0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	-0.1	-0.5	0.0
Zero Bias (Post), %	±5	-0.5	0.0	-0.2
Up-scale Bias (Pre), %	±5	0.2	-1.9	-0.6
Up-scale Bias (Post), %	±5	-1.9	-0.6	-0.4
Zero Drift, %	±3	0.4	0.5	0.1
Up-scale Drift, %	±3	2.1	1.3	0.2
Response Time, sec	N/A	35		

Table 4-18 Quality Assurance Results – Pellet Cooler RCO 1 Stack S5 Carbon Monoxide				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0		
Mid, %	±2	-0.6		
High, %	±2	0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	1.0	0.6
Zero Bias (Post), %	±5	1.0	0.6	0.4
Up-scale Bias (Pre), %	±5	2.5	1.8	2.6
Up-scale Bias (Post), %	±5	1.8	2.6	1.9
Zero Drift, %	±3	1.0	0.4	0.1
Up-scale Drift, %	±3	1.6	0.8	0.7
Response Time, sec	N/A	30		

Pellet Cooler RCO 2 Stack S6—Oxygen, carbon monoxide, nitrogen oxides, volatile organic compounds, and carbon monoxide were determined using EPA Methods 3A, 7E, 10, and 25A. These tests met all of the EPA quality assurance requirements for these methods. The quality assurance data are summarized in Tables 4-19 through 4-23 for the Pellet Cooler stack S6.

Table 4-19 Quality Assurance Results – Pellet Cooler RCO 2 Stack S6
Oxygen

Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.0		
Mid, %	±2	0.1		
High, %	±2	0.2		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.1	0.0	0.0
Zero Bias (Post), %	±5	0.0	0.0	0.0
Up-scale Bias (Pre), %	±5	-0.1	-0.3	-0.7
Up-scale Bias (Post), %	±5	-0.3	-0.7	-0.2
Zero Drift, %	±3	0.0	0.0	0.1
Up-scale Drift, %	±3	0.1	0.4	0.5
Response Time, sec	N/A	35		

Table 4-20. Quality Assurance Results –Pellet Cooler RCO 2 Stack S6
Carbon Dioxide

Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	-0.3		
Mid, %	±2	0.2		
High, %	±2	-0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.4	0.1	-0.5
Zero Bias (Post), %	±5	0.1	-0.5	1.1
Up-scale Bias (Pre), %	±5	-0.3	-0.1	-0.2
Up-scale Bias (Post), %	±5	-0.1	-0.2	0.0
Zero Drift, %	±3	0.3	0.6	1.6
Up-scale Drift, %	±3	0.2	0.1	0.2
Response Time, sec	N/A	30		

Table 4-21. Quality Assurance Results – Pellet Cooler RCO 2 Stack S6 VOCs				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	3.4		
Mid, %	±5	-0.1		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	-0.4	-0.3	0.2
Zero Bias (Post), %	±5	-0.3	0.2	0.1
Up-scale Bias (Pre), %	±5	-0.1	-0.5	-0.2
Up-scale Bias (Post), %	±5	-0.5	-0.2	0.1
Zero Drift, %	±3	0.2	0.4	-0.1
Up-scale Drift, %	±3	-0.5	0.4	0.3
Response Time, sec	N/A	25		

Table 4-22. Quality Assurance Results – Pellet Cooler RCO 2 Stack S6 Nitrogen Oxides				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.0		
Mid Level, %	±2	0.0		
High Level, %	±2	0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.4	0.3	0.1
Zero Bias (Post), %	±5	0.3	0.1	0.0
Up-scale Bias (Pre), %	±5	-0.2	-0.3	-0.6
Up-scale Bias (Post), %	±5	-0.3	-0.6	-0.1
Zero Drift, %	±3	0.2	0.2	0.1
Up-scale Drift, %	±3	0.0	0.3	0.4
Response Time, sec	N/A	30		

Table 4-23. Quality Assurance Results – Pellet Cooler RCO 2 Stack S6 Carbon Monoxide				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±2	0.0		
Mid, %	±2	0.9		
High, %	±2	0.2		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.3	0.2	0.4
Zero Bias (Post), %	±5	0.2	0.4	0.1
Up-scale Bias (Pre), %	±5	-0.4	-0.5	-0.5
Up-scale Bias (Post), %	±5	-0.5	-0.5	0.2
Zero Drift, %	±3	0.1	0.2	0.3
Up-scale Drift, %	±3	0.2	0.0	0.7
Response Time, sec	N/A	35		

4.3 HAPs Tests, Method 320 and Method 321

Air Control Techniques, P.C. performed daily quality assurance checks. Background scans and calibration transfer standard (CTS) spectra tests were performed prior to and following each test series. An analyte spike was performed using a methanol/SF_6 calibration standard.

The flow rate at the outlet of the pump was measured while the probe was plugged to verify that the sampling system was leak free. The flow rate was less than 200 ml/min. The FTIR cell was tested for leaks by closing the value while the cell was at minimum absolute pressure. The cell pressure remained constant for at least two minutes.

Background Spectra—Sample spectra were divided point-by-point by a 128-scan background recorded using nitrogen. The single beam spectrum was constantly monitored, and a new background was generated at the beginning and end of each test day or when residual and absorbance spectra indicated component build-up on the optical surfaces or alignment-related baseline shifts.

Calibration Transfer Standards and Absorption Path Lengths—A cylinder of 99.79 ppm ethylene in nitrogen served as the CTS. A CTS gas was introduced to the FTIR and allowed to reach steady state. The CTS was used to determine the effective cell path length based on comparisons of the “field” CTS spectra to a laboratory CTS spectrum recorded by MIDAC. As shown in Table 4-24, the maximum path length deviation was less than 5% of the average during the test program.

Table 4-24. CTS Results Summary							
Source	Date	Time	CTS (m)	Cell Pressure (psi)	Cell Temp (°C)	Deviation from Previous	Deviation from Average
Dry Hammermill	12/4/18	0736	8.19	14.42	181	NA	0.1%
	12/4/18	1459	8.20	14.37	181	-0.1%	-0.1%
Dryer/RTO	12/5/18	736	8.034	14.490	181	NA	0.1%
	12/5/18	1403	8.055	14.43	181	-0.3%	-0.1%
Pellet Cooler RCO 1	3/7/19	748	8,12	14.86	181	NA	0.0
Pellet Cooler RCO 2	1/15/19	730	7.98	14.70	181	NA	0.0

Minimum Detectable Concentration—EPA Method 320 and the equivalent ASTM Standard D6348-03 specify a number of analytical uncertainty parameters that the analyst may calculate to characterize the FTIR system performance. Emissions were calculated using the detection limit for this run. The MDL were calculated as follows.

$$\text{MDL (ppm)} = \text{SEC x 2}$$

Analytes with a SEC value that is twice the measured concentration are classified as a non-detectable concentration, and the reported value is 0.0. The MDL values for each test are listed in Appendix C of each of the three appendices.

QA Review—An analysis of possible analytical interferents (e.g., H_2O, CO_2, CO, pinenes) for this gas stream was determined prior to the test program. Reference spectra of the possible interferents were entered into the modeling program to minimize analytical uncertainty and detection limits of the target compounds.

Water spectra were recorded onsite with the FTIR instruments that were used for the field testing to simulate the actual gas stream moisture. The recorded water spectra were included as the primary spectra for modeling.

APPENDIX I-A
Method 5-Method 202 Data Sheets

Method 1 - Air Control Techniques, P.C.

Date: 12/3/2018

Client	Enviva
Job #	2333
Plant Name	Enviva, Greenwood
City, State	Greenwood, SC
Sampling Location	RTO Dryer
No. of Ports Available	4
No. of Ports Used	4
Port Inside Diameter, Inches	4
Distance From Far Wall To Outside Of Port, Inches	106
Nipple Length And/Or Wall Thickness, Inches	6
Depth Of Stack Or Duct, Inches	100
Stack Or Duct Width (if rectangular), Inches	
Equiv. Diameter = 2DW/(D+W), Inches	
Stack/Duct Area, Square Feet (πR^2 or L x W)	54.542

	Upstream	Downstream
Distance to Flow Disturbances, feet	30	20
Diameters	3.6	2.4

Diameters			
Velocity	Up	Down	Particulate
12	>7.00	>1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Note: If more than 8 and 2 diameters and duct is greater than 12" and less than 24", use 8 or 9 points.

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	2.1	2.1	8 1/8
2	6.7	6.7	12 3/4
3	11.8	11.8	17 6/8
4	17.7	17.7	23 6/8
5	25.0	25	31
6	35.6	35.6	41 5/8

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	1106	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											99.9

Location of Points in Rectangular Stacks or Ducts

	3	4	5	6	7	8	9	10	11	12
1	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	50	37.5	30.0	25	21.4	18.8	16.7	15.0	13.6	12.5
3	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4		87.5	70.0	58.3	50	43.8	28.9	35.0	31.8	29.2
5			90.0	75	64.3	56.3	50	45.0	40.9	37.5
6				91.7	78.6	68.8	61.1	55.0	50	45.8
7					92.9	81.3	72.2	65.0	59.1	54.2
8						93.8	83.3	75.0	68.2	62.5
9							94.4	85.0	77.3	70.8
10								95.0	86.4	79.2
11									95.5	87.5
12										95.8

0.0000 - 0.0625 - 0
0.0625 - 0.1875 - 1/8
0.1875 - 0.3125 - 1/4
0.3125 - 0.4375 - 3/8
0.4375 - 0.5625 - 1/2
0.5625 - 0.6875 - 5/8
0.6875 - 0.8125 - 3/4
0.8125 - 0.9375 - 7/8
0.9375 - 1.0000 - 1

PRELIMINARY INFORMATION

Plant Name	Enviva, Greenwood	**Date**	11/28/2018
City, State	Greenwood, SC	**Project #**	2333
Personnel	TH, JG, EG	**Pitot Identification**	6H
Test Location	Dryer	**Pitot Coefficient** (Cp)	0.84

Stack Dimensions			*Pressures*		
Length of Stack (D)	100	in	**Barometric Pressure** (Pb)	29.9	in Hg
Width of Stack (W)		in	**Static Pressure** (Pg)	-0.385	in H_2O
Area of Stack (As)	**54.542**	ft^2	**Absolute Stack Pressure** (Ps)	**29.87**	in Hg

Stack Gas Composition

Carbon Dioxide (%CO_2)	7.0	**Moisture Content** (Bws)	35.00	%
Oxygen (%O_2)	14.0	**Dry Molecular Weight** (Md)	**29.68**	lb/lb-mole
Nitrogen Concentration (%N_2)	**79.0**	**Wet Molecular Weight** (Ms)	**25.59**	lb/lb-mole

Preliminary Traverse

	Pitot Tube Leak Checks			A	B	
	Port	Point	Angle, °	Δp, in H_20	Temp. °F	ft/sec
Start	A	1	1	0.58	261	52.88
		2	0	0.57	269	52.94
		3	0	0.60	254	53.76
		4	3	0.40	244	43.58
		5	0	0.51	252	49.49
		6	0	0.83	268	63.84
	B	1	0	0.55	260	51.68
		2	0	0.66	260	56.45
		3	1	1.15	260	74.74
		4	3	0.66	260	56.45
		5	2	0.43	260	45.70
		6	0	0.32	260	39.42
End						

Average Angle, Degrees	**0.83**
Average Velocity Pressure	**0.5879**
	259.0
Average Stack Gas Velocity (ft/sec)	**53.40**
Actual Cubic Feet per minute (ACFM)	**174,743**
Dry Standard Cubic Feet per Minute (DSCFM)	**83,276**

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-1
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	Dryer

Date	12/5/18		Filter ID 1
Start	8:40		Filter ID 2
Stop	9:47		Filter ID 3
Meterbox ID	909033	TH, JG, EC	Operator*
$\Delta H_@$	1.898		Stack TC ID
Gamma (Y)	**0.9744**		Tedlar Bags
Ideal Nozzle	0.299		Orsat Pump
Nozzle Dia.	**0.302**		Probe Length/Type
Nozzle ID	M22	3.16	K Factor
Probe ID	4A		Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	8
Post Leak Check, ACFM	0.00	0.020	9

	A	B
Pitot Pre Leak Check	5	6
Pitot Post Leak Check	4	4

Ambient Temperature	33
Static Pressure, In. H_2O	-0.39
Barometric Pressure, In. Hg	29.97

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	602.6	Moisture, %	39.49
CO_2 %	7.89	O_2 %	12.53

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	314.658	0.45	43	260	1.5	260	258	41	70	4	1.452	104.7	104.7	LC 1
2	2.5	2:30	316.35	0.59	43	249	1.9	251	254	37	71	5	1.933	91.8	97.8	
3	2.5	5:0	318.06	0.55	44	253	1.8	258	257	37	71	5	1.793	100.7	98.8	
4	2.5	7:30	319.87	0.4	45	244	1.3	253	254	39	72	4	1.324	105.9	100.4	LC-2
5	2.5	10:0	321.51	0.35	45	248	1.2	253	253	41	69	4	1.153	108.7	101.8	
6	2.5	12:30	323.08	0.3	45	257	0.98	253	255	41	69	3.5	0.976	106.5	102.5	
1	2.5	15:0	324.496	0.55	45	257	1.8	257	255	42	69	5	1.791	93.2	101.0	LC-3
2	2.5	17:30	326.17	0.59	46	264	1.9	257	256	43	69	5	1.903	93.8	100.0	
3	2.5	20:0	327.91	0.62	46	252	2	258	256	44	70	6	2.032	99.1	99.9	
4	2.5	22:30	329.81	0.71	47	258	2.3	258	256	45	73	7	2.312	93.9	99.2	LC-4
5	2.5	25:0	331.73	0.7	47	247	2.3	257	256	48	75	7	2.313	96.8	98.9	
6	2.5	27:30	333.71	0.61	47	244	2	257	255	51	77	6	2.024	105.6	99.5	
1	2.5	30:0	335.734	0.4	47	246	1.3	246	245	48	69	4	1.325	106.7	100.0	LC-5
2	2.5	32:30	337.39	0.45	48	262	1.5	245	255	44	69	4.5	1.463	100.0	100.0	
3	2.5	35:0	339.02	0.72	48	247	2.4	253	250	44	71	5	2.389	90.9	99.3	
4	2.5	37:30	340.91	0.77	48	258	2.5	253	247	42	70	6	2.510	106.4	99.8	LC-6
5	2.5	40:0	343.18	0.78	48	243	2.6	250	249	42	71	6	2.596	101.0	99.9	
6	2.5	42:30	345.37	0.71	48	239	2.4	253	250	42	71	6	2.376	93.6	99.5	
1	2.5	45:0	347.314	0.46	49	261	1.5	253	257	42	70	5	1.496	100.2	99.6	LC-7
2	2.5	47:30	348.97	0.57	49	254	1.9	250	249	41	72	5	1.876	95.8	99.4	
3	2.5	50:0	350.74	0.6	49	257	2	254	259	42	72	5	1.965	104.2	99.6	
4	2.5	52:30	352.71	0.42	49	269	1.4	252	257	42	72	5	1.352	101.9	99.7	LC-8
5	2.5	55:0	354.31	0.37	50	241	1.2	251	245	42	72	5	1.243	101.5	99.8	
6	2.5	57:30	355.84	0.3	50	243	1.1	248	250	43	72	5	1.006	107.4	100.0	
		1:00:0	357.296													

	Total	Averages				Maximum and Minimum Values				
Vm	42.638	0.530	46.9	252.2	1.783	260	259	51	77	7
Vmstd	43.536	in. H_2O	°F	°F	in H_2O	245	245	37	69	

Run ISO
106.4
%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-2
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	Dryer

Date	12/5/18		Filter ID 1
Start	10:47		Filter ID 2
Stop	11:57		Filter ID 3
Meterbox ID	909033	TH, JG, EC	Personnel
ΔH@	1.898	4B	Stack TC ID
Gamma (Y)	**0.9744**		Tedlar Bags
Ideal Nozzle	0.313		Orsat Pump
Nozzle Dia.	**0.302**		Probe Length/Type
Nozzle ID	4-3	2.91	K Factor
Probe ID	4B	0	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	9
Post Leak Check, ACFM	0.00	0.020	11

	A	B
Pitot Pre Leak Check	3	4.5
Pitot Post Leak Check	5	4

Ambient Temperature	49
Static Pressure, In. H_2O	-0.39
Barometric Pressure, In. Hg	29.97

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	519.1	Moisture, %	38.68
CO_2 %	7.56	O_2 %	12.78

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	358.986	0.4	50	255	1.2	250	245	43	70	3	1.166	104.5	104.5	LC 1
2	2.5	2:30	360.51	0.46	50	248	1.4	250	242	40	69	3	1.356	103.8	104.2	
3	2.5	5:0	362.14	0.5	51	57	2	267	258	39	69	4	2.021	98.1	103.5	
4	2.5	7:30	364.02	0.76	51	247	2.2	264	255	41	70	4	2.243	98.5	101.6	LC-2
5	2.5	10:0	366.01	0.84	51	247	2.5	243	256	41	70	5	2.478	101.8	101.4	
6	2.5	12:30	368.17	0.51	52	238	1.5	256	254	44	72	3.5	1.526	100.3	101.3	
1	2.5	15:0	369.847	0.52	53	255	1.5	242	257	44	70	3.5	1.525	100.1	101.2	LC-3
2	2.5	17:30	371.52	0.58	53	246	1.75	241	253	46	75	4	1.723	99.2	100.9	
3	2.5	20:0	373.28	0.63	53	255	2	253	257	46	79	4.5	1.847	108.9	101.8	
4	2.5	22:30	375.28	0.675	54	265	1.95	251	256	48	79	4.5	1.954	90.9	100.7	LC-4
5	2.5	25:0	377	0.72	54	255	2.2	258	259	49	78	5	2.114	105.8	101.1	
6	2.5	27:30	379.08	0.75	54	244	2.3	253	259	50	78	5	2.235	99.9	101.0	
1	2.5	30:0	381.1	0.54	54	248	1.6	245	251	50	79	4	1.600	104.4	101.3	LC-5
2	2.5	32:30	382.89	0.61	54	245	1.8	254	257	49	78	4	1.818	92.6	100.6	
3	2.5	35:0	384.58	0.56	54	267	1.6	232	258	48	79	4	1.618	102.2	100.8	
4	2.5	37:30	386.34	0.45	54	243	1.3	256	252	48	76	4	1.345	103.1	100.9	LC-6
5	2.5	40:0	387.96	0.42	55	258	1.2	257	262	47	71	3.5	1.232	94.3	100.6	
6	2.5	42:30	389.38	0.28	55	238	0.85	256	257	46	71	3	0.845	103.9	100.7	
1	2.5	45:0	390.677	0.3	56	242	0.9	250	252	46	71	3	0.903	101.8	100.8	LC-7
2	2.5	47:30	391.99	0.22	56	250	0.65	232	251	43	72	2.5	0.655	96.4	100.7	
3	2.5	50:0	393.05	0.21	56	263	0.61	252	255	43	72	2.5	0.614	109.0	101.0	
4	2.5	52:30	394.21	0.3	56	241	0.69	257	256	43	74	2.5	0.905	97.5	100.8	LC-8
5	2.5	55:0	395.47	0.21	57	247	0.63	253	256	43	73	2	0.629	90.9	100.6	
6	2.5	57:30	396.45	0.2	57	238	0.61	253	255	43	74	2	0.607	101.8	100.6	
		1:00:0	397.528													

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	38.542	0.465	53.8	241.3	1.456	267	262	50	79	5	99.3
Vmstd	38.800	in. H_2O	°F	°F	in H_2O	232	242	39	69		%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-3
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	Dryer
Date	12/5/18
Start	12:15
Stop	13:27
Meterbox ID	909033
ΔH@	1.898
Gamma (Y)	**0.9744**
Ideal Nozzle	0.319
Nozzle Dia.	**0.302**
Nozzle ID	M22
Probe ID	4A

	Filter ID 1
	Filter ID 2
	Filter ID 3
TH, JG, EC	Personnel
4A	Stack TC ID
	Tedlar Bags
	Orsat Pump
	Probe Length/Type
3.06	K Factor
0	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	9
Post Leak Check, ACFM	0.00	0.020	10.5

	A	B
Pitot Pre Leak Check	3	6
Pitot Post Leak Check	5.4	6.5

Ambient Temperature	46
Static Pressure, In. H_2O	-0.39
Barometric Pressure, In. Hg	29.97

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	479.9	Moisture, %	37.17
CO_2 %	7.12	O_2 %	13.40

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	397.799	0.32	58	245	0.89	254	227	49	69	3	0.983	98.5	98.5	LC 1
2	2.5	2:30	399.13	0.23	59	266	0.62	260	256	43	79	2	0.688	91.9	95.6	
3	2.5	5:0	400.17	0.22	59	254	0.61	260	253	43	76	2	0.670	99.5	96.8	
4	2.5	7:30	401.28	0.22	59	247	0.61	256	252	43	73	2	0.677	94.5	96.3	LC-2
5	2.5	10:0	402.34	0.2	59	262	0.54	261	253	43	69	2	0.602	99.2	96.8	
6	2.5	12:30	403.39	0.2	60	247	0.56	260	256	44	69	2	0.616	95.4	96.6	
1	2.5	15:0	404.412	0.58	61	248	1.6	250	254	45	72	4	1.789	100.3	97.4	LC-3
2	2.5	17:30	406.24	0.57	61	257	1.6	254	236	43	70	4	1.731	91.4	96.4	
3	2.5	20:0	407.88	0.6	61	239	1.7	255	250	44	69	4	1.869	90.1	95.5	
4	2.5	22:30	409.56	0.45	62	247	1.3	256	256	45	71	3.5	1.388	94.4	95.4	LC-4
5	2.5	25:0	411.08	0.38	62	266	1	256	258	46	69	3	1.143	98.9	95.7	
6	2.5	27:30	412.525	0.335	62	244	1	253	256	46	69	3	1.040	97.7	95.9	
1	2.5	30:0	413.886	0.52	63	256	1.4	257	257	47	70	4	1.590	92.5	95.5	LC-5
2	2.5	32:30	415.48	0.56	63	240	1.6	256	257	47	72	4	1.750	93.5	95.4	
3	2.5	35:0	417.17	0.72	64	247	2.2	255	258	48	72	5	2.231	93.1	95.2	
4	2.5	37:30	419.07	0.72	64	251	1.9	260	255	50	75	5	2.215	98.2	95.4	LC-6
5	2.5	40:0	421.07	0.62	64	247	1.9	258	257	51	77	5	1.919	106.6	96.3	
6	2.5	42:30	423.09	0.63	64	244	2	256	255	51	79	5	1.959	96.4	96.3	
1	2.5	45:0	424.934	0.35	64	245	1.1	251	242	48	74	3.5	1.086	106.1	96.7	LC-7
2	2.5	47:30	426.45	0.56	64	244	1.7	245	247	47	74	4	1.744	98.6	96.9	
3	2.5	50:0	428.23	0.75	64	253	2.3	254	254	46	73	5.5	2.303	97.4	96.9	
4	2.5	52:30	430.25	0.85	64	251	2.6	255	254	47	73	5.5	2.614	97.8	96.9	LC-8
5	2.5	55:0	432.41	0.85	64	254	2	251	232	47	75	5	2.601	92.0	96.6	
6	2.5	57:30	434.44	0.78	65	251	2.4	257	247	46	74	5	2.405	92.5	96.4	
	2.5	1:00:0	436.401													

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	38.602	0.485	62.1	250.2	1.464	261	258	51	79	6	94.4
Vmstd	38.240	in. H_2O	°F	°F	in H_2O	245	227	43	69		%

Run Notes:

Method 4 - Air Control Techniques, P.C.

Date: 12/5/2018

Source Information

Plant Name	Enviva, Greenwood	Job #	2333
City, State	Greenwood, SC	Personnel	TTB, JG
Sampling Location	Dryer	Balance	

Sampling Information

Run Number	M5/202-1	M5/202-2	M5/202-3	
Filter Identification	14653	14654	14655	
Sampling Date	12/5/2018	12/5/2018	12/5/2018	

Moisture Data

Impinger 1 - Empty				
Final Weight, grams	961.8	870.3	850.6	
Initial Weight, grams	396.8	400.1	397.1	
Condensed Water, grams	565.0	470.2	453.5	
Impinger 2 - Empty				
Final Weight, grams	610.0	611.6	588.7	
Initial Weight, grams	592.8	593.2	580.8	
Condensed Water, grams	17.2	18.4	7.9	
Impinger 3				
Final Weight, grams	696.5	777.2	704.2	
Initial Weight, grams	688.2	760.4	696.5	
Condensed Water, grams	8.3	16.8	7.7	
Silica Gel				
Final Weight, grams	832.7	841.7	821.9	
Initial Weight, grams	820.6	828.0	811.1	
Adsorbed Water, grams	12.1	13.7	10.8	
Total Water, grams	**602.6**	**519.1**	**479.9**	

Sampling Train Purge Data

Purge Start	1008	1211	1345	
Purge End	1108	1311	1445	

Plant Name	Enviva, Greenwood	**Project #**	2333
City, State	Greenwood, SC	**Test Location**	Dryer

Parameter	Nomenclature/ Units	M5/202-1	M5/202-2	M5/202-3	Averages
Date		12/5/2018	12/5/2018	12/5/2018	
Run Time	θ, minutes	60	60	60	
Nozzle Diameter	inches	0.302	0.302	0.302	
Stack Area	As - sq. ft.	54.54	54.54	54.54	
Production Rate	ODT/hour	67.0	64.1	64.7	65.3
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	
Meter Calibration Factor	Y	0.9744	0.9744	0.9744	
Barometric Pressure, inches Hg	Bp - in Hg	29.97	29.97	29.97	
Static Pressure	Pg - in. H_2O	-0.39	-0.39	-0.39	
Stack Pressure	Ps - in.Hg	29.94	29.94	29.94	
Meter Box Pressure Differential	Δ H - in. H_2O	1.78	1.46	1.46	
Average Velocity Head	Δ P - in. H_2O	0.5303	0.4654	0.4851	
Volume of Gas Sampled	V_m - cu. ft.	42.638	38.542	38.602	
Dry Gas Meter Temperature	T_m - °F	46.9	53.8	62.1	
Stack Temperature	T_s - °F	252.2	241.3	250.2	247.9
Stack Temperature	T_s - °C	122.3	116.3	121.2	
Liquid Collected	grams	602.6	519.1	479.9	
Oxygen	O_2 %	12.53	12.78	13.40	12.90
Carbon Dioxide	CO_2 %	7.89	7.56	7.12	7.52
Nitrogen	N_2 %	79.58	79.66	79.48	
Volume of Gas Sampled, Dry	$V_{m(std)}$ - cu. ft.	43.536	38.800	38.240	40.192
Volume of Gas Sampled, Dry	$V_{m(std)}$ - cu. M	1.233	1.099	1.083	
Volume of Gas Sampled, Dry	$V_{m(std)}$ - N cu. M	1.148	1.023	1.008	
Volume of Water Vapor	$V_{w(std)}$ - cu. ft.	28.413	24.476	22.627	
Moisture Content	% H_2O	39.49	38.68	37.17	38.45
Saturation Moisture	% H_2O	100.00	100.00	100.00	
Dry Mole Fraction	Mfd	0.605	0.613	0.628	
Gas Molecular Weight, Dry	Md	29.76	29.72	29.68	
Gas Molecular Weight, Wet	Ms	25.12	25.19	25.34	
Gas Velocity	vs - ft./sec.	50.89	47.24	48.40	48.84
Gas Velocity	m/sec.	15.51	14.40	14.75	
Volumetric Air Flow, Actual	Q_{aw} - ACFM	166,531	154,608	158,373	159,837
Volumetric Air Flow, Actual	m^3/min	4,716	4,378	4,485	
Volumetric Air Flow, Standard	Q_{sd} - DSCFM	74,759	71,425	74,025	73,403
Volumetric Air Flow, Standard	Nm^3/min	1,971	1,883	1,952	
Isokinetic Sampling Rate	I %	106.4	99.3	94.4	
FILTERABLE PARTICULATE MATTER EMISSIONS					
Filterable Particulate Catch	mg	2.5	1.4	0.5	
Concentration	gr/DSCF	0.0009	0.0006	0.0002	0.0005
Mass Emission Rate	lb/hr	**0.57**	**0.34**	**0.13**	**0.35**
Mass Emission Rate	lbs./ODT	**0.0085**	**0.0053**	**0.0020**	**0.0053**
CONDENSABLE PARTICULATE MATTER EMISSIONS					
Condensable Particulate Catch	mg	7.5	6	5.2	
Concentration	gr/DSCF	0.0027	0.0024	0.0021	0.0024
Mass Emission Rate	lbs./hr	**1.70**	**1.46**	**1.33**	**1.50**
Mass Emission Rate	lbs./ODT	**0.025**	**0.023**	**0.021**	**0.023**
TOTAL PARTICULATE MATTER EMISSIONS					
Mass Emission Rate	lb/hr	**2.3**	**1.8**	**1.5**	**1.8**
Mass Emission Rate	lbs./ODT	**0.034**	**0.028**	**0.023**	**0.028**

Method 1 - Air Control Techniques, P.C.

Date: 12/3/2018

Client	Enviva
Job #	2333
Plant Name	Enviva, Greenwood
City, State	Greenwood, SC
Sampling Location	Dry Hammermill

No. of Ports Available		4
No. of Ports Used		4
Port Inside Diameter, Inches		4
Distance From Far Wall To Outside Of Port, Inches		68.5
Nipple Length And/Or Wall Thickness, Inches		6
Depth Of Stack Or Duct, Inches		62.5
Stack Or Duct Width (if rectangular), Inches		
Equiv. Diameter = 2DW/(D+W), Inches		
Stack/Duct Area, Square Feet (πR^2 or L x W)		21.305
	Upstream	Downstream
Distance to Flow Disturbances, feet	5.7	25
Diameters	1.09	4.8

Diameters			
Velocity	Up	Down	Particulate
12	>7.00	>1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Note: If more than 8 and 2 diameters and duct is greater than 12" and less than 24", use 8 or 9 points.

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	2.1	1.3125	7 3/8
2	6.7	4.1875	10 1/4
3	11.8	7.375	13 3/8
4	17.7	11.0625	17 1/8
5	25.0	15.625	21 3/4
6	35.6	22.25	28 2/8

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	1106	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											99.9

Location of Points in Rectangular Stacks or Ducts

	3	4	5	6	7	8	9	10	11	12
1	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	50	37.5	30.0	25	21.4	18.8	16.7	15.0	13.6	12.5
3	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4		87.5	70.0	58.3	50	43.8	28.9	35.0	31.8	29.2
5			90.0	75	64.3	56.3	50	45.0	40.9	37.5
6				91.7	78.6	68.8	61.1	55.0	50	45.8
7					92.9	81.3	72.2	65.0	59.1	54.2
8						93.8	83.3	75.0	68.2	62.5
9							94.4	85.0	77.3	70.8
10								95.0	86.4	79.2
11									95.5	87.5
12										95.8

0.0000 - 0.0625 - 0
0.0625 - 0.1875 - 1/8
0.1875 - 0.3125 - 1/4
0.3125 - 0.4375 - 3/8
0.4375 - 0.5625 - 1/2
0.5625 - 0.6875 - 5/8
0.6875 - 0.8125 - 3/4
0.8125 - 0.9375 - 7/8
0.9375 - 1.0000 - 1

PRELIMINARY INFORMATION

Plant Name	Enviva, Greenwood	**Date**	11/28/2018
City, State	Greenwood, SC	**Project #**	2333
Personnel	TH, JG, EG	**Pitot Identification**	3A
Test Location	DHM	**Pitot Coefficient** (Cp)	0.84

Stack Dimensions			*Pressures*		
Length of Stack (D)	62.5	in	**Barometric Pressure** (Pb)	29.9	in Hg
Width of Stack (W)		in	**Static Pressure** (Pg)	-0.31	in H_2O
Area of Stack (As)	**21.305**	ft^2	**Absolute Stack Pressure** (Ps)	**29.88**	in Hg

Stack Gas Composition

Carbon Dioxide (%CO_2)	0.0	**Moisture Content** (Bws)	4.00	%
Oxygen (%O_2)	20.9	**Dry Molecular Weight** (Md)	**28.84**	lb/lb-mole
Nitrogen Concentration (%N_2)	**79.1**	**Wet Molecular Weight** (Ms)	**28.40**	lb/lb-mole

Preliminary Traverse

Pitot Tube Leak Checks A B

	Port	Point	Angle, °	Δp, in H_2O	Temp. °F	ft/sec
Start	A	1	5	0.82	99	52.78
		2	0	1.05	99	59.72
		3	2	1.10	99	61.13
		4	2	0.83	99	53.10
		5	0	0.95	99	56.81
		6	-8	1.25	99	65.16
	B	1	19	1.25	99	65.16
		2	4	1.35	99	67.72
		3	0	1.15	99	62.50
		4	5	1.10	98	61.07
		5	2	1.30	99	66.45
		6	2	1.20	99	63.85
End						

Average Angle, Degrees **4.08**

Average Velocity Pressure **1.1059**

98.9

Average Stack Gas Velocity (ft/sec) **61.29**

Actual Cubic Feet per minute (ACFM) **78,345**

Dry Standard Cubic Feet per Minute (DSCFM) **70,949**

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-1
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	DHM

Date	12/4/18		Filter ID 1
Start	9:15		Filter ID 2
Stop	10:23		Filter ID 3
Meterbox ID	909033	TH, JG, EC	Operator*
ΔH@	1.898		Stack TC ID
Gamma (Y)	**0.9744**		Tedlar Bags
Ideal Nozzle	0.201		Orsat Pump
Nozzle Dia.	**0.206**		Probe Length/Type
Nozzle ID	M11	1.72	K Factor
Probe ID	3A		Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	6
Post Leak Check, ACFM	0.00	0.020	8

	A	B
Pitot Pre Leak Check	4	5
Pitot Post Leak Check	3	7

Ambient Temperature	40
Static Pressure, In. H_2O	-0.31
Barometric Pressure, In. Hg	29.97

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	35.7	Moisture, %	3.94
CO_2 %	0.12	O_2 %	20.95

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	183.434	0.87	60	99	1.5	261	235	34	69	3	1.545	103.3	103.3	LC 1
2	2.5	2:30	185.21	0.88	60	100	1.6	255	245	41	74	3	1.560	94.3	98.8	
3	2.5	5:0	186.84	0.95	60	98	1.7	261	259	41	73	3	1.690	100.7	99.4	
4	2.5	7:30	188.65	0.96	60	100	1.7	261	256	42	73	3.5	1.701	103.1	100.4	LC-2
5	2.5	10:0	190.51	0.9	61	102	1.6	260	255	44	72	3	1.592	97.8	99.9	
6	2.5	12:30	192.22	0.6	61	99	1.1	260	259	46	72	2	1.067	109.7	101.2	
1	2.5	15:0	193.791	0.97	61	99	1.7	255	254	47	71	3	1.728	102.8	101.5	LC-3
2	2.5	17:30	195.66	0.9	65	99	1.6	257	255	49	71	3	1.613	99.7	101.2	
3	2.5	20:0	197.42	0.95	67	102	1.7	257	251	50	71	3	1.700	100.8	101.2	
4	2.5	22:30	199.25	0.85	65	104	1.5	255	256	50	74	3	1.510	108.4	101.9	LC-4
5	2.5	25:0	201.103	0.78	65	101	1.4	260	259	49	75	3	1.394	100.3	101.8	
6	2.5	27:30	202.75	0.56	65	94	1	259	254	46	75	2.5	1.013	108.4	102.2	
1	2.5	30:0	204.269	0.99	65	97	1.8	260	254	44	75	3.5	1.784	95.5	101.6	LC-5
2	2.5	32:30	206.04	0.92	65	100	1.6	260	253	43	74	3	1.645	101.5	101.6	
3	2.5	35:0	207.85	0.9	65	102	1.6	255	254	43	74	3	1.605	100.5	101.6	
4	2.5	37:30	209.62	0.82	65	104	1.5	255	256	44	72	3	1.457	106.6	101.9	LC-6
5	2.5	40:0	211.41	0.7	65	105	1.2	255	254	45	75	2.5	1.242	106.4	102.1	
6	2.5	42:30	213.06	0.57	65	106	1	260	257	45	74	2.5	1.010	103.7	102.2	
1	2.5	45:0	214.511	0.9	65	106	1.6	260	256	46	75	3	1.596	102.5	102.2	LC-7
2	2.5	47:30	216.31	0.92	65	106	1.6	255	256	44	73	3	1.629	95.8	101.9	
3	2.5	50:0	218.01	0.95	68	105	1.7	256	255	45	72	3	1.695	100.9	101.8	
4	2.5	52:30	219.84	0.98	68	106	1.7	256	255	46	72	3	1.745	93.4	101.4	LC-8
5	2.5	55:0	221.56	0.95	67	107	1.7	255	257	45	72	3	1.685	92.4	101.0	
6	2.5	57:30	223.23	0.82	67	107	1.5	255	256	45	72	3	1.454	103.6	101.1	
		1:00:0	224.971													

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	41.537	0.853	64.2	102.0	1.525	261	259	50	75	4	101.1
Vmstd	40.991	in. H_2O	°F	°F	in H_2O	255	235	34	69		%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-2
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	DHM
Date	12/4/18
Start	11:17
Stop	12:25
Meterbox ID	909033
ΔH@	1.898
Gamma (Y)	**0.9744**
Ideal Nozzle	0.213
Nozzle Dia.	**0.206**
Nozzle ID	M12
Probe ID	3B
Filter ID 1	
Filter ID 2	
Filter ID 3	
Personnel	TH, JG, EC
Stack TC ID	3B
Tedlar Bags	
Orsat Pump	
Probe Length/Type	
K Factor	1.78
Umbilicle ID	0

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	7
Post Leak Check, ACFM	0.00	0.020	9

	A	B
Pitot Pre Leak Check	4	3
Pitot Post Leak Check	5	4

Ambient Temperature	49
Static Pressure, In. H_2O	-0.31
Barometric Pressure, In. Hg	29.97

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	39.7	Moisture, %	4.22
CO_2 %	0.12	O_2 %	20.95

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	225.602	0.99	65	100	1.8	261	254	54	71	3.5	1.774	102.1	102.1	LC 1
2	2.5	2:30	227.49	1.2	65	100	2.1	261	258	48	69	4.5	2.148	93.4	97.5	
3	2.5	5:0	229.39	1.2	65	103	2.1	260	256	46	69	4.5	2.135	103.0	99.4	
4	2.5	7:30	231.48	1.4	65	109	2.5	262	256	46	69	4.5	2.465	93.2	97.7	LC-2
5	2.5	10:0	233.51	1.1	65	106	1.9	261	257	49	72	4.5	1.945	101.6	98.4	
6	2.5	12:30	235.48	1.2	66	107	2.1	261	256	49	73	4.5	2.125	102.1	99.1	
1	2.5	15:0	237.549	1.1	68	106	2	262	257	50	73	4.5	1.958	103.2	99.6	LC-3
2	2.5	17:30	239.56	1	68	109	1.8	260	256	50	73	4.5	1.771	99.7	99.6	
3	2.5	20:0	241.41	1.1	69	110	1.9	258	256	50	73	4.5	1.949	108.4	100.6	
4	2.5	22:30	243.52	1	70	110	1.8	238	257	51	70	4	1.775	100.0	100.5	LC-4
5	2.5	25:0	245.38	0.97	70	110	1.7	256	258	51	71	4	1.722	96.0	100.2	
6	2.5	27:30	247.14	0.7	71	109	1.2	261	253	51	71	4	1.248	107.9	100.7	
1	2.5	30:0	248.826	0.86	71	108	1.5	254	257	51	70	3.5	1.538	104.7	101.0	LC-5
2	2.5	32:30	250.64	0.82	71	111	1.5	261	257	50	70	3.5	1.457	104.9	101.2	
3	2.5	35:0	252.41	0.78	72	111	1.4	262	254	51	69	3.5	1.389	104.3	101.4	
4	2.5	37:30	254.13	0.71	72	111	1.3	262	257	50	69	3	1.264	99.1	101.3	LC-6
5	2.5	40:0	255.69	0.7	72	111	1.3	262	251	51	69	3	1.247	99.8	101.2	
6	2.5	42:30	257.25	0.55	72	106	0.99	262	254	50	73	3	0.988	100.0	101.2	
1	2.5	45:0	258.642	0.95	72	110	1.7	255	256	50	70	4	1.697	101.0	101.2	LC-7
2	2.5	47:30	260.48	0.92	72	112	1.6	264	253	48	72	4	1.634	95.0	100.9	
3	2.5	50:0	262.18	0.94	72	111	1.7	261	254	49	72	4.5	1.673	109.4	101.3	
4	2.5	52:30	264.16	0.92	72	111	1.6	249	255	49	72	4	1.637	98.3	101.1	LC-8
5	2.5	55:0	265.92	0.83	72	112	1.5	256	254	49	72	4	1.475	96.5	100.9	
6	2.5	57:30	267.56	0.67	72	111	1.2	254	247	48	72	3.5	1.193	99.5	100.9	
		1:00:0	269.081													

	Total	Averages				Maximum and Minimum Values				
Vm	43.479	0.931	69.5	108.5	1.675	264	258	54	73	5
Vmstd	42.487	in. H_2O	°F	°F	in H_2O	238	247	46	69	

Run ISO
101.1
%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-3
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	DHM

Date	12/4/18		Filter ID 1
Start	13:04		Filter ID 2
Stop	14:12		Filter ID 3
Meterbox ID	909033	TH, JG, EC	Personnel
ΔH@	1.898	3A	Stack TC ID
Gamma (Y)	**0.9744**		Tedlar Bags
Ideal Nozzle	0.208		Orsat Pump
Nozzle Dia.	**0.206**		Probe Length/Type
Nozzle ID	M11	1.77	K Factor
Probe ID	3A	0	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	9
Post Leak Check, ACFM	0.00	0.020	11

	A	B
Pitot Pre Leak Check	3.4	7
Pitot Post Leak Check	6	5

Ambient Temperature	50
Static Pressure, In. H_2O	-0.31
Barometric Pressure, In. Hg	29.97

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	41.3	Moisture, %	4.33
CO_2 %	0.11	O_2 %	20.91

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	269.967	1	68	103	1.8	252	257	52	73	3	1.784	100.7	100.7	LC 1
2	2.5	2:30	271.84	1.1	68	100	2	259	252	44	71	3.5	1.971	94.6	97.6	
3	2.5	5:0	273.69	1.3	68	101	2.3	260	261	46	71	4	2.324	103.2	99.6	
4	2.5	7:30	275.88	1.1	69	103	2	261	257	50	73	4	1.962	107.0	101.4	LC-2
5	2.5	10:0	277.97	0.98	69	104	1.7	261	257	51	75	3.5	1.746	96.5	100.5	
6	2.5	12:30	279.75	0.9	69	105	1.6	261	256	52	76	3	1.602	98.9	100.3	
1	2.5	15:0	281.497	0.92	71	107	1.6	261	257	51	75	3	1.638	95.2	99.6	LC-3
2	2.5	17:30	283.2	0.85	71	106	1.8	259	256	51	73	3.5	1.516	104.1	100.1	
3	2.5	20:0	284.99	0.8	72	106	1.5	258	255	50	72	3	1.429	108.2	100.9	
4	2.5	22:30	286.8	0.77	73	106	1.4	259	256	50	72	3	1.379	102.7	101.1	LC-4
5	2.5	25:0	288.49	0.74	73	106	1.4	259	256	50	72	3	1.326	102.9	101.2	
6	2.5	27:30	290.15	0.64	73	107	1.2	258	254	50	72	2.75	1.145	103.9	101.4	
1	2.5	30:0	291.707	1.05	75	107	1.9	261	256	50	74	3.5	1.886	94.7	100.9	LC-5
2	2.5	32:30	293.53	1.05	74	109	2	261	257	48	76	4	1.872	103.8	101.1	
3	2.5	35:0	295.52	0.97	75	109	1.9	261	257	49	78	3.75	1.733	107.2	101.5	
4	2.5	37:30	297.5	0.92	75	110	1.7	262	256	49	78	3.5	1.641	102.4	101.6	LC-6
5	2.5	40:0	299.34	0.86	76	110	1.6	261	257	50	78	3.25	1.537	105.7	101.8	
6	2.5	42:30	301.18	0.69	77	109	1.25	260	257	50	79	3	1.238	100.5	101.7	
1	2.5	45:0	302.754	1	78	110	1.8	260	257	52	76	3.5	1.796	101.7	101.7	LC-7
2	2.5	47:30	304.67	1.15	78	111	2	261	257	51	77	3	2.059	91.2	101.1	
3	2.5	50:0	306.51	1.1	79	111	1.95	260	257	51.5	78	4	1.973	100.4	101.1	
4	2.5	52:30	308.495	1.05	79	111	1.9	260	257	52	78	4	1.883	102.2	101.2	LC-8
5	2.5	55:0	310.47	1	79	110	1.8	259	257	53	78	4	1.797	107.6	101.4	
6	2.5	57:30	312.5	0.83	80	110	1.5	259	256	53	78	3	1.495	104.4	101.6	
	2.5	1:00:0	314.3													

	Total	Averages				Maximum and Minimum Values				
Vm	44.333	0.942	73.7	107.1	1.733	262	261	53	79	4
Vmstd	42.990	in. H_2O	°F	°F	in H_2O	252	252	44	71	

Run ISO
101.6
%

Run Notes:

Method 4 - Air Control Techniques, P.C.

Date: 12/4/2018

Source Information

Plant Name	Enviva, Greenwood	Job #	2333
City, State	Greenwood, SC	Personnel	TTB, JG, EG
Sampling Location	DHM	Balance	

Sampling Information

Run Number	M5/202-1	M5/202-2	M5/202-3	
Filter Identification	14650	14651	14652	
Sampling Date	12/4/2018	12/4/2018	12/4/2018	

Moisture Data

Impinger 1 - Empty				
Final Weight, grams	412.9	408.3	411.2	
Initial Weight, grams	398.5	396.6	399.3	
Condensed Water, grams	14.4	11.7	11.9	
Impinger 2 - Empty				
Final Weight, grams	595.1	546.2	596.0	
Initial Weight, grams	590.8	540.5	592.5	
Condensed Water, grams	4.3	5.7	3.5	
Impinger 3				
Final Weight, grams	748.2	688.2	760.4	
Initial Weight, grams	740.9	677.6	748.2	
Condensed Water, grams	7.3	10.6	12.2	
Silica Gel				
Final Weight, grams	815.9	820.6	829.6	
Initial Weight, grams	806.2	808.9	815.9	
Adsorbed Water, grams	9.7	11.7	13.7	
Total Water, grams	**35.7**	**39.7**	**41.3**	

Sampling Train Purge Data

Purge Start	1035	1240	1430	
Purge End	1135	1341	1530	

Plant Name	Enviva, Greenwood	**Project #**	2333
City, State	Greenwood, SC	**Test Location**	DHM

Parameter	Nomenclature/ Units	M5/202-1	M5/202-2	M5/202-3	Averages
Date		12/4/2018	12/4/2018	12/4/2018	
Run Time	θ, minutes	60.0	60.0	60.0	
Nozzle Diameter	inches	0.206	0.206	0.206	
Stack Area	As - sq. ft.	21.3	21.3	21.3	
Production Rate	ODT/hour	65.4	64.9	64.6	65.0
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	
Meter Calibration Factor	Y	0.9744	0.9744	0.9744	
Barometric Pressure, inches Hg	Bp - in Hg	29.97	29.97	29.97	
Static Pressure	Pg - in. H_2O	-0.31	-0.31	-0.31	
Stack Pressure	Ps - in.Hg	29.95	29.95	29.95	
Meter Box Pressure Differential	Δ H - in. H_2O	1.53	1.67	1.73	
Average Velocity Head	Δ P - in. H_2O	0.8528	0.9314	0.9424	
Volume of Gas Sampled	V_m - cu. ft.	41.537	43.479	44.333	
Dry Gas Meter Temperature	T_m - °F	64.2	69.5	73.7	
Stack Temperature	T_s - °F	102.0	108.5	107.1	105.9
Stack Temperature	T_s - °C	38.9	42.5	41.7	
Liquid Collected	grams	35.7	39.7	41.3	
Oxygen	O_2 %	20.95	20.95	20.91	20.94
Carbon Dioxide	CO_2 %	0.12	0.12	0.11	0.12
Nitrogen	N_2 %	78.93	78.93	78.99	
Volume of Gas Sampled, Dry	$V_{m(std)}$ - cu. ft.	40.991	42.487	42.990	42.156
Volume of Gas Sampled, Dry	$V_{m(std)}$ - cu. M	1.161	1.203	1.217	
Volume of Gas Sampled, Dry	$V_{m(std)}$ - N cu. M	1.081	1.120	1.134	
Volume of Water Vapor	$V_{w(std)}$ - cu. ft.	1.683	1.872	1.947	
Moisture Content	% H_2O	3.94	4.22	4.33	4.17
Saturation Moisture	% H_2O	6.85	8.29	7.97	
Dry Mole Fraction	Mfd	0.961	0.958	0.957	
Gas Molecular Weight, Dry	Md	28.86	28.86	28.85	
Gas Molecular Weight, Wet	Ms	28.43	28.40	28.38	
Gas Velocity	vs - ft./sec.	53.88	56.66	56.94	55.83
Gas Velocity	m/sec.	16.42	17.27	17.36	
Volumetric Air Flow, Actual	Q_{aw} - ACFM	68,874	72,432	72,790	71,365
Volumetric Air Flow, Actual	m^3/min	1,950	2,051	2,061	
Volumetric Air Flow, Standard	Q_{sd} - DSCFM	62,212	64,491	64,891	63,865
Volumetric Air Flow, Standard	Nm^3/min	1,640	1,701	1,711	
Isokinetic Sampling Rate	I %	101.1	101.1	101.6	
FILTERABLE PARTICULATE MATTER EMISSIONS					
Filterable Particulate Catch	mg	48.2	47.4	34.8	
Concentration	gr/DSCF	0.0181	0.0172	0.0125	0.0160
Mass Emission Rate	lb/hr	**9.7**	**9.5**	**6.9**	**8.7**
Mass Emission Rate	lbs/ODT	**0.15**	**0.15**	**0.11**	**0.13**
CONDENSABLE PARTICULATE MATTER EMISSIONS					
Condensable Particulate Catch	mg	0.7	0.4	1.9	
Concentration	gr/DSCF	0.0003	0.0001	0.0007	0.0004
Mass Emission Rate	lb/hr	**0.14**	**0.08**	**0.38**	**0.20**
Mass Emission Rate	lbs/ODT	**0.0021**	**0.0012**	**0.0059**	**0.0031**
TOTAL PARTICULATE MATTER EMISSIONS					
Mass Emission Rate	lb/hr	**9.8**	**9.6**	**7.3**	**8.9**
Mass Emission Rate	lbs/ODT	**0.15**	**0.15**	**0.11**	**0.14**

APPENDIX I-B
Method 5-Method 202 Laboratory Report

RESOLUTION ANALYTICS, INC.

Specialists in Air Emissions Analysis

ANALYTICAL REPORT

CLIENT: AIR CONTROL TECHNIQUES, INC.

PROJECT: 2333

ANALYTICAL SERVICES PROVIDED:

- FILTERABLE & CONDENSIBLE PARTICULATE MATTER
  (EPA METHOD 5/202)

Confirmation of Data Review:

The analytical data and results provided in this report have been checked thoroughly for accuracy, has been performed and validated in accordance with the approved methods, and relate only to the samples provided for this project report.

The results contained herein shall not be reproduced except in full, without written approval of Resolution Analytics.

Date of Review: December 16, 2018

J. Bruce Nemet

J. Bruce Nemet
Quality Assurance Officer

www.resolutionanalytics.com
208 Technology Park Lane, Ste 110, Fuquay-Varina, NC 27526

Resolution Analytics, Inc.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Method: EPA M5

Report Summary

SAMPLE ID	TOTAL FILTERABLE PARTICULATE
Limit of Detection	0.2 mg
Acetone Blank	0.0 mg (in 184 mls)
S3-M5/202-1	48.2 mg
S3-M5/202-2	47.4 mg
S3-M5/202-3	34.8 mg
S1-M5/202-1	2.5 mg
S1-M5/202-2	1.4 mg
S1-M5/202-3	0.5 mg

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Method: M202

Report Summary

SAMPLE ID	Organic CPM	Inorganic CPM	Total CPM[1]
Limit of Dectection	0.1 mg	0.1 mg	0.2 mg
Acetone Blank			0.0 mg (in 184 ml)
Hexane Blank			0.2 mg (in 154 ml)
DI H_2O Blank			0.0 mg (in 200 ml)
M5/202-PB	1.1 mg	0.3 mg	1.4 mg
M5/202-FB	1.6 mg	0.3 mg	1.9 mg
S3-M5/202-1	2.3 mg	0.3 mg	0.7 mg
S3-M5/202-2	1.8 mg	0.5 mg	0.4 mg
S3-M5/202-3	3.8 mg	0.0 mg	1.9 mg
S1-M5/202-1	7.3 mg	2.1 mg	7.5 mg
S1-M5/202-2	5.8 mg	2.1 mg	6.0 mg
S1-M5/202-3	5.1 mg	2.0 mg	5.2 mg

[1] *Total Condensible Particulate Matter (CPM) results have been Field Blank corrected up to a maximum of 2.0 mg.*

Air
Control Techniques, P.C.
301 East Durham Road
Cary, North Carolina 27513

Office (919) 460-7811
Fax (919) 460-7897

Chain of Custody / Transmittal

JOB #: 2333 **PO#** - 8145-2333

TO: Resolution Analytics, Inc. Attn: Jeff Coppe33e (919) 346-5740
208 Technology Park Lane Suite 110
Fuquay Varina, North Carolina 27526

Samples sent by: Todd Brozell Date 12/7/18

SAMPLE NUMBER	COMPONENTS	ANALYSIS
S3-M5/202-1,2,3	• M5 Filter • F½ Acetone Rinse • B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
S1-M5/202-1,2,3	• M5 Filter • F½ Acetone Rinse • B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
M5/202-FB Field Blank	• B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
M5/202-PB Proof Blank	• B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
Blanks	• Acetone Blank M5 • Hexane Blank M202 • DI H_2O Blank M202	Total Particulate by Methods 5/202

Five Day Turnaround

Relinquished by: Todd Brozell Date 12/7/18

Received by: Jeffrey S. Coppola Date 12/10/18

Resolution Analytics, Inc.
Specialists in Air Emissions Analysis

Client:	Air Control Techniques
RFA #:	2333
Date Received:	12/10/18
Date Analyzed:	12/10/18
Analyst:	JSC
Analysis:	EPA M5
Analyte(s):	Filterable PM

Analytical Narrative

Sample Matrix & Components:

Dry Filters, Front½ Acetone Rinses, Acetone Blank

Summary of Sample Prep:

The acetone rinses were transferred to pre-tared teflon "baggies" in a low humidity environment. The acetone rinses were evaporated then desiccated for 24 hours, after which time they were weighed daily every six hours until consecutive weights agreed within ±0.5 mg. The filters were baked 2 to 3 hours at 105° C, cooled in a desiccator and weighed.

All weights were recorded to the nearest 0.1 mg and include filterable particulate catch only. The total catch reported for each run is a sum of the filter and rinse catches. The acetone blank catch has been subtracted from sample rinse catches in proportion with their respective volumes.

Summary of Instrumentation:

Denver model Pinnacle Series analytical balance

Analytical Detection Limit(s): 0.1 mg per fraction

Miscellaneous Comments Regarding Sample Analysis: **(Note unusual catch weights, interferences, odd sample behavior, and steps taken to confirm unusual results. Also note any deviations from standard analytical procedures, together with justification and possible affect on results. Specify samples when applicable.)**

No modifications to EPA Method 5 analytical procedure were made. See data sheets for individual sample descriptions.

PARTICULATE SAMPLING LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: EPA M5

Run Number				S3-M5/202-1			S3-M5/202-2			S3-M5/202-3
Filter Container #										
	Date	Init			Date			Date		
	12/12/18	JSC		0.5035	12/12/18		0.4937	12/12/18		0.4916
Baggie Tare Wt., g.				0.0000			0.0000			0.0000
Filter Tare Wt., g.	83Q-14650			0.4782	83Q-14651		0.4715	83Q-14652		0.4760
FILTER SAMPLE WT., g.				0.0253			0.0222			0.0156
Front ½ Rinse Container #				776			3361			3870
	Date	Init			Date			Date		
	12/14/18	JSC	F	3.4933	12/14/18	F	3.8191	12/14/18	F	3.8565
	12/13/18	JSC		3.4935	12/13/18		3.8193	12/13/18	F	3.8565
Tare Wt., g.	(	100	ml)	3.4704	(100	ml)	3.7939	(86	ml)	3.8373
RINSE SAMPLE WT., g.				0.0229			0.0252			0.0192
Filter Catch, mg.				**25.3**			**22.2**			**15.6**
Rinse Catch, mg.				22.9			25.2			19.2
Rinse Blank Residue, mg.				0.0			0.0			0.0
Net Rinse Catch, mg.				**22.9**			**25.2**			**19.2**
FILTERABLE PARTICULATE, mg.				**48.2**			**47.4**			**34.8**

Legend: F = Final Weight

Notes & Comments:

PARTICULATE SAMPLING LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: EPA M5

Run Number				S1-M5/202-1			S1-M5/202-2			S1-M5/202-3
Filter Container #	Date	Init			Date			Date		
	12/12/18	JSC		0.4640	12/12/18		0.4633	12/12/18		0.4669
Baggie Tare Wt., g.				0.0000			0.0000			0.0000
Filter Tare Wt., g.	83Q-14653			0.4639	83Q-14654		0.4638	83Q-14655		0.4674
FILTER SAMPLE WT., g.				0.0001			-0.0005 *			-0.0005 *
*Filter Fragments In Rinse(Yes, No)?							NO			NO
Front ½ Rinse Container #				1199			2851			2706
	Date	Init			Date			Date		
	12/14/18	JSC	F	3.8982	12/14/18	F	3.6719	12/14/18	F	3.6739
	12/13/18	JSC		3.8983	12/13/18		3.6722	12/13/18		3.6743
Tare Wt., g.	(	70	ml)	3.8958	(72	ml)	3.6705	(78	ml)	3.6734
RINSE SAMPLE WT., g.				0.0024			0.0014			0.0005

Filter Catch, mg.	**0.1**	**0.0 ****	**0.0 ****
Rinse Catch, mg.	2.4	1.4	0.5
Rinse Blank Residue, mg.	0.0	0.0	0.0
Net Rinse Catch, mg.	**2.4**	**1.4**	**0.5**
FILTERABLE PARTICULATE, mg.	**2.5**	**1.4**	**0.5**

**Negative results adjusted to zero.

Legend: F = Final Weight

Notes & Comments:

REAGENT BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: EPA M5

Run Number				Acetone Blank
Sample ID/Container #				3097
	Date	Init		
	12/14/18	JSC		3.7982
	12/13/18	JSC	F	3.7978
Tare Wt., g.	(	184	ml)	3.7978
SAMPLE WT., g.				0.0000

Blank Beaker #	3097
Final wt., mg.	3.7978
Tare wt., mg.	3.7978
Residue, mg.	0.0
Volume, ml.	184
Density, mg/ml	785.0
Conc., mg/mg	0.00E+00 ✓
Upper Limit, mg	1.00E-05

Legend: F = Final Weight

Notes & Comments:

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client:	Air Control Techniques
RFA #:	2333
Date Received:	12/10/18
Date Analyzed:	12/10/18
Analyst:	JSC
Analysis:	M202
Analyte(s):	Condensible PM

Analytical Narrative

Sample Matrix & Components:

H_2O liquid impinger samples, organic impinger rinses, CPM filter, reagent blanks

Summary of Sample Prep and Analysis:

The samples were received in the lab at a temperature of less than 85° F, and logged in our custody records. The teflon filters were each sonicated/extracted 3 times with DI H_2O, then 3 times with hexane. The extract was added to the appropriate sample fraction. The impinger contents were extracted 3 times with hexane and the extracts were combined with the organic rinses, then evaporated in pretared teflon baggies. The water fraction was evaporated in pretared teflon baggies to near dryness at 105° C, then at ambient until completely dry. When needed, the water fractions were resuspended in 50 mls DI H_20, titrated with 0.1 N NH_4OH until acid neutralization, and then evaporated using the same procedure as before. Samples were then desiccated for 24 hours and weighed at a minimum of 6 hour intervals to constant weight. All weights were recorded to the nearest 0.1 mg. Where field blanks have been provided, samples have been blank corrected up to a maximum of 2.0 mg.

Summary of Instrumentation:

Denver model Pinnacle Series analytical balance

Analytical Detection Limit(s): 0.1 mg per fraction

Miscellaneous Comments Regarding Sample Analysis: (Note unusual catch weights, interferences, odd sample behavior, and steps taken to confirm unusual results. Also note any deviations from standard analytical procedures, together with justification and possible affect on results. Specify samples when applicable).

No modifications to M202 analytical procedure were made. See data sheets for individual sample notes and comments.

CONDENSIBLE PARTICULATE MATTER LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				S3-M5/202-1			S3-M5/202-2			S3-M5/202-3
Acetone/Hexane Container #				2775			1561			1281
	Date	Init			Date			Date		
	12/14/18	JSC	F	3.5833	12/14/18	F	3.6056	12/14/18	F	3.8497
	12/13/18	JSC		3.5838	12/13/18		3.6059	12/13/18		3.8501
Tare Wt., g.				3.5810			3.6038			3.8459
RINSE SAMPLE WT., g.				0.0023			0.0018			0.0038
DI H_2O Container #				2987			2810			2211
	Date	Init			Date			Date		
	12/14/18	JSC	F	3.7044	12/14/18	F	3.8828	12/14/18	F	3.5765
	12/13/18	JSC		3.7045	12/13/18		3.8832	12/13/18		3.5767
Tare Wt., g.				3.7041			3.8823			3.5765
RINSE SAMPLE WT., g.				0.0003			0.0005			0.0000
Organic CPM Mass, mg.				**2.3**			**1.8**			**3.8**
Inorganic CPM Mass, mg				0.3			0.5			0.0
Volume of NH_4OH Added (N=0.1), ml										
Correction For NH_3 Added, mg				0.00			0.00			0.00
Adjusted Inorganic CPM Mass, mg				**0.3**			**0.5**			**0.0**
Total CPM Mass, mg *				**0.7**			**0.4**			**1.9**

* Total CPM Mass results have been Field Train Blank corrected up to a maximum of 2.0 mg.

Notes & Comments:

CONDENSIBLE PARTICULATE MATTER LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				S1-M5/202-1			S1-M5/202-2			S1-M5/202-3
Acetone/Hexane Container #				3888			3437			2824
	Date	Init			Date			Date		
	12/14/18	JSC	F	3.6830	12/14/18	F	3.6799	12/14/18	F	3.6902
	12/13/18	JSC		3.6832	12/13/18		3.6803	12/13/18		3.6903
Tare Wt., g.				3.6757			3.6741			3.6851
RINSE SAMPLE WT., g.				0.0073			0.0058			0.0051
DI H_2O Container #				2585			3378			3192
	Date	Init			Date			Date		
	12/14/18	JSC	F	3.4500	12/14/18	F	3.8415	12/14/18	F	3.4645
	12/13/18	JSC		3.4502	12/13/18		3.8418	12/13/18		3.4647
Tare Wt., g.				3.4479			3.8394			3.4625
RINSE SAMPLE WT., g.				0.0021			0.0021			0.0020
Organic CPM Mass, mg.				**7.3**			**5.8**			**5.1**
Inorganic CPM Mass, mg				2.1			2.1			2.0
Volume of NH_4OH Added (N=0.1), ml										
Correction For NH_3 Added, mg				0.00			0.00			0.00
Adjusted Inorganic CPM Mass, mg				**2.1**			**2.1**			**2.0**
Total CPM Mass, mg *				**7.5**			**6.0**			**5.2**

* Total CPM Mass results have been Field Train Blank corrected up to a maximum of 2.0 mg.

Notes & Comments:

J:Particulate Lab:Jobs:ACT:2333:December 10, 2018 2333 QT M202.xlsx

FIELD TRAIN BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				M5/202-PB
Acetone/Hexane Container #				2955
	Date	Init		
	12/14/18	JSC	F	3.8184
	12/13/18	JSC		3.8188
Tare Wt., g.				3.8173
RINSE SAMPLE WT., g.				0.0011
DI H_2O Container #				2312
	Date	Init		
	12/14/18	JSC	F	3.5153
	12/13/18	JSC		3.5154
Tare Wt., g.				3.5150
RINSE SAMPLE WT., g.				0.0003
Organic CPM Mass, mg.				**1.1**
Inorganic CPM Mass, mg				0.3
Volume of NH_4OH Added (N=0.1), ml				
Correction For NH_3 Added, mg				0.00
Adjusted Inorganic CPM Mass, mg				**0.3**
Total Proof Blank CPM Mass, mg				**1.4**

Notes & Comments:

FIELD TRAIN BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				M5/202-FB
Acetone/Hexane Container #				2446
	Date	Init		
	12/14/18	JSC	F	3.7845
	12/13/18	JSC		3.7848
Tare Wt., g.				3.7829
RINSE SAMPLE WT., g.				0.0016
DI H_2O Container #				3269
	Date	Init		
	12/14/18	JSC	F	3.6584
	12/13/18	JSC		3.6585
Tare Wt., g.				3.6581
RINSE SAMPLE WT., g.				0.0003
Organic CPM Mass, mg.				**1.6**
Inorganic CPM Mass, mg				0.3
Volume of NH_4OH Added (N=0.1), ml				
Correction For NH_3 Added, mg				0.00
Adjusted Inorganic CPM Mass, mg				**0.3**
Total Field Train Blank CPM Mass, mg				**1.9**

Notes & Comments:

FIELD REAGENT BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number	Date	Init			Acetone	Date			Hexane	Date			DI H_2O
Container #					3097				4003				3299
	12/14/18	JSC			3.7982	12/14/18	F		3.6623	12/14/18	F		3.6241
	12/13/18	JSC	F		3.7978	12/13/18	F		3.6623	12/13/18	F		3.6241
Tare Wt., g.	(	184	ml)		3.7978	(	154	ml)	3.6621	(	200	ml)	3.6241
SAMPLE WT., g.					0.0000				0.0002				0.0000
Field Reagent Blank Mass, mg					0.0				0.2				0.0
Field Reagent Blank Concentration, mg/mg					0.00E+00				1.98E-06				0.00E+00

Notes & Comments:

M5/17 Particulate Bench Sheet 5 DAY QT ✓

Client: ACT　　RFA #: 2333　　Date Received: 12/10/18
Analyst: JSC　　Method: 5　　Date Analyzed: 12/10/18

Run #	Filter			Acetone Rinse	
	Baggie #	Filter #	Filter Tare(g)	Baggie #	Rinse Volume(mls)
Acetone RB				3097	184
S3-M5/202-1		83Q-14650	0.4782	776	100
2		-14651	0.4715	3361	100
3		-14652	0.4760	3870	86
S1-M5/202-1		-14653	0.4639	1199	70
2		-14654	0.4638	2851	72
3		-14655	0.4674	2706	78

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Condensibles Bench Sheet QT ✓

Client: ACT RFA #: 2333 Date Received: 12/10/18
Analyst: JBC Method: 202 Date Analyzed: 12/10/18

Run #	Organic Fraction		Inorganic Fraction		
	Baggie #	Volume (mls)	Baggie #	Volume (mls)	Titration Volume (mls)
Acetone RB (M5)	3097	184			
Hexane RB	4003	154			
DI H2O RB	3299	200			
M5/202 - PB	2955		2312		
M5/202 - FB	2446		3269		
S3 - M5/202 - 1	2775		2987		
2	1561		2810		
3	1281		2211		
S1 - M5/202 - 1	3889		2585		
2	3437		3378		
3	2824		3192		

APPENDIX I-C
CEMs Data Sheets

Enviva	RTO Dryer Exhaust

Parameters	Units	Run 1	Run 2	Run 3	Average
Date		5-Dec-18	5-Dec-18	5-Dec-18	
Run Time		0840-0947	1047-1157	1216-1327	
Oxygen	%	12.53	12.78	13.40	12.90
Moisture	%	39.49	38.68	37.17	38.45
Volumetric Flow Rate, Std	DSCFM	74,759	71,425	74,025	73,403
Dryer Process Rate	ODT/hr	67.0	64.1	64.7	65.3
VOC Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (actual)	$ppmv_w$ as C_3	6.19	6.88	5.82	6.30
Concentration (dry)	$ppmv_d$ as C_3	10.2	11.2	9.3	10.2
Emission Rate (propane)	lb/hr as C_3H_8	5.3	5.5	4.7	5.2
Emission Factor (propane)	lb/ODT as C_3H_8	0.078	0.086	0.073	0.079
NOx Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (dry)	ppm_{vd}	38.48	34.36	32.63	35.16
Emission Rate	lb/hr	20.6	17.6	17.3	18.5
Emission Factor	lb/ODT as NO2	0.31	0.27	0.27	0.28
CO Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (dry)	ppm_{vd}	29.22	35.35	27.9	30.831
Emission Rate	lb/hr	9.5	11.0	9.0	9.9
Emission Factor	lb/ODT	0.14	0.17	0.14	0.15

Facility: Enviva
Date: 12/5/18

Source: RTO Dryer Exhaust

HAP		Methanol	Acetaldehyde	Formaldehyde	HCl	Supporting Data	
Formula		CH_4O	CH_3 CHO	CH_2O	C_6H_6		
Mol Weight	lb/lb mole	32.04	44.05	30.31	36.46		
Response Factor		0.65	1.00	0.00	0.00		
Run 1							
Conc	ppm wet	0.00	0.00	0.59	0.00		
Conc	ppm dry	0.00	0.00	0.97	0.00	39.49	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.34	0.00	74,759	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0051	0.00	67.00	ODT/hr
Run 2							
Conc	ppm wet	0.00	0.00	0.60	0.00		
Conc	ppm dry	0.00	0.00	0.98	0.00	38.68	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.33	0.00	71,425	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0051	0.00	64.10	ODT/hr
Run 3							
Conc	ppm wet	0.00	0.00	0.56	0.00		
Conc	ppm dry	0.00	0.00	0.89	0.00	37.17	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.31	0.00	74,025	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0048	0.00	64.70	ODT/hr
Averages							
Conc	ppm wet	0.00	0.00	0.58	0.00		
Conc	ppm dry	0.00	0.00	0.95	0.00	38.45	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.33	0.00	73,403	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0050	0.00		

ND values

Enviva | **Date:** 5-Dec-18 | **Run 1**
RTO Dryer Exhaust | **Run Time:** 0840-0947

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	N/A	N/A	30.07
Mid-Level Gas	$C_{v, mid}$	11.05	9.952	226.4	48.0	52.38
High-Level Gas	$C_{v, high}$	21.99	18.22	450.0	89.5	85.84
				983.4		
Calibration Span	CS	21.99	18.22	450	90	175
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir, zero}$	0.00	0.09	0.25	0.2	0.1
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	N/A	N/A	30.3
Mid-Level Gas	$C_{Dir, mid}$	11.04	10	228.6	47.82	52.14
High-Level Gas	$C_{Dir, high}$	22.04	18.26	450	89.5	85.88
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	0.5	0.1	0.2	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	0.8
Mid-Level Gas	ACE_{mid}	0.0	0.3	0.5	-0.2	-0.5
High-Level Gas	ACE_{high}	0.2	0.2	0.0	0.0	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s, zero (pre)}$	0.05	0.09	0.8	0.3	0.1
Final Zero	$C_{s, zero (post)}$	0.04	0.09	0.9	0.5	0.17
Upscale Gas Standard	C_{MA}	11.05	9.95	226.4	48.0	52.4
Initial Upscale	$C_{v, up (pre)}$	11.044	9.96	229	47.3	52.14
Final Upscale	$C_{v, up (post)}$	11.07	10.02	227.5	47.1	52.42
System Bias - Results (Percent)						
Zero (pre)	$SB_{i (zero)}$	0.2	0.0	0.1	0.1	0.0
Zero (post)	$SB_{final (zero)}$	0.2	0.0	0.1	0.3	0.0
Upscale (pre)	$SB_{i (upscale)}$	0.0	-0.2	0.1	-0.6	0.0
Upscale (post)	$SB_{final (upscale)}$	0.1	0.1	-0.2	-0.8	0.2
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.0	0.0	0.0	0.2	0.0
Upscale	$D_{upscale}$	0.1	0.4	0.3	0.2	0.2
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	40	35	35	NA
Zero Test		35	40	35	35	NA
Response Time		35	40	35	35	25
Calibration Correction						
Raw Average	C_{ave}	12.53	7.89	30.2	37.9	6.42
Bias Average - Zero	C_0	0.04	0.09	0.85	0.38	N/A
Bias Average - Upscale	C_M	11.06	9.99	228.25	47.20	N/A
Conc. Methane (J), wet C3	C_{me}	NA	NA	NA	NA	0.23
Corrected Run Average	C_{Gas}	**12.53**	**7.84**	**29.22**	**38.48**	**6.19**

Enviva | | **Date:** **5-Dec-18** | | **Run 2**
RTO Dryer Exhaust | | **Run Time:** **1047-1157**

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	N/A	N/A	30.1
Mid-Level Gas	$C_{v, mid}$	11.1	10.0	226.4	48.0	52.4
High-Level Gas	$C_{v, high}$	22.0	18.2	450.0	89.5	85.8
Calibration Span	CS	22.0	18.2	450.0	89.5	175
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir, zero}$	0.0	0.1	0.3	0.2	0.1
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	N/A	N/A	30.3
Mid-Level Gas	$C_{Dir, mid}$	11.0	10.0	228.6	47.8	52.1
High-Level Gas	$C_{Dir, high}$	22.0	18.3	450.0	89.5	85.9
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	0.5	0.1	0.2	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	0.8
Mid-Level Gas	ACE_{mid}	0.0	0.3	0.5	-0.2	-0.5
High-Level Gas	ACE_{high}	0.2	0.2	0.0	0.0	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s, zero (pre)}$	0.01	0.09	0.90	0.46	0.17
Final Zero	$C_{s, zero (post)}$	0.035	0.09	0.9	0.6	0.59
Upscale Gas Standard	C_{MA}	11.05	9.95	226.4	48.0	52.4
Initial Upscale	$C_{v, up (pre)}$	11.07	10.024	227.5	47.1	52.42
Final Upscale	$C_{v, up (post)}$	11.025	10.119	227.7	47.16	52.23
System Bias - Results (Percent)						
Zero (pre)	$SB_{i (zero)}$	0.1	0.0	0.1	0.3	0.0
Zero (post)	$SB_{final (zero)}$	0.2	0.0	0.1	0.4	0.3
Upscale (pre)	$SB_{i (upscale)}$	0.1	0.1	-0.2	-0.8	0.2
Upscale (post)	$SB_{final (upscale)}$	-0.1	0.7	-0.2	-0.7	0.1
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.1	0.0	0.0	0.2	0.2
Upscale	$D_{upscale}$	0.2	0.5	0.0	0.1	-0.1
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	40	35	35	NA
Zero Test		35	40	35	35	NA
Response Time		35	40	35	35	25
Calibration Correction						
Raw Average	C_{ave}	12.77	7.67	36.3	33.89	7.11
Bias Average - Zero	C_0	0.02	0.09	0.90	0.53	N/A
Bias Average - Upscale	C_M	11.05	10.07	227.60	47.13	N/A
Conc. Methane (J), wet C3	C_{me}	NA	NA	NA	NA	0.23
Corrected Run Average	C_{Gas}	**12.78**	**7.56**	**35.35**	**34.36**	**6.88**

Enviva	Date:	5-Dec-18			Run 3
RTO Dryer Exhaust	Run Time:	1216-1327			

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	N/A	N/A	30.1
Mid-Level Gas	$C_{v, mid}$	11.1	10.0	226.4	48.0	52.4
High-Level Gas	$C_{v, high}$	22.0	18.2	450.0	89.5	85.8
Calibration Span	CS	21.99	18.22	450.0	89.5	175.0
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir, zero}$	0.0	0.1	0.3	0.2	0.09
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	N/A	N/A	30.3
Mid-Level Gas	$C_{Dir, mid}$	11.0	10.0	228.6	47.8	52.1
High-Level Gas	$C_{Dir, high}$	22.0	18.3	450.0	89.5	85.9
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	0.5	0.1	0.2	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	0.8
Mid-Level Gas	ACE_{mid}	0.0	0.3	0.5	-0.2	-0.5
High-Level Gas	ACE_{high}	0.2	0.2	0.0	0.0	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s, zero (pre)}$	0.04	0.09	0.90	0.60	0.59
Final Zero	$C_{s, zero (post)}$	0.048	0.09		0.59	0.6
Upscale Gas Standard	C_{MA}	11.05	9.95	226.4	48.0	52.4
Initial Upscale	$C_{v, up (pre)}$	11.025	10.119	227.7	47.16	52.23
Final Upscale	$C_{v, up (post)}$	11.078	9.962	228.2	45	52.02
System Bias - Results (Percent)						
Zero (pre)	$SB_{i (zero)}$	0.2	0.0	0.1	0.4	0.3
Zero (post)	$SB_{final (zero)}$	0.2	0.0	-0.1	0.4	0.3
Upscale (pre)	$SB_{i (upscale)}$	-0.1	0.7	-0.2	-0.7	0.1
Upscale (post)	$SB_{final (upscale)}$	0.2	-0.2	-0.1	-3.2	-0.1
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.1	0.0	0.2	0.0	0.0
Upscale	$D_{upscale}$	0.2	0.9	0.1	2.4	-0.1
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	40	35	35	NA
Zero Test		35	40	35	35	NA
Response Time		35	40	35	35	25
Calibration Correction						
Raw Average	C_{ave}	13.40	7.12	28.9	31.5	6.14
Bias Average - Zero	C_0	0.04	0.09	0.90	0.60	N/A
Bias Average - Upscale	C_M	11.05	10.04	227.95	46.08	N/A
Conc. Methane (J), wet C3	C_{me}	NA	NA	NA	NA	0.32
Corrected Run Average	C_{Gas}	**13.40**	**7.12**	**27.92**	**32.63**	**5.82**

Test Run 4 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC	NOx	CO
		%	ppm	ppm	ppm	ppm
Start Averaging						
12/5/2018	8:40:21	12.585	7.818	8.1	38.68	19.4
12/5/2018	8:41:22	12.697	7.696	3.16	38.25	32.5
12/5/2018	8:42:22	12.611	7.753	9.04	37.91	34.9
12/5/2018	8:43:22	12.719	7.741	4.93	37.84	32
12/5/2018	8:44:22	12.796	7.596	6.19	37.5	32.6
12/5/2018	8:45:22	12.494	7.822	7.75	37.36	15.9
12/5/2018	8:46:22	12.434	7.955	2.87	38.16	25.3
12/5/2018	8:47:22	12.536	7.92	8.71	38.9	25.2
12/5/2018	8:48:22	12.466	7.872	4.72	38.93	29
12/5/2018	8:49:22	12.475	7.974	6.88	38.64	39.7
12/5/2018	8:50:22	12.499	7.981	8.44	38.35	32
12/5/2018	8:51:22	12.482	7.839	3.16	37.72	37
12/5/2018	8:52:22	12.286	8.062	8.64	37.59	28.8
12/5/2018	8:53:22	12.21	8.215	4.96	38.29	22.9
12/5/2018	8:54:22	12.484	8.047	6.8	38.57	34
12/5/2018	8:55:22	12.507	7.858	8.54	38.01	29.1
12/5/2018	8:56:22	12.517	7.913	3.82	37.51	40.8
12/5/2018	8:57:22	12.6	7.837	8.83	37.61	36
12/5/2018	8:58:22	12.596	7.778	4.59	37.3	20.3
12/5/2018	8:59:22	12.47	7.949	6.69	37.12	29.2
12/5/2018	9:00:22	12.295	8.089	8.28	37.76	21.7
12/5/2018	9:01:22	12.455	8.002	3.1	38.1	33.9
12/5/2018	9:02:22	12.386	8.004	8.86	37.75	36.8
12/5/2018	9:03:22	12.477	7.949	4.91	37.64	33.7
12/5/2018	9:04:22	12.509	7.982	6.84	37.65	39
12/5/2018	9:05:22	12.523	7.882	7.99	37.5	20.4
12/5/2018	9:06:22	12.694	7.794	3.31	37.3	28.4
12/5/2018	9:07:22	12.643	7.786	9.04	36.96	25.2
12/5/2018	9:08:22	12.796	7.685	4.67	36.52	28.9
12/5/2018	9:09:22	12.695	7.672	7.04	36.4	39.6
12/5/2018	9:10:22	12.438	7.875	8.29	36.9	34.5
12/5/2018	9:11:22	12.567	7.963	2.82	37.65	31.6
Pause						
12/5/2018	9:12:22	15.345	7.461	8.33	36.32	23.2
12/5/2018	9:13:22	17.012	2.053	4.68	13.33	13.8
End Pause						
12/5/2018	9:14:22	12.692	7.191	7.19	31.36	29.8
12/5/2018	9:15:22	12.524	7.866	8.26	37.48	27.7
12/5/2018	9:16:22	12.727	7.757	4.13	37.48	40.2
12/5/2018	9:17:21	12.643	7.755	9.09	37.12	35.2
12/5/2018	9:18:21	12.605	7.812	4.01	37.15	19.3
12/5/2018	9:19:23	12.662	7.821	7.01	37.3	26
12/5/2018	9:20:22	12.57	7.835	8.27	37.37	18.5

Test Run 4 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC	NOx	CO
		%	ppm	ppm	ppm	ppm
12/5/2018	9:21:23	12.668	7.724	3.16	37.35	32.9
12/5/2018	9:22:22	12.615	7.844	9.21	37.33	35
12/5/2018	9:23:22	12.592	7.841	4.76	37.31	35
12/5/2018	9:24:22	12.656	7.853	6.72	37.43	36.3
12/5/2018	9:25:22	12.654	7.791	7.85	37.56	20.1
12/5/2018	9:26:22	12.498	7.793	3.26	37.49	32.4
12/5/2018	9:27:22	12.391	8.09	9.26	38.01	28.5
12/5/2018	9:28:22	12.434	7.934	4.44	38.51	29.3
12/5/2018	9:29:22	12.44	8.027	8.53	38.38	40.8
12/5/2018	9:30:22	12.51	7.956	9	38.3	34.4
12/5/2018	9:31:22	12.597	7.909	3.5	38.11	28.8
12/5/2018	9:32:22	12.625	7.823	8.74	37.9	22.5
12/5/2018	9:33:22	12.515	7.887	3.93	37.87	22.5
12/5/2018	9:34:21	12.593	7.933	7.64	38.14	31.7
12/5/2018	9:35:21	12.626	7.811	8.22	38.17	27.7
12/5/2018	9:36:21	12.632	7.737	3.46	37.83	40.8
12/5/2018	9:37:22	12.435	7.95	8.37	37.99	36.1
12/5/2018	9:38:22	12.445	8.014	4.08	38.56	22.7
12/5/2018	9:39:22	12.457	7.979	7.22	38.72	30.1
12/5/2018	9:40:22	12.212	8.134	8.46	38.89	21.5
12/5/2018	9:41:22	12.342	8.146	3.43	39.42	34.7
12/5/2018	9:42:22	12.373	8.106	9.22	39.69	37.3
12/5/2018	9:43:22	12.521	7.892	4.3	39.26	36.9
12/5/2018	9:44:21	12.582	7.927	7.27	38.88	34.7
12/5/2018	9:45:21	12.579	7.847	7.72	38.55	14.8
12/5/2018	9:46:23	12.506	7.871	3.15	38.21	28.4
12/5/2018	9:47:22	12.411	8.024	8.76	38.26	26.1
Average	2910 samp	12.534	7.891	6.42	37.91	30.2

Test Run 4 End

Test Run 5 Begin. STRATA Version 3.2.112

Operator: David Goshaw

Plant Name: Enviva Greenwood

Location: Dryer

		O2	CO2	THC	NOx	CO
		%	ppm	ppm	ppm	ppm
12/5/2018	10:48:00	12.562	7.878	3.54	37.45	28.4
12/5/2018	10:49:00	12.605	7.875	9.14	36.98	24.8
12/5/2018	10:50:00	12.545	7.885	3.88	36.16	34.7
12/5/2018	10:51:00	12.568	7.897	8.64	35.82	33.4
12/5/2018	10:52:01	12.613	7.82	7.51	35.93	13.6
12/5/2018	10:53:01	12.59	7.827	3.44	36	23.5
12/5/2018	10:54:01	12.588	7.947	8.59	36.35	21.4
12/5/2018	10:55:01	12.725	7.755	3.23	36.39	29.2
12/5/2018	10:56:00	12.618	7.733	8.74	35.97	37.2
12/5/2018	10:57:00	12.471	7.84	7.78	36.03	34
12/5/2018	10:58:01	12.496	7.995	3.32	36.59	34.1
12/5/2018	10:59:01	12.682	7.857	8.55	36.59	24.1
12/5/2018	11:00:01	12.665	7.73	3.23	35.68	24.8
12/5/2018	11:01:01	12.728	7.833	8.35	35.27	30.1
12/5/2018	11:02:01	12.807	7.647	8.01	35.05	27.7
12/5/2018	11:03:01	12.99	7.535	4.4	34.44	39.1
12/5/2018	11:04:01	13.139	7.418	9.31	34.04	36.4
12/5/2018	11:05:01	12.986	7.344	3.65	33.82	20.5
12/5/2018	11:06:01	12.752	7.613	8.05	34.13	23.3
12/5/2018	11:07:01	12.606	7.787	7.59	35.03	17.4
12/5/2018	11:08:00	12.57	7.887	3.29	35.64	33.1
12/5/2018	11:09:00	12.689	7.829	8.56	35.86	32.9
12/5/2018	11:10:00	12.736	7.735	3.31	35.55	36.1
12/5/2018	11:11:00	12.694	7.727	7.82	35.21	37.1
12/5/2018	11:12:00	12.607	7.876	7.05	35.27	19.3
12/5/2018	11:13:00	12.411	7.928	3.66	35.48	30.2
12/5/2018	11:14:01	12.463	8.017	8.32	35.93	25.4
12/5/2018	11:15:01	12.513	7.933	2.81	36.15	29.4
12/5/2018	11:16:01	12.579	7.904	8.59	35.88	39.6
12/5/2018	11:17:01	12.66	7.826	7.85	35.56	33.8
12/5/2018	11:18:01	12.691	7.809	3.17	35.47	30.4
12/5/2018	11:19:01	12.729	7.774	7.97	35.64	21.5
12/5/2018	11:20:01	12.847	7.603	2.95	35.49	23.6
12/5/2018	11:21:01	12.817	7.637	7.99	35.36	30.1
12/5/2018	11:22:01	12.805	7.663	7.59	35.38	27.7
12/5/2018	11:23:01	12.967	7.63	4.15	34.93	41.7
12/5/2018	11:24:01	12.987	7.518	8.25	34.56	36.1
12/5/2018	11:25:01	13.097	7.413	2.29	34.51	24
12/5/2018	11:26:01	13.107	7.349	7.62	34.31	27.1
12/5/2018	11:27:01	12.782	7.575	7.16	34.31	20.8
12/5/2018	11:28:00	12.882	7.626	3.53	34.79	31.6
12/5/2018	11:29:00	12.948	7.593	8.74	35.07	30.3
12/5/2018	11:30:00	13.008	7.424	3.43	34.93	39.5
12/5/2018	11:31:00	13.076	7.429	8.33	35.02	34.5

Test Run 5 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: Dryer

		O2	CO2	THC	NOx	CO
		%	ppm	ppm	ppm	ppm
12/5/2018	11:32:00	13.028	7.445	7.31	35.14	15.4
12/5/2018	11:33:01	13.083	7.359	3.35	34.93	25.5
12/5/2018	11:34:01	13.055	7.429	7.88	34.83	21
12/5/2018	11:35:01	13.176	7.323	2.65	34.61	27.5
12/5/2018	11:36:01	13.249	7.235	8.28	34.09	32.1
12/5/2018	11:37:01	13.244	7.233	7.21	33.78	32.7
12/5/2018	11:38:01	13.318	7.216	2.87	33.44	31.1
Pause						
12/5/2018	11:39:00	14.232	7.179	7.62	33.04	15.1
12/5/2018	11:40:00	16.093	3.988	2.88	20.58	15.8
12/5/2018	11:41:01	13.259	7.001	8.04	32.97	24.1
12/5/2018	11:42:01	13.286	7.232	7.35	33.73	25.3
12/5/2018	11:43:01	13.126	7.311	3.44	33.79	35.7
End Pause						
12/5/2018	11:44:01	13.226	7.307	7.96	34.1	32.2
12/5/2018	11:45:01	13.318	7.187	2.37	34.32	27.1
12/5/2018	11:46:01	13.127	7.261	7.48	34.12	19.7
12/5/2018	11:47:01	12.792	7.543	7.15	34.49	18.4
12/5/2018	11:48:00	13.128	7.52	3.13	35.17	31.8
12/5/2018	11:49:00	13.137	7.352	8.02	34.66	29.4
12/5/2018	11:50:01	13.141	7.313	2.84	33.53	36.6
12/5/2018	11:51:00	12.953	7.511	7.6	33.39	38.6
12/5/2018	11:52:01	12.946	7.495	6.65	33.69	17.7
12/5/2018	11:53:01	13.002	7.479	3	33.81	28
12/5/2018	11:54:01	12.906	7.58	7.73	34.05	22.7
12/5/2018	11:55:01	12.9	7.52	2.48	34.03	28.7
12/5/2018	11:56:01	12.875	7.634	8.14	33.89	35.2
12/5/2018	11:57:00	12.77	7.672	7.11	33.89	36.3

Test Run 5 End

Run 3
Operator: David Goshaw
Plant Name Enviva Greenwood
Location: Dryer Stack

		O2	CO2	THC	NOx	CO
		%	ppm	ppm	ppm	ppm
Start Averaging						
12/5/2018	12:17:04	12.801	7.712	8.16	35.6	36.3
12/5/2018	12:18:04	13.176	7.511	3.07	34.71	32.2
12/5/2018	12:19:04	13.321	7.229	7.38	34.1	23.9
12/5/2018	12:20:04	13.335	7.122	3.11	33.23	25.2
12/5/2018	12:21:04	13.347	7.181	7.07	32.83	29
12/5/2018	12:22:04	13.574	7.013	7.75	32.45	29
12/5/2018	12:23:04	13.797	6.809	4.22	31.49	41.3
12/5/2018	12:24:04	13.85	6.658	8.43	30.76	36.4
12/5/2018	12:25:04	13.812	6.691	3.42	30.31	26.7
12/5/2018	12:26:04	13.719	6.738	6.94	30.1	19.9
12/5/2018	12:27:04	13.344	6.975	6.92	30.46	17.5
12/5/2018	12:28:04	13.288	7.174	3.14	31.41	26.4
12/5/2018	12:29:04	13.39	7.155	8.37	32.35	32.7
12/5/2018	12:30:04	13.391	7.087	3.92	32.39	39.3
12/5/2018	12:31:04	13.35	7.179	7.57	32.22	40.3
12/5/2018	12:32:03	13.248	7.263	6.96	32.66	24.2
12/5/2018	12:33:05	13.036	7.296	3.26	32.78	27.3
12/5/2018	12:34:05	12.757	7.73	8.45	34.78	27.8
12/5/2018	12:35:03	12.876	7.562	3.85	33.53	40
12/5/2018	12:36:05	13.048	7.581	8.88	34.4	48
12/5/2018	12:37:05	13.074	7.392	8.45	33.96	43.2
12/5/2018	12:38:04	13.146	7.417	3.09	33.38	35
12/5/2018	12:39:04	12.969	7.449	7.82	33.13	22.1
12/5/2018	12:40:04	12.898	7.571	3.61	33.47	22.3
12/5/2018	12:41:04	13.013	7.597	8.03	33.93	27.7
12/5/2018	12:42:04	13.177	7.322	8.31	33.39	26.6
12/5/2018	12:43:04	13.118	7.358	4.19	32.48	40.6
12/5/2018	12:44:04	13.155	7.344	8.78	32.55	36.6
12/5/2018	12:45:05	13.142	7.407	3.7	32.94	20.6
12/5/2018	12:46:04	13.151	7.358	7.59	33.22	25.1
12/5/2018	12:47:04	13.299	7.293	8.04	33.21	18.2
12/5/2018	12:48:04	13.34	7.159	3.82	32.68	27.9
12/5/2018	12:49:04	13.425	7.139	8.79	31.98	32.4
12/5/2018	12:50:04	13.417	7.127	4.06	31.32	41.8
12/5/2018	12:51:04	13.501	7.052	7.41	31.33	43.2
12/5/2018	12:52:04	13.325	7.141	6.96	31.41	20.4
12/5/2018	12:53:04	13.333	7.165	3.2	31.09	28.8
12/5/2018	12:54:04	13.292	7.225	8.24	31.25	21.3
12/5/2018	12:55:04	13.328	7.147	3.83	31.39	30.8
12/5/2018	12:56:05	13.318	7.194	8.74	31.37	39.7
12/5/2018	12:57:05	13.271	7.166	8.38	31.51	36.1
12/5/2018	12:58:04	13.497	7.139	3.57	31.57	35
12/5/2018	12:59:04	13.509	6.971	7.93	31.2	18.1

Run 3
Operator: David Goshaw
Plant Nam Enviva Greenwood
Location: Dryer Stack

		O2	CO2	THC	NOx	CO
		%	ppm	ppm	ppm	ppm
12/5/2018	13:00:04	13.351	7.101	3.1	31.13	21.6
12/5/2018	13:01:04	13.393	7.223	7.42	31.86	24
12/5/2018	13:02:04	13.399	7.111	7.6	31.84	28.6
12/5/2018	13:03:04	13.571	6.997	3.75	31.03	41.7
12/5/2018	13:04:04	13.54	6.966	8.28	30.48	38.3
12/5/2018	13:05:04	13.58	6.93	2.9	30.2	30.9
12/5/2018	13:06:04	13.453	7.015	7.25	30.3	23.3
Pause						
12/5/2018	13:07:04	13.33	7.095	7.05	30.61	21.9
12/5/2018	13:08:03	16.184	5.822	3.1	28.53	26.3
12/5/2018	13:09:03	13.525	5.788	8.07	24.74	28.5
End Pause						
12/5/2018	13:10:03	13.542	6.999	3.71	30.96	36
12/5/2018	13:11:05	13.659	6.885	8.51	29.67	36.9
12/5/2018	13:12:05	13.795	6.833	7.58	29.35	19.5
12/5/2018	13:13:04	13.747	6.766	3.67	28.97	21
12/5/2018	13:14:04	13.806	6.792	7.9	29.01	18.6
12/5/2018	13:15:04	13.953	6.605	3.06	29.04	26.8
12/5/2018	13:16:04	13.918	6.643	8.95	28.7	30.4
12/5/2018	13:17:04	13.934	6.593	7.97	28.44	33.5
12/5/2018	13:18:04	13.886	6.645	3.78	28.17	30.6
12/5/2018	13:19:04	13.761	6.746	7.78	28.26	15.6
12/5/2018	13:20:04	13.517	6.921	2.74	29.7	17.7
12/5/2018	13:21:04	13.509	7.085	7.73	29.98	19
12/5/2018	13:22:04	13.494	7.038	7.33	28.83	24.5
12/5/2018	13:23:04	13.564	6.945	3.62	29.04	32.7
12/5/2018	13:24:04	13.39	7.103	8.23	29.02	33.4
12/5/2018	13:25:04	13.404	7.076	2.48	30.82	24.8
12/5/2018	13:26:04	13.417	7.108	7.57	31.62	17.5
12/5/2018	13:27:04	13.22	7.23	7.05	31.57	17.6
Average	3044 samp	13.397	7.119	6.14	31.52	28.9

Test Run 6 End

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
0840-0947	**0.585**	**0.109**	**0.000**	**0.132**	**0.022**	**1.154**	**0.015**	**0.441**
1047-1157	**0.600**	**0.086**	**0.000**	**0.100**	**0.034**	**1.067**	**0.000**	**0.423**
1216-1327	**0.560**	**0.073**	**0.000**	**0.089**	**0.058**	**1.014**	**0.000**	**0.340**
			Note: Shaded indicates conc.< 2 x SEC, and is a none-detect value					
12/5/2018 8:09	0.919	0.096	0.441	0.115	0.164	1.111	0.000	0.380
12/5/2018 8:10	0.485	0.095	0.000	0.113	0.000	1.120	0.000	0.372
12/5/2018 8:11	0.731	0.105	0.000	0.124	0.000	1.156	0.000	0.404
12/5/2018 8:12	0.886	0.107	0.000	0.126	0.000	1.169	0.000	0.413
12/5/2018 8:13	0.386	0.106	0.000	0.126	0.000	1.163	0.000	0.416
12/5/2018 8:14	1.023	0.105	0.000	0.124	0.000	1.143	0.000	0.400
12/5/2018 8:15	0.569	0.108	0.000	0.124	0.000	1.174	0.000	0.417
12/5/2018 8:16	0.603	0.112	0.000	0.130	0.000	1.163	0.000	0.431
12/5/2018 8:17	0.766	0.107	0.000	0.126	0.000	1.162	0.000	0.414
12/5/2018 8:18	0.325	0.109	0.000	0.131	0.000	1.165	0.000	0.429
12/5/2018 8:19	0.955	0.113	0.000	0.138	0.006	1.153	0.000	0.454
12/5/2018 8:20	0.490	0.113	0.000	0.136	0.000	1.144	0.000	0.449
12/5/2018 8:21	0.688	0.114	0.000	0.136	0.000	1.144	0.000	0.451
12/5/2018 8:22	0.856	0.119	0.000	0.140	0.001	1.164	0.000	0.477
12/5/2018 8:23	0.285	0.118	0.000	0.140	0.000	1.181	0.000	0.459
12/5/2018 8:24	0.808	0.118	0.000	0.137	0.000	1.152	0.000	0.465
12/5/2018 8:25	0.468	0.119	0.000	0.140	0.000	1.161	0.000	0.473
12/5/2018 8:26	0.708	0.122	0.000	0.144	0.000	1.157	0.000	0.493
12/5/2018 8:27	0.943	0.115	0.000	0.139	0.000	1.135	0.000	0.458
12/5/2018 8:28	0.481	0.120	0.000	0.144	0.000	1.143	0.000	0.480
12/5/2018 8:29	0.929	0.117	0.000	0.143	0.000	1.169	0.000	0.466
12/5/2018 8:30	0.488	0.121	0.000	0.143	0.000	1.167	0.000	0.486
12/5/2018 8:31	0.587	0.124	0.000	0.148	0.000	1.174	0.000	0.498
12/5/2018 8:32	0.765	0.119	0.000	0.144	0.018	1.192	0.000	0.478
12/5/2018 8:33	0.313	0.115	0.000	0.138	0.000	1.171	0.000	0.460
12/5/2018 8:34	0.917	0.123	0.000	0.144	0.035	1.175	0.000	0.488
12/5/2018 8:35	0.515	0.118	0.000	0.140	0.000	1.177	0.000	0.469
12/5/2018 8:36	0.529	0.123	0.000	0.146	0.000	1.175	0.000	0.485
12/5/2018 8:37	0.760	0.118	0.000	0.141	0.001	1.175	0.000	0.473
12/5/2018 8:38	0.306	0.116	0.000	0.140	0.000	1.166	0.000	0.471
12/5/2018 8:39	0.944	0.119	0.000	0.142	0.039	1.153	0.000	0.479
12/5/2018 8:40	0.595	0.122	0.000	0.146	0.000	1.166	0.000	0.486
12/5/2018 8:41	0.672	0.123	0.000	0.146	0.000	1.160	0.000	0.488
12/5/2018 8:42	0.907	0.119	0.000	0.142	0.000	1.144	0.000	0.473
12/5/2018 8:43	0.203	0.118	0.000	0.143	0.000	1.162	0.000	0.471
12/5/2018 8:44	0.824	0.118	0.000	0.141	0.070	1.178	0.000	0.471
12/5/2018 8:45	0.481	0.115	0.000	0.140	0.000	1.176	0.000	0.473
12/5/2018 8:46	0.553	0.117	0.000	0.139	0.000	1.158	0.000	0.475
12/5/2018 8:47	0.841	0.117	0.000	0.139	0.053	1.174	0.000	0.471
12/5/2018 8:48	0.322	0.113	0.000	0.133	0.000	1.173	0.000	0.457
12/5/2018 8:49	0.826	0.115	0.000	0.135	0.057	1.160	0.000	0.460
12/5/2018 8:50	0.474	0.119	0.000	0.142	0.000	1.189	0.000	0.478
12/5/2018 8:51	0.514	0.116	0.000	0.142	0.000	1.194	0.000	0.467
12/5/2018 8:52	0.833	0.119	0.000	0.144	0.075	1.184	0.000	0.473
12/5/2018 8:53	0.366	0.115	0.000	0.138	0.000	1.161	0.000	0.468
12/5/2018 8:54	0.964	0.115	0.000	0.137	0.034	1.166	0.000	0.462
12/5/2018 8:55	0.632	0.115	0.000	0.137	0.000	1.156	0.000	0.464
12/5/2018 8:56	0.518	0.116	0.000	0.141	0.000	1.148	0.000	0.465

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
12/5/2018 8:57	0.849	0.114	0.000	0.138	0.059	1.162	0.000	0.456
12/5/2018 8:58	0.267	0.115	0.000	0.137	0.000	1.176	0.000	0.464
12/5/2018 8:59	0.794	0.117	0.000	0.137	0.037	1.168	0.000	0.469
12/5/2018 9:00	0.470	0.114	0.000	0.141	0.000	1.160	0.000	0.460
12/5/2018 9:01	0.609	0.109	0.000	0.131	0.000	1.157	0.000	0.447
12/5/2018 9:02	0.901	0.111	0.000	0.135	0.084	1.161	0.000	0.449
12/5/2018 9:03	0.249	0.110	0.000	0.131	0.000	1.149	0.000	0.443
12/5/2018 9:04	0.789	0.111	0.000	0.134	0.000	1.146	0.000	0.445
12/5/2018 9:05	0.545	0.108	0.000	0.129	0.000	1.141	0.000	0.428
12/5/2018 9:06	0.602	0.107	0.000	0.131	0.000	1.130	0.000	0.426
12/5/2018 9:07	0.884	0.104	0.000	0.125	0.017	1.145	0.000	0.422
12/5/2018 9:08	0.411	0.110	0.000	0.136	0.000	1.155	0.000	0.436
12/5/2018 9:09	0.879	0.108	0.000	0.131	0.074	1.151	0.000	0.426
12/5/2018 9:10	0.543	0.108	0.000	0.133	0.000	1.147	0.000	0.431
12/5/2018 9:11	0.554	0.056	0.000	0.068	0.197	0.400	1.037	0.240
12/5/2018 9:12	0.681	0.095	0.000	0.111	0.139	1.135	0.000	0.379
12/5/2018 9:13	0.193	0.097	0.000	0.120	0.000	1.164	0.000	0.408
12/5/2018 9:14	0.749	0.102	0.000	0.121	0.072	1.145	0.000	0.416
12/5/2018 9:15	0.478	0.101	0.000	0.118	0.000	1.147	0.000	0.405
12/5/2018 9:16	0.464	0.098	0.000	0.118	0.000	1.156	0.000	0.406
12/5/2018 9:17	0.754	0.104	0.000	0.125	0.040	1.154	0.000	0.413
12/5/2018 9:18	0.233	0.102	0.000	0.126	0.000	1.148	0.000	0.417
12/5/2018 9:19	0.823	0.111	0.000	0.136	0.033	1.154	0.000	0.446
12/5/2018 9:20	0.472	0.104	0.000	0.125	0.000	1.165	0.000	0.422
12/5/2018 9:21	0.617	0.109	0.000	0.133	0.000	1.154	0.000	0.431
12/5/2018 9:22	0.765	0.104	0.000	0.125	0.026	1.159	0.000	0.415
12/5/2018 9:23	0.130	0.104	0.000	0.126	0.000	1.148	0.000	0.417
12/5/2018 9:24	0.743	0.113	0.000	0.135	0.000	1.157	0.000	0.446
12/5/2018 9:25	0.480	0.114	0.000	0.139	0.000	1.196	0.000	0.448
12/5/2018 9:26	0.488	0.109	0.000	0.130	0.000	1.175	0.000	0.436
12/5/2018 9:27	0.906	0.110	0.000	0.132	0.050	1.177	0.000	0.440
12/5/2018 9:28	0.431	0.109	0.000	0.133	0.000	1.173	0.000	0.445
12/5/2018 9:29	1.054	0.107	0.000	0.130	0.080	1.158	0.000	0.437
12/5/2018 9:30	0.636	0.106	0.000	0.127	0.000	1.143	0.000	0.436
12/5/2018 9:31	0.564	0.106	0.000	0.132	0.000	1.157	0.000	0.440
12/5/2018 9:32	0.762	0.110	0.000	0.135	0.040	1.156	0.000	0.436
12/5/2018 9:33	0.135	0.111	0.000	0.132	0.000	1.153	0.000	0.439
12/5/2018 9:34	0.768	0.106	0.000	0.127	0.038	1.149	0.000	0.425
12/5/2018 9:35	0.439	0.111	0.000	0.134	0.000	1.169	0.000	0.443
12/5/2018 9:36	0.371	0.110	0.000	0.132	0.000	1.181	0.000	0.444
12/5/2018 9:37	0.613	0.107	0.000	0.128	0.055	1.164	0.000	0.423
12/5/2018 9:38	0.143	0.107	0.000	0.129	0.000	1.183	0.000	0.426
12/5/2018 9:39	0.777	0.115	0.000	0.139	0.032	1.191	0.000	0.457
12/5/2018 9:40	0.543	0.112	0.000	0.136	0.000	1.185	0.000	0.446
12/5/2018 9:41	0.563	0.109	0.000	0.131	0.000	1.164	0.000	0.441
12/5/2018 9:42	0.854	0.112	0.000	0.136	0.056	1.171	0.000	0.443
12/5/2018 9:43	0.237	0.113	0.000	0.141	0.000	1.157	0.000	0.459
12/5/2018 9:44	0.802	0.110	0.000	0.132	0.077	1.161	0.000	0.448
12/5/2018 9:45	0.522	0.108	0.000	0.133	0.000	1.173	0.000	0.447
12/5/2018 9:46	0.535	0.113	0.000	0.137	0.000	1.163	0.000	0.465
12/5/2018 9:47	0.192	0.083	0.000	0.103	0.000	1.416	0.000	0.365

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Pressure (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
5-Dec	736	8.03	0.113	14.490	181	NA	0.1%
5-Dec	1403	8.055	0.115	14.43	181	-0.3%	-0.1%
	Average	8.045	0.114				

Stratification Test

Point	Average Reading					Variation from Mean		
	O2	CO2	THC	NOx	CO	O2	CO2	NOx
1	14.25	6.73	7.35	29.42	13.90	0.16	0.19	0.06
2	14.12	6.87	7.91	29.32	14.43	0.03	0.05	0.04
3	14.05	6.96	7.02	29.55	14.40	0.04	0.04	0.19
4	13.94	7.07	7.46	29.60	22.97	0.15	0.16	0.24
5	14.08	6.95	7.65	28.91	11.67	0.00	0.03	0.45
6								
7								
8								
9								
10								
11								
12								
Mean	14.09	6.91	7.48	29.36	15.47			
					Maximum Variation From Mean	0.2	0.2	0.5
					Percent of Mean	**1.16**	**2.72**	**1.53**
					Result	**Unstratified**	**Unstratified**	**Unstratified**

Specifications (%)

≤5	Unstratified (single point testing)
>5 and ≤1(	Minimally Stratified (3-point testing required)
>10	Stratified (12-point testing required)

Enviva	DHM Exhaust

Parameters	Units	Run 1	Run 2	Run 3	Average
Date		4-Dec-18	4-Dec-18	4-Dec-18	
Run Time		0915-1023	1118-1225	1304-1412	
Oxygen	%	20.97	20.94	20.91	20.94
Moisture	%	3.94	4.22	4.33	4.17
Volumetric Flow Rate, Std	DSCFM	62,212	64,491	64,891	63,865
Dryer Process Rate	ODT/hr	65.4	64.9	64.6	65.0
VOC Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (actual)	$ppmv_w$ as C_3	65.6	83.8	82.3	77.2
Concentration (dry)	$ppmv_d$ as C_3	68.3	87.5	86.1	80.6
Emission Rate (propane)	lb/hr as C_3H_8	29.2	38.8	38.4	35.4
Emission Factor (propane)	lb/ODT	0.45	0.60	0.59	0.55

Facility: Enviva
Date: 12/4/18

Source: DHM Exhaust

HAP		**Methanol**	**Acet-aldehyde**	**Form-aldehyde**	**HCl**		
Formula		CH3OH	CH_3 CHO	CH_2O	HCl		
Mol Weight	lb/lb mole	32.04	44.05	30.31	36.46		
Run 1							
Conc	ppm wet	0.77	0.00	0.15	0.12		
Conc	ppm dry	0.80	0.00	0.15	0.13	3.94	% Moisture
Mass Emissions	lb/hr	0.25	0.00	0.045	0.046	62,212	DSCFM
Emission Factor	lb/ODT	0.0038	0.00	0.00068	0.00070	65.4	ODT/hr
Run 2							
Conc	ppm wet	1.07	0.00	0.00	0.00		
Conc	ppm dry	1.11	0.00	0.00	0.00	4.22	% Moisture
Mass Emissions	lb/hr	0.36	0.00	0.00	0.00	64,491	DSCFM
Emission Factor	lb/ODT	0.0055	0.00	0.00	0.00	64.9	ODT/hr
Run 3							
Conc	ppm wet	1.04	0.00	0.00	0.00		
Conc	ppm dry	1.08	0.00	0.00	0.00	4.33	% Moisture
Mass Emissions	lb/hr	0.35	0.00	0.00	0.00	64,891	DSCFM
Emission Factor	lb/ODT	0.0054	0.00	0.00	0.00	64.6	ODT/hr
Averages							
Conc	ppm wet	0.96	0.00	0.05	0.04		
Conc	ppm dry	1.00	0.00	0.05	0.04	4.17	% Moisture
Mass Emissions	lb/hr	0.32	0.00	0.015	0.015	63,865	DSCFM
Emission Factor	lb/ODT	0.0049	0.00	0.00023	0.00023		

ND values

Enviva	Date:	4-Dec-18	Run 1
DHM Exhaust	Run Time:	0915-1023	

Parameter	Symbol	O_2 %	CO_2 %	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards				
Zero Gas	$C_{v,\ zero}$	0.0	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	N/A	N/A	30.07
Mid-Level Gas	$C_{v,\ mid}$	11.05	9.952	52.38
High-Level Gas	$C_{v,\ high}$	21.99	18.22	85.84
Calibration Span	CS	21.99	18.22	175
Analyzer Calibration Error - Instrument Response				
Zero Gas	$C_{Dir,\ zero}$	0.02	0.12	0.1
Low-Level Gas	$C_{Dir,\ low}$	N/A	N/A	30.1
Mid-Level Gas	$C_{Dir,\ mid}$	11.083	10	52.37
High-Level Gas	$C_{Dir,\ high}$	22.02	18.23	85.5
Analyzer Calibration Error - Results (Percent of Span)				
Zero Gas	ACE_{zero}	0.1	0.7	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	0.1
Mid-Level Gas	ACE_{mid}	0.2	0.3	0.0
High-Level Gas	ACE_{high}	0.1	0.1	-0.2
Specification	ACE_{spec}	±2	±2	±5
System Calibrations - Instrument Response				
Initial Zero	$C_{s,\ zero\ (pre)}$	0.36	0.11	0.1
Final Zero	$C_{s,\ zero\ (post)}$	0.14	0.12	-0.17
Upscale Gas Standard	C_{MA}	21.99	18.22	52.4
Initial Upscale	$C_{v,\ up\ (pre)}$	21.905	18.20	52.37
Final Upscale	$C_{v,\ up\ (post)}$	21.987	18.26	51.37
System Bias - Results (Percent)				
Zero (pre)	$SB_{i\ (zero)}$	1.5	-0.1	0.0
Zero (post)	$SB_{final\ (zero)}$	0.6	0.0	-0.2
Upscale (pre)	$SB_{i\ (upscale)}$	-0.5	-0.2	0.0
Upscale (post)	$SB_{final\ (upscale)}$	-0.2	0.2	-0.6
Specification	SB_{spec}	±5	±5	NA
System Drift - Results (Percent)				
Zero	D_{zero}	1.0	0.1	-0.2
Upscale	$D_{upscale}$	0.4	0.3	-0.6
Specification	D_{spec}	±3	3.0	±3
Response Test - Results (seconds)				
Upscale Test		30	35	NA
Zero Test		30	35	NA
Response Time		30	35	30
Calibration Correction				
Raw Average	C_{ave}	20.94	0.12	65.6
Bias Average - Zero	C_0	0.25	0.12	N/A
Bias Average - Upscale	C_M	21.95	18.23	N/A
Corrected Run Average	C_{Gas}	**20.97**	**0.00**	**65.6**

Enviva | **Date:** 4-Dec-18 | **Run 2**
DHM Exhaust | **Run Time:** 1118-1225

Parameter	Symbol	O_2 %	CO_2 %	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards				
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	30.07
Mid-Level Gas	$C_{v, mid}$	11.1	10.0	52.38
High-Level Gas	$C_{v, high}$	22.0	18.2	85.84
Calibration Span	CS	22.0	18.2	175
Analyzer Calibration Error - Instrument Response				
Zero Gas	$C_{Dir, zero}$	0.0	0.1	0.1
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	30.1
Mid-Level Gas	$C_{Dir, mid}$	11.1	10.0	52.4
High-Level Gas	$C_{Dir, high}$	22.0	18.2	85.5
Analyzer Calibration Error - Results (Percent of Span)				
Zero Gas	ACE_{zero}	0.1	0.7	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	0.1
Mid-Level Gas	ACE_{mid}	0.2	0.3	0.0
High-Level Gas	ACE_{high}	0.1	0.1	-0.2
Specification	ACE_{spec}	±2	±2	±5
System Calibrations - Instrument Response				
Initial Zero	$C_{s, zero (pre)}$	0.14	0.12	-0.09
Final Zero	$C_{s, zero (post)}$	0.187	0.13	0.08
Upscale Gas Standard	C_{MA}	21.99	18.22	52.4
Initial Upscale	$C_{v, up (pre)}$	21.987	18.26	51.37
Final Upscale	$C_{v, up (post)}$	21.995	18.263	51.46
System Bias - Results (Percent)				
Zero (pre)	$SB_{i (zero)}$	0.6	0.0	-0.1
Zero (post)	$SB_{final (zero)}$	0.8	0.0	0.0
Upscale (pre)	$SB_{i (upscale)}$	-0.2	0.2	-0.6
Upscale (post)	$SB_{final (upscale)}$	-0.1	0.2	-0.5
Specification	SB_{spec}	±5	±5	NA
System Drift - Results (Percent)				
Zero	D_{zero}	0.2	0.0	0.1
Upscale	$D_{upscale}$	0.0	0.0	0.1
Specification	D_{spec}	±3	3.0	±3
Response Test - Results (seconds)				
Upscale Test		30	35	NA
Zero Test		30	35	NA
Response Time		30	35	30
Calibration Correction				
Raw Average	C_{ave}	20.95	0.12	83.79
Bias Average - Zero	C_0	0.17	0.12	N/A
Bias Average - Upscale	C_M	21.99	18.26	N/A
Corrected Run Average	C_{Gas}	**20.94**	**-0.01**	**83.8**

Enviva		Date:	4-Dec-18	Run 3
DHM Exhaust		Run Time:	1304-1412	

Parameter	Symbol	O_2 %	CO_2 %	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards				
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	30.1
Mid-Level Gas	$C_{v, mid}$	11.1	10.0	52.4
High-Level Gas	$C_{v, high}$	22.0	18.2	85.8
Calibration Span	CS	21.99	18.22	175.0
Analyzer Calibration Error - Instrument Response				
Zero Gas	$C_{Dir, zero}$	0.0	0.1	0.10
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	30.1
Mid-Level Gas	$C_{Dir, mid}$	11.1	10.0	52.4
High-Level Gas	$C_{Dir, high}$	22.0	18.2	85.5
Analyzer Calibration Error - Results (Percent of Span)				
Zero Gas	ACE_{zero}	0.1	0.7	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	0.1
Mid-Level Gas	ACE_{mid}	0.2	0.3	0.0
High-Level Gas	ACE_{high}	0.1	0.1	-0.2
Specification	ACE_{spec}	±2	±2	±5
System Calibrations - Instrument Response				
Initial Zero	$C_{s, zero (pre)}$	0.19	0.13	0.08
Final Zero	$C_{s, zero (post)}$	0.23	0.16	0.47
Upscale Gas Standard	C_{MA}	21.99	18.22	52.4
Initial Upscale	$C_{v, up (pre)}$	21.995	18.263	51.46
Final Upscale	$C_{v, up (post)}$	21.963	18.22	52.2
System Bias - Results (Percent)				
Zero (pre)	$SB_{i (zero)}$	0.8	0.0	0.0
Zero (post)	$SB_{final (zero)}$	1.0	0.2	0.2
Upscale (pre)	$SB_{i (upscale)}$	-0.1	0.2	-0.5
Upscale (post)	$SB_{final (upscale)}$	-0.3	-0.1	-0.1
Specification	SB_{spec}	±5	±5	NA
System Drift - Results (Percent)				
Zero	D_{zero}	0.2	0.2	0.2
Upscale	$D_{upscale}$	0.1	0.2	0.4
Specification	D_{spec}	±3	3.0	±3
Response Test - Results (seconds)				
Upscale Test		30	35	NA
Zero Test		30	35	NA
Response Time		30	35	30
Calibration Correction				
Raw Average	C_{ave}	20.91	0.11	82.3
Bias Average - Zero	C_0	0.21	0.14	N/A
Bias Average - Upscale	C_M	21.98	18.24	N/A
Corrected Run Average	C_{Gas}	**20.91**	**0.11**	**82.3**

Test Run 1 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC	O2	CO2	THC
		%	ppm	ppm	Volts	Volts	Volts
Start Averaging							
12/4/2018	9:16:24	20.943	0.111	73.05	8.417	0.045	2.495
12/4/2018	9:17:24	20.944	0.112	60.56	8.418	0.045	2.079
12/4/2018	9:18:24	20.945	0.111	42.67	8.418	0.045	1.482
12/4/2018	9:19:25	20.95	0.114	35.82	8.42	0.045	1.254
12/4/2018	9:20:24	20.95	0.113	38.92	8.42	0.045	1.357
12/4/2018	9:21:24	20.951	0.113	45.73	8.421	0.045	1.584
12/4/2018	9:22:23	20.948	0.113	53.06	8.419	0.045	1.829
12/4/2018	9:23:24	20.949	0.112	60.15	8.419	0.045	2.065
12/4/2018	9:24:24	20.946	0.112	65.15	8.418	0.045	2.232
12/4/2018	9:25:24	20.948	0.112	69.73	8.419	0.045	2.384
12/4/2018	9:26:24	20.951	0.111	74.45	8.421	0.044	2.542
12/4/2018	9:27:24	20.951	0.11	76.45	8.42	0.044	2.608
12/4/2018	9:28:23	20.951	0.112	77.1	8.421	0.045	2.63
12/4/2018	9:29:24	20.945	0.114	76.31	8.418	0.046	2.604
12/4/2018	9:30:24	20.947	0.118	72.31	8.419	0.047	2.47
12/4/2018	9:31:24	20.936	0.118	68.63	8.415	0.047	2.348
12/4/2018	9:32:24	20.937	0.117	57.28	8.415	0.047	1.969
12/4/2018	9:33:24	20.942	0.117	43.16	8.417	0.047	1.499
12/4/2018	9:34:24	20.952	0.117	39.6	8.421	0.047	1.38
12/4/2018	9:35:24	20.952	0.117	42.96	8.421	0.047	1.492
12/4/2018	9:36:24	20.952	0.116	49.92	8.421	0.046	1.724
12/4/2018	9:37:24	20.957	0.114	57.59	8.423	0.046	1.98
12/4/2018	9:38:23	20.953	0.114	63.62	8.421	0.046	2.181
12/4/2018	9:39:24	20.956	0.115	67.37	8.422	0.046	2.306
12/4/2018	9:40:24	20.955	0.114	71.1	8.422	0.046	2.43
12/4/2018	9:41:23	20.952	0.115	74.07	8.421	0.046	2.529
12/4/2018	9:42:24	20.947	0.115	72.76	8.419	0.046	2.485
12/4/2018	9:43:24	20.949	0.114	55.4	8.42	0.046	1.907
12/4/2018	9:44:24	20.955	0.115	35.21	8.422	0.046	1.234
12/4/2018	9:45:23	20.951	0.116	30.72	8.421	0.046	1.084
12/4/2018	9:46:24	20.948	0.12	33.63	8.419	0.048	1.181
12/4/2018	9:47:24	20.95	0.12	31.1	8.42	0.048	1.097
12/4/2018	9:48:23	20.954	0.12	33.67	8.422	0.048	1.182
12/4/2018	9:49:24	20.956	0.12	39.77	8.422	0.048	1.386
12/4/2018	9:50:24	20.954	0.12	46.11	8.422	0.048	1.597
12/4/2018	9:51:24	20.952	0.119	51.73	8.421	0.048	1.784
Pause							
End Pause							
12/4/2018	9:53:24	20.957	0.117	61.13	8.423	0.047	2.098
12/4/2018	9:54:24	20.957	0.118	68.74	8.423	0.047	2.351
12/4/2018	9:55:23	20.952	0.122	72.18	8.421	0.049	2.466
12/4/2018	9:56:24	20.95	0.122	73.76	8.42	0.049	2.519

Test Run 1 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC	O2	CO2	THC
		%	ppm	ppm	Volts	Volts	Volts
12/4/2018	9:57:24	20.951	0.123	74.75	8.42	0.049	2.552
12/4/2018	9:58:24	20.949	0.123	75.56	8.42	0.049	2.579
12/4/2018	9:59:24	20.949	0.123	76.09	8.419	0.049	2.596
12/4/2018	10:00:23	20.949	0.122	77.07	8.42	0.049	2.629
12/4/2018	10:01:24	20.95	0.123	78.08	8.42	0.049	2.663
12/4/2018	10:02:24	20.95	0.123	79.06	8.42	0.049	2.695
12/4/2018	10:03:23	20.948	0.123	80.35	8.419	0.049	2.738
12/4/2018	10:04:25	20.951	0.123	82.52	8.42	0.049	2.811
12/4/2018	10:05:24	20.949	0.123	86.06	8.42	0.049	2.929
12/4/2018	10:06:24	20.948	0.123	88.89	8.419	0.049	3.023
12/4/2018	10:07:23	20.946	0.123	90.19	8.419	0.049	3.066
12/4/2018	10:08:24	20.945	0.124	82.14	8.418	0.049	2.798
12/4/2018	10:09:24	20.948	0.123	76.74	8.419	0.049	2.618
12/4/2018	10:10:23	20.948	0.124	78.08	8.419	0.05	2.663
12/4/2018	10:11:24	20.945	0.123	79.87	8.418	0.049	2.722
12/4/2018	10:12:24	20.947	0.123	73.72	8.419	0.049	2.517
12/4/2018	10:13:24	20.95	0.123	72.59	8.42	0.049	2.48
12/4/2018	10:14:23	20.951	0.123	74.22	8.42	0.049	2.534
12/4/2018	10:15:24	20.945	0.123	76.73	8.418	0.049	2.618
12/4/2018	10:16:24	20.948	0.124	78.91	8.419	0.049	2.69
12/4/2018	10:17:24	20.947	0.123	79.41	8.419	0.049	2.707
12/4/2018	10:18:24	20.951	0.124	79.77	8.421	0.049	2.719
12/4/2018	10:19:24	20.95	0.123	80.35	8.42	0.049	2.738
12/4/2018	10:20:23	20.954	0.123	81.19	8.421	0.049	2.766
12/4/2018	10:21:24	20.481	0.123	82.43	8.232	0.049	2.808
12/4/2018	10:22:24	20.949	0.123	83.82	8.42	0.049	2.854
Avg		20.94233	0.1185	65.62515	8.416985	0.047364	2.24753

Test Run 2 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC	O2
		%	ppm	ppm	Volts
Start Averaging					
12/4/2018	11:18:18	20.954	0.121	58.22	8.421
12/4/2018	11:19:19	20.956	0.121	57.21	8.422
12/4/2018	11:20:19	20.953	0.118	60.1	8.421
12/4/2018	11:21:18	20.953	0.119	61.9	8.421
12/4/2018	11:22:18	20.951	0.118	64.57	8.42
12/4/2018	11:23:18	20.95	0.119	67.09	8.42
12/4/2018	11:24:19	20.95	0.118	68.96	8.42
12/4/2018	11:25:19	20.955	0.116	70.42	8.422
12/4/2018	11:26:18	20.953	0.117	71.18	8.421
12/4/2018	11:27:19	20.959	0.114	71.74	8.423
12/4/2018	11:28:18	20.958	0.115	72.59	8.423
12/4/2018	11:29:18	20.959	0.113	73.15	8.424
12/4/2018	11:30:19	20.961	0.114	74.36	8.424
12/4/2018	11:31:19	20.959	0.114	75.49	8.424
12/4/2018	11:32:18	20.962	0.113	76.38	8.425
12/4/2018	11:33:18	20.962	0.113	77.83	8.425
12/4/2018	11:34:19	20.963	0.113	79.34	8.425
12/4/2018	11:35:19	20.963	0.114	80.72	8.425
12/4/2018	11:36:18	20.967	0.113	82.44	8.427
12/4/2018	11:37:18	20.964	0.113	83.99	8.426
12/4/2018	11:38:19	20.965	0.112	85.54	8.426
12/4/2018	11:39:18	20.957	0.119	86.25	8.423
12/4/2018	11:40:18	20.953	0.121	86.57	8.421
12/4/2018	11:41:19	20.957	0.12	86.11	8.423
12/4/2018	11:42:19	20.957	0.12	85.42	8.423
12/4/2018	11:43:18	20.953	0.12	83.66	8.421
12/4/2018	11:44:18	20.959	0.12	82.04	8.424
12/4/2018	11:45:19	20.952	0.12	81.05	8.421
12/4/2018	11:46:18	20.952	0.121	80.66	8.421
12/4/2018	11:47:18	20.951	0.12	80.66	8.42
12/4/2018	11:48:19	20.952	0.12	81.48	8.421
12/4/2018	11:49:18	20.948	0.12	82.94	8.419
12/4/2018	11:50:18	20.948	0.12	84.16	8.419
12/4/2018	11:51:18	20.954	0.12	85.61	8.421
12/4/2018	11:52:18	20.951	0.119	87.16	8.42
12/4/2018	11:53:19	20.953	0.117	89.61	8.421
12/4/2018	11:54:19	20.953	0.117	91.64	8.421
12/4/2018	11:55:18	20.948	0.117	93.61	8.419
12/4/2018	11:56:19	20.951	0.117	94.81	8.421
Pause					
End Pause					

Test Run 2 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC	O2
		%	ppm	ppm	Volts
12/4/2018	11:59:18	20.952	0.117	86.6	8.421
12/4/2018	12:00:19	20.95	0.118	89.21	8.42
12/4/2018	12:01:18	20.947	0.118	90.97	8.419
12/4/2018	12:02:19	20.947	0.119	90.74	8.419
12/4/2018	12:03:18	20.946	0.118	89.75	8.418
12/4/2018	12:04:18	20.944	0.119	89.12	8.418
12/4/2018	12:05:19	20.944	0.119	89.03	8.418
12/4/2018	12:06:18	20.941	0.119	89.81	8.416
12/4/2018	12:07:18	20.944	0.118	90.97	8.418
12/4/2018	12:08:18	20.943	0.119	91.77	8.417
12/4/2018	12:09:19	20.945	0.119	92.15	8.418
12/4/2018	12:10:18	20.942	0.119	92.33	8.417
12/4/2018	12:11:18	20.945	0.119	93.7	8.418
12/4/2018	12:12:19	20.94	0.119	95.06	8.416
12/4/2018	12:13:18	20.937	0.121	95.72	8.415
12/4/2018	12:14:19	20.94	0.121	96.03	8.416
12/4/2018	12:15:19	20.941	0.121	95.93	8.416
12/4/2018	12:16:18	20.938	0.12	95.34	8.415
12/4/2018	12:17:19	20.938	0.12	93.95	8.415
12/4/2018	12:18:19	20.937	0.12	93.08	8.415
12/4/2018	12:19:18	20.938	0.12	92.26	8.415
12/4/2018	12:20:18	20.937	0.12	90.95	8.415
12/4/2018	12:21:19	20.931	0.119	90.41	8.413
12/4/2018	12:22:19	20.935	0.12	89.51	8.414
12/4/2018	12:23:18	20.945	0.128	90.23	8.418
12/4/2018	12:24:19	20.943	0.127	90.67	8.417
Average	2883 sam|	20.95	0.118	83.79	8.42

Test Run 2 End

Test Run 3 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC
		%	ppm	ppm
Start Averaging				
12/4/2018	13:04:58	20.913	0.113	63.32
12/4/2018	13:05:59	20.91	0.115	65.39
12/4/2018	13:06:59	20.914	0.115	67.18
12/4/2018	13:07:59	20.912	0.114	68.43
12/4/2018	13:08:59	20.911	0.115	69.45
12/4/2018	13:09:58	20.91	0.114	69.84
12/4/2018	13:10:59	20.91	0.115	71.47
12/4/2018	13:11:59	20.913	0.114	73.46
12/4/2018	13:12:59	20.908	0.115	74.62
12/4/2018	13:13:58	20.911	0.115	74.94
12/4/2018	13:14:58	20.909	0.115	75.8
12/4/2018	13:15:59	20.911	0.114	77.14
12/4/2018	13:16:58	20.909	0.113	78.77
12/4/2018	13:17:58	20.909	0.112	79.68
12/4/2018	13:18:59	20.912	0.112	80.79
12/4/2018	13:19:59	20.91	0.11	82.46
12/4/2018	13:20:59	20.91	0.112	82.64
12/4/2018	13:21:59	20.912	0.113	82.81
12/4/2018	13:22:58	20.906	0.112	83.72
12/4/2018	13:23:59	20.91	0.112	84.36
12/4/2018	13:24:59	20.909	0.11	85.39
12/4/2018	13:25:58	20.91	0.111	86.61
12/4/2018	13:26:59	20.908	0.108	87.65
12/4/2018	13:27:59	20.909	0.111	80.87
12/4/2018	13:28:59	20.909	0.111	73.9
12/4/2018	13:29:58	20.909	0.109	72.09
12/4/2018	13:30:58	20.905	0.113	72.6
12/4/2018	13:31:59	20.914	0.104	74.47
12/4/2018	13:32:59	20.92	0.096	76.04
12/4/2018	13:33:58	20.909	0.099	76.11
12/4/2018	13:34:59	20.916	0.093	76.63
12/4/2018	13:35:59	20.919	0.091	77.5
12/4/2018	13:36:59	20.917	0.092	79.64
12/4/2018	13:37:59	20.905	0.102	81.92
12/4/2018	13:38:58	20.899	0.105	83.1
12/4/2018	13:39:59	20.898	0.106	83.87
12/4/2018	13:40:59	20.9	0.104	85.59
12/4/2018	13:41:58	20.9	0.104	87.4
12/4/2018	13:42:59	20.898	0.104	90.23
12/4/2018	13:43:59	20.899	0.104	92.03
12/4/2018	13:44:59	20.9	0.105	92.96
12/4/2018	13:45:58	20.902	0.104	92.77
12/4/2018	13:46:59	20.905	0.105	92.59

Test Run 3 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name Enviva Greenwood
Location: DHM Stack

		O2	CO2	THC
		%	ppm	ppm
12/4/2018	13:47:59	20.905	0.104	91.46
12/4/2018	13:48:58	20.903	0.105	90.04
12/4/2018	13:49:59	20.904	0.104	88.67
12/4/2018	13:50:59	20.905	0.105	87
Pause				
12/4/2018	13:55:58	20.907	0.106	85.92
12/4/2018	13:56:59	20.905	0.105	86.93
End Pause				
12/4/2018	13:57:59	20.902	0.105	87.83
12/4/2018	13:58:58	20.906	0.105	89.97
12/4/2018	13:59:58	20.904	0.105	91.87
12/4/2018	14:00:59	20.905	0.105	92.4
12/4/2018	14:01:59	20.904	0.105	93.2
12/4/2018	14:02:58	20.902	0.105	93.25
12/4/2018	14:03:58	20.903	0.105	92.78
12/4/2018	14:04:59	20.904	0.105	91.38
12/4/2018	14:05:59	20.903	0.105	88.84
12/4/2018	14:06:58	20.902	0.105	86.69
12/4/2018	14:07:59	20.903	0.104	85.11
12/4/2018	14:08:59	20.903	0.105	84.56
12/4/2018	14:09:58	20.901	0.104	84.27
12/4/2018	14:10:59	20.9	0.105	84.3
12/4/2018	14:11:59	20.901	0.104	84.49
		20.90691	0.107219	82.33109

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 1	**0.146**	0.063	**0.124**	0.056	**0.771**	0.217	0.258	0.180
	0.146		**0.124**		**0.771**		**0.360**	
Run 2	**-0.014**	**0.075**	**0.065**	**0.056**	**1.067**	**0.205**	**0.299**	**0.189**
	0.150		**0.113**		**1.067**		**0.377**	
12/4/2018 9:15	0.035	0.062	0.232	0.056	0.762	0.163	0.374	0.179
12/4/2018 9:16	0.106	0.052	0.164	0.055	0.536	0.14	0.277	0.172
12/4/2018 9:17	0.079	0.048	0.196	0.056	0.49	0.129	0.188	0.166
12/4/2018 9:18	0.028	0.049	0.155	0.049	0.524	0.13	0.139	0.164
12/4/2018 9:19	0.095	0.052	0.14	0.053	0.576	0.139	0.22	0.166
12/4/2018 9:20	0.14	0.057	0.126	0.054	0.644	0.148	0.278	0.176
12/4/2018 9:21	0.252	0.06	0.197	0.056	0.734	0.157	0.28	0.177
12/4/2018 9:22	0.272	0.062	0.269	0.058	0.773	0.164	0.257	0.179
12/4/2018 9:23	0.156	0.065	0.179	0.056	0.794	0.17	0.342	0.179
12/4/2018 9:24	0.111	0.066	0.059	0.053	0.852	0.175	0.393	0.178
12/4/2018 9:25	0.119	0.068	0.061	0.054	0.89	0.178	0.394	0.184
12/4/2018 9:26	0.126	0.071	0.147	0.06	0.906	0.18	0.324	0.185
12/4/2018 9:27	0.125	0.069	0.099	0.056	0.894	0.179	0.32	0.18
12/4/2018 9:28	0.11	0.067	0.162	0.056	0.844	0.174	0.227	0.177
12/4/2018 9:29	0.036	0.066	0.154	0.056	0.782	0.169	0.417	0.182
12/4/2018 9:30	0.069	0.061	0.173	0.054	0.695	0.156	0.163	0.178
12/4/2018 9:31	0.102	0.051	0.187	0.056	0.554	0.135	0.366	0.174
12/4/2018 9:32	0.188	0.049	0.161	0.054	0.478	0.128	0.28	0.17
12/4/2018 9:33	0.221	0.053	0.133	0.056	0.555	0.134	0.253	0.172
12/4/2018 9:34	0.178	0.054	0.158	0.055	0.615	0.142	0.215	0.173
12/4/2018 9:35	0.153	0.059	0.218	0.054	0.642	0.151	0.43	0.173
12/4/2018 9:36	0.147	0.062	0.163	0.057	0.726	0.158	0.262	0.182
12/4/2018 9:37	0.081	0.063	0.187	0.056	0.726	0.164	0.137	0.177
12/4/2018 9:38	0.075	0.066	0.069	0.055	0.796	0.17	0.288	0.183
12/4/2018 9:39	0.149	0.067	0.09	0.054	0.861	0.177	0.304	0.184
12/4/2018 9:40	0.108	0.068	0.071	0.057	0.894	0.181	0.303	0.181
12/4/2018 9:41	0.051	0.062	0.154	0.058	0.749	0.169	0.26	0.175
12/4/2018 9:42	0.137	0.049	0.21	0.054	0.487	0.138	0.24	0.172
12/4/2018 9:43	0.195	0.045	0.2	0.051	0.401	0.122	0.128	0.169
12/4/2018 9:44	0.281	0.048	0.088	0.055	0.387	0.117	0.371	0.165
12/4/2018 9:45	0.198	0.045	0.192	0.052	0.4	0.11	0.201	0.165
12/4/2018 9:46	0.129	0.048	0.176	0.055	0.455	0.114	0.115	0.169
12/4/2018 9:47	0.109	0.05	0.138	0.053	0.517	0.125	0.159	0.173
12/4/2018 9:48	0.081	0.052	0.172	0.053	0.581	0.138	0.313	0.172
12/4/2018 9:49	0.06	0.056	0.169	0.057	0.661	0.146	0.331	0.175
12/4/2018 9:50	0.007	0.052	0.157	0.053	0.557	0.129	0.363	0.169
12/4/2018 9:51								
12/4/2018 9:52								
12/4/2018 9:53	0.232	0.066	0.093	0.056	0.933	0.172	0.416	0.186
12/4/2018 9:54	0.36	0.067	0.119	0.058	0.962	0.175	0.532	0.183
12/4/2018 9:55	0.381	0.067	0.132	0.054	0.965	0.177	0.25	0.179
12/4/2018 9:56	0.237	0.069	0.128	0.058	0.939	0.18	0.476	0.185
12/4/2018 9:57	0.188	0.069	0.066	0.058	0.911	0.179	0.23	0.186
12/4/2018 9:58	0.083	0.07	0.129	0.057	0.967	0.182	0.465	0.185
12/4/2018 9:59	0.139	0.071	0.069	0.058	0.976	0.183	0.327	0.183

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
12/4/2018 10:00	0.149	0.069	0.079	0.054	0.993	0.181	0.091	0.179
12/4/2018 10:01	0.091	0.072	0.04	0.056	0.997	0.184	0.116	0.186
12/4/2018 10:02	0.112	0.074	0.097	0.06	1.013	0.185	0.204	0.19
12/4/2018 10:03	0.165	0.074	0.077	0.057	1.029	0.188	0.44	0.189
12/4/2018 10:04	0.209	0.079	0.1	0.061	1.053	0.186	0.269	0.194
12/4/2018 10:05	0.283	0.075	0.045	0.058	1.04	0.189	0.387	0.192
12/4/2018 10:06	0.196	0.074	0.16	0.058	0.956	0.186	0.372	0.189
12/4/2018 10:07	0.202	0.07	0.077	0.058	0.894	0.176	0.447	0.188
12/4/2018 10:08	0.124	0.069	0.056	0.056	0.902	0.177	0.262	0.186
12/4/2018 10:09	0.125	0.072	0.051	0.059	0.905	0.178	0.322	0.187
12/4/2018 10:10	0.13	0.068	0.128	0.058	0.877	0.174	0.051	0.186
12/4/2018 10:11	0.07	0.069	0.179	0.058	0.874	0.171	0.137	0.187
12/4/2018 10:12	0.089	0.068	0.051	0.056	0.842	0.174	0.018	0.185
12/4/2018 10:13	0.08	0.07	0.137	0.054	0.873	0.176	0.225	0.185
12/4/2018 10:14	0.175	0.072	0.041	0.057	0.903	0.18	0.14	0.185
12/4/2018 10:15	0.245	0.073	0.089	0.059	0.891	0.181	0.213	0.189
12/4/2018 10:16	0.286	0.071	0.083	0.054	0.902	0.183	0.257	0.185
12/4/2018 10:17	0.206	0.071	0.063	0.057	0.903	0.183	0.231	0.188
12/4/2018 10:18	0.181	0.072	0.09	0.057	0.906	0.186	0.111	0.194
12/4/2018 10:19	0.145	0.074	0.029	0.058	0.966	0.187	0.066	0.185
12/4/2018 10:20	0.124	0.075	0.053	0.057	0.96	0.189	0.033	0.191
12/4/2018 10:21	0.15	0.077	0.055	0.06	0.994	0.188	0.056	0.195
12/4/2018 10:22	0.087	0.065	0.116	0.056	0.86	0.72	0.079	0.18
12/4/2018 10:23	0.05	0.028	0.073	0.036	-0.254	3.179	0.182	0.16
12/4/2018 11:18	0.057	0.061	0.047	0.057	0.764	0.151	0.151	0.181
12/4/2018 11:19	-0.063	0.064	0.118	0.058	0.757	0.154	0.206	0.184
12/4/2018 11:20	-0.016	0.063	0.142	0.056	0.771	0.157	0.161	0.177
12/4/2018 11:21	-0.054	0.066	0.132	0.053	0.826	0.161	0.246	0.18
12/4/2018 11:22	-0.055	0.067	0.078	0.056	0.874	0.165	0.059	0.183
12/4/2018 11:23	-0.016	0.068	0.073	0.057	0.886	0.165	0.204	0.188
12/4/2018 11:24	-0.052	0.066	0.007	0.056	0.876	0.168	0.15	0.183
12/4/2018 11:25	-0.013	0.07	0.055	0.058	0.854	0.166	0.396	0.188
12/4/2018 11:26	0.069	0.068	0.062	0.056	0.866	0.169	0.394	0.183
12/4/2018 11:27	0.079	0.068	0.077	0.057	0.884	0.169	0.219	0.184
12/4/2018 11:28	0.026	0.069	0.101	0.058	0.959	0.171	0.354	0.191
12/4/2018 11:29	-0.006	0.072	0.102	0.056	0.906	0.171	0.25	0.186
12/4/2018 11:30	0.026	0.071	0.115	0.057	0.911	0.172	0.137	0.188
12/4/2018 11:31	-0.014	0.072	0.035	0.059	0.965	0.174	0.288	0.193
12/4/2018 11:32	-0.103	0.071	0.069	0.054	0.972	0.176	0.353	0.187
12/4/2018 11:33	-0.083	0.074	0.028	0.057	0.993	0.176	0.336	0.188
12/4/2018 11:34	-0.029	0.073	0.092	0.056	0.975	0.175	0.254	0.186
12/4/2018 11:35	-0.016	0.076	0.078	0.058	1.054	0.176	0.294	0.192
12/4/2018 11:36	-0.003	0.074	0.052	0.053	1.081	0.177	0.399	0.189
12/4/2018 11:37	0.05	0.075	0.084	0.058	1.048	0.177	0.298	0.192
12/4/2018 11:38	0.006	0.075	0.146	0.053	1.062	0.177	0.406	0.188
12/4/2018 11:39	-0.051	0.073	0.032	0.054	1.125	0.18	0.475	0.186
12/4/2018 11:40	-0.047	0.076	-0.021	0.052	1.078	0.178	0.243	0.193
12/4/2018 11:41	-0.096	0.076	0.064	0.057	1.068	0.178	0.405	0.185
12/4/2018 11:42	-0.09	0.074	0.075	0.058	1.059	0.176	0.31	0.189
12/4/2018 11:43	-0.063	0.073	0.086	0.053	1.034	0.176	0.223	0.185
12/4/2018 11:44	-0.04	0.075	0.03	0.053	1.082	0.174	-0.016	0.186

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
12/4/2018 11:45	0.011	0.074	0.072	0.059	1.042	0.176	0.147	0.196
12/4/2018 11:46	0.11	0.075	0.039	0.061	1.069	0.174	-0.137	0.197
12/4/2018 11:47	0.118	0.074	0.047	0.06	1.056	0.174	-0.121	0.196
12/4/2018 11:48	0.016	0.075	0.071	0.058	1.047	0.175	0.171	0.191
12/4/2018 11:49	-0.029	0.078	0.052	0.059	1.066	0.177	0.232	0.19
12/4/2018 11:50	-0.098	0.076	0.099	0.052	1.074	0.177	0.218	0.184
12/4/2018 11:51	-0.111	0.079	0.028	0.058	1.109	0.177	0.323	0.187
12/4/2018 11:52	-0.104	0.079	0.054	0.053	1.126	0.178	0.369	0.184
12/4/2018 11:53	-0.085	0.081	0.042	0.058	1.117	0.178	0.243	0.191
12/4/2018 11:54	-0.109	0.081	0.025	0.056	1.147	0.178	0.381	0.191
12/4/2018 11:55								
12/4/2018 11:56	0.195	0.07	0.088	0.06	1.105	0.168	0.521	0.183
12/4/2018 11:57	0.124	0.076	0.071	0.055	1.106	0.173	0.442	0.19
12/4/2018 11:58	0.038	0.078	0.141	0.057	1.167	0.176	0.423	0.189
12/4/2018 11:59	0.055	0.078	0.057	0.053	1.223	0.178	0.51	0.186
12/4/2018 12:00	-0.016	0.08	0.093	0.055	1.193	0.179	0.512	0.193
12/4/2018 12:01	-0.003	0.078	0.044	0.056	1.111	0.178	0.325	0.187
12/4/2018 12:03	-0.049	0.079	0.061	0.057	1.1	0.179	0.375	0.191
12/4/2018 12:04	-0.037	0.08	0.078	0.056	1.105	0.177	0.326	0.188
12/4/2018 12:05	-0.038	0.078	0.11	0.059	1.125	0.179	0.54	0.188
12/4/2018 12:06	0.036	0.081	0.072	0.055	1.135	0.18	0.435	0.185
12/4/2018 12:07	0.077	0.078	0.027	0.056	1.167	0.179	0.633	0.189
12/4/2018 12:08	0.035	0.079	0.067	0.055	1.138	0.178	0.51	0.189
12/4/2018 12:09	0.054	0.081	0.05	0.058	1.174	0.178	0.46	0.198
12/4/2018 12:10	-0.037	0.081	0.091	0.054	1.182	0.179	0.413	0.187
12/4/2018 12:11	-0.026	0.081	0.015	0.058	1.219	0.181	0.492	0.19
12/4/2018 12:12	-0.055	0.081	0.015	0.058	1.237	0.181	0.429	0.193
12/4/2018 12:13	-0.084	0.084	0.043	0.056	1.257	0.18	0.344	0.192
12/4/2018 12:14	-0.076	0.082	0.021	0.056	1.225	0.182	0.583	0.184
12/4/2018 12:15	-0.092	0.083	0.11	0.056	1.243	0.181	0.424	0.197
12/4/2018 12:16	0.003	0.08	0.027	0.053	1.257	0.181	0.289	0.189
12/4/2018 12:17	0.089	0.079	0.032	0.057	1.269	0.18	0.366	0.189
12/4/2018 12:18	0.092	0.078	0.056	0.054	1.266	0.182	0.316	0.184
12/4/2018 12:19	0.067	0.078	0.07	0.058	1.246	0.18	0.24	0.189
12/4/2018 12:20	-0.02	0.078	-0.002	0.06	1.25	0.18	0.358	0.194
12/4/2018 12:21	-0.016	0.08	0.101	0.059	1.27	0.178	0.032	0.195
12/4/2018 12:22	-0.081	0.08	0.077	0.059	1.228	0.18	-0.008	0.194
12/4/2018 12:23	-0.101	0.08	0.013	0.057	1.25	0.18	0.133	0.202
12/4/2018 12:24	-0.048	0.08	0.081	0.059	1.267	0.181	0.085	0.196
12/4/2018 12:25	-0.108	0.042	0.08	0.046	0.292	2.17	0.183	0.172

	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
	-0.096	**0.071**	**0.030**	**0.055**	**1.036**	**0.323**	**0.133**	**0.189**
	0.142		**0.110**		**1.036**		**0.379**	
1:04 PM	-0.22	0.064	0.103	0.053	0.881	0.15	0.13	0.178
1:05 PM	-0.159	0.068	0.104	0.057	0.882	0.153	0.123	0.188
1:06 PM	-0.137	0.067	0.101	0.058	0.896	0.155	0.017	0.191
1:07 PM	-0.146	0.065	0.054	0.053	0.934	0.154	-0.152	0.181
1:08 PM	-0.076	0.065	0.067	0.054	0.933	0.156	-0.026	0.184
1:09 PM	0.003	0.068	0.112	0.061	0.879	0.153	0.02	0.191
1:10 PM	0.027	0.069	0.136	0.056	0.961	0.157	-0.028	0.187
1:11 PM	-0.01	0.069	0.123	0.056	0.984	0.158	0.247	0.188
1:12 PM	-0.098	0.07	0.058	0.06	1.012	0.163	0.048	0.191
1:13 PM	-0.104	0.071	0.061	0.06	1.027	0.164	0.043	0.196
1:14 PM	-0.129	0.072	0.147	0.057	1.021	0.168	0.174	0.193
1:15 PM	-0.138	0.073	0.028	0.057	1.026	0.168	0.131	0.19
1:16 PM	-0.126	0.072	0.101	0.057	1.072	0.172	0.192	0.187
1:17 PM	-0.185	0.071	0.056	0.055	1.078	0.172	0.095	0.182
1:18 PM	-0.122	0.073	0.075	0.057	1.097	0.174	0.072	0.19
1:19 PM	-0.054	0.075	0.06	0.054	1.11	0.174	0.17	0.189
1:20 PM	0.033	0.074	-0.01	0.053	1.121	0.172	0.212	0.191
1:21 PM	-0.044	0.075	0.063	0.057	1.127	0.175	-0.035	0.196
1:22 PM	-0.115	0.075	0.042	0.058	1.151	0.176	0.331	0.193
1:23 PM	-0.084	0.075	0.083	0.055	1.17	0.175	0.208	0.187
1:24 PM	-0.132	0.075	-0.007	0.058	1.152	0.176	0.45	0.196
1:25 PM	-0.179	0.077	0.019	0.058	1.229	0.177	0.299	0.193
1:26 PM	-0.129	0.075	0.015	0.058	1.18	0.175	0.097	0.192
1:27 PM	-0.123	0.069	0.003	0.056	1.069	0.168	-0.005	0.182
1:28 PM	-0.092	0.069	-0.003	0.059	1.028	0.164	0.024	0.19
1:29 PM	-0.077	0.069	0.015	0.057	1.008	0.163	0.295	0.19
1:30 PM	0.021	0.068	0.092	0.055	1.089	0.167	0.371	0.187
1:31 PM	0.004	0.071	0.027	0.058	1.129	0.168	0.044	0.189
1:32 PM	-0.082	0.069	0.059	0.06	1.179	0.17	0.03	0.196
1:33 PM	-0.17	0.072	0.111	0.056	1.183	0.173	0.046	0.19
1:34 PM	-0.121	0.073	0.055	0.057	1.16	0.173	0.023	0.191
1:35 PM	-0.103	0.073	0.098	0.057	1.151	0.174	0.029	0.187
1:36 PM	-0.166	0.074	0.073	0.056	1.136	0.175	0.068	0.19
1:37 PM	-0.147	0.074	0.052	0.057	1.206	0.174	0.085	0.191
1:38 PM	-0.124	0.076	0.022	0.06	1.169	0.177	-0.01	0.202
1:39 PM	-0.061	0.075	0.051	0.056	1.197	0.176	0.017	0.191
1:40 PM	0	0.075	0.028	0.056	1.196	0.178	-0.005	0.192
1:41 PM	0.029	0.079	0.081	0.059	1.23	0.178	-0.037	0.201
1:42 PM	-0.103	0.078	-0.026	0.055	1.247	0.18	0.1	0.193
1:43 PM	-0.11	0.079	0.031	0.057	1.282	0.18	0.021	0.194
1:44 PM	-0.095	0.08	0.021	0.057	1.283	0.181	0.059	0.196
1:45 PM	-0.153	0.08	0.008	0.057	1.269	0.181	0.071	0.189
1:46 PM	-0.175	0.08	-0.013	0.057	1.257	0.18	0.044	0.197
1:47 PM	-0.132	0.079	-0.032	0.055	1.227	0.182	0.105	0.191
1:48 PM	-0.102	0.079	-0.042	0.061	1.223	0.183	0.291	0.198
1:49 PM	-0.073	0.075	0.012	0.055	1.191	0.18	0.132	0.185
1:50 PM	-0.014	0.077	0.038	0.057	1.175	0.18	0.004	0.199
1:51 PM	-0.004	0.076	0.052	0.055	1.165	0.18	0.307	0.196
1:52 PM	-0.004	0.073	0.009	0.059	1.105	0.177	0.191	0.195
1:53 PM								

	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
1:54 PM	-0.052	0.076	0.092	0.058	1.185	0.181	0.1	0.195
1:55 PM	-0.144	0.079	-0.012	0.057	1.172	0.183	0.121	0.195
1:56 PM	-0.126	0.077	0.006	0.056	1.188	0.182	0.173	0.189
1:57 PM	-0.129	0.079	-0.039	0.06	1.218	0.184	0.111	0.199
1:58 PM	-0.058	0.08	-0.019	0.057	1.233	0.184	0.396	0.196
1:59 PM	-0.035	0.081	0.009	0.057	1.272	0.185	0.085	0.196
2:00 PM	0.027	0.08	-0.01	0.058	1.308	0.185	0.425	0.201
2:01 PM	0.039	0.08	0.031	0.058	1.323	0.188	0.223	0.196
2:02 PM	0.017	0.081	-0.026	0.053	1.321	0.185	0.28	0.196
2:03 PM	-0.081	0.081	-0.028	0.057	1.273	0.186	0.32	0.197
2:04 PM	-0.089	0.077	0.001	0.057	1.298	0.185	0.14	0.195
2:05 PM	-0.134	0.076	-0.019	0.055	1.283	0.186	0.296	0.195
2:06 PM	-0.134	0.078	0.027	0.057	1.221	0.185	0.254	0.191
2:07 PM	-0.099	0.076	0.033	0.057	1.247	0.184	0.203	0.195
2:08 PM	-0.036	0.076	0.032	0.053	1.246	0.183	0.156	0.192
2:09 PM	0.065	0.077	0.054	0.058	1.253	0.184	0.315	0.194
2:10 PM	0.054	0.075	-0.035	0.053	1.276	0.186	0.209	0.192
2:11 PM	0.073	0.075	-0.029	0.054	1.286	0.185	0.088	0.191
2:12 PM	-0.044	0.041	0.04	0.045	0.307	2.087	-0.151	0.164
2:13 PM	-0.164	0.026	0.005	0.033	-0.319	3.134	0.054	0.152
2:14 PM	-0.211	0.026	0.005	0.034	-0.333	3.148	-0.136	0.152
2:15 PM	-0.181	0.027	-0.012	0.035	-0.36	3.136	0.012	0.152
2:16 PM	-0.385	0.043	-0.06	0.038	-0.137	0.802	0.268	0.167
2:17 PM	-0.497	0.052	-0.055	0.048	0.039	0.034	0.358	0.182
2:18 PM	-0.418	0.051	-0.142	0.044	0.192	0.036	0.376	0.18
2:19 PM	0.022	0.074	0.024	0.057	1.235	0.175	0.197	0.192

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Pressure (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
4-Dec	0736	8.19	0.118	14.42	181	NA	0.1%
4-Dec	1459	8.1962	0.117	14.37	181	-0.1%	-0.1%
	Average	8.191	0.118				

APPENDIX I-D
Methane Laboratory Report

Air Control Techniques, P.C.

301 East Durham Rd.
Cary, NC 27513

ENV – Greenwood

Project # 2333

Analytical Report
(1218-052)

EPA Method 18 (Bags)

Methane

Enthalpy Analytical, LLC

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com

800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains ??? pages.

Report Issued: xx/xx/xxxx

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Summary of Results

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Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 1218-052 EPA Method 18 (Bags)

Client No.: 2333

Summary Table - Methane

Sample ID	***S1-M18-1***	***S1-M18-2***	***S1-M18-3***
Adjusted Concentration (ppm)	1.14 J	1.14 J	1.54 J

Results

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Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 1218-052 EPA Method 18 (Bags)

Client No.: 2333

Methane

Sample ID	Filename #1	Filename #2	Filename #3	Inj1DateTime	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc ppm	Spike Rec %	Adj. Conc ppm	Flag
S1-M18-1 SP	022B0601.D	022B0602.D	022B0603.D	12-09-2018 14:20	BETTYP773 _C1-C6_XAS.M	5.00	49,920	0.816	1.38	1.38	1.38	0.0	13.6	13.3	13.1	1.7	1	13.3			
S1-M18-1	018B0101.D	018B0102.D	018B0103.D	12-07-2018 09:49	BETTYP773 _C1-C7.M	5.00	49,920	0.816	1.38	1.38	1.38	0.1	1.01	1.01	0.982	1.8	1	1.00	87.5%	1.14	J
S1-M18-2	028B0201.D	028B0202.D	028B0203.D	12-07-2018 10:52	BETTYP773 _C1-C7.M	5.00	49,920	0.816	1.38	1.38	1.38	0.0	0.994	0.998	1.01	1.0	1	1.00	87.5%	1.14	J
S1-M18-3	022B0301.D	022B0302.D	022B0303.D	12-07-2018 11:56	BETTYP773 _C1-C7.M	5.00	49,920	0.816	1.38	1.38	1.38	0.0	1.33	1.36	1.36	1.4	1	1.35	87.5%	1.54	J

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 1218-052 EPA Method 18 (Bags)

Client No.: 2333

Spike Hold Times

Spiked Bag	Time Spiked	Spike Analyzed	Hold Time Hours	Related Bag	Related Bag Sampled Date	Bag Analyzed	Hold Time Hours
S1-M18-1 SP	12-07-2018 12:25	12-09-2018 14:20	49.9	***S1-M18-1***	12-05-2018 09:00	12-07-2018 09:49	48.8
				S1-M18-2	12-05-2018 11:00	12-07-2018 10:52	47.9
				S1-M18-3	12-05-2018 12:30	12-07-2018 11:56	47.4

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 1218-052 EPA Method 18 (Bags)

Client No.: 2333

Spiked Bag

	S1-M18-1 SP		Methane
Before Spiking	Inj1 (ppmv)		1.01
	Inj2 (ppmv)		1.01
	Inj3 (ppmv)		0.982
	Avg ppmv		1.00
	Bag vol L NTP	2.48	
Gas Spike	Cylinder	CC703691	
	Expires	3/21/21	
	Press/Temp	764.8 / 68.0	
	Vol (mL)	400	
	Cyl Dil Factor	1	
	Cyl Conc (ppmv)		102
	Vol (mL NTP)	403	0.0411
Totals	Sp Bag Vol L NTP	2.88	
	Corrected Initial (ppmv)		0.860
	Spike Amount (mL NTP)		0.0411
	Spike Amount (ppmv)		14.2
	Expected (ppmv)		15.1
Result	Inj1 (ppmv)		13.6
	Inj2 (ppmv)		13.3
	Inj3 (ppmv)		13.1
	Avg (ppmv)		13.3
	Recovery		**87.5%**

Narrative Summary

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Enthalpy Analytical Narrative Summary

Company	Air Control Techniques PC
Job #	1218-052 - EPA Method 18 (Bags)
Client #	2333

Custody	Matthew St. Lawrence of Enthalpy Analytical, LLC received the samples on 12/7/18 at ambient temperature after being relinquished by Air Control Techniques, PC. The samples were received in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.
Analysis	The samples were analyzed for methane using the analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A). The standards and samples were analyzed following the procedures specified in section 8.2.1, Integrated Bag Sampling and Analysis. All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. Methane was referenced to certified gas phase standards. The analyses were performed using the Agilent Technologies Model 6890N Gas Chromatograph "Betty" (S/N US10430048) equipped with a Flame Ionization Detector.
Calibration	The calibration curves are located in the Raw Data section of this report and referenced in the Analysis Method column on the Detailed Results page. For each calibration curve used, the first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.
Chromatographic Conditions	The acquisition method GC142P133_CAL.M is included in the Raw Data section of this report.

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Enthalpy Analytical Narrative Summary
(continued)

QC Notes	As required by the method, a recovery study was performed on a bag sample. The bag sample ***S1-M18-1*** was spiked on 12/7/18 at 12:25 PM. The recovery efficiency value met the method-required limits of 70 to 130%. The recovery efficiency value was used to adjust the results following equation 18-7 of Method 18. The analysis of the laboratory method blank did not contain methane at a concentration greater than the detection limit.
Reporting Notes	These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above. The results presented in this report are representative of the samples as provided to the laboratory.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.

- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.

- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.

- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.

- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.

- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.

- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.

- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).

- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.

- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

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General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

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Sample Custody

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Chain of Custody Record

Page 1 of 1

Special Handling:

- ■ Standard Turn Around Time (10 business days)
- ☐ Rush Turn Around Time -- Date Needed
- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt.
- All Other Samples Disposed of 4 Months from Receipt.

Client Name: Air Control Techniques, PC
Project Manager: John Richards
Report To: David Goshaw

Project Number: 2333
Site Name: ENV
Location: Greenwood

PO#: 2333 8143
Telephone#: 19194607811
Email: dave.goshaw@aircontroltechniques.com

For spiked or duplicate samples: please provide sample volumes for recovery calculations. For Particulates: please provide tare weights and/or condensed water volumes.

Special Instructions:

A=Air 1=H2SO4 2=NaOH 3=______ 4=______
X=XAD C=Charcoal SG=Silica Gel
G=Grab C=Composite Q=Quality Control

Sample ID	Date	Time	Sample Volume	Type	Matrix	# of VOA Vials	# of Glass	# of Plastic	# of Bags	# of Canisters	# of Tubes	# Other	Methane								Notes:
S1-M18-1	12/5/18	0900											x								methane/ethane analysis
S1-M18-2	12/5/18	1100											x								methane/ethane analysis
S1-M18-3	12/5/18	1230											x								methane/ethane analysis

Relinquished By:	Date:	Received By:	Date:	Time:	Sample Condition Upon Receipt:
[signature]	12/6/18	[signature] EE Mar 12/7/18	~~12/6/18~~ 12/7/18	8:46am	☐ Iced ☒ Ambient ☐ °C
					☐ Iced ☐ Ambient ☐ °C
					☐ Iced ☐ Ambient ☐ °C

800-1 Capitola Drive • Durham, NC 27713 • (919) 850-4392 • FAX (919) 850-9012 • www.enthalpy.com

* - Run containing condensate   Ambient temp

Raw Data

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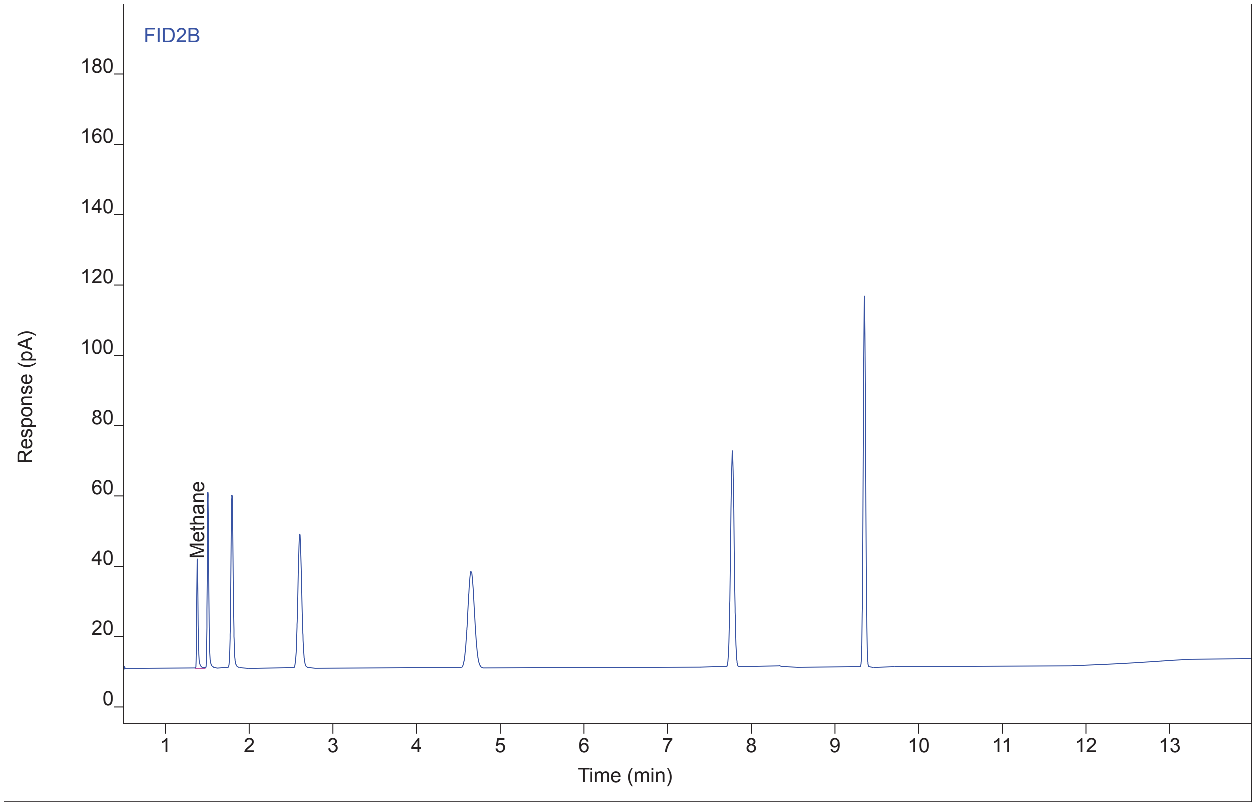
Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP972A ver.3	Vial Number	Vial 25
Inj Data File	025B1001.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	1 of 3
Injection Date	12/7/2018 8:04 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/7/2018 10:03 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument		Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

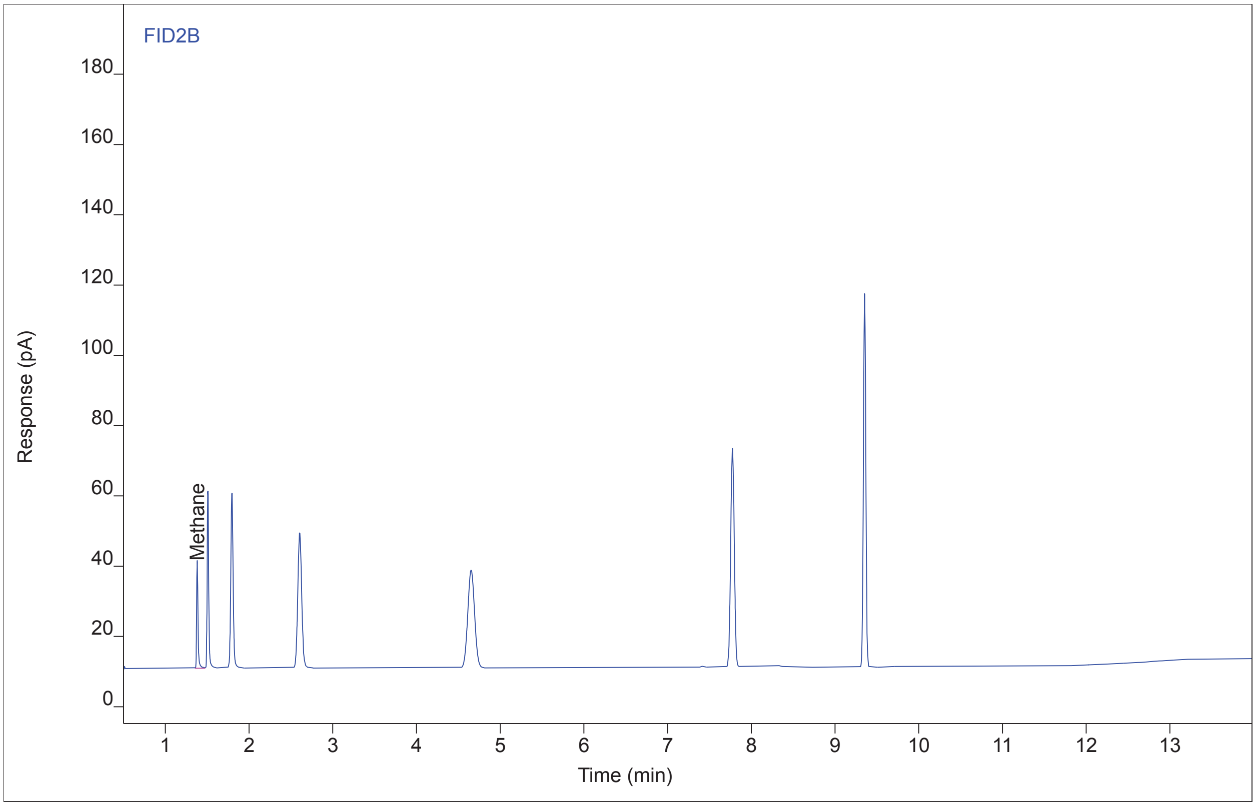


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	36.3358	31.0564	102.866	1	102.866	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP972A ver.3	Vial Number	Vial 25
Inj Data File	025B1002.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	2 of 3
Injection Date	12/7/2018 8:28 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/7/2018 10:03 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument		Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

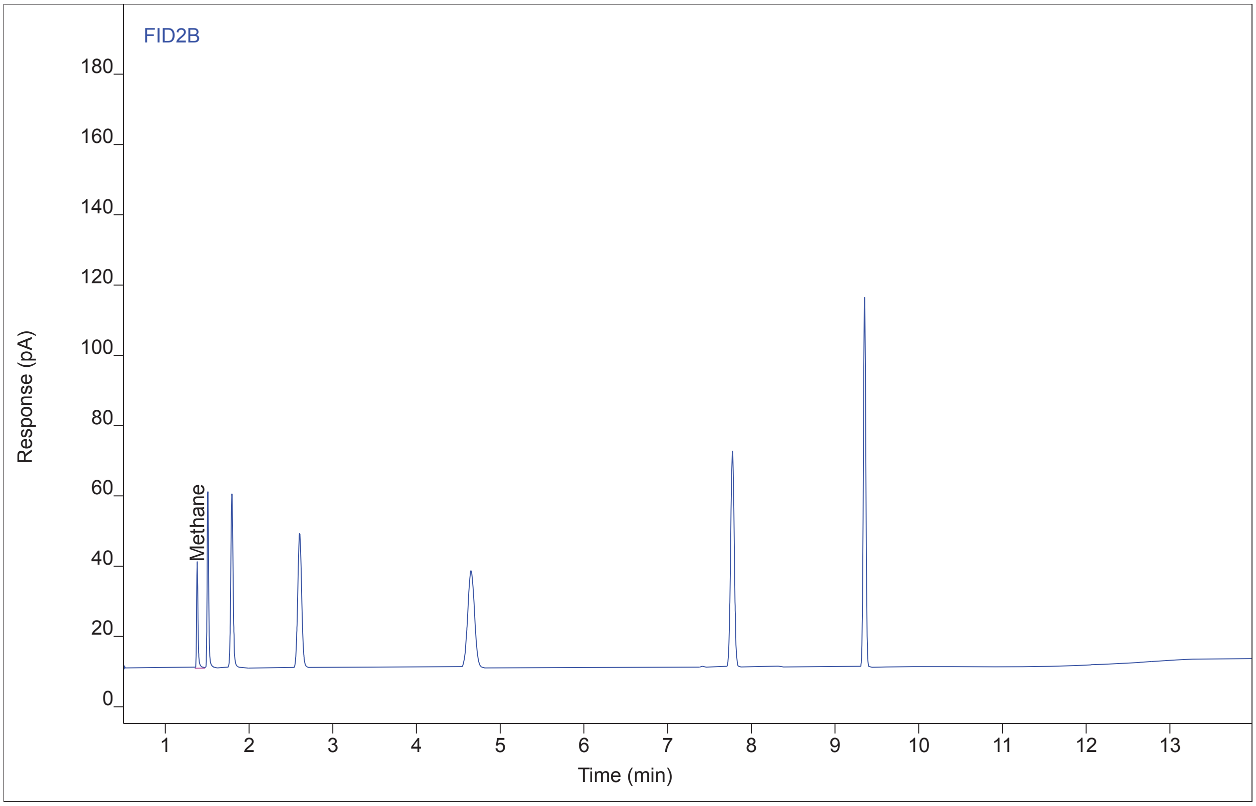


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	35.8488	30.6070	101.483	1	101.483	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP972A ver.3	Vial Number	Vial 25
Inj Data File	025B1003.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	3 of 3
Injection Date	12/7/2018 8:53 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/7/2018 10:03 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument		Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM



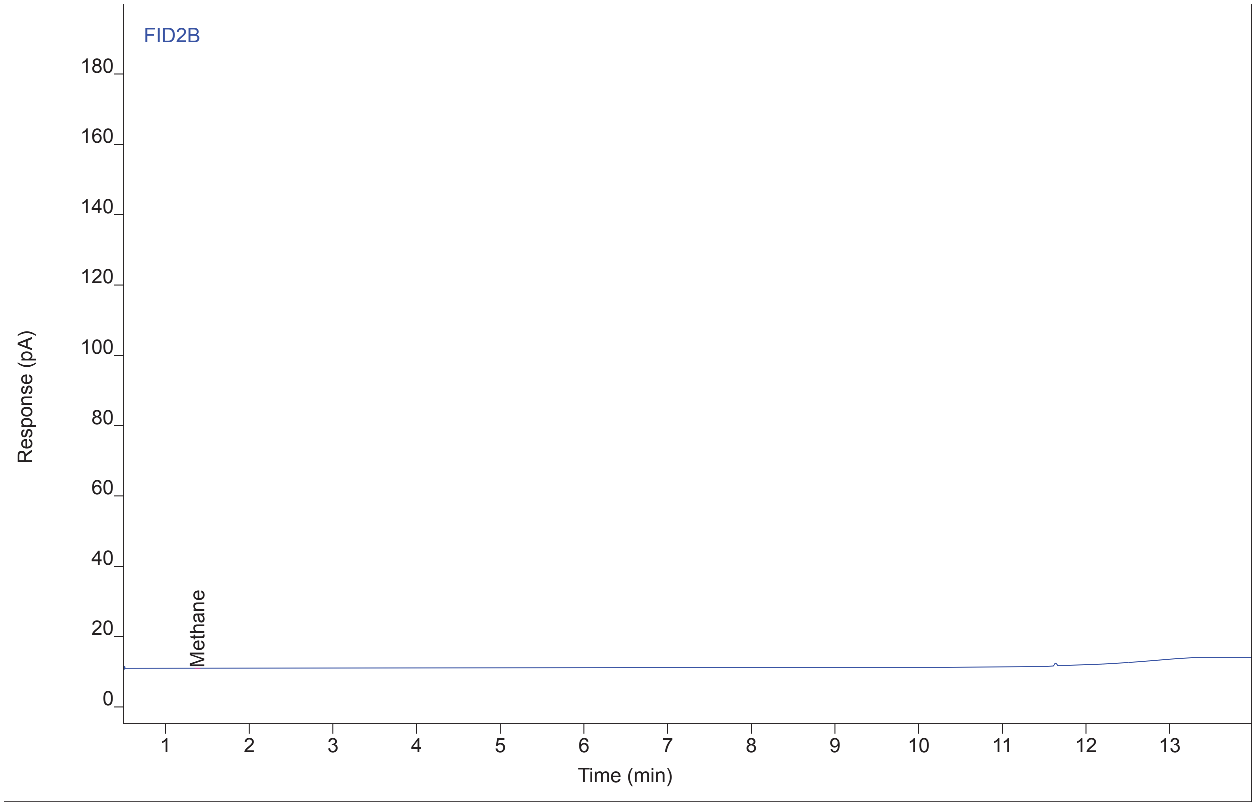
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	35.3424	30.2869	100.046	1	100.046	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-1.Bag
Sequence Name	BETTYP973 ver.1
Inj Data File	018B0101.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/7/2018 9:49 AM
File Modified	12/8/2018 12:52 PM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 18
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	11/29/2018 8:27 AM
Printed	12/11/2018 3:48 PM

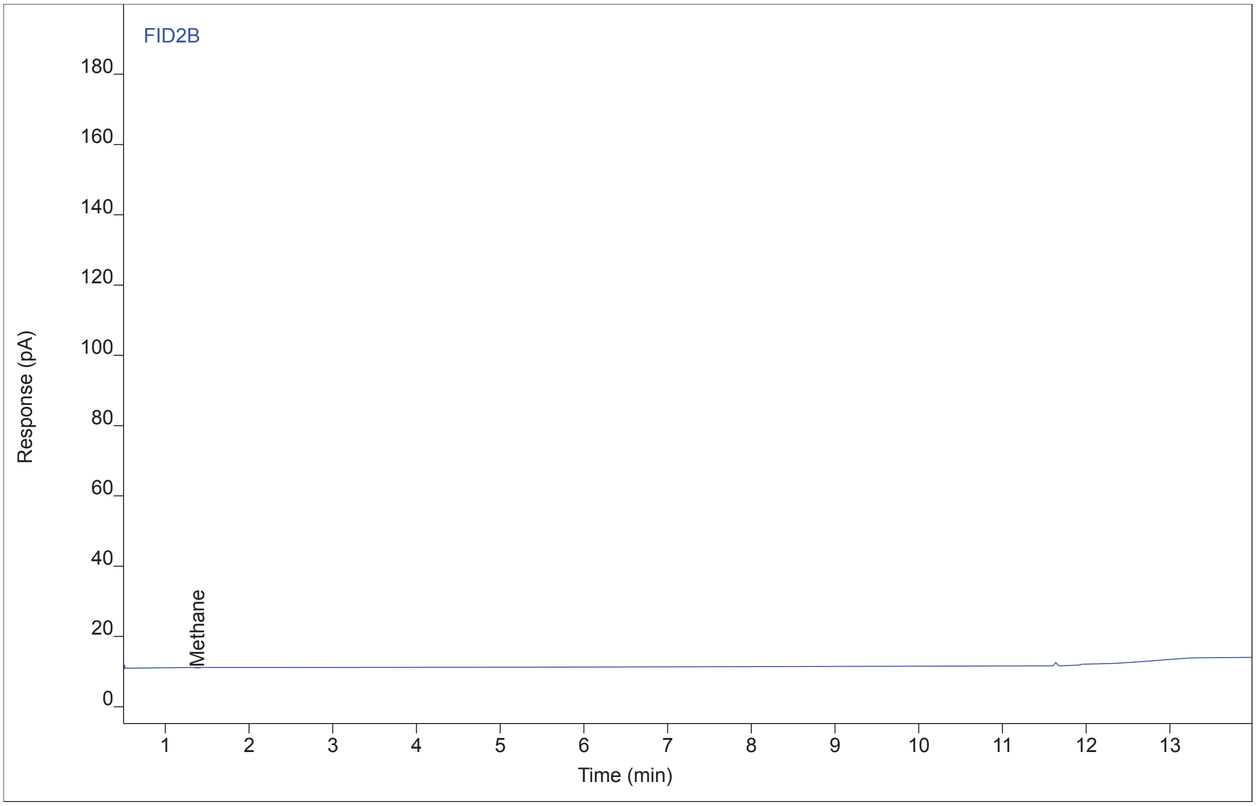


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BP	1.38	0.37460	0.25832	1.00827	1	1.00827	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-1.Bag	Sample Type	Sample
Sequence Name	BETTYP973 ver.1	Vial Number	Vial 18
Inj Data File	018B0102.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	2 of 3
Injection Date	12/7/2018 10:10 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/8/2018 12:52 PM	Analysis Method	BETTYP773_C1-C7.M
Instrument		Method Modified	11/29/2018 8:27 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM



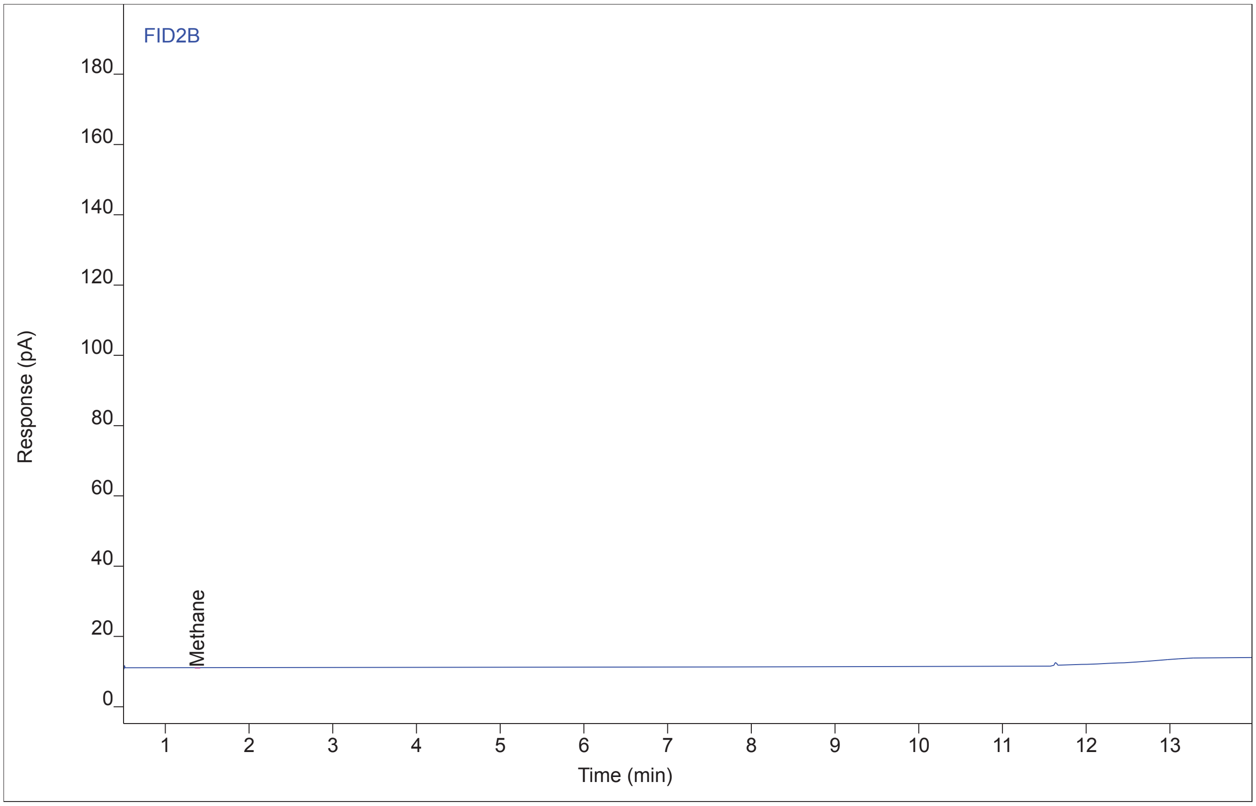
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	0.37466	0.26582	1.00845	1	1.00845	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-1.Bag
Sequence Name	BETTYP973 ver.1
Inj Data File	018B0103.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/7/2018 10:31 AM
File Modified	12/8/2018 12:52 PM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 18
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	11/29/2018 8:27 AM
Printed	12/11/2018 3:48 PM



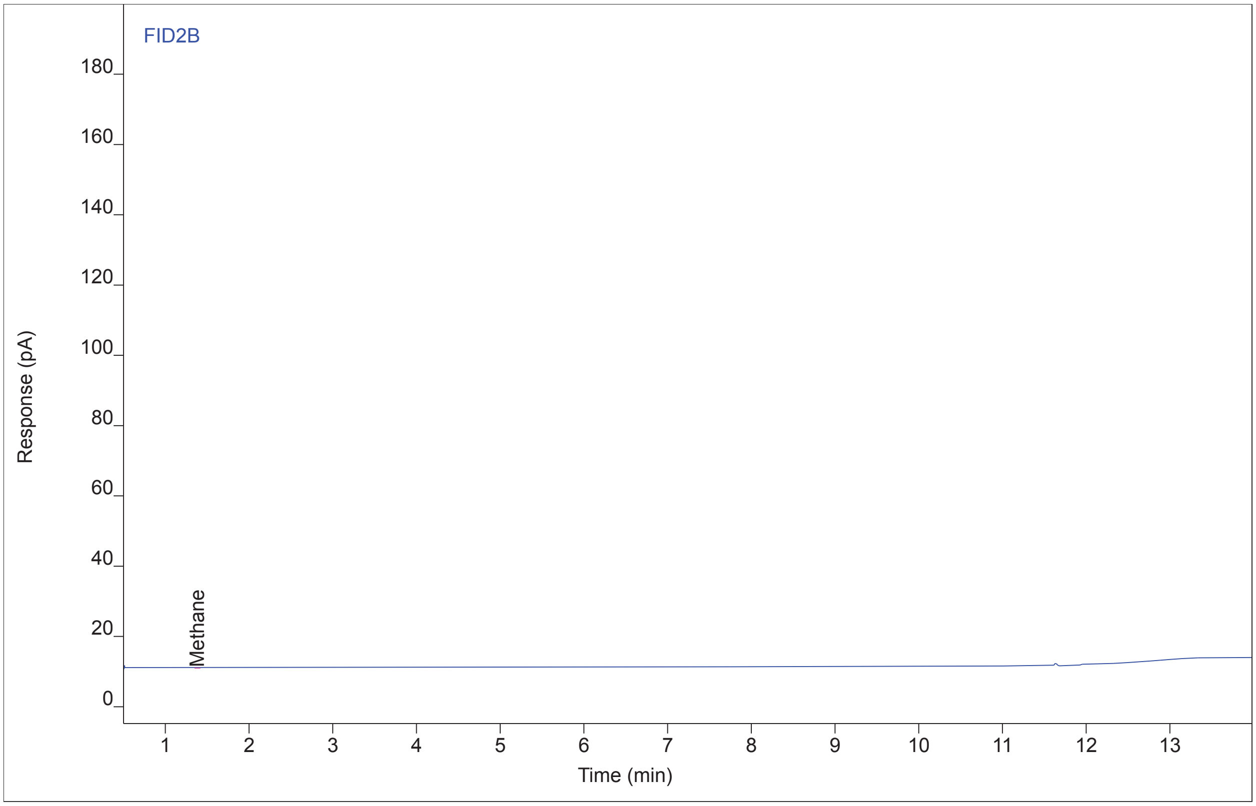
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BP	1.38	0.36487	0.26314	0.98210	1	0.98210	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-2.Bag
Sequence Name	BETTYP973 ver.1
Inj Data File	028B0201.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/7/2018 10:52 AM
File Modified	12/8/2018 12:52 PM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 28
Injection Volume	250
Injection	1 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	11/29/2018 8:27 AM
Printed	12/11/2018 3:48 PM



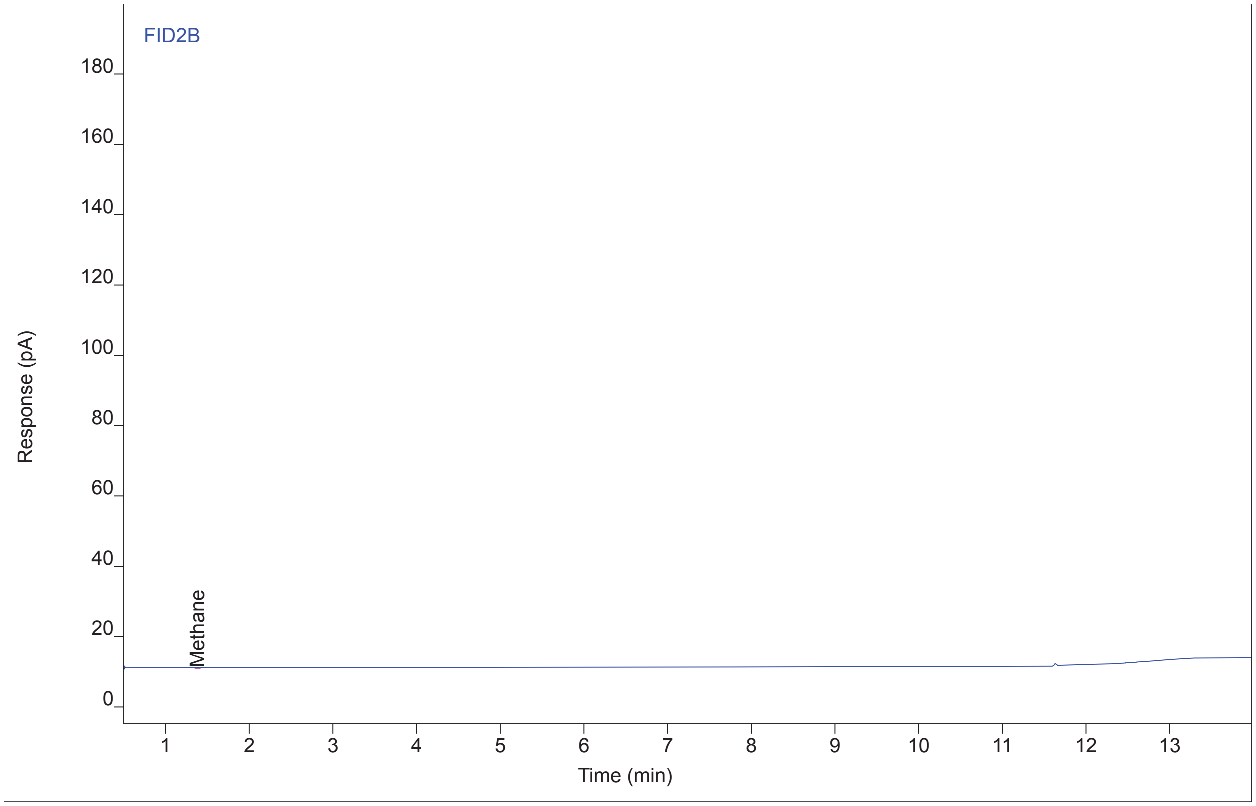
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	0.36927	0.25297	0.99394	1	0.99394	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-2.Bag
Sequence Name	BETTYP973 ver.1
Inj Data File	028B0202.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/7/2018 11:13 AM
File Modified	12/8/2018 12:52 PM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 28
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	11/29/2018 8:27 AM
Printed	12/11/2018 3:48 PM

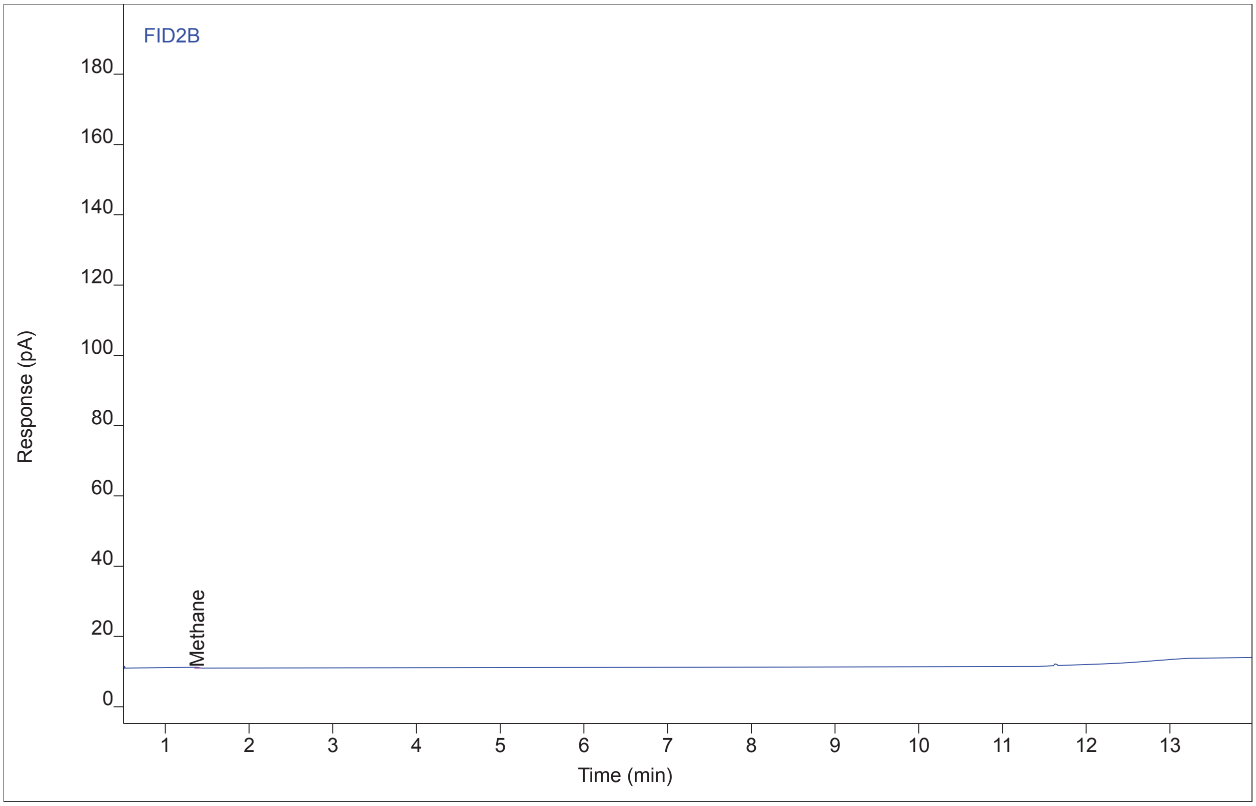


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	0.37092	0.24652	0.99837	1	0.99837	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-2.Bag
Sequence Name	BETTYP973 ver.1
Inj Data File	028B0203.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/7/2018 11:35 AM
File Modified	12/8/2018 12:52 PM
Instrument	
Operator	Justin Guenzler
Sample Type	Sample
Vial Number	Vial 28
Injection Volume	250
Injection	3 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	11/29/2018 8:27 AM
Printed	12/11/2018 3:48 PM

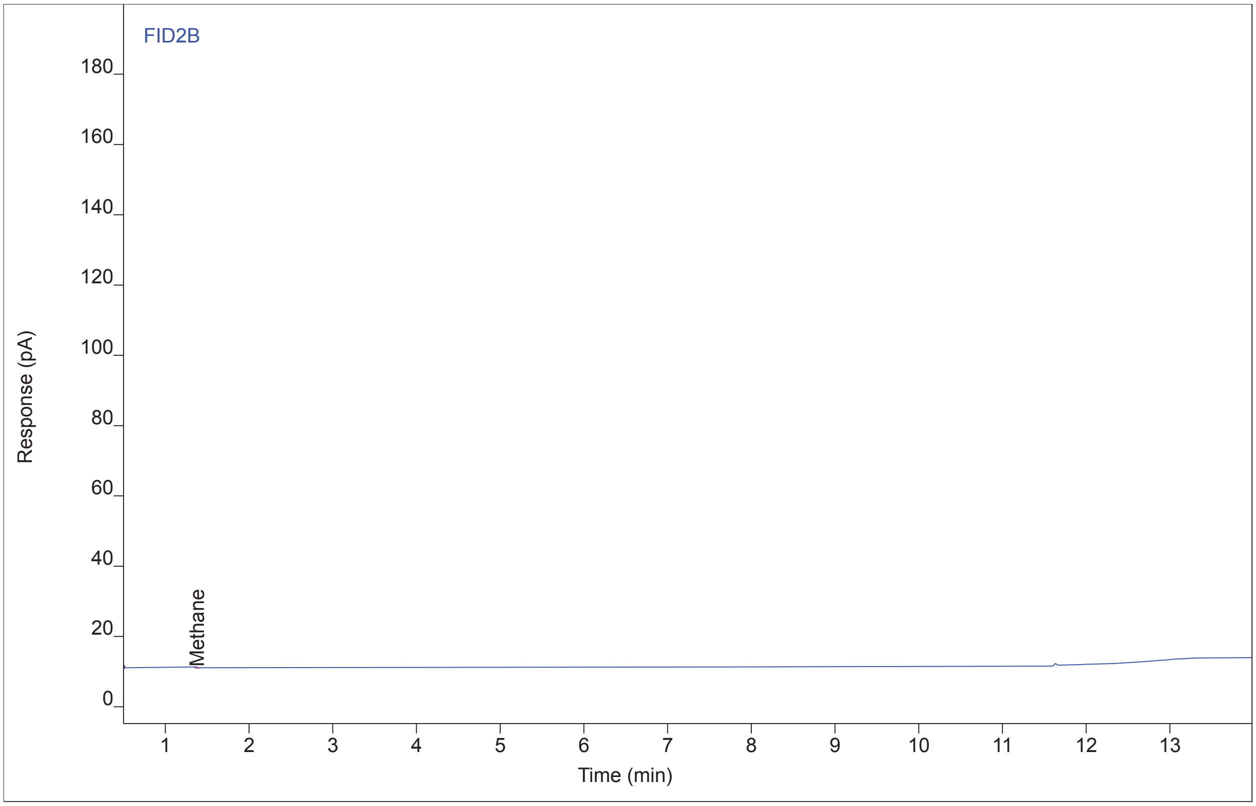


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	0.37563	0.24302	1.01105	1	1.01105	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-3.Bag	Sample Type	Sample
Sequence Name	BETTYP973 ver.1	Vial Number	Vial 22
Inj Data File	022B0301.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	1 of 3
Injection Date	12/7/2018 11:56 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/8/2018 12:52 PM	Analysis Method	BETTYP773_C1-C7.M
Instrument		Method Modified	11/29/2018 8:27 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

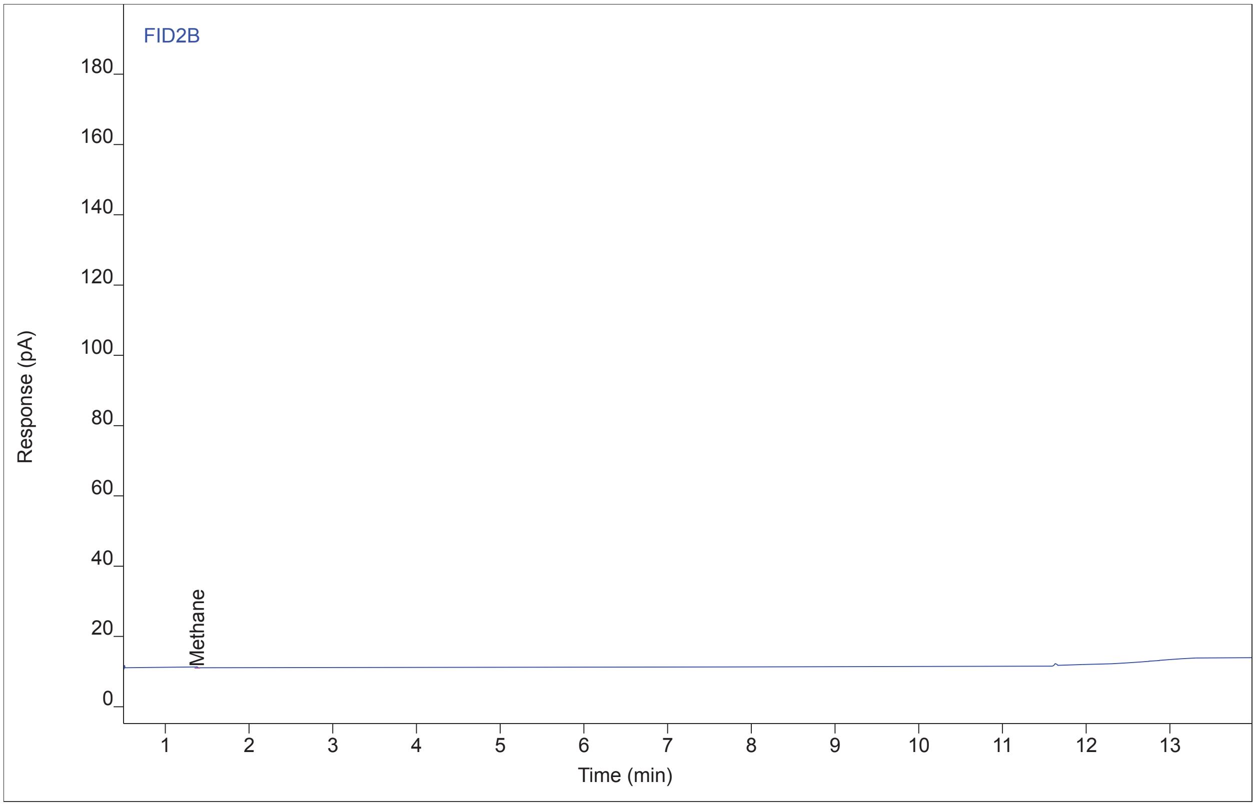


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	0.49498	0.37440	1.33229	1	1.33229	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-3.Bag	Sample Type	Sample
Sequence Name	BETTYP973 ver.1	Vial Number	Vial 22
Inj Data File	022B0302.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	2 of 3
Injection Date	12/7/2018 12:17 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/8/2018 12:52 PM	Analysis Method	BETTYP773_C1-C7.M
Instrument		Method Modified	11/29/2018 8:27 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

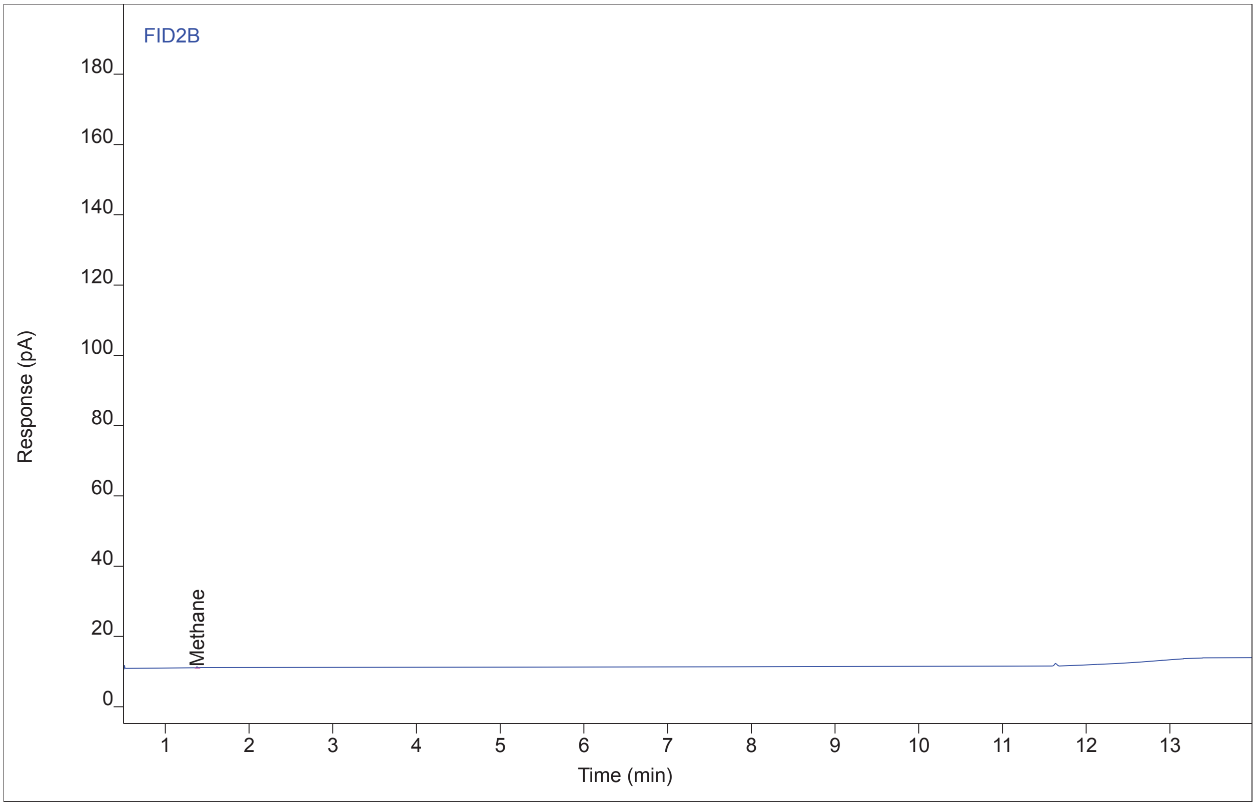


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	0.50399	0.37497	1.35655	1	1.35655	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-3.Bag	Sample Type	Sample
Sequence Name	BETTYP973 ver.1	Vial Number	Vial 22
Inj Data File	022B0303.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	3 of 3
Injection Date	12/7/2018 12:38 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/8/2018 12:52 PM	Analysis Method	BETTYP773_C1-C7.M
Instrument		Method Modified	11/29/2018 8:27 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

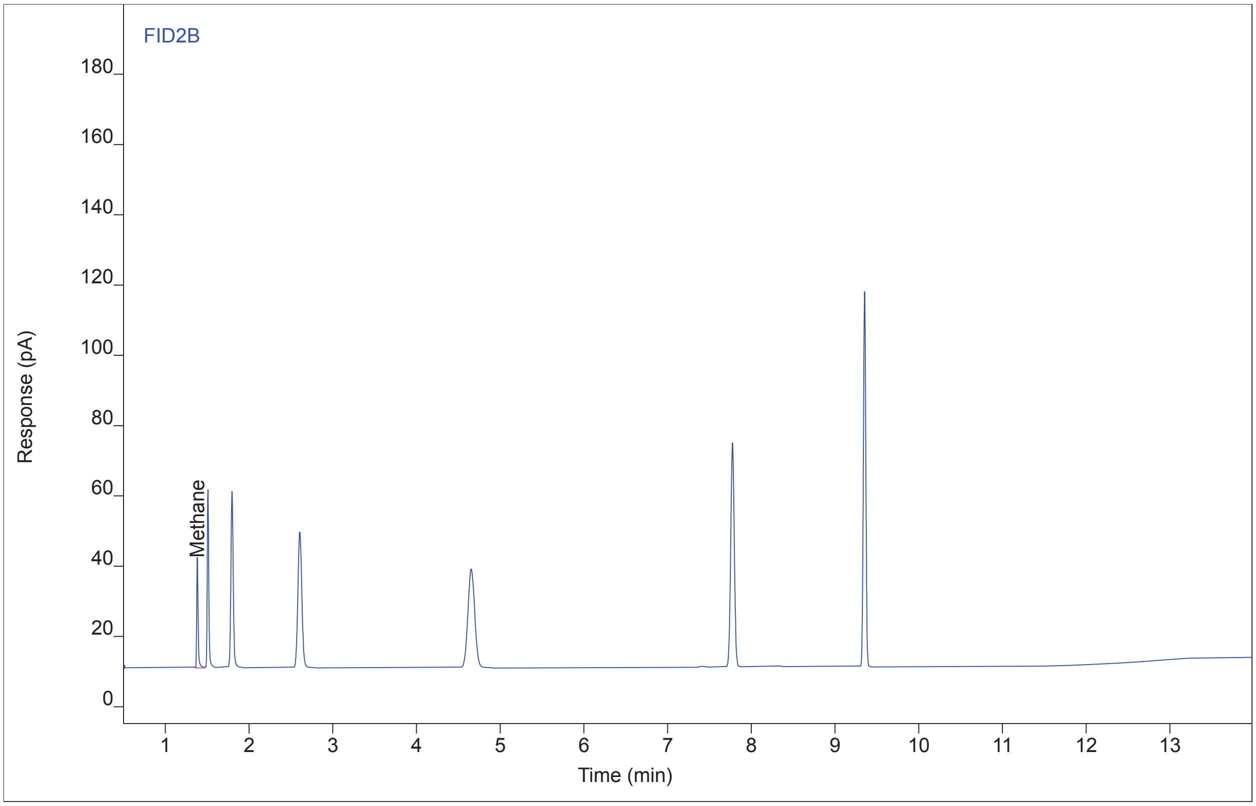


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	0.50690	0.38260	1.36439	1	1.36439	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP973 ver.1	Vial Number	Vial 25
Inj Data File	025B0701.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	1 of 3
Injection Date	12/8/2018 11:21 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/8/2018 12:53 PM	Analysis Method	BETTYP773_C1-C7.M
Instrument		Method Modified	11/29/2018 8:27 AM
Operator	Nicholas Traversa	Printed	12/11/2018 3:48 PM

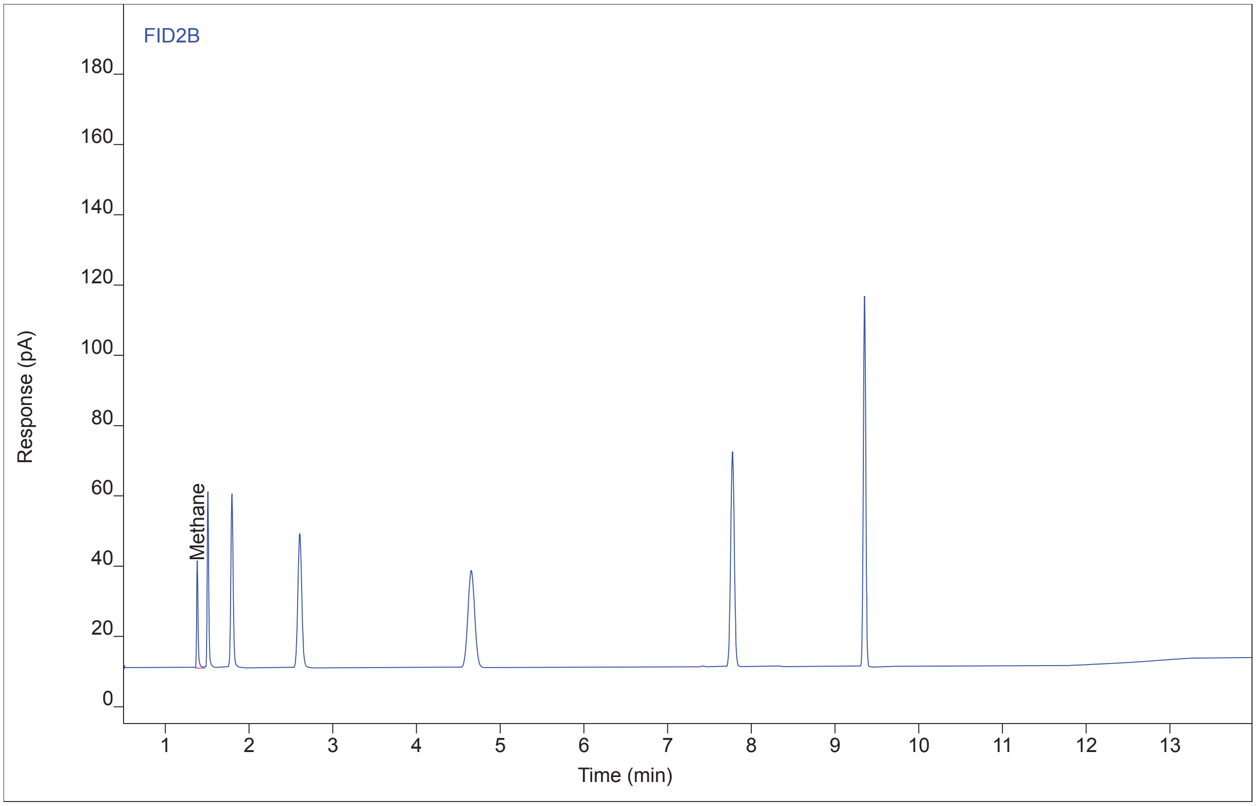


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	36.9312	31.3982	104.556	1	104.556	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP973 ver.1	Vial Number	Vial 25
Inj Data File	025B0702.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	2 of 3
Injection Date	12/8/2018 11:45 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/8/2018 12:53 PM	Analysis Method	BETTYP773_C1-C7.M
Instrument		Method Modified	11/29/2018 8:27 AM
Operator	Nicholas Traversa	Printed	12/11/2018 3:48 PM

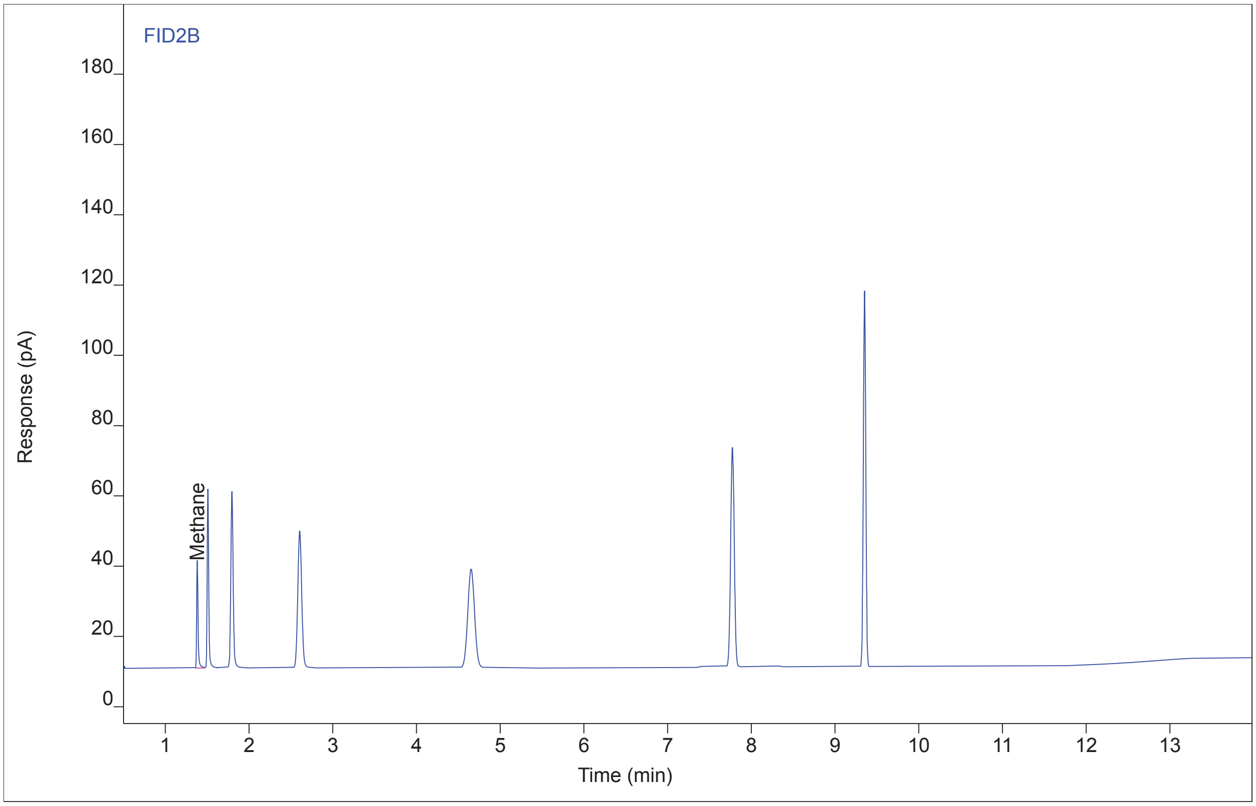


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	35.6187	30.5179	100.830	1	100.830	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP973 ver.1	Vial Number	Vial 25
Inj Data File	025B0703.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	3 of 3
Injection Date	12/8/2018 12:09 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/8/2018 12:53 PM	Analysis Method	BETTYP773_C1-C7.M
Instrument		Method Modified	11/29/2018 8:27 AM
Operator	Nicholas Traversa	Printed	12/11/2018 3:48 PM

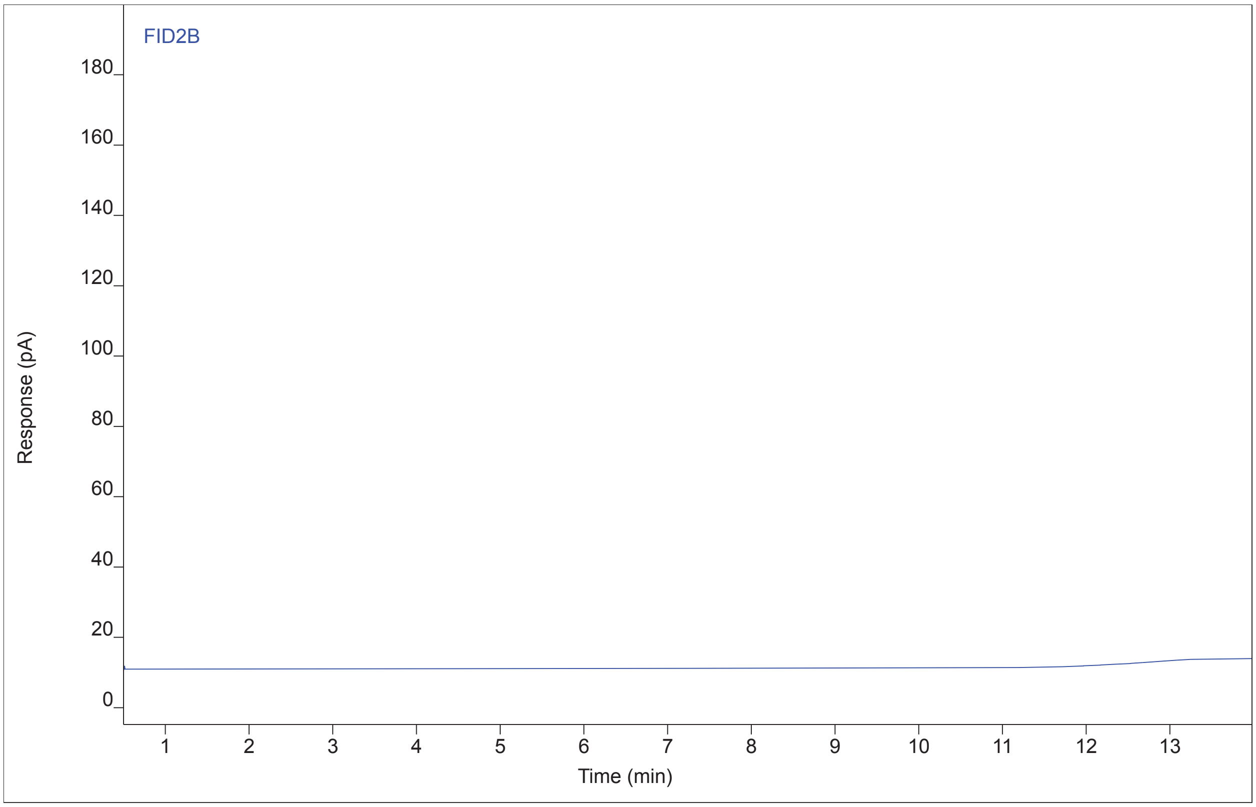


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	35.8770	30.5883	101.564	1	101.564	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP374 Method Blank 1 #MB	Sample Type	Control
Sequence Name	BETTYP974 ver.2	Vial Number	Vial 17
Inj Data File	017B0102.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	2 of 4
Injection Date	12/8/2018 1:25 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/11/2018 10:09 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument	Betty	Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM



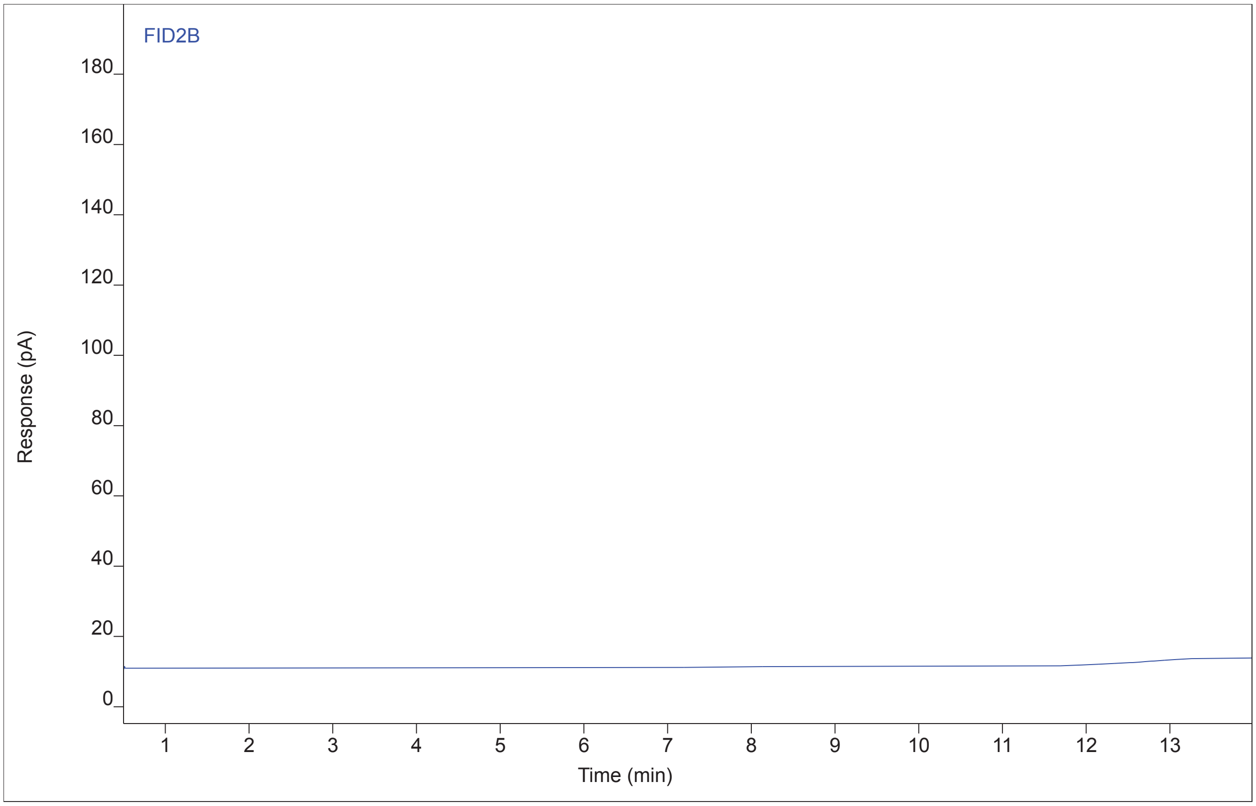
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.37)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP374 Method Blank 1 #MB
Sequence Name	BETTYP974 ver.2
Inj Data File	017B0103.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/8/2018 1:46 PM
File Modified	12/11/2018 10:09 AM
Instrument	Betty
Operator	Justin Guenzler

Sample Type	Control
Vial Number	Vial 17
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C6_XAS.M
Method Modified	12/5/2018 7:48 AM
Printed	12/11/2018 3:48 PM

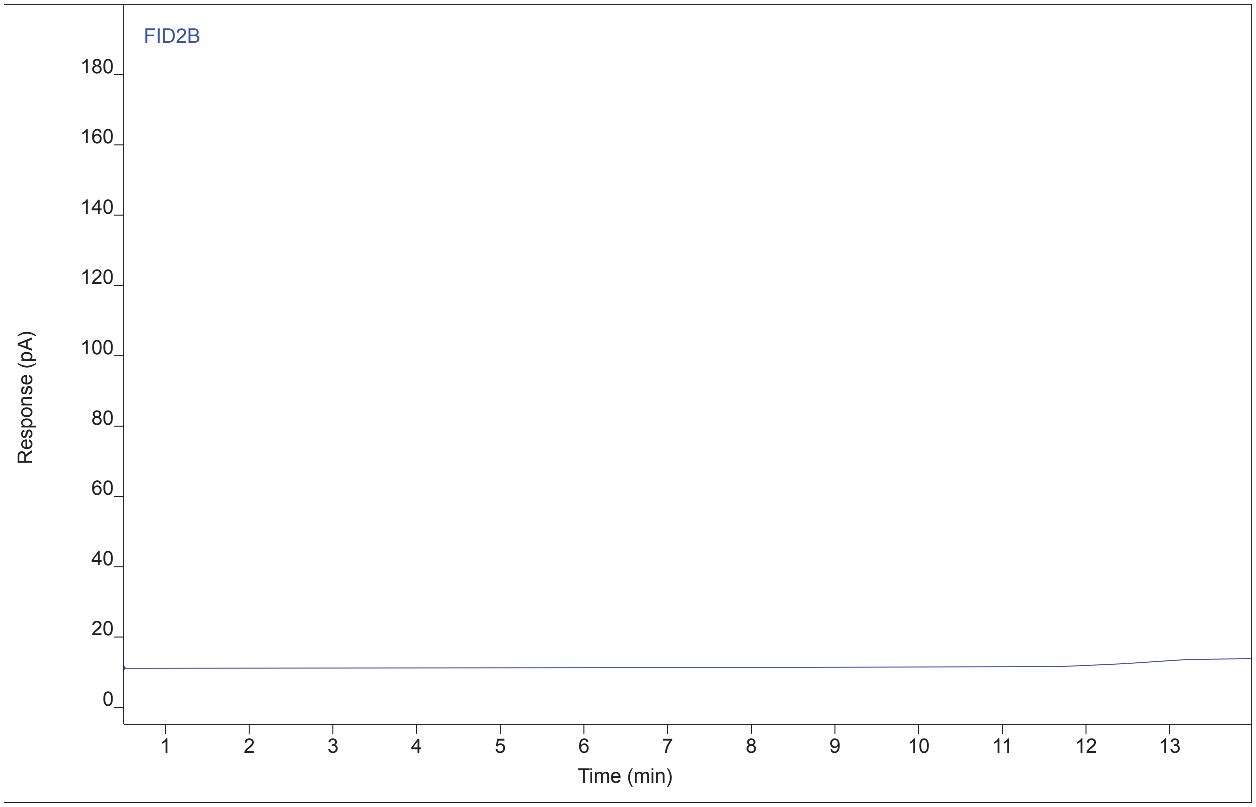


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.37)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP374 Method Blank 1 #MB	Sample Type	Control
Sequence Name	BETTYP974 ver.2	Vial Number	Vial 17
Inj Data File	017B0104.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	4 of 4
Injection Date	12/8/2018 2:07 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/11/2018 10:09 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument	Betty	Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

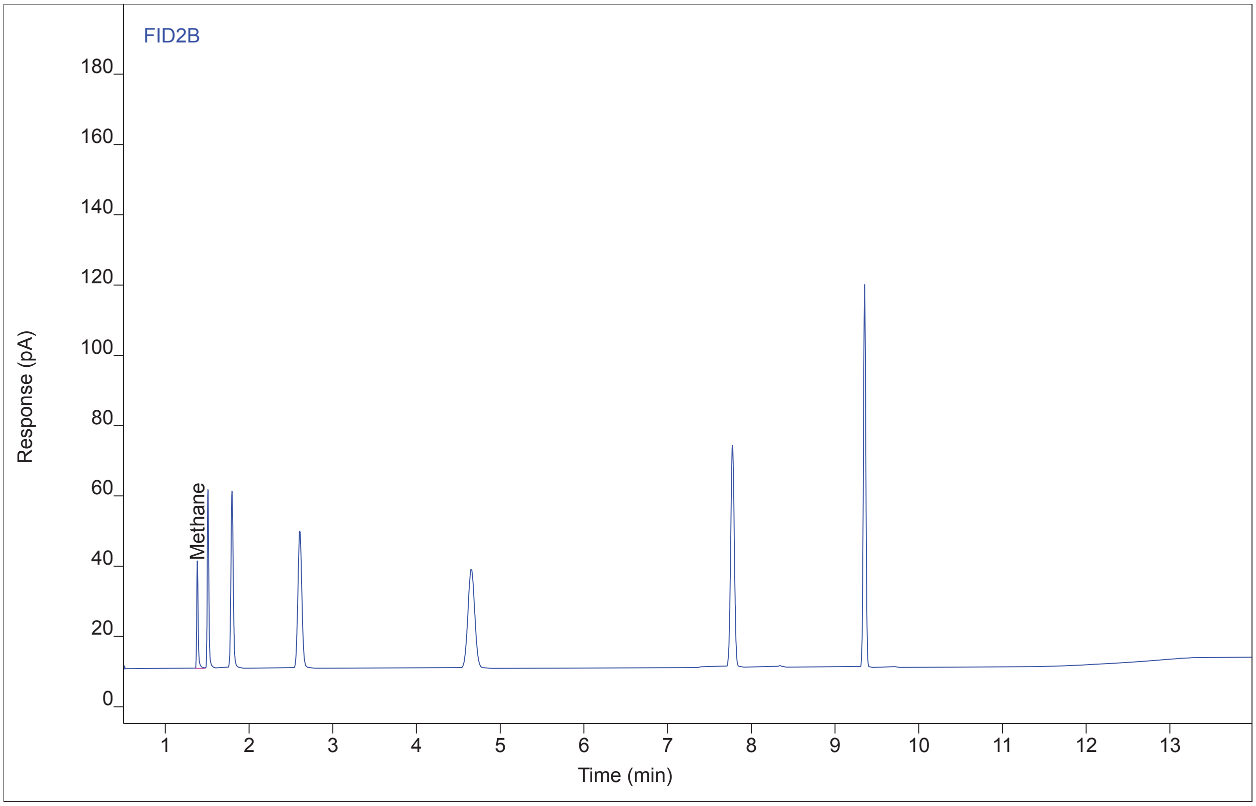


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.37)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)
Sequence Name	BETTYP974 ver.2
Inj Data File	025B0302.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/9/2018 4:32 AM
File Modified	12/11/2018 10:09 AM
Instrument	Betty
Operator	Justin Guenzler
Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	2 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C6_XAS.M
Method Modified	12/5/2018 7:48 AM
Printed	12/11/2018 3:48 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	36.2809	30.7145	102.710	1	102.710	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)
Sequence Name	BETTYP974 ver.2
Inj Data File	025B0303.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/9/2018 4:56 AM
File Modified	12/11/2018 10:09 AM
Instrument	Betty
Operator	Justin Guenzler
Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C6_XAS.M
Method Modified	12/5/2018 7:48 AM
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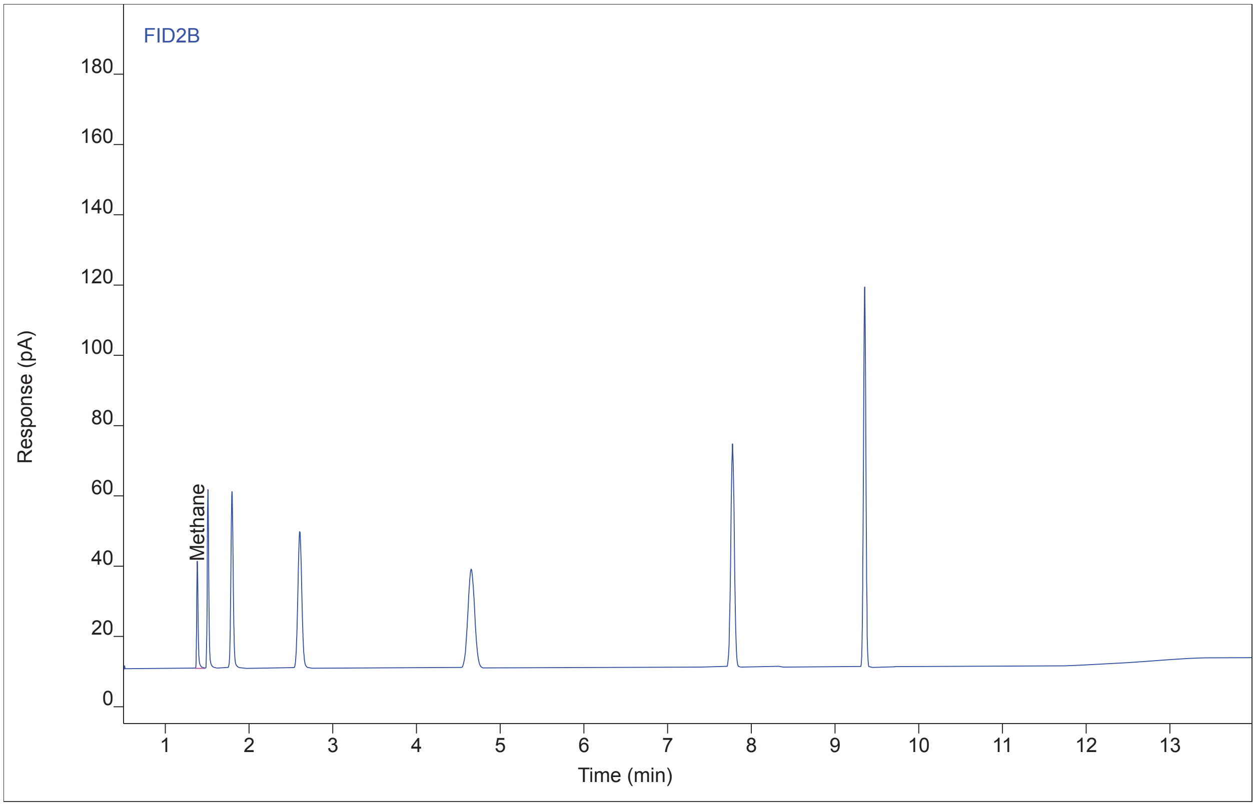
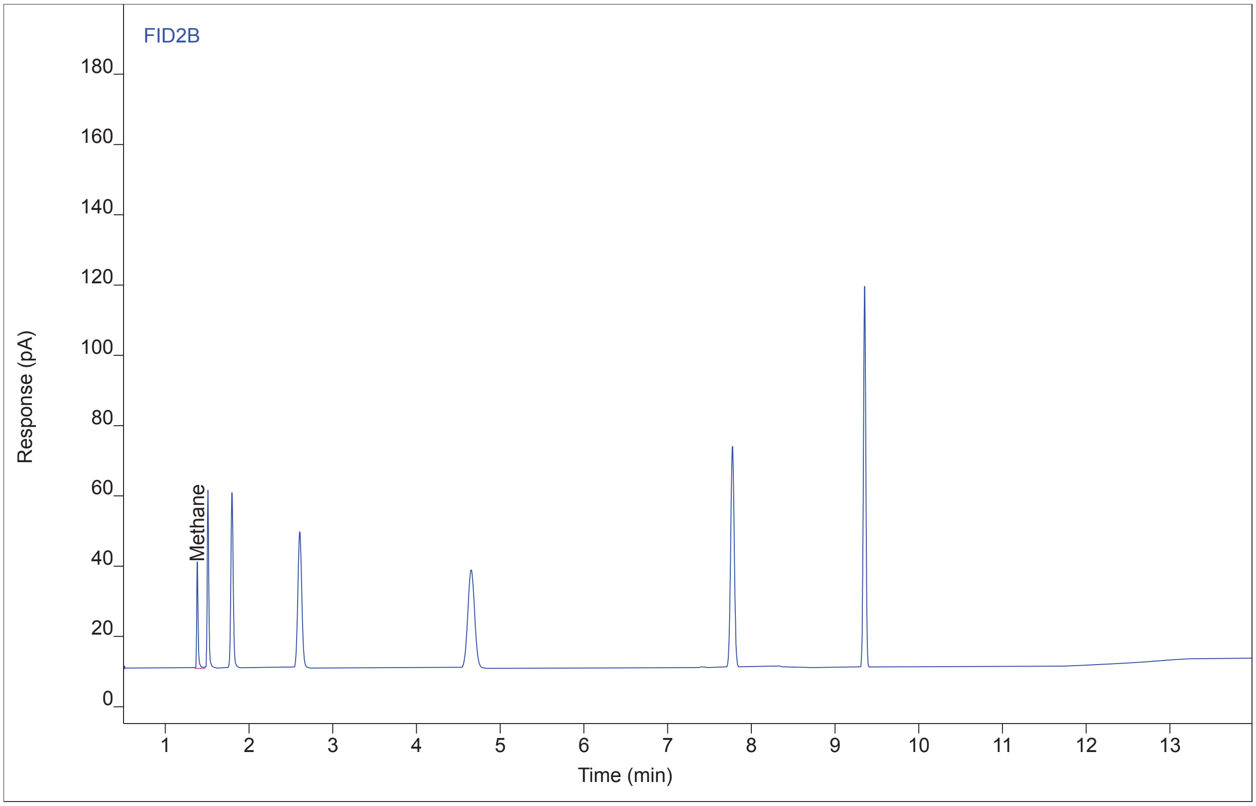


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	35.8732	30.4239	101.553	1	101.553	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP974 ver.2	Vial Number	Vial 25
Inj Data File	025B0304.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	4 of 4
Injection Date	12/9/2018 5:20 AM	Acquisition Method	GC142P133_CAL.M
File Modified	12/11/2018 10:09 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument	Betty	Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

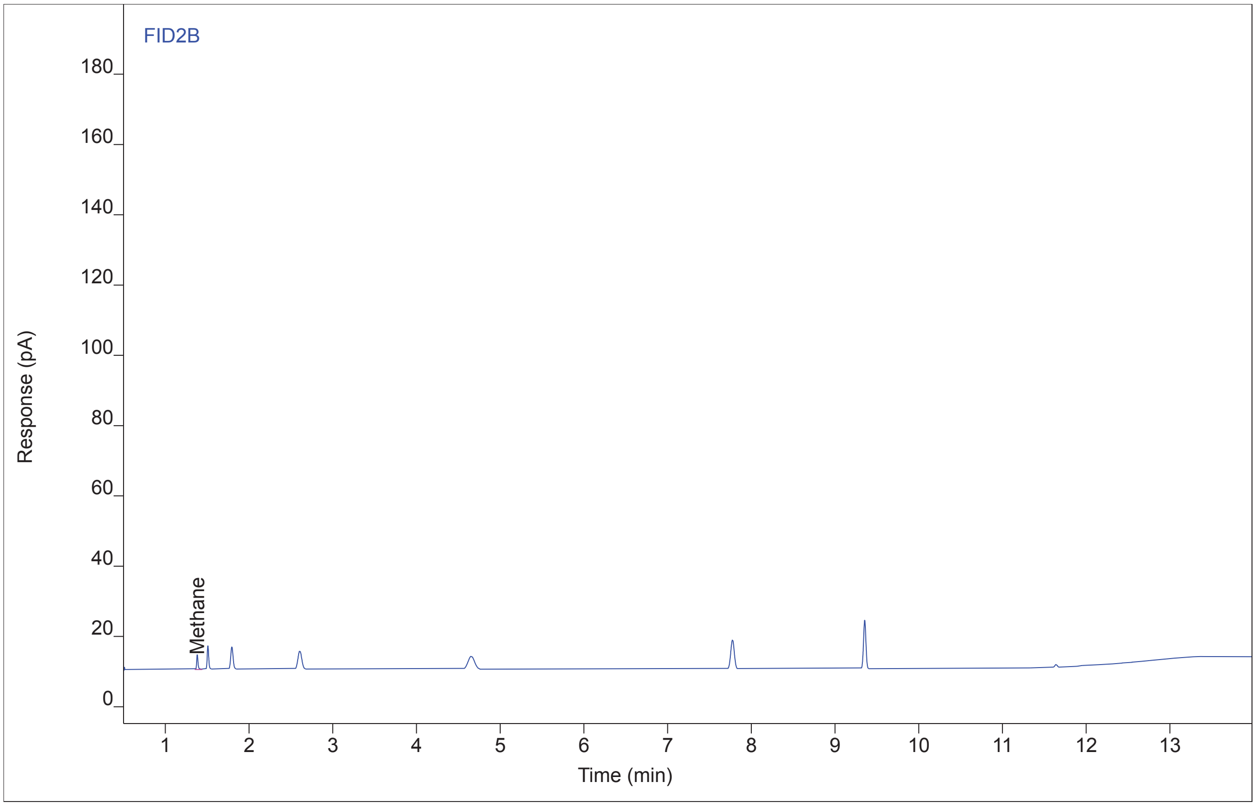


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	35.6105	30.2639	100.807	1	100.807	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-1 SP.Bag	Sample Type	Sample
Sequence Name	BETTYP974 ver.2	Vial Number	Vial 22
Inj Data File	022B0601.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	1 of 3
Injection Date	12/9/2018 2:20 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/11/2018 10:09 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument	Betty	Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM



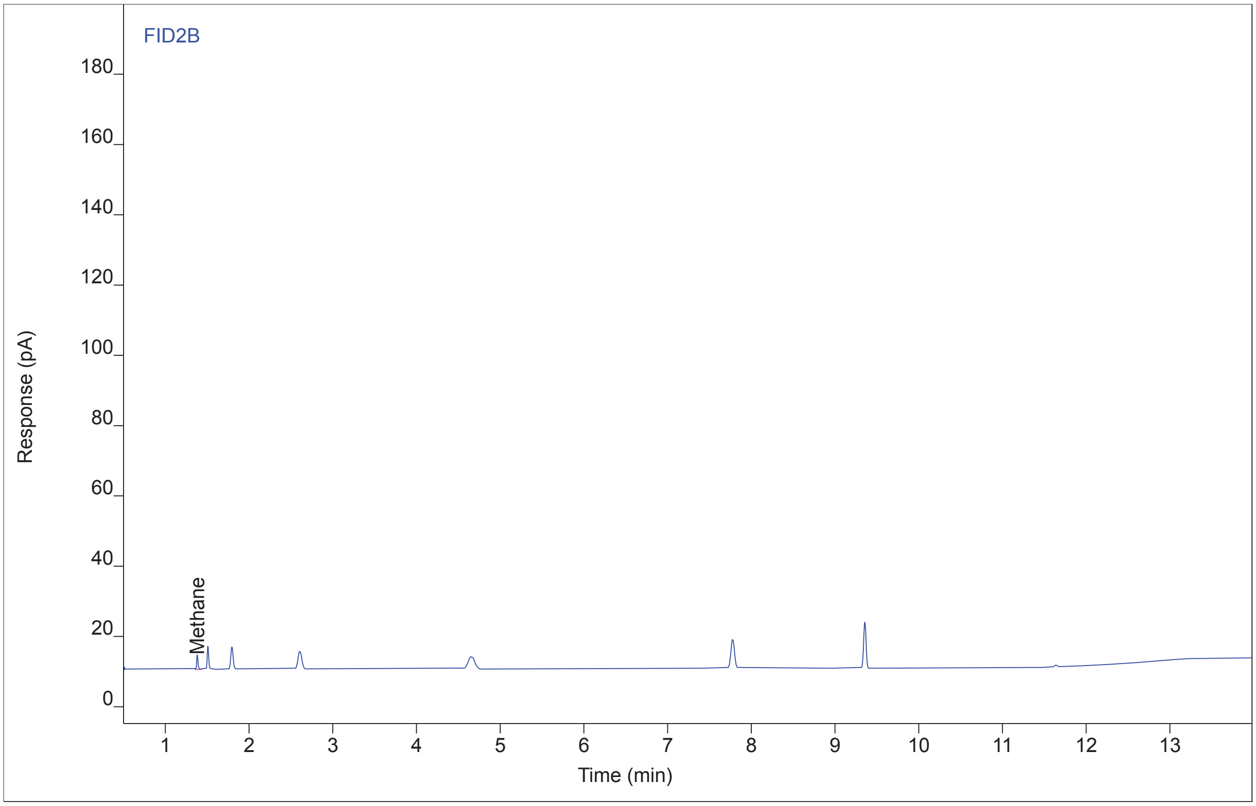
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	4.87233	4.24517	13.5572	1	13.5572	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-1 SP.Bag
Sequence Name	BETTYP974 ver.2
Inj Data File	022B0602.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/9/2018 2:41 PM
File Modified	12/11/2018 10:09 AM
Instrument	Betty
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 22
Injection Volume	250
Injection	2 of 3
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C6_XAS.M
Method Modified	12/5/2018 7:48 AM
Printed	12/11/2018 3:48 PM

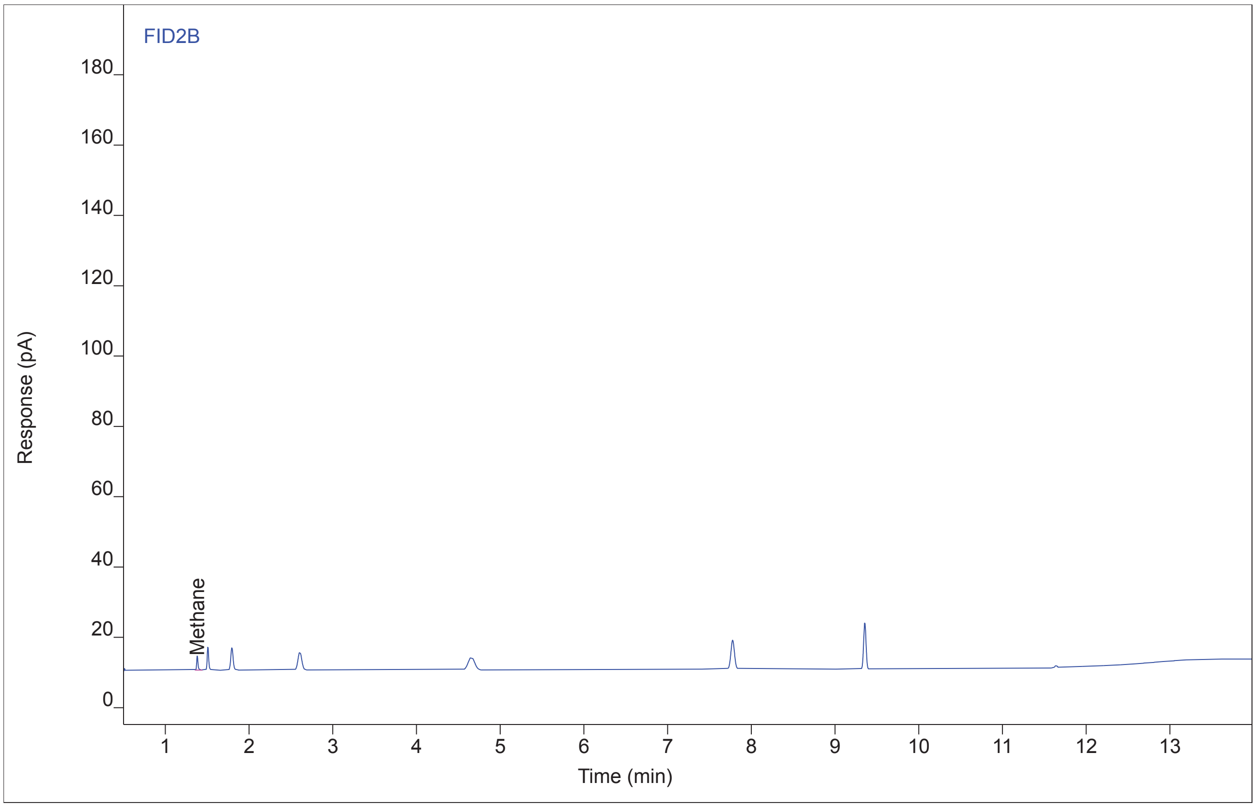


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	4.78405	4.18922	13.3066	1	13.3066	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	1218-052.S1-M18-1 SP.Bag	Sample Type	Sample
Sequence Name	BETTYP974 ver.2	Vial Number	Vial 22
Inj Data File	022B0603.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	3 of 3
Injection Date	12/9/2018 3:02 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/11/2018 10:09 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument	Betty	Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM

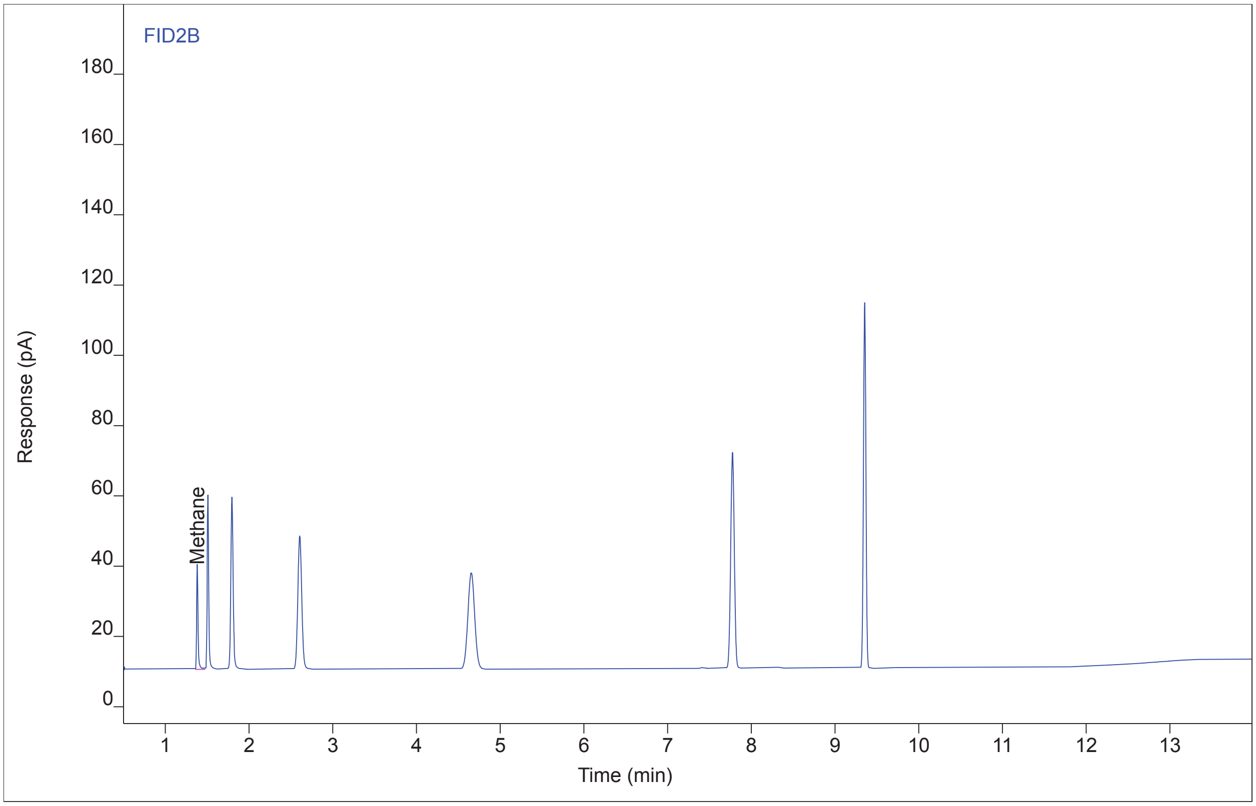


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	4.72264	4.14645	13.1323	1	13.1323	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	BETTYP974 ver.2	Vial Number	Vial 25
Inj Data File	025B0702.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 4	Injection	2 of 4
Injection Date	12/9/2018 3:50 PM	Acquisition Method	GC142P133_CAL.M
File Modified	12/11/2018 10:09 AM	Analysis Method	BETTYP773_C1-C6_XAS.M
Instrument	Betty	Method Modified	12/5/2018 7:48 AM
Operator	Justin Guenzler	Printed	12/11/2018 3:48 PM



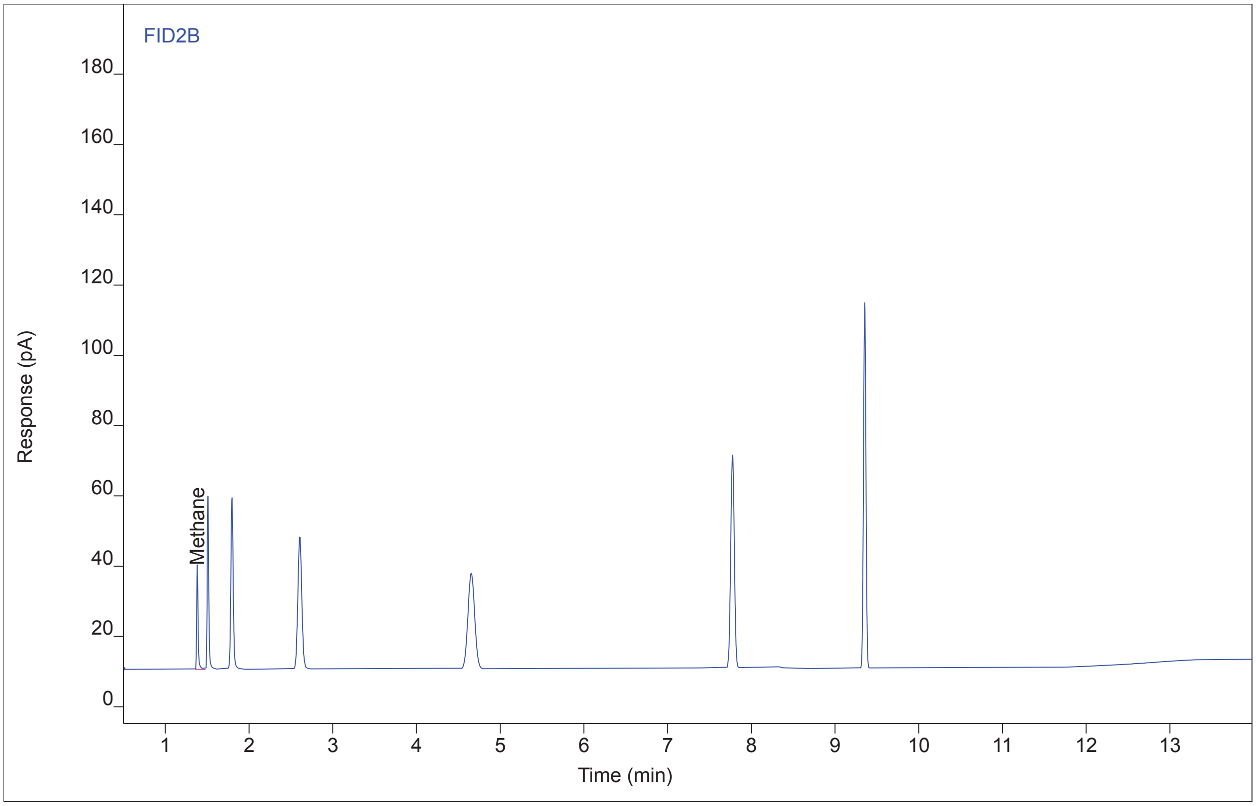
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	34.9088	29.8240	98.8152	1	98.8152	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)
Sequence Name	BETTYP974 ver.2
Inj Data File	025B0703.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/9/2018 4:14 PM
File Modified	12/11/2018 10:10 AM
Instrument	Betty
Operator	Justin Guenzler

Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C6_XAS.M
Method Modified	12/5/2018 7:48 AM
Printed	12/11/2018 3:48 PM

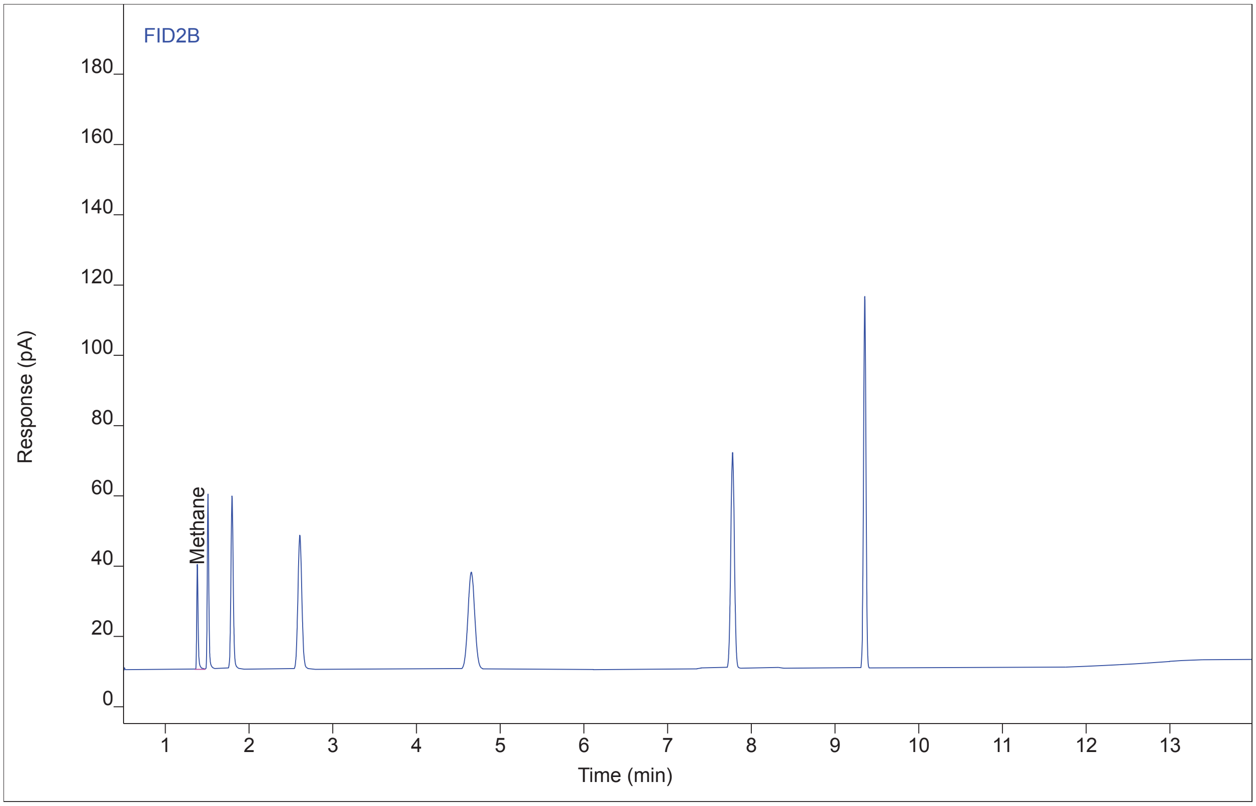


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	34.6003	29.6947	97.9396	1	97.9396	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP919 #C4 ENV(1=0,4=400)
Sequence Name	BETTYP974 ver.2
Inj Data File	025B0704.D
File Location	GC/2018/Betty/Quarter 4
Injection Date	12/9/2018 4:39 PM
File Modified	12/11/2018 10:10 AM
Instrument	Betty
Operator	Justin Guenzler
Sample Type	Calibration
Vial Number	Vial 25
Injection Volume	250
Injection	4 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C6_XAS.M
Method Modified	12/5/2018 7:48 AM
Printed	12/11/2018 3:48 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	35.0022	29.8472	99.0804	1	99.0804	ppm

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 1218-052 EPA Method 18 (Bags)

Client No.: 2333

Methane -- Calibration Standards

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc # 1	Conc # 2	Conc # 3	%dif conc	Avg Conc ppm	Std Tag ppm	% Tag
BettyP919 #C4 ENV(1=0,4=400)	025B1701.D	025B1702.D	025B1703.D	BETTYP773 _C1-C6_XAS.M	1.38	1.38	1.38	0.0	102	101	101	0.6	101	100	101
BettyP919 #C4 ENV(1=0,4=400)	025B1001.D	025B1002.D	025B1003.D	BETTYP773 _C1-C6_XAS.M	1.38	1.38	1.38	0.0	103	101	100	1.4	101	100	101
BettyP919 #C4 ENV(1=0,4=400)	025B0701.D	025B0702.D	025B0703.D	BETTYP773 _C1-C7.M	1.38	1.38	1.38	0.0	105	101	102	2.2	102	100	102
BettyP374 Method Blank 1 #MB	017B0102.D	017B0103.D	017B0104.D	BETTYP773 _C1-C6_XAS.M	NA	NA	NA	NA	0.816	0.816	0.816	0.0	0.816	NA	NA
BettyP919 #C4 ENV(1=0,4=400)	025B0302.D	025B0303.D	025B0304.D	BETTYP773 _C1-C6_XAS.M	1.38	1.38	1.38	0.0	103	102	101	1.0	102	100	102
BettyP919 #C4 ENV(1=0,4=400)	025B0702.D	025B0703.D	025B0704.D	BETTYP773 _C1-C6_XAS.M	1.38	1.38	1.38	0.0	98.8	97.9	99.1	0.7	98.6	100	98.6

===

Calibration Table

===

Calib. Data Modified : 3/20/2018 2:56:30 PM

Rel. Reference Window : 1.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 1.000 %
Abs. Non-ref. Window : 0.000 min
Uncalibrated Peaks : using compound Propane
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Quadratic (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

RetTime [min]	Sig	Lvl	Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
1.381	1	1	5.00000	1.85132	2.70077			Methane
		2	20.00000	7.17869	2.78602			
		3	36.00000	12.91274	2.78794			
		4	100.00000	35.92371	2.78368			
		5	1799.00000	629.92448	2.85590			
		6	5561.00000	1925.11084	2.88866			
		7	4.99200e4	1.74910e4	2.85404			
1.509	1	1	5.00000	3.51143	1.42392			Ethane
		2	20.00000	13.35849	1.49718			
		3	36.00000	24.17391	1.48921			
		4	100.00000	66.80825	1.49682			
		5	1800.00000	1185.36955	1.51851			
		6	5564.00000	3628.16577	1.53356			
		7	4.99500e4	3.27808e4	1.52376			
1.780	1	1	5.00000	5.44360	9.18511e-1			Propane
		2	20.00000	20.32719	9.83904e-1			
		3	36.00000	36.61232	9.83276e-1			
		4	100.00000	100.07090	9.99291e-1			
		5	1800.00000	1781.22225	1.01054			
		6	5566.00000	5436.71436	1.02378			
		7	4.99700e4	4.92738e4	1.01413			
2.609	1	1	5.00000	6.78349	7.37083e-1			Butane
		2	20.00000	26.32429	7.59755e-1			
		3	36.00000	47.11043	7.64162e-1			
		4	100.00000	130.48936	7.66346e-1			
		5	360.00000	474.45438	7.58766e-1			
		6	1113.00000	1449.71183	7.67739e-1			
		7	9991.00000	1.30827e4	7.63680e-1			

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RetTime [min]	Lvl Sig		Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
4.663	1	1	5.00000	8.53360	5.85919e-1			Pentane
		2	20.00000	33.10566	6.04126e-1			
		3	36.00000	59.18170	6.08296e-1			
		4	100.00000	163.94296	6.09968e-1			
		5	180.00000	295.46891	6.09201e-1			
		6	556.00000	903.34064	6.15493e-1			
		7	4995.00000	8149.24805	6.12940e-1			
7.782	1	1	5.00000	10.22645	4.88928e-1			Hexane
		2	20.00000	39.45738	5.06876e-1			
		3	36.00000	70.37578	5.11540e-1			
		4	100.00000	194.70184	5.13606e-1			
		5	144.00000	282.76460	5.09258e-1			
		6	446.00000	864.74677	5.15758e-1			
		7	4001.00000	7793.09538	5.13403e-1			

More compound-specific settings:

Compound: Methane
Time Window : From 1.360 min To 1.400 min

Compound: Ethane
Time Window : From 1.471 min To 1.531 min

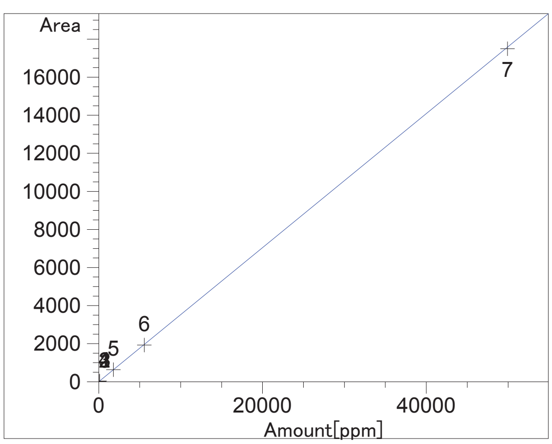
Compound: Propane
Time Window : From 1.722 min To 1.832 min

Compound: Butane
Time Window : From 2.563 min To 2.623 min

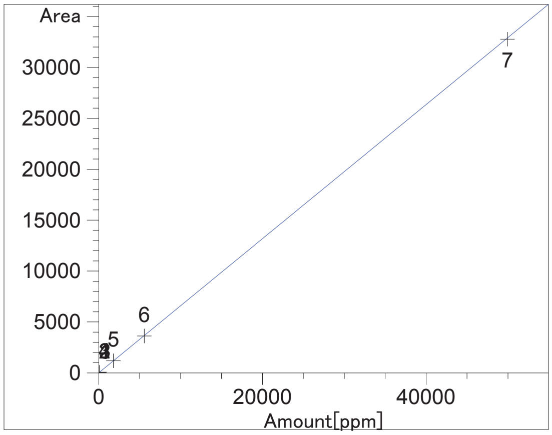
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.440	1.657	None	1.4977	1.4977	None
as Propane	1.657	2.211	None	9.9057e-1	0.9906	None
as Butane	2.211	3.652	None	7.5965e-1	0.7596	None
as Pentane	3.652	6.240	None	6.0656e-1	0.6066	None
as Hexane	6.240	14.000	None	5.0848e-1	0.5085	None

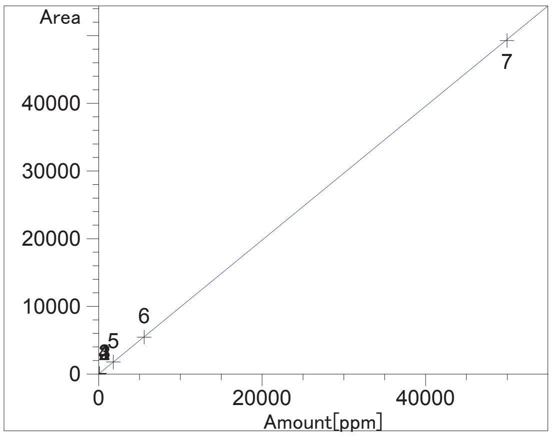
Calibration Curves



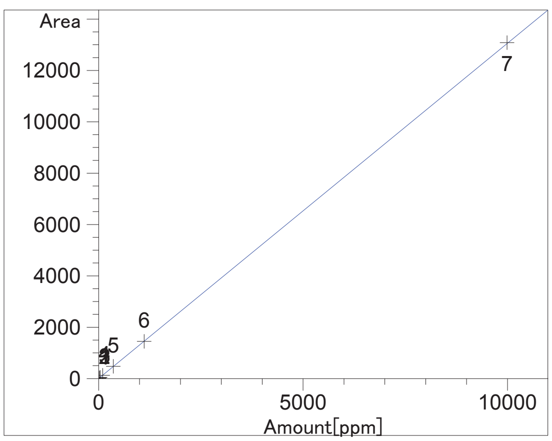
Methane at exp. RT: 1.381
FID2 B,
Correlation: 0.99992
Residual Std. Dev.: 45.57516
Formula: y = mx + b
m: 3.52300e-1
b: 9.61218e-2
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025
Level 5 : 7.72463e-006
Level 6 : 8.08415e-007
Level 7 : 1.00321e-008



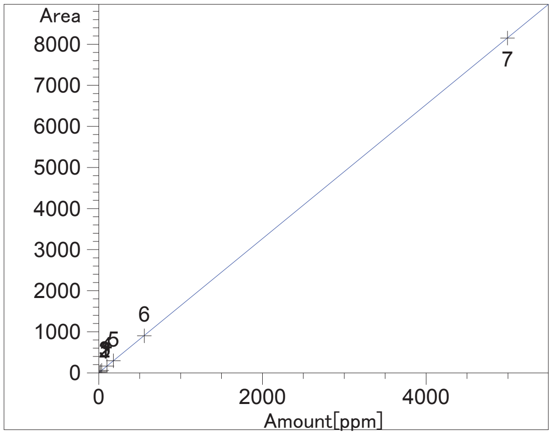

```
Ethane at exp. RT: 1.509
FID2 B,
Correlation:              0.99997
Residual Std. Dev.:    64.40241
Formula: y = mx + b
      m:       6.59042e-1
      b:       2.19675e-1
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1     : 1
    Level 2     : 0.0625
    Level 3     : 0.01929
    Level 4     : 0.0025
    Level 5     : 7.71605e-006
    Level 6     : 8.07543e-007
    Level 7     : 1.002e-008
```




```
Propane at exp. RT: 1.780
FID2 B,
Correlation:              0.99996
Residual Std. Dev.:    91.59980
Formula: y = mx + b
      m:       9.89883e-1
      b:       5.06094e-1
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1     : 1
    Level 2     : 0.0625
    Level 3     : 0.01929
    Level 4     : 0.0025
    Level 5     : 7.71605e-006
    Level 6     : 8.06963e-007
    Level 7     : 1.0012e-008
```

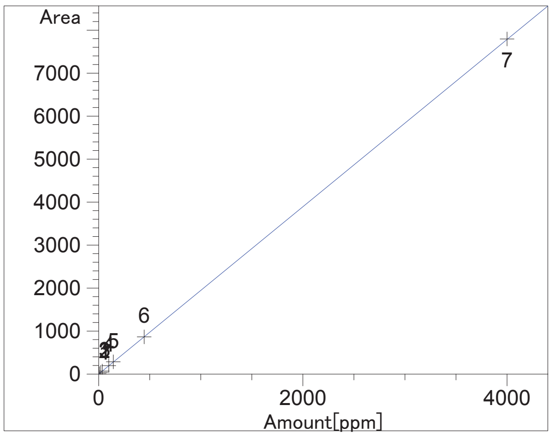



```
Butane at exp. RT: 2.609
FID2 B,
Correlation:              0.99999
Residual Std. Dev.:    13.67916
Formula: y = mx + b
      m:       1.30642
      b:       2.44793e-1
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1     : 1
    Level 2     : 0.0625
    Level 3     : 0.01929
    Level 4     : 0.0025
    Level 5     : 0.000193
    Level 6     : 0.00002
    Level 7     : 2.50451e-007
```



Pentane at exp. RT: 4.663
FID2 B,
Correlation: 0.99999
Residual Std. Dev.: 4.81681
Formula: y = mx + b
m: 1.63329
b: 3.72609e-1
x: Amount
y: Area
Calibration Level Weights:

Level 1	: 1
Level 2	: 0.0625
Level 3	: 0.01929
Level 4	: 0.0025
Level 5	: 0.000772
Level 6	: 0.000081
Level 7	: 1.002e-006



Hexane at exp. RT: 7.782
FID2 B,
Correlation: 0.99999
Residual Std. Dev.: 3.30193
Formula: y = mx + b
m: 1.94616
b: 4.95532e-1
x: Amount
y: Area
Calibration Level Weights:

Level 1	: 1
Level 2	: 0.0625
Level 3	: 0.01929
Level 4	: 0.0025
Level 5	: 0.001206
Level 6	: 0.000126
Level 7	: 1.56172e-006

==

Calibration Table

General Calibration Setting

Calib. Data Modified : 2/22/2018 9:12:06 AM
Signals calculated separately : No

Rel. Reference Window : 1.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 1.000 %
Abs. Non-ref. Window : 0.000 min
Uncalibrated Peaks : using compound Propane
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Quadratic (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal Details

Signal 1: FID2 B,

Overview Table

RT	Sig	Lvl	Amount [ppm]	Area	Rsp.Factor	Ref	ISTD	#	Compound
1.381	1	1	5.00000	1.85132	2.70077	No	No		Methane
		2	20.00000	7.17869	2.78602				
		3	36.00000	12.91274	2.78794				
		4	100.00000	35.92371	2.78368				
		5	1799.00000	629.92448	2.85590				
		6	5561.00000	1925.11084	2.88866				
		7	4.99200e4	1.74910e4	2.85404				
1.509	1	1	5.00000	3.51143	1.42392	No	No		Ethane
		2	20.00000	13.35849	1.49718				
		3	36.00000	24.17391	1.48921				

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RT	Sig	Lvl	Amount [ppm]	Area	Rsp.Factor	Ref	ISTD	#	Compound
		4	100.00000	66.80825	1.49682				
		5	1800.00000	1185.36955	1.51851				
		6	5564.00000	3628.16577	1.53356				
		7	4.99500e4	3.27808e4	1.52376				
1.797	1	1	5.00000	5.44360	9.18511e-1	No	No		Propane
		2	20.00000	20.32719	9.83904e-1				
		3	36.00000	36.61232	9.83276e-1				
		4	100.00000	100.07090	9.99291e-1				
		5	1800.00000	1781.22225	1.01054				
		6	5566.00000	5436.71436	1.02378				
		7	4.99700e4	4.92738e4	1.01413				
2.609	1	1	5.00000	6.78349	7.37083e-1	No	No		Butane
		2	20.00000	26.32429	7.59755e-1				
		3	36.00000	47.11043	7.64162e-1				
		4	100.00000	130.48936	7.66346e-1				
		5	360.00000	474.45438	7.58766e-1				
		6	1113.00000	1449.71183	7.67739e-1				
		7	9991.00000	1.30827e4	7.63680e-1				
4.663	1	1	5.00000	8.53360	5.85919e-1	No	No		Pentane
		2	20.00000	33.10566	6.04126e-1				
		3	36.00000	59.18170	6.08296e-1				
		4	100.00000	163.94296	6.09968e-1				
		5	180.00000	295.46891	6.09201e-1				
		6	556.00000	903.34064	6.15493e-1				
		7	4995.00000	8149.24805	6.12940e-1				
7.782	1	1	5.00000	10.22645	4.88928e-1	No	No		Hexane
		2	20.00000	39.45738	5.06876e-1				
		3	36.00000	70.37578	5.11540e-1				
		4	100.00000	194.70184	5.13606e-1				
		5	144.00000	282.76460	5.09258e-1				
		6	446.00000	864.74677	5.15758e-1				
		7	4001.00000	7793.09538	5.13403e-1				
9.359	1	1	5.00000	11.63456	4.29754e-1	No	No		Heptane
		2	20.00000	45.85759	4.36133e-1				
		3	36.00000	81.79598	4.40119e-1				
		4	100.00000	227.52871	4.39505e-1				
		7	251.20000	576.11442	4.36024e-1				

More compound-specific settings

Compound: Methane
Time Window : From 1.360 min To 1.400 min

Compound: Ethane
Time Window : From 1.471 min To 1.531 min

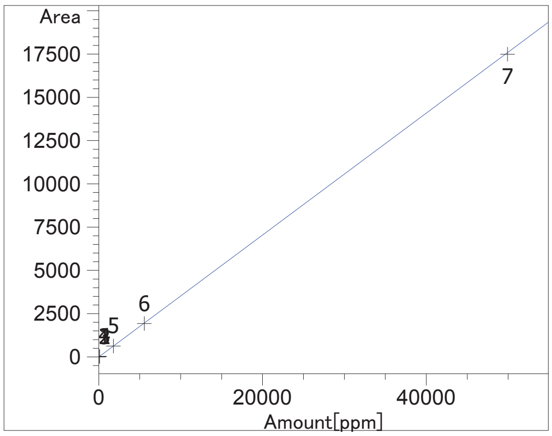
Compound: Propane
Time Window : From 1.739 min To 1.849 min

Compound: Butane
Time Window : From 2.563 min To 2.623 min

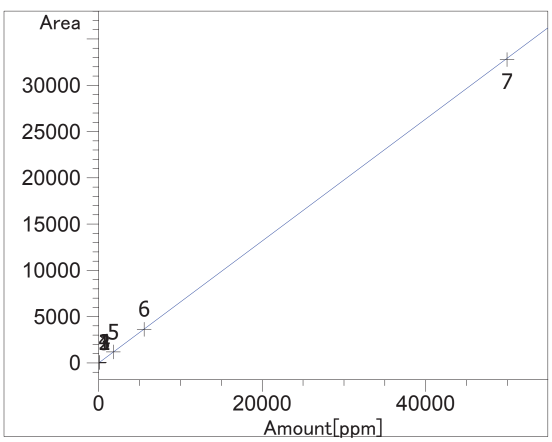
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.440	1.657	None	1.4977	1.4977	None
as Propane	1.657	2.211	None	9.9057e-1	0.9906	None
as Butane	2.211	3.652	None	7.5965e-1	0.7596	None
as Pentane	3.652	6.240	None	6.0656e-1	0.6066	None
as Hexane	6.240	8.578	None	5.0848e-1	0.5085	None
as Heptane	8.578	14.000	None	4.3630e-1	0.4363	None

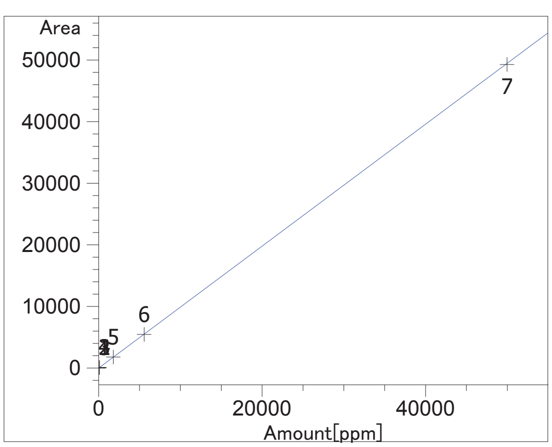
Calibration Curves



Methane at exp. RT: 1.381
FID2 B,
Correlation: 0.99992
Residual Std. Dev.: 45.57516
Formula: y = mx + b
m: 3.52300e-1
b: 9.61218e-2
x: Amount[ppm]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025
Level 5 : 7.72463e-006
Level 6 : 8.08415e-007
Level 7 : 1.00321e-008

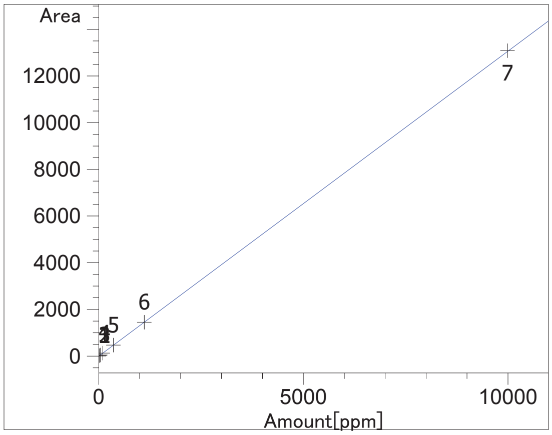


Ethane at exp. RT: 1.509
FID2 B,
Correlation: 0.99997
Residual Std. Dev.: 64.40241
Formula: y = mx + b
m: 6.59042e-1
b: 2.19675e-1
x: Amount[ppm]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025
Level 5 : 7.71605e-006
Level 6 : 8.07543e-007
Level 7 : 1.002e-008

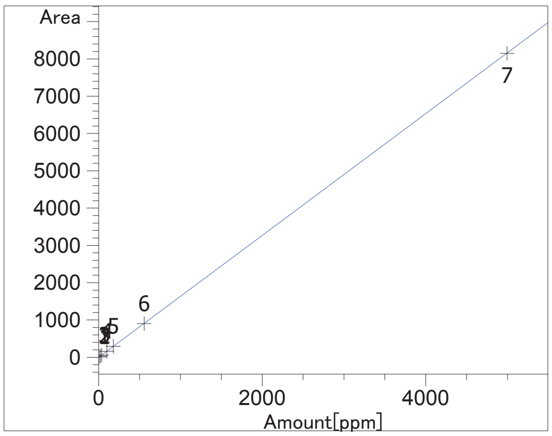


Propane at exp. RT: 1.797
FID2 B,
Correlation: 0.99996
Residual Std. Dev.: 91.59980
Formula: y = mx + b
m: 9.89883e-1
b: 5.06094e-1
x: Amount[ppm]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025

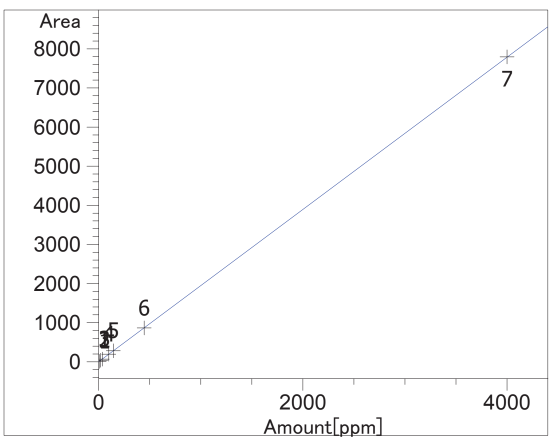
```
        Level 5    : 7.71605e-006
        Level 6    : 8.06963e-007
        Level 7    : 1.0012e-008
```



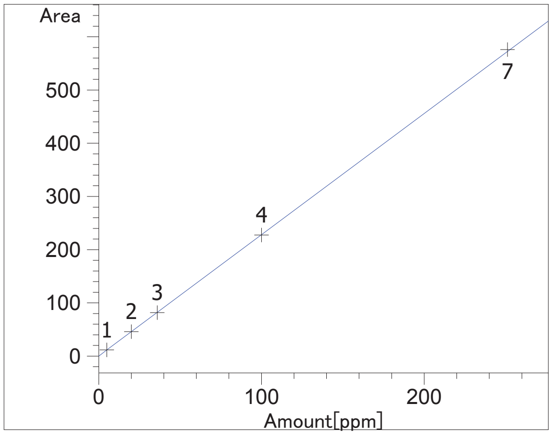
Butane at exp. RT: 2.609
FID2 B,
Correlation: 0.99999
Residual Std. Dev.: 13.67916
Formula: y = mx + b
m: 1.30642
b: 2.44793e-1
x: Amount[ppm]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025
Level 5 : 0.000193
Level 6 : 0.00002
Level 7 : 2.50451e-007



Pentane at exp. RT: 4.663
FID2 B,
Correlation: 0.99999
Residual Std. Dev.: 4.81681
Formula: y = mx + b
m: 1.63329
b: 3.72609e-1
x: Amount[ppm]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025
Level 5 : 0.000772
Level 6 : 0.000081
Level 7 : 1.002e-006



Hexane at exp. RT: 7.782
FID2 B,
Correlation: 0.99999
Residual Std. Dev.: 3.30193
Formula: y = mx + b
m: 1.94616
b: 4.95532e-1
x: Amount[ppm]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025
Level 5 : 0.001206
Level 6 : 0.000126
Level 7 : 1.56172e-006



Heptane at exp. RT: 9.359
FID2 B,
Correlation: 0.99999
Residual Std. Dev.: 2.10837
Formula: y = mx + b
m: 2.27824
b: 2.38039e-1
x: Amount[ppm]
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.01929
Level 4 : 0.0025
Level 7 : 0.000396

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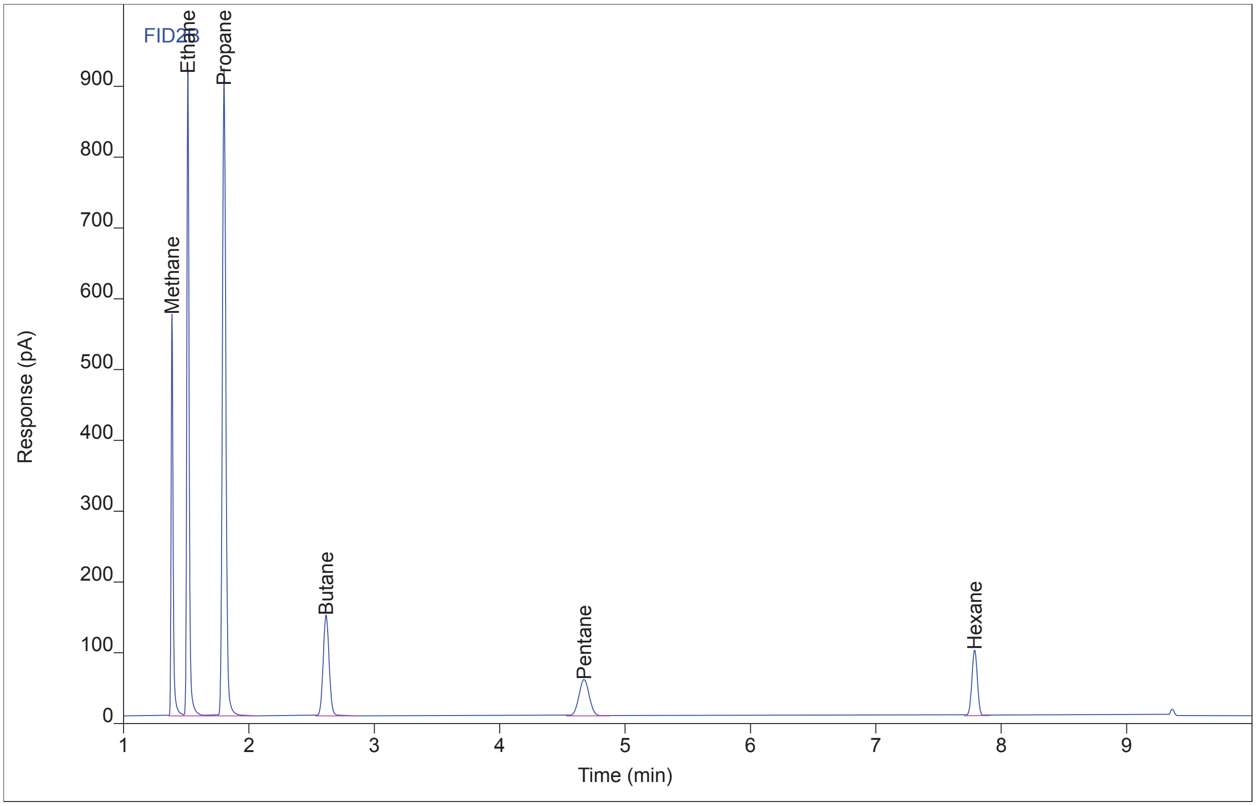
Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C5 ENV(1=3800,3=243.32)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1002.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	2 of 4
Injection Date	2/16/2018 1:49 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:19 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:36 AM

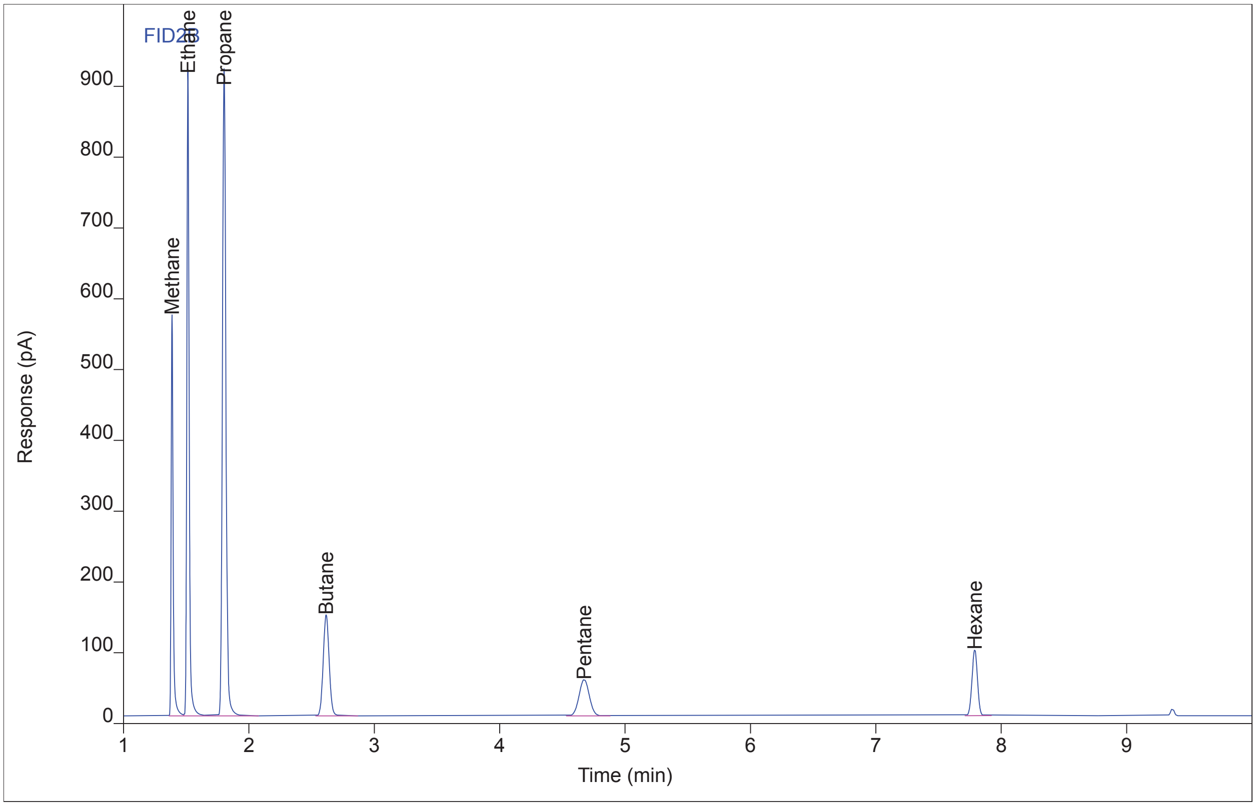


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.39	629.953	565.341	1787.84	1	1787.84	ppm
Ethane	VV	1.51	1185.28	910.378	1798.15	1	1798.15	ppm
Propane	VB	1.80	1780.92	913.393	1798.61	1	1798.61	ppm
Butane	BB	2.62	474.513	142.555	363.028	1	363.028	ppm
Pentane	BB	4.67	295.371	51.5300	180.616	1	180.616	ppm
Hexane	BB	7.79	282.589	93.0462	144.949	1	144.949	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C5 ENV(1=3800,3=243.32)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1003.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	3 of 4
Injection Date	2/16/2018 2:12 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:19 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:36 AM

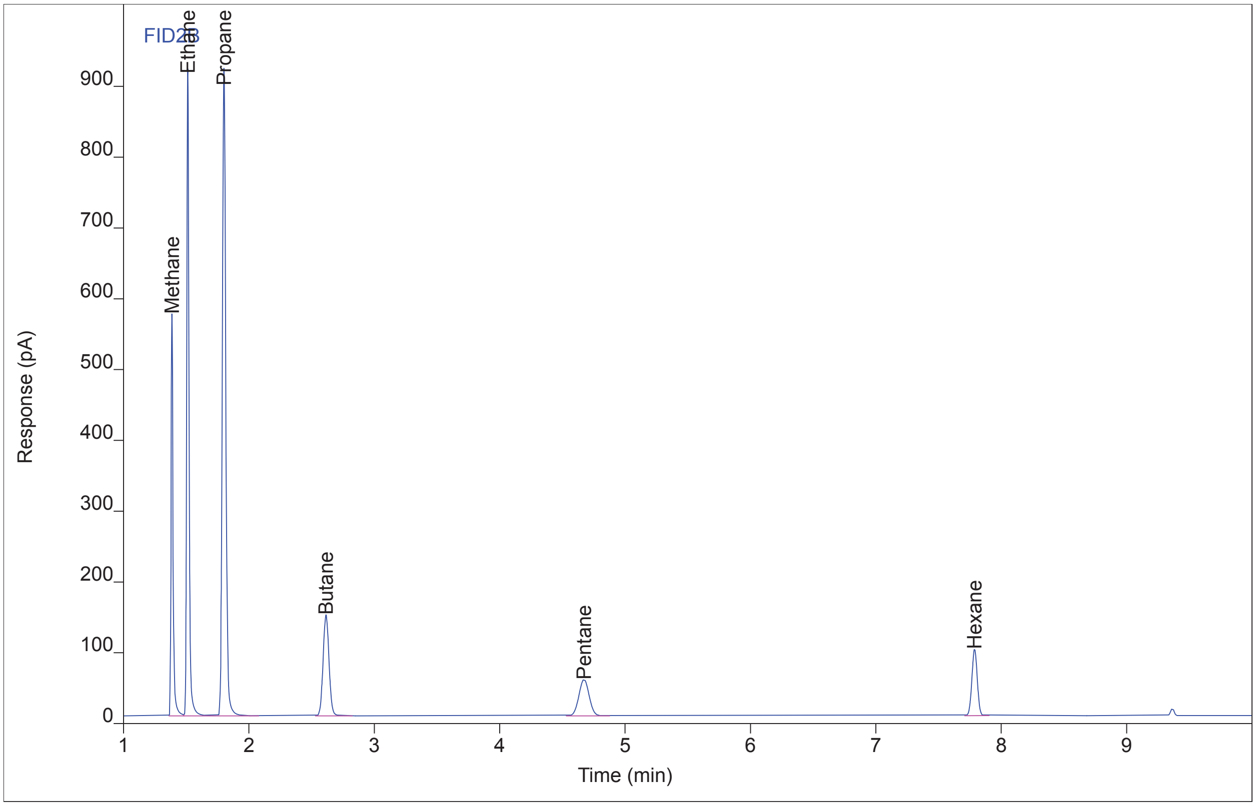


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.39	630.097	566.306	1788.25	1	1788.25	ppm
Ethane	VV	1.51	1185.76	911.997	1798.88	1	1798.88	ppm
Propane	VB	1.80	1781.99	913.783	1799.69	1	1799.69	ppm
Butane	BB	2.62	474.866	142.900	363.298	1	363.298	ppm
Pentane	BB	4.67	295.593	51.4285	180.752	1	180.752	ppm
Hexane	BB	7.79	282.999	93.2478	145.159	1	145.159	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C5 ENV(1=3800,3=243.32)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1004.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	4 of 4
Injection Date	2/16/2018 2:35 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:19 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:36 AM



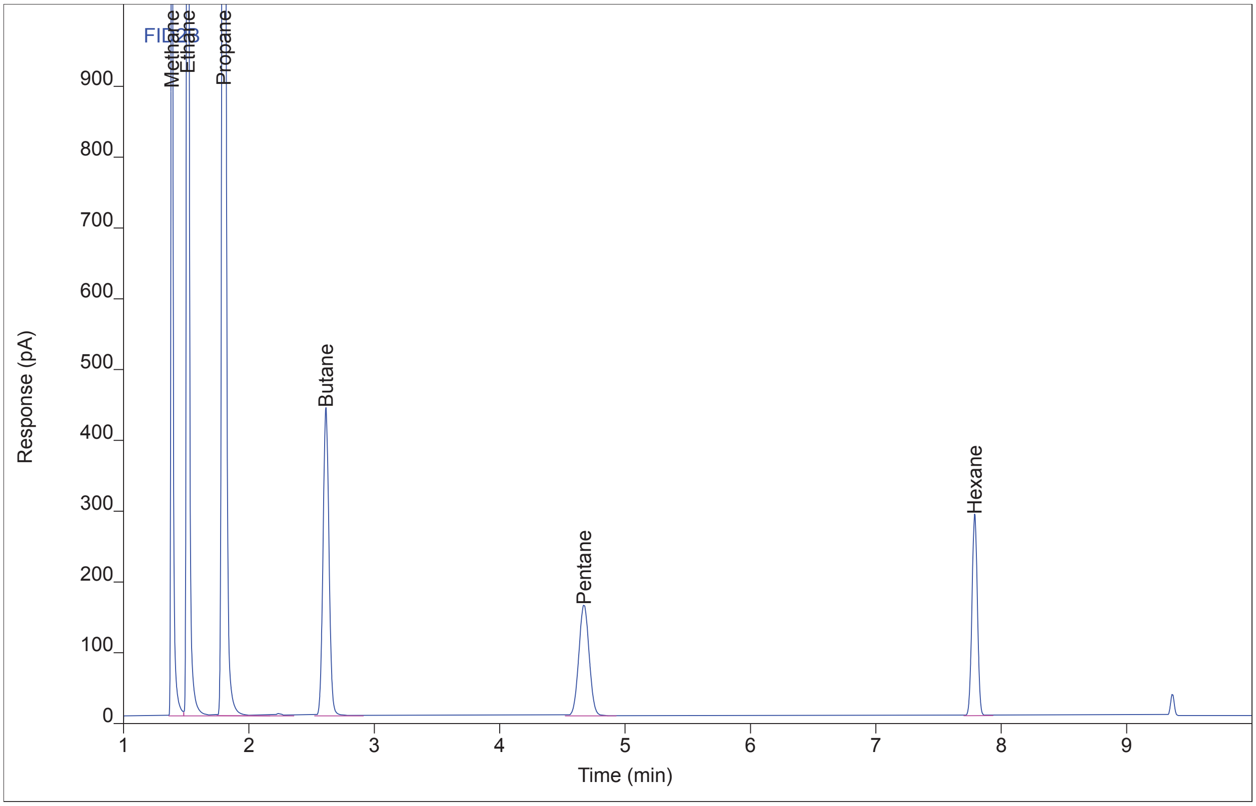
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.39	629.724	565.749	1787.19	1	1787.19	ppm
Ethane	VV	1.51	1185.07	911.949	1797.84	1	1797.84	ppm
Propane	VB	1.80	1780.76	913.993	1798.45	1	1798.45	ppm
Butane	BB	2.61	473.985	142.712	362.624	1	362.624	ppm
Pentane	BB	4.67	295.443	51.5371	180.660	1	180.660	ppm
Hexane	BB	7.79	282.706	94.1035	145.009	1	145.009	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C6 ENV(1=1700,3=365.09)
Sequence Name	BETTYP773 ver.7
Inj Data File	025B1102.D
File Location	GC/2018/Betty/Quarter 1
Injection Date	2/16/2018 3:21 PM
File Modified	2/22/2018 9:19 AM
Instrument	Betty
Operator	Nicholas Traversa

Sample Type	Calibration
Vial Number	25
Injection Volume	250
Injection	2 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	1/2/2014 5:30 PM
Printed	2/22/2018 9:36 AM

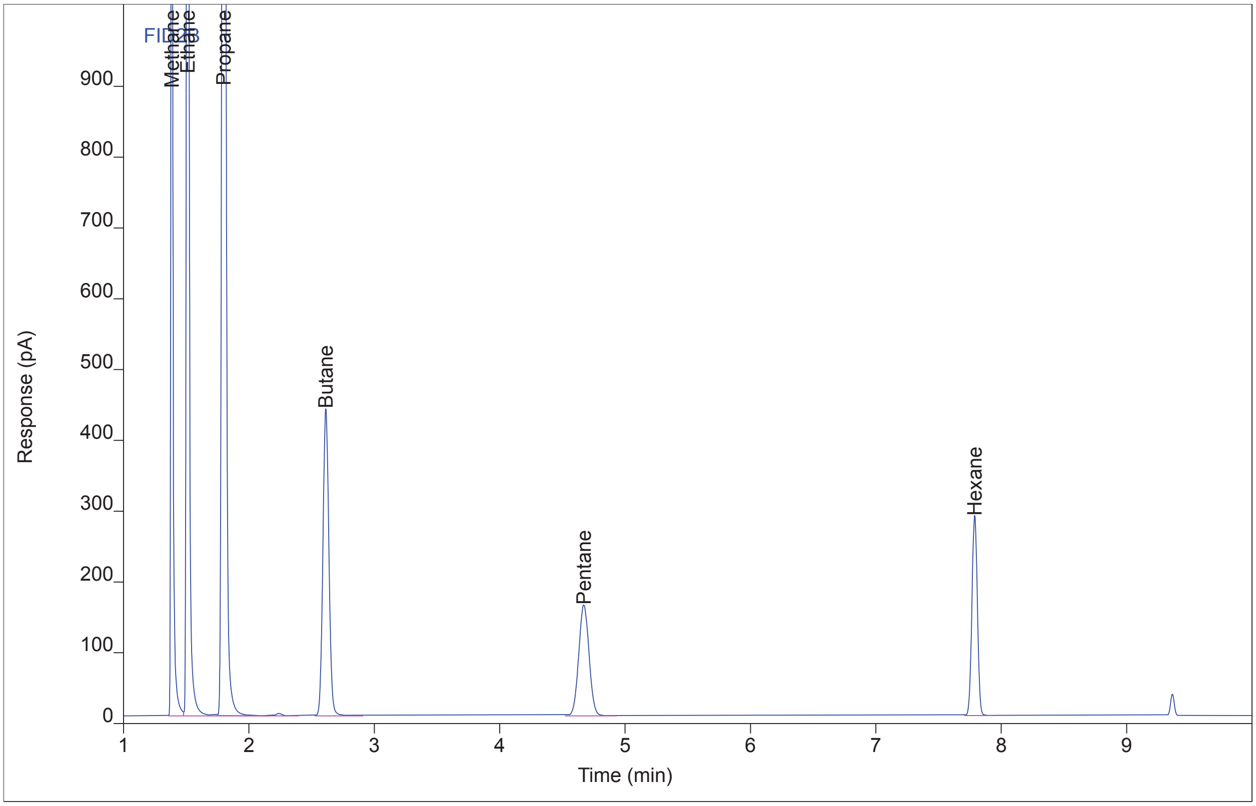


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.39	1926.40	1742.89	5467.79	1	5467.79	ppm
Ethane	VB S	1.51	3629.94	2796.19	5507.57	1	5507.57	ppm
Propane	BV T	1.80	5439.60	2789.89	5494.68	1	5494.68	ppm
Butane	BB	2.61	1450.56	436.128	1110.14	1	1110.14	ppm
Pentane	BB	4.67	903.786	157.261	553.126	1	553.126	ppm
Hexane	BB	7.79	865.027	284.625	444.225	1	444.225	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C6 ENV(1=1700,3=365.09)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1103.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	3 of 4
Injection Date	2/16/2018 3:44 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:19 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:36 AM

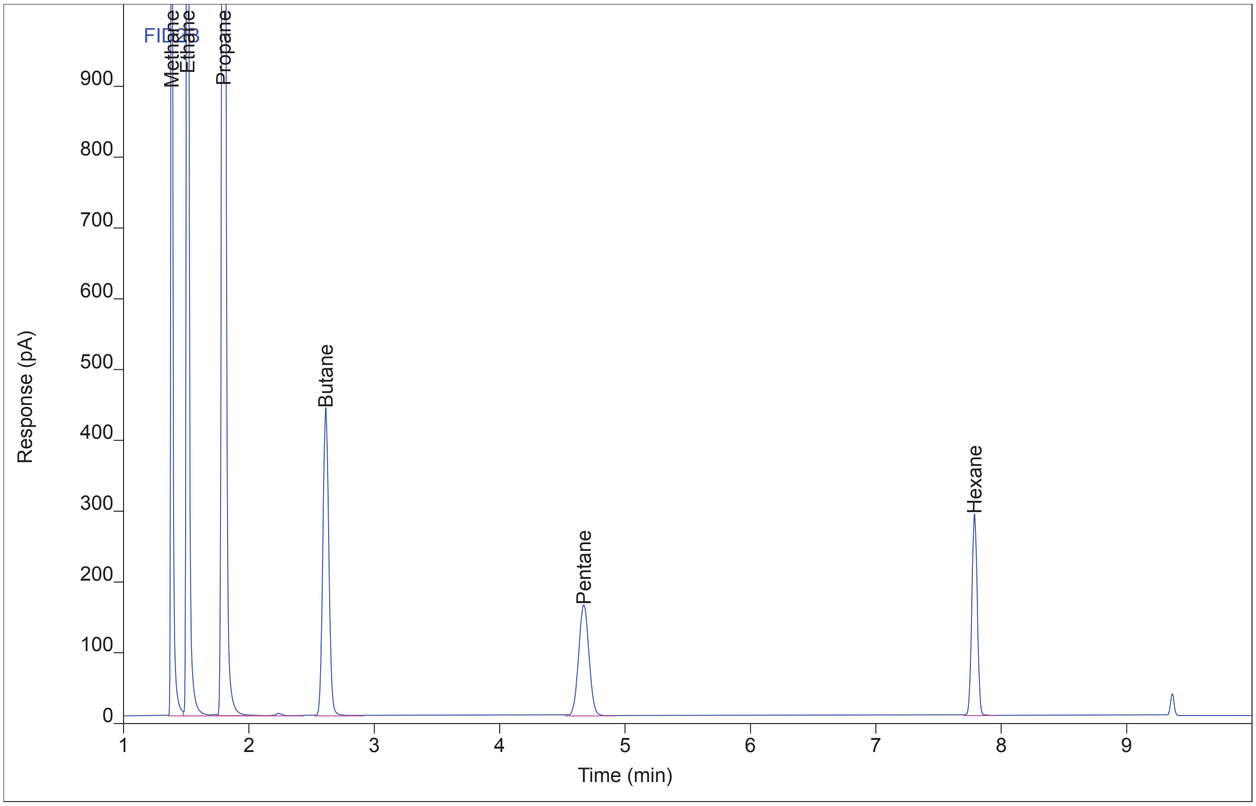


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	1923.59	1738.12	5459.82	1	5459.82	ppm
Ethane	VB S	1.51	3625.31	2787.84	5500.54	1	5500.54	ppm
Propane	BV X	1.80	5432.45	2785.46	5487.46	1	5487.46	ppm
Butane	BB	2.61	1448.46	434.599	1108.54	1	1108.54	ppm
Pentane	BB	4.67	902.542	157.242	552.364	1	552.364	ppm
Hexane	BB	7.79	864.123	282.417	443.760	1	443.760	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C6 ENV(1=1700,3=365.09)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1104.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	4 of 4
Injection Date	2/16/2018 4:07 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:19 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:36 AM



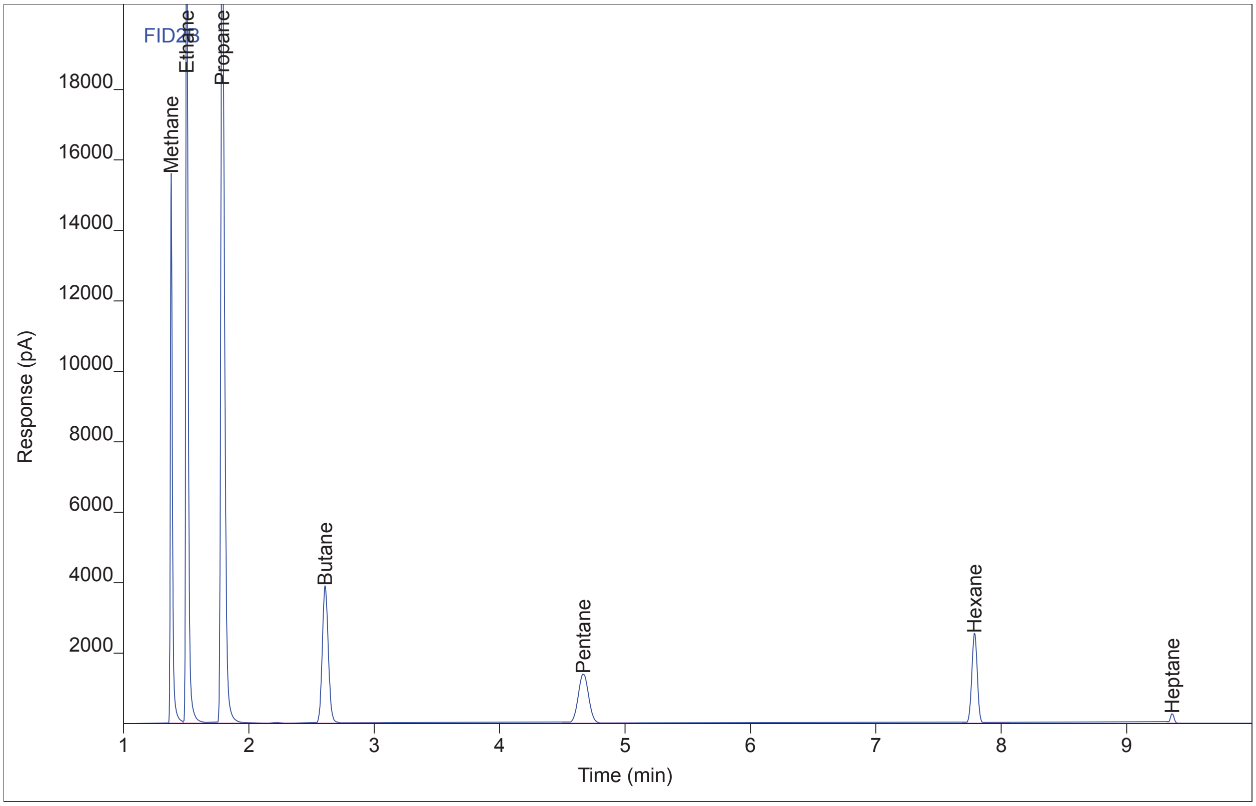
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	1925.34	1738.17	5464.78	1	5464.78	ppm
Ethane	VB S	1.51	3629.25	2800.41	5506.52	1	5506.52	ppm
Propane	BV X	1.80	5438.09	2785.91	5493.16	1	5493.16	ppm
Butane	BB	2.61	1450.11	435.311	1109.80	1	1109.80	ppm
Pentane	BB	4.67	903.693	157.115	553.069	1	553.069	ppm
Hexane	BB	7.79	865.091	284.456	444.257	1	444.257	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C7 ENV(1=0,3=438.21)
Sequence Name	BETTYP773 ver.7
Inj Data File	025B1202.D
File Location	GC/2018/Betty/Quarter 1
Injection Date	2/16/2018 4:53 PM
File Modified	2/22/2018 9:19 AM
Instrument	Betty
Operator	Nicholas Traversa

Sample Type	Calibration
Vial Number	25
Injection Volume	250
Injection	2 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	1/2/2014 5:30 PM
Printed	2/22/2018 9:35 AM



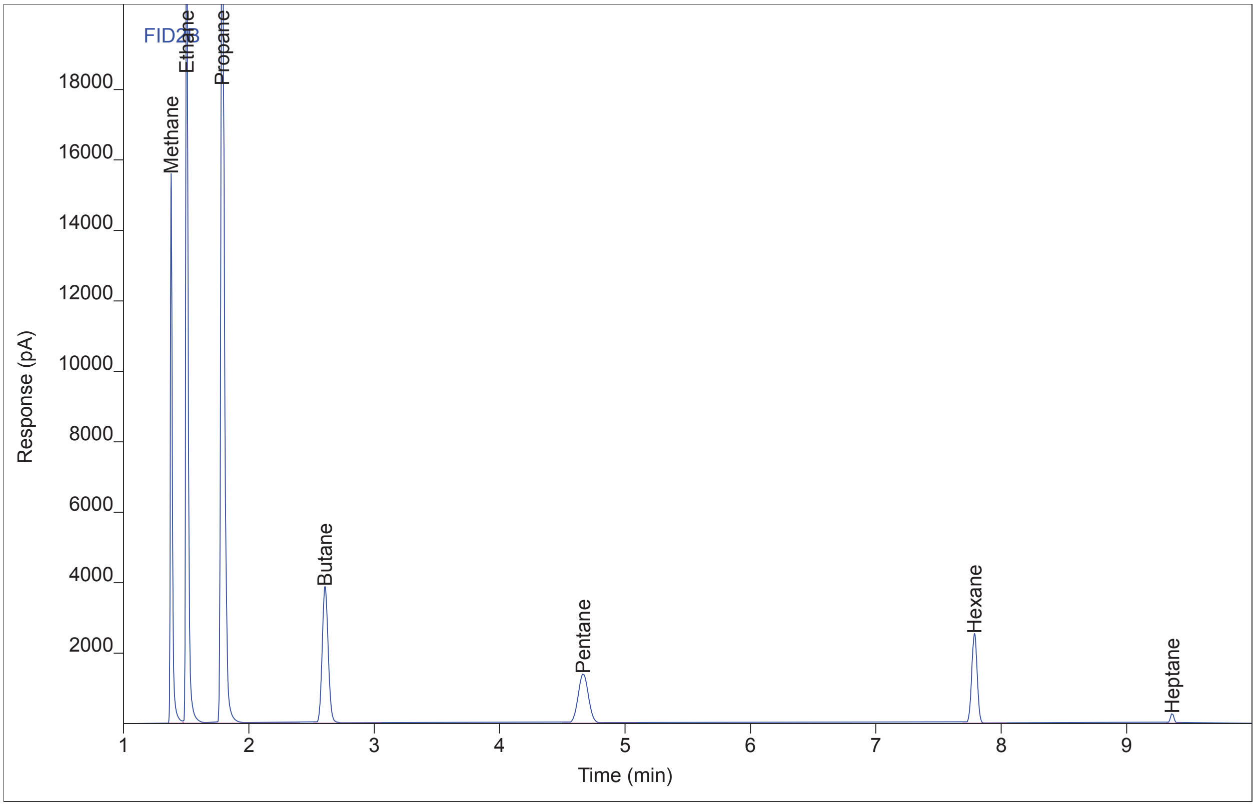
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	17500.4	15592.8	49674.3	1	49674.3	ppm
Ethane	VV S	1.50	32793.8	24862.2	49759.5	1	49759.5	ppm
Propane	VB S	1.79	49288.4	24422.6	49791.6	1	49791.6	ppm
Butane	BB	2.61	13089.8	3909.51	10019.4	1	10019.4	ppm
Pentane	BB	4.67	8153.55	1413.03	4991.88	1	4991.88	ppm
Hexane	BB	7.79	7795.58	2562.81	4005.37	1	4005.37	ppm
Heptane	BB	9.36	576.169	279.292	252.797	1	252.797	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C7 ENV(1=0,3=438.21)
Sequence Name	BETTYP773 ver.7
Inj Data File	025B1203.D
File Location	GC/2018/Betty/Quarter 1
Injection Date	2/16/2018 5:16 PM
File Modified	2/22/2018 9:19 AM
Instrument	Betty
Operator	Nicholas Traversa

Sample Type	Calibration
Vial Number	25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	1/2/2014 5:30 PM
Printed	2/22/2018 9:35 AM

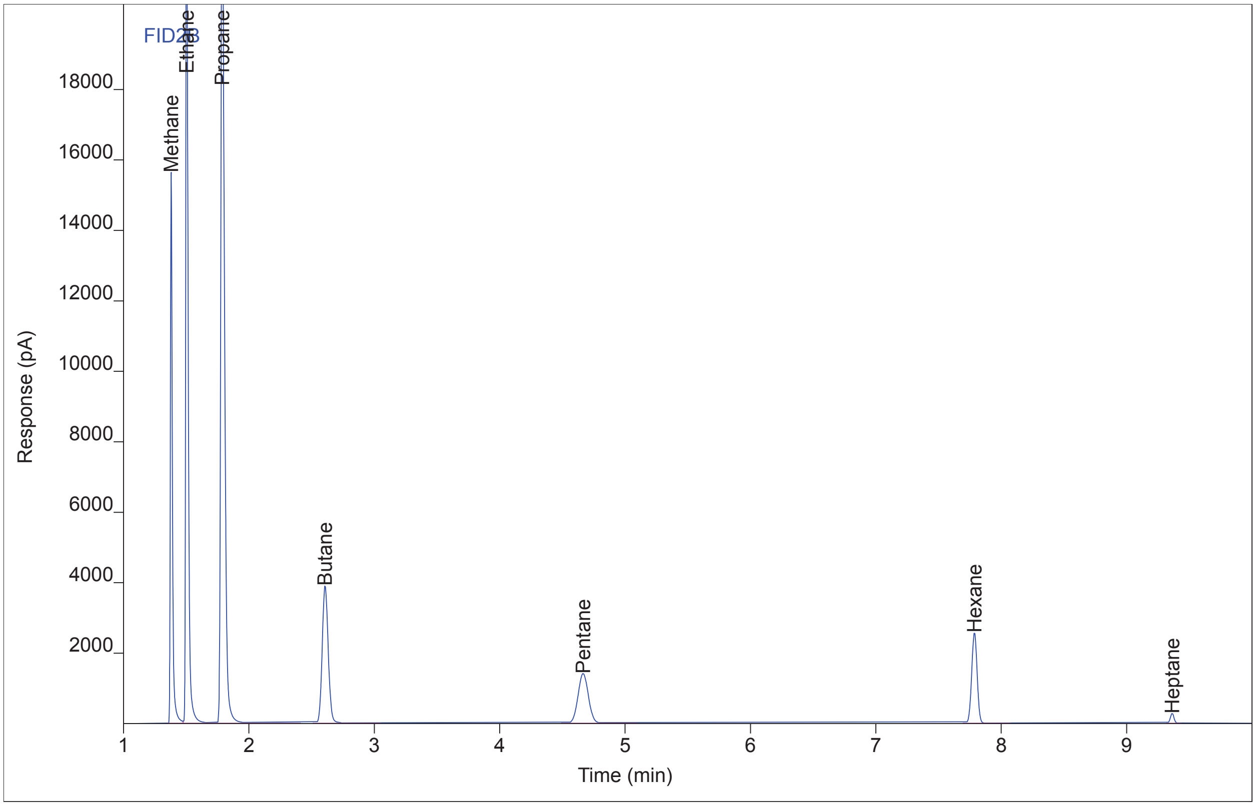


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	17443.8	15537.2	49513.6	1	49513.6	ppm
Ethane	VV S	1.50	32691.5	24747.2	49604.2	1	49604.2	ppm
Propane	VB S	1.79	49137.5	24333.0	49639.2	1	49639.2	ppm
Butane	BB	2.61	13046.0	3893.41	9985.83	1	9985.83	ppm
Pentane	BB	4.67	8126.22	1409.58	4975.15	1	4975.15	ppm
Hexane	BB	7.79	7772.18	2547.73	3993.35	1	3993.35	ppm
Heptane	BB	9.36	574.654	278.420	252.132	1	252.132	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C7 ENV(1=0,3=438.21)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1204.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	4 of 4
Injection Date	2/16/2018 5:40 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:19 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:35 AM



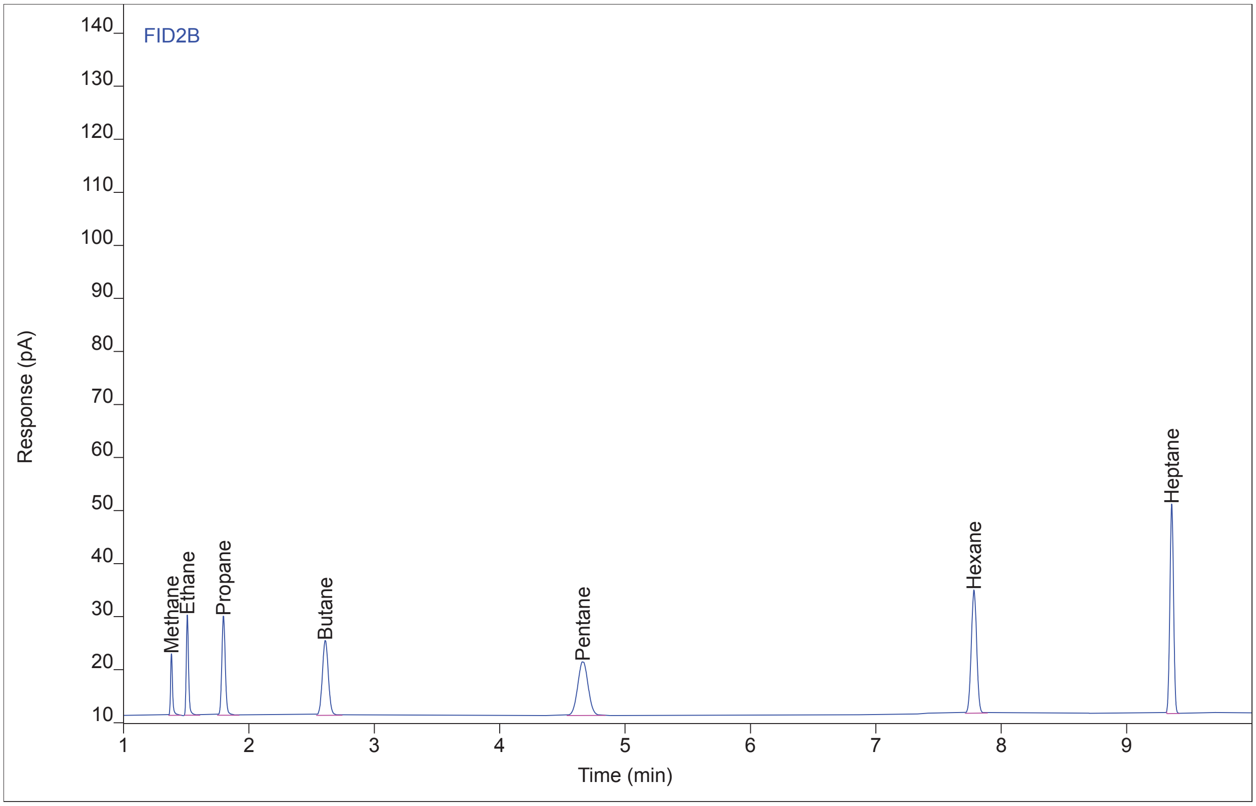
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.38	17528.9	15649.0	49755.1	1	49755.1	ppm
Ethane	VV S	1.50	32856.9	25027.5	49855.3	1	49855.3	ppm
Propane	VB S	1.79	49395.4	24486.2	49899.8	1	49899.8	ppm
Butane	BB	2.61	13112.4	3909.04	10036.7	1	10036.7	ppm
Pentane	BB	4.67	8167.97	1414.95	5000.71	1	5000.71	ppm
Hexane	BB	7.79	7811.53	2571.84	4013.57	1	4013.57	ppm
Heptane	BB	9.36	577.519	280.040	253.389	1	253.389	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C3 ENV(1=565.33,2=450)
Sequence Name	BETTYP773 ver.7
Inj Data File	025B1503.D
File Location	GC/2018/Betty/Quarter 1
Injection Date	2/19/2018 5:39 PM
File Modified	2/22/2018 9:20 AM
Instrument	Betty
Operator	Nicholas Traversa

Sample Type	Calibration
Vial Number	25
Injection Volume	250
Injection	3 of 5
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	1/2/2014 5:30 PM
Printed	2/22/2018 9:37 AM

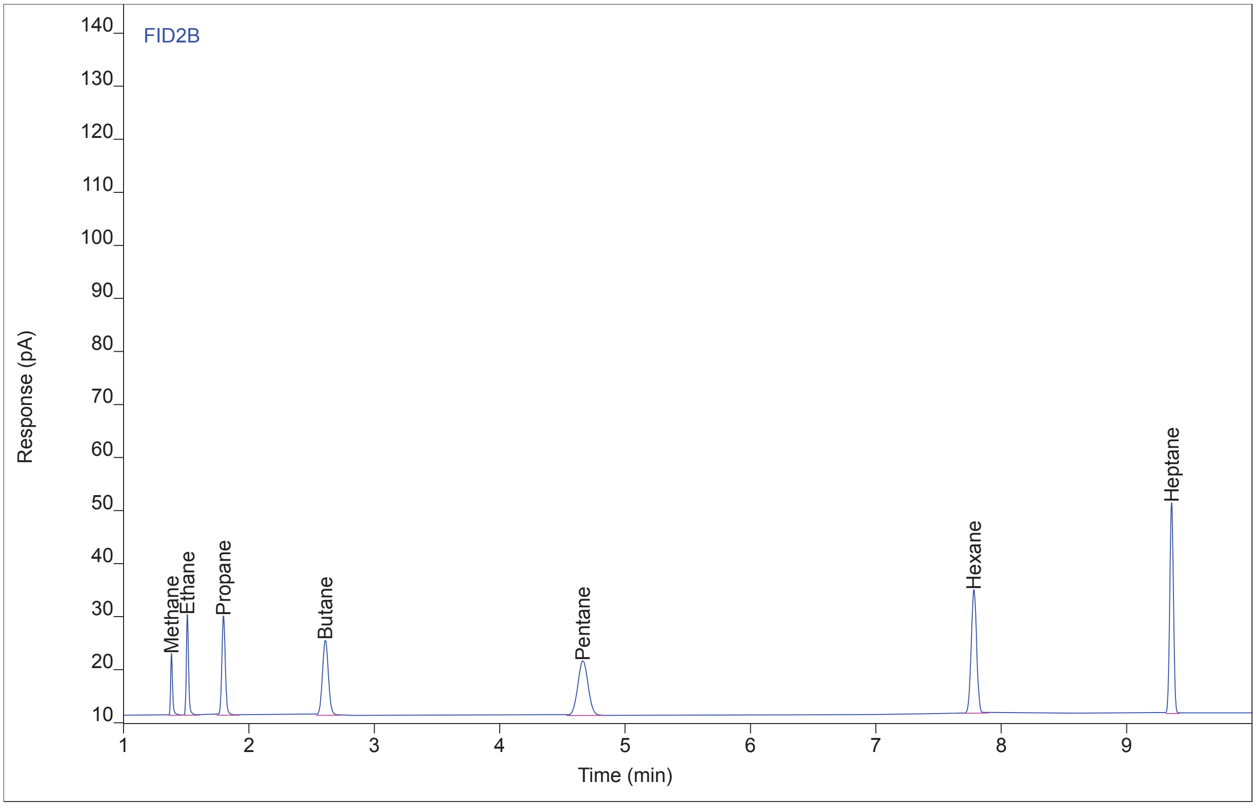


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	12.8807	11.6520	36.2888	1	36.2888	ppm
Ethane	PB	1.51	24.1863	18.9735	36.3659	1	36.3659	ppm
Propane	BB	1.80	36.6051	18.8290	36.4679	1	36.4679	ppm
Butane	BB	2.61	46.9566	14.1925	35.7555	1	35.7555	ppm
Pentane	BB	4.66	58.9851	10.2637	35.8862	1	35.8862	ppm
Hexane	BB	7.78	70.1094	23.2364	35.7699	1	35.7699	ppm
Heptane	BB	9.36	81.4405	39.4616	35.6427	1	35.6427	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C3 ENV(1=565.33,2=450)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1504.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	4 of 5
Injection Date	2/19/2018 6:02 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM

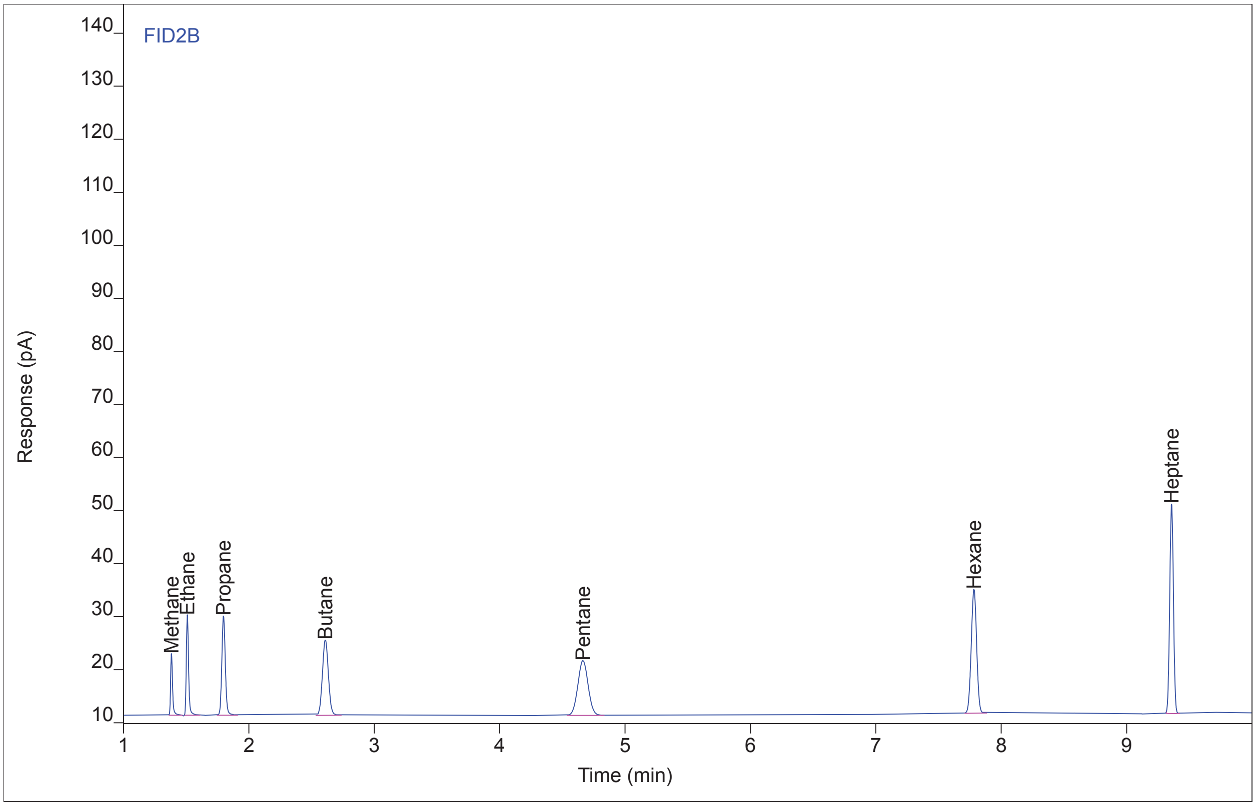


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BP	1.38	12.9393	11.5898	36.4553	1	36.4553	ppm
Ethane	PB	1.51	24.1664	18.9240	36.3356	1	36.3356	ppm
Propane	BB	1.80	36.6536	18.7980	36.5169	1	36.5169	ppm
Butane	BB	2.61	47.1369	14.2418	35.8935	1	35.8935	ppm
Pentane	BB	4.66	59.2716	10.3239	36.0616	1	36.0616	ppm
Hexane	BB	7.78	70.5193	23.3326	35.9805	1	35.9805	ppm
Heptane	BB	9.36	81.9037	39.7309	35.8460	1	35.8460	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C3 ENV(1=565.33,2=450)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1505.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	5 of 5
Injection Date	2/19/2018 6:25 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM

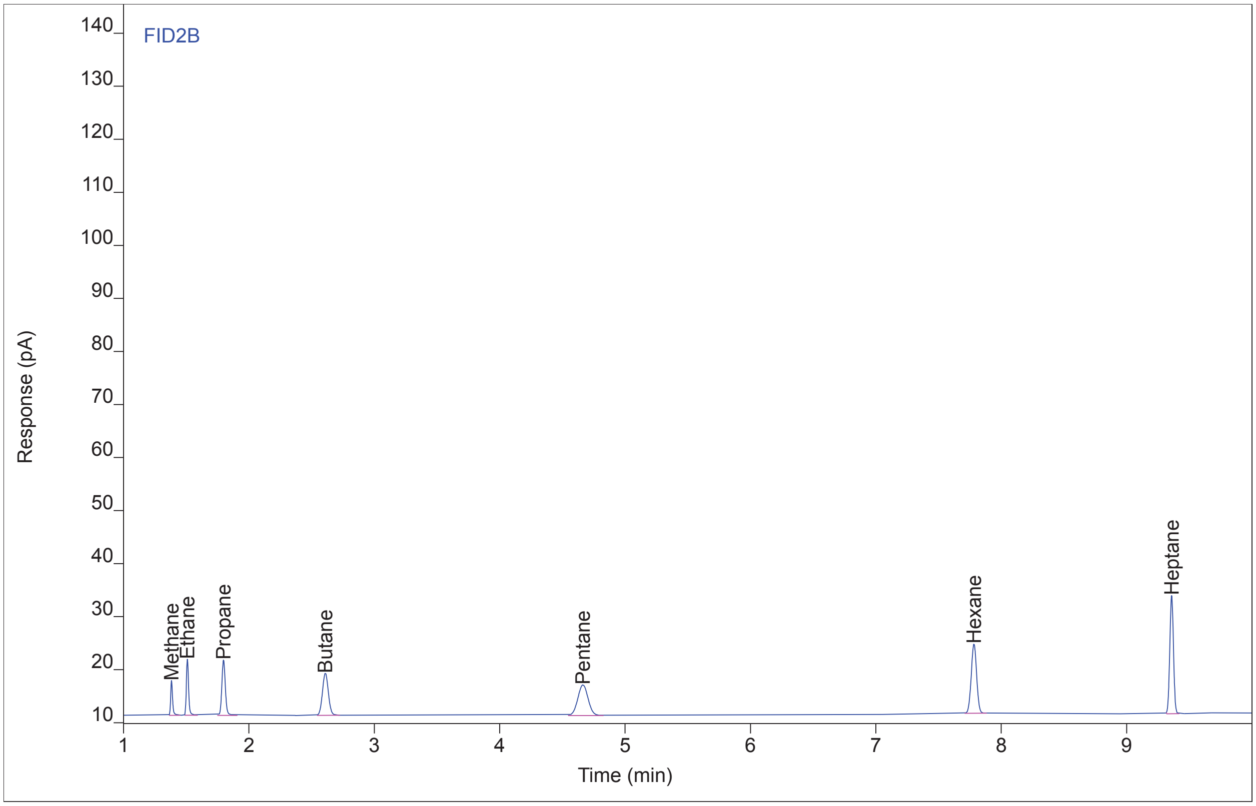


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BP	1.38	12.9182	11.5869	36.3953	1	36.3953	ppm
Ethane	PB	1.51	24.1690	18.8910	36.3396	1	36.3396	ppm
Propane	BB	1.80	36.5783	18.7748	36.4409	1	36.4409	ppm
Butane	BB	2.61	47.2378	14.2835	35.9708	1	35.9708	ppm
Pentane	BB	4.66	59.2884	10.3736	36.0719	1	36.0719	ppm
Hexane	BB	7.78	70.4986	23.4541	35.9699	1	35.9699	ppm
Heptane	BB	9.36	82.0437	39.4855	35.9074	1	35.9074	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C2 ENV(1=1130.66,2=400)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1603.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	3 of 5
Injection Date	2/19/2018 7:35 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM

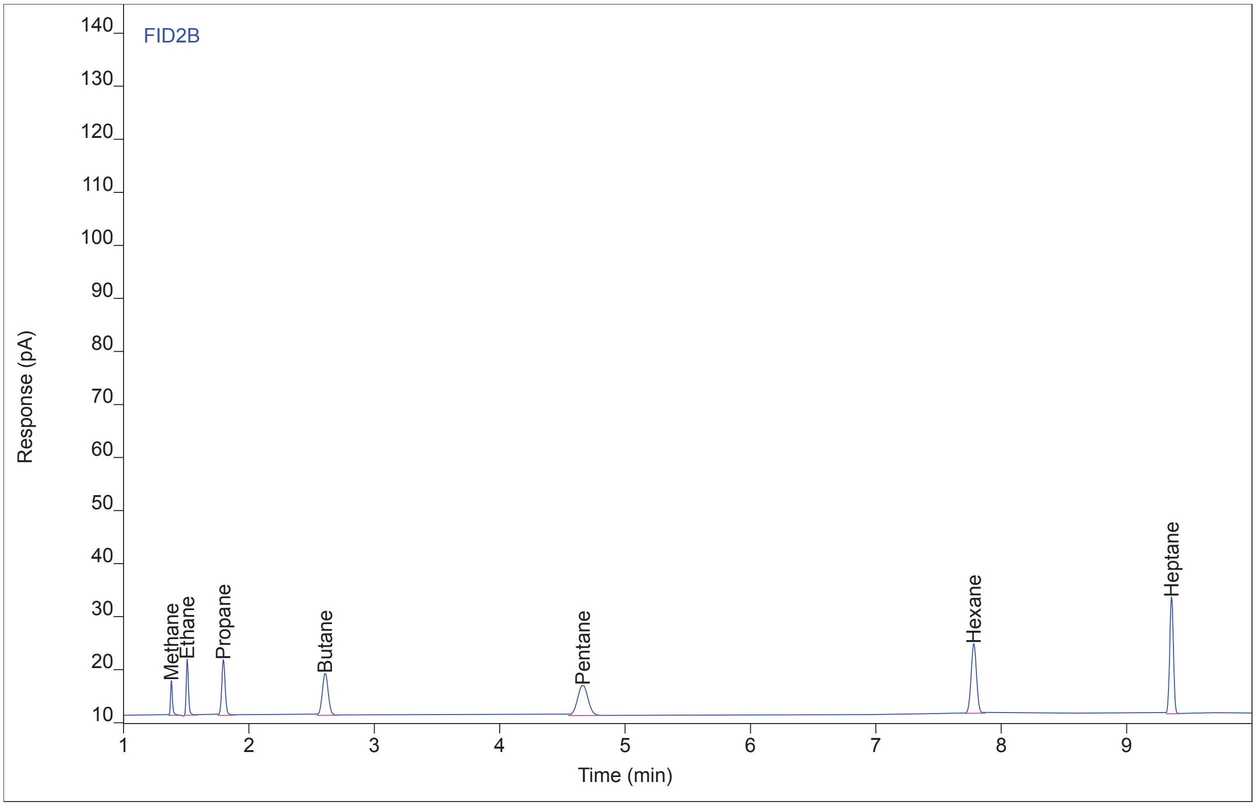


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	7.15522	6.53271	20.0372	1	20.0372	ppm
Ethane	PB	1.51	13.3428	10.5508	19.9123	1	19.9123	ppm
Propane	BB	1.80	20.3396	10.4517	20.0362	1	20.0362	ppm
Butane	BB	2.61	26.2591	7.97768	19.9126	1	19.9126	ppm
Pentane	BB	4.66	33.0174	5.79463	19.9871	1	19.9871	ppm
Hexane	BB	7.78	39.3943	13.1276	19.9875	1	19.9875	ppm
Heptane	BB	9.36	45.7573	22.3524	19.9800	1	19.9800	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C2 ENV(1=1130.66,2=400)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1604.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	4 of 5
Injection Date	2/19/2018 7:58 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM

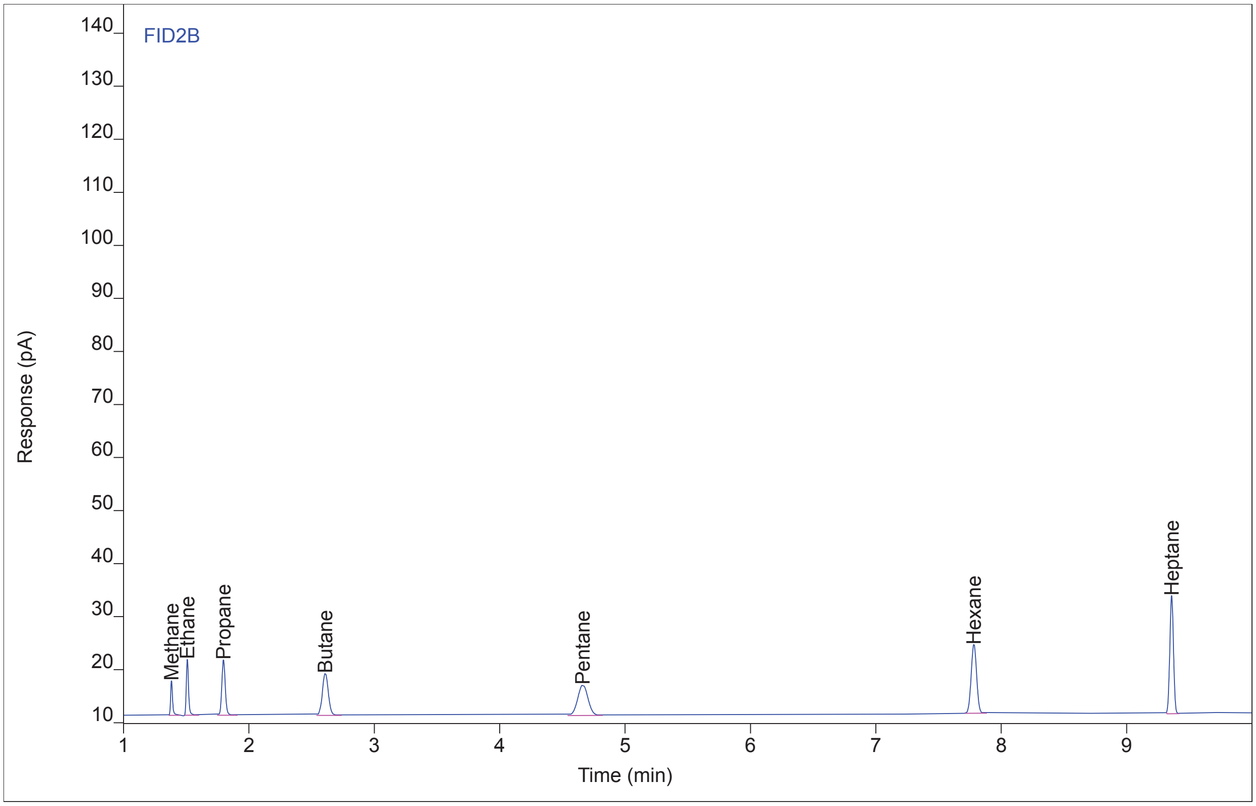


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	7.16378	6.56213	20.0614	1	20.0614	ppm
Ethane	PB	1.51	13.3420	10.5733	19.9112	1	19.9112	ppm
Propane	BB	1.80	20.2921	10.4921	19.9882	1	19.9882	ppm
Butane	BB	2.61	26.3020	7.96534	19.9455	1	19.9455	ppm
Pentane	BB	4.66	33.1046	5.76829	20.0405	1	20.0405	ppm
Hexane	BB	7.78	39.4584	13.1530	20.0204	1	20.0204	ppm
Heptane	BB	9.36	45.8967	21.9972	20.0412	1	20.0412	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C2 ENV(1=1130.66,2=400)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1605.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	5 of 5
Injection Date	2/19/2018 8:22 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM

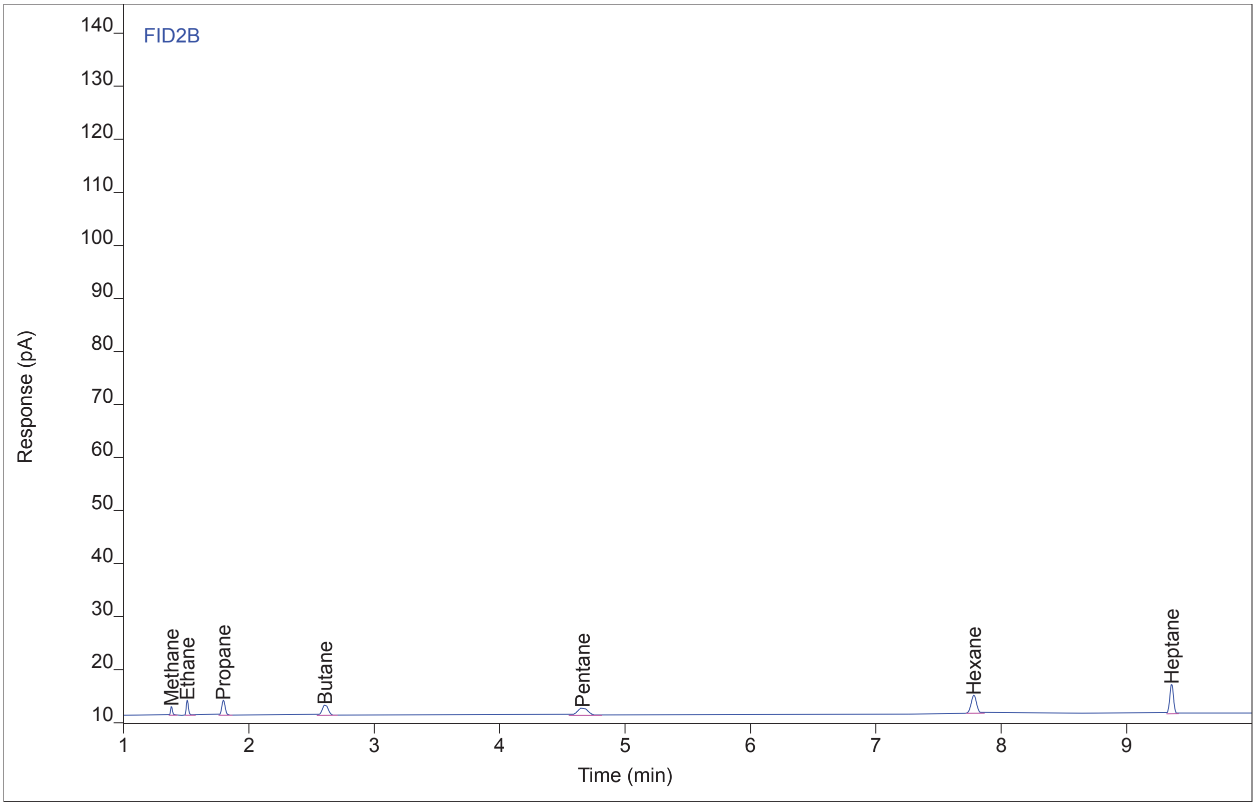


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	7.21708	6.55093	20.2127	1	20.2127	ppm
Ethane	PB	1.51	13.3907	10.5606	19.9851	1	19.9851	ppm
Propane	BB	1.80	20.3499	10.4654	20.0466	1	20.0466	ppm
Butane	BB	2.61	26.4118	7.97175	20.0295	1	20.0295	ppm
Pentane	BB	4.66	33.1951	5.79950	20.0960	1	20.0960	ppm
Hexane	BB	7.78	39.5194	12.9753	20.0518	1	20.0518	ppm
Heptane	BB	9.36	45.9188	22.2410	20.0509	1	20.0509	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C1 ENV(1=1342.66,2=100)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1703.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	3 of 10
Injection Date	2/19/2018 9:31 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM

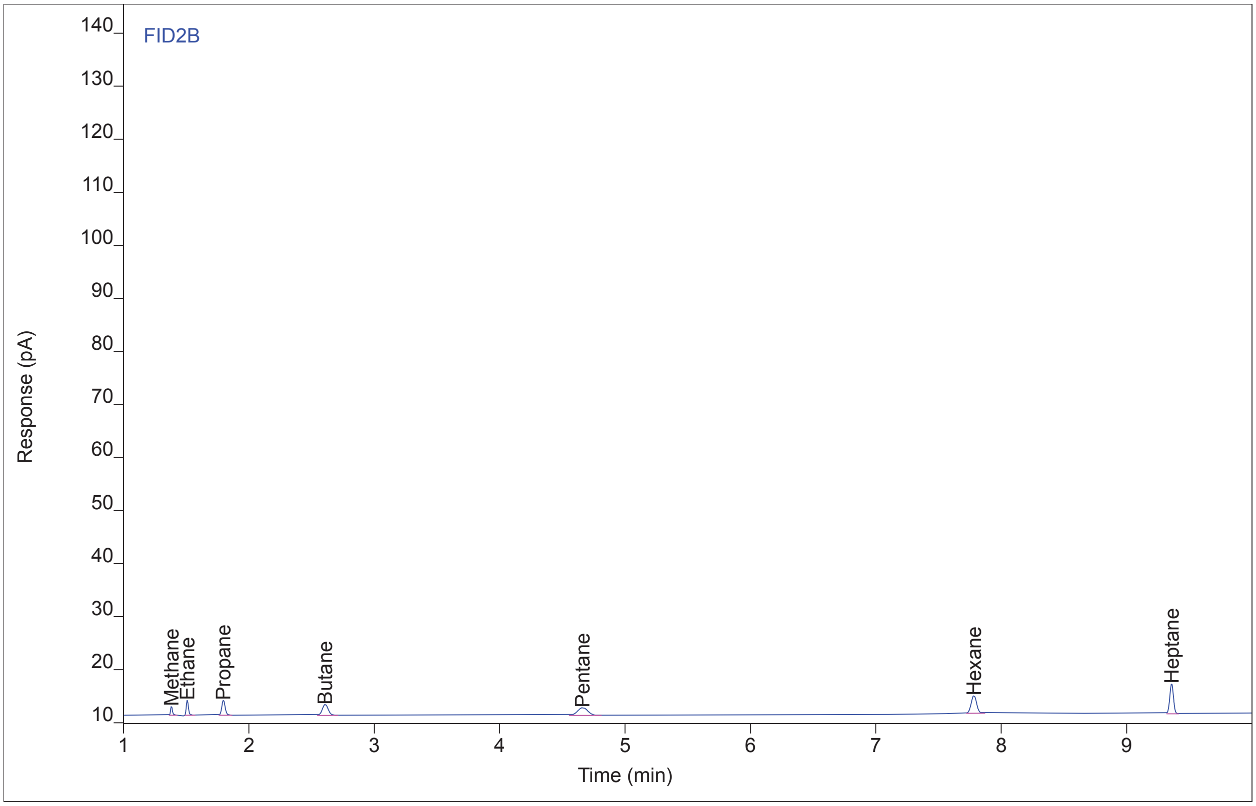


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	1.83410	1.72188	4.93669	1	4.93669	ppm
Ethane	PB	1.51	3.52163	2.83211	5.01023	1	5.01023	ppm
Propane	BB	1.80	5.43305	2.84652	4.97942	1	4.97942	ppm
Butane	BB	2.61	6.79641	2.06000	5.01493	1	5.01493	ppm
Pentane	BB	4.66	8.48314	1.47859	4.96726	1	4.96726	ppm
Hexane	BB	7.78	10.2616	3.40016	5.01813	1	5.01813	ppm
Heptane	BB	9.36	11.6098	5.62992	4.99163	1	4.99163	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C1 ENV(1=1342.66,2=100)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B1704.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	4 of 10
Injection Date	2/19/2018 9:55 PM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM



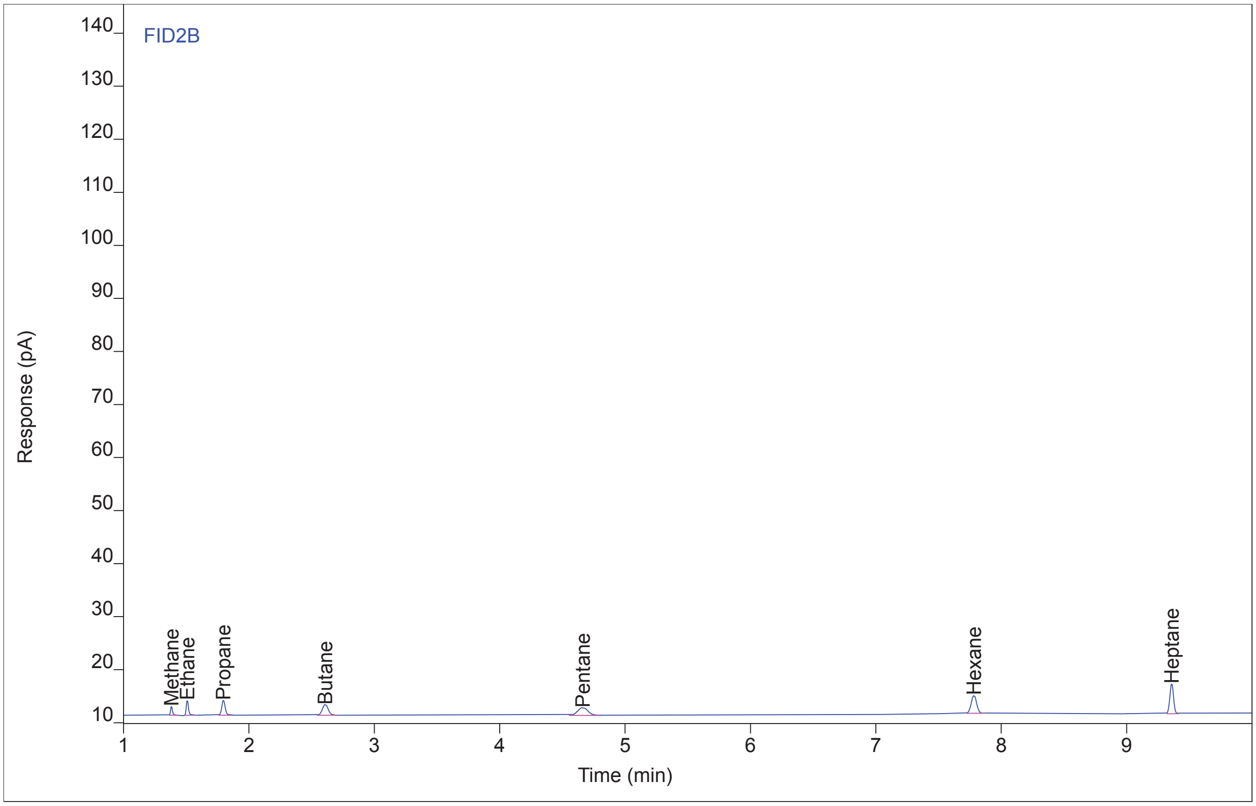
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	1.83776	1.73621	4.94653	1	4.94653	ppm
Ethane	PB	1.51	3.49533	2.84066	4.97218	1	4.97218	ppm
Propane	BB	1.80	5.43602	2.83212	4.98214	1	4.98214	ppm
Butane	BB	2.61	6.81482	2.06645	5.02902	1	5.02902	ppm
Pentane	BB	4.66	8.53314	1.49426	4.99654	1	4.99654	ppm
Hexane	BB	7.78	10.2106	3.37984	4.99229	1	4.99229	ppm
Heptane	BB	9.36	11.6536	5.67422	5.01071	1	5.01071	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C1 ENV(1=1342.66,2=100)
Sequence Name	BETTYP773 ver.7
Inj Data File	025B1705.D
File Location	GC/2018/Betty/Quarter 1
Injection Date	2/19/2018 10:18 PM
File Modified	2/22/2018 9:20 AM
Instrument	Betty
Operator	Nicholas Traversa

Sample Type	Calibration
Vial Number	25
Injection Volume	250
Injection	5 of 10
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	1/2/2014 5:30 PM
Printed	2/22/2018 9:37 AM

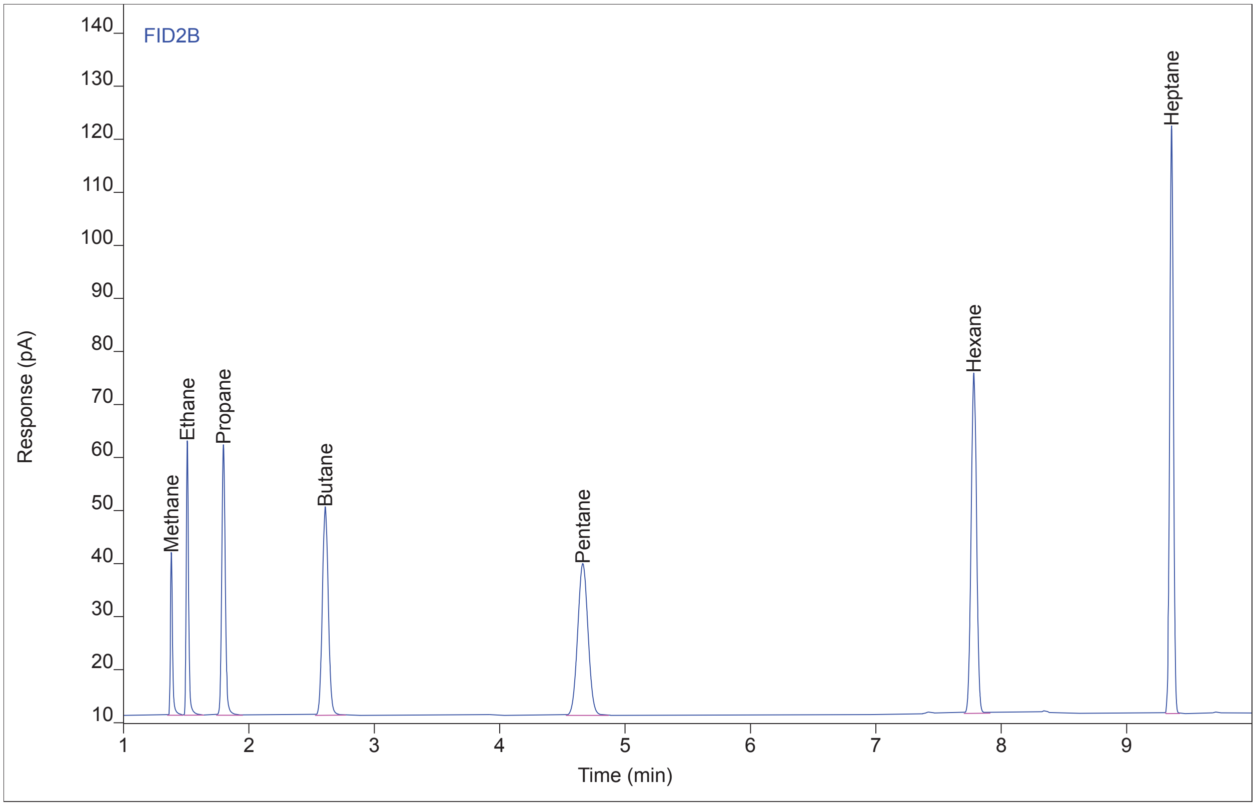


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.38	1.88211	1.73638	5.06950	1	5.06950	ppm
Ethane	PB	1.51	3.51733	2.84500	5.00371	1	5.00371	ppm
Propane	BB	1.80	5.46172	2.84196	5.00627	1	5.00627	ppm
Butane	BB	2.61	6.73925	2.06294	4.97221	1	4.97221	ppm
Pentane	BB	4.66	8.58453	1.49384	5.02785	1	5.02785	ppm
Hexane	BB	7.78	10.2072	3.39745	4.99065	1	4.99065	ppm
Heptane	BB	9.36	11.6403	5.67769	5.00486	1	5.00486	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C4 ENV(1=0,2=450)	Sample Type	Calibration
Sequence Name	BETTYP773 ver.7	Vial Number	25
Inj Data File	025B2002.D	Injection Volume	250
File Location	GC/2018/Betty/Quarter 1	Injection	2 of 4
Injection Date	2/20/2018 2:40 AM	Acquisition Method	GC142P133_CAL.M
File Modified	2/22/2018 9:20 AM	Analysis Method	BETTYP773_C1-C7.M
Instrument	Betty	Method Modified	1/2/2014 5:30 PM
Operator	Nicholas Traversa	Printed	2/22/2018 9:37 AM

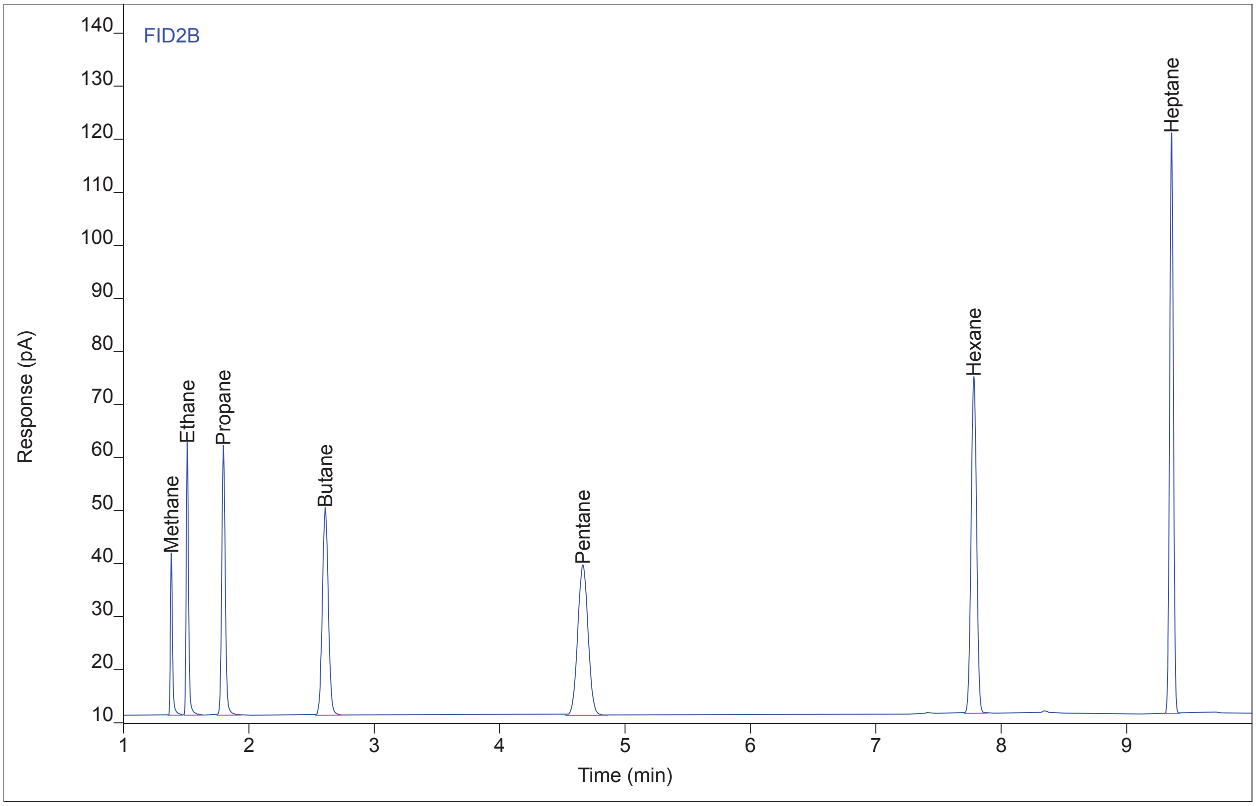


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BP	1.38	36.0835	30.6739	102.150	1	102.150	ppm
Ethane	PB	1.51	67.0489	51.6700	101.404	1	101.404	ppm
Propane	BB	1.80	100.482	51.0999	100.998	1	100.998	ppm
Butane	BB	2.61	130.784	39.3086	99.9209	1	99.9209	ppm
Pentane	BB	4.66	164.374	28.6474	100.412	1	100.412	ppm
Hexane	BB	7.78	195.290	64.1120	100.092	1	100.092	ppm
Heptane	BB	9.36	228.037	110.594	99.9893	1	99.9893	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C4 ENV(1=0,2=450)
Sequence Name	BETTYP773 ver.7
Inj Data File	025B2003.D
File Location	GC/2018/Betty/Quarter 1
Injection Date	2/20/2018 3:03 AM
File Modified	2/22/2018 9:21 AM
Instrument	Betty
Operator	Nicholas Traversa
Sample Type	Calibration
Vial Number	25
Injection Volume	250
Injection	3 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	1/2/2014 5:30 PM
Printed	2/22/2018 9:37 AM



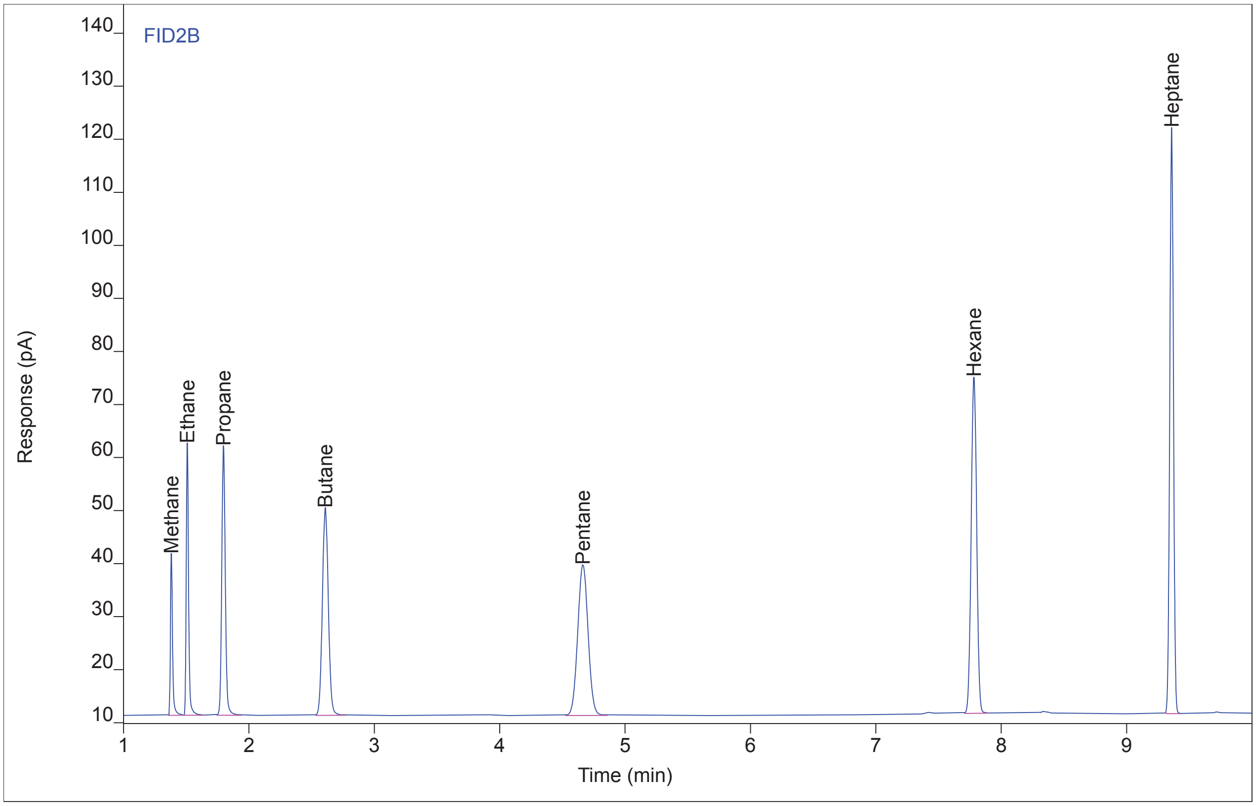
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BP	1.38	35.8568	30.4988	101.506	1	101.506	ppm
Ethane	PB	1.51	66.6901	51.3969	100.859	1	100.859	ppm
Propane	BB	1.80	99.9393	50.8724	100.450	1	100.450	ppm
Butane	BB	2.61	130.367	39.2007	99.6016	1	99.6016	ppm
Pentane	BB	4.66	163.745	28.5079	100.027	1	100.027	ppm
Hexane	BB	7.78	194.455	63.4382	99.6628	1	99.6628	ppm
Heptane	BB	9.36	227.324	109.164	99.6761	1	99.6761	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	BettyP773 #C4 ENV(1=0,2=450)
Sequence Name	BETTYP773 ver.7
Inj Data File	025B2004.D
File Location	GC/2018/Betty/Quarter 1
Injection Date	2/20/2018 3:27 AM
File Modified	2/22/2018 9:21 AM
Instrument	Betty
Operator	Nicholas Traversa

Sample Type	Calibration
Vial Number	25
Injection Volume	250
Injection	4 of 4
Acquisition Method	GC142P133_CAL.M
Analysis Method	BETTYP773_C1-C7.M
Method Modified	1/2/2014 5:30 PM
Printed	2/22/2018 9:37 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BP	1.38	35.8308	30.4474	101.432	1	101.432	ppm
Ethane	PB	1.51	66.6858	51.3447	100.853	1	100.853	ppm
Propane	BB	1.80	99.7915	50.8573	100.300	1	100.300	ppm
Butane	BB	2.61	130.318	39.1687	99.5642	1	99.5642	ppm
Pentane	BB	4.66	163.710	28.4499	100.005	1	100.005	ppm
Hexane	BB	7.78	194.360	63.4205	99.6141	1	99.6141	ppm
Heptane	BB	9.36	227.225	110.277	99.6326	1	99.6326	ppm

Airgas
an Air Liquide company

Airgas USA, LLC
24075 US Hwy 6
Stryker, OH 43557
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X08NI99C15A0079	Reference Number:	141-124578026-1
Cylinder Number:	CC72412	Cylinder Volume:	144.4 CF
Laboratory:	124 - Conley Stryker - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 19, 2016	Valve Outlet:	350
Lot Number:	141-124578026-1		

Expiration Date: Sep 19, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	100.0 PPM	+/- 2%
HEXANE	100.0 PPM	100.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	100.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		

Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED HYDROCARBON

Customer:	MONTROSE ENVIRONMENTAL GROUP		
Part Number:	X08NI83C15AC015	Reference Number:	126-400739490-1
Cylinder Number:	SG9164133BAL	Cylinder Volume:	15.8 CF
Laboratory:	124 - LaPorte Mix (SAP) - TX	Cylinder Pressure:	204 PSIG
Analysis Date:	Jul 14, 2016	Valve Outlet:	350
Lot Number:	126-400739490-1	Expiration Date:	Jul 14, 2019

Traceability Statement: Hydrocarbon Process standards are NIST traceable either directly by weight or by comparison to Airgas laboratory standards that are directly NIST traceable by weight.

CERTIFIED CONCENTRATIONS

Component	Requested Concentration	Reported Mole %	Accuracy
N HEPTANE	250.0 PPM	251.2 PPM	+/- 2%
HEXANE	0.4000 %	0.4001 %	+/- 2%
N PENTANE	0.5000 %	0.4995 %	+/- 2%
N BUTANE	1.000 %	0.9991 %	+/- 2%
ETHANE	5.000 %	4.995 %	+/- 2%
METHANE	5.000 %	4.992 %	+/- 2%
PROPANE	5.000 %	4.997 %	+/- 2%
NITROGEN	Balance	Balance	

Notes:.

PO# 06201603

Signature on file

Approved for Release

6890 GC METHOD

OVEN

Initial temp: 40 C (On)
Initial time: 6.00 min
Ramps:

#	Rate	Final temp	Final time
1	30.00	220	2.00
2	0 (Off)		

Post temp: 40 C
Post time: 0.00 min
Run time: 14.00 min

Maximum temp: 250 C
Equilibration time: 0.50 min

CRYO (N2)

Cryo: Off
Cryo fault: On
Cryo timeout: 40.00 min (On)
Quick cryo cool: Off
Ambient temp: 30 C

FRONT INLET (SPLIT/SPLITLESS)

Mode: Splitless
Initial temp: 200 C (On)
Pressure: 60.0 psi (On)
Purge flow: 0.0 mL/min
Purge time: 0.00 min
Total flow: 12.3 mL/min
Gas saver: Off
Gas type: Helium

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 200 C (On)
Pressure: 11.6 psi (On)
Split ratio: 5:1
Split flow: 12.3 mL/min
Total flow: 17.6 mL/min
Gas saver: Off
Gas type: Helium

COLUMN 1

Packed Column
Model Number: 19808
Description: Rt-ShinCarbon 2m x 1mm I
Max temperature: 250 C
Mode: constant pressure
Pressure: 60.0 psi
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 30m x 0.32mm x 4um
Max temperature: 250 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.5 mL/min
Nominal init pressure: 11.6 psi
Average velocity: 39 cm/sec
Inlet: Back Inlet
Outlet: (other)
Outlet pressure: ambient

FRONT DETECTOR (TCD)

Temperature: 275 C (On)
Reference flow: 20.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 10.0 mL/min (On)
Makeup Gas Type: Helium
Filament: On
Negative polarity: On

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 60.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 40.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 130 C (On)

VALVES

Valve 1 Gas Sampling
Loop Volume: 0.250 mL

POST RUN

Post Time: 0.00 min

```
         Load Time: 0.10 min
         Inject Time: 0.50 min
         Inlet:  Front Inlet
      Valve 2  Gas Sampling
         Loop Volume: 0.250 mL
         Load Time: 0.10 min
         Inject Time: 0.50 min
         Inlet:  Front Inlet


   TIME TABLE
      Time(min)      Parameter & Setpoint
         3.00       Front Detector Polarity:      Off
```

6890 GC METHOD

```
OVEN
   Initial temp:  40 C (On)              Maximum temp:  250 C
   Initial time:  3.00 min               Equilibration time:  0.50 min
   Ramps:
     #   Rate  Final temp  Final time   CRYO (N2)
     1    0 (Off)                          Cryo:  Off
   Post temp:  40 C                        Cryo fault:  On
   Post time:  0.00 min                    Cryo timeout:  40.00 min (On)
   Run time:  3.00 min                     Quick cryo cool:  Off
                                           Ambient temp:  30 C

FRONT INLET (SPLIT/SPLITLESS)           BACK INLET (SPLIT/SPLITLESS)
   Mode:  Splitless                        Mode:  Split
   Initial temp:  200 C (On)               Initial temp:  200 C (On)
   Pressure:  60.0 psi (On)                Pressure:  11.7 psi (On)
   Purge flow:  0.0 mL/min                 Split ratio:  5:1
   Purge time:  0.00 min                   Split flow:  12.3 mL/min
   Total flow:  12.3 mL/min                Total flow:  17.6 mL/min
   Gas saver:  Off                         Gas saver:  Off
   Gas type:  Helium                       Gas type:  Helium

COLUMN 1                                COLUMN 2
   Packed Column                           Capillary Column
   Model Number:  19808                    Model Number:  10198
   Description: Rt-ShinCarbon 2m x 1mm I   Description: Rtx-1 30m x 0.32mm x 4um
   Max temperature:  250 C                 Max temperature:  250 C
   Mode:  constant pressure                Nominal length:  30.0 m
   Pressure:  60.0 psi                     Nominal diameter:  320.00 um
   Inlet:  Front Inlet                     Nominal film thickness:  4.00 um
   Outlet:  Front Detector                 Mode:  constant flow
   Outlet pressure:  ambient               Initial flow:  2.5 mL/min
                                           Nominal init pressure:  11.7 psi
                                           Average velocity:  39 cm/sec
                                           Inlet:  Back Inlet
                                           Outlet:  (other)
                                           Outlet pressure:  ambient

FRONT DETECTOR (TCD)                    BACK DETECTOR (FID)
   Temperature:  275 C (On)                Temperature:  250 C (On)
   Reference flow:  20.0 mL/min (On)       Hydrogen flow:  60.0 mL/min (On)
   Mode:  Constant makeup flow             Air flow:  450.0 mL/min (On)
   Makeup flow:  10.0 mL/min (On)          Mode:  Constant makeup flow
   Makeup Gas Type: Helium                 Makeup flow:  40.0 mL/min (On)
   Filament:  On                           Makeup Gas Type: Nitrogen
   Negative polarity:  On                  Flame:  On
                                           Electrometer:  On
                                           Lit offset:  2.0

SIGNAL 1                                SIGNAL 2
   Data rate:  20 Hz                       Data rate:  20 Hz
   Type:  front detector                   Type:  back detector
   Save Data:  On                          Save Data:  On

THERMAL AUX 1
   Use:  Valve Box Heater
   Initial temp:  130 C (On)

VALVES                                  POST RUN
   Valve 1  Gas Sampling                   Post Time: 0.00 min
      Loop Volume: 0.250 mL
```

```
          Load Time: 0.10 min
          Inject Time: 0.50 min
          Inlet:  Front Inlet
       Valve 2  Gas Sampling
          Loop Volume: 0.250 mL
          Load Time: 0.10 min
          Inject Time: 0.50 min
          Inlet:  Front Inlet


    TIME TABLE
       Time(min)      Parameter & Setpoint
```

This Is The Last Page Of This Report.

ENTHALPY
ANALYTICAL

APPENDIX I-E
Calibration Gas Cylinder Certification Sheets

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI79E15A0088	Reference Number:	122-401268406-1
Cylinder Number:	EB0066823	Cylinder Volume:	151.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Aug 06, 2018

Expiration Date: Aug 06, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.952 %	G1	+/- 0.6% NIST Traceable	08/06/2018
OXYGEN	11.00 %	11.05 %	G1	+/- 0.4% NIST Traceable	08/06/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060638	CC414571	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 09, 2019
NTRM	09060212	CC262381	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 08, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Jul 25, 2018
Horiba MPA510 O2 41499150042	Paramagnetic	Jul 25, 2018

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI59E15A0014	Reference Number:	122-401123521-1
Cylinder Number:	EB0107294	Cylinder Volume:	158.6 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
		Certification Date:	Feb 12, 2018

Expiration Date: Feb 12, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	18.50 %	18.22 %	G1	+/- 0.6% NIST Traceable	02/12/2018
OXYGEN	22.00 %	21.99 %	G1	+/- 0.3% NIST Traceable	02/12/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061508	CC354696	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	12062009	CC367498	22.883 % OXYGEN/NITROGEN	+/- 0.2%	Apr 24, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Feb 07, 2018
Horiba MPA510 O2 41499150042	Paramagnetic	Feb 07, 2018

Triad Data Available Upon Request

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax (215) 736 5240

DocNumber: 000021313

PGVP ID: F32017

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 92286180
Customer P. O. Number: 0050001228
Customer Reference Number:

Fill Date: 6/10/2017
Part Number: NI CO225E-AS
Lot Number: 304613161708
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	6/14/2025		NIST Traceable
Cylinder Number:	CC120837		Analytical Uncertainty:
226.4 ppm		CARBON MONOXIDE	± 0.5 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 6/14/2017 *Term:* 96 Months *Expiration Date:* 6/14/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON MONOXIDE

Requested Concentration	225 ppm
Certified Concentration	226.4 ppm
Instrument Used	HORIBA VIA-3000 S/N Y9EY78L6
Analytical Method	NDIR
Last Multipoint Calibration	5/31/2017

Reference Standard Type	GMIS
Ref Std. Cylinder #	CC308682
Ref Std. Conc	303 PPM
Ref Std Traceable to SRM #	1680b
SRM Sample #	2-J-49
SRM Cylinder #	CAL018038

First Analysis Data: **Date:** 6/14/2017

Z:	0	R:	303	C:	226.3	Conc:	226.5
R:	302.6	Z:	0	C:	226.2	Conc:	226.4
Z:	0	C:	226.2	R:	302.6	Conc:	226.4

UOM: PPM **Mean Test Assay:** 226.4 PPM

Second Analysis Data: **Date:**

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM **Mean Test Assay:** 0 PPM

Analyzed by: Megha Patel

Certified by: Jessica Goodman

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax (215) 736 5240

DocNumber: 000019323

PGVP ID: F32016

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 86501794
Customer P. O. Number: 14848
Customer Reference Number:

Fill Date: 12/16/2016
Part Number: NI CO450E-AS
Lot Number: 304513351605
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	12/21/2024	NIST Traceable
Cylinder Number:	CC109287	Analytical Uncertainty:
450 ppm	CARBON MONOXIDE	± 0.7 %
Balance	NITROGEN	

Certifcation Information: Certification Date: 12/21/2016 Term: 96 Months *Expiration Date:* 12/21/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON MONOXIDE

Requested Concentration: 450 ppm
Certified Concentration: 450 ppm
Instrument Used: HORIBA VIA-3000 S/N Y9EY78L6
Analytical Method: NDIR
Last Multipoint Calibration: 12/7/2016

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC118336
Ref. Std. Conc: 398 PPM
Ref. Std. Traceable to SRM #: 1680b
SRM Sample #: 2-J-49
SRM Cylinder #: CAL016038

First Analysis Data: Date: 12/21/2016

Z: 0	R: 398	C: 451	Conc: 451
R: 398	Z: 0	C: 450	Conc: 450
Z: 0	C: 450	R: 398	Conc: 450
UOM: PPM		Mean Test Assay:	450 PPM

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc: 0
R: 0	Z: 0	C: 0	Conc: 0
Z: 0	C: 0	R: 0	Conc: 0
UOM: PPM		Mean Test Assay:	0 PPM

Analyzed by: Jessica Goodman
Jessica Goodman

Certified by: for
Megha Patel

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0930	Reference Number:	122-401180045-1
Cylinder Number:	CC57597	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	350
Gas Code:	PPN,BALN	Certification Date:	Apr 17, 2018

Expiration Date: Apr 17, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	30.00 PPM	30.07 PPM	G1	+/- 0.7% NIST Traceable	04/17/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	0010613	AAL18527	49.8 PPM PROPANE/AIR	+/- 0.6%	May 23, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Mar 22, 2018

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0931	Reference Number:	122-401180046-1
Cylinder Number:	CC354004	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	350
Gas Code:	PPN,BALN	Certification Date:	Apr 17, 2018

Expiration Date: Apr 17, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	50.00 PPM	52.38 PPM	G1	+/- 0.8% NIST Traceable	04/17/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	0010613	AAL18527	49.8 PPM PROPANE/AIR	+/- 0.6%	May 23, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Mar 22, 2018

Triad Data Available Upon Request

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000024404

PGVP ID: F32018

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 56678698
Customer P. O. Number: 0050001578
Customer Reference Number:

Fill Date: 3/14/2018
Part Number: NI NO47.5ME-AS
Lot Number: 304613707802
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu ft

Certified Concentration:

Expiration Date:	3/26/2021		NIST Traceable
Cylinder Number:	CC352567		Analytical Uncertainty:
48.0 ppm	NITRIC OXIDE		± 0.9 %
Balance	NITROGEN		

NOx = 48.0 ppm — NOx for Reference Only

Certification Information: *Certification Date:* 3/26/2018 *Term:* 36 Months *Expiration Date:* 3/26/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITRIC OXIDE

Requested Concentration:	47.5 ppm
Certified Concentration:	48.0 ppm
Instrument Used:	MKS 2031
Analytical Method:	FTIR
Last Multipoint Calibration:	3/15/2018

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	SA4389
Ref. Std. Conc:	50.3 PPM
Ref. Std. Traceable to SRM #:	1683B
SRM Sample #:	45-V-05
SRM Cylinder #:	CAL017971

First Analysis Data: Date: 3/19/2018

Z:	0.123	R:	49.7	C:	47.1	Conc:	47.7
R:	49.5	Z:	0.014	C:	47	Conc:	47.6
Z:	0.014	C:	47.2	R:	49.7	Conc:	47.8

UOM: PPM Mean Test Assay: 47.7 PPM

Second Analysis Data: Date: 3/26/2018

Z:	0.023	R:	49.5	C:	47.7	Conc:	48.3
R:	49.6	Z:	0.066	C:	47.8	Conc:	48.2
Z:	0.053	C:	47.8	R:	49.8	Conc:	48.2

UOM: PPM Mean Test Assay: 48.3 PPM

Analyzed by: Remzy Jemal

Certified by: Megha Patel

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000021376

PGVP ID: F32017

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 92286180
Customer P. O. Number: 0050001228
Customer Reference Number:

Fill Date: 6/10/2017
Part Number: NI NO90ME-AS
Lot Number: 304513161704
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	6/21/2025	NIST Traceable
Cylinder Number:	CC200174	Analytical Uncertainty:
89.5 ppm	NITRIC OXIDE	± 0.5 %
Balance	NITROGEN	

NOx = 90.0 ppm

NOx for Reference Only

Certifcation Information: Certification Date: 6/21/2017 Term: 96 Months Expiration Date: 6/21/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITRIC OXIDE

Requested Concentration: 90 ppm
Certified Concentration: 89.5 ppm
Instrument Used: TECO MODEL 42I, S/N: 0820017513
Analytical Method: CHEMILUMINESCENCE
Last Multipoint Calibration: 6/13/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC352709
Ref. Std. Conc: 95.0 PPM
Ref. Std. Traceable to SRM #: 1684B
SRM Sample #: 44-T-48
SRM Cylinder #: FF9239

First Analysis Data: Date: 6/14/2017

Z:	0	R:	95	C:	89.5	Conc:	89.5
R:	95	Z:	0	C:	89.4	Conc:	89.4
Z:	0	C:	89.4	R:	95	Conc:	89.4
UOM:	PPM			Mean Test Assay:			89.4 PPM

Second Analysis Data: Date: 6/21/2017

Z:	0	R:	95	C:	90	Conc:	89.7
R:	95.4	Z:	0	C:	90	Conc:	89.7
Z:	0	C:	90	R:	95.4	Conc:	89.7
UOM:	PPM			Mean Test Assay:			89.7 PPM

Analyzed by: Jessica Goodman

Jessica Goodman

Certified by: Megha Patel

Megha Patel

APPENDIX I-F
Sampling Equipment Calibration Sheets

Air Control Techniques, P.C.

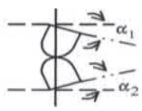
Type S Pitot Tube Inspection and Stack Thermocouple Calibration

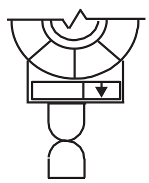
GENERAL INFORMATION

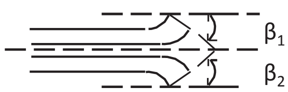
Probe ID	3A	Personnel	JBG
Date	7/13/2018	Coefficient Value	0.84

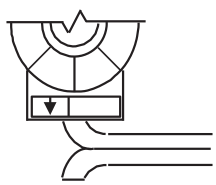
PITOT TUBE INSPECTION

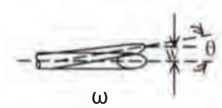
Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no

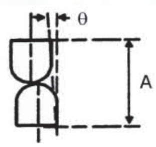


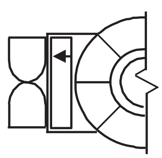


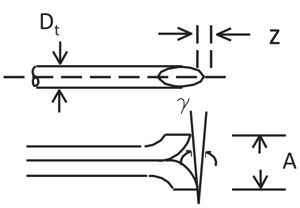


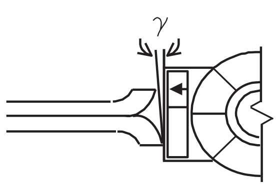












α_1	1	≤ ±10°
α_2	1	≤ ±10°
β_1	-2	≤ ±5°
β_2	2	≤ ±5°
γ	0.017453293	radians
θ	0.052359878	radians
z = A tan (γ)	0	≤ ±⅛"
ω = A tan (θ)	0.0469	≤ ±1/32"
D_t	0.375	

(3/16" < D_t < ⅜" Recommended)

A	0.895
P_A P_B	1.19

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type	Hg Thermometer	Ref. ID	Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	32.2	34	1.8
Ambient	78	79	1
Hot Plate	211.2	212	0.8
		Maximum Temp. Difference, °F	1.8

Type S Pitot Tube Inspection and Stack Thermocouple Calibration

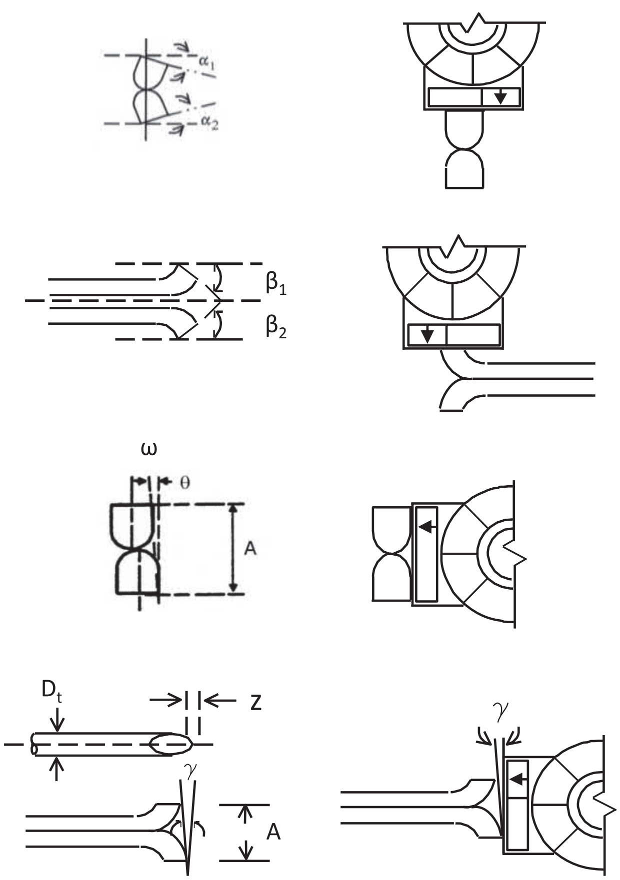
Air Control Techniques, P.C.

GENERAL INFORMATION

Probe ID	4B	Personnel	JBG
Date	4/30/2018	Coefficient Value	0.84

PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no



α_1	1	≤ ±10°
α_2	0	≤ ±10°
β_1	2	≤ ±5°
β_2	1	≤ ±5°
γ	0	
θ	1	
$z = A \tan(\gamma)$	0.00	≤ ±⅛"
$\omega = A \tan(\theta)$	0.016582312	≤ ±1/32"
D_t	0.375	
A	0.95	
P_A P_B	1.27	

($3/16" < D_t <$ ⅜" Recommended)

($1.05 < P/D_t < 1.50$ Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type: Hg Thermometer Ref. ID: Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	32	32	0
Ambient	67	67	0
Hot Plate	232	232	0
		Maximum Temp. Difference, °F	0

Type S Pitot Tube Inspection and Stack Thermocouple Calibration

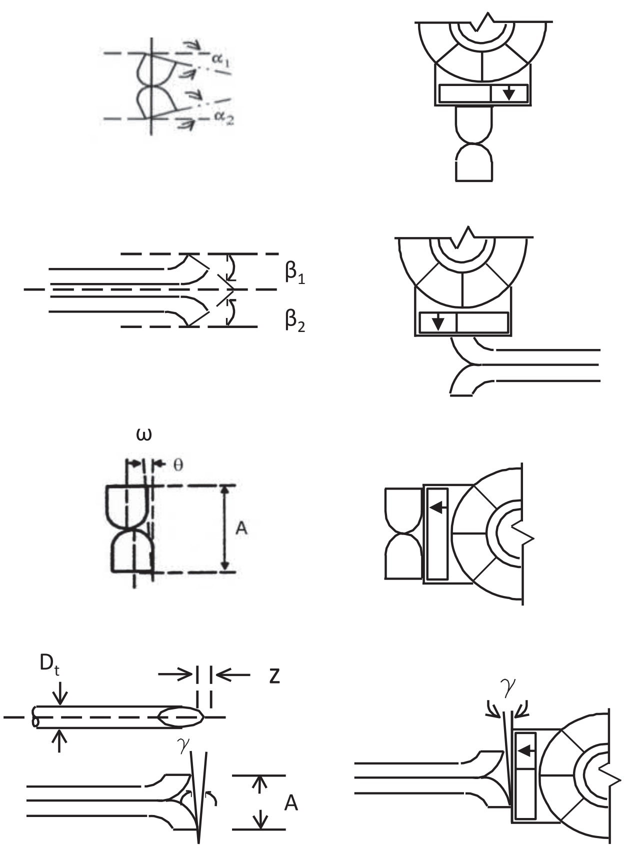
Air Control Techniques, P.C.

GENERAL INFORMATION

Probe ID	3B	Personnel	JBG
Date	4/30/2018	Coefficient Value	0.84

PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no



α_1	0	≤ ±10°
α_2	0	≤ ±10°
β_1	0	≤ ±5°
β_2	1	≤ ±5°
γ	0.034906585	radians
θ	0.017453293	radians
z = A tan (γ)	0.033698543	≤ ±⅛"
ω = A tan (θ)	0.016844138	≤ ±1/32"
D_t	0.375	

(3/16" < D_t < ⅜" Recommended)

A	0.965
P_A / P_B	1.286666667

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type	Hg Thermometer	Ref. ID	Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	32.1	32.8	0.7
Ambient	78	78	0
Hot Plate	211.4	213.2	1.8
		Maximum Temp. Difference, °F	1.8

Air Control Techniques, P.C.

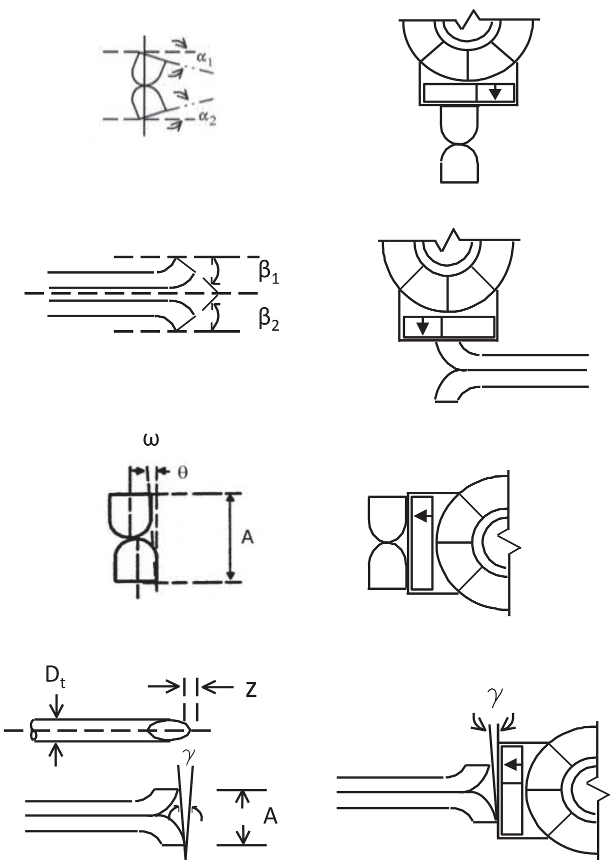
Type S Pitot Tube Inspection and Stack Thermocouple Calibration

GENERAL INFORMATION

Probe ID	4A	Personnel	JBG
Date	4/30/2018	Coefficient Value	0.84

PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no



α_1	0	≤ ±10°
α_2	2	≤ ±10°
β_1	-1	≤ ±5°
β_2	0	≤ ±5°
γ	0.0000	
θ	0.0524	
z = A tan (γ)	0.0000	≤ ±⅛"
ω = A tan (θ)	0.0472	≤ ±1⁄32"
D_t	0.375	

(3/16" < D_t < ⅜" Recommended)

A	0.9
P_A / P_B	1.2

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type: Hg Thermometer — Ref. ID: Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	32	32	0
Ambient	67	67	0
Hot Plate	232	231	1
		Maximum Temp. Difference, °F	1

Stainless Steel Nozzle Calibration and Condition
Air Control Techniques, P.C.

Nozzle Set ID	Nozzle ID	Average	Measurements			High-Low	Condition	Date Inspected
			1	2	3			
ACT-N-1	1-1	0.124	0.125	0.124	0.124	0.001	OK	12/11/17
ACT-N-1	1-2	0.180	0.180	0.180	0.181	0.001	OK	12/11/17
ACT-N-1	1-3	0.245	0.245	0.245	0.244	0.001	OK	12/11/17
ACT-N-1	1-4	0.302	0.303	0.301	0.301	0.002	OK	12/11/17
ACT-N-1	1-5	0.368	0.367	0.365	0.366	0.002	OK	12/11/17
ACT-N-1	1-6	0.428	0.428	0.428	0.428	0.000	OK	12/11/17
ACT-N-1	1-7	0.492	0.492	0.492	0.492	0.000	OK	12/11/17

Nozzle Set ID	Nozzle ID	Average	Measurements			High-Low	Condition	Date
			1	2	3			
ACT-N-2	2-1	0.126	0.127	0.125	0.127	0.002	OK	12/11/17
ACT-N-2	2-2	0.176	0.176	0.176	0.175	0.001	OK	12/11/17
ACT-N-2	2-3	0.238	0.239	0.237	0.239	0.002	OK	12/11/17
ACT-N-2	2-4	0.286	0.286	0.286	0.284	0.002	OK	12/11/17
ACT-N-2	2-5	0.377	0.377	0.377	0.376	0.001	OK	12/11/17
ACT-N-2	2-6	0.456	0.455	0.455	0.457	0.002	OK	12/11/17
ACT-N-2	2-7	0.497	0.498	0.497	0.497	0.001	OK	12/11/17

Nozzle Set ID	Nozzle ID	Average	Measurements			High-Low	Condition	Date
			1	2	3			
ACT-N-3	3-1	0.118	0.118	0.119	0.117	0.002	OK	12/11/17
ACT-N-3	3-2	0.190	0.189	0.190	0.190	0.001	OK	9/8/16
ACT-N-3	3-3	0.239	0.238	0.238	0.240	0.002	OK	12/11/17
ACT-N-3	3-4	0.254	0.254	0.254	0.255	0.001	OK	9/8/16
ACT-N-3	3-5	0.377	0.377	0.377	0.376	0.001	OK	12/11/17
ACT-N-3	3-8	0.996	0.997	0.997	0.999	0.002	OK	12/11/17
ACT-N-3	3-7	0.496	0.495	0.495	0.497	0.002	OK	12/11/17

Nozzle Set ID	Nozzle ID	Average	Measurements			High-Low	Condition	Date
			1	2	3			
ACT-N-4	4-1	0.303	0.304	0.302	0.302	0.002	OK	12/11/17
ACT-N-4	4-2	0.178	0.178	0.178	0.177	0.001	OK	9/8/16
ACT-N-4	4-3	0.302	0.303	0.301	0.301	0.002	OK	12/11/17
ACT-N-4	4-4	0.247	0.247	0.247	0.247	0.000	OK	12/11/17
ACT-N-4	4-5	0.370	0.371	0.369	0.369	0.002	OK	12/11/17
ACT-N-4	4-6	0.498	0.498	0.498	0.498	0.000	OK	12/11/17
ACT-N-4	4-7	0.501	0.500	0.500	0.502	0.002	OK	12/11/17

Name Jonas Gilbert Signature 12/11/2017

APEX INSTRUMENTS METHOD 5 PRE-TEST CONSOLE CALIBRATION
USING CALIBRATED CRITICAL ORIFICES
5-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522
Console Serial Number	909033
DGM Model Number	RW 110
DGM Serial Number	972787

Calibration Conditions			
Date	Time	11/06/18	9:00
Barometric Pressure		30.14	in Hg
Theoretical Critical Vacuum[1]		14.23	in Hg
Calibration Technician		JBG	

Factors/Conversions		
Std Temp	528	^oR
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

[2]The Critical Orifice Coefficient, K', must be entered in English units, ($ft^3 \cdot {}^oR^{1/2}$)/(in.Hg*min).

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice ΔH	Volume Initial	Volume Final	Outlet Temp Initial	Outlet Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	^oF	^oF		see above2	^oF	^oF	in Hg
15.85	0.33	840.100	845.100	66	67	FO 40	0.2380	69	69	23.5
10.86	0.69	845.200	850.200	67	68	FO 48	0.3488	69	71	22.5
8.22	1.20	850.202	855.300	68	69	FO 55	0.4594	71	71	22.5
6.40	2.00	855.300	860.302	69	69	FO 63	0.5906	71	71	19.5
4.68	3.60	860.302	865.303	69	70	FO 73	0.8063	71	71	19.0

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	ΔH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	(ΔH@)	(ΔΔH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
5.055	0.319	4.943	0.312	0.9779	0.003	0.312	1.932	0.035
5.050	0.465	4.959	0.457	0.9820	0.008	0.457	1.885	-0.013
5.146	0.626	4.939	0.601	0.9599	-0.015	0.601	1.894	-0.004
5.054	0.790	4.944	0.772	0.9783	0.004	0.772	1.916	0.018
5.068	1.083	4.936	1.055	0.9739	0.000	1.055	1.863	-0.035
				0.9744	Y Average		1.898	ΔH@ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature: Jonas Gilbert Jonas Gilbert Date: 11/6/18

METHOD 5 POST-TEST CONSOLE CALIBRATION USING CALIBRATED CRITICAL ORIFICES
3-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522
Console Serial Number	909033
DGM Model Number	RW 110
DGM Serial Number	328893

Calibration Conditions			
Date	**Time**	01/04/19	8:30
Barometric Pressure		30.1	in Hg
Theoretical Critical Vacuum[1]		14.2	in Hg
Calibration Technician		JBG	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

[2]The Critical Orifice Coefficient, K', must be entered in English units, (ft3*oR1/2)/(in.Hg*min).

Calibration Data										
Run Time	**Metering Console**					**Critical Orifice**				
Elapsed	**DGM Orifice ΔH**	**Volume Initial**	**Volume Final**	**Outlet Temp Initial**	**Outlet Temp Final**	**Serial Number**	**Coefficient**	**Amb Temp Initial**	**Amb Temp Final**	**Actual Vacuum**
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	in. Hg
min	in H_2O	cubic feet	cubic feet	°F	°F	FO		°F	°F	
10.0	2.00	590.50	598.146	48	51	FO-63	0.5906	68	68	15.50
10.0	2.00	598.146	605.833	51	55	FO-63	0.5906	68	68	15.50
10.0	2.00	605.833	613.549	55	59	FO-63	0.5906	68	68	15.50

Results								
Standardized Data				**Dry Gas Meter**				
Dry Gas Meter		**Critical Orifice**		**Calibration Factor**		**Flowrate**	0.3488	
				Value	**Variation**	**Std & Corr**	**0.75 SCFM**	**Variation**
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	($\Delta H@$)	($\Delta\Delta H@$)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
7.995	0.799	7.893	0.789	0.987	-0.002	0.789	1.899	0.014
7.985	0.799	7.893	0.789	0.989	-0.001	0.789	1.886	0.001
7.953	0.795	7.893	0.789	0.992	0.003	0.789	1.872	-0.014
Pretest Gamma	0.9744	**% Deviation**	1.5	0.989	Y Average		1.886	$\Delta H@$ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature _______ Jonas Gilbert Date ________ 1/4/2019

APPENDIX I-G
Process Data

December 5, 2018—Pine 75% wt. processed, Runs 1, 2, and 3

Appendix I-G, Table 1. Process Data, Dryer, December 5, 2018, Run 1						
Process Parameter	8:40 a.m.	8:55 a.m.	9:10 a.m.	9;25 a.m.	9:40 a.m.	Average
Run Time 8:40-9:47 a.m.						
Feed Rate, %	97.1	97.0	97.0	96.6	98.0	97.1
Short Tons/Hour	75.5	75.5	75.5	75.0	76.0	75.5
Dryer Outlet Moisture, % wt.	12.4	11.0	11.0	11.0	11.0	11.3
Dryer Inlet Moisture, % wt.	51.6	51.5	52.5	51.5	51.5	51.7
Production Rate, ODT/Hour	66.1	67.2	67.2	66.8	67.6	67.0
RTO Temperature A, F	1597	1606	1598	1600	1605	1601
RTO Temperature B, F	1588	1599	1587	1588	1594	1591
RTO Temperature C, F	1606	1605	1603	1603	1604	1604
RTO Temperature D, F	1604	1603	1599	1600	1603	1602
Temperature Average, F	1599	1603	1597	1598	1602	1600
WESP Grid 1 kilovolts	51	47	49	45	35	45.4
WESP Grid 1 milliamps	562	479	508	278	138	393
WESP Grid 2 kilovolts	47	43	45	42	49	45.2
WESP Grid 2 milliamps	439	250	384	213	525	362
WESP Grid 3 kilovolts	53	53	38	46	50	48
WESP Grid 3 milliamps	311	724	190	447	564	447
WESP Grid 4 kilovolts	57	49	52	59	48	53
WESP Grid 4 milliamps	971	515	616	1059	757	784

Appendix I-G, Table 2. Process Data, Dryer, December 5, 2018, Run 2						
Process Parameter	10:47 a.m.	11:02 a.m.	11:17 a.m.	11:34 a.m.	11:49 a.m.	Average
Run Time 10:47 a.m. – 11:57 a.m.						
Feed Rate, %	96.0	95.6	95.0	95.0	94.0	95.1
Short Tons/Hour	75.0	74.0	73.5	73.5	72.0	73.6
Dryer Outlet Moisture, % wt.	12.8	12.9	12.9	12.9	12.9	12.9
Dryer Inlet Moisture, % wt.	50.1	51.5	51.5	51.5	51.5	51.2
Production Rate, ODT/Hour	65.4	64.5	64.0	64.0	62.7	64.1
RTO Temperature A, F	1611	1604	1602	1611	1611	1608
RTO Temperature B, F	1599	1592	1595	1599	1600	1597
RTO Temperature C, F	1601	1604	1606	1602	1602	1603
RTO Temperature D, F	1600	1603	1604	1599	1599	1601
Temperature Average, F	1603	1601	1602	1603	1603	1602
WESP Grid 1 kilovolts	48	52	49	55	44	50
WESP Grid 1 milliamps	356	682	512	700	402	530
WESP Grid 2 kilovolts	48	49	43	52	55	49
WESP Grid 2 milliamps	448	509	277	640	820	539
WESP Grid 3 kilovolts	43	42	50	52	45	46
WESP Grid 3 milliamps	250	285	570	694	394	439
WESP Grid 4 kilovolts	57	51	52	54	43	51
WESP Grid 4 milliamps	964	584	708	676	278	642

Appendix I-G, Table 3. Process Data, Dryer, December 5, 2018, Run 3						
Process Parameter	12:15 p.m.	12:30 p.m.	12:45 p.m.	13:00 p.m.	13:15 p.m.	Average
Run Time 12:15 p.m. – 13:27 p.m.						
Feed Rate, %	97	94	95	96	94	95.2
Short Tons/Hour	75.5	72	73.5	75.0	72.0	73.6
Dryer Outlet Moisture, % wt.	53.1	53.1	53.1	53.6	53.6	53.3
Dryer Inlet Moisture, % wt.	12.0	12.0	12.0	12.2	12.2	12.1
Production Rate, ODT/Hour	66.4	63.4	64.7	65.9	63.2	64.7
RTO Temperature A, F	1610	1606	1597	1602	1601	1603
RTO Temperature B, F	1597	1594	1588	1595	1595	1594
RTO Temperature C, F	1597	1601	1605	1606	1605	1603
RTO Temperature D, F	1582	1601	1595	1604	1603	1597
Temperature Average, F	1597	1601	1596	1602	1601	1599
WESP Grid 1 kilovolts	45	45	58	61	48	51
WESP Grid 1 milliamps	368	353	900	1129	420	634
WESP Grid 2 kilovolts	38	52	59	62	62	55
WESP Grid 2 milliamps	160	684	991	1129	602	713
WESP Grid 3 kilovolts	45	51	36	53	54	48
WESP Grid 3 milliamps	365	682	181	780	833	568
WESP Grid 4 kilovolts	58	49	46	50	57	52
WESP Grid 4 milliamps	1001	550	550	589	1000	738

Appendix I-G, Table 4. Process Data, Dryer, December 5, 2018 Heat Input Data			
Parameter	Run 1	Run 2	Run 3
Start Time	8:40 a.m.	10:47 a.m.	12:15 p.m.
Fuel Strokes	55	55	46
Pounds per Stroke	558.7	558.7	558.7
MMBTU per ton	9.2	9.2	9.2
MMBTU per hour	143.4	143.4	118.2

Appendix I-G, Table 5. Dry Hammermill Process Data, December 4, 2019, Run 1						
Process Parameter	9:15 a.m.	9:30 a.m.	9:45 a.m.	10:00 a.m.	15:00 a.m.	Average
Run Time 9:15 a.m.-10:23 a.m..						
Throughput, tons/hour, DHM 1-5	74.8	74.9	74.9	74.9	74.9	74.9
Wood Moisture, % wt.	12.5	12.5	12.5	12.5	12.5	12.5
ODT/hour	65.5	65.5	65.5	65.5	65.5	65.5
DHM1 Differential Pressure, in. w.c.	7.5	7.5	7.8	8	8	7.8
DHM2 Differential Pressure, in. w.c.	10	10	11	16	16	12.6
DHM3 Differential Pressure, in. w.c.	8.5	8.5	7.8	8	8	8.2
DHM4 Differential Pressure, in. w.c.	10	12	13	13	13	12.2
DHM5 Differential Pressure, in. w.c.	9.5	11.8	12.8	12	12	11.6
Chute 1 Temperature, ^{o}F	52	52	52	56	52	53
Chute 2 Temperature, ^{o}F	58	57	47	56	59	55
Chute 3 Temperature, ^{o}F	49	47	42	48	51	47
Chute 4 Temperature, ^{o}F	56	55	48	60	60	56
Chute 5 Temperature, ^{o}F	47	58	43	50	63	52

Appendix I-G, Table 6. Dry Hammermill Process Data, December 4, 2019, Run 2						
Process Parameter	11:18 a.m.	11:33 a.m.	11:48 a.m.	12:03 p.m.	12:18 p.m.	Average
Run Time 11:18 a.m.-12:25 p.m..						
Throughput, tons/hour, DHM 1-5	73.6	74.5	74.6	74.3	74.3	74.3
Wood Moisture, % wt.	12.5	12.5	12.5	12.5	12.5	12.5
ODT/hour	64.4	65.2	65.3	65.0	65.0	65.0
DHM1 Differential Pressure, in. w.c.	5.5	6	6	6	6	6
DHM2 Differential Pressure, in. w.c.	7.2	9	9	10	10	9
DHM3 Differential Pressure, in. w.c.	7	7.5	8	7	7	7
DHM4 Differential Pressure, in. w.c.	17	18	18	18	18	18
DHM5 Differential Pressure, in. w.c.	8	7.5	7.5	10.2	10	9
Chute 1 Temperature, ^{o}F	54	57	60	61	61	59
Chute 2 Temperature, ^{o}F	47	55	55	53	57	53
Chute 3 Temperature, ^{o}F	50	52	53	54	54	53
Chute 4 Temperature, ^{o}F	59	61	61	63	66	62
Chute 5 Temperature, ^{o}F	50	52	52	54	54	52

Appendix I-G, Table 7. Dry Hammermill Process Data, December 4, 2019, Run 3						
Process Parameter	13:04 p.m.	13:19 p.m.	13:34 p.m.	13:49 p.m.	14:04 p.m.	Average
Run Time 13:04 a.m.-14:12 p.m..						
Throughput, tons/hour, DHM 1-5	73.4	74.3	74.9	74.3	72.9	74.0
Wood Moisture, % wt.	12.5	12.5	12.5	12.5	12.5	12.5
ODT/hour	64.2	65.0	65.5	65.0	63.8	64.7
DHM1 Differential Pressure, in. w.c.	6	6.5	6.5	6.5	6.5	6
DHM2 Differential Pressure, in. w.c.	10	10	11	11	11	11
DHM3 Differential Pressure, in. w.c.	7	7.5	8	8.5	8.5	8
DHM4 Differential Pressure, in. w.c.	17	17	18	18	18	18
DHM5 Differential Pressure, in. w.c.	2.5	5.7	7.5	8.5	8.5	7
Chute 1 Temperature, ^oF	59	60	55	60	60	59
Chute 2 Temperature, ^oF	54	56	57	59	58	57
Chute 3 Temperature, ^oF	50	53	53	54	54	53
Chute 4 Temperature, ^oF	52	60	61	62	63	60
Chute 5 Temperature, ^oF	57	50	50	52	52	52

APPENDIX II-A
Method 5-Method 202 Data Sheet

Method 1 - Air Control Techniques, P.C.

Date: 1/16/2019

Client	Enviva
Job #	2333
Plant Name	Enviva, Greenwood
City, State	Greenwood, SC
Sampling Location	RCO 2

No. of Ports Available	2
No. of Ports Used	2
Port Inside Diameter, Inches	4
Distance From Far Wall To Outside Of Port, Inches	45
Nipple Length And/Or Wall Thickness, Inches	3
Depth Of Stack Or Duct, Inches	42
Stack Or Duct Width (if rectangular), Inches	
Equiv. Diameter = 2DW/(D+W), Inches	
Stack/Duct Area, Square Feet (π R^2 or L x W)	9.621

	Upstream	Downstream
Distance to Flow Disturbances, feet		
Diameters	0.0	0.0

Diameters			
Velocity	Up	Down	Particulate
12	>7.00	>1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Note: If more than 8 and 2 diameters and duct is greater than 12" and less than 24", use 8 or 9 points.

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	2.1	0.882	3 7/8
2	6.7	2.814	5 3/4
3	11.8	4.956	8
4	17.7	7.434	10 3/8
5	25.0	10.5	13 2/4
6	35.6	14.952	18

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	1106	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											99.9

Location of Points in Rectangular Stacks or Ducts

	3	4	5	6	7	8	9	10	11	12
1	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	50	37.5	30.0	25	21.4	18.8	16.7	15.0	13.6	12.5
3	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4		87.5	70.0	58.3	50	43.8	28.9	35.0	31.8	29.2
5			90.0	75	64.3	56.3	50	45.0	40.9	37.5
6				91.7	78.6	68.8	61.1	55.0	50	45.8
7					92.9	81.3	72.2	65.0	59.1	54.2
8						93.8	83.3	75.0	68.2	62.5
9							94.4	85.0	77.3	70.8
10								95.0	86.4	79.2
11									95.5	87.5
12										95.8

0.0000 - 0.0625 - 0
0.0625 - 0.1875 - 1/8
0.1875 - 0.3125 - 1/4
0.3125 - 0.4375 - 3/8
0.4375 - 0.5625 - 1/2
0.5625 - 0.6875 - 5/8
0.6875 - 0.8125 - 3/4
0.8125 - 0.9375 - 7/8
0.9375 - 1.0000 - 1

PRELIMINARY INFORMATION			
Plant Name	Enviva, Greenwood	**Date**	1/16/2019
City, State	Greenwood, SC	**Project #**	2333
Personnel	JG, EG	**Pitot Identification**	3A
Test Location	RCO 2	**Pitot Coefficient** (Cp)	0.84

Stack Dimensions			***Pressures***		
Length of Stack (D)	42	in	**Barometric Pressure** (Pb)	29.9	in Hg
Width of Stack (W)		in	**Static Pressure** (Pg)	3.8	in H_2O
Area of Stack (As)	**9.621**	ft^2	**Absolute Stack Pressure** (Ps)	**30.18**	in Hg

Stack Gas Composition				
Carbon Dioxide (%CO_2)	0.0	**Moisture Content** (Bws)	6.00	%
Oxygen (%O_2)	20.9	**Dry Molecular Weight** (Md)	**28.84**	lb/lb-mole
Nitrogen Concentration (%N_2)	**79.1**	**Wet Molecular Weight** (Ms)	**28.19**	lb/lb-mole

Preliminary Traverse

	Pitot Tube Leak Checks			A	B	
	Port	Point	Angle, °	Δp, in H_2O	Temp. °F	ft/sec
Start	A	1	0	0.74	155	52.52
		2	0	0.79	160	54.49
		3	0	0.50	164	43.49
		4	0	0.69	163	51.05
		5	-10	0.75	161	53.14
		6	-8	0.94	162	59.53
	B	1	0			
		2	-12			
		3	-8			
		4	0			
		5	0			
		6	-3			
	X	1	0			
		2	-3			
		3	-4			
		4	2			
		5	0			
		6	0			
		7	0			
		8	3			
		9	5			
		10	3			
End		11	-2			
		12	2			

Average Angle, Degrees	**2.71**
Average Velocity Pressure	**0.7289**
	160.8
Average Stack Gas Velocity (ft/sec)	**52.37**
Actual Cubic Feet per minute (ACFM)	**30,234**
Dry Standard Cubic Feet per Minute (DSCFM)	**24,380**

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-1
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	RCO 2

Date	1/16/19		Filter ID 1
Start	0945		Filter ID 2
Stop	1052		Filter ID 3
Meterbox ID	909033	JG, EG	Operator*
$\Delta H_@$	1.898	4A	Stack TC ID
Gamma (Y)	**0.9744**	NA	Tedlar Bags
Ideal Nozzle	0.231	NA	Orsat Pump
Nozzle Dia.	**0.238**	5 SS	Probe Length/Type
Nozzle ID	2-3	2.65	K Factor
Probe ID	4A	60A	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	13
Post Leak Check, ACFM		Failed	

	A	B
Pitot Pre Leak Check	4	5
Pitot Post Leak Check	4	4

Ambient Temperature	38
Static Pressure, In. H_2O	0.67
Barometric Pressure, In. Hg	30.30

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	52.7	Moisture, %	5.06
CO_2 %	0.04	O_2 %	20.83

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	758.113	0.86	41	157	2.3	259	255	37	70	3.75	2.301	104.5	104.5	LC 1
2	2.5	2:30	760.25	0.775	41	154	2.1	257	252	38	70	3.5	2.079	104.0	104.3	
3	2.5	5:0	762.275	0.88	42	150	2.45	258	253	41	69	4	2.382	101.0	103.2	
4	2.5	7:30	764.38	0.75	43	155	2.1	259	254	44	72	3.75	2.016	105.7	103.8	LC-2
5	2.5	10:0	766.41	0.64	44	150	1.75	254	251	46	70	3	1.740	103.0	103.6	
6	2.5	12:30	768.25	0.675	46	156	1.85	254	259	48	70	3	1.826	100.9	103.2	
7	2.5	15:0	770.1	0.575	46	151	1.6	257	254	50	69	3	1.567	105.3	103.4	LC-3
8	2.5	17:30	771.89	0.345	48	154	1	259	254	52	70	2.5	0.940	108.3	103.9	
9	2.5	20:0	773.32	0.58	49	152	1.6	258	255	53	70	3	1.591	106.1	104.1	
10	2.5	22:30	775.14	0.36	19	160	1	258	255	54	70	3	0.916	107.4	104.4	LC-4
11	2.5	25:0	776.5	0.29	50	156	0.8	259	255	55	68	2	0.792	100.1	104.1	
12	2.5	27:30	777.715	0.78	51	155	2.2	259	255	57	70	3.5	2.139	99.3	103.7	
1	2.5	30:0	779.691	0.6	54	155	1.7	260	255	57	72	3	1.649	102.3	103.6	LC-5
2	2.5	32:30	781.49	0.67	54	155	1.9	259	255	57	72	3.25	1.844	102.1	103.4	
3	2.5	35:0	783.385	0.58	55	157	1.6	259	254	58	70	3	1.593	101.5	103.3	
4	2.5	37:30	785.14	0.62	56	155	1.7	259	253	59	71	4	1.713	103.7	103.3	LC-6
5	2.5	40:0	787	0.6	57	158	1.7	258	254	60	70	2.75	1.653	107.7	103.6	
6	2.5	42:30	788.9	0.85	58	157	2.4	258	256	60	70	4	2.350	104.7	103.7	
7	2.5	45:0	791.1	0.8	58	159	2.2	259	255	60	70	3.5	2.201	96.2	103.2	LC-7
8	2.5	47:30	793.06	0.63	59	153	1.8	260	256	58	71	3	1.754	102.1	103.2	
9	2.5	50:0	794.92	0.87	59	162	2.4	258	259	60	70	4	2.390	102.8	103.1	
10	2.5	52:30	797.1	0.77	60	153	2.2	260	255	58	70	3.5	2.147	101.7	103.1	LC-8
11	2.5	55:0	799.15	0.98	60	160	2.7	259	254	57	71	4	2.703	104.5	103.1	
12	2.5	57:30	801.51	0.78	62	159	2.2	260	255	57	70	3.5	2.161	102.9	103.1	
		1:00:0	803.595													

	Total	Averages				Maximum and Minimum Values				
Vm	45.482	0.665	50.5	155.5	1.885	260	259	60	72	4
Vmstd	46.631	in. H_2O	°F	°F	in H_2O	254	251	37	68	

Run ISO
102.4
%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-2
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	RCO 2

Date	1/16/19		Filter ID 1
Start	1144		Filter ID 2
Stop	1318		Filter ID 3
Meterbox ID	909033	JG, EG	Personnel
ΔH@	1.898	4A	Stack TC ID
Gamma (Y)	**0.9744**	NA	Tedlar Bags
Ideal Nozzle	0.234	NA	Orsat Pump
Nozzle Dia.	**0.239**	5	Probe Length/Type
Nozzle ID	3-3	2.82	K Factor
Probe ID	4A	60A	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	7
Post Leak Check, ACFM		Failed	

	A	B
Pitot Pre Leak Check	4	4.5
Pitot Post Leak Check	4	4

Ambient Temperature	49
Static Pressure, In. H_2O	0.67
Barometric Pressure, In. Hg	30.30

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	60.6	Moisture, %	5.72
CO_2 %	0.01	O_2 %	20.83

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run	
1	2.5	0	810.834	0.6	56	155	1.75	253	244	46	68	3	1.714	101.8	101.8	LC 1	
2	2.5	2:30	812.66	0.65	55	162	1.9	256	252	45	69	3.25	1.832	101.2	101.5		b
3	2.5	5:0	814.535	0.91	55	156	2.6	254	252	47	71	4.25	2.588	100.7	101.2		e
4	2.5	7:30	816.75	0.65	56	164	1.9	255	254	53	72	4.25	1.825	104.4	102.0	LC-2	
5	2.5	10:0	818.685	0.695	56	157	2	254	256	56	72	3.5	1.977	99.4	101.5		b
6	2.5	12:30	820.6	0.63	57	165	1.85	255	255	58	72	3.25	1.772	104.6	102.0		e
7	2.5	15:0	822.51	0.64	57	165	1.85	253	253	59	73	3.5	1.801	101.0	101.9	LC-3	
8	2.5	17:30	824.37	0.78	58	156	2.3	256	256	58	73	4.5	2.232	108.8	102.8		b
9	2.5	20:0	826.6	0.9	58	165	2.55	252	257	56	73	4.25	2.535	109.9	103.7		e
10	2.5	22:30	829	0.75	58	158	2.2	256	256	55	73	3.75	2.135	102.7	103.6	LC-4	
11	2.5	25:0	831.06	0.9	58	166	2.55	254	254	54	73	4	2.532	99.0	103.1		b
12	2.5	27:30	833.22	0.92	58	156	2.65	255	255	54	74	4.5	2.628	101.7	103.0		e
1	2.5	30:0	835.481	0.76	57	156	2.2	252	256	57	70	4	2.166	100.0	102.8	LC-5	
2	2.5	32:30	837.5	0.73	58	160	2.15	250	255	43	73	4	2.073	105.2	102.9		b
3	2.5	35:0	839.58	0.88	58	164	2.5	248	255	43	76	4.5	2.484	102.7	102.9		e
4	2.5	37:30	841.8	0.86	59	160	2.5	244	254	46	77	4.25	2.446	100.4	102.7	LC-6	
5	2.5	40:0	843.955	0.75	59	162	2.2	257	255	47	78	3.5	2.126	102.6	102.7		b
6	2.5	42:30	846.01	0.75	59	159	2.2	251	251	48	78	3.75	2.138	100.3	102.6		e
7	2.5	45:0	848.025	0.63	60	160	1.85	252	254	49	78	3.5	1.796	104.4	102.7	LC-7	
8	2.5	47:30	849.95	0.45	60	162	1.3	255	253	50	79	3.5	1.280	105.9	102.8		b
9	2.5	50:0	851.6	0.41	60	161	1.25	255	255	50	79	2.5	1.170	104.1	102.9		e
10	2.5	52:30	853.15	0.32	60	156	1	255	254	50	79	2.5	0.920	104.8	102.9	LC-8	
11	2.5	55:0	854.535	0.46	60	162	1.35	253	253	50	78	2.5	1.311	91.7	102.5		b
12	2.5	57:30	855.98	0.4	60	158	1.2	255	254	51	79	2.5	1.147	97.7	102.4		e
		1:00:0	857.421														

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	46.587	0.672	58.0	160.2	1.992	257	257	59	79	5	102.9
Vmstd	47.085	in. H_2O	°F	°F	in H_2O	244	244	43	68		%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-3
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	RCO 2

Date	1/16/19		Filter ID 1
Start	1407		Filter ID 2
Stop	1523		Filter ID 3
Meterbox ID	909033	JG, EG	Personnel
ΔH@	1.898	4A	Stack TC ID
Gamma (Y)	**0.9744**	NA	Tedlar Bags
Ideal Nozzle	0.234	NA	Orsat Pump
Nozzle Dia.	**0.238**	5	Probe Length/Type
Nozzle ID	2-3	2.76	K Factor
Probe ID	4A	60A	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	14.5
Post Leak Check, ACFM	0.00	0.020	7

	A	B
Pitot Pre Leak Check	4.5	4
Pitot Post Leak Check	4.25	6.5

Ambient Temperature	55
Static Pressure, In. H_2O	0.67
Barometric Pressure, In. Hg	30.30

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	51.3	Moisture, %	5.12
CO_2 %	0.05	O_2 %	20.84

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run	
1	2.5	0	866.663	0.74	59	162	2.1	256	249	60	68	3.5	2.044	103.8	103.8	LC 1	
2	2.5	2:30	868.7	0.74	60	159	2.1	255	246	57	68	3.5	2.055	101.2	102.5		b
3	2.5	5:0	870.695	0.675	60	162	2	260	253	57	70	3.5	1.865	105.4	103.4		e
4	2.5	7:30	872.675	0.71	61	156	2	260	254	58	71	3.5	1.986	101.3	102.9	LC-2	
5	2.5	10:0	874.64	0.7	61	166	2	260	253	58	71	3.5	1.926	102.6	102.8		b
6	2.5	12:30	876.6	0.64	61	160	1.9	257	254	58	72	3.5	1.778	105.6	103.3		e
7	2.5	15:0	878.54	0.42	62	155	1.2	259	254	58	73	2.5	1.179	107.4	103.7	LC-3	
8	2.5	17:30	880.15	0.45	62	165	1.3	259	252	57	72	3.5	1.245	98.1	103.1		b
9	2.5	20:0	881.66	0.45	62	157	1.3	259	255	57	72	3.5	1.261	102.0	103.0		e
10	2.5	22:30	883.24	0.34	63	166	1.3	260	255	58	73	3.5	0.941	105.3	103.2	LC-4	
11	2.5	25:0	884.65	0.81	63	156	2.3	255	256	58	74	4	2.278	103.4	103.3		b
12	2.5	27:30	886.8	0.45	63	164	1.3	259	255	58	75	3	1.246	110.0	103.8		e
1	2.5	30:0	888.497	0.52	63	161	1.5	259	254	56	69	3	1.450	106.5	104.0	LC-5	
2	2.5	32:30	890.267	0.65	63	158	1.9	260	254	55	71	3.5	1.821	99.4	103.6		b
3	2.5	35:0	892.117	0.63	63	166	1.8	260	255	54	72	3.5	1.741	103.8	103.6		e
4	2.5	37:30	894.007	0.7	63	157	1.9	260	254	54	73	3.5	1.963	98.8	103.3	LC-6	
5	2.5	40:0	895.917	0.61	63	159	1.8	261	256	55	75	3.5	1.705	105.5	103.4		b
6	2.5	42:30	897.817	0.65	63	157	1.9	261	257	56	75	3.5	1.823	102.3	103.4		e
7	2.5	45:0	899.722	0.6	63	160	1.7	258	253	56	75	3.25	1.674	108.9	103.7	LC-7	
8	2.5	47:30	901.667	0.6	64	165	1.7	260	255	57	75	3.25	1.664	101.6	103.6		b
9	2.5	50:0	903.477	0.55	64	155	1.6	262	256	57	72	3.25	1.551	107.5	103.7		e
10	2.5	52:30	905.327	0.7	64	164	2	259	256	57	71	4	1.945	95.6	103.3	LC-8	
11	2.5	55:0	907.167	0.79	64	157	2.3	259	255	57	71	3.5	2.218	102.2	103.3		b
12	2.5	57:30	909.267	0.9	64	166	2.6	260	255	57	71	3.5	2.489	97.7	103.0		e
	2.5	1:00:0	911.394														

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	44.731	0.619	62.4	160.5	1.813	262	257	60	75	4	102.5
Vmstd	44.807	in. H_2O	°F	°F	in H_2O	255	246	54	68		%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-4
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	RCO 2 (North)

Date	1/16/19	14469	Filter ID 1
Start	1545		Filter ID 2
Stop	1658		Filter ID 3
Meterbox ID	909033	JG, EG	Operator*
$\Delta H_@$	1.898	4B	Stack TC ID
Gamma (Y)	**0.9744**	NA	Tedlar Bags
Ideal Nozzle	0.230	NA	Orsat Pump
Nozzle Dia.	**0.239**	5	Probe Length/Type
Nozzle ID	3-3	2.74	K Factor
Probe ID	4B		Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	15
Post Leak Check, ACFM	0.00	0.020	12

	A	B
Pitot Pre Leak Check	3.5	4
Pitot Post Leak Check	4.2	5.1

Ambient Temperature	55
Static Pressure, In. H_2O	0.67
Barometric Pressure, In. Hg	30.20

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	51.1	Moisture, %	5.02
CO_2 %	0.02	O_2 %	20.89

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run	
1	2.5	0	911.9	0.9	62	161	2.6	250	251	55	68	4	2.573	100.9	100.9	LC 1	
2	2.5	2:30	914.13	0.58	63	163	1.7	257	253	54	69	3.5	1.652	92.8	97.3		b
3	2.5	5:0	915.78	0.9	63	159	2.6	256	254	54	69	3.5	2.585	100.1	98.3		e
4	2.5	7:30	918	0.55	63	162	1.6	257	254	53	69	3	1.569	98.1	98.3	LC-2	
5	2.5	10:0	919.7	0.67	64	165	2	254	254	53	71	4.75	1.910	94.2	97.5		b
6	2.5	12:30	921.5	0.6	64	161	1.8	258	256	54	73	3.5	1.720	109.1	99.3		e
7	2.5	15:0	923.48	0.58	64	160	1.7	255	256	54	73	3.25	1.666	103.0	99.8	LC-3	
8	2.5	17:30	925.32	0.75	65	164	2.2	254	256	54	74	3.75	2.145	101.7	100.0		b
9	2.5	20:0	927.38	0.65	65	164	1.95	256	256	54	76	3.5	1.857	103.3	100.4		e
10	2.5	22:30	929.33	0.63	65	163	1.9	253	252	54	76	3.5	1.804	104.3	100.8	LC-4	
11	2.5	25:0	931.27	0.8	65	170	2.3	251	255	54	76	4	2.266	102.3	100.9		b
12	2.5	27:30	933.4	0.75	66	158	2.2	255	255	54	77	10	2.167	106.4	101.4		e
1	2.5	30:0	935.57	0.68	64	166	2	254	254	55	73	3.5	1.933	104.4	101.6	LC-5	
2	2.5	32:30	937.578	0.84	64	159	2.5	256	256	50	70	4.5	2.416	95.5	101.1		b
3	2.5	35:0	939.628	0.74	65	167	2.2	256	255	50	70	4	2.103	104.6	101.4		e
4	2.5	37:30	941.728	0.63	65	159	2	255	255	50	69	4	1.815	109.4	101.9	LC-6	
5	2.5	40:0	943.768	0.7	66	160	2.1	253	254	50	70	4	2.018	107.2	102.2		b
6	2.5	42:30	945.878	0.7	66	160	2.1	250	255	50	70	3.75	2.017	102.7	102.2		e
7	2.5	45:0	947.898	0.53	66	159	1.6	252	259	51	70	3	1.530	106.7	102.4	LC-7	
8	2.5	47:30	949.728	0.5	66	168	1.5	255	254	50	70	3	1.424	105.8	102.6		b
9	2.5	50:0	951.478	0.48	66	162	1.4	255	256	49	70	3	1.381	98.2	102.4		e
10	2.5	52:30	953.078	0.37	67	167	1.2	254	255	49	70	3	1.058	108.5	102.6	LC-8	
11	2.5	55:0	954.628	0.34	67	162	1	253	255	49	70	2.5	0.981	105.4	102.7		b
12	2.5	57:30	956.078	0.48	67	164	1.5	253	256	49	70	3	1.381	101.1	102.6		e
		1:00:0	957.725														

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	45.825	0.631	64.9	162.6	1.902	258	259	55	77	10	102.5
Vmstd	45.544	in. H_2O	°F	°F	in H_2O	250	251	49	68		%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-5
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	RCO 2 (North)

Date	1/16/19	14670	Filter ID 1
Start	1835		Filter ID 2
Stop	2001		Filter ID 3
Meterbox ID	909033	JG, EG	Personnel
$\Delta H_@$	1.898	4A	Stack TC ID
Gamma (Y)	**0.9744**	NA	Tedlar Bags
Ideal Nozzle	0.236	NA	Orsat Pump
Nozzle Dia.	**0.238**	5	Probe Length/Type
Nozzle ID	2-3	2.82	K Factor
Probe ID	4A	0	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	14
Post Leak Check, ACFM	0.00	0.020	8

	A	B
Pitot Pre Leak Check	5	6
Pitot Post Leak Check	3	5.2

Ambient Temperature	53
Static Pressure, In. H_2O	0.67
Barometric Pressure, In. Hg	30.20

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	44.4	Moisture, %	4.54
CO_2 %	0.17	O_2 %	20.86

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	958.963	0.58	55	159	1.7	259	255	44	68	3	1.617	97.9	97.9	LC 1
2	2.5	2:30	960.67	0.7	55	154	2	259	255	45	71	3	1.966	104.6	101.4	
3	2.5	5:0	962.68	0.5	55	157	1.5	257	255	43	72	3.5	1.397	106.0	102.8	
4	2.5	7:30	964.4	0.5	55	155	1.5	260	255	46	73	3	1.403	106.2	103.6	LC-2
5	2.5	10:0	966.125	0.9	54	158	2.5	260	255	44	73	4	2.508	105.1	104.0	
6	2.5	12:30	968.4	0.65	55	159	2	258	255	46	71	3.5	1.808	106.8	104.4	
7	2.5	15:0	970.37	0.33	55	159	1	259	260	48	72	3	0.919	101.0	104.1	LC-3
8	2.5	17:30	971.7	0.3	55	158	0.9	259	256	45	73	2	0.839	107.4	104.4	
9	2.5	20:0	973.05	0.28	54	156	0.8	257	256	45	74	2	0.784	108.7	104.7	
10	2.5	22:30	974.37	0.48	55	165	1.3	258	255	45	74	2	1.327	94.9	103.8	LC-4
11	2.5	25:0	975.87	0.26	55	165	0.8	258	254	45	74	2	0.718	97.1	103.4	
12	2.5	27:30	977	0.275	55	154	0.8	259	256	46	75	2.5	0.774	107.6	103.6	
1	2.5	30:0	978.3	0.7	53	163	2.1	254	245	45	68	3.5	1.935	103.2	103.6	LC-5
2	2.5	32:30	980.26	0.68	56	160	2	254	254	43	70	3.5	1.893	94.2	102.8	
3	2.5	35:0	982.04	0.71	54	163	2.1	255	255	44	70	3.5	1.960	103.8	102.9	
4	2.5	37:30	984.03	0.9	54	164	2.55	255	255	46	71	4	2.480	101.2	102.7	LC-6
5	2.5	40:0	986.21	0.6	54	165	1.7	257	256	47	72	3	1.649	101.6	102.6	
6	2.5	42:30	988	0.7	54	169	2	256	251	46	71	4	1.916	100.3	102.5	
7	2.5	45:0	989.9	0.58	54	160	1.7	255	254	46	72	3.5	1.609	99.5	102.3	LC-7
8	2.5	47:30	991.63	0.775	54	163	2.2	255	257	47	72	3.75	2.141	107.9	102.6	
9	2.5	50:0	993.79	0.77	54	155	2.2	255	255	47	72	4	2.153	104.3	102.7	
10	2.5	52:30	995.885	0.88	54	164	2.5	257	254	48	73	4.5	2.425	104.0	102.8	LC-8
11	2.5	55:0	998.1	0.7	55	165	2	254	249	48	74	4	1.928	108.7	103.1	
12	2.5	57:30	1000.17	0.815	55	161	2.5	255	252	48	74	4	2.262	105.5	103.2	
		1:00:0	1002.34													

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	43.38	0.588	54.5	160.5	1.765	260	260	48	75	5	102.8
Vmstd	43.969	in. H_2O	°F	°F	in H_2O	254	245	43	68		%

Run Notes:

Method 4 - Air Control Techniques, P.C.

Date: 1/16/2019

Source Information

Plant Name	Enviva, Greenwood	Job #	2333
City, State	Greenwood, SC	Personnel	JG, TB
Sampling Location	RCO 2 (North)	Balance	

Sampling Information

Run Number	M5/202-1	M5/202-2		
Filter Identification	14666	14667		
Sampling Date	1/16/2019	1/16/2019		

Moisture Data

Impinger 1 - Empty				
Final Weight, grams	426.0	431.3		
Initial Weight, grams	395.1	398.6		
Condensed Water, grams	30.9	32.7		
Impinger 2 - Empty				
Final Weight, grams	594.3	608.7		
Initial Weight, grams	591.2	606.0		
Condensed Water, grams	3.1	2.7		
Impinger 3				
Final Weight, grams	728.9	705.5		
Initial Weight, grams	724.6	696.2		
Condensed Water, grams	4.3	9.3		
Silica Gel				
Final Weight, grams	820.7	820.4		
Initial Weight, grams	806.3	804.5		
Adsorbed Water, grams	14.4	15.9		
Total Water, grams	**52.7**	**60.6**		

Sampling Train Purge Data

Purge Start	1128	1345		
Purge End	1230	1445		

Method 4 - Air Control Techniques, P.C.

Date: 1/16/2019

Source Information

Plant Name	Enviva, Greenwood	Job #	2333
City, State	Greenwood, SC	Personnel	JG, TB
Sampling Location	RCO 2 (North)	Balance	

Sampling Information

Run Number	M5/202-3	M5/202-4	M5/202-5	
Filter Identification	14468	14469	14670	
Sampling Date	1/16/2019	1/16/2019	1/16/2019	

Moisture Data

Impinger 1 - Empty				
Final Weight, grams	421.3	427.2	414.3	
Initial Weight, grams	396.2	399.4	396.6	
Condensed Water, grams	25.1	27.8	17.7	
Impinger 2 - Empty				
Final Weight, grams	595.3	608.4	596.2	
Initial Weight, grams	593.0	607.4	593.7	
Condensed Water, grams	2.3	1.0	2.5	
Impinger 3				
Final Weight, grams	738.6	715.8	749.0	
Initial Weight, grams	728.9	705.5	738.6	
Condensed Water, grams	9.7	10.3	10.4	
Silica Gel				
Final Weight, grams	834.9	832.4	807.2	
Initial Weight, grams	820.7	820.4	793.4	
Adsorbed Water, grams	14.2	12.0	13.8	
Total Water, grams	**51.3**	**51.1**	**44.4**	

Sampling Train Purge Data

Purge Start	1540	1712	2007	
Purge End	1640	1816	2107	

Plant Name	Enviva, Greenwood	**Project #**	2333
City, State	Greenwood, SC	**Test Location**	RCO 2

Parameter	Nomenclature/ Units	M5/202-1	M5/202-2	M5/202-3	M5/202-4	M5/202-5	Average (Run 3, 4, 5)
Date		1/16/2019	1/16/2019	1/16/2019	1/16/2019	1/16/2019	
Run Time	θ, minutes	60	60	60	60	60	
Nozzle Diameter	inches	0.238	0.239	0.238	0.239	0.238	
Production Rate	ODT/hour	24.3	25.2	25.1	25.2	22.9	24.4
Stack Area	As - sq. ft.	9.62	9.62	9.62	9.62	9.62	
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	0.84	0.84	
Meter Calibration Factor	Y	0.9744	0.9744	0.9744	0.9744	0.9744	
Barometric Pressure, inches Hg	Bp - in Hg	30.30	30.30	30.30	30.20	30.20	
Static Pressure	Pg - in. H2O	0.67	0.67	0.67	0.67	0.67	
Stack Pressure	Ps - in.Hg	30.35	30.35	30.35	30.25	30.25	
Meter Box Pressure Differential	Δ H - in. H2O	1.89	1.99	1.81	1.90	1.76	
Average Velocity Head	Δ P - in. H2O	0.6651	0.6723	0.6185	0.6308	0.5882	
Volume of Gas Sampled	Vm - cu. ft.	45.482	46.587	44.731	45.825	43.38	
Dry Gas Meter Temperature	Tm - °F	50.5	58.0	62.4	64.9	54.5	
Stack Temperature	Ts - °F	155.5	160.2	160.5	162.6	160.5	161.2
Stack Temperature	Ts - °C	68.6	71.2	71.4	72.6	71.4	
Liquid Collected	grams	52.7	60.6	51.3	51.1	44.4	
Oxygen	O2 %	20.83	20.83	20.84	20.89	20.86	20.87
Carbon Dioxide	CO2 %	0.04	0.01	0.05	0.02	0.17	0.080
Carbon Monoxide	%	0	0	0	0	0	
Nitrogen	N2 %	79.13	79.16	79.11	79.09	78.97	
Fuel Factor		1.73	6.733	1.144	0.37	0.214	
Volume of Gas Sampled, Dry	Vm(std) - cu. ft.	46.631	47.085	44.807	45.544	43.969	44.774
Volume of Gas Sampled, Dry	Vm(std) - cu. M	1.320	1.333	1.269	1.290	1.245	1.268
Volume of Gas Sampled, Dry	Vm(std) - N cu. M	1.230	1.242	1.182	1.201	1.159	1.181
Volume of Water Vapor	Vw(std) - cu. ft.	2.485	2.857	2.419	2.409	2.093	2.307
Moisture Content	% H2O	5.06	5.72	5.12	5.02	4.54	4.90
Saturation Moisture	% H2O	28.50	31.88	32.14	33.88	32.18	
Dry Mole Fraction	Mfd	0.949	0.943	0.949	0.950	0.955	
Gas Molecular Weight, Dry	Md	28.84	28.83	28.84	28.84	28.86	
Gas Molecular Weight, Wet	Ms	28.29	28.21	28.29	28.29	28.37	
Gas Velocity	vs - ft./sec.	49.59	50.11	48.02	48.65	46.83	
Gas Velocity	m/sec.	15.11	15.27	14.64	14.83	14.27	14.58
Volumetric Air Flow, Actual	Qaw - ACFM	28,624	28,928	27,718	28,083	27,035	27,612
Volumetric Air Flow, Actual	m^3/min	811	819	785	795	766	782
Volumetric Air Flow, Standard	Qsd - DSCFM	23,646	23,551	22,698	22,867	22,202	22,589
Volumetric Air Flow, Standard	Nm^3/min	624	621	599	603	585	596
Isokinetic Sampling Rate	I %	102.4	102.9	102.5	102.5	102.8	102.6
FILTERABLE PARTICULATE MATTER EMISSIONS							
Filterable Particulate Catch	mg	2.3	1.2	4.7	3.8	1.2	3.233
Concentration	gr/DSCF	0.0008	0.0004	0.0016	0.0013	0.0004	0.0011
Mass Emission Rate	lb/hr	**0.15**	**0.08**	**0.31**	**0.25**	**0.080**	**0.22**
Mass Emission Rate	lbs./ODT	**0.0063**	**0.0032**	**0.012**	**0.010**	**0.0032**	**0.0086**
CONDENSABLE PARTICULATE MATTER EMISSIONS							
Condensable Particulate Catch	mg	0.5	2.2	2.6	1.0	1.0	1.533
Concentration	gr/DSCF	0.0002	0.0007	0.00090	0.00034	0.00035	0.00053
Mass Emission Rate	lb/hr	**0.03**	**0.15**	**0.17**	**0.07**	**0.07**	**0.10**
Mass Emission Rate	lbs./ODT	**0.0014**	**0.0058**	**0.0069**	**0.0026**	**0.0029**	**0.0042**
TOTAL PARTICULATE MATTER EMISSIONS							
Mass Emission Rate	lb/hr	**0.19**	**0.22**	**0.49**	**0.32**	**0.15**	**0.32**
Mass Emission Rate	lbs./ODT	**0.0077**	**0.0089**	**0.019**	**0.013**	**0.006**	**0.013**

Note: Run 1 and 2 voided due to post test leak check failure

APPENDIX II-B
Method 5-Method 202 Laboratory Report

RESOLUTION ANALYTICS, INC.

Specialists in Air Emissions Analysis

ANALYTICAL REPORT

CLIENT: **AIR CONTROL TECHNIQUES, INC.**

PROJECT: 2333

ANALYTICAL SERVICES PROVIDED:

- **FILTERABLE & CONDENSIBLE PARTICULATE MATTER (EPA METHOD 5/202)**

Confirmation of Data Review:

The analytical data and results provided in this report have been checked thoroughly for accuracy, has been performed and validated in accordance with the approved methods, and relate only to the samples provided for this project report.

Date of Review: January 31, 2019

J. Bruce Nemet

J. Bruce Nemet

Quality Assurance Officer

www.resolutionanalytics.com
208 Technology Park Lane, Ste 110, Fuquay-Varina, NC 27526

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Method: EPA M5

Report Summary

SAMPLE ID	TOTAL FILTERABLE PARTICULATE
Limit of Detection	0.2 mg
Acetone Blank	0.2 mg (in 196 mls)
S6-M5/202-1	2.3 mg
S6-M5/202-2	1.2 mg
S6-M5/202-3	4.7 mg
S6-M5/202-4	3.8 mg
S6-M5/202-5	1.2 mg

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Method: M202

Report Summary

SAMPLE ID	Organic CPM	Inorganic CPM	Total CPM[1]
Limit of Dectection	0.1 mg	0.1 mg	0.2 mg
Acetone Blank			0.2 mg (in 196 ml)
Hexane Blank			0.5 mg (in 190 ml)
DI H_2O Blank			0.6 mg (in 200 ml)
M5/202-PB	1.8 mg	0.0 mg	1.8 mg
M5/202-FB	1.2 mg	0.8 mg	2.0 mg
S6-M5/202-1	1.7 mg	0.8 mg	0.5 mg
S6-M5/202-2	1.7 mg	2.5 mg	2.2 mg
S6-M5/202-3	2.2 mg	2.4 mg	2.6 mg
S6-M5/202-4	1.2 mg	1.8 mg	1.0 mg
S6-M5/202-5	2.4 mg	0.6 mg	1.0 mg

[1] *Total Condensible Particulate Matter (CPM) results have been Field Blank corrected up to a maximum of 2.0 mg.*

Air
Control Techniques, P.C.
301 East Durham Road
Cary, North Carolina 27513

Office (919) 460-7811
Fax (919) 460-7897

Chain of Custody / Transmittal

JOB #: 2333 **PO#** - 9006-2333

TO: Resolution Analytics, Inc. Attn: Jeff Coppedge (919) 346-5740
208 Technology Park Lane Suite 110
Fuquay Varina, North Carolina 27526

Samples sent by: Todd Brozell Date 1/18/19

SAMPLE NUMBER	COMPONENTS	ANALYSIS
S6-M5/202-1,2,3,4,5 PC6AB	• M5 Filter • F½ Acetone Rinse • B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
M5/202-FB Field Blank	• B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
M5/202-PB Proof Blank	• B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
Blanks	• Acetone Blank M5 • Hexane Blank M202 • DI H_2O Blank M202	Total Particulate by Methods 5/202

Standard Turnaround

Relinquished by: Todd T. Brozell Date 1/18/19

Received by: Jeffrey S. Coppedge Date 1/22/19

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client:	Air Control Techniques
RFA #:	2333
Date Received:	1/22/19
Date Analyzed:	1/23/19
Analyst:	JSC
Analysis:	EPA M5
Analyte(s):	Filterable PM

Analytical Narrative

Sample Matrix & Components:

Dry Filters, Front½ Acetone Rinses, Acetone Blank

Summary of Sample Prep:

The acetone rinses were transferred to pre-tared teflon "baggies" in a low humidity environment. The acetone rinses were evaporated then desiccated for 24 hours, after which time they were weighed daily every six hours until consecutive weights agreed within ±0.5 mg. The filters were baked 2 to 3 hours at 105° C, cooled in a desiccator and weighed.

All weights were recorded to the nearest 0.1 mg and include filterable particulate catch only. The acetone blank catch has been subtracted from sample rinse catches in proportion with their respective volumes.

Summary of Instrumentation:

Denver model Pinnacle Series analytical balance

Analytical Detection Limit(s): 0.1 mg per fraction

Miscellaneous Comments Regarding Sample Analysis: **(Note unusual catch weights, interferences, odd sample behavior, and steps taken to confirm unusual results. Also note any deviations from standard analytical procedures, together with justification and possible affect on results. Specify samples when applicable.)**

No modifications to EPA Method 5 analytical procedure were made. See data sheets for individual sample descriptions.

PARTICULATE SAMPLING LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: EPA M5

Run Number				S6-M5/202-1			S6-M5/202-2			S6-M5/202-3
Filter Container #	Date	Init			Date			Date		
	1/24/19	JSC		0.4677	1/24/19		0.4665	1/24/19		0.4675
Baggie Tare Wt., g.				0.0000			0.0000			0.0000
Filter Tare Wt., g.	83Q-14666			0.4684	83Q-14667		0.4678	83Q-14668		0.4682
FILTER SAMPLE WT., g.				-0.0007 *			-0.0013 *			-0.0007 *
*Filter Fragments In Rinse(Yes, No)?				NO			NO			NO
Front ½ Rinse Container #				2085			1309			1520
	Date	Init			Date			Date		
	1/28/19	JSC		3.5037	1/28/19	F	3.5136	1/28/19	F	3.5214
	1/25/19	JSC	F	3.5034	1/25/19		3.5138	1/25/19	F	3.5214
Tare Wt., g.	(	76	ml)	3.5010	(80	ml)	3.5123	(90	ml)	3.5166
RINSE SAMPLE WT., g.				0.0024			0.0013			0.0048

	S6-M5/202-1	S6-M5/202-2	S6-M5/202-3
Filter Catch, mg.	**0.0** **	**0.0** **	**0.0** **
Rinse Catch, mg.	2.4	1.3	4.8
Rinse Blank Residue, mg.	0.1	0.1	0.1
Net Rinse Catch, mg.	**2.3**	**1.2**	**4.7**
FILTERABLE PARTICULATE, mg.	**2.3**	**1.2**	**4.7**

**Negative results adjusted to zero.

Legend: F = Final Weight

Notes & Comments: Light filter fragments present. Filter loss possible. No visible catch on filters.

PARTICULATE SAMPLING LABORATORY RESULTS

Client: ***Air Control Techniques*** *RFA #:* ***2333***
Method: EPA M5

Run Number				S6-M5/202-4			S6-M5/202-5			Run 6	
Filter Container #	Date	Init			Date			Date			
	1/24/19	JSC		0.4678	1/24/19		0.4605				
Baggie Tare Wt., g.				0.0000			0.0000			#N/A	
Filter Tare Wt., g.	83Q-14669			0.4686	83Q-14670		0.4614				
FILTER SAMPLE WT., g.				-0.0008 *			-0.0009 *			#N/A	#N/A
*Filter Fragments In Rinse(Yes, No)?				NO			NO				

Front ½ Rinse Container #	Date	Init		1663	Date		302	Date			
	1/28/19	JSC		3.6072	1/28/19	F	3.7435				
	1/25/19	JSC	F	3.6069	1/25/19		3.7437		##		
Tare Wt., g.	(	110	ml)	3.6030	(100	ml)	3.7422	(	ml)	#N/A	
RINSE SAMPLE WT., g.				0.0039			0.0013			#N/A	

Filter Catch, mg.	**0.0 ****	**0.0 ****	**#N/A**	
Rinse Catch, mg.	3.9	1.3	#N/A	
Rinse Blank Residue, mg.	0.1	0.1	0.0	
Net Rinse Catch, mg.	**3.8**	**1.2**	**#N/A**	**####**
FILTERABLE PARTICULATE, mg.	**3.8**	**1.2**	**#N/A**	

***Negative results adjusted to zero.*

Legend: F = Final Weight

Notes & Comments: Light filter fragments present. Filter loss possible. No visible catch on filters.

REAGENT BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: EPA M5

Run Number				Acetone Blank
Sample ID/Container #				3068
	Date	Init		
	1/28/19	JSC		3.6427
	1/25/19	JSC	F	3.6426
Tare Wt., g.	(	196	ml)	3.6424
SAMPLE WT., g.				0.0002

Blank Beaker #	3068
Final wt., mg.	3.6426
Tare wt., mg.	3.6424
Residue, mg.	0.2
Volume, ml.	196
Density, mg/ml	785.0
Conc., mg/mg	1.30E-06 ✓
Upper Limit, mg	1.00E-05

Legend: F = Final Weight

Notes & Comments:

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client:	Air Control Techniques
RFA #:	2333
Date Received:	1/22/19
Date Analyzed:	1/23/19
Analyst:	JSC
Analysis:	M202
Analyte(s):	Condensible PM

Analytical Narrative

Sample Matrix & Components:

H_2O liquid impinger samples, organic impinger rinses, CPM filter, reagent blanks

Summary of Sample Prep and Analysis:

The samples were received in the lab at a temperature of less than 85° F, on ice in a cooler, and logged in our custody records. The teflon filters were each sonicated/extracted 3 times with DI H_2O, then 3 times with hexane. The extract was added to the appropriate sample fraction. The impinger contents were extracted 3 times with hexane and the extracts were combined with the organic rinses, then evaporated in pretared teflon baggies. The water fraction was evaporated in pretared teflon baggies to near dryness at 105° C, then at ambient until completely dry. When needed, the water fractions were resuspended in 50 mls DI H_20, titrated with 0.1 N NH_4OH until acid neutralization, and then evaporated using the same procedure as before. Samples were then desiccated for 24 hours and weighed at a minimum of 6 hour intervals to constant weight. All weights were recorded to the nearest 0.1 mg. Where field blanks have been provided, samples have been blank corrected up to a maximum of 2.0 mg.

Summary of Instrumentation:

Denver model Pinnacle Series analytical balance

Analytical Detection Limit(s): 0.1 mg per fraction

<u>Miscellaneous Comments Regarding Sample Analysis:</u> (Note unusual catch weights, interferences, odd sample behavior, and steps taken to confirm unusual results. Also note any deviations from standard analytical procedures, together with justification and possible affect on results. Specify samples when applicable).

No modifications to M202 analytical procedure were made. See data sheets for individual sample notes and comments.

CONDENSIBLE PARTICULATE MATTER LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				S6-M5/202-1			S6-M5/202-2			S6-M5/202-3
Acetone/Hexane Container #				4012			1039			3794
	Date	Init			Date			Date		
	1/30/19	JSC	F	3.6419	1/30/19	F	3.6089	1/30/19	F	3.6110
	1/29/19	JSC		3.6422	1/29/19	F	3.6089	1/29/19	F	3.6110
Tare Wt., g.				3.6402			3.6072			3.6088
RINSE SAMPLE WT., g.				0.0017			0.0017			0.0022
DI H_2O Container #				3998			4128			2401
	Date	Init			Date			Date		
	1/29/19	JSC		3.6275	1/29/19	F	3.7115	1/29/19	F	3.3863
	1/28/19	JSC	F	3.6273	1/28/19		3.7117	1/28/19		3.3864
Tare Wt., g.				3.6265			3.7090			3.3839
RINSE SAMPLE WT., g.				0.0008			0.0025			0.0024
Organic CPM Mass, mg.				**1.7**			**1.7**			**2.2**
Inorganic CPM Mass, mg				0.8			2.5			2.4
Volume of NH_4OH Added (N=0.1), ml										
Correction For NH_3 Added, mg				0.00			0.00			0.00
Adjusted Inorganic CPM Mass, mg				**0.8**			**2.5**			**2.4**
Total CPM Mass, mg *				**0.5**			**2.2**			**2.6**

* Total CPM Mass results have been Field Train Blank corrected up to a maximum of 2.0 mg.

Notes & Comments:

CONDENSIBLE PARTICULATE MATTER LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				S6-M5/202-4			S6-M5/202-5		Run 6
Acetone/Hexane Container #				3071			3281		
	Date	Init			Date			Date	
	1/30/19	JSC	F	3.8338	1/30/19	F	3.9860		
	1/29/19	JSC		3.8341	1/29/19		3.9864	##	
Tare Wt., g.				3.8326			3.9836		#N/A
RINSE SAMPLE WT., g.				0.0012			0.0024		#N/A
DI H_2O Container #				52			1695		
	Date	Init			Date			Date	
	1/29/19	JSC	F	3.7273	1/29/19	F	3.7354		
	1/28/19	JSC		3.7274	1/28/19		3.7356	##	
Tare Wt., g.				3.7255			3.7348		#N/A
RINSE SAMPLE WT., g.				0.0018			0.0006		#N/A
Organic CPM Mass, mg.				**1.2**			**2.4**		**#N/A**
Inorganic CPM Mass, mg				1.8			0.6		#N/A
Volume of NH_4OH Added (N=0.1), ml									
Correction For NH_3 Added, mg				0.00			0.00		0.00
Adjusted Inorganic CPM Mass, mg				**1.8**			**0.6**		**#N/A**
Total CPM Mass, mg *				**1.0**			**1.0**		**#N/A**

* Total CPM Mass results have been Field Train Blank corrected up to a maximum of 2.0 mg.

Notes & Comments:

FIELD TRAIN BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number: M5/202-PB

Acetone/Hexane Container #	Date	Init		3458
	1/30/19	JSC	F	3.7009
	1/29/19	JSC		3.7012
Tare Wt., g.				3.6991
RINSE SAMPLE WT., g.				0.0018

DI H_2O Container #	Date	Init		2808
	1/29/19	JSC	F	3.5998
	1/28/19	JSC	F	3.5998
Tare Wt., g.				3.5998
RINSE SAMPLE WT., g.				0.0000

Organic CPM Mass, mg.	**1.8**
Inorganic CPM Mass, mg	0.0
Volume of NH_4OH Added (N=0.1), ml	
Correction For NH_3 Added, mg	0.00
Adjusted Inorganic CPM Mass, mg	**0.0**
Total Proof Blank CPM Mass, mg	**1.8**

Notes & Comments:

FIELD TRAIN BLANK LABORATORY RESULTS

Client: ***Air Control Techniques*** *RFA #:* ***2333***
Method: M202

Run Number *M5/202-FB*

	Date	Init		
Acetone/Hexane Container #				*3164*
	1/30/19	*JSC*		*3.8673*
	1/29/19	*JSC*	*F*	*3.8671*
Tare Wt., g.				*3.8659*
RINSE SAMPLE WT., g.				*0.0012*

	Date	Init		
DI H_2O Container #				*3906*
	1/29/19	*JSC*	*F*	*3.5187*
	1/28/19	*JSC*	*F*	*3.5187*
Tare Wt., g.				*3.5179*
RINSE SAMPLE WT., g.				*0.0008*

Organic CPM Mass, mg.	***1.2***
Inorganic CPM Mass, mg	*0.8*
Volume of NH_4OH Added (N=0.1), ml	
Correction For NH_3 Added, mg	*0.00*
Adjusted Inorganic CPM Mass, mg	***0.8***
Total Field Train Blank CPM Mass, mg	***2.0***

Notes & Comments:

FIELD REAGENT BLANK LABORATORY RESULTS

Client: Air Control Techniques RFA #: **2333**
Method: M202

Run Number				Acetone			Hexane			DI H_2O
Container #				3068			3405			2814
	Date	Init			Date			Date		
	1/28/19	JSC		3.6427	1/30/19	F	3.6617	1/29/19	F	3.7947
	1/25/19	JSC	F	3.6426	1/29/19		3.6622	1/28/19		3.7948
Tare Wt., g.	(	196	ml)	3.6424	(190	ml)	3.6612	(200	ml)	3.7941
SAMPLE WT., g.				0.0002			0.0005			0.0006
Field Reagent Blank Mass, mg				0.2			0.5			0.6
Field Reagent Blank Concentration, mg/mg				1.30E-06			4.02E-06			3.00E-06

Notes & Comments:

M5/17 Particulate Bench Sheet ✓

Client: ACT RFA #: 2333 Date Received: 1/22/19

Analyst: JBC Method: 5 Date Analyzed: 1/23/19

Run #	Filter			Acetone Rinse	
	Baggie #	Filter #	Filter Tare(g)	Baggie #	Rinse Volume(mls)
ACETONE RB				3068	196
S6-M5/202 - 1		830-14666	0.4684	2085	76
2		-14667	0.4678	1309	80
3		-14668	0.4682	1520	90
4		-14669	0.4686	1663	110
5		-14670	0.4614	302	100

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Condensibles Bench Sheet ✓

Client: ACT RFA #: 2333 Date Received: 1/22/19
Analyst: JSC Method: 202 Date Analyzed: 1/23/19

Run #	Organic Fraction		Inorganic Fraction		
	Baggie #	Volume (mls)	Baggie #	Volume (mls)	Titration Volume (mls)
Acetone RB (M5)	3068	196			
Hexane RB	3465	190			
DI H_2O RB	2814	200			
M5/202 - PB	3458		2808		
M5/202 - FB	3164		3906		
S6- M5/202 - 1	4012		3998		
2	1039		4128		
3	3794		2401		
4	3071		52		
5	3281		1695		

APPENDIX II-C
CEMs Data Sheets

Enviva	RCO 2 (North)		
Parameters	**Units**	**Run 1**	**Run 2**
Date		16-Jan-19	16-Jan-19
Run Time		0945-1052	1229-1329
Oxygen	%	20.83	20.83
Moisture	%	5.06	5.72
Volumetric Flow Rate, Std	DSCFM	28624	28928
Process Rate	ODT/hr	24.3	25.2
VOC Emissions	**Units**	**Run 1**	**Run 2**
Concentration (actual)	$ppmv_w$ as C_3	8.24	7.32
Concentration (dry)	$ppmv_d$ as C_3	8.68	7.76
Emission Rate (propane)	lb/hr as C_3H_8	1.71	1.54
Emission Factor (propane)	lb/ODT as C_3H_8	0.070	0.061
NOx Emissions	**Units**	**Run 1**	**Run 2**
Concentration (dry)	ppm_{vd}	1.0	0.8
Emission Rate	lb/hr	0.205	0.168
Emission Factor	lb/ODT	0.008	0.007
CO Emissions	**Units**	**Run 1**	**Run 2**
Concentration (dry)	ppm_{vd}	13.2	12.1
Emission Rate	lb/hr	1.65	1.53
Emission Factor	lb/ODT	0.068	0.061

Facility: Enviva
Date: 1/16/19

Source: RCO 2 (North)

HAP		**Methanol**	**Acetaldehyde**	**Formaldehyde**	**HCl**	**Sampling Data**	
Formula		CH_4O	CH_3 CHO	CH_2O	C_6H_6		
Mol Weight	lb/lb mole	32.04	44.05	30.31	36.46		
Response Factor		0.65	1.00	0.00	0.00		
Run 1							
Conc	ppm wet	0.00	0.00	0.86	0.00		
Conc	ppm dry	0.00	0.00	0.91	0.00	5.06	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.12	0.00	28,624	DSCFM
Emission Factor	lb/ODT	0.0000	0.0000	0.0051	0.00	24.3	ODT/hr
Run 2							
Conc	ppm wet	0.00	0.00	0.64	0.00		
Conc	ppm dry	0.00	0.00	0.68	0.00	5.72	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.09	0.00	28,928	DSCFM
Emission Factor	lb/ODT	0.0000	0.00	0.0037	0.00	25.2	ODT/hr

ND values

Enviva **Date:** 16-Jan-19 **Run 1**
RCO 2 (North) **Run Time:** 0945-1052

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	N/A	N/A	25.25
Mid-Level Gas	$C_{v, mid}$	11.05	9.952	125.6	48.0	52.38
High-Level Gas	$C_{v, high}$	21.99	18.22	227.0	89.5	85.84
Calibration Span	CS	21.99	18.22	227.0	89.5	100
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir, zero}$	0.00	-0.06	-0.07	0.0	0.1
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	N/A	N/A	26.1
Mid-Level Gas	$C_{Dir, mid}$	11.075	9.989	127.7	47.96	52.35
High-Level Gas	$C_{Dir, high}$	22.04	18.20	227.4	89.6	85.8
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	-0.3	0.0	0.0	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	3.4
Mid-Level Gas	ACE_{mid}	0.1	0.2	0.9	0.0	-0.1
High-Level Gas	ACE_{high}	0.2	-0.1	0.2	0.1	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s, zero (pre)}$	0.05	-0.06	-0.1	0.7	0.1
Final Zero	$C_{s, zero (post)}$	0.02	0.01	0.77	0.6	-0.05
Upscale Gas Standar	C_{MA}	21.99	18.22	125.6	48.0	52.4
Initial Upscale	$C_{v, up (pre)}$	21.99	18.10	126.2	47.7	52.35
Final Upscale	$C_{v, up (post)}$	22	18.12	127.09	47.6	52.11
System Bias - Results (Percent)						
Zero (pre)	$SB_{i (zero)}$	0.2	0.0	0.0	0.7	0.0
Zero (post)	$SB_{final (zero)}$	0.1	0.4	0.4	0.6	-0.2
Upscale (pre)	$SB_{i (upscale)}$	-0.2	-0.5	-0.7	-0.3	0.0
Upscale (post)	$SB_{final (upscale)}$	-0.2	-0.4	-0.3	-0.4	-0.2
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.1	0.4	0.4	0.1	-0.2
Upscale	$D_{upscale}$	0.0	0.1	0.4	0.1	-0.2
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	30	35	30	NA
Zero Test		35	30	35	30	NA
Response Time		35	30	35	30	25
Calibration Correction						
Raw Average	C_{ave}	20.84	0.01	13.6	1.6	8.2
Bias Average - Zero	C_0	0.03	-0.03	0.34	0.65	N/A
Bias Average - Upsca	C_M	22.00	18.11	126.65	47.65	N/A
Corrected Run Averag	C_{Gas}	**20.83**	**0.04**	**13.20**	**1.00**	**8.2**

Enviva | **Date:** 16-Jan-19 | **Run 2**
RCO 2 (North) | **Run Time:** 1229-1329

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v,\ zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	N/A	N/A	N/A	N/A	25.3
Mid-Level Gas	$C_{v,\ mid}$	11.1	10.0	125.6	48.0	52.4
High-Level Gas	$C_{v,\ high}$	22.0	18.2	227.0	89.5	85.8
Calibration Span	CS	22.0	18.2	227.0	89.5	100
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir,\ zero}$	0.0	-0.1	-0.1	0.0	0.1
Low-Level Gas	$C_{Dir,\ low}$	N/A	N/A	N/A	N/A	26.1
Mid-Level Gas	$C_{Dir,\ mid}$	11.1	10.0	127.7	48.0	52.4
High-Level Gas	$C_{Dir,\ high}$	22.0	18.2	227.4	89.6	85.8
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	-0.3	0.0	0.0	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	3.4
Mid-Level Gas	ACE_{mid}	0.1	0.2	0.9	0.0	-0.1
High-Level Gas	ACE_{high}	0.2	-0.1	0.2	0.1	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s,\ zero\ (pre)}$	0.02	0.01	0.77	0.60	-0.05
Final Zero	$C_{s,\ zero\ (post)}$	0.013	0.02	0.5	0.43	-0.3
Upscale Gas Standard	C_{MA}	21.99	18.22	125.6	48.0	52.4
Initial Upscale	$C_{v,\ up\ (pre)}$	22	18.12	127.09	47.6	52.11
Final Upscale	$C_{v,\ up\ (post)}$	22.01	18.14	126.9	47.75	52.3
System Bias - Results (Percent)						
Zero (pre)	$SB_{i\ (zero)}$	0.1	0.4	0.4	0.6	-0.2
Zero (post)	$SB_{final\ (zero)}$	0.1	0.4	0.3	0.4	-0.4
Upscale (pre)	$SB_{i\ (upscale)}$	-0.2	-0.4	-0.3	-0.4	-0.2
Upscale (post)	$SB_{final\ (upscale)}$	-0.1	-0.3	-0.4	-0.2	-0.1
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.0	0.1	0.1	0.2	-0.3
Upscale	$D_{upscale}$	0.0	0.1	0.1	0.2	0.2
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	30	35	30	NA
Zero Test		35	30	35	30	NA
Response Time		35	30	35	30	25
Calibration Correction						
Raw Average	C_{ave}	20.84	0.03	12.9	1.31	7.32
Bias Average - Zero	C_0	0.02	0.01	0.64	0.52	N/A
Bias Average - Upscale	C_M	22.01	18.13	127.00	47.68	N/A
Corrected Run Average	C_{Gas}	**20.83**	**0.01**	**12.14**	**0.81**	**7.3**

THC analyzer lost power at 1144. Powered on at 1156. Cal check 1212: zero std = 0.2; 52.38 std = 5

Test Run 1 Begin. STRATA Version 3.2.112
Operator: **David Goshaw**
Plant Name: **Enviva Greenwood**
Location: **PC North Exhaust (RCO2)**

		O2	CO2	THC	NOx	CO
Start Averaging		**%**	**ppm**	**ppm**	**ppm**	**ppm**
1/16/2019	9:45:37	20.845	0.013	9.89	1.62	12.89
1/16/2019	9:46:37	20.818	0.013	9.87	1.57	13.2
1/16/2019	9:47:38	20.819	0.013	8.27	1.64	13.48
1/16/2019	9:48:38	20.83	0.012	7.67	1.71	13.52
1/16/2019	9:49:38	20.833	0.013	7.46	1.66	13.43
1/16/2019	9:50:38	20.828	0.013	9.09	1.6	12.71
1/16/2019	9:51:38	20.82	0.012	9.94	1.6	13.41
1/16/2019	9:52:38	20.822	0.012	7.23	1.66	13.31
1/16/2019	9:53:38	20.838	0.012	7.71	1.68	12.61
1/16/2019	9:54:37	20.845	0.012	9.56	1.64	12.82
1/16/2019	9:55:37	20.825	0.012	9.65	1.58	12.8
1/16/2019	9:56:37	20.83	0.011	8.83	1.61	13.21
1/16/2019	9:57:38	20.831	0.012	7.71	1.67	13.29
1/16/2019	9:58:38	20.834	0.012	7.23	1.65	13.1
1/16/2019	9:59:38	20.839	0.011	9.53	1.6	12.53
1/16/2019	10:00:38	20.829	0.011	9.98	1.56	13.27
1/16/2019	10:01:38	20.83	0.012	7.48	1.62	13.23
1/16/2019	10:02:38	20.84	0.011	8.48	1.67	12.69
1/16/2019	10:03:38	20.85	0.011	9.61	1.62	12.96
1/16/2019	10:04:38	20.836	0.011	10.06	1.56	12.84
1/16/2019	10:05:38	20.84	0.012	9.98	1.6	13.5
1/16/2019	10:06:38	20.836	0.011	8.13	1.66	13.7
1/16/2019	10:07:38	20.842	0.012	7.16	1.65	13.31
1/16/2019	10:08:38	20.846	0.012	10.51	1.6	12.99
1/16/2019	10:09:37	20.83	0.011	10.65	1.56	13.69
1/16/2019	10:10:37	20.805	0.012	7.64	1.62	13.55
1/16/2019	10:11:37	20.84	0.012	9.25	1.72	13.06
1/16/2019	10:12:37	20.853	0.012	9.41	1.67	13.22
1/16/2019	10:13:37	20.843	0.012	9.87	1.61	12.75
1/16/2019	10:14:37	20.835	0.012	10.48	1.6	13.53
1/16/2019	10:15:37	20.835	0.012	7.99	1.66	13.78
1/16/2019	10:16:38	20.843	0.012	7.15	1.68	13.11
1/16/2019	10:17:38	20.852	0.011	10.63	1.61	12.93
1/16/2019	10:18:37	20.833	0.011	10.32	1.57	13.39
1/16/2019	10:19:37	20.812	0.012	7.94	1.64	13.36
1/16/2019	10:20:38	20.844	0.012	8.98	1.71	13
Pause						
1/16/2019	10:21:38	20.895	0.012	6.43	1.63	12.78
1/16/2019	10:22:38	20.863	0.012	8.61	1.22	9.32
End Pause						
1/16/2019	10:23:38	20.847	0.012	10.43	1.59	12.71
1/16/2019	10:24:38	20.843	0.012	7.74	1.66	13.49
1/16/2019	10:25:37	20.851	0.011	7.34	1.67	12.72

Test Run 1 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: PC North Exhaust (RCO2)

		O2	CO2	THC	NOx	CO
1/16/2019	10:26:37	20.854	0.012	9.85	1.64	12.97
1/16/2019	10:27:37	20.845	0.011	9.8	1.58	13.64
1/16/2019	10:28:37	20.839	0.011	8.07	1.63	14.04
1/16/2019	10:29:37	20.848	0.012	7.54	1.69	14.17
1/16/2019	10:30:38	20.853	0.012	7.53	1.66	14.37
1/16/2019	10:31:38	20.843	0.012	8.56	1.61	14.24
1/16/2019	10:32:37	20.838	0.01	9.07	1.59	15.36
1/16/2019	10:33:38	20.842	0.012	6.72	1.67	15.31
1/16/2019	10:34:38	20.849	0.012	6.48	1.7	14.43
1/16/2019	10:35:38	20.858	0.011	8.11	1.63	14.57
1/16/2019	10:36:38	20.84	0.011	8.19	1.58	14.95
1/16/2019	10:37:38	20.823	0.011	7.25	1.64	15.14
1/16/2019	10:38:38	20.843	0.011	6.6	1.71	14.69
1/16/2019	10:39:38	20.86	0.011	6.42	1.67	14.2
1/16/2019	10:40:38	20.856	0.012	7.99	1.6	13.78
1/16/2019	10:41:37	20.853	0.012	8.2	1.57	14.75
1/16/2019	10:42:37	20.852	0.011	6.01	1.62	14.67
1/16/2019	10:43:37	20.862	0.011	6.08	1.65	13.7
1/16/2019	10:44:37	20.868	0.011	7.18	1.6	13.88
1/16/2019	10:45:38	20.85	0.012	7.39	1.56	14.08
1/16/2019	10:46:38	20.854	0.011	6.98	1.6	14.6
1/16/2019	10:47:38	20.856	0.011	5.66	1.66	14.33
1/16/2019	10:48:38	20.862	0.012	5.58	1.65	13.65
1/16/2019	10:49:38	20.864	0.012	7.82	1.6	13.38
1/16/2019	10:50:38	20.86	0.012	7.86	1.56	14.31
1/16/2019	10:51:38	20.855	0.012	5.94	1.63	14.33
1/16/2019	10:52:38	20.862	0.013	5.83	1.66	13.64
Average	**2963 sam**	**20.842**	**0.012**	**8.24**	**1.63**	**13.61**

Test Run 1 End

Test Run 12 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Nam Enviva Greenwood
Location: PC North Exhaust (S6)

Start Averaging		O2 %	CO2 ppm	THC ppm	NOx ppm	CO ppm
1/16/2019	12:30:07	20.827	0.009	7.31	1.26	12.41
1/16/2019	12:31:07	20.836	0.014	8.17	1.32	13.32
1/16/2019	12:32:06	20.831	-0.018	6.38	1.37	13.09
1/16/2019	12:33:06	20.838	0.002	5.91	1.37	12.7
1/16/2019	12:34:07	20.846	-0.005	8.96	1.32	12.63
1/16/2019	12:35:07	20.835	0.004	8.95	1.31	13.27
1/16/2019	12:36:07	20.838	-0.001	6.32	1.37	13.01
1/16/2019	12:37:07	20.842	0.006	7.1	1.4	13.15
1/16/2019	12:38:07	20.846	-0.016	6.86	1.35	12.95
1/16/2019	12:39:07	20.835	-0.013	7.61	1.32	12.7
1/16/2019	12:40:06	20.836	-0.012	8.53	1.33	13.32
1/16/2019	12:41:08	20.834	-0.001	6.11	1.39	13.21
1/16/2019	12:42:07	20.847	0.041	5.84	1.41	12.65
1/16/2019	12:43:07	20.853	0	8.69	1.35	12.38
1/16/2019	12:44:07	20.844	0.01	8.85	1.33	12.97
1/16/2019	12:45:07	20.837	0.02	6.81	1.39	12.93
1/16/2019	12:46:07	20.842	0.004	6.93	1.43	12.83
1/16/2019	12:47:07	20.853	0.013	6.44	1.39	12.83
1/16/2019	12:48:07	20.842	-0.016	7.76	1.34	12.38
1/16/2019	12:49:07	20.842	0.018	8.62	1.35	13.24
1/16/2019	12:50:07	20.838	0.035	6.21	1.38	12.91
1/16/2019	12:51:07	20.847	-0.015	6.39	1.38	11.95
1/16/2019	12:52:07	20.861	0.027	8.49	1.33	12.6
1/16/2019	12:53:07	20.847	0.034	8.7	1.3	12.54
1/16/2019	12:54:07	20.853	0.011	7.47	1.34	12.86
1/16/2019	12:55:07	20.851	0.035	6.86	1.36	13.12
1/16/2019	12:56:07	20.848	0.021	6.25	1.32	12.98
1/16/2019	12:57:07	20.851	0.018	8.26	1.3	12.52
1/16/2019	12:58:07	20.85	0.02	8.91	1.28	13.56
1/16/2019	12:59:07	20.836	0.019	5.94	1.32	13.26
1/16/2019	13:00:07	20.847	0.016	6.47	1.33	12.78
1/16/2019	13:01:07	20.858	0.026	8.2	1.28	13.11
1/16/2019	13:02:07	20.846	0.042	8.49	1.24	12.97
1/16/2019	13:03:07	20.848	0.048	8.15	1.27	13.54
1/16/2019	13:04:06	20.839	0.046	6.65	1.31	13.56
1/16/2019	13:05:08	20.845	0.045	5.81	1.29	13.3
1/16/2019	13:06:07	20.847	0.025	8.62	1.25	12.8
1/16/2019	13:07:07	20.847	0.045	8.81	1.23	13.74
1/16/2019	13:08:07	20.829	0.017	6.01	1.28	13.33
1/16/2019	13:09:07	20.848	0.036	7.15	1.32	12.87
1/16/2019	13:10:07	20.857	0.049	7.41	1.28	13
1/16/2019	13:11:07	20.845	0.028	7.69	1.23	11.99
1/16/2019	13:12:07	20.848	0.01	8.28	1.24	12.43

Test Run 12 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Nam Enviva Greenwood
Location: PC North Exhaust (S6)

		O2	CO2	THC	NOx	CO
1/16/2019	13:13:07	20.842	0.033	6.02	1.29	12.8
1/16/2019	13:14:07	20.845	0.032	5.2	1.28	12.36
1/16/2019	13:15:07	20.853	0.031	8.63	1.23	12.45
1/16/2019	13:16:07	20.846	0.035	8.68	1.22	13.16
1/16/2019	13:17:07	20.846	0.042	5.97	1.27	13.13
1/16/2019	13:18:08	20.847	0.045	6.58	1.32	12.45
1/16/2019	13:19:07	20.852	0.043	6.58	1.28	12.62
1/16/2019	13:20:07	20.847	0.039	7.5	1.23	11.92
1/16/2019	13:21:07	20.84	0.046	8.64	1.25	13.02
1/16/2019	13:22:07	20.833	0.047	5.92	1.31	13.31
1/16/2019	13:23:07	20.843	0.056	5.32	1.34	12.62
1/16/2019	13:24:07	20.851	0.038	8.19	1.29	12.5
1/16/2019	13:25:07	20.845	0.036	8.23	1.25	12.69
1/16/2019	13:26:07	20.847	0.061	6.4	1.3	12.78
1/16/2019	13:27:07	20.848	0.036	7.08	1.32	12.32
1/16/2019	13:28:07	20.849	0.07	6.79	1.31	12.94
1/16/2019	13:29:07	20.843	0.072	7.94	1.28	12.07
Pause						
Average	**2651 sam**	**20.844**	**0.025**	**7.32**	**1.31**	**12.85**

Test Run 12 End

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
12/6/2018 8:26	0.582	0.055	0.216	0.068	0.002	0.194	0.597	0.224
12/6/2018 8:27	0.499	0.054	0.221	0.066	-0.005	0.193	0.628	0.222
12/6/2018 8:28	0.388	0.056	0.21	0.069	0.001	0.191	0.403	0.222
12/6/2018 8:29	0.613	0.052	0.134	0.063	0.031	0.193	0.523	0.219
12/6/2018 8:30	0.602	0.055	0.217	0.067	0.052	0.191	0.229	0.223
12/6/2018 8:31	0.449	0.055	0.201	0.069	-0.019	0.192	0.262	0.225
12/6/2018 8:32	0.479	0.053	0.197	0.065	0.028	0.189	0.357	0.225
12/6/2018 8:33	0.487	0.053	0.214	0.065	0.071	0.191	0.422	0.221
12/6/2018 8:34	0.584	0.056	0.236	0.07	0.043	0.192	0.143	0.228
12/6/2018 8:35	0.61	0.052	0.214	0.064	0.021	0.192	0.032	0.218
12/6/2018 8:36	0.513	0.057	0.175	0.069	-0.002	0.193	-0.098	0.229
12/6/2018 8:37	0.448	0.053	0.247	0.065	0.018	0.193	-0.054	0.221
12/6/2018 8:38	0.71	0.055	0.288	0.068	0.059	0.192	-0.373	0.23
12/6/2018 8:39	0.648	0.055	0.23	0.067	0.018	0.193	-0.164	0.221
12/6/2018 8:40	0.421	0.056	0.214	0.07	0.026	0.192	0.433	0.225
12/6/2018 8:41	0.482	0.056	0.181	0.068	0.001	0.192	0.563	0.222
12/6/2018 8:42	0.478	0.052	0.237	0.065	0.035	0.19	0.128	0.22
12/6/2018 8:43	0.616	0.055	0.198	0.064	0.017	0.193	0.076	0.221
12/6/2018 8:44	0.652	0.056	0.209	0.065	0.08	0.192	0.222	0.224
12/6/2018 8:45	0.444	0.054	0.156	0.069	0.028	0.192	0.118	0.223
12/6/2018 8:46	0.508	0.055	0.203	0.067	0.007	0.192	0.037	0.229
12/6/2018 8:47	0.596	0.057	0.243	0.065	0.029	0.191	-0.588	0.235
12/6/2018 8:48	0.663	0.058	0.279	0.071	0.013	0.194	-0.71	0.241
12/6/2018 8:49	0.537	0.057	0.254	0.068	0.016	0.194	-0.62	0.238
12/6/2018 8:50	0.525	0.058	0.157	0.071	0.048	0.194	-0.528	0.238
12/6/2018 8:51	0.492	0.056	0.274	0.063	0.016	0.194	-0.493	0.231
12/6/2018 8:52	0.639	0.057	0.239	0.066	0.026	0.193	-0.711	0.232
12/6/2018 8:53	0.666	0.057	0.23	0.07	0.057	0.191	0.579	0.23
12/6/2018 8:54	0.497	0.052	0.095	0.064	0.045	0.194	0.456	0.216
12/6/2018 8:55	0.471	0.053	0.112	0.065	0.03	0.192	0.493	0.222
12/6/2018 8:56	0.583	0.054	0.161	0.067	0.06	0.193	0.045	0.219
12/6/2018 8:57	0.656	0.054	0.197	0.064	0.068	0.195	-0.021	0.223
12/6/2018 8:58	0.527	0.055	0.196	0.069	0.084	0.196	0.026	0.228
12/6/2018 8:59	0.51	0.055	0.159	0.066	0.023	0.195	-0.06	0.225
12/6/2018 9:00	0.451	0.054	0.235	0.066	0.027	0.194	-0.11	0.225
12/6/2018 9:01	0.632	0.054	0.185	0.065	0.063	0.196	-0.285	0.228
12/6/2018 9:02	0.714	0.055	0.187	0.065	0.1	0.198	-0.272	0.226
12/6/2018 9:03	0.571	0.057	0.197	0.067	0.028	0.196	-0.743	0.233
12/6/2018 9:04	0.549	0.057	0.228	0.064	0.012	0.198	-0.303	0.23
12/6/2018 9:05	0.664	0.058	0.179	0.071	0.07	0.196	-0.691	0.237
12/6/2018 9:06	0.68	0.058	0.172	0.068	0.025	0.194	-0.542	0.241
12/6/2018 9:07	0.566	0.058	0.24	0.07	0.044	0.19	-0.544	0.238
12/6/2018 9:08	0.402	0.056	0.185	0.065	0.035	0.187	-0.389	0.228
12/6/2018 9:09	0.464	0.057	0.234	0.067	0.022	0.185	-0.411	0.233
12/6/2018 9:10	0.647	0.057	0.182	0.069	0.046	0.186	-0.587	0.239
12/6/2018 9:11	0.56	0.059	0.192	0.069	0.05	0.185	-0.414	0.235
12/6/2018 9:12	0.461	0.058	0.216	0.068	0.028	0.186	-0.699	0.233
12/6/2018 9:13	0.53	0.058	0.157	0.067	0.019	0.185	-0.851	0.238
12/6/2018 9:14	0.62	0.059	0.214	0.07	0.045	0.183	-0.501	0.243
12/6/2018 9:15	0.525	0.057	0.256	0.07	0.056	0.186	-0.525	0.23
12/6/2018 9:16	0.576	0.057	0.252	0.066	0.052	0.187	-0.646	0.241
12/6/2018 9:17	0.487	0.058	0.234	0.07	0.06	0.186	-0.775	0.241

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
12/6/2018 9:18	0.362	0.059	0.188	0.068	0.007	0.187	-0.724	0.244
12/6/2018 9:19	0.605	0.057	0.166	0.065	0.063	0.187	-0.49	0.245
12/6/2018 9:20	0.668	0.058	0.194	0.069	0.058	0.186	-0.978	0.242
12/6/2018 9:21	0.496	0.059	0.086	0.07	-0.008	0.186	-0.643	0.251
12/6/2018 9:22	0.547	0.06	0.233	0.071	0.005	0.186	-0.515	0.251
12/6/2018 9:23	0.571	0.056	0.137	0.066	0.026	0.179	-0.167	0.225
12/6/2018 9:24	0.555	0.056	0.107	0.07	0.057	0.178	0.24	0.224
12/6/2018 9:25	0.503	0.055	0.142	0.066	0.075	0.176	0.27	0.219
12/6/2018 9:26	0.404	0.056	0.127	0.068	0.073	0.178	0.353	0.221
12/6/2018 9:27	0.388	0.054	0.186	0.067	-0.006	0.176	0.402	0.218
12/6/2018 9:28	0.532	0.054	0.179	0.066	0.021	0.174	0.14	0.215
12/6/2018 9:29	0.57	0.055	0.171	0.07	0.052	0.173	0.226	0.219
12/6/2018 9:30	0.545	0.054	0.193	0.066	0.026	0.175	-0.021	0.221
12/6/2018 9:31	0.513	0.056	0.116	0.07	0.054	0.173	0.24	0.227
12/6/2018 9:32	0.441	0.054	0.215	0.067	0.052	0.172	0.28	0.215
12/6/2018 9:33	0.516	0.057	0.114	0.07	0.056	0.173	0.342	0.232
12/6/2018 9:34	0.543	0.056	0.237	0.069	0.084	0.172	0.198	0.23
12/6/2018 9:35	0.429	0.056	0.173	0.07	0.056	0.175	0.276	0.225
12/6/2018 9:36	0.417	0.054	0.205	0.067	0.053	0.173	0.149	0.224
12/6/2018 9:37	0.603	0.054	0.203	0.069	0.044	0.173	0.381	0.219
12/6/2018 9:38	0.534	0.058	0.22	0.068	0.08	0.172	-0.002	0.227
12/6/2018 9:39	0.49	0.056	0.25	0.071	0.066	0.173	0.21	0.228
12/6/2018 9:40	0.434	0.055	0.172	0.07	0.079	0.172	0.153	0.225
12/6/2018 9:41	0.44	0.055	0.219	0.068	0.041	0.171	0.108	0.222
12/6/2018 9:42	0.532	0.054	0.183	0.067	0.045	0.173	0.247	0.22
12/6/2018 9:43	0.512	0.056	0.214	0.067	0.107	0.17	0.058	0.224
12/6/2018 9:44	0.356	0.055	0.184	0.066	0.031	0.17	0.148	0.223
12/6/2018 9:45	0.332	0.055	0.2	0.069	0.063	0.171	0.114	0.22
12/6/2018 9:46	0.502	0.056	0.241	0.067	0.062	0.17	0.364	0.227
12/6/2018 9:47	0.549	0.057	0.202	0.07	0.057	0.17	0.274	0.233
12/6/2018 9:48	0.428	0.054	0.231	0.068	0.005	0.171	0.484	0.224
12/6/2018 9:49	0.464	0.052	0.2	0.065	0.022	0.175	0.09	0.217
12/6/2018 9:50	0.437	0.058	0.167	0.072	0.056	0.176	0.287	0.23
12/6/2018 9:51	0.569	0.055	0.155	0.069	0.086	0.178	0.426	0.227
12/6/2018 9:52	0.559	0.054	0.18	0.066	0.07	0.179	0.631	0.22
12/6/2018 9:53	0.407	0.058	0.205	0.072	0.059	0.181	0.416	0.231
12/6/2018 9:54	0.434	0.056	0.093	0.067	0.084	0.18	0.49	0.226
12/6/2018 9:55	0.58	0.058	0.197	0.071	0.109	0.179	0.383	0.227
12/6/2018 9:56	0.621	0.054	0.156	0.068	0.094	0.193	0.589	0.228
12/6/2018 9:57	0.694	0.055	0.146	0.067	0.053	0.202	0.453	0.225
12/6/2018 9:58	0.644	0.054	0.144	0.067	0.079	0.202	0.346	0.231
12/6/2018 9:59	0.456	0.053	0.155	0.068	0.033	0.675	0.025	0.217
12/6/2018 10:00	-0.013	0.039	0.127	0.049	-0.347	3.241	-0.66	0.153
12/6/2018 10:01	-0.048	0.032	-0.01	0.041	-0.4	3.352	-0.441	0.133
12/6/2018 10:02	-0.105	0.032	0.014	0.039	-0.416	3.358	-0.536	0.13
12/6/2018 10:03	-0.07	0.032	0.03	0.041	-0.422	3.348	-0.582	0.132
12/6/2018 10:04	-0.029	0.03	0.012	0.039	-0.262	1.194	-0.201	0.118
12/6/2018 10:05	-0.043	0.027	-0.01	0.035	0.007	0.054	-0.022	0.104
12/6/2018 10:06	-0.064	0.026	-0.02	0.035	-0.042	0.04	-0.177	0.115
12/6/2018 10:07	-0.026	0.027	0.01	0.036	-0.003	0.037	-0.358	0.114
12/6/2018 10:08	0.109	0.033	0.088	0.044	0.043	0.059	-0.157	0.133
12/6/2018 10:09	0.509	0.051	0.303	0.061	0.069	0.109	0.208	0.198

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
12/6/2018 10:10	0.074	0.034	0.151	0.043	0.008	0.036	-0.238	0.135
12/6/2018 10:11	0.008	0.03	-0.05	0.039	0.002	0.034	-0.229	0.123
12/6/2018 10:12	-0.179	0.034	-0.03	0.038	0.022	0.039	-0.098	0.138
12/6/2018 10:13	-0.246	0.05	-0.06	0.046	0.034	0.045	0.381	0.178
12/6/2018 10:14	0.192	0.05	0.089	0.055	0.062	0.089	0.376	0.182
12/6/2018 10:15	0.74	0.056	0.204	0.07	0.082	0.183	0.408	0.222
12/6/2018 10:16	0.4	0.056	0.138	0.067	0.065	0.18	0.705	0.224
12/6/2018 10:17	0.352	0.057	0.2	0.071	0.061	0.178	0.375	0.227
12/6/2018 10:19	0.574	0.055	0.185	0.068	0.061	0.179	0.125	0.224
12/6/2018 10:20	0.513	0.056	0.181	0.069	0.122	0.176	0.045	0.225
12/6/2018 10:21	0.39	0.056	0.241	0.07	0.131	0.177	0.378	0.227
12/6/2018 10:22	0.437	0.057	0.206	0.07	0.113	0.178	0.141	0.231
12/6/2018 10:23	0.452	0.058	0.182	0.072	0.029	0.176	0.153	0.227
12/6/2018 10:24	0.534	0.055	0.235	0.067	0.087	0.176	0.316	0.223
12/6/2018 10:25	0.574	0.056	0.138	0.068	0.104	0.178	0.262	0.225
12/6/2018 10:26	0.48	0.055	0.236	0.068	0.081	0.179	-0.072	0.228
12/6/2018 10:27	0.473	0.057	0.235	0.069	0.045	0.178	0.017	0.235
12/6/2018 10:28	0.556	0.056	0.229	0.068	0.113	0.176	0.199	0.233
12/6/2018 10:29	0.577	0.057	0.218	0.068	0.096	0.176	-0.213	0.235
12/6/2018 10:30	0.469	0.059	0.165	0.072	0.045	0.177	-0.223	0.231
12/6/2018 10:31	0.522	0.056	0.23	0.068	0.062	0.176	0.025	0.229
12/6/2018 10:32	0.453	0.055	0.174	0.067	0.064	0.177	-0.16	0.223
12/6/2018 10:33	0.639	0.056	0.239	0.07	0.085	0.178	0.057	0.227
12/6/2018 10:34	0.61	0.055	0.216	0.067	0.119	0.176	-0.053	0.222
12/6/2018 10:35	0.473	0.056	0.257	0.068	0.069	0.176	-0.049	0.231
12/6/2018 10:36	0.433	0.057	0.205	0.071	0.08	0.177	0.021	0.229
12/6/2018 10:37	0.565	0.057	0.179	0.071	0.103	0.176	0.27	0.239
12/6/2018 10:38	0.605	0.059	0.202	0.072	0.108	0.177	0.022	0.24
12/6/2018 10:39	0.536	0.056	0.19	0.068	0.085	0.177	0.213	0.229
12/6/2018 10:40	0.524	0.058	0.229	0.07	0.077	0.177	0.077	0.23
12/6/2018 10:41	0.522	0.057	0.225	0.071	0.063	0.177	0.129	0.226
12/6/2018 10:42	0.582	0.057	0.219	0.069	0.109	0.174	0.211	0.231
12/6/2018 10:43	0.566	0.057	0.132	0.068	0.111	0.176	0.257	0.231
12/6/2018 10:44	0.402	0.057	0.255	0.069	0.063	0.178	0.106	0.229
12/6/2018 10:45	0.502	0.056	0.194	0.071	0.07	0.176	0.083	0.229
12/6/2018 10:46	0.527	0.056	0.181	0.072	0.08	0.175	0.323	0.227
12/6/2018 10:47	0.552	0.056	0.202	0.069	0.159	0.176	0.277	0.23
12/6/2018 10:48	0.555	0.058	0.257	0.075	0.098	0.177	0.349	0.228
12/6/2018 10:49	0.498	0.06	0.211	0.073	0.092	0.178	0.34	0.237
12/6/2018 10:50	0.418	0.056	0.156	0.068	0.059	0.171	0.251	0.222
12/6/2018 10:51	0.572	0.057	0.209	0.07	0.095	0.165	0.423	0.23
12/6/2018 10:52	0.609	0.055	0.158	0.068	0.112	0.165	0.205	0.224
12/6/2018 10:53	0.422	0.055	0.124	0.068	0.063	0.178	0.532	0.221
12/6/2018 10:54	0.461	0.058	0.176	0.072	0.077	0.185	1.098	0.235
12/6/2018 10:55	0.563	0.057	0.09	0.07	0.114	0.191	1.069	0.232
12/6/2018 10:56	0.626	0.057	0.095	0.072	0.132	0.195	1.147	0.232
12/6/2018 10:57	0.623	0.055	0.112	0.07	0.134	0.195	1.033	0.234
12/6/2018 10:58	0.539	0.056	0.113	0.067	0.125	0.197	1.015	0.235
12/6/2018 10:59	0.467	0.057	0.116	0.072	0.094	0.197	0.982	0.235
12/6/2018 11:00	0.642	0.059	0.091	0.069	0.149	0.198	1.049	0.239
12/6/2018 11:01	0.75	0.055	0.115	0.067	0.174	0.198	0.853	0.232
12/6/2018 11:02	0.479	0.057	0.12	0.07	0.102	0.2	0.992	0.237

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
12/6/2018 11:03	0.609	0.058	0.164	0.073	0.111	0.2	1.167	0.242
12/6/2018 11:04	0.644	0.057	0.058	0.071	0.146	0.2	1.148	0.238
12/6/2018 11:05	0.663	0.057	0.056	0.07	0.121	0.2	1.137	0.234
12/6/2018 11:06	0.708	0.056	0.079	0.07	0.158	0.198	0.996	0.232
12/6/2018 11:07	0.516	0.058	0.11	0.07	0.091	0.2	0.986	0.238
12/6/2018 11:08	0.504	0.056	0.045	0.069	0.087	0.198	0.999	0.232
12/6/2018 11:09	0.693	0.056	0.083	0.069	0.15	0.191	0.781	0.229
12/6/2018 11:10	0.654	0.057	0.121	0.068	0.156	0.188	0.827	0.233
12/6/2018 11:11	0.568	0.057	0.174	0.069	0.113	0.192	0.815	0.232
12/6/2018 11:12	0.648	0.058	0.173	0.071	0.09	0.191	0.972	0.235
12/6/2018 11:13	0.584	0.057	0.144	0.071	0.077	0.187	1.033	0.239
12/6/2018 11:14	0.674	0.054	0.097	0.066	0.117	0.188	0.816	0.224
12/6/2018 11:15	0.616	0.056	0.129	0.067	0.113	0.188	0.874	0.231
12/6/2018 11:16	0.477	0.057	0.162	0.07	0.109	0.188	0.802	0.233
12/6/2018 11:17	0.463	0.057	0.116	0.07	0.143	0.188	0.728	0.231
12/6/2018 11:18	0.657	0.058	0.158	0.071	0.164	0.188	0.711	0.238
12/6/2018 11:19	0.678	0.058	0.128	0.072	0.14	0.19	0.79	0.242
12/6/2018 11:20	0.49	0.056	0.117	0.073	0.062	0.189	1.053	0.232
12/6/2018 11:21	0.565	0.056	0.146	0.067	0.095	0.187	0.728	0.231
12/6/2018 11:22	0.52	0.056	0.186	0.071	0.092	0.188	0.753	0.229
12/6/2018 11:23	0.63	0.057	0.098	0.073	0.155	0.189	1.055	0.231
12/6/2018 11:24	0.647	0.057	0.158	0.071	0.13	0.191	1.11	0.23
12/6/2018 11:25	0.418	0.057	0.22	0.07	0.106	0.191	1.143	0.233
12/6/2018 11:26	0.461	0.055	0.147	0.067	0.105	0.189	1.355	0.23
12/6/2018 11:27	0.521	0.056	0.204	0.067	0.128	0.183	1.125	0.228
12/6/2018 11:28	0.517	0.056	0.172	0.068	0.125	0.173	1.434	0.231
12/6/2018 11:29	0.5	0.055	0.207	0.067	0.122	0.171	1.195	0.229
12/6/2018 11:30	0.411	0.057	0.26	0.072	0.109	0.168	1.539	0.23
12/6/2018 11:31	0.493	0.058	0.197	0.071	0.127	0.167	1.157	0.231
12/6/2018 11:32	0.549	0.058	0.2	0.072	0.113	0.169	1.241	0.23
12/6/2018 11:33	0.522	0.058	0.177	0.068	0.113	0.165	1.344	0.226
12/6/2018 11:34	0.365	0.058	0.26	0.072	0.095	0.165	1.397	0.227
12/6/2018 11:35	0.398	0.056	0.251	0.068	0.101	0.167	1.396	0.226
12/6/2018 11:36	0.465	0.057	0.212	0.07	0.119	0.164	1.239	0.226
12/6/2018 11:37	0.488	0.057	0.168	0.069	0.136	0.167	1.191	0.229
12/6/2018 11:38	0.524	0.058	0.166	0.069	0.125	0.166	1.347	0.235
12/6/2018 11:39	0.383	0.056	0.232	0.069	0.185	0.166	1.414	0.23
12/6/2018 11:40	0.327	0.058	0.206	0.071	0.124	0.166	1.236	0.232
12/6/2018 11:41	0.523	0.058	0.281	0.069	0.154	0.168	1.396	0.23
12/6/2018 11:42	0.525	0.059	0.263	0.074	0.152	0.165	1.26	0.235
12/6/2018 11:43	0.424	0.058	0.246	0.069	0.105	0.166	1.447	0.234
12/6/2018 11:44	0.482	0.059	0.282	0.071	0.155	0.166	1.251	0.234
12/6/2018 11:45	0.507	0.059	0.222	0.072	0.17	0.166	1.309	0.235
12/6/2018 11:46	0.481	0.06	0.214	0.075	0.122	0.166	1.506	0.237
12/6/2018 11:47	0.378	0.059	0.215	0.073	0.124	0.166	1.518	0.239
12/6/2018 11:48	0.386	0.056	0.255	0.066	0.13	0.166	1.388	0.227
12/6/2018 11:49	0.325	0.059	0.203	0.072	0.151	0.167	1.565	0.234
12/6/2018 11:50	0.511	0.058	0.214	0.067	0.17	0.167	1.348	0.234
12/6/2018 11:51	0.498	0.056	0.211	0.072	0.15	0.167	1.327	0.23
12/6/2018 11:52	0.339	0.057	0.242	0.07	0.131	0.168	1.641	0.228
12/6/2018 11:53	0.427	0.059	0.25	0.071	0.144	0.168	1.502	0.238
12/6/2018 11:54	0.462	0.057	0.207	0.069	0.146	0.168	1.372	0.232

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
12/6/2018 11:55	0.518	0.059	0.178	0.072	0.129	0.168	1.379	0.241
12/6/2018 11:56	0.532	0.06	0.211	0.074	0.17	0.167	1.448	0.242
12/6/2018 11:57	0.42	0.059	0.212	0.073	0.157	0.168	1.431	0.243
12/6/2018 11:58	0.382	0.059	0.167	0.072	0.148	0.166	1.611	0.236
12/6/2018 11:59	0.533	0.059	0.321	0.072	0.198	0.165	1.53	0.236

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Pressure (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
5-Dec	730	7.98	0.111	14.7	181	NA	0.0%
						100.0%	100.0%
	Average	7.980	0.111				

Date	Time	Direct Spike Results, $Spike_{dir}$		System Spiked Result		Native Concentrations, Unspike		Dilution, DF	Expected Spike Concentration, CS	Recovery
		(ppm HCl)	(ppm SF6)	(ppm HCl)	(ppm SF6)	(ppm HCl)	(ppm SF6)			
15-Jan	1530/ 1633	45.63	2.21	3.391	0.198	0.153	-0.001	9.0%	4.2	**79.8%**

Enviva - Greenwood	RCO2 (North)				
Parameters	**Units**	**Run 3**	**Run 4**	**Run 5**	**Average**
Date		16-Jan-19	16-Jan-19	16-Jan-19	
Run Time		1407-1523	1545-1657	1837-2001	
Oxygen	%	20.84	20.89	20.86	20.87
Moisture	%	5.12	5.02	4.54	4.90
Volumetric Flow Rate, Std	DSCFM	22,698	22,867	22,202	22,589
Process Rate	ODT/hr	25.1	25.2	22.9	24.4
VOC Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (actual)	$ppmv_w$ as C_3	6.93	7.53	6.71	7.06
Concentration (dry)	$ppmv_d$ as C_3	7.30	7.93	7.03	7.42
Emission Rate (propane)	lb/hr as C_3H_8	1.1	1.2	1.1	1.2
Emission Factor (propane)	lb/ODT as C_3H_8	0.045	0.049	0.047	0.047
NOx Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (dry)	ppm_{vd}	0.87	0.95	1.01	0.94
Emission Rate	lb/hr	0.14	0.16	0.16	0.15
Emission Factor	lb/ODT	0.0056	0.0062	0.0070	0.0063
CO Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (dry)	ppm_{vd}	11.36	10.26	9.52	10.38
Emission Rate	lb/hr	1.1	1.0	0.92	1.0
Emission Factor	lb/ODT	0.045	0.041	0.040	0.042

Facility: Enviva - Greenwood Source: RCO2 (North)
Date: 1/16/19

HAP		Methanol	Ace-taldehyde	Form-aldehyde	HCl		
Formula		CH_4O	CH_3 CHO	CH_2O	C_6H_6		
Mol Weight	lb/lb mole	32.04	44.05	30.31	36.46		
Response Factor		0.65	1.00	0.00	0.00		
Run 3							
Conc	ppm wet	0.00	0.00	0.44	0.00		
Conc	ppm dry	0.00	0.00	0.46	0.00	5.12	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.049	0.00	22,698	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0020	0.00	25.10	ODT/hr
Run 4							
Conc	ppm wet	0.00	0.00	0.44	0.00		
Conc	ppm dry	0.00	0.00	0.46	0.00	5.02	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.050	0.00	22,867	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0020	0.00	25.20	ODT/hr
Run 5							
Conc	ppm wet	0.00	0.00	0.72	0.00		
Conc	ppm dry	0.00	0.00	0.76	0.00	4.54	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.080	0.00	22,202	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0035	0.00	22.90	ODT/hr
Averages							
Conc	ppm wet	0.00	0.00	0.53	0.00		
Conc	ppm dry	0.00	0.00	0.56	0.00	4.90	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.059	0.00	22,589	DSCFM
Emission Factor	lb/ODT	0.00	0.00	0.0025	0.00		

ND values

Enviva - Greenwood **Date:** **16-Jan-19** **Run 3**
RCO2 (North) **Run Time:** **1407-1523**

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	N/A	N/A	25.25
Mid-Level Gas	$C_{v, mid}$	11.05	9.952	125.6	48.0	52.38
High-Level Gas	$C_{v, high}$	21.99	18.22	226.4	89.5	85.84
Calibration Span	CS	21.99	18.22	226.4	89.5	100
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir, zero}$	0.00	-0.06	-0.07	0.0	0.1
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	N/A	N/A	26.1
Mid-Level Gas	$C_{Dir, mid}$	11.075	9.989	127.7	47.96	52.35
High-Level Gas	$C_{Dir, high}$	22.04	18.20	227.35	89.6	85.8
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	-0.3	0.0	0.0	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	3.4
Mid-Level Gas	ACE_{mid}	0.1	0.2	0.9	0.0	-0.1
High-Level Gas	ACE_{high}	0.2	-0.1	0.4	0.1	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s, zero (pre)}$	0.01	0.02	0.5	0.4	-0.3
Final Zero	$C_{s, zero (post)}$	0.00	-0.04	0.36	0.3	-0.15
Upscale Gas Standard	C_{MA}	21.99	18.22	125.6	48.0	52.4
Initial Upscale	$C_{v, up (pre)}$	22.01	18.14	126.9	47.75	52.3
Final Upscale	$C_{v, up (post)}$	21.98	18.18	126.5	47.71	51.83
System Bias - Results (Percent)						
Zero (pre)	$SB_{i (zero)}$	0.1	0.4	0.3	0.4	-0.4
Zero (post)	$SB_{final (zero)}$	0.0	0.1	0.2	0.3	-0.3
Upscale (pre)	$SB_{i (upscale)}$	-0.1	-0.3	-0.4	-0.2	-0.1
Upscale (post)	$SB_{final (upscale)}$	-0.3	-0.1	-0.5	-0.3	-0.5
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.0	0.3	0.1	0.2	0.2
Upscale	$D_{upscale}$	0.1	0.2	0.2	0.0	-0.5
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	30	35	30	NA
Zero Test		35	30	35	30	NA
Response Time		35	30	35	30	25
Calibration Correction						
Raw Average	C_{ave}	20.84	0.04	11.85	1.21	6.93
Bias Average - Zero	C_0	0.01	-0.01	0.43	0.35	N/A
Bias Average - Upscale	C_M	22.00	18.16	126.70	47.73	N/A
Corrected Run Average	C_{Gas}	**20.84**	**0.054**	**11.36**	**0.87**	**6.93**

Enviva - Greenwood | **Date:** 16-Jan-19 | **Run 4**
RCO2 (North) | **Run Time:** 1545-1657

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	N/A	N/A	25.3
Mid-Level Gas	$C_{v, mid}$	11.1	10.0	125.6	48.0	52.4
High-Level Gas	$C_{v, high}$	22.0	18.2	226.4	89.5	85.8
Calibration Span	CS	22.0	18.2	226.4	89.5	100
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir, zero}$	0.0	-0.1	-0.1	0.0	0.1
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	N/A	N/A	26.1
Mid-Level Gas	$C_{Dir, mid}$	11.1	10.0	127.7	48.0	52.4
High-Level Gas	$C_{Dir, high}$	22.0	18.2	227.4	89.6	85.8
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	-0.3	0.0	0.0	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	3.4
Mid-Level Gas	ACE_{mid}	0.1	0.2	0.9	0.0	-0.1
High-Level Gas	ACE_{high}	0.2	-0.1	0.4	0.1	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s, zero (pre)}$	0.00	-0.04	0.36	0.27	-0.15
Final Zero	$C_{s, zero (post)}$	0.007	-0.15	0.9	0.1	0.29
Upscale Gas Standard	C_{MA}	21.99	18.22	125.6	48.0	52.4
Initial Upscale	$C_{v, up (pre)}$	21.98	18.18	126.5	47.71	51.83
Final Upscale	$C_{v, up (post)}$	21.89	18.17	126.5	47.44	52.18
System Bias - Results (Percent)						
Zero (pre)	$SB_{i (zero)}$	0.0	0.1	0.2	0.3	-0.3
Zero (post)	$SB_{final (zero)}$	0.0	-0.5	0.4	0.1	0.2
Upscale (pre)	$SB_{i (upscale)}$	-0.3	-0.1	-0.5	-0.3	-0.5
Upscale (post)	$SB_{final (upscale)}$	-0.7	-0.2	-0.5	-0.6	-0.2
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.0	0.6	0.2	0.2	0.4
Upscale	$D_{upscale}$	0.4	0.1	0.0	0.3	0.4
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	30	35	30	NA
Zero Test		35	30	35	30	NA
Response Time		35	30	35	30	25
Calibration Correction						
Raw Average	C_{ave}	20.84	-0.08	10.9	1.12	7.53
Bias Average - Zero	C_0	0.01	-0.10	0.61	0.19	N/A
Bias Average - Upscale	C_M	21.94	18.18	126.50	47.58	N/A
Corrected Run Average	C_{Gas}	**20.89**	**0.019**	**10.26**	**0.95**	**7.53**

Enviva - Greenwood | **Date:** 16-Jan-19 | **Run 5**
RCO2 (North) | **Run Time:** 1837-2001

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v, zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v, low}$	N/A	N/A	N/A	N/A	25.3
Mid-Level Gas	$C_{v, mid}$	11.1	10.0	125.6	48.0	52.4
High-Level Gas	$C_{v, high}$	22.0	18.2	226.4	89.5	85.8
Calibration Span	CS	21.99	18.22	226.4	89.5	100.0
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir, zero}$	0.0	-0.1	-0.1	0.0	0.10
Low-Level Gas	$C_{Dir, low}$	N/A	N/A	N/A	N/A	26.1
Mid-Level Gas	$C_{Dir, mid}$	11.1	10.0	127.7	48.0	52.4
High-Level Gas	$C_{Dir, high}$	22.0	18.2	227.4	89.6	85.8
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	0.0	-0.3	0.0	0.0	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	3.4
Mid-Level Gas	ACE_{mid}	0.1	0.2	0.9	0.0	-0.1
High-Level Gas	ACE_{high}	0.2	-0.1	0.4	0.1	0.0
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s, zero (pre)}$	0.01	-0.15	0.85	0.10	0.29
Final Zero	$C_{s, zero (post)}$	-0.012	0.14	0.1	0.01	0.19
Upscale Gas Standard	C_{MA}	21.99	18.22	125.6	48.0	52.4
Initial Upscale	$C_{v, up (pre)}$	21.89	18.17	126.5	47.44	52.18
Final Upscale	$C_{v, up (post)}$	22	18.2	128.11	47.84	52.48
System Bias - Results (Percent)						
Zero (pre)	$SB_{i (zero)}$	0.0	-0.5	0.4	0.1	0.2
Zero (post)	$SB_{final (zero)}$	0.0	1.1	0.1	0.0	0.1
Upscale (pre)	$SB_{i (upscale)}$	-0.7	-0.2	-0.5	-0.6	-0.2
Upscale (post)	$SB_{final (upscale)}$	-0.2	0.0	0.2	-0.1	0.1
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.1	1.6	0.3	0.1	-0.1
Upscale	$D_{upscale}$	0.5	0.2	0.7	0.4	0.3
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	30	35	30	NA
Zero Test		35	30	35	30	NA
Response Time		35	30	35	30	25
Calibration Correction						
Raw Average	C_{ave}	20.86	0.17	10.1	1.06	6.71
Bias Average - Zero	C_0	0.00	0.00	0.49	0.06	N/A
Bias Average - Upscale	C_M	21.95	18.19	127.31	47.64	N/A
Corrected Run Average	C_{Gas}	**20.86**	**0.17**	**9.52**	**1.01**	**6.71**

Test Run 3 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: PC North Exhaust (RCO2)

		O2	CO2	THC	NOx	CO
Start Averaging		**%**	**%**	**ppm**	**ppm**	**ppm**
1/16/2019	14:08:25	20.835	0.056	5.18	1.17	12.26
1/16/2019	14:09:25	20.845	0.049	6.32	1.13	12.52
1/16/2019	14:10:24	20.835	0.085	6.86	1.1	12.61
1/16/2019	14:11:24	20.839	0.086	6.91	1.14	12.58
1/16/2019	14:12:24	20.836	0.098	6.17	1.19	12.56
1/16/2019	14:13:24	20.844	0.056	5.48	1.17	11.94
1/16/2019	14:14:24	20.846	0.073	8.21	1.14	11.59
1/16/2019	14:15:25	20.845	0.037	8.45	1.1	12.28
1/16/2019	14:16:25	20.838	0.01	5.66	1.14	12.24
1/16/2019	14:17:24	20.845	0.027	6.76	1.18	11.61
1/16/2019	14:18:24	20.856	0.038	7.67	1.15	12.03
1/16/2019	14:19:24	20.843	0.07	8.07	1.13	11.86
1/16/2019	14:20:24	20.852	0.061	8.21	1.15	12.06
1/16/2019	14:21:25	20.838	0.078	6.14	1.22	12.57
1/16/2019	14:22:25	20.835	0.045	4.7	1.21	11.86
1/16/2019	14:23:25	20.845	0.047	7.77	1.18	11.72
1/16/2019	14:24:25	20.843	0.063	8.12	1.15	12.52
1/16/2019	14:25:24	20.828	0.075	5.29	1.2	12.6
1/16/2019	14:26:24	20.842	0.069	6.6	1.24	11.89
1/16/2019	14:27:24	20.853	0.057	6.9	1.21	12.23
1/16/2019	14:28:24	20.842	0.087	7.56	1.17	12.18
1/16/2019	14:29:24	20.843	0.094	8.68	1.2	12.55
1/16/2019	14:30:24	20.836	0.071	6.83	1.25	12.46
1/16/2019	14:31:24	20.843	0.066	5.92	1.25	12.15
1/16/2019	14:32:24	20.845	0.07	8.17	1.22	11.9
1/16/2019	14:33:24	20.838	0.047	7.74	1.19	12.3
1/16/2019	14:34:24	20.842	0.073	5.79	1.25	12.49
1/16/2019	14:35:25	20.843	0.066	6.69	1.27	11.76
1/16/2019	14:36:25	20.85	0.054	6.57	1.22	11.81
1/16/2019	14:37:25	20.841	0.058	7.46	1.19	11.21
Pause						
End Pause						
1/16/2019	14:49:25	20.847	0.036	5.65	1.24	11.09
1/16/2019	14:50:25	20.856	0.025	8.17	1.23	11.21
1/16/2019	14:51:24	20.844	0.03	8.41	1.2	11.26
1/16/2019	14:52:24	20.844	-0.004	7.19	1.24	11.66
1/16/2019	14:53:24	20.842	0.008	5.93	1.27	11.86
1/16/2019	14:54:25	20.849	0.036	6.03	1.25	11.76
1/16/2019	14:55:24	20.846	0.028	8.3	1.2	11.48
1/16/2019	14:56:24	20.851	0.044	8.45	1.19	12.25
1/16/2019	14:57:24	20.84	0.062	5.46	1.21	12.27
1/16/2019	14:58:25	20.847	0.037	6.3	1.23	11.21
1/16/2019	14:59:24	20.856	0.068	7.84	1.23	11.72

Test Run 3 Begin. STRATA Version 3.2.112
Operator: **David Goshaw**
Plant Name: **Enviva Greenwood**
Location: **PC North Exhaust (RCO2)**

		O2	CO2	THC	NOx	CO
1/16/2019	15:00:24	20.846	0.041	8.27	1.19	11.59
1/16/2019	15:01:24	20.856	0.044	7.76	1.21	12.04
1/16/2019	15:02:24	20.836	0.005	5.51	1.22	12.08
1/16/2019	15:03:24	20.843	0.016	5.2	1.24	11.74
1/16/2019	15:04:24	20.852	0.022	8.55	1.23	11.35
1/16/2019	15:05:24	20.85	0.025	8.83	1.19	12.01
1/16/2019	15:06:24	20.847	0.007	5.96	1.23	11.67
1/16/2019	15:07:24	20.842	0.024	6.14	1.26	11.53
1/16/2019	15:08:24	20.855	0.032	7.01	1.25	11.65
1/16/2019	15:09:24	20.843	0.033	7.63	1.23	11.39
1/16/2019	15:10:24	20.848	0.023	8.42	1.24	12.01
1/16/2019	15:11:24	20.837	0.011	5.84	1.29	11.83
1/16/2019	15:12:24	20.841	-0.001	4.71	1.3	11.43
1/16/2019	15:13:25	20.841	-0.004	7.47	1.25	11.15
1/16/2019	15:14:25	20.844	0.007	7.93	1.21	11.54
1/16/2019	15:15:25	20.837	0.005	5.51	1.25	11.39
1/16/2019	15:16:25	20.845	0.028	6.12	1.28	11.09
1/16/2019	15:17:24	20.846	0.017	6.68	1.28	10.66
1/16/2019	15:18:24	20.837	0.035	7.51	1.24	10.5

Test Run 3 End
15:19:24

O2	CO2	THC	NOx	CO
%	**%**	**ppm**	**ppm**	**ppm**
20.84	**0.04**	**6.93**	**1.21**	**11.846**

Test Run 4 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Nam Enviva Greenwood
Location: PC North Exhaust (RCO2)

Start Averaging		**O2 %**	**CO2 %**	**THC ppm**	**NOx ppm**	**CO ppm**
1/16/2019	15:46:07	20.837	-0.014	9.01	1.2	11.16
1/16/2019	15:47:07	20.836	-0.038	7.19	1.23	10.94
1/16/2019	15:48:07	20.839	-0.035	6.62	1.27	10.78
1/16/2019	15:49:07	20.837	-0.033	6.31	1.23	10.86
1/16/2019	15:50:07	20.835	-0.004	7.88	1.19	10.45
1/16/2019	15:51:07	20.84	0.018	9.21	1.15	11.1
1/16/2019	15:52:07	20.833	0.021	6.46	1.2	10.99
1/16/2019	15:53:07	20.844	0.009	6.38	1.23	10.21
1/16/2019	15:54:06	20.847	-0.007	8.71	1.2	10.43
1/16/2019	15:55:06	20.842	0.005	9.21	1.14	10.58
1/16/2019	15:56:06	20.85	-0.003	7.98	1.13	10.91
1/16/2019	15:57:06	20.836	-0.016	6.47	1.17	10.81
1/16/2019	15:58:06	20.838	-0.008	6.08	1.18	10.75
1/16/2019	15:59:06	20.839	-0.021	8.74	1.18	10.35
1/16/2019	16:00:07	20.849	-0.025	9.32	1.13	11.15
1/16/2019	16:01:07	20.837	-0.032	6.41	1.16	11.09
1/16/2019	16:02:07	20.842	-0.018	6.66	1.19	10.51
1/16/2019	16:03:07	20.843	-0.02	8.08	1.15	10.78
1/16/2019	16:04:06	20.832	-0.045	8.45	1.09	10.47
1/16/2019	16:05:07	20.845	-0.06	8.5	1.09	11.32
1/16/2019	16:06:07	20.838	-0.066	7.33	1.11	11.32
1/16/2019	16:07:07	20.846	-0.076	6.83	1.13	10.67
1/16/2019	16:08:07	20.842	-0.054	9.69	1.12	10.5
1/16/2019	16:09:07	20.848	-0.051	9.62	1.1	11.48
1/16/2019	16:10:07	20.841	-0.027	6.43	1.1	11.3
1/16/2019	16:11:07	20.844	-0.048	6.82	1.13	10.96
1/16/2019	16:12:06	20.846	-0.021	7.59	1.11	11.07
1/16/2019	16:13:07	20.836	-0.03	8.15	1.07	10.74
1/16/2019	16:14:07	20.847	-0.035	8.8	1.07	11.43
1/16/2019	16:15:07	20.836	-0.033	6.88	1.09	11.47
Pause						
End Pause						
1/16/2019	16:28:07	20.836	-0.256	7.04	1.09	10.25
1/16/2019	16:29:07	20.845	-0.256	7.53	1.15	10.19
1/16/2019	16:30:07	20.847	-0.256	7.3	1.11	10.45
1/16/2019	16:31:07	20.843	-0.255	8.38	1.08	10.32
1/16/2019	16:32:07	20.845	-0.257	8.9	1.08	11.27
1/16/2019	16:33:07	20.833	-0.247	6.42	1.14	11.42
1/16/2019	16:34:07	20.839	-0.157	6.03	1.14	10.73
1/16/2019	16:35:07	20.845	-0.157	8.13	1.09	10.72
1/16/2019	16:36:07	20.83	-0.156	8.26	1.06	10.65
1/16/2019	16:37:07	20.836	-0.157	6.81	1.09	10.7
1/16/2019	16:38:07	20.831	-0.157	6.73	1.11	10.73

Test Run 4 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Nam Enviva Greenwood
Location: PC North Exhaust (RCO2)

		O2	CO2	THC	NOx	CO
1/16/2019	16:39:06	20.844	-0.157	6.44	1.09	10.62
1/16/2019	16:40:06	20.842	-0.157	8.26	1.06	10.34
1/16/2019	16:41:07	20.848	-0.157	8.52	1.05	11.24
1/16/2019	16:42:07	20.843	-0.156	6.11	1.07	11.17
1/16/2019	16:43:08	20.84	-0.157	5.99	1.09	10.42
1/16/2019	16:44:06	20.85	-0.157	7.5	1.05	10.55
1/16/2019	16:45:07	20.837	-0.158	8.01	1.03	10.41
1/16/2019	16:46:07	20.843	-0.157	7.71	1.06	10.72
1/16/2019	16:47:07	20.838	-0.157	7.01	1.09	10.8
1/16/2019	16:48:07	20.843	-0.158	6.35	1.09	10.64
1/16/2019	16:49:07	20.843	-0.157	8.36	1.05	10.49
1/16/2019	16:50:07	20.838	-0.157	8.16	1.05	11.4
1/16/2019	16:51:07	20.827	-0.157	5.49	1.09	11.27
1/16/2019	16:52:07	20.841	0.008	6.63	1.14	12.05
1/16/2019	16:53:07	20.854	0.172	7.89	1.13	11.65
1/16/2019	16:54:07	20.845	0.149	8.33	1.09	11.25
1/16/2019	16:55:07	20.848	0.155	8.09	1.12	11.8
1/16/2019	16:56:07	20.835	0.158	6.08	1.16	11.82
Test Run 4	End					
	16:57:16					

O2	CO2	THC	NOx	CO
%	%	ppm	ppm	ppm
20.8	**-0.1**	**7.53**	**1.12**	**10.9**

Test Run 5 Begin. STRATA Version 3.2.112
Operator: **David Goshaw**
Plant Name: **Enviva Greenwood**
Location: **PC North Exhaust (RCO2)**

Start Averaging		**O2 %**	**CO2 %**	**THC ppm**	**NOx ppm**	**CO ppm**
1/16/2019	18:38:16	20.863	0.187	8.23	1	11.06
1/16/2019	18:39:16	20.853	0.178	8.63	1	11.35
1/16/2019	18:40:15	20.853	0.129	6.1	1.06	11.35
1/16/2019	18:41:15	20.862	0.176	6.99	1.1	10.95
1/16/2019	18:42:15	20.863	0.155	7.32	1.05	11.25
1/16/2019	18:43:15	20.855	0.133	7.55	1.03	10.89
1/16/2019	18:44:15	20.857	0.125	7.88	1.06	11.48
1/16/2019	18:45:15	20.854	0.15	5.83	1.1	12.01
1/16/2019	18:46:15	20.859	0.137	5.12	1.09	11.16
Pause						
End Pause						
1/16/2019	18:50:16	20.868	0.149	7.08	1.07	10.56
1/16/2019	18:51:15	20.867	0.156	7.16	1.05	10.74
1/16/2019	18:52:16	20.844	0.147	7.74	1.03	10.66
Pause						
End Pause						
1/16/2019	18:54:16	20.84	0.157	6.25	1.13	11.17
1/16/2019	18:55:16	20.847	0.104	5.77	1.14	10.48
1/16/2019	18:56:16	20.865	0.079	7.95	1.09	10.48
1/16/2019	18:57:16	20.854	0.135	8.44	1.05	10.4
1/16/2019	18:58:16	20.853	0.169	6.83	1.1	10.68
1/16/2019	18:59:16	20.857	0.227	7.22	1.15	11.41
1/16/2019	19:00:16	20.87	0.224	6.35	1.12	10.58
1/16/2019	19:01:16	20.867	0.126	6.92	1.06	9.03
Pause						
End Pause						
1/16/2019	19:08:16	20.866	0.156	6.2	1.03	8.4
1/16/2019	19:09:16	20.86	0.203	6.02	1.05	10
1/16/2019	19:10:15	20.862	0.18	6.78	1.04	9.87
1/16/2019	19:11:15	20.878	0.201	6.52	1.04	9.55
1/16/2019	19:12:15	20.869	0.179	5.1	1.05	8.28
1/16/2019	19:13:16	20.88	0.192	5.54	1.04	7.82
1/16/2019	19:14:16	20.884	0.198	7.05	0.97	7.96
1/16/2019	19:15:15	20.862	0.141	7.49	0.95	8.71
1/16/2019	19:16:15	20.863	0.155	6.98	1.02	9.92
1/16/2019	19:17:15	20.869	0.153	5.56	1.08	9.92
1/16/2019	19:18:16	20.875	0.147	4.88	1.06	9.21
1/16/2019	19:19:16	20.876	0.153	6.49	0.99	8.27
1/16/2019	19:20:16	20.868	0.156	7.46	0.96	8.9
1/16/2019	19:21:16	20.859	0.176	5.59	1.01	9.2
Pause						
End Pause						
1/16/2019	19:32:16	20.875	0.179	7.25	0.89	9.22

Test Run 5 Begin. STRATA Version 3.2.112
Operator: David Goshaw
Plant Name: Enviva Greenwood
Location: PC North Exhaust (RCO2)

		O2	CO2	THC	NOx	CO
1/16/2019	19:33:16	20.86	0.166	7.81	0.97	9.59
1/16/2019	19:34:16	20.874	0.163	8.47	1.03	10.32
1/16/2019	19:35:16	20.86	0.157	6.17	1.06	10.25
1/16/2019	19:36:15	20.868	0.16	5.69	1.08	9.61
1/16/2019	19:37:15	20.875	0.18	7.98	1.07	9.63
1/16/2019	19:38:15	20.87	0.21	7.56	1.03	9.78
1/16/2019	19:39:16	20.857	0.192	5.96	1.04	9.48
1/16/2019	19:40:15	20.864	0.158	6.18	1.07	9.83
1/16/2019	19:41:15	20.878	0.185	5.85	1.09	10.04
1/16/2019	19:42:15	20.869	0.154	6.5	1.04	8.84
1/16/2019	19:43:15	20.864	0.173	7.65	1.01	9.89
1/16/2019	19:44:15	20.855	0.144	5.71	1.06	10.46
1/16/2019	19:45:15	20.864	0.167	5.39	1.13	10.39
1/16/2019	19:46:15	20.869	0.141	7.06	1.11	10.32
1/16/2019	19:47:15	20.856	0.195	7.6	1.07	10.79
1/16/2019	19:48:15	20.861	0.173	6.45	1.06	10.52
1/16/2019	19:49:16	20.868	0.224	5.62	1.11	11.17
1/16/2019	19:50:15	20.876	0.169	5.72	1.09	9.41
1/16/2019	19:51:15	20.864	0.23	7.12	1.07	10.4
1/16/2019	19:52:15	20.852	0.204	8.01	1.05	11.01
1/16/2019	19:53:15	20.861	0.185	5.57	1.11	11.01
1/16/2019	19:54:15	20.872	0.238	5.52	1.14	10.12
1/16/2019	19:55:15	20.873	0.18	7.48	1.1	9.9
Test Run 5 End						
	1956:15:00					
		O2	**CO2**	**THC**	**NOx**	**CO**
		%	**%**	**ppm**	**ppm**	**ppm**
		20.86	**0.17**	**6.71**	**1.06**	**10.10**

RCO 2	**Date/Time**	**Form-aldehyde (ppm)**	**MDL (ppm)**	**HCl (ppm)**	**MDL (ppm)**	**Methanol (ppm)**	**MDL (ppm)**	**Acetaldehyde (ppm)**	**MDL (ppm)**
Run 1	0945-1052	0.864	0.086	0.048	0.107	0.053	0.412	0.202	0.354
Run 2	1229-1329	0.639	0.084	0.002	0.104	0.075	0.410	0.166	0.353
Run 3	1407-1519	0.436	0.080	0.008	0.099	0.080	0.378	0.095	0.332
Run 4	1545-1657	0.436	0.080	0.006	0.099	0.075	0.380	0.147	0.335
Run 5	1835-2000	**0.814**	0.086	**0.038**	0.107	**0.056**	0.413	**0.195**	0.3350

	Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 1	1/16/2019 9:45	0.861	0.041	0.100	0.050	0.089	0.200	0.000	0.169
Run 1	1/16/2019 9:46	0.747	0.040	0.148	0.049	0.057	0.199	0.219	0.168
Run 1	1/16/2019 9:47	0.851	0.040	0.133	0.047	0.098	0.199	0.152	0.164
Run 1	1/16/2019 9:48	0.732	0.040	0.018	0.050	0.115	0.200	0.279	0.167
Run 1	1/16/2019 9:49	0.623	0.040	0.167	0.054	0.046	0.200	0.145	0.171
Run 1	1/16/2019 9:50	0.620	0.040	0.076	0.049	0.068	0.199	0.308	0.168
Run 1	1/16/2019 9:51	0.594	0.037	0.061	0.048	0.127	0.197	0.293	0.171
Run 1	1/16/2019 9:52	0.761	0.038	0.100	0.048	0.089	0.199	0.335	0.160
Run 1	1/16/2019 9:53	0.887	0.040	0.026	0.051	0.108	0.201	0.260	0.169
Run 1	1/16/2019 9:54	0.792	0.040	0.093	0.049	0.094	0.200	0.000	0.167
Run 1	1/16/2019 9:55	0.691	0.040	0.119	0.046	0.040	0.200	0.140	0.165
Run 1	1/16/2019 9:56	0.845	0.041	0.052	0.050	0.086	0.200	0.098	0.165
Run 1	1/16/2019 9:57	0.727	0.041	0.062	0.051	0.117	0.203	0.108	0.167
Run 1	1/16/2019 9:58	0.602	0.039	0.127	0.050	0.034	0.202	0.253	0.169
Run 1	1/16/2019 9:59	0.643	0.041	0.050	0.049	0.084	0.202	0.226	0.169
Run 1	1/16/2019 10:00	0.551	0.040	0.096	0.050	0.085	0.201	0.210	0.167
Run 1	1/16/2019 10:01	0.758	0.039	0.057	0.045	0.080	0.204	0.256	0.167
Run 1	1/16/2019 10:02	0.935	0.043	0.054	0.050	0.126	0.205	0.281	0.169
Run 1	1/16/2019 10:03	0.866	0.042	0.107	0.052	0.064	0.204	0.140	0.172
Run 1	1/16/2019 10:04	0.745	0.041	0.063	0.049	0.046	0.204	0.083	0.170
Run 1	1/16/2019 10:05	0.854	0.042	0.065	0.052	0.116	0.202	0.128	0.169
Run 1	1/16/2019 10:06	0.793	0.040	0.029	0.051	0.085	0.204	0.244	0.171
Run 1	1/16/2019 10:07	0.678	0.042	0.062	0.053	0.067	0.208	0.272	0.177
Run 1	1/16/2019 10:08	0.653	0.044	0.036	0.051	0.104	0.206	0.239	0.180
Run 1	1/16/2019 10:09	0.572	0.041	0.016	0.050	0.064	0.207	0.400	0.169
Run 1	1/16/2019 10:10	0.900	0.043	0.011	0.053	0.072	0.207	0.244	0.175
Run 1	1/16/2019 10:11	0.976	0.044	0.020	0.053	0.072	0.206	0.195	0.180
Run 1	1/16/2019 10:12	0.806	0.042	0.051	0.052	0.054	0.207	0.386	0.177
Run 1	1/16/2019 10:13	0.787	0.042	0.049	0.051	0.045	0.207	0.105	0.176
Run 1	1/16/2019 10:14	0.768	0.044	0.064	0.054	0.091	0.207	0.366	0.180
Run 1	1/16/2019 10:15	0.699	0.043	0.014	0.053	0.108	0.211	0.257	0.173
Run 1	1/16/2019 10:16	0.657	0.044	0.015	0.057	0.069	0.211	0.201	0.182
Run 1	1/16/2019 10:17	0.640	0.043	0.115	0.051	0.070	0.211	0.306	0.177
Run 1	1/16/2019 10:18	0.452	0.042	0.062	0.052	0.019	0.177	0.016	0.179
Run 1	1/16/2019 10:19	0.735	0.044	0.067	0.056	0.047	0.195	0.262	0.182
Run 1	1/16/2019 10:20	0.784	0.044	0.032	0.054	0.080	0.213	0.227	0.185
Run 1	1/16/2019 10:21								
Run 1	1/16/2019 10:22								
Run 1	1/16/2019 10:23	1.121	0.046	0.058	0.057	0.081	0.214	0.317	0.188
Run 1	1/16/2019 10:24	1.405	0.046	0.082	0.059	0.049	0.214	0.369	0.190
Run 1	1/16/2019 10:25	1.594	0.044	0.063	0.055	0.046	0.215	0.269	0.182
Run 1	1/16/2019 10:26	1.556	0.044	0.031	0.057	0.014	0.214	0.368	0.184

	Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 1	1/16/2019 10:28	1.567	0.048	0.027	0.059	0.000	0.213	0.162	0.195
Run 1	1/16/2019 10:29	1.695	0.046	0.001	0.059	0.059	0.214	0.037	0.190
Run 1	1/16/2019 10:30	1.525	0.046	0.023	0.056	0.039	0.217	0.245	0.186
Run 1	1/16/2019 10:31	1.159	0.045	0.049	0.056	0.056	0.216	0.261	0.187
Run 1	1/16/2019 10:32	1.103	0.046	0.000	0.060	0.016	0.216	0.268	0.191
Run 1	1/16/2019 10:33	1.040	0.046	0.047	0.057	0.000	0.212	0.254	0.186
Run 1	1/16/2019 10:34	1.128	0.045	0.049	0.055	0.027	0.217	0.074	0.188
Run 1	1/16/2019 10:35	1.072	0.046	0.020	0.058	0.009	0.216	0.387	0.185
Run 1	1/16/2019 10:36	0.869	0.045	0.032	0.058	0.000	0.214	0.049	0.184
Run 1	1/16/2019 10:37	0.735	0.046	0.000	0.056	0.000	0.212	0.245	0.185
Run 1	1/16/2019 10:38	0.986	0.045	0.002	0.055	0.005	0.212	0.164	0.181
Run 1	1/16/2019 10:39	1.021	0.046	0.043	0.056	0.023	0.209	0.039	0.183
Run 1	1/16/2019 10:40	0.782	0.046	0.017	0.059	0.000	0.212	0.138	0.190
Run 1	1/16/2019 10:41	0.789	0.044	0.000	0.056	0.029	0.211	0.156	0.180
Run 1	1/16/2019 10:42	0.766	0.044	0.014	0.056	0.000	0.208	0.032	0.183
Run 1	1/16/2019 10:43	0.839	0.042	0.045	0.053	0.000	0.210	0.219	0.177
Run 1	1/16/2019 10:44	0.875	0.045	0.004	0.059	0.023	0.209	0.328	0.189
Run 1	1/16/2019 10:45	0.613	0.044	0.058	0.056	0.012	0.209	0.233	0.181
Run 1	1/16/2019 10:46	0.616	0.043	0.000	0.054	0.000	0.208	0.104	0.181
Run 1	1/16/2019 10:47	0.920	0.044	0.000	0.057	0.038	0.207	0.057	0.179
Run 1	1/16/2019 10:48	0.901	0.044	0.025	0.057	0.014	0.208	0.132	0.182
Run 1	1/16/2019 10:49	0.754	0.043	0.001	0.052	0.040	0.208	0.156	0.175
Run 1	1/16/2019 10:50	0.725	0.044	0.000	0.055	0.000	0.206	0.274	0.179
Run 1	1/16/2019 10:51	0.698	0.043	0.000	0.055	0.030	0.205	0.115	0.180
Run 1	1/16/2019 10:52	0.753	0.041	0.043	0.050	0.003	0.171	0.044	0.164
Run 2	1/16/2019 12:28	0.725	0.044	0.000	0.054	0.041	0.209	0.000	0.180
Run 2	1/16/2019 12:29	0.583	0.042	0.000	0.051	0.055	0.211	0.000	0.178
Run 2	1/16/2019 12:30	0.550	0.044	0.000	0.055	0.057	0.210	0.077	0.178
Run 2	1/16/2019 12:31	0.457	0.043	0.000	0.054	0.067	0.208	0.232	0.185
Run 2	1/16/2019 12:32	0.603	0.044	0.000	0.052	0.082	0.208	0.166	0.181
Run 2	1/16/2019 12:33	0.700	0.044	0.000	0.055	0.113	0.208	0.149	0.183
Run 2	1/16/2019 12:34	0.556	0.044	0.000	0.052	0.044	0.208	0.163	0.185
Run 2	1/16/2019 12:35	0.627	0.042	0.000	0.052	0.039	0.208	0.193	0.179
Run 2	1/16/2019 12:36	0.771	0.044	0.000	0.053	0.085	0.207	0.348	0.182
Run 2	1/16/2019 12:37	0.733	0.043	0.000	0.054	0.116	0.209	0.071	0.179
Run 2	1/16/2019 12:38	0.659	0.043	0.000	0.054	0.032	0.209	0.105	0.181
Run 2	1/16/2019 12:39	0.582	0.044	0.000	0.057	0.080	0.208	0.106	0.183
Run 2	1/16/2019 12:40	0.484	0.043	0.000	0.051	0.058	0.206	0.284	0.178
Run 2	1/16/2019 12:41	0.662	0.043	0.000	0.054	0.092	0.207	0.233	0.179
Run 2	1/16/2019 12:42	0.678	0.043	0.000	0.053	0.100	0.209	0.313	0.179
Run 2	1/16/2019 12:43	0.584	0.043	0.000	0.052	0.055	0.209	0.143	0.178
Run 2	1/16/2019 12:44	0.642	0.042	0.000	0.054	0.030	0.206	0.172	0.173
Run 2	1/16/2019 12:45	0.802	0.043	0.000	0.055	0.065	0.207	0.333	0.177
Run 2	1/16/2019 12:46	0.751	0.042	0.000	0.052	0.098	0.208	0.207	0.177
Run 2	1/16/2019 12:47	0.600	0.042	0.000	0.052	0.045	0.209	0.089	0.177
Run 2	1/16/2019 12:48	0.521	0.041	0.001	0.050	0.090	0.209	0.211	0.174
Run 2	1/16/2019 12:49	0.449	0.042	0.000	0.053	0.083	0.207	0.018	0.175
Run 2	1/16/2019 12:50	0.597	0.041	0.000	0.053	0.065	0.208	0.059	0.176
Run 2	1/16/2019 12:51	0.690	0.042	0.000	0.051	0.097	0.208	0.083	0.173
Run 2	1/16/2019 12:52	0.648	0.043	0.000	0.052	0.042	0.208	0.221	0.176
Run 2	1/16/2019 12:53	0.758	0.042	0.000	0.050	0.059	0.207	0.101	0.176

	Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 2	1/16/2019 12:54	0.764	0.042	0.000	0.053	0.077	0.206	0.181	0.175
Run 2	1/16/2019 12:55	0.776	0.043	0.024	0.055	0.072	0.208	0.080	0.180
Run 2	1/16/2019 12:56	0.669	0.046	0.000	0.055	0.083	0.209	0.123	0.181
Run 2	1/16/2019 12:57	0.523	0.042	0.000	0.052	0.061	0.208	0.239	0.174
Run 2	1/16/2019 12:58								
Run 2	1/16/2019 12:59	0.679	0.042	0.000	0.049	0.120	0.208	0.465	0.173
Run 2	1/16/2019 13:00	0.719	0.041	0.000	0.051	0.102	0.208	0.127	0.173
Run 2	1/16/2019 13:01	0.626	0.040	0.000	0.050	0.053	0.209	0.141	0.176
Run 2	1/16/2019 13:02	0.772	0.040	0.000	0.051	0.050	0.208	0.128	0.174
Run 2	1/16/2019 13:03	0.685	0.042	0.000	0.051	0.093	0.208	0.137	0.170
Run 2	1/16/2019 13:04	0.716	0.042	0.000	0.053	0.098	0.207	0.296	0.174
Run 2	1/16/2019 13:05	0.669	0.044	0.000	0.054	0.092	0.208	0.145	0.179
Run 2	1/16/2019 13:06	0.494	0.040	0.000	0.050	0.072	0.207	0.094	0.171
Run 2	1/16/2019 13:07	0.492	0.040	0.000	0.049	0.046	0.205	0.133	0.171
Run 2	1/16/2019 13:08	0.673	0.042	0.000	0.053	0.117	0.200	0.231	0.177
Run 2	1/16/2019 13:09	0.752	0.041	0.000	0.051	0.098	0.199	0.186	0.170
Run 2	1/16/2019 13:10	0.661	0.041	0.000	0.052	0.077	0.198	0.000	0.173
Run 2	1/16/2019 13:11	0.718	0.042	0.000	0.048	0.034	0.200	0.300	0.173
Run 2	1/16/2019 13:12	0.621	0.042	0.000	0.052	0.058	0.199	0.310	0.177
Run 2	1/16/2019 13:13	0.632	0.041	0.000	0.052	0.069	0.204	0.068	0.175
Run 2	1/16/2019 13:14	0.574	0.041	0.000	0.050	0.101	0.205	0.396	0.174
Run 2	1/16/2019 13:15	0.427	0.041	0.000	0.050	0.061	0.202	0.118	0.175
Run 2	1/16/2019 13:16	0.456	0.041	0.000	0.047	0.042	0.202	0.150	0.170
Run 2	1/16/2019 13:17	0.759	0.042	0.000	0.050	0.127	0.200	0.309	0.174
Run 2	1/16/2019 13:18	0.816	0.041	0.000	0.051	0.112	0.202	0.145	0.175
Run 2	1/16/2019 13:19	0.783	0.041	0.020	0.049	0.028	0.207	0.260	0.167
Run 2	1/16/2019 13:20	0.753	0.042	0.000	0.050	0.104	0.207	0.056	0.175
Run 2	1/16/2019 13:21	0.580	0.039	0.043	0.050	0.059	0.206	0.113	0.173
Run 2	1/16/2019 13:22	0.670	0.042	0.000	0.050	0.091	0.207	0.092	0.177
Run 2	1/16/2019 13:23	0.576	0.042	0.000	0.051	0.105	0.208	0.231	0.175
Run 2	1/16/2019 13:24	0.512	0.043	0.000	0.052	0.059	0.209	0.000	0.179
Run 2	1/16/2019 13:25	0.553	0.042	0.000	0.053	0.070	0.208	0.146	0.175
Run 2	1/16/2019 13:26	0.717	0.041	0.018	0.051	0.136	0.207	0.000	0.177
Run 2	1/16/2019 13:27	0.767	0.042	0.000	0.053	0.105	0.208	0.189	0.181
Run 2	1/16/2019 13:28	0.315	0.044	0.000	0.051	0.064	0.105	0.323	0.172
Run 2	1/16/2019 13:29								
Run 3	1/16/2019 14:07	0.606	0.040	0.000	0.048	0.075	0.204	0.136	0.167
Run 3	1/16/2019 14:08	0.520	0.041	0.000	0.050	0.094	0.204	0.182	0.170
Run 3	1/16/2019 14:09	0.460	0.040	0.015	0.048	0.040	0.206	0.000	0.170
Run 3	1/16/2019 14:10	0.446	0.041	0.000	0.053	0.088	0.204	0.023	0.173
Run 3	1/16/2019 14:11	0.311	0.042	0.000	0.053	0.083	0.204	0.168	0.170
Run 3	1/16/2019 14:12	0.461	0.043	0.000	0.051	0.096	0.205	0.203	0.174
Run 3	1/16/2019 14:13	0.465	0.043	0.000	0.052	0.129	0.205	0.134	0.181
Run 3	1/16/2019 14:14	0.293	0.040	0.000	0.051	0.032	0.205	0.003	0.168
Run 3	1/16/2019 14:15	0.323	0.042	0.000	0.052	0.074	0.205	0.154	0.170
Run 3	1/16/2019 14:16	0.394	0.041	0.000	0.052	0.115	0.205	0.038	0.174
Run 3	1/16/2019 14:17	0.427	0.042	0.000	0.055	0.101	0.204	0.204	0.170
Run 3	1/16/2019 14:18	0.396	0.041	0.000	0.049	0.062	0.205	0.336	0.166
Run 3	1/16/2019 14:19	0.493	0.041	0.000	0.049	0.082	0.204	0.045	0.165
Run 3	1/16/2019 14:20	0.391	0.041	0.000	0.051	0.060	0.204	0.204	0.168
Run 3	1/16/2019 14:21	0.484	0.040	0.000	0.048	0.084	0.203	0.085	0.167

	Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 3	1/16/2019 14:22	0.470	0.041	0.000	0.048	0.100	0.204	0.122	0.170
Run 3	1/16/2019 14:23	0.297	0.041	0.000	0.051	0.051	0.206	0.178	0.171
Run 3	1/16/2019 14:24	0.376	0.041	0.000	0.053	0.084	0.204	0.000	0.171
Run 3	1/16/2019 14:25	0.394	0.042	0.000	0.052	0.053	0.205	0.098	0.173
Run 3	1/16/2019 14:26	0.424	0.041	0.000	0.049	0.093	0.205	0.024	0.169
Run 3	1/16/2019 14:27	0.388	0.042	0.000	0.051	0.097	0.206	0.180	0.173
Run 3	1/16/2019 14:28	0.371	0.043	0.000	0.053	0.094	0.206	0.000	0.180
Run 3	1/16/2019 14:29	0.299	0.041	0.000	0.049	0.037	0.204	0.078	0.172
Run 3	1/16/2019 14:30	0.592	0.040	0.000	0.047	0.097	0.203	0.164	0.165
Run 3	1/16/2019 14:31	0.489	0.042	0.000	0.053	0.127	0.205	0.286	0.171
Run 3	1/16/2019 14:32	0.322	0.041	0.000	0.053	0.052	0.205	0.108	0.173
Run 3	1/16/2019 14:33	0.347	0.041	0.000	0.050	0.072	0.203	0.227	0.171
Run 3	1/16/2019 14:34	0.355	0.039	0.000	0.049	0.114	0.200	0.000	0.167
Run 3	1/16/2019 14:35	0.320	0.039	0.000	0.049	0.126	0.202	0.000	0.165
Run 3	1/16/2019 14:36	0.392	0.038	0.000	0.048	0.097	0.201	0.147	0.163
Run 3	1/16/2019 14:37	0.288	0.041	0.000	0.051	0.061	0.202	0.074	0.170
Run 3	1/16/2019 14:38	0.209	0.038	0.006	0.052	0.061	0.172	0.000	0.160
Run 3	1/16/2019 14:39								
Run 3	1/16/2019 14:49	0.634	0.043	0.000	0.050	0.120	0.201	0.202	0.169
Run 3	1/16/2019 14:50	0.659	0.040	0.000	0.049	0.036	0.204	0.050	0.170
Run 3	1/16/2019 14:51	0.733	0.041	0.000	0.048	0.084	0.202	0.199	0.169
Run 3	1/16/2019 14:52	0.734	0.041	0.000	0.053	0.100	0.200	0.286	0.171
Run 3	1/16/2019 14:53	0.729	0.039	0.000	0.046	0.077	0.203	0.000	0.169
Run 3	1/16/2019 14:54	0.588	0.040	0.000	0.047	0.117	0.203	0.217	0.162
Run 3	1/16/2019 14:55	0.397	0.041	0.000	0.050	0.095	0.203	0.000	0.172
Run 3	1/16/2019 14:56	0.398	0.040	0.000	0.050	0.035	0.202	0.000	0.167
Run 3	1/16/2019 14:57	0.592	0.040	0.000	0.046	0.128	0.199	0.072	0.162
Run 3	1/16/2019 14:58	0.832	0.041	0.000	0.051	0.081	0.202	0.156	0.168
Run 3	1/16/2019 14:59	0.772	0.042	0.000	0.049	0.079	0.203	0.203	0.170
Run 3	1/16/2019 15:00	0.686	0.040	0.000	0.049	0.058	0.203	0.019	0.168
Run 3	1/16/2019 15:01	0.525	0.040	0.000	0.048	0.086	0.202	0.000	0.166
Run 3	1/16/2019 15:02	0.570	0.040	0.000	0.049	0.097	0.203	0.000	0.167
Run 3	1/16/2019 15:03	0.501	0.039	0.000	0.050	0.128	0.201	0.000	0.167
Run 3	1/16/2019 15:04	0.387	0.040	0.000	0.048	0.080	0.203	0.024	0.168
Run 3	1/16/2019 15:05	0.492	0.040	0.000	0.049	0.065	0.202	0.000	0.165
Run 3	1/16/2019 15:06	0.660	0.042	0.000	0.052	0.103	0.201	0.067	0.170
Run 3	1/16/2019 15:07	0.758	0.041	0.000	0.051	0.091	0.202	0.127	0.173
Run 3	1/16/2019 15:08	0.816	0.039	0.000	0.048	0.084	0.202	0.000	0.166
Run 3	1/16/2019 15:09	0.890	0.041	0.000	0.050	0.061	0.200	0.000	0.172
Run 3	1/16/2019 15:10	0.696	0.041	0.001	0.048	0.082	0.200	0.100	0.167
Run 3	1/16/2019 15:11	0.704	0.040	0.000	0.048	0.099	0.200	0.000	0.165
Run 3	1/16/2019 15:12	0.515	0.038	0.000	0.050	0.108	0.200	0.317	0.163
Run 3	1/16/2019 15:13	0.338	0.040	0.000	0.047	0.075	0.200	0.241	0.162
Run 3	1/16/2019 15:14	0.346	0.040	0.000	0.051	0.064	0.202	0.174	0.167
Run 3	1/16/2019 15:15	0.317	0.041	0.000	0.050	0.134	0.199	0.222	0.170
Run 3	1/16/2019 15:16	0.395	0.039	0.000	0.048	0.124	0.200	0.021	0.163
Run 3	1/16/2019 15:17	0.380	0.040	0.000	0.054	0.097	0.203	0.187	0.170
Run 3	1/16/2019 15:18	0.297	0.038	0.000	0.047	0.112	0.201	0.000	0.161
Run 3	1/16/2019 15:19	0.281	0.040	0.000	0.051	0.072	0.201	0.055	0.170
	Average	0.454	0.040	0.006	0.050	0.083	0.195	0.100	0.167

	Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 4	1/16/2019 15:45	0.358	0.039	0.000	0.048	0.065	0.203	0.000	0.168
Run 4	1/16/2019 15:46	0.284	0.041	0.000	0.049	0.056	0.200	0.092	0.174
Run 4	1/16/2019 15:47	0.395	0.041	0.000	0.049	0.110	0.199	0.240	0.166
Run 4	1/16/2019 15:48	0.389	0.040	0.000	0.047	0.114	0.200	0.145	0.165
Run 4	1/16/2019 15:49	0.300	0.040	0.000	0.050	0.103	0.200	0.278	0.167
Run 4	1/16/2019 15:50	0.255	0.038	0.000	0.049	0.013	0.201	0.025	0.165
Run 4	1/16/2019 15:51	0.261	0.043	0.000	0.051	0.081	0.199	0.131	0.175
Run 4	1/16/2019 15:52	0.377	0.040	0.000	0.046	0.109	0.200	0.192	0.164
Run 4	1/16/2019 15:53	0.402	0.040	0.000	0.051	0.170	0.201	0.195	0.170
Run 4	1/16/2019 15:54	0.289	0.041	0.000	0.049	0.054	0.201	0.081	0.169
Run 4	1/16/2019 15:55	0.393	0.042	0.000	0.055	0.068	0.200	0.384	0.169
Run 4	1/16/2019 15:56	0.422	0.039	0.000	0.047	0.123	0.201	0.157	0.162
Run 4	1/16/2019 15:57	0.414	0.040	0.000	0.048	0.114	0.202	0.182	0.162
Run 4	1/16/2019 15:58	0.359	0.040	0.000	0.049	0.081	0.202	0.106	0.162
Run 4	1/16/2019 15:59	0.282	0.040	0.000	0.048	0.049	0.202	0.056	0.169
Run 4	1/16/2019 16:00	0.243	0.039	0.000	0.047	0.069	0.203	0.109	0.163
Run 4	1/16/2019 16:01	0.321	0.040	0.000	0.050	0.106	0.201	0.180	0.164
Run 4	1/16/2019 16:02	0.324	0.041	0.000	0.051	0.104	0.202	0.194	0.165
Run 4	1/16/2019 16:03	0.274	0.039	0.000	0.049	0.035	0.206	0.140	0.166
Run 4	1/16/2019 16:04	0.287	0.041	0.005	0.050	0.065	0.205	0.209	0.168
Run 4	1/16/2019 16:05	0.403	0.041	0.000	0.050	0.124	0.202	0.045	0.169
Run 4	1/16/2019 16:06	0.451	0.039	0.000	0.053	0.121	0.203	0.322	0.163
Run 4	1/16/2019 16:07	0.470	0.041	0.000	0.052	0.101	0.205	0.111	0.171
Run 4	1/16/2019 16:08	0.334	0.039	0.000	0.048	0.065	0.205	0.071	0.165
Run 4	1/16/2019 16:09	0.221	0.040	0.000	0.048	0.071	0.202	0.103	0.167
Run 4	1/16/2019 16:10	0.372	0.040	0.000	0.048	0.131	0.203	0.328	0.171
Run 4	1/16/2019 16:11	0.351	0.040	0.000	0.051	0.124	0.205	0.063	0.165
Run 4	1/16/2019 16:12	0.266	0.041	0.000	0.052	0.048	0.203	0.183	0.174
Run 4	1/16/2019 16:13	0.282	0.040	0.000	0.048	0.072	0.203	0.244	0.168
Run 4	1/16/2019 16:14	0.251	0.041	0.000	0.049	0.056	0.189	0.182	0.167
Run 4	1/16/2019 16:15								
Run 4	1/16/2019 16:28	0.838	0.041	0.000	0.053	0.111	0.203	0.266	0.167
Run 4	1/16/2019 16:29	0.960	0.042	0.000	0.051	0.112	0.204	0.318	0.178
Run 4	1/16/2019 16:30	0.884	0.040	0.000	0.053	0.051	0.205	0.172	0.169
Run 4	1/16/2019 16:31	0.866	0.040	0.000	0.051	0.073	0.204	0.303	0.171
Run 4	1/16/2019 16:32	0.633	0.042	0.000	0.053	0.066	0.204	0.316	0.176
Run 4	1/16/2019 16:33	0.645	0.040	0.000	0.050	0.099	0.205	0.014	0.172
Run 4	1/16/2019 16:34	0.583	0.041	0.000	0.050	0.102	0.206	0.188	0.167
Run 4	1/16/2019 16:35	0.534	0.040	0.000	0.051	0.047	0.207	0.018	0.170
Run 4	1/16/2019 16:36	0.501	0.040	0.000	0.049	0.043	0.205	0.018	0.168
Run 4	1/16/2019 16:37	0.673	0.041	0.000	0.051	0.124	0.204	0.248	0.165
Run 4	1/16/2019 16:38	0.764	0.042	0.000	0.050	0.062	0.203	0.232	0.167
Run 4	1/16/2019 16:39	0.682	0.041	0.000	0.052	0.058	0.205	0.292	0.173
Run 4	1/16/2019 16:40	0.607	0.042	0.000	0.052	0.042	0.205	0.242	0.173
Run 4	1/16/2019 16:41	0.460	0.041	0.000	0.049	0.049	0.204	0.117	0.171
Run 4	1/16/2019 16:42	0.551	0.039	0.000	0.050	0.085	0.204	0.000	0.168
Run 4	1/16/2019 16:43	0.566	0.040	0.000	0.049	0.077	0.205	0.129	0.169
Run 4	1/16/2019 16:44	0.483	0.042	0.000	0.053	0.047	0.204	0.000	0.176
Run 4	1/16/2019 16:45	0.561	0.041	0.000	0.052	0.051	0.204	0.131	0.169
Run 4	1/16/2019 16:46	0.717	0.040	0.000	0.050	0.087	0.204	0.000	0.174

	Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 4	1/16/2019 16:47	0.685	0.042	0.000	0.051	0.107	0.204	0.000	0.172
Run 4	1/16/2019 16:48	0.702	0.041	0.000	0.050	0.034	0.203	0.086	0.170
Run 4	1/16/2019 16:49	0.516	0.042	0.000	0.050	0.042	0.205	0.014	0.178
Run 4	1/16/2019 16:50	0.373	0.040	0.000	0.050	0.059	0.203	0.000	0.175
Run 4	1/16/2019 16:51	0.584	0.042	0.000	0.051	0.130	0.205	0.128	0.177
Run 4	1/16/2019 16:52	0.604	0.041	0.000	0.049	0.069	0.203	0.095	0.174
Run 4	1/16/2019 16:53	0.461	0.041	0.000	0.049	0.045	0.203	0.144	0.175
Run 4	1/16/2019 16:54	0.499	0.039	0.000	0.047	0.056	0.202	0.344	0.164
Run 4	1/16/2019 16:55	0.422	0.039	0.000	0.049	0.129	0.201	0.158	0.168
Run 4	1/16/2019 16:56	0.389	0.038	0.000	0.050	0.072	0.185	0.000	0.172
Run 4	1/16/2019 16:57	0.000	0.051	0.014	0.049	0.020	0.039	0.436	0.189
	Average	0.436	0.040	0.006	0.050	0.075	0.190	0.147	0.168
Run 5	1/16/2019 18:35	0.681	0.04	0	0.052	0.112	0.196	0.371	0.172
Run 5	1/16/2019 18:36	0.678	0.041	0	0.051	0.125	0.198	0.174	0.174
Run 5	1/16/2019 18:37	0.748	0.041	0	0.05	0.128	0.201	0.334	0.168
Run 5	1/16/2019 18:38	0.561	0.04	0	0.051	0.09	0.201	0.193	0.168
Run 5	1/16/2019 18:39	0.605	0.041	0	0.049	0.078	0.2	0.213	0.169
Run 5	1/16/2019 18:40	0.751	0.042	0	0.05	0.148	0.2	0.333	0.173
Run 5	1/16/2019 18:41	0.832	0.042	0	0.051	0.123	0.202	0.193	0.176
Run 5	1/16/2019 18:42	0.71	0.041	0	0.053	0.084	0.203	0.34	0.175
Run 5	1/16/2019 18:43	0.759	0.042	0	0.05	0.084	0.201	0.303	0.174
Run 5	1/16/2019 18:44	0.672	0.04	0	0.052	0.095	0.201	0	0.17
Run 5	1/16/2019 18:45	0.721	0.042	0	0.054	0.062	0.196	0.219	0.171
Run 5	1/16/2019 18:46								
Run 5	1/16/2019 18:47								
Run 5	1/16/2019 18:48								
Run 5	1/16/2019 18:49								
Run 5	1/16/2019 18:50								
Run 5	1/16/2019 18:51	0.797	0.04	0	0.049	0.115	0.201	0.401	0.169
Run 5	1/16/2019 18:52								
Run 5	1/16/2019 18:53								
Run 5	1/16/2019 18:54								
Run 5	1/16/2019 18:55	0.747	0.04	0	0.051	0.155	0.2	0.368	0.169
Run 5	1/16/2019 18:56	0.65	0.041	0	0.051	0.113	0.202	0.192	0.176
Run 5	1/16/2019 18:57	0.759	0.043	0	0.052	0.073	0.198	0.271	0.178
Run 5	1/16/2019 18:58	0.781	0.042	0	0.054	0.114	0.189	0.282	0.172
Run 5	1/16/2019 18:59	0.755	0.041	0	0.051	0.106	0.186	0.465	0.167
Run 5	1/16/2019 19:00	0.671	0.04	0	0.049	0.103	0.174	0.325	0.165
Run 5	1/16/2019 19:01								
Run 5	1/16/2019 19:02								
Run 5	1/16/2019 19:03								
Run 5	1/16/2019 19:04								
Run 5	1/16/2019 19:05								
Run 5	1/16/2019 19:06								
Run 5	1/16/2019 19:07								
Run 5	1/16/2019 19:08	0.684	0.041	0	0.052	0.133	0.18	0.292	0.165
Run 5	1/16/2019 19:09	0.655	0.042	0	0.053	0.112	0.172	0.168	0.168
Run 5	1/16/2019 19:10	0.513	0.042	0	0.053	0.077	0.171	0.233	0.169
Run 5	1/16/2019 19:11	0.479	0.04	0	0.052	0.077	0.176	0.137	0.165

	Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Acet-aldehyde (ppm)	SEC (ppm)
Run 5	1/16/2019 19:12	0.588	0.042	0	0.053	0.124	0.185	0.251	0.172
Run 5	1/16/2019 19:13	0.679	0.041	0	0.05	0.122	0.193	0.315	0.168
Run 5	1/16/2019 19:14	0.633	0.042	0	0.052	0.096	0.19	0.148	0.168
Run 5	1/16/2019 19:15	0.747	0.043	0	0.054	0.072	0.18	0.313	0.176
Run 5	1/16/2019 19:16	0.603	0.041	0	0.05	0.148	0.177	0.046	0.17
Run 5	1/16/2019 19:17	0.664	0.039	0	0.049	0.114	0.176	0.216	0.167
Run 5	1/16/2019 19:18	0.627	0.039	0	0.051	0.108	0.184	0.246	0.167
Run 5	1/16/2019 19:19	0.51	0.041	0	0.051	0.086	0.19	0.238	0.169
Run 5	1/16/2019 19:20	0.419	0.041	0	0.052	0.067	0.135	0.185	0.162
Run 5	1/16/2019 19:21	0.231	0.038	0.009	0.05	0.04	0.057	0.083	0.15
Run 5	1/16/2019 19:22								
Run 5	1/16/2019 19:23								
Run 5	1/16/2019 19:24								
Run 5	1/16/2019 19:25								
Run 5	1/16/2019 19:26								
Run 5	1/16/2019 19:27								
Run 5	1/16/2019 19:28								
Run 5	1/16/2019 19:29								
Run 5	1/16/2019 19:30								
Run 5	1/16/2019 19:31								
Run 5	1/16/2019 19:32	0.547	0.041	0	0.052	0.107	0.19	0.258	0.168
Run 5	1/16/2019 19:33	0.567	0.042	0	0.053	0.073	0.189	0.103	0.167
Run 5	1/16/2019 19:34	0.575	0.042	0	0.055	0.091	0.187	0.372	0.175
Run 5	1/16/2019 19:35	0.741	0.044	0	0.056	0.117	0.186	0.492	0.175
Run 5	1/16/2019 19:36	0.893	0.042	0	0.054	0.132	0.187	0.301	0.166
Run 5	1/16/2019 19:37	0.886	0.042	0	0.054	0.037	0.19	0.369	0.171
Run 5	1/16/2019 19:38	0.97	0.042	0	0.053	0.046	0.187	0.426	0.171
Run 5	1/16/2019 19:39	1.047	0.042	0	0.054	0.074	0.174	0.206	0.173
Run 5	1/16/2019 19:40	0.982	0.041	0	0.053	0.114	0.184	0.498	0.166
Run 5	1/16/2019 19:41	0.873	0.042	0	0.052	0.105	0.191	0.46	0.171
Run 5	1/16/2019 19:42	0.788	0.039	0	0.05	0.074	0.195	0.271	0.167
Run 5	1/16/2019 19:43	0.783	0.042	0	0.054	0.07	0.191	0.319	0.174
Run 5	1/16/2019 19:44	0.862	0.042	0	0.051	0.116	0.191	0.268	0.168
Run 5	1/16/2019 19:45	0.936	0.043	0	0.056	0.144	0.195	0.388	0.174
Run 5	1/16/2019 19:46	0.783	0.041	0	0.051	0.063	0.193	0.409	0.176
Run 5	1/16/2019 19:47	0.768	0.042	0	0.054	0.038	0.183	0.159	0.173
Run 5	1/16/2019 19:48	0.826	0.042	0	0.053	0.087	0.191	0.234	0.169
Run 5	1/16/2019 19:49	0.852	0.039	0	0.049	0.12	0.2	0.345	0.169
Run 5	1/16/2019 19:50	0.814	0.04	0	0.049	0.092	0.198	0.48	0.172
Run 5	1/16/2019 19:51	0.673	0.041	0	0.053	0.055	0.191	0.148	0.17
Run 5	1/16/2019 19:52	0.587	0.041	0	0.052	0.082	0.196	0.204	0.166
Run 5	1/16/2019 19:53	0.861	0.042	0	0.053	0.123	0.199	0.328	0.177
Run 5	1/16/2019 19:54	0.9	0.041	0	0.051	0.148	0.201	0.484	0.166
Run 5	1/16/2019 19:55	0.868	0.042	0	0.051	0.057	0.205	0.404	0.173
Run 5	1/16/2019 19:56	0.861	0.042	0	0.051	0.073	0.206	0.617	0.176
Run 5	1/16/2019 19:57	0.921	0.043	0	0.053	0.118	0.204	0.346	0.177
Run 5	1/16/2019 19:58	0.906	0.042	0	0.054	0.143	0.207	0.544	0.171
Run 5	1/16/2019 19:59	0.872	0.042	0	0.052	0.124	0.209	0.419	0.173
Run 5	1/16/2019 20:00	0.346	0.038	0	0.049	0.052	0.107	0.246	0.155

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Pressure (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
5-Dec	730	7.98	0.111	14.7	181	NA	0.0%
						100.0%	100.0%
	Average	7.980	0.111				

Date	Time	Direct Spike Results, $Spike_{dir}$		System Spiked Result		Native Concentrations, Unspike		Dilution, DF	Expected Spike Conc., CS	Recovery
		(ppm HCl)	(ppm SF6)	(ppm HCl)	(ppm SF6)	(ppm HCl)	(ppm SF6)			
15-Jan	1530/ 1633	45.63	2.21	3.391	0.198	0.153	-0.001	9.0%	4.2	**79.8%**

APPENDIX II-D
Methane Laboratory Report

Air Control Techniques, P.C.

301 East Durham Rd.
Cary, NC 27513

Enviva - GRE

Client Project # 2333

Analytical Report
(0119-087)

EPA Method 18(Bags)

Methane

Enthalpy Analytical, LLC

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com

800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 78 pages.

Quentisha L. Forrester

QA Review Performed by – Quentisha L. Forrester

Report Issued: 02/05/2019

ENTHALPY ANALYTICAL

Summary of Results

ENTHALPY
ANALYTICAL

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0119-087 EPA Method 18 Tedlar Bag

Project No.: 2333 Enviva - GRE

Summary Table

Sample ID / Concentration (ppm)

Compound	***Run 1***	***Run 2***	***Run 3***	***Run 4***	***Run 5***
Methane	3.85 J	3.75 J	3.78 J	2.98 J	3.68 J

Results

ENTHALPY
ANALYTICAL

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0119-087 EPA Method 18 Tedlar Bag

Project No.: 2333 Enviva - GRE

ROSIEP082_C1-C7.M

Analysis Method Used:

Methane

Sample ID	Filename #1	Filename #2	Filename #3	MDL	Curve Min	Curve Max	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	DF	Conc (ppm)	Spike Recovery	Adj. Conc (ppm)	Flag
S6-M18-1	020B0201.D	020B0202.D	020B0203.D	0.524	5.00	49,920	1.43	1.43	1.43	0.0	3.02	3.08	3.26	4.6	1	3.12	81.1%	3.85	J
S6-M18-2	021B0301.D	021B0302.D	021B0303.D	0.524	5.00	49,920	1.43	1.43	1.43	0.0	3.04	2.93	3.17	4.0	1	3.04	81.1%	3.75	J
S6-M18-3	022B0101.D	022B0102.D	022B0103.D	0.524	5.00	49,920	1.43	1.43	1.43	0.0	3.12	3.02	3.07	1.6	1	3.07	81.1%	3.78	J
S6-M18-4	019B0201.D	019B0202.D	019B0203.D	0.524	5.00	49,920	1.43	1.43	1.43	0.1	2.50	2.36	2.38	3.5	1	2.42	81.1%	2.98	J
S6-M18-5	019B0101.D	019B0102.D	019B0103.D	0.524	5.00	49,920	1.43	1.43	1.43	0.0	3.10	2.99	2.88	3.8	1	2.99	81.1%	3.68	J
S6-M18-1 SP	019B0301.D	019B0302.D	019B0303.D	0.524	5.00	49,920	1.43	1.43	1.43	0.0	10.4	10.7	10.3	2.0	1	10.4	81.1%		

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0119-087 EPA Method 18 Tedlar Bag

Project No.: 2333 Enviva - GRE

Spiked Bag

Run 1 Spike			Methane
Before Spiking	Inj1 (ppmv)		3.02
	Inj2 (ppmv)		3.08
	Inj3 (ppmv)		3.26
	Avg ppmv		3.12
	Bag vol L NTP	3.44	
Gas Spike	Cylinder	EB0091522	
	Expires	9/26/21	
	Press/Temp	773.2 / 67.5	
	Vol (mL)	350	
	Cyl Dil Factor	1	
	Cyl Conc (ppmv)		100
	Vol (mL NTP)	356	0.0356
Totals	Sp Bag Vol L NTP	3.80	
	Corrected Initial (ppmv)		2.83
	Spike Amount (mL NTP)		0.0356
	Spike Amount (ppmv)		9.39
	Expected (ppmv)		12.2
Result	Inj1 (ppmv)		10.4
	Inj2 (ppmv)		10.7
	Inj3 (ppmv)		10.3
	Avg (ppmv)		10.4
	Recovery		**81.1%**

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0119-087 EPA Method 18 Tedlar Bag

Project No.: 2333 Enviva - GRE

Spike Hold Times

Spiked Bag	Time Spiked	Spike Analyzed	Hold Time (Hours)	Related Bag	Related Bag Sampled Date	Bag Analyzed	Hold Time (Hours)
Run 1 SP	01-22-2019 09:25	01-27-2019 15:43	126.3	***Run 1***	01-16-2019 10:00	01-21-2019 13:01	123.0
				Run 2	01-16-2019 13:00	01-21-2019 14:06	121.1
				Run 3	01-16-2019 15:00	01-21-2019 15:30	120.5
				Run 4	01-16-2019 16:00	01-21-2019 16:35	120.6
				Run 5	01-16-2019 19:00	01-21-2019 11:56	112.9

Narrative Summary

ENTHALPY
ANALYTICAL

Enthalpy Analytical Narrative Summary

Company	Air Control Techniques, P.C.
Analyst	NBT
Parameters	EPA Method 18 Bags

Client #	2333
Job #	0119-087
# Samples	5, 1 S&R

Custody

David Myers received the samples on 1/21/19 after being relinquished by Air Control Techniques, P.C. The samples were received at ambient temperature and in good condition though sample ***S6-M18-5*** was received with a the valve open. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for methane using the analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A).

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. Methane was referenced to certified gas phase standards.

The Gas Chromatograph "Rosie" was equipped with a Flame Ionization Detector for this analysis.

Calibration

The calibration curve is included in the Raw Data section of this report. The data analysis method is referenced in the Analysis Method column on the Detailed Results page.

The first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

Chromatographic Conditions

The acquisition method (AQM_ROSIEP080.M) is included in the Raw Data section of this report.

QC Notes

As required by the method, a recovery study was performed. The bag sample ***S6-M18-1*** was spiked at 9:25AM on 1/22/19. The recovery efficiency values met the method-required limits of 70 to 130%. The recovery efficiency values were used to adjust the associated sample results following equation 18-7 of Method 18.

Enthalpy Analytical Narrative Summary
(continued)

QC Notes (continued)	The analytes of interest were not identified in the analysis of the laboratory blank at concentrations greater than the detection limit.
Reporting Notes	These analytical results are reported on a wet basis. The user of this report should determine the percent moisture in the sample and correct the reported value to ppmvd as appropriate.
	The results presented in this report are representative of the samples as provided to the laboratory.
	These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.

- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.

- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.

- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.

- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.

- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.

- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.

- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).

- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.

- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

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General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

Sample Custody

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Chain of Custody Record

Page 1 of 1

Special Handling:
- ■ Standard Turn Around Time (10 business days)
- ☐ Rush Turn Around Time -- Date Needed________
- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt.
- All Other Samples Disposed of 4 Months from Receipt.

Client Name: Air Control Techniques, PC
Project Manager: John Richards
Report To: David Goshaw

Project Number: 2333
Site Name: Enviva - GRE
Location:

PO#: 2333 9007
Telephone#: 9191 460 7811
Email: dave.goshaw@aircontroltechniques.com

For spiked or duplicate samples: please provide sample volumes for recovery calculations.
For Particulates: please provide tare weights and/or condensed water volumes.

Special Instructions:
M18 analysis for methane, compliance level

A=Air 1=H2SO4 2=NaOH 3=________ 4=________
X=XAD C=Charcoal SG=Silica Gel
G=Grab C=Composite Q=Quality Control

Sample ID	Date	Time	Sample Volume	Type	Matrix	# of VOA Vials	# of Glass	# of Plastic	# of Bags	# of Canisters	# of Tubes	# Other	Analyses:								Notes:
S6-M18-1	1/16	1000											X								methane analysis
S6-M18-2	1/16	1300											X								methane analysis
S6-M18-3	1/16	1500											X								methane analysis
S6-M18-4	1/16	1600											X								methane analysis
S6-M18-5	1/16	1900											X								methane analysis

Relinquished By:	Date:	Received By:	Date:	Time:	Sample Condition Upon Receipt:
[signature]	1/21	[signature]	1-21-19	9:10AM	☐ Iced ☑ Ambient ☐ °C______
					☐ Iced ☐ Ambient ☐ °C______
					☐ Iced ☐ Ambient ☐ °C______

800-1 Capitola Drive • Durham, NC 27713 • (919) 850-4392 • FAX (919) 850-9012 • www.enthalpy.com

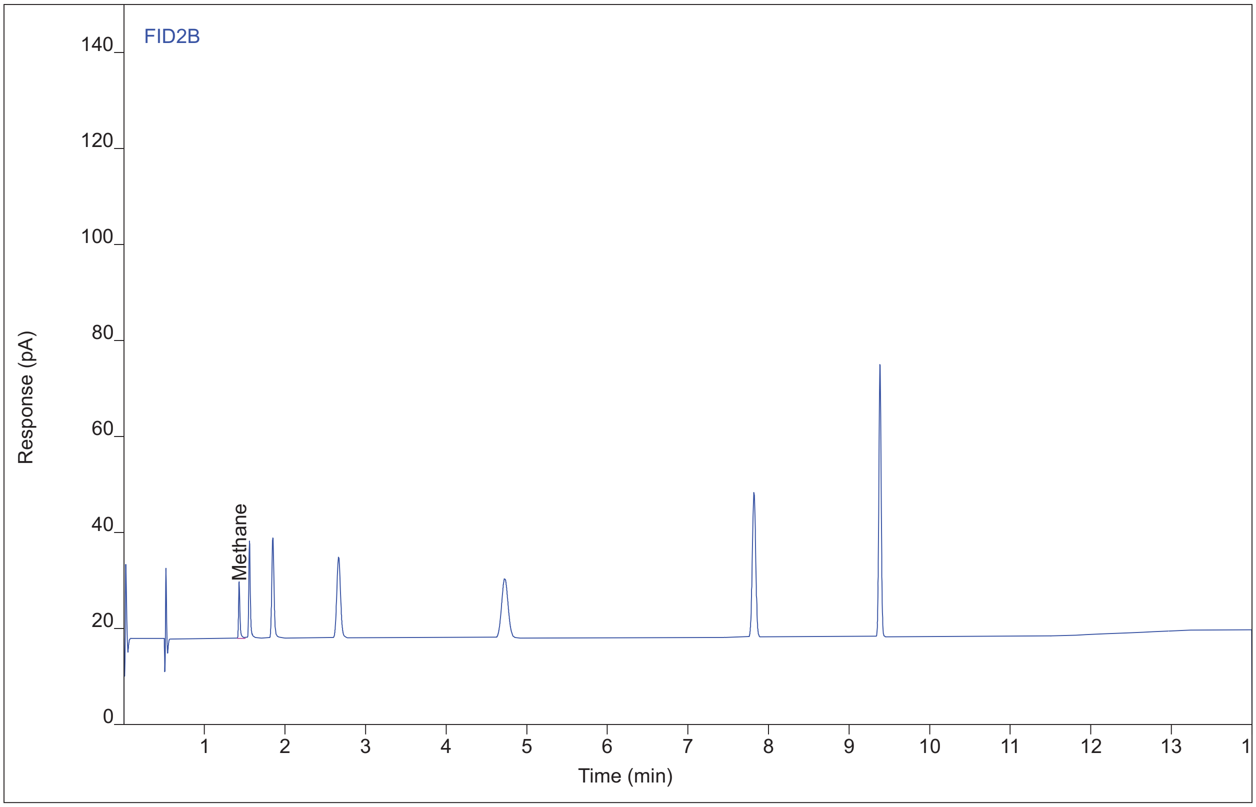
Good Condition Ambient Temp
DSM 01-21-19

Raw Data

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP138 ver.1	Vial Number	Vial 26
Inj Data File	026B2102.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 4
Injection Date	1/21/2019 10:29 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/21/2019 11:42 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	12/13/2018 1:28 PM
Operator	disconnected	Printed	1/28/2019 8:24 AM

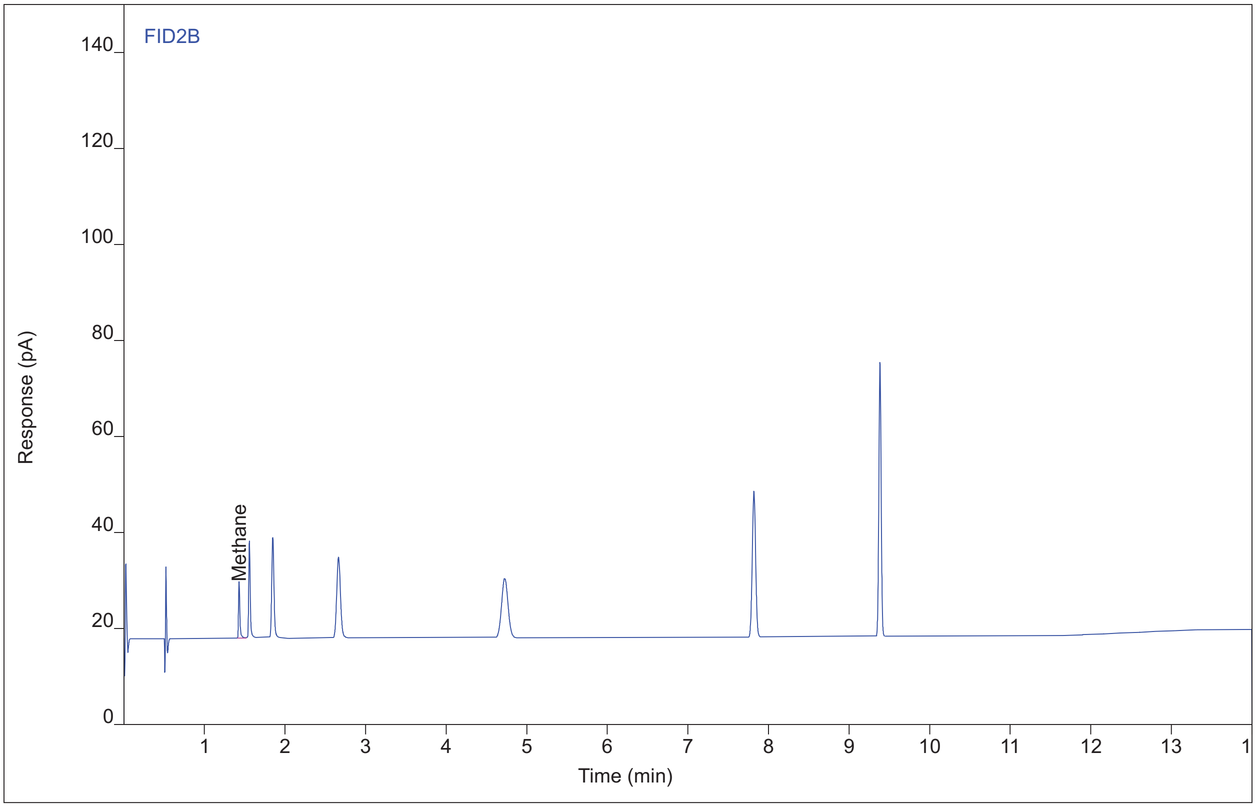


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	14.4138	11.7034	40.7348	1	40.7348	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP138 ver.1	Vial Number	Vial 26
Inj Data File	026B2103.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 4
Injection Date	1/21/2019 10:54 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/21/2019 11:42 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	12/13/2018 1:28 PM
Operator	disconnected	Printed	1/28/2019 8:24 AM

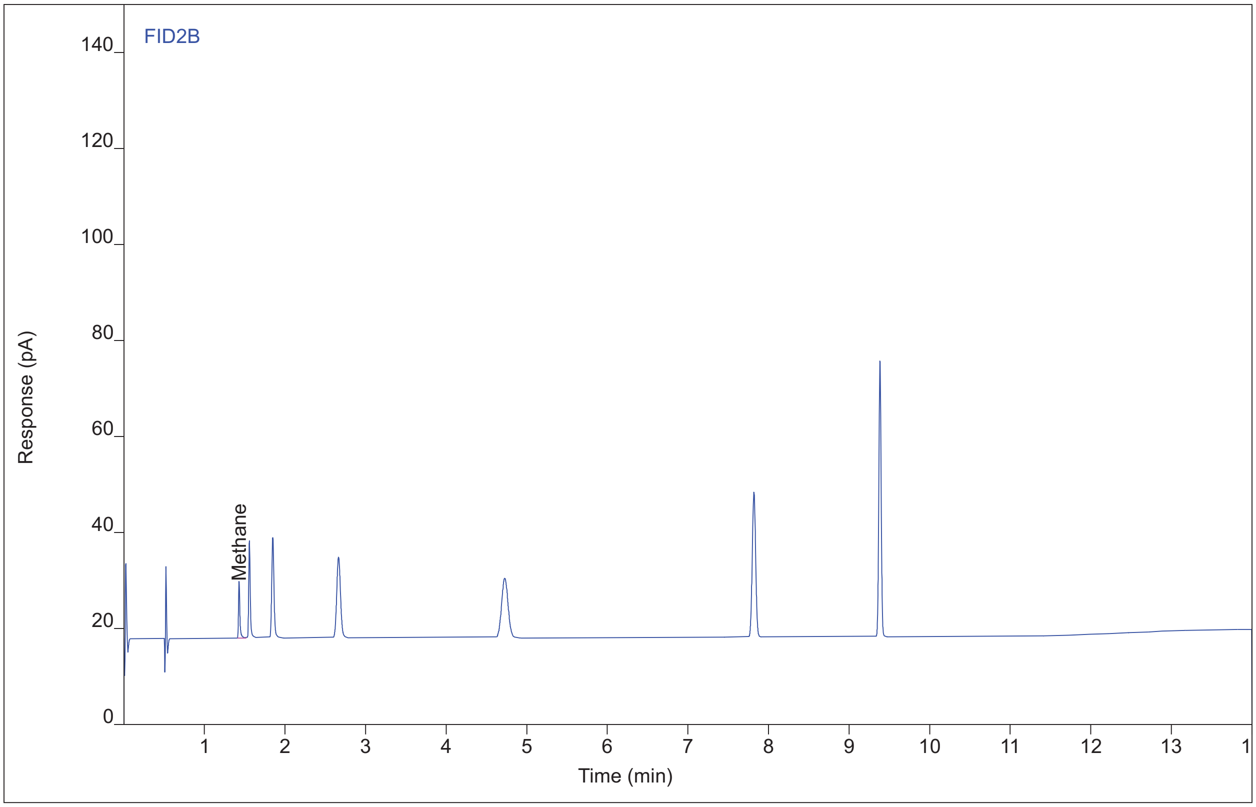


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.2796	11.6805	40.3554	1	40.3554	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP138 ver.1	Vial Number	Vial 26
Inj Data File	026B2104.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	4 of 4
Injection Date	1/21/2019 11:19 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/21/2019 11:42 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	12/13/2018 1:28 PM
Operator	disconnected	Printed	1/28/2019 8:24 AM

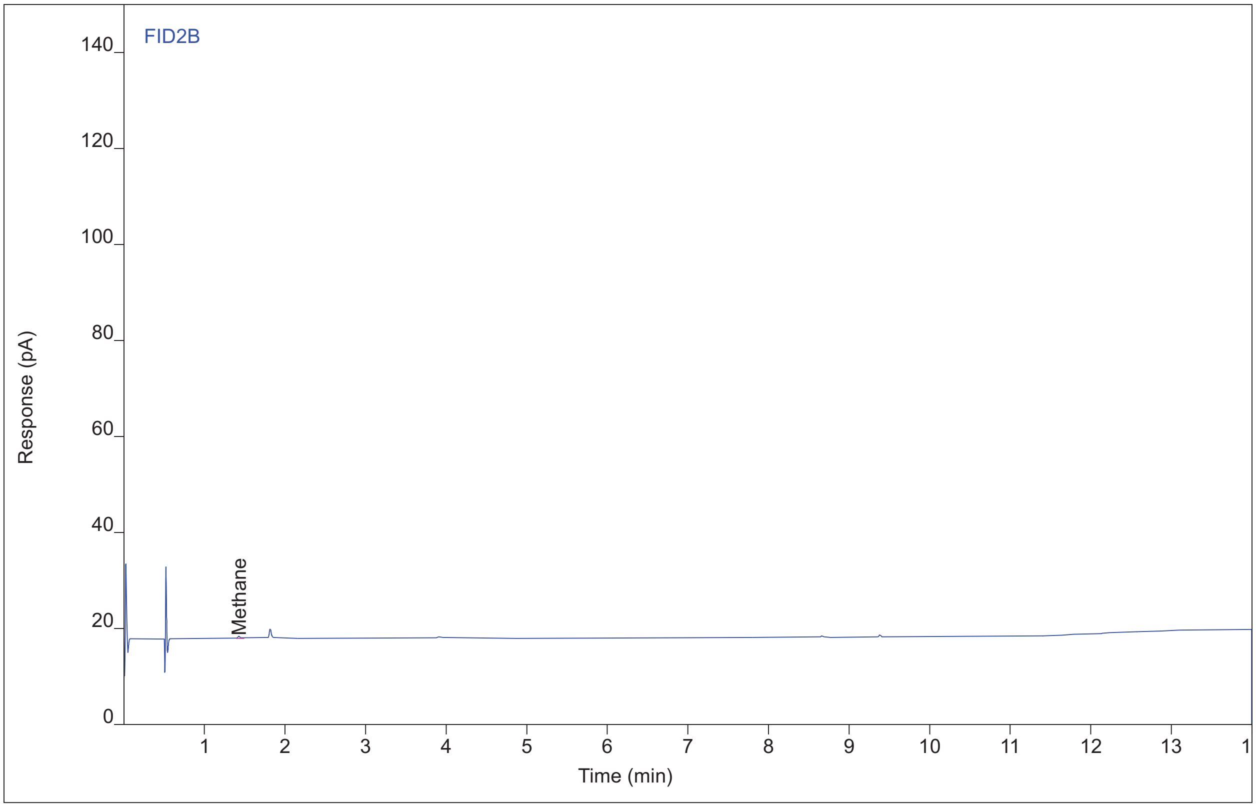


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.2736	11.7475	40.3384	1	40.3384	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 5.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 19
Inj Data File	019B0101.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	1 of 3
Injection Date	1/21/2019 11:56 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

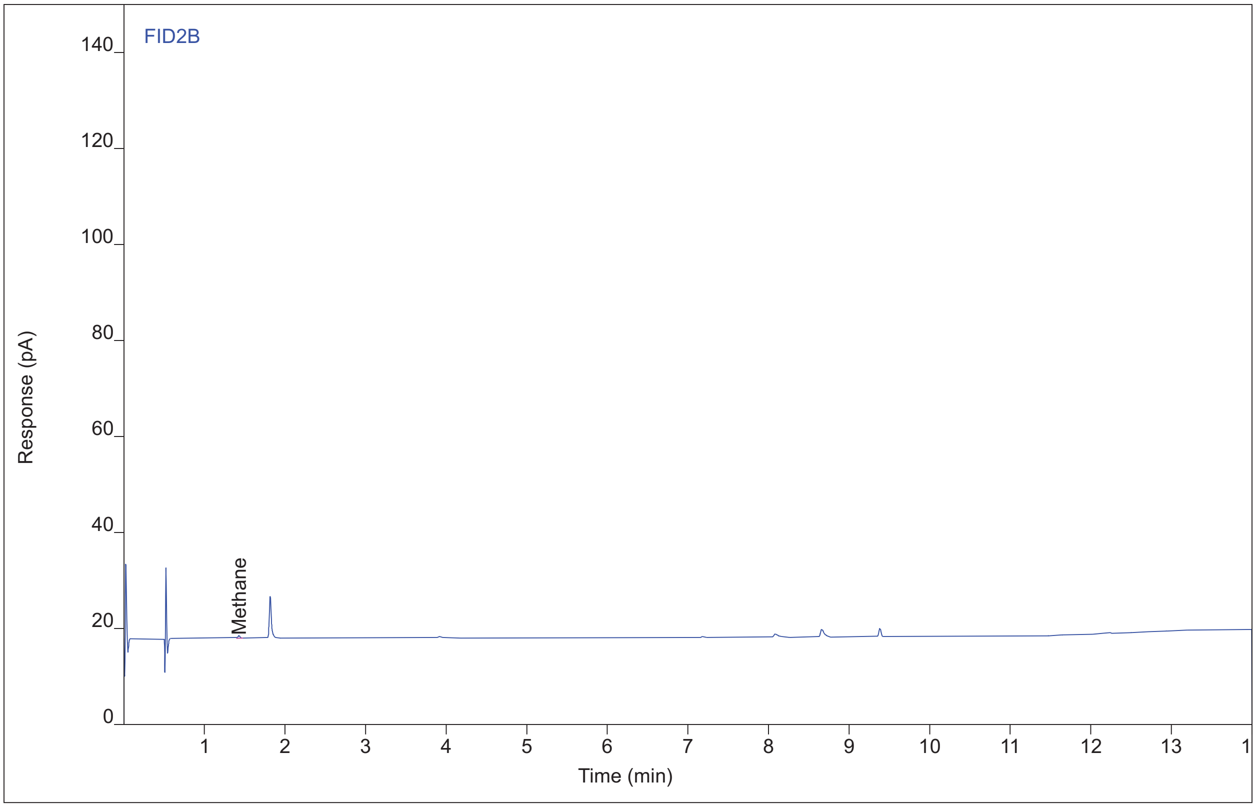


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.10009	0.61085	3.10133	1	3.10133	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 5.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 19
Inj Data File	019B0102.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 3
Injection Date	1/21/2019 12:18 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

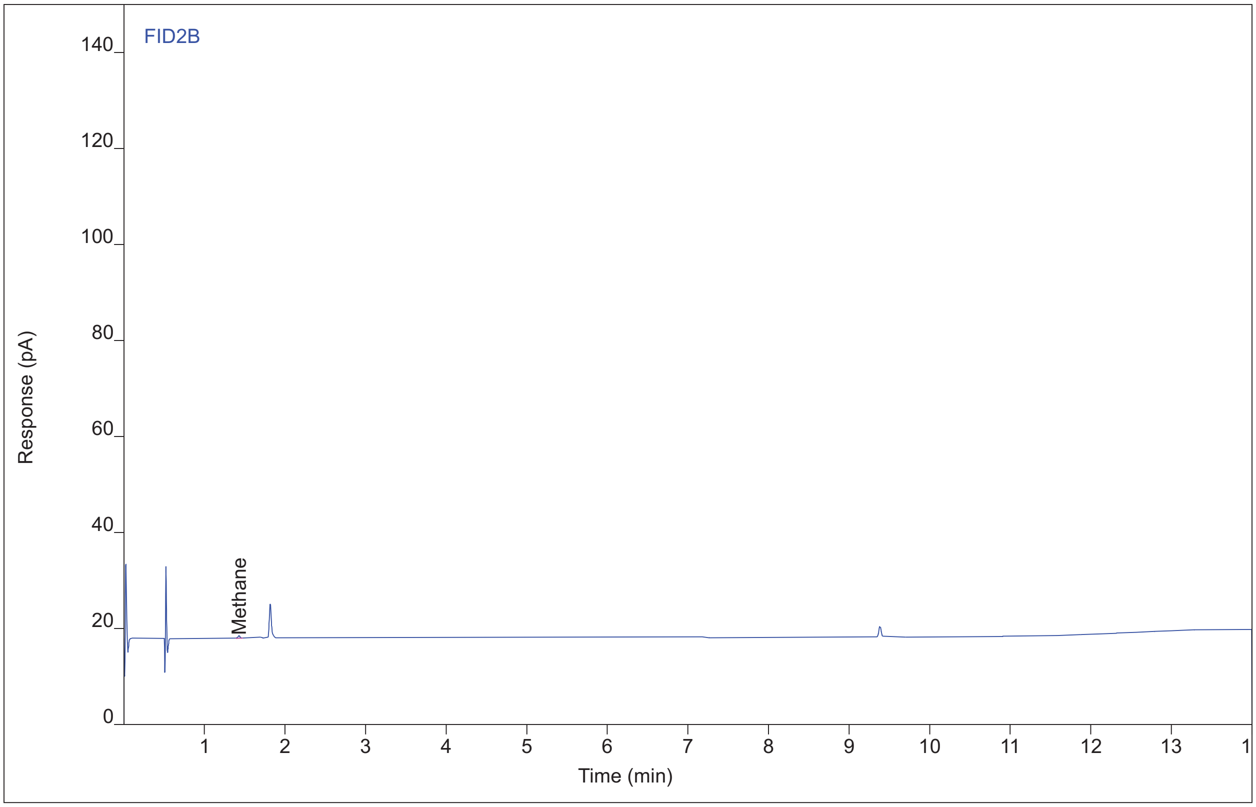


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.05911	0.64719	2.98581	1	2.98581	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 5.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 19
Inj Data File	019B0103.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 3
Injection Date	1/21/2019 12:39 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

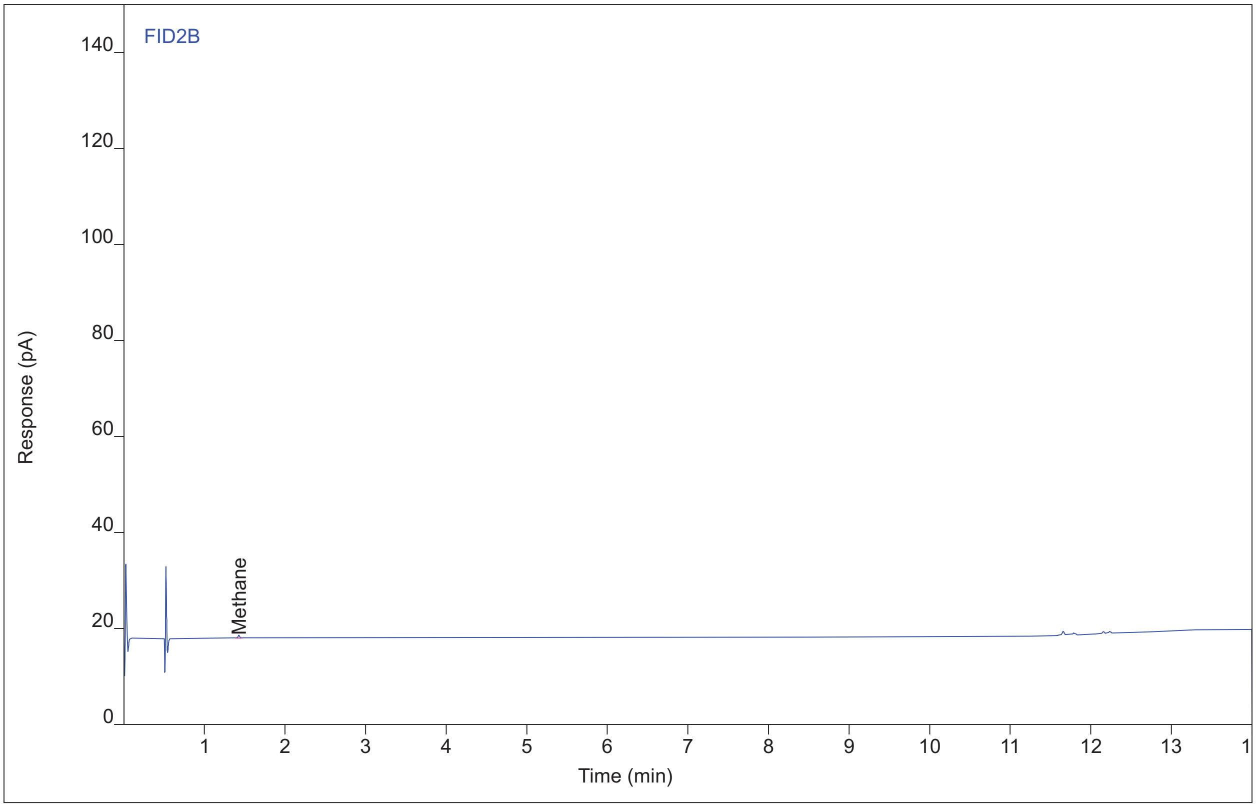


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.02139	0.62931	2.87946	1	2.87946	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 1.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 20
Inj Data File	020B0201.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	1 of 3
Injection Date	1/21/2019 1:01 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

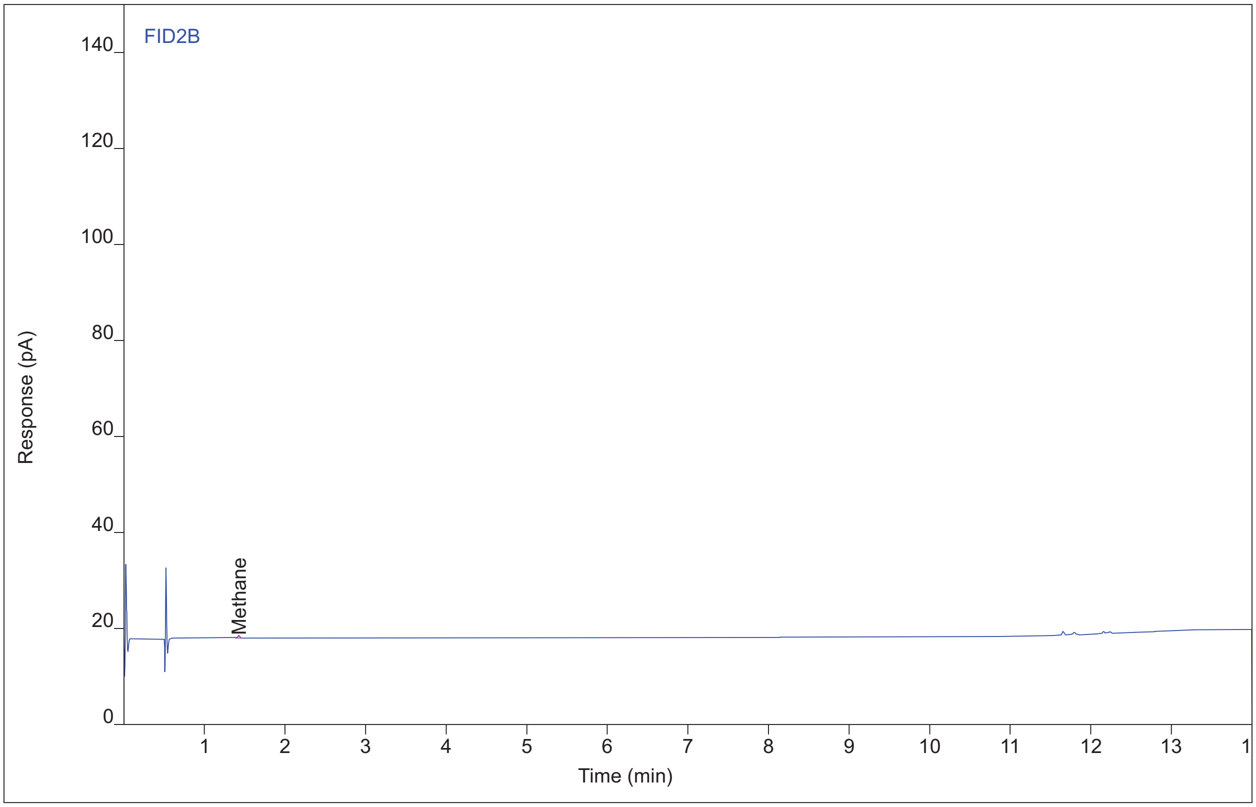


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.07291	0.69014	3.02472	1	3.02472	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 1.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 20
Inj Data File	020B0202.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 3
Injection Date	1/21/2019 1:23 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

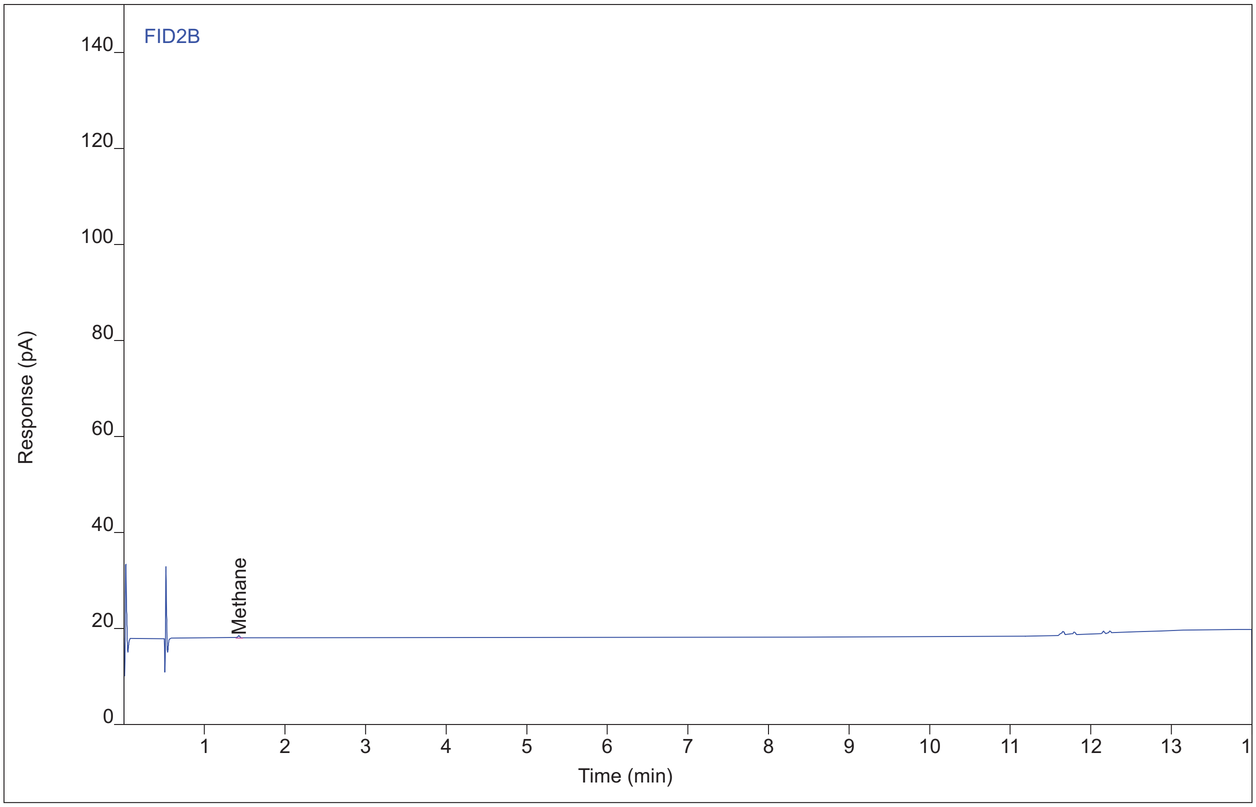


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.09149	0.69355	3.07710	1	3.07710	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 1.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 20
Inj Data File	020B0203.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 3
Injection Date	1/21/2019 1:44 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

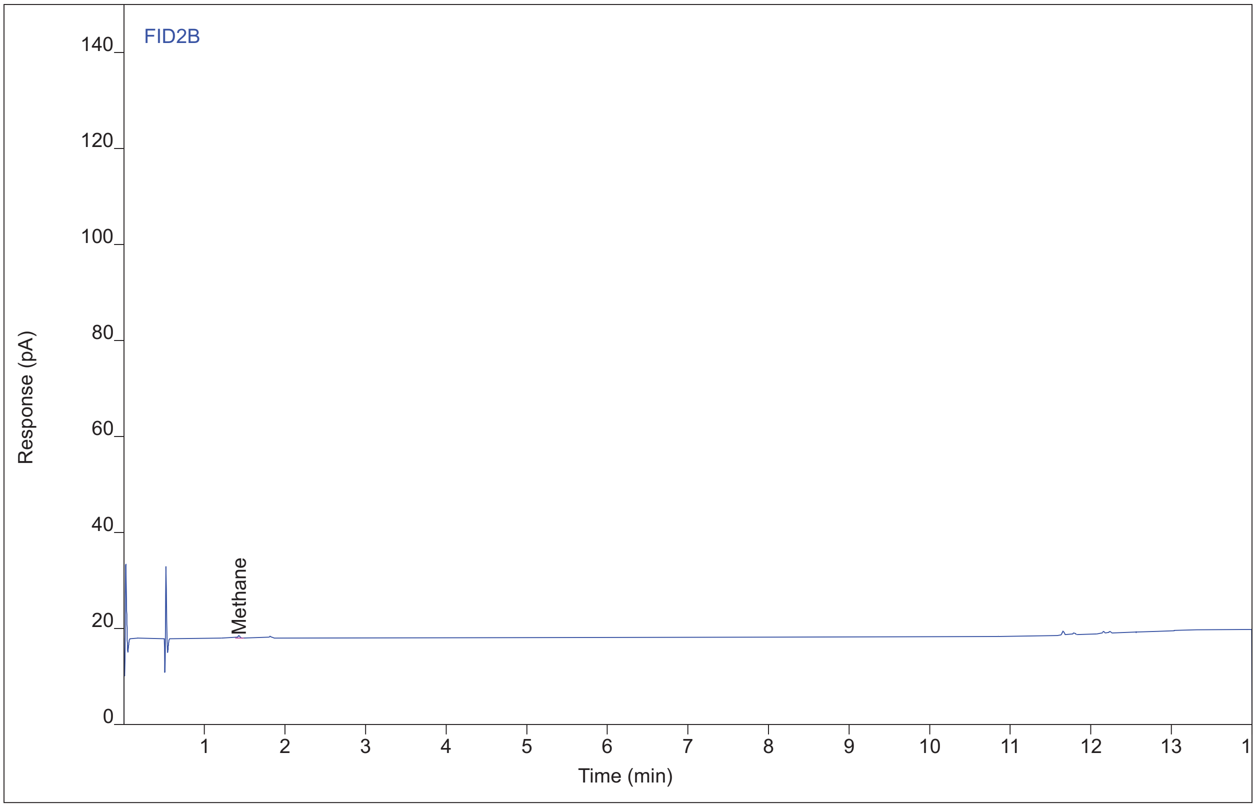


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.15781	0.69517	3.26405	1	3.26405	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 2.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 21
Inj Data File	021B0301.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	1 of 3
Injection Date	1/21/2019 2:06 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

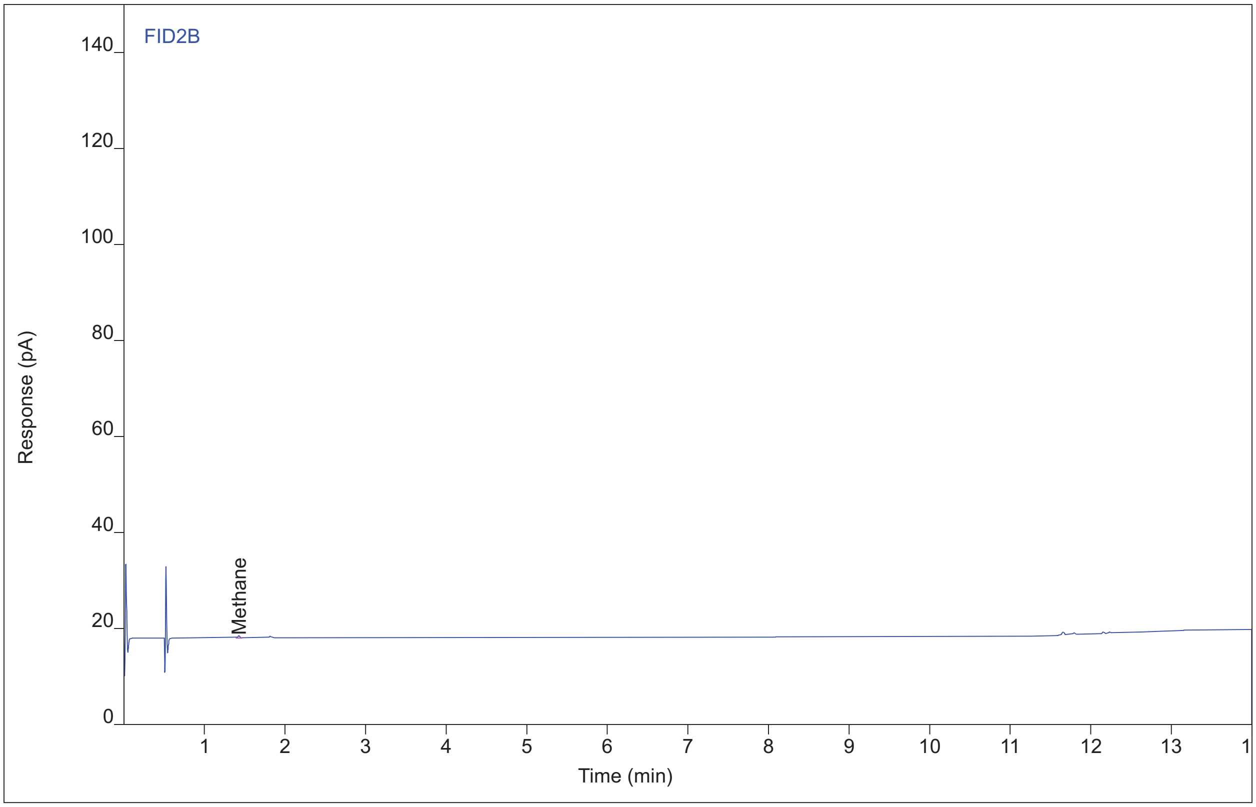


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.07704	0.67330	3.03637	1	3.03637	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 2.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 21
Inj Data File	021B0302.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 3
Injection Date	1/21/2019 2:28 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM

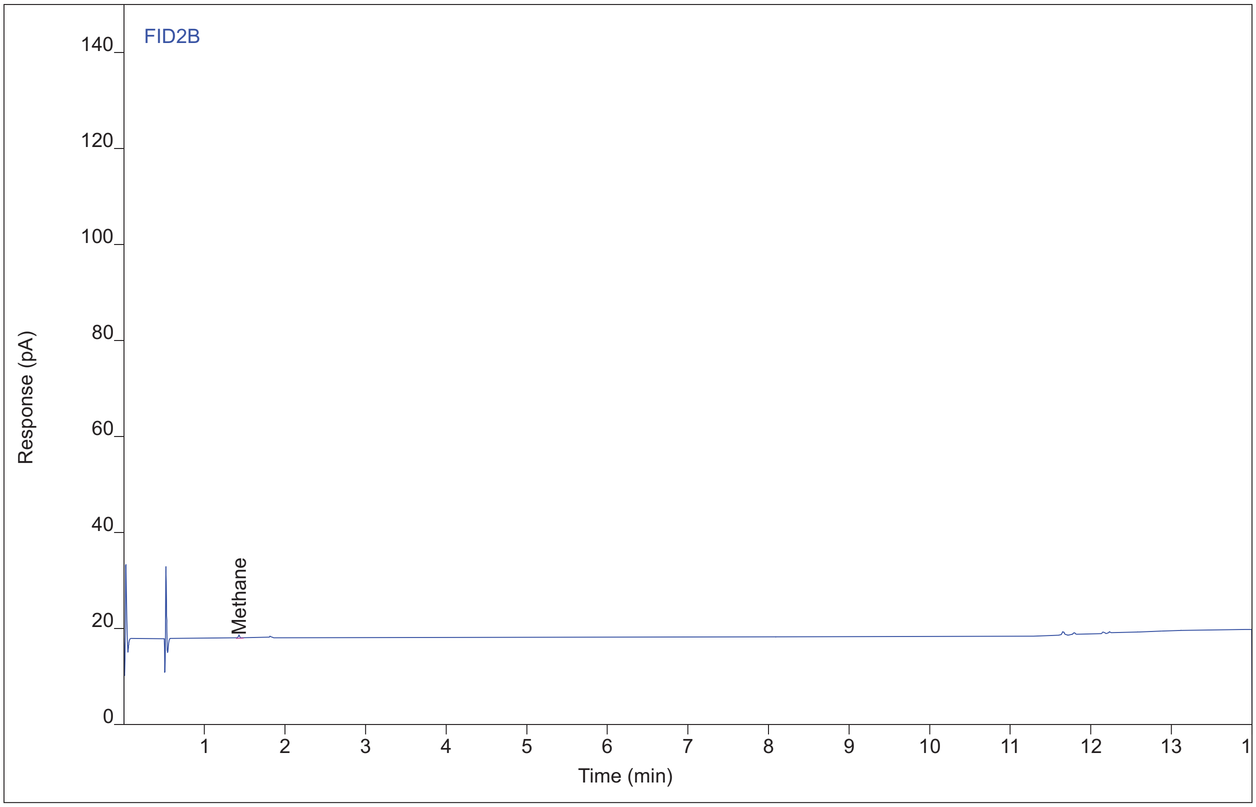


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.03869	0.66506	2.92824	1	2.92824	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 2.Bag	Sample Type	Sample
Sequence Name	ROSIEP141 ver.2	Vial Number	Vial 21
Inj Data File	021B0303.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 3
Injection Date	1/21/2019 2:49 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:35 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	1/22/2019 5:22 AM
Operator	disconnected	Printed	1/28/2019 8:24 AM



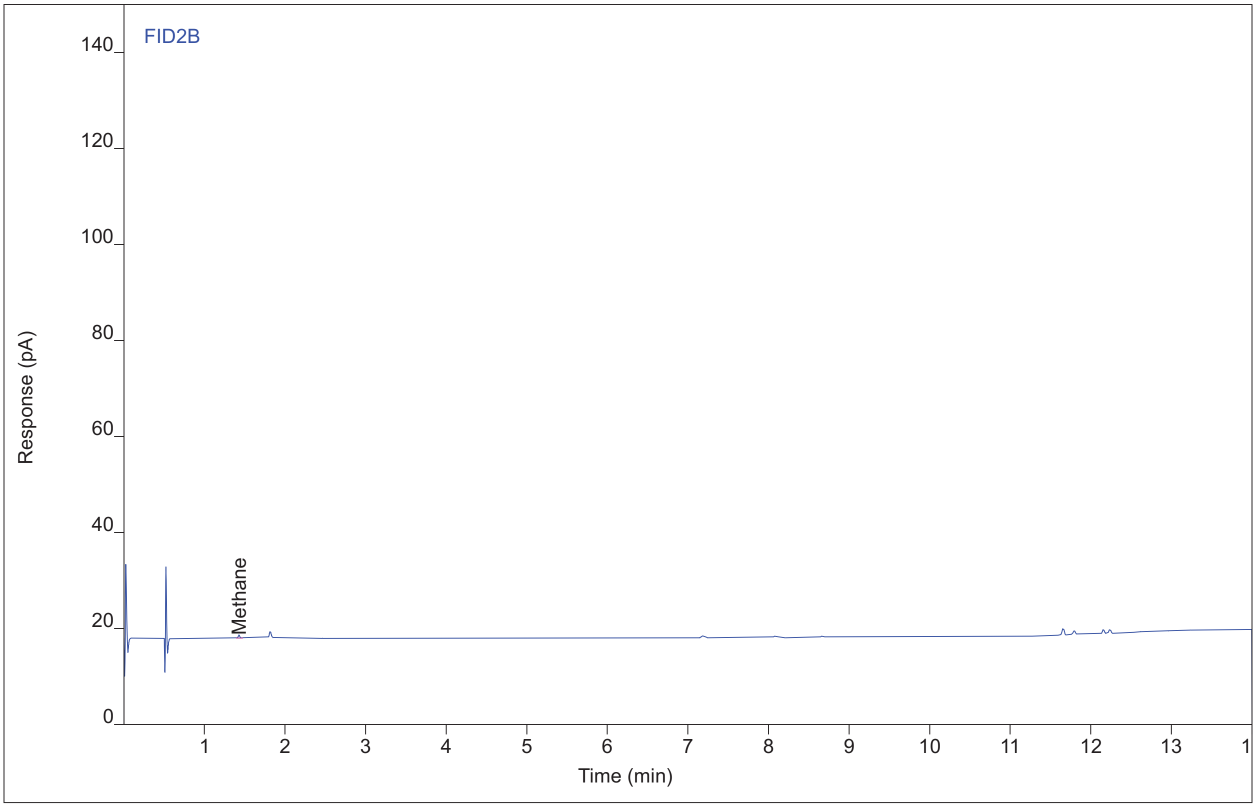
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.12298	0.67683	3.16587	1	3.16587	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 3.Bag
Sequence Name	ROSIEP141A ver.2
Inj Data File	022B0101.D
File Location	GC/2019/Rosie/Quarter 1
Injection Date	1/21/2019 3:30 PM
File Modified	1/22/2019 9:38 AM
Instrument	Rosie
Operator	Nicole West

Sample Type	Sample
Vial Number	Vial 22
Injection Volume	NA
Injection	1 of 3
Acquisition Method	AQM_ROSIEP080.M
Analysis Method	ROSIEP082_C1-C7.M
Method Modified	1/22/2019 5:22 AM
Printed	1/28/2019 8:24 AM

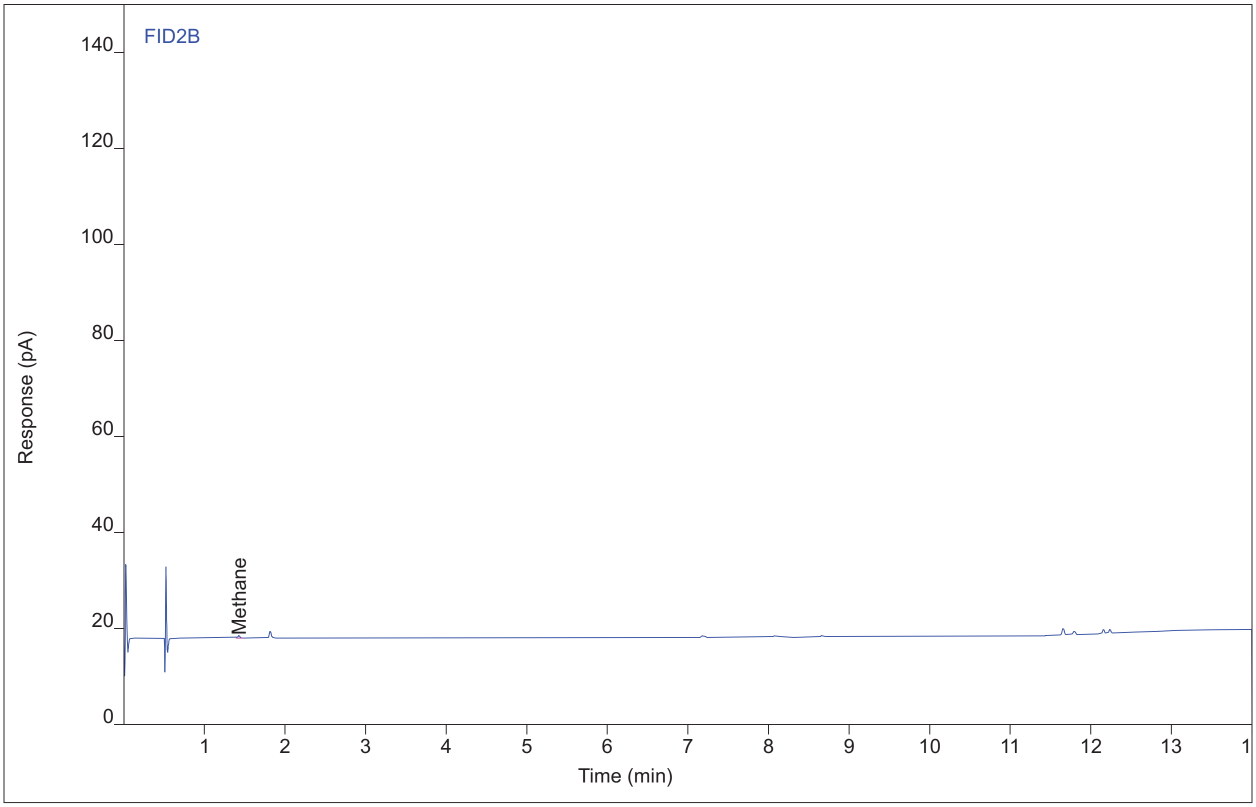


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.10502	0.71978	3.11523	1	3.11523	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 3.Bag	Sample Type	Sample
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 22
Inj Data File	022B0102.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 3
Injection Date	1/21/2019 3:51 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:38 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicole West	Printed	1/28/2019 8:24 AM

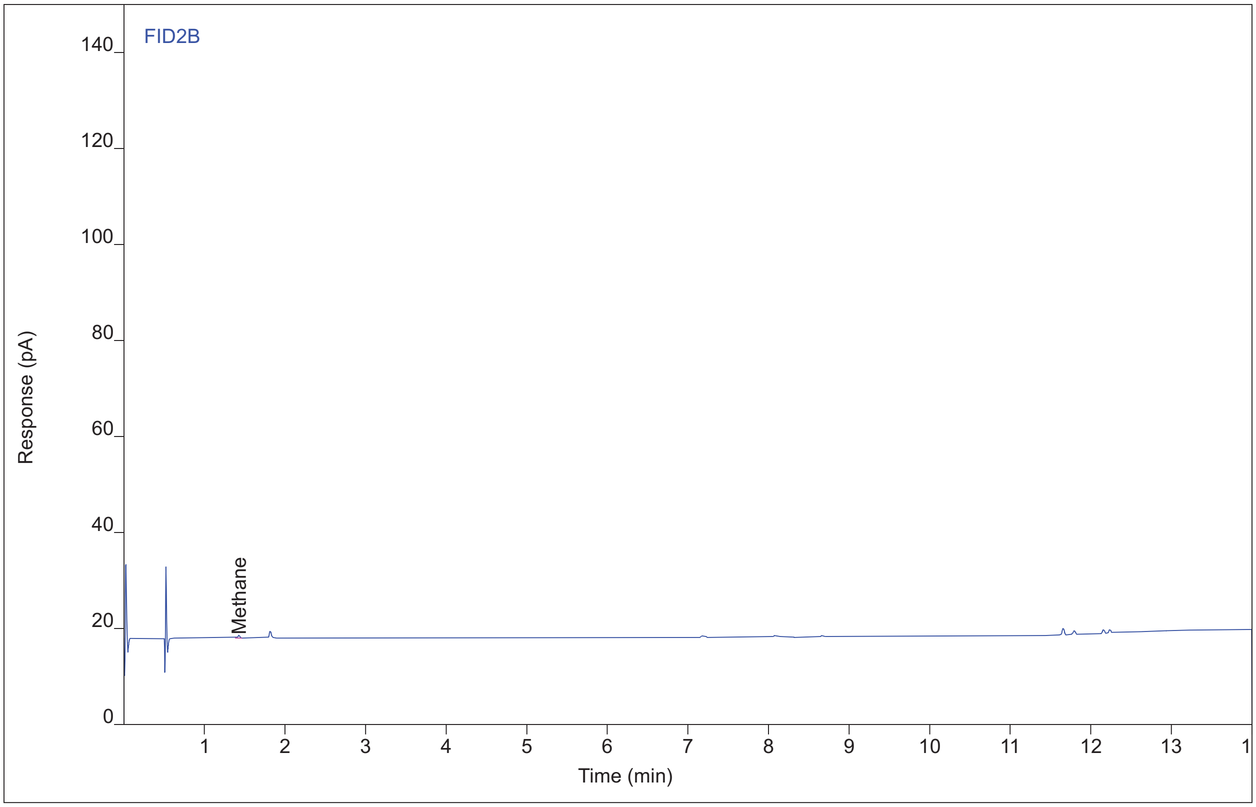


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.07024	0.70528	3.01717	1	3.01717	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 3.Bag	Sample Type	Sample
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 22
Inj Data File	022B0103.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 3
Injection Date	1/21/2019 4:13 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:38 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicole West	Printed	1/28/2019 8:24 AM

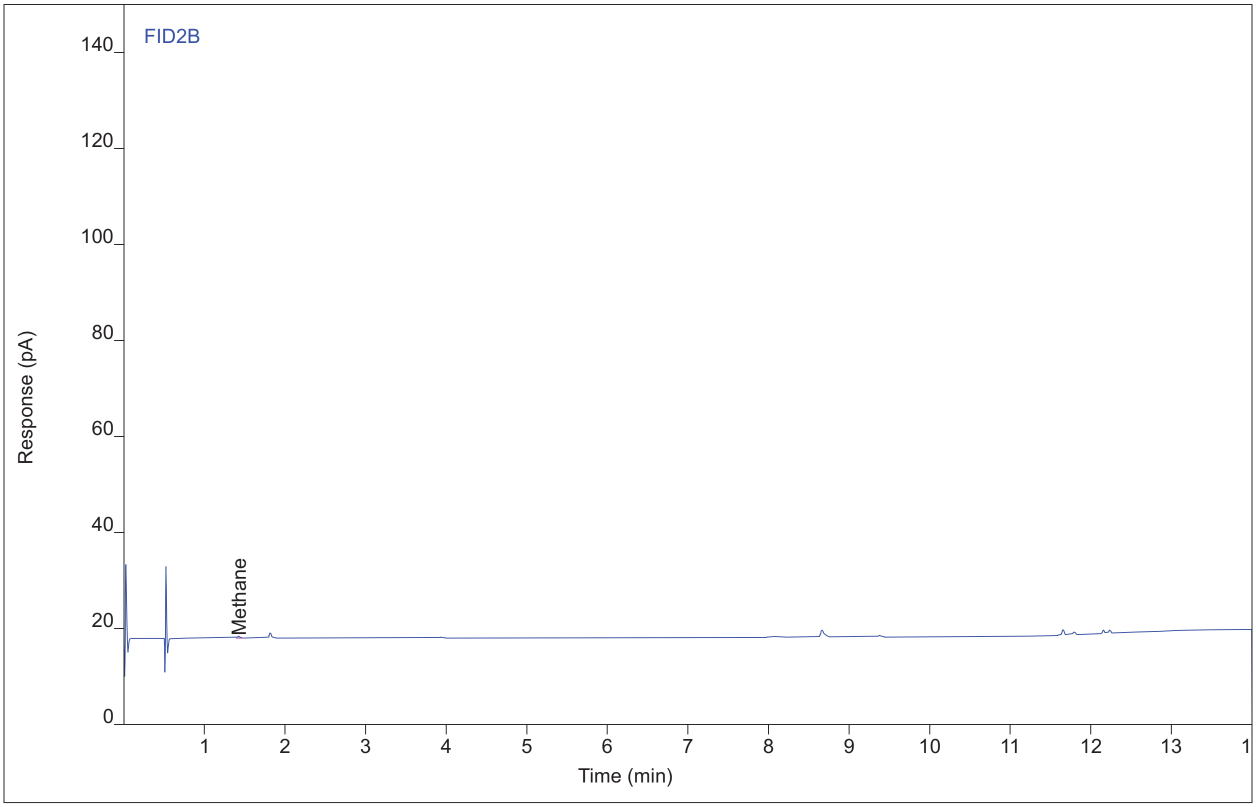


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	1.08887	0.71310	3.06970	1	3.06970	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 4.Bag	Sample Type	Sample
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 19
Inj Data File	019B0201.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	1 of 3
Injection Date	1/21/2019 4:35 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:38 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicole West	Printed	1/28/2019 8:24 AM

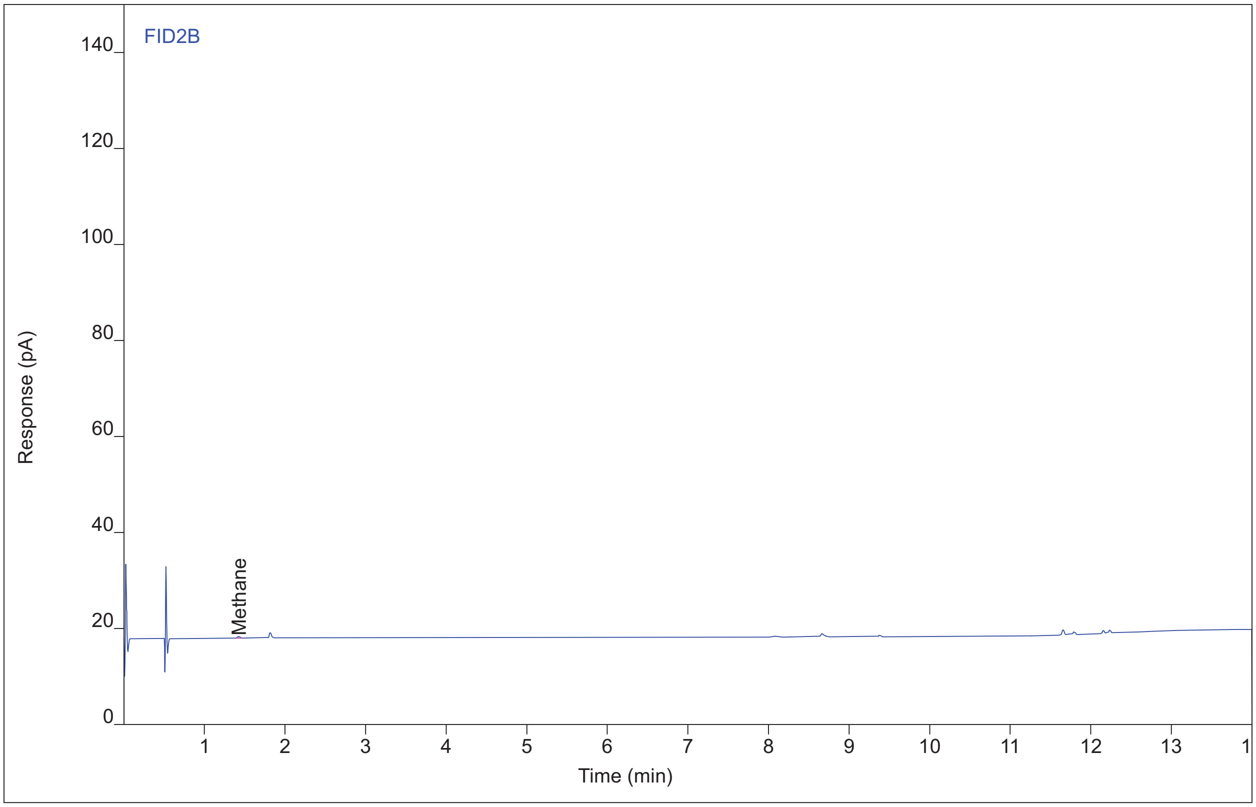


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	0.88661	0.52665	2.49952	1	2.49952	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 4.Bag	Sample Type	Sample
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 19
Inj Data File	019B0202.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 3
Injection Date	1/21/2019 4:56 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:38 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Justin Guenzler	Printed	1/28/2019 8:24 AM

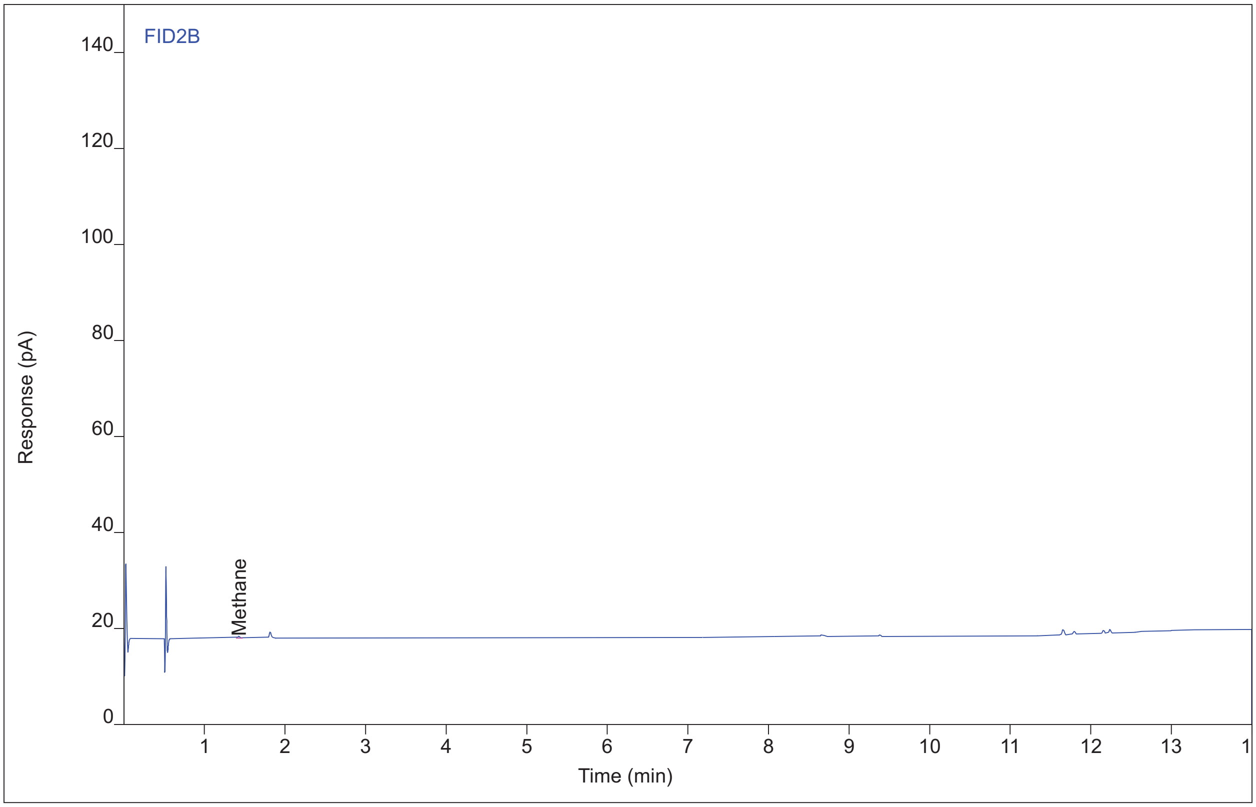


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	0.83820	0.50906	2.36303	1	2.36303	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 4.Bag	Sample Type	Sample
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 19
Inj Data File	019B0203.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 3
Injection Date	1/21/2019 5:18 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:38 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Justin Guenzler	Printed	1/28/2019 8:24 AM

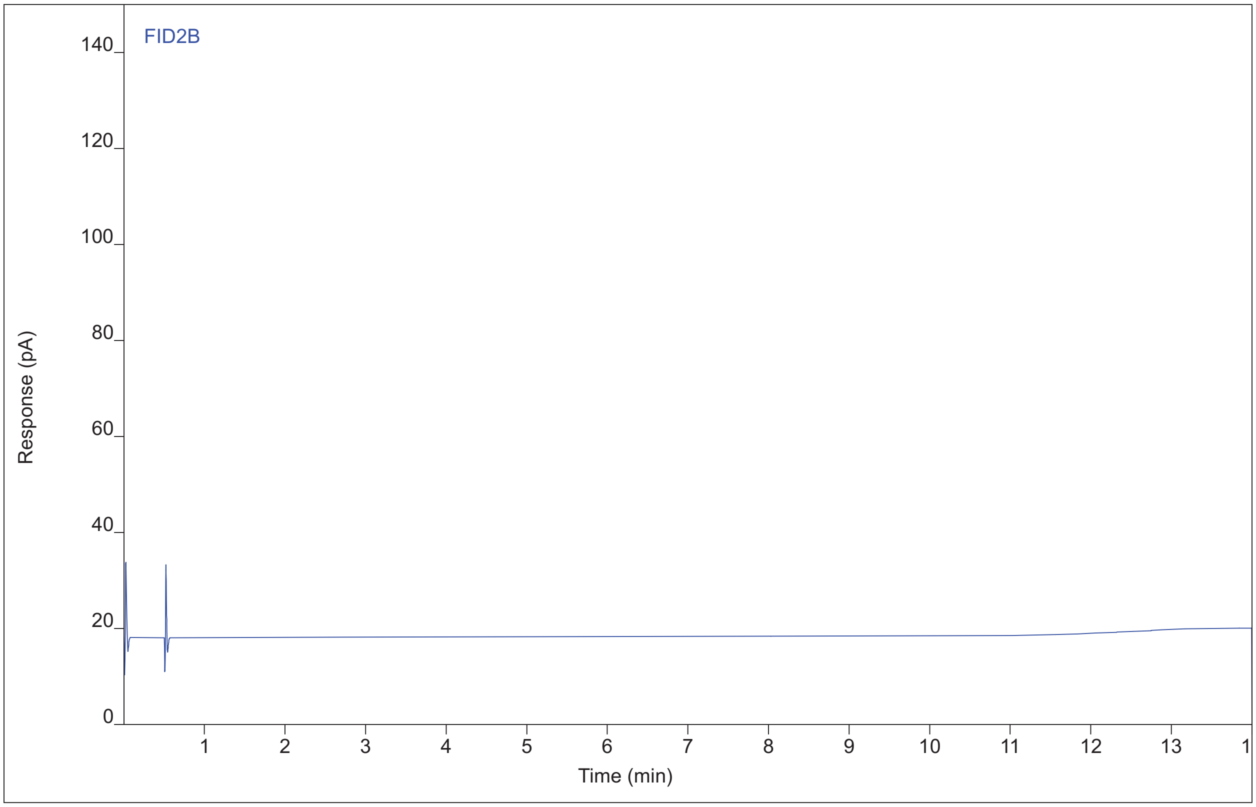


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.43	0.84591	0.51933	2.38477	1	2.38477	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	He Blank #LB	Sample Type	Sample
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 17
Inj Data File	017B1101.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	1 of 3
Injection Date	1/22/2019 3:02 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:39 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Justin Guenzler	Printed	1/28/2019 8:24 AM

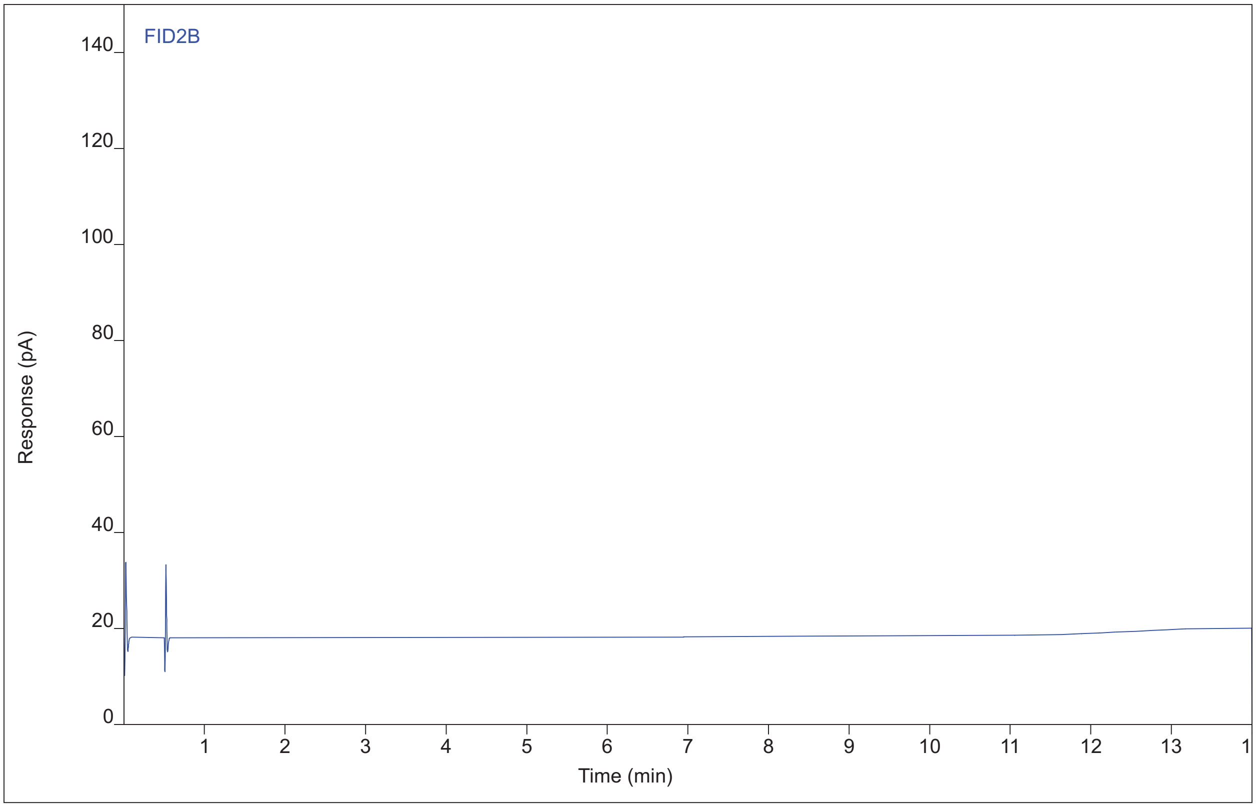


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.43)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	He Blank #LB	Sample Type	Sample
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 17
Inj Data File	017B1102.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 3
Injection Date	1/22/2019 3:23 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:39 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Justin Guenzler	Printed	1/28/2019 8:24 AM



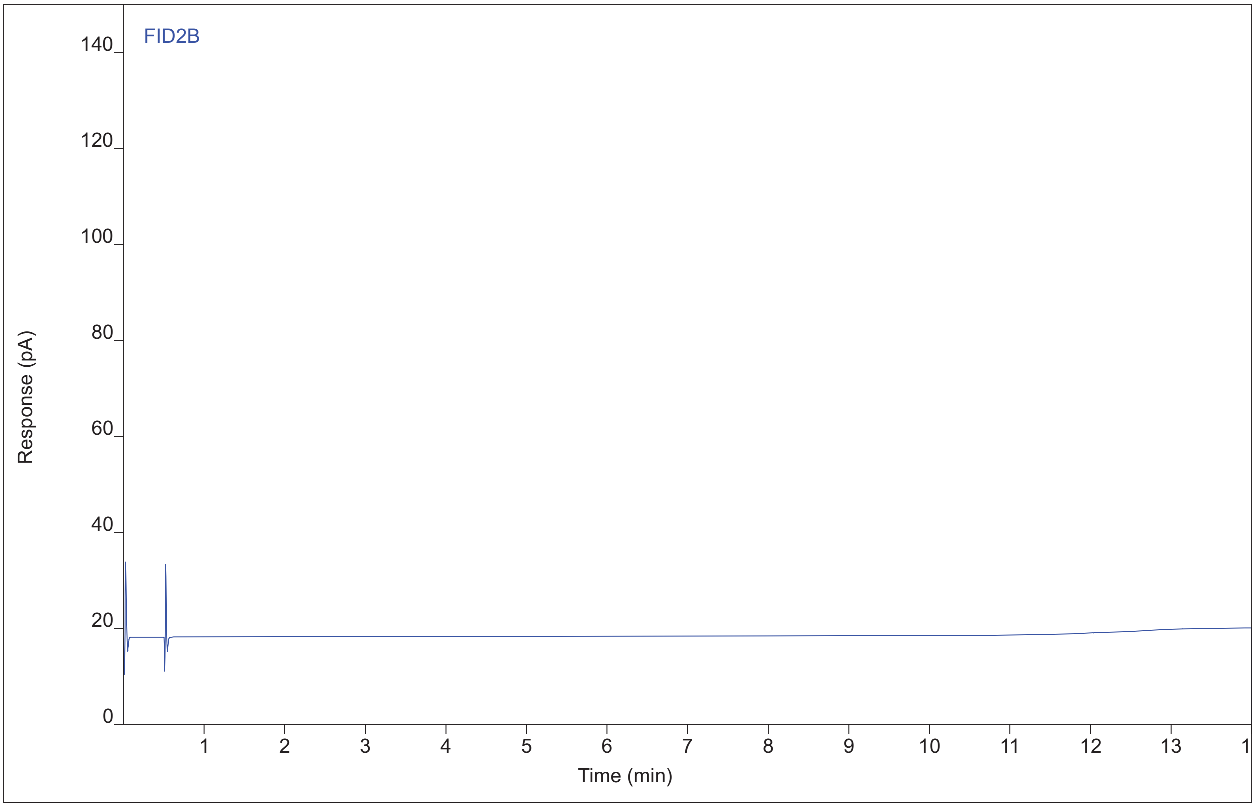
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.43)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	He Blank #LB
Sequence Name	ROSIEP141A ver.2
Inj Data File	017B1103.D
File Location	GC/2019/Rosie/Quarter 1
Injection Date	1/22/2019 3:45 AM
File Modified	1/22/2019 9:39 AM
Instrument	Rosie
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 17
Injection Volume	NA
Injection	3 of 3
Acquisition Method	AQM_ROSIEP080.M
Analysis Method	ROSIEP082_C1-C7.M
Method Modified	1/22/2019 5:22 AM
Printed	1/28/2019 8:24 AM

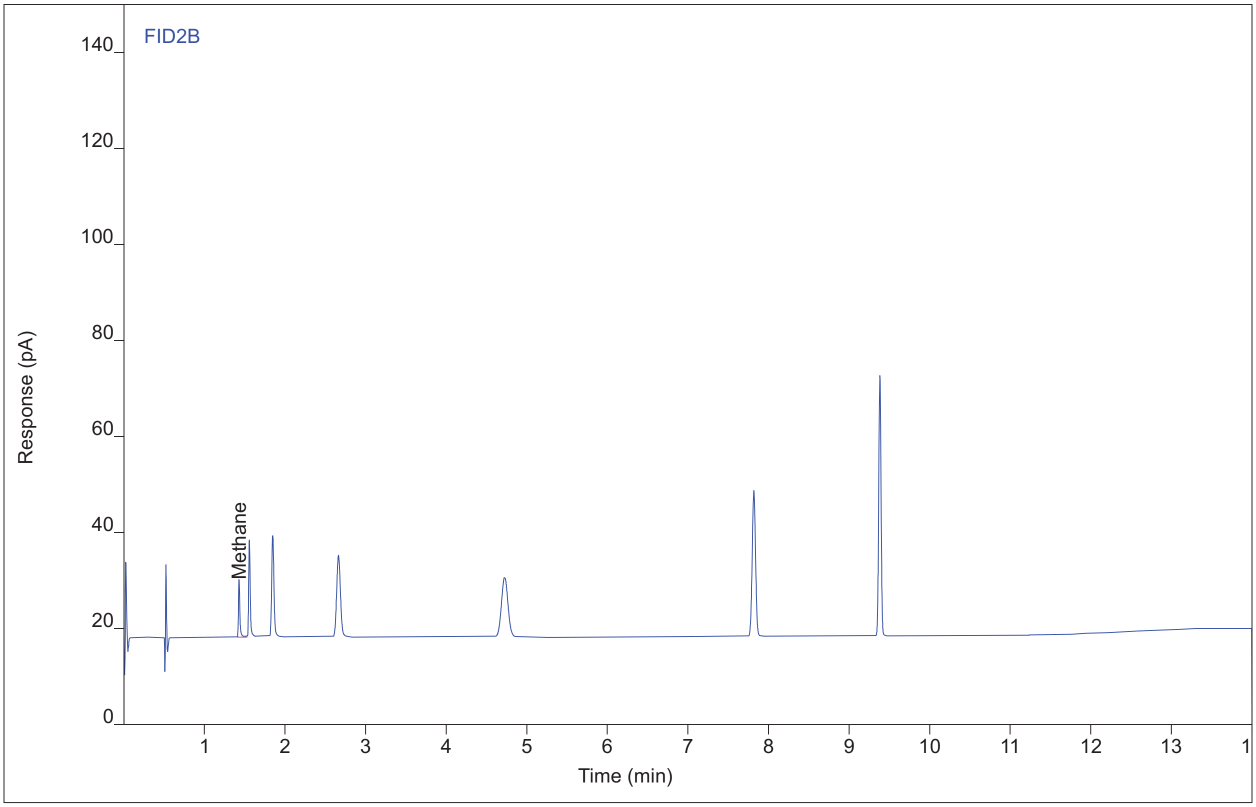


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.43)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 26
Inj Data File	026B1202.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 4
Injection Date	1/22/2019 4:33 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:39 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Justin Guenzler	Printed	1/28/2019 8:24 AM

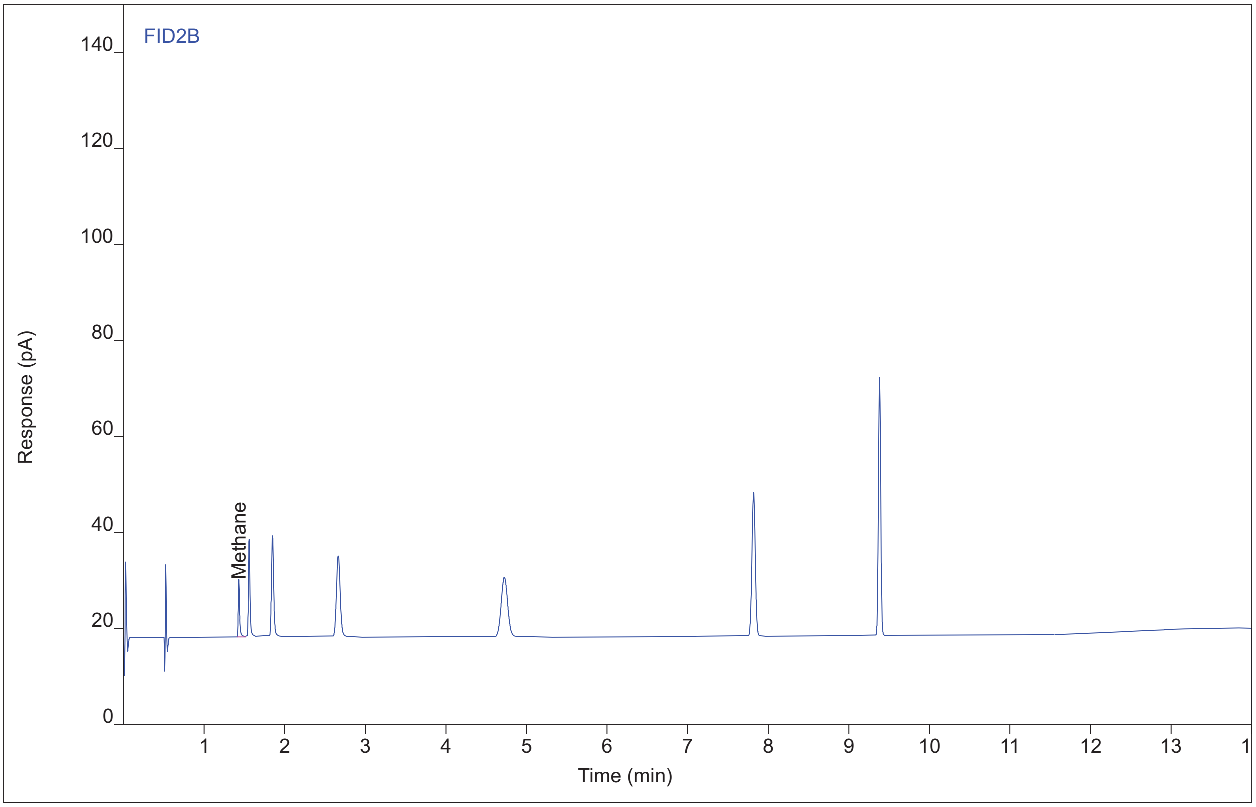


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.5798	11.9397	41.2041	1	41.2041	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 26
Inj Data File	026B1203.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 4
Injection Date	1/22/2019 4:58 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:39 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Justin Guenzler	Printed	1/28/2019 8:24 AM

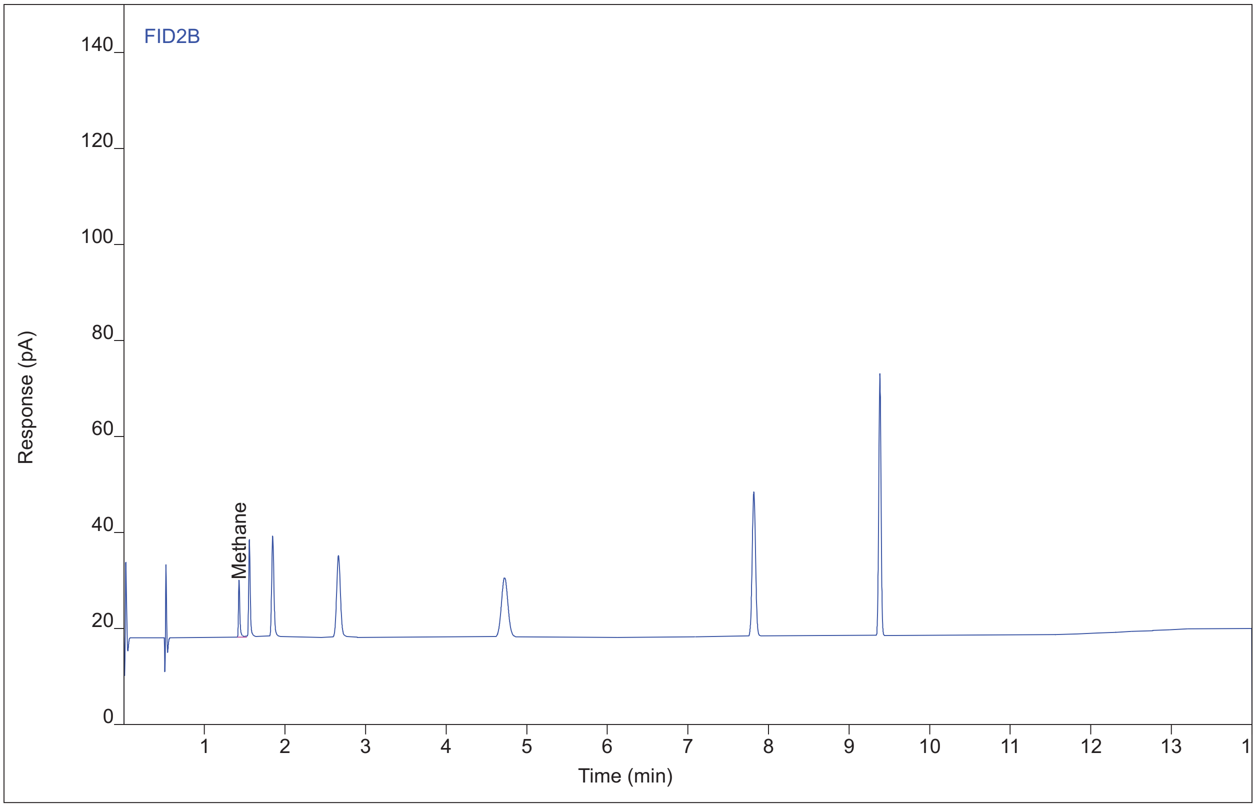


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	14.5420	11.9249	41.0971	1	41.0971	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP141A ver.2	Vial Number	Vial 26
Inj Data File	026B1204.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	4 of 4
Injection Date	1/22/2019 5:22 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/22/2019 9:39 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Justin Guenzler	Printed	1/28/2019 8:24 AM

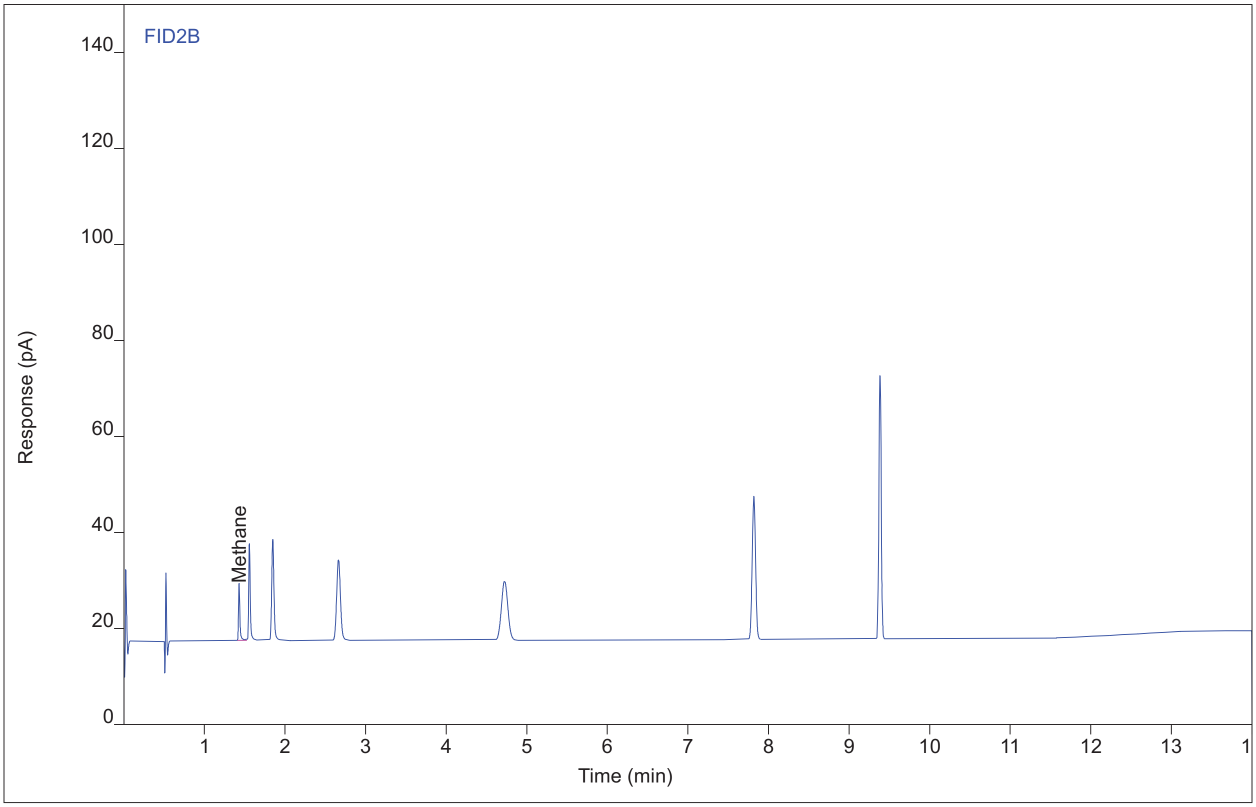


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.6701	11.8508	41.4594	1	41.4594	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 26
Inj Data File	026B0202.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 4
Injection Date	1/27/2019 2:32 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:19 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

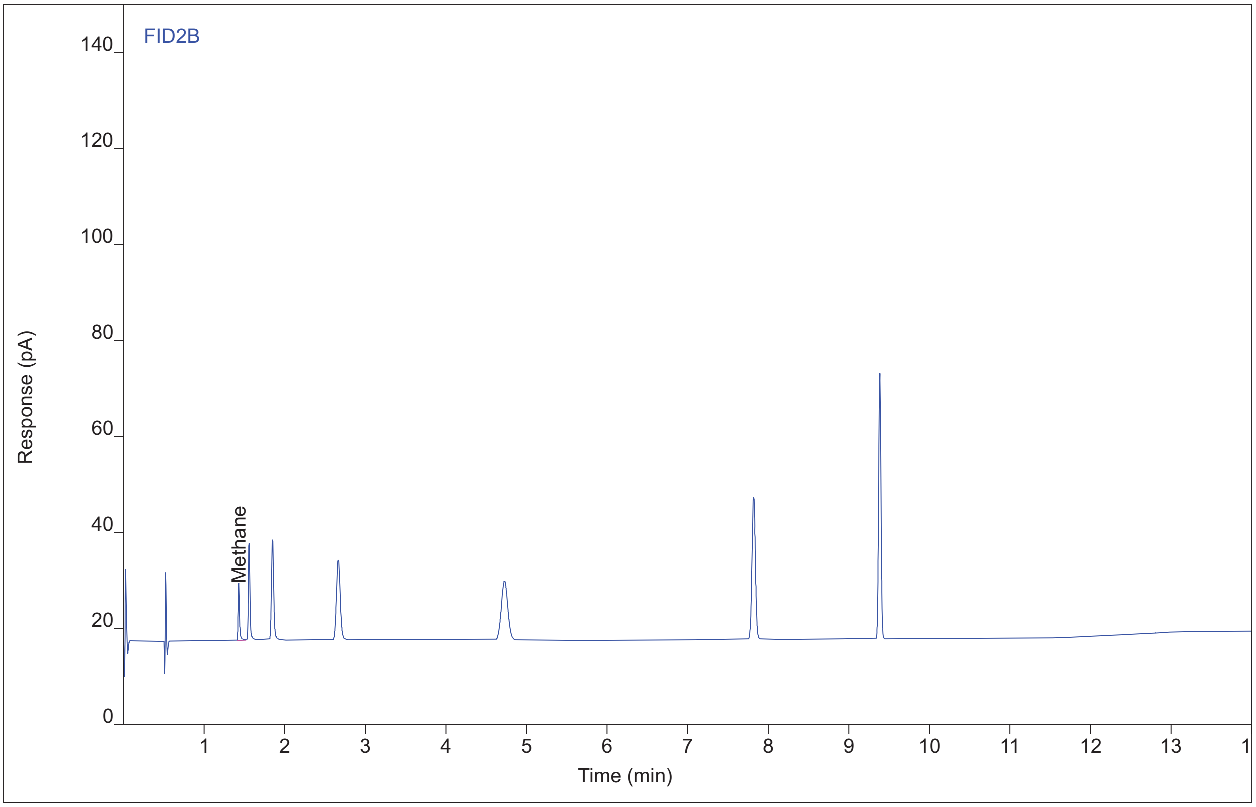


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.4798	11.7532	40.9214	1	40.9214	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 26
Inj Data File	026B0203.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 4
Injection Date	1/27/2019 2:57 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:19 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

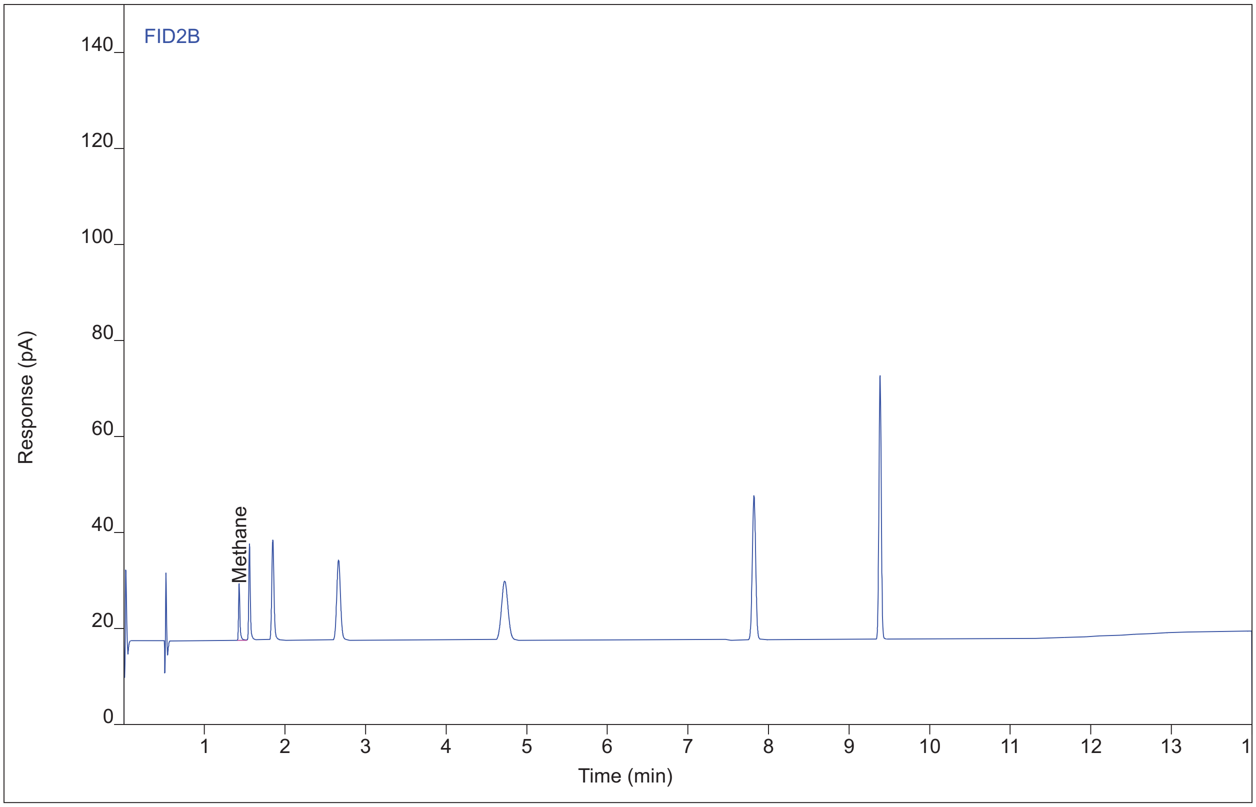


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.4822	11.7200	40.9282	1	40.9282	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 26
Inj Data File	026B0204.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	4 of 4
Injection Date	1/27/2019 3:22 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:19 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

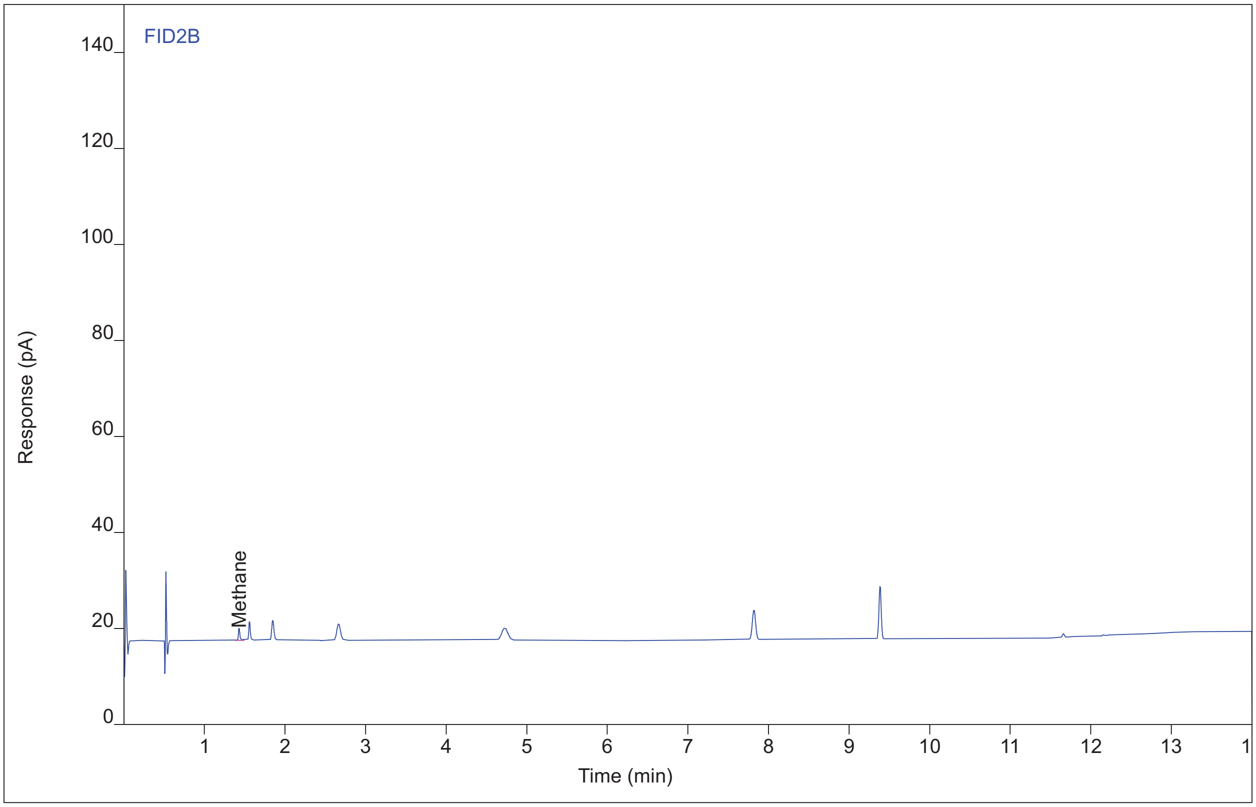


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.2313	11.6635	40.2189	1	40.2189	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 1 SP.Bag	Sample Type	Sample
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 19
Inj Data File	019B0301.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	1 of 3
Injection Date	1/27/2019 3:43 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:19 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

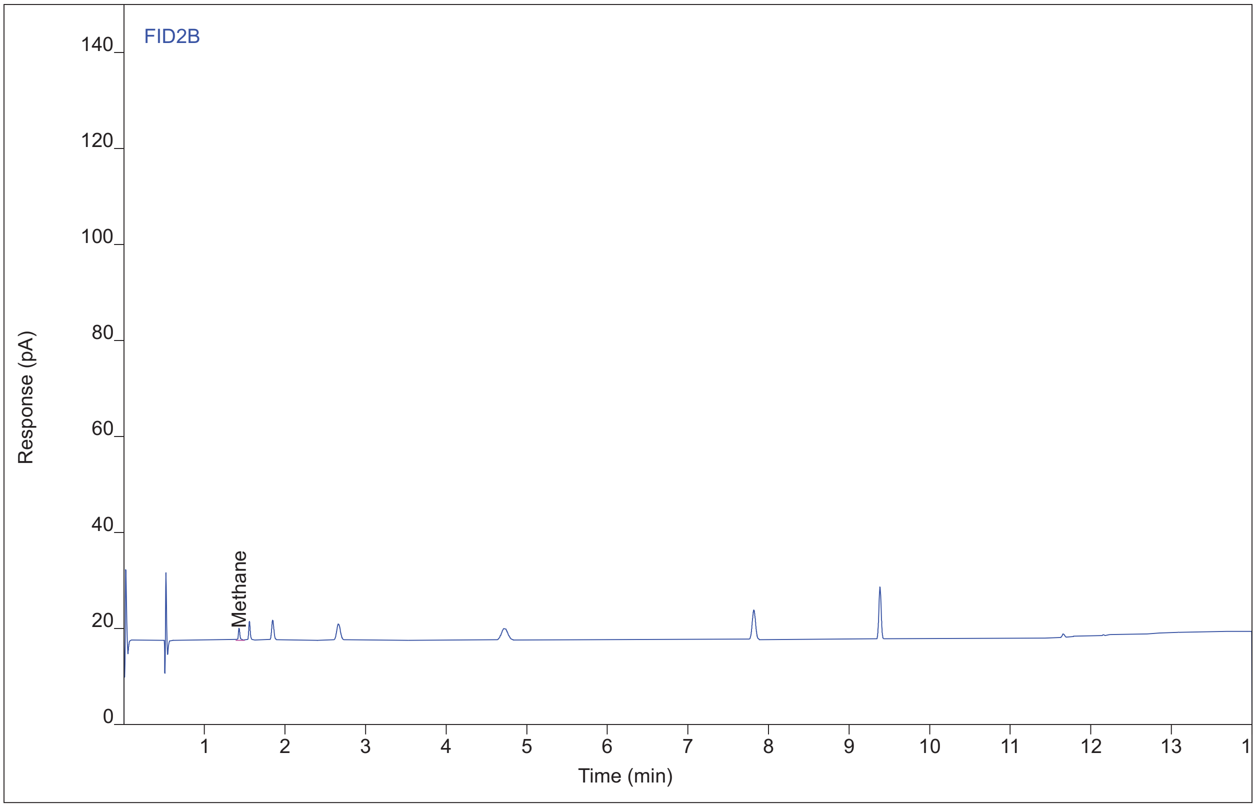


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.43	3.67199	2.64948	10.3670	1	10.3670	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 1 SP.Bag	Sample Type	Sample
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 19
Inj Data File	019B0302.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 3
Injection Date	1/27/2019 4:05 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:19 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

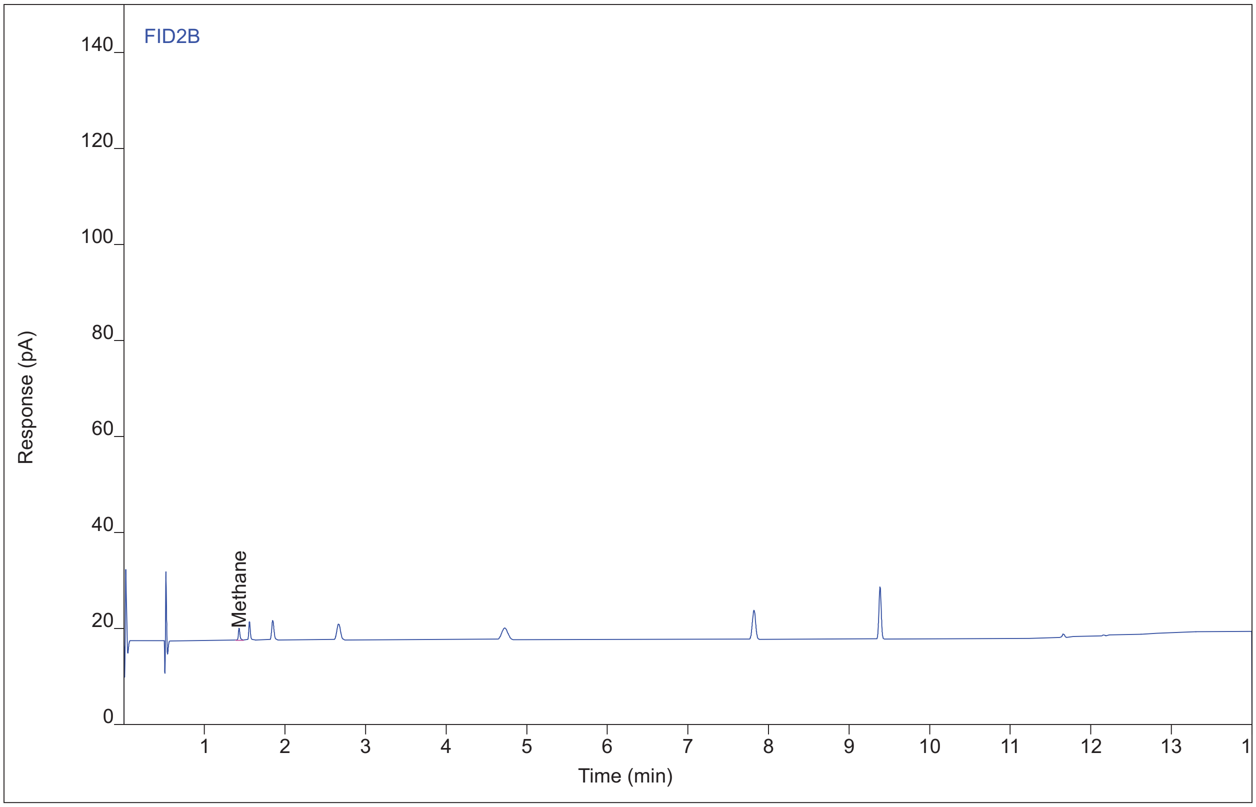


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.43	3.77406	2.66107	10.6555	1	10.6555	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0119-087.Run 1 SP.Bag	Sample Type	Sample
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 19
Inj Data File	019B0303.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 3
Injection Date	1/27/2019 4:26 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:20 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

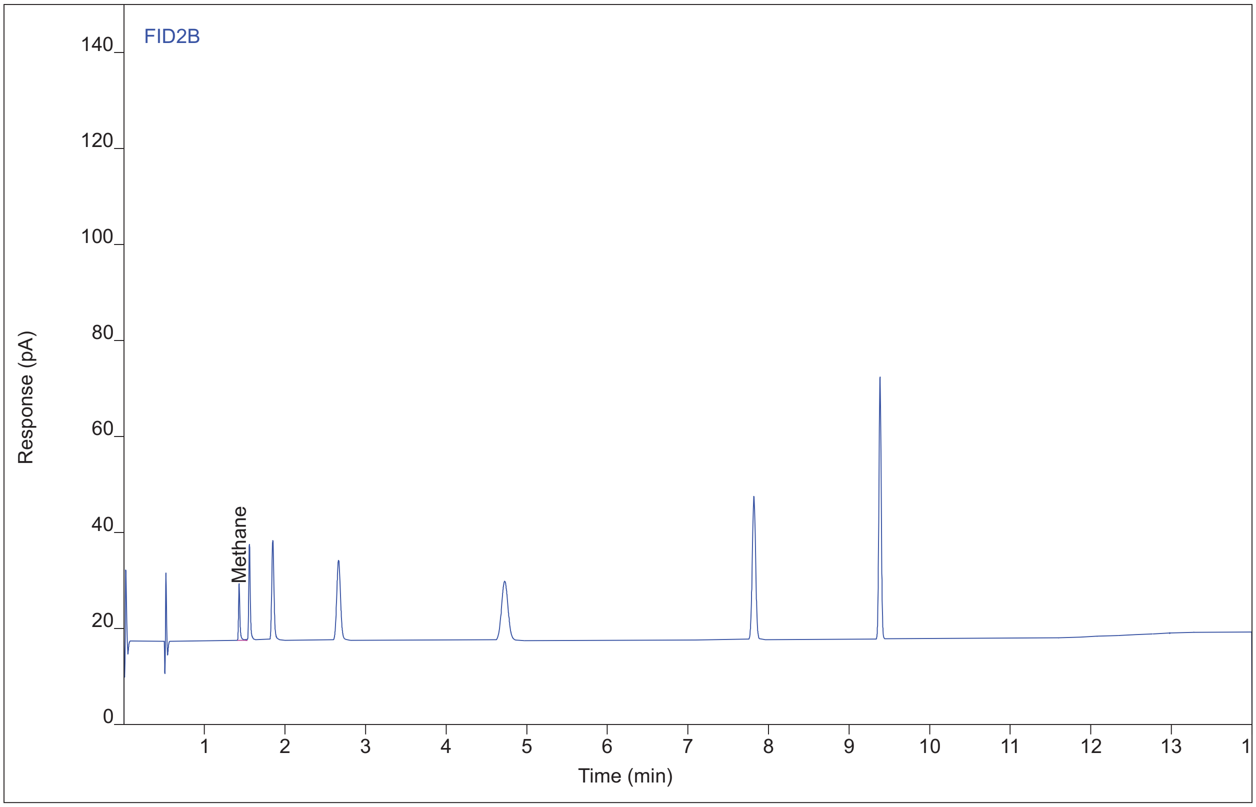


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.43	3.65428	2.64023	10.3169	1	10.3169	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 26
Inj Data File	026B0402.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	2 of 4
Injection Date	1/27/2019 5:15 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:20 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

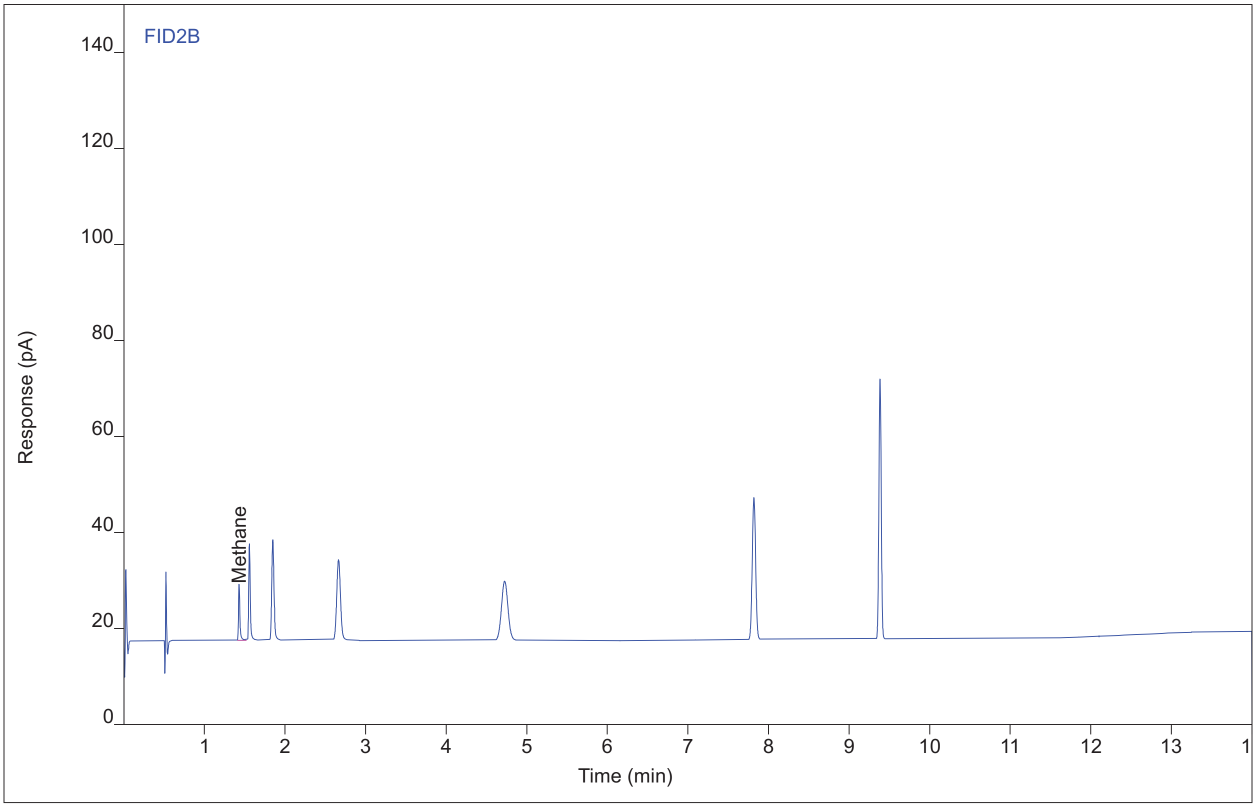


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.3706	11.6653	40.6128	1	40.6128	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 26
Inj Data File	026B0403.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	3 of 4
Injection Date	1/27/2019 5:39 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:20 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM

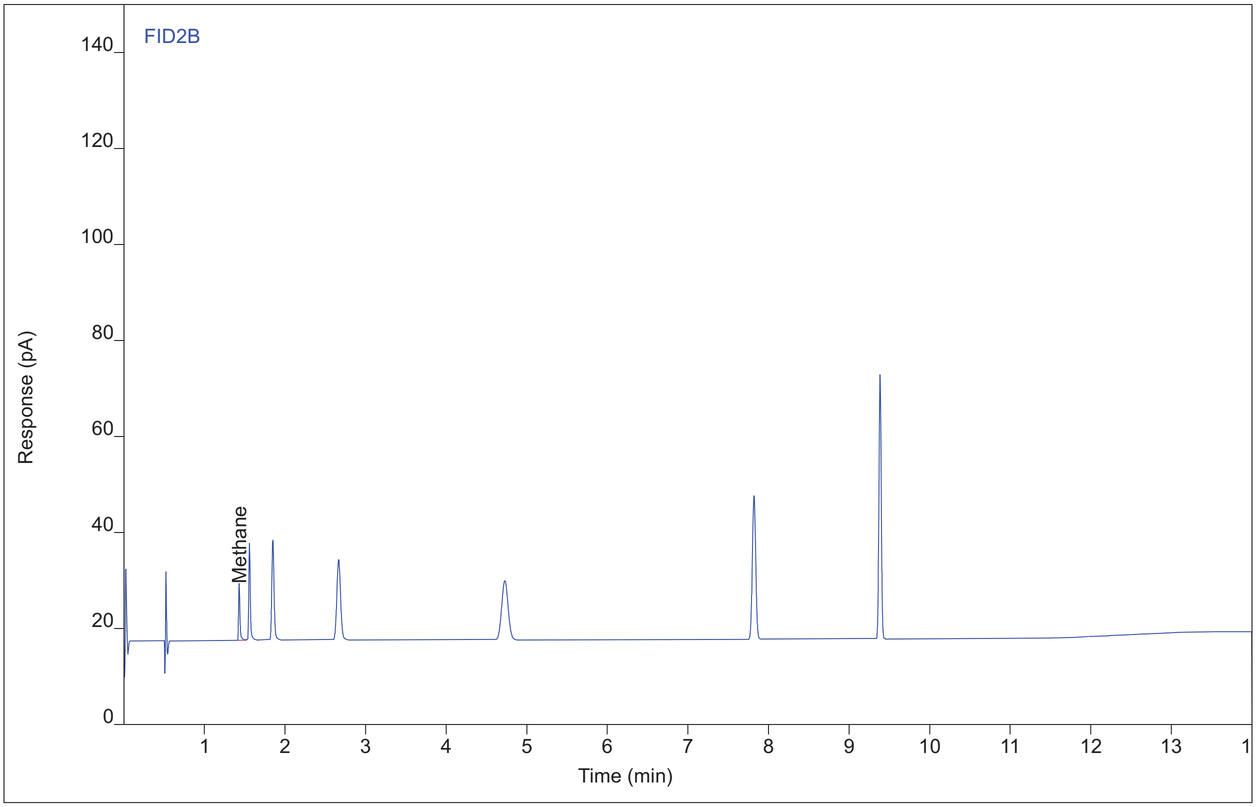


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	14.3778	11.6373	40.6330	1	40.6330	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP115 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP145 ver.1	Vial Number	Vial 26
Inj Data File	026B0404.D	Injection Volume	NA
File Location	GC/2019/Rosie/Quarter 1	Injection	4 of 4
Injection Date	1/27/2019 6:04 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	1/28/2019 8:20 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	1/22/2019 5:22 AM
Operator	Nicholas Traversa	Printed	1/28/2019 8:25 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.4553	11.7552	40.8520	1	40.8520	ppm

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0119-087 EPA Method 18 Tedlar Bag

Project No.: 2333 Enviva - GRE

ROSIEP082_C1-C7.M

Analysis Method Used:

Methane -- Calibration Standards

Sample ID	Filename #1	Filename #2	Filename #3	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1 (ppm)	Conc #2 (ppm)	Conc #3 (ppm)	%dif conc	Avg Conc (ppm)	Standard Tag	% Tag
ROSIEP115 #C4 ENV(1=424,4=400)	026B2102.D	026B2103.D	026B2104.D	1.43	1.43	1.43	0.0	40.7	40.4	40.3	0.6	40.5	40.0	101
He Blank #LB	017B1101.D	017B1102.D	017B1103.D	NA	NA	NA	NA	0.524	0.524	0.524	0.0	0.524	ND	
ROSIEP115 #C4 ENV(1=424,4=400)	026B1202.D	026B1203.D	026B1204.D	1.43	1.43	1.43	0.0	41.2	41.1	41.5	0.5	41.3	40.0	103
ROSIEP115 #C4 ENV(1=424,4=400)	026B0202.D	026B0203.D	026B0204.D	1.43	1.43	1.43	0.0	40.9	40.9	40.2	1.2	40.7	40.0	102
ROSIEP115 #C4 ENV(1=424,4=400)	026B0402.D	026B0403.D	026B0404.D	1.43	1.43	1.43	0.0	40.6	40.6	40.9	0.4	40.7	40.0	102

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Calibration Table

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Calib. Data Modified : Wednesday, November 14, 2018 8:02:51 AM

Rel. Reference Window : 1.000 %
Abs. Reference Window : 0.000 min
Rel. Non-ref. Window : 1.000 %
Abs. Non-ref. Window : 0.000 min
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Quadratic (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

RetTime [min]	Lvl Sig		Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
1.430	1	2	5.00000	1.75817	2.84387			Methane
		3	20.00000	7.22710	2.76736			
		4	40.00000	14.61188	2.73750			
		5	100.00000	34.98189	2.85862			
		6	5561.00000	1987.41703	2.79810			
		7	4.99200e4	1.68861e4	2.95628			
1.558	1	2	5.00000	3.42997	1.45774			Ethane
		3	20.00000	14.01885	1.42665			
		4	40.00000	28.24833	1.41601			
		5	100.00000	66.51178	1.50349			
		6	5564.00000	3908.44775	1.42358			
		7	4.99500e4	3.28573e4	1.52021			
1.848	1	2	5.00000	5.36286	9.32338e-1			Propane
		3	20.00000	21.25991	9.40738e-1			
		4	40.00000	42.96450	9.31001e-1			
		5	100.00000	100.36798	9.96334e-1			
		6	5566.00000	5815.71908	9.57061e-1			
		7	4.99700e4	4.95481e4	1.00851			
2.665	1	2	5.00000	7.15856	6.98465e-1			Butane
		3	20.00000	28.37661	7.04806e-1			
		4	40.00000	56.87943	7.03242e-1			
		5	100.00000	133.08791	7.51383e-1			
		6	1113.00000	1573.80908	7.07201e-1			
		7	9991.00000	1.33395e4	7.48977e-1			
4.729	1	2	5.00000	9.28642	5.38420e-1			Pentane
		3	20.00000	36.48395	5.48186e-1			
		4	40.00000	73.19273	5.46502e-1			
		5	100.00000	170.43754	5.86725e-1			

330

RetTime [min]	Sig	Lvl	Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
		6	556.00000	1000.59776	5.55668e-1			
		7	4995.00000	8457.50391	5.90600e-1			
7.822	1	2	5.00000	11.42911	4.37479e-1			Hexane
		3	20.00000	45.69358	4.37698e-1			
		4	40.00000	91.82283	4.35622e-1			
		5	100.00000	212.44948	4.70700e-1			
		6	446.00000	1008.85931	4.42083e-1			
		7	4001.00000	8344.50651	4.79477e-1			
9.386	1	2	5.00000	15.56155	3.21305e-1			Heptane
		3	20.00000	61.72245	3.24031e-1			
		4	40.00000	122.89329	3.25486e-1			
		5	100.00000	280.55623	3.56435e-1			

More compound-specific settings:

Compound: Methane
Time Window : From 1.409 min To 1.449 min

Compound: Ethane
Time Window : From 1.520 min To 1.580 min

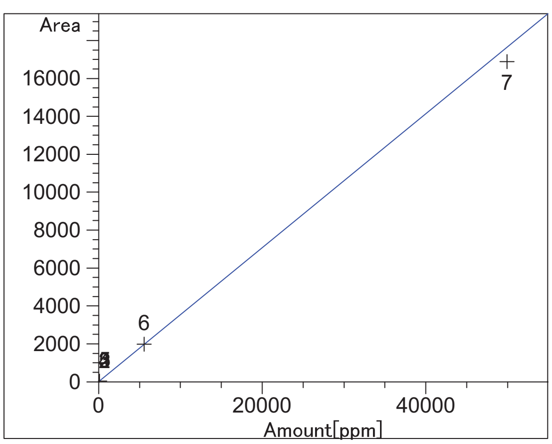
Compound: Propane
Time Window : From 1.790 min To 1.900 min

Compound: Butane
Time Window : From 2.619 min To 2.679 min

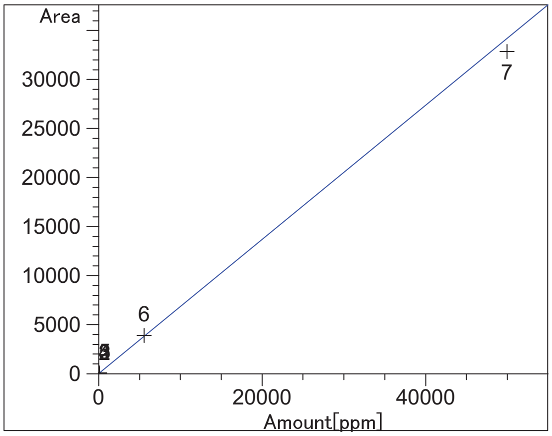
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	2.000	2.265	None	1.4937	1.4937	None
as Propane	2.265	2.839	None	9.8901e-1	0.9890	None
as Butane	2.839	4.332	None	7.3667e-1	0.7367	None
as Pentane	4.332	6.736	None	5.6498e-1	0.5650	None
as Hexane	6.736	8.796	None	4.2535e-1	0.4253	None
as Heptane	8.796	14.000	None	2.7188e-1	0.2719	None

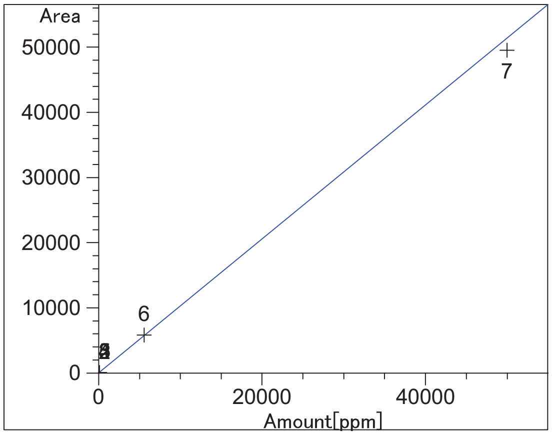
Calibration Curves



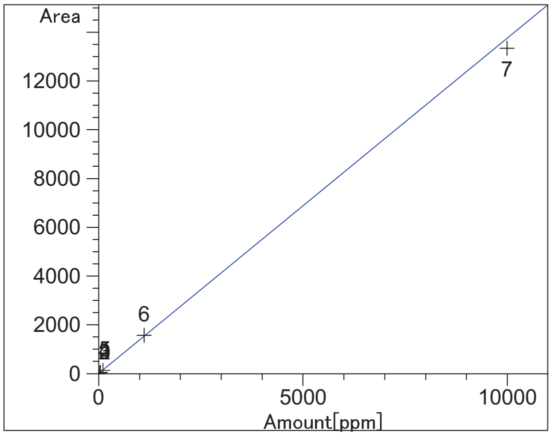
Methane at exp. RT: 1.430
FID2 B,
Correlation: 0.99955
Residual Std. Dev.: 386.02480
Formula: y = mx + b
m: 3.53723e-1
b: 4.95789e-3
x: Amount
y: Area
Calibration Level Weights:
Level 2 : 1
Level 3 : 0.0625
Level 4 : 0.015625
Level 5 : 0.0025
Level 6 : 8.08415e-007
Level 7 : 1.00321e-008



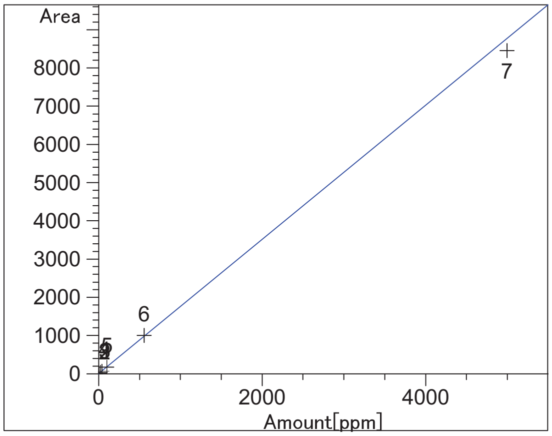
Ethane at exp. RT: 1.558
FID2 B,
Correlation: 0.99946
Residual Std. Dev.: 679.43864
Formula: y = mx + b
m: 6.84938e-1
b: 3.11796e-2
x: Amount
y: Area
Calibration Level Weights:
Level 2 : 1
Level 3 : 0.0625
Level 4 : 0.015625
Level 5 : 0.0025
Level 6 : 8.07543e-007
Level 7 : 1.002e-008



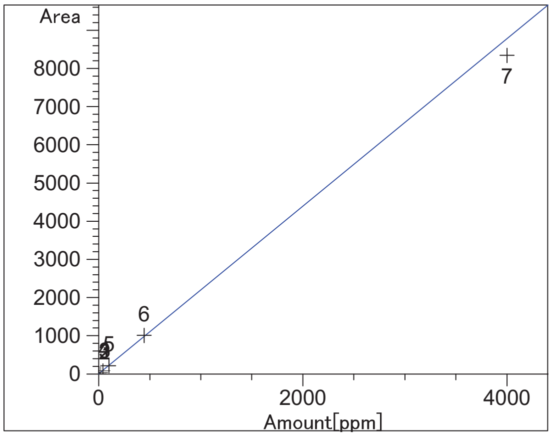
Propane at exp. RT: 1.848
FID2 B,
Correlation: 0.99949
Residual Std. Dev.: 944.41574
Formula: y = mx + b
m: 1.02931
b: 2.59154e-1
x: Amount
y: Area
Calibration Level Weights:
Level 2 : 1
Level 3 : 0.0625
Level 4 : 0.015625
Level 5 : 0.0025
Level 6 : 8.06963e-007
Level 7 : 1.0012e-008



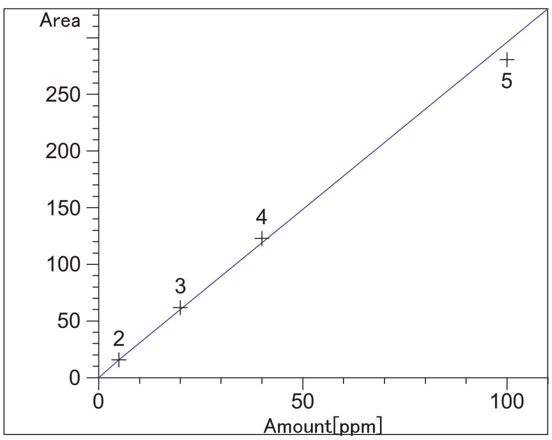
Butane at exp. RT: 2.665
FID2 B,
Correlation: 0.99951
Residual Std. Dev.: 209.93292
Formula: y = mx + b
m: 1.37694
b: 3.17925e-1
x: Amount
y: Area
Calibration Level Weights:
Level 2 : 1
Level 3 : 0.0625
Level 4 : 0.015625
Level 5 : 0.0025
Level 6 : 0.00002
Level 7 : 2.50451e-007



Pentane at exp. RT: 4.729
FID2 B,
Correlation: 0.99943
Residual Std. Dev.: 161.31053
Formula: y = mx + b
m: 1.75749
b: 5.69840e-1
x: Amount
y: Area
Calibration Level Weights:
Level 2 : 1
Level 3 : 0.0625
Level 4 : 0.015625
Level 5 : 0.0025
Level 6 : 0.000081
Level 7 : 1.002e-006



Hexane at exp. RT: 7.822
FID2 B,
Correlation: 0.99914
Residual Std. Dev.: 221.94403
Formula: y = mx + b
m: 2.19615
b: 5.60918e-1
x: Amount
y: Area
Calibration Level Weights:
Level 2 : 1
Level 3 : 0.0625
Level 4 : 0.015625
Level 5 : 0.0025
Level 6 : 0.000126
Level 7 : 1.56172e-006



Heptane at exp. RT: 9.386
FID2 B,
Correlation: 0.99887
Residual Std. Dev.: 11.48665
Formula: y = mx + b
m: 2.95319
b: 9.24731e-1
x: Amount
y: Area
Calibration Level Weights:
Level 2 : 1
Level 3 : 0.0625
Level 4 : 0.015625
Level 5 : 0.0025

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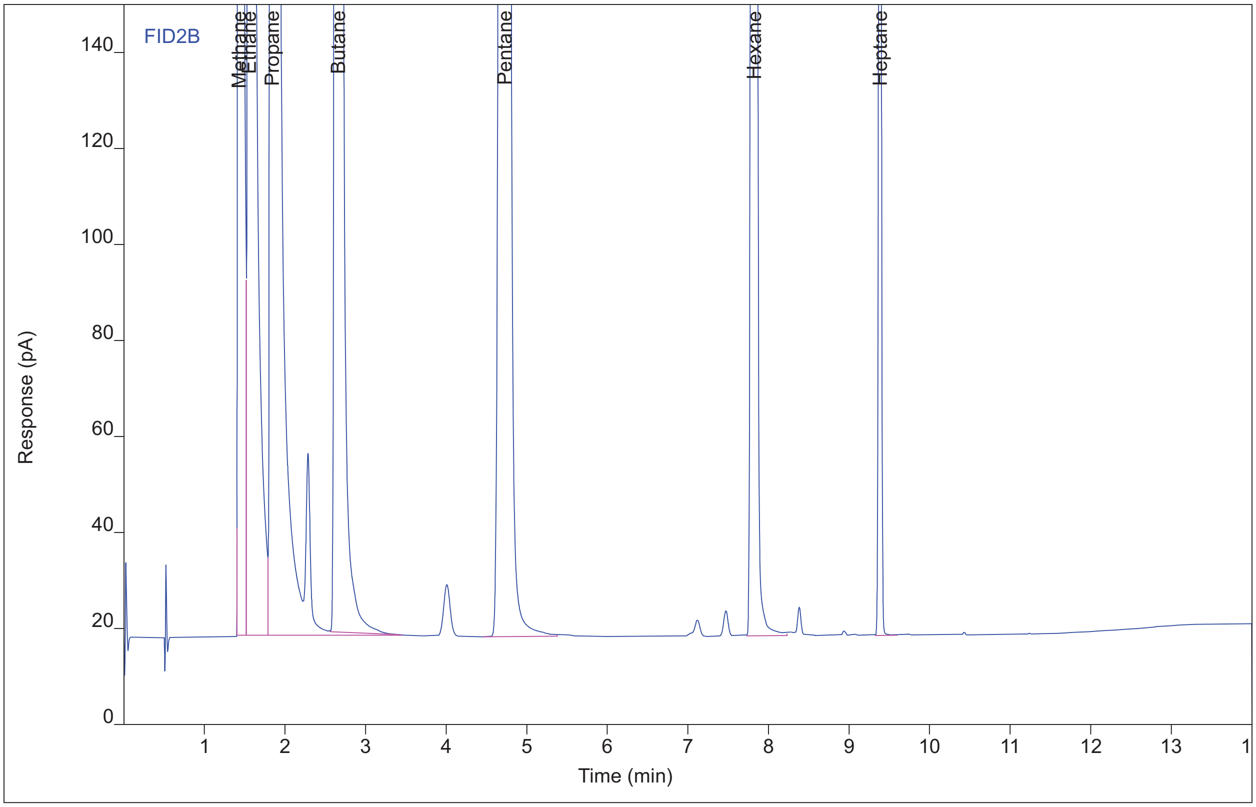
Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C7 ENV(1=0,6=438.21)	Sample Type	Calibration
Sequence Name	ROSIEP082A ver.2	Vial Number	Vial 26
Inj Data File	026B0102.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	2 of 4
Injection Date	11/12/2018 9:41 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:47 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

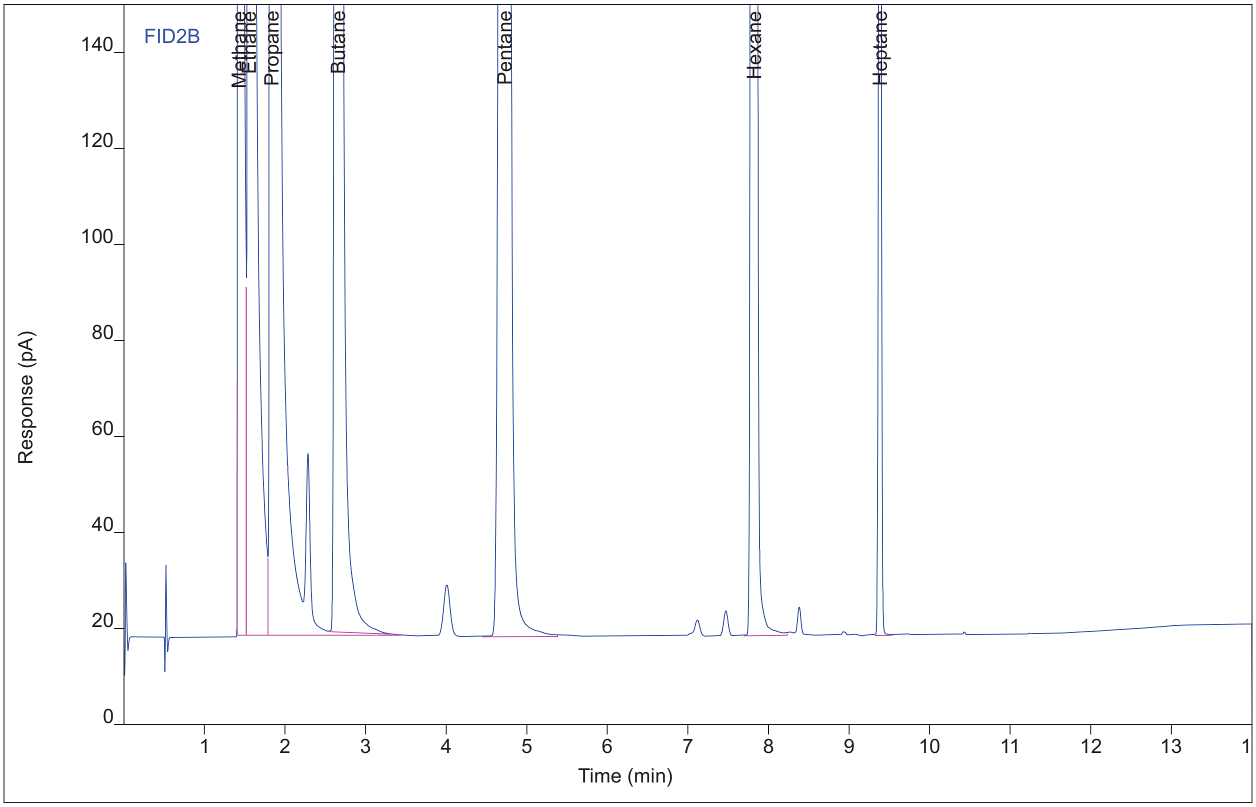


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV S	1.43	16896.3	13737.3	47767.0	1	47767.0	ppm
Ethane	VV S	1.55	32872.8	23382.5	47993.8	1	47993.8	ppm
Propane	VB S	1.83	49570.3	23443.4	48158.4	1	48158.4	ppm
Butane	BB T	2.66	13348.3	3940.06	9693.95	1	9693.95	ppm
Pentane	VB	4.72	8462.03	1473.14	4814.51	1	4814.51	ppm
Hexane	BV	7.82	8350.11	2796.23	3801.90	1	3801.90	ppm
Heptane	VB	9.38	671.570	330.259	227.091	1	227.091	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C7 ENV(1=0,6=438.21)	Sample Type	Calibration
Sequence Name	ROSIEP082A ver.2	Vial Number	Vial 26
Inj Data File	026B0103.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	3 of 4
Injection Date	11/12/2018 10:05 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:48 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

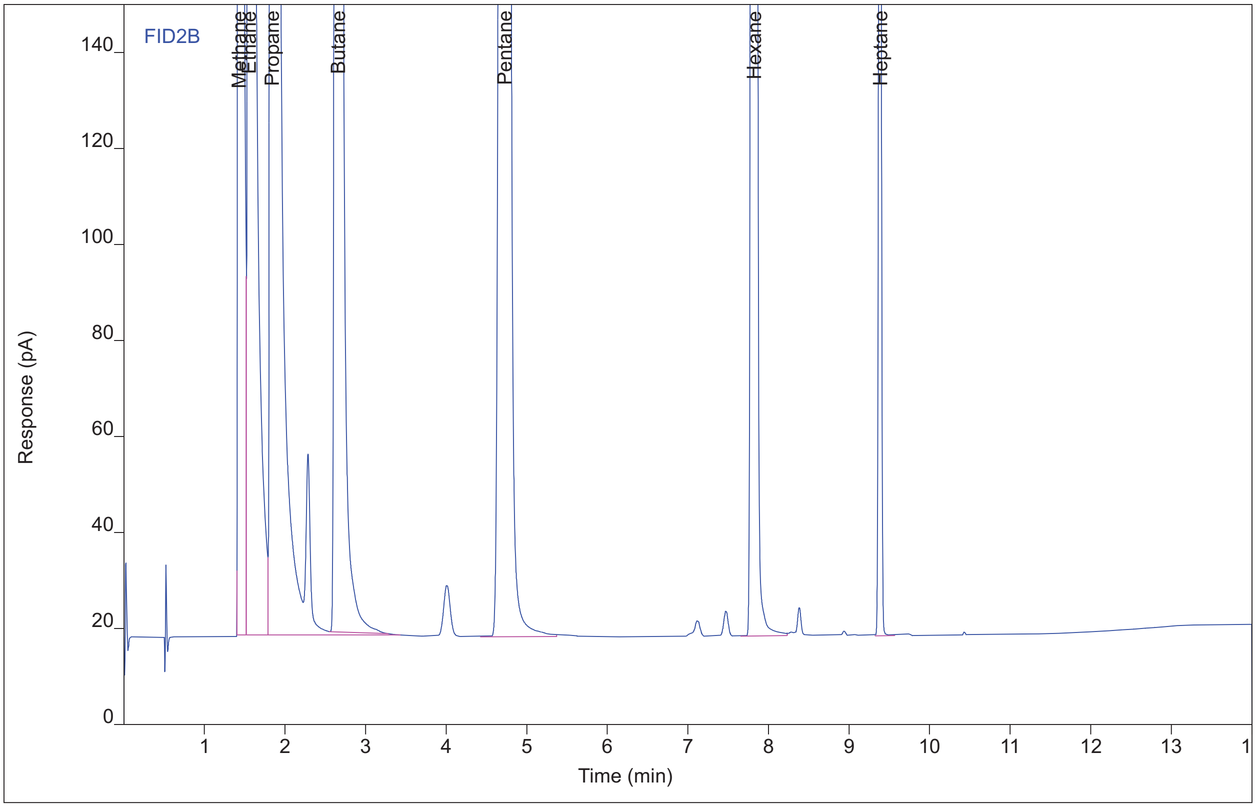


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV S	1.43	16860.5	13637.1	47665.8	1	47665.8	ppm
Ethane	VV S	1.55	32810.9	23185.9	47903.4	1	47903.4	ppm
Propane	VB S	1.83	49482.9	23628.5	48073.5	1	48073.5	ppm
Butane	BB T	2.66	13322.0	3929.24	9674.79	1	9674.79	ppm
Pentane	VB	4.72	8446.69	1464.59	4805.77	1	4805.77	ppm
Hexane	BV	7.82	8333.25	2809.08	3794.22	1	3794.22	ppm
Heptane	VB	9.38	669.165	328.779	226.277	1	226.277	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C7 ENV(1=0,6=438.21)	Sample Type	Calibration
Sequence Name	ROSIEP082A ver.2	Vial Number	Vial 26
Inj Data File	026B0104.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	4 of 4
Injection Date	11/12/2018 10:30 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:48 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

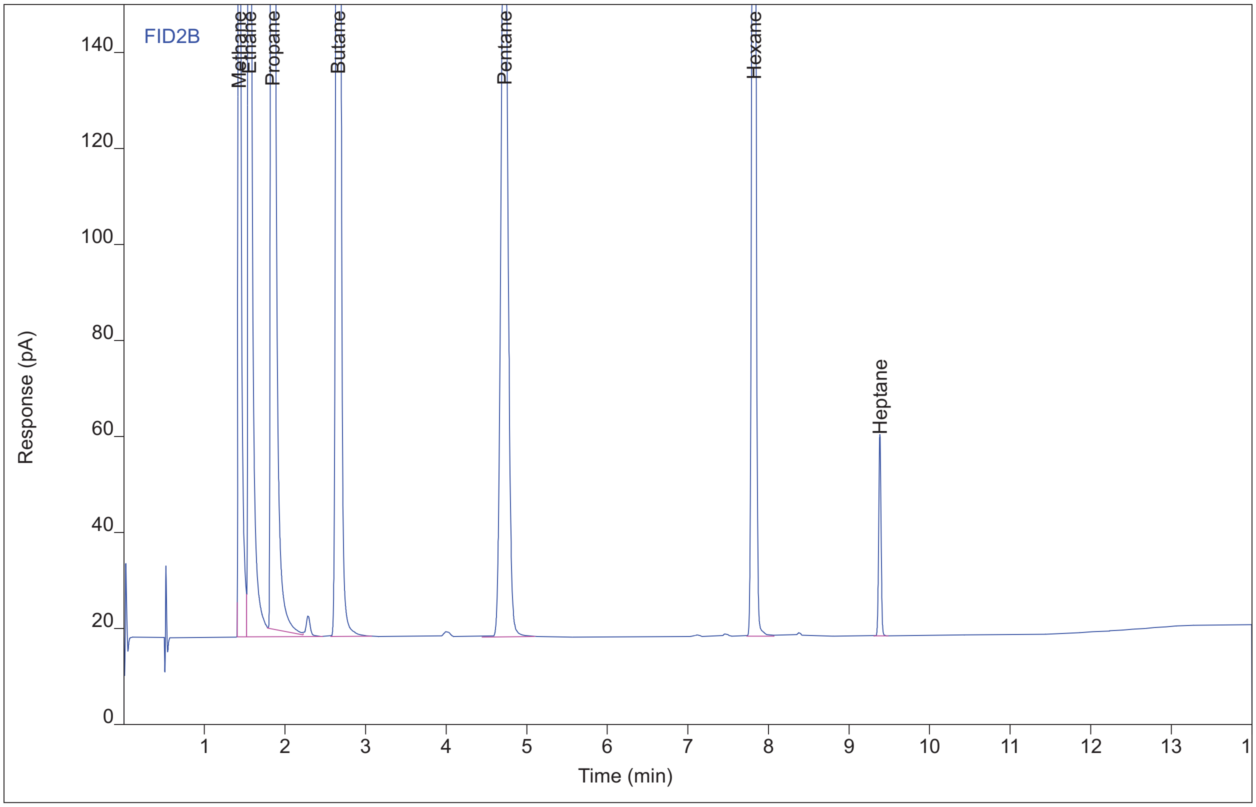


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV S	1.43	16901.4	13729.4	47781.6	1	47781.6	ppm
Ethane	VV S	1.55	32888.2	23413.4	48016.2	1	48016.2	ppm
Propane	VB S	1.83	49591.2	23498.8	48178.7	1	48178.7	ppm
Butane	BB T	2.66	13348.3	3942.26	9693.91	1	9693.91	ppm
Pentane	VB	4.72	8463.79	1471.57	4815.51	1	4815.51	ppm
Hexane	BV	7.82	8350.16	2796.48	3801.92	1	3801.92	ppm
Heptane	VB	9.38	670.864	330.563	226.853	1	226.853	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C6 ENV(1=1700.23,6=365.09)	Sample Type	Calibration
Sequence Name	ROSIEP082A ver.2	Vial Number	Vial 26
Inj Data File	026B0202.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	2 of 4
Injection Date	11/12/2018 11:19 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:48 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

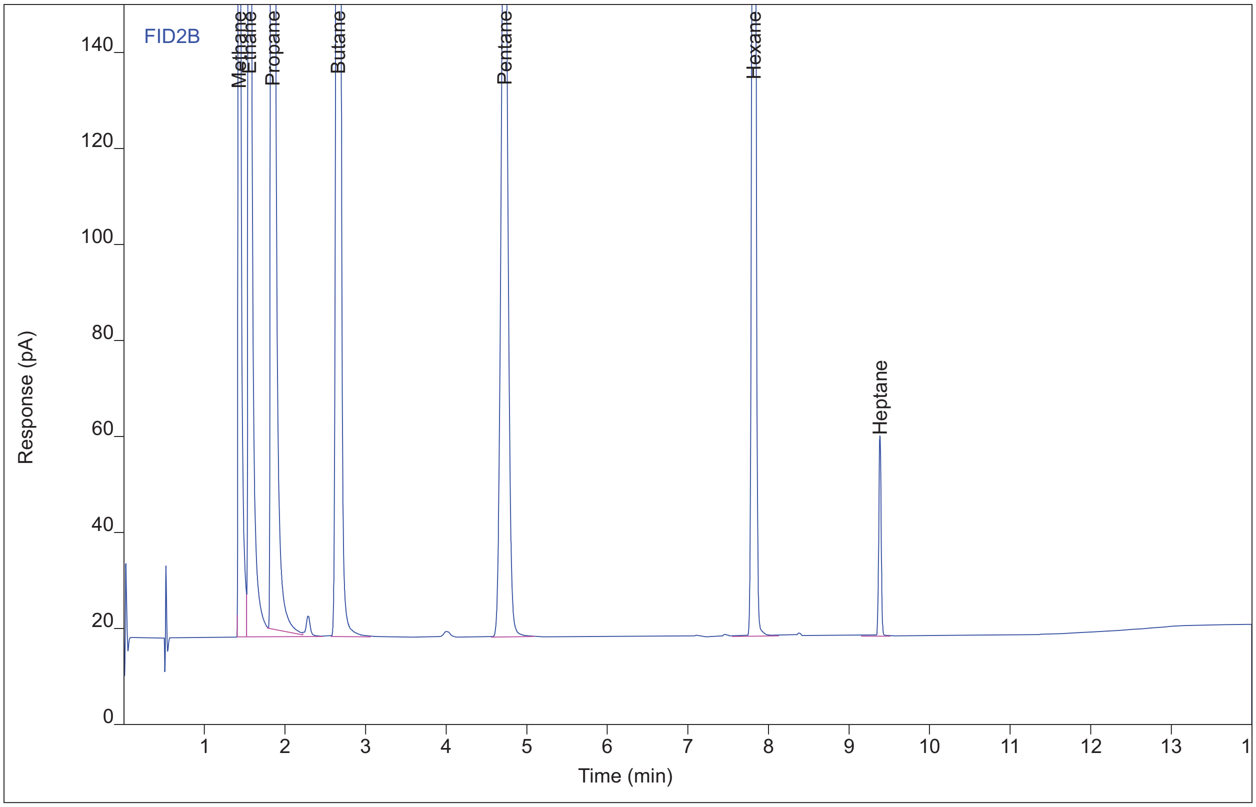


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	1986.70	1641.12	5616.53	1	5616.53	ppm
Ethane	VB S	1.56	3906.93	2795.13	5704.02	1	5704.02	ppm
Propane	BV T	1.84	5813.57	2903.62	5647.76	1	5647.76	ppm
Butane	BB	2.66	1572.34	470.117	1141.68	1	1141.68	ppm
Pentane	BB	4.72	999.712	175.216	568.504	1	568.504	ppm
Hexane	BV	7.82	1009.66	337.920	459.486	1	459.486	ppm
Heptane	VB	9.38	85.0527	41.8904	28.4871	1	28.4871	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C6 ENV(1=1700.23,6=365.09)	Sample Type	Calibration
Sequence Name	ROSIEP082A ver.2	Vial Number	Vial 26
Inj Data File	026B0203.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	3 of 4
Injection Date	11/12/2018 11:44 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:48 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

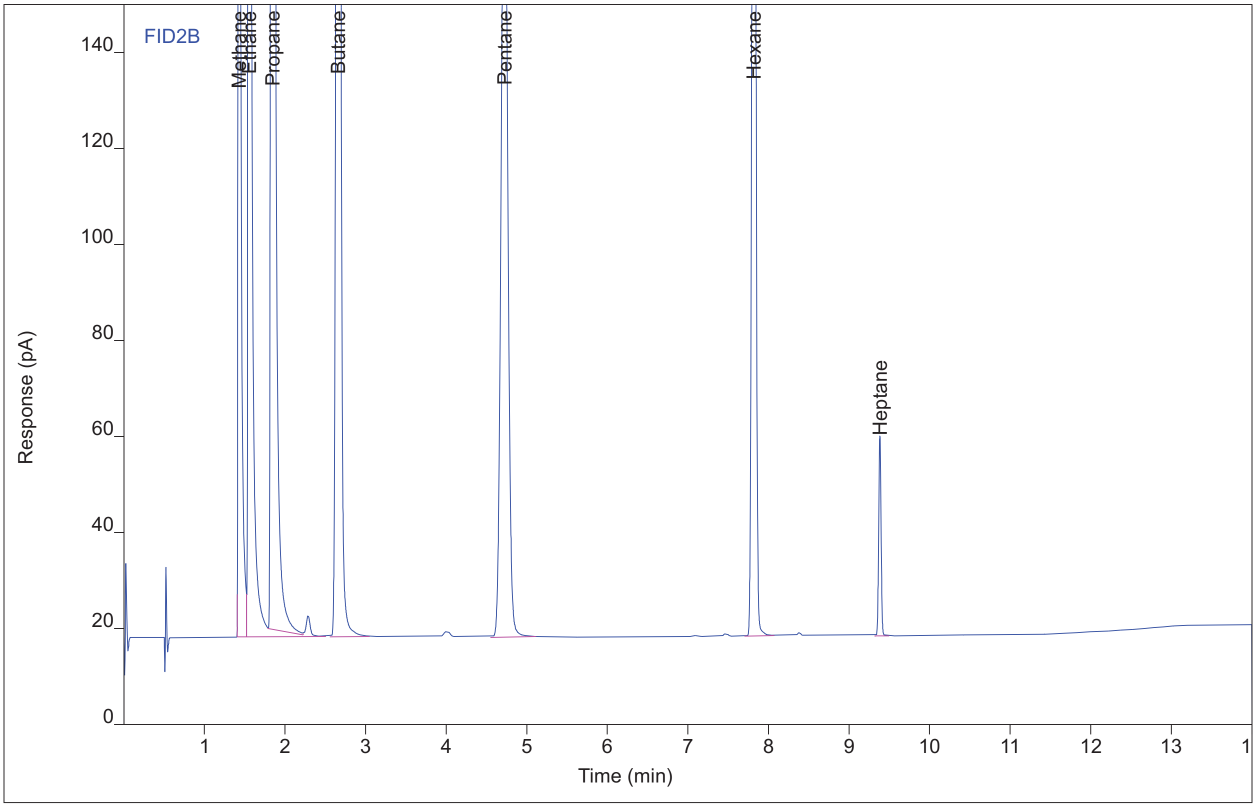


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	1986.79	1641.43	5616.77	1	5616.77	ppm
Ethane	VB S	1.56	3905.69	2792.95	5702.21	1	5702.21	ppm
Propane	BV T	1.84	5812.54	2905.82	5646.77	1	5646.77	ppm
Butane	BB	2.66	1573.61	470.257	1142.60	1	1142.60	ppm
Pentane	BB	4.72	999.995	175.533	568.665	1	568.665	ppm
Hexane	VB	7.82	1007.94	339.865	458.700	1	458.700	ppm
Heptane	VB	9.38	85.6645	41.7210	28.6943	1	28.6943	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C6 ENV(1=1700.23,6=365.09)	Sample Type	Calibration
Sequence Name	ROSIEP082A ver.2	Vial Number	Vial 26
Inj Data File	026B0204.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	4 of 4
Injection Date	11/12/2018 12:08 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:48 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

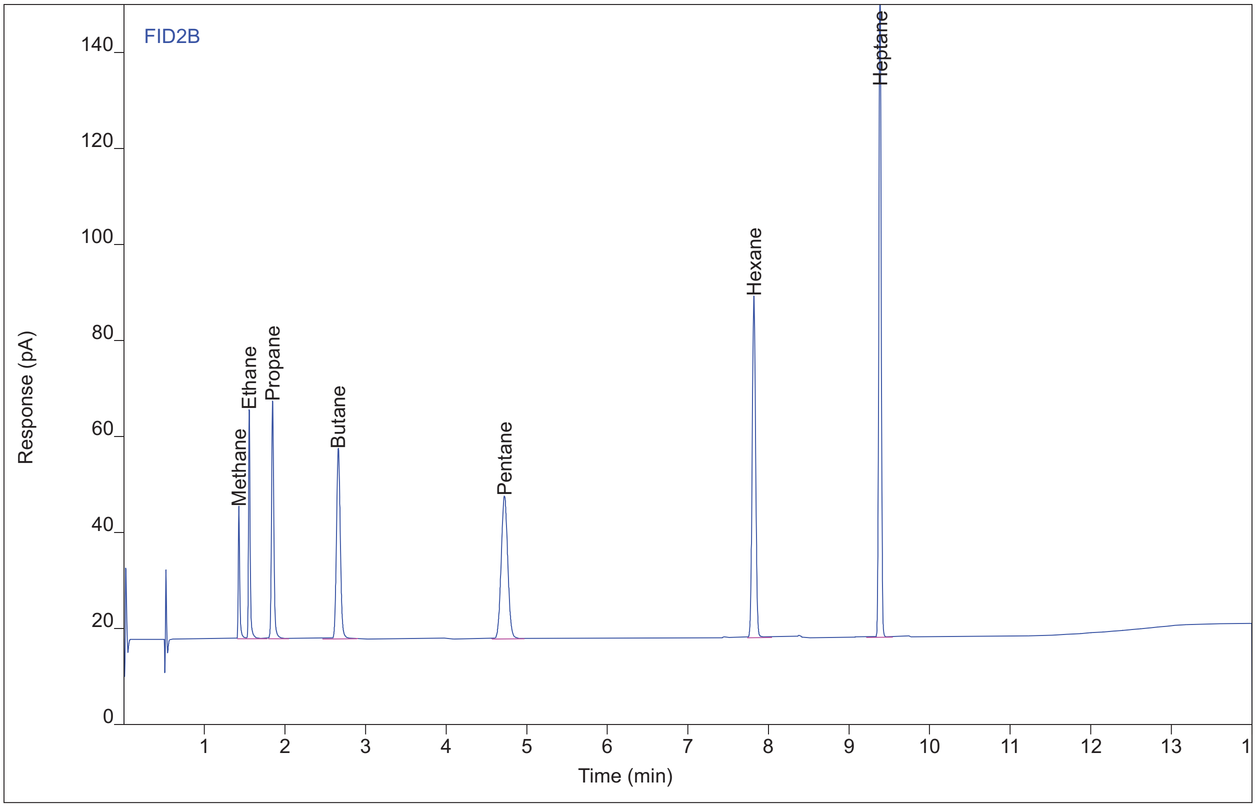


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	1988.76	1642.79	5622.36	1	5622.36	ppm
Ethane	VB S	1.56	3912.72	2798.13	5712.47	1	5712.47	ppm
Propane	BV T	1.84	5821.05	2906.87	5655.03	1	5655.03	ppm
Butane	BV	2.66	1575.47	471.001	1143.95	1	1143.95	ppm
Pentane	VB	4.72	1002.09	175.648	569.855	1	569.855	ppm
Hexane	VB	7.82	1008.98	341.100	459.174	1	459.174	ppm
Heptane	VB	9.38	84.9782	41.7746	28.4619	1	28.4619	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C5 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP082 ver.2	Vial Number	Vial 26
Inj Data File	026B0202.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	2 of 4
Injection Date	11/10/2018 1:33 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:42 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	12/13/2018 1:02 PM

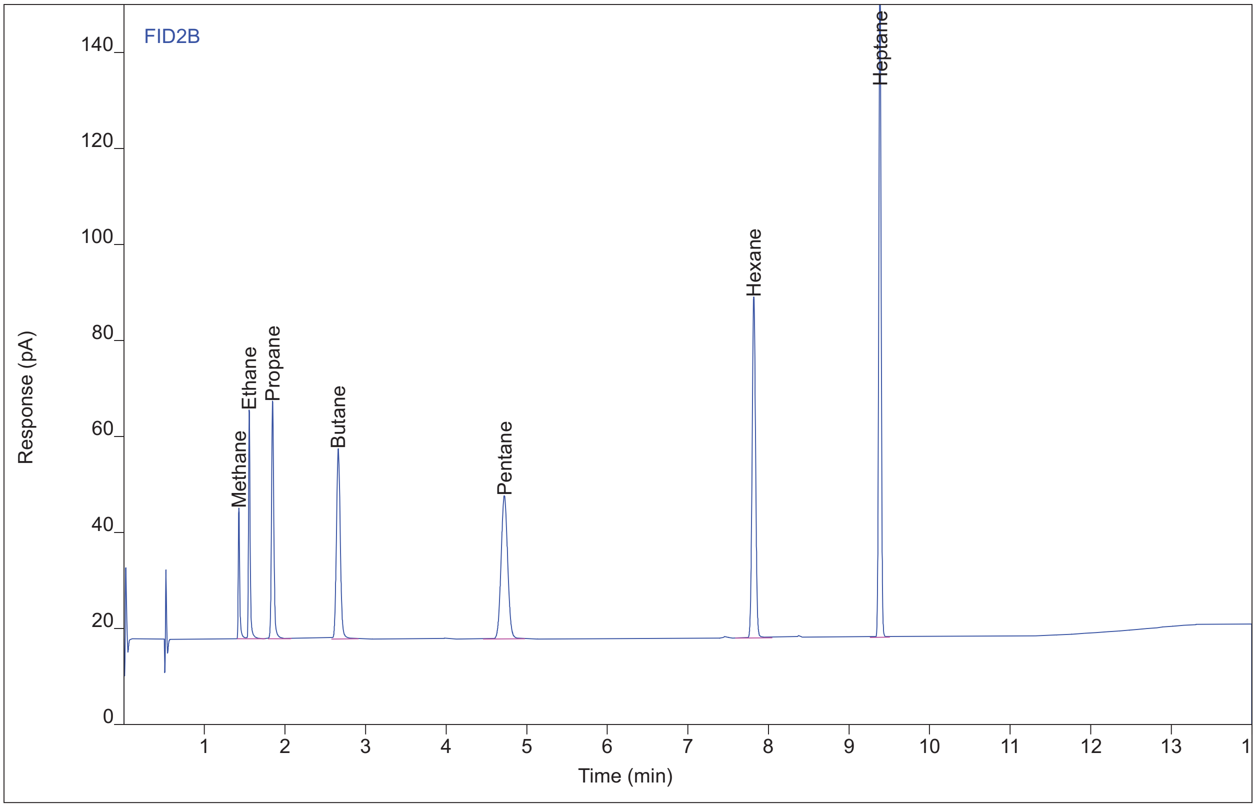


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	35.4224	27.4133	100.128	1	100.128	ppm
Ethane	VB	1.56	66.6021	47.4095	97.1927	1	97.1927	ppm
Propane	BB	1.85	100.182	49.4171	97.0772	1	97.0772	ppm
Butane	VB	2.66	132.998	39.7009	96.3584	1	96.3584	ppm
Pentane	BB	4.72	169.873	29.8588	96.3321	1	96.3321	ppm
Hexane	BB	7.82	212.464	71.2231	96.4880	1	96.4880	ppm
Heptane	BB	9.38	280.859	137.683	94.7904	1	94.7904	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C5 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP082 ver.2	Vial Number	Vial 26
Inj Data File	026B0203.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	3 of 4
Injection Date	11/10/2018 1:58 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:43 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	12/13/2018 1:02 PM

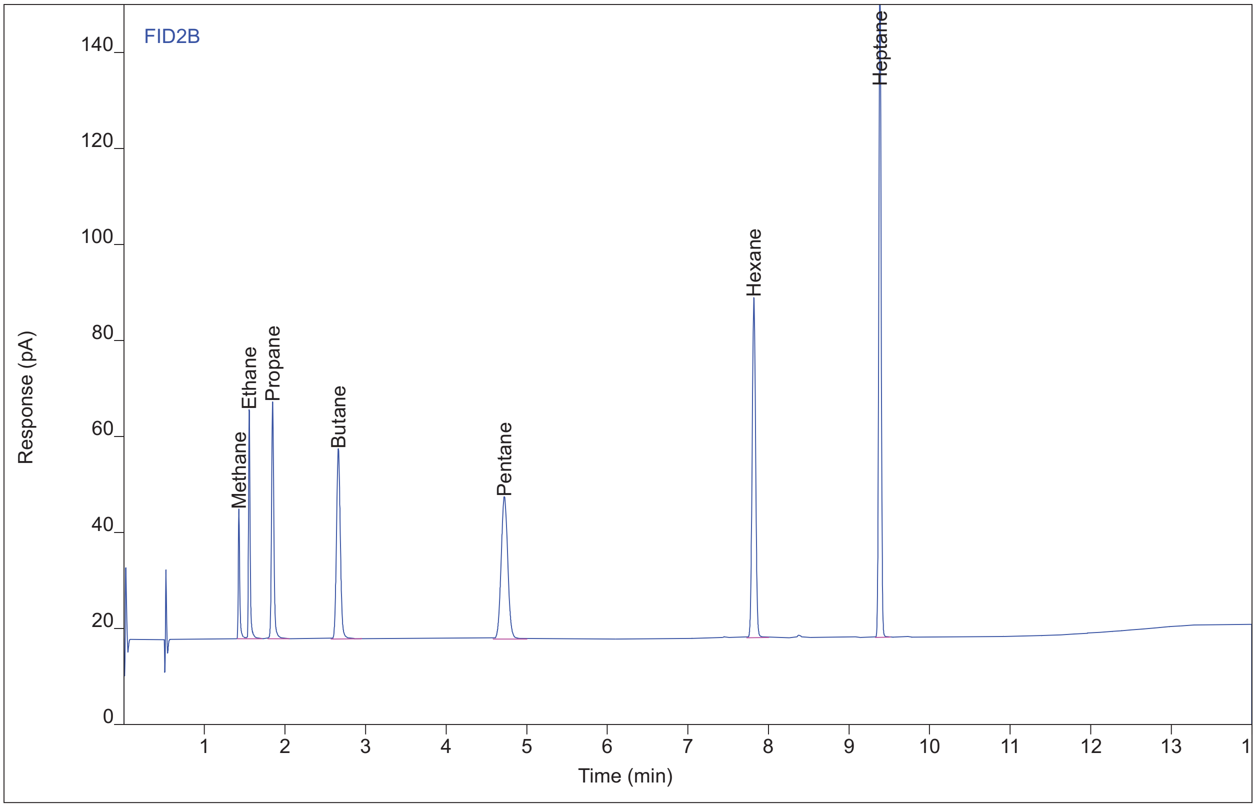


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	35.0460	27.0188	99.0634	1	99.0634	ppm
Ethane	VB	1.56	66.6993	47.4974	97.3345	1	97.3345	ppm
Propane	BV	1.85	100.737	49.4290	97.6164	1	97.6164	ppm
Butane	BB	2.66	133.041	39.6367	96.3897	1	96.3897	ppm
Pentane	VB	4.72	170.360	29.8895	96.6090	1	96.6090	ppm
Hexane	VB	7.82	212.638	71.0156	96.5675	1	96.5675	ppm
Heptane	VB	9.38	280.847	137.798	94.7863	1	94.7863	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C5 ENV(1=0,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP082 ver.2	Vial Number	Vial 26
Inj Data File	026B0204.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	4 of 4
Injection Date	11/10/2018 2:22 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:43 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument	Rosie	Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	12/13/2018 1:02 PM

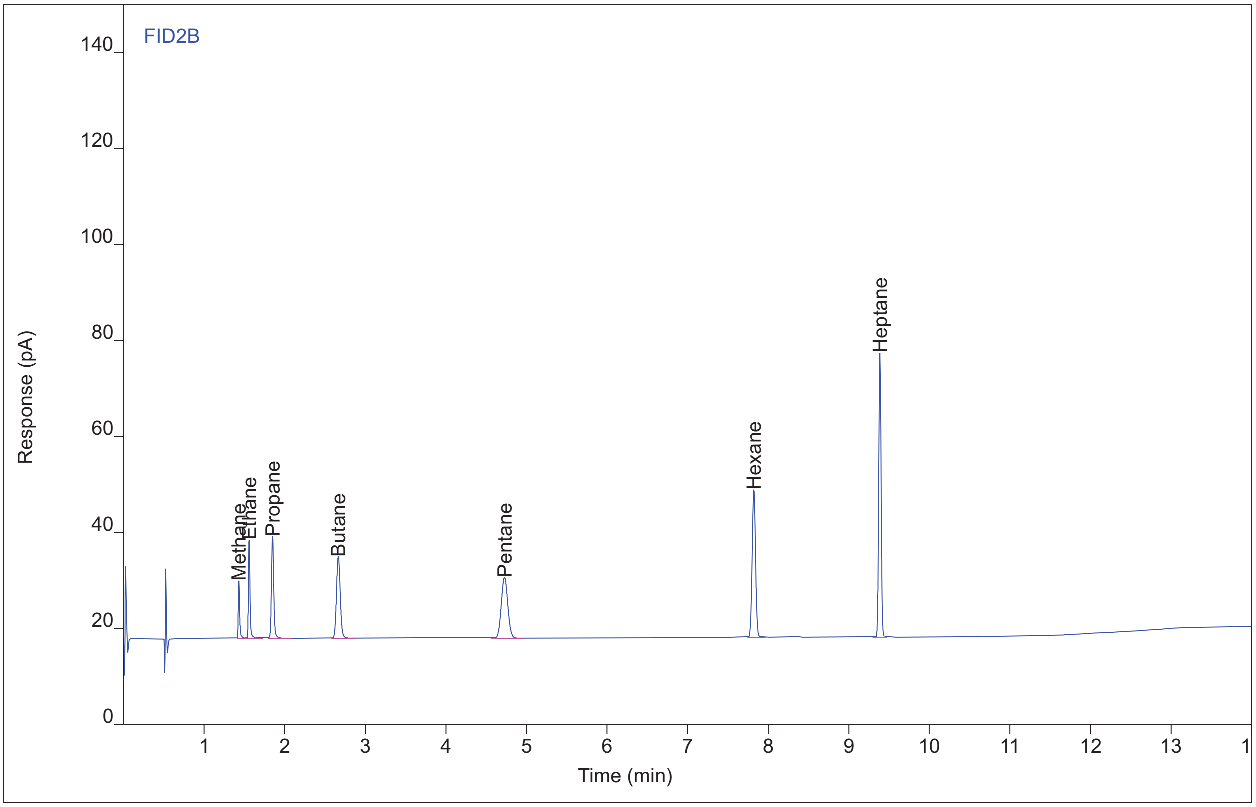


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	34.4773	26.7914	97.4557	1	97.4557	ppm
Ethane	VB	1.56	66.2339	47.4142	96.6551	1	96.6551	ppm
Propane	BB	1.85	100.185	49.3369	97.0804	1	97.0804	ppm
Butane	VB	2.66	133.225	39.6708	96.5231	1	96.5231	ppm
Pentane	BB	4.72	171.080	29.7498	97.0191	1	97.0191	ppm
Hexane	BB	7.82	212.247	70.9457	96.3893	1	96.3893	ppm
Heptane	VB	9.38	280.287	137.523	94.5966	1	94.5966	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1002.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	2 of 4
Injection Date	11/13/2018 9:51 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

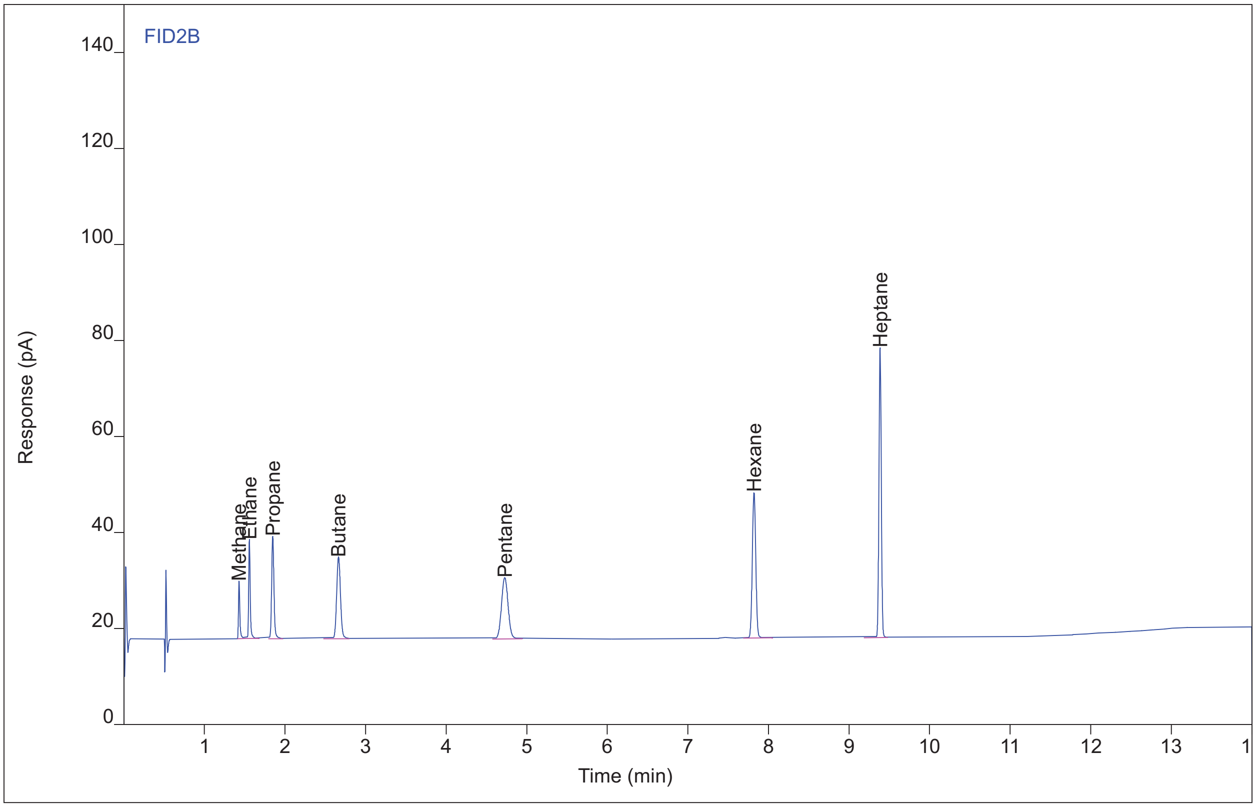


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.6585	11.8297	41.4267	1	41.4267	ppm
Ethane	VB	1.56	28.2549	20.4514	41.2062	1	41.2062	ppm
Propane	BB	1.85	43.1505	21.2846	41.6699	1	41.6699	ppm
Butane	BB	2.66	56.8532	17.0466	41.0585	1	41.0585	ppm
Pentane	VB	4.73	73.0329	12.8144	41.2309	1	41.2309	ppm
Hexane	BB	7.82	91.4246	30.7716	41.3740	1	41.3740	ppm
Heptane	BV	9.39	122.765	59.1071	41.2570	1	41.2570	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1003.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	3 of 4
Injection Date	11/13/2018 10:16 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

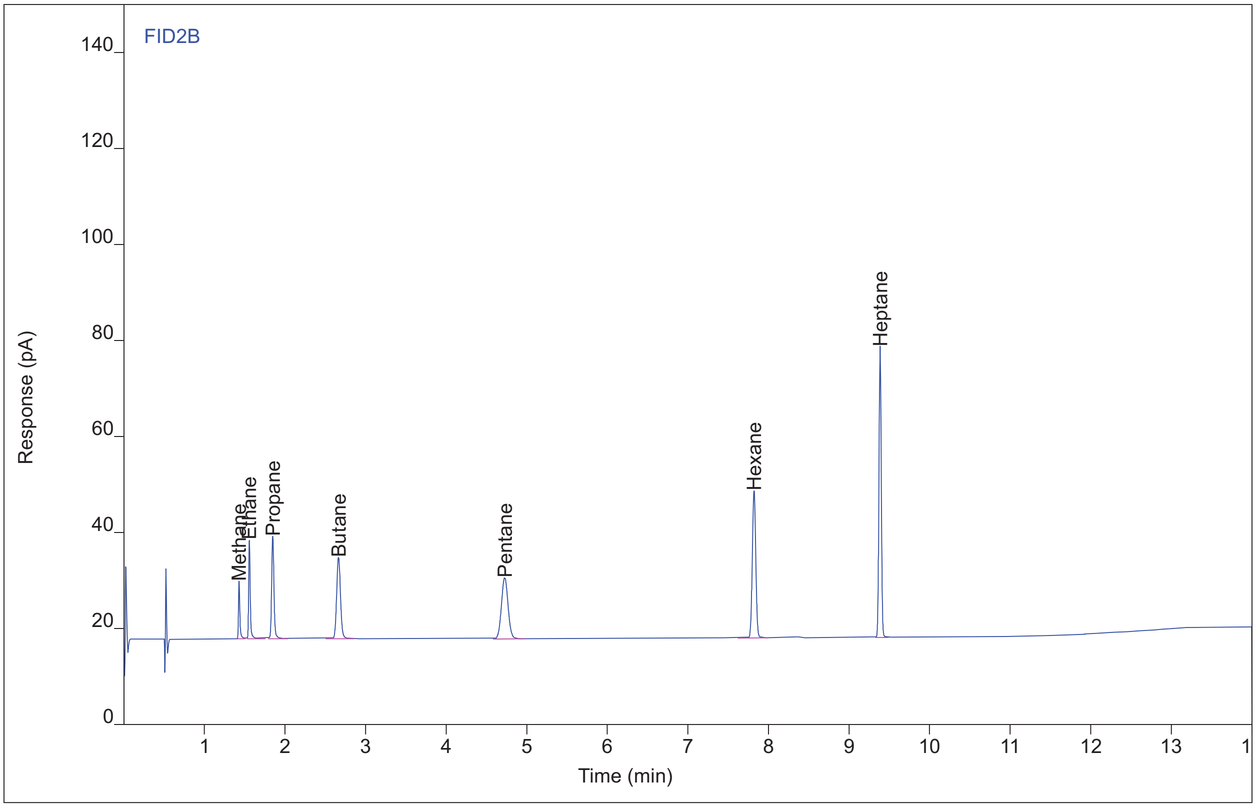


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	14.5349	11.9417	41.0772	1	41.0772	ppm
Ethane	VB	1.56	27.9790	20.4552	40.8035	1	40.8035	ppm
Propane	BV	1.85	42.7910	21.3216	41.3207	1	41.3207	ppm
Butane	BV	2.66	56.8867	17.0754	41.0829	1	41.0829	ppm
Pentane	VB	4.73	72.9691	12.7965	41.1946	1	41.1946	ppm
Hexane	VB	7.82	92.1227	30.4459	41.6919	1	41.6919	ppm
Heptane	VB	9.39	123.072	60.3312	41.3610	1	41.3610	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C4 ENV(1=424,4=400)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1004.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	4 of 4
Injection Date	11/13/2018 10:40 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

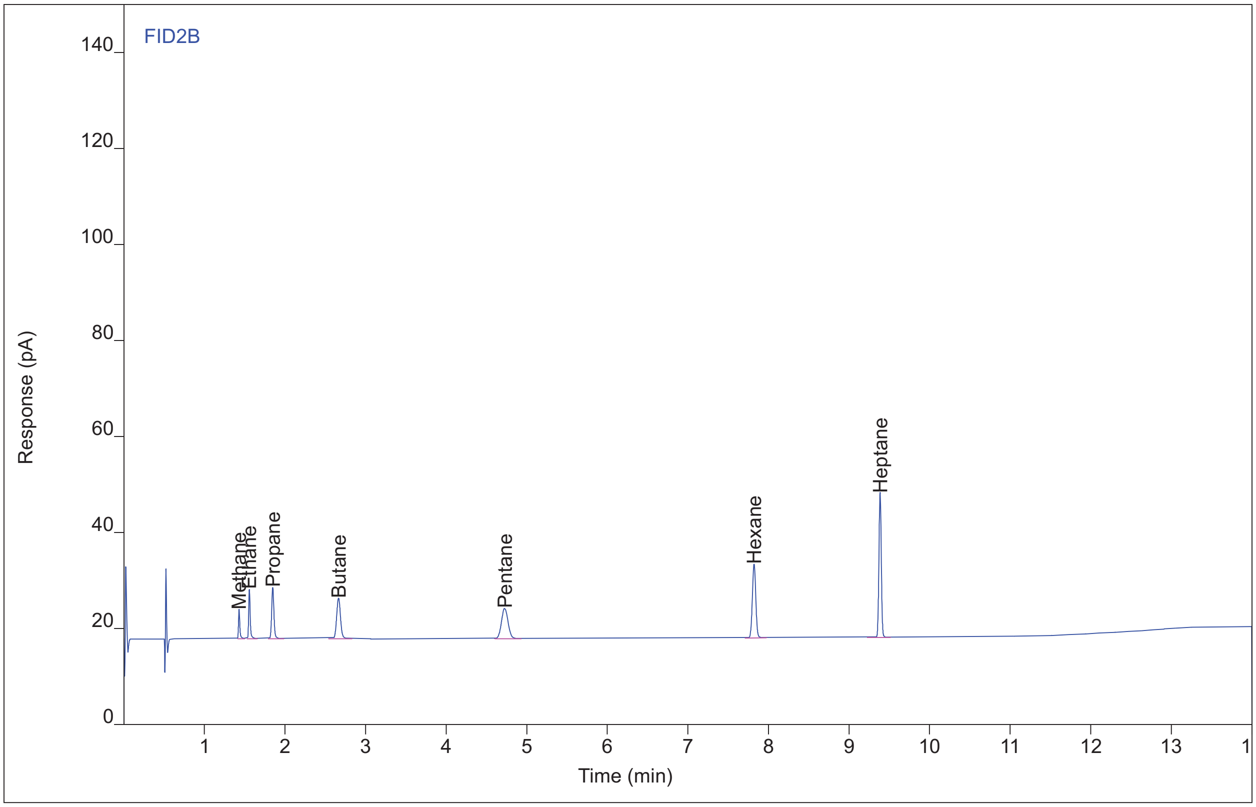


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	14.6422	11.9358	41.3806	1	41.3806	ppm
Ethane	BB	1.56	28.5111	20.4968	41.5803	1	41.5803	ppm
Propane	BB	1.85	42.9520	21.3178	41.4771	1	41.4771	ppm
Butane	VB	2.66	56.8984	17.0630	41.0913	1	41.0913	ppm
Pentane	VB	4.73	73.5761	12.8171	41.5400	1	41.5400	ppm
Hexane	BB	7.82	91.9212	30.6665	41.6001	1	41.6001	ppm
Heptane	VB	9.39	122.843	60.3471	41.2836	1	41.2836	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C3 ENV(1=565.33,4=200)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1102.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	2 of 4
Injection Date	11/13/2018 11:30 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

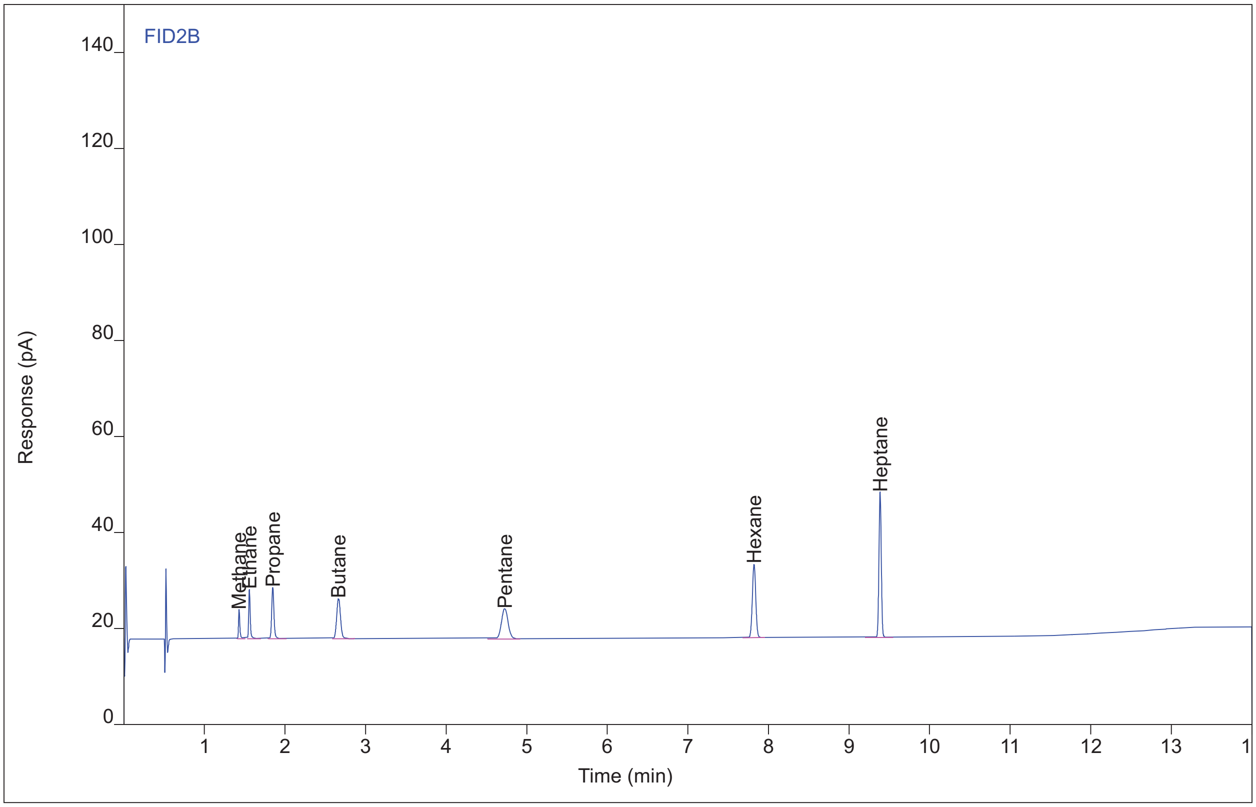


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	7.13819	6.02462	20.1662	1	20.1662	ppm
Ethane	BB	1.56	13.8926	10.2509	20.2375	1	20.2375	ppm
Propane	BB	1.85	21.2701	10.6660	20.4126	1	20.4126	ppm
Butane	BB	2.66	28.3705	8.51824	20.3730	1	20.3730	ppm
Pentane	BB	4.73	36.3249	6.37608	20.3443	1	20.3443	ppm
Hexane	VB	7.82	45.8091	15.4109	20.6034	1	20.6034	ppm
Heptane	BB	9.39	62.0428	30.0893	20.6956	1	20.6956	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C3 ENV(1=565.33,4=200)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1103.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	3 of 4
Injection Date	11/13/2018 11:54 AM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

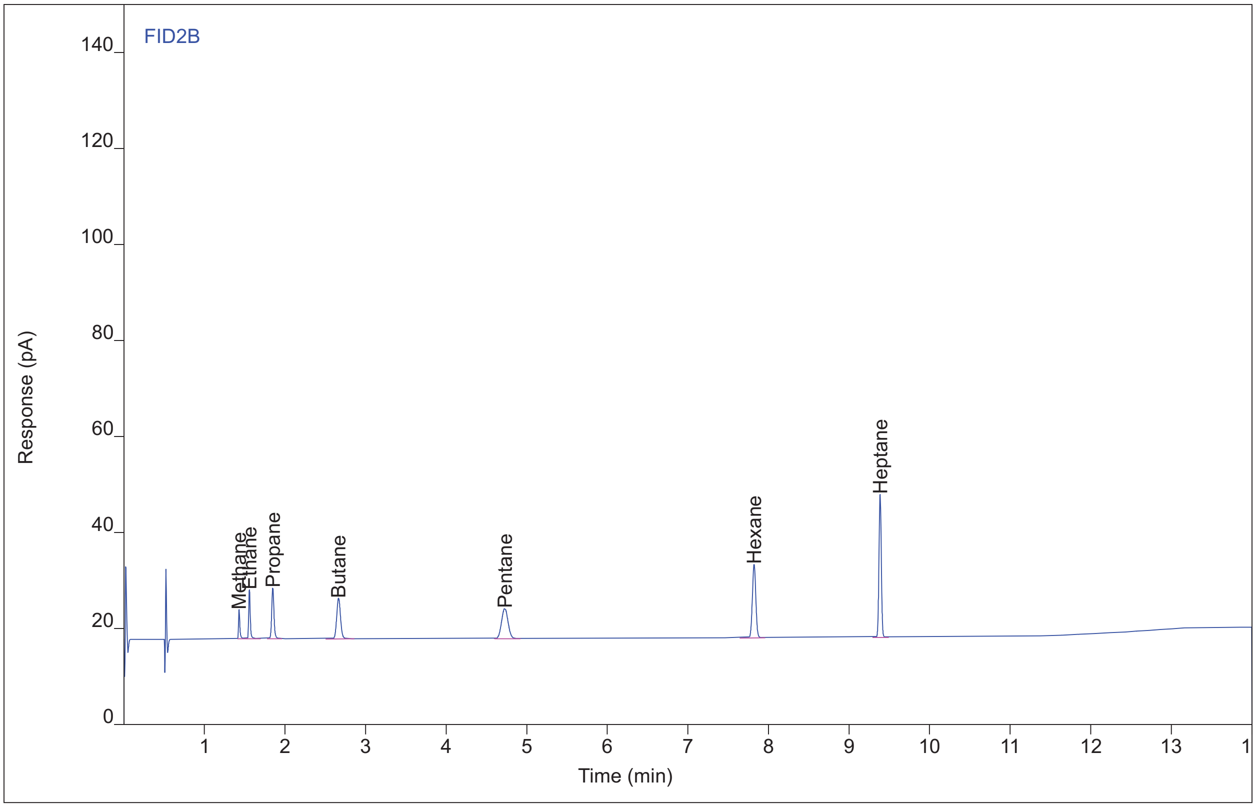


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	7.26946	6.00915	20.5373	1	20.5373	ppm
Ethane	BB	1.56	14.0987	10.2966	20.5384	1	20.5384	ppm
Propane	BB	1.85	21.3746	10.6937	20.5141	1	20.5141	ppm
Butane	BB	2.66	28.4466	8.51116	20.4284	1	20.4284	ppm
Pentane	BV	4.73	36.7338	6.37650	20.5770	1	20.5770	ppm
Hexane	BB	7.82	45.5395	15.4286	20.4806	1	20.4806	ppm
Heptane	BB	9.39	61.7406	30.2741	20.5932	1	20.5932	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C3 ENV(1=565.33,4=200)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1104.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	4 of 4
Injection Date	11/13/2018 12:19 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

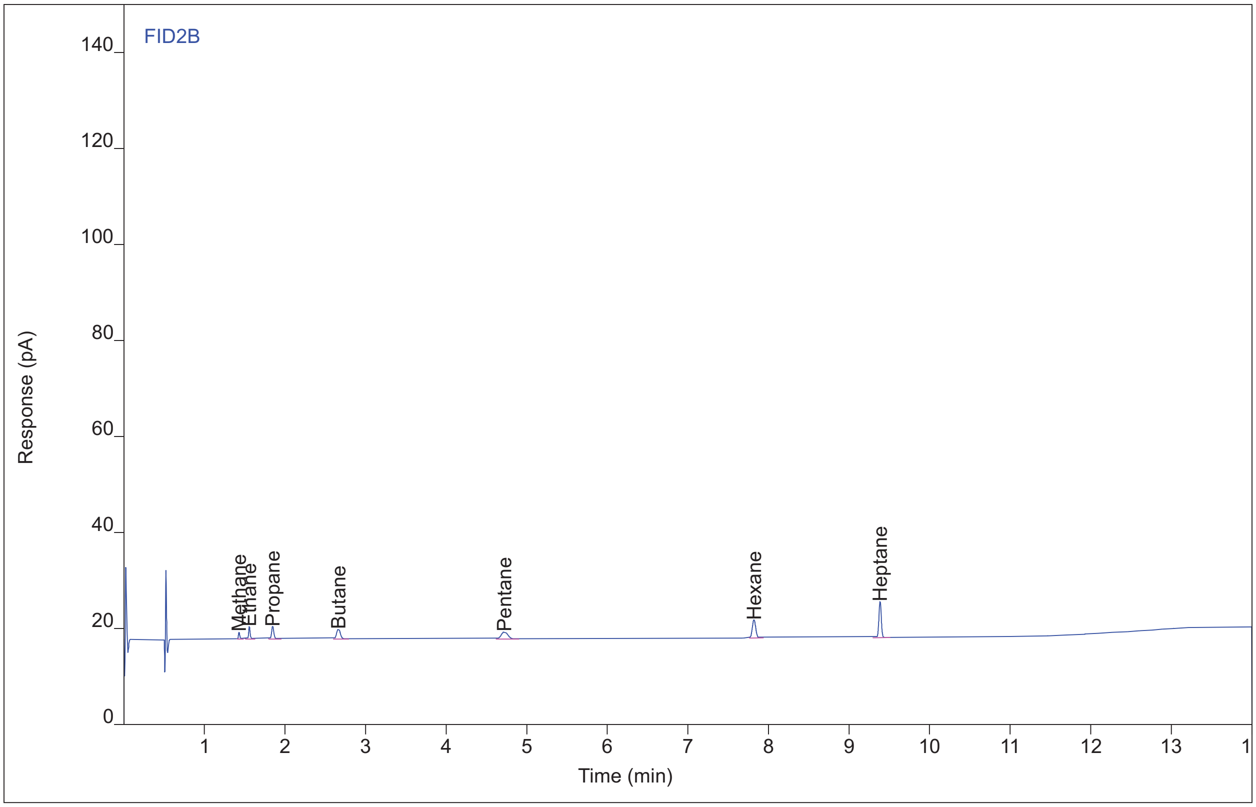


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BV	1.43	7.27366	5.94380	20.5491	1	20.5491	ppm
Ethane	VB	1.56	14.0653	10.2404	20.4896	1	20.4896	ppm
Propane	BB	1.85	21.1351	10.6369	20.2814	1	20.2814	ppm
Butane	VB	2.66	28.3127	8.50836	20.3311	1	20.3311	ppm
Pentane	BV	4.73	36.3931	6.39648	20.3831	1	20.3831	ppm
Hexane	VB	7.82	45.7321	15.4246	20.5683	1	20.5683	ppm
Heptane	BV	9.39	61.3840	29.8497	20.4725	1	20.4725	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C2 ENV(1=2685.32,4=200)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1202.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	2 of 4
Injection Date	11/13/2018 1:08 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

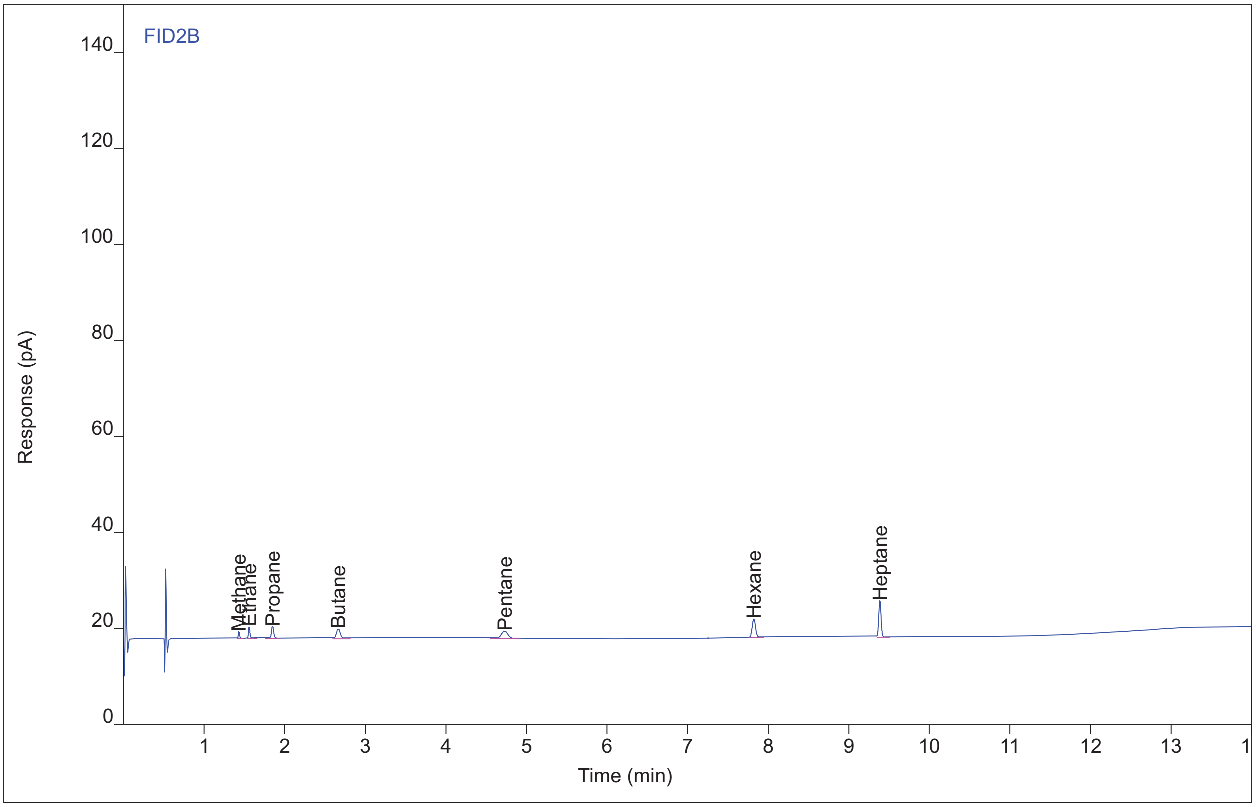


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	1.71699	1.49252	4.84048	1	4.84048	ppm
Ethane	BB	1.56	3.42487	2.55082	4.95515	1	4.95515	ppm
Propane	BV	1.85	5.37806	2.66524	4.97442	1	4.97442	ppm
Butane	BB	2.66	7.08012	2.16606	4.91495	1	4.91495	ppm
Pentane	BV	4.72	9.28425	1.62423	4.96096	1	4.96096	ppm
Hexane	BB	7.82	11.3842	3.80375	4.93178	1	4.93178	ppm
Heptane	BB	9.39	15.5713	7.54648	4.96195	1	4.96195	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C2 ENV(1=2685.32,4=200)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1203.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	3 of 4
Injection Date	11/13/2018 1:33 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM

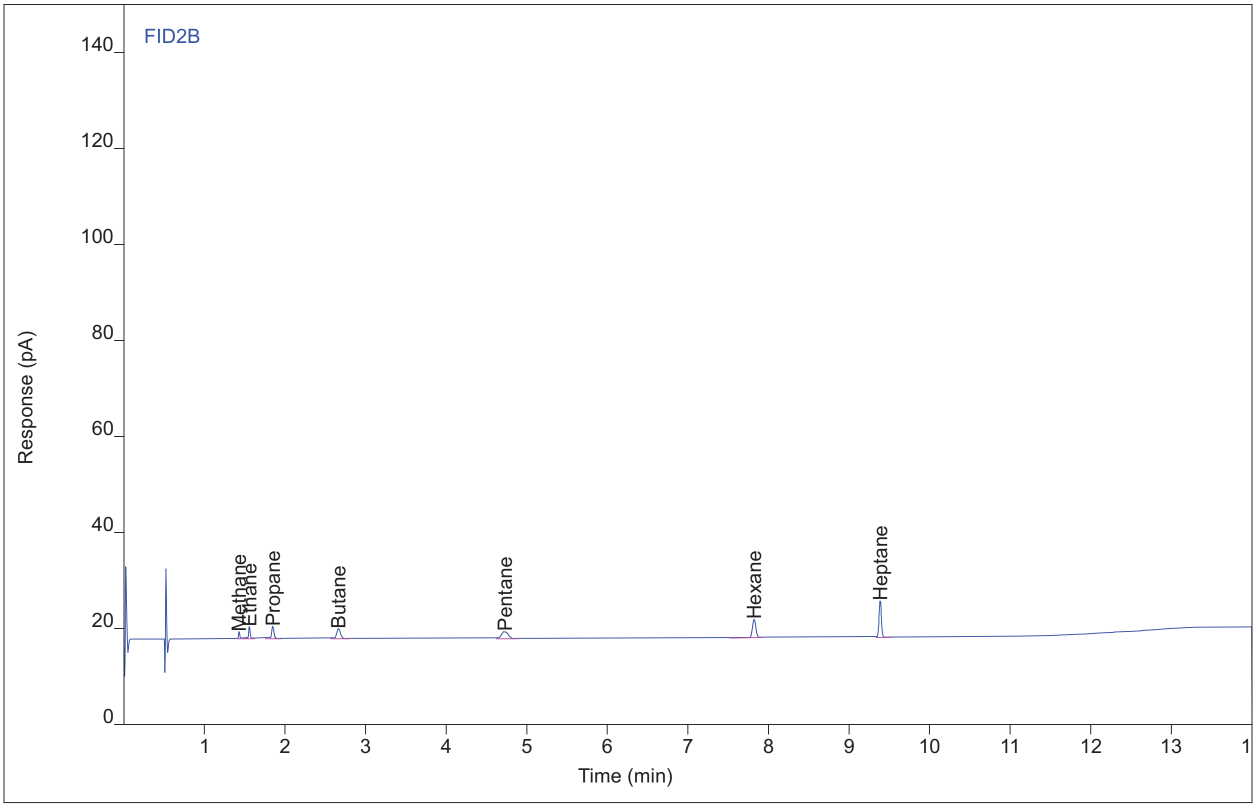


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	1.75824	1.49851	4.95678	1	4.95678	ppm
Ethane	BB	1.56	3.39306	2.52292	4.90913	1	4.90913	ppm
Propane	BB	1.85	5.30697	2.67176	4.90867	1	4.90867	ppm
Butane	BB	2.66	7.26584	2.13648	5.04590	1	5.04590	ppm
Pentane	BB	4.73	9.32038	1.62147	4.98027	1	4.98027	ppm
Hexane	BB	7.82	11.4795	3.85250	4.97306	1	4.97306	ppm
Heptane	BB	9.39	15.5537	7.61731	4.95635	1	4.95635	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	ROSIEP082 #C2 ENV(1=2685.32,4=200)	Sample Type	Calibration
Sequence Name	ROSIEP084 ver.2	Vial Number	Vial 26
Inj Data File	026B1204.D	Injection Volume	NA
File Location	GC/2018/Rosie/Quarter 1	Injection	4 of 4
Injection Date	11/13/2018 1:57 PM	Acquisition Method	AQM_ROSIEP080.M
File Modified	11/27/2018 10:53 AM	Analysis Method	ROSIEP082_C1-C7.M
Instrument		Method Modified	11/14/2018 8:03 AM
Operator	Jennie Parrish	Printed	11/27/2018 11:01 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	BB	1.43	1.79927	1.50518	5.07264	1	5.07264	ppm
Ethane	BB	1.56	3.47199	2.58465	5.02354	1	5.02354	ppm
Propane	BV	1.85	5.40355	2.66159	4.99800	1	4.99800	ppm
Butane	VB	2.67	7.12971	2.14548	4.94937	1	4.94937	ppm
Pentane	BB	4.73	9.25463	1.61267	4.94514	1	4.94514	ppm
Hexane	VB	7.82	11.4236	3.84068	4.94885	1	4.94885	ppm
Heptane	BB	9.39	15.5596	7.62864	4.95823	1	4.95823	ppm

Airgas
an Air Liquide company

Airgas USA, LLC
24075 US Hwy 6
Stryker, OH 43557
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X08NI99C15A0079	Reference Number:	141-124578026-1
Cylinder Number:	CC72412	Cylinder Volume:	144.4 CF
Laboratory:	124 - Conley Stryker - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 19, 2016	Valve Outlet:	350
Lot Number:	141-124578026-1		

Expiration Date: Sep 19, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	100.0 PPM	+/- 2%
HEXANE	100.0 PPM	100.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	100.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		

Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED HYDROCARBON

Customer:	MONTROSE ENVIRONMENTAL GROUP		
Part Number:	X08NI83C15AC015	Reference Number:	126-400739490-1
Cylinder Number:	SG9164133BAL	Cylinder Volume:	15.8 CF
Laboratory:	124 - LaPorte Mix (SAP) - TX	Cylinder Pressure:	204 PSIG
Analysis Date:	Jul 14, 2016	Valve Outlet:	350
Lot Number:	126-400739490-1	Expiration Date:	Jul 14, 2019

Traceability Statement: Hydrocarbon Process standards are NIST traceable either directly by weight or by comparison to Airgas laboratory standards that are directly NIST traceable by weight.

CERTIFIED CONCENTRATIONS

Component	Requested Concentration	Reported Mole %	Accuracy
N HEPTANE	250.0 PPM	251.2 PPM	+/- 2%
HEXANE	0.4000 %	0.4001 %	+/- 2%
N PENTANE	0.5000 %	0.4995 %	+/- 2%
N BUTANE	1.000 %	0.9991 %	+/- 2%
ETHANE	5.000 %	4.995 %	+/- 2%
METHANE	5.000 %	4.992 %	+/- 2%
PROPANE	5.000 %	4.997 %	+/- 2%
NITROGEN	Balance	Balance	

Notes:

PO# 06201603

Signature on file

Approved for Release

Method Information

Method: C:\GC\ROSIE\2018\METHODS\AQM_ROSIEP080.M
Modified: 11/6/2018 at 9:32:59 AM

Method Audit Trail

Operator : Justin Guenzler
Date : 11/6/2018 9:32:58 AM
Change Info: This method was created at 11/6/2018 9:32:58 AM and based on method C:\GC\ROSIE\2018\METHODS\ROSIEP001_CAL.M

Operator : Justin Guenzler
Date : 11/6/2018 9:32:59 AM
Change Info: Method saved. User comment: ""

Run Time Checklist

Pre-Run Cmd/Macro: on
Name: VC_ENV

Data Acquisition: on

Standard Data Analysis: on

Customized Data Analysis: off

Save GLP Data: off

Post-Run Cmd/Macro: off

Save Method with Data: off

Injection Source and Location

Injection Source: 6890 GC Valve

Injection Location: Dual

===
6890 GC METHOD
===

OVEN
Initial temp: 40 'C (On) Maximum temp: 260 'C
Initial time: 6.00 min Equilibration time: 1.50 min
Ramps:

#	Rate	Final temp	Final time
1	30.00	220	2.00
2	0.0(Off)		

Post temp: 40 'C
Post time: 0.00 min
Run time: 14.00 min

FRONT INLET (SPLIT/SPLITLESS) BACK INLET (SPLIT/SPLITLESS)

Mode: Splitless
Initial temp: 200 'C (On)
Pressure: 60.00 psi (On)
Purge flow: 0.0 mL/min
Purge time: 0.00 min
Total flow: 12.3 mL/min
Gas saver: Off
Gas type: Helium

Mode: Split
Initial temp: 200 'C (On)
Pressure: 11.99 psi (On)
Split ratio: 5:1
Split flow: 12.8 mL/min
Total flow: 18.5 mL/min
Gas saver: Off
Gas type: Helium

COLUMN 1
Packed Column
Model Number: Restek Shincarbon
2x 2mx1/16inch
Max temperature: 280 'C
Mode: constant pressure
Pressure: 60.00 psi
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2
Capillary Column
Model Number: Restek 10198
RTX-1 s/n - 1452469
Max temperature: 300 'C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.6 mL/min
Nominal init pressure: 12.00 psi
Average velocity: 41 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (TCD)
Temperature: 275 'C (On)
Reference flow: On
Makeup flow: On
Makeup Gas Type: Helium
Filament: On
Negative polarity: On

BACK DETECTOR (FID)
Temperature: 250 'C (On)
Hydrogen flow: 60.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 40.0 mL/min (On)
Makeup Gas Type: Helium
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1
Data rate: 20 Hz
Type: front detector
Save Data: On
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

SIGNAL 2
Data rate: 20 Hz
Type: back detector
Save Data: On
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

COLUMN COMP 1
Derive from front detector

COLUMN COMP 2
Derive from front detector

THERMAL AUX 1
Use: Valve Box Heater
Description:
Initial temp: 130 'C (On)
Initial time: 11.00 min

#	Rate	Final temp	Final time
1	0.0(Off)		

VALVES
Valve 1 Gas Sampling
Description:
Loop Volume: 0.250 mL
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Front Inlet
Valve 2 Gas Sampling
Description:

POST RUN
Post Time: 0.00 min

Loop Volume: 0.250 mL
Load Time: 0.10 min
Inject Time: 0.50 min
Inlet: Back Inlet

TIME TABLE

Time	Specifier	Parameter & Setpoint	
3.00		Front Detector Polarity:	Off

This Is The Last Page Of This Report.

ENTHALPY
ANALYTICAL

APPENDIX II-E
Calibration Gas Cylinder Certification Sheets

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI79E15A0088	Reference Number:	122-401268406-1
Cylinder Number:	EB0066823	Cylinder Volume:	151.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Aug 06, 2018

Expiration Date: Aug 06, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.952 %	G1	+/- 0.6% NIST Traceable	08/06/2018
OXYGEN	11.00 %	11.05 %	G1	+/- 0.4% NIST Traceable	08/06/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060638	CC414571	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 09, 2019
NTRM	09060212	CC262381	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 08, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Jul 25, 2018
Horiba MPA510 O2 41499150042	Paramagnetic	Jul 25, 2018

Triad Data Available Upon Request

Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI59E15A0014	Reference Number:	122-401123521-1
Cylinder Number:	EB0107294	Cylinder Volume:	158.6 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
		Certification Date:	Feb 12, 2018

Expiration Date: Feb 12, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	18.50 %	18.22 %	G1	+/- 0.6% NIST Traceable	02/12/2018
OXYGEN	22.00 %	21.99 %	G1	+/- 0.3% NIST Traceable	02/12/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061508	CC354696	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 11, 2024
NTRM	12062009	CC367498	22.883 % OXYGEN/NITROGEN	+/- 0.2%	Apr 24, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Feb 07, 2018
Horiba MPA510 O2 41499150042	Paramagnetic	Feb 07, 2018

Triad Data Available Upon Request

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax (215) 736 5240

DocNumber: 000021313

PGVP ID: F32017

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 92286180
Customer P. O. Number: 0050001228
Customer Reference Number:

Fill Date: 6/10/2017
Part Number: NI CO225E-AS
Lot Number: 304613161708
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	6/14/2025		NIST Traceable
Cylinder Number:	CC120837		Analytical Uncertainty:
226.4 ppm		CARBON MONOXIDE	± 0.5 %
Balance		NITROGEN	

Certifcation Information: *Certification Date:* 6/14/2017 *Term:* 96 Months *Expiration Date:* 6/14/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. **Component: CARBON MONOXIDE**

Requested Concentration: 225 ppm
Certified Concentration: 226.4 ppm
Instrument Used: HORIBA VIA-3000 S/N Y9EY78L6
Analytical Method: NDIR
Last Multipoint Calibration: 5/31/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC308682
Ref. Std. Conc: 303 PPM
Ref. Std. Traceable to SRM #: 1680b
SRM Sample #: 2-J-49
SRM Cylinder #: CAL018038

First Analysis Data: **Date:** 6/14/2017

Z: 0		R: 303		C: 226.3		Conc:	226.5
R: 302.6		Z: 0		C: 226.2		Conc:	226.4
Z: 0		C: 226.2		R: 302.6		Conc:	226.4
UOM: PPM				Mean Test Assay:			226.4 PPM

Second Analysis Data: **Date:**

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM			Mean Test Assay:			0 PPM

Analyzed by: Megha Patel

Certified by: Jessica Goodman

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000022170

PGVP ID: F32017

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 41969933
Customer P. O. Number: 0050001358
Customer Reference Number:

Fill Date: 9/6/2017
Part Number: NI CO125E-AS
Lot Number: 304613249708
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	9/11/2025		NIST Traceable
Cylinder Number:	CC247564		Analytical Uncertainty:
125.6 ppm	CARBON MONOXIDE		± 0.3 %
Balance	NITROGEN		

Certification Information: *Certification Date:* 9/11/2017 *Term:* 96 Months *Expiration Date:* 9/11/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. **Component:** CARBON MONOXIDE

Requested Concentration: 125 ppm
Certified Concentration: 125.6 ppm
Instrument Used: HORIBA VIA-510, S/N 577172041
Analytical Method: NON-DISPERSIVE INFRARED
Last Multipoint Calibration: 8/15/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC219583
Ref. Std. Conc: 100.5 PPM
Ref. Std. Traceable to SRM #: 1679c
SRM Sample #: 3-K-04
SRM Cylinder #: FI25419

First Analysis Data: **Date:** 9/11/2017

Z:	0	R:	100.5	C:	125.3	Conc:	125.1
R:	100.6	Z:	0	C:	126.1	Conc:	125.9
Z:	0	C:	125.9	R:	100.8	Conc:	125.7
UOM:	PPM			Mean Test Assay:			125.6 PPM

Second Analysis Data: **Date:**

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM			Mean Test Assay:			0 PPM

Analyzed by: Megha Patel

Certified by: Jessica Goodman

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000005550

PGVP ID: F32012

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PDI WHSE RALEIGH
2807 GRESHAM LAKE RD
RALEIGH NC 276160

Praxair Order Number: 04430644
Customer P. O. Number: 12395 99
Customer Reference Number:

Fill Date: 8/9/2013
Part Number: EV AIPR25.5MEAS
Lot Number: 302541221301
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**8/16/2021**		NIST Traceable
Cylinder Number:	**CC145705**		Analytical Uncertainty:
25.25	**ppm**	**PROPANE**	± 1 %
	Balance	**AIR**	

Certifcation Information: *Certification Date:* 8/16/2013 *Term:* 96 Months *Expiration Date:* 8/16/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: PROPANE

Requested Concentration: 25.5 ppm
Certified Concentration: 25.25 ppm
Instrument Used: GOW MAC 580
Analytical Method:
Last Multipoint Calibration: 8/14/2013

Reference Standard Type: GMIS
Ref. Std. Cylinder #: SA7942
Ref. Std. Conc: 20.92 PPM
Ref. Std. Traceable to SRM #: 1667b
SRM Sample #:
SRM Cylinder #:

First Analysis Data:						**Date:**	8/16/2013
Z: 0		**R:** 20.9		**C:** 25.5		**Conc:**	25.51
R: 20.82		**Z:** 0		**C:** 25.14		**Conc:**	25.15
Z: 0		**C:** 25.1		**R:** 21.02		**Conc:**	25.11
UOM: PPM				**Mean Test Assay:**			25.25 PPM

Second Analysis Data:						**Date:**	
Z: 0		**R:** 0		**C:** 0		**Conc:**	0
R: 0		**Z:** 0		**C:** 0		**Conc:**	0
Z: 0		**C:** 0		**R:** 0		**Conc:**	0
UOM: PPM				**Mean Test Assay:**			0 PPM

Analyzed by: Jeff Gosner

Certified by: Matthew Wilhelm for

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0581	Reference Number:	122-401180044-1
Cylinder Number:	CC341990	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	350
Gas Code:	PPN,BALN	Certification Date:	Apr 17, 2018

Expiration Date: Apr 17, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	85.00 PPM	85.84 PPM	G1	+/- 0.8% NIST Traceable	04/17/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	0010613	AAL18527	49.8 PPM PROPANE/AIR	+/- 0.6%	May 23, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Mar 22, 2018

Triad Data Available Upon Request

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240
PGVP ID: F32018

DocNumber: 000024404

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 56678698
Customer P. O. Number: 0050001578
Customer Reference Number:

Fill Date: 3/14/2018
Part Number: NI NO47.5ME-AS
Lot Number: 30461307802
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	3/26/2021		NIST Traceable
Cylinder Number:	CC352567		Analytical Uncertainty:
48.0 ppm	NITRIC OXIDE		± 0.9 %
Balance	NITROGEN		

NOx = 48.0 ppm NOx for Reference Only

Certification Information: *Certification Date:* 3/26/2018 *Term:* 36 Months *Expiration Date:* 3/26/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITRIC OXIDE

Requested Concentration: 47.5 ppm
Certified Concentration: 48.0 ppm
Instrument Used: MKS 2031
Analytical Method: FTIR
Last Multipoint Calibration: 3/15/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: SA4389
Ref. Std. Conc: 50.3 PPM
Ref. Std. Traceable to SRM #: 1683B
SRM Sample #: 45-V-05
SRM Cylinder #: CAL017971

First Analysis Data: Date: 3/19/2018

Z: 0.123	R: 49.7	C: 47.1	Conc:	47.7
R: 49.5	Z: 0.014	C: 47	Conc:	47.6
Z: 0.014	C: 47.2	R: 49.7	Conc:	47.8
UOM: PPM		Mean Test Assay:		47.7 PPM

Second Analysis Data: Date: 3/26/2018

Z: 0.023	R: 49.5	C: 47.7	Conc:	48.3
R: 49.6	Z: 0.066	C: 47.6	Conc:	48.2
Z: 0.053	C: 47.6	R: 49.8	Conc:	48.2
UOM: PPM		Mean Test Assay:		48.3 PPM

Analyzed by: Remzy Jemal

Certified by: Megha Patel

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000021376

PGVP ID: F32017

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 92286180
Customer P. O. Number: 0050001228
Customer Reference Number:

Fill Date: 6/10/2017
Part Number: NI NO90ME-AS
Lot Number: 304513161704
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	6/21/2025		NIST Traceable
Cylinder Number:	CC200174		Analytical Uncertainty:
89.5	ppm	NITRIC OXIDE	± 0.5 %
	Balance	NITROGEN	

NOx = 90.0 ppm

NOx for Reference Only

Certification Information: *Certification Date:* 6/21/2017 *Term:* 96 Months *Expiration Date:* 6/21/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITRIC OXIDE

Requested Concentration: 90 ppm
Certified Concentration: 89.5 ppm
Instrument Used: TECO MODEL 42I, S/N: 0820017513
Analytical Method: CHEMILUMINESCENCE
Last Multipoint Calibration: 6/13/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC352709
Ref. Std. Conc: 95.0 PPM
Ref. Std. Traceable to SRM #: 1684B
SRM Sample #: 44-T-48
SRM Cylinder #: FF9239

First Analysis Data: Date: 6/14/2017

Z: 0	R: 95	C: 89.5	Conc: 89.5
R: 95	Z: 0	C: 89.4	Conc: 89.4
Z: 0	C: 89.4	R: 95	Conc: 89.4

UOM: PPM Mean Test Assay: 89.4 PPM

Second Analysis Data: Date: 6/21/2017

Z: 0	R: 95	C: 90	Conc: 89.7
R: 95.4	Z: 0	C: 90	Conc: 89.7
Z: 0	C: 90	R: 95.4	Conc: 89.7

UOM: PPM Mean Test Assay: 89.7 PPM

Analyzed by: Jessica Goodman
Jessica Goodman

Certified by: Megha Patel
Megha Patel

APPENDIX II-F
Sampling Equipment Calibration Sheets

METHOD 5 POST-TEST CONSOLE CALIBRATION USING CALIBRATED CRITICAL ORIFICES

3-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522
Console Serial Number	909033
DGM Model Number	RW 110
DGM Serial Number	328893

Calibration Conditions			
Date	**Time**	01/21/19	10:30
Barometric Pressure		30.4	in Hg
Theoretical Critical Vacuum[1]		14.3	in Hg
Calibration Technician		JBG	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

[2]The Critical Orifice Coefficient, K', must be entered in English units, (ft3*oR1/2)/(in.Hg*min).

Calibration Data

Run Time	**Metering Console**					**Critical Orifice**				
Elapsed	**DGM Orifice ΔH**	**Volume Initial**	**Volume Final**	**Outlet Temp Initial**	**Outlet Temp Final**	**Serial Number**	**Coefficient**	**Amb Temp Initial**	**Amb Temp Final**	**Actual Vacuum**
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	in. Hg
min	in H_2O	cubic feet	cubic feet	°F	°F	FO		°F	°F	
9.5	2.00	10.00	17.429	63	63	FO-63	0.5906	66	66	15.00
8.0	2.00	17.429	23.687	63	64	FO-63	0.5906	66	66	15.00
8.0	2.00	23.687	29.957	64	64	FO-63	0.5906	66	66	15.00

Results

Standardized Data				**Dry Gas Meter**				
Dry Gas Meter		**Critical Orifice**		**Calibration Factor**		**Flowrate**	0.3488	
				Value	**Variation**	**Std & Corr**	**0.75 SCFM**	**Variation**
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	($\Delta H@$)	($\Delta\Delta H@$)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
7.657	0.806	7.596	0.800	0.992	0.000	0.800	1.824	0.002
6.444	0.806	6.397	0.800	0.993	0.001	0.800	1.822	0.000
6.450	0.806	6.397	0.800	0.992	0.000	0.800	1.820	-0.002
Pretest Gamma	0.9744	**% Deviation**	1.8	0.992	Y Average		1.822	$\Delta H@$ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature _______ Jonas Gilbert

Date ________ 1/21/2019

Air Control Techniques, P.C.

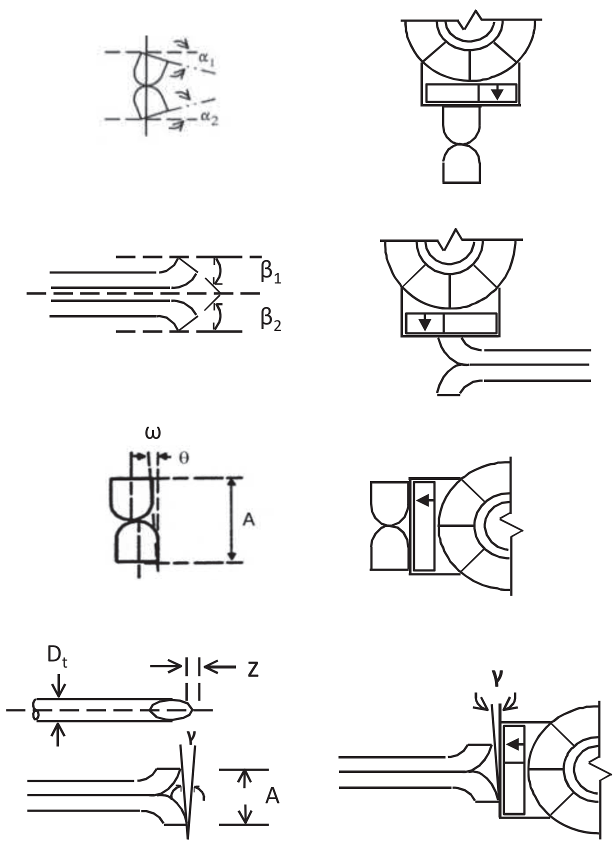
Type S Pitot Tube Inspection

GENERAL INFORMATION

Probe ID	4A	Personnel	EBG
Date	3/19/2019	Coefficient Value	0.84

PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no



α_1	0	$\leq \pm 10°$
α_2	2	$\leq \pm 10°$
β_1	-1	$\leq \pm 5°$
β_2	0	$\leq \pm 5°$
γ	0.0087	
θ	0.0524	
z = A tan (γ)	0.0200	$\leq \pm 1/8$"
ω = A tan (θ)	0.0475	$\leq \pm 1/32$"
D_t	0.375	

(3/16" < D_t < 3/8" Recommended)

A	0.906
P_A P_B	1.208

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type	Hg Thermometer	Ref. ID	Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	32	32	0
Ambient	67	67	0
Hot Plate	232	231	1
		Maximum Temp. Difference, °F	1

Air Control Techniques, P.C.

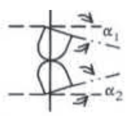
Type S Pitot Tube Inspection

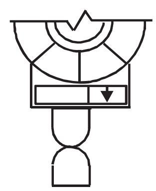
GENERAL INFORMATION

Probe ID	4B	Personnel	EJG
Date	3/19/2019	Coefficient Value	0.84

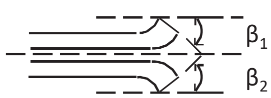
PITOT TUBE INSPECTION

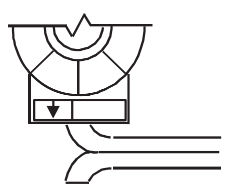
Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no





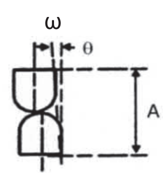
α_1	1	≤ ±10°
α_2	0	≤ ±10°

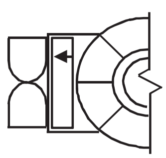




β_1	1	≤ ±5°
β_2	2	≤ ±5°

γ	0
θ	3

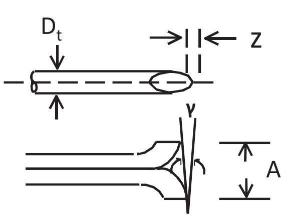


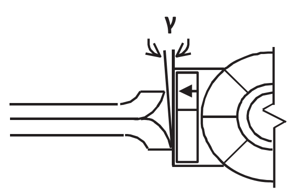


$z = A \tan(\gamma)$	0.00	≤ ±⅛"
$\omega = A \tan(\theta)$	0.049970818	≤ ±1/32"

D_t	0.3735

(3/16" < D_t < ⅜" Recommended)





A	0.9535
P_A P_B	1.28

(1.05 < P/D_t < 1.50 Recommended)

APPENDIX II-G
Process Data

Pine Content, January 16, 2019: 80% by weight

Appendix II-G, Table 1. Process Data, RCO 2, January 16, 2019, Run 1						
Process Parameter	9:45 AM	10:00 AM	10:15 AM	10:30 AM	10:45 AM	Average
Run Time 9:45-10:52 a.m.						
Short Tons/hour (wet basis)	25.8	25.8	25.8	25.8	25.8	25.8
Production, ODT/hour	24.3	24.3	24.3	24.3	24.3	24.3
Pellet Moisture Content, % weight	5.93	5.93	5.93	5.93	5.93	5.93
RCO 2 Diff. Pressure, in w.c.	1.8	1.3	0.53	1.2	1.9	1.3
RCO 2 Burner SP, ºF	750	750	750	750	750	750
RCO 2 Burner Temps, PV,º F	782	789	745	785	782	777
Cyclofilter 1 Diff. Pressure., in w.c.	0.8	0.8	0.8	0.9	0.8	0.82
Cyclofilter 2 Diff. Pressure, in w.c.	0.5	0.5	0.6	0.6	0.6	0.56

Notes

No run for PM, VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

Failed leak test for PM results

Moisture was consistent with Runs 3 thru 5.

Appendix II-G, Table 2. Process Data, RCO 2, January 16, 2019, Run 2									
Process Parameter	11:43 a.m.	11:58 a.m.	12:13 p.m.	12:32 p.m.	12:47 p.m.	13:02 p.m.	13:17 p.m.	13:27 p.m.	Average
Run Time 11:44 a.m.-13:18 p.m..									
Short Tons/hour (wet basis)	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Production, ODT/hour	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
Pellet Moisture Content, % weight	5.13	5.13	5.13	5.13	5.13	5.45	5.45	5.45	5.45
RCO 2 Diff. Pressure, in w.c.	1.8	1.2	1.3	1.2	1.3	1.3	1.5	0.5	1.3
RCO 2 Burner SP, ºF	750	750	750	750	750	750	750	750	750
RCO 2 Burner Temps, PV,º F	741	796	771	754	763	781	736	758	763
Cyclofilter 1 Diff. Pressure., in w.c.	0.6	0.6	0.7	0.6	0.6	0.7	0.6	0.6	0.6
Cyclofilter 2 Diff. Pressure, in w.c.	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Notes

1. Paused test, 12:24pm to 12:28pm, 2.2 vibration, but during a port change, so did not affect testing.

Had power issue with analyzer, does not affect the emissions, extended the run

No run for PM, VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

failed leak test for PM results
Moisture was consistent with Runs 3 thru 5.

Appendix II-G, Table 3. Process Data, RCO 2, January 16, 2019, Run 3							
Process Parameter	14:07 p.m.	14:22 p.m.	14:37 p.m.	14:52 p.m.	15:07 p.m.	15:22 p.m.	Average
Run Time 14:07 p.m.-15:23 p.m.							
Short Tons/hour (wet basis)	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Production, ODT/hour	25.1	25.1	25.1	25.1	25.1	25.1	25.1
Pellet Moisture Content, % wt.t	5.78	5.78	5.78	5.78	5.78	5.78	5.78
RCO 2 Diff. Pressure, in w.c.	1.2	1.4	0.53	1.7	1.3	0.70	1.1
RCO 2 Burner SP, ºF	750	750	750	750	750	750	750
RCO 2 Burner Temps, PV, º F	748	766	745	784	774	743	760
Cyclofilter 1 Diff. Press. in w.c.	0.6	0.7	0.6	0.6	0.7	0.6	0.6
Cyclofilter 2 Diff. Press., in w.c.	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Passed the post-test leak check. First accepted run for PM, run 3 for VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

Appendix II-G, Table 4. Process Data, RCO 2, January 16, 2019, Run 4							
Process Parameter	3:45 p.m.	4:00 p.m.	4:15 p.m.	4:30 p.m.	4:45 p.m.	4:58 p.m.	Average
Run Time 15:45 p.m.-16:58 p.m.							
Short Tons/hour (wet basis)	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Production, ODT/hour	25.2	25.2	25.2	25.2	25.2	25	25.2
Pellet Moisture Content, % wt.t	5.24	5.24	5.24	5.24	5.24	5.41	5.27
RCO 2 Diff. Pressure, in w.c.	1.3	1.3	1.7	1.6	1.3	1.2	1.4
RCO 2 Burner SP, ºF	750	750	750	750	750	750	750
RCO 2 Burner Temps, PV, º F	698	786	769	747	765	769	756
Cyclofilter 1 Diff. Press. in w.c.	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Cyclofilter 2 Diff. Press., in w.c.	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Notes

Passed the post-test leak check. Run included PM, VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

Appendix II-G, Table 5. Process Data, RCO 2, January 16, 2019, Run 5								
Process Parameter	18:38 p.m.	18:53 p.m.	19:08 p.m.	19:23 p.m.	7:38 p.m.	19:49 p.m.	20:01 p.m.	Average
Run Time 18:35 p.m.-20:01 p.m.								
Short Tons/hour (wet basis)	25.1	25.1	25.1	22.6	21.3	24.1	25.1	24.1
Production, ODT/hour	23.9	23.9	23.9	21.5	20.3	22.9	23.9	22.9
Pellet Moisture Content, % wt.t	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
RCO 2 Diff. Pressure, in w.c.	1.2	1.8	1.6	1.3	1.6	1.2	1.5	1.5
RCO 2 Burner SP, ^{o}F	750	750	750	750	750.0	750	750	750
RCO 2 Burner Temps, PV, ^{o} F	762	726	782	783	782	767	768	767
Cyclofilter 1 Diff. Press. in w.c.	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Cyclofilter 2 Diff. Press., in w.c.	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Notes

Passed post-test leak check. Run included PM, VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

Paused sampling due to presses going offline due to high vibration or high temp roller bearings

Feed screw on two of the presses amped out causing loss of feed.

Appendix II-G, Table 2. Process Data, RCO 2, January 16, 2019, Run 2									
Process Parameter	11:43 a.m.	11:58 a.m.	12:13 p.m.	12:32 p.m.	12:47 p.m.	13:02 p.m.	13:17 p.m.	13:27 p.m.	Average
Run Time 11:44 a.m.-13:18 p.m..									
Short Tons/hour (wet basis)	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Production, ODT/hour	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2	25.2
Pellet Moisture Content, % weight	5.13	5.13	5.13	5.13	5.13	5.45	5.45	5.45	5.45
RCO 2 Diff. Pressure, in w.c.	1.8	1.2	1.3	1.2	1.3	1.3	1.5	0.5	1.3
RCO 2 Burner SP, ºF	750	750	750	750	750	750	750	750	750
RCO 2 Burner Temps, PV,º F	741	796	771	754	763	781	736	758	763
Cyclofilter 1 Diff. Pressure., in w.c.	0.6	0.6	0.7	0.6	0.6	0.7	0.6	0.6	0.6
Cyclofilter 2 Diff. Pressure, in w.c.	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Notes

1. Paused test, 12:24pm to 12:28pm, 2.2 vibration, but during a port change, so did not affect testing.

Had power issue with analyzer, does not affect the emissions, extended the run

No run for PM, VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

failed leak test for PM results
Moisture was consistent with Runs 3 thru 5.

Appendix II-G, Table 3. Process Data, RCO 2, January 16, 2019, Run 3							
Process Parameter	14:07 p.m.	14:22 p.m.	14:37 p.m.	14:52 p.m.	15:07 p.m.	15:22 p.m.	Average
Run Time 14:07 p.m.-15:23 p.m.							
Short Tons/hour (wet basis)	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Production, ODT/hour	25.1	25.1	25.1	25.1	25.1	25.1	25.1
Pellet Moisture Content, % wt.t	5.78	5.78	5.78	5.78	5.78	5.78	5.78
RCO 2 Diff. Pressure, in w.c.	1.2	1.4	0.53	1.7	1.3	0.70	1.1
RCO 2 Burner SP, ºF	750	750	750	750	750	750	750
RCO 2 Burner Temps, PV, º F	748	766	745	784	774	743	760
Cyclofilter 1 Diff. Press. in w.c.	0.6	0.7	0.6	0.6	0.7	0.6	0.6
Cyclofilter 2 Diff. Press., in w.c.	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Passed the post-test leak check. First accepted run for PM, run 3 for VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

Appendix II-G, Table 4. Process Data, RCO 2, January 16, 2019, Run 4							
Process Parameter	3:45 p.m.	4:00 p.m.	4:15 p.m.	4:30 p.m.	4:45 p.m.	4:58 p.m.	Average
Run Time 15:45 p.m.-16:58 p.m.							
Short Tons/hour (wet basis)	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Production, ODT/hour	25.2	25.2	25.2	25.2	25.2	25	25.2
Pellet Moisture Content, % wt.t	5.24	5.24	5.24	5.24	5.24	5.41	5.27
RCO 2 Diff. Pressure, in w.c.	1.3	1.3	1.7	1.6	1.3	1.2	1.4
RCO 2 Burner SP, ºF	750	750	750	750	750	750	750
RCO 2 Burner Temps, PV, º F	698	786	769	747	765	769	756
Cyclofilter 1 Diff. Press. in w.c.	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Cyclofilter 2 Diff. Press., in w.c.	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Notes

Passed the post-test leak check. Run included PM, VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

Appendix II-G, Table 5. Process Data, RCO 2, January 16, 2019, Run 5								
Process Parameter	18:38 p.m.	18:53 p.m.	19:08 p.m.	19:23 p.m.	7:38 p.m.	19:49 p.m.	20:01 p.m.	Average
Run Time 18:35 p.m.-20:01 p.m.								
Short Tons/hour (wet basis)	25.1	25.1	25.1	22.6	21.3	24.1	25.1	24.1
Production, ODT/hour	23.9	23.9	23.9	21.5	20.3	22.9	23.9	22.9
Pellet Moisture Content, % wt.t	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
RCO 2 Diff. Pressure, in w.c.	1.2	1.8	1.6	1.3	1.6	1.2	1.5	1.5
RCO 2 Burner SP, ^{o}F	750	750	750	750	750.0	750	750	750
RCO 2 Burner Temps, PV, ^{o} F	762	726	782	783	782	767	768	767
Cyclofilter 1 Diff. Press. in w.c.	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Cyclofilter 2 Diff. Press., in w.c.	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4

Notes

Passed post-test leak check. Run included PM, VOC, CO, NOx, HCl, Methane, Ethane, Methanol, Formaldehyde, and Acetaldehyde

Paused sampling due to presses going offline due to high vibration or high temp roller bearings

Feed screw on two of the presses amped out causing loss of feed.

APPENDIX III-A
Method 5-Method 202 Data Sheets

Method 1 - Air Control Techniques, P.C.

Date: 3/7/2019

Client	Enviva
Job #	2333
Plant Name	Enviva, Greenwood
City, State	Greenwood, SC
Sampling Location	RCO 1 - Pellet Cooler South
No. of Ports Available	2
No. of Ports Used	2
Port Inside Diameter, Inches	4
Distance From Far Wall To Outside Of Port, Inches	45
Nipple Length And/Or Wall Thickness, Inches	3
Depth Of Stack Or Duct, Inches	42
Stack Or Duct Width (if rectangular), Inches	
Equiv. Diameter = 2DW/(D+W), Inches	
Stack/Duct Area, Square Feet (πR^2 or L x W)	9.621

	Upstream	Downstream
Distance to Flow Disturbances, feet	6	5
Diameters	1.7	1.4

Diameters			
Velocity	Up	Down	Particulate
12	>7.00	>1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Note: If more than 8 and 2 diameters and duct is greater than 12" and less than 24", use 8 or 9 points.

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	1106	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											99.9

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	2.1	0.882	3 7/8
2	6.7	2.814	5 3/4
3	11.8	4.956	8
4	17.7	7.434	10 3/8
5	25.0	10.5	13 2/4
6	35.6	14.952	18
			27
			31 4/8
			34 5/8
			37
			39 1/8
			41 1/8

Location of Points in Rectangular Stacks or Ducts

	3	4	5	6	7	8	9	10	11	12
1	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	50	37.5	30.0	25	21.4	18.8	16.7	15.0	13.6	12.5
3	83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4		87.5	70.0	58.3	50	43.8	28.9	35.0	31.8	29.2
5			90.0	75	64.3	56.3	50	45.0	40.9	37.5
6				91.7	78.6	68.8	61.1	55.0	50	45.8
7					92.9	81.3	72.2	65.0	59.1	54.2
8						93.8	83.3	75.0	68.2	62.5
9							94.4	85.0	77.3	70.8
10								95.0	86.4	79.2
11									95.5	87.5
12										95.8

0.0000 - 0.0625 - 0
0.0625 - 0.1875 - 1/8
0.1875 - 0.3125 - 1/4
0.3125 - 0.4375 - 3/8
0.4375 - 0.5625 - 1/2
0.5625 - 0.6875 - 5/8
0.6875 - 0.8125 - 3/4
0.8125 - 0.9375 - 7/8
0.9375 - 1.0000 - 1

PRELIMINARY INFORMATION

Plant Name	Enviva, Greenwood	**Date**	3/6/2019
City, State	Greenwood, SC	**Project #**	2333
Personnel	EJG, WS	**Pitot Identification**	4A
Test Location	Pellet Cooler RCO1	**Pitot Coefficient** (Cp)	0.84

Stack Dimensions / *Pressures*

Length of Stack (D)	42	in	**Barometric Pressure** (Pb)	30.1	in Hg
Width of Stack (W)		in	**Static Pressure** (Pg)	3.8	in H_2O
Area of Stack (As)	**9.621**	ft^2	**Absolute Stack Pressure** (Ps)	**30.38**	in Hg

Stack Gas Composition

Carbon Dioxide (% CO_2)	0.0	**Moisture Content** (Bws)	5.35	%
Oxygen (% O_2)	20.9	**Dry Molecular Weight** (Md)	**28.84**	lb/lb-mole
Nitrogen Concentration (% N_2)	**79.1**	**Wet Molecular Weight** (Ms)	**28.26**	lb/lb-mole

Preliminary Traverse

Pitot Tube Leak Checks A B

	Port	Point	Angle, °	Δp, in H_2O	Temp. °F	ft/sec
Start	A	1	0	1.25	156	68.01
		2	-1	1.20	157	66.69
		3	-2	1.20	160	66.85
		4	1	1.25	163	68.40
		5	-8	1.20	160	66.85
		6	-5	1.30	156	69.36
	B	1	-3	1.10	160	64.01
		2	-4	1.05	164	62.86
		3	-3	1.10	170	64.52
		4	5	1.45	160	73.49
		5	8	1.50	159	74.68
		6	8	1.50	168	75.22
	X	1	-2	1.4	159	72.15
		2	-5	1.3		59.94
		3	2	1.35		61.08
		4	3	1.45	137	72.11
		5	0	1.1		55.13
		6	0	1.2		57.58
		7	0	1.2		57.58
		8	3	1.2		57.58
		9	5	1.3	172	70.25
		10	0	1.35	177	71.87
End		11	0	1.55	176	76.95
		12	5	1.65	176	79.40
		Average Angle, Degrees	**3.04**			
			Average Velocity Pressure	**1.2936**		
					162.8	

Average Stack Gas Velocity (ft/sec)	**69.57**
Actual Cubic Feet per minute (ACFM)	**40,159**
Dry Standard Cubic Feet per Minute (DSCFM)	**32,720**

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-1
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	Pellet Cooler RCO1

Date	3/7/19	14973	Filter ID 1
Start	9:10		Filter ID 2
Stop	10:15		Filter ID 3
Meterbox ID	909033	EJG, WS	Operator*
ΔH@	1.928	4A	Stack TC ID
Gamma (Y)	**0.9760**	NA	Tedlar Bags
Ideal Nozzle	0.200	NA	Orsat Pump
Nozzle Dia.	**0.206**	4ft	Probe Length/Type
Nozzle ID	M12	1.51	K Factor
Probe ID	4A	60A	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	10
Post Leak Check, ACFM	0.00	0.020	11

	A	B
Pitot Pre Leak Check	4	6
Pitot Post Leak Check	4	5

Ambient Temperature	31
Static Pressure, In. H_2O	0.25
Barometric Pressure, In. Hg	30.10

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	64.3	Moisture, %	5.97
CO_2 %	0.00	O_2 %	20.61

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	743	1.45	37	161	2.3	248	256	41	69	4.5	2.202	101.5	94.8	LC 1
2	2.5	2:30	745.01	1.55	46	143	2.5	250	236	36	68	5.5	2.463	98.8	96.9	
3	2.5	5:0	747.1	1.4	46	158	2.25	253	243	35	69	5.5	2.170	102.7	98.8	
4	2.5	7:30	749.14	1.3	47	159	1.6	250	232	38	69	4	2.017	94.3	97.7	LC-2
5	2.5	10:0	750.95	1.2	47	157	1.95	251	229	39	69	4.5	1.871	103.0	98.7	
6	2.5	12:30	752.85	1.3	48	148	2	252	234	40	69	5	2.059	98.0	98.6	
7	2.5	15:0	754.75	1.2	48	132	2.1	257	244	40	70	4.75	1.952	103.9	99.3	LC-3
8	2.5	17:30	756.71	1.25	49	167	2.1	256	244	41	69	5	1.923	106.1	100.1	
9	2.5	20:0	758.7	1.15	50	153	1.9	257	248	43	70	4.5	1.813	109.7	101.1	
10	2.5	22:30	760.7	1.1	50	163	1.6	255	246	43	69	4.5	1.707	101.7	101.2	LC-4
11	2.5	25:0	762.5	1.1	50	165	1.7	256	244	43	69	4	1.703	96.8	100.8	
12	2.5	27:30	764.21	1.4	51	158	2.2	255	247	43	69	5	2.196	96.2	100.4	
1	2.5	30:0	766.14	1.5	51	167	2.35	245	227	41	68	5.5	2.316	109.7	101.2	LC-5
2	2.5	32:30	768.4	1.2	51	135	1.6	252	233	41	68	5	1.952	91.8	100.5	766.14
3	2.5	35:0	770.14	1.2	52	163	2	257	244	41	68	5	1.871	102.5	100.6	766.28
4	2.5	37:30	772.04	1.45	52	185	2.25	255	247	41	68	5	2.181	101.9	100.7	LC-6
5	2.5	40:0	774.08	1.25	53	175	2.1	256	246	42	68	5	1.913	107.6	101.1	
6	2.5	42:30	776.1	1.25	53	148	2.1	247	231	43	69	5	1.998	104.2	101.3	
7	2.5	45:0	778.1	1.1	53	130	2	248	232	44	69	5	1.812	103.9	101.4	LC-7
8	2.5	47:30	780	1.05	53	132	1.9	252	233	44	69	4.5	1.724	110.5	101.8	
9	2.5	50:0	781.97	1.1	55	178	1.75	255	238	45	68	4.5	1.683	103.6	101.9	
10	2.5	52:30	783.8	1.3	55	167	2.1	251	232	45	69	5	2.025	100.8	101.8	LC-8
11	2.5	55:0	785.75	1.15	55	146	2	247	227	45	68	5	1.852	106.4	102.0	
12	2.5	57:30	787.72	1.5	56	147	2.5	251	232	46	68	6	2.417	103.1	102.1	
		1:00:0	789.9													

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	46.76	1.265	50.3	155.7	2.035	257	256	46	70	6	102.6
Vmstd	47.738	in. H_2O	°F	°F	in H_2O	245	227	35	68		%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-2
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	Pellet Cooler RCO1

Date	3/7/19	14974	Filter ID 1
Start	11:08		Filter ID 2
Stop	12:22		Filter ID 3
Meterbox ID	909033	EJG, WS	Personnel
$\Delta H_@$	1.928	4B	Stack TC ID
Gamma (Y)	**0.9760**	NA	Tedlar Bags
Ideal Nozzle	0.199	NA	Orsat Pump
Nozzle Dia.	**0.206**	4b	Probe Length/Type
Nozzle ID	M11	1.56	K Factor
Probe ID	4B	60A	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	11
Post Leak Check, ACFM	0.00	0.020	9

	A	B
Pitot Pre Leak Check	8	6
Pitot Post Leak Check	5	4

Ambient Temperature	55
Static Pressure, In. H_2O	0.25
Barometric Pressure, In. Hg	30.10

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	68.2	Moisture, %	6.34
CO_2 %	0.00	O_2 %	20.60

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	790.178	1.45	56	160	2.4	250	225	50	68	4.5	2.265	108.6	106.2	LC 1
2	2.5	2:30	792.4	1.5	58	158	2.4	250	225	41	68	4.75	2.355	99.4	102.8	
3	2.5	5:0	794.48	1.25	58	162	2.5	252	228	41	68	4.75	1.950	106.1	103.8	
4	2.5	7:30	796.5	1.4	58	203	2.2	250	228	43	68	5	2.048	97.3	102.3	LC-2
5	2.5	10:0	798.4	1.1	60	180	1.8	245	235	49	68	3.5	1.675	109.6	103.6	
6	2.5	12:30	800.34	1.2	58	212	1.8	245	249	44	69	4	1.735	103.5	103.7	
7	2.5	15:0	802.2	1.3	59	205	1.8	246	242	44	68	3.5	1.903	106.1	104.0	LC-3
8	2.5	17:30	804.2	1.2	59	188	1.8	245	244	45	68	4	1.803	107.9	104.5	
9	2.5	20:0	806.18	1.15	59	180	1.8	247	248	46	68	3.5	1.749	106.3	104.7	
10	2.5	22:30	808.1	1.2	59	211	1.8	248	254	46	68	3.5	1.741	94.3	103.7	LC-4
11	2.5	25:0	809.8	1.3	59	205	1.9	251	251	46	68	4	1.903	99.0	103.3	
12	2.5	27:30	811.665	1.3	59	186	2.1	251	242	46	69	4.5	1.959	106.8	103.6	
1	2.5	30:0	813.705	1.5	59	160	2.1	258	256	45	75	4.5	2.354	100.0	103.3	LC-5
2	2.5	32:30	815.8	1.2	58	155	2	255	255	44	75	4.5	1.895	100.1	103.1	813.657
3	2.5	35:0	817.68	1.4	59	160	2.3	255	253	45	77	5	2.197	103.8	103.1	813.705
4	2.5	37:30	819.78	1.4	58	162	2.3	256	252	46	78	5	2.184	105.2	103.3	LC-6
5	2.5	40:0	821.9	1.25	59	188	2	256	251	48	80	4.5	1.876	106.9	103.5	
6	2.5	42:30	823.9	1.2	59	189	1.85	256	253	49	80	4	1.799	109.1	103.8	
7	2.5	45:0	825.9	1.2	59	184	1.825	253	253	49	74	4	1.814	92.4	103.2	LC-7
8	2.5	47:30	827.6	1.15	59	185	1.8	255	253	50	68	4	1.736	108.3	103.5	
9	2.5	50:0	829.55	1.2	59	180	1.8	256	254	50	68	4	1.825	100.2	103.3	
10	2.5	52:30	831.4	1.35	60	212	2	255	255	50	68	4	1.960	101.9	103.2	LC-8
11	2.5	55:0	833.35	1.4	60	200	2.1	255	254	51	68	4.5	2.068	100.7	103.1	
12	2.5	57:30	835.33	1.65	60	204	2.5	253	251	53	68	5	2.422	103.2	103.1	
		1:00:0	837.524													

	Total	Averages				Maximum and Minimum Values					Run ISO
Vm	47.298	1.299	58.8	184.5	2.036	258	256	53	80	5	103.4
Vmstd	47.500	in. H_2O	°F	°F	in H_2O	245	225	41	68		%

Run Notes:

Air Control Techniques, P.C.
Isokinetic Sampling Train Field Data Sheet

Job #	Run ID	M5/202-3
2333	Method	5/202

IDENTIFICATION INFORMATION

Plant	Enviva, Greenwood
City, State	Greenwood, SC
Test Location	Pellet Cooler RCO1

Date	3/7/19	14977	Filter ID 1
Start	13:04		Filter ID 2
Stop	14:18		Filter ID 3
Meterbox ID	909033	EJG, WS	Personnel
$\Delta H_{@}$	1.928	4A	Stack TC ID
Gamma (Y)	**0.9760**	NA	Tedlar Bags
Ideal Nozzle	0.200	NA	Orsat Pump
Nozzle Dia.	**0.206**	4a	Probe Length/Type
Nozzle ID	M12	1.50	K Factor
Probe ID	4A	60A	Umbilicle ID

PRELIMINARY CHECKS AND DATA

	Actual	Req'd	Vacuum
Pre Leak Check, ACFM	0.00	<0.02 or 4%	9
Post Leak Check, ACFM	0.00	0.020	9.5

	A	B
Pitot Pre Leak Check	4	3
Pitot Post Leak Check	5	6

Ambient Temperature	60
Static Pressure, In. H_2O	0.25
Barometric Pressure, In. Hg	30.10

ACTUAL MOISTURE & GAS COMPOSITION

Water Recovered, grams	74.4	Moisture, %	7.02
CO_2 %	0.01	O_2 %	20.53

Sampling Information

Point	Time Per Pt, (Min.)	Elapsed Time (h:m:s)	Dry Gas Meter (cu.ft.)	Velocity ΔP (In H_2O)	Meter Temp (°F)	Stack Temp (°F)	Actual ΔH (in H_2O)	Probe Temp (°F)	Filter Temp (°F)	Exit Temp (°F)	CPM Temp (°F)	Pump Vac (in. Hg)	Target ΔH (in H_2O)	Run ISO % Pt	Run ISO % Cum	Lk √ During Run
1	2.5	0	838.421	1.4	60	189	2.2	225	238	58	77	5	2.092	108.3	101.5	LC 1
2	2.5	2:30	840.56	1.2	61	202	1.9	225	238	46	72	5	1.758	105.2	103.3	
3	2.5	5:0	842.47	1.4	61	186	1.95	230	240	48	72	4.5	2.104	95.2	100.5	
4	2.5	7:30	844.36	1.15	62	183	1.8	249	238	50	70	4.5	1.739	107.3	102.1	LC-2
5	2.5	10:0	846.3	1.05	62	220	1.5	256	255	51	69	4	1.502	105.6	102.9	
6	2.5	12:30	848.075	1.35	62	197	2.1	255	250	52	70	4.75	2.001	102.0	102.7	
7	2.5	15:0	850.05	1.15	63	191	1.8	254	250	52	70	1.8	1.721	105.6	103.1	LC-3
8	2.5	17:30	851.95	1.2	63	189	1.9	257	256	53	73	4.5	1.802	103.2	103.1	
9	2.5	20:0	853.85	1.1	63	218	1.75	256	254	53	73	4.5	1.581	107.2	103.6	
10	2.5	22:30	855.7	1.1	64	218	1.7	256	250	53	77	4	1.585	107.3	103.9	LC-4
11	2.5	25:0	857.555	1.15	63	212	1.8	256	260	54	79	4.5	1.669	104.7	104.0	
12	2.5	27:30	859.41	1.4	64	210	2.15	255	253	54	75	5	2.041	109.2	104.5	
1	2.5	30:0	861.55	1.45	64	197	2.2	251	245	54	80	5	2.154	102.8	104.3	LC-5
2	2.5	32:30	863.62	1.3	64	222	2	254	251	48	78	4.5	1.860	105.8	104.4	861.415
3	2.5	35:0	865.6	1.5	64	213	2.3	254	256	48	68	5	2.176	103.8	104.4	861.55
4	2.5	37:30	867.7	1.3	65	205	2	254	253	49	73	4.5	1.910	106.9	104.5	LC-6
5	2.5	40:0	869.73	1.35	65	195	2.15	258	252	48	68	4.75	2.016	101.6	104.4	
6	2.5	42:30	871.71	1.2	65	188	2	256	250	48	68	4.75	1.810	107.6	104.5	
7	2.5	45:0	873.7	1.2	66	188	2.1	257	256	49	69	4.75	1.815	108.0	104.7	LC-7
8	2.5	47:30	875.7	1.05	67	193	1.75	253	252	49	69	4	1.578	104.0	104.7	
9	2.5	50:0	877.5	1.2	67	210	1.8	251	255	49	72	4	1.759	106.8	104.8	
10	2.5	52:30	879.45	1.05	67	195	1.65	256	256	49	72	4	1.575	102.4	104.7	LC-8
11	2.5	55:0	881.22	1.4	67	216	2.1	255	255	49	73	4	2.035	106.0	104.7	
12	2.5	57:30	883.3	1.5	67	200	2.3	254	256	49	72	5	2.231	98.7	104.5	
	2.5	1:00:0	885.327													

	Total	Averages				Maximum and Minimum Values				
Vm	46.771	1.252	64.0	201.5	1.954	258	260	58	80	5
Vmstd	46.495	in. H_2O	°F	°F	in H_2O	225	238	46	68	

Run ISO
105.1
%

Run Notes:

Method 4 - Air Control Techniques, P.C.

Date: 3/7/2019

Source Information

Plant Name	Enviva, Greenwood	Job #	2333
City, State	Greenwood, SC	Personnel	TH, WS
Sampling Location	Pellet Cooler RCO1	Balance	

Sampling Information

Run Number	M5/202-1	M5/202-2	M5/202-3	
Filter Identification	14973	14974	14977	
Sampling Date	3/7/2019	3/7/2019	3/7/2019	

Moisture Data

Impinger 1 - Empty				
Final Weight, grams	406.8	429.2	426.2	
Initial Weight, grams	368.2	396.5	368.8	
Condensed Water, grams	38.6	32.7	57.4	
Impinger 2 - Empty				
Final Weight, grams	606.4	618.3	603.6	
Initial Weight, grams	601.4	606.0	603.5	
Condensed Water, grams	5.0	12.3	0.1	
Impinger 3				
Final Weight, grams	595.3	658.7	591.3	
Initial Weight, grams	585.1	647.7	586.6	
Condensed Water, grams	10.2	11.0	4.7	
Silica Gel				
Final Weight, grams	802.2	891.7	814.4	
Initial Weight, grams	791.7	879.5	802.2	
Adsorbed Water, grams	10.5	12.2	12.2	
Total Water, grams	**64.3**	**68.2**	**74.4**	

Sampling Train Purge Data

Purge Start	1030	1250	1430	
Purge End	1130	1350	1530	

Plant Name	Enviva, Greenwood	Project #	2333
City, State	Greenwood, SC	Test Location	Pellet Cooler RCO1

Parameter	Nomenclature/ Units	M5/202-1	M5/202-2	M5/202-3	Averages
Date		3/7/2019	3/7/2019	3/7/2019	
Run Time	θ, minutes	60	60	60	
Production Rate	ODT/hour	39.5	40.3	40.5	40.1
Nozzle Diameter	inches	0.206	0.206	0.206	
Stack Area	As - sq. ft.	9.62	9.62	9.62	
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	
Meter Calibration Factor	Y	0.9760	0.9760	0.9760	
Barometric Pressure, inches Hg	Bp - in Hg	30.10	30.10	30.10	
Static Pressure	Pg - in. H_2O	0.25	0.25	0.25	
Stack Pressure	Ps - in.Hg	30.12	30.12	30.12	
Meter Box Pressure Differential	Δ H - in. H_2O	2.04	2.04	1.95	
Average Velocity Head	Δ P - in. H_2O	1.2647	1.2988	1.2522	
Volume of Gas Sampled	V_m - cu. ft.	46.76	47.298	46.771	
Dry Gas Meter Temperature	T_m - °F	50.3	58.8	64.0	
Stack Temperature	T_s - °F	155.7	184.5	201.5	180.6
Stack Temperature	T_s - °C	68.7	84.7	94.2	
Liquid Collected	grams	64.3	68.2	74.4	
Oxygen	O_2 %	20.70	20.70	20.53	20.6
Carbon Dioxide	CO_2 %	0.004	0.000	0.010	0.0045
Nitrogen	N_2 %	79.30	79.30	79.46	
Volume of Gas Sampled, Dry	$V_{m(std)}$ - cu. ft.	47.738	47.500	46.495	47.2
Volume of Gas Sampled, Dry	$V_{m(std)}$ - cu. M	1.352	1.345	1.317	
Volume of Gas Sampled, Dry	$V_{m(std)}$ - N cu. M	1.259	1.253	1.226	
Volume of Water Vapor	$V_{w(std)}$ - cu. ft.	3.032	3.216	3.508	
Moisture Content	% H_2O	5.97	6.34	7.02	6.44
Saturation Moisture	% H_2O	28.83	56.00	80.34	
Dry Mole Fraction	Mfd	0.940	0.937	0.930	
Gas Molecular Weight, Dry	Md	28.83	28.83	28.82	
Gas Molecular Weight, Wet	Ms	28.18	28.14	28.06	
Gas Velocity	vs - ft./sec.	68.78	71.37	71.09	70.4
Gas Velocity	m/sec.	20.96	21.75	21.67	
Volumetric Air Flow, Actual	Q_{aw} - ACFM	39,706	41,198	41,040	40,648
Volumetric Air Flow, Actual	m^3/min	1,124	1,167	1,162	
Volumetric Air Flow, Standard	Q_{sd} - DSCFM	32,229	31,818	30,659	31,569
Volumetric Air Flow, Standard	Nm^3/min	850	839	808	
Isokinetic Sampling Rate	I %	102.6	103.4	105.1	
FILTERABLE PARTICULATE MATTER EMISSIONS					
Filterable Particulate Catch	mg	1.9	1.9	1.1	
Concentration	gr/DSCF	0.00061	0.00062	0.00037	0.00053
Mass Emission Rate	lb/hr	**0.17**	**0.17**	**0.10**	**0.14**
Mass Emission Rate	lbs./ODT	**0.0043**	**0.0042**	**0.0024**	**0.0036**
CONDENSABLE PARTICULATE MATTER EMISSIONS					
Condensable Particulate Catch	mg	2.1	1.6	2.5	
Concentration	gr/DSCF	0.0007	0.0005	0.0008	0.0007
Mass Emission Rate	lb/hr	**0.19**	**0.14**	**0.22**	**0.18**
Mass Emission Rate	lbs./ODT	**0.0047**	**0.0035**	**0.0054**	**0.0046**
TOTAL PARTICULATE MATTER EMISSIONS					
Mass Emission Rate	lb/hr	**0.36**	**0.31**	**0.31**	**0.32**
Mass Emission Rate	lbs./ODT	**0.0090**	**0.0077**	**0.0078**	**0.0082**

APPENDIX III-B
Method 5-Method 202 Laboratory Report

RESOLUTION ANALYTICS, INC.

Specialists in Air Emissions Analysis

ANALYTICAL REPORT

CLIENT: AIR CONTROL TECHNIQUES, INC.

PROJECT: 2333

ANALYTICAL SERVICES PROVIDED:

- FILTERABLE & CONDENSIBLE PARTICULATE MATTER (EPA METHOD 5/202)

Confirmation of Data Review:

The analytical data and results provided in this report have been checked thoroughly for accuracy, has been performed and validated in accordance with the approved methods, and relate only to the samples provided for this project report.

The results contained herein shall not be reproduced except in full, without written approval of Resolution Analytics.

Date of Review: March 12, 2019

J. Bruce Nemet

J. Bruce Nemet
Quality Assurance Officer

www.resolutionanalytics.com
208 Technology Park Lane, Ste 110, Fuquay-Varina, NC 27526

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Method: EPA M5

Report Summary

SAMPLE ID	TOTAL FILTERABLE PARTICULATE
Limit of Detection	0.2 mg
Acetone Blank	0.0 mg (in 144 mls)
S5-M5/202-1	1.9 mg
S5-M5/202-2	1.9 mg
S5-M5/202-3	1.1 mg

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Method: M202

Report Summary

SAMPLE ID	Organic CPM	Inorganic CPM	Total CPM[1]
Limit of Dectection	0.1 mg	0.1 mg	0.2 mg
Acetone Blank			0.0 mg (in 144 ml)
Hexane Blank			0.0 mg (in 70 ml)
DI H_2O Blank			0.0 mg (in 146 ml)
M5/202-PB	1.2 mg	0.0 mg	1.2 mg
M5/202-FB	1.1 mg	0.0 mg	1.1 mg
S5-M5/202-1	1.9 mg	1.3 mg	2.1 mg
S5-M5/202-2	1.9 mg	0.8 mg	1.6 mg
S5-M5/202-3	2.6 mg	1.0 mg	2.5 mg

[1] *Total Condensible Particulate Matter (CPM) results have been Field Blank corrected up to a maximum of 2.0 mg.*

Air
Control Techniques, P.C.
301 East Durham Road
Cary, North Carolina 27513
Office (919) 460-7811
Fax (919) 460-7897

Chain of Custody / Transmittal

JOB #: 2333 **PO#** - 9034-2333

TO: Resolution Analytics, Inc. Attn: Jeff Coppedge (919) 346-5740
208 Technology Park Lane Suite 110
Fuquay Varina, North Carolina 27526

Samples sent by: Todd Brozell Date 3/8/19

SAMPLE NUMBER	COMPONENTS	ANALYSIS
S5-M5/202-1,2,3 PC5ABC	• M5 Filter • F½ Acetone Rinse • B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
M5/202-FB Field Blank	• B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
M5/202-PB Proof Blank	• B½ Acetone/Hexane Rinse • CPM Filter • Impinger Catch and DI Rinse	Total Particulate by Methods 5/202
Blanks	• Acetone Blank M5 • Hexane Blank M202 • DI H_2O Blank M202	Total Particulate by Methods 5/202

Five Day Turnaround
Results by 3/15/19

Relinquished by: Todd T Brozell Date 3/8/19

Received by: Jeffrey S. Coppedge Date 3/8/19

send results to David & John

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Date Received: 3/8/19
Date Analyzed: 3/8/19
Analyst: JSC
Analysis: EPA M5
Analyte(s): Filterable PM

Analytical Narrative

Sample Matrix & Components:

Dry Filters, Front½ Acetone Rinses, Acetone Blank

Summary of Sample Prep:

The acetone rinses were transferred to pre-tared teflon "baggies" in a low humidity environment. The acetone rinses were evaporated then desiccated for 24 hours, after which time they were weighed daily every six hours until consecutive weights agreed within ±0.5 mg. The filters were baked 2 to 3 hours at 105° C, cooled in a desiccator and weighed.

All weights were recorded to the nearest 0.1 mg and include filterable particulate catch only. The acetone blank catch has been subtracted from sample rinse catches in proportion with their respective volumes.

Summary of Instrumentation:

Denver model Pinnacle Series analytical balance

Analytical Detection Limit(s): 0.1 mg per fraction

Miscellaneous Comments Regarding Sample Analysis: **(Note unusual catch weights, interferences, odd sample behavior, and steps taken to confirm unusual results. Also note any deviations from standard analytical procedures, together with justification and possible affect on results. Specify samples when applicable.)**

No modifications to EPA Method 5 analytical procedure were made. See data sheets for individual sample descriptions.

PARTICULATE SAMPLING LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: EPA M5

Run Number				S5-M5/202-1			S5-M5/202-2			S5-M5/202-3
Filter Container #										
	Date	Init			Date			Date		
	3/11/19	JSC		0.4410	3/11/19		0.4562	3/11/19		0.4498
Baggie Tare Wt., g.				0.0000			0.0000			0.0000
Filter Tare Wt., g.	83Q-14973			0.4413	83Q-14974		0.4565	83Q-14977		0.4499
FILTER SAMPLE WT., g.				-0.0003 *			-0.0003 *			-0.0001 *
*Filter Fragments In Rinse(Yes, No)?				NO			NO			NO
Front ½ Rinse Container #				182			2380			3820
	Date	Init			Date			Date		
	3/12/19	JSC	F	3.6050	3/12/19	F	3.2566	3/12/19	F	3.6274
	3/11/19	JSC		3.6055	3/11/19		3.2570	3/11/19		3.6277
Tare Wt., g.	(	160	ml)	3.6031	(110	ml)	3.2547	(110	ml)	3.6263
RINSE SAMPLE WT., g.				0.0019			0.0019			0.0011

	S5-M5/202-1	S5-M5/202-2	S5-M5/202-3
Filter Catch, mg.	**0.0** **	**0.0** **	**0.0** **
Rinse Catch, mg.	1.9	1.9	1.1
Rinse Blank Residue, mg.	0.0	0.0	0.0
Net Rinse Catch, mg.	**1.9**	**1.9**	**1.1**
FILTERABLE PARTICULATE, mg.	**1.9**	**1.9**	**1.1**

**Negative results adjusted to zero.

Legend: F = Final Weight

Notes & Comments: No visible catch on filters.

REAGENT BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: EPA M5

Run Number				Acetone Blank
Sample ID/Container #				2313
	Date	Init		
	3/12/19	JSC	F	3.4515
	3/11/19	JSC		3.4518
Tare Wt., g.	(	144	ml)	3.4515
SAMPLE WT., g.				0.0000

Blank Beaker #	2313
Final wt., mg.	3.4515
Tare wt., mg.	3.4515
Residue, mg.	0.0
Volume, ml.	144
Density, mg/ml	785.0
Conc., mg/mg	0.00E+00 ✓
Upper Limit, mg	1.00E-05

Legend: F = Final Weight

Notes & Comments:

RESOLUTION ANALYTICS, INC.
Specialists in Air Emissions Analysis

Client: Air Control Techniques
RFA #: 2333
Date Received: 3/8/19
Date Analyzed: 3/8/19
Analyst: JSC
Analysis: M202
Analyte(s): Condensible PM

Analytical Narrative

Sample Matrix & Components:

H_2O liquid impinger samples, organic impinger rinses, CPM filter, reagent blanks

Summary of Sample Prep and Analysis:

The samples were received in the lab at a temperature of less than 85° F, and logged in our custody records. The teflon filters were each sonicated/extracted 3 times with DI H_2O, then 3 times with hexane. The extract was added to the appropriate sample fraction. The impinger contents were extracted 3 times with hexane and the extracts were combined with the organic rinses, then evaporated in pretared teflon baggies. The water fraction was evaporated in pretared teflon baggies to near dryness at 105° C, then at ambient until completely dry. When needed, the water fractions were resuspended in 50 mls DI H_20, titrated with 0.1 N NH_4OH until acid neutralization, and then evaporated using the same procedure as before. Samples were then desiccated for 24 hours and weighed at a minimum of 6 hour intervals to constant weight. All weights were recorded to the nearest 0.1 mg. Where field blanks have been provided, samples have been blank corrected up to a maximum of 2.0 mg.

Summary of Instrumentation:

Denver model Pinnacle Series analytical balance

Analytical Detection Limit(s): 0.1 mg per fraction

Miscellaneous Comments Regarding Sample Analysis: (Note unusual catch weights, interferences, odd sample behavior, and steps taken to confirm unusual results. Also note any deviations from standard analytical procedures, together with justification and possible affect on results. Specify samples when applicable).

No modifications to M202 analytical procedure were made. See data sheets for individual sample notes and comments.

CONDENSIBLE PARTICULATE MATTER LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				S5-M5/202-1			S5-M5/202-2			S5-M5/202-3
Acetone/Hexane Container #				3129			2573			2324
	Date	Init			Date			Date		
	3/12/19	JSC	F	3.6569	3/12/19	F	3.6121	3/12/19	F	3.5819
	3/11/19	JSC		3.6572	3/11/19		3.6124	3/11/19		3.5820
Tare Wt., g.				3.6550			3.6102			3.5793
RINSE SAMPLE WT., g.				0.0019			0.0019			0.0026
DI H_2O Container #				853			2744			3359
	Date	Init			Date			Date		
	3/12/19	JSC	F	3.6692	3/12/19	F	3.6850	3/12/19	F	3.7220
	3/11/19	JSC		3.6696	3/11/19		3.6851	3/11/19		3.7224
Tare Wt., g.				3.6679			3.6842			3.7210
RINSE SAMPLE WT., g.				0.0013			0.0008			0.0010
Organic CPM Mass, mg.				**1.9**			**1.9**			**2.6**
Inorganic CPM Mass, mg				1.3			0.8			1.0
Volume of NH_4OH Added (N=0.1), ml										
Correction For NH_3 Added, mg				0.00			0.00			0.00
Adjusted Inorganic CPM Mass, mg				**1.3**			**0.8**			**1.0**
Total CPM Mass, mg *				**2.1**			**1.6**			**2.5**

* Total CPM Mass results have been Field Train Blank corrected up to a maximum of 2.0 mg.

Notes & Comments:

J:Particulate Lab:Jobs:ACT:2333:March 8, 2019 2333 QT M202.xlsx

FIELD TRAIN BLANK LABORATORY RESULTS

Client: **Air Control Techniques** RFA #: **2333**
Method: M202

Run Number				M5/202-PB
Acetone/Hexane Container #				2393
	Date	Init		
	3/12/19	JSC	F	3.3950
	3/11/19	JSC		3.3953
Tare Wt., g.				3.3938
RINSE SAMPLE WT., g.				0.0012
DI H_2O Container #				3565
	Date	Init		
	3/12/19	JSC	F	3.6196
	3/11/19	JSC	F	3.6196
Tare Wt., g.				3.6196
RINSE SAMPLE WT., g.				0.0000
Organic CPM Mass, mg.				**1.2**
Inorganic CPM Mass, mg				0.0
Volume of NH_4OH Added (N=0.1), ml				
Correction For NH_3 Added, mg				0.00
Adjusted Inorganic CPM Mass, mg				**0.0**
Total Proof Blank CPM Mass, mg				**1.2**

Notes & Comments:

FIELD TRAIN BLANK LABORATORY RESULTS

Client: **Air Control Techniques**	RFA #: **2333**
Method: M202	
Run Number	M5/202-FB

Acetone/Hexane Container # 2140

	Date	Init		
	3/12/19	JSC	F	3.7691
	3/11/19	JSC		3.7694
Tare Wt., g.				3.7680
RINSE SAMPLE WT., g.				0.0011

DI H_2O Container # 3017

	Date	Init		
	3/12/19	JSC	F	3.5917
	3/11/19	JSC	F	3.5917
Tare Wt., g.				3.5917
RINSE SAMPLE WT., g.				0.0000

Organic CPM Mass, mg.	**1.1**
Inorganic CPM Mass, mg	0.0
Volume of NH_4OH Added (N=0.1), ml	
Correction For NH_3 Added, mg	0.00
Adjusted Inorganic CPM Mass, mg	**0.0**
Total Field Train Blank CPM Mass, mg	**1.1**

Notes & Comments:

FIELD REAGENT BLANK LABORATORY RESULTS

Client: **Air Control Techniques** | **RFA #:** **2333**
Method: M202

Run Number	Date	Init		Acetone	Date			Hexane	Date			DI H_2O
Container #				2313				4014				2848
	3/12/19	JSC	F	3.4515	3/12/19	F		3.6513	3/12/19			3.6479
	3/11/19	JSC		3.4518	3/11/19	F		3.6513	3/11/19	F		3.6477
Tare Wt., g.	(	144	ml)	3.4515	(	70	ml)	3.6513	(	146	ml)	3.6477
SAMPLE WT., g.				0.0000				0.0000				0.0000
Field Reagent Blank Mass, mg				0.0				0.0				0.0
Field Reagent Blank Concentration, mg/mg				0.00E+00				0.00E+00				0.00E+00

Notes & Comments:

M5/17 Particulate Bench Sheet QT ✓

Client: ACT
Analyst: JBC

RFA #: 2333
Method: 5

Date Received: 3/8/19
Date Analyzed: 3/8/19

Run #	Filter			Acetone Rinse	
	Baggie #	Filter #	Filter Tare(g)	Baggie #	Rinse Volume(mls)
Acetone RB				233	144
S5-M5/202 - 1		830-14973	0.4413	182	160
2		-14974	0.4565	2380	110
3		-14977	0.4499	3820	110

400

Condensibles Bench Sheet QT ✓

Client: ACT RFA #: 2333 Date Received: 3/8/19
Analyst: JBC Method: 202 Date Analyzed: 3/8/19

Run #	Organic Fraction		Inorganic Fraction		
	Baggie #	Volume (mls)	Baggie #	Volume (mls)	Titration Volume (mls)
Acetone RB (M5)	2313	144			
Hexane RB	4014	70			
DI H_2O RB	2848	146			
M5/202 - PB	2393		3565		
M5/202 - FB	2140		3017		
S5-M5/202 - 1	3129		853		
2	2573		2744		
3	2324		3359		

401

APPENDIX III-C
CEMs Data Sheets

Enviva - Greenwood	RCO 1 (South)

Parameters	Units	Run 1	Run 2	Run 3	Average
Date		7-Mar-19	7-Mar-19	7-Mar-19	
Run Time		0910-1015	1108-1222	1304-1418	
Oxygen	%	20.70	20.70	20.53	20.64
Moisture	%	5.97	6.34	7.02	6.44
Volumetric Flow Rate, Std	DSCFM	32,231	31,820	30,659	31,570
Pellet Moisture Content	%	5.16	4.69	4.14	4.66
Process Rate	ODT/hr	39.5	40.3	40.5	40.1
VOC Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (actual)	$ppmv_w$ as C_3	5.19	4.48	8.85	6.17
Concentration (dry)	$ppmv_d$ as C_3	5.52	4.78	9.52	6.61
Emission Factor (propane)	lb/ODT as C_3H_8	0.031	0.026	0.049	0.035
Emission Rate (propane)	**lb/hr as C_3H_8**	**1.2**	**1.0**	**2.0**	**1.4**
NOx Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (dry)	ppm_{vd}	1.03	1.21	1.16	1.13
Emission Factor	lb/ODT	0.0060	0.0069	0.0063	0.0064
Emission Rate	**lb/hr**	**0.24**	**0.28**	**0.26**	**0.26**
CO Emissions	**Units**	**Run 1**	**Run 2**	**Run 3**	**Average**
Concentration (dry)	ppm_{vd}	16.68	17.93	16.73	17.11
Emission Factor	lb/ODT	0.059	0.062	0.055	0.059
Emission Rate	**lb/hr**	**2.3**	**2.5**	**2.2**	**2.4**

Facility: Enviva - Greenwood

Date: 3/7/19

Source: RCO 1 (South)

HAP		Methanol	Acetaldehyde	Formaldehyde	HCl		
Formula		CH_4O	CH_3 CHO	CH_2O	C_6H_6		
Mol Weight	lb/lb mole	32.04	44.05	30.31	36.46		
Response Factor		0.65	1.00	0.00	0.00		
Run 1							
Conc	ppm wet	0.00	0.00	0.00	0.00		
Conc	ppm dry	0.00	0.00	0.00	0.00	5.97	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.00	0.00	32,231	DSCFM
Emission Factor	lb/ton material	0.00	0.00	0.00	0.00	39.5	ODT/hr
Run 2							
Conc	ppm wet	0.00	0.00	0.00	0.00		
Conc	ppm dry	0.00	0.00	0.00	0.00	6.34	% Moisture
Mass Emissions	lb/hr	0.00	0.00	0.00	0.00	31,820	DSCFM
Emission Factor	lb/ton material	0.00	0.00	0.00	0.00	40.3	ODT/hr
Run 3							
Conc	ppm wet	0.19	0.00	0.00	0.00		
Conc	ppm dry	0.20	0.00	0.00	0.00	7.02	% Moisture
Mass Emissions	lb/hr	0.031	0.00	0.00	0.00	30,659	DSCFM
Emission Factor	lb/ton material	0.00077	0.00	0.00	0.00	40.5	ODT/hr
Averages							
Conc	ppm wet	0.06	0.00	0.00	0.00		
Conc	ppm dry	0.07	0.00	0.00	0.00	6.44	% Moisture
Mass Emissions	lb/hr	0.010	0.00	0.00	0.00	31,570	DSCFM
Emission Factor	lb/ton material	0.00026	0.00	0.00	0.00		

ND values

Enviva - Greenwood | **Date:** **7-Mar-19** | **Run 1**
RCO 1 (South) | **Run Time:** **0910-1015**

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v,\ zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	N/A	N/A	N/A	N/A	25.74
Mid-Level Gas	$C_{v,\ mid}$	11.05	9.952	46.1	49.8	50.18
High-Level Gas	$C_{v,\ high}$	21.80	18.20	89.5	89.5	85.84
Calibration Span	CS	21.80	18.20	89.5	89.5	100
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir,\ zero}$	-0.01	0.00	-0.03	0.1	0.1
Low-Level Gas	$C_{Dir,\ low}$	N/A	N/A	N/A	N/A	27.3
Mid-Level Gas	$C_{Dir,\ mid}$	11.005	10.058	45.6	49.5	49.85
High-Level Gas	$C_{Dir,\ high}$	21.73	18.12	89.5	89.5	85.75
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	-0.1	0.0	0.0	0.1	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	6.1
Mid-Level Gas	ACE_{mid}	-0.2	0.6	-0.6	-0.3	-0.7
High-Level Gas	ACE_{high}	-0.3	-0.4	0.0	0.0	-0.1
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s,\ zero\ (pre)}$	0.02	-0.01	0.01	-0.1	-0.3
Final Zero	$C_{s,\ zero\ (post)}$	0.06	0.00	0.9	-0.4	-0.6
Upscale Gas Standard	C_{MA}	21.80	18.20	46.1	49.8	50.2
Initial Upscale	$C_{v,\ up\ (pre)}$	21.66	17.82	47.8	49.7	50
Final Upscale	$C_{v,\ up\ (post)}$	21.722	17.99	47.23	47.8	50.14
System Bias - Results (Percent)						
Zero (pre)	$SB_{i\ (zero)}$	0.1	0.0	0.0	-0.1	-0.4
Zero (post)	$SB_{final\ (zero)}$	0.3	0.0	1.0	-0.5	-0.7
Upscale (pre)	$SB_{i\ (upscale)}$	-0.3	-1.6	2.5	0.2	0.1
Upscale (post)	$SB_{final\ (upscale)}$	-0.1	-0.7	1.8	-1.9	0.3
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.2	0.0	1.0	0.4	-0.3
Upscale	$D_{upscale}$	0.3	0.9	0.6	2.1	0.1
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	40	30	35	NA
Zero Test		35	35	30	35	NA
Response Time		35	40	30	35	25
Calibration Correction						
Raw Average	C_{ave}	20.60	0.00	17.48	0.79	5.19
Bias Average - Zero	C_0	0.04	0.00	0.46	-0.22	N/A
Bias Average - Upscale	C_M	21.69	17.90	47.52	48.75	N/A
Corrected Run Average	C_{Gas}	**20.70**	**0.00**	**16.68**	**1.03**	**5.19**

Enviva - Greenwood **Date:** **7-Mar-19** **Run 2**
RCO 1 (South) **Run Time:** **1108-1222**

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v,\ zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	N/A	N/A	N/A	N/A	25.7
Mid-Level Gas	$C_{v,\ mid}$	11.1	10.0	46.1	49.8	50.2
High-Level Gas	$C_{v,\ high}$	21.8	18.2	89.5	89.5	85.8
Calibration Span	CS	21.8	18.2	89.5	89.5	100
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir,\ zero}$	0.0	0.0	0.0	0.1	0.1
Low-Level Gas	$C_{Dir,\ low}$	N/A	N/A	N/A	N/A	27.3
Mid-Level Gas	$C_{Dir,\ mid}$	11.0	10.1	45.6	49.5	49.9
High-Level Gas	$C_{Dir,\ high}$	21.7	18.1	89.5	89.5	85.8
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	-0.1	0.0	0.0	0.1	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	6.1
Mid-Level Gas	ACE_{mid}	-0.2	0.6	-0.6	-0.3	-0.7
High-Level Gas	ACE_{high}	-0.3	-0.4	0.0	0.0	-0.1
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s,\ zero\ (pre)}$	0.06	0.00	0.90	-0.39	-0.60
Final Zero	$C_{s,\ zero\ (post)}$	0.129	0.00	0.5	0.02	-0.2
Upscale Gas Standard	C_{MA}	21.80	18.20	46.1	49.8	50.2
Initial Upscale	$C_{v,\ up\ (pre)}$	21.722	17.985	47.23	47.8	50.14
Final Upscale	$C_{v,\ up\ (post)}$	21.651	17.7	47.94	48.98	50.6
System Bias - Results (Percent)						
Zero (pre)	$SB_{i\ (zero)}$	0.3	0.0	1.0	-0.5	-0.7
Zero (post)	$SB_{final\ (zero)}$	0.6	0.0	0.6	0.0	-0.3
Upscale (pre)	$SB_{i\ (upscale)}$	-0.1	-0.7	1.8	-1.9	0.3
Upscale (post)	$SB_{final\ (upscale)}$	-0.4	-2.3	2.6	-0.6	0.8
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.3	0.0	0.4	0.5	0.4
Upscale	$D_{upscale}$	0.3	1.6	0.8	1.3	0.5
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	40	30	35	NA
Zero Test		35	35	30	35	NA
Response Time		35	40	30	35	25
Calibration Correction						
Raw Average	C_{ave}	20.60	0.00	18.94	1.00	4.48
Bias Average - Zero	C_0	0.09	0.00	0.70	-0.19	N/A
Bias Average - Upscale	C_M	21.69	17.84	47.59	48.39	N/A
Corrected Run Average	C_{Gas}	**20.70**	**0.00**	**17.93**	**1.21**	**4.48**

Enviva - Greenwood | **Date:** 7-Mar-19 | **Run 3**
RCO 1 (South) | **Run Time:** 1304-1418

Parameter	Symbol	O_2 %	CO_2 %	CO ppm	NOx ppm	THC ppm (as C_3H_8)
Analyzer Calibration Error - Calibration Standards						
Zero Gas	$C_{v,\ zero}$	0.0	0.0	0.0	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	N/A	N/A	N/A	N/A	25.7
Mid-Level Gas	$C_{v,\ mid}$	11.1	10.0	46.1	49.8	50.2
High-Level Gas	$C_{v,\ high}$	21.8	18.2	89.5	89.5	85.8
Calibration Span	CS	21.80	18.20	89.5	89.5	100.0
Analyzer Calibration Error - Instrument Response						
Zero Gas	$C_{Dir,\ zero}$	0.0	0.0	0.0	0.1	0.10
Low-Level Gas	$C_{Dir,\ low}$	N/A	N/A	N/A	N/A	27.3
Mid-Level Gas	$C_{Dir,\ mid}$	11.0	10.1	45.6	49.5	49.9
High-Level Gas	$C_{Dir,\ high}$	21.7	18.1	89.5	89.5	85.8
Analyzer Calibration Error - Results (Percent of Span)						
Zero Gas	ACE_{zero}	-0.1	0.0	0.0	0.1	0.1
Low-Level Gas	ACE_{low}	N/A	N/A	N/A	N/A	6.1
Mid-Level Gas	ACE_{mid}	-0.2	0.6	-0.6	-0.3	-0.7
High-Level Gas	ACE_{high}	-0.3	-0.4	0.0	0.0	-0.1
Specification	ACE_{spec}	±2	±2	±2	±2	±5
System Calibrations - Instrument Response						
Initial Zero	$C_{s,\ zero\ (pre)}$	0.13	0.00	0.50	0.02	-0.20
Final Zero	$C_{s,\ zero\ (post)}$	0.025	0.00	0.37	-0.09	-0.45
Upscale Gas Standard	C_{MA}	21.80	18.20	46.1	49.8	50.2
Initial Upscale	$C_{v,\ up\ (pre)}$	21.651	17.7	47.94	48.98	50.6
Final Upscale	$C_{v,\ up\ (post)}$	21.755	17.94	47.31	49.16	49.1
System Bias - Results (Percent)						
Zero (pre)	$SB_{i\ (zero)}$	0.6	0.0	0.6	0.0	-0.3
Zero (post)	$SB_{final\ (zero)}$	0.2	0.0	0.4	-0.2	-0.6
Upscale (pre)	$SB_{i\ (upscale)}$	-0.4	-2.3	2.6	-0.6	0.8
Upscale (post)	$SB_{final\ (upscale)}$	0.1	-1.0	1.9	-0.4	-0.8
Specification	SB_{spec}	±5	±5	±5	±5	NA
System Drift - Results (Percent)						
Zero	D_{zero}	0.5	0.0	0.1	0.1	-0.3
Upscale	$D_{upscale}$	0.5	1.3	0.7	0.2	-1.5
Specification	D_{spec}	±3	3.0	3.0	3.0	±3
Response Test - Results (seconds)						
Upscale Test		35	40	30	35	NA
Zero Test		35	35	30	35	NA
Response Time		35	40	30	35	25
Calibration Correction						
Raw Average	C_{ave}	20.53	0.01	17.56	1.11	8.85
Bias Average - Zero	C_0	0.08	0.00	0.44	-0.04	N/A
Bias Average - Upscale	C_M	21.70	17.82	47.63	49.07	N/A
Corrected Run Average	C_{Gas}	**20.53**	**0.01**	**16.73**	**1.16**	**8.85**

Test Run 1 Begin. STRATA Version 3.2.112
Operator: ACTPC
Plant Name Enviva Greenwod
Location: RCO 1 - Exhaust

		O2	CO2	THC	NOx	CO
Start Averaging		% dry	% dry	ppm	ppm	ppm
3/7/2019	9:10:31	20.569	0.008	10.97	1.11	18.92
3/7/2019	9:11:31	20.573	0.01	3.97	1.06	19.22
3/7/2019	9:12:32	20.579	0.007	3.63	1.08	18.35
3/7/2019	9:13:32	20.585	0.004	11.71	1.05	17.97
3/7/2019	9:14:31	20.586	0.003	3.7	1.03	18.25
3/7/2019	9:15:32	20.584	0.002	2.19	1.08	17.39
3/7/2019	9:16:32	20.583	-0.003	9.01	1.02	17.19
3/7/2019	9:17:31	20.581	-0.002	2.66	1.02	17.47
3/7/2019	9:18:31	20.58	-0.002	2.05	1.02	16.76
3/7/2019	9:19:32	20.59	-0.001	9.43	1	16.72
3/7/2019	9:20:31	20.594	0	3.02	0.97	17.26
3/7/2019	9:21:31	20.597	-0.003	2.68	0.97	16.75
3/7/2019	9:22:32	20.607	0	10.49	0.95	16.76
3/7/2019	9:23:32	20.601	-0.002	4.42	0.9	17.23
3/7/2019	9:24:31	20.601	0	2.98	0.96	16.61
3/7/2019	9:25:32	20.588	-0.002	9.44	0.97	16.6
3/7/2019	9:26:31	20.586	0.002	2.34	0.98	17.29
3/7/2019	9:27:31	20.585	-0.003	1.66	0.99	17.13
3/7/2019	9:28:31	20.591	0	9.02	0.97	17.59
3/7/2019	9:29:32	20.58	0.005	2.76	0.94	18.35
3/7/2019	9:30:31	20.584	0.003	2.25	0.97	18.05
3/7/2019	9:31:31	20.59	0.003	10.75	0.93	18.12
3/7/2019	9:32:31	20.592	0.004	3.63	0.92	18.67
3/7/2019	9:33:31	20.601	0.003	3.28	0.97	18.22
3/7/2019	9:34:32	20.603	0.003	10.88	0.97	18.05
3/7/2019	9:35:31	20.586	-0.001	3.22	0.97	18.51
3/7/2019	9:36:31	20.586	0.002	1.93	0.95	17.95
3/7/2019	9:37:31	20.585	-0.001	9.87	0.9	17.9
3/7/2019	9:38:32	20.583	0.001	2.42	0.9	18.52
3/7/2019	9:39:31	20.586	0.002	1.65	0.9	18.11
3/7/2019	9:40:32	20.594	-0.002	9.46	0.89	17.89
3/7/2019	9:41:31	20.593	0.004	3.24	0.88	18.02
3/7/2019	9:42:31	20.603	-0.001	2.62	0.9	17.04
3/7/2019	9:43:31	20.615	-0.003	10.15	0.85	16.45
3/7/2019	9:44:32	20.622	-0.001	3.81	0.83	16.71
3/7/2019	9:45:31	20.613	-0.003	3.06	0.81	16.23
3/7/2019	9:46:32	20.614	-0.002	9.44	0.76	16.36
3/7/2019	9:47:31	20.605	-0.002	2.76	0.75	16.99
3/7/2019	9:48:31	20.6	-0.003	2	0.78	16.55
3/7/2019	9:49:31	20.605	-0.001	9.23	0.72	16.58
3/7/2019	9:50:32	20.601	-0.001	2.43	0.66	17.28
3/7/2019	9:51:31	20.604	-0.002	1.93	0.66	17.11
3/7/2019	9:52:31	20.607	0.002	9.59	0.66	17.38

Test Run 1 Begin. STRATA Version 3.2.112
Operator: ACTPC
Plant Name Enviva Greenwod
Location: RCO 1 - Exhaust

		O2	CO2	THC	NOx	CO
3/7/2019	9:53:32	20.615	-0.002	3.92	0.64	17.88
3/7/2019	9:54:31	20.616	-0.002	3.49	0.62	17.28
3/7/2019	9:55:31	20.619	0.002	10.76	0.61	17.1
3/7/2019	9:56:31	20.611	-0.001	3.11	0.55	17.62
3/7/2019	9:57:32	20.604	-0.001	1.79	0.59	17.28
3/7/2019	9:58:32	20.607	-0.002	9.22	0.57	17.43
3/7/2019	9:59:31	20.601	-0.002	2.85	0.55	17.89
3/7/2019	10:00:32	20.604	-0.002	2	0.5	17.18
3/7/2019	10:01:31	20.609	-0.003	9.85	0.36	17.01
3/7/2019	10:02:32	20.616	-0.002	2.88	0.25	17.53
3/7/2019	10:03:31	20.619	-0.002	2.52	0.25	17.18
3/7/2019	10:04:31	20.63	-0.003	10.09	0.3	17.14
3/7/2019	10:05:32	20.629	-0.002	4.26	0.41	17.37
3/7/2019	10:06:31	20.624	-0.003	3.44	0.5	16.77
3/7/2019	10:07:31	20.616	-0.002	9.79	0.55	16.9
3/7/2019	10:08:32	20.606	-0.002	2.39	0.6	17.7
3/7/2019	10:09:31	20.608	-0.001	1.65	0.64	17.55
3/7/2019	10:10:32	20.613	-0.003	9.07	0.66	17.63

Test Run 2 Begin. STRATA Version 3.2.112
Operator: ACTPC
Plant Nam Enviva Greenwod
Location: RCO 1 - Exhaust

		O2	CO2	THC	NOx
Start Averaging		**% dry**	**% dry**	**ppm**	**ppm**
3/7/2019	11:12:20	20.608	-0.002	2.07	1.09
3/7/2019	11:13:19	20.602	0.001	7.96	1.03
3/7/2019	11:14:20	20.601	-0.002	1.89	1.04
3/7/2019	11:15:20	20.603	-0.001	1.12	1.03
3/7/2019	11:16:20	20.61	-0.002	8.23	1.03
3/7/2019	11:17:20	20.602	-0.003	2.59	1
3/7/2019	11:18:20	20.619	-0.001	3.59	1.03
3/7/2019	11:19:20	20.616	-0.002	9.89	1.07
3/7/2019	11:20:19	20.607	-0.001	3.41	1.06
3/7/2019	11:21:20	20.601	0.001	2.13	1.03
3/7/2019	11:22:20	20.598	-0.001	8.36	1.03
3/7/2019	11:23:19	20.594	-0.001	2.28	1
3/7/2019	11:24:20	20.59	0.002	1.14	1.06
3/7/2019	11:25:19	20.601	-0.002	8.2	1.05
3/7/2019	11:26:20	20.605	-0.002	3.18	1.03
3/7/2019	11:27:20	20.622	-0.002	3.58	1.01
3/7/2019	11:28:20	20.636	-0.001	10.37	0.97
3/7/2019	11:29:19	20.622	-0.002	4.95	0.97
3/7/2019	11:30:20	20.6	-0.001	1.99	1.02
3/7/2019	11:31:20	20.594	0	7.65	1.04
3/7/2019	11:32:20	20.589	-0.002	1.33	1.03
3/7/2019	11:33:19	20.585	-0.001	0.26	1.03
3/7/2019	11:34:20	20.593	-0.001	6.99	1.01
3/7/2019	11:35:20	20.59	-0.002	2.28	0.97
3/7/2019	11:36:20	20.592	0.001	1.46	1.02
3/7/2019	11:37:20	20.609	-0.002	9.51	1.01
3/7/2019	11:38:19	20.623	-0.002	5.04	0.97
3/7/2019	11:39:20	20.626	-0.001	4.23	0.97
3/7/2019	11:40:20	20.627	-0.002	10.23	0.93
3/7/2019	11:41:20	20.605	-0.002	4.21	0.93
3/7/2019	11:42:20	20.594	0	1.76	1.02
3/7/2019	11:43:19	20.592	-0.003	8	1.03
3/7/2019	11:44:20	20.585	0	1.85	1.03
3/7/2019	11:45:19	20.587	-0.002	0.86	1.03
3/7/2019	11:46:20	20.606	-0.003	9.42	0.98
3/7/2019	11:47:20	20.612	-0.001	4.35	0.96
3/7/2019	11:48:19	20.607	0	3.37	0.97
3/7/2019	11:49:20	20.598	-0.002	10.05	0.97
3/7/2019	11:50:20	20.591	-0.002	3.46	0.97
3/7/2019	11:51:20	20.593	0	1.45	1.02
3/7/2019	11:52:19	20.582	-0.002	7.5	1.02
3/7/2019	11:53:20	20.584	-0.002	2.62	0.99
3/7/2019	11:54:20	20.595	0.004	2.09	1.03

Test Run 2 Begin. STRATA Version 3.2.112
Operator: ACTPC
Plant Nam Enviva Greenwod
Location: RCO 1 - Exhaust

		O2	CO2	THC	NOx
3/7/2019	11:55:20	20.592	0.001	9.23	0.98
3/7/2019	11:56:20	20.584	0	1.85	0.98
3/7/2019	11:57:20	20.587	0.002	0.81	1.01
3/7/2019	11:58:20	20.592	-0.003	8.07	0.97
3/7/2019	11:59:19	20.586	-0.002	2.88	0.94
3/7/2019	12:00:20	20.591	0.001	2.1	0.97
3/7/2019	12:01:19	20.597	0.002	9.5	0.97
3/7/2019	12:02:20	20.601	0.004	3.93	0.97
3/7/2019	12:03:20	20.594	-0.001	2.17	0.97
3/7/2019	12:04:20	20.6	-0.001	9.21	0.97
3/7/2019	12:05:20	20.578	-0.001	2.24	0.98
3/7/2019	12:06:20	20.585	-0.002	0.66	1.03
3/7/2019	12:07:20	20.583	-0.003	8.04	1
3/7/2019	12:08:20	20.584	-0.001	2.22	0.97
3/7/2019	12:09:20	20.595	0.002	1.83	1.01
3/7/2019	12:10:19	20.616	-0.002	10.02	0.96
3/7/2019	12:11:20	20.604	-0.002	4.65	0.94
3/7/2019	12:12:20	20.59	-0.002	2.14	1.01
3/7/2019	12:13:20	20.583	-0.001	8.02	1.03
3/7/2019	12:14:19	20.577	-0.001	1.65	1.03
3/7/2019	12:15:20	20.576	-0.002	0.24	1.03
3/7/2019	12:16:20	20.578	-0.003	7.39	1.03

Test Run 3 Begin. STRATA Version 3.2.112
Operator: ACTPC
Plant Nam Enviva Greenwod
Location: RCO 1 - Exhaust

Start Averaging		**O2 % dry**	**CO2 % dry**	**THC ppm**	**NOx ppm**	**CO ppm**
3/7/2019	13:05:07	20.563	-0.001	8.85	1.09	16.51
3/7/2019	13:06:07	20.565	0.005	7.52	1.09	16.35
3/7/2019	13:07:06	20.563	0.003	13.73	1.09	16
3/7/2019	13:08:07	20.548	0.004	8.34	1.09	16.75
3/7/2019	13:09:07	20.546	0.002	5.81	1.11	16.9
3/7/2019	13:10:07	20.548	0.003	10.96	1.14	16.75
3/7/2019	13:11:06	20.542	0.001	7.38	1.09	17.68
3/7/2019	13:12:07	20.536	0.005	5.52	1.13	17.33
3/7/2019	13:13:07	20.541	0.003	11.84	1.14	16.89
3/7/2019	13:14:07	20.538	0.014	7.68	1.09	17.69
3/7/2019	13:15:07	20.543	0.006	6.34	1.14	17.66
3/7/2019	13:16:07	20.553	0.004	12.59	1.12	17.25
3/7/2019	13:17:07	20.548	0.003	9.02	1.09	17.9
3/7/2019	13:18:07	20.543	0.003	6.58	1.17	17.48
3/7/2019	13:19:06	20.531	0.004	11.99	1.22	17.07
3/7/2019	13:20:07	20.533	0.002	7.56	1.19	17.73
3/7/2019	13:21:07	20.527	0.006	5.62	1.16	17.55
3/7/2019	13:22:07	20.543	0.004	11.29	1.17	17
3/7/2019	13:23:07	20.538	0.003	8.31	1.11	17.44
3/7/2019	13:24:06	20.542	0.003	6.65	1.15	16.9
3/7/2019	13:25:07	20.546	-0.001	12.76	1.1	16.25
3/7/2019	13:26:07	20.549	0.004	9.03	1.09	16.68
3/7/2019	13:27:07	20.548	0.002	7.3	1.09	16.44
3/7/2019	13:28:07	20.547	0.003	12.35	1.09	16.1
3/7/2019	13:29:07	20.542	0.001	8.34	1.09	16.78
3/7/2019	13:30:07	20.537	0.001	6.13	1.09	16.56
3/7/2019	13:31:06	20.535	0	12.03	1.14	16.18
3/7/2019	13:32:07	20.537	0.004	8.01	1.07	16.81
3/7/2019	13:33:07	20.539	0.001	6.36	1.03	16.79
3/7/2019	13:34:07	20.537	0.003	12.28	1.03	16.74
3/7/2019	13:35:06	20.54	0.001	9	1.03	17.74
3/7/2019	13:36:07	20.54	0.004	7.42	1.03	17.54
3/7/2019	13:37:07	20.534	0.002	13.95	1.03	17.31
3/7/2019	13:38:07	20.53	0.009	9.17	1.03	18.15
3/7/2019	13:39:07	20.518	0.007	6.28	1.06	18.47
3/7/2019	13:40:06	20.515	0.008	12.16	1.09	18.5
3/7/2019	13:41:07	20.514	0.006	8.08	1.05	19.22
3/7/2019	13:42:07	20.517	0.008	6.1	1.09	18.71
3/7/2019	13:43:07	20.515	0.002	12.9	1.09	18.19
3/7/2019	13:44:07	20.516	0.007	8.74	1.08	18.87
3/7/2019	13:45:06	20.52	0.01	6.62	1.08	18.79
3/7/2019	13:46:07	20.526	0.009	12.98	1.09	18.47
3/7/2019	13:47:07	20.527	0.008	9.87	1.04	19.04

Test Run 3 Begin. STRATA Version 3.2.112
Operator: ACTPC
Plant Nam Enviva Greenwod
Location: RCO 1 - Exhaust

		O2	CO2	THC	NOx	CO
3/7/2019	13:48:06	20.53	0.006	7.82	1.09	18.46
3/7/2019	13:49:07	20.524	0.004	13.48	1.09	17.82
3/7/2019	13:50:07	20.513	0.009	8.24	1.09	18.39
3/7/2019	13:51:06	20.514	0.004	6.06	1.14	18.2
3/7/2019	13:52:07	20.523	0.006	11.68	1.14	17.76
3/7/2019	13:53:07	20.514	0.003	7.96	1.09	18.25
3/7/2019	13:54:06	20.523	0.008	6.22	1.1	17.58
3/7/2019	13:55:07	20.527	0.005	12.71	1.1	16.86
3/7/2019	13:56:06	20.526	0.002	8.53	1.06	17.31
3/7/2019	13:57:07	20.534	0.006	6.97	1.09	17.2
3/7/2019	13:58:07	20.531	0.007	12.59	1.11	16.85
3/7/2019	13:59:06	20.523	0.003	8.58	1.09	17.42
3/7/2019	14:00:07	20.509	0.005	5.42	1.13	17.12
3/7/2019	14:01:07	20.507	0.005	11.53	1.15	16.84
3/7/2019	14:02:07	20.506	0.009	7.27	1.15	17.6
3/7/2019	14:03:07	20.508	0.009	5.01	1.15	17.68
3/7/2019	14:04:07	20.508	0.004	10.92	1.15	17.49

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
3/7/2019 8:57	0.061	0.041	0.000	0.051	0.024	0.092	0.000	0.163
3/7/2019 8:58	0.056	0.040	0.000	0.052	0.095	0.090	0.000	0.159
3/7/2019 8:59	0.114	0.040	0.000	0.050	0.065	0.088	0.000	0.158
3/7/2019 9:00	0.198	0.041	0.000	0.053	0.042	0.089	0.000	0.165
3/7/2019 9:01	0.234	0.040	0.000	0.050	0.061	0.088	0.000	0.164
3/7/2019 9:02	0.193	0.039	0.000	0.050	0.099	0.089	0.000	0.157
3/7/2019 9:03	0.079	0.041	0.000	0.051	0.058	0.091	0.000	0.164
3/7/2019 9:04	0.104	0.040	0.000	0.053	0.048	0.087	0.000	0.159
3/7/2019 9:05	0.089	0.041	0.000	0.052	0.056	0.091	0.000	0.164
3/7/2019 9:06	0.049	0.042	0.000	0.052	0.002	0.092	0.000	0.163
3/7/2019 9:07	0.063	0.040	0.000	0.053	0.051	0.088	0.000	0.160
3/7/2019 9:08	0.070	0.040	0.000	0.052	0.035	0.089	0.000	0.161
3/7/2019 9:09	0.035	0.041	0.000	0.051	0.037	0.089	0.000	0.157
3/7/2019 9:10	0.045	0.041	0.000	0.054	0.098	0.085	0.000	0.164
3/7/2019 9:11	0.094	0.040	0.000	0.052	0.070	0.087	0.000	0.165
3/7/2019 9:14	0.046	0.044	0.000	0.055	0.070	0.084	0.000	0.173
3/7/2019 9:16	0.072	0.038	0.000	0.050	0.065	0.086	0.000	0.157
3/7/2019 9:17	0.056	0.041	0.000	0.050	0.063	0.081	0.000	0.158
3/7/2019 9:18	0.072	0.042	0.000	0.049	0.095	0.080	0.000	0.165
3/7/2019 9:19	0.070	0.038	0.000	0.046	0.113	0.077	0.000	0.158
3/7/2019 9:20	0.068	0.038	0.000	0.047	0.068	0.077	0.000	0.154
3/7/2019 9:21	0.104	0.040	0.000	0.051	0.101	0.077	0.000	0.161
3/7/2019 9:22	0.147	0.038	0.000	0.046	0.152	0.079	0.000	0.153
3/7/2019 9:23	0.148	0.037	0.000	0.045	0.086	0.078	0.000	0.149
3/7/2019 9:24	0.047	0.040	0.000	0.051	0.078	0.079	0.000	0.161
3/7/2019 9:25	0.103	0.039	0.000	0.049	0.160	0.078	0.000	0.157
3/7/2019 9:26	0.094	0.040	0.000	0.048	0.086	0.079	0.000	0.162
3/7/2019 9:27	0.032	0.039	0.000	0.049	0.069	0.079	0.000	0.161
3/7/2019 9:28	0.133	0.037	0.000	0.045	0.125	0.081	0.000	0.155
3/7/2019 9:29	0.058	0.039	0.000	0.050	0.098	0.080	0.000	0.161
3/7/2019 9:30	0.073	0.039	0.000	0.047	0.062	0.079	0.000	0.160
3/7/2019 9:31	0.084	0.039	0.000	0.047	0.119	0.079	0.000	0.159
3/7/2019 9:32	0.058	0.039	0.000	0.049	0.094	0.080	0.000	0.158
3/7/2019 9:33	0.127	0.038	0.000	0.049	0.111	0.079	0.000	0.159
3/7/2019 9:34	0.142	0.038	0.000	0.047	0.176	0.078	0.000	0.158
3/7/2019 9:35	0.047	0.040	0.000	0.047	0.093	0.078	0.000	0.162
3/7/2019 9:36	0.095	0.039	0.000	0.050	0.092	0.077	0.000	0.161
3/7/2019 9:37	0.039	0.040	0.000	0.048	0.124	0.078	0.000	0.162
3/7/2019 9:38	0.021	0.039	0.000	0.045	0.081	0.075	0.000	0.159
3/7/2019 9:39	0.090	0.040	0.000	0.051	0.113	0.077	0.000	0.161
3/7/2019 9:40	0.047	0.037	0.000	0.044	0.109	0.076	0.000	0.151
3/7/2019 9:41	0.012	0.038	0.000	0.048	0.061	0.076	0.000	0.155
3/7/2019 9:42	0.084	0.040	0.000	0.052	0.127	0.074	0.000	0.159
3/7/2019 9:43	0.130	0.037	0.000	0.046	0.154	0.075	0.000	0.151
3/7/2019 9:44	0.040	0.040	0.000	0.049	0.051	0.077	0.000	0.151
3/7/2019 9:45	0.022	0.039	0.000	0.049	0.109	0.075	0.000	0.155
3/7/2019 9:46	0.064	0.037	0.000	0.047	0.136	0.074	0.000	0.149
3/7/2019 9:47	0.000	0.038	0.000	0.047	0.121	0.074	0.000	0.155
3/7/2019 9:48	0.021	0.040	0.000	0.049	0.131	0.071	0.000	0.151
3/7/2019 9:49	0.084	0.037	0.000	0.049	0.170	0.074	0.000	0.150

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
3/7/2019 9:50	0.002	0.038	0.000	0.049	0.096	0.074	0.000	0.156
3/7/2019 9:51	0.017	0.039	0.000	0.051	0.116	0.073	0.000	0.159
3/7/2019 9:52	0.079	0.037	0.000	0.048	0.172	0.073	0.000	0.150
3/7/2019 9:53	0.056	0.039	0.000	0.047	0.087	0.072	0.000	0.154
3/7/2019 9:54	0.083	0.039	0.000	0.048	0.095	0.072	0.000	0.158
3/7/2019 9:55	0.078	0.038	0.000	0.047	0.132	0.072	0.000	0.155
3/7/2019 9:56	0.060	0.040	0.000	0.049	0.135	0.074	0.000	0.158
3/7/2019 9:57	0.064	0.040	0.000	0.049	0.092	0.073	0.000	0.159
3/7/2019 9:58	0.109	0.038	0.000	0.046	0.164	0.071	0.000	0.158
3/7/2019 9:59	0.048	0.037	0.000	0.045	0.079	0.071	0.000	0.154
3/7/2019 10:00	0.016	0.038	0.000	0.046	0.110	0.070	0.000	0.154
3/7/2019 10:01	0.043	0.039	0.000	0.048	0.151	0.071	0.000	0.155
3/7/2019 10:02	0.000	0.037	0.000	0.044	0.109	0.071	0.000	0.150
3/7/2019 10:03	0.094	0.038	0.000	0.046	0.124	0.071	0.000	0.155
3/7/2019 10:04	0.100	0.038	0.000	0.050	0.163	0.073	0.000	0.157
3/7/2019 10:05	0.016	0.040	0.000	0.049	0.110	0.073	0.000	0.163
3/7/2019 10:06	0.040	0.040	0.000	0.050	0.124	0.073	0.000	0.159
3/7/2019 10:07	0.084	0.038	0.000	0.049	0.174	0.073	0.000	0.155
3/7/2019 10:08	0.002	0.040	0.000	0.049	0.100	0.074	0.000	0.158
3/7/2019 10:09	0.000	0.039	0.000	0.048	0.144	0.076	0.000	0.157
3/7/2019 10:10	0.057	0.038	0.000	0.045	0.178	0.073	0.000	0.155
3/7/2019 10:11	0.032	0.040	0.000	0.047	0.144	0.072	0.000	0.159
3/7/2019 10:12	0.043	0.038	0.000	0.046	0.124	0.070	0.000	0.161
3/7/2019 10:13	0.000	0.038	0.000	0.047	0.237	0.057	0.000	0.148
3/7/2019 10:14	0.000	0.052	0.099	0.058	0.096	0.042	0.000	0.189
3/7/2019 10:15	0.000	0.049	0.057	0.053	0.092	0.039	0.000	0.183
3/7/2019 10:16	0.000	0.039	0.024	0.044	0.060	0.035	0.000	0.146
3/7/2019 10:17	0.000	0.027	0.000	0.036	0.058	0.027	0.000	0.109
3/7/2019 10:18	0.000	0.028	0.067	0.035	0.030	0.027	0.000	0.106
3/7/2019 10:19	0.000	0.028	0.053	0.035	0.007	0.028	0.000	0.104
3/7/2019 10:20	0.000	0.029	0.053	0.038	0.020	0.026	0.000	0.111
3/7/2019 10:21	0.000	0.026	0.056	0.032	0.042	0.028	0.000	0.102
3/7/2019 10:22	0.000	0.028	0.003	0.035	0.059	0.092	0.000	0.105
3/7/2019 10:23	0.000	0.031	0.017	0.037	-0.238	2.515	0.000	0.130
3/7/2019 10:24	0.000	0.030	0.015	0.035	-0.324	3.047	0.000	0.133
3/7/2019 10:25	0.000	0.031	0.036	0.034	-0.359	3.071	0.000	0.136
3/7/2019 10:26	0.116	0.035	0.080	0.044	0.121	1.301	0.000	0.160
3/7/2019 10:27	0.087	0.038	0.000	0.045	0.135	0.156	0.000	0.155
3/7/2019 10:28	0.098	0.040	0.000	0.051	0.166	0.077	0.000	0.160
3/7/2019 10:29	0.000	0.040	0.000	0.047	0.109	0.072	0.000	0.159
3/7/2019 10:30	0.000	0.039	0.000	0.048	0.107	0.073	0.000	0.157
3/7/2019 10:31	0.016	0.039	0.000	0.050	0.192	0.074	0.000	0.160
3/7/2019 10:32	0.023	0.040	0.000	0.046	0.138	0.073	0.000	0.160
3/7/2019 10:33	0.074	0.040	0.000	0.049	0.127	0.073	0.000	0.157
3/7/2019 10:34	0.185	0.040	0.000	0.050	0.178	0.075	0.000	0.158
3/7/2019 10:35	0.131	0.040	0.000	0.049	0.094	0.073	0.000	0.161
3/7/2019 10:36	0.056	0.038	0.000	0.048	0.138	0.071	0.000	0.157
3/7/2019 10:37	0.054	0.038	0.000	0.047	0.181	0.071	0.000	0.155
3/7/2019 10:38	0.031	0.038	0.000	0.048	0.119	0.074	0.000	0.158
3/7/2019 10:39	0.051	0.039	0.000	0.047	0.107	0.071	0.000	0.157
3/7/2019 10:40	0.092	0.039	0.000	0.048	0.212	0.072	0.000	0.154
3/7/2019 10:41	0.002	0.039	0.000	0.052	0.137	0.072	0.000	0.163

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
3/7/2019 10:42	0.013	0.040	0.000	0.049	0.114	0.070	0.000	0.158
3/7/2019 10:43	0.077	0.037	0.000	0.048	0.161	0.074	0.000	0.151
3/7/2019 10:44	0.045	0.040	0.000	0.050	0.143	0.074	0.000	0.156
3/7/2019 10:45	0.044	0.038	0.000	0.048	0.095	0.075	0.000	0.151
3/7/2019 10:46	0.144	0.038	0.000	0.049	0.177	0.075	0.000	0.152
3/7/2019 10:47	0.011	0.040	0.000	0.049	0.115	0.073	0.000	0.156
3/7/2019 10:48	0.000	0.037	0.000	0.045	0.130	0.073	0.000	0.147
3/7/2019 10:49	0.103	0.038	0.000	0.048	0.195	0.072	0.000	0.147
3/7/2019 10:50	0.011	0.038	0.000	0.045	0.099	0.073	0.000	0.151
3/7/2019 10:51	0.032	0.040	0.000	0.049	0.126	0.073	0.000	0.158
3/7/2019 10:52	0.101	0.037	0.000	0.046	0.159	0.075	0.000	0.147
3/7/2019 10:53	0.042	0.039	0.000	0.049	0.100	0.075	0.000	0.147
3/7/2019 10:54	0.065	0.038	0.000	0.048	0.122	0.072	0.000	0.157
3/7/2019 10:55	0.035	0.037	0.000	0.046	0.158	0.072	0.000	0.145
3/7/2019 10:56	0.053	0.040	0.000	0.050	0.138	0.074	0.000	0.153
3/7/2019 10:57	0.059	0.038	0.000	0.046	0.119	0.073	0.000	0.151
3/7/2019 10:58	0.089	0.037	0.000	0.046	0.194	0.074	0.000	0.149
3/7/2019 10:59	0.098	0.039	0.000	0.049	0.100	0.072	0.000	0.152
3/7/2019 11:00	0.020	0.038	0.000	0.046	0.160	0.071	0.000	0.147
3/7/2019 11:01	0.071	0.037	0.000	0.044	0.173	0.071	0.000	0.144
3/7/2019 11:02	0.037	0.038	0.000	0.046	0.162	0.069	0.000	0.150
3/7/2019 11:03	0.033	0.038	0.000	0.046	0.152	0.068	0.000	0.151
3/7/2019 11:04	0.078	0.037	0.000	0.045	0.154	0.069	0.000	0.142
3/7/2019 11:05	0.041	0.039	0.000	0.048	0.112	0.069	0.000	0.150
3/7/2019 11:06	0.006	0.039	0.000	0.046	0.144	0.071	0.000	0.148
3/7/2019 11:07	0.051	0.038	0.000	0.050	0.204	0.069	0.000	0.146
3/7/2019 11:08	0.057	0.039	0.000	0.047	0.135	0.070	0.000	0.145
3/7/2019 11:09	0.040	0.039	0.000	0.050	0.115	0.072	0.000	0.153
3/7/2019 11:10	0.057	0.039	0.000	0.053	0.166	0.069	0.000	0.150
3/7/2019 11:11	0.000	0.038	0.000	0.047	0.106	0.073	0.000	0.144
3/7/2019 11:12	0.077	0.037	0.000	0.046	0.103	0.072	0.000	0.144
3/7/2019 11:13	0.040	0.037	0.000	0.046	0.159	0.071	0.000	0.144
3/7/2019 11:14	0.030	0.039	0.000	0.049	0.155	0.073	0.000	0.142
3/7/2019 11:15	0.000	0.039	0.000	0.048	0.148	0.073	0.000	0.148
3/7/2019 11:16	0.086	0.036	0.000	0.046	0.159	0.074	0.000	0.142
3/7/2019 11:17	0.056	0.040	0.000	0.047	0.133	0.074	0.000	0.149
3/7/2019 11:18	0.044	0.040	0.000	0.047	0.154	0.073	0.000	0.150
3/7/2019 11:19	0.026	0.037	0.000	0.046	0.155	0.076	0.000	0.144
3/7/2019 11:20	0.026	0.039	0.000	0.047	0.116	0.076	0.000	0.144
3/7/2019 11:21	0.000	0.037	0.000	0.046	0.105	0.073	0.000	0.142
3/7/2019 11:22	0.052	0.037	0.000	0.046	0.189	0.070	0.000	0.142
3/7/2019 11:23	0.002	0.040	0.000	0.047	0.120	0.071	0.000	0.149
3/7/2019 11:24	0.000	0.040	0.000	0.047	0.145	0.068	0.000	0.149
3/7/2019 11:25	0.036	0.039	0.000	0.051	0.157	0.069	0.000	0.146
3/7/2019 11:26	0.010	0.039	0.000	0.046	0.129	0.071	0.000	0.144
3/7/2019 11:27	0.037	0.039	0.000	0.047	0.107	0.070	0.000	0.143
3/7/2019 11:28	0.112	0.038	0.000	0.045	0.186	0.071	0.000	0.149
3/7/2019 11:29	0.056	0.039	0.000	0.045	0.127	0.072	0.000	0.146
3/7/2019 11:30	0.004	0.040	0.000	0.047	0.153	0.069	0.000	0.148
3/7/2019 11:31	0.000	0.036	0.000	0.043	0.140	0.072	0.000	0.145
3/7/2019 11:32	0.000	0.040	0.000	0.047	0.108	0.072	0.000	0.150
3/7/2019 11:33	0.000	0.040	0.000	0.048	0.124	0.071	0.000	0.149

Date	Form-aldehyde (ppm)	SEC (ppm)	HCl (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	acet-aldehyde (ppm)	SEC (ppm)
3/7/2019 11:34	0.029	0.039	0.000	0.049	0.197	0.071	0.000	0.149
3/7/2019 11:35	0.040	0.041	0.000	0.047	0.098	0.070	0.000	0.153
3/7/2019 11:36	0.000	0.041	0.000	0.051	0.119	0.068	0.000	0.153
3/7/2019 11:37	0.000	0.039	0.000	0.047	0.159	0.071	0.000	0.149
3/7/2019 11:38	0.018	0.040	0.000	0.049	0.125	0.069	0.000	0.150
3/7/2019 11:39	0.049	0.039	0.000	0.048	0.147	0.070	0.000	0.147
3/7/2019 11:40	0.096	0.039	0.000	0.048	0.205	0.071	0.000	0.150
3/7/2019 11:41	0.005	0.042	0.000	0.048	0.121	0.071	0.000	0.151
3/7/2019 11:42	0.007	0.041	0.000	0.044	0.149	0.069	0.000	0.149
3/7/2019 11:43	0.000	0.040	0.000	0.049	0.165	0.069	0.000	0.152
3/7/2019 11:44	0.001	0.040	0.000	0.046	0.079	0.071	0.000	0.149
3/7/2019 11:45	0.000	0.041	0.000	0.046	0.098	0.071	0.000	0.150
3/7/2019 11:46	0.032	0.040	0.000	0.045	0.172	0.072	0.000	0.149
3/7/2019 11:47	0.010	0.043	0.000	0.051	0.098	0.074	0.000	0.160
3/7/2019 11:48	0.000	0.041	0.000	0.048	0.156	0.071	0.000	0.154
3/7/2019 11:49	0.058	0.039	0.000	0.045	0.184	0.072	0.000	0.151
3/7/2019 11:50	0.023	0.039	0.000	0.046	0.093	0.073	0.000	0.147
3/7/2019 11:51	0.000	0.041	0.000	0.050	0.124	0.069	0.000	0.156
3/7/2019 11:52	0.029	0.039	0.000	0.047	0.204	0.072	0.000	0.147
3/7/2019 11:53	0.001	0.040	0.000	0.047	0.111	0.072	0.000	0.148
3/7/2019 11:54	0.000	0.042	0.000	0.050	0.140	0.070	0.000	0.156
3/7/2019 11:55	0.035	0.041	0.000	0.051	0.154	0.070	0.000	0.154
3/7/2019 11:56	0.000	0.039	0.000	0.046	0.122	0.073	0.000	0.148
3/7/2019 11:57	0.011	0.039	0.000	0.047	0.112	0.071	0.000	0.147
3/7/2019 11:58	0.030	0.039	0.000	0.049	0.118	0.072	0.000	0.148
3/7/2019 11:59	0.026	0.040	0.000	0.046	0.096	0.071	0.000	0.147
3/7/2019 12:00	0.017	0.040	0.000	0.050	0.146	0.069	0.000	0.151
3/7/2019 12:01	0.073	0.039	0.000	0.048	0.168	0.071	0.000	0.157
3/7/2019 12:02	0.040	0.041	0.000	0.050	0.102	0.072	0.000	0.153
3/7/2019 12:03	0.000	0.041	0.000	0.047	0.122	0.069	0.000	0.149
3/7/2019 12:04	0.055	0.041	0.000	0.049	0.152	0.068	0.000	0.157
3/7/2019 12:05	0.000	0.044	0.000	0.048	0.084	0.070	0.000	0.157
3/7/2019 12:06	0.013	0.041	0.000	0.048	0.118	0.068	0.000	0.154
3/7/2019 12:07	0.014	0.040	0.000	0.049	0.211	0.069	0.000	0.153
3/7/2019 12:08	0.000	0.042	0.000	0.045	0.083	0.071	0.000	0.155
3/7/2019 12:09	0.005	0.042	0.000	0.047	0.122	0.069	0.000	0.153
3/7/2019 12:10	0.039	0.038	0.000	0.050	0.208	0.071	0.000	0.147
3/7/2019 12:11	0.020	0.040	0.000	0.047	0.108	0.069	0.000	0.149
3/7/2019 12:12	0.017	0.039	0.000	0.046	0.134	0.070	0.000	0.144
3/7/2019 12:13	0.000	0.038	0.000	0.045	0.196	0.069	0.000	0.145
3/7/2019 12:14	0.000	0.038	0.000	0.048	0.102	0.068	0.000	0.147
3/7/2019 12:15	0.000	0.039	0.000	0.045	0.110	0.070	0.000	0.142
3/7/2019 12:16	0.043	0.039	0.000	0.048	0.181	0.069	0.000	0.150
3/7/2019 12:17	0.000	0.043	0.000	0.050	0.103	0.069	0.000	0.151
3/7/2019 12:18	0.000	0.041	0.000	0.051	0.123	0.068	0.000	0.151
3/7/2019 12:19	0.000	0.039	0.000	0.048	0.169	0.070	0.000	0.149
3/7/2019 12:20	0.000	0.041	0.000	0.049	0.158	0.069	0.000	0.154
3/7/2019 12:21	0.021	0.037	0.000	0.044	0.194	0.079	0.000	0.140
3/7/2019 12:22	0.026	0.046	0.123	0.059	0.150	0.040	0.000	0.171
3/7/2019 12:23	0.000	0.041	0.174	0.053	0.113	0.034	0.000	0.158
3/7/2019 12:24	0.000	0.035	0.072	0.045	-0.045	0.876	0.000	0.141
3/7/2019 12:25	0.000	0.030	0.009	0.039	-0.276	2.879	0.000	0.138

Date	Time	Direct Spike Results, $Spike_{dir}$		System Spiked Result		Native Concentrations, Unspike		Dilution, DF	Expected Spike Conc., CS	Recovery
		(ppm HCl)	(ppm SF6)	(ppm HCl)	(ppm SF6)	(ppm HCl)	(ppm SF6)			
6-Mar	1730	46.82	2.15	5.132	0.213	-0.071	-0.001	10.0%	4.6	**111.6%**
6-Mar	1730	46.82	2.15	4.288	0.182	-0.071	-0.001	8.5%	3.9	**109.3%**
6-Mar	1730	46.82	2.15	3.770	0.182	-0.071	-0.001	8.5%	3.9	**96.1%**
6-Mar	1730	46.82	2.15	3.449	0.182	-0.071	-0.001	8.5%	3.9	**87.9%**
6-Mar	1730	46.82	2.15	3.143	0.181	-0.071	-0.001	8.5%	3.9	**80.6%**

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Pressure (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
7-Mar	746	8.12	0.114	14.86	181	NA	0.0%
	Average	8.116	0.114				

Stratification Test

Point	Average Reading		Variation from Mean	
	NOx	CO	NOx	CO
1	1.12	29.94	0.00	0.3
2	1.09	29.86	0.03	0.4
3	1.14	30.56	0.02	0.3
4	1.12	31.65	0.00	1.4
5	1.11	30.95	0.01	0.7
6	1.14	30.49	0.02	0.2
7	1.13	29.88	0.01	0.4
8	1.11	28.90	0.01	1.4
9				
10				
11				
12				
Mean	1.12	30.28		
Maximum Variation From Mean			0.0	1.4
Percent of Mean			**2.46**	**4.56**
Result			**Unstratified**	**Unstratified**

Specifications (%)

≤5
>5 and ≤10
>10

APPENDIX III-D
Methane Laboratory Report

Report is not due from the lab until Friday, March 22.

Air Control Techniques, P.C.

301 East Durham Rd.
Cary, NC 27513

ENV – Green

Client Project # 2333

Analytical Report
(0319-054)

EPA Method 18 (Bags)

Methane

Enthalpy Analytical, LLC

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com

800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 96 pages.

Report Issued: 03/21/2019

ENTHALPY
ANALYTICAL

Summary of Results

ENTHALPY
ANALYTICAL

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0319-054 EPA Method 18 (Bags)

Client No.: 2333

Summary Table - Methane

Results Adjusted Using Recovery Efficiencies

Sample ID	***RCO1-1***	***RCO1-2***	***RCO1-3***
Adjusted Concentration ppm	1.65 J	1.68 J	1.58 J

Results

ENTHALPY
ANALYTICAL

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0319-054 EPA Method 18 (Bags)

Client No.: 2333

Analysis Method: EDITHP1576F_C1-C7.M

Methane

Sample ID	Filename #1	Filename #2	Filename #3	MDL	Curve Min	Curve Max	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc (ppm)	Spike Rec %	Adj. Conc (ppm)	Flag
RCO1-1	003F0101.D	003F0102.D	003F0103.D	0.510	5.10	49,960	1.51	1.51	1.51	0.0	1.38	2.18	1.60	26.4	1	1.72	105%	1.65	J
RCO1-2	004F0201.D	004F0202.D	004F0203.D	0.510	5.10	49,960	1.51	1.51	1.51	0.0	1.91	1.68	1.69	8.7	1	1.76	105%	1.68	J
RCO1-3	005F0301.D	005F0302.D	005F0303.D	0.510	5.10	49,960	1.51	1.51	1.51	0.0	1.56	1.71	1.70	5.8	1	1.66	105%	1.58	J
RCO1-1 SP	003F0702.D	003F0703.D	003F0704.D	0.510	5.10	49,960	1.51	1.51	1.51	0.0	20.9	20.3	20.4	1.9	1	20.5	105%		

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0319-054 EPA Method 18 (Bags)

Client No.: 2333

Spike Hold Times

Spiked Bag	Time Spiked	Spike Analyzed	Hold Time (Hours)	Related Bag	Related Bag Sampled Date	Bag Analyzed	Hold Time (Hours)
RCO1-1 SP	03-08-2019 11:11	03-09-2019 12:35	25.4	***RCO1-1***	03-07-2019 09:30	03-08-2019 09:37	24.1
				RCO1-2	03-07-2019 11:30	03-08-2019 10:19	22.8
				RCO1-3	03-07-2019 13:30	03-08-2019 11:03	21.6

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0319-054 EPA Method 18 (Bags)

Client No.: 2333

Spiked Bag

	RCO1-1 SP		Methane
Before Spiking	Inj1 (ppmv)		1.38
	Inj2 (ppmv)		2.18
	Inj3 (ppmv)		1.60
	Avg ppmv		1.72
	Bag vol L NTP	2.67	
Gas Spike	Cylinder	*CC100532*	
	Expires	1/31/22	
	Press/Temp	762.5 / 72.0	
	Vol (mL)	600	
	Cyl Dil Factor	1	
	Cyl Conc (ppmv)		100
	Vol (mL NTP)	597	0.0597
Totals	Sp Bag Vol L NTP	3.27	
	Corrected Initial (ppmv)		1.41
	Spike Amount (mL NTP)		0.0597
	Spike Amount (ppmv)		18.3
	Expected (ppmv)		19.7
Result	Inj1 (ppmv)		20.9
	Inj2 (ppmv)		20.3
	Inj3 (ppmv)		20.4
	Avg (ppmv)		20.5
	Recovery		**105%**

Narrative Summary

ENTHALPY
ANALYTICAL

Enthalpy Analytical Narrative Summary

Company	Air Control Techniques PC
Job #	0319-054 EPA Method 18 (Bags)
Client #	2333

Custody

David Myers of Enthalpy Analytical, LLC received the samples on 3/8/2019 at ambient temperature after being relinquished by Air Control Techniques PC. The samples were received in good condition.

Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for methane using the analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A).

The standards and samples were analyzed following the procedures specified in section 8.2.1, Integrated Bag Sampling and Analysis.

All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. Methane was referenced to certified gas phase standards.

The analyses were performed using an Agilent Technologies Model 7890A, Gas Chromatograph ("Edith" CN10722006) equipped with a Flame Ionization Detector.

Calibration

The calibration curves are located in the Raw Data section of this report and referenced in the Analysis Method column on the Detailed Results page.

For each calibration curve used, the first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

ENTHALPY ANALYTICAL

Enthalpy Analytical Narrative Summary
(continued)

Chromatographic Conditions	The acquisition methods ***AQ_EDITHP503_HRVOC_LONG*** and ***AQ_EDITHP503_HRVOC*** are included in the Raw Data section of this report.
QC Notes	As required by the method, a recovery study was performed on a bag sample. The bag sample ***RCO1-1*** was spiked on 3/8/2019 at 11:11 AM. The recovery efficiency value met the method-required limits of 70 to 130%. The recovery efficiency value was used to adjust the results following equation 18-7 of Method 18. The analysis of the laboratory method blank exhibited no methane at concentrations greater than the MDL.
Reporting Notes	These analytical results are reported on a wet basis. The user of this report should determine the percent moisture in the sample and correct the reported value to ppmvd as appropriate. These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above. The results presented in this report are representative of the samples as provided to the laboratory.

ENTHALPY ANALYTICAL

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.

- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.

- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.

- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.

- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.

- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.

- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.

- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).

- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.

- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

ENTHALPY ANALYTICAL

General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.

- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).

- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.

- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.

- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.

- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

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Sample Custody

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ENTHALPY analytical, inc.

Chain of Custody Record

Page 1 of 1

Special Handling:

☑ Standard Turn Around Time (10 business days)

☐ Rush Turn Around Time -- Date Needed____

- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt.
- All Other Samples Disposed of 4 Months from Receipt.

Client Name: Air Control Techniques

Project Manager: David Goshaw

Report To: John Richards

Project Number: 2333

Site Name: ENV

Location: Green

PO#:

Telephone#: 919 6243074

Email:

For spiked or duplicate samples: please provide sample volumes for recovery calculations. For Particulates: please provide tare weights and/or condensed water volumes.

Special Instructions: David Goshaw

A=Air 1=H2SO4 2=NaOH 3=____ 4=____
X=XAD C=Charcoal SG=Silica Gel

G=Grab C=Composite Q=Quality Control

Sample ID	Date	Time	Sample Volume	Type	Matrix	# of VOA Vials	# of Glass	# of Plastic	# of Bags	# of Canisters	# of Tubes	# Other	Analyses: Methane								Notes:
RC01-1	3/7	930											/								
RC02-2	3/7	1130											/								
RC01-3	3/7	1330											/								

Relinquished By:	Date:	Received By:	Date:	Time:	Sample Condition Upon Receipt:
[signature]	3/8	[signature]	3-8-19	9:02AM	☐ Iced ☐ Ambient ☐ °C____
					☐ Iced ☐ Ambient ☐ °C____
					☐ Iced ☐ Ambient ☐ °C____

800-1 Capitola Drive • Durham, NC 27713 • (919) 850-4392 • FAX (919) 850-9012 • www.enthalpy.com

Good Condition DSM 03-08-19
Ambient Temp

Raw Data

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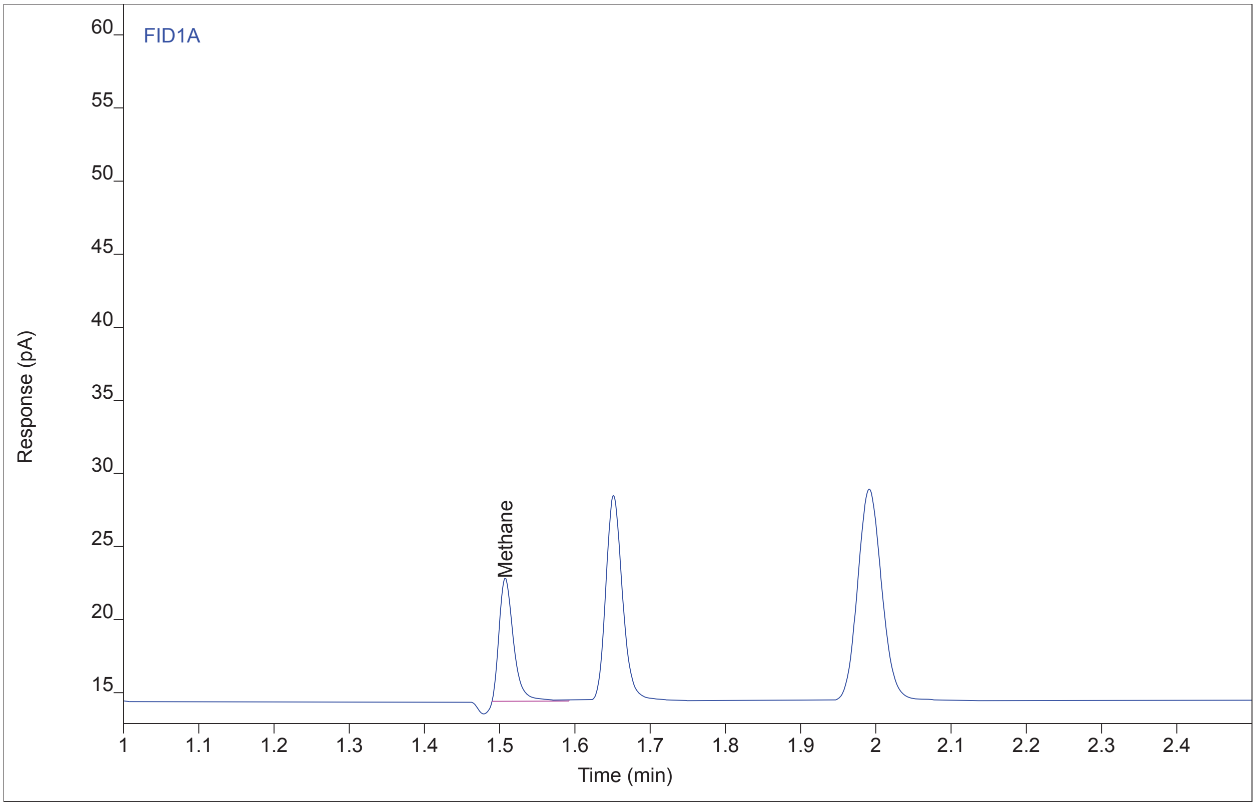
Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1711 ver.4	Vial Number	Vial 2
Inj Data File	002F0302.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	2 of 4
Injection Date	3/8/2019 1:18 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/8/2019 9:30 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	2/20/2019 3:54 PM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



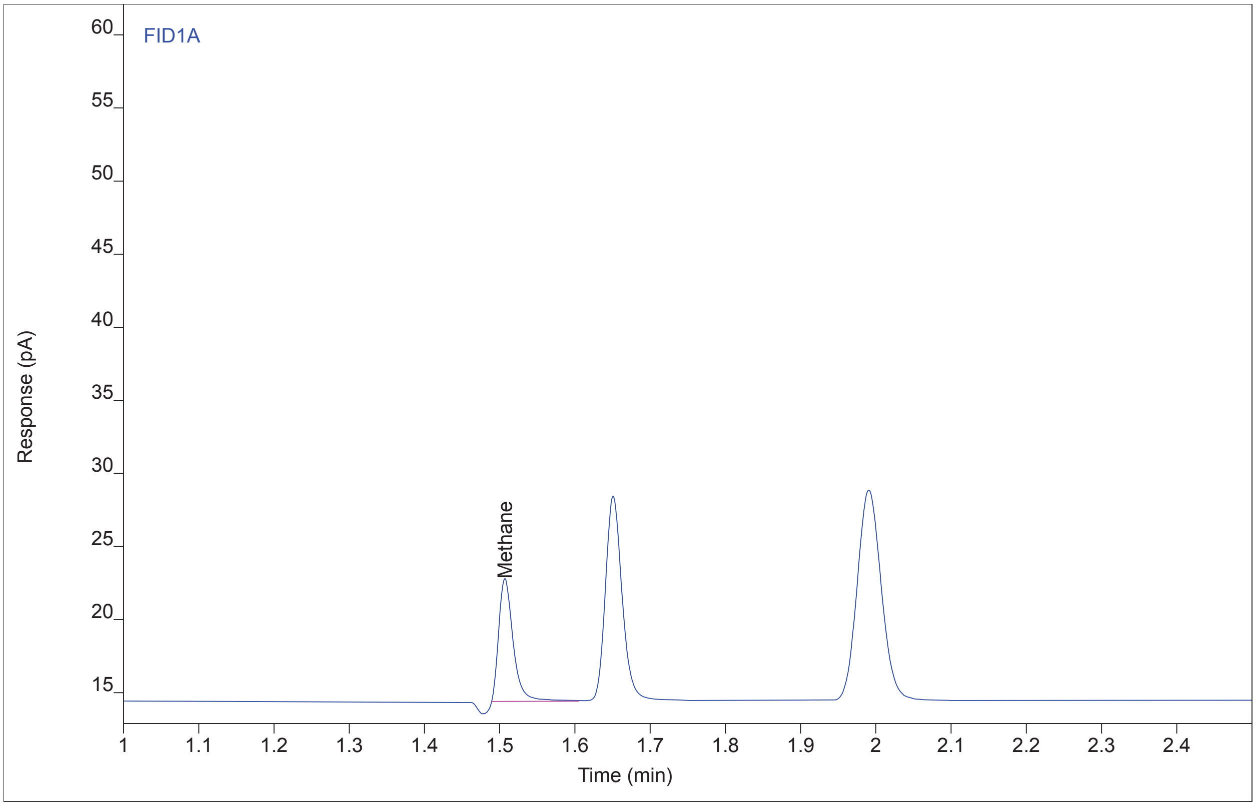
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.2721	8.33229	41.3771	1	41.3771	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)
Sequence Name	EDITHP1711 ver.4
Inj Data File	002F0303.D
File Location	GC/2019/Edith/Quarter 1
Injection Date	3/8/2019 1:34 AM
File Modified	3/8/2019 9:30 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Calibration
Vial Number	Vial 2
Injection Volume	250
Injection	3 of 4
Acquisition Method	AQ_EDITHP503_HRVOC.M
Analysis Method	EDITHP1576F_C1-C7.M
Method Modified	2/20/2019 3:54 PM
Printed	3/11/2019 9:56 AM

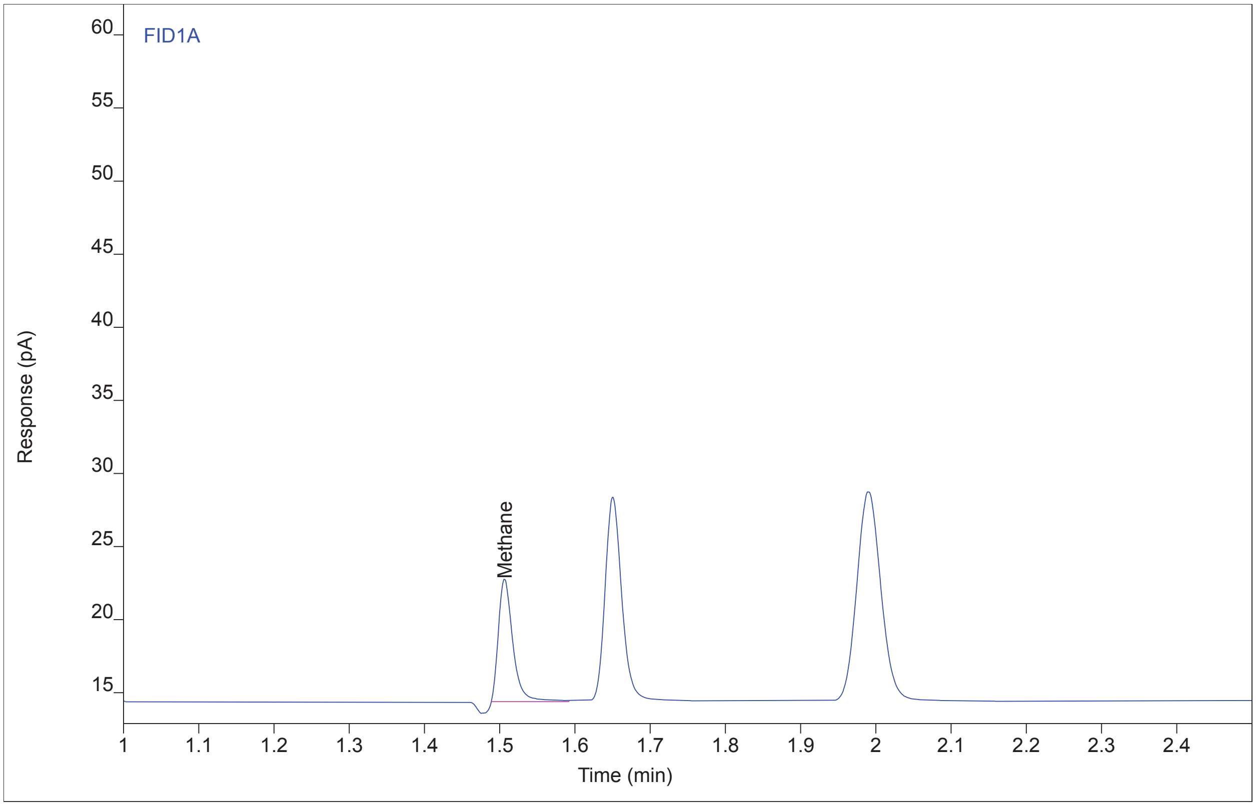


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.3013	8.28440	41.4833	1	41.4833	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1711 ver.4	Vial Number	Vial 2
Inj Data File	002F0304.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	4 of 4
Injection Date	3/8/2019 1:49 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/8/2019 9:30 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	2/20/2019 3:54 PM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

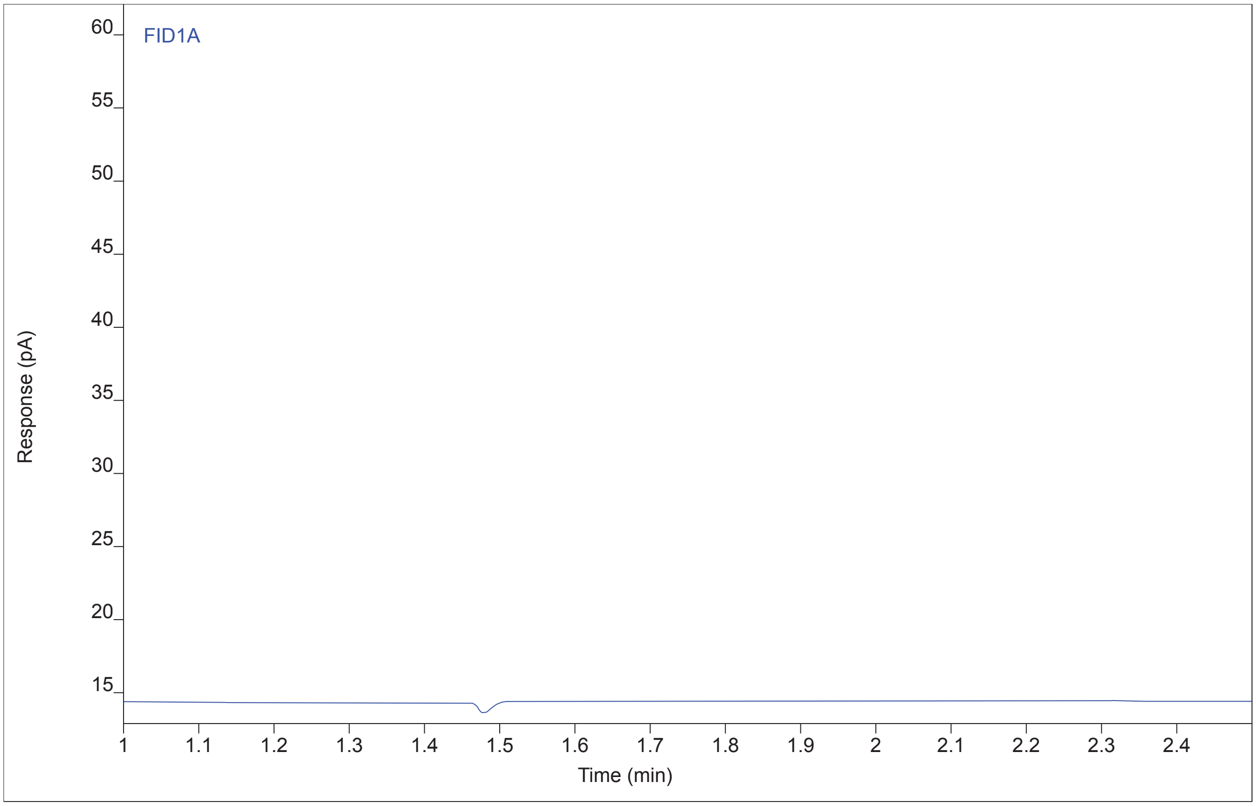


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.2745	8.35602	41.3859	1	41.3859	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Zero Air Blank	Sample Type	Sample
Sequence Name	EDITHP1711 ver.4	Vial Number	Vial 16
Inj Data File	016F0501.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	1 of 3
Injection Date	3/8/2019 3:15 AM	Acquisition Method	AQ_EDITHP503_HRVOC_LONG.M
File Modified	3/8/2019 9:30 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	2/20/2019 3:54 PM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.50)				1		

Analyst Peak Integration Comments

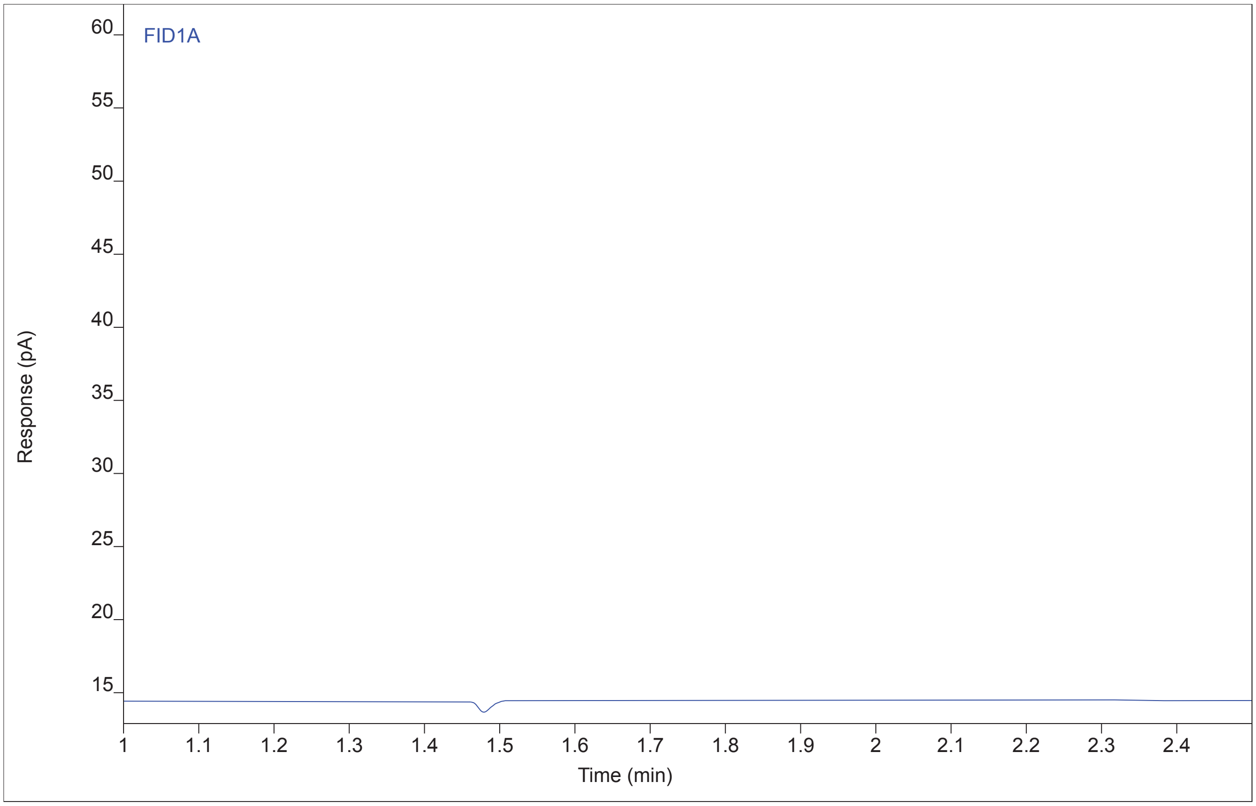
09:29:44 03/08/19 Jennie Parrish NI-Negative peak

Chromatogram Report

Enthalpy Analytical

Sample Name	Zero Air Blank
Sequence Name	EDITHP1711 ver.4
Inj Data File	016F0502.D
File Location	GC/2019/Edith/Quarter 1
Injection Date	3/8/2019 3:39 AM
File Modified	3/8/2019 9:30 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 16
Injection Volume	250
Injection	2 of 3
Acquisition Method	AQ_EDITHP503_HRVOC_LONG.M
Analysis Method	EDITHP1576F_C1-C7.M
Method Modified	2/20/2019 3:54 PM
Printed	3/11/2019 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.50)				1		

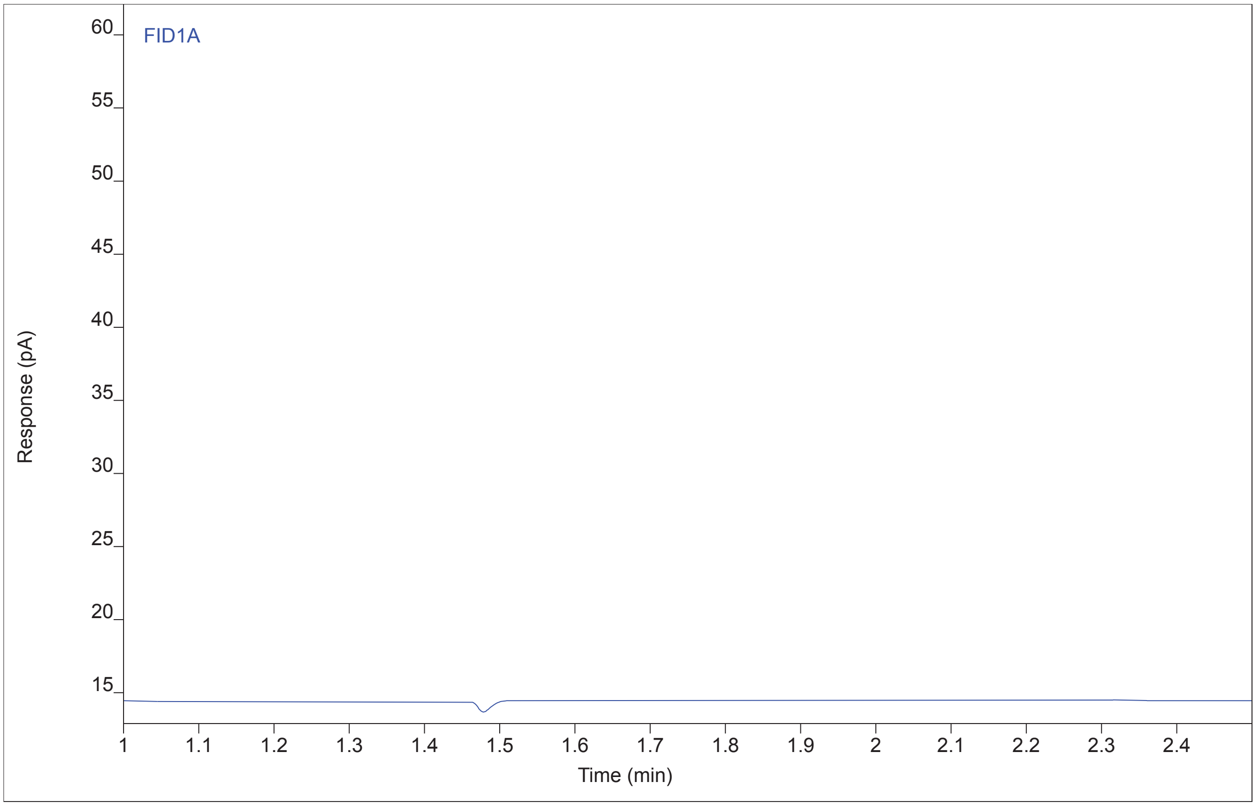
Analyst Peak Integration Comments

09:29:12 03/08/19 Jennie Parrish NI-Negative Peak

Chromatogram Report

Enthalpy Analytical

Sample Name	Zero Air Blank	Sample Type	Sample
Sequence Name	EDITHP1711 ver.4	Vial Number	Vial 16
Inj Data File	016F0503.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	3 of 3
Injection Date	3/8/2019 4:02 AM	Acquisition Method	AQ_EDITHP503_HRVOC_LONG.M
File Modified	3/8/2019 9:30 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	2/20/2019 3:54 PM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.50)				1		

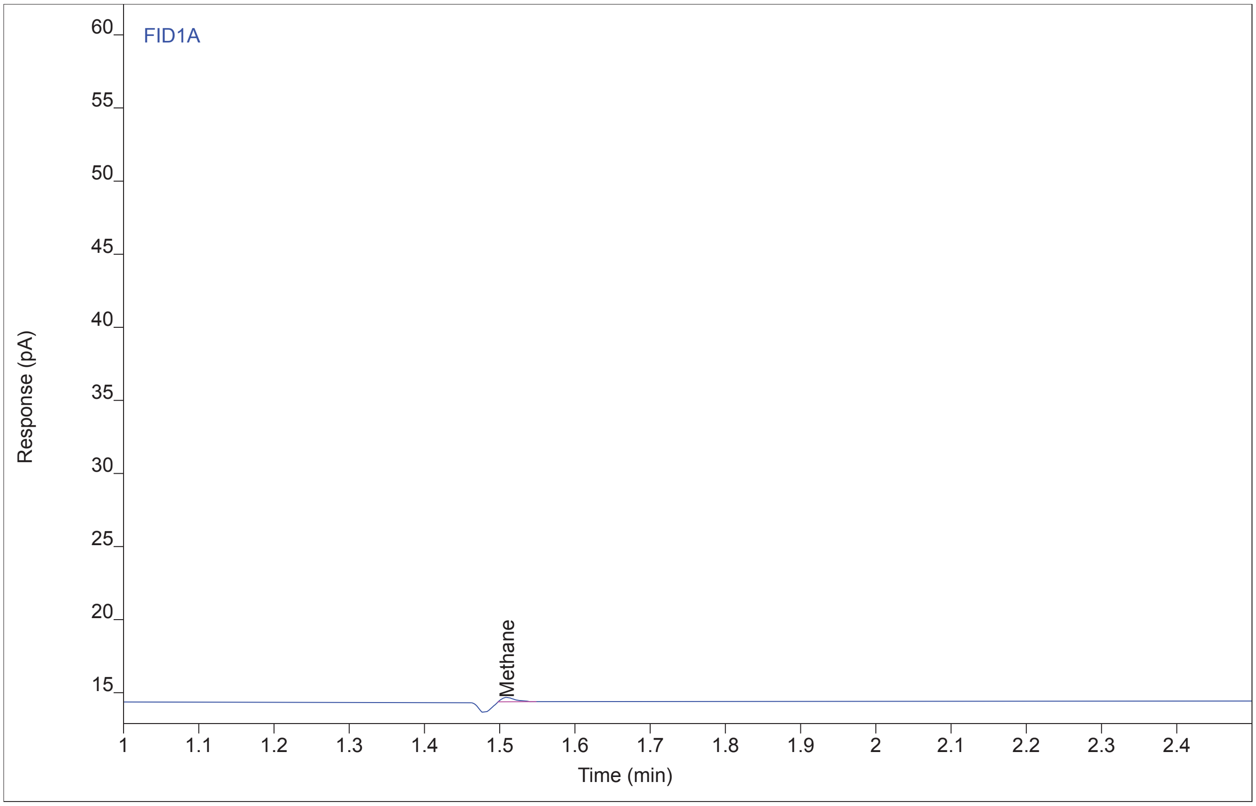
Analyst Peak Integration Comments

09:28:58 03/08/19 Jennie Parrish NI-Negative peak

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-1.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 3
Inj Data File	003F0101.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	1 of 3
Injection Date	3/8/2019 9:37 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:05 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	0.35005	0.29787	1.38264	1	1.38264	ppm

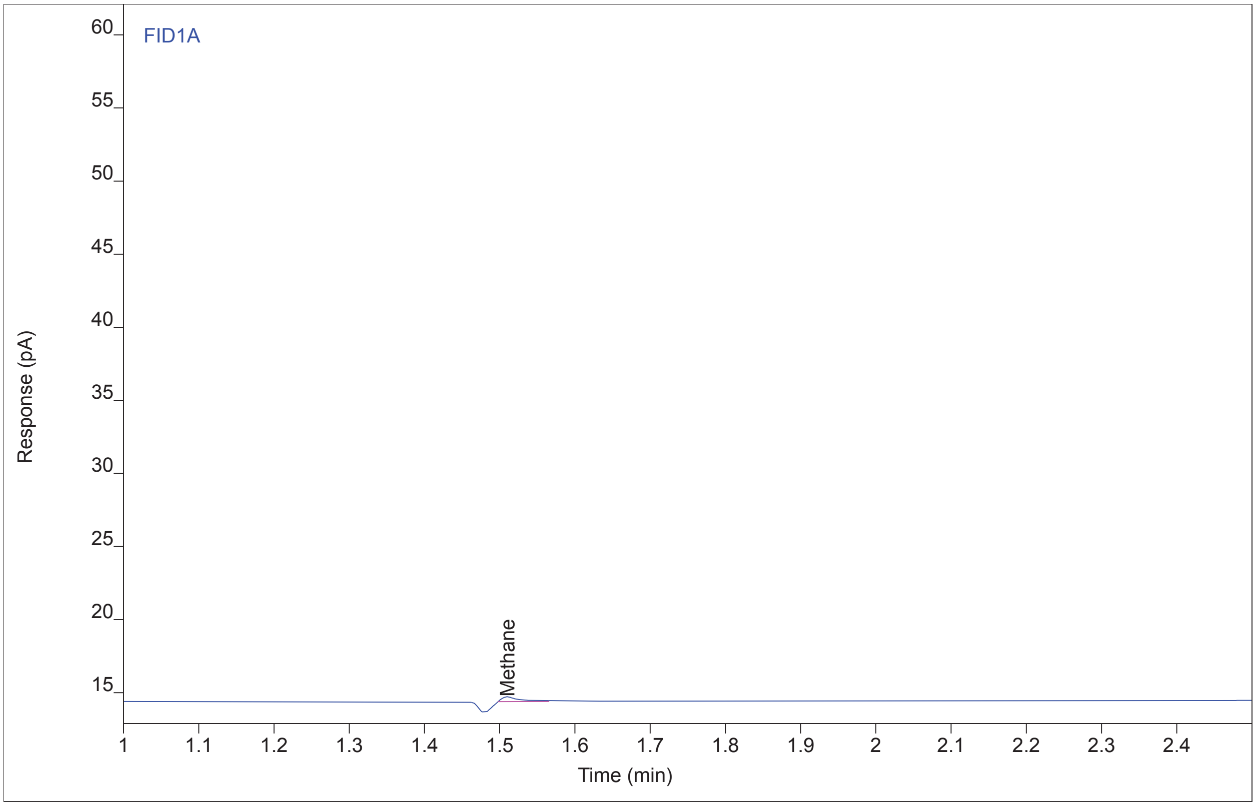
Analyst Peak Integration Comments

09:47:17 03/08/19 Jennie Parrish II-C1

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-1.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 3
Inj Data File	003F0102.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	2 of 3
Injection Date	3/8/2019 9:51 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:05 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	0.55075	0.32622	2.17539	1	2.17539	ppm

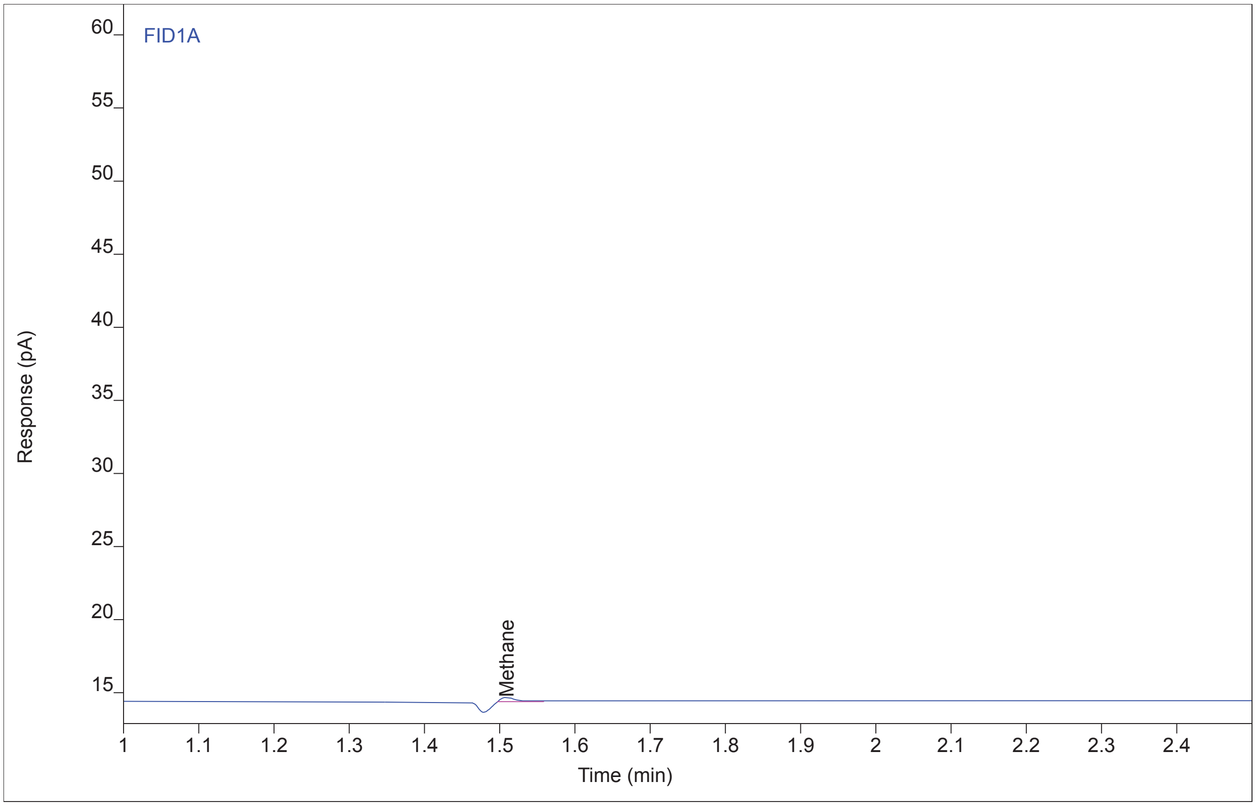
Analyst Peak Integration Comments

10:01:55 03/08/19 Jennie Parrish II-C1

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-1.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 3
Inj Data File	003F0103.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	3 of 3
Injection Date	3/8/2019 10:05 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:05 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



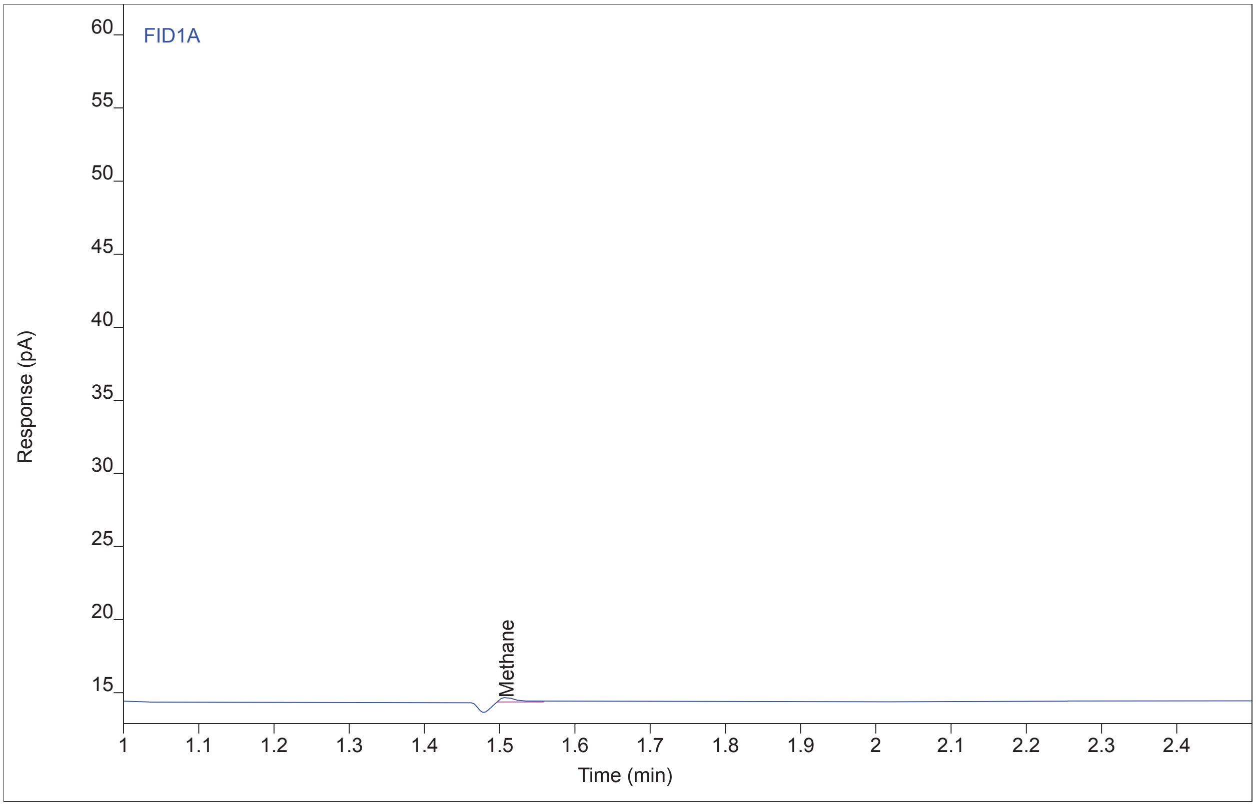
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	0.40607	0.30269	1.60394	1	1.60394	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-2.Bag
Sequence Name	EDITHP1712 ver.2
Inj Data File	004F0201.D
File Location	GC/2019/Edith/Quarter 1
Injection Date	3/8/2019 10:19 AM
File Modified	3/11/2019 8:05 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 4
Injection Volume	250
Injection	1 of 3
Acquisition Method	AQ_EDITHP503_HRVOC.M
Analysis Method	EDITHP1576F_C1-C7.M
Method Modified	3/8/2019 7:56 AM
Printed	3/11/2019 9:56 AM

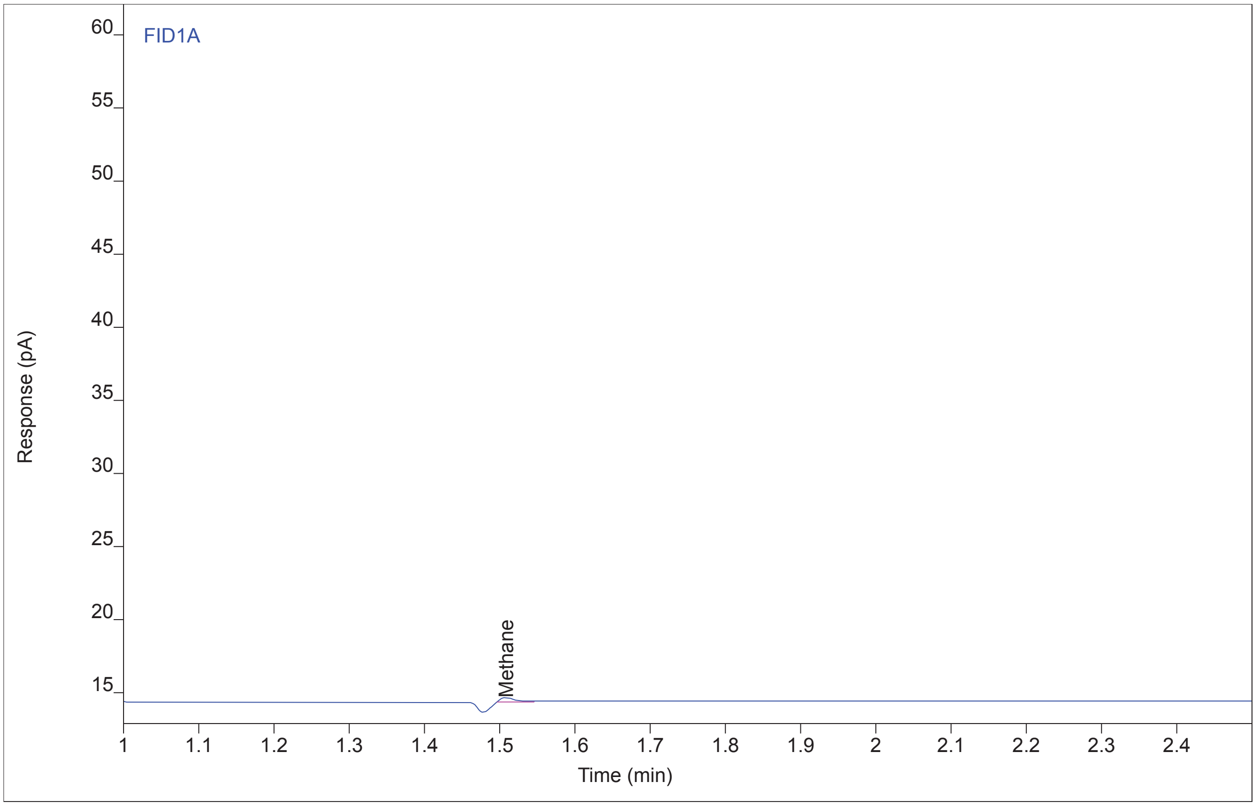


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	0.48378	0.31472	1.91086	1	1.91086	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-2.Bag
Sequence Name	EDITHP1712 ver.2
Inj Data File	004F0202.D
File Location	GC/2019/Edith/Quarter 1
Injection Date	3/8/2019 10:34 AM
File Modified	3/11/2019 8:06 AM
Instrument	
Operator	Justin Guenzler
Sample Type	Sample
Vial Number	Vial 4
Injection Volume	250
Injection	2 of 3
Acquisition Method	AQ_EDITHP503_HRVOC.M
Analysis Method	EDITHP1576F_C1-C7.M
Method Modified	3/8/2019 7:56 AM
Printed	3/11/2019 9:56 AM

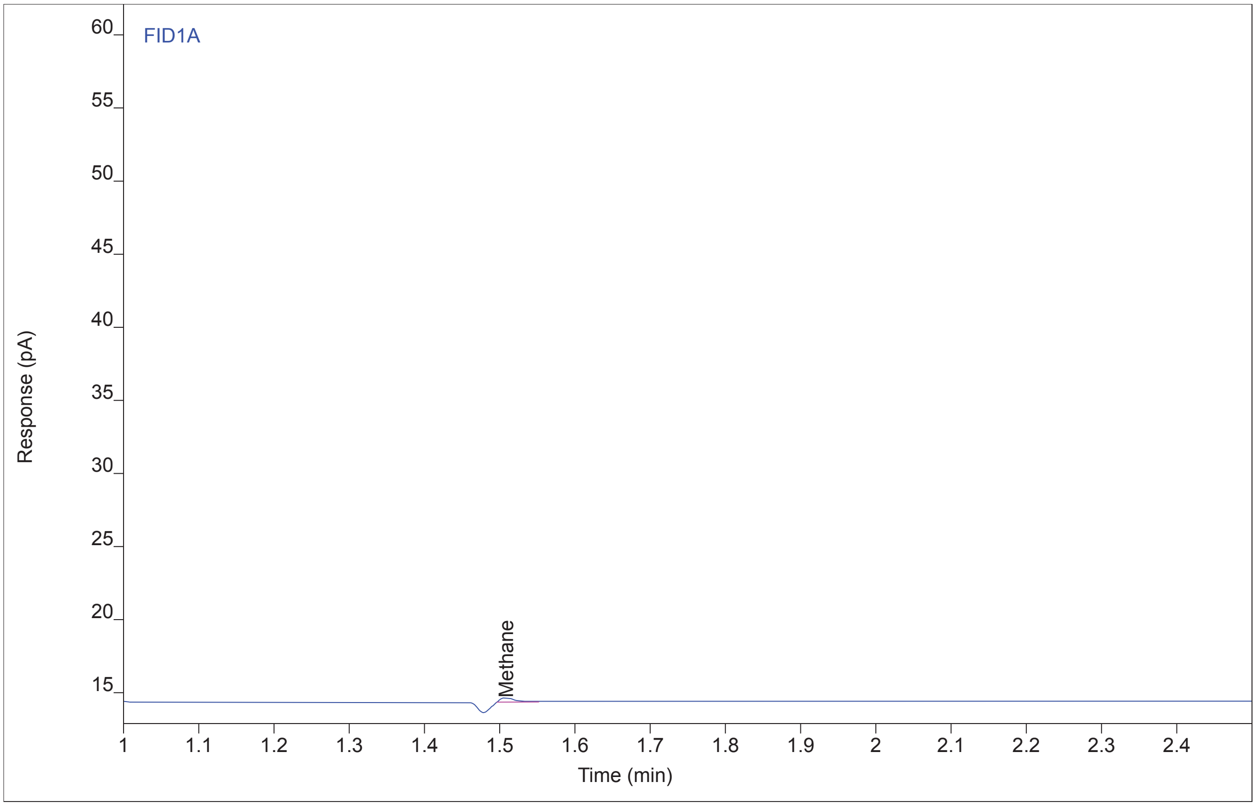


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.51	0.42493	0.31375	1.67843	1	1.67843	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-2.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 4
Inj Data File	004F0203.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	3 of 3
Injection Date	3/8/2019 10:48 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



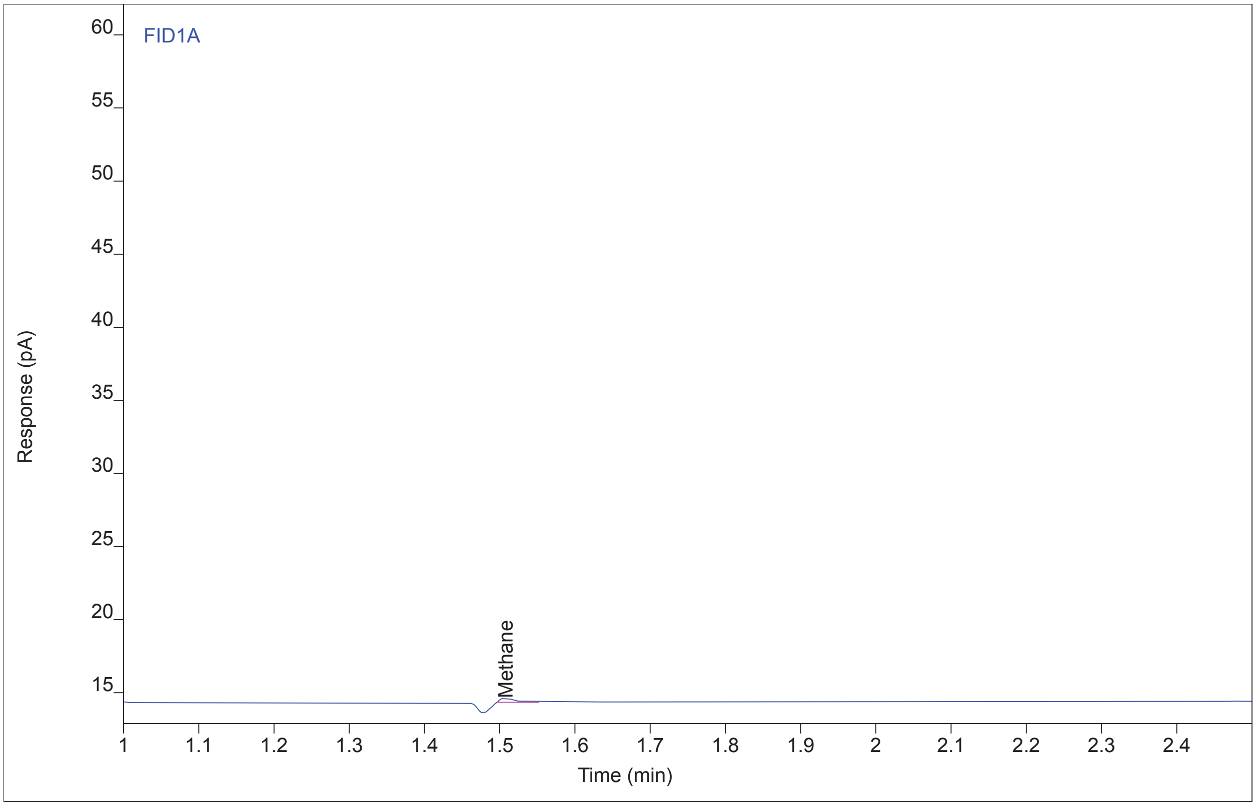
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	0.42693	0.30645	1.68633	1	1.68633	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-3.Bag
Sequence Name	EDITHP1712 ver.2
Inj Data File	005F0301.D
File Location	GC/2019/Edith/Quarter 1
Injection Date	3/8/2019 11:03 AM
File Modified	3/11/2019 8:06 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 5
Injection Volume	250
Injection	1 of 3
Acquisition Method	AQ_EDITHP503_HRVOC.M
Analysis Method	EDITHP1576F_C1-C7.M
Method Modified	3/8/2019 7:56 AM
Printed	3/11/2019 9:56 AM

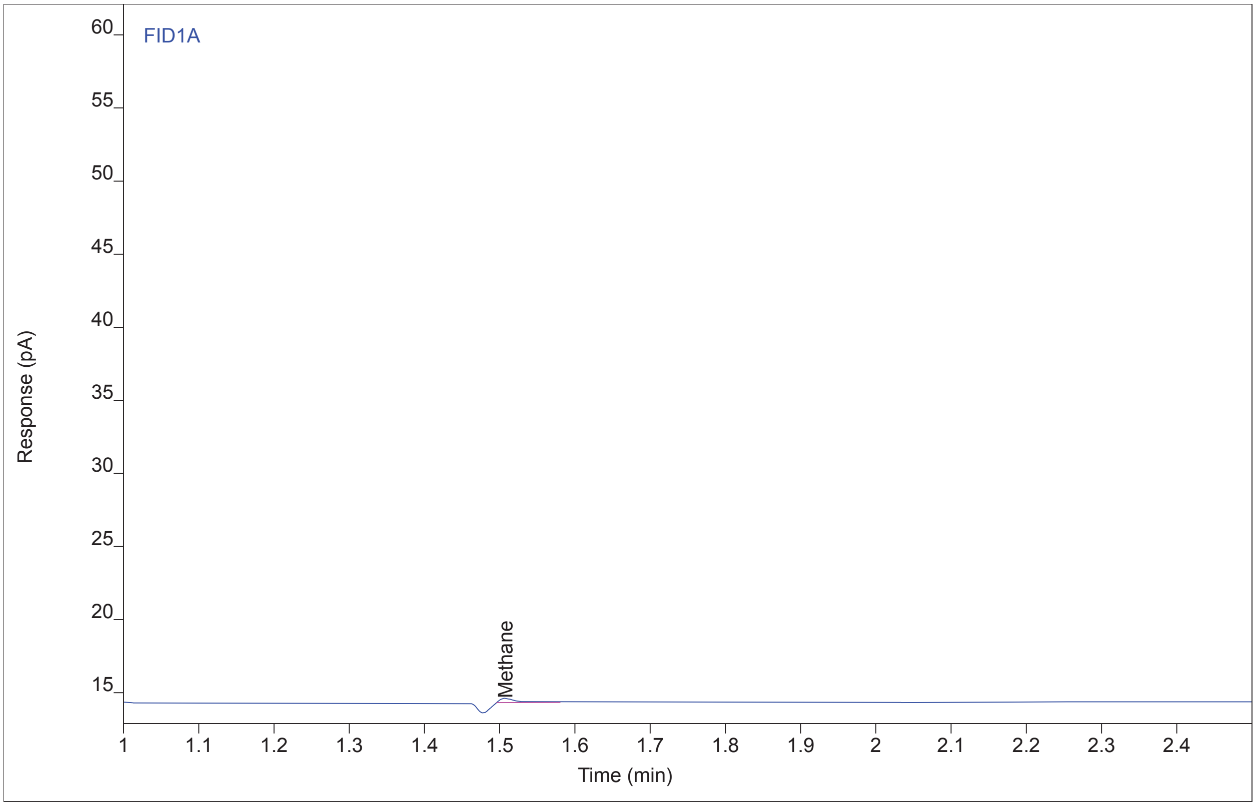


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	0.39515	0.29787	1.56077	1	1.56077	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-3.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 5
Inj Data File	005F0302.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	2 of 3
Injection Date	3/8/2019 11:17 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

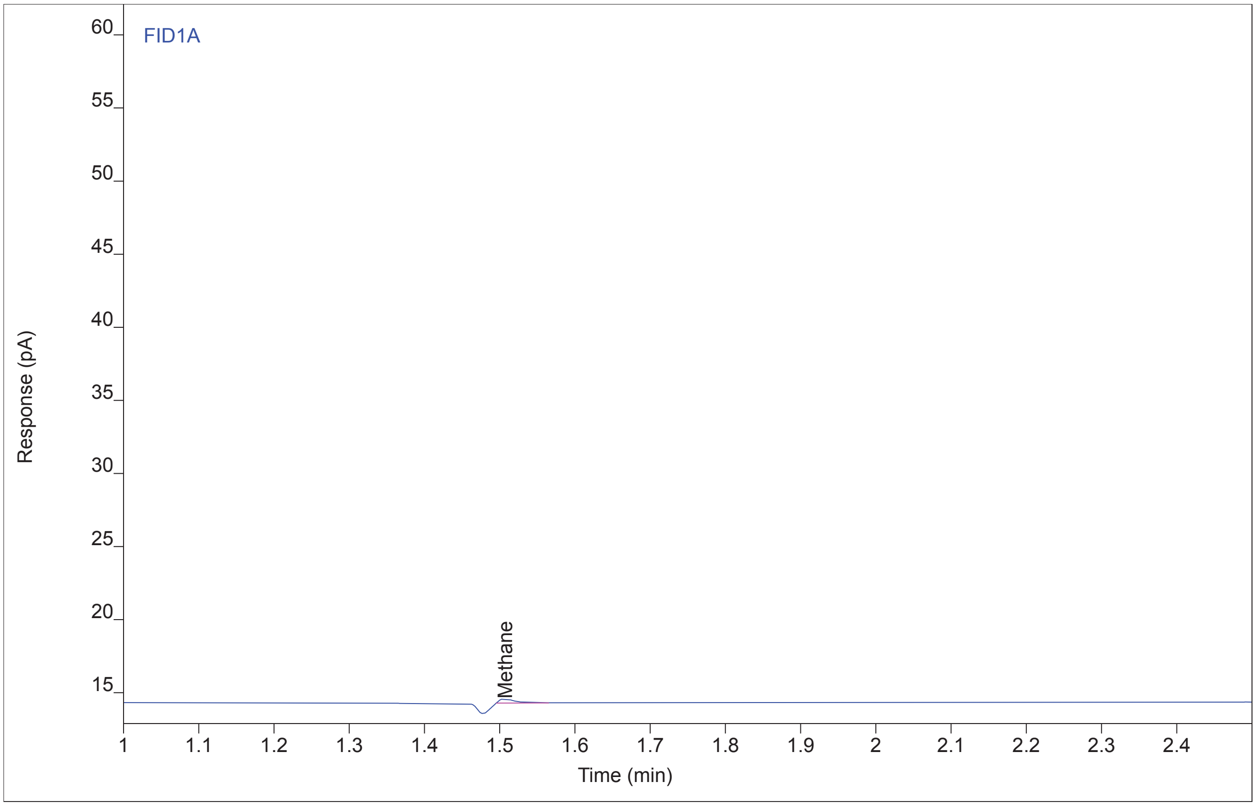


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.51	0.43205	0.29912	1.70655	1	1.70655	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-3.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 5
Inj Data File	005F0303.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	3 of 3
Injection Date	3/8/2019 11:32 AM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

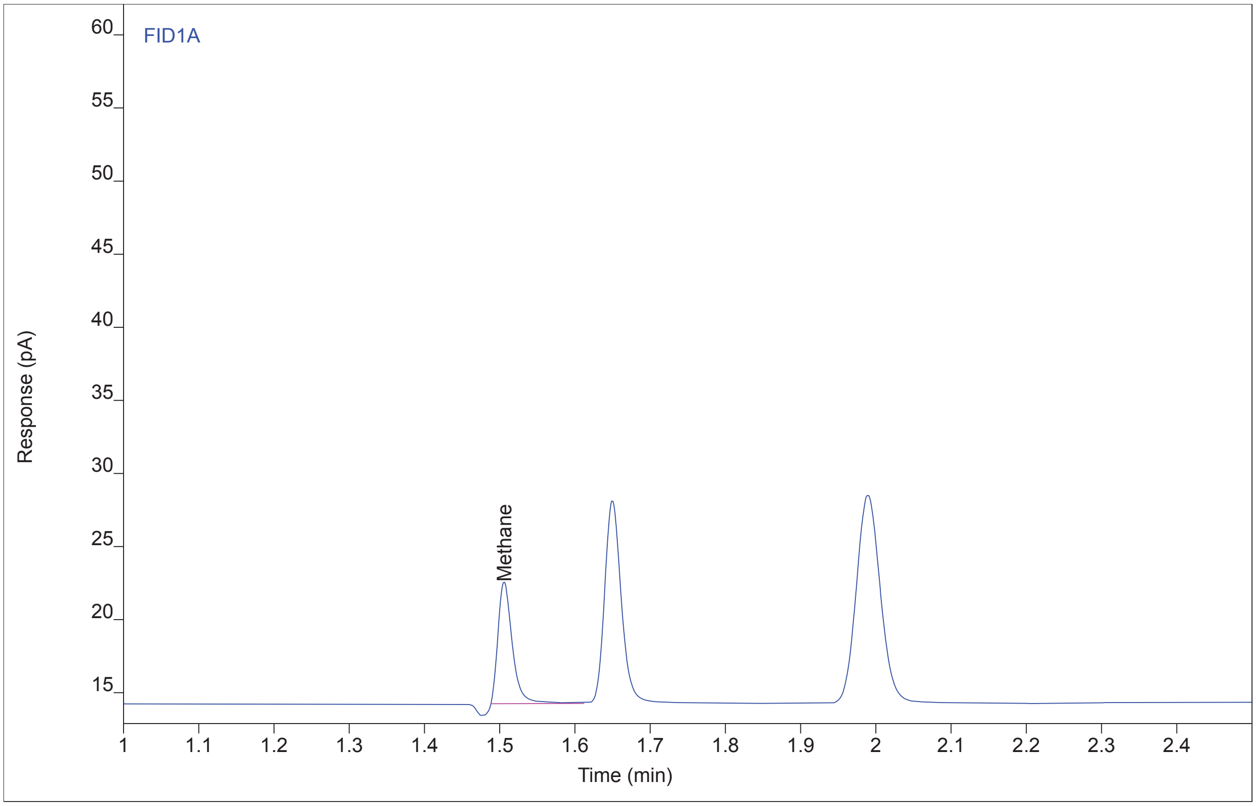


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	0.43097	0.29850	1.70226	1	1.70226	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 2
Inj Data File	002F0502.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	2 of 4
Injection Date	3/8/2019 12:41 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

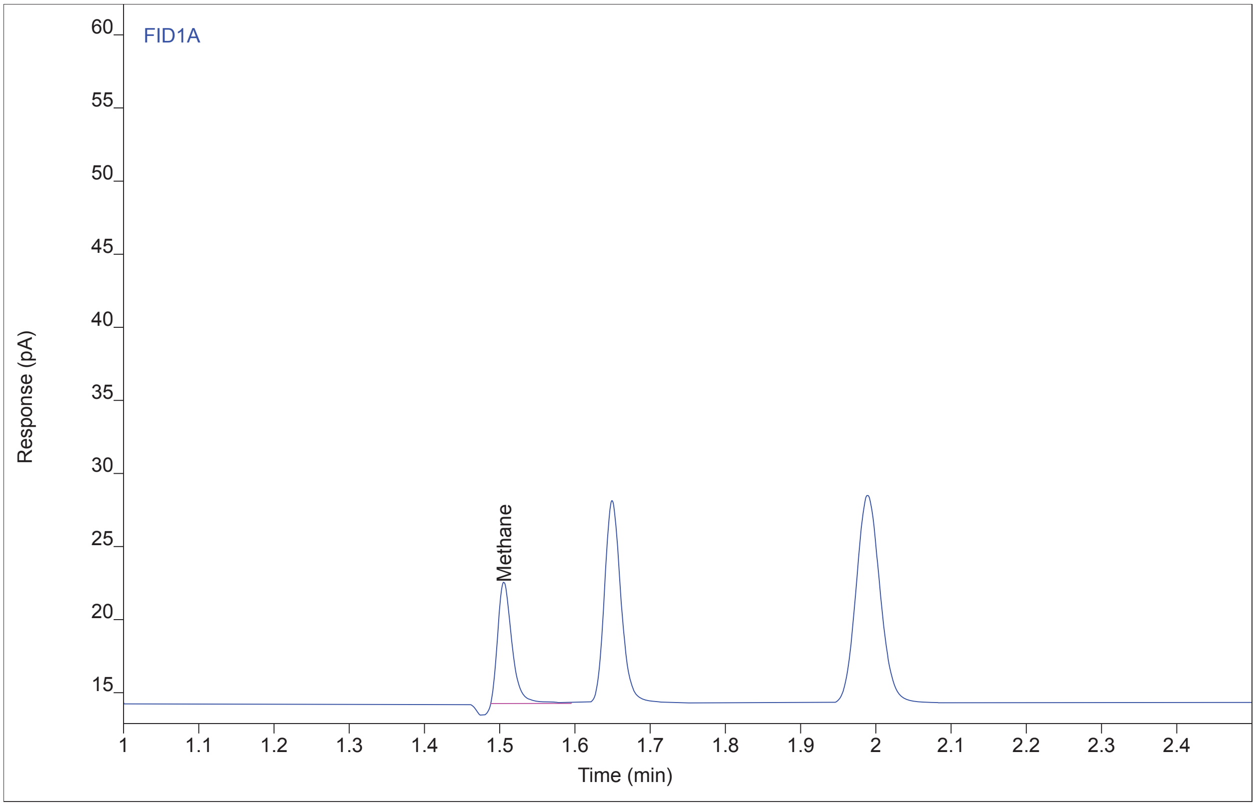


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.1258	8.29219	40.8455	1	40.8455	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 2
Inj Data File	002F0503.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	3 of 4
Injection Date	3/8/2019 12:57 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

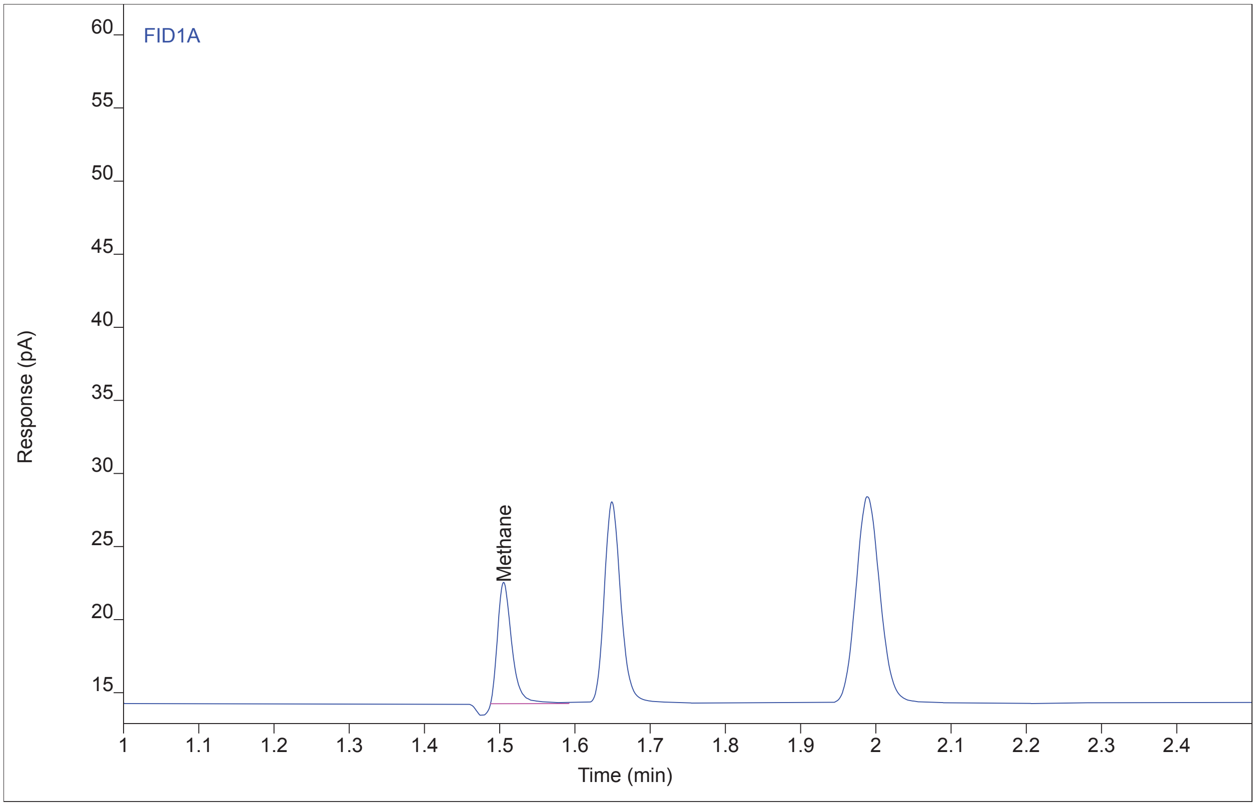


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.0637	8.27260	40.6196	1	40.6196	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 2
Inj Data File	002F0504.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	4 of 4
Injection Date	3/8/2019 1:13 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

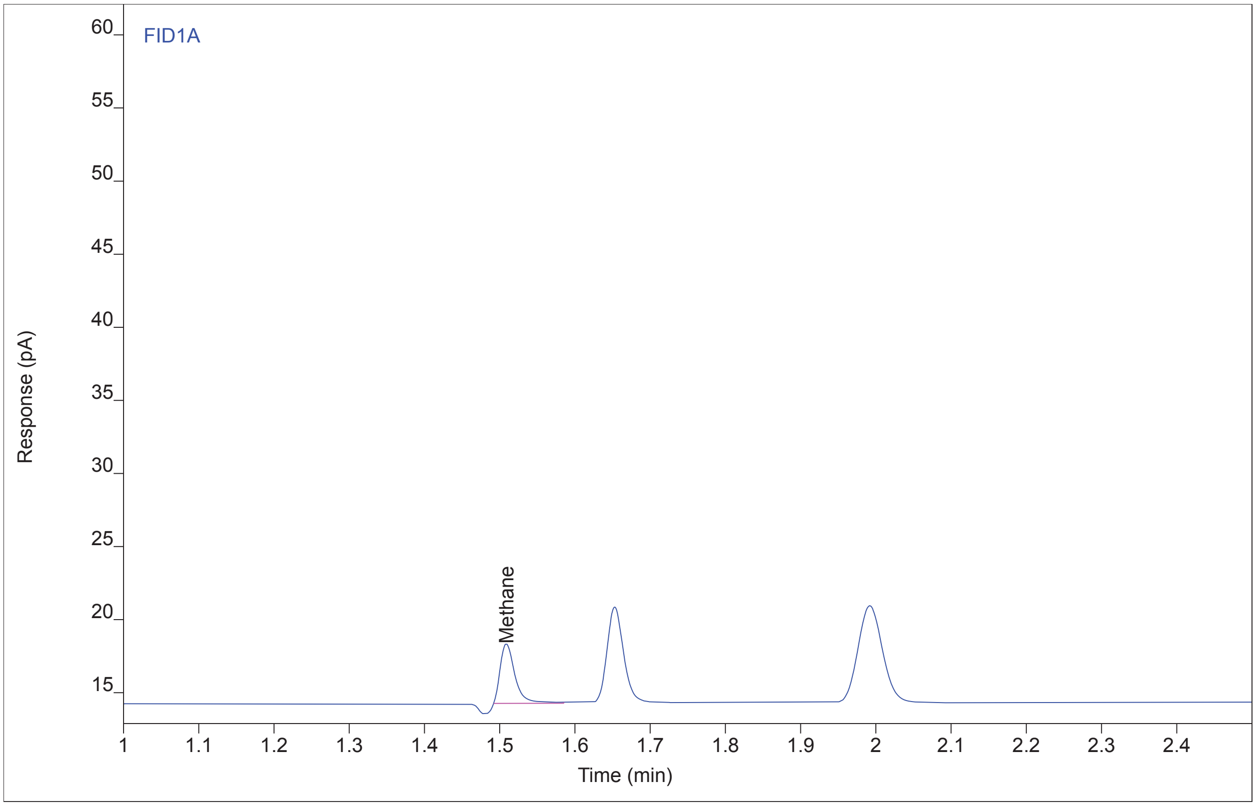


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.0219	8.24959	40.4677	1	40.4677	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-1 SP.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 3
Inj Data File	003F0702.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	2 of 4
Injection Date	3/9/2019 12:35 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

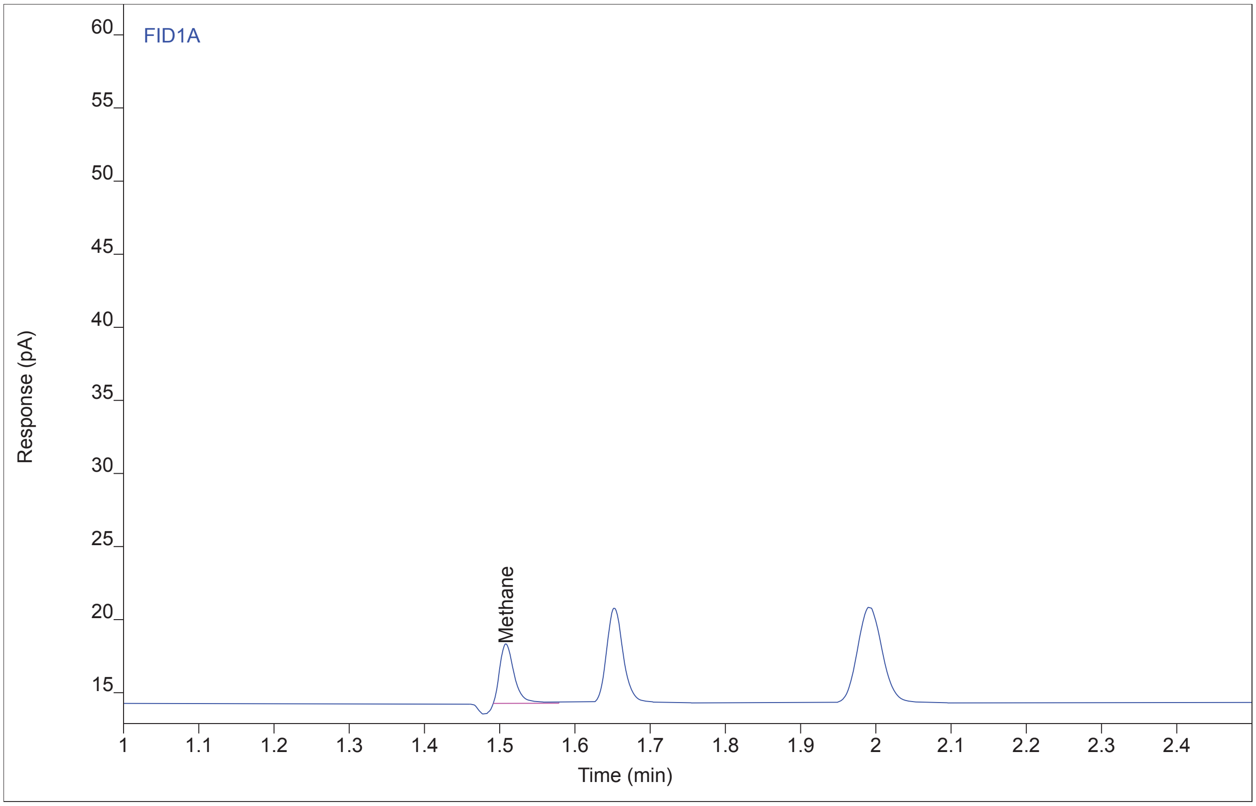


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	5.64455	4.06970	20.9229	1	20.9229	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-1 SP.Bag	Sample Type	Sample
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 3
Inj Data File	003F0703.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	3 of 4
Injection Date	3/9/2019 12:50 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



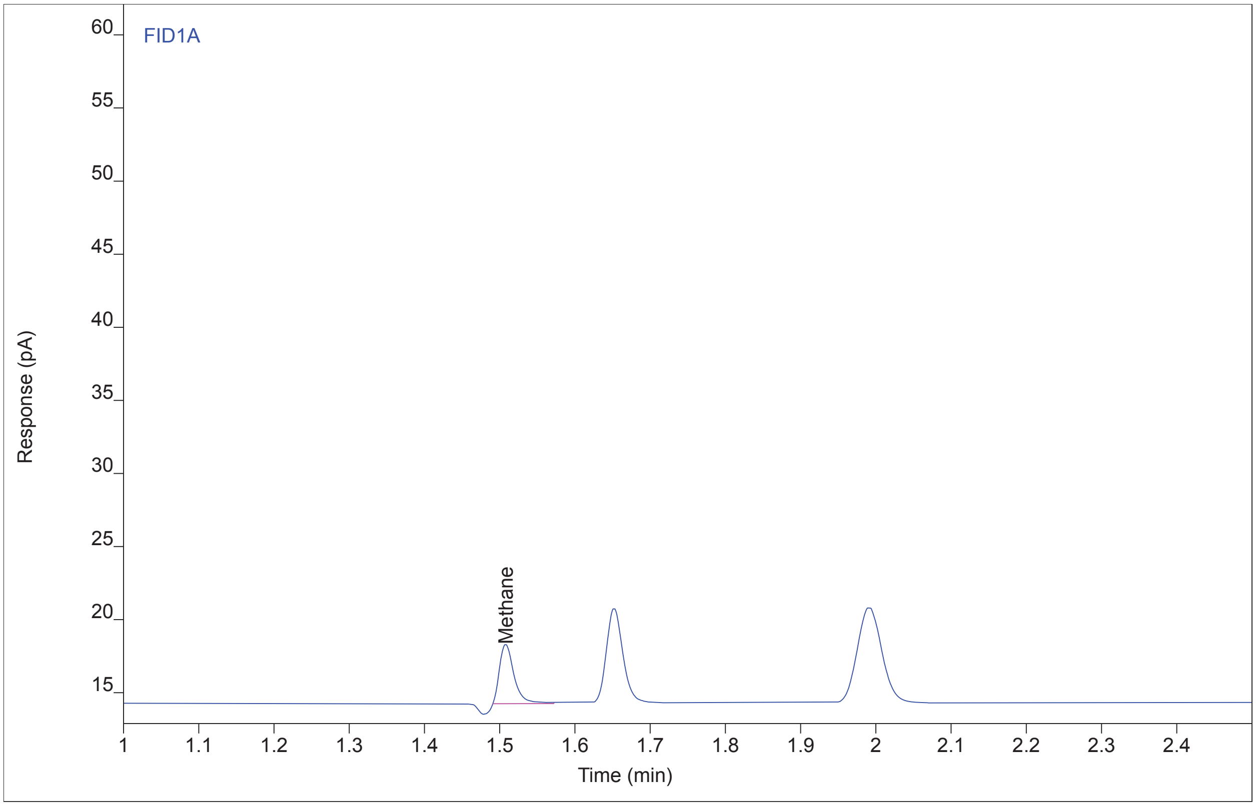
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	5.47103	4.05220	20.2923	1	20.2923	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	0319-054.RCO1-1 SP.Bag
Sequence Name	EDITHP1712 ver.2
Inj Data File	003F0704.D
File Location	GC/2019/Edith/Quarter 1
Injection Date	3/9/2019 1:04 PM
File Modified	3/11/2019 8:06 AM
Instrument	
Operator	Justin Guenzler

Sample Type	Sample
Vial Number	Vial 3
Injection Volume	250
Injection	4 of 4
Acquisition Method	AQ_EDITHP503_HRVOC.M
Analysis Method	EDITHP1576F_C1-C7.M
Method Modified	3/8/2019 7:56 AM
Printed	3/11/2019 9:56 AM

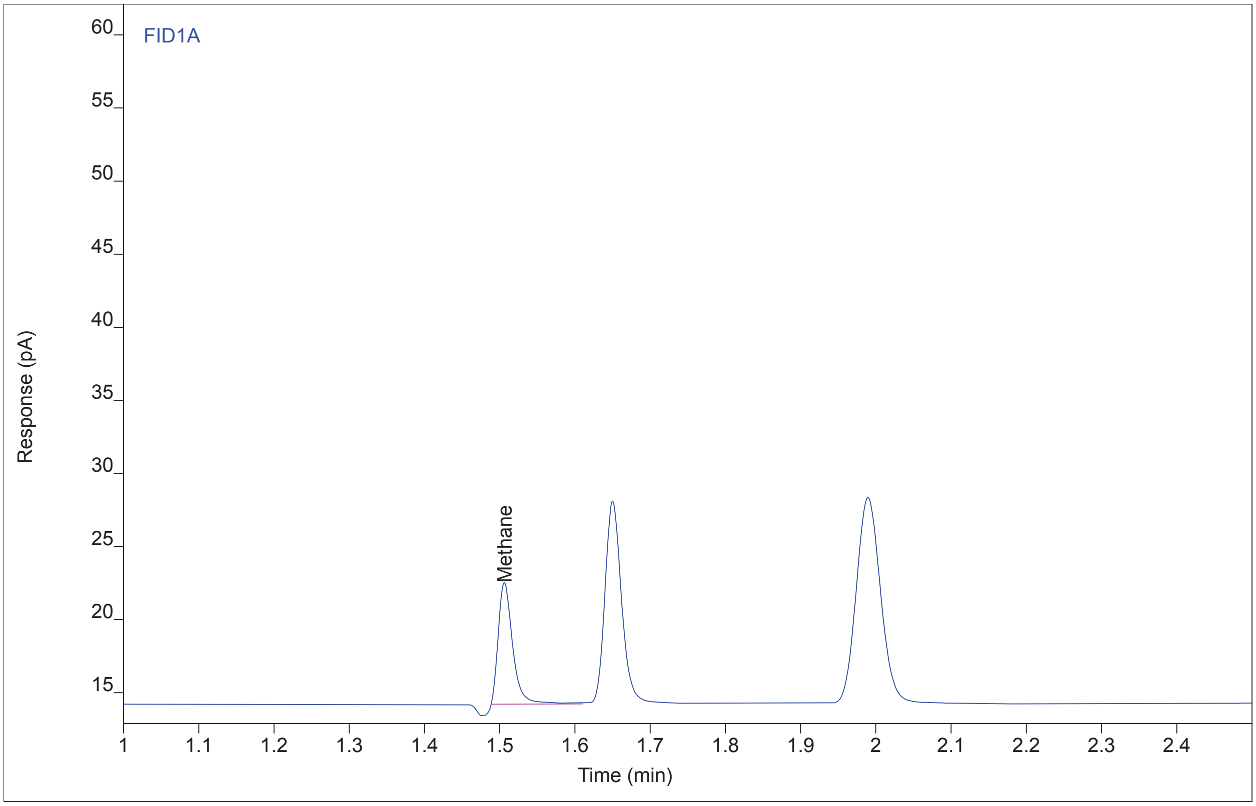


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	5.49131	4.04236	20.3660	1	20.3660	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 2
Inj Data File	002F0802.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	2 of 4
Injection Date	3/9/2019 1:36 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

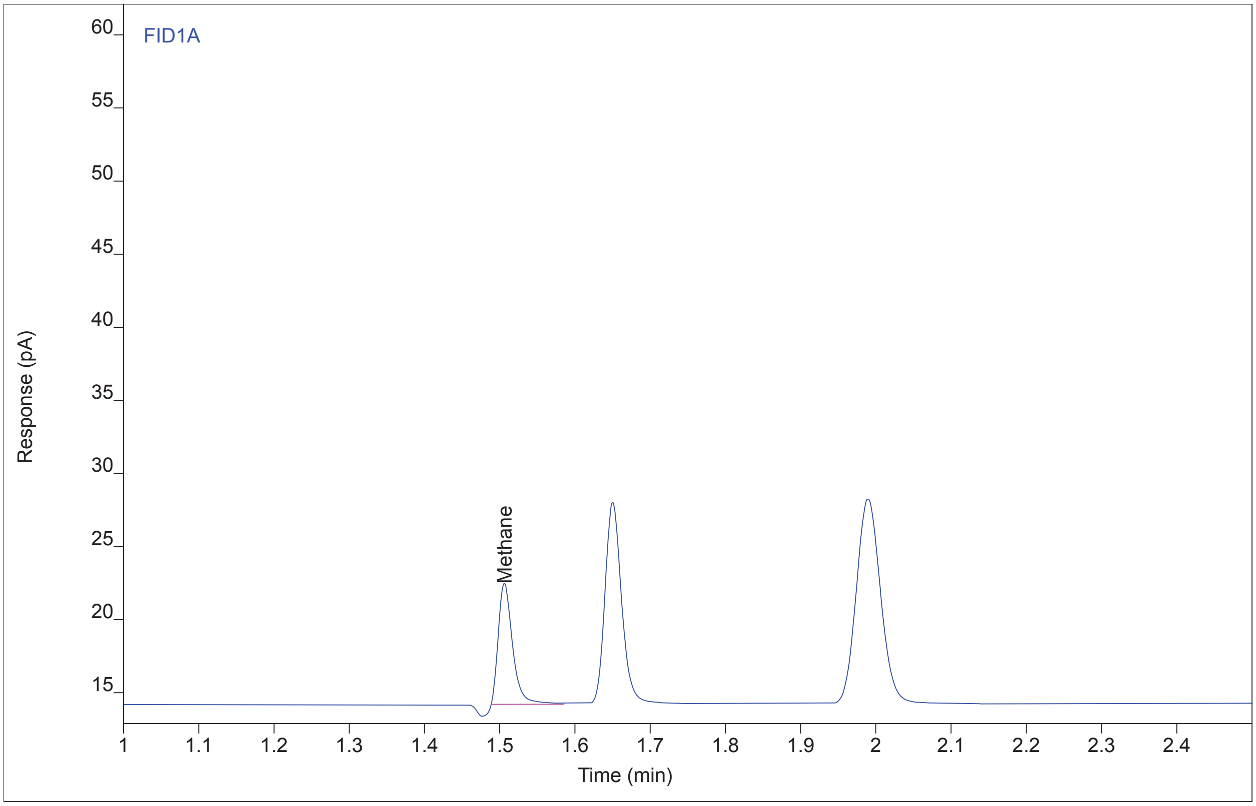


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.51	11.1332	8.28130	40.8722	1	40.8722	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 2
Inj Data File	002F0803.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	3 of 4
Injection Date	3/9/2019 1:51 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM

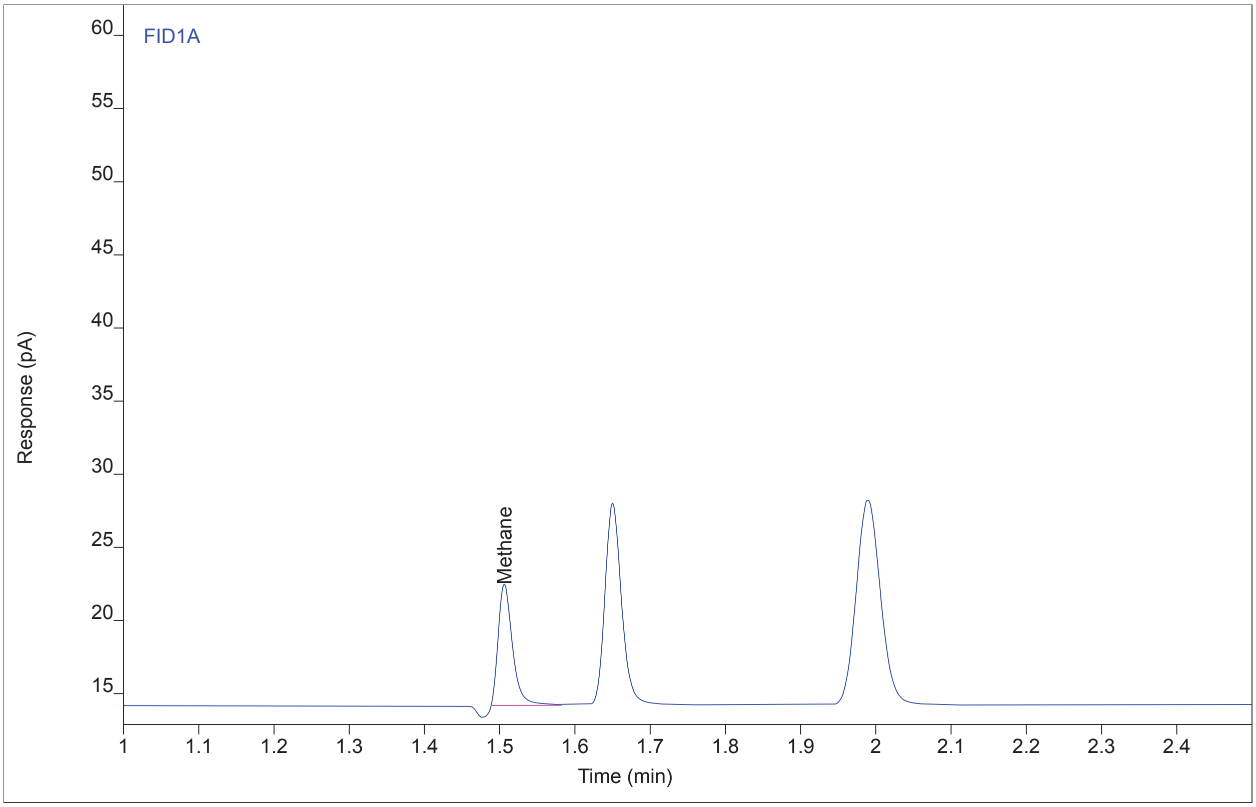


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.0235	8.24143	40.4736	1	40.4736	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name	Edithp1686 #C4 ENV(1=600,2=400)	Sample Type	Calibration
Sequence Name	EDITHP1712 ver.2	Vial Number	Vial 2
Inj Data File	002F0804.D	Injection Volume	250
File Location	GC/2019/Edith/Quarter 1	Injection	4 of 4
Injection Date	3/9/2019 2:07 PM	Acquisition Method	AQ_EDITHP503_HRVOC.M
File Modified	3/11/2019 8:06 AM	Analysis Method	EDITHP1576F_C1-C7.M
Instrument		Method Modified	3/8/2019 7:56 AM
Operator	Justin Guenzler	Printed	3/11/2019 9:56 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.51	11.0082	8.25576	40.4180	1	40.4180	ppm

Enthalpy Analytical

Company: Air Control Techniques PC

Job No.: 0319-054 EPA Method 18 (Bags)

Client No.: 2333

Analysis Method: EDITHP1576F_C1-C7.M

Methane -- Calibration Standards

SAMPLE NAME	Filename #1	Filename #2	Filename #3	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc # 1	Conc # 2	Conc # 3	%dif conc	Avg Conc (ppm)	Std Tag (ppm)	% Tag
Edithp1686 #C4 ENV(1=600,2=400)	002F0302.D	002F0303.D	002F0304.D	1.51	1.51	1.51	0.0	41.4	41.5	41.4	0.2	41.4	40.0	104
Zero Air Blank	016F0501.D	016F0502.D	016F0503.D	NA	NA	NA	NA	0.510	0.510	0.510	0.0	0.510	ND	
Edithp1686 #C4 ENV(1=600,2=400)	002F0502.D	002F0503.D	002F0504.D	1.51	1.51	1.51	0.0	40.8	40.6	40.5	0.5	40.6	40.0	102
Edithp1686 #C4 ENV(1=600,2=400)	002F0802.D	002F0803.D	002F0804.D	1.51	1.51	1.51	0.0	40.9	40.5	40.4	0.7	40.6	40.0	101

===
Calibration Table
===

Calib. Data Modified : 12/14/2018 9:50:22 AM

Rel. Reference Window : 0.000 %
Abs. Reference Window : 0.100 min
Rel. Non-ref. Window : 0.000 %
Abs. Non-ref. Window : 0.050 min
Uncalibrated Peaks : Separately calculated (see below)
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Connected
Weight : Quadratic (Amnt)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Signal 1: FID1 A, Front Signal
Uncalibrated Peaks : using compound Propane
Signal 2: FID3 B, Back Signal
Uncalibrated Peaks : not reported

RetTime [min]	Sig	Lvl	Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
1.504	1	1	5.10000	1.29160	3.94858			Methane
		2	20.40000	5.52779	3.69045			
		3	40.80000	11.01984	3.70241			
		4	102.00000	27.69730	3.68267			
		5	2510.00000	684.59015	3.66643			
		6	7528.00000	2076.00431	3.62620			
		7	4.99600e4	1.39978e4	3.56913			
1.643	1	1	5.10000	2.65259	1.92265			Ethane
		2	20.40000	10.88862	1.87352			
		3	40.80000	21.65314	1.88425			
		4	102.00000	54.30959	1.87812			
		5	2513.00000	1316.89852	1.90827			
		6	7537.00000	3991.51025	1.88826			
		7	5.00200e4	2.69156e4	1.85840			
1.977	1	1	5.10000	3.92461	1.29949			Propane
		2	20.40000	16.05077	1.27097			
		3	40.80000	32.02243	1.27411			
		4	102.00000	80.39683	1.26871			
		5	2518.00000	1976.26827	1.27412			
		6	7552.00000	5993.93441	1.25994			
		7	5.01200e4	4.04632e4	1.23866			
2.906	1	1	5.10000	5.31357	9.59807e-1			Butane
		2	20.40000	21.42567	9.52129e-1			
		3	40.80000	42.59832	9.57784e-1			
		4	102.00000	107.09192	9.52453e-1			

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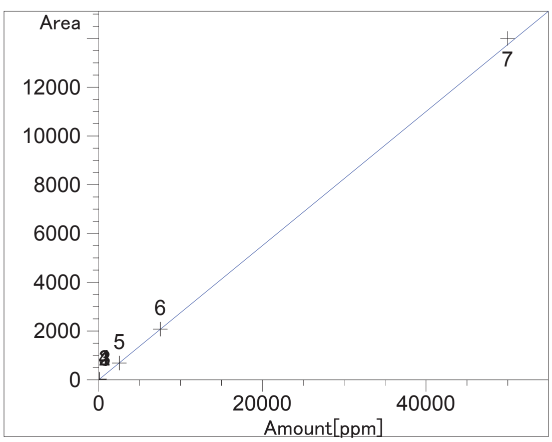
RetTime [min]	Lvl Sig		Amount [ppm]	Area	Amt/Area	Ref	Grp	Name
		5	503.00000	520.91770	9.65604e-1			
		6	1508.00000	1582.14661	9.53135e-1			
		7	1.00100e4	1.07690e4	9.29517e-1			
4.476	1	1	5.10000	6.70864	7.60214e-1			Pentane
		2	20.40000	26.59298	7.67120e-1			
		3	40.80000	52.75502	7.73386e-1			
		4	102.00000	131.93262	7.73122e-1			
		5	251.00000	313.40609	8.00878e-1			
		6	753.00000	956.22872	7.87469e-1			
		7	4998.00000	6587.28239	7.58735e-1			
6.049	1	1	5.10000	7.79287	6.54445e-1			Hexane
		2	20.40000	31.50593	6.47497e-1			
		3	40.80000	62.78177	6.49870e-1			
		4	102.00000	157.50427	6.47601e-1			
		5	201.00000	275.12465	7.30578e-1			
		6	603.00000	841.54812	7.16537e-1			
		7	4000.00000	5994.54932	6.67273e-1			
7.210	1	1	5.10000	8.83190	5.77452e-1			Heptane
		2	20.40000	35.93434	5.67702e-1			
		3	40.80000	71.82188	5.68072e-1			
		4	102.00000	181.16883	5.63011e-1			

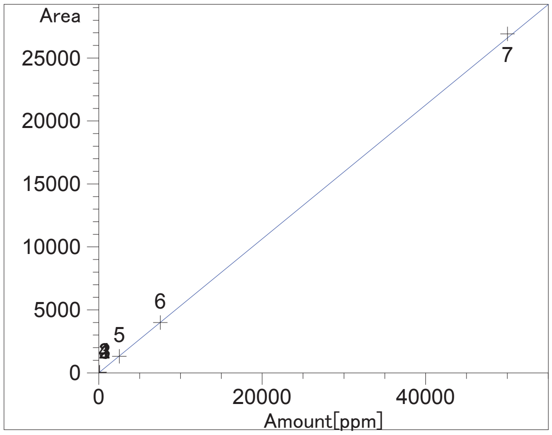
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.560	1.825	None	1.8876	1.8876	None
as Propane	1.825	2.500	None	1.2694	1.2694	None
as Butane	2.500	3.600	None	9.5292e-1	0.9529	None
as Pentane	3.600	5.250	None	7.7442e-1	0.7744	None
as Hexane	5.250	6.600	None	6.7340e-1	0.6734	None
as Heptane	6.600	16.300	None	5.6906e-1	0.5691	None

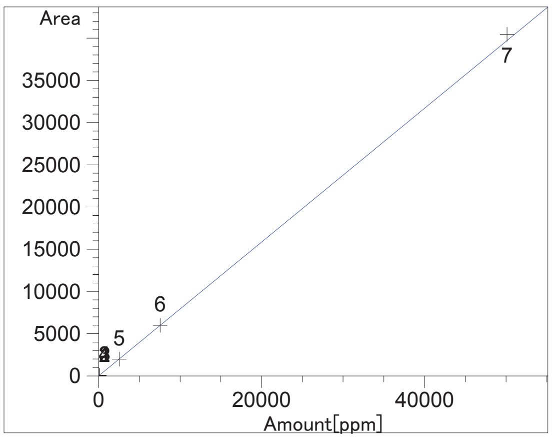
Calibration Curves



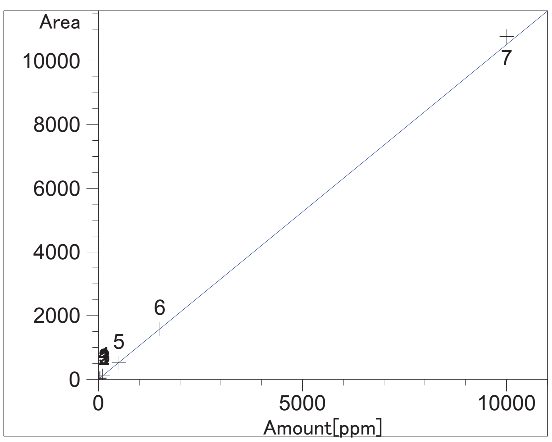
Methane at exp. RT: 1.504
FID1 A, Front Signal
Correlation: 0.99994
Residual Std. Dev.: 112.94523
Formula: y = mx + b
m: 2.75130e-1
b: -1.11977e-1
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.015625
Level 4 : 0.0025
Level 5 : 4.12851e-006
Level 6 : 4.58967e-007
Level 7 : 1.04207e-008



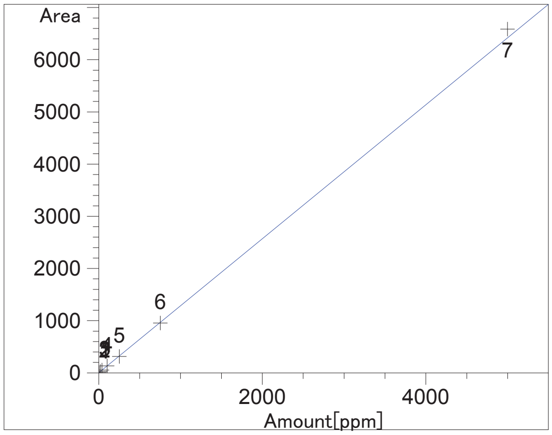
Ethane at exp. RT: 1.643
FID1 A, Front Signal
Correlation: 0.99996
Residual Std. Dev.: 136.58627
Formula: y = mx + b
m: 5.32016e-1
b: -5.48544e-2
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.015625
Level 4 : 0.0025
Level 5 : 4.11865e-006
Level 6 : 4.57871e-007
Level 7 : 1.03957e-008



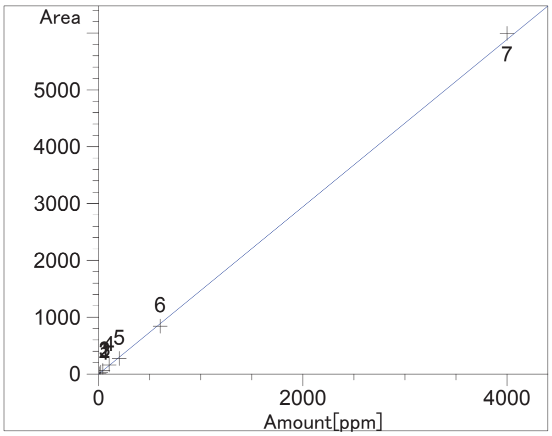
Propane at exp. RT: 1.977
FID1 A, Front Signal
Correlation: 0.99995
Residual Std. Dev.: 325.64908
Formula: y = mx + b
m: 7.92806e-1
b: -1.22762e-1
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.015625
Level 4 : 0.0025
Level 5 : 4.10231e-006
Level 6 : 4.56054e-007
Level 7 : 1.03542e-008



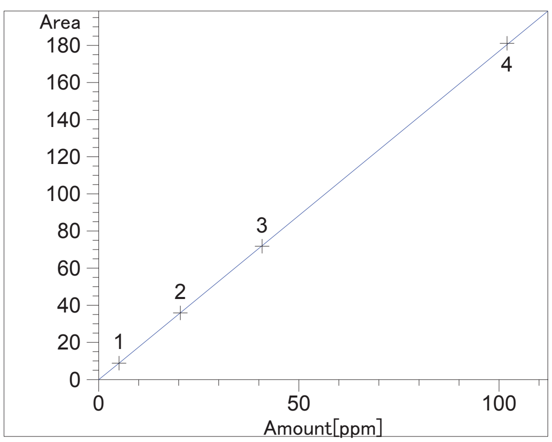
Butane at exp. RT: 2.906
FID1 A, Front Signal
Correlation: 0.99992
Residual Std. Dev.: 108.08724
Formula: y = mx + b
m: 1.05170
b: -5.37354e-2
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.015625
Level 4 : 0.0025
Level 5 : 0.000103
Level 6 : 0.000011
Level 7 : 2.59581e-007




```
Pentane at exp. RT: 4.476
FID1 A, Front Signal
Correlation:              0.99983
Residual Std. Dev.:      74.37563
Formula: y = mx + b
      m:       1.28480
      b:       1.69663e-1
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1    : 1
    Level 2    : 0.0625
    Level 3    : 0.015625
    Level 4    : 0.0025
    Level 5    : 0.000413
    Level 6    : 0.000046
    Level 7    : 1.04123e-006
```




```
Hexane at exp. RT: 6.049
FID1 A, Front Signal
Correlation:              0.99868
Residual Std. Dev.:      52.04078
Formula: y = mx + b
      m:       1.47250
      b:       3.87249e-1
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1    : 1
    Level 2    : 0.0625
    Level 3    : 0.015625
    Level 4    : 0.0025
    Level 5    : 0.000644
    Level 6    : 0.000072
    Level 7    : 1.62562e-006
```




```
Heptane at exp. RT: 7.210
FID1 A, Front Signal
Correlation:              0.99999
Residual Std. Dev.:       0.48764
Formula: y = mx + b
      m:       1.77197
      b:      -2.08074e-1
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1    : 1
    Level 2    : 0.0625
    Level 3    : 0.015625
    Level 4    : 0.0025
```

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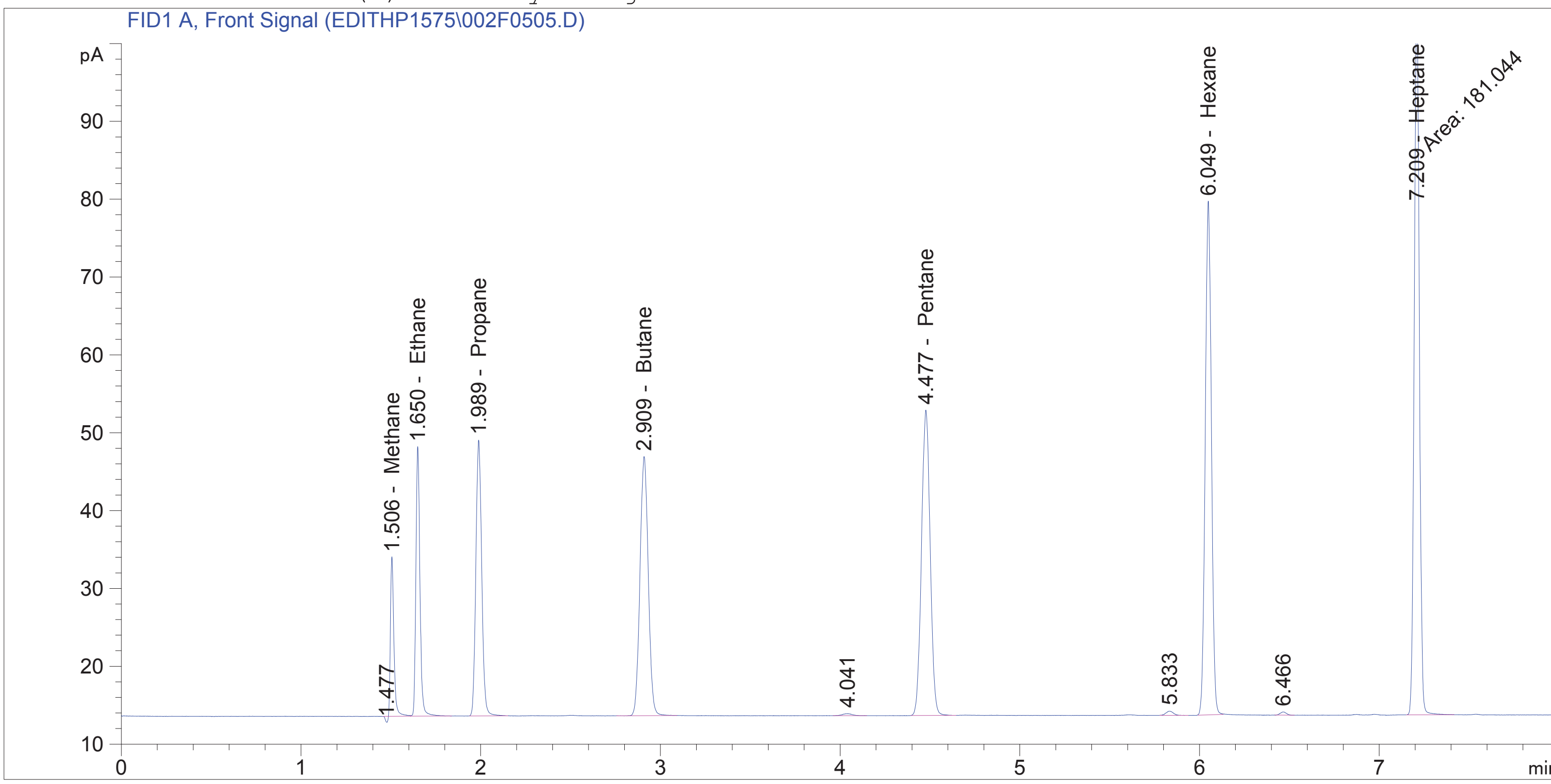
```
Acq. Operator   : Nicholas Traversa               Seq. Line :    5
Acq. Instrument : Edith                            Location : Vial 2
Injection Date  : 11/26/2018 5:22:11 PM                 Inj :    5
                                                 Inj Volume : 250 µl
Acq. Method     : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed    : 12/14/2018 9:51:41 AM by Nicole West
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicole West
ECM Path        : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version     : 3 (modified after loading)
Additional Info : Peak(s) manually integrated
```



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External Standard Report

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```
Sorted By             :      Signal
Calib. Data Modified  :      12/14/2018 9:50:22 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PV	27.70986	3.64934	101.12263		Methane
1.650	VB	54.33673	1.88154	102.23680		Ethane
1.989	BB	80.35818	1.26327	101.51406		Propane
2.909	BB	107.06507	9.51315e-1	101.85257		Butane
4.477	BB	131.90427	7.77327e-1	102.53277		Pentane
6.049	BB	157.39224	6.77446e-1	106.62477		Hexane
7.209	MM	181.04440	5.64993e-1	102.28874		Heptane

Totals : 718.17235

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	7.25178e-1	1.30084	9.43339e-1		?
4.041	BB	1.00411	1.30084	1.30619		?
5.833	BB	1.59848	1.30084	2.07936		?
6.466	BB	9.82327e-1	1.30084	1.27785		?

Uncalib. totals : 5.60673

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Pentane	3.600	5.250	1.00411	0.7776
as Hexane	5.250	6.600	2.58080	1.7379

Totals : 2.5155

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Pentane	1.00411	0.7776
as Hexane	2.58080	1.7379
Methane	27.70986	101.1226
Ethane	54.33673	102.2368
Propane	80.35818	101.5141
Butane	107.06507	101.8526
Pentane	131.90427	102.5328
Hexane	157.39224	106.6248
Heptane	181.04440	102.2887

Totals : 720.6879

*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\002F0504.D
Sample Name: Edithp1486 #C4 ENV(1=0,2=400.67)

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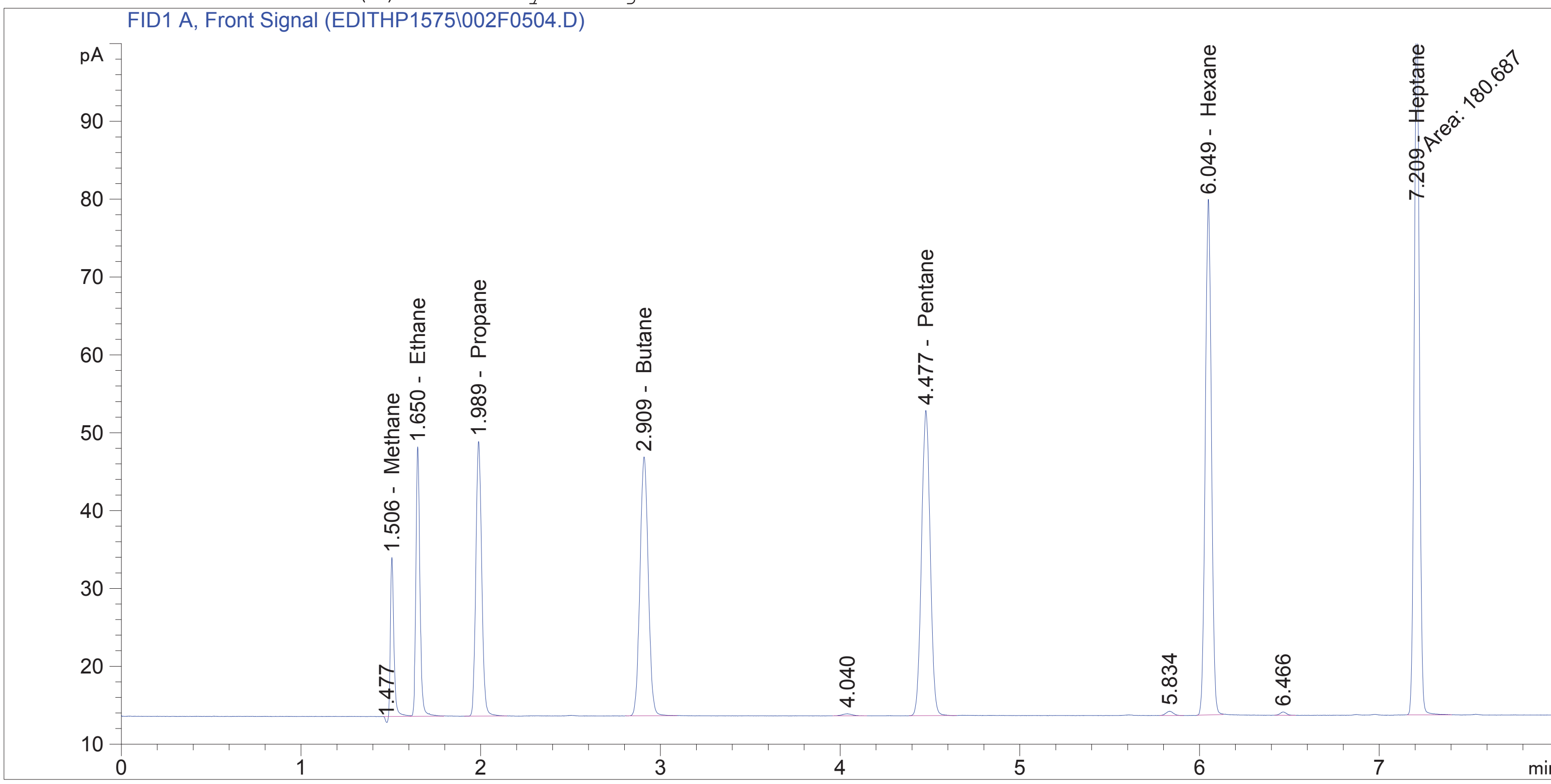
Acq. Operator : Nicholas Traversa Seq. Line : 5
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/26/2018 5:05:14 PM Inj : 4
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PV	27.66279	3.64936	100.95155		Methane
1.650	VB	54.24749	1.88154	102.06906		Ethane
1.989	PB	80.15423	1.26327	101.25680		Propane
2.909	BB	106.83001	9.51316e-1	101.62907		Butane
4.477	BB	131.70012	7.77326e-1	102.37388		Pentane
6.049	BB	157.16905	6.77444e-1	106.47320		Hexane
7.209	MM	180.68741	5.64994e-1	102.08727		Heptane

Totals : 716.84083

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	7.29872e-1	1.30084	9.49446e-1		?
4.040	BB	1.03790	1.30084	1.35013		?
5.834	BB	1.55590	1.30084	2.02397		?
6.466	BB	1.04231	1.30084	1.35588		?

Uncalib. totals : 5.67943

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Pentane	3.600	5.250	1.03790	0.8038
as Hexane	5.250	6.600	2.59821	1.7496

Totals : 2.5534

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

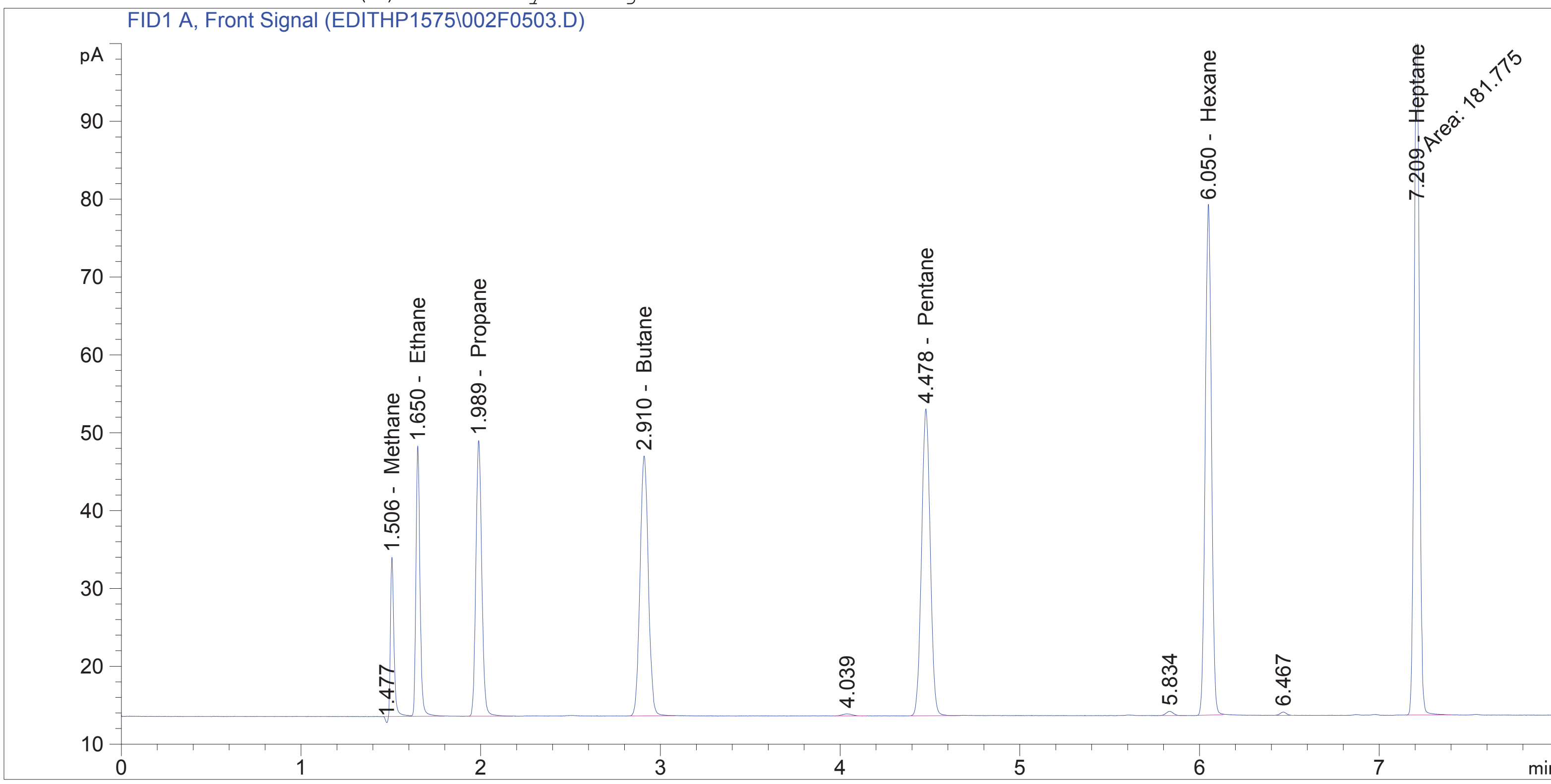
Name	Total Area [pA*s]	Amount [ppm]
as Pentane	1.03790	0.8038
as Hexane	2.59821	1.7496
Methane	27.66279	100.9515
Ethane	54.24749	102.0691
Propane	80.15423	101.2568
Butane	106.83001	101.6291
Pentane	131.70012	102.3739
Hexane	157.16905	106.4732
Heptane	180.68741	102.0873

Totals : 719.3942

*** End of Report ***

===

Acq. Operator : Nicholas Traversa   Seq. Line : 5
Acq. Instrument : Edith   Location : Vial 2
Injection Date : 11/26/2018 4:48:22 PM   Inj : 3
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PV	27.71927	3.64933	101.15684		Methane
1.650	VB	54.34456	1.88154	102.25151		Ethane
1.989	BB	80.67809	1.26326	101.91757		Propane
2.910	BB	107.38068	9.51313e-1	102.15267		Butane
4.478	BB	132.19347	7.77329e-1	102.75786		Pentane
6.050	BB	157.95152	6.77452e-1	107.00459		Hexane
7.209	MM	181.77467	5.64990e-1	102.70087		Heptane

Totals : 719.94191

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	7.39343e-1	1.30084	9.61766e-1		?
4.039	BB	1.00726	1.30084	1.31028		?
5.834	BB	1.56231	1.30084	2.03232		?
6.467	BB	1.01105	1.30084	1.31522		?

Uncalib. totals : 5.61958

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Pentane	3.600	5.250	1.00726	0.7800
as Hexane	5.250	6.600	2.57336	1.7329

Totals : 2.5129

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Pentane	1.00726	0.7800
as Hexane	2.57336	1.7329
Methane	27.71927	101.1568
Ethane	54.34456	102.2515
Propane	80.67809	101.9176
Butane	107.38068	102.1527
Pentane	132.19347	102.7579
Hexane	157.95152	107.0046
Heptane	181.77467	102.7009

Totals : 722.4548

*** End of Report ***

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```
Acq. Operator   : Nicholas Traversa              Seq. Line :   6
Acq. Instrument : Edith                           Location : Vial 2
Injection Date  : 11/26/2018 6:46:11 PM                Inj :   5
                                                Inj Volume : 250 µl
Acq. Method     : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed    : 12/14/2018 9:51:41 AM by Nicole West
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicole West
ECM Path        : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version     : 3 (modified after loading)
Additional Info : Peak(s) manually integrated
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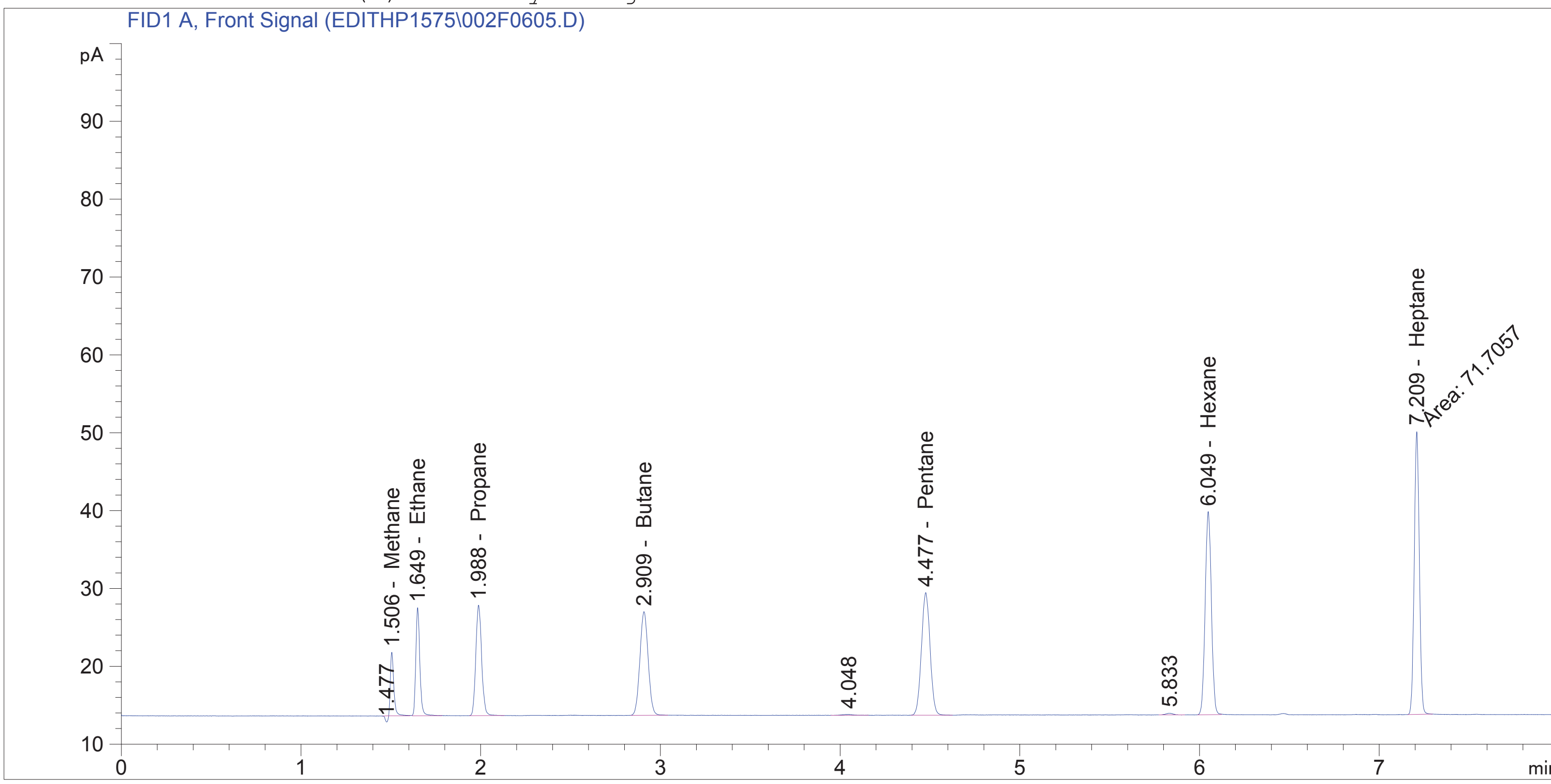

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External Standard Report

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Sorted By             :      Signal
Calib. Data Modified  :      12/14/2018 9:50:22 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs
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Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	10.99815	3.67166	40.38143		Methane
1.649	BB	21.63459	1.88441	40.76843		Ethane
1.988	BB	32.01132	1.26618	40.53209		Propane
2.909	BB	42.57405	9.52038e-1	40.53210		Butane
4.477	BB	52.74920	7.75825e-1	40.92414		Pentane
6.049	BB	62.75278	6.74926e-1	42.35350		Hexane
7.209	MM	71.70566	5.65982e-1	40.58408		Heptane

Totals : 286.07578

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	7.87896e-1	1.30084	1.02492		?
4.048	BB	4.30614e-1	1.30084	5.60159e-1		?
5.833	BB	5.81095e-1	1.30084	7.55911e-1		?

Uncalib. totals : 2.34099

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Pentane	3.600	5.250	4.30614e-1	0.3335
as Hexane	5.250	6.600	5.81095e-1	0.3913

Totals : 7.2478e-1

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

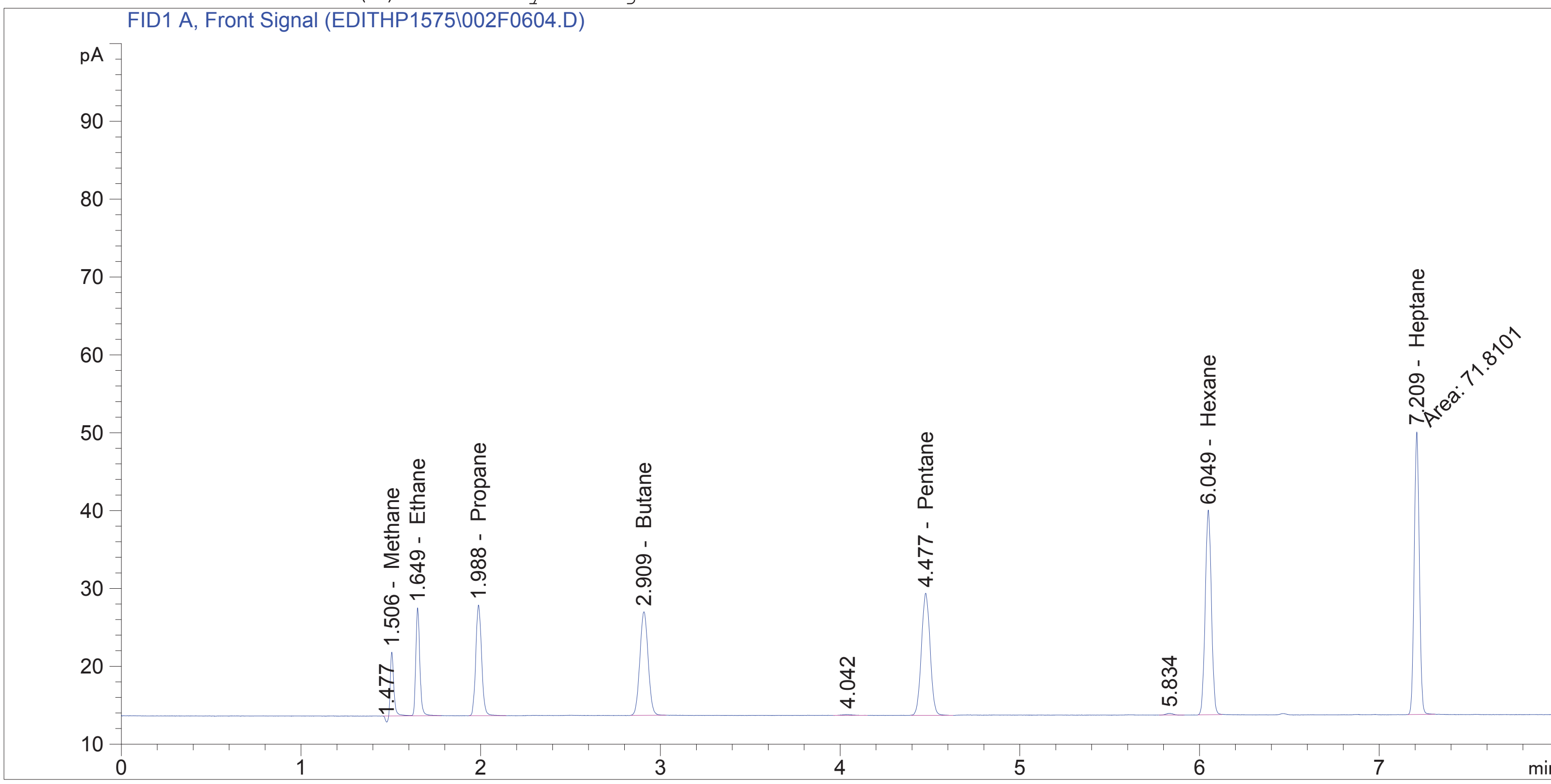
Name	Total Area [pA*s]	Amount [ppm]
as Pentane	4.30614e-1	0.3335
as Hexane	5.81095e-1	0.3913
Methane	10.99815	40.3814
Ethane	21.63459	40.7684
Propane	32.01132	40.5321
Butane	42.57405	40.5321
Pentane	52.74920	40.9241
Hexane	62.75278	42.3535
Heptane	71.70566	40.5841

Totals : 286.8006

*** End of Report ***

===

Acq. Operator : Nicholas Traversa Seq. Line : 6
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/26/2018 6:29:25 PM Inj : 4
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PV	11.07759	3.67139	40.67018		Methane
1.649	VB	21.65865	1.88440	40.81365		Ethane
1.988	BB	32.10891	1.26617	40.65519		Propane
2.909	BB	42.61734	9.52036e-1	40.57326		Butane
4.477	BB	52.77180	7.75826e-1	40.94174		Pentane
6.049	BB	62.79457	6.74929e-1	42.38188		Hexane
7.209	MM	71.81006	5.65979e-1	40.64300		Heptane

474

Totals : 286.67889

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	7.77669e-1	1.30084	1.01162		?
4.042	BB	4.00612e-1	1.30084	5.21132e-1		?
5.834	BB	6.06667e-1	1.30084	7.89176e-1		?

Uncalib. totals : 2.32193

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Pentane	3.600	5.250	4.00612e-1	0.3102
as Hexane	5.250	6.600	6.06667e-1	0.4085

Totals : 7.1877e-1

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

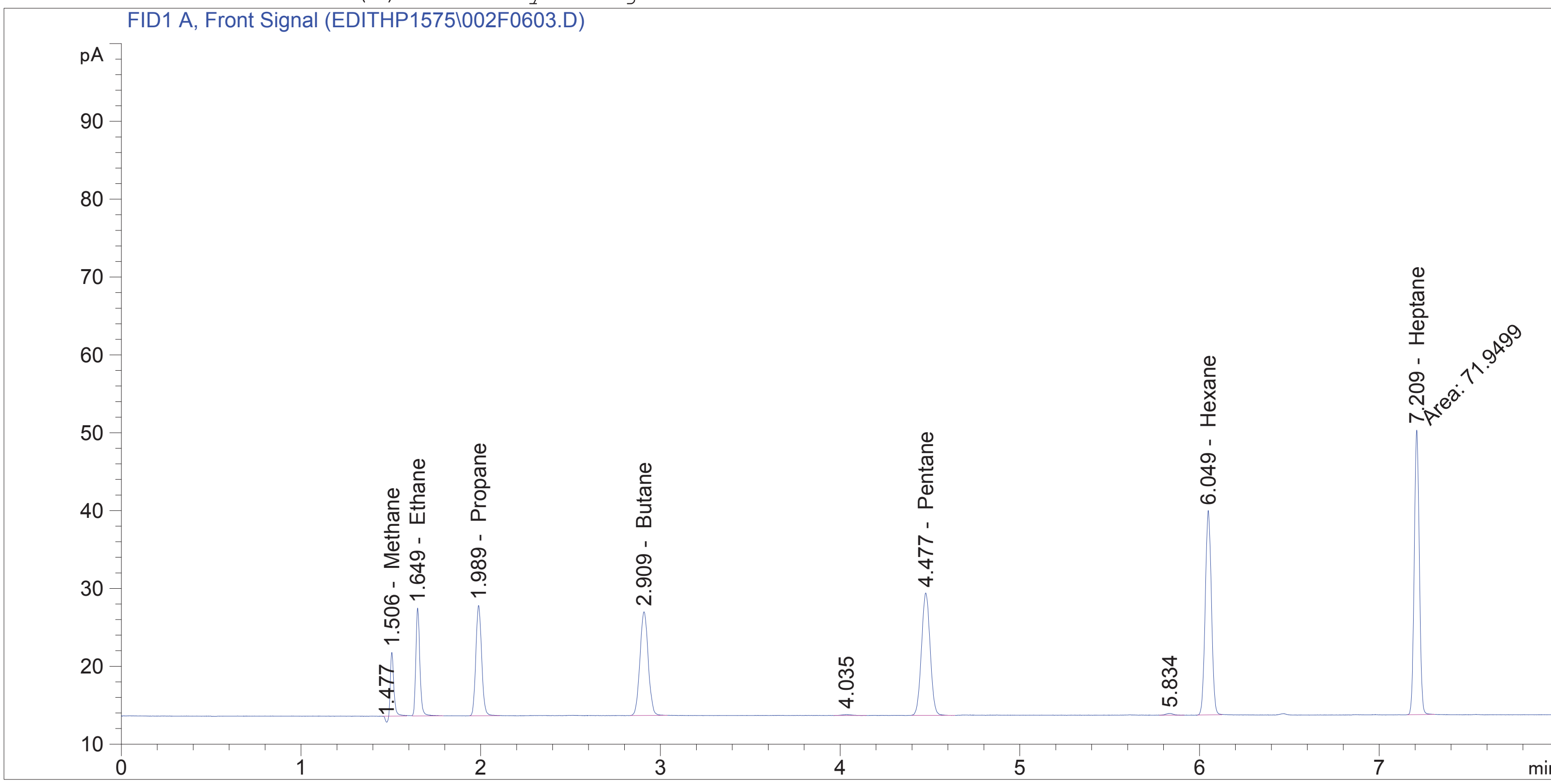
Name	Total Area [pA*s]	Amount [ppm]
as Pentane	4.00612e-1	0.3102
as Hexane	6.06667e-1	0.4085
Methane	11.07759	40.6702
Ethane	21.65865	40.8137
Propane	32.10891	40.6552
Butane	42.61734	40.5733
Pentane	52.77180	40.9417
Hexane	62.79457	42.3819
Heptane	71.81006	40.6430

Totals : 287.3977

*** End of Report ***

===

Acq. Operator : Nicholas Traversa Seq. Line : 6
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/26/2018 6:12:40 PM Inj : 3
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	10.98377	3.67170	40.32915		Methane
1.649	BB	21.66619	1.88440	40.82782		Ethane
1.989	BB	31.94706	1.26619	40.45104		Propane
2.909	BB	42.60355	9.52037e-1	40.56015		Butane
4.477	BB	52.74406	7.75825e-1	40.92014		Pentane
6.049	BB	62.79795	6.74929e-1	42.38417		Hexane
7.209	MM	71.94994	5.65976e-1	40.72194		Heptane

Totals : 286.19440

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	7.85343e-1	1.30084	1.02160		?
4.035	BB	4.51579e-1	1.30084	5.87431e-1		?
5.834	BB	6.34677e-1	1.30084	8.25612e-1		?

Uncalib. totals : 2.43465

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Pentane	3.600	5.250	4.51579e-1	0.3497
as Hexane	5.250	6.600	6.34677e-1	0.4274

Totals : 7.7710e-1

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

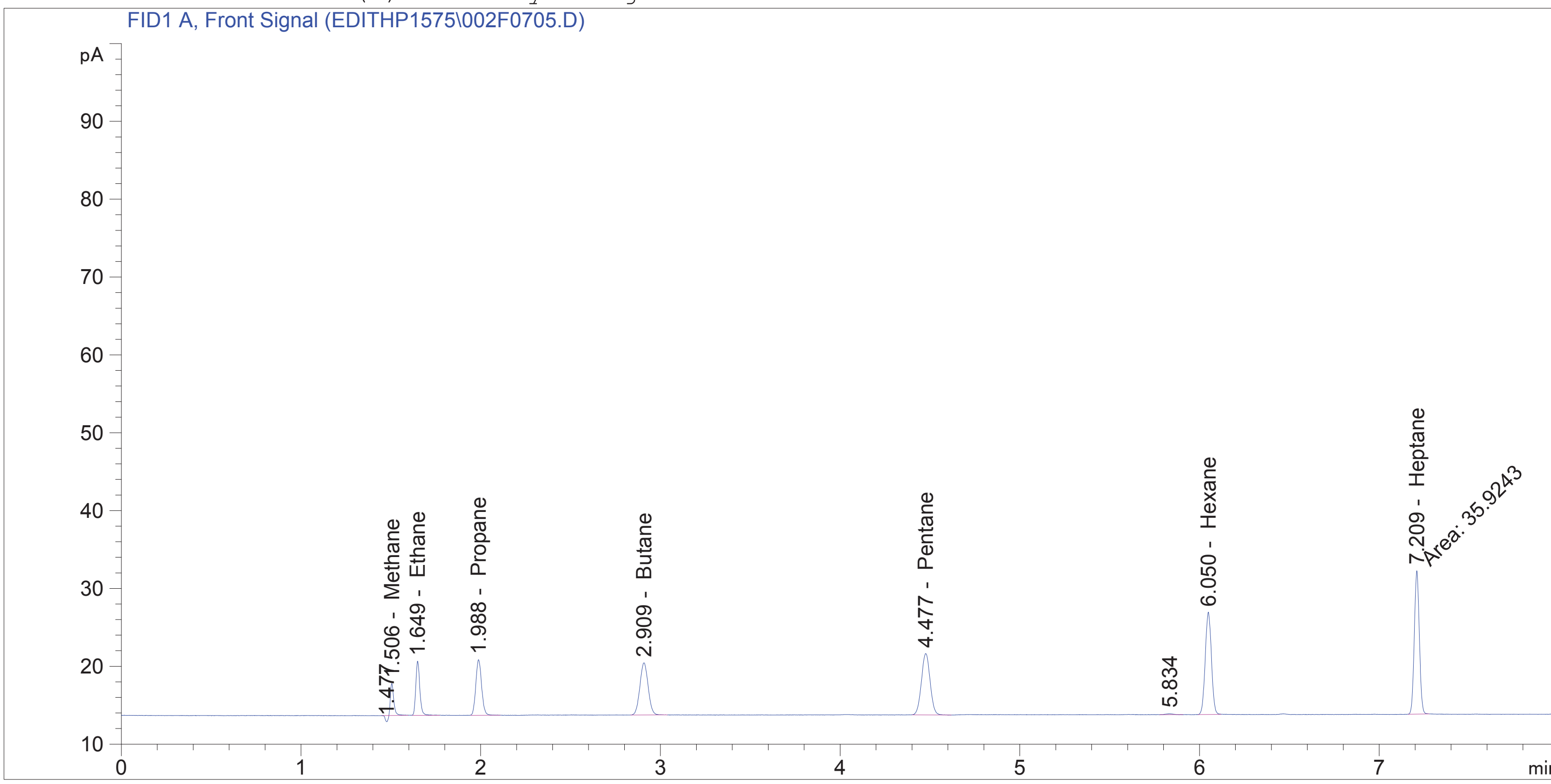
Name	Total Area [pA*s]	Amount [ppm]
as Pentane	4.51579e-1	0.3497
as Hexane	6.34677e-1	0.4274
Methane	10.98377	40.3291
Ethane	21.66619	40.8278
Propane	31.94706	40.4510
Butane	42.60355	40.5601
Pentane	52.74406	40.9201
Hexane	62.79795	42.3842
Heptane	71.94994	40.7219

Totals : 286.9715

*** End of Report ***

===

Acq. Operator : Nicholas Traversa Seq. Line : 7
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/26/2018 8:10:27 PM Inj : 5
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	5.51604	3.70843	20.45587		Methane
1.649	BB	10.89861	1.88910	20.58860		Ethane
1.988	BB	16.05990	1.27098	20.41188		Propane
2.909	BB	21.46897	9.53217e-1	20.46459		Butane
4.477	BB	26.60523	7.73365e-1	20.57555		Pentane
6.050	BB	31.52674	6.70775e-1	21.14736		Hexane
7.209	MM	35.92431	5.67613e-1	20.39109		Heptane

Totals : 144.03495

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	8.32714e-1	1.30084	1.08323		?
5.834	BB	3.11135e-1	1.30084	4.04736e-1		?

Uncalib. totals : 1.48796

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Hexane	5.250	6.600	3.11135e-1	0.2095

Totals : 2.0952e-1

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Hexane	3.11135e-1	0.2095
Methane	5.51604	20.4559
Ethane	10.89861	20.5886
Propane	16.05990	20.4119
Butane	21.46897	20.4646
Pentane	26.60523	20.5755
Hexane	31.52674	21.1474
Heptane	35.92431	20.3911

Totals : 144.2445

*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\002F0704.D
Sample Name: Edithp1486 #C2 ENV(1=800,2=200)

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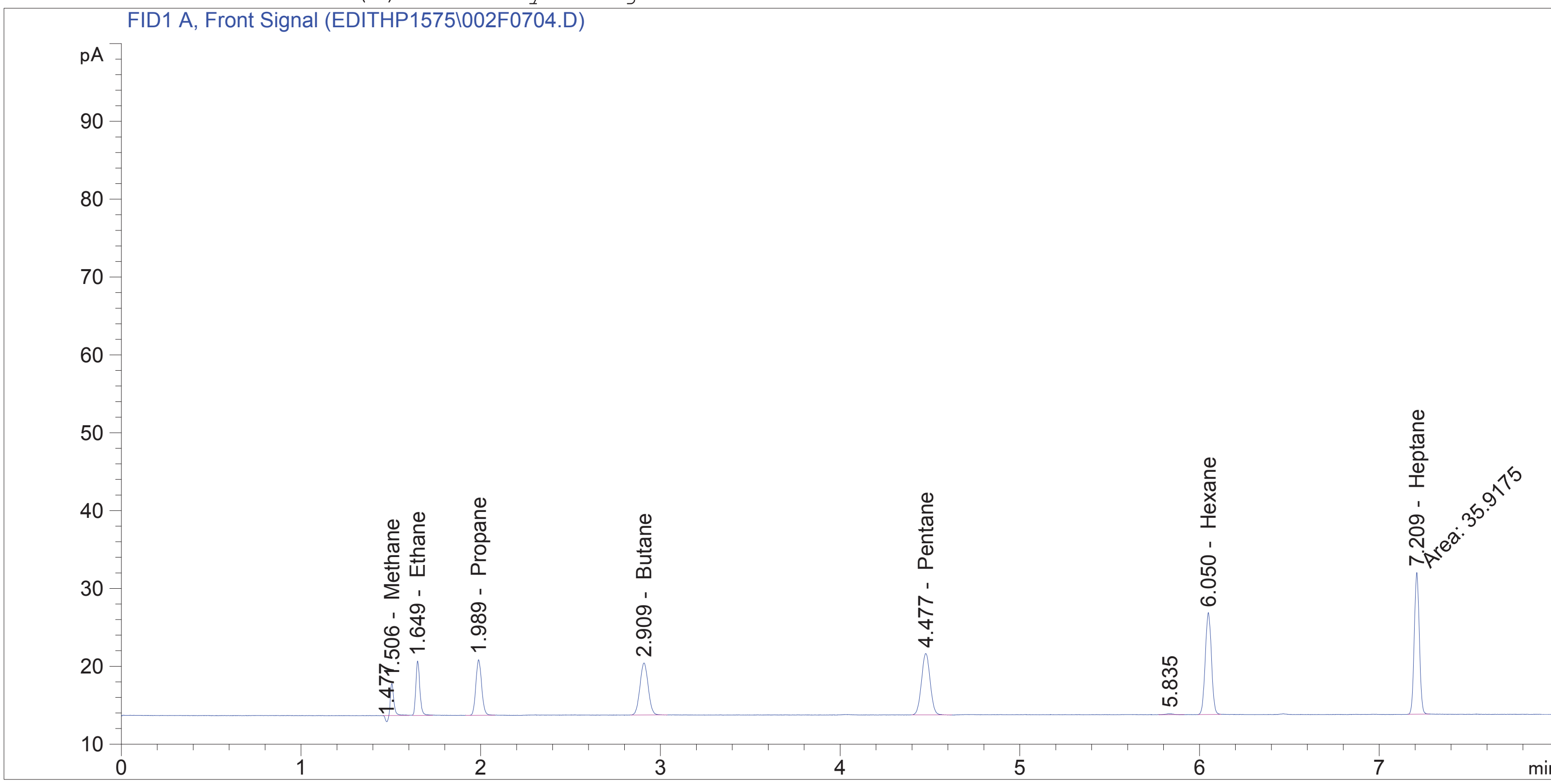
Acq. Operator : Nicholas Traversa Seq. Line : 7
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/26/2018 7:53:40 PM Inj : 4
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	5.57529	3.70765	20.67124		Methane
1.649	BB	10.89599	1.88911	20.58368		Ethane
1.989	PB	15.97103	1.27104	20.29979		Propane
2.909	BB	21.38335	9.53227e-1	20.38318		Butane
4.477	BB	26.52572	7.73350e-1	20.51367		Pentane
6.050	BB	31.44983	6.70755e-1	21.09513		Hexane
7.209	MM	35.91750	5.67613e-1	20.38725		Heptane

Totals : 143.93393

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	8.06123e-1	1.30084	1.04864		?
5.835	BB	3.12239e-1	1.30084	4.06173e-1		?

Uncalib. totals : 1.45481

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Hexane	5.250	6.600	3.12239e-1	0.2103

Totals : 2.1026e-1

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Hexane	3.12239e-1	0.2103
Methane	5.57529	20.6712
Ethane	10.89599	20.5837
Propane	15.97103	20.2998
Butane	21.38335	20.3832
Pentane	26.52572	20.5137
Hexane	31.44983	21.0951
Heptane	35.91750	20.3872

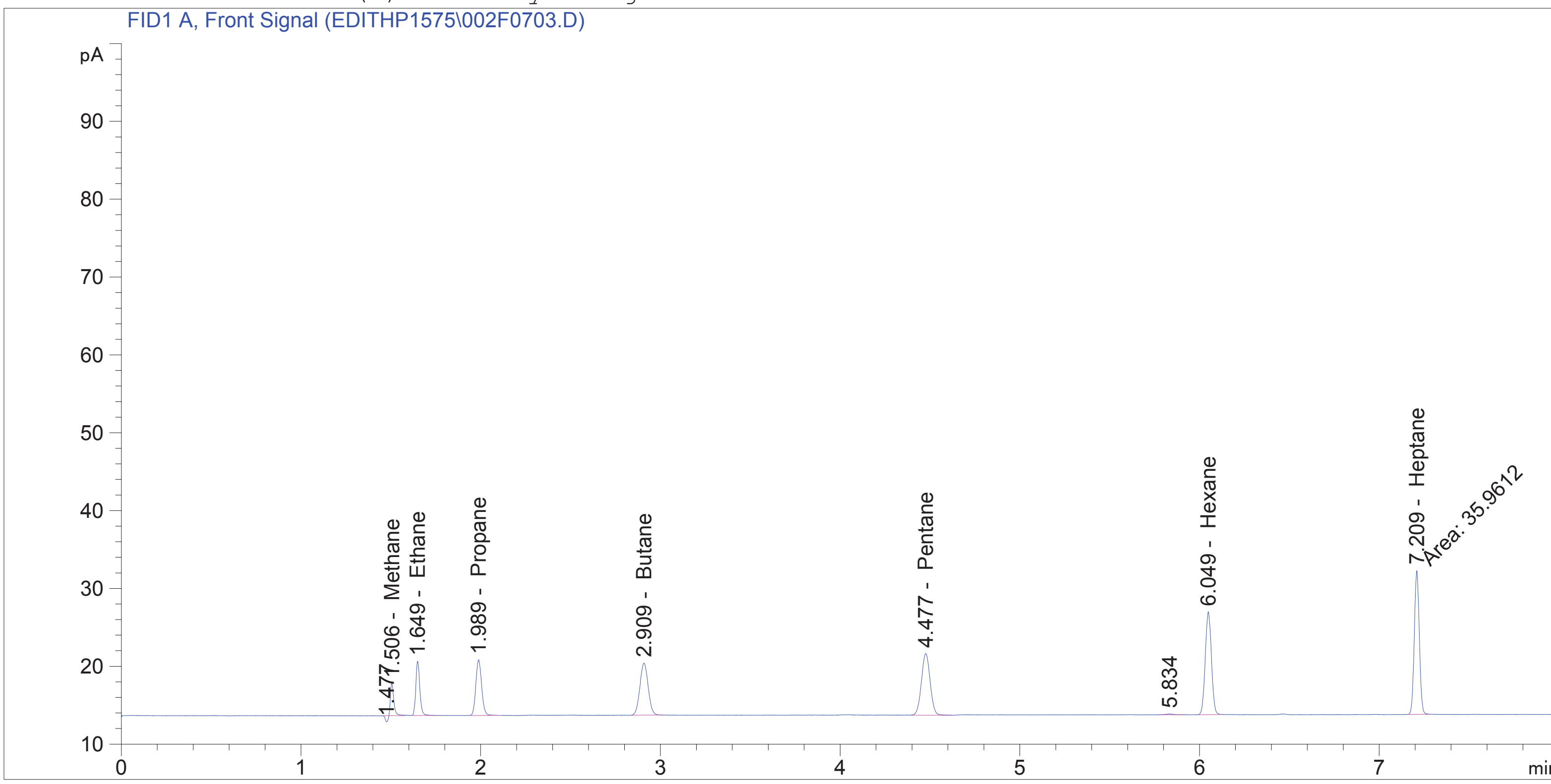
Totals : 144.1442

*** End of Report ***

===

Acq. Operator	: Nicholas Traversa	Seq. Line :	7
Acq. Instrument	: Edith	Location :	Vial 2
Injection Date	: 11/26/2018 7:36:52 PM	Inj :	3
		Inj Volume :	250 µl

Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report
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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	5.49202	3.70876	20.36858		Methane
1.649	BB	10.87127	1.88913	20.53723		Ethane
1.989	BB	16.12137	1.27095	20.48942		Propane
2.909	BB	21.42468	9.53222e-1	20.42249		Butane
4.477	BB	26.64799	7.73373e-1	20.60883		Pentane
6.049	BB	31.54122	6.70779e-1	21.15719		Hexane
7.209	MM	35.96122	5.67609e-1	20.41192		Heptane

Totals : 143.99567

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	8.19267e-1	1.30084	1.06573		?
5.834	BB	3.06913e-1	1.30084	3.99244e-1		?

Uncalib. totals : 1.46498

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Hexane	5.250	6.600	3.06913e-1	0.2067

Totals : 2.0668e-1

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

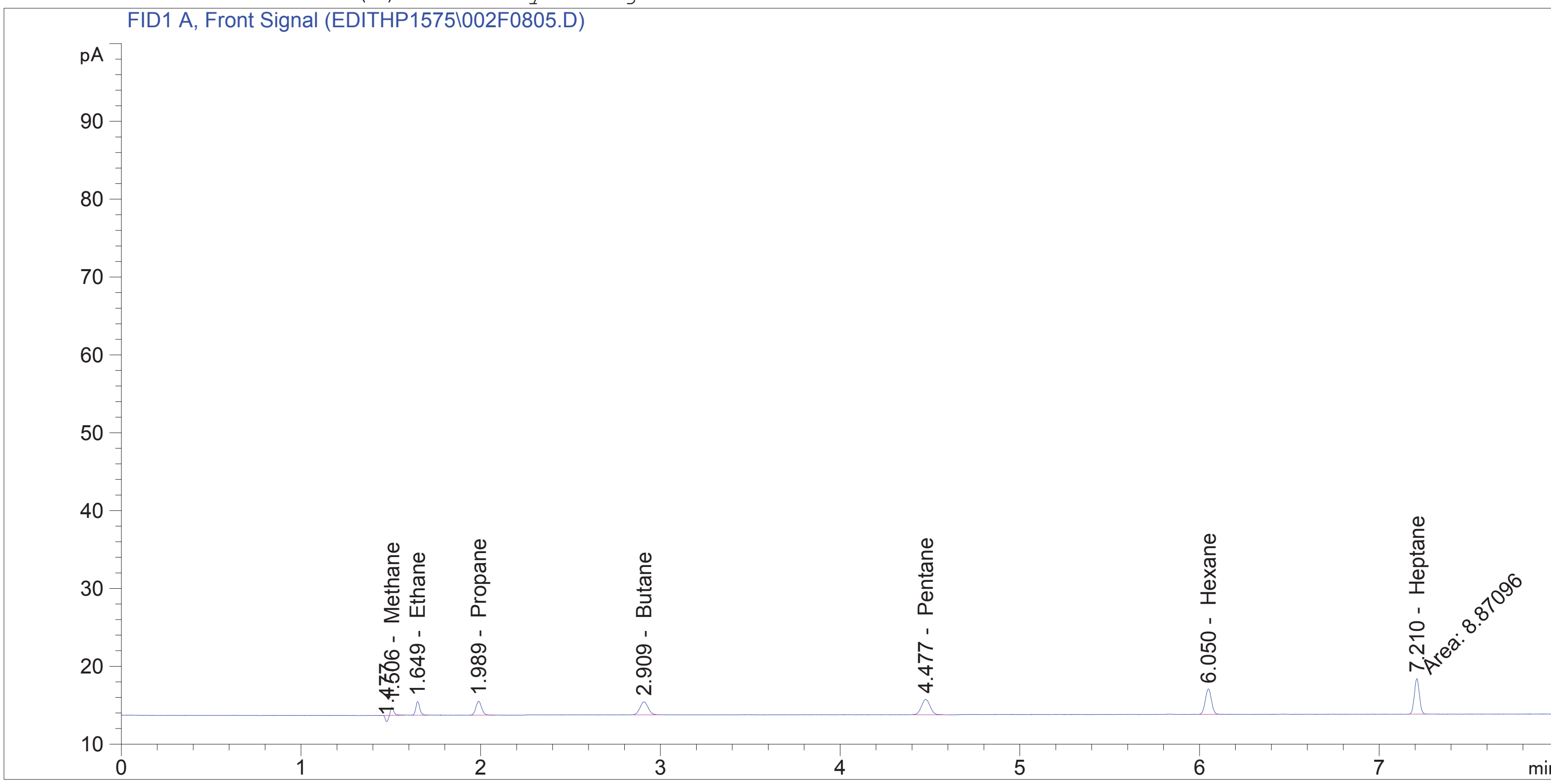
Name	Total Area [pA*s]	Amount [ppm]
as Hexane	3.06913e-1	0.2067
Methane	5.49202	20.3686
Ethane	10.87127	20.5372
Propane	16.12137	20.4894
Butane	21.42468	20.4225
Pentane	26.64799	20.6088
Hexane	31.54122	21.1572
Heptane	35.96122	20.4119

Totals : 144.2023

*** End of Report ***

===

Acq. Operator : Nicholas Traversa Seq. Line : 8
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/26/2018 9:34:43 PM Inj : 5
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	1.34769	3.93665	5.30539		Methane
1.649	BB	2.68938	1.91798	5.15819		Ethane
1.989	BB	3.98060	1.30024	5.17575		Propane
2.909	BB	5.32137	9.60439e-1	5.11086		Butane
4.477	BB	6.75434	7.58777e-1	5.12504		Pentane
6.050	BB	7.80680	6.45815e-1	5.04175		Hexane
7.210	MM	8.87096	5.77581e-1	5.12370		Heptane

Totals : 36.04068

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	8.93210e-1	1.30084	1.16192		?

Uncalib. totals : 1.16192

Summed Peaks Report

Signal 1: FID1 A, Front Signal

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Methane	1.34769	5.3054
Ethane	2.68938	5.1582
Propane	3.98060	5.1757
Butane	5.32137	5.1109
Pentane	6.75434	5.1250
Hexane	7.80680	5.0417
Heptane	8.87096	5.1237

Totals : 36.0407

*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\002F0804.D
Sample Name: Edithp1486 #C1 ENV(1=3800,2=200)

===

```
Acq. Operator   : Nicholas Traversa              Seq. Line :   8
Acq. Instrument : Edith                           Location : Vial 2
Injection Date  : 11/26/2018 9:17:57 PM                Inj :   4
                                                Inj Volume : 250 µl
Acq. Method     : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed    : 12/14/2018 9:51:41 AM by Nicole West
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicole West
ECM Path        : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version     : 3 (modified after loading)
Additional Info : Peak(s) manually integrated
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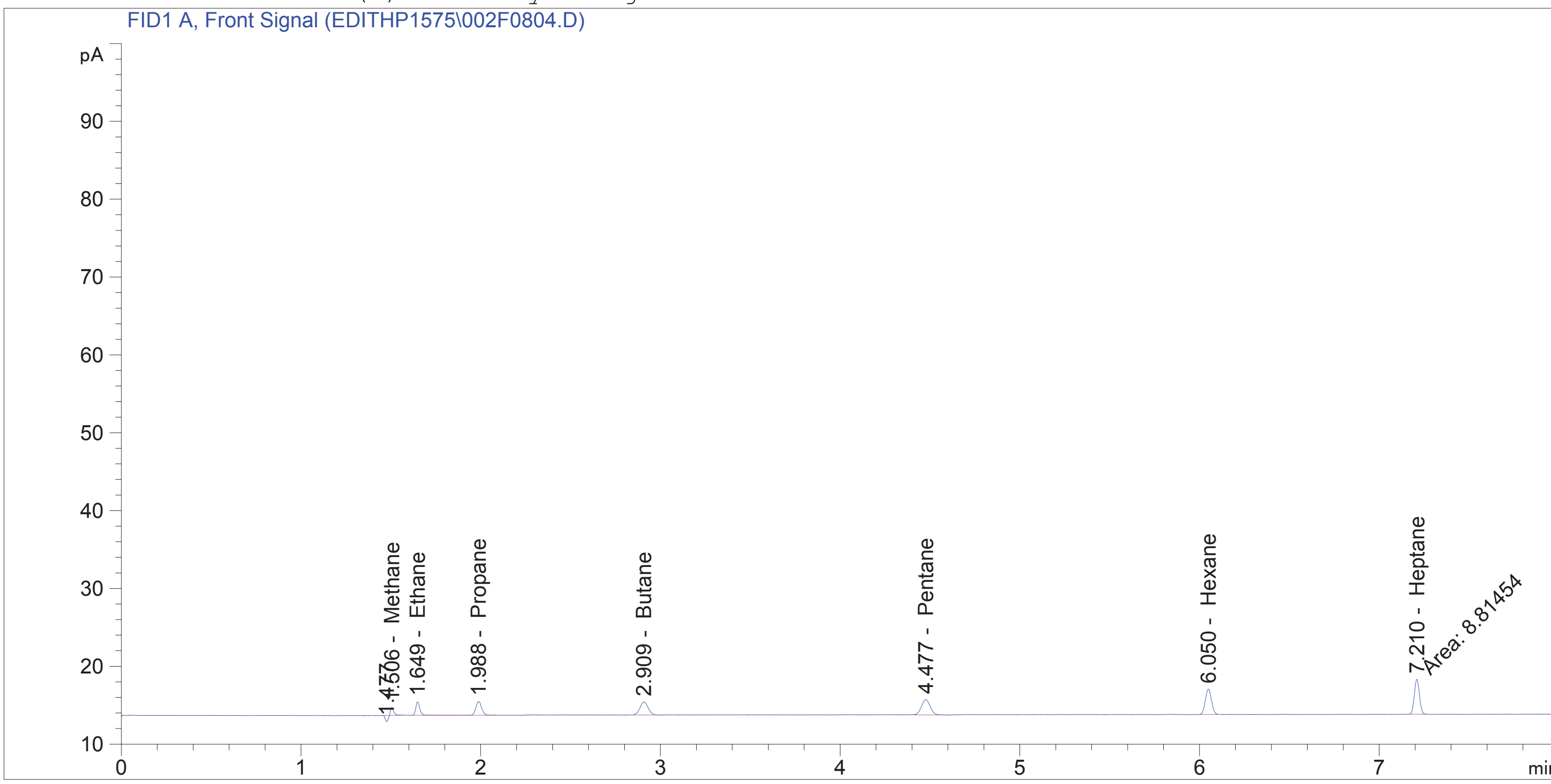

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External Standard Report

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Sorted By             :      Signal
Calib. Data Modified  :      12/14/2018 9:50:22 AM
Multiplier            :      1.0000
Dilution              :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	1.27715	3.94986	5.04457		Methane
1.649	BP	2.63685	1.91843	5.05861		Ethane
1.988	VB	3.92124	1.30083	5.10087		Propane
2.909	BB	5.32560	9.60431e-1	5.11487		Butane
4.477	BB	6.70052	7.58684e-1	5.08358		Pentane
6.050	BB	7.77185	6.45815e-1	5.01918		Hexane
7.210	MM	8.81454	5.77644e-1	5.09166		Heptane

Totals : 35.51334

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	8.91521e-1	1.30084	1.15972		?

Uncalib. totals : 1.15972

Summed Peaks Report

Signal 1: FID1 A, Front Signal

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Methane	1.27715	5.0446
Ethane	2.63685	5.0586
Propane	3.92124	5.1009
Butane	5.32560	5.1149
Pentane	6.70052	5.0836
Hexane	7.77185	5.0192
Heptane	8.81454	5.0917

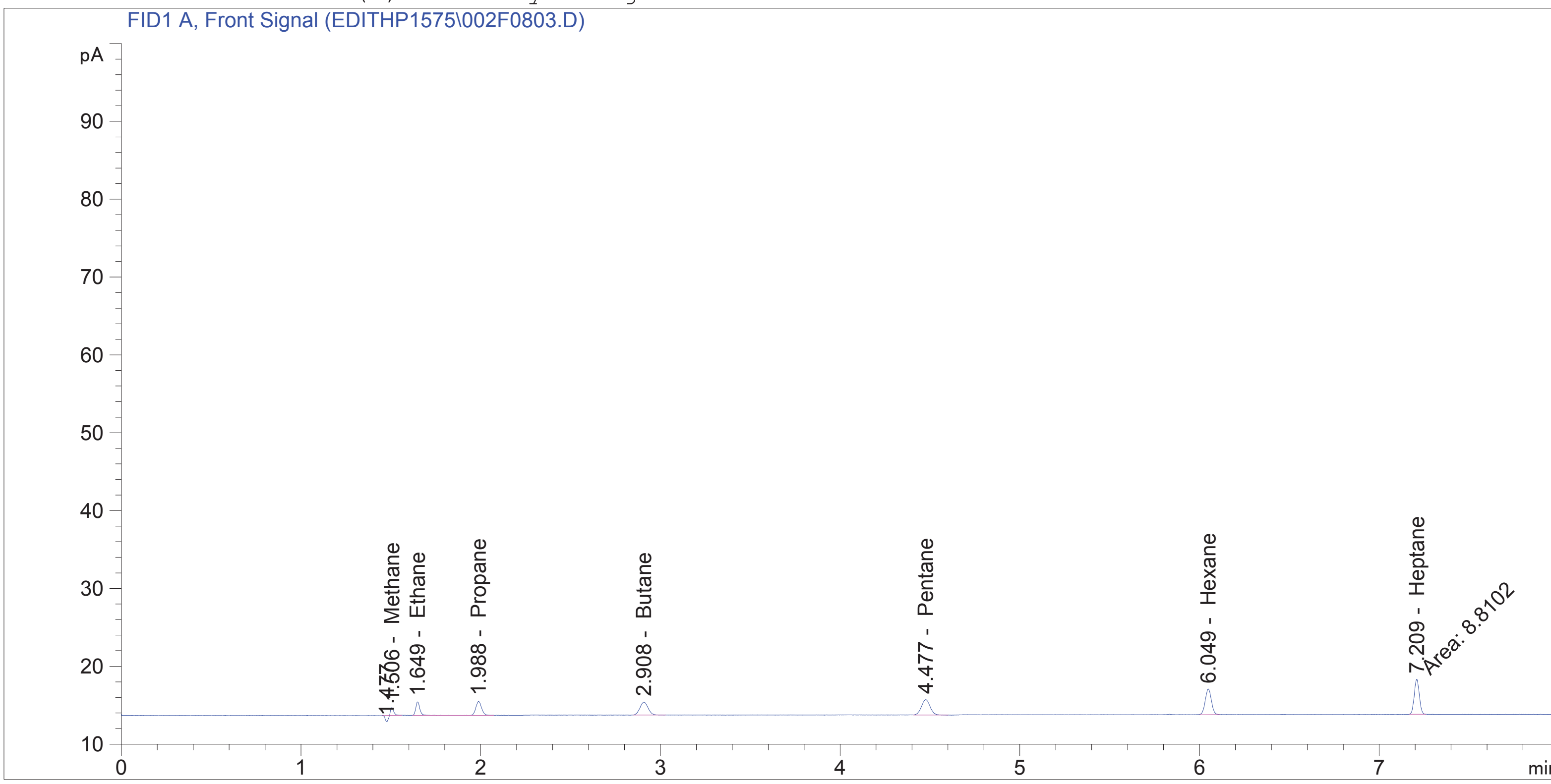
Totals : 35.5133

*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\002F0803.D
Sample Name: Edithp1486 #C1 ENV(1=3800,2=200)

===

Acq. Operator : Nicholas Traversa Seq. Line : 8
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/26/2018 9:01:03 PM Inj : 3
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1575\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1575.SC.SSIzip
ECM Version : 3 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PB	1.24997	3.94986	4.93720		Methane
1.649	BP	2.63154	1.91843	5.04842		Ethane
1.988	VB	3.87200	1.30084	5.03684		Propane
2.908	BB	5.29373	9.60460e-1	5.08441		Butane
4.477	BB	6.67106	7.58684e-1	5.06123		Pentane
6.049	BB	7.79994	6.45815e-1	5.03732		Hexane
7.209	MM	8.81020	5.77644e-1	5.08916		Heptane

Totals : 35.29458

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.477	BP N	9.15488e-1	1.30084	1.19090		?

Uncalib. totals : 1.19090

Summed Peaks Report

Signal 1: FID1 A, Front Signal

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Methane	1.24997	4.9372
Ethane	2.63154	5.0484
Propane	3.87200	5.0368
Butane	5.29373	5.0844
Pentane	6.67106	5.0612
Hexane	7.79994	5.0373
Heptane	8.81020	5.0892

Totals : 35.2946

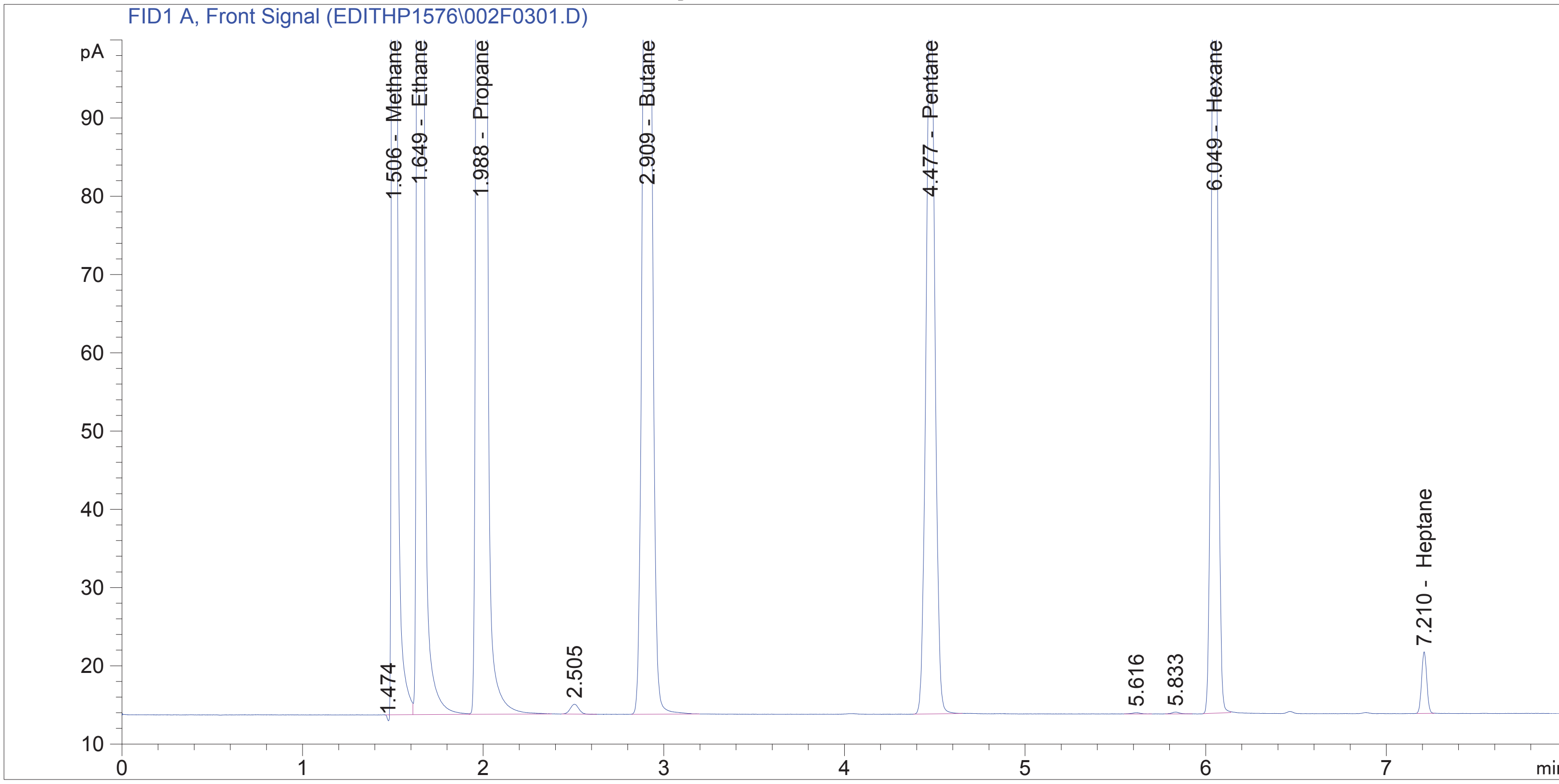
*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\002F0301.D
Sample Name: Edithp1576 #C5 ENV(1=3800,4=243.32)

===

Acq. Operator	: Nicholas Traversa	Seq. Line :	3
Acq. Instrument	: Edith	Location :	Vial 2
Injection Date	: 11/27/2018 9:15:39 AM	Inj :	1
		Inj Volume :	250 µl

Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1576.SC.SSIzip
ECM Version : 2 (modified after loading)



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PV	683.82556	3.63525	2485.87356		Methane
1.649	VV	1315.96326	1.87972	2473.64508		Ethane
1.988	VB	1975.39160	1.26142	2491.80081		Propane
2.909	BB	520.42926	9.50936e-1	494.89471		Butane
4.477	BB	312.89081	7.77906e-1	243.39972		Pentane
6.049	BB	274.24289	6.78158e-1	185.98005		Hexane
7.210	BB	15.67916	5.71833e-1	8.96586		Heptane

Totals : 8384.55980

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.474	BP N	5.35620e-1	1.30084	6.96755e-1		?
2.505	BB	4.10949	1.29902	5.33832		?
5.616	BB	5.32803e-1	1.30084	6.93091e-1		?
5.833	BB	6.62697e-1	1.30084	8.62062e-1		?

Uncalib. totals : 7.59023

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	4.10949	3.9160
as Hexane	5.250	6.600	1.19550	0.8050

Totals : 4.7211

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	4.10949	3.9160
as Hexane	1.19550	0.8050
Methane	683.82556	2.486e3
Ethane	1315.96326	2.474e3
Propane	1975.39160	2.492e3
Butane	520.42926	494.8947
Pentane	312.89081	243.3997
Hexane	274.24289	185.9800
Heptane	15.67916	8.9659

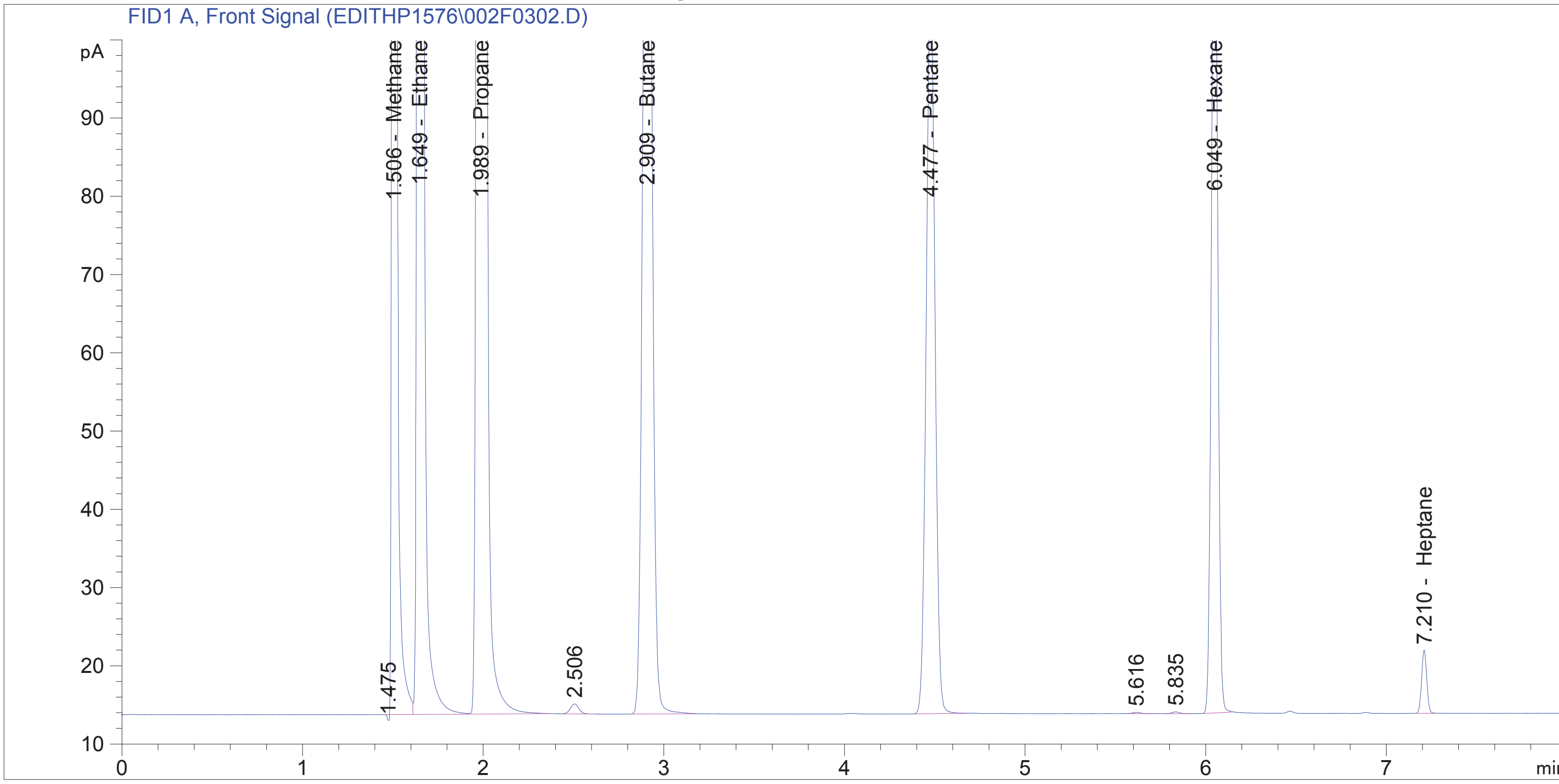
Totals : 8389.2809

*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\002F0302.D
Sample Name: Edithp1576 #C5 ENV(1=3800,4=243.32)

===

Acq. Operator : Nicholas Traversa Seq. Line : 3
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/27/2018 9:32:21 AM Inj : 2
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1576.SC.SSIzip
ECM Version : 2 (modified after loading)



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PV	686.03040	3.63524	2493.88736		Methane
1.649	VV	1319.69446	1.87972	2480.65841		Ethane
1.989	VB	1980.55090	1.26142	2498.30846		Propane
2.909	BB	521.80157	9.50935e-1	496.19956		Butane
4.477	BB	314.09924	7.77908e-1	244.34028		Pentane
6.049	BB	275.69302	6.78163e-1	186.96486		Hexane
7.210	BB	15.86714	5.71744e-1	9.07195		Heptane

Totals : 8409.43089

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	5.47269e-1	1.30084	7.11909e-1		?
2.506	BB	4.12589	1.29887	5.35900		?
5.616	BB	5.04847e-1	1.30084	6.56724e-1		?
5.835	BB	6.49772e-1	1.30084	8.45248e-1		?

Uncalib. totals : 7.57288

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	4.12589	3.9316
as Hexane	5.250	6.600	1.15462	0.7775

Totals : 4.7092

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	4.12589	3.9316
as Hexane	1.15462	0.7775
Methane	686.03040	2.494e3
Ethane	1319.69446	2.481e3
Propane	1980.55090	2.498e3
Butane	521.80157	496.1996
Pentane	314.09924	244.3403
Hexane	275.69302	186.9649
Heptane	15.86714	9.0720

Totals : 8414.1400

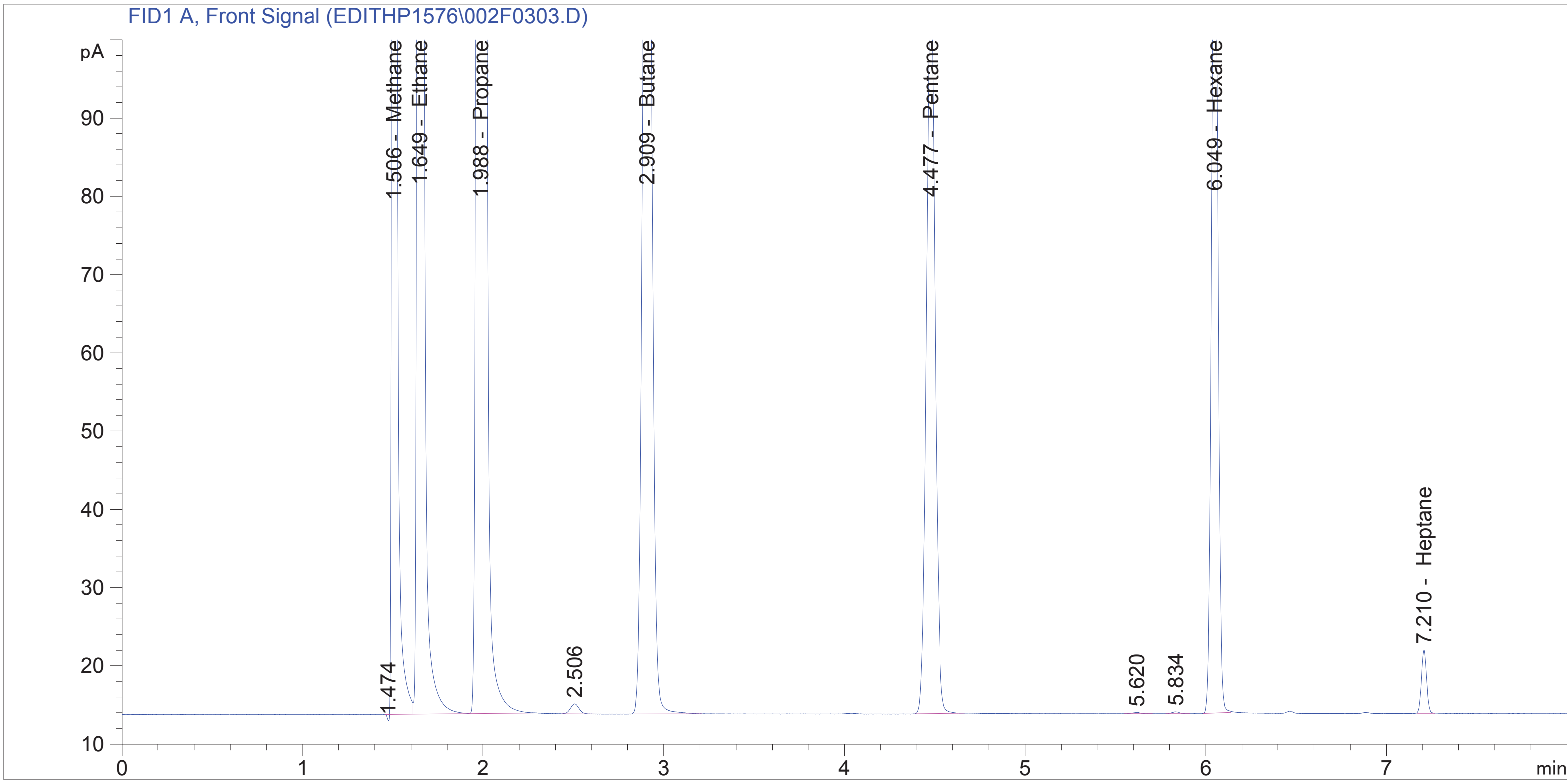
*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\002F0303.D
Sample Name: Edithp1576 #C5 ENV(1=3800,4=243.32)

===

Acq. Operator	: Nicholas Traversa	Seq. Line :	3
Acq. Instrument	: Edith	Location :	Vial 2
Injection Date	: 11/27/2018 9:49:04 AM	Inj :	3
		Inj Volume :	250 µl

Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1576.SC.SSIzip
ECM Version : 2 (modified after loading)



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.506	PV	683.91449	3.63525	2486.19678		Methane
1.649	VV	1315.03784	1.87972	2471.90563		Ethane
1.988	VB	1972.86230	1.26142	2488.61050		Propane
2.909	BB	520.52228	9.50936e-1	494.98316		Butane
4.477	BB	313.22821	7.77907e-1	243.66233		Pentane
6.049	BB	275.43805	6.78162e-1	186.79170		Hexane
7.210	BB	15.88176	5.71738e-1	9.08020		Heptane

Totals : 8381.23031

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.474	BP N	5.63313e-1	1.30084	7.32779e-1		?
2.506	BB	4.15882	1.29858	5.40054		?
5.620	BB	4.64841e-1	1.30084	6.04684e-1		?
5.834	BB	6.75879e-1	1.30084	8.79209e-1		?

Uncalib. totals : 7.61722

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	4.15882	3.9630
as Hexane	5.250	6.600	1.14072	0.7682

Totals : 4.7312

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	4.15882	3.9630
as Hexane	1.14072	0.7682
Methane	683.91449	2.486e3
Ethane	1315.03784	2.472e3
Propane	1972.86230	2.489e3
Butane	520.52228	494.9832
Pentane	313.22821	243.6623
Hexane	275.43805	186.7917
Heptane	15.88176	9.0802

Totals : 8385.9615

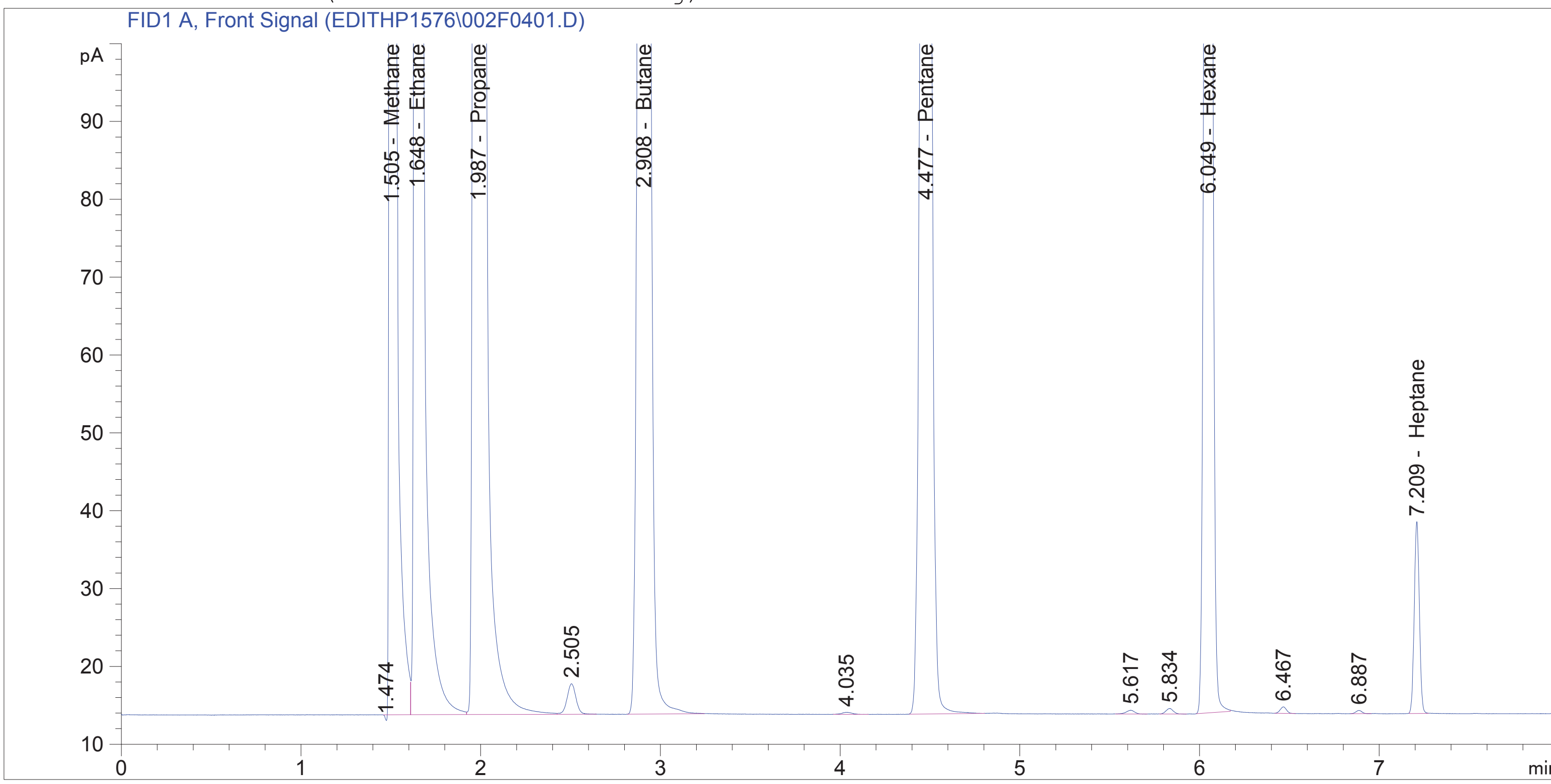
*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\002F0401.D
Sample Name: Edithp1576 #C6 ENV(1=1700,4=365.09)

===

Acq. Operator	: Nicholas Traversa	Seq. Line :	4
Acq. Instrument	: Edith	Location :	Vial 2
Injection Date	: 11/27/2018 10:05:49 AM	Inj :	1
		Inj Volume :	250 µl

Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1576.SC.SSIzip
ECM Version : 2 (modified after loading)



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External Standard Report
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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.505	PV	2078.42896	3.63485	7554.76875		Methane
1.648	VV	3995.80933	1.87967	7510.80073		Ethane
1.987	VV	6000.27979	1.26137	7568.56454		Propane
2.908	BB	1583.58789	9.50870e-1	1505.78573		Butane
4.477	BB	956.35535	7.78190e-1	744.22639		Pentane
6.049	BB	841.50397	6.78805e-1	571.21674		Hexane
7.209	BB	48.72845	5.66754e-1	27.61703		Heptane

Totals : 2.54830e4

496

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.474	BP N	4.63058e-1	1.30084	6.02363e-1		?
2.505	VB	13.49588	1.27282	17.17777		?
4.035	BB	1.00763	1.30084	1.31076		?
5.617	BB	1.53543	1.30084	1.99735		?
5.834	BB	2.03289	1.30084	2.64446		?
6.467	BB	2.01859	1.30084	2.62585		?
6.887	BB	9.57464e-1	1.30084	1.24551		?

Uncalib. totals : 27.60406

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Summed Peaks Report

===

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	13.49588	12.8605
as Pentane	3.600	5.250	1.00763	0.7803
as Hexane	5.250	6.600	5.58690	3.7622
as Heptane	6.600	16.300	9.57464e-1	0.5449

Totals : 17.9479

1 Warnings or Errors :

Warning : Reference compound(s) not found

===

Final Summed Peaks Report

===

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	13.49588	12.8605
as Pentane	1.00763	0.7803
as Hexane	5.58690	3.7622
as Heptane	9.57464e-1	0.5449
Methane	2078.42896	7.555e3
Ethane	3995.80933	7.511e3
Propane	6000.27979	7.569e3
Butane	1583.58789	1.506e3
Pentane	956.35535	744.2264
Hexane	841.50397	571.2167
Heptane	48.72845	27.6170

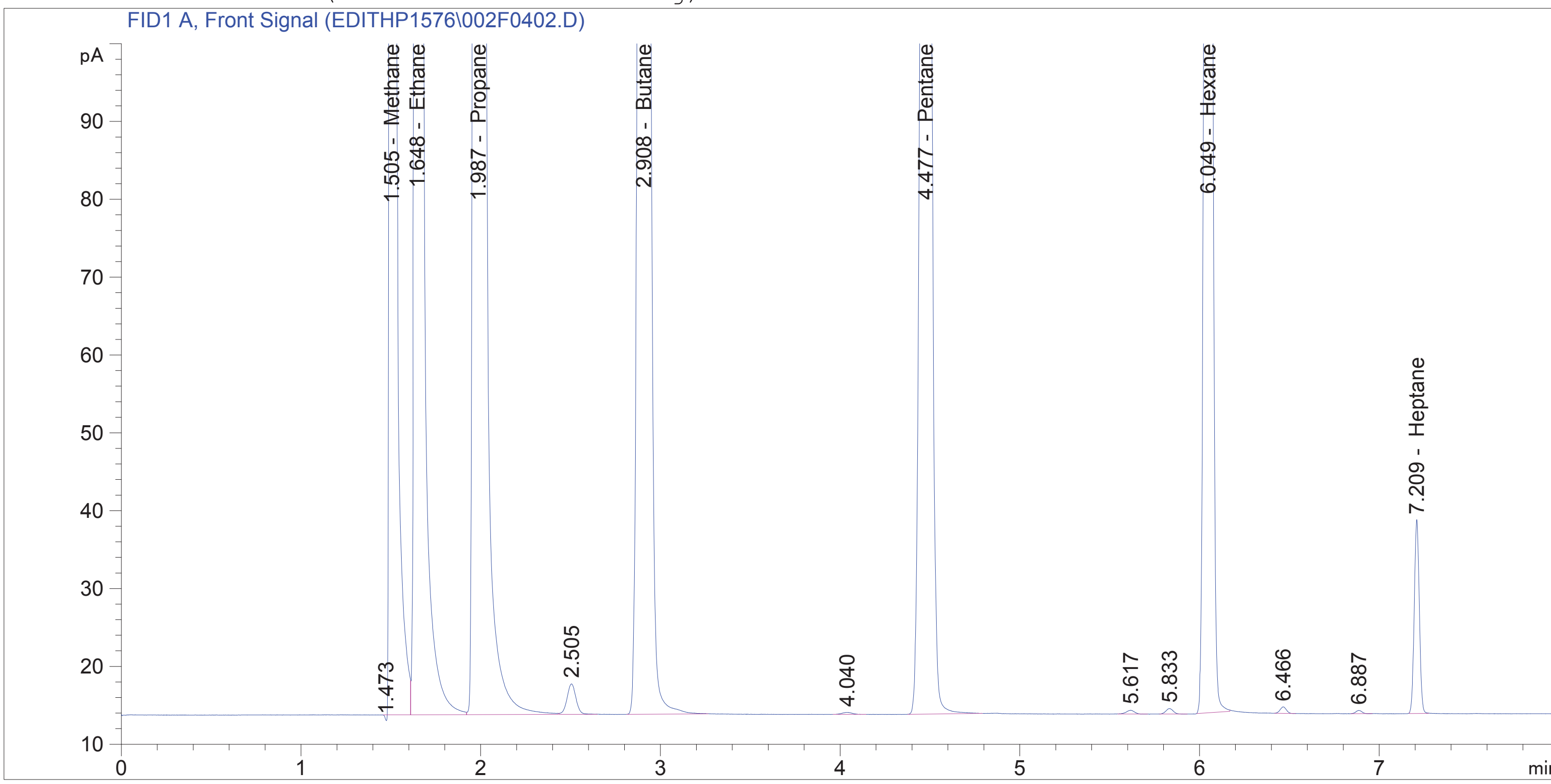
Totals : 2.5501e4

*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\002F0402.D
Sample Name: Edithp1576 #C6 ENV(1=1700,4=365.09)

===

Acq. Operator : Nicholas Traversa Seq. Line : 4
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/27/2018 10:22:35 AM Inj : 2
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1576.SC.SSIzip
ECM Version : 2 (modified after loading)



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.505	PV	2076.99609	3.63485	7549.56080		Methane
1.648	VV	3993.58789	1.87967	7506.62522		Ethane
1.987	VB	5997.00488	1.26137	7564.43376		Propane
2.908	BB	1583.02283	9.50870e-1	1505.24845		Butane
4.477	BB	956.33893	7.78190e-1	744.21362		Pentane
6.049	BB	841.85822	6.78805e-1	571.45732		Hexane
7.209	BB	48.90889	5.66745e-1	27.71886		Heptane

Totals : 2.54693e4

498

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.473	BP N	4.65423e-1	1.30084	6.05440e-1		?
2.505	BB	13.46173	1.27285	17.13470		?
4.040	BB	1.01272	1.30084	1.31738		?
5.617	BB	1.57744	1.30084	2.05199		?
5.833	BB	2.00139	1.30084	2.60349		?
6.466	BB	1.99102	1.30084	2.58999		?
6.887	BB	1.00472	1.30084	1.30698		?

Uncalib. totals : 27.60999

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	13.46173	12.8279
as Pentane	3.600	5.250	1.01272	0.7843
as Hexane	5.250	6.600	5.56985	3.7507
as Heptane	6.600	16.300	1.00472	0.5717

Totals : 17.9347

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	13.46173	12.8279
as Pentane	1.01272	0.7843
as Hexane	5.56985	3.7507
as Heptane	1.00472	0.5717
Methane	2076.99609	7.550e3
Ethane	3993.58789	7.507e3
Propane	5997.00488	7.564e3
Butane	1583.02283	1.505e3
Pentane	956.33893	744.2136
Hexane	841.85822	571.4573
Heptane	48.90889	27.7189

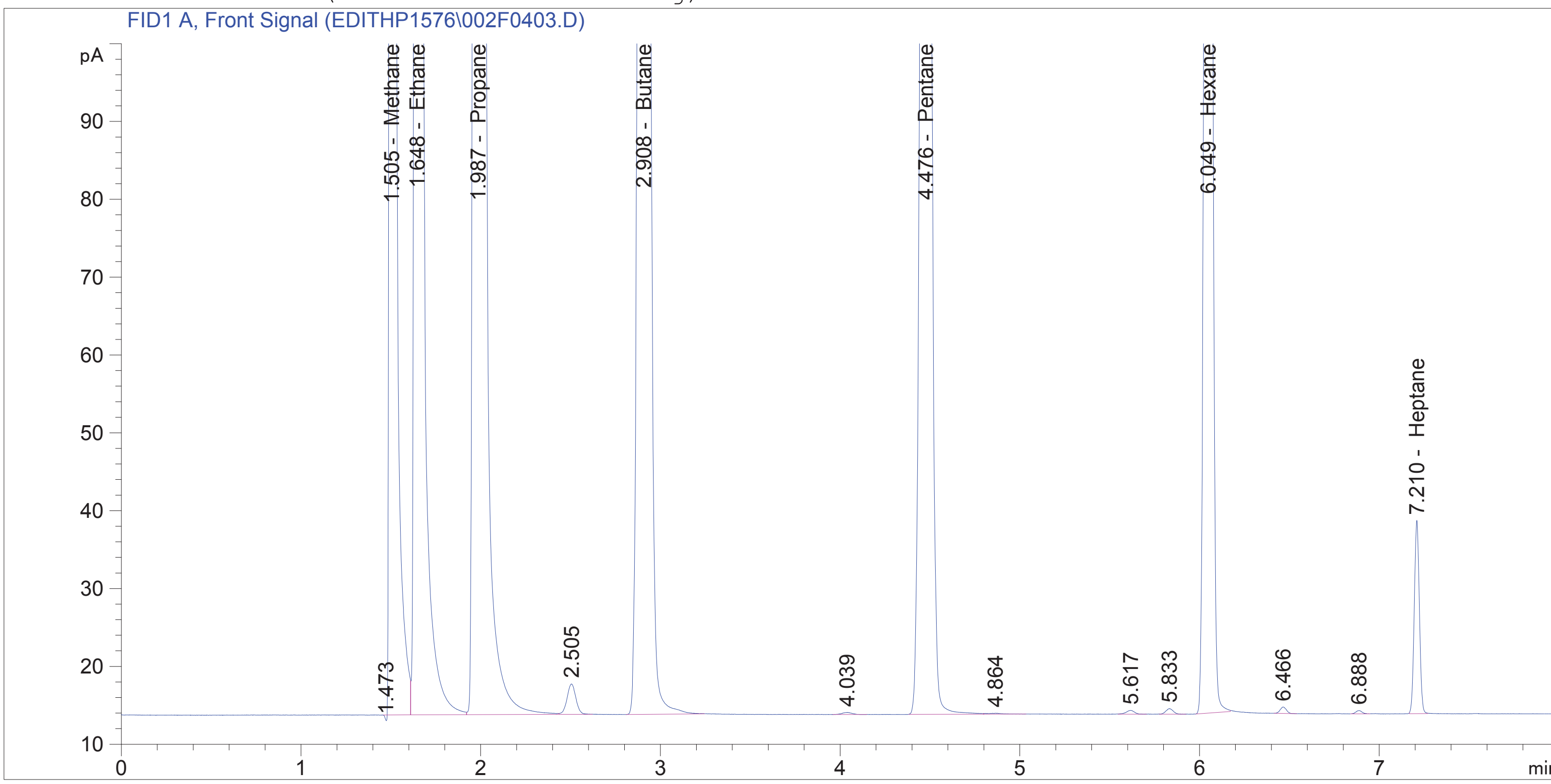
Totals : 2.5487e4

*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\002F0403.D
Sample Name: Edithp1576 #C6 ENV(1=1700,4=365.09)

===

Acq. Operator : Nicholas Traversa Seq. Line : 4
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/27/2018 10:39:25 AM Inj : 3
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1576\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1576.SC.SSIzip
ECM Version : 2 (modified after loading)



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.505	PV	2072.58789	3.63485	7533.53853		Methane
1.648	VV	3985.13354	1.87967	7490.73406		Ethane
1.987	VB	5984.51855	1.26137	7548.68422		Propane
2.908	BB	1579.82910	9.50870e-1	1502.21173		Butane
4.476	BB	955.99188	7.78190e-1	743.94350		Pentane
6.049	BB	841.28217	6.78804e-1	571.06611		Hexane
7.210	BB	48.86404	5.66747e-1	27.69355		Heptane

Totals : 2.54179e4 500

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.473	BP N	4.65565e-1	1.30084	6.05625e-1		?
2.505	BB	13.25031	1.27303	16.86803		?
4.039	BB	1.00364	1.30084	1.30557		?
4.864	BB	7.77603e-1	1.30084	1.01154		?
5.617	BB	1.54241	1.30084	2.00642		?
5.833	BB	1.98681	1.30084	2.58452		?
6.466	BB	1.98251	1.30084	2.57893		?
6.888	BB	1.01848	1.30084	1.32488		?

Uncalib. totals : 28.28552

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	13.25031	12.6265
as Pentane	3.600	5.250	1.78124	1.3794
as Hexane	5.250	6.600	5.51173	3.7116
as Heptane	6.600	16.300	1.01848	0.5796

Totals : 18.2971

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

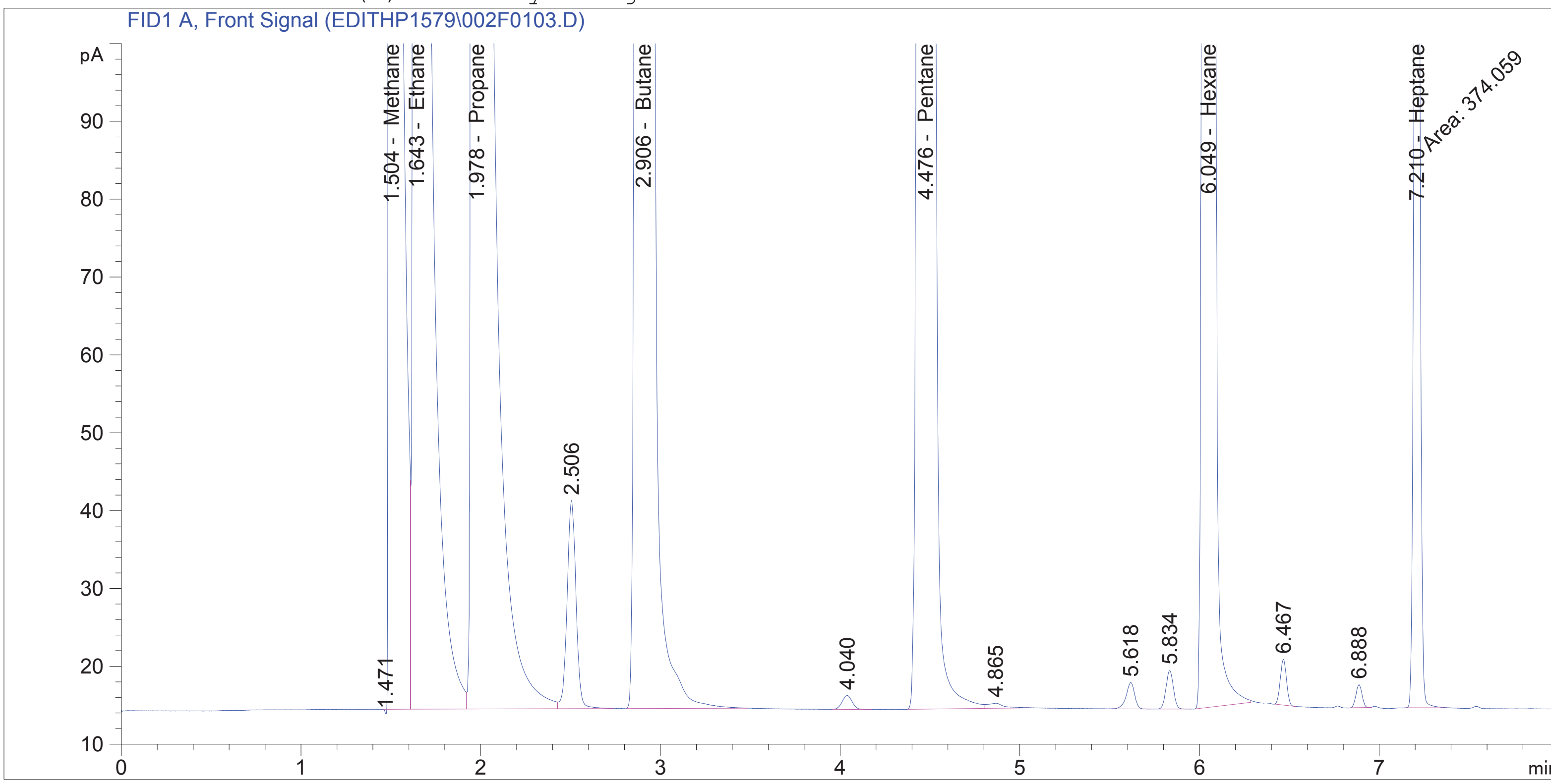
Name	Total Area [pA*s]	Amount [ppm]
as Butane	13.25031	12.6265
as Pentane	1.78124	1.3794
as Hexane	5.51173	3.7116
as Heptane	1.01848	0.5796
Methane	2072.58789	7.534e3
Ethane	3985.13354	7.491e3
Propane	5984.51855	7.549e3
Butane	1579.82910	1.502e3
Pentane	955.99188	743.9435
Hexane	841.28217	571.0661
Heptane	48.86404	27.6936

Totals : 2.5436e4

*** End of Report ***

===

Acq. Operator : Nicholas Traversa Seq. Line : 1
Acq. Instrument : Edith Location : Vial 2
Injection Date : 11/29/2018 10:57:57 AM Inj : 3
Inj Volume : 250 µl
Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1579\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1579.SC.SSIzip
ECM Version : 1 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.504	PV	1.40291e4	3.63468	5.09913e4		Methane
1.643	VV	2.69759e4	1.87965	5.07051e4		Ethane
1.978	VV	4.05528e4	1.26135	5.11512e4		Propane
2.906	BB	1.07922e4	9.50842e-1	1.02617e4		Butane
4.476	BV	6600.19092	7.78308e-1	5136.98344		Pentane
6.049	BB	6003.61182	6.79073e-1	4076.89241		Hexane
7.210	MM	374.05896	5.64658e-1	211.21534		Heptane

Totals : 1.72534e5

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.471	BP N	3.21462e-1	1.30084	4.18170e-1		?
2.506	VB	92.56744	1.26302	116.91411		?
4.040	BB	6.93200	1.28368	8.89847		?
4.865	VB	4.33401	1.29707	5.62152		?
5.618	BB	11.03230	1.27538	14.07036		?
5.834	BB	14.06593	1.27235	17.89681		?
6.467	BB	14.20183	1.27225	18.06822		?
6.888	BB	6.90864	1.28376	8.86901		?

Uncalib. totals : 190.75667

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	92.56744	88.2093
as Pentane	3.600	5.250	11.26601	8.7246
as Hexane	5.250	6.600	39.30007	26.4647
as Heptane	6.600	16.300	6.90864	3.9314

Totals : 127.3299

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	92.56744	88.2093
as Pentane	11.26601	8.7246
as Hexane	39.30007	26.4647
as Heptane	6.90864	3.9314
Methane	1.40291e4	5.099e4
Ethane	2.69759e4	5.071e4
Propane	4.05528e4	5.115e4
Butane	1.07922e4	1.026e4
Pentane	6600.19092	5.137e3
Hexane	6003.61182	4.077e3
Heptane	374.05896	211.2153

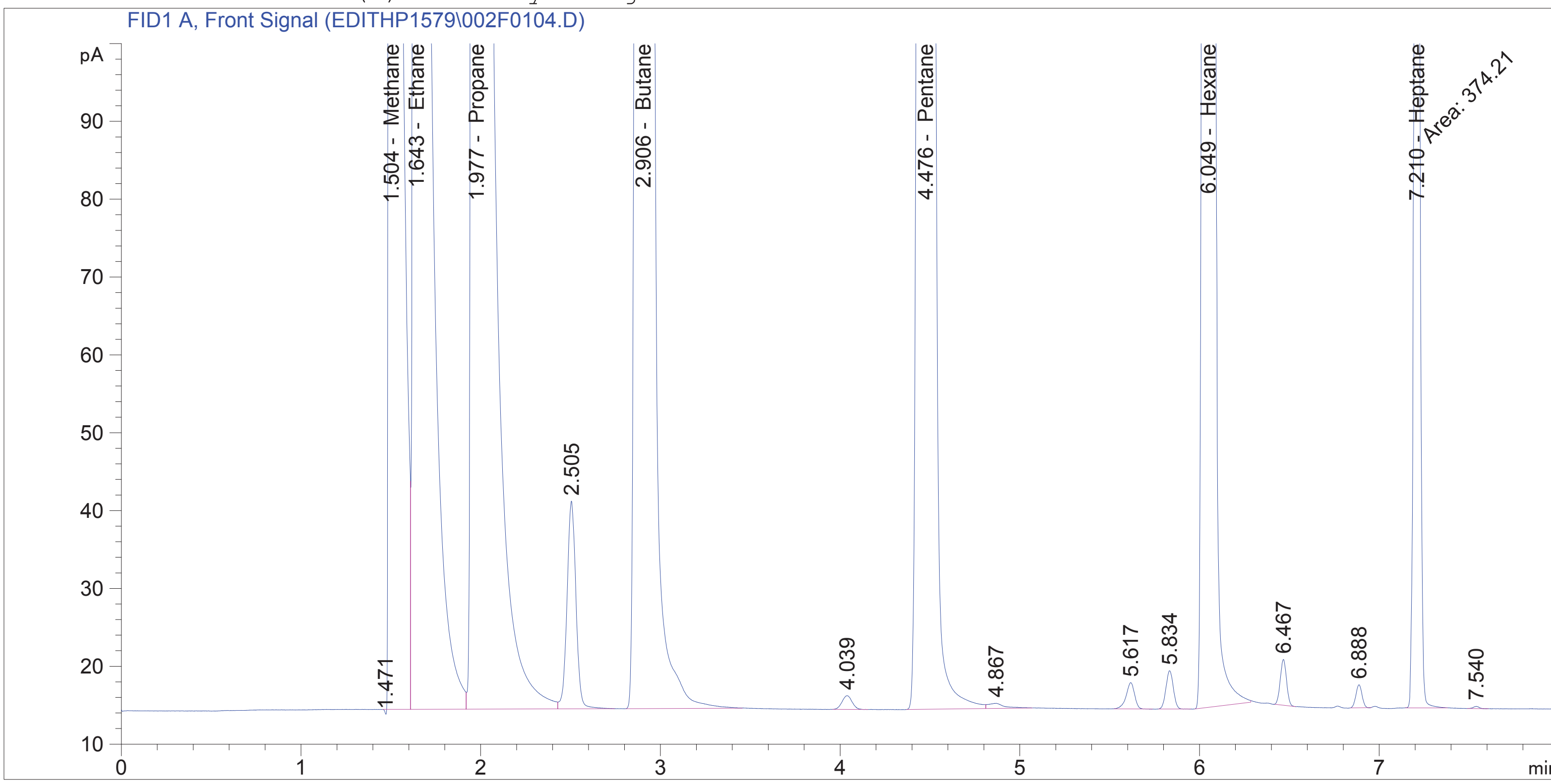
Totals : 1.7266e5

*** End of Report ***

===

Acq. Operator	: Nicholas Traversa	Seq. Line :	1
Acq. Instrument	: Edith	Location :	Vial 2
Injection Date	: 11/29/2018 11:14:40 AM	Inj :	4
		Inj Volume :	250 µl

Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1579\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1579.SC.SSIzip
ECM Version : 1 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report
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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.504	PV	1.39959e4	3.63468	5.08705e4		Methane
1.643	VV	2.69101e4	1.87965	5.05815e4		Ethane
1.977	VV	4.04556e4	1.26135	5.10286e4		Propane
2.906	BB	1.07665e4	9.50842e-1	1.02372e4		Butane
4.476	BV	6586.56982	7.78308e-1	5126.38176		Pentane
6.049	BB	5993.73096	6.79073e-1	4070.18215		Hexane
7.210	MM	374.21008	5.64658e-1	211.30063		Heptane

Totals : 1.72126e5

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.471	BP N	3.29428e-1	1.30084	4.28532e-1		?
2.505	VB	92.59371	1.26302	116.94726		?
4.039	BB	6.83739	1.28399	8.77914		?
4.867	VB	4.29990	1.29735	5.57850		?
5.617	BB	11.05684	1.27535	14.10131		?
5.834	BB	14.06647	1.27235	17.89749		?
6.467	BB	14.17977	1.27226	18.04040		?
6.888	BB	6.91731	1.28373	8.87995		?
7.540	BB	6.13440e-1	1.30084	7.97986e-1		?

Uncalib. totals : 191.45056

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Summed Peaks Report

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Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	92.59371	88.2343
as Pentane	3.600	5.250	11.13730	8.6249
as Hexane	5.250	6.600	39.30309	26.4667
as Heptane	6.600	16.300	7.53075	4.2854

Totals : 127.6114

1 Warnings or Errors :

Warning : Reference compound(s) not found

===

Final Summed Peaks Report

===

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	92.59371	88.2343
as Pentane	11.13730	8.6249
as Hexane	39.30309	26.4667
as Heptane	7.53075	4.2854
Methane	1.39959e4	5.087e4
Ethane	2.69101e4	5.058e4
Propane	4.04556e4	5.103e4
Butane	1.07665e4	1.024e4
Pentane	6586.56982	5.126e3
Hexane	5993.73096	4.070e3
Heptane	374.21008	211.3006

Totals : 1.7225e5

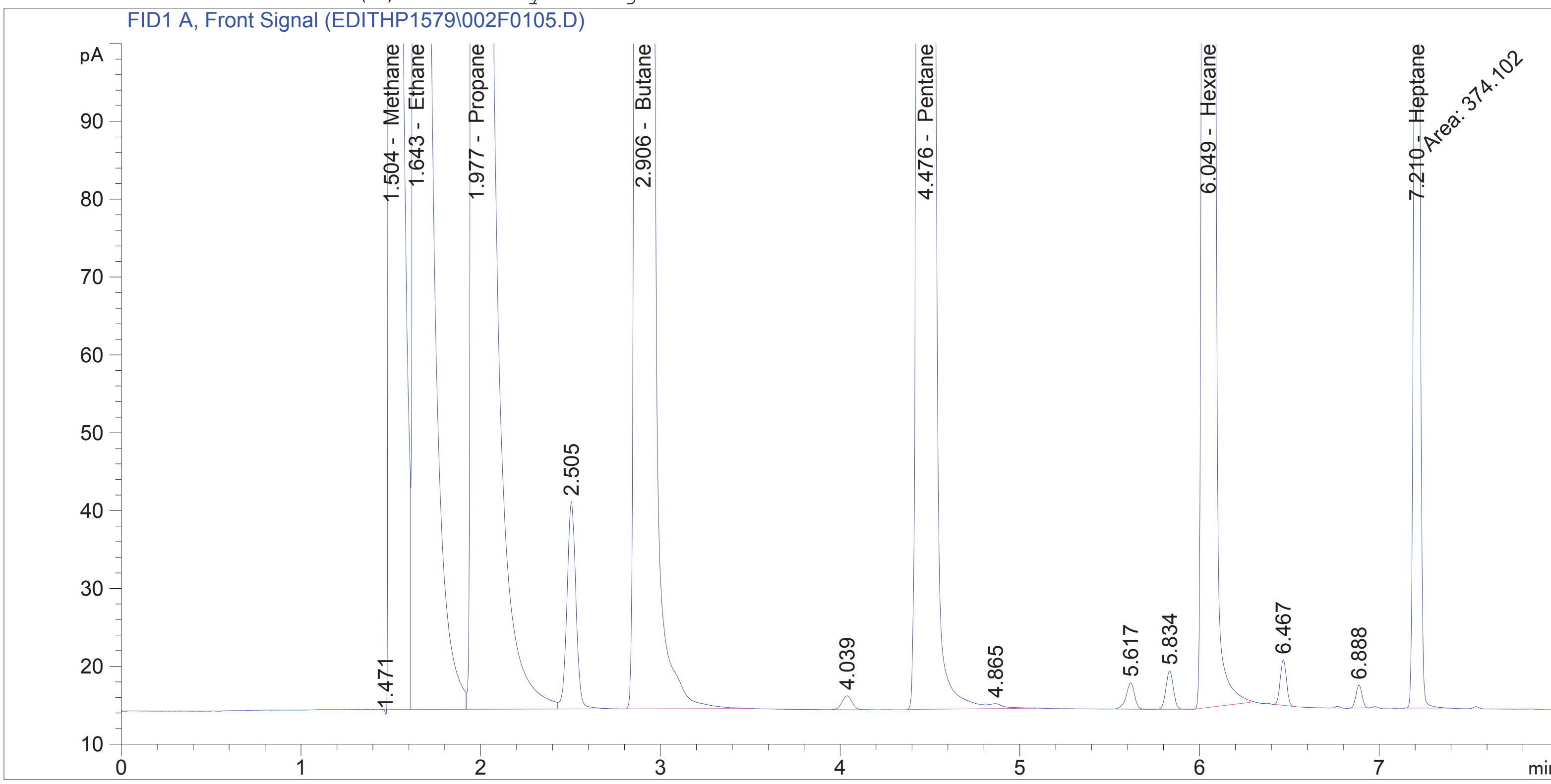
*** End of Report ***

Data File C:\GC\2018\EDITH\QUARTER 4\EDITHP1579\002F0105.D
Sample Name: Edithp1576 #C7 ENV(1=0,4=400)

===

Acq. Operator	: Nicholas Traversa	Seq. Line :	1
Acq. Instrument	: Edith	Location :	Vial 2
Injection Date	: 11/29/2018 11:31:21 AM	Inj :	5
		Inj Volume :	250 µl

Acq. Method : C:\GC\2018\EDITH\QUARTER 4\EDITHP1579\AQ_EDITHP503_HRVOC.M
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2018\EDITH\METHODS\EDITHP1576F_C1-C7.M
Last changed : 12/14/2018 9:51:41 AM by Nicole West
ECM Server : http://s022vas01/Enthalpy
ECM Operator : Nicole West
ECM Path : GC\2018\Edith\Quarter 4\EDITHP1579.SC.SSIzip
ECM Version : 1 (modified after loading)
Additional Info : Peak(s) manually integrated



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External Standard Report
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Sorted By : Signal
Calib. Data Modified : 12/14/2018 9:50:22 AM
Multiplier : 1.0000
Dilution : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.504	PV	1.39684e4	3.63468	5.07708e4		Methane
1.643	VV	2.68608e4	1.87965	5.04888e4		Ethane
1.977	VV	4.03811e4	1.26135	5.09346e4		Propane
2.906	BB	1.07484e4	9.50842e-1	1.02200e4		Butane
4.476	BV	6575.08643	7.78308e-1	5117.44390		Pentane
6.049	BB	5986.30518	6.79073e-1	4065.13918		Hexane
7.210	MM	374.10193	5.64658e-1	211.23959		Heptane

Totals : 1.71808e5

Uncalibrated Peaks : using compound Propane

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.471	BP N	3.22791e-1	1.30084	4.19899e-1		?
2.505	VB	92.41842	1.26302	116.72615		?
4.039	BB	6.87014	1.28388	8.82044		?
4.865	VB	4.41804	1.29639	5.72751		?
5.617	BB	11.11505	1.27527	14.17473		?
5.834	BB	14.08544	1.27234	17.92141		?
6.467	BB	14.09875	1.27233	17.93820		?
6.888	BB	6.88028	1.28385	8.83324		?

Uncalib. totals : 190.56158

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [ppm]
as Butane	2.500	3.600	92.41842	88.0673
as Pentane	3.600	5.250	11.28818	8.7418
as Hexane	5.250	6.600	39.29923	26.4641
as Heptane	6.600	16.300	6.88028	3.9153

Totals : 127.1884

1 Warnings or Errors :

Warning : Reference compound(s) not found

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
as Butane	92.41842	88.0673
as Pentane	11.28818	8.7418
as Hexane	39.29923	26.4641
as Heptane	6.88028	3.9153
Methane	1.39684e4	5.077e4
Ethane	2.68608e4	5.049e4
Propane	4.03811e4	5.093e4
Butane	1.07484e4	1.022e4
Pentane	6575.08643	5.117e3
Hexane	5986.30518	4.065e3
Heptane	374.10193	211.2396

Totals : 1.7194e5

*** End of Report ***

Airgas
an Air Liquide company

Airgas USA, LLC
24075 US Hwy 6
Stryker, OH 43557
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X08NI99C15A0079	Reference Number:	141-401159104-1
Cylinder Number:	CC703691	Cylinder Volume:	144.4 CF
Laboratory:	124 - Conley Stryker (SAP) - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Mar 21, 2018	Valve Outlet:	350
Lot Number:	141-401159104-1		

Expiration Date: Mar 21, 2021

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	102.0 PPM	+/- 2%
HEXANE	100.0 PPM	102.0 PPM	+/- 2%
METHANE	100.0 PPM	102.0 PPM	+/- 2%
N BUTANE	100.0 PPM	102.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	102.0 PPM	+/- 2%
N PENTANE	100.0 PPM	102.0 PPM	+/- 2%
PROPANE	100.0 PPM	102.0 PPM	+/- 2%
NITROGEN	Balance		

Victoria Bayliff

Approved for Release

Airgas
an Air Liquide company

Airgas USA, LLC
616 Miller Cut Off Rd.
LaPorte, TX 77571
281-842-6900
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED HYDROCARBON

Customer:	MONTROSE ENVIRONMENTAL GROUP - LA PORTE , TX		
Part Number:	X08NI83C15AC015	Reference Number:	126-401156534-1
Cylinder Number:	CC172313	Cylinder Volume:	37.2 CF
Laboratory:	124 - LaPorte Mix (SAP) - TX	Cylinder Pressure:	500 PSIG
Analysis Date:	Apr 10, 2018	Valve Outlet:	350
Lot Number:	126-401156534-1	Expiration Date:	Apr 10, 2021

Traceability Statement: Hydrocarbon Process standards are NIST traceable either directly by weight or by comparison to Airgas laboratory standards that are directly NIST traceable by weight.

CERTIFIED CONCENTRATIONS

Component	Requested Concentration	Reported Mole %	Accuracy
N HEPTANE	250.0 PPM	250.2 PPM	+/- 2%
HEXANE	0.4000 %	0.4000 %	+/- 2%
N PENTANE	0.5000 %	0.4995 %	+/- 2%
N BUTANE	1.000 %	1.001 %	+/- 2%
ETHANE	5.000 %	5.002 %	+/- 2%
METHANE	5.000 %	4.998 %	+/- 2%
PROPANE	5.000 %	5.012 %	+/- 2%
NITROGEN	Balance	Balance	

Notes:
MONTROSE ENVIRONMENTAL GROUP
PO#: 1017793

Approved for Release

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Agilent 7890A

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```
Oven
Equilibration Time                              0.3 min
Max Temperature                                 200 degrees C
Slow Fan                                        Disabled
Oven Program                                    On
    35 °C for 2.2 min
    then 15 °C/min to 70 °C for 0.07 min
Run Time                                        4.6033 min

Sample Overlap
Sample overlap is not enabled

Front SS Inlet H2
Mode                                            Split
Heater                                          On    200 °C
Pressure                                        On    5.1931 psi
Total Flow                                      On    15.6 mL/min
Septum Purge Flow                               On    3 mL/min
Gas Saver                                       Off
Split Ratio                                     5 :1
Split Flow                                      10.5 mL/min

Back SS Inlet H2
Mode                                            Split
Heater                                          On    200 °C
Pressure                                        On    14.935 psi
Total Flow                                      On    25.632 mL/min
Septum Purge Flow                               On    3 mL/min
Gas Saver                                       Off
Split Ratio                                     2 :1
Split Flow                                      15.088 mL/min

Column #1
Restek 10198Rtx-1 S/N 1452467
280 °C: 30 m x 320 µm x 4 µm
In: Front SS Inlet H2
Out: Front Detector FID

(Initial)                                       35 °C
Pressure                                        5.1931 psi
Flow                                            2.1 mL/min
Average Velocity                                39.91 cm/sec
Holdup Time                                     1.2528 min
Flow Program                                    On
    2.1 mL/min for 0 min
Run Time                                        4.6033 min

Column #2
Restek 19757Rt-Alumina BOND/Na2SO4
200 °C: 30 m x 320 µm x 5 µm
In: Back SS Inlet H2
Out: Back Detector FID

(Initial)                                       35 °C
Pressure                                        14.935 psi
Flow                                            7.5439 mL/min
Average Velocity                                110 cm/sec
Holdup Time                                     0.45455 min
Flow Program                                    On
    7.5439 mL/min for 0 min
```

Run Time	4.6033 min
Front Detector FID	
Heater	On 300 °C
H2 Flow	On 50 mL/min
Air Flow	On 450 mL/min
Makeup Flow	On 35 mL/min
Const Col + Makeup	Off
Flame	On
Electrometer	On
Back Detector FID	
Heater	On 200 °C
H2 Flow	On 50 mL/min
Air Flow	On 450 mL/min
Makeup Flow	On 35 mL/min
Const Col + Makeup	Off
Flame	On
Electrometer	On
Valve 1	
Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min
Valve 2	
Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min
Valve Box	
Heater	On 150 °C
Signals	
Signal #1: Front Signal	Save On 20 Hz
Signal #2: Test Plot	Save Off 50 Hz
Signal #3: Back Signal	Save On 20 Hz
Signal #4: Test Plot	Save Off 50 Hz

method: C:\GC\2018\EDITH\QUARTER 4\EDITHP1554\AQ_EDITHP503_HRVOC.M
Modified on: 8/14/2017 at 12:18:06 PM

Agilent 7890A

Oven

Equilibration Time	0.3 min
Max Temperature	200 degrees C
Slow Fan	Disabled
Oven Program	On

35 °C for 2.2 min
#1 then 15 °C/min to 70 °C for 0.07 min
#2 then 30 °C/min to 180 °C for 1 min

Run Time	9.27 min

Sample Overlap
Sample overlap is not enabled

Front SS Inlet H2

Mode	Split
Heater	On 200 °C
Pressure	On 5.1931 psi
Total Flow	On 15.6 mL/min
Septum Purge Flow	On 3 mL/min
Gas Saver	Off
Split Ratio	5 :1
Split Flow	10.5 mL/min

Back SS Inlet H2

Mode	Split
Heater	On 200 °C
Pressure	On 14.935 psi
Total Flow	On 25.632 mL/min
Septum Purge Flow	On 3 mL/min
Gas Saver	Off
Split Ratio	2 :1
Split Flow	15.088 mL/min

Column #1
Restek 10198Rtx-1 S/N 1452467
280 °C: 30 m x 320 µm x 4 µm
In: Front SS Inlet H2
Out: Front Detector FID

(Initial)	35 °C
Pressure	5.1931 psi
Flow	2.1 mL/min
Average Velocity	39.91 cm/sec
Holdup Time	1.2528 min
Flow Program	On

2.1 mL/min for 0 min

Run Time	9.27 min

Column #2
Restek 19757Rt-Alumina BOND/Na2SO4
200 °C: 30 m x 320 µm x 5 µm
In: Back SS Inlet H2
Out: Back Detector FID

(Initial)	35 °C
Pressure	14.935 psi
Flow	7.5439 mL/min
Average Velocity	110 cm/sec
Holdup Time	0.45455 min
Flow Program	On

7.5439 mL/min for 0 min

Run Time	9.27 min
Front Detector FID	
Heater	On 300 °C
H2 Flow	On 50 mL/min
Air Flow	On 450 mL/min
Makeup Flow	On 35 mL/min
Const Col + Makeup	Off
Flame	On
Electrometer	On
Back Detector FID	
Heater	On 200 °C
H2 Flow	On 50 mL/min
Air Flow	On 450 mL/min
Makeup Flow	On 35 mL/min
Const Col + Makeup	Off
Flame	On
Electrometer	On
Valve 1	
Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min
Valve 2	
Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min
Valve Box	
Heater	On 150 °C
Signals	
Signal #1: Front Signal	Save On 20 Hz
Signal #2: Test Plot	Save Off 50 Hz
Signal #3: Back Signal	Save On 20 Hz
Signal #4: Test Plot	Save Off 50 Hz

method: C:\GC\2017\EDITH\METHODS\AQ_EDITHP503_HRVOC_LONG.M
Modified on: 8/14/2017 at 12:18:56 PM

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Agilent 7890A

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Oven

Equilibration Time	0.3 min
Max Temperature	200 degrees C
Slow Fan	Disabled
Oven Program	On
35 °C for 2.2 min	
#1 then 15 °C/min to 70 °C for 0.07 min	
#2 then 30 °C/min to 180 °C for 10 min	
Run Time	18.27 min

Sample Overlap
Sample overlap is not enabled

Front SS Inlet H2

Mode	Split
Heater	On 200 °C
Pressure	On 5.1931 psi
Total Flow	On 15.6 mL/min
Septum Purge Flow	On 3 mL/min
Gas Saver	Off
Split Ratio	5 :1
Split Flow	10.5 mL/min

Back SS Inlet H2

Mode	Split
Heater	On 200 °C
Pressure	On 14.935 psi
Total Flow	On 25.632 mL/min
Septum Purge Flow	On 3 mL/min
Gas Saver	Off
Split Ratio	2 :1
Split Flow	15.088 mL/min

Column #1
Restek 10198Rtx-1 S/N 1452467
280 °C: 30 m x 320 µm x 4 µm
In: Front SS Inlet H2
Out: Front Detector FID

(Initial)	35 °C
Pressure	5.1931 psi
Flow	2.1 mL/min
Average Velocity	39.91 cm/sec
Holdup Time	1.2528 min
Flow Program	On
2.1 mL/min for 0 min	
Run Time	18.27 min

Column #2
Restek 19757Rt-Alumina BOND/Na2SO4
200 °C: 30 m x 320 µm x 5 µm
In: Back SS Inlet H2
Out: Back Detector FID

(Initial)	35 °C
Pressure	14.935 psi
Flow	7.5439 mL/min
Average Velocity	110 cm/sec
Holdup Time	0.45455 min
Flow Program	On

7.5439 mL/min for 0 min

Run Time	18.27 min
Front Detector FID	
Heater	On 300 °C
H2 Flow	On 50 mL/min
Air Flow	On 450 mL/min
Makeup Flow	On 35 mL/min
Const Col + Makeup	Off
Flame	On
Electrometer	On
Back Detector FID	
Heater	On 200 °C
H2 Flow	On 50 mL/min
Air Flow	On 450 mL/min
Makeup Flow	On 35 mL/min
Const Col + Makeup	Off
Flame	On
Electrometer	On
Valve 1	
Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min
Valve 2	
Gas Sampling Valve	Unknown
GSV Loop Volume	0.25 mL
Load Time	1.5 min
Inject Time	0.5 min
Valve Box	
Heater	On 150 °C
Signals	
Signal #1: Front Signal	Save On 20 Hz
Signal #2: Test Plot	Save Off 50 Hz
Signal #3: Back Signal	Save On 20 Hz
Signal #4: Test Plot	Save Off 50 Hz

This Is The Last Page Of This Report.

ENTHALPY
ANALYTICAL

APPENDIX III-E
Calibration Gas Cylinder Certificates

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI79E15A0088	Reference Number:	122-401268406-1
Cylinder Number:	EB0066823	Cylinder Volume:	151.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Aug 06, 2018

Expiration Date: Aug 06, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.952 %	G1	+/- 0.6% NIST Traceable	08/06/2018
OXYGEN	11.00 %	11.05 %	G1	+/- 0.4% NIST Traceable	08/06/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060638	CC414571	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 09, 2019
NTRM	09060212	CC262381	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 08, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Jul 25, 2018
Horiba MPA510 O2 41499150042	Paramagnetic	Jul 25, 2018

Triad Data Available Upon Request

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000019256

PGVP ID: F32016

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 86503230
Customer P. O. Number: 14849
Customer Reference Number:

Fill Date	12/12/2016
Part Number	NI CD18O5ZE-AS
Lot Number	301733347606
Cylinder Style & Outlet	AS CGA 590
Cylinder Pressure & Volume	2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		**12/16/2024**	NIST Traceable
Cylinder Number:		**CC200302**	Analytical Uncertainty:
18.20	**%**	**CARBON DIOXIDE**	**± 0.4 %**
21.80	**%**	**OXYGEN**	**± 0.1 %**
	Balance	**NITROGEN**	

Certification Information: *Certification Date:* 12/16/2016 *Term:* 96 Months *Expiration Date:* 12/16/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: CARBON DIOXIDE

Requested Concentration:	18 %
Certified Concentration:	18.20 %
Instrument Used:	SIEMENS ULTRAMAT 5E SN: D2-412
Analytical Method:	NON-DISPERSIVE INFRARED
Last Multipoint Calibration:	12/7/2016

Reference Standard Type:	GMIS
Ref. Std. Cylinder # :	CC157836
Ref. Std. Conc:	19.99 %
Ref. Std. Traceable to SRM # :	2745a
SRM Sample # :	9-7-34
SRM Cylinder # :	CAL016129

First Analysis Data: Date: 12/16/2016

Z:	0	R:	19.99	C:	18.16	Conc:	18.2
R:	19.92	Z:	0	C:	18.16	Conc:	18.2
Z:	0	C:	18.16	R:	19.99	Conc:	18.2

UOM: % Mean Test Assay: 18.2 %

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: % Mean Test Assay: 0 %

2. Component: OXYGEN

Requested Concentration:	21.75 %
Certified Concentration:	21.80 %
Instrument Used:	SIEMENS OXYMAT 5F
Analytical Method:	PARAMAGNETIC
Last Multipoint Calibration:	12/7/2016

Reference Standard Type:	GMIS
Ref. Std. Cylinder # :	CC8852
Ref. Std. Conc:	21.32%
Ref. Std. Traceable to SRM # :	2659A
SRM Sample # :	71-E-24
SRM Cylinder # :	FF18300

First Analysis Data: Date: 12/16/2016

Z:	0	R:	21.32	C:	21.8	Conc:	21.8
R:	21.32	Z:	0	C:	21.8	Conc:	21.8
Z:	0	C:	21.8	R:	21.32	Conc:	21.8

UOM: % Mean Test Assay: 21.8 %

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: % Mean Test Assay: 0 %

Analyzed by: Jessica Goodman

Jessica Goodman

Certified by:

Jeff Gosner

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000019320

PGVP ID: F32016

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 86501794
Customer P. O. Number: 14848
Customer Reference Number:

Fill Date: 12/16/2016
Part Number: NI CO45ME-AS
Lot Number: 304613351605
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		12/21/2024	NIST Traceable
Cylinder Number:		LCCO-SA15768	Analytical Uncertainty:
46.1	ppm	CARBON MONOXIDE	± 0.5 %
	Balance	NITROGEN	

Certifcation Information: *Certification Date:* 12/21/2016 *Term:* 96 Months *Expiration Date:* 12/21/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. **Component:** CARBON MONOXIDE

Requested Concentration	45 ppm
Certified Concentration	46.1 ppm
Instrument Used	HORIBA VIA-510,S/N 577172041
Analytical Method	NON-DISPERSIVE INFRARED
Last Multipoint Calibration	12/15/2016

Reference Standard Type	GMIS
Ref. Std. Cylinder #	CC170310
Ref. Std. Conc	75.2 PPM
Ref. Std. Traceable to SRM #	1679C
SRM Sample #	03-J-47
SRM Cylinder #	CAL018062

First Analysis Data:						**Date:**	12/21/2016
Z:	0	R:	75.2	C:	46.2	Conc:	46.1
R:	75.2	Z:	0	C:	46.2	Conc:	46.1
Z:	0	C:	46.2	R:	75.2	Conc:	46.1
UOM:	PPM			**Mean Test Assay:**			46.1 PPM

Second Analysis Data:						**Date:**	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM			**Mean Test Assay:**			0 PPM

Analyzed by: Jessica Goodman

Certified by: Megha Patel

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000006513

PGVP ID: F32013

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PDI WHSE RALEIGH
2807 GRESHAM LAKE RD
RALEIGH NC 276160

Praxair Order Number: 04602771
Customer P. O. Number: 12593 99
Customer Reference Number:

Fill Date: 11/15/2013
Part Number: NI CO90ME-AS
Lot Number: 304121319303
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**11/19/2021**		NIST Traceable
Cylinder Number:	**CC14366**		Analytical Uncertainty:
89.5	**ppm**	**CARBON MONOXIDE**	**± 1 %**
	Balance	**NITROGEN**	

Certifcation Information: *Certification Date:* 11/19/2013 *Term:* 96 Months *Expiration Date:* 11/19/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1 . Component: CARBON MONOXIDE

Requested Concentration: 90 ppm
Certified Concentration: 89.5 ppm
Instrument Used: MKS 2031
Analytical Method: FTIR
Last Multipoint Calibration: 10/21/2013

Reference Standard Type:
Ref. Std. Cylinder # : SA2779
Ref. Std. Conc: 505 PPM
Ref. Std. Traceable to SRM # : 1680b
SRM Sample # :
SRM Cylinder # :

First Analysis Data:						**Date:**	11/19/2013
Z: 0.029		**R:** 504.54		**C:** 89.54		**Conc:**	89.42
R: 506.5		**Z:** -0.04		**C:** 89.55		**Conc:**	89.43
Z: -0.07		**C:** 89.79		**R:** 506.4		**Conc:**	89.67
UOM: PPM				**Mean Test Assay:**			89.51 PPM

Second Analysis Data:			**Date:**	
Z: 0	**R:** 0	**C:** 0	**Conc:**	0
R: 0	**Z:** 0	**C:** 0	**Conc:**	0
Z: 0	**C:** 0	**R:** 0	**Conc:**	0
UOM: PPM		**Mean Test Assay:**		0 PPM

Analyzed by: Jeff Gosner

Certified by: Judith Imperial

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000015392

PGVP ID: F32016

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 70027764
Customer P. O. Number:
Customer Reference Number:

Fill Date:	1/29/2016
Part Number:	EV AIPR25 5MEAS
Lot Number:	304322029605
Cylinder Style & Outlet:	AS CGA 590
Cylinder Pressure & Volume:	2000 psig 140 cu. ft

Certified Concentration:

Expiration Date: 2/2/2024
Cylinder Number: CC154735

NIST Traceable
Analytical Uncertainty:

25.74 ppm PROPANE ± 0.8 %
Balance AIR

Certification Information: Certification Date: 2/2/2016 Term: 96 Months Expiration Date: 2/2/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1 . Component: PROPANE

Requested Concentration:	25.5 ppm
Certified Concentration:	25.74 ppm
Instrument Used:	GOW MAC 600
Analytical Method:	Flame Ionization Detector
Last Multipoint Calibration:	2/2/2016

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	CC107531
Ref. Std. Conc:	30.05 PPM
Ref. Std. Traceable to SRM #:	1667b
SRM Sample #:	83-I-52
SRM Cylinder #:	XF004079B

First Analysis Data: Date: 2/2/2016

Z:	0	R:	30.1	C:	25.78	Conc:	25.78
R:	30.06	Z:	0	C:	25.71	Conc:	25.69
Z:	0	C:	25.77	R:	30.05	Conc:	25.75

UOM: PPM Mean Test Assay: 25.74 PPM

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM Mean Test Assay: 0 PPM

Analyzed by: Jeff Gosner

Certified by: Judith Imperial

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax (714) 542-6689
PGVPID: F22016

DocNumber: 000089651

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PXPKG RALEIGH NC HS
2807 GRESHAM LAKES RD
RALEIGH NC 27615

Praxair Order Number: 33652518
Customer P. O. Number: 72163933-799700
Customer Reference Number:

Fill Date: 2/3/2016
Part Number: AI NX50ME-AS
Lot Number: 109603402
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:		2/12/2019	NIST Traceable
Cylinder Number:		CC266282	Analytical Uncertainty:
50.2	ppm	NITROGEN DIOXIDE (as NOx)	± 1 %
	Balance	AIR	

NO = 0.1 ppm NO for Reference Only

Certifcation Information: *Certification Date:* 2/12/2016 *Term:* 36 Months *Expiration Date:* 2/12/2019

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: NITROGEN DIOXIDE (as NOx)

Requested Concentration: 50 ppm
Certified Concentration: 50.2 ppm
Instrument Used: Thermo Env. 42i-HL
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 1/27/2016

Reference Standard Type: GMIS
Ref Std Cylinder #: CC308931
Ref Std Conc: 97.3 ppm
Ref Std Traceable to SRM #: 2660a
SRM Sample #: 2660C-46
SRM Cylinder #: CAL016162

First Analysis Data:						Date:	2/5/2016
Z:	0	R:	95.6	C:	49.3	Conc:	50.177
R:	95.6	Z:	0	C:	49.5	Conc:	50.38
Z:	0	C:	49.4	R:	95.6	Conc:	50.278
UOM:	ppm			Mean Test Assay:			50.278 ppm

Second Analysis Data:						Date:	2/12/2016
Z:	0	R:	95.6	C:	49.2	Conc:	50.075
R:	95.6	Z:	0	C:	49.4	Conc:	50.278
Z:	0	C:	49.3	R:	95.6	Conc:	50.177
UOM:	ppm			Mean Test Assay:			50.177 ppm

Analyzed by: Henry Koung

Certified by: Matthew Angerer

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0581	Reference Number:	122-401180044-1
Cylinder Number:	CC341990	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	350
Gas Code:	PPN,BALN	Certification Date:	Apr 17, 2018

Expiration Date: Apr 17, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	85.00 PPM	85.84 PPM	G1	+/- 0.8% NIST Traceable	04/17/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	0010613	AAL18527	49.8 PPM PROPANE/AIR	+/- 0.6%	May 23, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Mar 22, 2018

Triad Data Available Upon Request

Approved for Release

PRAXAIR
Making our planet more productive

DocNumber: 230051

Praxair Distribution, Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22018

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Certificate Issuance Date: 02/12/2019
Praxair Order Number: 69497584
Part Number: NI NO48MER-AS

Fill Date: 11/21/2018
Lot Number: 70086832502
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure and Volume: 2000 psig 140 ft3

Certified Concentration

Expiration Date:	12/13/2021	NIST Traceable
Cylinder Number:	SA6170	Expanded Uncertainty
49.8 ppm	Nitric oxide	± 0.9 %
Balance	Nitrogen	

ProSpec EZ Cert

For Reference Only: *NOx 49.9 ppm*

Certification Information: *Certification Date:* 12/13/2018 *Term:* 36 Months *Expiration Date:* 12/13/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1
Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. ***Component:*** Nitric oxide

Requested Concentration: 48 ppm
Certified Concentration: 49.8 ppm
Instrument Used: Thermo Electron 42i-LS S/N 1030645077
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 11/27/2018

Reference Standard: Type / Cylinder #: NTRM / CC506530
Concentration / Uncertainty: 49.23 ppm ±0.853%
Expiration Date: 07/18/2022
Traceable to: SRM # / Sample # / Cylinder #: NTRM / 18070118 / NTRM CC506530
SRM Concentration / Uncertainty: 49.23 ppm / 0.42 ppm
SRM Expiration Date: 07/18/2022

First Analysis Data:							Date	12/04/2018
Z:	0	R:	49.2	C:	49.7	Conc:	49.8	
R:	49.1	Z:	0	C:	49.6	Conc:	49.7	
Z:	0	C:	49.7	R:	49.2	Conc:	49.8	
UOM:	ppm			Mean Test Assay:		49.7	ppm	

Second Analysis Data:							Date	12/13/2018
Z:	0	R:	49.3	C:	50	Conc:	49.9	
R:	49.3	Z:	0	C:	50	Conc:	49.9	
Z:	0	C:	50	R:	49.3	Conc:	49.9	
UOM:	ppm			Mean Test Assay:		49.9	ppm	

Analyzed By Amelia Real

Certified By Henry Koung (PB) Henry Koung

PRAXAIR

Praxair Distribution Mid-Atlantic
One Steel Road East,
Morrisville, PA 19067
Tel: (800) 638-6360 Fax:(215) 736 5240

DocNumber: 000021376

PGVP ID: F32017

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC
100 LOGAN COURT
ANGIER NC 27501

Praxair Order Number: 92286180
Customer P. O. Number: 0050001228
Customer Reference Number:

Fill Date: 6/10/2017
Part Number: NI NO90ME-AS
Lot Number: 304513161704
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	6/21/2025		NIST Traceable
Cylinder Number:	CC200174		Analytical Uncertainty:
89.5 ppm	NITRIC OXIDE		± 0.5 %
Balance	NITROGEN		

NOx = 90.0 ppm NOx for Reference Only

Certification Information: Certification Date: 6/21/2017 Term: 96 Months Expiration Date: 6/21/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: NITRIC OXIDE

Requested Concentration: 90 ppm
Certified Concentration: 89.5 ppm
Instrument Used: TECO MODEL 42I, S/N: 0820017513
Analytical Method: CHEMILUMINESCENCE
Last Multipoint Calibration: 6/13/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC352709
Ref. Std. Conc: 95.0 PPM
Ref. Std. Traceable to SRM #: 1684B
SRM Sample #: 44-T-48
SRM Cylinder #: FF9239

First Analysis Data: Date: 6/14/2017

Z:	0	R:	95	C:	89.5	Conc:	89.5
R:	95	Z:	0	C:	89.4	Conc:	89.4
Z:	0	C:	89.4	R:	95	Conc:	89.4

UOM: PPM Mean Test Assay: 89.4 PPM

Second Analysis Data: Date: 6/21/2017

Z:	0	R:	95	C:	90	Conc:	89.7
R:	95.4	Z:	0	C:	90	Conc:	89.7
Z:	0	C:	90	R:	95.4	Conc:	89.7

UOM: PPM Mean Test Assay: 89.7 PPM

Analyzed by: Jessica Goodman

Certified by: Megha Patel

APPENDIX III-F
Sampling Equipment Calibration Sheets

APEX INSTRUMENTS METHOD 5 PRE-TEST CONSOLE CALIBRATION
USING CALIBRATED CRITICAL ORIFICES
5-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522
Console Serial Number	909033
DGM Model Number	RW 110
DGM Serial Number	972787

Calibration Conditions			
Date	**Time**	02/14/19	13:50
Barometric Pressure		29.61	in Hg
Theoretical Critical Vacuum[1]		13.98	in Hg
Calibration Technician		JBG	

Factors/Conversions		
Std Temp	528	^oR
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]**For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.**

[2]**The Critical Orifice Coefficient, K', must be entered in English units, ($ft^3 \cdot {}^oR^{1/2}$)/(in.Hg*min).**

Calibration Data

Run Time	**Metering Console**					**Critical Orifice**				
Elapsed	**DGM Orifice ΔH**	**Volume Initial**	**Volume Final**	**Outlet Temp Initial**	**Outlet Temp Final**	**Serial Number**	**Coefficient**	**Amb Temp Initial**	**Amb Temp Final**	**Actual Vacuum**
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	^oF	^oF		see above2	^oF	^oF	in Hg
18.50	0.33	187.000	192.865	64	65	FO 40	0.2380	66	65	19.0
10.50	0.69	200.400	205.253	66	66	FO 48	0.3488	66	67	17.0
11.50	1.20	193.200	200.215	65	66	FO 55	0.4594	65	66	17.0
8.00	2.00	205.600	211.894	66	67	FO 63	0.5906	67	70	15.0
9.00	3.60	212.200	221.692	67	67	FO 73	0.8063	70	68	14.0

Results

Standardized Data				**Dry Gas Meter**				
				Calibration Factor		**Flowrate**	**ΔH @**	
Dry Gas Meter		**Critical Orifice**		**Value**	**Variation**	**Std & Corr**	**0.75 SCFM**	**Variation**
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	($\Delta H@$)	($\Delta\Delta H@$)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
5.848	0.316	5.687	0.307	0.9725	-0.003	0.307	1.962	0.033
4.829	0.460	4.726	0.450	0.9786	0.003	0.450	1.911	-0.017
6.996	0.608	6.824	0.593	0.9754	-0.001	0.593	1.919	-0.009
6.278	0.785	6.086	0.761	0.9694	-0.007	0.761	1.950	0.022
9.496	1.055	9.342	1.038	0.9838	0.008	1.038	1.898	-0.030
				0.9760	Y Average		1.928	$\Delta H@$ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature: Jonas Gilbert Date: 2/14/19

METHOD 5 POST-TEST CONSOLE CALIBRATION USING CALIBRATED CRITICAL ORIFICES
3-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522
Console Serial Number	909033
DGM Model Number	RW 110
DGM Serial Number	328893

Calibration Conditions			
Date	**Time**	03/19/19	10:05
Barometric Pressure		30.6	in Hg
Theoretical Critical Vacuum[1]		14.4	in Hg
Calibration Technician		JBG	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

[2]The Critical Orifice Coefficient, K', must be entered in English units, (ft3*oR1/2)/(in.Hg*min).

Calibration Data										
Run Time	**Metering Console**					**Critical Orifice**				
Elapsed	**DGM Orifice ΔH**	**Volume Initial**	**Volume Final**	**Outlet Temp Initial**	**Outlet Temp Final**	**Serial Number**	**Coefficient**	**Amb Temp Initial**	**Amb Temp Final**	**Actual Vacuum**
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})		K'	(t_{amb})	(t_{amb})	in. Hg
min	in H_2O	cubic feet	cubic feet	°F	°F	FO		°F	°F	
7.0	2.00	911.50	916.982	58	68	FO-63	0.5906	63	63	20.00
13.0	2.00	916.982	927.173	60	68	FO-63	0.5906	63	65	20.00
9.0	2.00	927.173	934.257	63	68	FO-63	0.5906	65	65	20.00

Results								
Standardized Data				**Dry Gas Meter**				
Dry Gas Meter		**Critical Orifice**		**Calibration Factor**		**Flowrate**	0.3488	
				Value	**Variation**	**Std & Corr**	**0.75 SCFM**	**Variation**
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	($\Delta H@$)	($\Delta\Delta H@$)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
5.687	0.812	5.645	0.806	0.993	0.000	0.806	1.805	0.002
10.553	0.812	10.477	0.806	0.993	0.001	0.806	1.804	0.001
7.314	0.813	7.248	0.805	0.991	-0.001	0.805	1.801	-0.002
Pretest Gamma	0.9760	**% Deviation**	1.7	0.992	Y Average		1.803	$\Delta H@$ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature _______ Elias Gilbert

Date ________ 3/19/2019

Air Control Techniques, P.C.

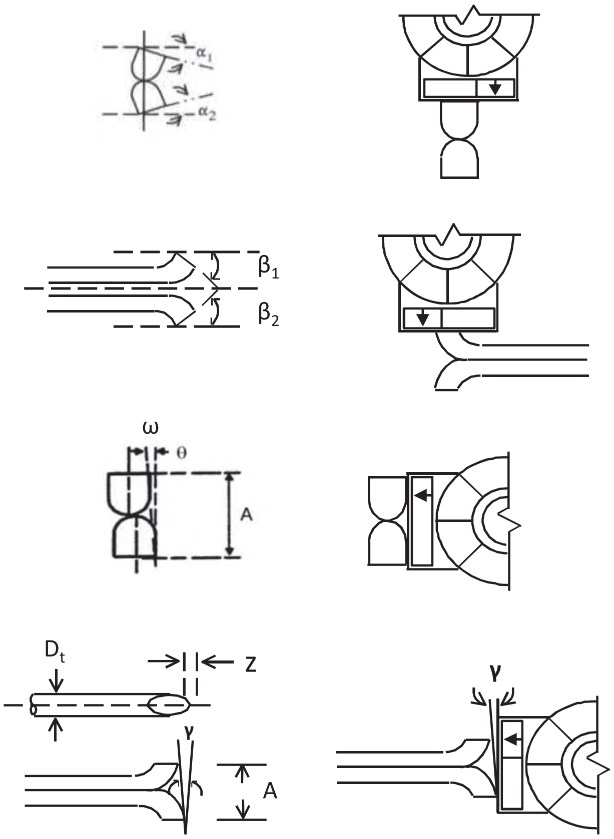
Type S Pitot Tube Inspection

GENERAL INFORMATION

Probe ID	4A	Personnel	EBG
Date	3/19/2019	Coefficient Value	0.84

PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no



α_1	0	≤ ±10°
α_2	2	≤ ±10°
β_1	-1	≤ ±5°
β_2	0	≤ ±5°
γ	0.0087	
θ	0.0524	
$z = A \tan(\gamma)$	0.0200	≤ ±⅛"
$\omega = A \tan(\theta)$	0.0475	≤ ±1⁄32"
D_t	0.375	

(3/16" < D_t < ⅜" Recommended)

A	0.906
P_A P_B	1.208

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type: Hg Thermometer   Ref. ID: Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	32	32	0
Ambient	67	67	0
Hot Plate	232	231	1
		Maximum Temp. Difference, °F	1

Air Control Techniques, P.C.

Type S Pitot Tube Inspection

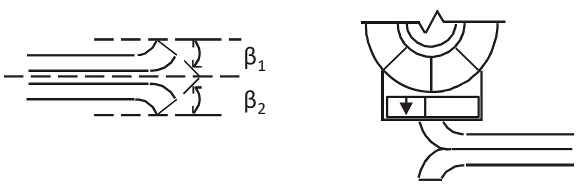
GENERAL INFORMATION

Probe ID	4B	Personnel	EJG
Date	3/19/2019	Coefficient Value	0.84

PITOT TUBE INSPECTION

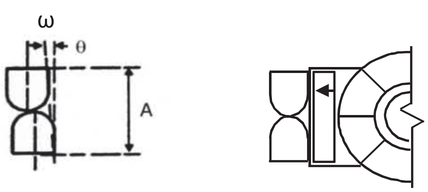
Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no

α_1	1	$\leq \pm 10°$
α_2	0	$\leq \pm 10°$



β_1	1	$\leq \pm 5°$
β_2	2	$\leq \pm 5°$

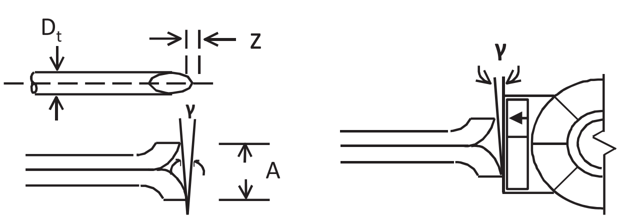
γ	0
θ	3



$z = A \tan(\gamma)$	0.00	$\leq \pm \frac{1}{8}$"
$\omega = A \tan(\theta)$	0.049970818	$\leq \pm \frac{1}{32}$"

D_t	0.3735

(3/16" < D_t < ⅜" Recommended)



A	0.9535
P_A / P_B	1.28

(1.05 < P/D_t < 1.50 Recommended)

APPENDIX III-G
Process Data

March 7, 2019 Pine 85% wt. processed

Appendix III-G, Table 1. Process Data, RCO 1, March 7, 2019, Run 1						
Process Parameter	9:10 a.m.	9:25 a.m.	9:40 a.m.	9:55 a.m.	10:10 a.m.	Average
Run Time 9:10-10:15 a.m.						
Short Tons/hour (wet basis)	41.7	41.7	41.7	41.7	41.7	41.7
Production, ODT/hour	39.5	39.5	39.5	39.5	39.5	39.5
Pellet Moisture Content, % weight	5.16	5.16	5.16	5.16	5.16	5.16
RCO 1 Differential Pressure, in. w.c.	1.1	1.2	1.2	1.2	1.2	1.2
RCO CC 1 SP, ºF	750	750	750	750	750	750
RCO CC 1 PV,º F	948	950	947	946	944	947
Cyclofilter 1 Diff. Pressure., in w.c.	0.6	0.5	0.5	0.6	0.6	0.6
Cyclofilter 2 Diff. Pressure, in w.c.	0.5	0.5	0.4	0.2	0.2	0.4
Cyclofilter 3 Diff. Pressure, in w.c.	0.2	0.2	0.2	0.2	0.2	0.2

Appendix III-G, Table 2. Process Data, RCO 1, March 7, 2019, Run 2						
Process Parameter	11:08 a.m.	11:23 a.m.	11:38 a.m.	11:53 a.m.	12:08 p.m.	Average
Run Time 11:08 a.m.-12:22 p.m..						
Short Tons/hour (wet basis)	42.0	42.0	42.0	42.0	42.0	42.0
Production, ODT/hour	40.3	40.3	40.3	40.3	40.3	40.3
Pellet Moisture Content, % weight	4.69	4.69	4.69	4.69	4.69	4.7
RCO 1 Differential Pressure, in. w.c.	1.2	1.2	1.2	1.2	1.2	1.2
RCO CC 1 SP, ºF	750	750	750	750	750	750
RCO CC 1 PV,º F	936	936	939	937	941	938
Cyclofilter 1 Diff. Pressure, in w.c.	0.7	0.7	0.6	0.6	0.7	0.7
Cyclofilter 2 Diff. Pressure, in w.c.	0.3	0.4	0.4	0.4	0.4	0.4
Cyclofilter 3 Diff. Pressure, in w.c.	0.2	0.2	0.2	0.2	0.2	0.2

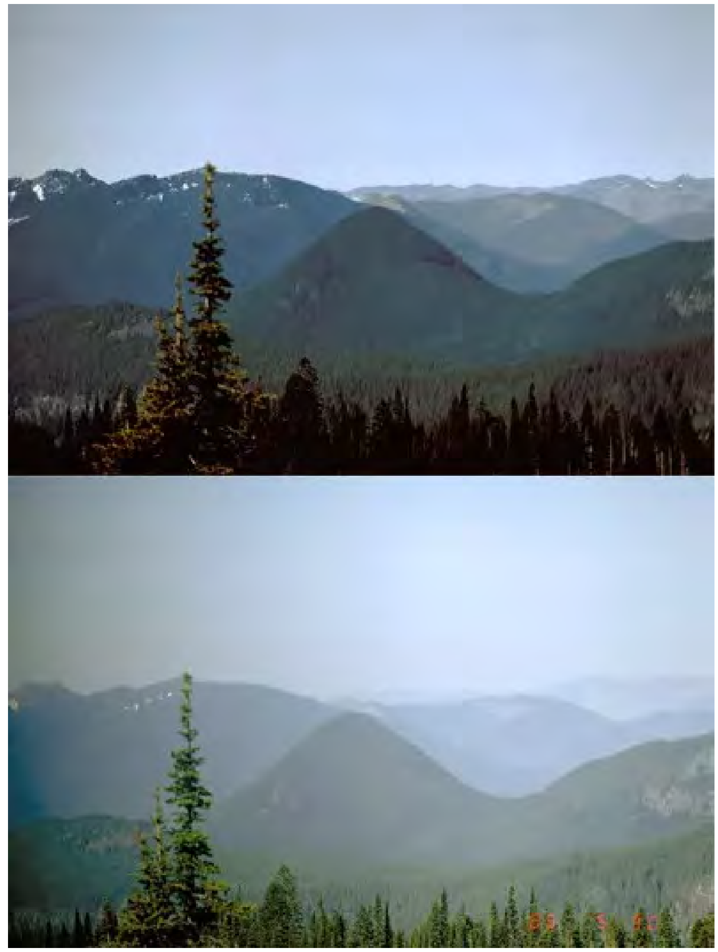
Appendix III-G, Table 2. Process Data, RCO 1, March 7, 2019, Run 3						
Process Parameter	13:04 p.m.	13:19 p.m.	13:34 p.m.	13:49 p.m.	14:04 p.m.	Average
Run Time 13:04 p.m.-14:18 p.m.						
Short Tons/hour (wet basis)	42.3	42.3	42.3	42.3	42.3	42.3
Production, ODT/hour	40.5	40.5	40.5	40.5	40.5	40.5
Pellet Moisture Content, % weight	4.14	4.14	4.14	4.14	4.14	4.1
RCO 1 Differential Pressure, in. w.c.	1.2	1.2	1.2	1.2	1.2	1.2
RCO CC 1 SP, ^{o}F	750	750	750	750	750	750
RCO CC 1 PV,^{o} F	937	941	936	944	944	940
Cyclofilter 1 Diff. Pressure, in w.c.	0.6	0.6	0.6	0.6	0.6	0.6
Cyclofilter 2 Diff. Pressure, in w.c.	0.3	0.3	0.4	0.3	0.3	0.3
Cyclofilter 3 Diff. Pressure, in w.c.	0.2	0.2	0.2	0.2	0.2	0.2

Mount Rainier

National Park
Washington

Air Quality

Mount Rainier National Park is designated as a Class I air protection area. National parks over 6,000 acres, like Mount Rainier, and national wilderness areas over 5,000 acres that were in existence before August 1977 are designated as Class I areas, as defined by an amendment to the Clean Air Act. In addition to Mount Rainier, some of the surrounding U.S. Forest Service wilderness areas are also designated as Class I areas. **Areas designated as Class I receive the highest level of air-quality protection.**



Two photos from an air quality camera in Paradise show different degrees of air clarity. The upper photo is from a clear day; the lower photo shows a day with higher levels of haze and air pollution.
NPS Air Resources Photos

Consequently, Mount Rainier National Park staff are very involved in the National Park Service's comprehensive air resources management program, designed to assess air pollution impacts and protect air quality related values. Air quality related values include scenic vistas; sensitive natural ecosystem processes, functions, and components; and cultural resources.

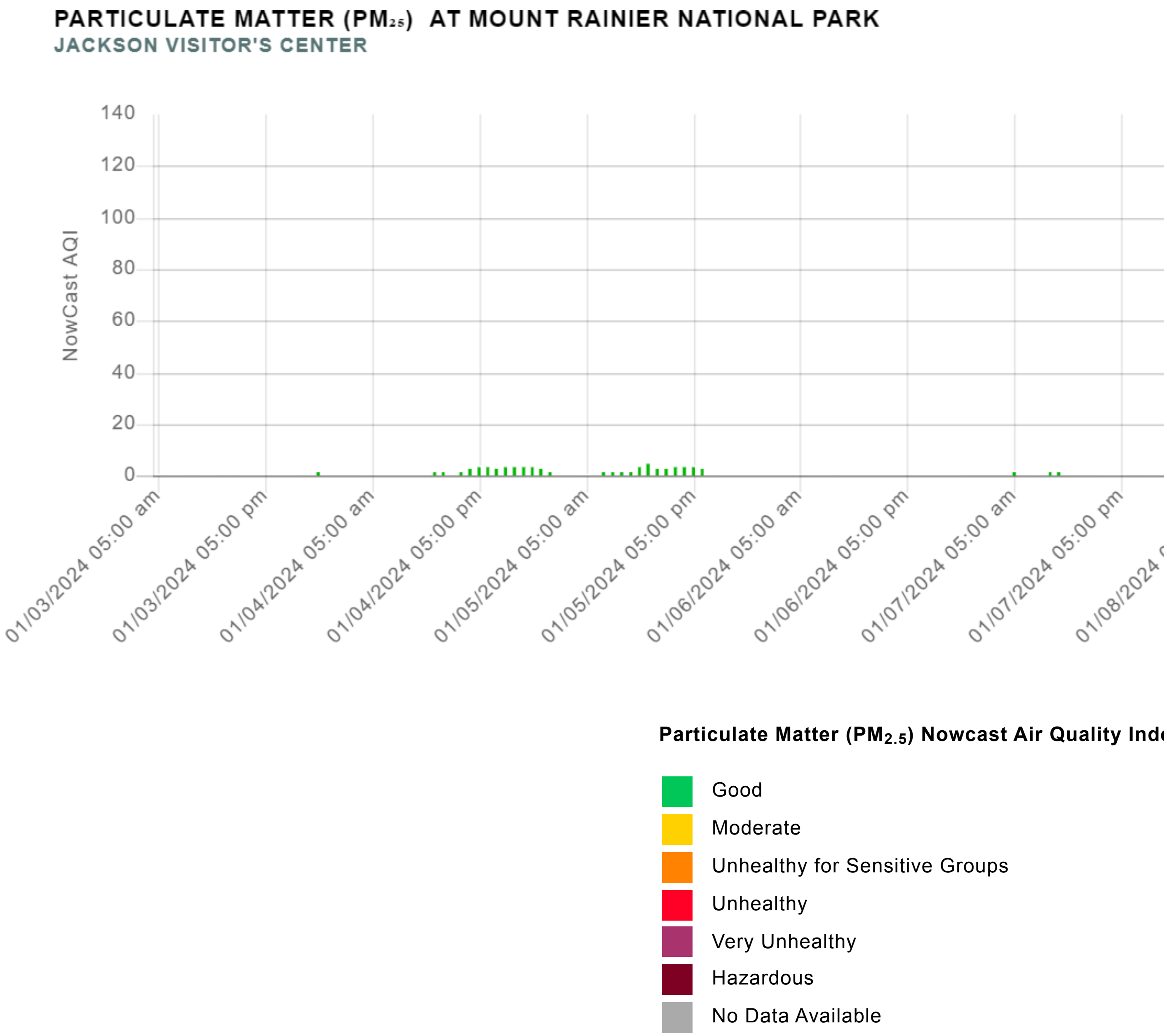
The air resources management program at Mount Rainier includes monitoring, research, and regulatory interaction with local, state and federal agencies. Long-term monitoring programs include monitoring for gaseous pollutants such as ozone, visibility impairment, and atmospheric depositions. More information is available on the **IMPROVE (Interagency Monitoring of Protected Visual Environments) (http://vista.cira.colostate.edu/Datawarehouse/IMPROVE/Data/Photos/MORA/start.htm)** web site. In addition, there is an ongoing effort to determine the ecological effects of air pollutants on park resources.

The National Park Service (NPS) **Air Quality Research Program (https://www.nps.gov/subjects/air/air-monitoring.htm)** involves an extensive network of monitoring for pollution, visibility conditions, and biological effects in NPS units. At Mount Rainier the monitoring program has included:

- Use of cameras for measuring visibility.
- Fine particulate monitors for identifying the causes and sources of visibility impairment.
- Ozone monitors for establishing baseline conditions, assisting ozone effects research, measuring precipitation chemistry, and evaluating new pollution sources.

Current Air Quality in Paradise

This graph shows levels of particulate matter affecting air quality in Paradise on the south side of the park at 5,400 feet elevation.

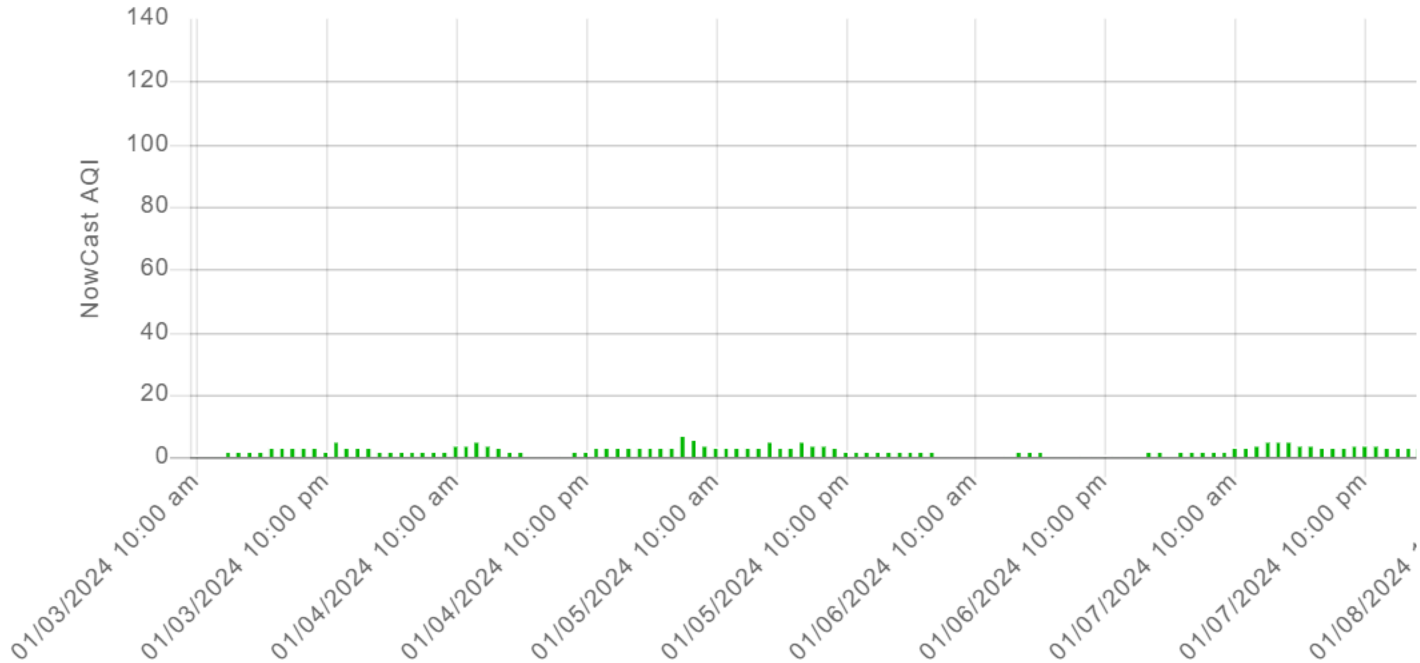


View More Data (https://www.nps.gov/subjects/air/current-data.htm?site=mora&location=jackson-visitor's-center)

Current Air Quality in Longmire

This graph shows levels of particulate matter affecting air quality in Longmire in the southwest corner of the park at 2,700 feet elevation.

PARTICULATE MATTER ($PM_{2.5}$) AT MOUNT RAINIER NATIONAL PARK
LONGMIRE



Particulate Matter ($PM_{2.5}$) Nowcast Air Quality Ind

- Good
- Moderate
- Unhealthy for Sensitive Groups
- Unhealthy
- Very Unhealthy
- Hazardous
- No Data Available

View More Data (https://www.nps.gov/subjects/air/current-data.htm?site=mora&location=longmire)

Ohanapecosh Air Quality - Down for the winter. Check back summer 2024!

The **Ohanapecosh air quality sensor** is located near the Ohanapecosh Campground and it is not uncommon to see poor air quality spikes on the graph above, especially in the evening when many visitors are having campfires. The valley that Ohanapecosh sits in is susceptible to inversion events that can trap the campfire smoke, keeping it nearer the ground and preventing dispersion. When that happens even campfires can effect the local air quality. Learn more about air quality monitoring at **How We Measure Smoke (https://www.nps.gov/subjects/air/howwemeasure-smoke.htm)**.

Air Quality Camera

A webcam has been installed at Paradise to show the effects of air pollution such as visibility impairment. The air quality webcam is part of the NPS air quality web camera network. Images are updated every 15 minutes. Visit the **NPS Air Resources** (https://www.nps.gov/subjects/air/index.htm) site for more air quality data- including ozone, particulate matter, visual range, and weather conditions- that are updated hourly.

WEBCAM

Air Quality

Monitors the air quality over the Nisqually Valley from Paradise. Note that ozone and weather measurements are from the weather station at Paradise; visibility readings are from the weather station at Tahoma Woods, near Ashford, WA.

View Webcam (https://www.nps.gov/subjects/air/webcams.htm?site=mora)

Air Pollution at Mount Rainier

Mount Rainier National Park is located downwind of a number of urban and industrial areas to the northwest and southwest and is not isolated from the by-products of industrialization. Man-made air pollutants are transported long distances and have been detected through air quality monitoring programs. A number of stationary and mobile sources of pollutants affecting the park include a variety of sources in the Puget Sound region as far north as Vancouver, and as far south as Portland, Oregon. Pollutants traveling across the Pacific Ocean from Asia, and including pollutants from Europe and eastern North America that circumnavigate the globe, are deposited in lakes, streams and on land within the Cascade mountain range at high elevations.

Visibility Impairment

Nearly two million visitors come to Mount Rainier each year to enjoy the scenery, but the view is often obscured by regional haze, especially in the summer. Haze is caused when sunlight encounters fine pollution particles in the air. Some light is absorbed by particles. Other light is scattered away before it reaches an observer. More pollutants result in more absorption and scattering of light, which reduce the clarity and color of what we see.

Fine particulates are measured at the **IMPROVE (http://vista.cira.colostate.edu/Datawarehouse/IMPROVE/Data/Photos/MORA/start.htm)** (Interagency Monitoring of Protected Visual Environments) site at Tahoma Woods as well as in the park at Paradise. Photographic documentation of visibility has also been conducted at Paradise and Camp Muir, as well as at the Fremont and Tolmie Peak Fire Lookouts. Visibility impairment at Mount Rainier National Park is among the highest of all sites monitored in the west. The **NPS Visibility Monitoring Program (https://www.nps.gov/subjects/air/visibility.htm)** provides access to the most current data on visibility monitoring in the park.

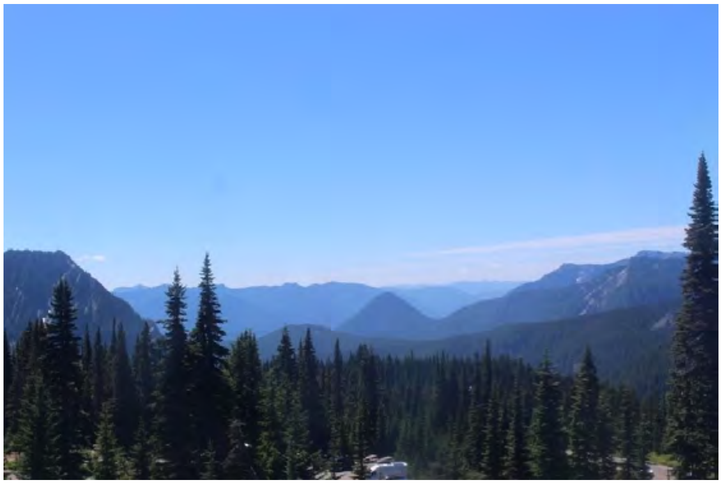
Wildfire Smoke

Increased **wildfire activity (https://www.nps.gov/mora/learn/news/fire.htm)**, whether local or regional, is leading to increased smoke events. Smoke and PM2.5 concentrations (small particles of ash and other material) in the air deteriorate air quality and have negative health effects. It's easy to see how smoke haze affects visibility, such as in the photos below from the air quality webcam at

Paradise from July 18, 2021, compared to August 2, 2021. However, it's also important to monitor air quality at the surface. Mount Rainier National Park is installing low-cost particle sensors to monitor PM2.5 levels at various locations in the park. Better air quality monitoring information will be used in the future to create a tiered list of management responses to poor air quality conditions.

Air Quality & Wildfire Smoke Resources:
Mount Rainier Webcams (https://www.nps.gov/mora/learn/photosmultimedia/webcams.htm)
WA Smoke Information (https://wasmoke.blogspot.com/)
WA Air Monitoring Network Map (https://enviwa.ecology.wa.gov/home/map)
AirNow Interactive Map (https://gispub.epa.gov/airnow/)

Wildfire Smoke & Air Quality



Left image
View from the Mount Rainier air quality webcam on July 18, 2021 with good air quality.
Credit: NPS Webcam Still

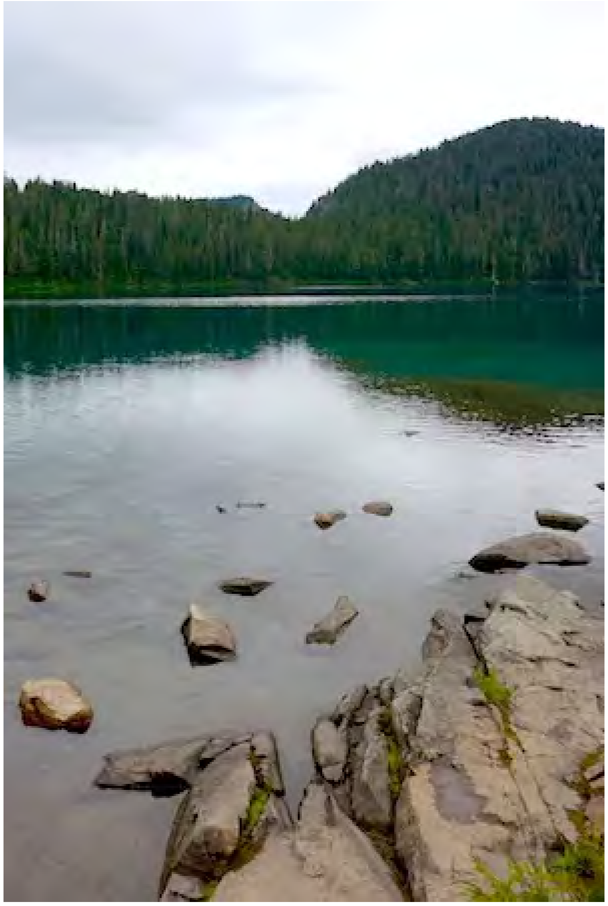
Right image
View from the Mount Rainier air quality webcam on August 2, 2021 with poor air quality due to haze from wildfire smoke.
Credit: NPS Webcam Still

View from the Mount Rainier air quality webcam on July 18, 2021, with good air quality compared to webcam view on August 2, 2021, with poor air quality due to haze from wildfire smoke.

Acid Deposition

As precipitation water passes through the air it reacts with carbon dioxide, sulfur oxides, and nitrogen oxides to form acids. These compounds then fall to the Earth in either dry form (such as gas and particles) or wet form (such as rain, snow, and fog). The park's lakes and streams are very sensitive to acidic deposition because the soils and bedrock cannot neutralize acids well. Acid deposition impacts aquatic organisms and ecosystems as well as terrestrial life through direct contact and by changing the chemical balance in the soil and increasing the acidity of lakes and streams.

Water quality for approximately 20 of the major streams in the park have been inventoried along with approximately 48% of the park lakes. Of these, 10 stream sites have been documented as extremely sensitive, while lakes on the west and south sides of the park tend to be more sensitive. Spring snowmelt or late summer storms can cause highly acidic deposition events which can affect the aquatic ecology of these surface waters.



Mowich Lake
NPS Photo

Studies conducted at Eunice Lake in the northwest corner of the park documented increased levels of sulfate during the spring, early summer snowmelt period. The chemistry of bulk precipitation collected at Paradise has been measured since 1986. Precipitation samples taken at Paradise have shown higher than background levels of sulfates. The chemistry of cloudwater samples taken at Paradise have shown some of the lowest levels of pH and highest levels of acidity of any taken in the state.

Mount Rainier National Park established a National Atmospheric Deposition Site within the park in 1999 to collect precipitation samples and analyze their chemistry. Data is available on the **National Atmospheric Deposition Program (http://nadp.isws.illinois.edu/data/sites/siteDetails.aspx?net=AMON&id=WA99)** web site.

Ozone

Plants can be sensitive to ozone at levels well under the national health standards for people. Lichens, mosses, and liverworts are often the most sensitive components of the vegetation within an ecosystem and can serve as early indicators of air pollution effects. Plants such as trees, shrubs, and herbaceous species are also injured by ozone which can damage leaves and needles and weaken the plants' ability to withstand disease and insect infestations.

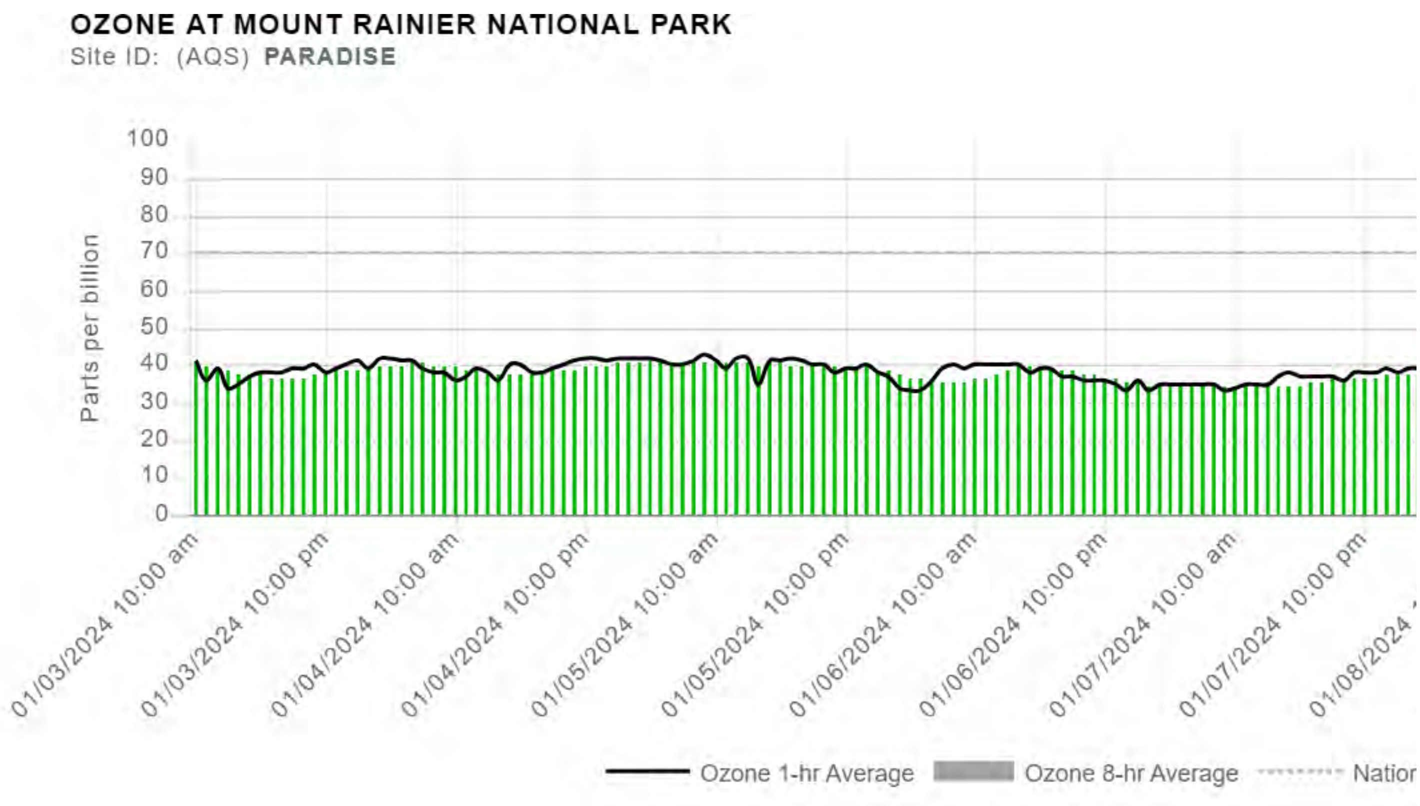
Two leaves, one without injury (left) and the other showing damage from ozone exposure (right).
Images from the NPS/USFS report "Guide to Ozone Injury in Vascular Plants in the Pacific Northwest"

Clean air is defined as ozone concentrations ranging from 15 to 30 ppb (parts per billion). Elevated ozone levels (above 80 ppb) were measured at Longmire in the southwest section of Mount Rainier National Park during the summers of 1987 and 1988. Values above 80 ppb were not uncommon at an ozone monitor at Carbon River in the northwest corner of the park during 1989 to 1992 and there were a few readings above 100 ppb. Similar values have been measured at Tahoma Woods, while ozone levels at Paradise have, on some days, been the highest recorded in the state.

High levels of ozone have also been measured in rural areas surrounding the park in Enumclaw (10 miles north of the park), Cedar River (30 miles north of the park), and Pack Forest (15 miles west of the park). Chlorotic foliar spotting on the foliage of ponderosa pine at Pack Forest has been reported and scientists hypothesized that ozone-sulfur dioxide synergism was responsible for the damage.

Ozone impacts on sensitive vegetation in the Pacific Northwest have received little attention until recent years because of the relatively low levels of ozone in the area. Ozone sensitive species in Mount Rainier have recently been identified and are being monitored in selected areas. Passive ozone monitors are also used to document ozone levels at sites where vegetation plots have been established. In addition, continuous ozone monitors are in operation at Tahoma Woods and Paradise. The **Guide to Ozone Injury in Vascular Plants of the Pacific Northwest (https://www.fs.fed.us/pnw/pubs/pnw_gtr446.pdf)** describes some of the effects of ozone on vegetation. This document is the result of NPS and U.S. Forest Service studies of ozone sensitive plant species.

This graph shows how ozone is affecting air quality at Paradise.



Ozone Air Quality Index

- Good
- Moderate
- Unhealthy for Sensitive Groups
- Unhealthy
- Very Unhealthy
- No Data Available

View More Data (https://www.nps.gov/subjects/air/current-data.htm?site=mora&location=paradise)

Air Toxics

Air Toxics is a term that includes persistent organic pollutants and heavy metals. Studies indicate that air pollutants from Europe and Asia remain airborne for thousands of miles across the Pacific Ocean and deposit in snow at relatively high elevations in North America. Air toxics also originate from local and regional sources. These contaminants such as DDT, dioxin and mercury, may accumulate in annual snowpack, particularly in higher elevation ecosystems. Once deposited, many pollutants, particularly persistent organic pollutants, accumulate and concentrate in foodwebs, threatening the viability of aquatic and terrestrial ecosystems. These air toxics are of particular concern because they remain in the environment a long time, can accumulate in the biological tissue of organisms, and are toxic to humans and wildlife.

There is very little information on the accumulation of any of these toxic materials in the natural environments of the U.S. or elsewhere in the world. The National Park Service is initiating an air-toxic focused assessment program based in the National Parks of the western United States to provide spatially extensive, site specific, and temporally resolved information regarding the exposure, accumulation and impacts of airborne contaminants in these ecosystems for the purpose of instituting long-term monitoring.

Mount Rainier Air Quality Articles

Showing results 1-3 of 3

Sort By: Recently Updated

Historic Visibility Studies in National Parks

(https://www.nps.gov/articles/visibilitystudies.htm)

Sites: Air Resources Division, Big Bend National Park, Grand Canyon National Park, Mount Rainier National Park, North Cascades National Park, **more »**

(https://www.nps.gov/articles/visibilitystudies.htm)
Haze can negatively impact how well people can see and appreciate our national parks across the country. This article summarizes the visibility studies from the 1980s, 1990s and 2000s aimed at identifying the sources of haze causing pollution at specific parks and improving visibility monitoring methods.

Series: Park Air Profiles

(https://www.nps.gov/articles/series.htm?id=98574651-1DD8-B71B-0BA56A8502905AB4)

Type: Series
Sites: Acadia National Park, Arches National Park, Badlands National Park, Bandelier National Monument, Big Bend National Park, **more »**

(https://www.nps.gov/articles/series.htm?id=98574651-1DD8-B71B-0BA56A8502905AB4)
Clean air matters for national parks around the country.

Park Air Profiles - Mount Rainier National Park

(https://www.nps.gov/articles/airprofiles-mora.htm)

Sites: Air Resources Division, Mount Rainier National Park

(https://www.nps.gov/articles/airprofiles-mora.htm)

Air quality profile for Mount Rainier National Park. Gives park-specific information about air quality and air pollution impacts for Mount Rainier NP as well as the studies and monitoring conducted for Mount Rainier NP.

Tags: air (https://www.nps.gov/media/article-search.htm?q=Air)

Last updated: October 11, 2023

CONTACT INFO

Mailing Address:

55210 238th Avenue East
Ashford, WA 98304

Phone:

360 569-2211

Appendix D
Vendor Information

Vendor-supplied emission rates for PM and VOC.

Source: Original table provided in diagram “2572A-PME-03-9901B_EMISSION POINTS.pdf”

Updated table reflecting dry hammer mill/pellet cooler PM emissions from email from Brandon Henderson (PNWRE) to Ed Warner (ESA) on July 6, 2023, Subject: RE: Modeled PM Impacts

PROCESS LINE	EMISSION POINT	DESCRIPTION	FILTERING DEVICE	LINE CAPACITY	EMISSION POINT HEIGTH		STACK DIAMETER		TEMPERATURE		ACTUAL FLOW RATE	NOMINAL FLOW RATE	WORKING HOURS	PM to environmnet after Filtering Device (NOMINAL)			VOCs estimation based on previous projects to environmnet after Filtering Device (NOMINAL)		
				ODST/y	m	ft	mm	in	ºc	ºF	m3/h	Nm3/h	h/y	mg/Nm3	ton/y	ston/y	mg/Nm3	ton/y	ston/y
PELLET PLANT																			
GROUND CHIPS CLENING LINE	EP-01	Sand and stones cleaning line	Cyclone	227.211	15	50	1.200	47	10	50	64.000	61.740	8.000	50	24,70	27,23	-	-	-
WET MILLING LINE	EP-02	Wet hammer mill 1 pneumatic system	Cyclone	101.433	15	50	600	24	10	50	18.000	17.364	8.000	50	6,95	7,66	-	-	-
	EP-03	Wet hammer mill 2 pneumatic system	Cyclone	101.433	15	50	600	24	10	50	18.000	17.364	8.000	50	6,95	7,66	-	-	-
DRYING LINE	EP-04	Drum dryer	Cyclone + WESP + RTO	405.733	27	90	2.200	87	55	131	210.730	175.410	8.000	20	28,07	30,94	17	23,86	26,30
DRY INTERMEDIATE STORAGE	EP-05	Dry product intermediate storage	Filter	-	13	44	No Stack		10	50	1.500	1.447	8.000	5	0,06	0,06	-	-	-
	EP-06	Dry product intermediate storage	Filter	-	13	44	No Stack		10	50	1.500	1.447	8.000	5	0,06	0,06	-	-	-
DRY MILLING AND PELLETING LINE	EP-08	Dry hammer mill 1,2,3&4 pneumatic system Pellet cooler 1&2 pneumatic system	Cyclofilter/Cyclone + RTO/RCO	417.905	27	90	2.100	83	101	214	232.278	169.576	7.500	5	6,36	7,01	23	29,25	32,25
SAWDUST INTERMEDIATE STORAGE	EP-09	Milled dry product intermediate storage	Filter	-	11	36	No Stack		10	50	1.500	1.447	7.500	5	0,05	0,06	-	-	-
PELLET SILOS	EP-10	Silo air renovation system. 6 extractors per silo	Extractor	-	28	93	No Stack		10	50	27.540	26.567	8.000	15	3,19	3,51	-	-	-
	EP-11	Silo air renovation system. 6 extractors per silo	Extractor	-	28	93	No Stack		10	50	27.540	26.567	8.000	15	3,19	3,51	-	-	-
	EP-12	Silo air renovation system. 6 extractors per silo	Extractor	-	28	93	No Stack		10	50	27.540	26.567	8.000	15	3,19	3,51	-	-	-
	EP-13	Silo air renovation system. 6 extractors per silo	Extractor	-	28	93	No Stack		10	50	27.540	26.567	8.000	15	3,19	3,51	-	-	-
	EP-14	Silo air renovation system. 6 extractors per silo	Extractor	-	28	93	No Stack		10	50	27.540	26.567	8.000	15	3,19	3,51	-	-	-

From:	Antonio Torrubia
To:	Brandon Henderson; Alberto Muela; Forcus Martínez
Cc:	Kim Alexander; Mark Boivin; Illya Kobzev
Subject:	RE: Air Emissions Questions
Date:	Friday, June 23, 2023 6:00:56 AM
Attachments:	image001.png image002.png

Hi Brandon,

The only points with NOx and CO emissions are those where there is combustion. Therefore, points EP04 and EP-08.
These would be the preliminary data that we can give at this time:

EP04 – DRYING LINE:

Carbon Monoxide (CO) (lbs/hr): ≤42 lbs/hr
Nitrogen Oxide (NOx) (lbs/hr): ≤52 lbs/hr

EP08 – DRY MILLING AND PELLETING LINE:

Carbon Monoxide (CO) (lbs/hr): ≤16 lbs/hr
Nitrogen Oxide (NOx) (lbs/hr): ≤5 lbs/hr

Note: NOx emissions for Dryer Island are based on fuel nitrogen level at 0.22% bone dry basis. Higher nitrogen content within fuel will result in higher NOx emissions.

We will include this data in the drawing table and we will send it to you updated as soon as possible.

Regarding the cyclone filters, they are equipment that incorporate a bag filter, in order to reduce PM emissions up to 5 mg/Nm3.
We are still studying the final design and selecting the supplier. As soon as we have selected it, we will send the vendor documentation.
It is a very common equipment in our plants, we can send documentation of another project if you need it urgently but it may not correspond to the final vendor.

Un saludo / Best regards,

Antonio Torrubia
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atorrubia@prodesa.net

PRODESA
"Your local pelleting expert around the world"

PRODESA Medioambiente SLU – PART OF PRODESA GROUP
Avda. Diagonal Plaza, Edificio Plaza Center 20, Planta 3
50197 Zaragoza (España)
www.prodesa.net

De: Brandon Henderson <bhenderson@pnwrenewable.com>
Enviado el: jueves, 22 de junio de 2023 19:21
Para: Alberto Muela <amuela@prodesa.net>; Antonio Torrubia <atorrubia@prodesa.net>; Forcus Martínez <fmartinez@prodesa.net>
CC: Kim Alexander <kalexander@pnwrenewable.com>; Mark Boivin <mboivin@pnwrenewable.com>
Asunto: Air Emissions Questions
Importancia: Alta

Alberto,

Can we add NOx and CO rate emission's to chart? We're need to include those in our Air Permit.

Also, we need clarification on the cyclone filter. Is it a traditional cyclone or will it have an actual filter in the system like a baghouse.

We also would like to have the vendor documentation to attach to our air permit application. The state is used to seeing that in the applications.

Regards,

Brandon Henderson
Director of Engineering
Pacific Northwest Renewable Energy
M: (254) 813-3260

PRODESA	OFFER FORM	F.82.01.03 Rev.: 2

Offer number:			
2572	OFS	05	0007

Date:
06/14/2021

To:	Philip Heasman - CEO
Company:	PNWRE
Address:	P.O. 391 Sth Egremont, MA 01258, USA
E-mail:	pheasman@pnwrenewable.com
Telephone:	+44 (0)7808 293864 (UK) +1 860 383 5444 (USA)

Dear Sirs, please find enclosed our offer for the following products / services:

REQUESTED PRODUCTS/ SERVICES	**Supply of a wood pellets production plant**
DELIVERY TIME	To be checked inside
PRICE	To be checked inside
METHOD OF PAYMENT	To be checked inside
OFFER VALIDITY	To be checked inside
NOTES	General Conditions of Sales according to attached ANNEX 1

In case of accepting the conditions exposed in this offer, please send us back this document properly signed as a sign of acceptance. If you wish, you can use your own document.

☐ I agree to receive commercial communications from Prodesa by email.

From PRODESA NORTH AMERICA	ACCEPTANCE by client
Name and position:	Name and position:

PRELIMINARY OFFER

PNWRE

WOOD PELLETS PRODUCTION PLANT

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13. ANNEX 71

2. INTRODUCTION

This offer has been prepared according to the request of **PNWRE** for the supply of a wood pellets production plant.

The design data that have been considered for this budget offer are the following:

EMPLACEMENT			
State	Washington, USA	City	Hoquiam, Grays Harbor County
Site coordinates	46° 58' 34 " N; 123° 54' 58" W (Corner of Airport Way & Paulson Rd – Port of Grays Harbor)		

SITE CONDITIONS			
	Minimum	Average	Maximum
Ambient temperature	14 º F / -10 ºC	51 º F / 10 ºC	89 º F / 31 ºC
Relative humidity	85 - 90%	Site elevation (o.s.l.)	18 ft – 5.5 m
Wind load	48 psf - 235 kg/m^2 ; (135 mph - 60 m/s)	Snow load	25 psf - 122 kg/m^2
Seismic load	Ss = 1.532; S1 = 0.712; TL = 16; Sds = 1.225; PGA = 0.734		

ELECTRICAL DATA			
Voltage supply	460 Vac 24 Vdc	Frequency	60 Hz

INPUT MATERIAL:

RAW MATERIAL SPECIES (FOREST RESIDUALS) – GENERAL PROCESS		
Type	Softwood	Hardwood
Proportion (%)	80 - 90%	10 - 20%
Species	Douglas Fir: 37.04% W Hemlock: 42.74% W Red Cedar: 3.00% Sitka Spruce: 3.07% Pacific Silver Fir: 1.40% Lodgepole Pine: 0.43% Western White Pine: 0.04% TOTAL: 87.72%	Red Alder: 10.41% Big Leaf Maple: 1.44% Black Cottonwood: 0.29% Bitter Cherry: 0.02% Oregon Ash: 0.01% TOTAL: 12.17%

RAW MATERIAL SPECIES (MILL RESIDUALS) – GENERAL PROCESS		
Type	Softwood	Hardwood
Proportion (%)	80 - 90%	10 - 20%
Species	Douglas Fir: 40 - 45% W Hemlock & Other: 40 - 45%	Red Alder & Other: 10 - 20%

RAW MATERIAL DATA – GENERAL PROCESS	
Type of material	**Forest residual – ground chips (325,000 GMT/y; 50%)**
Product size distribution (PSD)	< 1” 3% (by weight) 1 - 6” 87% (by weight) > 6” 10% (by weight)
Bulk Density	350 kg/m^3 (average)
Water content (W.B.)	40% (average)
Type of material	**Sawdust (184,000 GMT/y; 30%)**
Product size distribution (PSD)	TBC
Bulk Density	350 kg/m^3 (average)
Water content (W.B.)	50% (average)

Type of material	**Shavings (122,600 GMT/y; 20%)**
Product size distribution (PSD)	TBC
Bulk Density	150 kg/m^3 (average)
Water content (W.B.)	25% (average)

FUEL:

RAW MATERIAL SPECIES – COMBUSTION SYSTEM		
Type	Softwood	Hardwood
Proportion (%)	45 - 55%	45 - 55%
Species	Douglas Fir W Hemlock & Other	Red Alder Other

RAW MATERIAL DATA – COMBUSTION SYSTEM	
Type of material	**Bark & Hogfuel (220,000 GMT/y; 100%)***
Product size distribution (PSD)	1 - 6’’ (approximately)
Bulk density M.C.	305 kg/m^3 (average)
Ash content	8-10%
Ash melting point	> 1100 ºC
Water content (W.B.)	55 %

FINAL PRODUCT:

FINAL PELLET REQUIRED	
Material	Wood pellets
Size	3.15 < L ≤ 40 mm Diameter = 6 mm
Bulk density	650 - 750 kg/m^3
Moisture Content (m.c.) wet basis	<10%
Required capacity	400,000 metric tons/year (441,000 sh.ton/year)

This is a **budget offer**. The final dimensioning and power of the equipment included in this offer will be defined after having analysed the raw material that the plant will work with. Meanwhile, this budget offer is based on average production figures.

Information contained in this offer is confidential and cannot be communicated to third party without our permission.

During the project realization, PRODESA reserves the right to bring all the necessary variations in design, equipment and brands in order to ensure the best operation of the plant.

GENERAL REMARKS ABOUT ELECTRICAL EQUIPMENT:

- Motors IEC and NEMA. Motors included in the offer are not NFPA/ATEX Classified
- The use of low tension for all the installation (460 V and 60 Hz) has been considered.
- MCCs, I/O and PLC panels are supplied including UL certification. The design will be according to UL 508.

3. GENERAL DESCRIPTION

For a better process understanding, please see the process mass and energy diagram 2572-PBS-04-0001A, the process flow diagram 2572-PBS-04-0002 and the layout 2572-PME-03-1001B.

3.1 RAW MATERIAL RECEPTION

We propose a truck scale system to control the raw materials received in the plant.

In order to receive the raw material and fuel, and discharge the trucks, three truck dumpers are included: one for the forest residues, other for the sawmill residues and a third one for the biomass used as fuel.

Once the product is discharged by the trucks, it will be storage in piles through a front end loader.

3.2 WET MILLING LINE

The line includes:

- Raw material moving floors
- Forest residuals cleaning and screening unit
- Sawmill residuals screening unit
- Wet hammer mills

One (1) 250 m^3 MOVING FLOOR delimited by walls to store the ground chips, and a second one to store the sawdust and shavings are included.

Example of moving floor

The chips moving floor discharges the product into a chain conveyor to feed the CLEANING AND SCREENING unit, with the objective of separate impurities (sand, stones), fines and overs. Fines will be discharge to the dryer feeding system, while the intermediate fraction will be sent to the wet hammer mills. Impurities and overs will be discharged into a container (by client).

Example of cleaner and screening system

The sawdust and shavings moving floor discharges the product to a DISC SCREEN to separate big pieces that will be sent to the wet hammer mills. The good product will be sent directly to the dryer feeding system.

So, the cleaned chips will be processed in the wet hammer mills to reduce the particle size so they have an optimum drying

Two hammer mills of 500 kW each have been selected to reduce the particle size of the cleaned chips so they have an optimum drying process and they reach the dry milling stage with the optimum moisture content and size.

The produced microchips are discharged downwards by mechanical and pneumatic systems. Thus, one pneumatic system for each hammer mill is required, and each one equipped with dust collection systems, in order to control the dust emission to the atmosphere and to recover the small size particles into the product flow.

General view of wet milling line

Wet hammer mill

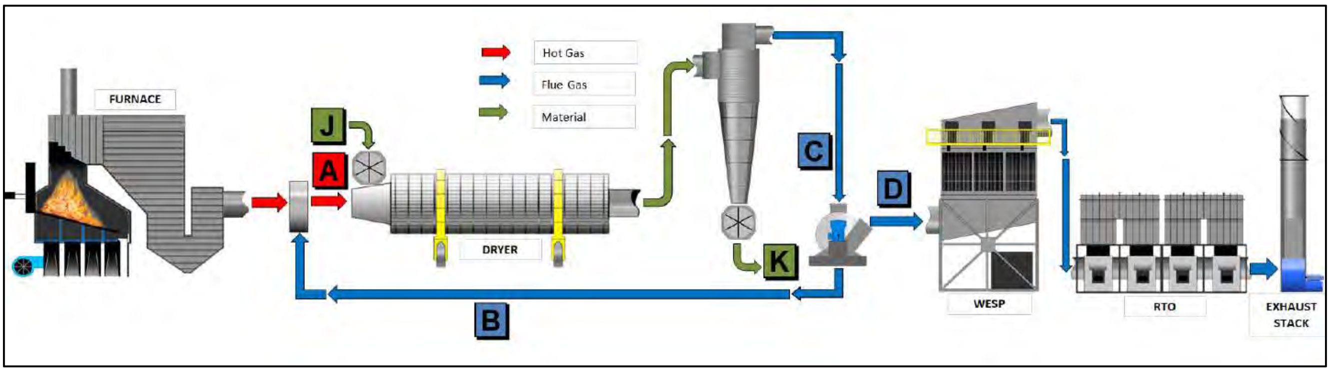
3.3 DRYER FEEDING SYSTEM

The microchips produced in the wet milling line are transported by several conveyors to the drying island.

3.4 DRYING ISLAND: DRUM DRYER AND HEAT GENERATION SYSTEM

The drying line is the heart of the plant. Design, control and operation are the key to achieve the production objectives.

The drying island includes: Heat generation system, Drum dryer, and Gases emissions treatment (WESP and RTO).

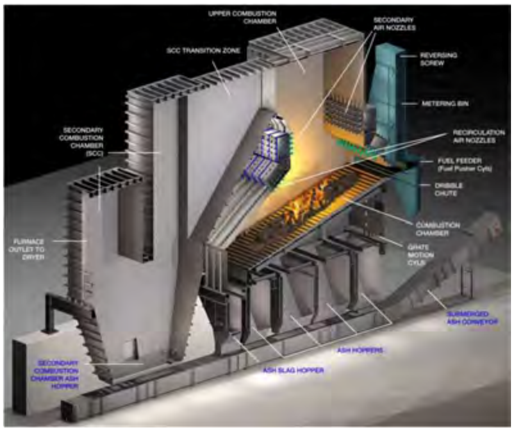


HEAT GENERATION SYSTEM: Biomass Furnace and Fuel Feeding System

We include a biomass furnace of 55 m2 to provide the thermal energy required by the drum dryer. This furnace has pusher grates and a biomass dosing system by a fuel feed pushers.

A 250 m3 moving floor discharges the biomass used as fuel to a chain conveyor to feed the furnace metering bin.

Example of Heat Energy System



Heat Energy System Overview

DRUM DRYER

The selected dryer is a high temperature drum dryer that uses hot gases at around 400ºC provided by a heat generation system (biomass furnace)

During the drying process the raw material features will change and it is necessary to work gently with the wood in order to keep the proper conditions to ensure the best product quality. Moisture, colour and chemical parameters of raw material are related to the drying process.

The drum dryer has the following benefits:

- Well proven drying system
- Low energy consumption
- Automated operation
- Good product quality

DRUM DRYER DESCRIPTION:

The Dryer System receives hot gas from the Heat Energy System and combines this hot gas stream with the Dryer System's flue gas stream within the Dryer System's Recycle Bustle. Once two gas streams are mixed, the resultant gas mixture enters the Dryer Drum for purpose of drying wet woody biomass.

Dryer System's Metering Bin is located at ground level and material from the Metering Bin is fed to Dryer System's Infeed Airlock via a chain conveyor.

Dryer Drum is a single-pass unit that is responsible for distributing and classifying each biomass particle to allow for its efficient drying. This is accomplished with utilization of a complex 'flighting system' within the Dryer Drum. Dried material is conveyed from the drum discharge to two (2) High Efficiency Cyclones that are responsible for effectively removing dried biomass from flue gas stream. Dried biomass exits out the bottom of High Efficiency Cyclones and into the Cyclone Airlocks; each Cyclone has its own dedicated Airlock.

Dried biomass from Cyclone Airlocks is received by a Collection Screw that conveys dried biomass to the Diverter Gate. The Diverter Gate under upset operating conditions discharges biomass to client's Fire Dump. The Diverter Gate under normal operating conditions discharges material to the dry product silo feeding chain conveyor.

Flue gas exits Cyclones out the top and is processed either to the Dryer System as recycle, or to the Pollution Control Equipment (WESP + RTO)

Biomass and flue gas is conveyed through the Dryer System via an Induced Draft Fan (ID Fan).

GASES EMISSIONS SYSTEM: WESP + RTO

To remove fine particulate from gas stream prior to discharging scrubbed flue gas stream to the atmosphere, we propose a WESP (Wet Electrostatic Precipitator).

After that, there is four-chamber RTO to receive particulate cleaned flue gas from the WESP and treat this flue gas for the purpose of VOC and CO destruction, before this flue gas is exhausted to atmosphere.

Example of WESP

Example of RTO

3.5 DRY PRODUCT STORAGE

Once the product goes out from the drying process, the moisture content is around 10% and it is transported the dry product storage by a chain conveyor.

The main aim of this is to uncouple drying line and milling line. Thus, both lines can work in an uncoupled way, increasing the production capability of the plant because during maintenance works in one line, the other one continues producing.

In addition, due to moisture content at dryer outlet is around 10%, it is required to have a certain retention time after the dryer in order to get very homogenous moisture content in the product.

During storage, the whole product is in contact and moisture content will become an average value into the silos. Homogenous moisture content means a stable pelletizing process and high pellet quality.

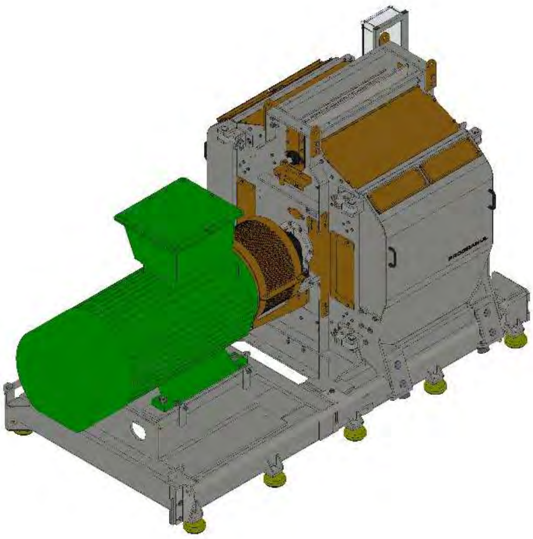
A chain conveyor transports the product from the outlet of the buffer silo to the milling line.

3.6 DRY MILLING LINE

As the most, dry milling line is required to reduce the particle size, thus the machines and line design has been developed to get the required wood pellet quality.

We propose one milling line with four (4) hammer mill with one (1) motor of 900 HP each one. The product is discharged by gravity system, equipped also with a cyclofilter, in order to control de dust emissions to the atmosphere.

To control de VOCs emissions, the air flow of two of the four hammer mills will pass through ~~an scrubber and RTO~~ together with the pellet cooler air flow. (Design change from RTO to RCO)



3.7 DRY AND MILLED PRODUCT STORAGE

In between the dry milling and the pelleting line there another silo for the product storage is included.

The main aim of this storage is to uncouple the milling line and pelletizing line. In addition, a more homogenous moisture content in the product will be achieved which is one of the key factors to reach high pelletizing productions.

At the outlet of the silo, a chain conveyor transports the product to the pelleting line.

3.8 PELLETING LINE

Pellet mills feeding will be done by a dosing screw conveyor. This system works fulltime charge in order to get the best performance in the pellet mill. A conditioner is installed between the conveyor and the pellet mill in order to adjust the moisture content in the raw material as required and to have a continuous feeding in the pellet mill.

We propose two pelleting lines with six (6) pellet mills with 500 HP each.

Once the pellet is produced, the temperature in the product is around 90ºC, thus two (2) coolers (one per line) are required to achieve the quality and to comply with the pellets specifications. The cooler is equipped with a ~~cyclone~~ to reduce the dust emission to the atmosphere and to recover the very small size particles into the product flow. (Design change from cyclones to baghouse)

Additionally, another ~~RTO~~ receives VOC laden flue gas stream from the pelletizing line and from 2 dry hammer mills, which treats this flue gas for the purpose of VOC destruction, before this flue gas is exhausted to atmosphere. (Design change from RTO to RCO)

After each cooler, a vibratory screen sieves the product, thus fines and broken pellets that not comply with the specifications, are taken out from the line.

The final dimensioning and motorization of the pellet mills will be reviewed after having a raw material screen analysis and information about the wood species that will be processed.

3D – Example of pelleting line.

Pelleting line in a Pellet plant Prodesa's design

4. DESIGN DATA

4.1 RAW MATERIAL RECEPTION

Raw material	Product as in *Section 2. Introduction*
Number of truck scales	1
Number of truck dumpers	3
Truck dumper type	75' Back-On Truck Dump Platform
Empty weight of truck	30,000 lbs
Full truck weight	120,000 lbs
Platform Lift & Lower Time	4 – 4.5 min
Max. Dumping Angle	63 degrees
HPU Horsepower/unit	2 x 60 HP
Life Cycles	2,000,000 cycles

4.2 WET MILLING LINE

Raw material	Product as in *Section 2. Introduction*
RAW MATERIAL STORAGE	
Chips storage	1 x Moving floor 250 m^3 (8,828 ft^3)
Sawdust and shavings storage	1 x Moving floor 250 m^3 (8,828 ft^3)
CHIPS CLEANING AND SCREENING UNIT	
Design capacity	57.4 ton/h
Screened fractions	0 – 1.5 mm 1.5 – 10 mm 10 – 60 mm 60 – 150 mm > 150 mm
Separated impurities	Sand and stones
WET MILLING LINE	
Number of hammer mills	2
Design capacity	54.2 ton/h @ 350 kg/m3 = 155 m3/h (5,474 ft^3/h)
Hammer mill installed power (each)	500 kW (700 HP)

4.3 DRYER FEEDING SYSTEM

Raw material	Product from wet milling line
Design capacity	54.2 ton/h

4.4 DRYING ISLAND

4.4.1 HEAT ENERGY SYSTEM: Biomass Furnace

Number of Reciprocating Grate Zones	Four (4)
Wet Fuel Moisture Content (bark)	50% (wet basis)
Maximum Overall Moisture Content	55% (wet basis)
Minimum Overall Moisture Content	35% (wet basis)
Grate Fuel Design LHV at 50% mc (wet basis)	3,480 Btu/lb
Grate Fuel Design HHV at 50% mc (wet basis)	4,300 Btu/lb
Fuel Size (Maximum)	100% bark <6” 90% bark <4” 70% all fuel >2” Max 25% <1” Max 15% <1/2”
Bulk Density of Fuel (average)	18 – 20 lbs/cuft (volumetric)
Designed Combined Fuel Alkali Content	< 0.25 lb/MMBtu
Material Grate Bars	High Heat Resistant Steel (ASTM A297, Grade HD)
Grate Speed Control	10% to 100%, modulating
Thermal Turn Down Ration	4:1
Primary Air Static Pressure	5” WC
Secondary Air Static Pressure	12” WC
Number of Secondary Air Zones	Two

4.4.2 DRUM DRYER

A. Design ambient conditions:

Temperature	51º F (10 ºC)
Relative humidity	85-90%

B. Product and design data:

Product inlet	Microchips from wet milling line
Product inlet moisture content	45% wet basis
Product inlet flow	85.5 ton/h @ 45% mc
Dryer technology	Drum dryer
Product outlet flow	51.11 ton/h [1] @ 8% mc
Dryer drum size	Ø 20’ by 90’ long

[1] At design ambient conditions

C. Thermal energy

Gas inlet temperature	510ºC (950ºF)
BTU/hr (HHV)	164,810,016

[1] At design ambient conditions and product not frozen

Remarks:

— *With very wet and/or frozen raw material, water evaporation and dry raw material capacity is reduced in spite of higher energy consumption.*
— *If strong and short time oscillations in heat supply, product inlet moisture, particle size distribution or particle composition occur, a constant outlet moisture content cannot be guaranteed.*
— *If ambient conditions and/or moisture content of wet product change, the dryer capacity and also the thermal energy consumption will change.*

4.4.3 GASES EMISSIONS TREATMENT: WESP + RTO

Air flow (from drum dryer)	124,031 ACFM (210,730 m^3/h)
Inlet temperature	113ºC (235ºF)
WET ELECTROSTATIC PRECIPITATOR (WESP)	
Quantity	1
Number of Ø10'' tubes	621
Number of Fields	3
REGENERATIVE THERMAL OXIDIZER (RTO)	
Quantity	1
Number of combustion chambers	4
Combustion chambers size	11' wide by 23' long by 8' tall
Projected gas consumption	5.7 mmBTU/h

4.5 DRY PRODUCT STORAGE

Product	Dry product from dryer system.
Moisture content	8% (wet basis)
Description	Vertical silo.
Capacity	1,000 m^3 (35,315 ft^3)

4.6 DRY MILLING LINE

Inlet product	Product from dry product storage
Number of hammer mills	4
Electrical power (each one)	900 HP
Design capacity (each)	15,5 ton/h

**The final dimensioning and the motorization of the hammer mills will be reviewed after having a raw material screen analysis and information about the wood species that will be processed.*

4.7 DRY AND MILLED PRODUCT STORAGE

Product	Dry and milled product from dry milling line.
Moisture content	8% (wet basis)
Description	Vertical silo.
Capacity	1,000 m^3 (35,315 ft^3)

4.8 PELLETING LINE

PELLETING LINE	
Product	Dry and milled product from dry milling line.
Number of pellet mills	12
Electrical power (each one)	500 HP
Design capacity (each one)	5.5 ton/h
Pellets diameter	6 mm
PELLETING LINE: ~~RTO~~ Client updated to RCO	
Air flow (from drum dryer)	29,500 ACFM (50,121 m^3/h) from DHM 76,000 ACFM (129,125 m^3/h) from pelleting line
Quantity	1
Number of combustion chambers	4
Combustion chambers size	11’ wide by 23’ long by 8’ tall
Projected gas consumption	~~1.8 mmBTU/h~~ Client updated to 2 x 2.25 MMBtu/hr

**The final dimensioning and the motorization of the pellet mill will be reviewed after having a raw material screen analysis and information about the wood species that will be processed.*

INSTALLED ELECTRICAL POWER

The table below shows the installed electrical power per lines of the equipment included in the main scope of supply of this offer. It is important to remark that these values are indicative and with no contractual value.

Description	**Electrical installed power**	
Raw material reception	378 HP	282 kW
Wet milling line	2,301 HP	1,717 kW
Dryer feeding system	115 HP	86 kW
Drying island	3,434 HP	2,562 kW
Dry product storage	132 HP	99 kW
Dry milling line	4,266 HP	3,183 kW
Dry and milled product storage	137 HP	103 kW
Pelleting line	7,981 HP	5,956 kW
TOTAL	**18,744 HP**	**13,988 kW**

5. EQUIPMENT DESCRIPTION

Pos	Units	Description
5.1		**RAW MATERIAL RECEPTION**
5.1.1	**1**	**Truck Scale** Truck scale for controlling the raw material and fuel entrance. It includes a visor with high memory capacity for different products, clients, suppliers, etc. Technical data Dimensions: 85.35 x 9.8 ft (26.016 x 3 m) Height: 11.4'' (290 mm) Capacity: 80 ton Number of cells: 12 (analogics)
5.1.2	**3**	**75' Back-On Truck Dumper** It includes a 75' dumping platform The platform is designed for a GVW of 120,000 pounds and utilizes two 3 stage inverted telescopic cylinders which operate at a pressure of 1,600psi with a safety factor of 3:1. Once the receiving truck has backed onto the platform it is raised to its maximum angle causing the material to flow freely into the ground. The full lift and lower cycle is completed in approximately 4.5 minutes. It includes a walkway on the driver side as well as handrail on both the passenger and driver side Technical data/unit Empty weight of truck: 30,000 lbs Full truck weight: 120,000 lbs Platform Lift & Lower Time: 4 – 4.5 minutes Max. Dumping Angle: 63 degrees HPU Horsepower: 2 x 60 HP Life Cycles: 2,000,000 cycles

Pos	Units	Description
5.2		**WET MILLING LINE**
5.2.1	**1**	**Ground chips moving floor** It receives the ground chips from the client´s front end loader. Delimited by concrete walls (out of PRODESA´s supply) Technical data: Volume 250 m^3 (8,828 ft^3) Number of grates 4 Hydraulic unit motors 2 x 60 HP (2 x 45 kW)
5.2.2	**1**	**Cleaning unit feeding chain conveyor** It receives the ground chips from the moving floor (pos 5.2.1) and feeds the cleaning and screening unit (pos 5.2.3) Supports included. Technical data: Total length 126 ft (38.5 m) Inclination 0º - 25º Installed power 15 kW (20 HP)
5.2.3	**1**	**Cleaning and screening unit** To separate impurities and to screen different fractions. It consists on integrated roller screening and air separation units, which enables screening and cleaning of infeed material. The infeed material mix is screened into different fractions, to get a better cleaning result for each fraction. All rolls in the roller bed rotate in the same direction shaking and conveying the material towards the rear end of the screen. The finest fraction (e.g. sand and dust) is separated in the first roller section and accordingly the coarse fractions are separated later on the coarser section(s). Mixture of wood and impurities move along the roller bed, heavy contaminants are concentrated and form a mineral-enriched layer on the roller bed. Mineral-enriched layer is taken out in a larger gap. This sub-flow is further cleaned in an air cleaning unit. Sand and stones are separated by airflow and the wood material is returned to the process via cyclones. Defined by roller pattern and gap size (smaller than previous “removal gap” for enriched material) the fractions to be separated, go through the gaps of the rollers and fall under the roller bed for further processing. It includes the screens, cleaning units, pneumatici systems, structures, electrical cabinets and control system

Pos	Units	Description
5.2.4	**1**	**Cleaned and screened chips chain conveyor** It receives the cleaned and screened chips from the cleaning and screening unit (pos 5.2.3) and discharges it into the wet hammer mills feeding chain conveyor (pos 5.2.5) Supports included. Technical data: Total length 224.7 ft (68.5 m) Inclination 0º - 30º Installed power 30 kW (40 HP)
5.2.5	**1**	**Wet hammer mills feeding chain conveyor** It receives the chips from the previous chain conveyor (pos 5.2.4). It includes two intermediate outlets to feech each of the wet hammer mills and a final outlet as emergency exit. Supports included. Technical data: Total length 82 ft (25 m) Inclination 0º Installed power 7.5 kW (10 HP)
5.2.6	**2**	**Feeding system for Hammer Mill** Vibratory feeder: Width: 5.9 ft (1800 mm) Length: 9.8 ft (3000 mm) Drive (per unit): 2 x 2.5 HP (2 x 1.7 kW) Canted and welded steel construction without cover. Driven by 2 maintenance-free vibration motors. Exit side conveyor trough of nonmagnetic VA steel if magnetic drum is used. Magnetic drum: Diameter: 1.3 ft (406 mm) Length: 6.4 ft (1965 mm) Drive (per unit) 1.5 HP (1.1 kW) Complete with clamp bearing, gear motor and dust hood. Support frame: For feeding system.

Pos	Units	Description
5.2.7	**2**	**Wet Hammer mill Type HH 600x2000** Consisting of: Heavy particle separator type CLEANER, installed at the material infeed chute of the Hammer Mill. CLEANER housing with adjustable guide plates, and expansion room, 2 fans each 4 kW with compensator and blowing in channel. Hammer Mill type HH 600 x 2000. Direction of rotor rotation: right-handed or left-handed, reversible. Technical data: Infeed opening 2 x 6.6 ft (600 x 2000 mm) Rotor diameter 6.6 ft (2000 mm) Motor power 670 HP (500 kW) Self-propelled air 16 000 m^3/h Basic equipment: Vertical infeed. Infeed flap, adjustable to direct the material for right-handed or left-handed rotation, hydraulically. Three-part machine housing in welded steel construction. Machine sides folding away hydraulically. Screens and milling tracks integrated in side parts Milling tracks surface hardened Rotor in arc welded steel construction, dynamically balanced, with swinging hammers made out of special steel, pendulous suspended on hardened shafts. Hammers with 2 drill holes therefore all 4 edges can be used. V-belt pulley mounted at the rotor shaft. Zero-speed control (24 V DC) for rotor speed. Limit switch at the housing side parts. All electrical components wired on a conduit box.
5.2.8	**2**	**Dust extraction system for Hammer mill** It includes: - Piping and connection to machine. - Cyclone separator complete with rotary valve and steel support: Air flow Up to 16 000 m^3/h Installed power rotary valve 0.5 HP (0.37 kW) - Radial fan Air flow Up to 16 000 m^3/h Installed power 50 HP (37 kW)

Pos	Units	Description
5.2.9	**2**	**Screw conveyor** U-shaped conveyor trough of 5 mm bent steel plate, with bolted-on cover. Auger (screw) of 8 mm steel plate, welded on center shaft. Center shaft with bolted, exchangeable shaft ends running in double-row spherical roller bearings. Anti-clockwise rotating auger. Drive unit with hollow-shaft mounted flat gear of type Nord (standard) or SEW.
5.2.10	**1**	**Microchips chain conveyor** It collects the microchips produced in the two wet hammer mills and discharges it to the dryer feeding conveyors. Supports included <u>Technical data:</u> Total length: 69 ft (21 m) Inclination: 0º - 45º Installed power: 11 kW (15 HP)
5.2.11	**1**	**Sawdust and shavings moving floor** It receives the sawdust and shavings from the client´s front end loader. Delimited by concrete walls (out of PRODESA´s supply) <u>Technical data</u>: Volume: 250 m^3 (8,828 ft^3) Number of grates: 4 Hydraulic unit motors: 2 x 60 HP (2 x 45 kW)
5.2.12	**1**	**Disc screen feeding chain conveyor** It receives the product from the moving floor (pos 5.2.11) and feeds disc screen (pos 5.2.12) Supports included. <u>Technical data:</u> Total length: 98.4 ft (30 m) Inclination: 0º - 15º Installed power: 11 kW (15 HP)
5.2.13	**1**	**Disc screen** It receives the product from the previous conveyor (pos 5.2.12). To separate big pieces. The good product is discharged to a conveyor that feeds the dryer feeding system. Driven by gearbox and chain transmission. It includes the upper and lower hopper for connection with the previous and post chain conveyors.

Pos	Units	Description
5.2.14	**1**	**Disc screen outlet chain conveyor** It receives the product from the disc screen (pos 5.2.13) and discharges the dryer feeding system. Supports included. Technical data: Total length 44.2 ft (13.5 m) Inclination 0º Installed power 5.5 kW (7.5 HP)
5.2.15	**1**	**Structures and painting** Metal structures necessary for the support of described equipment, as well as access stairs and walkways required for the inspection and maintenance of the facility. All items (except stainless and galvanized steel) are supplied with a first coat of synthetic painting according to our standard RAL.

Pos.	Units	Description
5.3		**DRYER FEEDING SYSTEM**
5.3.1		**Wet product chain conveyor** It receives the microchips from the wet hammer mills (pos.5.2.10) and the sawdust and shavings from the disc screen outlet conveyor (pos 5.2.14), and discharges it to the dryer feeding chain conveyor. Supports included. Technical data: Total length: 220 ft (67 m) Inclination: 0º - 45º Installed power: 37 kW (50 HP)
5.3.2	**1**	**Dryer feeding chain conveyor** It receives the product from the previous chain conveyor (pos 5.3.1) and feeds the dryer dosing bin Supports included Technical data: Total length: 207 ft (63 m) Inclination: 20º Installed power: 45 kW (60 HP)
5.3.3		**Structures and painting** Metal structures necessary for the support of described equipment, as well as access stairs and walkways required for the inspection and maintenance of the facility. All items (except stainless and galvanized steel) are supplied with a first coat of synthetic painting according to our standard RAL.

Pos	Units	Description
5.4	**1**	**Drying Island: DRUM DRYER**
5.4.1	**1**	**Hot Gas Isolation Gate** The Hot Gas Isolation Gate is bolted between the Heat Energy System and Recycle Bustle. This gate enables plant personnel to seal off the Dryer System from the hot gasses generated by the Heat Energy System. When activated, to hold back gasses generated by the Heat Energy System from entering the Dryer System, and thus provide safe passage for plant maintenance personnel into the Dryer System. Technical data: Housing material: 3/8'' thick A36 mild steel Gate material: 12 mm thick 304 SS Actuator: Twin hydraulic cyclinders
5.4.2	**1**	**Recycle system** To control the flow of Dryer System flue gas back to the Dryer System via the Recycle Bustle. The Recycle System consists of gas ductwork that runs from the discharge of the Dryer System's ID Fan to the Recycle Bustle; the Recycle Bustle is located between the Burner and the Dryer Drum. Within this ductwork is a Recycle Damper that controls the amount of flue gas recycled.
5.4.3	**1**	**Recycle bustle** To accept recycled gas from the Dryer Exhaust System and blend it back into the incoming hot gas stream generated by the Heat Energy System.
5.4.4	**1**	**Inlet fitting** To act as a conduit for the transition of the homogeneous drying gas from the Recycle Bustle into the Dryer Drum and for the introduction of the wet woody biomass to be dried into the Dryer Drum
5.4.5	**1**	**Purge Fan** To purge the Dryer System clean of combustible gas to prevent explosions from occurring within the Dryer System
5.4.6	**1**	**Metering Bin** To receive the wet material from the chain conveyor pos 5.3.2, store it and meter it to the infeed airlock. The Metering Bin is located above the Infeed Airlock. The Metering Bin contains augers at bin bottom that are driven by a Variable Frequency Drives.

Pos	Units	Description
		The augers feed/meter the product to the infeed airlock. Above the auger there is an agitator that distributes the product evenly across the augers to ensure proper and constant feed of the augers. Technical data: Capacity: Approx 30 minutes
5.4.7	**1**	**Infeed Airlock** To receive wet material from the Metering Bin and discharge it onto the louvered chute of the Inlet Fitting. The Infeed Airlock comprises a formed machined steel body with a rotating vane. The vane has eight pockets with knife tips. The design loading is based on achieving the optimum balance between minimizing the introduction of ambient air into the system and creating a maximum, nonplugging load in each pocket.
5.4.8	**1**	**Rotary drum** The Drum assembly consists of three major subassemblies: the Drum, the trunnion assemblies, and the drive. The Drum is a cylindrical structure formed of rolled mild steel plate, reinforced with structural section channel, tee, and angle ribs, and external bands. The Drum rides on two full diameter forged tracks. The Drum's interior is a network of lifting flights and baffles, designed to shower material across the Drum's cross-section as it rotates and to regulate the forward movement of material through the Drum. Around the circumference of the Drum are mounted segmented chain teeth sets, on which a roller chain rides. Drum rotation is effected by an electric motor and a gear reducer. The Drum's tires are supported on four trunnion wheels, arranged in opposed pairs at the two track locations. Each trunnion is cast and machined from nodular iron, with shafts riding in split pillow-block spherical roller bearings. Rear runnion Wheels are flanged to fix the location of the Drum. Seals are located at both ends of the drum and are designed to limit ambient air infiltration. Seals are mounted to adapter-taper fittings to insure alignment. Drive chain, trunnions wheels, and tracks are lubricated by Molybdenum Blocks. The Drum is clad with a corrugated skin held in place with stainless steel bands. This creates an air gap which acts as insulation. Technical data: Length: 90' Diameter: 20'

Pos	Units	Description
5.4.9	**1**	**Ductwork** To convey dried biomass and spent gas from the Drum discharge to the High Efficiency Cyclone, and to convey spent gas from the High Efficiency Cyclone discharge to the ID Fan, and from the ID Fan either to the Recycle Bustle and Emission Control Equipment. The Ductwork is made from rolled mild steel. There are essentially two types of Duct in the system: Material Duct that conveys both spent gas and entrained particulate and Gas Duct that conveys spent gas only.
5.4.10	**1**	**Double-Duct** To keep inner walls of the ductwork after material separating Cyclones hotter than the condensable temperature of the complex hydrocarbons that evaporate from woody biomass during the drying process thus prevent ‘pitch’ buildup Double-Duct encompasses the duct from Cyclone discharge to the ID Fan inlet; it also encompasses the recycle duct, which runs from ID Fan to the Recycle Bustle, and duct from ID Fan to WESP’s Quench Duct. Double-Duct is heated via natural gas burners. Sole purpose of the Double-Duct is to keep the inner walls of the process duct (process duct processes Dryer System flue gas) hotter than the condensable temperature of complex hydrocarbons that evaporate from woody biomass during the drying process. This prevents hydrocarbons from condensing onto inner walls of the process duct, which is commonly in the industry referred as ‘pitch’ buildup. Pitch buildup is prone to fires, explosions, and while it accumulates it slowly reduces production capacity of the Dryer Island due to restricting air flow. It is very costly and time consuming to manually clean ‘pitch’ buildup.
5.4.11	**2**	**High efficiency cyclones** To separate dried biomass from the spent gas and deliver it into the Cyclone Airlock. High Efficiency Cyclone accepts spent gas and dried material from the incoming Material Duct. The inlet geometry features a tangential transition to the tub section with inlet angle between Material Duct and transition of fifteen degrees. The cone section is a relatively shallow angle for better efficiency at removing smaller particulate from the gas stream. At the exit to the cone there is an oversized Vortex Breaker with anti-spin baffles to effectively stop the cyclonic action of the material and to evenly distribute it into the Cyclone Airlock pockets minimizing the risk of plugging and wear on the tips of the Airlock. Spent gas is drawn from the top of the Cyclones into the Gas Duct. Explosion relief panels are located on top of the Cyclone.

Pos	Units	Description
5.4.12	**2**	**Cyclone Airlock** To receive dried biomass from the High Efficiency Cyclone and discharge dried biomass to Collection Screw(s). High Efficiency The Cyclone Airlock comprises a formed machined steel body with a rotating vane. The vane has eight pockets with knife tips. The design loading is based on achieving the optimum balance between minimizing the introduction of ambient air into the system and creating a maximum, nonplugging load in each pocket
5.4.13	**1**	**Collection screw** To collect dried material from the Cyclone Airlocks, and process dried material to the dry product chain conveyor or to client´s Fire Dump.
5.4.14	**1**	**ID Fan** To provide the motive force and requisite pressures through the Dryer System. The ID Fan is positioned at grade level after the High Efficiency Cyclone and connects to Gas Ductwork on both the inlet and the outlet sides. It draws gas through the entire Dryer System prior to the inlet and then forces some gas back into the Dryer System via the Recycle Bustle and the reminder of the gas to the WESP. There are expansion joints located at both the inlet and the outlet of the ID Fan that accommodate for the thermal expansion of the Gas Ductwork, but also isolate the Ductwork from any potential vibrations originating with the ID Fan. The ID Fan flow is modulated via a Variable Frequency Drive and it is governed by the pressure differential reading across the High Efficiency Cyclones Technical data: Type: Single wheel, double inlet, centrifugal, class IV. Blade Shape: Radial. Speed: 1,200 rpm Access: Man door for maintenance
5.4.15	**1**	**Recycle & Stack Dumper** To control the flow of gas to the Recycle Bustle or to the Pollution Control Equipment.

Pos	Units	Description
5.4.16	**1**	**Emergency Abort Stack** To vent Dryer System gasses to atmosphere during upset operating conditions At times the Dryer System flue gas will need to be aborted to atmosphere during upset operating conditions; rather than sending these flue gasses to the Pollution Control Equipment or to the Heat Energy System. The Emergency Abort Stack provides the ability to vent gases to atmosphere during upset operating conditions. The control damper is air actuated and is fail safe; if there is a power outage or air failure the Emergency Abort Stack will automatically open. Technical data: Height Approx. 65' above grade Diameter 50''
5.4.17	**1**	**Dryer System Control Devices** The following devices are included in order to control the Dryer System via PLC: • Temperature Control Sensors • Temperature Transmitters • Pressure Transmitters • Speed Switches • Proximity Switches (Capacitive and Inductive) • Plug Detectors • Deluge Nozzles
5.4.18	**1**	**Spark detection and suppression** To monitor the Dryer System for sparks and fires, and extinguish those sparks and fires. The Spark Detection and Suppression monitors various locations within the Dryer. System. Deluge nozzles are linked to the spark detection devices and respond appropriately based on input. The deluge works in conjunction with the Diverter Gate to abort material to the Buyer's Fire Dump. The Spark Detection and Suppression is integrated into the overall Dryer System controls with audible fire alarm, control panel display, and fire sequence relay.
5.4.19	**1**	**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passage ways needed for the correct inspection and maintenance of the installation. All the equipment (except those in inox steel) are supplied with a layer of epoxy covered by a layer of synthetic paint, according with our standard RAL.

Pos	Units	Description
5.5	**1**	**Drying Island: HEAT ENERGY SYSTEM**
5.5.1	**1**	**Fuel moving floor** It receives the biomass used as fuel from the client´s front end loader. Delimited by concrete walls (out of PRODESA´s supply) Technical data: Volume 250 m^3 8,828 ft^3) Number of grates 4 Hydraulic unit motors 2 x 60 HP (2 x 45 kW)
5.5.2	**1**	**Fuel feeding chain conveyor** It receives the biomass from the fuel moving floor (pos 5.5.1) and discharges it into the furnace flop gate (pos 5.5.3) Technical data: Total length 171 ft (52 m) Inclination 20º Installed power 11 kW (15 HP)
5.5.3	**1**	**Flop Gate** The Flop Gate provides isolation of the fuel feed system from the Fuel Feed Conveyor. The Flop Gate only opens when the Furnace is calling for fuel based on low level sensor located in the Metering Bin. The Flop Gate blocks air (oxygen) from getting inside the Metering Bin during fuel feed upsets or when shutting down a Furnace which contributes to fires
5.5.4	**1**	**Reversing screw** The Reversing Screw is located directly above the Metering Bin and directs fuel to both sides of the Metering Bin, thus ensuring even fuel distribution within the Metering Bin. It provides for even fuel feed into the Furnace from the Metering Bin. The motor driving the screw is a reversing motor.
5.5.5	**1**	**Metering bin** The Metering Bin consists of fuel feed pushers that push fuel onto the Combustion Chamber's grates, and cover the entire grate area with fuel at a controlled fuel bed level. The complete grate area forms an active drying and combustion area. A double alarm system (level control furnace and level control fuel feeders) warns operator in case of interruptions of fuel supply. A gate valve and sprinkler system are installed for prevention of back burning into the Metering Bin. The Metering Bin provides approximately fifteen (15) minutes of fuel storage capacity.

Pos	Units	Description
5.5.6	**1**	**Reciprocating Grate Combustion Chamber** The Combustion Chamber constructed of a robust steel frame structure with moving and stationary grate frames. Reciprocating grate bars are carried by moving support frames. Stationary grate bars are supported by the structure frame. The Reciprocating Grate frames and grate bars are supported on ball bearings. There are four (4) zones of moving grates within the Furnace. The grate bars are of high heat resistant alloy with cooling fins to prevent overheating; water cooling is not required. The grate bars are overlapping, thus preventing through fall of unburned fuel. A hydraulic power pack with pump operates the fuel feeders and grates. The primary combustion air enters the fuel bed from the under-fire air zone through slots between the grate bars. The sides of the grate's assembly are cast steel side bars to protect the refractory of the furnace from abrasion by the moving grate bars. The reciprocating grate bars are activated by hydraulic cylinders. The relative movement between stationary and moving grate bars causes the fuel to continually turn and convey along the grate to enhance the combustion process.
5.5.7	**1**	**Hydraulic Power Pack** Hydraulics for ram feeder, shut off slide, grate cylinders, and the last grate section. Hydraulic Power Pack unit complete with one high-capacity hydraulic pump, complete with coupling, guard, three 4-way directional solenoid valves, tank trim, all components pre-piped, and mounted on a rigid tank.
5.5.8	**1**	**Hyadraulic Displacement Pumps** Hydraulic Displacement Pumps operate all four (4) grate sections of the Furnace and control the speed of the strokes based on firing rate and controlling the speed of the pumps. Each pump motor requires a variable frequency drive.
5.5.9	**1**	**Primary Air Fan** Forced draft fan with flanged inlet and outlet, inlet vane control damper, electric actuator with linkage and mounting bracket. The Primary Air Fan provides the primary combustion air into the under-fire air zones. Air is fed from under the grate bars and is controllable in each of the foursections
5.5.10	**1**	**Secondary Air Fan** Secondary Air Fan is a forced draft fan with flanged inlet and outlet, inlet vane control damper, electric actuator with linkage and mounting bracket. The Secondary Air Fan feeds the air over the fuel pile for complete combustion of fuel.

Pos	Units	Description
5.5.11	**1**	**Furnace Casing and Combustion Air Ducts** Carbon steel construction for the complete chamber with external stiffening beams. Ducting for the Primary and Secondary Air Fans from the fans to the Furnace air boxes and headers.
5.5.12	**1**	**Secondary Combustion and Dropout Chamber** This chamber provides final combustion of the gases from the Furnace. The chamber also provides for mixing of the furnace gas with the Dryer System flue gas. After mixing and blending, the gases are discharged to the Dryer ducting. The Chamber is refractory lined and includes a dropout chamber and flue gas turn around design for maximum removal of fly ash in front of the Dryer. The chamber is designed with the top as a secondary combustion chamber to burn-out the carry over and the bottom as an ash drop-out in order to get clean burned out gas that can be directly fed into the dryer.
5.5.13	**1**	**Refractory** Internal refractory block insulation rated to 1900°F. Furnace material is plastic rated to 2700°F. Using low cement materials and installation to be done using shot-crete method. To be blown-in-place on site.
5.5.14	**1**	**Submerged Ash Conveyor** Submerged Ash Conveyor of drag chain design, complete with gearbox and drive, collects ash from underneath the Furnace grate. Submerged Ash Conveyor provides an air lock for the Furnace ash hoppers
5.5.15	**1**	**Emergency Exhaust Stack** Mounted on top of the Furnace and includes automatic hydraulic damper. The purpose of the Emergency Stack is to open at high temperature and/or high pressure in the system and at power failures. It is fabricated from mild steel and refractory-lined for the first 5 feet above the furnace roof. The remainder of the stack is made of stainless steel and includes one pneumatically operated damper on top as a stack cap. Stack cap is made of stainless steel and also has refractory lining. Technical data: Height — Approx. 50 ft above grade
5.5.16	**1**	**Video Camera and Monitor** One (1) air-cooled video cameras are provided at the rear end of the Furnace with one (1) monitors to allow for visual inspection of the furnace combustion process from the operator room. The video monitors will be located in the operator control room

Pos	Units	Description
5.5.17	**1**	**Heat Energy System Control Devices** The following devices are included in order to control the Heat Energy System via PLC: • Temperature Control Sensors • Temperature Transmitters • Zero Speed Switches • Pressure Transmitters • Proximity Switches (Capacitive and Inductive) • Level Indicators • Deluge Nozzles
5.5.18	**1**	**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passage ways needed for the correct inspection and maintenance of the installation. All the equipment (except those in inox steel) are supplied with a layer of epoxy covered by a layer of synthetic paint, according with our standard RAL

Pos	Units	Description
5.6	**1**	**Drying Island: WET ELECTROSTATIC PRECIPITATOR (WESP)**
5.6.1	**1**	**Inlet Quench Duct** The Inlet Quench Duct is equipped with recycled water sprays to saturate the gas stream and also scrub out the large particulate present in the exhaust gas. The Inlet Quench Duct attaches to the corresponding
5.6.2	**1**	**Wet Electrostatic Precipitator (WESP)** One Complete WESP unit will be provided. The unit will be complete with collecting electrodes, discharge electrodes, and a suspended power grid Technical data: Design Pressure: ± 25 IWC (0.06 bar) Collection Electrodes: 304L SS Discharge Electrodes: 304L SS Collection Section Housing: 304L SS tubes and tube sheets; A36 CS steel structural supports; A36 CS partical external skin
5.6.3	**1**	**Quench Water Recycle** The Quench Water Recycle will include a common recycle tank with one (1) recycle pump. Recycle water is sprayed into the quench duct and spent recycle water will gravity drain into the recycle tank located beneath the WESP. The Quench Water Recycle will be controlled automatically by the PLC control system. Make up water requirements due to evaporation or blow down will be satisfied with flush water or on demand by level control Technical data: Recycle Tank capacity: 20,000 gallons (75 m3) Recycle Pumps capacity: 2,500 gallon/min (9,375 l/min)
5.6.4	**1**	**Decanter Centrifuge** The Decanter Centrifuge removes solids collected by the Wet ESP and is required for the system. The Decanter Centrifuge is configured to treat a slipstream of up to 50 gallons per minute (187.5 liters/minute) of recycle water from the Wet ESP. The cake produced by the Decanter Centrifuge will be approximately 50% solids by weight and, depending on the nature of the solids, can be burned in the Reciprocating Step-Grate Furnace or sent to landfill. The centrate (cleaned water) will gravity drain back to the recycle tank. A small blow-down stream of approximately 2 gallons per minute (7.5 liters/minute) will

Pos	Units	Description
		also be necessary to control dissolved solids. The exact amount will be determined after start up based on dissolved solids level..
5.6.5	**1**	**Chemical Injection** The Chemical Injection is incorporated into the flush and recycle systems. This system is designed to periodically inject sodium hydroxide (NaOH) directly into the flush water to aid in cleaning of the Wet ESP collection tubes. The flush and caustic systems will be controlled by the Dryer Island PLC. The Chemical Injection is also designed to inject a de-foaming agent into the water recirculation system to control foam when it occurs. The de-foaming system will be controlled at the PLC and also have the capability for manual control. The caustic and de-foaming system will be enclosed in a containment area. It is recommended that the entire system be insulated and heat traced.
5.6.6	**1**	**High Voltage Power Supply** Type: 3 phase, air cooled. T/R: NEMA 4. Control Panel: NEMA 1 to be located in MCC Output Rating: 70 kilovolt, 1500 milliamp. Input Power: 105 KVA, 460 V / 3-phase / 60 Hz. High Voltage Transmission: Pipe in grounded duct. Features: Control Panel with digital controller, KV and MA signal transmitters; remote start/stop function; grounding switch; key interlock system.
5.6.7	**1**	**Purge Air** Purge Air will provide clean, warm air to all support insulators to prevent fouling by process gas. The Purge Air System will also be equipped with a ducting network that uses the tube bundle for pre-heating the air
5.6.8	**1**	**Flush System** Type: Intermittent sprays. Flushed Areas: Collection sections (tubes and probes) plus mist eliminator. Features: All required nozzles and internal headers are provided. One feed system consisting of heated flush tank immersed in the recycle water for heat transfer purposes and a pump will be supplied. Hot water with caustic added is much more effective in removing sticky organic deposits from the collection tubes than cold water

Pos	Units	Description
5.6.9	**1**	**Control Devices** The following devices are included in order to control the WESP via PLC: • Temperature Control Sensors • Temperature Transmitters • Zero Speed Switches • Pressure Transmitters • Proximity Switches (Capacitive and Inductive) • Level Indicators • PH Level Indicators
5.6.10		**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passage ways needed for the correct inspection and maintenance of the installation. All the equipment (except those in inox steel) are supplied with a layer of epoxy covered by a layer of synthetic paint, according with our standard RAL

Pos	Units	Description
5.7	**1**	**Drying Island: REGENERATIVE THERMAL OXIDIZER (RTO)**
5.7.1	**1**	**Inlet manifold** Materials of Construction: Type 304L stainless steel, with minimum 10-gauge thickness, adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC; 176°F (0.06 bar @ 80°C). Access: One access door for internal inspection of inlet manifold
5.7.2	**1**	**Diverter Valves** Materials of Construction: Type 304L stainless steel 3/16 in. thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC; 176°F (0.06 bar @ 80°C) inlet and 209°F outlet (98°C); maximum operational temperature is 600°F (316°C) during bake-out, and occurrence is for duration of 15-minute intervals. Valve Trim Construction: Main disk 3/16-inch-thick, Type 2101 duplex stainless steel; support disks 3/16-inch-thick Type 304L stainless steel. Seat materials are Type 304L stainless steel. Seal arrangement is metal to metal sealing surfaces without elastomeric compounds that would damage during bake-out. Access: One access door for internal inspection. Valve Actuation System: Parker 2A heavy duty pneumatic cylinder, adjustable end cushions at each end of travel; direct link with Parker linear alignment coupling, inductive proximity switches measuring actual valve shaft position, actuation time is 0.5 seconds full open to full close; the assembly is pre-assembled and pre-wired to junction box.
5.7.3	**1**	**Hopper Transitions** Materials of Construction: Type 304 stainless steel 3/16-inch-thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC; 176°F (0.06 bar @ 80°C) inlet and 209°C outlet (98°C); maximum operational temperature is 600°F (316°C) during bake-out.
5.7.4	**1**	**Heat Recovery Sections** Materials of Construction: Type 304L stainless steel 3/16-inch-thick and adequately stiffened to withstand maximum internal pressures Operational Parameters: ±25” IWC (0.06 bar); 176°F (80°C) inlet and 1500°F outlet (816°C); maximum operational temperature 1800°F (982°C) at top and 1100°F (593°C) at bottom. Media Support Structure: Type 304 stainless steel structure with laser cut slotted plate; maximum design temperature of 1100°F (593°C); maximum free passage of 70% open area; centered in heat recovery chamber with no direct contact to outside walls; both ends floating to allow for thermal expansion.

Pos	Units	Description
		Access: Inspection access to the support structures is through the diverter valve; inspection access to top of heat recovery section is through combustion chamber access.
5.7.5	**1**	**Combustion Chamber** Materials of Construction: Type 304L stainless steel 3/16-inch-thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC (0.06 bar); normal operation 1500°F (816°C); maximum operational temperature 1800°F (982°C). Access: One access door in the combustion chamber
5.7.6	**1**	**Outlet Manifolds** Materials of Construction: A36 carbon steel, ¼" thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC (0.06 bar); 204°F (96°C) normal operating temperature; maximum operational temperature is 800°F (427°C) during bake-out and occurrence is for a duration of 15 minutes intervals. Access: One (1) man door for internal inspection.
5.7.7	**1**	**Process Dampers** Materials of Construction: Type 304L stainless steel for inlet side of RTO and A36 for discharge side of RTO. Type: Butterfly with tadpole seats.
5.7.8	**1**	**ID Fan** Temperature: 450°F design temperature (232°C). Static Pressure: 25 IWC (0.06 bar); includes additional pressure with 2 IWC (0.005 bar) for incoming duct loss
5.7.9	**1**	**Exhaust Stack** Materials of Construction: A36 carbon steel. Height: 50' above grade. Features: Sampling platform per specifications, ladder from grade to platform, free standing
5.7.10	**1**	**Internal Ceramic Refractory** Heat Recovery Sections: Minimum 6" thick 8 lb density (15.24 cm thick @ 3.64 kg density). Combustion Chamber: Minimum 8" thick 8 lb density (20.32 cm thick @ 3.64 kg density). Type: Unifrax or approved equal; Anchor-Loc spun fiber ceramic modules. Attachment Method: Welded/threaded stud, Stainless steel.

Pos	Units	Description
		Combustion Chamber Temperature: 1550°F (843°C). Maximum Internal Temperature: 2200°F (1204°C). External Skin Temperature: Less than 150°F (66°C) at 70°F (21°C) with 5 mph (8 km/hr) wind.
5.7.11	**1**	**Heat Recovery Media** Type: MLM structured media by Lantec or equal. Thermal Efficiency: 96.5% TE.
5.7.12	**1**	**Burner System** Type: Maxon Kinemax. Size: 8 mmBTU/hr each (8.44 Gj). (Total RTO rating) Quantity: Six (6) burners. Features: Maxon series 5000 blocking valves, Honeywell C6097 A series pressure switches, Actarus B 38 R pressure regulators, Maxon MicroRatio series air/gas proportioning valves, combustion blower, Honeywell RM 7800L flame supervisory system, Honeywell C7061 A self-checking flame scanner, and Honeywell UDC 2500 over temperature control; supplied pre-piped, pre-wired, skid mounted
5.7.13	**1**	**RTO Control Devices** The following devices are included in order to control the RTO via PLC: • Temperature Control Sensors • Temperature Transmitters • Zero Speed Switches • Pressure Transmitters • Proximity Switches (Capacitive and Inductive) • Flame Scanner(s)
5.7.14	**1**	**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passage ways needed for the correct inspection and maintenance of the installation. All the equipment (except those in inox steel) are supplied with a layer of epoxy covered by a layer of synthetic paint, according with our standard RAL

Pos	Units	Description
5.8	**1**	**Drying Island: REFRACTORY WORKS**
		Supply all manpower, lifting and hoisting equipment, and travel and living expenses, to install the refractory on the Heat Energy System and connecting hot gas ductwork between the Heat Energy System and Dryer Drum. It includes: 1) Heat Energy System refractory supply. 2) Heat Energy System refractory anchors supply. 3) Dryer System's hot gas ductwork refractory supply. 4) Dryer System's hot gas ductwork refractory anchor supply. 5) Heat Energy System anchor and refractory installation. 6) Dryer System hot gas ductwork anchor and refractory installation. 7) Heat Energy System refractory cure-out. 8) Dryer System refractory cure-out. 9) Refractory installation/cure-out 3rd party inspection. 10) Confined space area attendants and monitors.

Pos.	Units	Description
5.9		**DRY PRODUCT STORAGE**
5.9.1	**1**	**Chain conveyor** Moves the dry product from the dryer to the intermediate storage silo. <u>Technical data:</u> Length 154 ft (47 m) Inclination 22º Installed power 18.5 kW (25 HP) Material SS
5.9.2	**1**	**Screw conveyor** It receives the dry product from the previous chain conveyor (pos 5.9.1) and discharges it into the dry product silo. It includes a second outlet as emergency exit.. <u>Technical data:</u> Length 21 ft (6.5 m) Inclination 0º Installed power 7.5 kW (10 HP)
5.9.3		**Intermediate storage vertical silo** <u>VERTICAL SILO</u>: Bolted carbon and carbon steel construction, delivered in prefabricated segments or parts for assembling on site. It consists of: • Interior floor assembly with all assembling and connection openings • 4’ x 4’ opening in skirt as outlet for process conveyor • 4’ x 4’ opening in skirt as outlet for dump conveyor1 • 6' x 6'-8" Double Walk-Through Door in silo skirt1 • 36” x 48” maintenance opening at level of product floor • 4'-6" x 4'-6" exterior platform at level of product floor with access ladder and fall • protection system • 1 set of explosion vents arranged underneath eave • 4 x eave mounted conveyor support columns, designed for max 10 kip vertical load each • Exterior ladder with fall protection system - OSHA Compliant – as access to silo • roof, design with no cage and no rest platforms • Accessible roof (1:12) – self supported • 1 guardrail (full perimeter) • 4’ square inlet flange on roof

<table>
<tr><th>Pos.</th><th>Units</th><th>Description</th></tr>
<tr><td></td><td></td><td>

2'x 3' bin vent flange on roof
24" roof combination manway pressure relief valve, 2.0 oz. pressure, 0.5 oz. vacuum with removable security cross
2 x 4" dia., Flange (for level control (continuous), silo roof)
4 x 2 1/2" dia. half coupling (for level control min, intermediate or max in silo roof or silo shell)
1 fire suppression line w/ roof mounted nozzles (dry line system)

<u>Silo Technical data:</u>
Volume (gross) 45,732 ft3 (1,295 m3)
Volume (net), approx. 35,456 ft3 (1,004 m3)
Angle of repose 45º
Inner silo diameter 33.85' (10.317 mm)
It includes a <u>ROTATING SCREW:</u>
1 turret, supported in a heavy-duty rotary-joint, with external teeth system for transmission of the forward feed drive forces.
2 rotating screw, support to one side in the silo center at the turret, screw spiral with progressive pitch, screw flights in special design; supported in a heavy-duty bevel helical gearbox.
1 Drive unit for the screw spiral in multilevel design
2 forward feed drive for rotation of the turret around the silo centreline
1 support frame for assembly of the complete rotating screw unit into the silo bottom structure.
1 level switch / overfilling protection in the lower part of the turret for automatic switch-off, in case of an unforeseen shutdown of the downstream conveyor below the rotating screw unit.
1 sealing between turret and silo bottom.
<u>Rotating Screw Technical data:</u>
Diameter 33.85' (10,317 mm)
Discharge rate 11,000 ft3/h (311 m3/h)
Installed power main drive 45 kW (60 HP)
Installed power forward device 2 x 0.5 Kw (2 x 0.33 HP)
</td></tr>
<tr><td>5.9.4</td><td>1</td><td>
Diverter
Installed at the dry product silo outlet, allows discharge the product:

Outlet 1: Emergency Screw Conveyor
Outlet 2: Milling line feeding chain conveyor

</td></tr>
</table>

Pos.	Units	Description
5.9.5	**1**	**Emergency screw conveyor** To empty the silo in case of emergency.
5.9.6	**1**	**Milling line feeding chain conveyor** To transport the dried product from the intermediate storage silo diverter (pos 5.9.4) to the dry hammer mills feeding chain conveyor (pos 5.10.1). Technical data: Length 126 ft (38.5 m) Inclination 20º Installed power 15 kW (20 HP)
5.9.7	**1**	**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passageways needed for the correct inspection and maintenance of the installation.

Pos	Units	Description
5.10		**DRY MILLING LINE**
5.10.1	**1**	**Dry hammer mills feeding chain conveyor** It receives the product from the previous conveyor (pos 5.9.6) and feeds the dry hammer mills. Double bottom chain conveyor so it is possible to feed the hammer mills and the leftover will be discharged to a second conveyor (pos 5.10.8) to return it to the dry product storage silo (pos 5.9.3) Technical data: Length 108 ft (33 m) Inclination 0º Installed power 15 kW (20 HP)
5.10.2	**4**	**DHM Dosing bin with triple extracting screw** Steel bin to collect the dry product and dose it to the hammer mill. It includes dosing screws with frequency converters. Driven by gear box directly mounted on the screw shaft.
5.10.3	**4**	**Destoner Rolston DRS 15** - Stone separator to evacuate heavy sizes (stones). - Permanent magnet to evacuate the metal pieces. - Suction pipe to introduce air in the hammer mill. Technical data: Dimensions 47" x 39 " x 63" Weight 1370 lbs
5.10.4	**4**	**Dry hammer mill THOR DHM 15** PROGRANUL AdvancePelleting by PRODESA **Body and frame:** - A robust body made from welded steel which sits over the rotor - A single base frame for the body and motors - Suspension feet under the frame with height adjustment - A product deflector flap controlled manually at the inlet of hammer mill (two possible positions according to the rotational direction of the rotor) **Drive:** - Coupling is carried out by machined plates with semi-elastic cylindrical fingers (Mounted under protective guards) - Motor included: Motor: 900 HP Motor rpm: 1,500 rpm

Pos	Units	Description

	Direct drive

Rotor:

- Big and heavy, mounted to two external roller bearings

Diameter	55"
Width	60"

- Rotor rotational direction can be clock-wise or counter clock-wise

Screens

- The total screening surface is composed of 6 distinct sections (individual screens)

Total suface area	48 ft^2

- Internal impact zones are composed of removable plates, some of which are equipped with static counter-hammers
- 1st set of screens (6) supplied with the hammer mill (diameter to be defined in further stages)
- Screens are changed manually when the hammer mill is stopped

Hammers:

Units	216 (1st set)
Speed	109 m/s
Dimensions	13" x 3" x 0.4"
Weight	4.6 lbs

Access doors:

- Two access doors on each side of the machine; each equipped with electric security locks

An electrical terminal block for the connection of various sensors (pre-wired in our workshop):

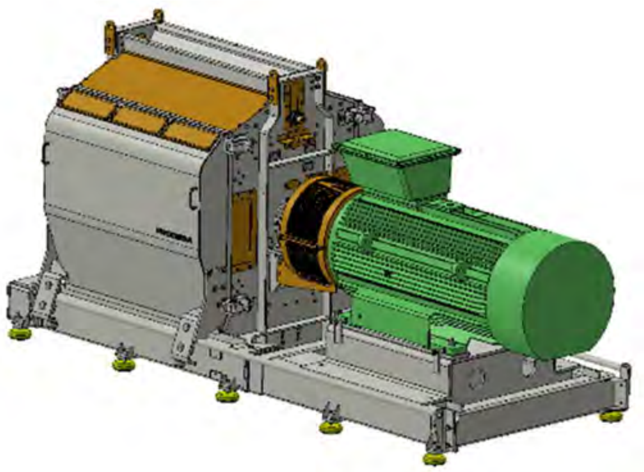
- Two electromechanical limit switches confirming the position of the inlet deflector flap
- Vibration sensor mounted to one of the side plates
- Temperature sensors on the bearings

Tools for hammer mill maintenance:

- Set of anti-drop steel plates (to prevent anything from falling under the hammer mill during maintenance)

Additional technical data:

Inlet opening	12" x 60.9"
Self-propelled air	14,714 CFM (25,000 Nm^3/h)

Pos	Units	Description
		Total weight (without motor) 7.850 kg 
5.10.5	**4**	**Dry hammer mill PLENUM CHAMBER and PNEUMATIC SYSTEM** It includes: • PLENUM CHAMBER The milled product is discharged by gravity in a discharge hopper. It includes: o Back pressure flaps: Equipment which prevents the transmission of the dangerous effects of an explosion, a pressure wave and flames before the filter. It prevents too the dust returns when the installation is stopped. o Extracting chain conveyor o Rotary valve, for the pneumatic sealing of the hammer mill circuit. • PNEUMATIC SYSTEM It includes the ducting (from plenum chamber to inlet cyclofilter, outlet cyclofilter to fan) cyclofilter with explosion panels, valves, exhaust fan and stack: o Ducting o Explosion isolation valve, to be installed at the inlet duct, with micro switch and dust level sensor

Pos	Units	Description
		o Cyclofilter, with explosion venting and explosion vent burst indicators. 232 filter bags that provide 2,413 square feet of media for 15,000 CFM airflow. o 48'' Bottom hopper with screw conveyor + 12'' NFPA Rotary valve o Fan 75 HP o Cyclofilter platform/ladder
5.10.6	**1**	**Spark detector and extinguishing system** To be installed in the ducts of the pneumatic systems of each hammer mill, it includes the following devices: • Spark detection central (one unique and common for all the different lines) For the connection of the detecting instruments (upgradeable) It registers the all the events: alarms, number of sparks, sparks threshold, time threshold, extinguishing time. Microprocessor with an automatic control system. • Spark detectors • Extinghisihing devices • Flashing alarm hor
5.10.7	**1**	**Dry and milled product chain conveyor** It receives the product from the dry hammer mills and discharges into pelleting line feeding chain conveyor (pos. 5.11.6). Technical data: Length: 197 ft (60 m) Inclination: 0º - 21º Installed power: 18.5 kW (25 HP)
5.10.8	**1**	**Dry product recirculation chain conveyor** It receives the product from the dry hammer mills feeding chain conveyor pos 5.10.1 to be introduced again in the dry product storage silo Technical data: Length: 123 ft (37.5 m) Inclination: 16º Installed power: 15 kW (20 HP)

Pos	Units	Description
5.10.9	**1**	**Support structures and painting** Metal structures necessary for the support of described equipment, as well as access stairs and walkways required for the inspection and maintenance of the facility. All items (except stainless and galvanized steel) are supplied with a first coat of synthetic painting according to our standard RAL.

Pos.	Units	Description
5.11		**DRY & MILLED PRODUCT STORAGE**
5.11.1	**1**	**Chain conveyor** Moves the leftover dry and milled product from the pelleting line, to the dry and milled product storage. Technical data: Length 164 ft (50 m) Inclination 0º - 25º Installed power 18.5 kW (25 HP)
5.11.2	**1**	**Screw conveyor** It receives the dry and milled product from the previous chain conveyor (pos 5.11.1) and discharges it into the dry and milled product silo. It includes a second outlet as emergency exit.. Technical data: Length 21 ft (6.5 m) Inclination 0º Installed power 7.5 kW (10 HP)
5.11.3	**1**	**Intermediate storage vertical silo** VERTICAL SILO: Bolted carbon and carbon steel construction, delivered in prefabricated segments or parts for assembling on site. It consists of: • Interior floor assembly with all assembling and connection openings • 4' x 4' opening in skirt as outlet for process conveyor • 4' x 4' opening in skirt as outlet for dump conveyor1 • 6' x 6'-8" Double Walk-Through Door in silo skirt1 • 36" x 48" maintenance opening at level of product floor • 4'-6" x 4'-6" exterior platform at level of product floor with access ladder and fall • protection system • 1 set of explosion vents arranged underneath eave • 4 x eave mounted conveyor support columns, designed for max 10 kip vertical load each • Exterior ladder with fall protection system - OSHA Compliant – as access to silo • roof, design with no cage and no rest platforms • Accessible roof (1:12) – self supported • 1 guardrail (full perimeter)

<table>
<tr><th>Pos.</th><th>Units</th><th>Description</th></tr>
<tr><td></td><td></td><td>

4’ square inlet flange on roof
2’x 3’ bin vent flange on roof
24“ roof combination manway pressure relief valve, 2.0 oz. pressure, 0.5 oz. vacuum with removable security cross
2 x 4” dia., Flange (for level control (continuous), silo roof)
4 x 2 1/2” dia. half coupling (for level control min, intermediate or max in silo roof or silo shell)
1 fire suppression line w/ roof mounted nozzles (dry line system)

<u>Silo Technical data:</u>
Volume (gross) 45,732 ft3 (1,295 m3)
Volume (net), approx. 35,456 ft3 (1,004 m3)
Angle of repose 45º
Inner silo diameter 33.85’ (10.317 mm)

It includes a <u>ROTATING SCREW:</u>
1 turret, supported in a heavy-duty rotary-joint, with external teeth system for transmission of the forward feed drive forces.
2 rotating screw, support to one side in the silo center at the turret, screw spiral with progressive pitch, screw flights in special design; supported in a heavy-duty bevel helical gearbox.
1 Drive unit for the screw spiral in multilevel design
2 forward feed drive for rotation of the turret around the silo centreline
1 support frame for assembly of the complete rotating screw unit into the silo bottom structure.
1 level switch / overfilling protection in the lower part of the turret for automatic switch-off, in case of an unforeseen shutdown of the downstream conveyor below the rotating screw unit.
1 sealing between turret and silo bottom.
<u>Rotating Screw Technical data:</u>
Diameter 33.85’ (10,317 mm)
Discharge rate 12,361 ft3/h (350 m3/h)
Installed power main drive 45 kW (60 HP)
Installed power forward device 2 x 0.25 Kw (2 x 0.33 HP)
</td></tr>
<tr><td>5.11.4</td><td>1</td><td>
Diverter
Installed at the dry product silo outlet, allows discharge the product:

Outlet 1: Emergency Screw Conveyor
Outlet 2: Pelleting line feeding chain conveyor

</td></tr>
</table>

Pos.	Units	Description
5.11.5	**1**	**Emergency screw conveyor** To empty the silo in case of emergency.
5.11.6	**1**	**Pelleting line feeding chain conveyor** To transport the dried product from the intermediate storage silo diverter (pos 5.11.3) to the two pelleting lines. <u>Technical data:</u> Length 161 ft (49 m) Inclination 11º - 0º Installed power 11 kW (15 HP)
5.11.7	**1**	**Pelleting line 1 Screw conveyor** It receives the product from the pelleting line feeding chain conveyor (pos 5.11.6) and feeds the pelleting line 1. To control de product flow that is fed to each pelleting line.
5.11.8	**1**	**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passageways needed for the correct inspection and maintenance of the installation.

Pos.	Units	Description
5.12	**1**	**PELLETING LINE**
5.12.1	**2**	**Pellet mills feeding chain conveyor** Double bottom chain conveyor that collect the product from the previous conveyors (pos 5.11.6 for one pelleting line and pos 5.11.7 for the other pelleting line) to feed the pellet mills. The leftover returns to the dry & milled product silo through the chain conveyor pos 5.11.1. Technical data/UNIT Length: 78.7 ft (24 m) Inclination: 0º Installed power: 5.5 kW (7.5 HP)
5.12.2	**12**	**Feeding dosing screw FS 1 x 3.0** PROGRANUL AdvancePelleting by PRODESA To dose the product into the pellet mill through frequency converter[1] Driven by gearbox Technical data: Diameter of screw: 12" Length: 6.5 ft Material: AISI 304 stainless steel Electrical installed power: 2.2 Kw (3 HP) By variable Frequency Drive (optional)
5.12.3	**12**	**Conditioner CD 45** PROGRANUL AdvancePelleting by PRODESA For a correct conditioning of the product before the pelletizing, through water addition. Rotor with 50 adjustable and detachable paddles made of stainless steel Inspection door with safety magnetic detector PT 100 sensor Driven by gearbox Technical data: Material: Stainless steel Length: 87" Volume: 12.5 ft³ Conditioner rotation: 500 rpm Inlet water flange diameter: 10 mm Electrical installed power (each): 10 HP Full Voltage

Pos.	Units	Description
5.12.4	**12**	**Pellet mill TORO PM 8.1** PROGRANUL AdvancePelleting by PRODESA

Pellet mill designed for wood pelleting with a vertically mounted ring die.

Body and frame

- Made from welded steel
- Designed to position the motor at the rear of the pellet mill
- Anti-vibrational plates placed between the pellet mill body and the floor
- Equipped with 4 cantilever plates on each frame according to the Prodesa design

Main shaft mechanical assembly

- Hollow main shaft – made from cast iron
- Main pulley made from a special cast iron, mounted onto heavy duty high quality bearings
- Safety pin calibrated according to motor power

Secondary shaft

- Mounted to two bearings with housing support

Drive / transmission

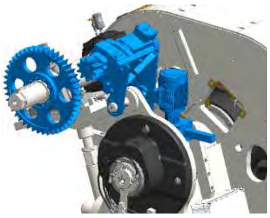
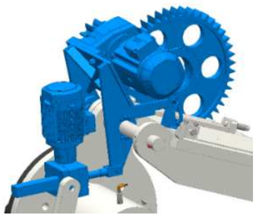
- Main drive – XPC V-belt transmission – under protective guard designed according to Prodesa standard
- Secondary drive – Toothed belt transmission – enclosed in the pellet mill body
- Motor included:

Motor	500 HP
Motor rpm	1,800 rpm

Compression

- A conical bowl to distribute the product entering via the feeding chute
- Scrapers to help guide the product between the rolls and inner die surface
- **Ring die** (ESR) – see note below
    - Dismantled via a thermo-mechanical system

Working width	4"
Inner diameter	32"
Working surface	3 ft^2 (432 in^2)
Pellet diameter	6-8 mm
Rotation speed	91 rpm

<table>
<tr><th>Pos.</th><th>Units</th><th>Description</th></tr>
<tr><td></td><td></td><td>
- Two corrugated rollers (ED) - Micrometric adjustment (Low grease consumption)
<table>
<tr><td>Units</td><td>2</td></tr>
<tr><td>Outer diameter</td><td>15,3"</td></tr>
<tr><td>Working width</td><td>4"</td></tr>
</table>
Main door and hinged feeding chute
- Made of stainless steel
- Door opening to the left or right (reversible)
- Mechanical safety locks for both the main door and hinged chute (opening to the right). To be connected to the local control cabinet (deported electronics)
- Opening on door with butterfly flap for steam extraction
An electrical box to connect the sensors and probes (Pre-wired in our workshop)
- Temperature probes for the secondary shaft bearings
- Vibration control probes placed on the secondary shaft bearing housing
- Speed control and module counting of the main pulley
- Cooling fan for the toothed belts
- Safety pin rupture sensor
<u>Additional data:</u>
Weight 26,500 lbs
</td></tr>
<tr><td>5.12.5</td><td>12</td><td>
Slow die rotation system
To be able to work with the die turning bidirectional at low speed and during maintenance operations and adjustments.
Mechanical system which allows to work with the die turning at low speed during the maintenance operation and adjustments. It means a greater operator safety.
It allows to reduce the speed from 91 rpm to 1 rpm.
 
<u>Technical data:</u>
Rotation speed with slow rotation system 1 rpm
Electrical installed power (each) 4 HP (3 Kw)
Variable Frequency Drive
</td></tr>
<tr><td>5.12.6</td><td>12</td><td>Water injection system</td></tr>
</table>

Pos.	Units	Description
5.12.7	**12**	**Pellet mill lubrication system**
5.12.8	**2**	**Tool kit** For the pellet mills maintenance. It includes: • Set of tools Tool set used to perform all maintenance and adjustments on the pellet mill: special hoop for die handling, reinforced front hoop,), small tools for bolts dismounting, tension gauge (laser tensiometer) • Thermal system for die mounting Thermo-mechanical system using heating belts to heat up and dilate the front hoop and floor bearing to remove and replace the die. o Heating belt composed of two half-rings equipped with resistors and a thermocouple o Power: 2 x 12 kW – 380 V – 50 Hz o Electrical control cabinet mounted to a mobile trolley • Trolley for die and rollers maintenance and replacement Die and roll handling system. One trolley can be used for a park of several machines. Hooks to lift die and rollers (for crane trolley ,the equipment has been controlled and certified for safety use under indicated working conditions. o Manual trolley for 1100 kg load o Double effect pump
5.12.9	**12**	**By-pass at the pellet mills outlet**
5.12.10	**2**	**Demister circuit** It collects the mist produced during the pelletizing process into the pellet mills. The mist will transport air and solid particles. The mist flow is transported through a channel with a hollow screw which takes out the solid particles. A special outlet gate unloads the refuse product on a container.
5.12.11	**2**	**Hot pellets chain conveyor** To collect the pellets at the outlet of the pellet mills and discharges them into the hot pellets bucket elevator

<table>
<tr><th>Pos.</th><th>Units</th><th>Description</th></tr>
<tr><td></td><td></td><td><u>Technical data:</u>
Material — Stainless steel 304
Length approx. — 85.3 ft (26 m)</td></tr>
<tr><td>5.12.12</td><td>2</td><td>Hot pellets bucket elevator
For elevating the pellets to the pellet cooler
Driven by gear box directly mounted
It includes explosion protection including venting panels and pressure sensors.
It includes a by pass at its outlet in order to send the product out of the line as an emergency
<u>Technical data:</u>
Material — Stainless steel 304
Total height — 49.2 ft (15 m)</td></tr>
<tr><td>5.12.13</td><td>2</td><td>Pellets cooler
Counter current vertical cooler to reduce the temperature of the pellets.
Including:
- 1 Inlet rotary valve
- 1 aspiration inlet
- 2 level detectors
- 1 pellets extraction device
- 1 supporting steel structure
- 1 collecting hopper for pellets</td></tr>
<tr><td>5.12.14</td><td>2</td><td>Cooling pneumatic system
Includes: cyclone, rotary valve, fan and pipes.
<u>Technical data/unit</u>
Cooling air flow — 60,760 m3/h
Fan motor — 180 HP (132 Kw)</td></tr>
<tr><td>5.12.15</td><td>2</td><td>Pellet sifter
For the separation of the fine particles at the cooler output.</td></tr>
<tr><td>5.12.16</td><td>1</td><td>Fines and broken pellets collecting conveyor 1
To collect fines and broken pellets from the pellets screens and from the cooler cyclonges, and carries then back to dry product silo through the conveyor pos 5.12.17.
<u>Technical data:</u>
Length — 55.7 ft (17 m)
Inclination — 0º - 10º
Installed power — 3.5 kW (5 HP)</td></tr>
</table>

Pos.	Units	Description
5.12.17	**1**	**Fines and broken pellets collecting conveyor 2** To collect fines and broken pellets from the previous conveyor (pos 5.12.7) and discharges it into the dry product silo. Technical data: Length 151 ft (46 m) Inclination 15º Installed power 45 kW (60 HP)
5.12.18	**1**	**Spark detector and extinguishing system** To be installed in the following points: - 1 x Outlet of hot pellets bucket elevator - 1 x Pneumatic system of the coolers It includes the following devices: • Spark detection central (one unique and common for all the different lines) For the connection of the detecting instruments (upgradeable) It registers the all the events: alarms, number of sparks, sparks threshold, time threshold, extinguishing time. Microprocessor with an automatic control system. • Spark detectors • Extinghisihing devices • Flashing alarm horn
5.12.19	**1**	**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passageways needed for the correct inspection and maintenance of the installation.

Pos	Units	Description
5.13	**1**	**Milling and Pelleting Island RTO** (RCO correction)
5.13.1	**1**	**Inlet manifold** Materials of Construction: Type 304L stainless steel, with minimum 10-gauge thickness, adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC; 176°F (0.06 bar @ 80°C). Access: One access door for internal inspection of inlet manifold.
5.13.2	**1**	**Diverter Valves** Materials of Construction: Type 304L stainless steel 3/16 in. thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC; 176°F (0.06 bar @ 80°C)inlet and 209°F outlet (98°C); maximum operational temperature is 600°F (316°C) during bake-out, and occurrence is for duration of 15-minute intervals. Valve Trim Construction: Main disk 3/16-inch-thick, Type 2101 duplex stainless steel; support disks 3/16-inch-thick Type 304L stainless steel. Seat materials are Type 304L stainless steel. Seal arrangement is metal to metal sealing surfaces without elastomeric compounds that would damage during bake-out. Access: One access door for internal inspection. Valve Actuation System: Parker 2A heavy duty pneumatic cylinder, adjustable end cushions at each end of travel; direct link with Parker linear alignment coupling, inductive proximity switches measuring actual valve shaft position, actuation time is 0.5 seconds full open to full close; the assembly is pre-assembled and pre-wired to junction box.
5.13.3	**1**	**Hopper Transitions** Materials of Construction: Type 304 stainless steel 3/16-inch-thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC; 176°F (0.06 bar @ 80°C) inlet and 209°C outlet (98°C); maximum operational temperature is 600°F (316°C) during bake-out
5.13.4	**1**	**Heat Recovery Sections** Materials of Construction: Type 304L stainless steel 3/16-inch-thick and adequately stiffened to withstand maximum internal pressures Operational Parameters: ±25” IWC (0.06 bar); 176°F (80°C) inlet and 1500°F outlet (816°C); maximum operational temperature 1800°F (982°C) at top and 1100°F (593°C) at bottom. Media Support Structure: Type 304 stainless steel structure with laser cut slotted plate; maximum design temperature of 1100°F (593°C); maximum free passage of 70% open area; centered in heat recovery chamber with no direct contact to outside walls; both ends floating to allow for thermal expansion.

Pos	Units	Description
		Access: Inspection access to the support structures is through the diverter valve; inspection access to top of heat recovery section is through combustion chamber access .
5.13.5	**1**	**Combustion Chamber** Materials of Construction: Type 304L stainless steel 3/16-inch-thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC (0.06 bar); normal operation 1500°F (816°C); maximum operational temperature 1800°F (982°C). Access: One access door in the combustion chamber.
5.13.6	**1**	**Outlet Manifolds** Materials of Construction: A36 carbon steel, ¼” thick and adequately stiffened to withstand maximum internal pressures. Operational Parameters: ±25 IWC (0.06 bar); 204°F (96°C) normal operating temperature; maximum operational temperature is 800°F (427°C) during bake-out and occurrence is for a duration of 15 minutes intervals. Access: One (1) man door for internal inspection
5.13.7	**1**	**Process Dampers** Materials of Construction: Type 304L stainless steel for inlet side of RTO and A36 for discharge side of RTO. Type: Butterfly with tadpole seats..
5.13.8	**1**	**ID Fan** Static Pressure: 25 IWC (0.06 bar); includes additional pressure with 2 IWC (0.005 bar) for incoming duct loss
5.13.9	**1**	**Exhaust Stack** Materials of Construction: A36 carbon steel. Features: Sampling platform per specifications, ladder from grade to platform, free standing
5.13.10	**1**	**Internal Ceramic Refractory** Heat Recovery Sections: Minimum 6” thick 8 lb density (15.24 cm thick @ 3.64 kg density). Combustion Chamber: Minimum 8” thick 8 lb density (20.32 cm thick @ 3.64 kg density). Type: Unifrax or approved equal; Anchor-Loc spun fiber ceramic modules. Attachment Method: Welded/threaded stud, Stainless steel. Combustion Chamber Temperature: 1550°F (843°C). Maximum Internal Temperature: 2200°F (1204°C).

Pos	Units	Description
		External Skin Temperature: Less than 150°F (66°C) at 70°F (21°C) with 5 mph (8 km/hr) wind.
5.13.11	**1**	**Heat Recovery Media** Type: MLM structured media by Lantec or equal. Thermal Efficiency: 96.5% TE.
5.13.12	**1**	**Burner System** Type: Maxon Kinemax. Features: Maxon series 5000 blocking valves, Honeywell C6097 A series pressure switches, Actarus B 38 R pressure regulators, Maxon MicroRatio series air/gas proportioning valves, combustion blower, Honeywell RM 7800L flame supervisory system, Honeywell C7061 A self-checking flame scanner, and Honeywell UDC 2500 over temperature control; supplied pre-piped, pre-wired, skid mounted.
5.13.13	**1**	**RTO Control Devices** The following devices are included in order to control the RTO via PLC: • Temperature Control Sensors • Temperature Transmitters • Zero Speed Switches • Pressure Transmitters • Proximity Switches (Capacitive and Inductive) • Flame Scanner(s)
5.13.14	**1**	**Structures, supports and platforms** All the metallic structures for the sustentation of the described equipment, the access ladders and platforms and passage ways needed for the correct inspection and maintenance of the installation. All the equipment (except those in inox steel) are supplied with a layer of epoxy covered by a layer of synthetic paint, according with our standard RAL

Pos.	Units	Description
5.14		**Electrical equipment and control system**
5.14.1	**1**	**Control system** • Automatic process control. In order to control and regulate the plant, a PLC (Siemens S7-300, S7-1500 or similar), with visualization and trending, is supplied. For maintenance and regulation of every equipment, it exists the possibility of controlling them in a manual mode. • Independent control systems in dry line and pellet line. In this way, for maintenance, it can be possible to disconnect completely one line, whereas the other one can continue operating. • There are instrumentation control inputs and outputs in electrical cabinets, which are located near the equipment. These inputs and outputs include IP 54 protection in order to reduce the cabling and to avoid interferences. • Local control electrical cabinets for the main equipment, such as mills and pellet mills. • Communication between electrical cabinets by Profibus, Profinet or CANopen. Ring layout in order to guarantee a better performance. • Double communications card. The first one to ensure SCADA communications and the other one to control inputs/outputs. • Safety controllers to manage the general emergency stop and the safety circuits of main equipment. • Internet connection for remote maintenance to be supplied by client. • Process instrumentation: IFM,Edress Hauser, Wika, Schmersall, ACO, etc.
5.14.2	**1**	**Monitoring System** • Monitoring system PC-SCADA, based on WinCC, Cimplicity or similar. • PC in Rack with constant supply, SAI. • Rack of connecting PC-SCADA, SAI and Switch of Ethernet connections. • Redundant hard disks. • Display system in several monitors at the same time. Thanks to it, it can be possible to display the whole plant state in a simple way. • Display of process parameters, input data and state of the sequence. • Functioning and operation control, with the equipment working in a manual mode. • Graphs and functioning records. In this way, it can be possible to visualize current trends or recover old records in order to analyze them. • Display active alarms and record them in the long-term. • Internet connection for remote maintenance to be supplied by client.

Pos.	Units	Description
5.14.3	**1**	**Electrical Power Cabinet** • Control and protection of motors and drives. • Cutoff switch with protection against overcurrents and differential failure. • Network analyzer integrated with record and display of data from SCADA. • Direct starter for motors (P <= 7,5 kW), Siemens, ABB or similar. • Slow starter for motors (P >7,5 kW or less if it is required for the process), Siemens, ABB or similar. • High performance frequency variators. It is possible to add a line filter for drivers if the process requires it. ABB, Siemens or similar. • Control panels for the starters and variators. They are located in the frontal part of the electrical cabinet, in this way you can manipulate them without opening the cabinet. • Variators and starters communicated with the PLC by Profibus, Profinet, etherCAN or similar. • Terminal connection on the bottom of the electrical cabinet for areas under 35 mm^2. If the area is higher than 35 mm^2, the connection takes place in the driver shovel. *The cabling of all the elements described in this offer to the control panel is not included.*

Pos.	Units	Description
5.15		**Engineering, Documentation and Project Management**
5.15.1	**1**	**Engineering and Documentation** The following documentation in English language is included in the price: ✓ Loading drawing. ✓ Layout drawing. ✓ Electrical drawing. ✓ Motor and instrument list. ✓ P&ID. ✓ Operating instructions. ✓ List of spare parts. **Project Management** Remote services of a Prodesa's Project Manager to coordinate the different stages of engineering, manufacturing, shipping, erection supervision and commissioning. Includes monthly visits during the engineering stage to coordinate the Balance of Plant (Building, civil works, utilities, etc.) with the client and contractors.

6. TRANSPORT, ERECTION SUPERVISION, COMMISSIONING

6.1 TRANSPORT

Prices are considered as DDP Hoquiam, Grays Harbor County (Washington, USA) according to INCOTERMS 2020 and in accordance with applicable duties, taxes and other costs related to import, in force at the moment of issuance of this offer.

In case of modifications on these costs:

- During the validity period of the offer or
- In case of project execution: during the period between the date of contract signature and the delivery date of the last material.

PRODESA reserves its right to revise the price of this DDP transport cost.

6.2 ERECTION SUPERVISION

The erection supervision by a wide experienced chief is included in our scope of supply.

We have included in the scope of this offer the services of three-four (3-4) experienced technicians during six (6) months to support the erection/assembly.

The electrical and mechanical erection will be done with local fitters. The cost of those fitters is not included in this offer.

Additionally services will be “per diem” rates.

NOTE: Our works on site include all the travel expenses, the accommodation and the subsistence allowances of our technicians.

6.3 COMMISSIONING

The commissioning consists on a cold start-up followed by a warm start-up. Our engineers will be onsite as required in order to carry out this operation.

The client will supply the utilities that will be specified before the commissioning.

For the commissioning, we have included the services of three (3) experienced technicians during four (4) months that will set the plant into operation and will train the staff.

Additionally services will be “per diem” rates.

The cold start-up phase is defined as all tasks and checks carried out in the equipment in dynamic and energized conditions (without raw material) in order to prepare the plant for the warm start-up (with product).

The end of the warm start-up is defined as the moment when the plant starts to produce pellets, so the Take Over. At this time, operational risks of the pellets plant is transferred to the client.

The training of the client’s staff will be in English language. The training will be together to the commissioning.

NOTE: Our works on site include all the travel expenses, the accommodation and the subsistence allowances of our technicians.

7. SUPPLY LIMITS

Product inlet

Ground chips:	Truck dumper	(pos. 5.1.2)
Shavings and sawdust	Truck dumper	(pos. 5.1.2)
Fuel	Truck dumper	(pos 5.1.2)

Product outlet

Pellets:	Pellet sifter	(pos. 5.12.15)

Thermal energy

Fuel :	Truck dumper	(pos 5.1.2)

Electricity

Electrical connection in our control panel.

Water

Inlet water flanges to the different consumption points.

Compressed air

Connections of different air consumption points: filters, coolers, etc.

Lubricant

Connections of different lubricant consumption points.

8. PRICE

As this is a budget proposal, prices and scope of supply may be altered in further discussions with the client.

Prices are given in USD.

POS.	DESCRIPTION	[redacted]
5.1	Raw material reception	[redacted]
5.2	Wet milling line	[redacted]
5.3	Dryer feeding system	[redacted]
5.4	Drying island – Drum dryer	[redacted]
5.5	Drying island – Heat energy System	[redacted]
5.6	Drying island – Wet electrostatic precipitator (WESP)	[redacted]
5.7	Drying island – Regenerative thermal oxidizer (RTO)	[redacted]
5.8	Drying island – Refractory works	[redacted]
5.9	Dry product storage	[redacted]
5.10	Dry milling line	[redacted]
5.11	Dry and milled product storage	[redacted]
5.12	Pelleting line	[redacted]
5.13	Dry milling and pelleting island RTO	[redacted]
5.14	Electrical equipment and control system	[redacted]
5.15	Engineering, Documentation and Project Management	[redacted]
6.1	Transport (DDP Delivery)	[redacted]
6.2-6-3	Erection Supervision and Commissioning	[redacted]
	TOTAL	[redacted]

VAT and taxes not included.

9. TERMS OF PAYMENT

First payment: 30% at the signature of the contract.

The rest of the payments: 70%

Resting 70 % will be done by Partial or Total Transferable and Irrevocable Letter of Credit, in these stages:

- 50% at the delivery of the main equipment, by divided payments in each partial delivery of main equipment.
- 10 % at the end of the mechanical erection.
- 5 % at the end of the cold start-up.
- 5% at the end of the warm start-up.

The following sentences are applicable to the Letter of Credit or any other terms of payment agreed with the client:

- It must be emitted not later than one (1) month after the first payment is done. In case of delay in the emission of this Letter of Credit, the project will be delayed in proportional time or higher depending on the circumstances of the manufacturing.
- In case of delay in the delivery of the equipment, erection or commissioning due to circumstances beyond PRODESA´s control, will invoice the corresponding pending stages of the LC in 15 days of our communication to execute the works.

10. PRICE VALIDITY

This offer is valid for 1 month from the date of issuance.

11. DELIVERY TIME

To be confirmed.

12. NOT INCLUDED

Unless especially mentioned in our quotation, the following parts and services are not included in our price:

1. Building with concrete, foundations and civil works, and Building construction, painting and demolition works possibly necessary on existing buildings
2. Based plates.
3. Cabling from the different elements described in the contract to the electrical panels.
4. Manpower for mechanical and electrical erection.
5. Cranes, scaffolding and other elevating devices necessary for the erection and offloading.
6. Thermal and acoustic isolation or reduction equipment (if required and not mentioned).
7. Grounding, Grounding network and bonding grid.
8. Reactive energy compensation.
9. Harmonics reduction system.
10. Ducting for compressed air, water, steam etc.
11. Air compressor, water pumps, etc.
12. Heat trace cables.
13. Piping insulation.
14. Pipe bridges.
15. Spare parts and parts subject to wear.
16. Radiographs of welds.
17. Protecting measures for electrical motors installed outdoor.
18. Required operating materials (pressurised air, water, electricity, lubricants, hydraulic oil, etc.) and disposal of the same
19. Operating material or fuels for commissioning test running and/or performance testing.
20. Energy and electrical cabinets during the erection and commissioning.
21. Toilets, changing rooms, and material storage room during the work.
22. Containers and management of the waste generated during the assembly and start up.
23. Containers for rejected product (overs, fines, metals, heavy particles...).
24. The cost of testing, third parties certifications and adaptations to regulations different to the ones considered, as local regulations for example. There is no provision for technical support to these adaptations in case of required.
25. Expenses for tests, stamps and approvals eventually requested by the authority in the country of destination.
26. Emissions and noise tests.
27. Registration with the Local Authority.
28. Any travel expenses, accommodation, allowances, etc, derived from mandatory quarantines due to COVID19 (If applicable at time of travel). These costs will be invoiced according to Prodesa's Administration fares
29. All other services and supplies not mentioned in our description.

13. ANNEX

Annex 1	General Conditions of Sales	F.82.01.04 - ANNEX I, GCS

www.prodesa.net
prodesa@prodesa.net

PORT OF GRAYS HARBOR WOOD PELLET PLANT

Notice of Construction Permit Application

Prepared for
Pacific Northwest Renewable Energy, LLC

July 2023

ESA

ESA
2801 Alaskan Way
Suite 200
Seattle, WA 98121
206.789.9658 phone
206.789.9684 fax

July 21, 2023

Olympic Region Clean Air Authority
2940 Limited Lane NW
Olympia, Washington 98502

Subject: NOC Application Submittal

Dear Mark Goodin:

On behalf of Pacific Northwest Renewable Energy, LLC, Environmental Science Associates is submitting a Notice of Construction application for a wood pellet manufacturing facility to be located in Hoquiam, Washington. A signed Form 1 and application fee will be provided separately.

Sincerely,

Ed Warner
Air Quality Analyst

PORT OF GRAYS HARBOR WOOD PELLET PLANT

Notice of Construction Permit Application

Prepared for
Pacific Northwest Renewable Energy, LLC

July 2023

2801 Alaskan Way
Suite 200
Seattle, WA 98121
206.789.9658
www.esassoc.com

ESA

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Acronyms and Other Abbreviations

Abbreviation	Definition
°C	degrees Celsius
°F	degrees Fahrenheit
K	degrees Kelvin
ASIL	Acceptable Source Impact Level
BACT	Best Available Control Technology
CAS	Chemical Abstract Service
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
EPA	U.S. Environmental Protection Agency
HAP	hazardous air pollutants
ICE	internal combustion engine
lb/hr	pounds per hour

Abbreviation	Definition
m	meters
m/s	meters per second
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
mph	miles per hour
NAAQS	national ambient air quality standards
NED	National Elevation Dataset
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NOC	Notice of Construction
NO_X	nitrogen oxides
NSPS	New Source Performance Standards
ORCAA	Olympic Region Clean Air Agency
PM	particulate matter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
PM_{10}	particulate matter less than or equal to 10 microns in diameter
PNWRE	Pacific Northwest Renewable Energy
PSD	Prevention of Significant Deterioration
PTE	potential to emit
RACT	Reasonably Available Control Technology
RCO	regenerative catalytic oxidizer
RICE	reciprocating internal combustion engine
RBLC	Reasonably Available Control Technology (RACT)/Best Available Control Technology (BACT)/ Lowest Achievable Emission Reduction (LAER) Clearinghouse
RTO	regenerative thermal oxidizer
SIL	Significant Impact level
SO_2	sulfur dioxide
SQER	Small Quantity Emission Rate
TAP	toxic air pollutant
tBACT	Best Available Control Technology for toxic air pollutants associated with a project
TPY	tons per year
UTM	Universal Transverse Mercator
VOC	volatile organic compounds
WAC	Washington Administrative Code
WBAN	Weather-Bureau-Army-Navy
WDOE	Washington Department of Ecology
WESP	wet electrostatic precipitator
Willis Enterprises	Willis Enterprises Moon Island Chip Mill

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PORT OF GRAYS HARBOR WOOD PELLET PLANT

Notice of Construction Permit Application

1 Executive Summary

Pacific Northwest Renewable Energy, LLC (PNWRE) is proposing to construct and operate a wood pellet facility on an approximately 60-acre parcel in the city of Hoquiam, Washington. The facility would include a wood biomass pellet plant, storage silos, and a new conveyor that would connect to an existing conveyor at the Willis Enterprises Moon Island Chip Mill (Willis Enterprises).

The processing of woody biomass at the proposed PNWRE facility would involve the use of three truck tippers; a chips cleaning line with air emissions controlled by a cyclone; two wet hammer mills with air emissions controlled by cyclones; one hog fuel furnace and dryer with air emissions controlled by a wet electrostatic precipitator (WESP) and a regenerative thermal oxidizer (RTO); four dry hammer mills, each with air emissions controlled by a combined cyclone and fabric filter system (cyclofilter); 12 pellet mills in production and two cooling lines with air emissions controlled by baghouses; a regenerative catalytic oxidizer (RCO) controlling air emissions from the combined dry hammer mills and pellet cooling lines; five wood pellet storage silos; and a covered conveyor system to deliver wood pellets to the existing Willis Enterprises conveyance system and ship loadout facility. The wet raw materials for pellet production and hog fuel for the furnace would be delivered to the facility via truck. The facility would have the capacity to process up to 440,800 tons per year (TPY) of dried wood pellets.

The project would induce emissions of air contaminants in the region, thereby requiring an approved Notice of Construction (NOC) application from the Olympic Region Clean Air Agency (ORCAA). The PNWRE facility is not expected to generate criteria pollutant emissions in quantities that would trigger the need for a Prevention of Significant Deterioration (PSD) permit but is anticipated to trigger the need for a Title V Air Operating Permit. The facility would be an area source of hazardous air pollutants (HAPs), as potential emissions of each individual HAP would be less than the applicable major source threshold, 10 TPY. Total HAP are less than the combined HAP major-source threshold, 25 TPY.

This report serves as the NOC permit application required by ORCAA. The purpose of this application is to document an emission inventory for the PNWRE facility, review relevant permitting programs and equipment standards, and compare project-specific air modeling results to applicable thresholds. General forms required by ORCAA for an NOC application are found in **Appendix A**.

2 Facility Description

2.1 Site Description

Pacific Northwest Renewable Energy (PNWRE) is proposing to construct and operate a wood pellet facility located on an approximately 60-acre parcel in the city of Hoquiam, Washington. The facility would be adjacent to the Willis Enterprises Moon Island Chip Mill (Willis Enterprises) and near Terminal 3 at the Port of Grays Harbor. Hoquiam is in Grays Harbor County and falls under the jurisdiction of the Olympic Region Clean Air Agency (ORCAA). The area has a moderate coastal climate with mild summer and winter temperatures and plentiful rain. The county is currently designated as attainment/unclassifiable for all federal ambient air quality standards for criteria pollutants.[1] **Figure 1** shows the general location of the proposed PNWRE facility.

Figure 1 General Location of the Proposed Wood Pellet Facility

2.2 Process Description

The processing of wood pellets at the proposed PNWRE facility would involve the use of three truck tippers with outdoor storage piles; a chip cleaning line; two wet hammer mills; one hog fuel furnace and dryer with air emissions controlled by a wet electrostatic precipitator (WESP) and a regenerative thermal oxidizer (RTO); four dry hammer mills; 12 pelletizers; two pellet coolers; a regenerative catalytic oxidizer (RCO) that controls emissions from the dry hammer mills and

[1] U.S. Environmental Protection Agency. 2021. "Status of Washington Designated Areas." Available: https://www3.epa.gov/airquality/urbanair/sipstatus/reports/wa_areabypoll.html. Last updated March 12, 2021. Accessed May 31, 2023.

pelletizers; five pellet storage silos; and a conveyance system for product loadout. The woody biomass raw materials for processing and hog fuel for the furnace would be delivered via truck. A new conveyor would transport wood pellets from the silos and connect them to the existing Willis Enterprises conveyor system located on the Willis Enterprises chip mill site. Pellets would then be conveyed to the Port of Grays Harbor Terminal 3 for loading onto vessels. The facility would be designed to produce, store, and export up to 440,800 short tons per year (TPY) of wood pellets at 8% moisture content. While the facility's operational plan is based on 8,000 hours per year, air quality impacts are calculated based on 8,760 hours per year. Facility layout and process flow diagrams are found in **Appendix B**.

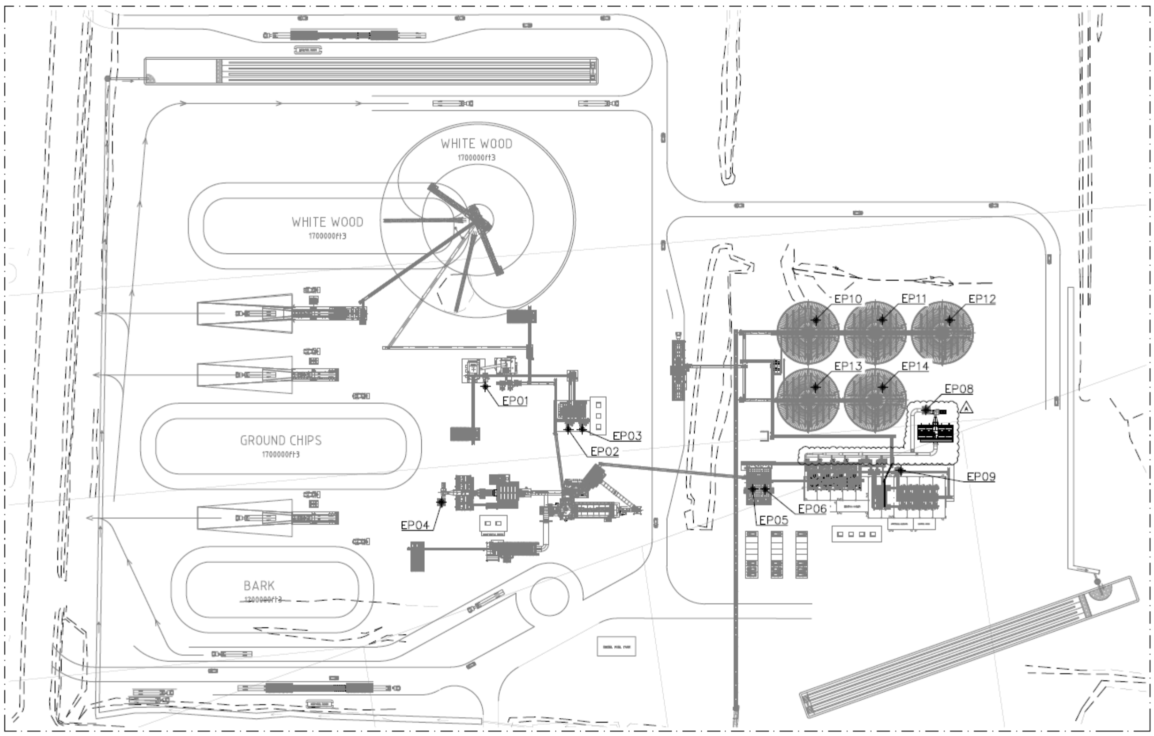

Figure 2 General Facility Layout

2.2.1 Raw-Material Receiving and Storage Area

The manufacture of wood pellets would start with the raw woody biomass consisting of forest residues (ground chips) and mill residues (white wood), which would be delivered by truck. Trucks delivering ground chips and white wood would be emptied via dedicated truck tippers while front-end loaders would form outdoor storage piles of these materials. Biomass fuel or bark, also referred to as "hog fuel," would likewise be delivered via truck and a front-end loader would form an outdoor storage pile. These storage piles are expected to be up to 1.7 acres each in size. PNWRE is also considering the use of a radial stacker/reclaimer for the handling, stockpiling, and transfer of white wood after it has been deposited by the truck tipper. This method would generate the same amount of emissions as the material handling and stockpiling of white wood via front-end loader, but it would eliminate emissions associated with front-end loader traffic for this material. The analysis herein presents emissions for the receiving and storage of white wood as if a front-end loader were being used, to conservatively represent the highest potential emissions impact; however, PNWRE may implement the radial stack/reclaimer instead, depending on economic conditions.

To minimize the dust emissions from vehicle traffic, the PNWRE facility would implement a dust control plan. The plan would include abiding by a 10 miles per hour (mph) posted speed limit for all vehicles and heavy equipment, regularly applying water on road surfaces via water truck, and using a pickup broom truck as needed.

Front-end loaders would transfer raw materials and biomass fuel to dedicated walking-floor bins. The walking floors would move the materials to the next phase in their processing. From this point onward, all raw material handing processes would be fully enclosed. The ground-chips walking floor would discharge to a chain conveyor that would feed the chip cleaning line. The white wood walking floor would discharge to a disc screen that would separate larger pieces for further sizing in the wet hammer mills, with the remaining product routed to the dryer. The bark walking floor would route the biomass fuel to the furnace.

2.2.2 Chip Cleaning Line

Ground chips created from forest residuals include impurities such as sand and stone that must be separated from the wood. The chip cleaning line would use a series of scalper rolls to remove these impurities and organize the chips by size. The smallest sizes, or fines, would be routed to the dryer feeding system, while the intermediate fraction would be sent to the wet hammer mills. A cyclone would be used to mitigate particulate emissions, while also recovering airborne product from the scalping process to combine it with the fines routed to the dryer feeding system. The oversized pieces and impurities would be discharged to a container as waste.

2.2.3 Wet Hammer Mills

Wet hammer mills would be used to reduce the size of the raw materials to facilitate optimum drying. They are referred to as “wet hammer mills” because the raw materials would not have been dried yet. Two identical hammer mills in parallel would be used to reduce the size of the chips. Each wet hammer mill would use a cyclone to mitigate particulate emissions, while also recovering product to route to the dryer feeding system. After the chips pass through the wet hammer mills, they would be discharged downward by mechanical and pneumatic systems to conveyors that would transport them to the dryer.

2.2.4 Drying Line

The drying line is the heart of the proposed PNWRE facility. The drying line would include the furnace, drum dryer, and emissions control system. The furnace would combust hog fuel to provide heat for the dryer and would have a maximum heat input capacity of 164.81 million British thermal units per hour (MMBtu/hr). Wet raw materials would be staged in a metering bin before being fed to the drum dryer inlet. Hot flue gas from the furnace would be routed through the drum dryer, where the heat would dry the raw material from approximately 45 percent moisture content to a target 10 percent final moisture content. Dried material would be conveyed from the drum dryer discharge through a pair of high-efficiency cyclones in parallel that would separate the dried wood material from the moisture-rich exhaust gas stream. The exhaust stream then either would be recycled back through the drum dryer or would pass through the emissions control system before emitting from a stack into the atmosphere. The dried material would be conveyed to a dry-product intermediate-storage silo.

The emissions control system for the drying line would consist of cyclones and a WESP for controlling emissions of particulate matter (PM); and an RTO for mitigating emissions of volatile organic compounds (VOC), carbon monoxide (CO), and organic HAP and toxic air pollutants (TAPs). A WESP controls PM using electrical forces to remove particles entrained within an exhaust stream onto collector surfaces such as pipes or plates within the WESP. The particulate is washed from the collector surfaces with liquid spray for collection and disposal. Cyclones are located prior to the WESP to recover airborne product and reduce the inlet PM loading to the WESP. An RTO is a type of thermal incinerator or oxidizer that destroys VOC and condensable organics by burning them at high temperatures, while oxidizing the CO in the exhaust to carbon dioxide.

2.2.5 Dry-Product Intermediate Storage

Dried material would pass from the dryer into the dry-product intermediate-storage silo. Two dust filter-equipped vents in this vessel (EP-05 and EP-06) would emit exhaust to the atmosphere. The retention time in the silo would allow the material moisture content to homogenize, which would help to optimize the pelletizing process. A chain conveyor would transport the product from the outlet of the silo to the dry hammer mills.

2.2.6 Dry Hammer Mills

Four dry hammer mills would process the dried material to the desired size. Each hammer mill would emit exhaust through a combined cyclone and fabric filter device (cyclofilter) for recovering product and controlling particulate emissions. The exhaust streams would then be combined with exhaust streams from the pellet coolers, then passed through an RCO for VOC control before emitting from a stack to the atmosphere. An RCO functions like an RTO to destroy VOC and condensable TAP via oxidation; however, it uses a catalyst material rather than ceramic material to achieve oxidation at lower temperatures.

2.2.7 Milled Dry-Product Intermediate Storage

From the dry hammer mills, the dried and milled product would be conveyed to the milled dry-product intermediate-storage silo with a dust filter-equipped vent (EP-09). The dried product would be offered additional retention time for achieving a more homogenous moisture content, a key factor for achieving the desired quality in the final product. A chain conveyor would transport the product from the outlet of the silo to the pellet mill hoppers that would independently feed each pellet mill.

2.2.8 Pellet Mills

There would be two pellet lines consisting of six pellet mills each, for a total of 12 pellet mills. In each pellet mill, rollers would push the material through the holes of a die plate. Knives on the exterior of the die plate would cut the wood pellets from the plate once the pellets achieve the required length. The temperature of a freshly produced pellet is around 200 degrees Fahrenheit (°F). Therefore, each of the two pellet lines would discharge into a pellet cooler where the material would flow countercurrent to a stream of ambient air introduced in the cooler. The air flow reduces the temperature of the wood pellets at the point of pellet discharge. Each pellet cooler would be equipped with a baghouse to remove dust from the exhaust stream. The exhaust streams from the two pellet cooler baghouses would be combined with the exhaust streams from the dry hammer mills, then passed through an RCO for VOC control before emitting from a stack to the atmosphere.

2.2.9 Pellet Silos and Loadout

Pellets would move from the pellet coolers to the 5 pellet silos. The total combined capacity of the pellet silos would be approximately 60,000 short tons. Pellets would be aggregated in the silos until enough volume is accumulated for bulk shipments. The silos would utilize aeration fans and venting to maintain low pellet temperature for final shipment. An automated enclosed conveyor would draw pellets from the silos evenly according to loading schedules and transport them to the neighboring Willis Enterprises' existing conveyors and vessel loadout facilities. Willis Enterprises operates under an RC2-class ORCAA registration (source number 2112, file number 647). PNWRE would also have the ability to deliver pellets via a truck unloading system; however, this system would be used only in special circumstances. PNWRE proposes no more than 10 loaded trucks per day and 32,000 tons per year of truck loadout utilization.

2.2.10 Emergency Equipment

An emergency backup diesel generator would be available for use during periods of power loss. The generator would be no larger than 300-kilowatt capacity.

3 Emission Calculations

Table 1 identifies the facility-wide criteria pollutant emissions from point sources for the proposed PNWRE facility. The emissions are based on operation at maximum capacity assuming compliance with the proposed emissions limitations, consistent with the definition for potential to emit (PTE) from ORCAA Regulation 1.4. The table includes point-source emissions only and excludes fugitive emissions because wood pellet production is not among the 28 listed categories of PSD regulations with lower major source thresholds (100 TPY) that require including fugitive emissions for comparison to major-source regulatory thresholds. Although the proposed facility would not exceed the PSD major-source threshold of 250 TPY for any criteria pollutant, some pollutants would exceed the Title V major-source threshold of 100 TPY. PNWRE would apply for the required Title V Operating Permit within 12 months of commencing operation. Detailed emissions calculations are found in **Appendix C**.

TABLE 1
FACILITY-WIDE POTENTIAL EMISSIONS

Pollutant	Facility-wide Point-Source PTE (TPY)	Title V Major-Source Threshold (TPY)	Title V Major? (Yes/No)	PSD Major-Source Threshold (TPY)	PSD Major? (Yes/No)
Filterable PM	108	N/A	N/A	250	No
Total PM_{10} [1]	88	100	No	250	No
Total $PM_{2.5}$ [1]	71	100	No	250	No
NO_X	230	100	Yes	250	No
CO	185	100	Yes	250	No
VOC	67	100	No	250	No
SO_2	18	100	No	250	No
CO_2e	163,592	N/A	N/A	100,000	No[2]
Total HAP	1.32	25	No	N/A	N/A
Max Individual HAP[3]	0.31	10	No	N/A	N/A

NOTES: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; HAP = hazardous air pollutant; N/A = not applicable; NO_X = nitrogen oxides; PM = particulate matter; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter; PSD = Prevention of Significant Deterioration; PTE = potential to emit; SO_2 = sulfur dioxide; TPY = tons per year; VOC = volatile organic compound

1 Total PM_{10} and $PM_{2.5}$ include condensable fraction.
2 CO_2e cannot trigger PSD unless already triggered by another pollutant.
3 The maximum individual HAP is formaldehyde.

4 Regulatory Applicability Analysis

This section identifies and discusses the federal and state air quality regulations that potentially apply to the stationary sources associated with this project.

4.1 Applicability of Notice of Construction

ORCAA Regulations Rule 6.1 states that an approved NOC permit application is required for construction, installation, or establishment of any stationary source and applies to the proposed PNWRE wood pellet facility. The NOC forms required by ORCAA can be found in **Appendix A**. As outlined in ORCAA Rule 6.1.4, for the NOC application to be approved, the applicant must demonstrate that Best Available Control Technology (BACT) has been employed for all air pollutants. In addition, TAP emissions regulated under Washington Administrative Code (WAC) Chapter 173-460 must meet the applicable requirements of that program. The facility shall comply with all applicable federal regulations such as New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAP). This NOC application has been prepared to demonstrate that the proposed PNWRE facility would comply with all requirements in ORCAA Rule 6.1.4 and allow ORCAA to issue an air permit.

4.2 Prevention of Significant Deterioration (Major New Source Review)

The Washington Department of Ecology (WDOE) administers the state PSD air quality permitting program that applies to new sources or modifications that are considered "major." The PSD program defines a major new source or a major modification as having potential emissions of any pollutant regulated under the program that exceeds 250 TPY.

As discussed in Section 3 of this report, the PNWRE wood pellet facility would not emit any criteria pollutant at a rate exceeding 250 TPY; therefore, the project is not required to submit an application for a PSD permit. This NOC application demonstrates that criteria pollutants would not be emitted in quantities that would trigger the PSD program.

4.3 Title V Operating Permit Program

Title V of the federal Clean Air Act requires facilities with the potential to emit more than 100 tons of a regulated criteria pollutant, 10 tons of a single HAP, or 25 tons of all HAPs combined on an annual basis, to obtain a Title V Air Operating Permit. As described in Section 3 of this report, facility-wide potential emissions are expected to exceed 100 TPY for a criteria pollutant; therefore, a Title V Air Operating Permit would be required. PNWRE would submit a Title V Air Operating Permit application within 12 months of the commencement of operation.

4.4 New Source Performance Standards

The NSPS are federal emissions standards applied to specific categories of stationary sources that are constructed, modified, or reconstructed after the standard was proposed. These standards are found in Title 40, Part 60 of the Code of Federal Regulations (CFR). The NSPS represent the minimum level of control that is required on a new or modified source. The following sections discuss some potentially applicable NSPS regulations. Note that some of the discussions demonstrate that the NSPS are not applicable to the PNWRE wood pellet facility.

4.4.1 40 CFR 60 Subpart A – General Provisions

Elements of Subpart A apply to each affected facility under any NSPS rule, as specified in each NSPS source category standard. Subpart A contains general requirements for notifications, monitoring, performance testing, reporting, recordkeeping, operation, and maintenance.

4.4.2 40 CFR 60 Subpart Db – Industrial, Commercial, and Institutional Steam Generating Units

This NSPS applies to industrial, commercial, and institutional steam generating units with a heat input greater than 100 MMBtu/hr that began construction, modification, or reconstruction after June 19, 1984. While this regulation applies to wood-burning combustion units, it is focused on combustion used to produce steam or heat water. A steam generating unit is defined within this regulation as a device that combusts any fuel or byproduct/waste and produces steam or heats water or heats any heat transfer medium. The burner in the dryer includes one 165 MMBtu/hr burner firing biomass (wood materials) to provide heat for the dryer. The burner would generate heat for the direct drying of wood materials only, and no heat from the burner would be utilized to generate steam, heat water, or heat any heat transfer medium. PNWRE does not propose installation of any steam-generating units at the wood pellet facility; therefore, the facility would not be subject to NSPS Subpart Db.

4.4.3 40 CFR 60 Subpart CCCC – Commercial and Industrial Solid Waste Incineration Units

This NSPS applies to commercial and solid waste incineration units (CISWI) and air curtain incinerators (ACI). A CISWI is defined within this regulation as any distinct operating unit at a commercial or industrial facility that combusts a solid waste meeting the definition in 40 CFR Part 241. As stated in §241.2, traditional fuels that are produced as fuels and are unused products that have not been discarded are not solid wastes, including cellulosic biomass (virgin wood). The traditional fuels definition further states that clean cellulosic biomass, defined in §241.2 to include forest-derived biomass such as bark and hogged fuel, is a fuel product. Therefore, the bark that would be used as fuel for the facility furnace is not solid waste and the furnace is not a CISWI. An ACI is defined within this NSPS as an incinerator that operates by forcefully projecting a curtain of air across an open chamber or pit in which combustion occurs. There are no proposed ACI for the PNWRE wood pellet facility. The facility would not be subject to NSPS CCCC.

4.4.4 40 CFR 60 Subpart IIII – Stationary Compression Ignition Internal Combustion Engines

This NSPS applies to manufacturers, owners, and operations of certain stationary compression ignition (CI) internal combustion engines (ICEs). PNWRE is proposing to operate a CI ICE emergency generator. Therefore, NSPS IIII is applicable to the CI ICE at the facility. PNWRE proposes to operate the CI ICE as an emergency engine as defined in this regulation. The facility shall comply with the following requirements:

- Use only ultra-low-sulfur diesel.
- Operate, maintain, install, and configure the engines per the manufacturer’s instructions.
- Maintain a copy of the U.S. Environmental Protection Agency (EPA) certificate for the engine.
- Ensure that the engine is equipped with a non-resettable hour meter and that run logs noting the reason for operation are maintained.
- Limit maintenance and readiness testing to 100 hours per year. (There is no time limit on the use of emergency stationary ICE in emergency situations.)

4.5 National Emissions Standards for Hazardous Air Pollutants

The NESHAP are emission standards for HAPs from specific source categories. These regulations generally specify the Maximum Achievable Control Technology (MACT) that must be applied for a given industry category. Consequently, these rules are often called “MACT standards.” These federal regulations are found in 40 CFR Parts 61 and 63 and are applicable to major and area sources of HAPs. A “HAP major source” is defined as a facility with potential emissions exceeding 25 TPY for total HAPs or potential emissions exceeding 10 TPY for any individual HAP. An "area source" is a stationary source of HAPs that is not a major source. As identified in Table 1, the proposed PNWRE wood pellet facility would be an area source of HAP emissions because maximum individual HAP emissions would be less than 10 TPY and total HAP emissions would be less than 25 TPY. The following sections discuss some potentially applicable NESHAP regulations. Note that some of the discussions demonstrate that the NESHAP is not applicable to the facility.

4.5.1 40 CFR 63 Subpart A – General Provisions

All affected sources are subject to the general provisions of 40 CFR 63 Subpart A unless specifically excluded by the source-specific NESHAP. Subpart A requires initial notification and performance testing, recordkeeping, and monitoring; provides reference methods; and mandates general control device requirements all other subparts as applicable.

4.5.2 40 CFR 63 Subpart DDDD – Plywood and Composite Wood Products

This regulation applies to major sources of HAPs that manufacture plywood or composite wood products by bonding wood materials (e.g., fibers, particles, strands, veneers) or agricultural fiber, generally with resin under heat and pressure, to form a structural panel or engineered wood product. The PNWRE wood pellet facility would not use any form of resin or manufacture structural panels or any similar type of wood product (i.e., veneer, particleboard, fiberboard, kiln-dried lumber). Furthermore, the facility would be an area source of HAPs; therefore, NESHAP Subpart DDDD is not applicable to the proposed facility.

4.5.3 40 CFR 63 Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters

This regulation applies to solid, liquid, and gaseous-fired boilers and process heaters at major sources of HAP emissions. This regulation includes the following language in the definition of a process heater: "an enclosed device using controlled flame, and the unit's primary purpose is to transfer heat indirectly to a process material… Process heaters are devices in which the combustion gases do not come into direct contact with the process materials." The combustion gases from the dryer burner at the PNWRE facility's drying line would be in direct contact with the wood materials; therefore, the dryer burner does not meet the definition of a process heater. Boilers are defined within this regulation as an enclosed device using controlled flame combustion for the primary purpose of recovering thermal energy in the form of steam or hot water. The furnace for the dryer would not be used for generating steam or hot water; therefore, it does not meet the definition of a boiler. Furthermore, the PNWRE facility would be an area source of HAP emissions. For these reasons, the proposed facility is not subject to Subpart DDDDD.

4.5.4 40 CFR 63 Subpart JJJJJJ – Industrial, Commercial, and Institutional Boilers Area Sources

This regulation applies to industrial, commercial, and institutional boilers located at area sources of HAPs. Boilers are defined within this regulation as an enclosed device using controlled flame combustion for the primary purpose of recovering thermal energy in the form of steam or hot water. The furnace for the dryer would not be used for generating steam or hot water; therefore, it does not meet the definition of a boiler. The PNWRE facility would be an area source of HAP emissions; however, there would be no boilers that meet the applicability criteria, so this regulation would not apply.

4.5.5 40 CFR 63 Subpart QQQQQQ – Wood Preserving Area Sources

This regulation applies to wood preserving operations located at area sources of HAPs. A "wood preserving operation" is defined by Subpart QQQQQQ as a pressure treatment process with use of a wood preservative containing chromium, arsenic, dioxins, or methylene chloride, where the preservative is applied to the wood product inside a retort or similarly closed vessel. The PNWRE facility would not use any wood preservatives in the production of wood pellets; therefore, this regulation would not apply.

4.5.6 40 CFR 63 Subpart ZZZZ – Stationary Reciprocating Internal Combustion Engines

This regulation applies to reciprocating internal combustion engines (RICE) at both major and area sources of HAPs. The PNWRE facility would operate one diesel-fired emergency generator that would meet the applicability criteria of this regulation. The emergency CI RICE would have a maximum rated design power greater than 25 horsepower and a construction date after January 1, 2006; therefore, these engines would be considered new units under the rule. New CI RICE at area sources of HAPs must meet the requirements of this rule by meeting the requirements of 40 CFR 60 Subpart IIII; no other requirements from 40 CFR 63 Subpart ZZZZ apply to the emergency CI RICE.

4.6 General Air Pollution Control Regulations

ORCAA Regulation 8 establishes general emission standards that apply to all emission units, including those at the project site. PNWRE would comply with these general emissions standards. The relevant general emission standards are as follows:

- Rule 8.2 General Standards for Maximum Visual Emissions – opacity from any emissions unit (with some exceptions) is limited to 20 percent.
- Rule 8.3 General Standards for Maximum Particulate Matter – PM emissions are limited to 0.10 grains per dry standard cubic foot of gas for most sources, and reasonable precautions must be taken to prevent fugitive particulate material from becoming airborne. This rule also prohibits PM fallout that negatively affects adjacent properties.

4.7 Washington Toxic Air Pollutant Regulations

In Washington, all new and modified sources emitting TAPs must show compliance with the Washington TAP program found in WAC Chapter 173-460. The program requires that an NOC application demonstrate, using the procedures established by the program, that the increase in TAP emissions from a project would be sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects. Like the federal list of toxic air contaminants referred to as HAPs, WDOE maintains a list of carcinogens and noncarcinogens referred to as TAPs in WAC 173-460-150. The Washington TAP program and associated TAP list was last updated in November 2019. The procedures for a new source of TAP emissions to comply with the program are:

1. Apply BACT for toxic air pollutants associated with a project (tBACT), then quantify the level of emissions of each TAP.

2. In an NOC application, address each TAP emissions quantification greater than its *de minimis* level per specified averaging period in the TAP list in WAC 173-460-150.

3. Conduct a first-tier review[2] by investigating whether the TAP addressed in an NOC application has an emissions impact less than its corresponding Acceptable Source Impact Level (ASIL) from the TAP list in WAC 173-460-150. If the estimated impacts are less than the ASIL, then health risks are considered insignificant and a permit may be issued.

    a. The initial screening method for a first-tier review is to compare estimated TAP emissions rates to their Small Quantity Emission Rate (SQER) values found in the TAP list in WAC 173-460-150. If a TAP emissions rate is less than its SQER, its impact is considered to be less than its ASIL and the requirements of the Washington TAP program have been satisfied for NOC approval.

    b. If a TAP emissions level is not less than its SQER, then dispersion modeling may be conducted to determine a maximum ambient concentration for that TAP. If the modeled TAP concentration is less than its ASIL, then health risks are considered insignificant and the requirements of the Washington TAP program have been satisfied for NOC approval.

4. If TAP emissions levels cannot be shown to be insignificant via the first-tier review, then conduct a second-tier review. A second-tier review[3] requires that the applicant submit a petition to WDOE to conduct the second-tier review. WDOE will make an approval recommendation to the permitting agency after reviewing the petition.

5. If a second-tier review cannot demonstrate that cancer and health risks are within allowable limits, then conduct a third-tier review. A third-tier review[4] is a risk management analysis conducted by WDOE to determine whether the risk of the project is acceptable based on available preventive measures and estimated environmental benefits to the state of Washington. WDOE will make an approval recommendation based upon the risk management analysis.

The TAP emissions from the proposed PNWRE facility satisfy the criteria of the Washington TAP program for NOC approval based upon a first-tier review. **Table 2** summarizes the results of the first-tier review, demonstrating that each TAP emitted in quantities greater than *de minimis* levels either would be emitted at a rate less than its SQER or has a modeled concentration measuring less than its ASIL. Detailed TAP emissions calculations are included in Appendix C. A discussion of the air dispersion modeling methodology is found in Section 6.

[2] WAC 173-460-080 (https://app.leg.wa.gov/WAC/default.aspx?cite=173-460-080) codifies the first-tier review procedure.

[3] WAC 173-460-090 (https://app.leg.wa.gov/WAC/default.aspx?cite=173-460-090) codifies the second-tier review procedure.

[4] WAC 173-460-100 (https://app.leg.wa.gov/WAC/default.aspx?cite=173-460-100) codifies the third-tier review procedure.

TABLE 2
RESULTS OF FIRST-TIER REVIEW FOR TOXIC AIR POLLUTANT EMISSIONS

CAS Registry Number	TAP Name	Averaging Period	Emission Rate (lb/averaging period)	SQER[1] (lb/averaging period)	Modeling Required? (Yes/No)	ASIL[1] (mg/m³)	Modeling Result (mg/m³)
57-97-6	7,12-Dimethylbenz(a)anthracene	year	1.72E-03	1.40E-03	Yes	8.50E-06	1.42E-08
75-07-0	Acetaldehyde	year	3.29E+02	6.00E+01	Yes	3.70E-01	8.58E-03
107-02-8	Acrolein	24-hr	1.39E+00	2.60E-02	Yes	3.50E-01	4.09E-02
56-55-3	Benz(a)anthracene	year	8.42E-02	8.90E-01	No	N/A	N/A
71-43-2	Benzene	year	6.90E+01	2.10E+01	Yes	1.30E-01	1.03E-02
50-32-8	Benzo(a)pyrene	year	9.53E-03	1.60E-01	No	N/A	N/A
117-81-7	Bis-(2-ethylhexyl phthalate)	year	7.16E+00	6.80E+01	No	N/A	N/A
53-70-3	Dibenzo(a,h)anthracene	year	2.93E-02	8.20E-02	No	N/A	N/A
50-00-0	Formaldehyde	year	6.27E+02	2.70E+01	Yes	1.70E-01	1.33E-02
1330-20-7	m,p-Xylene	24-hr	3.45E+00	1.60E+01	No	N/A	N/A
91-20-3	Naphthalene	year	4.69E+00	4.80E+00	No	N/A	N/A
123-38-6	Propionaldehyde	24-hr	1.96E-01	5.90E-01	No	N/A	N/A
7440-38-2	Arsenic	year	1.61E+00	4.90E-02	Yes	3.00E-04	6.21E-06
7440-41-7	Beryllium	year	8.07E-02	6.80E-02	Yes	4.20E-04	3.12E-07
7440-43-9	Cadmium	year	4.14E-01	3.90E-02	Yes	2.40E-04	1.89E-06
CRVICOMP	Chromium, hexavalent	year	2.53E-01	6.50E-04	Yes	4.00E-06	9.68E-07
7440-47-3	Chromium, total	24-hr	4.56E-03	7.40E-03	No	N/A	N/A
7440-48-4	Cobalt	24-hr	1.31E-03	7.40E-03	No	N/A	N/A
7439-96-5	Manganese	24-hr	3.17E-01	2.20E-02	Yes	3.00E-01	1.14E-02
7439-97-6	Mercury	24-hr	1.39E-02	2.20E-03	Yes	3.00E-02	5.03E-04
7440-02-0	Nickel	year	2.61E+00	6.20E-01	Yes	3.80E-03	1.05E-05
7440-62-2	Vanadium	24-hr	8.70E-04	7.40E-03	No	N/A	N/A

NOTES: CAS = Chemical Abstract Service; μg/m³ = micrograms per cubic meter; ASIL = Acceptable Source Impact Level; hr = hour; lb = pounds; N/A = not applicable; SQER = Small Quantity Emission Rate; TAP = toxic air pollutant

1 SQER and ASIL values are from Washington Administrative Code 173-460-150.

5 Best Available Control Technology

ORCAA Rule 6.1.4 states that any new stationary source of emissions must employ Best Available Control Technology (BACT) for all air pollutants. A paraphrasing of the regulatory language defining BACT in Rule 1.4 is that it is an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under the Washington Clean Air Act emitted from any new stationary source which the permitting agency, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such stationary source. Sources must also employ BACT for toxic air pollutants (tBACT) as part of the Washington TAP program. This section includes a BACT analysis, addressing tBACT where appropriate, from the following sources of emissions at the PNWRE wood pellet facility:

- Raw material receiving
- Chips cleaning line
- Wet hammer mills
- Drying line
- Dry hammer mills and pellet line
- Intermediate and final product storage silos
- Product loadout
- Vehicle traffic
- Emergency generator

5.1 BACT Methodology

Presented below are the five basic steps of a top-down BACT review:

5.1.1 Step 1 – Identify All Control Technologies

Available control technologies are identified for each emission unit in question. The following methods are used to identify potential technologies: (1) Researching the Reasonably Available Control Technology (RACT)/Best Available Control Technology (BACT)/Lowest Achievable Emission Reduction (LAER) Clearinghouse (RBLC) database, (2) survey regulatory agencies, and (3) draw from previous engineering experience.

5.1.2 Step 2 – Eliminate Technically Infeasible Options

After the identification of control options, an analysis is conducted to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that prohibit the implementation of the control.

5.1.3 Step 3 – Rank Remaining Control Technologies by Control Effectiveness

Once technically infeasible options are removed from consideration, the remaining options are ranked based on their control effectiveness. If there is only one remaining option, or if all remaining technologies could achieve equivalent control efficiencies, ranking based on control efficiency is not required.

5.1.4 Step 4 – Evaluate the Most Effective Controls and Document Results

The BACT process is intended to require sources to implement the most efficient air pollution control strategies that are feasible. When a source selects a control strategy that does not represent the most efficient option in the ranking, a detailed economic, energy, and environmental impact evaluation must be performed that justifies the selection. If a control option is determined to be economically feasible without adverse energy or environmental impacts, it is not necessary to evaluate the remaining options with lower control efficiencies.

The economic evaluation centers on the cost effectiveness of the control option. Costs of installing and operating control technologies are estimated and annualized following the methodologies outlined in EPA’s Control Cost Manual and other industry resources. Cost effectiveness is expressed in dollars per ton of pollutant controlled. Objective analyses of energy and environmental impacts associated with each option are also conducted.

If the most effective control device is selected, a detailed cost analysis is not required.

5.1.5 Step 5 – Select BACT

In the final step, one pollutant-specific control option is selected that satisfies BACT for each emission unit under review based on evaluations from the previous step. A BACT emissions limit is proposed when appropriate that reflects the control option selected by the analysis. Vendor-provided information can be found in **Appendix D**.

5.2 BACT Analysis for Raw-Material Receiving

Woody biomass would be delivered to the PNWRE facility via trucks that would be emptied via truck dumpers and formed into outdoor storage piles with front-end loaders. There would be three truck dumpers and associated storage piles: one for forest residues (chips), one for sawmill residues (white wood), and one for biomass used as fuel (bark). Filterable PM would be emitted as the material slides from the open truck trailer and lands on the ground, as the front-end loaders drop the material onto piles, and again as the front-end loaders empty the material into dedicated walking-floor bins. Filterable PM would also be emitted from wind erosion of the outdoor storage piles. These emissions sources are considered fugitive emissions sources because they would occur outdoors and could not be reasonably passed through a stack, chimney, or vent. After the deposit of raw materials into the walking-floor bins, all raw-material handling processes would be fully enclosed and/or within buildings. Raw material is considered “wet” because of its moisture content, estimated between 18 percent and 55 percent depending on the wood species.

5.2.1 PM BACT for Raw-Material Receiving

5.2.1.1 Steps 1–4 – Identify and Evaluate Control Technologies for Raw-Materials Receiving

Fugitive PM emissions from raw-material handling are analogous to fugitive dust emissions. Because these emissions cannot reasonably be passed through a stack, chimney, or vent, add-on pollution control technologies designed for these types of emissions points are not technically feasible. The primary pollution control strategy accepted as BACT for fugitive dust emissions is the use of wet suppression techniques to increase the moisture content of the material. Increased moisture content results in heavier material particles, which makes it more difficult for them to become airborne. Given that the wood materials would already have a high moisture content upon delivery to the PNWRE facility, the raw material would achieve the benefits of wet suppression techniques without additional application of water.

5.2.1.2 Step 5 – Select BACT for Raw-Materials Receiving

The wood materials would achieve the benefits of wet suppression techniques because they would already have a high moisture content upon delivery to the PNWRE facility. Therefore, no additional control technology is proposed as BACT for the truck dumpers or material storage piles.

5.3 BACT Analysis for Chips Cleaning Line and Wet Hammer Mills

Both the chips cleaning line and the wet hammer mills would involve mechanical handling of the raw "wet" materials, either to clean and organize by size in the case of the chips cleaning line, or to reduce the size of the chips in the case of the wet hammer mills. In both of these activities, filterable PM emissions would be generated from the handling of the raw materials.

5.3.1 PM BACT for Chips Cleaning Line and Wet Hammer Mills

5.3.1.1 Step 1 – Identify Control Technologies for Chips Cleaning Line and Wet Hammer Mills

The following PM control technologies for the chips cleaning line and wet hammer mills have been identified:

- Baghouse
- Cyclone

Baghouse[5]

In a fabric filter baghouse, a particle-laden exhaust stream is passed through a tightly woven or felted fabric, causing the PM in the exhaust stream to be collected on the fabric by sieving and other mechanisms. Fabric filters may be in the form of sheets, cartridges, or bags, with a number of the individual fabric filter units housed together in a group. Bags are the most common type of filter. The dust cake that forms on the filter from the collected PM can significantly increase collection efficiency. Fabric filters are frequently referred to as "baghouses" because the fabric is usually configured in cylindrical bags. Typical design efficiencies are between 99 and 99.9 percent.

Cyclone[6]

A cyclone removes particulate from a gas stream by centrifugal and inertial forces, induced by forcing particulate-laden gas to change direction. Typically, cyclones are effective for particulate greater than 10 microns in diameter; however, there are high-efficiency cyclones designed to be effective for particulate matter less than or equal to 10 microns and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$, respectively). Cyclones operate by creating a double vortex inside the cyclone body, usually a cone-shaped chamber. The incoming gas is forced into circular motion down the

[5] U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Fabric Filter – Pulse-Jet Cleaned Type (also referred to as Baghouses). EPA-452/F-03-025. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100RQ6L.txt. Accessed June 15, 2023.

[6] U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Cyclones. EPA-452/F-03-005. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100C75Q.txt. Accessed June 15, 2023.

cyclone near the inner surface of the cyclone tube. At the bottom of the cyclone, the gas turns and spirals up through the center of the tube and out of the top of the cyclone. Control efficiencies for a single conventional cyclone are 70–90 percent for PM, 30–90 percent for PM_{10}, and 0–40 percent for $PM_{2.5}$. High-efficiency single cyclones are designed to achieve higher control of smaller particles and have control efficiencies of 80–99 percent for PM, 60–95 percent for PM_{10}, and 20–70 percent for $PM_{2.5}$.

5.3.1.2 Step 2 – Eliminate Technically Infeasible Options for Chips Cleaning Line and Wet Hammer Mills

The material processed in the chips cleaning line and wet hammer mills is high in moisture content. Baghouses are not suitable for high-moisture-content exhaust streams because of the crusty caking or plugging of the fabric filters that would occur.[7] This plugging leads to blinding, a phenomenon that prevents airflow through the cake buildup and reduces efficiency. Therefore, a baghouse is not technically feasible for the chips cleaning line and wet hammer mills and has been removed from further consideration.

5.3.1.3 Step 3 – Rank Remaining Control Options by Effectiveness for Chips Cleaning Line and Wet Hammer Mills

The only remaining feasible control technology is cyclones.

5.3.1.4 Step 4 – Evaluate the Most Effective Controls and Document Results for Chips Cleaning Line and Wet Hammer Mills

The only remaining feasible control technology is cyclones.

5.3.1.5 Step 5 – Select BACT for Chips Cleaning Line and Wet Hammer Mills

PNWRE proposes the use of cyclones for controlling PM from the chips cleaning line and wet hammer mills. Cyclones provide the added benefit of allowing for reclamation of airborne product. PNWRE would route product reclaimed by the cyclones to the drying line. PM emissions from the chips cleaning line cyclone would not exceed 6.81 lb/hr and PM emissions from each wet hammer mill cyclone would not exceed 1.91 lb/hr.

5.4 BACT/tBACT Analysis for Drying Line

The drying line includes the hog fuel furnace and drum dryer. The furnace would combust hog fuel to provide heat for the dryer and would have a maximum heat input capacity of 164.81 MMBtu/hr. Wet raw materials would be staged in a metering bin before being fed to the drum dryer inlet. Hot flue gas from the furnace would be routed through the drum dryer where the heat would dry the raw material from approximately 50 percent moisture content to a target 10 percent final moisture content. Dried material would be conveyed from the drum dryer discharge through a pair of high-efficiency cyclones in parallel that would separate the dried wood material from the moisture-rich exhaust gas stream. The exhaust stream then either would be recycled back through the drum dryer or would pass through the emissions control system before emitting from a stack

7 U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Fabric Filter – Pulse-Jet Cleaned Type (also referred to as Baghouses). EPA-452/F-03-025. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100RQ6L.txt. Accessed June 15, 2023.

into the atmosphere. The furnace would generate combustion emissions of filterable and condensable PM, nitrogen oxides (NO_X), CO, VOC, and sulfur dioxide (SO_2). TAP emissions would also be generated during this process. This BACT analysis would also serve as tBACT for complying with the Washington TAP program.

5.4.1 PM BACT for Drying Line

5.4.1.1 Step 1 – Identify Control Technologies for Drying Line

Filterable PM and condensable PM would be generated from the combustion of wood fuel in the dryer furnace. An RBLC search to identify PM control technologies for the drying line identified the following:

- Baghouse
- Electrostatic precipitator
- Wet electrostatic precipitator

Baghouse

Refer to the discussion in Section 5.3.1.1 for a description of the theory of operation of a baghouse.

Electrostatic Precipitator[8]

An ESP is a PM control device that uses electrical forces to move particles entrained within an exhaust stream onto collector surfaces such as pipes or plates. The entrained particles are given an electrical charge when they pass through a corona, a region where the gaseous ions flow. Electrodes in the center of the flow lane are maintained at high voltage and generate the electrical field that forces the particles to the collector surface. In dry ESPs, the collectors are knocked, or “rapped,” by various mechanical means to dislodge the particulate, which slides downward into a hopper where they are collected and disposed of. Typical design efficiencies are between 99 and 99.9 percent.

Wet Electrostatic Precipitator[9]

A WESP is a PM control device that uses electrical forces to move particles entrained within an exhaust stream onto collector surfaces such as pipes or plates in the same manner as a dry ESP. Where a WESP differs from a dry ESP is that the collectors are either intermittently or continuously washed by a spray of liquid to remove the particulate from the surfaces. Water is usually the liquid used for washing the collection surfaces. A drainage system collects the wet effluent, which is then disposed of. A WESP can be effective in collecting sticky particles and mists, as well as explosive or flammable dusts. The humid atmosphere that results from washing in a WESP cools and conditions the gas stream, causing pollutants to condense. Liquid particles such as condensable PM are collected along with particles and provide another means of rinsing the collection surfaces. Typical design efficiencies are between 99 and 99.9 percent.

8 U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Dry Electrostatic Precipitator (ESP)—Wire-Plate Type. EPA-452/F-03-028. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1008OHL.txt. Accessed June 26, 2023.

9 U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Wet Electrostatic Precipitator (ESP)—Wire-Plate Type. EPA-452/F-03-030. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1008OHV.txt. Accessed June 15, 2023.

5.4.1.2 Step 2 – Eliminate Technically Infeasible Options for Drying Line

The drying line uses heat to draw moisture from the product and transfer it to the exhaust stream, resulting in a moisture-laden exhaust stream. Baghouses are not suitable for high-moisture-content exhaust streams because of the crusty caking or plugging of the fabric filters that would occur.[10] This plugging leads to blinding, a phenomenon that prevents airflow through the cake buildup and reduces efficiency. Therefore, a baghouse is technically infeasible for the drying line and has been removed from further consideration.

Dry ESPs are not recommended for removing sticky or moist particles.[11] Therefore, a dry ESP is not technically feasible for the drying line and has been removed from further consideration.

5.4.1.3 Step 3 – Rank Remaining Control Options by Effectiveness for Drying Line

The only remaining control technology is the WESP.

5.4.1.4 Step 4 – Evaluate the Most Effective Controls and Document Results for Drying Line

The only remaining control technology is the WESP. In addition to filterable PM effectiveness, a WESP controls TAPs that are in particulate form, such as most metals, as well as aerosolized PM, acid mists, and VOCs.[12]

5.4.1.5 Step 5 – Select BACT for Drying Line

PNWRE proposes installation and utilization of a WESP with filterable PM not to exceed 7.73 pounds per hour (lb/hr) as BACT for the drying line's filterable particulate emissions. Filterable PM_{10} and $PM_{2.5}$ are assumed to be equivalent to filterable PM from this source. When accounting for condensable particulate emissions, total PM_{10} and $PM_{2.5}$ are not to exceed 12.74 lb/hr.

5.4.2 NO_X BACT for Drying Line

5.4.2.1 Steps 1–4 – Identify and Evaluate Control Technologies for Drying Line

The drying line's furnace would burn hog fuel (wood bark) as a fuel source. A regenerative thermal oxidizer, or RTO, that would combust natural gas would also be proposed to control other pollutants. NO_X emissions result primarily from thermal NO_X formation during combustion. Nitrogen and oxygen in the combustion air combine with one another at the high temperatures in a flame. An RBLC search to identify NO_X control technologies for hog fuel-fired or wet bark-fired dryers at wood pellet facilities did not yield any results. Therefore, good combustion practices, which is always available, is the only available control technology.

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[10] U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Fabric Filter – Pulse-Jet Cleaned Type (also referred to as Baghouses). EPA-452/F-03-025. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100RQ6L.txt. Accessed June 15, 2023.

[11] U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Dry Electrostatic Precipitator (ESP)—Wire-Plate Type. EPA-452/F-03-028. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1008OHL.txt. Accessed June 26, 2023.

[12] U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Wet Electrostatic Precipitator (ESP)—Wire-Plate Type. EPA-452/F-03-030. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1008OHV.txt. Accessed June 15, 2023.

5.4.2.2 *Step 5 – Select BACT for Drying Line*

PNWRE proposes good combustion practices—the only available control technology—with NO_X emissions not to exceed 52 lb/hr as BACT for the drying line's NO_X emissions.

5.4.3 CO and VOC BACT for Drying Line

5.4.3.1 *Steps 1–4 – Identify and Evaluate Control Technologies for Drying Line*

CO and VOC emissions result primarily from the incomplete combustion of fuels. Wood combustion also releases VOC from compounds evaporated from the wood. Because of their similar formation mechanisms and control strategies, CO and VOC are analyzed together during BACT. An RBLC search to identify CO and VOC control technologies identified the following:

- Good combustion practices
- Regenerative thermal oxidizer

Regenerative Thermal Oxidizer[13,14]

An RTO is a type of thermal incinerator or oxidizer that destroys VOC and condensable organics by burning them at high temperatures. Thermal oxidizers also reduce CO emissions in direct-fired dryer exhausts by oxidizing the CO in the exhaust to carbon dioxide. RTOs are designed to preheat the inlet emission stream with heat recovered from the incineration exhaust gases. A gas burner brings the preheated emissions up to an incineration temperature between 788 degrees Celsius (°C) and 871°C (1,450°F and 1,600°F) in a combustion chamber with sufficient gas residence time to complete the combustion. Combustion gases then pass through a cooled ceramic bed where heat is extracted. By reversing the flow through the beds, the heat transferred from the combustion exhaust air preheats the gases to be treated, thereby reducing auxiliary fuel requirements.

PNWRE considers this technology to be available for the dryer.

5.4.3.2 *Step 5 – Select BACT for Drying Line*

Good combustion practices and RTO are proposed as BACT for the drying line's VOC and CO emissions, with VOC emissions not to exceed 6.58 lb/hr and CO emissions not to exceed 42 lb/hr. The RTO would be rated to achieve at least 95 percent destruction efficiency of VOC.

5.4.4 SO_2 BACT for Drying Line

5.4.4.1 *Steps 1–4 – Identify and Evaluate Control Technologies for Drying Line*

SO_2 emissions result primarily from a mass balance conversion of sulfur present in the combustion fuels. Wood does not typically have a notable sulfur content and therefore does not emit SO_2 in large quantities. An RBLC search to identify SO_2 controls applied to hog fuel or wet bark combustion did not yield any results. Accordingly, good combustion practices, which are always available, are proposed to satisfy BACT for SO_2.

[13] U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Regenerative Incinerator. EPA-452/F-03-021. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1008OH5.txt. Accessed June 19, 2023.

[14] U.S. Environmental Protection Agency. 2002. AP-42, Section 10.6.2, Particleboard Manufacturing. Available: https://www.epa.gov/sites/default/files/2020-10/documents/c10s06-2.pdf. Accessed June 19, 2023.

5.4.4.2 Step 5 – Select BACT for Drying Line

Good combustion practices are proposed as BACT for the drying line's SO_2 emissions.

5.4.5 tBACT for Drying Line

tBACT, which is BACT as applied to TAP emissions, is required by the Washington TAP program. TAP emissions from the drying line would be in the form of VOC emissions, or PM emissions in the case of most metals. Therefore, the BACT strategies employed for control of PM and VOC emissions from the drying line (WESP and RTO) would satisfy tBACT as well.

5.5 BACT/tBACT Analysis for Combined Exhaust from the Dry Hammer Mills and Pellet Line

PNWRE intends to route emissions from the dry hammer mills and the pellet line to a common stack prior to release to the atmosphere. Therefore, the BACT analysis addresses both of these processes together. The dry hammer mills would reduce the size of the dried material for optimal pellet formation. The dried material would be pressed and cut into pellets of desired dimensions in the pellet line, experiencing a reduction in dusting characteristics after having been formed into pellets. PM and VOC emissions would be generated from these processes. The TAP emissions would be in the form of VOC emissions; therefore, tBACT would equate to the BACT employed for VOC control.

5.5.1 PM BACT for Dry Hammer Mills and Pellet Line

5.5.1.1 Step 1 – Identify Control Technologies for Dry Hammer Mills and Pellet Line

The following PM control technologies would be analyzed:

- Fabric filters/baghouse
- Cyclone

5.5.1.2 Step 2 – Eliminate Technically Infeasible Options for Dry Hammer Mills and Pellet Line

These technologies are feasible.

5.5.1.3 Step 3 – Rank Remaining Control Options by Effectiveness for Dry Hammer Mills and Pellet Line

1. Fabric filters/baghouse
2. Cyclones

5.5.1.4 Step 4 – Evaluate the Most Effective Controls and Document Results for Dry Hammer Mills and Pellet Line

PNWRE proposes to use "cyclofilters," which are a combination of cyclones and fabric filters, for controlling the PM from the dry hammer mills. The cyclone portion of the cyclofilter would allow for product recovery while the fabric filtration would offer the best-performing PM control. Each of the four dry hammer mills would emit exhaust through a dedicated cyclofilter before the exhaust combines with the exhaust from the pellet coolers. Each of the two pellet coolers would emit exhaust to a baghouse before the exhaust combines with the exhaust from the dry hammer mills.

5.5.1.5 Step 5 – Select BACT for Dry Hammer Mills and Pellet Line

PNWRE proposes the combined use of cyclofilters and baghouses for controlling PM from the dry hammer mills and pellet line. The cyclofilters would allow for airborne product reclamation and the integrated fabric filter system would offer the best-performing PM control. The combined emission streams would have a filterable PM emission rate not to exceed 1.87 lb/hr. Filterable PM_{10} and $PM_{2.5}$ are assumed to be equivalent to filterable PM from this source. The combined exhaust streams would have controlled the PM sufficiently to prevent blinding of catalyst used in the downstream RCO for VOC control before release to the atmosphere. When considering the condensable PM formed during combustion in the RCO, the total PM_{10} and $PM_{2.5}$ emissions would not exceed 1.89 lb/hr.

5.5.2 VOC BACT/tBACT for Dry Hammer Mill and Pellet Line

5.5.2.1 Step 1 – Identify Control Technologies for Dry Hammer Mill and Pellet Line

The following VOC/TAP control technologies would be analyzed:

- Regenerative Thermal Oxidizer
- Regenerative Catalytic Oxidizer

Refer to the discussion in Section 5.4.3.1 for a description of the theory of operation of an RTO.

An RCO is a regenerative incinerator that operates under principles similar to those of an RTO, where VOC is destroyed via oxidation. An RCO uses a catalyst material rather than ceramic material in the packed bed. This allows for destruction of VOC at a lower oxidation temperature.[15] An RCO has a destruction efficiency similar to that of an RTO, but with lower fuel requirements because of the lower temperatures.

5.5.2.2 Step 2 – Eliminate Technically Infeasible Options for Dry Hammer Mill and Pellet Line

These technologies are feasible for this source of emissions.

5.5.2.3 Step 3 – Rank Remaining Control Options by Effectiveness for Dry Hammer Mill and Pellet Line

Both RTO and RCO achieve the same levels of VOC/TAP control.

15 U.S. Environmental Protection Agency. 2003. Air Pollution Control Technology Fact Sheet: Regenerative Incinerator. EPA-452/F-03-021. Available: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P1008OH5.txt. Accessed June 19, 2023.

5.5.3.4 Step 4 – Evaluate the Most Effective Controls and Document Results for Dry Hammer Mill and Pellet Line

PNWRE proposes to use an RCO for control of the VOC/TAP from this source of emissions. No further evaluation is necessary because PNWRE has proposed the best-performing technology.

5.5.3.5 Step 5 – Select BACT/tBACT for Dry Hammer Mill and Pellet Line

PNWRE proposes an RCO for controlling VOC/TAP from the combined exhaust stream for the dry hammer mill and pellet line. The RCO would be rated to achieve at least 95 percent destruction efficiency of the VOC/TAP emissions with a VOC emission rate not to exceed 8.6 lb/hr.

5.6 BACT Analysis for Intermediate and Final Product Storage Silos and Truck Loadout

The dry-product intermediate-storage silo (two vents, EP-06 and EP-06) is a vessel that would be used for staging material after it exits the drying line and before it is processed in the dry hammer mills. Milled dry-product intermediate-storage silo EP-09 is a vessel that would be used for staging material after it exits the dry hammer mills and before it is processed in the pellet line. The estimated maximum potential PM emissions of these enclosed silo vents would not exceed 0.07 TPY each and vent filters are included in the design, so additional control devices are not necessary.

Five pellet storage silos, EP-10 through EP-14, would provide staging for final product before loadout. The silos would utilize aeration fans and venting via mechanical extractor to maintain low pellet temperature for final shipment. Pellets have reduced dusting characteristics because of their inherent moisture content and high density. Each silo would maintain a maximum PM PTE of no more than 3.85 TPY, so additional control devices are not necessary.

Transferring to Willis Enterprises' existing conveyance and vessel loadout equipment would be the primary means of product export; however, the facility would include truck loadout capability onsite (EP-15) that could be used in special circumstances. Because this source would be used only in special circumstances, PNWRE proposes no more than 10 loaded trucks per day and 32,000 tons per year of truck loadout utilization. Fugitive PM emissions would be generated from the deposit of pellets into trucks; however, maximum potential PM emissions would be less than 0.02 TPY, so additional control devices are not necessary.

PNWRE proposes proper maintenance and good operating practices as BACT for PM emissions from the product storage silos and truck loadout.

5.7 BACT Analysis for Vehicle Traffic

Raw materials would be provided to PNWRE via heavy-duty trucks and front-end loaders would move the unloaded raw materials as needed. In special circumstances, pellets could be exported from the facility via heavy-duty trucks. This vehicle traffic on the facility's unpaved roads would be a source of PM emissions.

5.7.1 PM BACT for Vehicle Traffic

5.7.1.1 Steps 1–4 – Identify and Evaluate Control Technologies for Vehicle Traffic

The following PM control technology is generally applied to unpaved roads and is considered feasible:

- Reasonable precautions, including regular application of water or other dust suppressants.

The PNWRE facility would implement a dust control plan, which would include abiding by a 10-mph posted speed limit for all vehicles and heavy equipment, regularly applying water on road surfaces via water truck, and using a pickup broom truck as needed. The Western Region Air Partnership Fugitive Dust Handbook[16] provides control efficiencies for various control strategies on unpaved roads, offering 44 percent control for limiting speeds to 25 mph and up to 74 percent from applying water. The PNWRE dust control plan would require even lower speeds, daily monitoring of road surfaces that would include watering, and use of a pickup broom truck as needed. Therefore, an 85 percent control efficiency has been identified and applied to unpaved haul road traffic based on the combined application of these measures.

5.7.1.2 Step 5 – Select BACT for Vehicle Traffic

PNWRE proposes to mitigate PM emissions from vehicle traffic by employing reasonable precautions and adherence to a dust control plan as BACT. This is consistent with ORCAA Regulation 8.3(c), which requires that reasonable and/or appropriate precautions be taken to prevent fugitive particulate material from becoming airborne.

5.8 BACT/tBACT Analysis for Emergency Generator

A 300-kilowatt backup emergency generator would be installed at the PNWRE facility. The diesel-fired engine for this generator would be certified to meet the emissions standards of 40 CFR 60, Subpart IIII and would be fired with ultra-low-sulfur diesel only. Other than emergency use, backup emergency engines are limited by 40 CFR 60, Subpart IIII to no more than 100 hours per year of operation for maintenance checks and readiness testing.

Add-on controls for emergency backup diesel-fired generators are impractical because of the intermittent and infrequent operation of these units. Therefore, PNWRE proposes that BACT/tBACT for all pollutants be good combustion practices and following manufacturer's instructions for maintenance. In addition, PNWRE would comply with the applicable conditions for emergency engines from 40 CFR 60, Subpart IIII.

PNWRE has not selected a specific generator yet; however, the selected unit would not exceed 300 kilowatts in capacity. A conservative estimate of sufficient engine size (500 horsepower) and EPA Tier 3 nonroad emissions standards have been used to account for engine emissions from maintenance checks and readiness testing.

[16] Western Governors' Association. 2006. *WRAP Fugitive Dust Handbook.* Denver, CO. Prepared by Countess Environmental, Westlake Village, CA. September 7, 2006. Available: https://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf. Accessed July 5, 2023.

6 Air Dispersion Modeling Methodology

This section of the application report presents the procedures used to perform the air dispersion modeling analysis.

6.1 Model Selection

Version 22112 of the AERMOD model was used to estimate maximum ground-level concentrations in the air dispersion analysis. AERMOD is a refined, steady-state, multi-source air dispersion model used for industrial sources.

6.2 Meteorological Data

The modeling analysis was performed using five years of representative meteorological data prepared for input with AERMOD version 22112. The AERMOD meteorological data were derived using several data sets, including surface station data collected at the Bowerman Airport, WA, station (WBAN Station No. 94225) for calendar years 2018–2022. Upper air sounding data are taken from the Quillayute Airport, WA station (WBAN Station No. 72797). The meteorological data were processed with AERMET v22112, along with the ADJU* option to account for deficiencies in AERMOD under low wind speed conditions. Wind roses are found in **Appendix E**.

The AERMINUTE pre-processor (version 15272), a tool for assessing 1-minute ASOS data, was used to process 1-minute wind speed and direction data from Bowerman Airport. AERMINUTE produces hourly average winds from the 1-minute data that are used as inputs to AERMET's second stage.

In addition to the meteorological data, processing of land use data to derive albedo, Bowen ratio, and surface roughness was conducted using the AERSURFACE preprocessor (version 20060) in a manner consistent with EPA guidance. The resulting parameters are used by AERMOD to estimate surface energy fluxes and construct boundary layer profiles. EPA guidance indicates that AERSURFACE should be used to process land use arcs out to one kilometer from the project site and using arcs equal or greater than 30 degrees for assessing surface roughness. The most recent version of the AERSURFACE also allows for the incorporation of imperviousness data and canopy data that helps inform the surface roughness calculations. Bowen ratio and albedo are assessed by calculating their geometric means associated with common land use types across a 10 kilometer by 10 kilometer region.

For the project site, AERSURFACE processed National Land Cover (2016 NLCD) data acquired from the EPA.[17] These data were used as inputs to the AERSURFACE tool along with information on the meteorological surface data site, including that the site is not expected to have continuous snow cover in winter, that the site is not in an arid region, and that the site is an airport. The tool was also supplied with the canopy and imperviousness data from the NLCD data set.

[17] National Land Cover Data, as published by the EPA, ftp://newftp.epa.gov/aqmg/nlcd/

The results from AERSURFACE provided an albedo of 0.13 that did not vary by season. The Bowen ratio was calculated as 0.28, 0.24, 0.21, and 0.28 for winter, spring, summer, and autumn respectively. The surface roughness estimated by AERSURFACE is provided in **Table 3**.

TABLE 3
BOWERMAN AIRPORT SURFACE ROUGHNESS

Sector	Winter	Spring	Summer	Autumn
1	0.165	0.170	0.174	0.172
2	0.075	0.082	0.096	0.094
3	0.013	0.017	0.019	0.017
4	0.006	0.007	0.008	0.007
5	0.002	0.002	0.003	0.002
6	0.002	0.003	0.003	0.003
7	0.002	0.002	0.002	0.002
8	0.004	0.005	0.005	0.005
9	0.021	0.027	0.033	0.027
10	0.054	0.058	0.061	0.058
11	0.068	0.070	0.072	0.070
12	0.106	0.110	0.113	0.110

6.3 Coordinate System

The locations of emission sources, structures, and receptors are represented in the Universal Transverse Mercator (UTM) coordinate system using the North American Datum of 1983, Continental U.S. projection. The UTM grid divides the world into coordinates that are measured in north meters (measured from the equator) and east meters (measured from the central meridian of a particular zone, which is set at 500 kilometers). UTM coordinates for this analysis are based on UTM Zone 10. The location of the PNWRE facility is approximately 5,203,070 Northing and 430,485 Easting in UTM Zone 10.

6.4 Terrain Elevations

Terrain elevations for receptors, buildings, and sources were determined using the National Elevation Dataset (NED) supplied by the U.S. Geological Survey. The NED is a seamless data set with the best available raster elevation data of the contiguous United States. NED data retrieved for this model have a grid spacing of 1/3 arc-second or 10 meters. The AERMOD preprocessor, AERMAP version 18081, was used to compute model object elevations from the NED grid spacing. AERMAP also calculates hill height data for all receptors.

6.5 Urban/Rural Determination

The proposed PNWRE facility is located in the city of Hoquiam on the west coast of Washington. According to 2020 census data, Hoquiam has a population of 8,774.[18] Outside of the city, most of the land use is not considered urban (medium- to high-intensity developed land). For the purposes of this model, it is conservatively assumed that the area surrounding the facility does not meet the definition of urban land use. Therefore, the urban option was not selected in AERMOD.

6.6 Receptor Grids

The model has receptors along the fence line spaced 12.5 meters apart. There is also a variable-density, circular Cartesian receptor grid extending 10,000 meters from the center of the PNWRE facility site. This receptor grid spacing was set up according to the following list:

- 25-meter spacing for the first 400 meters from the center of the facility site.
- 50-meter spacing from 400 to 900 meters from the center of the facility site.
- 100-meter spacing from 900 to 2,000 meters from the center of the facility site.
- 300-meter spacing from 2,000 to 4,500 meters from the center of the facility site.
- 600-meter spacing from 4,500 to 10,000 meters from the center of the facility site.

In addition to the receptor grid above, a fine 12.5-meter spaced grid was used for the first 150 meters extending outward from the proposed facility's fence line. **Figure 3** and **Figure 4** show maps of the receptors. **Figure 5** shows the proposed facility with the fence line represented by the red outline surrounding the facility with included buildings.

[18] U.S. Census Bureau, Population Division. 2023. Annual Estimates of the Resident Population for Incorporated Places in Washington: April 1, 2020 to July 1, 2022 (SUB-IP-EST2022-POP-53). May 2023. Available: https://www2.census.gov/programs-surveys/popest/tables/2020-2022/cities/totals/SUB-IP-EST2022-POP-53.xlsx. Accessed June 30, 2023.

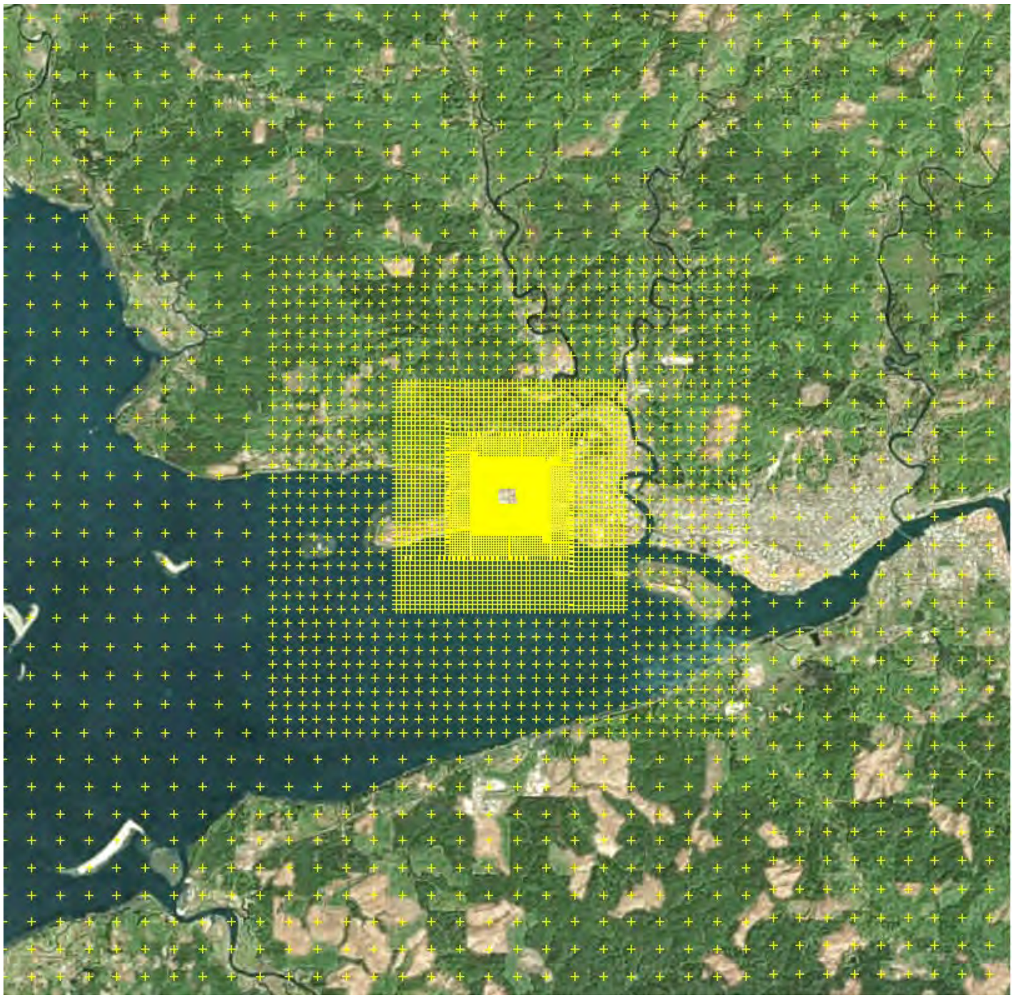

Figure 3 Zoomed-Out Receptor Grid

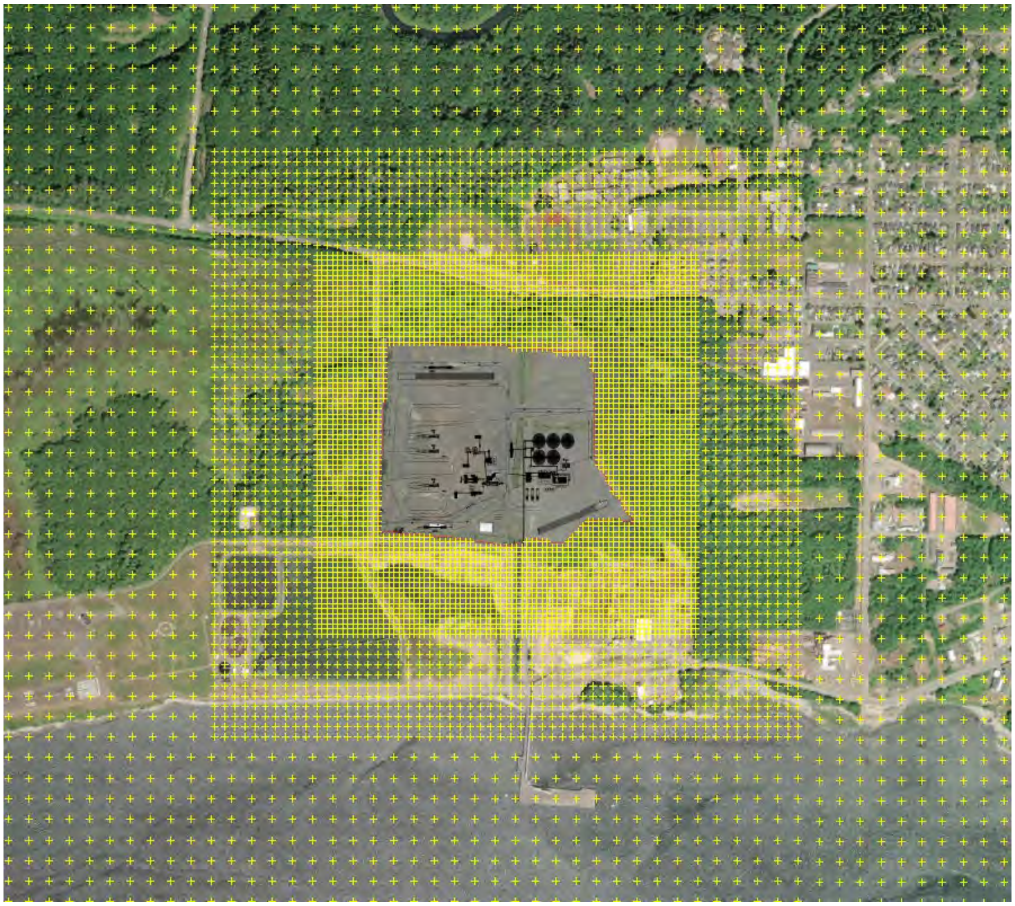

Figure 4 Zoomed-In Receptor Grid

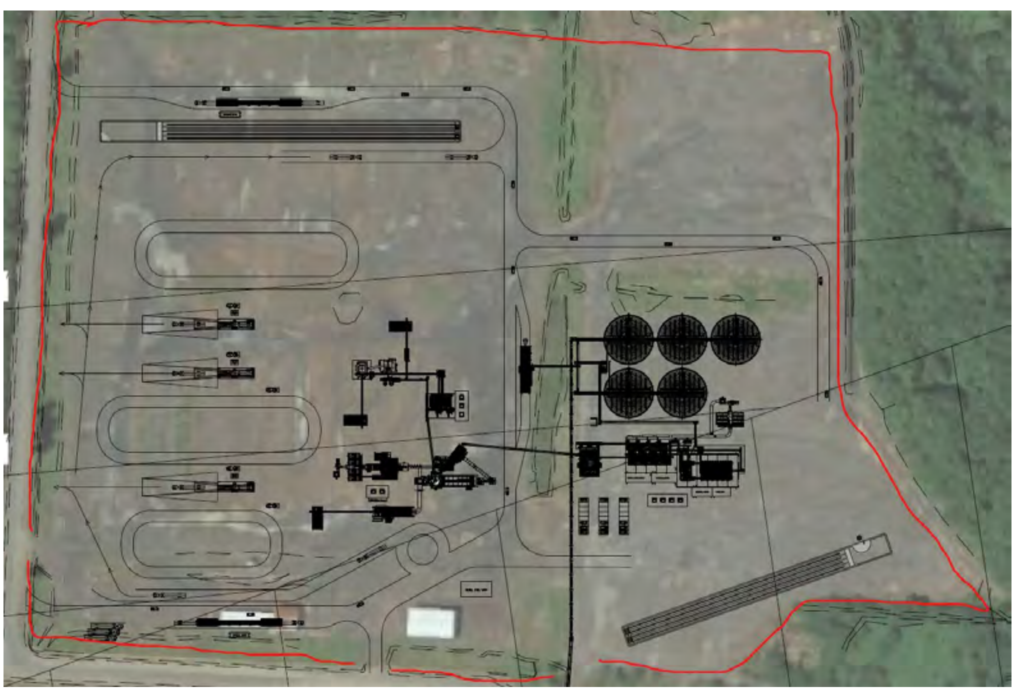

Figure 5 Facility Fence Line

6.7 Building Downwash

Emissions from a source are evaluated in terms of the source's proximity to nearby structures. The purpose of this evaluation was to determine whether stack discharges might become caught in the turbulent wakes of the structures at the PNWRE facility. Wind blowing around a building creates zones of turbulence greater than those that would exist if the buildings were absent. The concepts and procedures expressed in the Guideline for Determination of Good Engineering Practice Stack Height were applied.[19] All structures that may affect downwash of emissions from the proposed facility were included in the models and are presented in **Table 4**.

TABLE 4
BUILDING PARAMETERS

Building	Shape	Center (UTM X, UTM Y)	Building Height (m)	Side Length 1 (m)	Side Length 2 (m)	Diameter (m)
01	Rectangular	(430453, 5203005)	27.0	5.5	6.5	N/A
02	Rectangular	(430468, 5203026)	24.0	4.3	9.9	N/A
03	Rectangular	(430389, 5203010)	27.0	2.1	2.5	N/A
04	Rectangular	(430553, 5203020)	10.7	12.7	17.6	N/A
05	Rectangular	(430591, 5203027)	17.0	25.6	6.2	N/A
06	Rectangular	(430593, 5203016)	17.0	33.2	14.5	N/A
07	Rectangular	(430616, 5203011)	15.0	13.3	25.3	N/A
08	Rectangular	(430636, 5203010)	12.0	26.4	25.3	N/A
09	Rectangular	(430651, 5203026)	13.0	1.7	1.2	N/A
10	Rectangular	(430563, 5203091)	34.0	3.0	9.3	N/A
11	Rectangular	(430513, 5203090)	34.0	8.3	5.6	N/A
12	Rectangular	(430405, 5203088)	13.0	12.2	13.9	N/A
13	Rectangular	(430401, 5203051)	6.0	16.4	8.6	N/A
14	Rectangular	(430431, 5203120)	6.0	15.1	9.1	N/A
15	Rectangular	(430435, 5203099)	6.0	4.2	9.6	N/A
16	Rectangular	(430457, 5203085)	10.0	6.2	6.9	N/A
17	Rectangular	(430458, 5203064)	10.0	16.2	12.4	N/A
18	Rectangular	(430465, 5203006)	7.5	30.7	9.6	N/A
19	Rectangular	(430377, 5202978)	6.0	8.3	18.5	N/A
20	Rectangular	(430401, 5203016)	6.0	10.5	22.0	N/A
21	Rectangular	(430421, 5203017)	6.0	16.2	21.5	N/A
22	Circular	(430580, 5203112)	34.0	N/A	N/A	33.5
23	Circular	(430613, 5203112)	34.0	N/A	N/A	33.5
24	Circular	(430647, 5203112)	34.0	N/A	N/A	33.5
25	Circular	(430580, 5203071)	34.0	N/A	N/A	33.5
26	Circular	(430613, 5203071)	34.0	N/A	N/A	33.5

NOTES: m = meter; UTM = Universal Transverse Mercator; N/A = not applicable

[19] EPA, 1985. Guideline for Determination of Good Engineering Practice Stack Height. Available: https://www.epa.gov/sites/default/files/2020-09/documents/gep.pdf.

6.8 Source Types and Parameters

Emission releases from the equipment on-site were represented in the model as point sources, horizontal point sources, area sources, and volume sources. Emission unit parameters were based on vendor quotes and emissions estimates using EPA AP-42 and Region 10 Memorandum of emission factors for activities at sawmills in the Pacific Northwest. Area and volume source parameters were based on the dimensions of nearby structures or obstructions according to the User’s Guide for the AMS/EPA Regulatory Model (AERMOD). The current facility site layout is provided in Appendix B.

The modeling parameters for the sources are determined based the following and are included in **Table 5** and **Table 6** as well as **Appendix F**:

- Exhaust temperature, exhaust flow rate/velocity, stack height, and stack diameter were obtained from client information. Engineering assumptions applied for modeling the backup emergency generator.
- Dimensions for the following volume source emission units were determined based on dimensions from the facility site plan and Table 3-2 of the AERMOD Users' Guide.
- Dimensions for the following area source emission units were configured according to Section 3.3.2.3 of the AERMOD Users’ Guide.
- Haul road volume source parameters were determined using the dimensions of an average semi-truck trailer and the EPA guidance memo on haul roads.

TABLE 5
POINT SOURCE PARAMETERS

Source	Release Type	Center (UTM X, UTM Y)	Release Height (m)	Exit Velocity (m/s)	Exit Temperature (K)	Diameter (m)
Chips cleaning line	Vertical	(430412, 5203082)	15.0	15.7	283.2	1.20
Wet hammer mill 1 pneumatic system	Vertical	(430455, 5203054)	15.0	17.7	283.2	0.60
Wet hammer mill 2 pneumatic system	Vertical	(430462, 5203054)	15.0	17.7	283.2	0.60
Drying line WESP/RTO	Vertical	(430389, 5203010)	27.0	15.4	328.2	2.20
Dry milling & pellet line RCO	Vertical	(430640, 5203064)	27.0	18.6	374.2	2.10
Dry product intermediate storage	Horizontal	(430550, 5203018)	13.0	13.4	283.2	0.84
Dry product intermediate storage	Horizontal	(430556, 5203018)	13.0	13.4	283.2	0.84
Milled dry product intermediate storage	Horizontal	(430625, 5203028)	11.0	13.4	283.2	0.84
Silo 1	Vertical	(430583, 5203118)	28.0	13.8	283.2	0.84
Silo 2	Vertical	(430617, 5203118)	28.0	13.8	283.2	0.84
Silo 3	Vertical	(430650, 5203118)	28.0	13.8	283.2	0.84
Silo 4	Vertical	(430583, 5203077)	28.0	13.8	283.2	0.84
Silo 5	Vertical	(430617, 5203077)	28.0	13.8	283.2	0.84
Emergency generator	Vertical	(430415, 5203000)	2.7	130.3	822.2	0.10

NOTES: m = meter; m/s = meter per second; K = degrees Kelvin; UTM = Universal Transverse Mercator; N/A = not applicable

TABLE 6
VOLUME AND AREA SOURCE PARAMETERS

Source	Source Type	Configuration/Location	Release Height (m)	Initial Horizontal Dimension (m)	Initial Vertical Dimension (m)
White wood storage pile	Polygon Area	Dimension of the storage pile	3.05	N/A	1.4
Ground chips storage pile	Polygon Area	Dimension of the storage pile	3.05	N/A	1.4
Hog fuel wood storage pile	Polygon Area	Dimension of the storage pile	3.05	N/A	1.4
Truck route for white wood delivery	Multiple Volume	Following delivery route; entry and exit	2.55	9.0	5.1
Truck route for ground chips delivery	Multiple Volume	Following delivery route; entry and exit	2.55	9.0	5.1
Truck route for hog fuel delivery	Multiple Volume	Following delivery route; entry and exit	2.55	9.0	5.1
Truck route for product loadout	Multiple Volume	Following delivery route; entry and exit	2.55	9.0	5.1
Front end loader activity for white wood	Multiple Volume	Following loader paths to unload truck and load floor bin	4.46	10.7	8.9
Front end loader activity for ground chips	Multiple Volume	Following loader paths to unload truck and load floor bin	4.46	10.7	8.9
Front end loader activity for hog fuel wood	Multiple Volume	Following loader paths to unload truck and load floor bin	4.46	10.7	8.9
Product truck loading	Volume	Dimensions of the truck loading bucket	3.04	1.9	10.2

NOTES: m = meter; m/s = meter per second; N/A = not applicable

Emissions for all sources were calculated on a PTE basis and represent the maximum expected emissions from facility operations as described in Section 3 for point sources and presented in Appendix C for fugitive sources. Emissions from the emergency engine were estimated using 100 hours/year, per 40 CFR 60, Subpart IIII for emergency engines. The occurrence of maintenance and testing of this unit was assumed to only contribute to a maximum of one hour runtime on any given day for the 24-hour PM_{10}, 24-hour $PM_{2.5}$, 1-hour nitrogen dioxide (NO_2), 1-hour carbon monoxide (CO), and 8-hour CO national ambient air quality standards (NAAQS).

7 Air Dispersion Modeling Analysis

7.1 Toxic Air Pollutant Modeling

The Washington TAP program requires that where any predicted TAP emission rates would exceed their corresponding SQER values, the project proponent must show via dispersion modeling, that the predicted maximum concentrations do not exceed their corresponding ASIL concentration. The SQER and ASIL values are codified in WAC 173-460-150. As shown in Table 2 in Section 4.7 of this report, PNWRE identified 12 predicted TAP emissions rates that exceeded their SQER values and thus require dispersion modeling as part of the first-tier analysis. **Table 7** summarizes the results of the dispersion modeling and shows that the modeled concentrations are less than their respective ASIL values.

TABLE 7
MODELING RESULTS FOR TOXIC AIR POLLUTANTS

CAS Registry Number	TAP Name	Averaging Period	Emission Rate (lb/averaging period)	SQER[1] (lb/averaging period)	ASIL[1] ($\mu g/m^3$)	Modeling Result ($\mu g/m^3$)
57-97-6	7,12-Dimethylbenz(a) anthracene	year	1.72E-03	1.40E-03	8.50E-06	1.42E-08
75-07-0	Acetaldehyde	year	3.29E+02	6.00E+01	3.70E-01	8.58E-03
107-02-8	Acrolein	24-hr	1.39E+00	2.60E-02	3.50E-01	4.09E-02
71-43-2	Benzene	year	6.90E+01	2.10E+01	1.30E-01	1.03E-02
50-00-0	Formaldehyde	year	6.27E+02	2.70E+01	1.70E-01	1.33E-02
7440-38-2	Arsenic	year	1.61E+00	4.90E-02	3.00E-04	6.21E-06
7440-41-7	Beryllium	year	8.07E-02	6.80E-02	4.20E-04	3.12E-07
7440-43-9	Cadmium	year	4.14E-01	3.90E-02	2.40E-04	1.89E-06
CRVICOMP	Chromium, hexavalent	year	2.53E-01	6.50E-04	4.00E-06	9.68E-07
7439-96-5	Manganese	24-hr	3.17E-01	2.20E-02	3.00E-01	1.14E-02
7439-97-6	Mercury	24-hr	1.39E-02	2.20E-03	3.00E-02	5.03E-04
7440-02-0	Nickel	year	2.61E+00	6.20E-01	3.80E-03	1.05E-05

NOTES: CAS = Chemical Abstract Service; $\mu g/m^3$ = micrograms per cubic meter; ASIL = Acceptable Source Impact Level; hr = hour; lb = pounds; N/A = not applicable; SQER = Small Quantity Emission Rate; TAP = toxic air pollutant

1 SQER and ASIL values are from Washington Administrative Code 173-460-150.

7.2 National Ambient Air Quality Standards Modeling

ORCAA guidance for ambient air quality analyses suggests using an approved screening method to predict emissions impacts and compare them to the significance levels in ORCAA's rule 6.1.4 (Table 6.1.b).[20] If impacts are less than the insignificant impact thresholds, it can be concluded that the proposed source will not contribute to a violation of a standard. Based on engineering judgement, increases in PM_{10}, $PM_{2.5}$, NO_2, and CO emissions from the project would exceed the insignificant impact thresholds. Therefore, a cumulative NAAQS analysis would be required to demonstrate that the project would not cause or contribute to a violation of the NAAQS.

In a cumulative NAAQS analysis, the scope of the analysis is expanded from the SIL analysis to include impacts from nearby sources by including background concentrations. Background concentrations in **Table 8** were obtained from NW-AIRQUEST.[21] For each pollutant and averaging period, the concentration of the closest grid point to the proposed facility (coordinates 46.99, -123.89) was used.

20 ORCAA, 2023. Ambient Air Quality Analysis Fact Sheet. Available: https://www.orcaa.org/wp-content/uploads/AAQA-Fact-Sheet_2023.pdf. Accessed July 14, 2023.

21 Idaho DEQ, 2023. Background Concentrations 2014-2017. Available: https://idahodeq.maps.arcgis.com/apps/MapSeries/index.html?appid=0c8a006e11fe4ec5939804b873098dfe.

TABLE 8
BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration	Unit of Measure
PM_{10}	24-hour	42.1	µg/m^3
$PM_{2.5}$	24-hour	12.5	µg/m^3
	Annual	5.1	µg/m^3
NO_2	1-hour	15.1	ppb
	Annual	2.6	ppb
CO	1-hour	1.04	ppm
	8-hour	0.69	ppm

NOTES: µg/m^3 = micrograms per cubic meter; ppb = parts per billion; ppm = parts per million; CO = carbon monoxide; NO_2 = nitrogen dioxide; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter

Table 9 shows the modeled concentrations for the proposed PNWRE facility. All criteria pollutant concentrations are below the NAAQS. Therefore, the proposed facility has been demonstrated to be in compliance with the NAAQS.

TABLE 9
NATIONAL AMBIENT AIR QUALITY STANDARDS MODEL RESULTS

Pollutant	Averaging Period	Design Concentration	Modeled Concentration	Total Concentration	NAAQS	Exceeds NAAQS? (Yes/No)
PM_{10} (µg/m^3)	24-hour	H6H	79.8	122	150	No
$PM_{2.5}$ (µg/m^3)	24-hour	H8H	11.6	24.1	35	No
	Annual		3.86	8.96	12	No
NO_2 (ppb)	1-hour	H8H	68.6	83.7	100	No
	Annual		0.818	3.42	53	No
CO (ppm)	1-hour	H2H	0.381	1.42	35	No
	8-hour	H2H	0.0809	0.771	9	No

NOTES: µg/m^3 = micrograms per cubic meter; ppb = parts per billion; ppm = parts per million; CO = carbon monoxide; NAAQS = national ambient air quality standard; NO_2 = nitrogen dioxide; $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter; PM_{10} = particulate matter 10 microns or less in diameter

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INSTRUCTIONS FOR FORM 6
BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

BACT by definition is the most effective control option which is technically feasible considering economic, energy, and other environmental impacts. Control options can be eliminated as BACT on a basis of technical, economic, energy, or environmental considerations. The following procedure is designed to facilitate a BACT analysis in cookbook fashion. The following analysis should be performed for each pollutant requiring BACT.

STEP 1: IDENTIFY AVAILABLE CONTROL TECHNOLOGIES: For the source, emissions unit, activity, or process requiring BACT, identify and list all "available" emissions control options for the pollutant in question. Available control options are those air pollution control technologies and techniques with a practical potential for application to the source, emissions unit, activity, or process. In general, any control option in commercial use in the U.S. at the time the analysis is performed should be included on the list of available control options. One very good resource for obtaining listings of control options in use for a particular source type is the U.S. EPA BACT/LAER Clearinghouse (RBLC) which can be viewed at http://cfpub.epa.gov/RBLC/.

STEP 2: ELIMINATE TECHNICALLY INFEASIBLE OPTIONS: Considering site-specific factors and constraints, remove from the list compiled in STEP 1 all technically infeasible control options. A control option can be considered as technically infeasible if technical difficulties such as physical, chemical, or engineering constraints would preclude the successful use of the control option in the particular application in question. For all control options eliminated, demonstration that a control option is technically infeasible should be clearly documented in the BACT Analysis and included with the BACT submittal.

STEP 3: RANK REMAINING CONTROL TECHNOLOGIES BY CONTROL EFFECTIVENESS: Rank and list in attached table all remaining control options in order of control effectiveness with the most effective control alternative at the top of the list.

STEP 4: ENERGY, ENVIRONMENTAL, AND ECONOMIC CONSIDERATIONS: Using the "Top Down" procedure specified below, control options may be eliminated as BACT candidates on the basis of energy, environmental, and economic impacts of the option.

Energy impacts include but are not limited to energy efficiency impacts, fuel cycle efficiency considerations, and fuel availability. Environmental impacts include but are not limited to ground water and water impacts, solid and hazardous waste impacts, and air quality impacts from increases in emissions of other air pollutants that result from implementing the control option. Economic impacts include the sum of up-front capital cost and annual operation and maintenance costs of implementing the control option.

A control option may be eliminated as a BACT candidate on grounds of significant energy, environmental, or economic impacts. Rationale for eliminating a control option should be well documented and included in the analysis. Economic impacts should be evaluated by comparing the cost effectiveness of the control option with generally acceptable cost effectiveness ranges for control of the particular pollutant in question. Inquire with ORCAA on the generally acceptable ranges of cost effectiveness.

STEP 4, TOP DOWN PROCEDURE:

STEP 4.A: Start with the most effective control option from the list compiled in STEP 3.

STEP 4.B: Provide the information specified in items a through g below for the control option being considered. The attached table is provided for convenience of organizing this information.

a. Control Efficiency: Enter the percent of the pollutant removed by the control option. Control efficiency should be calculated based on the control achieved from the control option in question only.

b. Potential Emissions: Potential emissions in pounds of pollutant per hour and tons of pollutant per year should be calculated based on the maximum potential to emit rather than actual emissions. Potential emissions represent the maximum capacity of a source, emissions unit, process, or activity to emit an air pollutant under physical constraints considering air pollutant emission controls and applicable regulatory limits. Operational factors such as hours of operation or partial loading which influence emissions may be included as constraints which limit the potential to emit provided that the project proponent agrees to incorporate these constraints in enforceable regulatory compliance limits.

c. Expected Emissions: Expected emissions in tons of pollutant per year should be calculated considering expected operational considerations such as down time for maintenance, periods of partial load, capacity factors, etc.

d. Annual Expected Emission Reduction: Using the expected emission rate computed in "c" and control efficiency entered in "a", compute the expected annual emission reduction in tons per year.

e. Annual Cost of Control Option: Compute the annual cost of the control option using standard economic principles. Annual cost should include both the initial capital costs as well as operation and maintenance costs. All costs should be amortized over the expected life of the control option (default is ten years). Include in the analysis the calculations, assumptions, and economic parameters used in the calculations.

f. Cost Effectiveness: Cost effectiveness is the ratio of the annual cost computed in "e" to the annual expected emission reduction computed in "d".

g. Other Considerations: List all other media impacts (water, solid waste, etc.) and energy impacts which are associated with the control option.

STEP 4.C: If there are no outstanding issues regarding energy, environmental and economic impacts, the analysis is ended and this control option is proposed as BACT.

STEP 4.D: In the event that the control option is determined to be inappropriate due to energy, environmental, or economic impacts, this control option is eliminated and the analysis proceeds to the next control option on the list. Rationale for elimination of a control option on grounds of significant energy, environmental or economic impacts should be well documented and included with the analysis.

STEP 4.E: Go to STEP 4.B and proceed with the analysis for the next control option on the list.

STEP 5: DOCUMENTATION: Include with the analysis all information, calculations, assumptions, and data used in making the BACT determination.

FORM 6
BACT ANALYSIS TABLE

Emission Unit:

CONTROL OPTIONS	CONTROL EFFICIENCY (% removal)	POTENTIAL EMISSIONS (lbs/hr)	EXPECTED EMISSIONS (tons/yr)	ANNUAL EMISSION REDUCTIONS (tons)	ANNUAL COST ($)	COST EFFECTIVENESS ($/ton)	ENERGY, ENVIRONMENTAL ECONOMIC IMPACTS (list)
1.							
2.							
3.							
4.							
5.							
6.							

REGULATIONS
of the
OLYMPIC REGION CLEAN AIR AGENCY
Clallam, Grays Harbor, Jefferson, Mason, Pacific
and Thurston Counties
ADOPTED BY THE BOARD OF DIRECTORS
ON DECEMBER 3, 1969

Telephone:
Olympia: 360-539-7610
1-800-422-5623
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NOTICE

The regulations, rules, and emission standards of the Olympic Region Clean Air Agency (ORCAA), and as described on the following pages are the basic law for the geographical area covered and are the priority regulations for the same subject matter covered by other laws concerning air pollution control.

Other Reference in Law Concerning

AIR POLLUTION IN THE STATE OF WASHINGTON

(1) Chapter 70A.15 Revised Code of Washington, the State Clean Air Act: and related administrative codes of the State of Washington Department of Ecology, Title 173 WAC.

(2) United States Public Law 101-549, Clean Air amendments of 1990: and related regulations and standards of the U.S. Environmental Protection Agency as found in the Federal Register.

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REGULATION 1 – GENERAL PROVISION

RULE 1.1 POLICY

The Olympic Region Clean Air Agency (Agency), consisting of the counties of Clallam, Grays Harbor, Jefferson, Mason, Pacific and Thurston, having formed pursuant to chapter 70A.15 RCW, as amended, adopts the following Regulations to control the emission of air contaminants from sources within the jurisdiction of the Agency: to provide for the uniform administration and enforcement of these Regulations: and to administer the requirements and purposes of chapter 70A.15 RCW, as amended, and the Federal Clean Air Act.

It is hereby declared to be the public policy of the Olympic Region Clean Air Agency to secure and maintain such levels of air quality as will protect human health and safety; and, to the greatest degree practicable, prevent injury to plant and animal life and to property; and be consistent with the social, economic, and industrial well-being of the territory of the Agency.
[Adopted 08/17/06; Amended 02/26/22]

RULE 1.2 NAME OF AGENCY

The name of the multi-county air pollution control authority comprised of the activated or inactivated air pollution control authorities of Clallam County, Grays Harbor County, Jefferson County, Mason County, Pacific County, and Thurston County will be known and cited as the "Olympic Region Clean Air Agency."
[Adopted 08/17/06; Amended 02/26/22]

RULE 1.3 SHORT TITLE

These Regulations may be known and cited as "Regulations of the Olympic Region Clean Air Agency."
[Adopted 08/17/06]

RULE 1.4 DEFINITIONS

When used in regulations of the Olympic Region Clean Air Agency, the following definitions will apply, unless defined otherwise in individual Regulations:

"Actual Emissions" means the actual rate of emissions of a pollutant from an emission unit, as determined in accordance with (a) through (c) of this rule.

(a) In general, actual emissions as of a particular date must equal the average rate, in tons per year, at which the emission unit actually emitted the pollutant during a two-year period which precedes the particular date, and which is representative of normal source operation. The Agency must allow the use of a different time period upon determination that it is more representative of normal source rates, and types of materials processed, stored, or combusted during the selected time operation. Actual emissions must be calculated using the emissions unit's actual operating hours, production period.

(b) The Agency may presume that source-specific allowable emissions for the unit are equivalent to the actual emissions of the emissions unit.

(c) For an emissions unit that has not begun normal operations on the particular date, actual emissions will equal the potential to emit of the emissions unit on that date.

"Agency" shall mean the same as "Authority."

"Agriculture or Agricultural" means the growing of crops, the raising of fowl or animals as gainful occupation.

"Air Contaminant" means dust, fumes, mist, smoke, other particulate matter, vapor, gas, odorous substance, or any combination thereof. "Air pollutant" means the same as "air contaminant."

"Air Pollution" means the presence in the outdoor atmosphere of one or more air contaminants in sufficient quantities, and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, property, or which unreasonably interferes with enjoyment of life and property. For these Regulations, air pollution does not include air contaminants emitted in compliance with chapter 17.21 RCW, the Washington Pesticide Application Act, which regulates the application and control of the use of various pesticides.

"Allowable Emissions" means the emission rate of a source calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits which restrict the operating rate, or hours of operation, or both) and the most stringent of the following:

(a) The applicable standards as set forth in 40 CFR part 60, 61, or 63;
(b) Any applicable state implementation plan emissions limitation including those with a future compliance date; or,
(c) The emissions rate specified as a federally enforceable permit condition, including those with future compliance date.

"Alteration" means the act of altering, which means to change or make different and includes any addition to or enlargement or replacement; or change of the design, capacity, process or arrangement; or any increase in the connected loading of equipment or control facility; or any change in fuels, method of operation or hours of operation not previously approved by the Agency through a Notice of Construction Approval, which would increase or adversely affect the kind or amount of air contaminant emitted by a stationary source.

"Ambient Air" means the surrounding outside air.

"Ambient Air Quality Standard" means an established concentration, exposure time, and frequency of occurrence of air contaminant(s) in the ambient air, which must not be exceeded.

"Attainment Area" means a geographic area designated by EPA at 40 CFR Part 81 as having attained the National Ambient Air Quality Standard for a given criteria pollutant.

"Authority" means the Olympic Region Clean Air Agency. "Agency" shall mean the same as "Authority."

“Begin Actual Construction” means, in general, initiation of physical on-site construction activities on an emission unit, which are of a permanent nature. Such activities include, but are not limited to, installation of building supports and foundations, laying underground pipe work and construction of permanent storage structures. With respect to a change in method of operations, this term refers to those on-site activities other than preparatory activities which mark the initiation of the change.

“Best Available Control Technology (BACT)” means an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under chapter 70A.15 RCW emitted from or which results from any new or modified stationary source which the permitting agency, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such stationary source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of such air pollutant. In no event must application of the best available control technology result in emissions of any pollutants which would exceed the emissions allowed by any applicable standard under 40 CFR Part 60, Part 61, and Part 62. Emissions from any stationary source utilizing clean fuels, or any other means, to comply with this paragraph must not be allowed to increase above levels that would have been required under definition of BACT in the Federal Clean Air Act as it existed prior to enactment of the Clean Air Act Amendments of 1990.

“Board” means the Board of Directors of the Olympic Region Clean Air Agency.

“Bubble” means a set of emission limits which allows an increase in emissions from a given emissions unit in exchange for a decrease in emissions from another emissions unit, pursuant to RCW 70A.15.2240 and Rule 6.1.12 of Regulation 6.

“Commenced” as applied to “Construction” means that the owner or operator has all the necessary pre-construction approvals or permits and either has:

- **(a)** Begun, or caused to begin, a continuous program of actual on-site construction of the source, to be completed within a reasonable time; or
- **(b)** Entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of actual construction of the source to be completed within a reasonable time.

For this definition, “necessary pre-construction approvals” means those permits or orders of approval required under federal air quality control laws and regulations, including state, local and federal regulations and orders contained in the SIP.

“Concealment” means any action taken to reduce the observed or measured concentrations of a pollutant in a gaseous effluent while, in fact, not reducing the total amount of pollutant discharged.

“Control Apparatus” means any device that prevents or controls the emission of any air contaminant.

“Construction” means any physical change or change in the method of operation (including fabrication, erection, installation, demolition, or modification of an emissions unit) which would result in a change in actual emissions.

“Criteria Pollutant” means a pollutant for which there is established a National Ambient Air Quality Standard at 40 CFR Part 50. The criteria pollutants are carbon monoxide (CO), particulate matter, ozone (O_3), sulfur dioxide (SO_2), lead (Pb), and nitrogen dioxide (NO_2).

“Daylight Hours” means the hours between official sunrise and official sunset.

“Ecology” means the Washington State Department of Ecology.

“Emission” means a release of air contaminants into the ambient air.

“Emission Point” means the location (place in horizontal plane and vertical elevation) at which an emission enters the atmosphere.

“Emission reduction credit (ERC)” means a credit granted pursuant to chapter 173-400 WAC. This is a voluntary reduction in emissions.

“Emission Standard” and “Emission Limitation” means requirements established under the Federal Clean Air Act or chapter 70A.15 RCW which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a stationary source to assure continuous emission reduction and any design, equipment work practice, or operational standard adopted under the Federal Clean Air Act, chapter 70A.15 RCW.

“Emission Unit” means any part of a stationary source or source which emits or would have a potential to emit any pollutant subject to regulation under the Federal Clean Air Act, chapter 70A.15 or 70A.388 RCW.

“EPA” means the United States Environmental Protection Agency (USEPA).

“Equipment” means any stationary or portable device, or any part thereof, capable of causing the emission of any air contaminant into the atmosphere.

“Establishment” means the act of establishing, which means creating, setting up, or putting into practice any equipment, material, fuel, or operational change.

“Excess Emission” means emissions of an air pollutant more than the applicable emission standard.

“Executive Director” means the Air Pollution Control Officer of the Olympic Region Clean Air Agency.

“Facility” means all emission units in the same industrial grouping located on contiguous or adjacent properties and under common ownership and control.

“Federal Clean Air Act (FCAA)” means the Federal Clean Air Act, as known as Public Law 88-206, 77 Stat. 392, December 17, 1963, 42 U.S.C. 7401 et seq., as last amended by the Clean Air Act Amendments of 1990, P.L. 101-549, November 15, 1990.

“Federally Enforceable” means all limitations and conditions enforceable by EPA, including those requirements developed under 40 CFR Parts 60, 61, and 63, requirements within the Washington SIP, requirements within any permit established under 40 CFR 52.21 or order of approval under a SIP approved new source review regulation, or any voluntary limits on emissions pursuant to Rule 6.1.12 or WAC 173-400-091.

“Fuel Burning Equipment” means any equipment, device or contrivance used for the burning of any fuel, and all appurtenances thereto, including ducts, breechings, control equipment, fuel feeding equipment, ash removal equipment, combustion controls, stacks, chimneys, etc., used for indirect heating in which the material being heated is not contacted by and adds no substances to the products of combustion.

“Fugitive Dust” means a particulate emission made airborne by forces of wind, man’s activity, or both. Unpaved roads, construction sites, and tilled land are examples of areas that originate fugitive dust. Fugitive dust is a type of fugitive emission.

“Fugitive Emission” means emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

“Garbage” means refuse, animal, or vegetable matter as from a kitchen, restaurant, or store.

“Good Engineering Practice (GEP)” refers to a calculated stack height based on the equation specified in WAC 173-400-200(2)(a)(ii).

“Hogged-fuel” means wood slabs, edging, trimmings, etc., which have been put through a “hog” to reduce them to a uniform small size, and includes shavings from planing mills, sawdust from saw-kerfs, bits of bark, chips, and other small-recovered products from the manufacture of wood products or any combination thereof.

“Incinerator” means a furnace used primarily for the thermal destruction of waste.

“In Operation” means engaged in activity related to the primary design function of the source.

“Installation” means the act of installing, which means placing, assembling, or constructing equipment or control equipment at the premises where the equipment or control equipment will be used, and includes all preparatory work at such premises.

“Light Detection and Ranging (LIDAR)” means the EPA alternate method 1 determination of the opacity of emissions from stationary sources remotely by LIDAR.

“Lowest Achievable Emission Rate (LAER)” means the same as it is defined in WAC 173-400-810.

“Major Modification” as it applies to stationary sources subject to requirements for new sources in nonattainment areas means the same as it is defined in WAC 173-400-810.

“Major Stationary Source” (a) as it applies to stationary sources subject to requirements for new sources in **nonattainment areas** means the same as it is defined in WAC 173-400-810; or,
(b) As it applies to stationary sources subject to requirements for new sources in **attainment or unclassified areas** means the same as it is defined in WAC 173-400-710.

“Masking” means the mixing of a chemically nonreactive control agent with a malodorous gaseous effluent to change the perceived odor.

“Material Handling” means the handling, transporting, loading, unloading, storage, and transfer of material with no significant chemical or physical alteration.

“Modification” means any physical change in, or change in the method of operation of, a stationary source that increases the amount of any air contaminant emitted by such stationary source or that result in the emissions of any air contaminant not previously emitted. The term modification will be construed consistent with the definitions of modification in Section 7411, Title 42, United States Code, and with rules implementing that section.

“National Ambient Air Quality Standards (NAAQS)” means an ambient air quality standard set by EPA at 40 CFR Part 50 and includes standards for carbon monoxide (CO), particulate matter, ozone (O_3), sulfur dioxide (SO_2), lead (Pb), and nitrogen dioxide (NO_2).

“National Emission Standards for Hazardous Air Pollutants (NESHAP)” means the federal rules in 40 CFR Part 61.

“National Emission Standards for Hazardous Air Pollutants for Source Categories” means the federal rules in 40 CFR Part 63.

“Net Emissions Increase” (a) as it applies to stationary sources subject to requirements for new sources in **nonattainment** areas means the same as it is defined in WAC 173-400-810; or,
(b) as it applies to stationary sources subject to requirements for new sources in **attainment or unclassified** areas means the same as it is defined in WAC 173-400-710.

“New Source” means:

- **(a)** The construction or modification of a stationary source that increases the amount of any air contaminant emitted by such stationary source or that results in the emission of any air contaminant not previously emitted; and
- **(b)** Any other project that constitutes a new stationary source under the Federal Clean Air Act.

“New Source Performance Standards (NSPS)” means the federal rules set forth in 40 CFR Part 60.

“Nonattainment Area” means a geographic area designated by EPA at 40 CFR Part 81 as exceeding a national ambient air quality standard (NAAQS) for a given criteria pollutant. An area is nonattainment only for the pollutants for which the area has been designated nonattainment.

"Nonroad Engine" means:

(a) Except as discussed in (b) of this rule, a nonroad engine is any internal combustion engine:

(1) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or
(2) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or
(3) That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(b) An internal combustion engine is not a nonroad engine if:

(1) The engine is used to propel a motor vehicle, or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the Federal Clean Air Act; or
(2) The engine is regulated by a New Source Performance Standard promulgated under section 111 or 112 of the Federal Clean Air Act; or
(3) The engine otherwise included in (a)(3) of this rule remains or will remain at a location for more than twelve consecutive months or a shorter period of time for an engine located at a seasonal source. A location is a single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that operates at a single location approximately three months (or more) each year. The paragraph does not apply to an engine after the engine is removed from the location.

"Notice of Construction Application" means a written application to permit construction, installation or establishment of a new stationary source, modification of an existing stationary source, or replacement or substantial alteration of control technology at an existing stationary source.

"Olympic Air Pollution Control Authority (OAPCA)" is the former name of Olympic Region Clean Air Agency (ORCAA). Reference to "OAPCA" means the same as ORCAA.

"Opacity" means the degree to which an object seen through a plume is obscured, stated as a percentage.

"Order" means any order issued by ecology or a local air agency pursuant to chapter 70A.15 RCW, including, but not limited to RCW 70A.15.3011, 70A.15.2520, 70A.15.2210, 70A.15.2220, and 70A.15.2040(3), and includes, where used in the generic sense, the terms order, corrective action order, order of approval, and regulatory order.

"Order of Approval" or **"Approval Order"** means a regulatory order issued by Ecology or the Agency to approve the Notice of Construction application for a proposed new source or modification, or the replacement or substantial alteration of control technology at an existing stationary source.

"Owner" means person, agent, lessor, lessee, possessor, manager, supervisor, operator, or other responsible party of real property or other assets which includes equipment or control apparatus.

"Ozone Depleting Substance" means any substance listed in Appendices A and B to Subpart A of 40 CFR part 82.

"Particulate Matter" or **"Particulates"** means any airborne finely divided solid or liquid material with an aerodynamic diameter smaller than 100 micrometers.

"Parts Per Million (ppm)" means parts of a contaminant per million parts of gas, by volume, exclusive of water or particulates.

"Permit" means a written warrant or license granted by the Board, Executive Director, or duly authorized Representative or Agent.

"Permitting Agency" means ecology or the local air pollution control agency with jurisdiction over the source.

"Person" means an individual, firm, public or private corporation, association, partnership, political subdivision, municipality, or government agency.

"$PM_{2.5}$" means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by a reference method based on 40 CFR Part 50 Appendix L and designated in accordance with 40 CFR Part 53 or by an equivalent method designated in accordance with 40 CFR Part 53.

"PM_{10}" means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on 40 CFR Part 50 Appendix J and designated in accordance with 40 CFR Part 53 or by an equivalent method designated in accordance with 40 CFR Part 53.

"$PM_{2.5}$ Emissions" means finely divided solid or liquid material, including condensable particulate matter, with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers emitted to the ambient air as measured by an applicable reference method, or an equivalent or alternate method, specified in Appendix M of 40 CFR Part 51 or by a test method specified in the SIP.

“PM_{10} Emissions” means finely divided solid or liquid material, including condensable particulate matter, with an aerodynamic diameter less than or equal to a nominal 10 micrometers emitted to the ambient air as measured by an applicable reference method, or an equivalent or alternate method, specified in Appendix M of 40 CFR Part 51 or by a test method specified in the SIP.

“Potential to Emit” means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, will be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a source.

“Prevention of Significant Deterioration (PSD)” means the program in WAC 173-400-700 to 173-400-750. Ecology is responsible for the PSD program for stationary sources in ORCAA’s jurisdiction.

“Process” means any equipment, device apparatus, chemical, natural element, procedure, effort, or any combination thereof which performs a service, function, use, or method, leading to an end of a performance, or manufacturing production.

“Reasonably Available Control Technology (RACT)” means the lowest emission limit that a particular stationary source or stationary source category is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. RACT is determined on a case-by-case basis for an individual stationary source or stationary source category considering the impact of the stationary source upon air quality, the availability of additional controls, the emission reduction to be achieved by additional controls, the impact of additional controls on air quality, and the capital and operating costs of the additional controls. RACT requirements for any stationary source or stationary source category will be adopted only after notice and opportunity for comment are afforded.

“Refuse” means waste as defined in Rule 1.4 of this Regulation.

“Regulation” means any regulation, or any subsequently adopted additions or amendments thereto, of the Olympic Region Clean Air Agency.

“Regulatory Order” means an order issued by Ecology or an agency to an air contaminant source that applies to that source, any applicable provision of chapter 70A.15 RCW, or the rules adopted there under, or, for sources regulated by a local air agency, the regulations of that agency.

“Representative” or **“Agent”** means any person authorized by the Executive Director of the Agency to represent them in an official and specific manner.

“Residential” means a two or single-family unit.

“Secondary Emissions” means emissions which would occur because of the construction or operation of a major stationary source or major modification, but do not come from the major stationary source or major modification itself. Secondary emissions must be specific, well defined, quantifiable, and impact the same general area as the stationary source or modification that causes the secondary emissions. Secondary emissions may include, but are not limited to:

(a) Emissions from ships or trains located at the new modified stationary source; and,

(b) Emissions from any off-site support facility which would not otherwise be constructed or increase its emissions because of the construction or operation of the major stationary source or major modification.

“Significant” (a) as it applies to stationary sources subject to requirements for new sources in **nonattainment areas** means the same as it is defined in WAC 173-400-810; or,
(b) as it applies to stationary sources subject to requirements for new sources in **attainment or unclassified areas** means the same as it is defined in WAC 173-400-710.

“Source” means all the emissions units, including quantifiable fugitive emissions, that are located on one or more contiguous or adjacent properties, and are under the control of the same person or persons under common control, whose activities are ancillary to the production of a single product or functionally related groups of products. Activities will be considered ancillary to the production of a single product or functionally related group of products if they belong to the same Major Group (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 supplement.

“Source Category” means all sources of the same type of classification.

“Stack” means any point in a source designed to emit solids, liquids, or gases into the air, including a pipe or duct.

“Stack Height” means the height of an emission point measured from the ground-level elevation at the base of the stack.

“Standard Conditions” means a temperature of 20ºC (68ºF) and a pressure of 760 mm (29.92 inches) of mercury.

“Standard Cubic Foot of Gas” means that amount of the gas, which would occupy a cube having dimensions of one foot on each side if the gas were free of water vapor and at standard conditions.

“State Implementation Plan (SIP)” or the “Washington SIP” in 40 CFR Part 52, subpart WW. The SIP contains state, local and federal regulations and orders, the state plan and compliance schedules approved and promulgated by EPA, for implementing, maintaining, and enforcing the National Ambient Air Quality Standards.

“Stationary Source” means any building, structure, facility, or installation, which emits or may emit any air contaminant. This term does not include emissions resulting directly from an internal combustion engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in section 216(11) of the Federal Clean Air Act.

"Synthetic Minor" means any stationary source that's potential to emit has been limited below applicable thresholds by means of a federally enforceable order, rule, or permit condition.

"Temporary" means a period not to exceed one (1) year.

"Total Reduced Sulfur (TRS)" means the sum of the sulfur compounds hydrogen sulfide, mercaptans, dimethyl sulfide, dimethyl disulfide, and any other organic sulfides emitted and measured by EPA method 16 or an approved equivalent method and expressed as hydrogen sulfide.

"Total Suspended Particulate (TSP)" means particulate matter as measured by the method described in 40 CFR Part 50 Appendix B.

"Toxic Air Pollutant (TAP)" means any toxic air pollutant listed in WAC 173-460-150. The term toxic air pollutant may include particulate matter and volatile organic compounds if an individual substance or a group of substances within either of these classes is listed in WAC 173-460-150. The term toxic air pollutant does not include particulate matter and volatile organic compounds as generic classes or compounds.

"True Vapor Pressure" means the equilibrium partial pressure exerted by the stored organic compound at:

(a) The annual average temperature of the organic compound as stored; or
(b) At the local annual average temperature as reported by the National Weather Service if stored at ambient temperature.

"Unclassifiable Area" means an area that cannot be designated attainment or nonattainment based on the available information as meeting or not meeting the National Ambient Air Quality Standard for the criteria pollutant that is listed by EPA at 40 CFR part 81.

"United States Environmental Protection Agency (USEPA)" will be referred to as EPA.

"Vent" means any opening through which gaseous emissions are exhausted into the ambient air.

"Volatile Organic Compound (VOC)" means the same as it is defined in WAC 173-400-030.
[Adopted 08/17/06; Amended 05/22/10; 03/18/11; 05/13/12; 02/26/22]

RULE 1.5 EXECUTIVE DIRECTOR – POWERS AND DUTIES

(a) The Executive Director shall observe and enforce the provisions of state law and all orders, ordinances, resolutions or rules and regulations of the Agency pertaining to control and prevention of air pollution in accordance with the policies of the Board of Directors.

(b) At least thirty days prior to the commencement of any formal enforcement action under RCW 70A.15.3150 or 70A.15.3160, whenever the Executive Director has reason to believe that any provision of state law or any regulation relating to the control or prevention of air pollution has been violated, the Executive Director may cause written notice to be served upon the alleged violator or violators. The notice must specify the provision of state law or the regulation alleged to be violated and the facts alleged to constitute a violation there of and may include an order that necessary corrective action be taken within a specified time. In lieu of an order, the Executive Director may require that the alleged violator or violators appear before the Board for a hearing, at a time and place specified in the notice, given at least twenty (20) days prior to such hearing, and answer the charges.

(c) The Executive Director and/or a qualified designated agent may make any investigation or study which is necessary for enforcing these Regulations or any amendment thereto of controlling or reducing the amount or kind of air contaminant.

(d) The Executive Director and/or a qualified designated agent may obtain from any person, subject to the jurisdiction of the Agency, such information or analysis as will disclose the nature, extent, quantity, or degree of air contaminants which are, or may be, discharged by such source and type or nature of control equipment in use.

(e) To investigate conditions specific to the control, recovery, or release of air contaminants into the atmosphere, the Executive Director or a duly authorized representative has the power to enter at reasonable times upon any private or public property, excepting non-multiple unit private dwellings housing two families or less. No person may refuse entry or access to the Executive Director, or a duly authorized representative, who request entry for an inspection, and who presents appropriate credentials; nor obstruct, hamper, or interfere with any such inspection.

(f) If during the course of an inspection, the Executive Director or a duly authorized representative desires to obtain a sample of air contaminant, fuel, or process material or other material which affects or may affect the emission of air contaminants, the Executive Director or a designated agent shall notify the owner or operator of the time and place of obtaining a sample so the owner or operator has the opportunity to take a similar sample at the same time and place; and the Executive Director or a duly authorized representative shall give a receipt to the owner or operator for the sample obtained.

(g) The Executive Director may engage, at the Agency's expense and with Board approval, qualified individuals, or firms to make independent studies and reports as to the nature, extent, quantity, or degree of any air contaminants which are or may be discharged from any source.

(h) The Executive Director is empowered to sign official complaints or issue citations or initiate court suits or use other means to enforce the provisions of the Regulations.

(i) To demonstrate compliance with emission standards, the Executive Director has the authority to require a source to be tested, either by the Agency personnel or by the owner, using source test procedures approved by the Agency. The owner must be given reasonable advance notice of the requirement of the test.

(j) For Agency personnel to perform a source test, the Executive Director has the authority to require the owner of the source to provide an appropriate platform and sampling ports. The owner must have the opportunity to observe the sampling and, if there is adequate space to conduct the tests safely and efficiently, to obtain sample at the same time.

[Adopted 08/17/06; Amended 02/26/22]

RULE 1.6 CONFIDENTIAL INFORMATION

Whenever any record or other information, other than ambient air quality data or emissions data, furnished to or obtained by the Agency, pursuant to any sections in chapter 70A.15 RCW, relate to processes or production unique to the owner or operator or are likely to affect adversely the competitive position of such owner or operator if released to the public or to the competitor, and the owner or operator of such processes or production so certifies, such records or information will only be for the confidential use of the Agency.

Nothing herein will be construed to prevent the use of records or information by the Agency in compiling or publishing analysis or summaries relating to the general condition of the outdoor atmosphere: Provided, that such analysis or summaries do not reveal any information otherwise confidential under the provisions of this rule: Provided further, that emission data furnished to or obtained by the Agency will be correlated with applicable emission limitations and other control measures and will be available for public inspection during normal business hours at offices of the Agency.

[Adopted 08/17/06; Amended 02/26/22]

RULE 1.7 APPOINTMENT OF HEARING OFFICER

(a) In all instances where the Board is permitted or required to hold hearings under the provisions of chapter 70A.15 RCW, such hearings must be held before the Board; or the Board may appoint a hearing officer, who will be the Executive Director of the Agency or his/her designee to hold such hearings.

(b) A duly appointed hearing officer has all the powers, rights and duties of the Board relating to the hearings.

[Adopted 08/17/06; Amended 02/26/22]

RULE 1.8 APPEALS FROM BOARD ORDERS

(a) Any order issued by the Agency becomes final unless such order is appealed to the Hearings Board as provided in chapter 43.21B RCW. The sole basis for appeal of a fee assessed by the Executive Director or Board will be that the assessment contains an arithmetic or clerical error.

(b) Any order issued by the Agency may be appealed to the Pollution Control Hearings Board if the appeal is filed with the Hearings Board and served on the Agency within thirty (30) days after receipt of the order in accordance with chapter 371-08 WAC. This is the exclusive means of appeal of such an order.

(c) The Agency in its discretion may stay the effectiveness of an order during the pendency of such an appeal.

(d) At any time during the pendency of such an appeal of such an order to the Pollution Control Hearings Board, the appellant or other affected parties may apply to the Hearings Board pursuant to chapter 43.21B RCW and chapter 371-08 WAC for a stay of the order or the removal thereof.

[Adopted 08/17/06; Amended 02/26/22]

RULE 1.9 SEVERABILITY

If any phrase, clause, or rule of these Regulations is declared unconstitutional or invalid by any court of competent jurisdiction, it will be conclusively presumed that the Board of Directors would have enacted these Regulations without the phrase, clause, or rule so held unconstitutional or invalid; and the remainder of the Regulations will not be affected because of said part being held unconstitutional or invalid.

[Adopted 08/17/06; Amended 02/26/22]

RULE 1.10 SERVICE OF NOTICE

(a) Service of any written notice required by ORCAA Regulations must be made on the owner(s) as follows:

- **(1)** Either by mailing the notice in a prepaid envelope directed to the owner at the address listed on their application, order, registration certificate, or at the address where the equipment is located, by United States Certified Mail, return receipt requested; or
- **(2)** By leaving the notice with the owner or if the owner is not an individual, with a member of the partnership or group concerned, or with an officer, registered agent or managing agent of the corporation.

(b) Service of any written notice required by ORCAA Regulations must be made on the Agency, as follows:

- **(1)** Either by mailing the notice in a prepaid envelope directly to the Agency at its office by United States Certified Mail, return receipt requested; or
- **(2)** By leaving the notice at the Agency office with an employee of the Agency.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

RULE 1.11 FEDERAL REGULATION REFERENCE DATE

Whenever federal regulations are referenced in ORCAA's rules, the effective date is July 1, 2023.

[Adopted 08/17/06; Amended 10/29/16; 10/16/17; 03/23/19; 01/04/2020; 11/22/2020; 10/17/2021; 02/26/2022; 10/31/2022; Amended 10/28/2023]

RULE 1.12 STATE REGULATIONS REFERENCE DATE

Whenever state regulations are referenced in ORCAA's rules, the effective date is July 1, 2023.

[Adopted 02/26/2022; Amended 10/31/2022; Amended 10/28/2023]

REGULATION 2 – ENFORCEMENT PROCEDURES AND PENALTIES

RULE 2.1 VOLUNTARY COMPLIANCE

Nothing in this Regulation prevents the Agency from making efforts to obtain voluntary compliance through warning, conference, or any other appropriate means.
[Adopted 08/17/06; Amended 02/26/22]

RULE 2.3 VARIANCES

Any person who owns or is in control of any plant, building, structure, establishment, process, or equipment may apply to the Agency or the Board for a variance to exceed a specific maximum emission standard of these Regulations for a limited period, except for any federally enforceable standard, provided that a variance to state standard is also approved by the Department of Ecology. The application must be accompanied by such information and data as the Agency or Board requires. The Board may grant such variance but only after approval by the Department of Ecology and public hearing or due notice and in accordance with the provisions set forth in RCW 70A.15.2310, as now or hereafter amended. Any hearing held pursuant to this rule must be conducted in accordance with the rules of evidence as set forth in RCW 34.04.100, as now or hereafter amended. A variance will be charged fees per the Agency's Notice of Construction Fee Schedule.
[Adopted 08/17/06; Amended 04/26/15; 02/26/22]

RULE 2.4 NOTICES OF VIOLATIONS

At least 30 days prior to the commencement of any formal enforcement action under RCW 70A.15.3150 or 70A.15.3160, the Board or Executive Director will serve written notice upon the alleged violator or violators. The notice must specify the provisions of chapter 70A.15 RCW or the orders, rules, or regulations adopted pursuant thereto, alleged to be violated, and the facts alleged to constitute a violation thereof, and may include an order directing that necessary corrective action be taken within a reasonable time. In lieu of an order, the Board or the Executive Director may require the alleged violator or violators appear before the Board for a hearing. Every notice of violation will offer the alleged violator an opportunity to meet with the Agency prior to the commencement of enforcement action.

- **(a)** Each act of commission or omission which procures, aids, or abets in the violation is a violation and is subject to the same penalty.
- **(b)** In case of a continuing violation, whether knowingly committed, each day's continuance is a separate and distinct violation.

[Adopted 08/17/06; Amended 02/26/22]

RULE 2.5 REGULATORY ACTIONS AND PENALTIES

The Executive Director may take any of the following regulatory actions to enforce the provisions of chapter 70A.15 RCW or any of the rules or regulations in force pursuant thereto, which are incorporated by reference.

- **(a)** Civil Penalties

(1) Any person who violates any of the provisions of chapter 70A.15 RCW or any of the rules or regulations in force pursuant thereto may incur a civil penalty in an amount not to exceed $14,915.00 per day for each violation.
(2) Any person who fails to act as specified by an Order issued pursuant to chapter 70A.15 RCW or Regulations of ORCAA is liable for a civil penalty of not more than $14,915.00 for each day of continued noncompliance.
(3) Within 30 days after receipt of Notice of Civil Penalty, the person incurring the penalty may apply in writing to the Executive Director for the remission or mitigation of the penalty. Any such request must contain the following:

- **(i)** The name, mailing address, and telephone number of the appealing party;
- **(ii)** A copy of the Notice of Civil Penalty appealed from;
- **(iii)** A short and plain statement showing the grounds upon which the appealing party considers such Order to be unjust or unlawful;
- **(iv)** A clear and concise statement of facts upon which the appealing party relies to sustain their grounds for appeal;
- **(v)** The relief sought, including the specific nature and extent; and
- **(vi)** A statement that the appealing party has read the notice of appeal and believes the contents to be true followed by the party's signature.

Upon receipt of the application, the Executive Director may remit or mitigate the penalty only upon a demonstration by the requestor of extraordinary circumstances such as the presence of information or factors not considered in setting the original penalty.

(4) Any civil penalty may also be appealed to the Pollution Control Hearings Board pursuant to chapter 43.21B RCW and chapter 371-08 WAC if the appeal is filed with the Hearings Board and served on the Agency within 30 days after receipt by the person penalized of the notice imposing the penalty or 30 days after receipt of the notice of disposition of the application for relief from penalty.
(5) A civil penalty becomes due and payable on the later of:

- **(i)** 30 days after receipt of the notice imposing the penalty;
- **(ii)** 30 days after receipt of the notice of disposition on application for the relief from penalty, if such application is made; or
- **(iii)** 30 days after receipt of the notice of decision of the Hearings Board if the penalty is appealed.

(6) If the amount of the civil penalty is not paid to the Agency within the time allowed, the Agency may use any available methods, including Superior Court, to recover the penalty. In all actions brought in the Superior Court for recovery of penalties hereunder, the procedure and rules of evidence are the same as in ordinary civil action.
(7) To secure the penalty incurred under this rule, this Agency may secure a lien on any vessel used or operated in violation of these Regulations, which will be enforced as provided in RCW 60.36.050.

(b) Criminal Penalties

(1) Any person who knowingly violates any of the provisions of chapter 70A.15 RCW or any rules or regulations in force pursuant thereto, is guilty of a crime and upon conviction thereof, may be punished by fine of not more than $10,000.00, or by imprisonment in the county jail for not more than 1 year, or by both for each separate violation.

(2) Any person who negligently releases into the ambient air any substance listed by the Department of Ecology as a hazardous air pollutant, other than in compliance with terms of an applicable permit or emission limit, and who at the time negligently places another person in imminent danger of death or substantial bodily harm is guilty of a crime and may, upon conviction, be punished by a fine of not more than $10,000.00, or by imprisonment for not more than 1 year, or both.

(3) Any person who knowingly releases into the ambient air any substance listed by the Department of Ecology as a hazardous air pollutant, other than in compliance with the terms of an applicable permit or emission limit, and who knows at the time that they have thereby placed another person in imminent danger of death or substantial bodily harm is guilty of a crime and may, upon conviction, be punished by a fine of not less than $50,000.00, or by imprisonment for not more than 5 year, or both.

(c) Additional Enforcement

(1) Notwithstanding the existence or use of any other remedy, whenever any person has engaged in, or is about to engage in, any acts or practices which constitute or will constitute a violation of any provision of chapter 70A.15 RCW, or any order, rule or regulation issued by the Board of Executive Director or a duly authorized agent, the Board, after notice to such person and an opportunity to comply, may petition the Superior Court of the county wherein the violation is alleged to be occurring or to have occurred for a restraining order or a temporary or permanent injunction or another appropriate order.

(2) As an additional means of enforcement, the Board or Executive Director may accept an assurance of discontinuance of any act or practice deemed in violation of chapter 70A.15 RCW or of any order, rule, or regulation adopted pursuant thereto, from any person engaging in, or who has engaged in, such act or practice. Any such assurance must specify a time limit during which such discontinuance is to be accomplished. Failure to perform the terms of any such assurance constitutes prima facie proof of a violation of this chapter or the orders, rules or regulations issued pursuant thereto, which make the alleged act or practice unlawful for securing any injunction or other relief from Superior Court in the county wherein the violation is alleged to be occurring or to have occurred.

[Adopted 08/17/06; Amended 02/12/07; 02/26/22]

RULE 2.6 COMPLIANCE SCHEDULES

(a) Issuance. Whenever a source is found to be in violation of an emission standard or other provision of ORCAA's Regulations or chapter 70A.15 RCW or title 173 WAC or any applicable federal regulation the Agency may issue a regulatory order requiring that the source be brought into compliance within a specified time. The order must contain a schedule for installation, with intermediate benchmark dates and a completion date, which constitutes a compliance schedule.

(b) The source, including any person who owns or is in control of any plant, building, structure, establishment, process, or equipment, which is in violation of an emission standard or other provision of ORCAA's Regulations or chapter 70A.15 RCW or title 173 WAC may submit a proposed Compliance Schedule to the Board for approval. The proposed Compliance Schedule must meet the requirements of this rule and must be accompanied by such information and data as the Executive Director or the Board may require.

(c) Public Noticing. Compliance Schedules must meet the requirements for public involvement in accordance with chapter 70A.15 RCW as now or hereafter amended. Any hearing held pursuant to this rule must be conducted in accordance with the Rules of Evidence as set forth in Chapter 34.04 RCW, as now or hereafter amended.

(d) Federal Action. A source will be considered in compliance with this rule if all the provisions of its individual compliance schedule, including those stated by regulatory order, are being met. Such compliance does not preclude federal enforcement action by the EPA until and unless the schedule is submitted and adopted as an amendment to the State Implementation Plan.

(e) Penalties for delayed compliance. Sources on a compliance schedule but not meeting emissions standards may be subject to penalties as provided in the Federal Clean Air Act. In addition, failure at any phase to make progress towards compliance pursuant to any Compliance Schedule accepted by the Board may be deemed an unreasonable delay and in violation of the terms of said Compliance Schedule and the Board or Executive Director may require that the responsible person appear before the Board to explain the delay and show cause why abatement action should not be started, enforcement action taken, and/or the Compliance Schedule revoked.

(f) Fee for Compliance Schedule. The Agency will not commence processing a compliance schedule request until it has received a filing fee as determined by Rule 3.3.

[Adopted 08/17/06; Amended 02/26/22]

REGULATION 3 – FEES

The Board will establish Fee Schedules by Resolution. The Fee Schedules will be reviewed periodically to determine if the fee revenue collected is sufficient to recover program costs. Any proposed fee revision must include opportunity for public review and comment. Accordingly, the Agency must account for program costs, including direct and indirect employee costs and overhead. If it is determined that the total program fee revenue is either significantly excessive or deficient for this purpose, the Board may choose to amend the fee schedules to recover program costs more accurately.
[Adopted 08/17/06; Amended 02/26/22]

RULE 3.1 ANNUAL REGISTRATION FEES

(a) The Agency will charge Initial and Annual registration fees pursuant to RCW 70A.15.2200. Annual registration fees will be assessed per the annual fee schedules set forth in Rule 3.1(b) below. Initial registration fees will be assessed upon initial registration of a source and will equal the annual registration fee based on projected emissions and prorated for the remaining months in the fiscal year. Initial and Annual registration fees provide revenue to fund the Agency's ongoing Registration Program.

(b) All sources requiring registration will be assessed an annual registration fee; the fees required by this rule will be based on process rates, equipment specifications, and emissions data from the previous calendar year on file with the Agency, if this information is not on file with the Agency, the Agency may base the annual fee on the enforceable emissions limitations for the source and maximum capacities and production rates. In assessing annual registration fees, the Agency will consider updates and revisions to any source's file received prior to July 1 of the current year. The fees will be assessed per items (1) and (2) of this rule. Sources assessed annual operating permit fees under Rule 3.2 will not be assessed annual fees under this rule.

(1) An Emissions Fee as specified in the Registration Fee Schedule per ton of each air contaminant listed in Table 3.1 that is emitted by the source. The emissions fee will be based on actual emissions from the source, for the last calendar year when available, or as specified in the file or permit. Only non-VOC TAPs will be subject to the emission fee; and

(2) A Registration Classification Fee as specified in the Registration Fee Schedule.

(c) The Agency sends annual registration invoices out on or after August 1 of each year to cover the cost of administering the program for the current fiscal year commencing July 1 and ending June 30. The agency assesses annual registration fees based on the most recent information on file with the Agency including any updates to the source's file received prior to July 1 of that year.

(d) Upon assessment by the Agency, annual registration fees are due and payable and will be deemed delinquent if not fully paid on or before the due date on the invoice. However, sources classified as RC1, RC2, or RC3 have the option to pay their annual fee in quarterly installments. RC1, RC2, and RC3 sources choosing to pay quarterly installments may indicate so on the first invoice received and remit payment of the first installment to the Agency along with the duplicate copy of the invoice. Quarterly installments are equal to 25% of the total annual registration fee and are due on or before the due date on the invoice.

(e) Any source which fails to pay, in full, their annual registration fee or annual registration installment by the due date, as stated on the invoice, may be assessed a late penalty in the amount of 25% of their annual registration fee. This late penalty is in addition to the annual registration fee.

(f) Annual registration fees may be appealed per the procedure specified in Rule 1.8.

(g) Failure to pay annual registration fees is a violation of these Regulations and will result in the issuance of a Notice of Violation and prescribed penalties.

(h) On a periodic basis, the Agency conducts a workload analysis to determine the adequacy of annual registration fees in funding the Agency's Registration Program. The workload analysis is based on the Agency's historical record of time and resource expenditures associated with the registration program. The workload analysis will be presented to the Board periodically. Any proposed revisions to the annual registration fee schedule must be presented to the Board for adoption after public noticing pursuant to these Regulations public noticing requirements and opportunity for a public hearing.

(i) All registered sources needing to be re-inspected, due to verified conditions or actions caused by the source, will be charged an additional amount as specified in the Registration Fee Schedule.

(j) The Agency's Registration fees must cover the direct and indirect cost of the Registration program as specified in RCW 70A.15.2200.

(k) The applicable fees are established in the current fee schedule adopted by Resolution of the Board of Directors of ORCAA.

Table 3.1: Pollutants Considered For Fees

Total Suspended Particulates (TSP)
Carbon Monoxide (CO)
Sulfur Oxides (SOx)
Nitrogen Oxides (NOx)
Volatile Organic Compounds (VOC)
Toxic Air Pollutants (TAP)

[Adopted 08/17/06; Amended 05/17/07; 05/13/12; 04/26/15; 02/26/22]

RULE 3.2 OPERATING PERMIT FEES

(a) Fee Applicability. Any source or area source in the Agency's jurisdiction subject to the requirement to obtain an Operating Permit pursuant to 40 CFR Part 70 or RCW 70A.15.2260 (Title V sources), except those Title V sources for which air emissions are regulated by the Washington State Department of Ecology or Energy Facility Site Evaluation Council (EFSEC), must pay annual fees to the Agency per the provisions in this rule.

(b) Operating Permit Program Account. The Agency must maintain a dedicated account for the Air Operating Permit Program. The account will be funded exclusively by fee revenue from annual fees collected from Title V sources within the jurisdiction of the Agency. All fee revenue collected under Rule 3.2 must be deposited in the Air Operating Permit account.

(c) Operating Permit Program Funding. The sum of fees assessed by the Agency under Rule 3.2 covers all direct and indirect costs of developing and administering the Agency's Operating Permit Program including Ecology's cost for development and oversight of the Agency's Operating Permit Program, as provided in RCW 70A.15.2270.

(d) Ecology Development and Oversight Fees. The Agency assesses an annual Ecology Development and Oversight Fee to all Title V sources within the jurisdiction of the Agency. The total amount of Ecology Development and Oversight Fees assessed annually by the Agency equals Ecology's annual cost of development and oversight of the Agency's Operating Permit Program, as provided in RCW 70A.15.2270.

(e) Annual Fees, Existing Title V Sources. The Agency assesses an Annual Fee to all existing Title V sources. The total amount of Annual Fees assessed by the Agency to existing Title V sources must equal the projected net annual cost to administer the Agency's Operating Permit Program during the current fiscal year.

(f) Net Annual Cost Projections. Projected net annual cost to administer the Agency's Operating Permit Program will be determined annually and must equal the projected annual cost to administer the program minus any balance of funds in the Operating Permit Program account at the end of the previous fiscal year. Projected annual costs include all direct and indirect costs to administer the Agency's Operating Permit Program and is based on a workload analysis conducted by staff. Net annual cost projections including the workload analysis must be included in the Agency's annual budget and approved by resolution of the Agency's Board of Directors in a public hearing.

(g) Workload Analysis. Only fee eligible activities as specified below, as provided in RCW 70A.15.2270, are considered in the workload analysis conducted annually by staff. Fee eligible activities will include:

(1) Preapplication assistance and review of an application and proposed compliance plan for a permit, permit revision, or permit renewal;

(2) Source inspections, testing, and other data gathering activities necessary for development of a permit, permit revision or renewal;

(3) Acting on an application for a permit, permit revision or renewal, including the cost of developing an applicable requirement as part of the processing of a permit, permit revision or renewal, preparing a draft permit and fact sheet, preparing a proposed permit, and preparing a final permit;

(4) Notifying and soliciting, reviewing. and responding to comment from the public and contiguous states and tribes, conducting public hearings regarding the issuance of a draft permit and other costs of providing information to the public regarding operating permits and the permit issuance process;

(5) Modeling necessary to establish permit limits or to determine compliance with the permit limits;

(6) Reviewing compliance certifications and emission reports, conducting related compilation and reporting activities;

(7) Conducting compliance inspections, complaint investigations and other activities necessary to ensure that a source is complying with permit conditions;

(8) Administrative enforcement activities and penalty assessment, excluding the cost of proceedings before the Pollution Control Hearings Board (PCHB) and all costs of judicial enforcement;

(9) The share attributable to permitted sources to the development and maintenance of emissions inventories;

(10) The share attributable to permitted sources of the ambient air quality monitoring and associated recording and reporting activities;

(11) Training for permit administration and enforcement;

(12) Fee determination, assessment, and collection, including the cost of necessary administrative dispute resolution and enforcement;

(13) Required fiscal audits, periodic performance audits and reporting activities;

(14) Tracking of time, revenues and expenditures and accounting activities;

(15) Administering the permit program including costs of clerical support, supervision, and management;

(16) Provisions of assistance to small business under jurisdiction of the Agency as required under Section 507 of the Federal Clean Air Act; and,

(17) Other activities required by operating permit regulations issued by EPA under the Federal Clean Air Act.

(h) Allocation of Fees. The Annual Fee for a Title V source will be calculated using the following three-part fee allocation equation:

Table 3.2a: Operating Permit Fee Formulas

Annual Fee = Facility Fee + Equipment Fee + Emissions Fee
WHERE: Facility Fee = (Annual Net Cost ÷ 3) ÷ n Equipment Fee = [(Annual Net Cost ÷ 3) ÷ U_{total}] x U_{source} Emissions Fee = [(Annual Net Cost ÷ 3) ÷ E_{total}] x E_{source} Annual Net Cost = Projected net annual cost as approved by the Agency's Board of Directors. n = Total number of Title V sources in the Agency's jurisdiction. Note, each area source category requiring a Title V permit will be counted as one source in determining "n." However, the facility fee for an area source category will be divided equally among all individual area sources within the area source category. U_{total} = Total number of emission units located at Title V sources in the Agency's jurisdiction. U_{source} = Number of emission units at the specific Title V source. For area source categories requiring a Title V permit, "U_{source}" is the number of individual area sources within the area source category that have been identified within the Agency's jurisdiction. However, the emission unit fee for an area source category will be divided equally among all individual area sources within the area source category. E_{total} = Total actual annual emissions of the air pollutants subject to fees from Title V sources based on the Agency's most recent emissions inventory. E_{source} = Total actual annual emissions of the air pollutants subject to fees, from the specific Title V source for the most recent calendar year. For area source categories requiring a Title V permit, "E_{source}" is the total actual annual emissions from the area source category. However, the Emissions Fee for an area source category will be divided equally among all individual area sources within the area source category. Air pollutants subject to fees = Total Particulates (TSP) Sulfur Oxides (SOx) Nitrogen Oxides (NOx) Volatile Organic Compounds (VOC) Toxic Air Pollutants

(i) Initial Fees. New Title V sources will be assessed an Initial Fee after commencement of operation to cover the Agency's cost of administering the program for the new Title V source for the remainder of the current fiscal year. The Initial Fee for a new Title V source will equal the Annual Fee based on Rule 3.2(h), which would otherwise be assessed if the Title V source commenced operation on or prior to the beginning of the current fiscal year, prorated by multiplying by the number of months remaining in the current fiscal year divided by 12.

(j) Fee Assessment and Payment Schedule. The Agency sends Annual Fee invoices on or after August 1 of each year to cover the cost of administering the program for the current fiscal year commencing on July 1 and ending on June 30.

Annual Fees are due and payable and will be deemed delinquent if not fully paid on or before the due date on the invoice. However, option will be given to pay Annual Fees in quarterly installments. Owners or operators may choose to pay their Annual fees in quarterly installments by signing the invoice payment addendum received and remit it with payment of the first quarterly installment to the Agency on or before the due date on the invoice. After initial payment, the remaining installments must be received on or before October 1, January 1, and April 1 Quarterly installments are equal to twenty-five percent (25%) of the total fee.

(k) Late Payment. Any Title V source which does not pay the Annual Fee or installment by the Invoice Due date will be assessed a late penalty equal to twenty-five percent (25%) of the balance due. Any penalty is in addition to the fee.

(l) Appeal of Annual Fees. Annual Fees may be appealed per the procedure specified in Rule 1.8. The basis for such appeals is limited to arithmetic or clerical errors.

(m) Exemption from Rule 3.1 fees. Title V sources assessed annual fees under Rule 3.2 are not subject to annual Registration Program Fees under Rule 3.1 of Regulation 3.

(n) Transfer of Ownership. Transfer of ownership of a Title V source does not affect any obligation to pay fees required by Rule 3.2. Any liability for fee payment, including payment of delinquent fees and other penalties survives any transfer of ownership of a Title V source.

(o) Accountability. The sum of the fees assessed by the Agency to all Title V sources within the Agency’s jurisdiction will not exceed the cost of developing and administering the program. The Agency keeps record of all direct and indirect costs to develop and administer the Operating Permit Program as specified in 40 CFR Part 70. This information is used by the Agency in determining the net annual cost projections required by Rule 3.2(f) above. Provided, however, the information obtained from tracking revenues, time, and expenditures will not provide a basis for challenge to the amount of an individual source’s fee.

[Adopted 08/17/06; Amended 04/26/15; 02/26/22]

RULE 3.3 NOTICE OF CONSTRUCTION FEES

(a) Fees for processing a Notice of Construction (NOC) application must include Filing Fees per Rule 3.3(b) and any applicable Additional NOC Processing Fees per Rule 3.3(c). Other cost to the agency of work performed outside of the agency in conjunction with approving an NOC application must be directly reimbursed to the agency per Rule 3.3(d).

(b) Filing Fees. A Filing Fee per the Notice of Construction Fee Schedule must be paid for each proposed piece of equipment or process, or for groups of identical equipment or processes that, if considered individually would be subject to an NOC. Filing Fees will be assessed and paid as follows:

(1) An NOC application may not be deemed complete unless initial Filing Fees have been paid in full.

(2) Equipment or processes may be considered identical and subject to a single filing fee provided:

  (i) They are identical in size and capacity;
  (ii) Employ identical air pollution control technology;
  (iii) Use the same fuel types;
  (iv) Are subject to the same performance standards and air regulatory determinations; and,
  (v) May be considered as a single emission point for determining ambient air quality impacts.

(3) Payment of NOC Filing Fees is due on or before the Invoice Due Date unless the Executive Director has approved an alternative payment plan.

(c) Additional NOC Processing Fees. Additional NOC Processing Fees must be paid at a rate as specified in the Notice of Construction Fee Schedule for direct time expended by agency staff working on any of the items or actions described in Table 3.3. If required, additional NOC Processing Fees will be determined and paid as follows:

(1) Additional NOC Fees may be assessed periodically as work to complete the items in Table 3.3 incurs, but not more frequently than monthly.
(2) All Additional NOC Processing Fees must be assessed and paid prior to issuing any Final Determination on an NOC application unless the Executive Director has approved an alternative payment plan.
(3) Payment of any Additional NOC Processing Fee is due on or before the Invoice Due date unless the Executive Director has approved an alternative payment plan.
(4) The Executive Director may approve an alternative payment plan if a request is submitted in writing by the applicant.
(5) In computing fees based on hourly rates, only hours attributed directly to completing tasks listed in Table 3.3 will be used in computing fees.
(6) The total hours used in computing fees will be based on the agency's official time accounting records.

(d) **Other Costs.** The following other costs must be borne by the applicant and paid prior to issuing any Final Determination on an NOC application unless an alternative payment plan has been approved by the Executive Director:

(1) The cost of publishing any required notice
(2) Consulting cost incurred by the agency in conjunction with approving an NOC application.

(e) Late Payment Penalties. Failure to pay, in full, any assessed NOC fee on or before the due date as stated on the invoice, may incur a late payment penalty in the amount of 25% of the total amount due.
(f) The Agency's NOC fees cover the direct and indirect cost of processing an NOC application and will be determined through a workload-driven process as allowed under RCW 70A.15.2210.

(g) On a periodic basis, the Agency reviews the Notice of Construction Fee Schedule based on a workload-driven process and determines if the total actual fee revenue is sufficient to recover program costs as allowed in RCW 70A.15.2210. Any proposed fee revision must be Board approved and includes opportunity for public review and comment.

(h) The Applicable fee(s) will be established in the current fee schedule adopted by Resolution of the Board of Directors of ORCAA.

Table 3.3: Additional NOC Processing Fees

Fee-Eligible Item	Description
NOC Application Assistance	Direct technical assistance completing an NOC application, including, but not limited to calculating emissions, filling out standard forms, determining applicable requirements, completing a BACT analysis, performing an air toxics screening analysis pursuant to chapter 173-460 WAC, or selecting monitoring equipment. An NOC Application Assistance fee may only be assessed if the fee rate is disclosed to the applicant and applicant requests such assistance in writing.
Work Exceeding Base-Fee Hours	Direct work attributed to processing an NOC application more than the sum of applicable base-fee hours stated in the Notice of construction Fee Schedule for each piece of equipment or process subject to an NOC.
State Environmental Policy Act (SEPA)	SEPA-related work such as reviewing Environmental Checklists, making threshold determinations, preparing Determinations of Nonsignificance (DNS) and other SEPA-related reports.
Public Noticing	Work directly associated with issuing public notice pursuant to WAC 173-400-171 and Rule 6.1.3 of ORCAA's Regulations. Associated work includes issuing a press release if warranted, copying, and posting the written Preliminary Determination for public viewing, and reviewing and responding to comments.
Public Hearing	Work associated with conducting a public hearing including, but not limited to, preparation of summary materials, copying, issuing hearing notice, conducting the hearing, and responding to comments

[Adopted 08/17/06; Amended 05/17/07; 04/26/15; 02/26/22]

RULE 3.4 OUTDOOR BURNING PERMIT FEES

The applicable fee(s) for the following Permits will be established in the current fee schedule adopted by Resolution of the Board of Directors of ORCAA.

(a) The fee for an Agricultural Burn Permit is specified in the Outdoor Burning Fee Schedule.

(b) The fee for a Land Clearing Burn Permit is specified in the Outdoor Burning Fee Schedule. The fees must cover the direct and indirect cost of the Land Clearing Burn Permit program and will be determined through a workload-driven process.

[Adopted 08/17/06; Amended 02/12/07; 05/10/08; 04/26/15; 10/11/15; 02/26/22]

RULE 3.5 ASBESTOS FEES

The applicable fee(s) for Asbestos and Demolition Notifications will be established in the current fee schedule adopted by Resolution of the Board of Directors of ORCAA.

The fees must cover the direct and indirect cost of the asbestos program and will be determined through a workload-driven process.
[Adopted 08/17/06; Amended 09/19/08; 04/26/15; 01/15/17; 02/26/22]

Rule 3.6 Notice of Intent to Operate Fees

(a) The submittal of a Notice of Intent to Operate (NOI) must be accompanied by the appropriate fees as specified in the Notice of Intent Fee Schedule.

(b) The applicable fee(s) will be established in the current fee schedule adopted by Resolution of the Board of Directors of ORCAA.

(c) The Agency's fees must cover the direct and indirect costs of the NOI application process and will be determined through a workload-driven process.

[Adopted 08/17/06; Amended 04/26/15; 02/26/22]

REGULATION 4 – REGISTRATION

RULE 4.1 REGISTRATION REQUIRED

(a) All stationary sources within the jurisdiction of the Agency, except for any stationary sources required to obtain an air operating permit under chapter 173-401 WAC, must be registered with the Agency. Notwithstanding the exemptions provided in Rule 4.1(b), the following stationary sources must be registered with the Agency:

(1) Any stationary source subject to a standard under New Source Performance Standards, 40 CFR Part 60, except; New Residential Wood Heaters (Subpart AAA); Kraft Pulp Mills (Subpart BB); and Primary Aluminum Reduction Plants (Subpart S);
(2) Any stationary source subject to a performance standard under National Emission Standards for Hazardous Air Pollutants, 40 CFR Part 61, except for asbestos demolition and renovation projects subject to 40 CFR Part 61 Subpart M;
(3) Any stationary source subject to a performance standard under National Emission Standards for Hazardous Air Pollutants for Source Categories, 40 CFR Part 63;
(4) Any stationary source that includes equipment or control equipment subject to an Approval Order issued by the Agency.

(b) The following stationary sources are exempt from registration requirements under Regulation 4. All stationary sources exempt from registration under Regulation 4 are still required to comply with other applicable air pollution requirements.

Maintenance/construction:
(1) Cleaning and sweeping of streets and paved surfaces;
(2) Concrete application, and installation;
(3) Dredging wet spoils handling and placement;
(4) Paving application and maintenance, excluding asphalt plants;
(5) Plant maintenance and upkeep activities (grounds keeping, general repairs, routine housekeeping, routine plant painting, welding, cutting, brazing, soldering, plumbing, retarring roofs, etc.);
(6) Plumbing installation and plumbing protective coating application associated with plant maintenance activities;
(7) Roofing application;
(8) Insulation application and maintenance, excluding products for resale;
(9) Janitorial services and consumer use of janitorial products;
(10) Asphalt laying equipment including asphalt-roofing operations (not including manufacturing or storage);
(11) Blast cleaning equipment that uses a suspension of abrasives in liquid water;
(12) Spray painting or blasting equipment used at temporary locations to clean or paint bridges, water towers, buildings, or similar structures.

Storage tanks:

(13) Lubricating oil storage tanks except those facilities that are wholesale or retail distributors of lubricating oils;

(14) Polymer tanks and storage devices and associated pumping and handling equipment, used for solids dewatering and flocculation;

(15) Storage tanks, reservoirs, pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions;

(16) Process and white-water storage tanks;

(17) Storage tanks and storage vessels, with lids or other appropriate closure and less than 260-gallon capacity (35 cu ft);

(18) Storage tanks of a capacity of 10,000 gallons or less, with lids or other appropriate closure, used for the storage of materials containing organic compounds, but not for use with materials containing toxic air pollutants (as defined in chapter 173-460 WAC);

(19) Storage tanks of a capacity of 40,000 gallons or less, with lids or other appropriate closure, used for storage of organic compounds, but not for use with materials containing toxic air pollutants (as defined in chapter 173-460 WAC), with a true vapor pressure less than 0.01 kPa (0.002 psia) (0.0001 atm);

(20) Storage tanks of a capacity of 40,000 gallons or less used for the storage of butane, propane, or liquefied petroleum gas;

(21) Tanks, vessels, and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts, bases, and acids;

(22) Storage tanks used exclusively for storage of diesel fuel;

(23) Loading and unloading equipment used exclusively for the storage tanks exempted under this rule.

Combustion:

(24) Fuel burning equipment (not including incinerators) that:

- **(i)** is used solely for a private dwelling serving five families or less; or
- **(ii)** has a maximum heat input rate of 5 MMBtu/hr or less if burning natural gas, propane, or LPG; or
- **(iii)** has a maximum heat input rate of 0.5 MMBtu/hr or less if burning waste-derived fuels; or
- **(iv)** has a maximum heat input rate of 1 MMBtu/hr or less if burning recycled or used oil per the requirements of RCW 70A.15.4510; or
- **(v)** has a maximum heat input rate of 1 MMBtu/hr or less if burning any other type of fuel and with less than or equal to 0.05% sulfur by weight.

(25) All stationary gas turbines with a rated heat input less than 10 million Btu per hour.

(26) Stationary internal combustion engines having rated capacity:

- **(i)** less than 50 horsepower output; or

(ii) less than 500 horsepower and used only for standby emergency power generation.

(27) Nonroad engines.

Material handling:

(28) Storage and handling of water-based lubricants for metal working where organic content of the lubricant is less than 10%;

(29) Equipment used exclusively to pump, load, unload, or store high boiling point organic material in tanks less than one million gallons, material with initial atmospheric boiling point not less than 150ºC or vapor pressure not more than 5 mm Hg @21ºC, with lids or other appropriate closure.

Water treatment:

(30) Septic sewer systems, not including active wastewater treatment facilities;

(31) NPDES permitted ponds and lagoons used solely for settling suspended solids and skimming of oil and grease;

(32) De-aeration (oxygen scavenging) of water where toxic air pollutants as defined in chapter 173-460 WAC are not emitted;

(33) Process water filtration system and demineralizer vents;

(34) Sewer manholes, junction boxes, sumps and lift stations associated with wastewater treatment systems;

(35) Demineralizer tanks;

(36) Alum tanks;

(37) Clean water condensate tanks;

(38) Oil/water separators, except those at petroleum refineries;

(39) Equipment used exclusively to generate ozone and associated ozone destruction equipment for the treatment of cooling tower water or for water treatment processes;

(40) Municipal sewer systems, including wastewater treatment plants and lagoons with a design capacity of one million gallons per day or less, if they do not use anaerobic digesters, chlorine disinfections or sewer sludge incinerators.

Environmental chambers and laboratory equipment:

(41) Environmental chambers and humidity chambers not using toxic air pollutant gases, as regulated under chapter 173-460 WAC;

(42) Gas cabinets using only gases that are not toxic air pollutants regulated under chapter 173-460 WAC;

(43) Laboratory fume hoods;

(44) Laboratory calibration and maintenance equipment.

Monitoring/quality assurance/testing:

(45) Equipment and instrumentation used for quality control/assurance or inspection purpose;

(46) Hydraulic and hydrostatic testing equipment;

(47) Sample gathering, preparation and management;

(48) Vents from continuous emission monitors and other analyzers.

Miscellaneous:

(49) Single-family residences and duplexes;
(50) Plastic pipe welding;
(51) Primary agricultural production activities including soil preparation, planting, fertilizing, weed and pest control, and harvesting;
(52) Insecticide, pesticide, or fertilizer spray equipment;
(53) Comfort air conditioning;
(54) Flares used to indicate danger to the public;
(55) Natural and forced air vents and stacks for bathroom/toilet activities;
(56) Personal care activities including establishments like beauty salons, beauty schools, and hair cutting establishments;
(57) Recreational fireplaces including the use of barbecues, campfires, and ceremonial fires;
(58) Tobacco smoking rooms and areas;
(59) Noncommercial smokehouses;
(60) Blacksmith forges for single forges;
(61) Vehicle maintenance activities, not including vehicle surface coating;
(62) Vehicle or equipment washing;
(63) Wax application;
(64) Oxygen, nitrogen, or rare gas extraction and liquefaction equipment not including internal and external combustion equipment;
(65) Ozone generators and ozonation equipment;
(66) Ultraviolet curing processes, to the extent that toxic air pollutant gases as defined in chapter 173-460 WAC are not emitted;
(67) Electrical circuit breakers, transformers, or switching equipment installation or operation;
(68) Pneumatically operated equipment, including tools and hand-held applicator equipment for hot melt adhesives;
(69) Firefighting and similar safety equipment and equipment used to train fire fighters;
(70) Production of foundry sand molds, unheated and using binders less than 0.25% free phenol by sand weight;
(71) Natural gas pressure regulator vents, excluding venting at oil and gas production facilities and transportation marketing facilities;
(72) Solvent cleaners less than 10 square feet air-vapor interface with solvent vapor pressure not more than 30 mm HG @21ºC, and not containing toxic air pollutants (as defined in chapter 173-460 WAC);
(73) Surface coating, aqueous solution or suspension containing less than 1% (by weight) VOCs, and/or toxic air pollutants as defined in chapter 173-460 WAC;
(74) Cleaning and stripping activities and equipment using solutions having less than 1% VOCs (by weight); on metallic substances, acid solutions are not exempt;
(75) Dip coating operations, using materials less than 1% VOCs (by weight) and/or toxic air pollutants as defined in chapter 173-460 WAC;
(76) Laundry dryers, extractors or tumblers used exclusively for the removal of water from fabric;
(77) Residential composting facilities;
(78) Restaurants and other retail food preparing establishments;

(79) Routing, turning, carving, cutting, and drilling equipment used for metal, wood, plastics, rubber, leather, or ceramics;

(80) Steam cleaning equipment used exclusively for office or residential housekeeping;

(81) Vacuum cleaning systems used exclusively for office or residential housekeeping;

(82) Vacuum producing devices used in laboratory operations and vacuum producing devices that do not remove or convey air contaminants from or to another source;

(83) Vents used exclusively for:

  (i) Sanitary or storm drainage systems; or

  (ii) Safety valves.

(84) Washing or drying equipment used for products fabricated from metal or glass, if no volatile organic material is used in the process;

(85) Welding, brazing or soldering equipment;

(86) Coffee roaster with a design capacity less than 10 pounds per batch;

(87) Bark and soil screening operations;

(88) Portable sand and gravel plants and crushed stone plants with a cumulative rated capacity of all crushers less than or equal to 150 tons per hour;

(89) Fixed sand and gravel plants and crushed stone plants with a cumulative rated capacity of all crushers less than or equal to 25 tons per hour;

(90) Any portable stationary source approved by the Agency for temporary operation at a single location.

[Adopted 08/17/06; Amended 02/26/22]

RULE 4.2 REGISTRATION PROGRAM

(a) Program purpose. As authorized by RCW 70A.15.2200, the Agency's registration program is a program to develop and maintain a current and accurate record of stationary sources. Information collected through the registration program is used to evaluate the effectiveness of air pollution control strategies and to verify stationary source compliance with applicable air pollution requirements.

(b) Program components. The components of the Agency's registration program include:

  (1) Initial notification and annual or other periodic reports from owners of stationary sources providing the information described in Rule 4.3.

  (2) On-site inspections necessary to verify compliance with applicable air pollution control requirements and/or to supplement information provided by owners of stationary sources pursuant to the requirements of Rule 4.3.

  (3) Maintenance of computers and software used to compile and retrieve information provided by owners of stationary sources relating to air contaminant emissions and compliance with air pollution control requirements.

(4) Compilation of emission inventory reports and computation of emission reduction credits from information provided by owners of stationary sources pursuant to the requirements of Rule 4.3.
(5) Staff review, including engineering analysis for accuracy and correctness, of information provided by owners of stationary sources pursuant to the requirements of Rule 4.3.
(6) Clerical and other office support provided by the Agency in direct support of the registration program.
(7) Administrative support provided in directly carrying out the registration program.
(8) Assessment and collection of annual registration fees from all stationary sources requiring registration in accordance with Rule 3.1.

[Adopted 08/17/06; Amended 02/26/22]

RULE 4.3 REQUIREMENTS FOR STATIONARY SOURCES SUBJECT TO REGISTRATION

(a) The owner or operator of any stationary source subject to registration under Rule 4.1 must register the stationary source by submitting an initial notification to the Agency of its existence within 30 days from:

(1) Commencement of operation of any new or recommissioned stationary source including those sources subject to prior approval by the Agency through a Notice of Construction under Rule 6.1; or,
(2) Change in ownership of an existing registered stationary source.

(b) Initial notification must include the following information:

(1) Owner name, address, and phone number;
(2) Source location;
(3) Name, address, and phone number of on-site contact person;
(4) Identification and brief description in terms of type, location and size or capacity, of each stationary source subject to registration;
(5) Date each stationary source was constructed, installed, or established;
(6) Date each stationary source commenced operation;
(7) If subject to pre-construction review and approval by the Agency, the date of the approval and Notice of Construction application number.

(c) Owners or operators of any stationary source subject to registration must, upon request by the Agency, make annual and/or periodic reports to the Agency regarding emission sources, types and amounts of raw materials and fuels used, types, amounts and concentrations of air contaminants emitted, data on emissions units and control devices, data on emission points, and any other information directly related to the registration program as requested by the Agency.

(d) Annual and periodic reports as required by the Agency pursuant to Rule 4.3(c) must be made by the owner or lessee of the stationary source, or an agent, on forms provided by the Agency or in an Agency approved format. The owner of the stationary source is responsible for completion and submittal of the annual or periodic report within thirty (30) days of receipt of the request and forms provided by the Agency. The owner of the stationary source is responsible for the completeness and correctness of the information submitted.

(e) The owner or operator must notify the Agency of any changes in the following administrative information within 30 days from the change taking place:

(1) Owner name, address, and phone number;

(2) Name, address, and phone number of on-site contact person;

(3) Process or equipment changes resulting in an increase in emissions. Changes requiring prior approval by the Agency through a Notice of Construction (NOC) or requiring submittal of a Notice of Intent to Operate (NOI) application must also comply with the requirements of Rule 6.1 and 6.4 respectively; and,

(4) Any permanent shut down or decommissioning of a stationary source.

(f) Each notification or report required under this rule must be signed by the owner or operator of the stationary source, or by the agent appointed by the owner.

(g) The Agency may require the owner or operator of a stationary source develop and implement an Operations and Maintenance (O&M) plant to assure compliance with the applicable air regulations and standards. When required, a copy of the plan must be retained at the facility where the stationary source is located and must be available to the Agency for inspection.

(h) Owners or operators of stationary sources subject to registration will be classified per Rule 4.4 and must pay annual registration fees pursuant to Rule 3.1.

[Adopted 08/17/06; Amended 02/26/22]

RULE 4.4 CLASSIFICATION OF SOURCES REQUIRED TO REGISTER WITH AGENCY

All sources requiring registration pursuant to Rule 4.1 will be classified in one of the registration classifications listed in Table 4.4b. A source will be placed in the most appropriate classification as determined by the Agency. To determine classification, the pollutants listed in Table 4.4a will be considered.

Table 4.4a: Pollutants

Total Suspended Particulates (TSP)
Sulfur Oxides (SOx)
Nitrogen Oxides (NOx)
Volatile Organic Compounds (VOC)
Carbon Monoxide (CO)
Toxic Air Pollutants (TAP)

Table 4.4b: Registration Classification (RC)

CLASSIFICATION RC1 - Any source that has an effective Synthetic Minor Order issued pursuant to WAC 173-400-091. CLASSIFICATION RC2 - Any source with a potential to emit 30 tons or more per year

of any combination of pollutants listed in Table 4.4a.

CLASSIFICATION RC3 - Any source with a potential to emit 10 tons or more per year of any combination of pollutants listed in Table 4.4a.

CLASSIFICATION RC4 - Any source, with a potential to emit 5 tons or more per year of any combination of pollutants listed in Table 4.4a.

CLASSIFICATION RC5 - Any source with a potential to emit less than 5 tons per year of any combination of pollutants listed in Table 4.4a.

[Adopted 08/17/06; Amended 05/13/12; 02/26/22]

REGULATION 5 – OPERATING PERMIT PROGRAM

RULE 5.1 OPERATING PERMIT PROGRAM

(a) Purpose. The purpose of this rule is to provide for a comprehensive operating permit program consistent with the requirements of Title V of the Federal Clean Air Act Amendments of 1990 and its implementing regulation 40 CFR Part 70, and RCW 70A.15.2260 and its implementing regulation chapter 173-401 WAC.

(b) Commitment to administer the program. The Agency, provided full or partial delegation by the US Environmental Protection Agency (EPA) and the Washington Department of Ecology (ECY), will administer an air operating permit program for the Agency's jurisdiction in accordance with Title V of the Federal Clean Air Act Amendments of 1990 and its implementing regulation 40 CFR Part 70, and RCW 70A.15.2260 and its implementing regulation chapter 173-401 WAC.

(c) Applicability. The provisions of this rule apply to all sources subject to the requirements of chapter 173-401 WAC.

(d) Compliance. It is unlawful for any person to cause or allow the operation of any source subject to the requirements of chapter 173-401 WAC without complying with the provisions of chapter 173-401 WAC and any permit issued under its authority.

[Adopted 08/17/06; Amended 02/26/22]

RULE 5.2 (RESERVED)

RULE 5.3 RESTRICTING THE POTENTIAL TO EMIT

A service-based fee, in addition to annual registration or operating permit fees, will be assessed to those sources applying to the Agency for approval of enforceable conditions that restrict the sources' potential to emit, making the source a minor source and not subject to an operating permit. Fees for restricting a sources' potential to emit will be assessed per Regulation 3, Rule 3.3. The Agency assesses the fee based on only those emissions units affected by the enforceable condition as proposed by the applicant.

[Adopted 08/17/06; Amended 02/26/22]

REGULATION 6 – REQUIRED PERMITS AND NOTIFICATIONS

RULE 6.1 NOTICE OF CONSTRUCTION REQUIRED

(a) Approval of a Notice of Construction (NOC) Application required. It is unlawful for any person to cause or allow the following actions unless a Notice of Construction application has been filed with and approved by the Agency, except for those actions involving stationary sources excluded under Rule 6.1(b) and (c):

(1) Construction, installation, or establishment of any stationary source;
(2) Modification to any existing stationary source; or,
(3) Replacement or substantial alteration of emission control technology installed on an existing stationary source.

(b) Exemption provided Notice of Intent to Operate (NOI). An NOC application and approval by the Agency is not required prior to construction, installation, establishment, or modification of the stationary sources listed in Rule 6.4 if a complete Notice of Intent to Operate is filed with the Agency per that section.

(c) Categorical Exemptions. An NOC application and prior approval by the Agency is not required prior to construction, installation, establishment, or modification of stationary sources in the following stationary source categories, if sufficient records are kept documenting the exemption:

Maintenance/construction:
(1) Cleaning and sweeping of streets and paved surfaces;
(2) Concrete application, and installation;
(3) Dredging wet spoils handling and placement;
(4) Paving application and maintenance, excluding asphalt plants;
(5) Plant maintenance and upkeep activities (grounds keeping, general repairs, routine housekeeping, routine plant painting, welding, cutting, brazing, soldering, plumbing, retarring roofs, etc.);
(6) Plumbing installation and plumbing protective coating application associated with plant maintenance activities;
(7) Roofing application;
(8) Insulation application and maintenance, excluding products for resale;
(9) Janitorial services and consumer use of janitorial products;
(10) Asphalt laying equipment including asphalt-roofing operations (not including manufacturing or storage);
(11) Blast cleaning equipment that uses a suspension of abrasive in liquid water;
(12) Spray painting or blasting equipment used at temporary locations to clean or paint bridges, water towers, buildings, or similar structures.

Storage Tanks:
(13) Lubricating oil storage tanks except those facilities that are wholesale or retail distributors of lubricating oils;
(14) Polymer tanks and storage devices and associated pumping and handling equipment, used for solids dewatering and flocculation;

(15) Storage tanks, reservoirs, pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions;
(16) Process and white-water storage tanks;
(17) Storage tanks and storage vessels, with lids or other appropriate closure and less than 260-gallon capacity (35 cu ft);
(18) Gasoline storage tanks less than 2,000 gallons storage capacity;
(19) Gasoline dispensing facilities with a cumulative gasoline storage capacity of less than 10,000 gallons;
(20) Storage tanks of a capacity of 10,000 gallons or less, with lids or other appropriate closure, and for the storage of materials containing organic compounds, but not for use with materials containing toxic air pollutants (as defined in chapter 173-460 WAC);
(21) Storage tanks of a capacity of 40,000 gallons or less, with lids or other appropriate closure, used for the storage of organic compounds, but not for use with materials containing toxic air pollutants (as defined in chapter 173-460 WAC), with a true vapor pressure less than 0.01 kPa (0.002 psia) (0.0001 atm);
(22) Storage tanks of a capacity of 40,000 gallons or less used for the storage of butane, propane, or liquefied petroleum gas;
(23) Tanks, vessels, and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts, bases, and acids.
(24) Storage tanks used exclusively for storage of diesel fuel;
(25) Loading and unloading equipment used exclusively for the storage tanks exempted under this rule.

Combustion:
(26) Fuel burning equipment (not including incinerators) that:

(i) is used solely for a private dwelling serving five families or less; or
(ii) has a maximum heat input rate of 5 MMBtu/hr or less if burning natural gas, propane, or LPG; or
(iii) has a maximum heat input rate of 0.5 MMBtu/hr or less if burning waste-derived fuels; or
(iv) has a maximum heat input rate of 1 MMBtu/hr or less if burning recycled or used oil per the requirements of RCW 70A.15.4510; or
(v) has a maximum heat input rate of 1 MMBtu/hr or less if burning any other type of fuel and with less than or equal to 0.05% sulfur by weight.

(27) All stationary gas turbines with a rated heat input less than 10 million Btu per hour.
(28) Stationary internal combustion engines having rated capacity:

(i) less than 50 horsepower output; or
(ii) less than 500 horsepower and used only for standby emergency power generation.

(29) Nonroad engines.

Material handling:

(30) Storage and handling of water-based lubricants for metal working where organic content of the lubricant is less than 10%;

(31) Equipment used exclusively to pump, load, unload, or store high boiling point organic material in tanks less than one million gallons, material with initial atmospheric boiling point not less than 150°C or vapor pressure not more than 5 mm Hg @ 21°C, with lids or other appropriate closure.

Water treatment:

(32) Septic sewer systems, not including active wastewater treatment facilities;

(33) NPDES permitted ponds and lagoons used solely for settling and suspended solids and skimming of oil and grease;

(34) De-aeration (oxygen scavenging) of water where toxic air pollutants as defined in chapter 173-460 WAC are not emitted;

(35) Process water filtration system and demineralizer vents;

(36) Sewer manholes, junction boxes, sumps and lift stations associated with wastewater treatment systems (does not include engines);

(37) Demineralizer tanks;

(38) Alum tanks;

(39) Clean water condensate tanks;

(40) Oil/water separators, except those at petroleum refineries;

(41) Equipment used exclusively to generate ozone and associated ozone destruction equipment for the treatment of cooling tower water or for water treatment processes.

(42) Municipal sewer systems, including wastewater treatment plants and lagoons with a design capacity of one million gallons per day or less.

Environmental chambers and laboratory equipment:

(43) Environmental chambers and humidity chambers not using toxic air pollutant gases, as regulated under chapter 173-460 WAC;

(44) Gas cabinets using only gases that are not toxic air pollutants regulated under chapter 173-460 WAC;

(45) Installation or modification of a single laboratory fume hood;

(46) Laboratory calibration and maintenance equipment.

Monitoring/quality assurance/testing:

(47) Equipment and instrumentation used for quality control/assurance or inspection purposes;

(48) Hydraulic and hydrostatic testing equipment;

(49) Sample gathering, preparation and management;

(50) Vents from continuous emission monitors and other analyzers.

Miscellaneous:

(51) Single-family residences and duplexes;

(52) Plastic pipe welding;

(53) Primary agricultural production activities including soil preparation, planting, fertilizing, weed and pest control, and harvesting;

(54) Insecticide, pesticide, or fertilizer spray equipment;
(55) Comfort air conditioning;
(56) Flares used to indicate danger to the public;
(57) Natural and forced air vents and stacks for bathroom/toilet activities;
(58) Personal care activities including establishments like beauty salons, beauty schools, and hair cutting establishments;
(59) Recreational fireplaces including the use of barbecues, campfires, and ceremonial fires;
(60) Tobacco smoking rooms and areas;
(61) Noncommercial smokehouses;
(62) Blacksmith forges for single forges;
(63) Vehicle maintenance activities, not including vehicle surface coating;
(64) Vehicle or equipment washing;
(65) Wax application;
(66) Oxygen, nitrogen, or rare gas extraction and liquefaction equipment not including internal and external combustion equipment;
(67) Ozone generators and ozonation equipment;
(68) Ultraviolet curing processes, to the extent that toxic air pollutant gases as defined in chapter 173-460 WAC are not emitted;
(69) Electrical circuit breakers, transformers, or switching equipment installation or operation;
(70) Pneumatically operated equipment, including tools and hand-held applicator equipment for hot melt adhesives;
(71) Fire fighting and similar safety equipment and equipment used to train fire fighters;
(72) Production of foundry sand molds, unheated and using binders less than 0.25% free phenol by sand weight;
(73) Natural gas pressure regulator vents, excluding venting at oil and gas production facilities and transportation marketing facilities;
(74) Solvent cleaners less than 10 square feet air-vapor interface with solvent vapor pressure not more than 30 mm Hg @21°C, and not containing toxic air pollutants (as defined in chapter 173-460 WAC);
(75) Surface coating, aqueous solution or suspension containing less than 1% (by weight) VOCs, and/or toxic air pollutants as defined in chapter 173-460 WAC;
(76) Cleaning and stripping activities and equipment using solutions having less than 1% VOCs (by weight); on metallic substances, acid solutions are not exempt;
(77) Dip coating operations, using materials less than 1% VOCs (by weight) and/or toxic air pollutants as defined in chapter 173-460 WAC.
(78) Laundry dryers, extractors or tumblers used exclusively for the removal of water from fabric;
(79) Residential composting facilities;
(80) Restaurants and other retail food preparing establishments;
(81) Routing, turning, carving, cutting, and drilling equipment used for metal, wood, plastics, rubber, leather. or ceramics;
(82) Steam cleaning equipment used exclusively for that purpose;
(83) Vacuum cleaning systems used exclusively for office or residential housekeeping;

(84) Vacuum producing devices used in laboratory operations and vacuum producing devices that no not remove or convey air contaminants from or to another source;

(85) Vents used exclusively for:

- **(i)** Sanitary or storm drainage systems; or
- **(ii)** Safety valves

(86) Washing or drying equipment used for products fabricated from metal or glass, if no volatile organic material is used in the process.

(87) Welding, brazing, or soldering equipment;

(88) Coffee roasters with a design capacity less than 10 pounds per batch;

(89) Bark and soil screening operations;

(90) Portable sand and gravel plants and crushed stone plants with a cumulative rated capacity of all initial crushers less than or equal to 150 tons per hour;

(91) Fixed sand and gravel plants and crushed stone plants with a cumulative rated capacity of all initial crushers less than or equal to 25 tons per hour.

[Adopted 08/17/06; Amended 10/29/16; 08/17/19; 02/26/22]

Rule 6.1.1 (Reserved)

Rule 6.1.2 Application Processing

(a) Application certification. All NOC applications must be signed by the applicant or owner, who may be required to submit evidence of their authority.

(b) Completeness determination. Within thirty (30) days after receiving an NOC application, the Agency will either notify the applicant in writing that the application is complete or notify the applicant in writing of all additional information necessary to complete the application. Complete applications must include:

- **(1)** Any standard NOC form of the Agency that is applicable to the proposed stationary source or modification;
- **(2)** An Environmental Checklist consistent with requirements in WAC 197-11-315 of the State Environmental Policy Act (SEPA), for any one of the following:
  - **(i)** A Determination of Non-significance (DNS) in accordance with WAC 197-11-340;
  - **(ii)** A Mitigated Determination of Non-significance (MDNS) in accordance with WAC 197-11-350; or,
  - **(iii)** Written statement by the applicant claiming that the proposed stationary source or modification is categorically exempt from SEPA.
- **(3)** When applicable, all information required for review under WAC 173-400-117 and WAC 173-400-700 through 750 and WAC 173-400-800 through 860;

(4) NOC processing fees in accordance with Rule 3.3(b) and (c); and,
(5) Any additional information requested by the Agency that is necessary to make the determinations required under Rule 6.1.4.

(c) Timeframe for Public Involvement:

(1) For NOC applications subject to a mandatory public comment period pursuant to Rule 6.1.3(b), the Agency will issue a Preliminary Determination within 60 days from receipt of a complete application followed by a public comment period in accordance with Rule 6.1.3(c).
(2) For all other NOC applications, the Agency will post a public comment period in accordance with Rule 6.1.3(a) within 30 days from receipt of an application.

(d) Final determination schedule. Final Determination on an application subject to a mandatory public comment period in accordance with Rule 6.1.3(b) will be made as promptly as possible after close of the public comment period. Final Determination on all other applications will be made within sixty (60) days of receipt of a complete NOC application.

(e) Approval. A final determination to approve an NOC application and an "Order of Approval," setting forth the conditions of approval, will be issued, and served as provided for in these Regulations, provided the following conditions are met:

(1) A complete application in accordance with Rule 6.1.2(b) was received by the Agency;
(2) The application verifies to the Agency that the applicable new source review requirements in Rule 6.1.4 have been met;
(3) Application processing fees in accordance with Rule 3.3 have been paid;
(4) The application includes an environmental checklist and other documents that verify compliance with the State Environmental Policy Act;
(5) Applicable public involvement requirements in Rule 6.1.3 have been met; and,
(6) The NOC has been signed by the Executive Director of the Agency or an authorized representative.

(f) Denial. If the Agency determines that a proposed project subject to approval of an NOC application does not meet the applicable approval requirements in Rule 6.1.3, then a final determination to deny approval and an Order to Deny Construction will be issued and served as provided for in these Regulations. Any Order to Deny Construction must:

(1) Be in writing;
(2) Set forth the objections in detail regarding the specific law or rule or rules of these Regulations that will not be met by the proposed project; and,
(3) Must be signed by the Executive Director of the Agency or an authorized representative.

(g) Scope of review of modifications. New source review of a modification to an existing stationary source is limited to the emission unit proposed to be modified, and the air contaminants whose emissions would increase because of the action; provided, however, that review of a major modification must also comply with applicable major new source review requirements under Rule 6.1.4(a) and/or Rule 6.1.4(b), as applicable.

(h) Integration with Title V permitting requirements. A person seeking approval to construct or modify a stationary source subject to chapter 173-401 WAC may elect to integrate review of the operating permit application or amendment required under RCW 70A.15.2260 and the NOC application required by this rule. An NOC application designated for integrated review will be processed in accordance with operating permit program procedures and deadlines in chapter 173-401 WAC. Applications submitted under WAC 173-400-700 through 750 and WAC 173-400-800 through 860 must also comply with public involvement requirements of Rule 6.1.3 and WAC 173-400-171.

(i) Professional Engineer review and sign-off. Every final determination on an NOC application must be reviewed and signed prior to issuance by a professional engineer, or staff under the direct supervision of a professional engineer.

(j) Appeals.

(1) Any order issued pursuant to this Rule may be appealed to the Pollution Control Hearings Board of the State of Washington, pursuant to Rule 1.8.

(2) Any order issued or the failure to issue such an order, does not relieve any person from their obligation to comply with any emission control requirement or with any other provision of law.

(k) Major NSR obligations of the Agency. If the new stationary source is a major stationary source, or the change is a major modification, the Agency will:

(1) Submit any control technology determination included in a final order of approval to the RACT/BACT/LAER clearinghouse maintained by EPA; and

(2) Send a copy of the final approval order to EPA.

(l) Deviations from approved plans. After approval to construct, install, establish, or modify a stationary source or air pollution control device is granted, deviations from the approved plans, drawings, data. and specifications that may result in changes to air pollutant emission rates, control efficiencies or impacts are not permissible without prior approval through an NOC application.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

Rule 6.1.3 Public Involvement

The public will be afforded an opportunity to express interest in any Notice of Construction (NOC) application prior to approval or denial by the Agency.

(a) Public Notice.

(1) A public interest fact sheet must be published on the Agency's website announcing the receipt of permit applications and other proposed actions that do not automatically require a public comment period pursuant to Rule 6.1.3(b). Fact sheets must be published on the Agency's webpage for a minimum of fifteen (15) days. If publication to the Agency's website is not possible, the fact sheet will be published in a newspaper of general circulation in the area of the proposed action. When published in a newspaper, fact sheets will be published for a minimum of one (1) day.

(2) The public must be afforded a minimum of fifteen (15) days from initial publishing of a fact sheet to express an interest in a permit application or proposed decision by responding to the Agency in writing via letter, fax, or email.

(3) Public interest fact sheets must include:

- **(i)** The name of the applicant;
- **(ii)** Location of the proposed project;
- **(iii)** A brief project description;
- **(iv)** Agency contact information;
- **(v)** Procedures for submitting comments and the date by which public comments are due;
- **(vi)** A statement that a public comment period will be provided if requested by any person, government agency, group, or the applicant.

(4) Requests for a public comment period must be submitted to the Agency in writing via letter, fax, or electronic mail. A public comment period must be provided pursuant to Rule 6.1.3(c) for any permit application or proposed action that receives such a request. Any application or proposed action for which a public comment period is not requested may be processed without further public involvement.

(5) The Agency must consider comments submitted in accordance with Rule 6.1.3(a)(2) provided they are received prior to close of the comment period specified in the public interest fact sheet.

(b) Mandatory public comment period. A public comment period in accordance with Rule 6.1.3(c) must be required prior to approval or denial of any NOC application if:

(1) The proposed project would cause a significant net increase in emissions of any air contaminant listed in the following table:

Table 6.1a: Significant Emissions Increase

AIR CONTAMINANT	POTENTIAL TONS/YEAR
Carbon Monoxide (CO)	100.0
Volatile Organic Compounds (VOC)	40.0
Sulfur Dioxide (SO_2)	40.0
Nitrogen Oxides (NO_x)	40.0
Particulate Matter (PM)	25.0
Fine Particulate Matter (PM_{10})	15.0
Lead	0.6
Fluorides	3.0
Sulfuric Acid Mist	7.0

Hydrogen Sulfide (H_2S)	10.0
Total Reduced Sulfur (including H_2S)	10.0
Total Toxic Air Pollutants (total TAPs) (TAPs as listed in chapter 173-460 WAC)	25.0
Any single Toxic Air Pollutant (TAP)	10.0
Municipal waste combustor organics (measured as total tetra-through octa-chlorinated dibenzo-p-dioxins and dibenzofurans)	0.0000035
Municipal waste combustor metals (measured as PM)	15.0
Municipal waste combustor acid gases (measured as SO_2 and hydrogen chloride)	40.0

(2) The applicant requests a limit on the potential to emit under Rule 6.1.12;

(3) The applicant requests to bank emission reduction credits;

(4) The proposed project involves refuse burning equipment;

(5) The Executive Director determines that there may be substantial public interest in the proposal;

(6) The proposed action is to extend the deadline to begin construction of a major stationary source or major modification in a nonattainment area;

(7) A modified or substituted air quality model, other than a guideline model in Appendix W of 40 CFR Part 51 (in effect on June 1, 2003) was used as part of review under Rule 6.1.4;

(8) The action involves an order to determine a category wide RACT;

(9) The action involves establishing a compliance schedule or variance;

(10) The order is to demonstrate the credible height of a stack which exceeds the GEP formula height and sixty-five (65) meters, by means of a fluid model or a field study, or purposes of establishing an emission limitation;

(11) The action includes an order to authorize a bubble; or,

(12) A public comment period is requested by any person, interested governmental agency, group, or the applicant in accordance with requirements for under Rule 6.1.3(a).

(c) Public Comment period. If required, a public comment period must be initiated through posting on the Agency's website for the duration of the public comment period. The Agency may supplement this method of notification by publication of a legal notice in a newspaper of daily circulation in the area of proposed action or by other methods appropriate to notify the local community. The public comment period can only be initiated after all information required by the Agency has been submitted and after a Preliminary Determination has been made. The cost of any supplemental noticing must be borne by the applicant per provisions in Rule 3.3. Public notice of any NOC application requiring a public comment period must include the following:

(1) Availability of the NOC application and any written Preliminary Determination of the Agency in at least one location near the proposed project site or on the Agency's website, excluding any confidential information as provided in Rule 1.6. The Agency's written Preliminary Determination must include the conclusions, determinations, and pertinent supporting information from the Agency's analysis of the effect of the proposed project on air quality.

(2) Publication of a legal notice in a newspaper of general circulation in the area of the proposed project which provides:

- **(i)** A brief description of the project;
- **(ii)** Location of the project and location of documents made available for public inspection;
- **(iii)** The deadline for submitting written comments;
- **(iv)** A statement that any person, interested governmental agency, group, or the applicant may request a public hearing; and,
- **(v)** A statement that a public hearing may be held if the Agency determines within a 30-day period that significant public interest exists; and,
- **(vi)** The date of the close of the public comment period in the event of a public hearing; and,
- **(vii)** For projects subject to Special protection requirements for federal Class I areas in WAC 173-400-117(5)(c), the legal notice must explain the permitting agency's decision or state that an explanation of the decision appears in the fact sheet for the proposed PSD permit.

(3) Notice to the US Environmental Protection Agency Region 10 Regional Administrator.

(d) Extent of public comment period. Unless a public hearing is held, the public comment period must be a minimum of thirty days. If a public hearing is held, the public comment period must extend through the hearing date and thereafter for such period, if an, as the notice of public hearing may specify.

(e) Public hearings. The applicant, any interested governmental entity, any group, or any person may request a public hearing within the comment period specified in the public notice. Any such request must indicate, in writing, the interest of the entity filing it and why a hearing is warranted. The Agency may, in its discretion, hold a public hearing if it determines significant public interest exists. Any such hearing will be held upon such notice and at a time and place as the Agency deems reasonable. The Agency must provide at least 30 days prior notice of any hearing.

(f) Consideration of public comments. No final decision on any NOC application can be made until all public comment periods have ended and any comments received in accordance with requirements for public comments under Rule 6.1.3 have been considered.

(g) Other requirements of law. Whenever procedures permitted or mandated by law will accomplish the objectives of public notice and opportunity for comment, those procedures may be used in lieu of the provisions of this rule (e.g., SEPA). This rule does not apply to an application for a "major modification" or an application for a "major stationary source."

(h) Public information. In accordance with Rule 1.6, all information, except information protected from disclosure under any applicable law, including, but not limited to, RCW 70A.15.2510, must be available for public inspection at the

agency. This includes copies of notices of construction applications, orders, and modifications.
[Adopted 08/17/06; Amended 02/26/22]

Rule 6.1.4 Requirements for Approval

(a) Attainment or Unclassified area requirements. The following requirements apply to any new stationary source or modification proposed in an attainment or unclassified area:

(1) The proposed new stationary source or modification will comply with all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, emission standards adopted under chapter 70A.15 RCW and applicable emission standards in ORCAA's Regulations.

(2) The proposed new stationary source or modification will employ BACT for all air pollutants not previously emitted or whose emissions would increase because of the new stationary source or modification.

(3) Allowable emissions from the proposed new stationary source or modification will not delay the attainment date for an area not in attainment nor cause or contribute to a violation of any ambient air quality standard. This requirement will be met if the projected impact of the allowable emissions from the proposed new stationary source or the projected impact of the increase in allowable emissions from the proposed modification at any location within a nonattainment area does not exceed the levels listed in the following table for the pollutants for which the area has been designated nonattainment:

Table 6.1.b Insignificant Impact Thresholds

Pollutant	Annual Average	24-hour Average	8-hour Average	3-hour Average	1-hour Average
CO	-	-	0.5 mg/m^3	-	2.0 mg/m^3
SO_2	1.0 µg/m^3	5.0 µg/m^3	-	25.0 µg/m^3	30.0 µg/m^3
PM_{10}	1.0 µg/m^3	5.0 µg/m^3	-	-	-
$PM_{2.5}$	0.3 µg/m^3	1.2 µg/m^3	-	-	-
NO_2	1.0 µg/m^3	-	-	-	-

An offsetting emission reduction may be used to satisfy some or all requirements of this rule.

(4) If the proposed project is subject to WAC 173-400-700 through 750 or WAC 173-400-800 through 860, Ecology has issued a final permit under those programs.

(5) If the proposed new stationary source or the proposed modification will emit any toxic air pollutants regulated under chapter 173-460 WAC, the stationary source meets all applicable requirements of that program.

(b) Nonattainment area requirements. The following requirements apply to any new stationary source or modification proposed in a nonattainment area:

(1) The proposed new stationary source or modification will comply with all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, emission standards adopted under chapter 70A.15 RCW and applicable emission standards in ORCAA's Regulations.

(2) The proposed new stationary source or modification will employ BACT for all air contaminants, except that if the new stationary source is a major stationary source or the proposed modification is a major modification it will achieve LAER for the air contaminants for which the area has been designated nonattainment and for which the proposed new stationary source or modification is major.

(3) The proposed new stationary source or modification will not cause any ambient air quality standard to be exceeded, will not violate the requirements for reasonable further progress established by the Standard Operating Procedures and will comply with Rule 6.1.4(a)(3) for all air contaminants for which the area has not been designated nonattainment.

(4) If the proposed new stationary source is a major stationary source or the proposed modification is a major modification, the Agency has determined, based on review of an analysis performed by the source of alternative sites, sizes, production processes, and environmental control techniques, that the benefits of the project significantly outweigh the environmental and social costs imposed because of its location, construction, or modification.

(5) If the proposed new stationary source or the proposed modification is major for the air contaminant for which the area is designated nonattainment, allowable emissions from the proposed new stationary source or modification of that air contaminant are offset by reductions in actual emissions from existing sources in the nonattainment area. Emission offsets must be sufficient to ensure that total allowable emissions from existing major stationary sources in the nonattainment area, new or modified sources which are not major stationary sources, and the proposed new or modified stationary source will be less than total actual emissions from existing sources (before submitting the application) so as to represent (when considered together with the nonattainment provisions of section 172 of the Federal Clean Air Act) reasonable further progress. All offsetting emission reductions must satisfy the following requirements:

(i) The proposed new level of allowable emissions of the source or emissions unit(s) providing the reduction must be less than the current level of actual emissions of that source or emissions unit(s). No emission reduction can be credited for actual emissions that exceed the current allowable emissions of the source or emissions unit(s) providing the reduction. Emission reductions imposed by local, state, or federal regulations, regulatory orders, or permits required by the Federal Clean Air Act, including the SIP, cannot be credited.

(ii) The emission reductions must provide for a net air quality benefit. For marginal ozone nonattainment areas, the total emission of volatile organic compounds or total emissions of nitrogen oxides are reduced by a ratio of 1.1 to 1 for the area in which the new stationary source or modification is located. For any other nonattainment area, the emissions offsets must provide a positive net air quality benefit in the nonattainment area. Determinations on whether emissions offsets provide a positive net air quality benefit will be made in accordance with the guidelines contained in 40 CFR 51 Appendix S (in effect on July 1, 2000).

(iii) If the offsets are provided by another source, the reductions in emissions from that source must be federally enforceable by the time the order of approval for the new or modified stationary source is effective. An emission reduction credit issued under WAC 173-400-131 may be used to satisfy some, or all, of the offset requirements of this rule.

(6) If the proposed new stationary source is a major stationary source or the proposed modification is a major modification, the owner or operator has demonstrated that all major stationary sources owned or operated by such person (or by any entity controlling, controlled by, or under common control with such persons) in Washington are subject to emission limitations and are in compliance, or on a schedule for compliance, with all applicable emission limitations and standards under the Federal Clean Air Act, including all rules in the SIP.

(7) If the proposed new stationary source or modification is subject to WAC 173-400-700 through 750 and WAC 173-400-800 through 860, Ecology has issued a final permit under these programs.

(8) If the proposed new stationary source or modification will emit any toxic air pollutants regulated under chapter 173-460 WAC, the source meets all applicable requirements of that chapter.

(9) If the proposed new stationary source is a major stationary source within the meaning of WAC 173-400-710 or 810, or the proposed modification is a major modification within the meaning of WAC 173-400-710 or 810, the project meets the special protection requirements for federal Class I areas in WAC 173-400-117.

[Adopted 08/17/06; Amended 02/26/22]

Rule 6.1.5 Notice of Completion – Order of Violation

(a) The owner or applicant must notify the Agency of the completion of construction, installation, establishment, or modification of a stationary source approved through an NOC application and, in the case of a new stationary source, the date upon which operation will commence. The Agency may inspect the new or modified stationary source and may issue an Order of Violation if it is found that it is not in accord with the approved NOC application or Order of Approval.

(b) Upon receipt of an Order of Violation, the owner may appeal the order in accordance with the provisions and procedures in Rule 1.8 and Rule 2.1 of these Regulations.

(c) The issuance of approval as provided by Rule 6.1.2(e) does not relieve the owner of the obligation to comply with the laws or regulations as adopted by this Agency or prevent the Board or Executive Director from issuing violation notices as provided by Rule 1.5(b).

[Adopted 08/17/06; Amended 02/26/22]

Rule 6.1.6 Time Limit on Approval of Construction

Approval to construct or modify a stationary source becomes invalid if construction is not commenced within eighteen months after receipt of the approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The Agency may extend the eighteen-month period upon a satisfactory showing that an extension is justified. An extension for a project operating under a PSD permit must also comply with public notice requirements in WAC 173-400-171. This provision does not apply to the period between construction of the approved phases of a phased construction project. Each phase must commence construction within eighteen months of the projected and approved commencement date.

[Adopted 08/17/06; Amended 02/26/22]

Rule 6.1.7 (Reserved)

Rule 6.1.8 Conditions in Orders of Approval Enforceable

Failure to comply with any term or condition of an Order of Approval constitutes a violation of this rule and is subject to penalties pursuant to RCW 70A.15.3150 and RCW 70A.15.3160.

[Adopted 08/17/06; Amended 02/26/22]

Rule 6.1.9 Work Done Without Approval

Where work, for which a Notice of Construction is required, is commenced, or performed prior to making application and receiving approval, the Executive Director or an authorized agent may investigate as part of the Notice of Construction review. In such a case, an investigation fee, in addition to the fees of Rule 3.3 may be assessed in an amount up to 3 times the fees required of Rule 3.3. Payment of the fees does not relieve any person from the requirement to comply with the regulations nor from any penalties for failure to comply.

[Adopted 08/17/06; Amended 02/26/22]

Rule 6.1.10 Requirements for Replacement or Substantial Alteration of Emission Control Technology at an Existing Stationary Source

(a) Any person proposing to replace or substantially alter the emission control technology installed on an existing stationary source must file a Notice of Construction (NOC) application with the Agency. Replacement or substantial alteration of control technology does not include routine maintenance, repair, or similar parts replacement.

(b) For projects not otherwise reviewable under Rule 6.1(a)(1) or Rule 6.1(a)(2), the Agency may:

(1) Require that the owner or operator employ RACT on the affected stationary source;
(2) Prescribe reasonable operation and maintenance conditions for the control equipment; and,
(3) Prescribe other requirements as authorized by chapter 70A.15 RCW.

(c) Within 30 days of receipt of a Notice of Construction application under this rule the Agency will notify the applicant in writing that the application is complete or notify the applicant in writing of all additional information necessary to complete the application. Within thirty days of receipt of a complete NOC application under this rule the Agency will issue an order of approval or a proposed RACT determination for the proposed project.
(d) Construction must not commence on a project subject to review under this rule until the Agency issues a final order of approval. However, any NOC application filed under this rule will be deemed to be approved without conditions if the Agency takes no action within 30 days of receipt of a complete NOC application.
(e) Approval to replace or substantially alter emission control technology will become invalid if construction is not commenced within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Agency may extend the 18-month period upon satisfactory showing that an extension is justified. This provision does not apply to the period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date.

[Adopted 08/17/06; Amended 08/17/19; 02/26/22]

Rule 6.1.11 Change of Conditions

(a) The owner or operator of a stationary source may request, at any time, a change in conditions of an approval order issued by the Agency and the Agency may approve the request provided the Agency finds that:

(1) The change in conditions will not cause the source to exceed an emissions standard;
(2) No ambient air quality standard or PSD increment will be exceeded because of the change;
(3) The change will not adversely impact the ability of the Agency to determine compliance with an emissions standard;
(4) The revised order continues to require BACT, as defined at the time of the original approval, for each new stationary source approved by the order except where the Federal Clean Air Act requires LAER; and
(5) The revised order meets the requirements of Rule 6.1, as applicable.
(6) If the order was issued under WAC 173-400-700 through 750 or WAC 173-400-800 through 860, the revised order will meet any applicable requirements of those sections.

(b) Actions taken under this rule are subject to the public involvement provisions of Rule 6.1.3.

(c) Requests must be made on forms provided by the Agency and must follow the procedures and timelines for an NOC application as specified in Rule 6.1. The fee schedule found in Rule 3.3 also applies to these requests.

(d) Changes involving construction, installation or establishment of a stationary source or modification of an existing source require approval under Rule 6.1(a).

[Adopted 08/17/06; Amended 02/26/22]

Rule 6.1.12 Voluntary Limits on Emissions

(a) Upon request by the owner or operator of a source, the Agency will issue a regulatory order that limits the source's potential to emit any air contaminant or contaminants to a level agreed to by the owner or operator and the Agency.

(b) A condition contained in an order issued under this rule must be less than the source's otherwise allowable annual emissions of a particular contaminant under all applicable requirements of the chapter 70A.15 RCW and the FCAA, including Washington State Implementation Plan. The term "condition" refers to limits on production or other limitations, in addition to emissions limitation.

(c) Any order issued under this rule must include monitoring, record keeping and reporting requirements to ensure that the source complies with any condition established under this rule. Monitoring requirements must use terms, test methods, units, averaging periods, and other statistical conventions consistent with the requirements of WAC 173-400-105.

(d) Any order issued under this rule is subject to the notice and comment procedures under Rule 6.1.3.

(e) The terms and conditions of a regulatory order issued under this rule are federally enforceable upon approval of this rule as an element of the Washington State Implementation Plan. Any proposed deviation from a condition contained in an order issued under this rule requires revision or revocation of the order.

[Adopted 08/17/06; Amended 02/26/22]

RULE 6.2 OUTDOOR BURNING

To maintain air quality at desirable levels, it is the policy of ORCAA to minimize to the greatest extent reasonably possible the burning of outdoor fires. Consistent with this policy, the Board declares that such fires should be allowed only on a limited basis under strict regulation and close control. The Board also encourages the fostering and development of an alternate technology or method of disposing of natural vegetation, which is reasonably economical and less harmful to the environment.

[Adopted 08/17/06; Repealed/Replaced 03/18/11; Amended 02/26/222]

Rule 6.2.1 The provisions of this rule apply to:

(a) Agricultural burning
(b) Fire training fires
(c) Land clearing burning
(d) Native American ceremonial fires
(e) Recreational fires
(f) Residential burning
(g) Storm and flood debris burning
(h) Weed abatement fires

[Adopted 03/18/11]

Rule 6.2.2 Definitions

When used in this Rule the following definitions apply:

“Agricultural burning” means the burning of vegetative debris from an agricultural operation necessary for disease or pest control, necessary for crop propagation and/or crop rotation, or where identified as a best management practice by the agricultural burning practices and research task force established in RCW 70A.15.5090 or other authoritative source on agricultural practices. Propane flaming of vegetative debris is considered commercial agricultural burning.

“Air Pollution Episode” means a period when a forecast, alert, warning, or emergency air pollution state is declared, as stated in chapter 173-435 WAC.

“Burn ban” means an “air pollution episode”, or a period of “impaired air quality” as defined in RCW 70A.15.3580.

“Extinguish” means to put out a fire completely. It must be cool to the touch and not smoldering or smoking.

“Firewood” means clean, dry, seasoned, untreated wood used as fuel in a Native American ceremonial fire or recreational fire.

“Land Clearing Burning” means outdoor burning of trees, stumps, shrubbery, or other natural vegetation from land clearing projects (i.e., projects that clear the land surface so it can be developed, used differently, or left unused).

“Outdoor Burning” means the combustion of material in an open fire or in an open container, without providing for the control of combustion or the control of the emissions from the combustion.

“Nuisance” means an emission that unreasonably interferes with the use and enjoyment of property.

“Recreational Fire” means cooking fires or campfires using firewood which occur in designated areas on public lands, or on private property. Fires used for disposal are not recreational fires.

“Residential Burning” means the outdoor burning of leaves, clippings, prunings, and other yard and gardening refuse originating on the maintained area of residential property (i.e., lands immediately adjacent and near a human dwelling) and burned on such lands by the property owner and/or another responsible person.

“Urban Growth Area” (UGA) means land, generally including land associated with an incorporated city, designated by a county for urban growth under RCW 36.70A.110.

[Adopted 03/18/11; Amended 02/26/22]

Rule 6.2.3 No Burn Areas:

No residential or land clearing burning is allowed in the following cities and/or UGAs:

Clallam	Grays Harbor	Jefferson	Mason	Pacific	Thurston
Carlsborg Clallam Bay Forks Joyce Port Angeles Sekiu Sequim	Aberdeen Hoquiam	Port Townsend Irondale Port Hadlock	Allyn Belfair Shelton	Ilwaco Long Beach Raymond Seaview South Bend	Bucoda Grand Mound Lacey Olympia Rainier Tenino Tumwater Yelm

[Adopted 03/18/11; Amended 02/04/12; Amended 02/26/22]

Rule 6.2.4 Summer Burn Restrictions

No residential or land clearing burning is allowed in Thurston County from July 15th through September 30th.
[Adopted 03/18/11; Amended 08/12/16]

Rule 6.2.5 Prohibitions and restrictions

(a) It is unlawful for any person to cause or allow an outdoor fire containing prohibited materials which include but are not limited to garbage, dead animals, asphalt, petroleum products, paints, rubber products, plastics, paper, cardboard, treated wood, processed wood, construction/ demolition debris, metal, or any substance which when burned releases toxic emissions, dense smoke, or obnoxious odors. A limited amount of paper may be used to start the fire. ORCAA may allow the limited burning of prohibited materials for fire training.

(b) It is illegal to burn vegetation originating in any area where burning is prohibited as listed in Rule 6.2.3.

(c) A person capable of extinguishing the fire must attend it at all times, and the fire must be extinguished before leaving it.

(d) Containers (not regulated under WAC 173-400-070(1)) used for outdoor burning, must be constructed of concrete or masonry with a completely enclosed combustion chamber and equipped with a permanently attached spark arrester constructed of iron, heavy wire mesh, or other noncombustible material with openings not larger than one-half inch.

(e) The use of burn barrels is illegal.

(f) A fire protection agency, county, conservation district, or other governing body may enforce its own regulations that are stricter than those set forth in this rule.

(g) It is unlawful for any person to cause or allow an emission from outdoor burning that is detrimental to the health, safety, or welfare of any person, that causes damage to property or business, or that causes a nuisance.

[Adopted 03/18/11; Amended 02/26/22]

Rule 6.2.6 Curtailment

(a) No outdoor fire can be ignited in a geographical area where an impaired air quality or episode has been declared.
(b) The person responsible for an outdoor fire must extinguish the fire when a burn ban is declared.
(c) Three (3) hours after a burn ban is declared smoke visible from all types of outdoor burning, except land clearing burning, constitutes prima facie evidence of unlawful outdoor burning.
(d) Eight (8) hours after a burn ban is declared smoke visible from land clearing burning constitutes prima facie evidence of unlawful outdoor burning.

[Adopted 03/18/11; Amended 02/26/22]

Rule 6.2.7 Recreational Burning

The following burn practices must be used for recreational burning where allowed.

(a) Maximum pile size is three (3) feet in diameter and two (2) feet high.
(b) Only dry, seasoned firewood or charcoal and enough clean paper necessary to start a fire may be burned.

[Adopted 03/18/11; Amended 02/26/22; 03/06/23]

Rule 6.2.8 Permit Program

ORCAA may consult with fire protection authorities, conservation districts, or counties to determine if any of these agencies are capable and willing to serve as the permitting agency and/or enforcing agency for specific types of burning. Permitting agencies may use, as appropriate, a verbal, electronic, written, or general permit established by rule, for any type of burning that requires a permit.

(a) Permitting agencies may deny an application or revoke a previously issued permit if it is determined that the application contained inaccurate information, failed to contain pertinent information or the permitted activity has caused a nuisance.
(b) Failure to comply with any term or condition of a permit constitutes a violation of this rule and is subject to penalties pursuant to RCW 70A.15.3150 and RCW 70A.15.3160.
(c) Types of burning that require a written permit.

  (1) Agricultural burning must abide by Rule 6.2 and all conditions of the written permit issued by ORCAA or another permitting agency.
  (2) Fire training fires, except as provided in RCW 52.12.150, may be conducted provided all the following requirements are met:

    (i) Fire training must not occur during a burn ban.
    (ii) The fire must be for training.
    (iii) The agency conducting the training fire must obtain any permits, licenses, or other approvals required by any entity for such training fires. All permits, licenses, and approvals must be kept on-site and available for inspection.

(3) Land Clearing Burning requires an approved written permit. Conditions of the written permit issued by ORCAA or another permitting agency are enforceable.

(4) Storm and flood debris resulting from a declared emergency by a governmental authority may be burned within two years of the event (storm). Burning must abide by Rule 6.2 and all conditions of the written permit issued by ORCAA or another permitting agency.

(5) Weed abatement fires.

(6) Residential fires in Thurston County.

The permit application for the above permits must be accompanied by the applicable fee, pursuant to Rule 3.4.

(d) Where residential burning is allowed and no written burn permits are issued, burning must abide by Rule 6.2 and the following:

(1) Maximum pile size is four (4) feet in diameter and three (3) feet high.

(2) Only one pile may be burned at a time, and each pile must be extinguished before lighting another.

(3) Only natural vegetation may be burned.

(4) No fires are to be within fifty (50) feet of structures or within five hundred (500) feet of forest slash.

(5) No tree stumps may be burned.

[Adopted 03/18/11; Amended 10/11/15; 02/26/22;03/06/23]

RULE 6.3 ASBESTOS

The Board of Directors of the ORCAA recognize asbestos is a serious health hazard. Any asbestos fibers released into the air can be inhaled and can cause lung cancer, pleural mesothelioma, peritoneal mesothelioma, or asbestosis. The Board has determined any asbestos emitted to the ambient air is air pollution. Because of the seriousness of the health hazard, the Board of Directors has adopted this regulation to control asbestos emissions from asbestos removal projects to protect public health. The Board adopted these regulations to coordinate with the EPA asbestos NESHAP, the OSHA asbestos regulation, the Washington Department of Labor and Industries asbestos regulations, the Washington Department of Ecology Dangerous Waste regulation, and the solid waste regulations of Clallam, Grays Harbor, Jefferson, Mason, Pacific, and Thurston counties.
[Adopted 08/17/06; Amended 09/19/08; 10/29/16; 02/26/22]

Rule 6.3.1 Definitions

When used in this Rule the following definitions apply:

Asbestos – The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, and actinolite-tremolite.

Asbestos-containing Materials (ACM) – Any material containing more than one percent (1%) asbestos as determined using the method specified in EPA *Method for the Determination of Asbestos in Building Materials* EPA/600/R-93/116, July 1993, or more effective method as approved or required by EPA. This definition includes all loose vermiculite used as insulation.

Asbestos-containing Waste Material – Any waste that contains or is contaminated with asbestos-containing material. Asbestos-containing waste material includes asbestos waste from control equipment, materials used to enclose the work area during an asbestos project, asbestos-containing material collected for disposal, asbestos-contaminated waste, debris, containers, bags, protective clothing, or HEPA filters. Asbestos-containing waste material does not include samples of asbestos-containing material taken for testing or enforcement purposes.

Asbestos Hazard Emergency Response Act (AHERA) Building Inspector – A person who has successfully completed the training requirements for a building inspector established by EPA Asbestos Model Accreditation Plan (40 CFR Part 763, Appendix C to Subpart E.I.B.3) and whose certification is current.

Asbestos Hazard Emergency Response Act (AHERA) Project Designer – A person who has successfully completed the training requirements for an abatement project designer established by EPA regulations (40 CFR 763.90(g)) and whose certification is current.

Asbestos Project – Any activity involving the abatement, renovation, demolition, removal, salvage, clean up, or disposal of asbestos-containing materials, or any other action that disturbs or is likely to disturb any asbestos-containing materials. It includes the removal and disposal of stored asbestos-containing materials or asbestos-containing waste material. This term does not include the application of duct tape, rewettable glass cloth, canvas, cement, paint, or other non-asbestos materials to seal or fill exposed areas where asbestos fibers may be released.

Asbestos Survey – A written report describing an inspection using the procedures contained in EPA regulations (40 CFR 763.86 and 40 CFR 763.87), or an alternate method that has received prior written approval from the Executive Director, or designee, to determine whether materials or buildings to be worked on, removed, disturbed, or demolished, contain asbestos.

Component – Any equipment, pipe, structural member, or other item covered or coated with, or manufactured from, asbestos-containing materials.

Demolition – Wrecking, razing, dismantling, burning via fire protection agency training, or removal of any load supporting structural member of a structure, including any related handling operations, making all or part of the structure permanently uninhabitable or unusable.

Friable Asbestos-containing Materials – Asbestos-containing materials that when dry can be crumbled, disintegrated, or reduced to powder by hand pressure or by the forces expected to act upon the materials during demolition, renovation, or disposal.

HEPA Filter – A High Efficiency Particulate Air filter found in some respirators and vacuum systems. HEPA filters must be capable of filtering 0.3 micrometer mean aerodynamic diameter particles with 99.97% efficiency.

Leak-Tight Container – A dust-tight and liquid-tight container that encloses asbestos-containing waste material and prevents solids or liquids from escaping or spilling out. Such containers may include sealed plastic bags, metal or fiber drums, and sealed polyethylene plastic.

Liquid Wetting Agent – Water in which a surfactant (detergent) has been added.

Non-friable Asbestos-containing Materials – Asbestos-containing materials that, when dry, cannot be crumbled, disintegrated, or reduced to powder by hand pressure or other forces expected to act on the materials during demolition, renovation, or disposal.

Renovation – To make changes or repairs, other than demolition, to a structure.

Single-Family Residence – Any structure containing space for use such as living, sleeping, food preparation and eating. This term includes houses, mobile homes, detached garages, houseboats, and houses with a “mother-in-law apartment” or “guest room”. This term does not include multiple-family units (such as apartments, duplexes, condominiums, etc.), nor does this term include any mixed-use building, structure, or installation that contains a residential unit.

Surfacing Material – Material sprayed or troweled on, or otherwise applied to surfaces including, but not limited to, acoustical plaster on ceilings, paints, fireproofing materials on structural members, or other materials on surfaces for decorative purposes.

Suspect Material – Material that has historically contained asbestos including, but not limited to, surfacing material, thermal system insulation, roofing material (except 3-tab composite roofing), fire barriers, gaskets, flooring material, and cement or concrete siding.

Thermal System Insulation – Material applied to pipes, fittings, boilers, tanks, ducts, or other structural components to prevent heat loss or gain.

Visible Asbestos Emissions – Any asbestos-containing materials that are visually detectable without the aid of instruments.

Waste Generator – Any owner or operator of a facility whose act or process produces asbestos-containing waste material.

Waste Shipment Record – The shipping document required to be originated and signed by the owner or operator, used to track, and substantiate the disposition of asbestos-containing waste material.

[Adopted 08/17/06; Amended 09/19/08; 10/29/16; 02/26/22]

Rule 6.3.2 Asbestos Survey Requirements

(a) Renovation. An asbestos survey is required for any renovation involving 48 square feet, or more, of suspect asbestos material. The property owner or the owner's agent must determine whether there are suspect asbestos-containing materials (ACM) in the work area and obtain an asbestos survey by an Asbestos Hazard Emergency Response Act (AHERA) building inspector. An AHERA building inspector is not required for asbestos surveys associated with the renovation of a single-family residence. In lieu of a survey, the owner of the residence may collect samples to have analyzed by a National Voluntary Laboratory Accreditation Program (NVLAP) certified lab per 40 CFR 763.87.

(1) A summary of the results of the asbestos survey must be available at the work site and communicated to all persons who may encounter the material.
(2) If there are no suspect materials in the work area, this determination must be available at the work site and communicated to all persons involved in the renovation.
(3) It is not required that an AHERA building inspector sample any material presumed to be ACM.

(b) Demolition. It is unlawful for any person to cause or allow any demolition unless the property owner or the owner's agent obtains an asbestos survey, by an AHERA building inspector, of the structure.

(1) It is not required that an AHERA building inspector evaluate any material presumed to be ACM.
(2) Only an AHERA building inspector may determine that a suspect material does not contain asbestos.
(3) A summary of the results of the asbestos survey must be available at the work site and communicated to all persons who may encounter the material.

[Adopted 08/17/06; Amended 09/19/08; 04/26/15; 10/29/16; 02/26/22]

Rule 6.3.3 Controlled and Regulated Substances

(a) It is unlawful to cause or allow visible asbestos emissions, including emissions from asbestos waste materials:

(1) On public or private lands, on developed or undeveloped properties and on any open uncontrolled and non-designated disposal sites;
(2) During the collection, processing, handling, packaging, transporting, storage, and disposal of any asbestos-containing waste material; or
(3) From any fugitive source.

[Adopted 08/17/06; Amended 09/19/08; 10/29/16; 02/26/22]

Rule 6.3.4 Notification Requirements

(a) It is unlawful for any person to cause or allow any work on an asbestos project or demolition unless a complete notification, including the required fee and any additional information requested by the Executive Director, or designee, has been submitted to the ORCAA on approved forms, in accordance with the notification period requirements contained in 6.3.4(c) Notification Period:

(1) Notification is required for all demolitions of structures with a footprint greater than 120 square feet, even if no ACM is present. All other demolition requirements remain in effect.

(2) Per Rule 3.5, the appropriate nonrefundable fee must accompany the notification.

(3) A copy of the notification, all amendments to the notification, the asbestos survey, and a work plan for an alternate means of compliance must be available for inspection at the asbestos project or demolition site.

(4) Notification for multiple asbestos projects or demolitions may be filed by a property owner or agent on one form if all the following criteria are met:

(i) The same contractor will perform the work continuously; and,

(ii) A work plan is submitted that includes: a map clearly identifying the structures involved in the project; the amount and type of ACM in each structure; and the schedule for performing asbestos project and demolition work; and,

(iii) The project must be bid as a group under the same contract; and

(iv) The structures must be on contiguous property.

(b) Exemptions from Notification

(1) Notification is not required for asbestos projects containing less than 10 linear feet on pipe or 48 square feet (per structure, per calendar year) of any ACM.

(2) Notification is not required for removal and disposal of non-friable caulking, window glazing and roofing.

(c) Notification Period

Project	Notification Period
Asbestos	10 days prior to commencement of work on project
Asbestos-NESHAP[1]	14 days prior to commencement of work on project
Asbestos Project Amendments	Prior Notice
Demolition	14 days prior to commencement of work on project
Emergency	Prior Notice

(1) The duration of an asbestos project must not exceed one year from date of submission of the original notification.

(2) The Executive Director, or designee, may waive the notification period, by written authorization, for disposal of unused and intact or abandoned (without the knowledge or consent of the property owner) ACM. All other asbestos project and demolition requirements remain in effect.

[Adopted 08/17/06; Amended 09/19/08; 10/29/16; 02/26/22]

[1] Projects subject to 40 CFR Part 61 Subpart M must comply with the 14-day notification period.

Rule 6.3.5 Annual Notification

(a) A property owner or agent may file one annual notification for asbestos projects on one or more structures, vessels, or buildings during each calendar year if all the following conditions are met:

(1) The annual notification must be filed with ORCAA before beginning work on any asbestos project included in the annual notification;
(2) The annual notification covers only those structures, vessels, or buildings from the same industrial grouping located on contiguous or adjacent properties and are under common ownership and control.
(3) The total amount of ACM removed is less than 260 linear feet on pipes or less than 160 square feet of any ACM; and
(4) The property owner or agent submits quarterly written reports to the Executive Director, or designee, on ORCAA-approved forms within 15 days after the end of each calendar quarter.

[Adopted 08/17/06; Amended 09/19/08; 10/29/16; 02/26/22]

Rule 6.3.6 Asbestos Project Amendments

(a) The original applicant will submit an amendment on or before the completion date on file to the Executive Director, or a designee, for the following changes in a project:

(1) Change in the quantity of asbestos to be removed; or
(2) Changes in the ACM that will be removed; or
(3) Change of contractor; or
(4) Changes in the start date, completion date, or work schedule, including hours of work.

[Adopted 10/29/16; Amended 02/26/22]

Rule 6.3.7 Emergencies—Exceptions to Advance Notification Period

(a) The Executive Director, or designee, may waive the advance notification period, if the property owner or agent submits a written request that demonstrates to the Executive Director, or designee, that an asbestos project or demolition must be conducted immediately because of any of the following:

(1) There was an event that resulted in a public health or safety hazard;
(2) The project must proceed immediately to protect equipment, ensure continuous vital utilities, or minimize property damage;
(3) ACM were encountered that were not identified during the asbestos survey; or,
(4) The project must proceed to avoid imposing an unreasonable burden.

[Adopted 10/29/16; Amended 02/26/22]

Rule 6.3.8 Asbestos Removal Requirements Prior to Renovation or Demolition

(a) Except as provided in Rule 6.3.8(b), it is unlawful for any person to cause or allow any demolition or renovation that may disturb ACM or damage a structure to preclude access to ACM for future removal, without first removing all ACM in accordance with the requirements of this regulation. ACM need not be removed from a component if the component can be removed, stored, or transported for reuse without disturbing or damaging the asbestos.

(b) Inaccessible Asbestos Removal Requirements. ACM may be removed during demolition, if the property owner demonstrates to the Executive Director, or designee, through a work plan, that the ACM is not accessible such as:

(1) Structures or buildings that are structurally unsound and in danger of imminent collapse;

(2) Conditions that are immediately dangerous to life and health;

(3) Unable to access all asbestos material prior to demolition.

(4) The owner must submit:

(i) written determination of the hazard by an authorized government official or a licensed structural engineer; and,

(ii) a work plan outlining the procedures that will be followed to control asbestos emissions during the demolition or renovation and disposal of the asbestos-containing waste material.

[Adopted 10/29/16; Amended 02/26/22]

Rule 6.3.9 Procedures for Asbestos Projects

(a) Training Requirements. It is unlawful for any person to cause or allow any work on an asbestos project unless it is performed by persons trained and certified in accordance with the standards established by the Washington State Department of Labor and Industries, the federal Occupational Safety and Health Administration, or the United States Environmental Protection Agency (whichever agency has jurisdiction) and whose certificate is current. This certification requirement does not apply to individuals who work on asbestos projects on their own single-family residence(s).

(b) Asbestos Work Practices. Except as provided in Rule 6.3.4(b)(2) of this Rule, it is unlawful for any person to cause or allow the removal of ACM unless all the following requirements are met:

(1) The asbestos project must be conducted in a controlled area, clearly marked by barriers and asbestos warning signs. Access to the controlled area must be restricted to authorized personnel only.

(2) If a negative pressure enclosure is employed it must be equipped with transparent viewing ports, if feasible, and must be maintained in good working order. Emissions from the negative air exhaust must be controlled by a HEPA filter.

(3) Absorbent ACM, such as surfacing material and thermal system insulation, must be saturated with a liquid wetting agent prior to removal. Any unsaturated absorbent ACM exposed during removal must be immediately saturated with a liquid wetting agent. All absorbent asbestos-containing waste material must be kept saturated with a liquid wetting agent until sealed in leak-tight containers. All asbestos-containing waste material must be sealed in leak-tight containers as soon as possible after removal but no later than the end of each work shift.

(4) Nonabsorbent ACM, such as cement asbestos board or vinyl asbestos tile, must be continuously coated with a liquid wetting agent on any exposed surface prior to and during removal. Any dry surfaces of nonabsorbent ACM exposed during removal must be immediately coated with a liquid wetting agent. All nonabsorbent asbestos-containing waste material must be kept coated with a liquid wetting agent until sealed in leak-tight containers.

(5) Metal components (such as valves and fire doors) that have internal ACM are exempt from the requirements of 6.3.4 if all access to the ACM is welded shut or the component has mechanical seals, which cannot be removed by hand, that separate the ACM from the environment.

(6) ACM that are being removed, have been removed, or may have fallen off components during an asbestos project must be carefully lowered to the ground or a lower floor, not dropped, thrown, slid, or otherwise damaged, unless enclosed inside a negative-pressure enclosure.

(7) The exterior of each leak-tight container must be free of all asbestos residue and permanently marked with the date the material was collected for disposal, the name of the waste generator, and the address at which the waste was generated. This marking must be readable without opening the container.

(8) It is unlawful to allow visible asbestos emission from an asbestos project. Leak-tight containers must not be dropped, thrown, slid, or otherwise damaged.

(9) The asbestos-containing waste material must be stored in a controlled area until transported to an approved waste disposal site.

(10) It is unlawful for any person to create or allow a condition that results in the disturbance, or likely disturbance, of ACM. Such unlawful activity includes but is not limited to: Not removing all ACM in a structure scheduled for demolition; partially removing ACM and leaving remaining ACM in a state making it more susceptible to being disturbed; or, leaving it on the ground, outside and open to the environment.

[Adopted 10/29/16; Amended 02/26/22]

Rule 6.3.10 Disposal of Asbestos-Containing Waste Material

(a) Except as provided in 6.3.10(c) of this Regulation, ACM must be transferred offsite within 10 days of removal. The ACM may be transferred to an approved temporary storage site or to a waste disposal site operated in accordance with 40 CFR 61.154 or 40 CFR 61.155.

(b) Temporary Storage Site. A person may establish a facility for collecting and temporarily storing asbestos-containing waste material if the facility is approved by the Executive Director, or designee, and all the following conditions are met:

(1) Accumulated asbestos-containing waste material must be kept in a controlled storage area posted with asbestos warning signs and accessible only to authorized persons;

(2) All asbestos-containing waste material must be stored in leak-tight containers and the leak-tight containers must be maintained in good condition;
(3) The storage area must be locked except during transfer of asbestos-containing waste material; and
(4) Storage, transportation, disposal, and return of the waste shipment record to the waste generator must not exceed 90 days.

(c) Disposal of Asbestos Cement Pipe. Asbestos cement water pipe used on a public right-of-way or public easement is excluded from the disposal requirements of Rule 6.3.10 if the following conditions are met:

(1) Asbestos cement pipe may be buried in place if the pipe is left intact (e.g., not moved, broken or disturbed) and covered with at least three (3) feet or more of non-asbestos fill material and the state, county or city authorities are notified in writing of buried asbestos cement pipe; and
(2) All asbestos-containing waste material, including asbestos cement water pipe fragments that are one (1) linear foot or less, protective clothing, HEPA filters, or other asbestos contaminated material, debris, or containers, will be subject to the requirements of Rule 6.3.

[Adopted 10/29/16; Amended 02/26/22]

Rule 6.3.11 Compliance with other Rules

Other government agencies have adopted rules that may apply to asbestos projects regulated under these rules including, but not limited to, the United States Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Department of Labor and Industries. Nothing in the Agency's rules excuse any person from complying with any other applicable local, state, or federal requirement.

[Adopted 10/29/16; Amended 02/26/22]

RULE 6.4 NOTICE OF INTENT TO OPERATE

(a) A Notice of Intent to Operate may be filed with the Agency in lieu of a Notice of Construction for the following sources:
(1) Temporary Portable Stationary Sources. Relocation of temporary portable stationary sources having a valid Order of Approval from Ecology or a local air pollution control agency in the State of Washington.
(2) Stationary Sources based on Potential to Emit. Any stationary source that will have a combined uncontrolled potential to emit from all emission units less than:
(i) 0.5 tons per year of any criteria pollutant; and,
(ii) 1.0 tons per year of total criteria pollutants and VOC combined; and,
(iii) 0.005 tons per year of lead; and,
(iv) The de minimis emission rate specified for each Toxic Air Pollutant listed in WAC 173-460-150; and,
(v) 1.0 tons per year of ozone depleting substances combined.

(3) Gasoline Dispensing Facilities (GDF). Construction or modification of a gasoline dispensing facility, or replacement or substantial alteration of vapor recovery systems, provided that:

(i) The installed equipment is in accordance with the current California Air Resources Board (CARB) Executive Orders as defined in Rule 8.12 listed on the GDF Notification form effective at the time of the filing;
(ii) The GDF is not part of a stationary source subject to the Air Operating Program (Rule 5);
(iii) The GDF is not subject to any of the Stage II requirements in WAC 173-491-040(5); and
(iv) The project does not involve the removal of a Stage II vapor recovery system.

(b) A Notice of Intent to Operate must be filed with the agency for nonroad engines (as defined in WAC 173-400-035) as required by WAC 173-400-035.
(c) A complete Notice of Intent to Operate (NOI) application must be filed at least 15 days prior to starting operation of the source.
(d) NOI applications will be made on standard forms of the Agency and will include:

(1) All information requested in the applicable standard forms;
(2) If submitting a NOI for a stationary source qualifying for the exemption based on potential to emit under Rule 6.4(a)(2), documentation verifying the stationary source's potential to emit;
(3) If submitting a NOI for a nonroad engine, the notice must include all the information required by WAC 173-400-035(4) or (5), as applicable;
(4) Any additional information requested by the Agency to verify that operation of the stationary source will comply with applicable air pollution control requirements; and,
(5) Applicable fee per Rule 3.6.

(e) Condition of operation. The Agency may establish enforceable conditions of operation, through issuance of a regulatory Order, as are necessary to assure compliance with applicable air pollution control requirements.

(f) Temporary Portable Stationary Sources - Requirements for Operation. Sources submitting a Notice of Intent per Rule 6.4(a)(1) must meet the following requirements:

(1) The operation must not cause a violation of ambient air quality standards;
(2) If the operation is in a nonattainment area, it must not interfere with the scheduled attainment of ambient standards;
(3) The temporary source must operate in compliance with all applicable air pollution rules and regulations;
(4) A temporary portable stationary source that is considered a major stationary source within the meaning of WAC 173-400-710 or WAC 173-400-810 must also comply with the requirements in WAC 173-400-700

through 750 and WAC 173-400-800 through 860 and Rule 6.1.3(b) as applicable;

(5) Any operating condition in an Order previously issued to a temporary source will remain in effect upon relocating the source within ORCAA's jurisdiction unless specifically superseded by condition in a subsequent Order.

(g) Where work, for which a Notice of Intent to Operate is required, is commenced prior to making application and receiving approval, the Executive Director, or an authorized agent, may investigate as part of the Notice of Intent review. In such a case, an investigation fee, in addition to fees of Rule 3.3, may be assessed in an amount up to 3 times the Notice of Intent fees of Rule 3.3. Payment of the fees does not relieve any person from the requirement to comply with the regulations nor from any penalties for failure to comply.

[Adopted 02/26/22]

REGULATION 7 – PROHIBITIONS

RULE 7.1 INTERFERENCE OR OBSTRUCTION

It is unlawful for any person to willfully interfere with or obstruct the Executive Director or any Agency employee in performing any lawful duty.
[Adopted 08/17/06; Amended 02/26/22]

RULE 7.2 FALSE OR MISLEADING STATEMENTS

It is unlawful for any person to willfully make a false or misleading statement to the Board or its representative as to any matter within the jurisdiction of the Board.
[Adopted 08/17/06; Amended 02/26/22]

RULE 7.3 UNLAWFUL REPRODUCTION OR ALTERATION OF DOCUMENTS

It is unlawful for any person to reproduce or alter, or cause to be reproduced or altered, any order, registration certificate or other paper issued by the Agency if the purpose of such reproduction or alteration is to evade or violate any provision of these Regulations or any other law.
[Adopted 08/17/06; Amended 02/26/22]

RULE 7.4 DISPLAY OF ORDERS AND CERTIFICATES: REMOVAL OR MUTILATION PROHIBITED

(a) Any order or registration certificate required to be obtained by these Regulations must be available on the premises designated on the order or certificate.

(b) If the Agency requires an order or registration certificate to be displayed, it must be posted.

(c) It is unlawful for any person to mutilate, obstruct or remove any order or registration certificate unless authorized to do so by the Board or the Executive Director.

[Adopted 08/17/06; Amended 02/26/22]

RULE 7.5 EMISSION OF AIR CONTAMINANT – CONCEALMENT AND MASKING

(a) It is unlawful for any person to cause or allow the installation or use of any device or use of any means, which conceals or masks an emission of air contaminant, which would otherwise violate any provisions of ORCAA’s Regulations or chapter 173-400 WAC.

(b) It is unlawful for any person to cause or allow the installation or use of any device or use of any means designed to conceal or mask the emission of an air contaminant, which causes detriment to health, safety, or welfare of any person, or cause damage to property or business.

[Adopted 08/17/06; Amended 02/26/22]

RULE 7.6 EMISSIONS OF AIR CONTAMINANT OR WATER VAPOR: DETRIMENT TO PERSONS AND/OR PROPERTY

It is unlawful for any person to cause or allow the emission of an air contaminant or water vapor, including an air contaminant whose emission is not otherwise prohibited by these

Regulations, if the air contaminant or water vapor causes detriment to the health, safety, or welfare of any person, or causes damage to property or business.
[Adopted 08/17/06; Amended 02/26/22]

REGULATION 8 – PERFORMANCE STANDARDS

RULE 8.1 WOOD HEATING

The provisions of this rule apply to solid fuel burning devices in all areas within the jurisdiction of Olympic Region Clean Air Agency (ORCAA).
[Adopted 08/17/06; Amended 05/22/10]

Rule 8.1.1 Definitions

“Adequate Source of Heat” means a furnace or heating system, connected, or disconnected from its energy source, designed with the ability to maintain seventy degrees Fahrenheit (70°F) at a point three (3) feet above the floor in all normally inhabited areas of a dwelling. Garages are specifically excluded.

“Certified” means that a woodstove meets emission performance standards when tested by an accredited independent laboratory and labeled according to procedures specified by EPA in 40 CFR Part 60 Subpart AAA-Standards of Performance for Residential Wood Heaters as amended through July 1, 1990.

“Cook Stove” means an appliance designed with the primary function of cooking food and containing an integrally built-in oven, with an internal temperature indicator and oven rack, around which the fire is vented, as well as a shaker grate ash pan, and an ash cleanout below the firebox. Any device with a fan or heat channels used to dissipate heat into the room is not considered a cook stove.

“Fireplace” means a permanently installed masonry fireplace; or a factory-built metal solid fuel burning device designed to be used with an open combustion chamber and without features to control the air to fuel ratio.

“First Stage of Impaired Air Quality” means the same as Stage 1 burn ban and is declared when meteorological conditions are predicted to cause fine particulate levels to exceed 35 micrograms per cubic meter measured on a 24-hour average, within 48 hours.

“Second Stage of Impaired Air Quality” means the same as Stage 2 burn ban and is declared when a first stage of impaired air quality has been in force and has not been sufficient to reduce the increasing fine particulate pollution trend. A second stage burn ban may be called without calling a first stage burn ban only when all the following occur:

(a) Fine particulate levels have reached or exceeded 25 micrograms per cubic meter, measured on a 24-hour average:
(b) Meteorological conditions have caused fine particulate levels to rise rapidly;
(c) Meteorological conditions are predicted to cause fine particulate levels to exceed the 35 micrograms per cubic meter, measured on a 24-hour average, within 24 hours; and,
(d) Meteorological conditions are highly likely to prevent sufficient dispersion of fine particulate.

"Nonaffected Pellet Stove" means that a pellet stove has an air-to-fuel ratio equal to or greater than 35.0 when tested by an accredited laboratory in accordance with methods and procedures specified by the EPA in 40 CFR Part 60 Appendix A, Reference Method 28A-Measurement of Air to Fuel Ratio and minimum achievable burn rates for wood fired appliances as amended through July 1, 1990.

"Salt Laden Wood" means any species of wood that has been soaked in salt water.

"Seasoned Wood" means clean, untreated wood of any species that has been dried and contains twenty percent (20%), or less, moisture by weight.

"Solid Fuel Burning Device" means a device that burns seasoned wood, coal, or any other nongaseous or nonliquid fuels except those prohibited by Rule 8.1.3. This also includes devices used for aesthetic or a space heating purpose, which has heat input less than one million British thermal units per hour. A cook stove is specifically excluded from this definition.

"Treated Wood" mean wood of any species that has been chemically impregnated, painted, or similarly modified to improve structural qualities or resistance to weathering or deterioration.

"Woodstove" means an enclosed solid fuel burning device capable of and intended for space heating and/or domestic water heating.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

Rule 8.1.2 General Emission Standards

(a) It is unlawful for any person to cause or allow an emission from a solid fuel burning device that unreasonably interferes with the use and enjoyment of property or workplace.

(b) It is unlawful for any person to cause or allow emission of a smoke plume from any solid fuel burning device to exceed an average of twenty percent (20%) opacity as determined by EPA Method 9. The provision of this requirement will not apply during the starting of a new fire for a period not to exceed 20 minutes in any 4-hour period.

(c) Smoke visible from a chimney, flue, or exhaust duct, in excess of the opacity standard will constitute prima facie evidence of unlawful operation of an applicable solid fuel burning device. This presumption may be refuted by demonstration that the smoke was not caused by an applicable solid fuel burning device.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

Rule 8.1.3 Prohibited Fuel Types

It is unlawful for any person to cause or allow any of the following materials to be burned in a solid fuel burning device:

(a) Garbage;

(b) Treated wood;

(c) Plastic products;
(d) Rubber products;
(e) Animals;
(f) Asphalt products;
(g) Petroleum products;
(h) Paints and chemicals;
(i) Salt laden wood; or
(j) Any substance that normally emits dense smoke or obnoxious odors.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

Rule 8.1.4 Curtailment

(a) Whenever the Agency has declared a Stage 1 burn ban for a geographic area, a person within that geographic area with an adequate source of heat other than a solid fuel burning device must not operate any solid fuel burning device, unless the solid fuel burning device is one of the following:

(1) Certified; or
(2) A nonaffected pellet stove.

(b) Whenever the Agency has declared a Stage 2 burn ban for a geographic area, a person within that geographical area with an adequate source of heat other than a solid fuel burning device must not operate any solid fuel burning device.

(c) The affected geographic area of a declared Impaired Air Quality will be determined by the Executive Director or their designee.

(d) A person responsible for an applicable solid fuel burning device already in operation at the time Impaired Air Quality is declared must withhold new solid fuel for the duration of the Impaired Air Quality. Smoke visible from a chimney, flue, or exhaust duct after three hours has elapsed from the declaration of the Impaired Air Quality will constitute prima facie evidence of unlawful operation of an applicable solid fuel burning device. This presumption may be refuted by demonstration that the smoke was not caused by a solid fuel burning device.

(e) For the sole purpose of a contingency measure to meet the requirements of Section 172(c)(9) of the Federal Clean Air Act, the use of solid fuel burning devices, except fireplaces as defined in RCW 70A.15.3510(3), woodstoves meeting the standards set forth in RCW 70A.15.3530 or pellet stoves either certified or issued an exemption by the EPA in accordance with Title 40, Part 60 of the Code of Federal Regulations will be prohibited if the EPA, in consultation with Ecology and the Agency, makes written findings that:

(1) The area has failed to make reasonable further progress or attain or maintain a national ambient air quality standard; and,
(2) Emissions from solid fuel burning devices from a geographic area are a contributing factor to such failure to make reasonable further progress or attain or maintain a national ambient air quality standard.
(3) A prohibition issued under 8.1.4(e) will not apply to a person that does not have an adequate source of heat without burning wood.

(4) The area is to consist of all areas within the city limits of Lacey, Olympia, and Tumwater and unincorporated areas of Thurston County lying within or between the municipal boundaries.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

Rule 8.1.5 Exemptions

Written exemptions granted by the Agency are valid for one (1) year from date of issue. Exemptions may be canceled at any time if the original request is found to be incorrect, inaccurate, or fraudulent. Exemptions will apply only to the use of solid fuel burning device during an Impaired Air Quality and not to the other rules of this regulation or other applicable regulations.

(a) Emergency exemption. In an emergency the Agency may issue a written solid fuel burning device emergency exemption. An emergency may include, but is not limited to, a situation where a person demonstrates that their heating system, other than a solid fuel heating device, is inoperable for reasons other than their own actions or a situation where the heating system has been involuntarily disconnected by a utility company or other fuel supplier.

(b) Inadequate heat source. Written exemptions may be issued by the Agency if a person can demonstrate that:

(1) The structure was originally designed with a solid fuel burning device as the source of heat; or

(2) The existing heat source, fueled with other than solid fuel, will not provide adequate heat.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

Rule 8.1.6 Penalties

A person in violation of this Rule 8.1 may be subject to the provisions of Rule 2.5.

[Adopted 08/17/06; Amended 05/22/10]

Rule 8.1.7 Sale and Installation of Uncertified Woodstoves

It is unlawful to install, sell, offer for sale, advertise for sale, or otherwise transfer an uncertified solid fuel burning device unless the device has been rendered permanently inoperable as a combustion device.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

Rule 8.1.8 Disposal of Uncertified Woodstoves

When an uncertified solid fuel burning device is to be permanently removed from its location it must be rendered inoperable as a solid fuel burning device. A removed uncertified solid fuel burning device must not be sold, bartered, traded, or given away for a purpose other than recycling of the materials to form something other than an uncertified solid fuel burning device.

[Adopted 08/17/06; Amended 05/22/10; 02/26/22]

RULE 8.2 GENERAL STANDARDS FOR MAXIMUM VISUAL EMISSIONS

All facilities, sources and emissions units are required to meet the visual emission standards of this rule except when a visual emission standard is listed in another rule of these Regulations, or where a Notice of Construction lists a more stringent visual emission standard, or where an applicable State of Washington or Federal Regulation lists a visual emission standard that is more stringent, such standards will take precedent over a general emission standard listed in this rule.

(a) In equipment or facilities, including boilers using hogged fuel, regardless of their date of installation, it is unlawful for any person to cause or allow the emission to the outdoor atmosphere, for more than three (3) minutes in any one hour, of a gas stream containing air contaminants that are greater than 20% opacity.

(b) Observations must be made by trained and certified observers or by LIDAR instrumentation.

(c) The exceptions to Rule 8.2 are as follows:

> **(1)** Emission occurring due to soot blowing or grate cleaning may be greater than 20% opacity; providing the operator can demonstrate that soot blowing, or grate cleaning will not exceed a total of 15 minutes in any 8 consecutive hours. This practice, except for testing and troubleshooting, is to be scheduled for the same approximate times each day and ORCAA must be advised of the schedule.
>
> **(2)** When the owner or operator of a source supplies valid data to show that the presence of uncombined water is the only reason for the opacity to exceed 20%.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.3 GENERAL STANDARDS FOR MAXIMUM PARTICULATE MATTER

All sources and emission units are required to meet the emission standards of this rule, except when a standard is listed in another rule of these Regulations, or where a Notice of Construction Approval Order lists a more stringent standard, or where an applicable State of Washington or Federal Regulation lists a standard that is more stringent, such standards will take precedent over a general emission standard listed in this rule. Further, all existing emission units are required to use reasonably available control technology (RACT), which may be determined for some sources or source categories to be more stringent than the applicable emission limitations of ORCAA Regulations. When current controls are determined to be less than RACT, ORCAA will, on a case-by-case basis, define RACT for each source or source category and issue a regulatory order to the source or source category for installation of RACT. Particulate test procedures, on file at the Authority, will be used to determine compliance. The Agency requires the inclusion of condensable particulate matter, for determining compliance with the particulate matter standards in this rule.

(a) In equipment or facilities, except boilers using hog fuel, it is unlawful for any person to cause or allow the emission of particulate matter to the outdoor atmosphere from any single source in excess of 0.10 grains per standard cubic foot of gas (calculated at 7% oxygen). Particulate test procedures, on file at the Agency, will be used to determine compliance.

(b) Hogged Fuel Boilers: It is unlawful for any person to cause or allow the emission of particulate matter to the outdoor atmosphere from any single source in excess of 0.20 grains per standard cubic foot of gas (calculated at 7% oxygen). Particulate test procedures, on file at the Agency, will be used to determine compliance.

(c) Fugitive particulate material. Reasonable and/or appropriate precautions must be taken to prevent fugitive particulate material from becoming airborne;

(1) When handling, loading, unloading, transporting, or storing particulate material; or,

(2) When constructing, altering, repairing, or demolishing a building; or its appurtenance; or a road; or,

(3) From an untreated open area.

For this rule, fugitive particulate means particulate material which is generated incidental to an operation, process or procedure and is emitted into the open air from points other than an opening designed for emissions such as stacks or vents.

(d) It is unlawful for any person to cause or allow any construction, alteration, repair, maintenance, or demolition work without taking precautions to prevent air pollution.

(e) Fallout. It is unlawful for any person to cause or permit the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner(s) or operator(s) of the source which interferes unreasonably with the use and enjoyment of the property upon which the material is deposited.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.4 INCINERATION OPERATION

(a) It is unlawful for any person to cause or allow any incineration operation within the Agency's jurisdiction except in an incinerator provided with emission control apparatus found by the Executive Director, or a duly designated agent, in advance of such use, to be effective for air pollution control.

(b) Operating Hours. It is unlawful for any person to cause or allow an incineration operation at any time other than daylight hours of the same day, except with written approval of the Executive Director.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.5 ODOR CONTROL MEASURES

(a) Reasonably available control technology (RACT) must be installed and operated to mitigate odor-bearing gases emitted into the atmosphere to a minimum, or, so as not to create air pollution.

(b) The Board may establish requirements that the building or equipment be enclosed and ventilated in such a way that all the air, gases and particulate matter are effectively treated for removal or destruction of odorous matter or other air contaminants before emission to the outdoor atmosphere.

(c) It is unlawful for any person to cause or allow the emission or generation of any odor from any source, which unreasonably interferes with another person's use, and enjoyment of their property.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.6 EMISSION OF TOXIC AIR POLLUTANTS

(a) Sources installed after June 18, 1991, must meet the requirements of chapter 173-460 WAC, New Sources of Toxic Air Pollutants. For sources installed after June 18, 1991, "Toxic Air Pollutant (TAP)" means any toxic air pollutant listed in WAC 173-460-150

(b) No person shall cause or allow the emission of formaldehyde into the ambient air beyond such person's property line, which will result in a concentration exceeding .05 ppm (parts per million) 1 hour average or 61 micrograms per cubic meter 1 hour average.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.7 REPORTING OF EXCESS EMISSIONS

(a) Excess emission must be reported to the Agency as soon as possible and within 24 hours unless the Agency has established alternative reporting timeline requirements for the source. Upon request by the Executive Director, the owner(s), or operator(s), of the source(s) must submit a full written report including the known causes, the corrective actions taken, and the preventative measures to be taken to minimize or eliminate the chance of recurrence.

(b) The owner or operator of a source has the burden of proving to the Agency that excess emissions were unavoidable.

(c) The following scenarios of excess emissions will be considered unavoidable:

(1) Excess emissions due to startup or shutdown conditions will be considered unavoidable provided the source reports as required under Rule 8.7(a) and adequately demonstrates the excess emissions could not have been prevented through careful planning and design and if a bypass of control equipment occurs, that such bypass is necessary to prevent loss of life, personal injury, or severe property damage.

(2) Excess emissions due to scheduled maintenance will be considered unavoidable if the source reports as required under Rule 8.7(a) and could not have been avoided through better design, scheduling for maintenance, or through better operation and maintenance practices.

(3) Excess emissions due to upsets will be considered unavoidable provided the source reports, as required under Rule 8.7(a), and demonstrates:

(i) The event was not caused by poor or inadequate design, operation, maintenance, or any other reasonably preventable condition;

(ii) The event was not of a recurring pattern indicative of inadequate design, operation, or maintenance; and

(iii) The operator took immediate and appropriate corrective action in a manner consistent with good air pollution control practice for minimizing emissions during and after the event, including slowing or shutting down the emission unit as necessary to minimize emissions, when the operator knew or should have known that an emission standard or permit condition was being exceeded.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.8 CONTROL EQUIPMENT – MAINTENANCE AND REPAIR

All air contaminant sources are required to keep any process and/or air pollution control equipment in good operating condition and repair.

[Adopted 08/17/06]

RULE 8.9 BURNING USED OIL IN LAND BASED FACILITIES

(RCW 70A.15.4510)

(a) Except as provided in Rule 8.9(b), a person may not burn used oil as fuel in a land-based facility or in state waters unless the used oil meets the following standards:

(1) Cadmium – 2 ppm maximum
(2) Chromium – 10 ppm maximum
(3) Lead – 100 ppm maximum
(4) Arsenic – 5 ppm maximum
(5) Total Halogens – 1000 ppm maximum
(6) Polychlorinated Biphenyls – 2 ppm maximum
(7) Ash - .1 percent maximum (0.1%)
(8) Sulfur – 1.0 percent maximum (1%)
(9) Flash point – 100 degrees Fahrenheit minimum (100ºF)

(b) This rule does not apply to:

(1) Used oil burned in space heaters if the space heater has a maximum heat output of not greater than 0.5 million BTUs per hour or used oil burned in facilities permitted by the Agency; or
(2) Ocean going vessels.

(c) This rule does not apply to persons in the business of collecting used oil from residences when under authorization by a city, county, or the utilities and transportation commission.

Test procedures for determining compliance for the above specifications must be approved by the Agency.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.10 FLUORIDES

(a) The following standards apply to forage:

(1) After sampling monthly, the yearly average fluoride content of the forage should not exceed 40 ppm Fluoride ion (ppm F), on a dry weight basis, or exceed 60 ppm F for more than two (2) consecutive months or exceed 80 ppm F for more than one (1) month.

(2) In areas where cattle are not grazed continually but are fed cured forage, as hay, for part of the year, the fluoride content of this hay will be used as it is fed to establish the yearly average. Computation of the yearly average, must take into consideration, periods when cattle may have been grazed outside the area.

(3) Inasmuch as the standards set forth in paragraph (1) are intended to protect livestock, all forage samples analyzed to determine compliance with such standards must be representative of forage consumed by livestock in the area. Also, in determining compliance in particular cases, consideration will be given to the supplemental feed of the livestock involved.

(b) The following standards apply to the outdoor atmosphere:

Table 8.10a Maximum Allowable Fluoride

Maximum Allowable Fluoride* Ground-level Concentrations	
Concentration**	Averaging Time
4.5 ppb	12 consecutive hours
3.5 ppb	24 consecutive hours
2.0 ppb	1 calendar year
1.0 ppb	1 calendar month
* as gaseous fluorides calculated as HF ** parts per billion by volume	

Because the standards set forth in Table 8.10 are intended to protect vegetation, the outdoor atmosphere analyzed to determine compliance with such standards must be from the area of the vegetation to be protected.

(c) Forage or air quality levels higher than those specified in paragraph (1) and Table 8.10 will be permitted to exist in an area where justified by local conditions and where such higher levels do not or will not be expected to result in significant adverse effects. Similarly, levels lower than those specified in paragraph (1) and Table 8.10 will be maintained in cases where significant adverse effects have occurred or can be expected to occur at the specified levels.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.11 RECORD KEEPING AND REPORTING

This rule requires owners or operators of stationary sources of air contaminants to maintain records of, and periodically report to the Olympic Region Clean Air Agency information on the nature and amounts of emissions and other information as may be necessary to determine whether such sources are in compliance with applicable emission limitations and other control measures.

This rule also provides for public availability of emission data reported to the Olympic Region Clean Air Agency by stationary source owners or operators or otherwise obtained by the Agency, as correlated with applicable emission limitations.

(a) The owner or operator of any stationary source in the geographical area of the Authority must, upon notification by the Executive Director, maintain records of the nature and amounts of emissions from such source and/or provide other information deemed necessary by the Control Officer to determine whether such source is in compliance with the applicable emission limitations and other control measures.

(b) When requested by the Agency, the information pursuant to Rule 8.11(a) must be reported on forms supplied by the Agency.

[Adopted 08/17/06; Amended 02/26/22]

RULE 8.12 GASOLINE DISPENSING FACILITIES

This regulation applies to all gasoline dispensing facilities.
[Adopted 08/17/06; Amended 08/17/19]

Rule 8.12.1 Definitions

Unless a different meaning is clearly required by context, the following words and phrases, as used in this Rule, will have the following meanings:

"CARB" means California Air Resources Board.

"CARB Certified" means a vapor recovery system, equipment, or any component thereof, for which the California Air Resources Board (CARB) has evaluated its performance and issued an Executive Order.

"CARB Executive Order" means a document issued by the Executive Officer of the California Air Resources Board that specified the requirements for specific vapor control equipment and the procedures used in installing, maintaining, inspecting, or testing vapor recovery systems.

"Enhanced Vapor Recovery (EVR)" means performance standards and specifications set forth in the CARB CP 201 (Certification Procedure for Vapor Recovery Systems at gasoline dispensing facilities) Sections 3 through 9.

"Gasoline" means a petroleum distillate, which is a liquid at standard conditions and has a true vapor pressure greater than four pounds per square inch absolute at 20°C and is used as a fuel for internal combustion engines. Any liquid sold as a vehicle fuel with a true vapor pressure greater than four pounds per square inch absolute at 20°C is considered 'gasoline' in this regulation.

"Gasoline Dispensing Facility" means any site dispensing gasoline from stationary storage tanks including facilities dispensing gasoline for automotive, aviation, and marine uses.

“Stage I” means gasoline vapor recovery during all gasoline marketing transfer operations except motor vehicle refueling.

“Stage II” means gasoline vapor recovery during motor vehicle refueling operations from stationary tanks.

“Submerged Fill Line” means any discharge pipe or nozzle designed to be within six (6) inches of the bottom of the tank and submerged at all times.

“Throughput” means the amount of gasoline passing through a facility.

“Vapor Recovery System” means equipment that reduces the emissions of volatile organic compounds to the ambient air.
[Adopted 08/17/06; Amended 08/17/19; 02/26/22]

Rule 8.12.2 General Requirements

(a) All gasoline dispensing facilities with gasoline storage tanks, regardless of size must:

  (1) Not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
    (i) Minimize gasoline spills;
    (ii) Clean up spills as soon as practicable;
    (iii) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use; and
    (iv) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devises, such as oil/water separators.

(b) Gasoline storage tanks with a capacity of 2,000 gallons or more must be equipped with submerged fill lines.

(c) Gasoline dispensing facilities may be subject to registration per Rule 4.1.

(d) Gasoline dispensing facilities may be subject to Notice of Construction requirements per Rule 6.1.

[Adopted 08/17/06; Amended 08/17/19; 02/26/22]

Rule 8.12.3 Vapor Recovery Requirements

(a) CARB Certified Stage I Enhanced Vapor Recovery (EVR), or equivalent equipment as approved by the Agency, is required for any new or upgraded gasoline storage tank with a storage capacity of 2,000 gallons or more and located at a gasoline dispensing facility with a cumulative gasoline storage capacity of 10,000 gallons or more. Upgrading means replacing a gasoline storage tank, or substantially altering any component of the Stage I vapor recovery system. Prior to commencing construction, modifications, or upgrades, gasoline dispensing facilities must comply with the applicable requirements in Rule 6.1.

(b) Nothing in Rule 8.12 precludes the Agency from requiring installation of a Stage II vapor recovery system in conjunction with approval of a Notice of Constructing application if Stage II vapor recovery is necessary to assure compliance with applicable air regulations and standards.

[Adopted 08/17/06; Amended 08/17/19]

Rule 8.12.4 Testing Requirements

(a) The owner or operator of a gasoline dispensing facility with a cumulative storage capacity of 10,000 gallons or more and equipped with Stage I EVR must conduct the following performance tests:

- **(1)** Initial performance testing must be completed, for all performance tests listed in Table 1, after initial installation and prior to the facility dispensing fuel commercially; and,
- **(2)** Subsequent testing must be conducted according to the schedule in Table 1.

(b) The owner or operator of a gasoline dispensing facility with a cumulative gasoline storage capacity of 10,000 gallons or more that is equipped with Stage I, but not equipped with Stage I EVR, must conduct the appropriate Static Pressure Performance of Vapor Recovery Systems test in Table 1 at least once every 13 months.

(c) Tests must be conducted in accordance with the CARB test procedure specified, or CARB-approved equivalent test procedures.

(d) Tests must be performed by a third-party independent testing company trained in the testing methods.

(e) In the event of a failed performance test, the owner or operator must correct the cause of the failure in accordance with Rule 8.12.5(c) and retest within 30 days of the date of the failed test.

(f) The owner or operator must report to the Agency the results of all required performance testing within 30 days of the test date.

Table 1: Performance Testing

A	**An owner/operator of a facility with underground storage tanks must conduct the following tests…**	**After the initial testing, the owner/operator must conduct the subsequent tests…**
	A1. TP-201.3 – Static Pressure Performance of Vapor Recovery Systems	at least once every 13 months
	A2. TP-201.1E – Leak Rate and Cracking Pressure of P/V Vent Valves	at least once every 37 months
	A3. TP-201.3C – Determination of Vapor Piping Connection to Underground Gasoline Storage Tanks (Tie-Tank Test)	
	A4. TP-201.1B – Static Torque of Rotatable Stage I Adaptors	at least once every 13 months
	A5. TP-201.1C or **TP-201.1D**[1] – Leak Rate of Drop Tube/Drain Valve Assembly or Leak Rate of Drop Tube/Overfill Prevention Device	at least once every 13 months
B	**An owner/operator with aboveground storage tanks must conduct the following tests…**	**After the initial testing, the owner/operator must conduct the subsequent tests…**
	B1. TP-206.3 or TP-201.3B[2]– Static Pressure Performance of Vapor Recovery Systems	at least once every 13 months
	B2. TP-201.1B – Static Torque of Rotatable Stage I Adaptors[3]	at least once every 13 months
	B3. TP-201.1E – Leak Rate and Cracking Pressure of P/V Vent Valves	at least once every 37 months

[Adopted 08/17/06; Amended 08/17/19; 02/26/22]

[1] TP-201.1C has no overfill prevention device and TP-201.1D is required for drop tubes with overfill prevention
[2] TP-206.3 is required for aboveground storage tanks equipped with Stage I EVR
[3] TP-201.1B only required for aboveground storage tanks equipped with Rotatable Stage I Adaptors

Rule 8.12.5 Self-Inspection Requirements

(a) The owner or operator of a gasoline dispensing facility must complete self-inspections of the vapor recovery system. The inspection must occur at least once a week, or after each gasoline delivery, whichever is less frequent. At a minimum, the following items must be inspected:

- **(1)** All adaptors must be equipped with vapor-tight caps;
- **(2)** All fill and vapor recovery wells or boxes must be free of liquid gasoline;
- **(3)** All gasoline storage tank fill-pipes must have gasketed seals in good working condition;
- **(4)** All caps must have gasketed seals in good working condition; and,
- **(5)** Vapor recovery adaptors on the storage tanks must seal upon disconnect.

(b) The dates and results of the self-inspections must be recorded.

(c) No later than 15 days after discovery, the owner or operator must take corrective actions to repair, replace, or adjust defective equipment found during any of the following events:

- **(1)** Performance tests;
- **(2)** Routine maintenance checks;
- **(3)** Self-inspections; or,
- **(4)** Agency compliance inspections.

[Adopted 08/17/06; Amended 08/17/19; 02/26/22]

Rule 8.12.6 Recordkeeping Requirements

(a) The following records must be maintained on site for no less than five years from origination, and copies made available to the Agency upon request:

- **(1)** Records of all maintenance and repair activities;
- **(2)** Records of all self-inspections conducted per Rule 8.12.5;
- **(3)** Records of all performance tests required by Rule 8.12.4; and,
- **(4)** Monthly gasoline throughput records.

(b) The following records must be maintained on site for the life of the gasoline dispensing facility or the associated equipment, whichever is earlier:

- **(1)** Any determinations issued by the Agency per Rule 6.1;
- **(2)** Any GDF Notice of Intent to Operate submitted to the Agency per Rule 6.1(b)(3).

[Adopted 08/17/19; Amended 02/26/22]

RULE 8.13 (RESERVED)

RULE 8.14 ADOPTION OF FEDERAL NEW SOURCE PERFORMANCE STANDARDS (NSPS)

(a) The NSPS in 40 CFR Part 60 and its Appendices in effect on the date referenced in ORCAA Rule 1.11 are adopted by reference except for the subparts and sections listed in subsection (4). A current list of adopted federal standards is provided in Appendix A of ORCAA's Regulation.

(1) The term “Administrator” in 40 CFR Part 60 means the Administrator of EPA and the Executive Director of the Agency.

(2) Where EPA has delegated to the Agency the authority to receive reports under 40 CFR Part 60 the affected facility is required to provide such reports only to the Agency, unless otherwise requested in writing by EPA.

(3) This section does not apply to any source operating under a waiver granted by EPA or an exemption granted by the president of the United States.

(4) Exceptions. The following sections and subparts of 40 CRF Part 60 are not adopted:

(i) Subpart B – Adoption and Submittal of State Plans for Designated Facilities;

(ii) Subpart C – Emission Guidelines and Compliance Times;

(iii) Subpart Cb – Large Municipal Waste Combustors that are Constructed on or before September 20, 1994 (Emission Guidelines and Compliance Times);

(iv) Subpart Cc – Municipal Solid Waste Landfills (Emission Guidelines and Compliance Times);

(v) Subpart Cd – Sulfuric Acid Production Units (Emission Guidelines and Compliance Times);

(vi) Subpart Ce – Hospital/Medical/Infectious Waste Incinerators (Emission Guidelines and Compliance Times);

(vii) Subpart S – Primary Aluminum Reduction Plants;

(viii) Subpart BB – Kraft Paper Mills;

(ix) Subpart AAA – New Residential Wood Heaters – as it applies to non-Title V sources;

(x) Subpart BBBB - Small Municipal Waste Combustion Units Constructed on or before August 30, 1999 (Emission Guidelines and Compliance Times);

(xi) Subpart DDDD - Commercial and Industrial Solid Waste Incineration Units that Commenced Construction on or before November 30, 1999 (Emission Guidelines and Compliance Times);

(xii) Subpart FFFF - Emission Guidelines and Compliance Times for Other Solid Waste Incineration Units that Commenced Construction on or before December 9, 2004;

(xiii) Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines - as it applies to non-Title V sources;

(xiv) Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines - as it applies to non-Title V sources;

(xv) Subpart MMMM - Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units;

(xvi) Subpart QQQQ – Standards of Performance for New Residential Hydronic Heaters and Forced-Air Furnaces - as it applies to non-Title V sources;

(xvii) Subpart UUUU - Emission Guidelines for Greenhouse Gas Emissions and Compliance Times for Electric Utility Generating Units; and,

(xviii) Appendix G - Provisions for an Alternative Method of Demonstrating Compliance with 40 CFR 60.43 for the Newton Power Station of Central Illinois Public Service Company.

[Adopted 08/17/06; Amended 10/29/16; 02/26/22]

RULE 8.15 ADOPTION OF NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

(a) The NESHAP in 40 CFR Part 61 and its Appendices in effect on the date referenced in ORCAA Rule 1.11 are adopted by reference except for the subparts and sections listed in subsection (4). A current list of adopted federal standards is provided in Appendix A of ORCAA's Regulation.

(1) The term "Administrator" in 40 CFR Part 61 means the Administrator of EPA and the Executive Director of the Agency.

(2) Where EPA has delegated to the Agency the authority to receive reports under 40 CFR Part 61 the affected facility is required to provide such reports only to the Agency, unless otherwise requested in writing by EPA.

(3) This section does not apply to any source operating under a waiver granted by EPA or an exemption granted by the president of the United States.

(4) Exceptions. The following sections and subparts of 40 CFR Part 61 are not adopted:

(i) Subpart B - Radon from Underground Uranium Mines;

(ii) Subpart H - Radionuclide other than Radon from Dept. of Energy Facilities;

(iii) Subpart I - Radionuclide from Federal Facilities other than Nuclear Regulatory Commission Licensees and not covered by Subpart H;

(iv) Subpart K - Radionuclide from Elemental Phosphorus Plants;

(v) Subpart Q - Radon from Dept. of Energy Facilities;

(vi) Subpart R - Radon from Phosphogypsum Stacks;

(vii) Subpart T - Radon from Disposal Uranium Mill Tailings; and,

(viii) Subpart W - Radon from Operating Mill Tailings.

[Adopted 08/17/06; Amended 10/29/16; 02/26/22]

RULE 8.17 ADOPTION OF NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR SOURCE CATEGORIES

(a) The NESHAP for Source Categories in 40 CFR Part 63 and its Appendices in effect on the date referenced in ORCAA Rule 1.11 are adopted by reference except for the subparts and sections listed in subsection (4). A current list of adopted federal standards is provided in Appendix A of ORCAA's Regulation.

(1) The term "Administrator" in 40 CFR Part 63 means the Administrator of EPA and the Executive Director of the Agency.

(2) Where EPA has delegated to the Agency the authority to receive reports under 40 CFR Part 63 the affected facility is required to provide such reports only to the Agency, unless otherwise requested in writing by EPA.

(3) This section does not apply to any source operating under a waiver granted by EPA or an exemption granted by the president of the United States.

(4) Exceptions. The following sections and subparts of 40 CFR Part 63, as they apply to non-Title V sources, are not adopted:

- **(i)** Subpart M - National Perchloroethylene Emission Standards for Dry Cleaning Facilities;
- **(ii)** Subpart LL - National Emission Standard for Hazardous Air Pollutants for Primary Aluminum Reduction Plants;
- **(iii)** Subpart RRR - National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production;
- **(iv)** Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines;
- **(v)** Subpart - BBBBBB National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities;
- **(vi)** Subpart HHHHHH - Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources; and,
- **(vii)** Subpart XXXXXX - Area Source Standards for Nine Metal Fabrication and Finishing Source Categories.

[Adopted 10/29/16; Amended 02/26/22]

RULE 8.18 ADOPTION OF FEDERAL CONSOLIDATED REQUIREMENTS FOR THE SYNTHETIC ORGANIC CHEMICAL MANUFACTURING INDUSTRY

The Consolidated Requirements for the Synthetic Organic Chemical Manufacturing Industry in Section 2.18 of 40 CFR Part 65 in effect on the date referenced in ORCAA Rule 1.11 are adopted by reference.
[Adopted 10/29/16]

APPENDIX A - ADOPTED FEDERAL REGULATIONS AND STANDARDS

40 CFR Part 60 - Standards of Performance for New Stationary Sources

Subpart A	General Provisions
Subpart D	Fossil-Fuel-Fired Steam Generators for which Construction is Commenced after August 17, 1971
Subpart Da	Electric Utility Steam Generating Units for which Construction is Commenced after September 18, 1978
Subpart Db	Industrial-Commercial-Institutional Steam Generating Units
Subpart Dc	Small Industrial-Commercial-Institutional Steam Generating Units
Subpart E	Incinerators
Subpart Ea	Municipal Waste Combustors for which Construction is Commenced after December 20, 1989 and on or before September 20, 1994
Subpart Eb	Large Municipal Waste Combustors
Subpart Ec	Hospital/Medical/Infectious Waste Incinerators
Subpart F	Portland Cement Plants
Subpart G	Nitric Acid Plants
Subpart Ga	Nitric Acid Plants for which Construction, Reconstruction, or Modification Commenced after October 14, 2011
Subpart H	Sulfuric Acid Plants
Subpart I	Hot Mix Asphalt Facilities
Subpart J	Petroleum Refineries
Subpart Ja	Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After May 14, 2007
Subpart K	Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced after June 11, 1973 and prior to May 19, 1978
Subpart Ka	Storage Vessels for Petroleum Liquids for which Construction, Reconstruction, or Modification Commenced after May 18, 1978 and prior to July 23, 1984
Subpart Kb	VOC Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984
Subpart L	Secondary Lead Smelters
Subpart M	Secondary Brass and Bronze Production Plants
Subpart N	Primary Emissions from Basic Oxygen Process Furnaces for which Construction is Commenced after June 11, 1973
Subpart Na	Secondary Emissions from Basic Oxygen Process Steel-making Facilities for which Construction is Commenced after January 20, 1983
Subpart O	Sewage Treatment Plants
Subpart P	Primary Copper Smelters
Subpart Q	Primary Zinc Smelters
Subpart R	Primary Lead Smelters
Subpart T	Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants

Subpart U	Phosphate Fertilizer Industry: Superphosphoric Acid Plants
Subpart V	Phosphate Fertilizer Industry: Diammonium Phosphate Plants
Subpart W	Phosphate Fertilizer Industry: Triple Superphosphate Plants
Subpart X	Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities
Subpart Y	Coal Preparation Plants
Subpart Z	Ferroalloy Production Facilities
Subpart AA	Steel Plants: Electric Arc Furnaces Constructed after October 21, 1974 and on or before August 17, 1983
Subpart AAa	Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed after August 7, 1983
Subpart CC	Glass Manufacturing Plants
Subpart DD	Grain Elevators
Subpart EE	Surface Coating of Metal Furniture
Subpart GG	Stationary Gas Turbines
Subpart HH	Lime Manufacturing Plants
Subpart KK	Lead-Acid Battery Manufacturing Plants
Subpart LL	Metallic Mineral Processing Plants
Subpart MM	Automobile and Light Duty Truck Surface Coating Operations
Subpart NN	Phosphate Rock Plants
Subpart PP	Ammonium Sulfate Manufacture
Subpart QQ	Graphic Arts Industry: Publication Rotogravure Printing
Subpart RR	Pressure Sensitive Tape and Label Surface Coating Standards
Subpart SS	Industrial Surface Coating: Large Appliances
Subpart TT	Metal Coil Surface Coating
Subpart UU	Asphalt Processing and Asphalt Roof Manufacture
Subpart VV	Equipment Leaks of VOC in Synthetic Organic Chemical Manufacturing Industry
Subpart VVa	Equipment Leaks of VOC in Synthetic Organic Chemical Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After November 7, 2006
Subpart WW	Beverage Can Surface Coating Industry
Subpart XX	Bulk Gasoline Terminals
Subpart AAA	New Residential Wood Heaters – Title V sources only
Subpart BBB	Rubber Tire Manufacturing Industry
Subpart DDD	VOC Emissions from Polymer Manufacturing Industry
Subpart FFF	Flexible Vinyl and Urethane Coating and Printing
Subpart GGG	Equipment Leaks of VOC in Petroleum Refineries
Subpart GGGa	Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, And On Or Before November 7, 2006

Subpart HHH	Synthetic Fiber Production Facilities
Subpart III	VOC Emissions from Synthetic Organic Chemical Manufacturing Industry Air Oxidation Unit Processes
Subpart JJJ	Petroleum Dry Cleaners
Subpart KKK	Equipment Leaks of VOC from Onshore Natural Gas Processing Plants
Subpart LLL	Onshore Natural Gas Processing: SO2Emissions
Subpart NNN	VOC Emissions from Synthetic Organic Chemical Manufacturing Industry Distillation Operations
Subpart OOO	Nonmetallic Mineral Processing Plants
Subpart PPP	Wool Fiberglass Insulation Manufacturing Plants
Subpart QQQ	VOC Emissions from Petroleum Refinery Wastewater Systems
Subpart RRR	VOCs from Synthetic Organic Chemical Manufacturing Industry Reactor Processes
Subpart SSS	Magnetic Tape Coating Facilities
Subpart TTT	Industrial Surface Coating: Surface Coating of Plastic Parts for Business Machines
Subpart UUU	Calciners and Dryers in Mineral Industries
Subpart VVV	Polymeric Coating of Supporting Substrates Facilities
Subpart WWW	Municipal Solid Waste Landfills
Subpart AAAA	Small Municipal Waste Combustion Units for which Construction is Commenced after August 30, 1999 or for which Modification or Reconstruction is Commenced after June 6, 2001
Subpart CCCC	Commercial and Industrial Solid Waste Incineration Units for which Construction is Commenced after November 30, 1999 or for which Modification or Reconstruction is Commenced on or after June 1, 2001
Subpart EEEE	Standards of Performance for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004, or for Which Modification or Reconstruction is Commenced on or After June 16, 2006
Subpart IIII	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines – Title V sources only.
Subpart JJJJ	Standards of Performance for Stationary Spark Ignition Internal Combustion Engines – Title V sources only.
Subpart KKKK	Standards of Performance for Stationary Combustion Turbines
Subpart LLLL	Standards of Performance for New Sewage Sludge Incineration Units
Subpart OOOO	Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution
Subpart QQQQ	Standards of Performance for New Residential Hydronic Heaters and Forced-Air Furnaces – Title V sources only.
Subpart TTTT	Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units

40 CFR Part 60	Appendix A
40 CFR Part 60	Appendix B
40 CFR Part 60	Appendix C
40 CFR Part 60	Appendix D
40 CFR Part 60	Appendix F
40 CFR Part 60	Appendix I

40 CFR Part 61 – National Emission Standards for Hazardous Air Pollutants

Subpart A	General Provisions
Subpart C	Beryllium
Subpart D	Beryllium Rocket Motor Firing
Subpart E	Mercury
Subpart F	Vinyl Chloride
Subpart J	Equipment Leaks of Benzene
Subpart L	Benzene from Coke By-Product Recovery Plants
Subpart M	Asbestos
Subpart N	Inorganic Arsenic from Glass Manufacturing Plants
Subpart O	Inorganic Arsenic from Primary Copper Smelters
Subpart P	Inorganic Arsenic emissions from Arsenic Trioxide and Metallic Arsenic Production Facilities
Subpart V	Equipment Leaks (Fugitive Sources)
Subpart Y	Benzene from Benzene Storage Vessels
Subpart BB	Benzene from Benzene Transfer Operations
Subpart FF	Benzene Waste Operations
40 CFR Part 61	Appendix A
40 CFR Part 61	Appendix B
40 CFR Part 61	Appendix C
40 CFR Part 61	Appendix D
40 CFR Part 61	Appendix E

40 CFR Part 63 – National Emission Standards for Hazardous Air Pollutants for Source Categories

Subpart A	General Provisions
Subpart B	Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act Sections, Sections 112(g) and 112(j)
Subpart C	List of Hazardous Air Pollutants, Petition Process, Lesser Quantity Designations, Source Category List
Subpart D	Regulations Governing Compliance Extensions for Early Reductions of Hazardous Air Pollutants
Subpart F	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry
Subpart G	National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry Process Vents, Storage Vessels, Transfer Operations, and Wastewater

Subpart H	National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks
Subpart I	National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks
Subpart J	National Emission Standards for Hazardous Air Pollutants for Polyvinyl Chloride and Copolymers Production
Subpart L	National Emission Standards for Coke Oven Batteries
Subpart M	National Perchloroethylene Air Emission Standards for Dry Cleaning Facilities – Title V sources only.
Subpart N	National Emission Standards for Chromium Emissions from Hard and Decorative Chromium Electroplating and Chromium Anodizing Tanks
Subpart O	Ethylene Oxide Emissions Standards for Sterilization Facilities
Subpart Q	National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers
Subpart R	National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)
Subpart S	National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry
Subpart T	National Emission Standards for Halogenated Solvent Cleaning
Subpart U	National Emission Standards for Hazardous Air Pollutant Emissions: Group I Polymers and Resins
Subpart W	National Emission Standards for Hazardous Air Pollutants for Epoxy Resins Production and Non-Nylon Polyamides Production
Subpart X	National Emission Standards for Hazardous Air Pollutants from Secondary Lead Smelting
Subpart Y	National Emission Standards for Marine Tank Vessel Loading Operations
Subpart AA	National Emission Standards for Hazardous Air Pollutants from Phosphoric Acid Manufacturing Plants
Subpart BB	National Emission Standards for Hazardous Air Pollutants from Phosphate Fertilizers Production Plants
Subpart CC	National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries
Subpart DD	National Emission Standards for Hazardous Air Pollutants from Off-Site Waste and Recovery Operations
Subpart EE	National Emission Standards for Magnetic Tape Manufacturing Operations
Subpart GG	National Emission Standards for Aerospace Manufacturing and Rework Facilities
Subpart HH	National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities
Subpart II	National Emission Standards for Shipbuilding and Ship

	Repair (Surface Coating)
Subpart JJ	National Emission Standards for Wood Furniture Manufacturing Operations
Subpart KK	National Emission Standard for the Printing and Publishing Industry
Subpart MM	National Emission Standard for Hazardous Air Pollutants for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills
Subpart OO	National Emission Standards for Tanks -Level 1
Subpart PP	National Emission Standards for Containers
Subpart QQ	National Emission Standards for Surface Impoundments
Subpart RR	National Emission Standards for Individual Drain Systems
Subpart SS	National Emission Standards for Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process
Subpart TT	National Emission Standards for Equipment Leaks - Control Level 1
Subpart UU	National Emission Standards for Equipment Leaks - Control Level 2 Standards
Subpart VV	National Emission Standards for Oil-Water Separators and Organic-Water Separators
Subpart WW	National Emission Standards for Storage Vessels (Tanks) -Control Level 2
Subpart XX	National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations
Subpart YY	National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards
Subpart CCC	National Emission Standards for Hazardous Air Pollutants for Steel Pickling--HCl Process Facilities and Hydrochloric Acid Regeneration Plants
Subpart DDD	National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production
Subpart EEE	National Emission Standard for Hazardous Air Pollutants from Hazardous Waste Combustors
Subpart GGG	National Emission Standards Pharmaceuticals Production
Subpart HHH	National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities
Subpart III	National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production
Subpart JJJ	National Emission Standard for Hazardous Air Pollutant Emissions: Group IV Polymers and Resins
Subpart LLL	National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry
Subpart MMM	National Emission Standards for Hazardous Air Pollutants for Pesticide Active Ingredient Production
Subpart NNN	National Emission Standards for Hazardous Air Pollutants

	for Wool Fiberglass Manufacturing
Subpart OOO	National Emission Standards for Hazardous Air Pollutants Emissions: Manufacture of Amino/Phenolic Resins
Subpart PPP	National Emission Standards for Hazardous Air Pollutants Emissions for Polyether Polyols Production
Subpart QQQ	National Emission Standards for Hazardous Air Pollutants for Primary Copper Smelting
Subpart RRR	National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production – Title V sources only.
Subpart TTT	National Emission Standards for Hazardous Air Pollutants for Primary Lead Smelting
Subpart UUU	National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units.
Subpart VVV	National Emission Standard for Hazardous Air Pollutants: Publicly Owned Treatment Works
Subpart XXX	National Emission Standards for Hazardous Air Pollutants for Ferroalloys Production: Ferromanganese and Silicomanganese
Subpart AAAA	National Emission Standard for Hazardous Air Pollutants: Municipal Solid Waste Landfills
Subpart CCCC	National Emission Standard for Hazardous Air Pollutants: Manufacturing of Nutritional Yeast
Subpart DDDD	National Emission Standard for Hazardous Air Pollutants: Plywood and Composite Wood Products
Subpart EEEE	National Emission Standard for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)
Subpart FFFF	National Emission Standard for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing
Subpart GGGG	National Emission Standard for Hazardous Air Pollutants: Solvent Extractions for Vegetable Oil Production
Subpart HHHH	National Emission Standard for Hazardous Air Pollutants for Wet-Formed Fiberglass Mat Production
Subpart IIII	National Emission Standard for Hazardous Air Pollutants: Surface Coating of Automobiles and Light-Duty Trucks
Subpart JJJJ	National Emission Standard for Hazardous Air Pollutants: Paper and Other Web Coating
Subpart KKKK	National Emission Standard for Hazardous Air Pollutants: Surface Coating of Metal Cans
Subpart MMMM	National Emission Standard for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products
Subpart NNNN	National Emission Standard for Hazardous Air Pollutants: Surface Coating of Large Appliances
Subpart OOOO	National Emission Standard for Hazardous Air Pollutants: Printing, Coating, and Dyeing of Fabrics and Other Textiles

Subpart PPPP	National Emission Standards for Hazardous Air Pollutants for Surface Coating of Plastic Parts and Products
Subpart QQQQ	National Emission Standard for Hazardous Air Pollutants: Surface Coating of Wood Building Products
Subpart RRRR	National Emission Standard for Hazardous Air Pollutants: Surface Coating of Metal Furniture
Subpart SSSS	National Emission Standard for Hazardous Air Pollutants: Surface Coating of Metal Coil
Subpart TTTT	National Emission Standard for Hazardous Air Pollutants for Leather Finishing Operations
Subpart UUUU	National Emission Standard for Hazardous Air Pollutants for Cellulose Products Manufacturing
Subpart VVVV	National Emission Standard for Hazardous Air Pollutants for Boat Manufacturing
Subpart WWWW	National Emission Standard for Hazardous Air Pollutants: Reinforced Plastic Composites Production
Subpart XXXX	National Emission Standard for Hazardous Air Pollutants: Rubber Tire Manufacturing
Subpart YYYY	National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines
Subpart ZZZZ	National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines – Title V sources only.
Subpart AAAAA	National Emission Standard for Hazardous Air Pollutants for Lime Manufacturing Plants
Subpart BBBBB	National Emission Standard for Hazardous Air Pollutants for Semiconductor Manufacturing
Subpart CCCCC	National Emission Standard for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks
Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters
Subpart EEEEE	National Emission Standard for Hazardous Air Pollutants for Iron and Steel Foundries
Subpart FFFFF	National Emission Standard for Hazardous Air Pollutants for Integrated Iron and Steel Manufacturing Facilities
Subpart GGGGG	National Emission Standard for Hazardous Air Pollutants: Site Remediation
Subpart HHHHH	National Emission Standard for Hazardous Air Pollutants: Miscellaneous Coating Manufacturing
Subpart IIIII	National Emission Standard for Hazardous Air Pollutants: Mercury Emissions from Mercury Cell Chlor-Alkali Plants
Subpart JJJJJ	National Emission Standard for Hazardous Air Pollutants for Brick and Structural Clay Products Manufacturing
Subpart KKKKK	National Emission Standard for Hazardous Air Pollutants for Clay Ceramics Manufacturing
Subpart LLLLL	National Emission Standard for Hazardous Air Pollutants: Asphalt Processing and Asphalt Roofing Manufacturing

Subpart MMMMM	National Emission Standard for Hazardous Air Pollutants: Flexible Polyurethane Foam Fabrication Operations
Subpart NNNNN	National Emission Standard for Hazardous Air Pollutants: Hydrochloric Acid Production
Subpart PPPPP	National Emission Standard for Hazardous Air Pollutants for Engine Test Cells/Stands
Subpart QQQQQ	National Emission Standard for Hazardous Air Pollutants for Friction Materials Manufacturing Facilities
Subpart RRRRR	National Emission Standard for Hazardous Air Pollutants: Taconite Iron Ore Processing
Subpart SSSSSS	National Emission Standard for Hazardous Air Pollutants for Refractory Products Manufacturing
Subpart TTTTT	National Emission Standard for Hazardous Air Pollutants for Primary Magnesium Refining
Subpart UUUUU	National Emission Standards for Hazardous Air Pollutants: Coal- and Oil-Fired Electric Utility Steam Generating Units
Subpart WWWWW	National Emission Standards for Hospital Ethylene Oxide Sterilizers
Subpart YYYYY	National Emission Standard for Hazardous Air Pollutants for Area/Sources: Electric Arc Furnace Steelmaking Facilities
Subpart ZZZZZ	National Emission Standard for Hazardous Air Pollutants for Iron and Steel Foundries Area Sources
Subpart BBBBBB	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities – Title V sources only.
Subpart CCCCCC	National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities
Subpart DDDDDD	National Emission Standards for Hazardous Air Pollutants for Polyvinyl Chloride and Copolymers Production Area Sources
Subpart EEEEEE	National Emission Standards for Hazardous Air Pollutants for Primary Copper Smelting Area Sources
Subpart FFFFFF	National Emission Standards for Hazardous Air Pollutants for Secondary Copper Smelting Area Sources
Subpart GGGGGG	National Emission Standards for Hazardous Air Pollutants for Primary Nonferrous Metals Area Sources—Zinc, Cadmium, and Beryllium
Subpart HHHHHH	National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources – Title V sources only.
Subpart JJJJJJ	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources
Subpart LLLLLL	National Emission Standards for Hazardous Air Pollutants for Acrylic and Modacrylic Fibers Production Area Sources
Subpart MMMMMM	National Emission Standards for Hazardous Air Pollutants for Carbon Black Production Area Sources

Subpart NNNNNN	National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources: Chromium Compounds
Subpart OOOOOO	National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production and Fabrication Area Sources
Subpart PPPPPP	National Emission Standards for Hazardous Air Pollutants for Lead Acid Battery Manufacturing Area Sources
Subpart QQQQQQ	National Emission Standards for Hazardous Air Pollutants for Wood Preserving Area Sources
Subpart RRRRRR	National Emission Standards for Hazardous Air Pollutants for Clay Ceramics Manufacturing Area Sources
Subpart SSSSSS	National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources
Subpart TTTTTT	National Emission Standards for Hazardous Air Pollutants for Secondary Nonferrous Metals Processing Area Sources
Subpart VVVVVV	National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Sources
Subpart WWWWWW	National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Plating and Polishing Operations
Subpart XXXXXX	National Emission Standards for Hazardous Air Pollutants Area Source Standards for Nine Metal Fabrication and Finishing Source Categories – Title V sources only.
Subpart YYYYYY	National Emission Standards for Hazardous Air Pollutants for Area Sources: Ferroalloys Production Facilities
Subpart ZZZZZZ	National Emission Standards for Hazardous Air Pollutants Area Source Standards for Aluminum, Copper, and Other Nonferrous Foundries
Subpart AAAAAAA	National Emission Standards for Hazardous Air Pollutants for Area Sources: Asphalt Processing and Asphalt Roofing Manufacturing
Subpart BBBBBBB	National Emission Standards for Hazardous Air Pollutants for Area Sources: Chemical Preparations Industry
Subpart CCCCCCC	National Emission Standards for Hazardous Air Pollutants for Area Sources: Paints and Allied Products Manufacturing
Subpart DDDDDDD	National Emission Standards for Hazardous Air Pollutants: Area Source Standards for Prepared Feeds Manufacturing
Subpart EEEEEEE	National Emission Standards for Hazardous Air Pollutants: Gold Mine Ore Processing and Production Area Source Category
Subpart HHHHHHH	National Emission Standards for Hazardous Air Pollutant Emissions for Polyvinyl Chloride and Copolymers Production
40 CFR Part 63	Appendix A
40 CFR Part 63	Appendix B

40 CFR Part 63	Appendix C
40 CFR Part 63	Appendix D
40 CFR Part 63	Appendix E
Section 2.18 of 40 CFR Part 65	Consolidated Requirements for the Synthetic Organic Chemical Manufacturing Industry.

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Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

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Project Number
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Date
September 2018

APPLICATION FOR INITIAL STATE PERMIT TO CONSTRUCT

ENVIVA PELLETS LUCEDALE, LLC

enviva®

RAMBOLL

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APPENDIX

Appendix A – Area Map and Site Plan

Appendix B – Process Flow Diagram

Appendix C – Potential Emissions Calculations

Appendix D – Permit Application Forms

ACRONYMS AND ABBREVIATIONS

AER	Air Emissions Reporting
AP-42	Compilation of Air Pollutant Emission Factors
bhp	brake horsepower
BMP	Best Management Practice
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CI	Compression Ignition
CO	Carbon Monoxide
CO_2	Carbon Dioxide
EPA	Environmental Protection Agency
EPD	Environmental Permits Division
FSC	Forest Stewardship Council
HAP	Hazardous Air Pollutant
hp	Horsepower
H_2O	Water
ICE	Internal Combustion Engine
lb	Pound
MACT	Maximum Achievable Control Technology
MDEQ	Mississippi Department of Environmental Quality
MMBtu	Million British thermal units
NAAQS	National Ambient Air Quality Standards
NCASI	National Council for Air and Stream Improvement
NESHAP	National Emission Standards for Hazardous Air Pollutants
NNSR	Nonattainment New Source Review
NO_x	Nitrogen Oxides ($NO + NO_2$)
NSPS	New Source Performance Standards
NSR	New Source Review
NWS	National Weather Service
ODT	Oven Dried Tons
PCWP	Plywood and Composite Wood Products

PEFC	Programme for the Endorsement of Forest Certifications
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter Less Than 2.5 Micrometers in Aerodynamic Diameter
PM_{10}	Particulate Matter Less Than 10 Micrometers in Aerodynamic Diameter
PSD	Prevention of Significant Deterioration
PSEU	Pollutant Specific Emission Unit
RICE	Reciprocating Internal Combustion Engine
RCO	Regenerative Catalytic Oxidizer
RMP	Risk Management Plan
RTO	Regenerative Thermal Oxidizer
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SFI	Sustainable Forestry Initiative
TCO	Thermal Catalytic Oxidizer
TO	Thermal Oxidizer
tph	tons per hour
tpy	tons per year
VOC	Volatile Organic Compounds
WESP	Wet Electrostatic Precipitator

1. INTRODUCTION

Enviva Pellets Lucedale, LLC (Enviva) is proposing to construct a greenfield wood pellet manufacturing plant (referred to herein as "the Lucedale plant" or "the plant") in Lucedale, George County, Mississippi. It should be noted that on May 20, 2014, Green Circle Energy, Inc (Green Circle) received Construction Permit No. 0840-00022 authorizing construction of a proposed greenfield wood pellet manufacturing plant at the Lucedale site. This construction permit was transferred to Enviva on November 20, 2015; however, construction on the new plant was never initiated by Enviva or Green Circle. On June 16, 2017, Enviva submitted a request to Mississippi Department of Environmental Quality (MDEQ) to revoke Construction Permit No. 0840-00022. Since that time, business conditions have changed and Enviva is now re-starting the permitting process for a new construction permit for the Lucedale plant. The proposed new Lucedale plant will be designed to produce approximately 1,420,500 oven dried tons (ODT) per year of wood pellets utilizing up to 85% softwood. Construction will be completed in two phases with the initial construction phase allowing production of approximately 781,300 ODT per year. The second construction phase will be implemented within 18 months of completing the first construction phase and will allow the facility to achieve the final production capacity of approximately 1,420,500 ODT per year. The plant will include a Log Chipper, Bark Hog, Debarker, Green Screen, Green Hammermills, Rotary Dryers, Dry Hammermills, Pellet Presses and Coolers, product loadout operations and other ancillary activities.

The Lucedale plant will be a major source with respect to the Title V Operating Permit Program because facility-wide potential emissions of one or more criteria pollutants will exceed the major source threshold of 100 tons per year (tpy). Furthermore, the plant will be a major source of hazardous air pollutants (HAP) due to potential total HAP emissions and maximum individual HAP emissions above the major source thresholds of 25 tpy, and 10 tpy, respectively. However, the Lucedale plant will be a minor source with respect to the New Source Review (NSR) permitting programs because facility-wide potential emissions of all regulated pollutants will be below the major source threshold of 250 tpy.

Enviva is submitting this application for a State Permit to Construct to the Mississippi Department of Environmental Quality (MDEQ) Environmental Permits Division (EPD) in accordance with Title 11 of the Mississippi Administrative Code (Miss. Admin. Code) Part (Pt.) 2 Chapter (Ch.) 2 Rule (R.) 2.1.D. A description of the process is provided in Section 2 and methodologies used to quantify potential emissions are summarized in Section 3. Section 4 describes the applicability of federal and state permitting programs. Section 5 includes a detailed applicability analysis of both federal and state regulations.

2. PROCESS DESCRIPTION

Enviva manufactures wood pellets for use as a renewable fuel for energy generation and industrial customers. Enviva's customers use wood pellets in place of coal, significantly reducing emissions of pollutants such as lifecycle carbon dioxide (CO_2)/greenhouse gases (GHG), mercury (Hg), arsenic (As), and lead (Pb). The company is dedicated to improving the environmental profile of energy generation while promoting sustainable forestry in the southeastern United States. Enviva holds certifications from the Forest Stewardship Council (FSC), Sustainable Forestry Initiative (SFI), Programme for the Endorsement of Forest Certification (PEFC), and Sustainable Biomass Program (SBP). Enviva requires that all suppliers adhere to state-developed "Best Management Practices" (BMPs) in their activities to protect water quality and sensitive ecosystems. In addition, Enviva is implementing an industry leading "track and trace" system to further ensure that all fiber resources come from responsible harvests. Enviva pays particular attention to: land use change, use and effectiveness of BMPs, wetlands, biodiversity, and certification status. All of this combined ensures that Enviva's forestry activities contribute to healthy forests both today and in the future.[1] The following process description details the proposed operations at the Lucedale plant.

Wood fiber (round wood, green wood chips, bark, and dry shavings) will be delivered to the Lucedale plant via trucks where it will then be unloaded and stored. The plant will include three (3) chip truck dumps (ID# AA-004, Greenwood Handling Operations), one (1) bark truck dump (ID# Insignificant Activity, Bark Handling Operations), and one (1) dry shavings truck dump (ID # AA-021, Dry Shavings Handling). Round wood will be stored as whole logs and will be debarked (ID# AA-001, Debarker) and chipped (ID# AA-002, Log Chipping), as needed. Bark from the Debarker and purchased bark will be transferred to the Bark Hog (ID# AA-003, Bark Hog) via conveyor for further processing, after which it will be transferred to the Bark Storage Pile (ID# Insignificant Activity, Bark Storage Pile) via conveyor.[2] The bark removed from the round wood, along with purchased bark, will be used as fuel for the dryer furnaces. Conveyors will transport wood chips and fuel to the dryers and furnaces, respectively.[3]

Dry shavings, largely composed of wood planer shavings and sawdust, will be delivered by truck to the plant's dry shavings truck dump. From the dry shavings truck dump, the dry shavings will be transferred to the Dry Shavings Silo (ID# AA-020, Dry Shavings Silo) via an enclosed conveyor and bucket elevator. As the dry shavings will already be dried, they will bypass the dryers. The Dry Shavings Silo will be equipped with a baghouse for control of particulate matter (PM) emissions resulting from air displaced during silo loading.

The Lucedale plant will include three (3) Dryer lines (ID#s AA-007, AA-010, and AA-013, Wood-fired Direct Heat Drying System Nos. 1, 2, and 3), each consisting of a bark-fired furnace and a rotary drum dryer. The maximum design heat input rate of each dryer will be

[1] A detailed description of Enviva's Responsible Wood Supply Program can be found at: http://www.envivabiomass.com/sustainability/wood-sourcing/responsible-wood-supply-program/

[2] Bark handling and storage is considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 6 R. 6.7.B(13).

[3] Bark will be transferred from the Bark Fuel Storage Pile via a walking floor to a covered conveyor and then to the fully enclosed Bark Fuel Bin. Due to complete enclosure of the Bark Feed Bin, no emissions are expected from transfer of material into the bin.

168 million British thermal units per hour (MMBtu/hr). The products of combustion from each furnace will directly exhaust to the rotary drum dryers, which will dry wood chips conveyed from the Green Wood Storage Pile (ID# AA-006, Green Wood Storage Pile). Prior to drying, the chips will be processed by a Green Screen (ID# AA-005, Green Screen) and three (3) Green Hammermills (ID#s AA-007 and AA-010, Green Hammermills) as needed to ensure proper size.

From the dryers, an induced draft will carry all dried chips and hot air to high efficiency material handling cyclones to remove the wood fiber. The dryer is designed to recirculate a portion of the exhaust gas to improve fuel and drying efficiency and reduce emissions. The non-recirculated portion of each dryer exhaust will flow through a wet electrostatic precipitator (WESP) and a regenerative thermal oxidizer (RTO) (ID# AA-007, AA-010, and AA-013, WESP/RTO Nos. 1, 2, and 3), then out a stack to the atmosphere. Each dryer line will have a dedicated WESP and RTO. The RTO burners will combust natural gas, with propane as a back-up fuel. The Green Hammermills will be part of a closed loop system that will exhaust to the WESP and RTO on Dryer Line 1. In the event Dryer Line 1 is not operational, the exhaust will be routed to the WESP and RTO on Dryer Line 2.

As the flue gas exits the dryer and begins to cool, wood tar can condense and coat the inner walls of the dryer ducts creating a fire risk. In order to prevent condensation from occurring and thus reduce the fire risk, the two (2) ducts (herein referred to as double ducts) on each dryer system will be heated. The duct from the cyclone outlet to the ID fan will be heated by one (1) low-NO_x burner with a maximum heat input rating of 1 MMBtu/hr and a second 1 MMBtu/hr low-NO_x burner will be used to heat the duct used for exhaust gas recirculation and the WESP. The burners will combust natural gas, or propane as back-up, and will exhaust to the WESPs and RTOs (ID# AA-007, AA-010, and AA-013, WESP/RTO Nos. 1, 2, and 3).[4]

Bypass stacks for each furnace (ID# AA-009, AA-012, AA-015, Furnace Bypass Stacks) and rotary drum dryer (ID# AA-008, AA-011, AA-014, Dryer Bypass Stacks) will be used to exhaust hot gases during start-ups (for temperature control), shutdowns, and malfunctions. Specifically, the Furnace Bypass Stacks will be used in the following situations:

- **Cold Start-ups:** The furnace bypass stacks will be used when the furnace is started up from a cold shutdown until the refractory is sufficiently heated and can sustain operations at a low level. The bypass stack will then be closed and the furnace will slowly be brought up to a normal operating rate.
- **Malfunction:** The furnace itself can abort and open the bypass stack in the event of a malfunction. This may be caused by failsafe interlocks associated with the furnace or dryer and emissions control systems as well as utility supply systems (i.e., electricity, compressed air, water/fire protection). As soon as the furnace aborts it will automatically switch to "idle mode" (defined as operation at up to a maximum heat input rate of 5 MMBtu/hr). The fuel feed is stopped and the heat input rate drops rapidly.

[4] Combustion units with a rated input capacity less than 10 MMBtu/hr that are fueled by liquefied petroleum gas or natural gas supplied by a public utility are considered insignificant per 11 Miss. Admin. Code Pt. 2, Ch. 6 R. 6.7.B(2)

- **Planned Shutdown:** In the event of a planned shutdown the furnace heat input will be decreased and all remaining fuel will be moved through the system to prevent a fire. The remaining fuel will be combusted prior to opening the furnace bypass stack.

Conditions under which the Dryer Bypass Stacks will be used are as follows:

- **Malfunction:** The dryer system can abort due to power failure, equipment failure, or as a result of a furnace abort. If the RTO goes offline as a result of interlock failure, the dryer will immediately abort. This can occur if the dryer temperature is out of range or as a result of equipment or power failure. Dryer abort will also be triggered if a spark is detected.
- **Planned Shutdown:** During planned shutdowns, as the remaining fuel is combusted by the furnace, the Operator will reduce the chip input to the dryer. When only a small amount of chips remain, these will be emptied to clean the dryer drum out. The dryer bypass stack will then be opened and a purge air fan used to ensure no explosive build-up occurs in the drum. Emissions during this time will be minimal as the furnace and dryer are no longer operating.

Use of the Furnace and Dryer Bypass Stacks for start-up, shutdown, and malfunctions will not exceed 100 hours per year for each dryer line at full operating capacity (i.e., 50 hours of furnace bypass at full capacity and 50 hours of dryer bypass at full capacity).

Each furnace may also operate up to 500 hours per year in "idle mode" with emissions routed to the Furnace Bypass Stacks. The purpose of operation in "idle mode" is to maintain the temperature of the fire brick lining the furnaces which may be damaged if it cools too rapidly. Operation in "idle mode" also significantly reduces the amount of time required to restart the dryers.

Emissions from Furnace and Dryer start-up, shutdown and malfunctions, and emissions from Furnace idle mode operations, are quantified and included in maximum allowable emissions presented in this permit application.

The Lucedale plant will include two (2) pelletizing lines, each consisting of twenty-four (24) Dry Hammermills, twelve (12) Pellet Mills, and six (6) Pellet Coolers. Dried wood chips will be stored in the Dry Hammermill Feed Silo and dry shavings in the Dry Shavings Silo (ID# AA-020) prior to being processed by the Dry Hammermills (ID# AA-016, AA-017, Forty-Eight Dry Hammermills). The Dry Hammermills will reduce the dry wood chips to under 4 mm (0.16") in size. From the Dry Hammermills, the processed wood fiber will be conveyed to a Pellet Mill Feed Silo which will be kept under negative pressure by aspiration systems. These aspiration systems will be routed to a wet scrubber and regenerative catalytic oxidizer (RCO) (ID# AA-016, Wet Scrubber-1/RCO-1). The Dry Hammermill Feed Silo, Pellet Mill Feed Silo, and all associated conveyors and transfer points will be sealed and kept under negative pressure.

Aspiration systems will be used to remove heated moist air from the Dry Hammermills, Pellet Mills, and Pellet Coolers. These aspiration systems will be routed to high efficiency material handling cyclones and then to wet scrubbers and RCOs for control of PM, HAP, and volatile organic compounds (VOC). Emissions from Pelletizing Lines 1 and 2 will be controlled by two (2) wet scrubbers and two (2) RCOs. Wet Scrubber-1/RCO-1 (ID# AA-016) will control emissions from thirty-two (32) Dry Hammermills, sixteen (16) Pellet Mills, and eight (8) Pellet Coolers. Wet Scrubber-2/RCO-2 (ID# AA-017) will control emissions from sixteen (16)

Dry Hammermills, eight (8) Pellet Mills, and four (4) Pellet Coolers. The RCO burners will combust natural gas, with propane as a back-up fuel.

Processed wood from the Pellet Mill Feed Silo will be conveyed to the Pellet Mills where wood fiber will be compressed by rotating press rollers and will exit through a sizing die. Heat from the friction of compressing the wood through the die activates wood lignin in the fiber which effectively bonds the material into a durable pellet. No resin or chemical binder will be used in the process. A dry powder additive may be used which acts as a lubricant for the dies. This additive would be added to sized wood from the Dry Hammermills prior to transfer to the Pellet Presses. The dry powder contains no hazardous chemicals or VOC materials. It will be delivered by truck and pneumatically loaded into an Additive Storage Silo (ID# AA-019, Additive Handling and Storage) which will be equipped with a baghouse to control PM emissions from air displaced during silo loading. The additive will then be conveyed via screw conveyor from the Additive Storage Silo to the milled fiber conveyor which will transfer milled wood to the Pellet Presses.

Pellets exiting the Pellet Mills will be gravity fed to counter air flow Pellet Coolers. From the Pellet Coolers, pellets will be conveyed to two (2) storage bins (ID# AA-018, Finished Product Handling and Pellet Loadout Bins) located above the railcar loading area. The bins will provide approximately one hour of pellet storage and uniformly meter out the pellets for railcar loading. All conveyors will be sealed with dust aspiration air directed to a baghouse. A slight negative pressure will be maintained in the loadout building as a fire prevention measure to prevent any build-up of dust on surfaces within the building. This slight negative pressure will be produced via an induced draft fan that will exhaust to the Finished Product Handling baghouse (ID# AA-018).

The Lucedale plant will also include one (1) 131 horsepower (hp) diesel-fired fire water pump (ID# AA-023, 131 hp Diesel-fired Fire Water Pump) and associated 185 gallon diesel fuel storage tank (ID# Insignificant Activity, 185 Gallon Diesel Storage Tank), one (1) 500 kilowatt (kW) diesel-fired emergency generator (ID# AA-022, 500 kW Diesel-Fired Emergency Generator) and associated 500 gallon diesel fuel storage tank (ID# Insignificant Activity, 500 Gallon Diesel Storage Tank), one (1) additional 5,000 gallon diesel fuel storage tank (ID# Insignificant Activity, 5,000 Gallon Diesel Storage Tank), as well as emissions from paved roads (ID# AA-024, Paved Roads).[5]

A direct-fired Propane Vaporizer (ID# Insignificant Activity, Propane Vaporizer) will be located on-site to vaporize propane gas for combustion by the RTO burners, RCO burners, and burners for the dryer system double ducts.[6] The vaporizer will have a maximum heat input capacity of 1 MMBtu/hr and will combust propane. Natural gas will be the primary fuel for all burners; however, propane may be used as a back-up fuel.

An area map and site plan are provided in Appendix A and a process flow diagram is provided in Appendix B.

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[5] Storage tanks used exclusively to store diesel are considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 1 R. 6.7.B(7).

[6] Combustion units with a rated input capacity less than 10 MMBtu/hr that are fueled by liquefied petroleum gas or natural gas supplied by a public utility are considered insignificant per 11 Miss. Admin. Code Pt. 2, Ch. 6 R. 6.7.B(2).

3. POTENTIAL EMISSIONS QUANTIFICATION

The following summarizes the data sources and calculation methodologies used in quantifying potential emissions from the proposed Lucedale plant. Detailed potential emissions calculations are provided in Appendix C.

3.1 Debarker (AA-001)

PM emissions will occur as a result of log debarking. Potential PM emissions from debarking were quantified based on an emission factor from EPA's *AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants* for Source Classification Code (SCC) 3-07-008-01 (Log Debarking).[7] All PM was assumed to be larger than 2.5 microns in diameter. The debarking drum will be enclosed, except for the two ends where logs enter and material exits after debarking. Detailed potential emission calculations are included in Appendix C, Table 4.

3.2 Log Chipping (AA-002)

The chipping process will result in emissions of VOC and methanol. VOC and methanol emissions were quantified based on emission factors for log chipping from AP-42 Section 10.6.3, *Medium Density Fiberboard* and AP-42 Section 10.6.4, *Hardboard and Fiberboard*.[8] The Chipper will be located inside of a building. As such, there are no quantifiable particulate emissions. Detailed emission calculations are included in Appendix C, Table 5.

3.3 Bark Hog (AA-003)

Processing of bark by the Bark Hog will result in emissions of PM, VOC, and methanol. Particulate emission factors were not available for this specific operation; therefore, potential PM emissions were quantified based on an emission factor from EPA's *AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants* for log debarking (SCC 3-07-008-01).[9] This emission factor is conservative given that the Bark Hog is primarily enclosed and thus will have minimal PM emissions. A belt will feed an infeed chute and the chute, hog, and outfeed will all be enclosed. VOC and methanol emissions were quantified based on emission factors for log chipping from AP-42 Section 10.6.3, *Medium Density Fiberboard*.[10] Detailed potential emission calculations are included in Appendix C, Table 6.

3.4 Green Wood Handling Operations (AA-004) and Bark Handling Operations (IA)

Fugitive PM emissions will result from unloading purchased chips and bark from trucks into hoppers and transfer of these materials to storage piles via conveyors. Fugitive PM emissions from chip and bark transfer operations were calculated based on AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles*.[11] Detailed potential emission calculations are included in Appendix C, Table 7.

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[7] U.S. EPA. Office of Air Quality Planning and Standards. *AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants*. EPA 450/4-90-003. March 1990.

[8] U.S. EPA AP-42 Section 10.6.3, *Medium Density Fiberboard Manufacturing* (08/02).

[9] Ibid.

[10] Ibid.

[11] U.S. EPA AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles* (11/06).

Green wood and bark contain a high moisture content approaching 50 percent water by weight. Therefore, Green Wood and Bark Handling will have minimal PM emissions. Per 11 Miss. Admin. Code Pt. 2, Ch. 6 R. 6.7.B(7) Bark Handling is an insignificant activity (IA).

3.5 Green Screen (AA-005)

Particulate emissions will occur during screening of green wood chips. Emissions from the Green Screen were calculated based on the potential throughput and an emission factor for chip screening from the National Council for Air and Stream Improvement (NCASI) Technical Bulleting No. 1020.[12] Detailed potential emission calculations are included in Appendix C, Table 8.

3.6 Green Wood Storage Pile (AA-006) and Bark Storage Pile (IA)

Particulate emission factors used to quantify emissions from storage pile wind erosion for the Green Wood Storage Pile and Bark Storage Pile were calculated based on EPA's *Control of Open Fugitive Dust Sources*.[13] The number of days with rainfall greater than 0.01 inch was obtained from AP-42 Section 13.2.2, *Unpaved Roads*[14], and the percentage of time that wind speed exceeds 12 miles per hour (mph) was determined based on meteorological data from the Mobile/Bates Field National Weather Service (NWS) Station (KMOB) for 2013-2017. The mean silt content of 8.4% for unpaved roads at lumber mills from AP-42 Section 13.2.2 was conservatively applied in the absence of site-specific data. The exposed surface area of the piles was calculated based on expected worst-case pile dimensions.

VOC emissions from storage piles were quantified based on the exposed surface area of the pile and emission factors from NCASI. NCASI emission factors range from 1.6 to 3.6 pounds (lb) VOC as carbon/acre-day; however, emissions were conservatively based on the maximum emission factor. Detailed potential emission calculations are included in Appendix C, Table 9.

Per 11 Miss. Admin. Code Pt. 2, Ch. 6 R. 6.7.B(7) bark storage is an insignificant activity.

3.7 Dryers, Green Wood Hammermills, and Dryer System Double Duct Burners (IA)

As described in Section 2, aside from normal operation there are several other potential operating conditions for the dryer lines. Emissions were quantified as described in the following subsections.

3.7.1 Normal Operation (AA-007, AA-010, AA-013)

During normal operation the exhaust from each dryer will be routed to a dedicated WESP and RTO for control of PM, VOC, and HAP. Exhaust from the Green Hammermills will be controlled by the WESP/RTO on Dryer Line 1 (ID# AA-007). If Dryer Line 1 is not operational, the Green Hammermill exhaust will be routed to the WESP/RTO on Dryer Line 2 (ID# AA-010). For purposes of potential emissions, emissions from the Green Hammermills are shown under Dryer Line 1 (ID# AA-007) only to avoid double-counting emissions. As shown in Appendix C, Tables 10a, 11a, and 12a, potential emissions of PM, PM less than 10

[12] National Council for Air and Stream Improvement, Inc. (NCASI). 2013. Compilation of criteria air pollutant emissions data for sources at pulp and paper mills including boilers – an update to Technical Bulletin No. 884. Technical Bulletin No. 1020. Research Triangle Park, NC: National Council for Air and Stream Improvement, Inc.

[13] U.S. EPA *Control of Open Fugitive Dust Sources*, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.

[14] U. S. EPA AP-42 Section 13.2.2, *Unpaved Roads* (11/06).

microns in diameter (PM_{10}), PM less than 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO) and oxides of nitrogen (NO_x), including NO_x and CO emissions generated during thermal oxidation, are based on vendor data, stack testing data from comparable Enviva facilities, and AP-42 factors where no other data were available. Potential emissions of sulfur dioxide (SO_2) were calculated based on an emission factor from AP-42 Section 10.6.2, *Particle Board Manufacturing*.[15] VOC emissions are based on data provided by the RTO vendor and stack testing conducted at Enviva facilities.

HAP emissions were calculated based on emission factors from several data sources including stack testing data from other similar facilities and emission factors from AP-42 Section 1.6, *Wood Residue Combustion in Boilers*.[16] HAP emissions from natural gas and propane combustion by the RTO burners were calculated based on AP-42 Section 1.4, *Natural Gas Combustion* and emission factors from the South Coast Air Quality Management District's (SCAQMD) Air Emissions Reporting (AER) Tool, respectively.[17,18]

Combustion of wood by the dryer furnaces and natural gas/propane by the RTO burners will also result in emissions of GHG. GHG emissions were quantified based on emission factors from AP-42, Section 10.6.1 for a rotary dryer with an RTO control device. The potential CO_2 emissions were conservatively calculated using the higher hardwood emission factor because the dryers at the Lucedale plant will use a combination of hardwood and softwood.

As previously described, two (2) low-NOx burners will be used to heat the dryer system ducts to prevent condensation of wood tar from occurring and thus reduce the risk of fire. There will be six (6) total burners (i.e., two for each dryer line). The burners will combust natural gas, or propane as back-up, resulting in emissions of criteria pollutants, HAP, and GHG. Emissions from the burners will be routed to the WESP and RTO on each dryer line. For the purposes of determining potential annual emissions, the worst-case between natural gas and propane was selected on a pollutant-by-pollutant basis.

Potential criteria pollutant emissions from the burners were quantified based on emission factors from AP-42 Section 1.4, *Natural Gas Combustion* and AP-42 Section 1.5, *Liquefied Petroleum Gas Combustion*. [19,20] Potential SO_2 emissions from propane combustion assume a sulfur content of 0.54 grains per 100 cubic feet for propane.[21]

Potential HAP emissions from propane combustion by the burners were quantified based on emission factors from the SCAQMD's AER Tool for external combustion equipment fired with

[15] U.S. EPA AP-42 Section 10.6.2, *Particle Board Manufacturing* (6/02).

[16] U.S. EPA AP-42 Section 1.6, *Wood Residue Combustion in Boilers* (09/03).

[17] U.S. EPA AP-42 Section 1.4, *Natural Gas Combustion* (07/98).

[18] South Coast Air Quality Management District's (SCAQMD) Air Emissions Reporting (AER) Tool. Available online at: http://www3.aqmd.gov/webappl/help/newaer/index.html

[19] U.S. EPA AP-42 Section 1.4 *Natural Gas Combustion* (07/98).

[20] U.S. EPA AP-42 Section 1.5 *Liquefied Petroleum Gas Production* (7/08).

[21] *A National Methodology and Emission Inventory for Residential Fuel Combustion* (2001). Retrieved from https://www3.epa.gov/ttnchie1/conference/ei12/area/haneke.pdf.

LPG.[22] Potential HAP emissions from natural gas combustion were quantified based on emission factors from AP-42 Section 1.4, *Natural Gas Combustion*.[23]

Potential GHG emissions from the burners were quantified based on emission factors from AP-42 Section 1.4, *Natural Gas Combustion* and AP-42 Section 1.5, *Liquefied Petroleum Gas Combustion*. [24,25] Emissions were converted to CO_2e based on Global Warming Potentials from Subpart A of 40 CFR 98. Potential emissions were quantified based on a rated capacity of 1 MMBtu/hr per burner and assume continuous operation (8,760 hours per year). A 95% control efficiency was applied to particulate and metal HAP which will be controlled by the WESPs and organic HAP which will be controlled by the RTO. Refer to Appendix C, Tables 10a, 11a, and 12a for detailed potential emission calculations.

The burners will be an insignificant activity per 11 Miss. Admin. Code Pt. 2, Ch. 6 R. 6.7.B(2).

3.7.2 Dryer Bypass (AA-008, AA-011, AA-014, Full Capacity)

Bypass stacks following each furnace (AA-009, AA-012, and AA-015, Furnace Bypass Stack Nos. 1, 2, and 3) and rotary drum dryer (AA-008, AA-011, and AA-014, Dryer Bypass Stack Nos. 1, 2, and 3) will be used to exhaust hot gases during start-up (for temperature control), shutdown, and malfunctions. Potential emissions associated with dryer bypass were calculated based on stack testing data from comparable Enviva facilities. Condensable PM and SO_2 emissions were calculated based on emission factors from AP-42 Section 1.6, *Wood Residue Combustion in Boilers*.[26] Filterable PM and HAP emissions were calculated based on stack testing data from a comparable Enviva plant. Emissions were based on the full capacity of the furnaces (168 MMBtu/hr) and 50 hours per year per dryer. Detailed potential emission calculations are included in Appendix C, Tables 10b, 11b, and 12b.

3.7.3 Furnace Bypass (AA-009, AA-012, AA-015, Full Capacity)

Potential emissions of CO, NO_x, SO_2, VOC and HAP for furnace bypass conditions were calculated based on emission factors from AP-42 Section 1.6, *Wood Residue Combustion in Boilers*.[27] Filterable PM emissions were calculated based on stack testing data from a comparable Enviva plant. Emissions were based on the full capacity of the furnaces (168 MMBtu/hr) and 50 hours per year per furnace. Detailed potential emission calculations are included in Appendix C, Tables 10c, 11c, and 12c.

3.7.4 Furnace Bypass (AA-009, AA-012, AA-015, Idle Mode)

Each furnace will operate up to 500 hours per year in "idle mode", which is defined as operation up to a maximum heat input rate of 5 MMBtu/hr. During this time, emissions will exhaust out of the furnace bypass stacks. Potential emissions of CO, NO_x, SO_2, VOC, and HAP were calculated based on emission factors from AP-42 Section 1.6, *Wood Residue*

[22] South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting.

[23] U.S. EPA AP-42 Section 1.4 *Natural Gas Combustion* (07/98).

[24] U.S. EPA AP-42 Section 1.4 *Natural Gas Combustion* (07/98).

[25] U.S. EPA AP-42 Section 1.5 *Liquefied Petroleum Gas Production* (7/08).

[26] U.S. EPA AP-42, Section 1.6, *Wood Residue Combustion in Boilers*, (09/03).

[27] Ibid.

Combustion in Boilers.[28] Detailed potential emission calculations are included in Appendix C, Tables 10d, 11d, and 12d.

3.8 Pelletizing Lines (AA-016 and AA-017)

As previously described, the Lucedale plant will include two (2) pelletizing lines, each consisting of twenty-four (24) Dry Hammermills, twelve (12) Pellet Mills, and six (6) Pellet Coolers. Aspiration systems will be used to remove heated moist air from the Dry Hammermills, Pellet Mills, and Coolers. The aspiration systems will also keep the dried wood and Dry Hammermill outfeed conveyors and the Pellet Mill Feed Silo under negative pressure. These aspiration systems will be routed to material handling cyclones and then wet scrubbers and RCOs for emissions control.

The Dry Hammermill, Pellet Mill, and Pellet Cooler operations will generate PM, HAP, and VOC emissions during the sizing of wood chips and forming and cooling of wood pellets. VOC, HAP, and PM emissions from Pelletizing Lines 1 and 2 will be controlled by two (2) wet scrubbers and RCOs (ID# AA-016 and AA-017). PM and VOC emissions from the RCO outlets were calculated based on vendor data.

HAP emissions at the RCO outlets were quantified based on stack testing data from comparable Enviva plants. Controlled emissions were estimated based on a 96.3% control efficiency for the RCOs based on vendor data. NO_x and CO emissions resulting from thermal oxidation were calculated using AP-42 Section 1.4, *Natural Gas Combustion*, and the maximum high heating value of the anticipated VOC constituents.[29] Detailed calculations are provided in Appendix C, Tables 13 and 14.

Emissions of criteria pollutants and HAP from natural gas/propane combustion by the RCO burners were estimated using emission factors from AP-42 Section 1.4 and the SCAQMD's AER Tool.[30] Potential GHG emissions from natural gas/propane combustion were quantified based on emission factors from Subpart C of 40 CFR Part 98. Emissions were converted to carbon dioxide equivalent (CO_2e) based on Global Warming Potentials from Subpart A of 40 CFR 98.

3.9 Pellet Loadout Bins and Finished Product Handling (AA-018)

PM emissions will result from the transfer of finished product to the Pellet Loadout Bins. No emissions are anticipated from the transfer of pellets from the bins to railcars because wood pellets will be loaded into closed top railcars. PM emissions from Finished Product Handling and the two (2) Pellet Loadout Bins will be controlled by a baghouse (ID# AA-018). Potential PM emissions from the baghouse were calculated based on a maximum exit grain loading rate and the maximum exhaust flow rate of the baghouse. Detailed potential emissions calculations are provided in Appendix C, Table 15.

3.10 Additive Handling and Storage (AA-019)

A dry powder additive will be used in the pellet production process to serve as a lubricant for the dies. Additive will be pneumatically conveyed from trucks to a storage silo equipped with a baghouse. PM emissions from the baghouse were calculated based on an assumed exit

[28] Ibid.

[29] U.S. EPA AP-42 Section 1.4, *Natural Gas Combustion* (07/98).

[30] South Coast Air Quality Management District's (SCAQMD) Air Emissions Reporting (AER) Tool. Available online at: http://www3.aqmd.gov/webappl/help/newaer/index.html

grain loading rate and the maximum exhaust flow rate of the baghouse. Detailed potential emissions calculations are provided in Appendix C, Table 15.

3.11 Dry Shavings Silo (AA-020) and Dry Shavings Handling (AA-021)

Particulate emissions will occur during unloading of dry shavings from trucks and may also occur due to displacement of air during silo loading. Potential emissions from truck unloading (ID# AA-021) were calculated based on AP-42, Section 13.2.4, *Aggregate Handling and Storage Piles*.[31] Dry shavings will be transferred via an enclosed bucket elevator into the Dry Shavings Silo which will be equipped with a baghouse (ID# AA-020). PM emissions from the baghouse were calculated based on an assumed exit grain loading rate and the maximum exhaust flow rate of the baghouse. Detailed potential emission calculations are provided in Appendix C, Tables 7 and 15.

3.12 Emergency Generator (AA-022) and Fire Water Pump Engine (AA-023)

Operation of the Emergency Generator and Fire Water Pump will generate emissions of criteria pollutants, HAP, and GHG. Potential PM, NO_X, VOC, and CO emissions from operation of the Emergency Generator and Fire Water Pump Engine were calculated based on emission factors from their respective manufacturer specification sheets and the maximum horsepower rating of the engines. VOC emissions were calculated based on the manufacturer's emission factor for hydrocarbons. Potential SO_2 emissions were calculated based on the fuel sulfur restriction in NSPS Subpart IIII, assuming that all the sulfur present in the diesel fuel is emitted as SO_2.[32] Potential HAP emissions from the Emergency Generator and Fire Water Pump were quantified based on emission factors from AP-42 Sections 3.4, *Large Stationary Diesel and All Stationary Dual-fuel Engines* and 3.3, *Gasoline and Diesel Industrial Engines*, respectively.[33,34] Annual potential emissions were conservatively calculated based on operation of these sources for 500 hours per year.

Combustion of diesel fuel by the engines will also result in emissions of GHG. Potential GHG emissions from each engine were quantified based on emission factors from Subpart C of 40 CFR Part 98. Emissions were converted to CO_2e based on Global Warming Potentials from Subpart A of 40 CFR 98. Refer to Appendix C, Tables 16 and 17 for detailed potential emission calculations.

3.13 Diesel Storage Tanks (IA)

The storage of diesel in on-site storage tanks will generate emissions of VOC. VOC emissions from the three (3) Diesel Storage Tanks were calculated using EPA's TANKS 4.0 software based on actual tank characteristics (e.g., orientation, dimensions, etc.) and potential annual throughput. The storage tanks will exclusively store diesel fuel and are thus considered insignificant activities per 11 Miss. Admin. Code Pt. 2 Ch. 6 R. 6.7.B(7). Refer to Appendix C, Table 19 for detailed potential emission calculations.

3.14 Paved Roads (AA-024)

Fugitive PM emissions will occur as a result of trucks and employee vehicles traveling on paved roads on the Lucedale plant property. Emission factors were calculated based on

[31] U.S. EPA AP-42 Section 13.2.4, *Aggregate Handling and Storage Piles* (11/06).

[32] Sulfur content in accordance with Year 2010 standards of 40 CFR 80.510(b) as required by NSPS Subpart IIII.

[33] U.S. EPA AP-42 Section 3.4, *Large Stationary Diesel and All Stationary Dual-fuel Engines*, (10/96).

[34] U.S. EPA AP-42 Section 3.3, *Gasoline and Diesel Industrial Engines*, (10/96).

Equation 2 from AP-42 Section 13.2.1, *Paved Roads*[35] using the mean silt loading for quarries (8.2 g/m^2) and 110 days with rainfall greater than 0.01 inch based on Figure 13.2.1-2. A 90% control efficiency was applied for water/dust suppression activities followed by sweeping. This control efficiency is based on data from the *Air Pollution Engineering Manual* of the Air and Waste Management Association. Refer to Appendix C, Table 18 for detailed potential emissions calculations.

3.15 Propane Vaporizer (IA)

The direct-fired Propane Vaporizer will be used to heat liquid propane to convert it to a gas for combustion by the RTO burners, RCO burners, and dryer system double duct burners. Combustion of propane by the vaporizer's 1 MMBtu/hr burner will result in emissions of criteria pollutants, HAP, and GHG. Potential criteria pollutant emissions were quantified based on emission factors from AP-42 Section 1.5, *Liquefied Petroleum Gas Combustion*.[36] Potential SO_2 emissions assume a sulfur content of 0.54 grains per 100 cubic feet for propane.[37] Potential HAP emissions were quantified based on emission factors from the SCAQMD's AER Tool for external combustion equipment fired with LPG.[38]

Potential GHG emissions were quantified based on emission factors from AP-42 Section 1.5, *Liquefied Petroleum Gas Combustion*.[39] Emissions were converted to CO_2e based on Global Warming Potentials from Subpart A of 40 CFR 98. Potential emissions from the Propane Vaporizer were quantified based on a rated capacity of 1 MMBtu/hr and assume continuous operation (8,760 hours per year). Refer to Appendix C, Table 20 for detailed potential emission calculations.

The Propane Vaporizer will be an insignificant activity per 11 Miss. Admin. Code Pt. 2, Ch. 6 R. 6.7.B(2).

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[35] U.S. EPA AP-42 Section 13.2.1, *Paved Roads* (01/11).

[36] U.S. EPA AP-42 Section 1.5 *Liquefied Petroleum Gas Production* (7/08).

[37] *A National Methodology and Emission Inventory for Residential Fuel Combustion* (2001). Retrieved from https://www3.epa.gov/ttnchie1/conference/ei12/area/haneke.pdf.

[38] South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting.

[39] U.S. EPA AP-42 Section 1.5 *Liquefied Petroleum Gas Production* (7/08).

APPENDIX C
POTENTIAL EMISSIONS CALCULATIONS

Table 1
Calculation Inputs
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Operational Data	
Facility-wide	
Production (ODT/yr)	1,420,539
Moisture Content of Finished Pellets	5.5%
Softwood Composition	85%
Green Hammermills	
Short-Term Throughput (ODT/hr)	159
Annual Throughput (ODT/yr)	1,390,475
Hours of Operation (hr/yr)	8,760
Dryers (Per Dryer)	
Number of Dryers	3
Short-Term Throughput (ODT/hr)	42
Annual Throughput (ODT/yr)	367,920
Hourly Heat Input Capacity	168
Annual Heat Input Capacity	1,471,680
Hours of Operation (hr/yr)	8,760
Dry Hammermills	
Short-Term Throughput (ODT/hr)	162
Annual Throughput (ODT/yr)	1,420,539
Hours of Operation (hr/yr)	8,760
Pellet Mills/Coolers	
Short-Term Throughput (ODT/hr)	162
Annual Throughput (ODT/yr)	1,420,539
Hours of Operation (hr/yr)	8,760

Table 2
Summary of Facility-wide Potential Emissions
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Emission Point ID	Source Description	Control Device Description	CO (tpy)	NO_x (tpy)	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)	CO_2e (tpy)	Total HAP (tpy)
AA-001	Debarker	--	--	--	20.9	11.5	--	--	--	--	--
AA-002	Log Chipping	--	--	--	--	--	--	--	2.19	--	0.44
AA-003	Bark Hog	--	--	--	9.91	5.45	--	--	1.36	--	0.27
IA[1]	Bark Handling Operations	--	--	--	0.039	0.018	0.0028	--	--	--	--
IA[1]	Bark Storage Pile	--	--	--	1.81	0.91	0.14	--	0.82	--	--
AA-004	Green Wood Handling Operations	--	--	--	0.19	0.088	0.013	--	--	--	--
AA-005	Green Screen	--	--	--	2.64	2.64	2.64	--	--	--	--
AA-006	Green Wood Storage Pile	--	--	--	3.88	1.94	0.29	--	1.76	--	--
AA-007[2,3]	One (1) 168 MMBtu/hr Wood-fired Direct Heat Drying System; Three (3) Green Hammermills; Two (2) 1 MMBtu/hr Burners for Double Ducts	WESP-1; RTO-1	62.9	75.1	33.1	33.1	33.1	18.4	50.1	144,712	9.25
AA-008	Dryer 1 Bypass Stack	--	0.54	0.66	1.46	1.46	1.46	0.11	0.35	880	0.50
AA-009	Furnace 1 Bypass Stack	--	3.27	1.20	3.05	3.00	2.91	0.14	0.09	1,142	0.17
AA-010[2,3]	One (1) 168 MMBtu/hr Wood-fired Direct Heat Drying System; Two (2) 1 MMBtu/hr Burners for Double Ducts	WESP-2; RTO-2	62.9	75.1	33.1	33.1	33.1	18.4	38.3	144,712	6.21
AA-011	Dryer 2 Bypass Stack	--	0.54	0.66	1.46	1.46	1.46	0.11	0.35	880	0.50
AA-012	Furnace 2 Bypass Stack	--	3.27	1.20	3.05	3.00	2.91	0.14	0.09	1,142	0.17
AA-013[3]	One (1) 168 MMBtu/hr Wood-fired Direct Heat Drying System; Two (2) 1 MMBtu/hr Burners for Double Ducts	WESP-3; RTO-3	62.9	75.1	33.1	33.1	33.1	18.4	38.3	144,712	6.21
AA-014	Dryer 3 Bypass Stack	--	0.54	0.66	1.46	1.46	1.46	0.11	0.35	880	0.50
AA-015	Furnace 3 Bypass Stack	--	3.27	1.20	3.05	3.00	2.91	0.14	0.09	1,142	0.17
AA-016	Thirty-two (32) Dry Hammermills; Sixteen (16) Pellet Mills, Eight (8) Pellet Coolers	Wet Scrubber-1; RCO-1	4.93	6.04	9.67	9.67	9.67	0.025	34.3	6,334	7.56
AA-017	Sixteen (16) Dry Hammermills; Eight (8) Pellet Mills, Four (4) Pellet Coolers	Wet Scrubber-2; RCO-2	2.36	5.21	4.83	4.83	4.83	0.012	17.2	2,973	3.78
AA-018	Finished Product Handling Two (2) Pellet Loadout Bins	One (1) baghouse	--	--	0.45	0.41	0.0077	--	--	--	--
AA-019	Additive Handling and Storage	One (1) baghouse	--	--	0.15	0.15	0.15	--	--	--	--
AA-020	Dry Shavings Silo	One (1) baghouse	--	--	0.15	0.15	0.15	--	--	--	--
AA-021	Dry Shavings Handling	--	--	--	0.17	0.08	0.012	--	--	--	--
IA[4]	500 gallon Diesel Storage Tank	--	--	--	--	--	--	--	2.10E-04	--	--
IA[4]	185 gallon Diesel Storage Tank	--	--	--	--	--	--	--	1.85E-04	--	--
IA[4]	5,000 gallon Diesel Storage Tank	--	--	--	--	--	--	--	0.0038	--	--
AA-022	500 kW Diesel-fired Emergency Generator	--	0.14	2.46	0.0078	0.0078	0.0078	6.63E-04	1.68	179	0.0017
AA-023	131 hp Diesel-fired Fire Water Pump	--	0.070	0.18	0.0092	0.0092	0.0092	4.79E-04	0.0081	50.4	8.88E-04
AA-024	Paved Roads	--	--	--	8.81	1.76	0.43	--	--	--	--
IA[3]	Propane Vaporizer	--	0.36	0.62	0.034	0.034	0.034	0.0026	0.048	611	0.010
		Total Emissions:	**208**	**245**	**176**	**152**	**131**	**56.0**	**187**	**450,350**	**35.8**
		Total Excluding Fugitives[5]:	**208**	**245**	**159**	**145**	**127**	**56.0**	**185**	**450,350**	**35.8**
		PSD Major Source Threshold:	**250**	**250**	**250**	**250**	**250**	**250**	**250**	**--**	**--**

Notes:

[1] Bark storage and handling is considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 6 R. 6.7.B(13).
[2] The three (3) Green Hammermills will be controlled by the WESP and RTO on Dryer Line 1. If Dryer Line 1 is not operational, the Green Hammermill exhaust will be routed to the WESP/RTO on Dryer Line 2. For potential emissions purposes, emissions from the Green Hammermills are shown under Dryer Line 1 (AA-007) only to avoid double-counting emissions.
[3] The propane vaporizer and six (6) burners for the dryer line double duct systems are considered insignificant activities per 11 Miss. Admin. Code Pt. 2 Ch. 6 R. 6.7.B(2).
[4] Storage tanks used exclusively to store diesel are considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 1 R. 6.7.B(7).
[5] Fugitive emissions are not included in comparison against the major source threshold because the facility is not on the list of 28 source categories in 40 CFR 52.21.

Abbreviations:

CO - carbon monoxide
CO_2e - carbon dioxide equivalent
IA - Insignificant Activity
NO_x - nitrogen oxides
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
RCO - Regenerative Catalytic Oxidizer
RTO - Regenerative Thermal Oxidizer
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compounds
WESP - Wet Electrostatic Precipitator

Table 3
Summary of Facility-wide HAP Emissions
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Pollutant	Log Chipping AA-002 (tpy)	Bark Hog AA-003 (tpy)	RTO-1 AA-007[1] (tpy)	Dryer 1 Bypass AA-008 (tpy)	Furnace 1 Bypass AA-009 (tpy)	RTO-2 AA-010[1] (tpy)	Dryer 2 Bypass AA-011 (tpy)	Furnace 2 Bypass AA-012 (tpy)	RTO-3 AA-013[1] (tpy)	Dryer 3 Bypass AA-014 (tpy)	Furnace 3 Bypass AA-015 (tpy)	RCO-1 AA-016[2] (tpy)	RCO-2 AA-017[3] (tpy)	Emergency Generator AA-022 (tpy)	Fire Water Pump AA-023 (tpy)	Propane Vaporizer IA (tpy)	Total HAP (tpy)
Acetaldehyde	--	--	1.48	0.10	0.0045	0.90	0.10	0.0045	0.90	0.10	0.0045	0.31	0.15	2.75E-05	1.76E-04	--	4.06
Acetophenone	--	--	1.18E-07	1.34E-08	1.74E-08	1.18E-07	1.34E-08	1.74E-08	1.18E-07	1.34E-08	1.74E-08	--	--	--	--	--	4.46E-07
Acrolein	--	--	0.99	0.051	0.022	0.45	0.051	0.022	0.45	0.051	0.022	1.07	0.54	8.61E-06	2.12E-05	--	3.71
Antimony and compounds	--	--	2.91E-04	3.32E-05	4.31E-05	2.91E-04	3.32E-05	4.31E-05	2.91E-04	3.32E-05	4.31E-05	--	--	--	--	--	0.0011
Arsenic and compounds	--	--	8.23E-04	9.24E-05	1.20E-04	8.23E-04	9.24E-05	1.20E-04	8.23E-04	9.24E-05	1.20E-04	8.42E-06	3.95E-06	--	--	--	0.0031
Benzene	--	--	0.20	--	--	0.20	--	--	0.20	--	--	3.05E-03	1.43E-03	8.48E-04	2.14E-04	0.0031	0.66
Benzo(a)pyrene	--	--	9.57E-05	1.09E-05	1.42E-05	9.57E-05	1.09E-05	1.42E-05	9.57E-05	1.09E-05	1.42E-05	5.05E-08	2.37E-08	2.81E-07	4.31E-08	--	3.63E-04
Beryllium metal	--	--	4.13E-05	4.62E-06	6.00E-06	4.13E-05	4.62E-06	6.00E-06	4.13E-05	4.62E-06	6.00E-06	5.05E-07	2.37E-07	--	--	--	1.56E-04
Butadiene, 1,3-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8.96E-06	--	8.96E-06
Cadmium Metal	--	--	2.27E-04	1.72E-05	2.23E-05	2.27E-04	1.72E-05	2.23E-05	2.27E-04	1.72E-05	2.23E-05	4.63E-05	2.17E-05	--	--	--	8.67E-04
Carbon tetrachloride	--	--	0.0017	1.89E-04	2.45E-04	0.0017	1.89E-04	2.45E-04	0.0017	1.89E-04	2.45E-04	--	--	--	--	--	0.0063
Chlorine	--	--	0.58	0.0033	0.0043	0.58	0.0033	0.0043	0.58	0.0033	0.0043	--	--	--	--	--	1.77
Chlorobenzene	--	--	0.0012	1.39E-04	1.80E-04	0.0012	1.39E-04	1.80E-04	0.0012	1.39E-04	1.80E-04	--	--	--	--	--	0.0046
Chloroform	--	--	0.0010	--	--	0.0010	--	--	0.0010	--	--	--	--	--	--	--	0.0031
Chromium VI	--	--	9.68E-05	--	--	9.68E-05	--	--	9.68E-05	--	--	5.88E-05	2.77E-05	--	--	--	3.77E-04
Chromium--Other compounds	--	--	6.44E-04	7.35E-05	9.98E-05	6.44E-04	7.35E-05	9.98E-05	6.44E-04	7.35E-05	9.98E-05	--	--	--	--	--	0.0025
Cobalt compounds	--	--	2.45E-04	2.73E-05	3.54E-05	2.45E-04	2.73E-05	3.54E-05	2.45E-04	2.73E-05	3.54E-05	3.53E-06	1.66E-06	--	--	--	9.28E-04
Dichlorobenzene	--	--	8.30E-05	--	--	8.30E-05	--	--	8.30E-05	--	--	5.05E-05	2.37E-05	--	--	--	3.23E-04
Dichloroethane, 1,2-	--	--	0.0011	1.22E-04	1.58E-04	0.0011	1.22E-04	1.58E-04	0.0011	1.22E-04	1.58E-04	--	--	--	--	--	0.0040
Dichloropropane, 1,2-	--	--	0.0012	1.39E-04	1.80E-04	0.0012	1.39E-04	1.80E-04	0.0012	1.39E-04	1.80E-04	--	--	--	--	--	0.0046
Dinitrophenol, 2,4-	--	--	6.62E-06	7.56E-07	9.81E-07	6.62E-06	7.56E-07	9.81E-07	6.62E-06	7.56E-07	9.81E-07	--	--	--	--	--	2.51E-05
Di(2-ethylhexyl)phthalate	--	--	1.73E-06	1.97E-07	2.56E-07	1.73E-06	1.97E-07	2.56E-07	1.73E-06	1.97E-07	2.56E-07	--	--	--	--	--	6.55E-06
Ethyl benzene	--	--	0.0011	1.30E-04	1.69E-04	0.0011	1.30E-04	1.69E-04	0.0011	1.30E-04	1.69E-04	--	--	--	--	--	0.0043
Formaldehyde	--	--	0.71	0.060	0.024	0.83	0.060	0.024	0.83	0.060	0.024	0.75	0.37	8.62E-05	2.71E-04	0.0066	3.35
Hexane	--	--	0.12	--	--	0.12	--	--	0.12	--	--	0.078	0.038	--	--	--	0.48
Hydrochloric acid	--	--	1.40	0.080	0.10	1.40	0.080	0.10	1.40	0.080	0.10	--	--	--	--	--	4.74
Lead and lead compounds	--	--	0.0018	2.02E-04	2.62E-04	0.0018	2.02E-04	2.62E-04	0.0018	2.02E-04	2.62E-04	2.10E-05	9.88E-06	--	--	--	0.0068
Manganese and compounds	--	--	0.059	0.0067	0.0087	0.059	0.0067	0.0087	0.059	0.0067	0.0087	1.60E-05	7.51E-06	--	--	--	0.22
Mercury	--	--	1.47E-04	1.47E-05	1.91E-05	1.47E-04	1.47E-05	1.91E-05	1.47E-04	1.47E-05	1.91E-05	1.09E-05	5.14E-06	--	--	--	5.58E-04
Methanol	0.44	0.27	2.41	0.089	--	0.78	0.089	--	0.78	0.089	--	4.37	2.18	--	--	--	11.5
Methyl bromide	--	--	5.52E-04	6.30E-05	8.18E-05	5.52E-04	6.30E-05	8.18E-05	5.52E-04	6.30E-05	8.18E-05	--	--	--	--	--	0.0021
Methyl chloride	--	--	8.46E-04	9.66E-05	1.25E-04	8.46E-04	9.66E-05	1.25E-04	8.46E-04	9.66E-05	1.25E-04	--	--	--	--	--	0.0032
Methylene chloride	--	--	0.011	--	--	0.011	--	--	0.011	--	--	--	--	--	--	--	0.032
Naphthalene	--	--	0.0036	4.07E-04	5.29E-04	0.0036	4.07E-04	5.29E-04	0.0036	4.07E-04	5.29E-04	2.97E-05	1.20E-05	1.42E-04	1.95E-05	--	0.014
Nickel metal	--	--	0.0014	1.39E-04	1.80E-04	0.0014	1.39E-04	1.80E-04	0.0014	1.39E-04	1.80E-04	8.84E-05	4.15E-05	--	--	--	0.0052
Nitrophenol, 4-	--	--	4.05E-06	4.62E-07	6.00E-07	4.05E-06	4.62E-07	6.00E-07	4.05E-06	4.62E-07	6.00E-07	--	--	--	--	--	1.53E-05
Pentachlorophenol	--	--	3.75E-05	2.14E-07	2.78E-07	3.75E-05	2.14E-07	2.78E-07	3.75E-05	2.14E-07	2.78E-07	--	--	--	--	--	1.14E-04
Perchloroethylene	--	--	0.028	1.60E-04	2.07E-04	0.028	1.60E-04	2.07E-04	0.028	1.60E-04	2.07E-04	--	--	--	--	--	0.085
Phenol	--	--	0.87	0.081	2.78E-04	0.71	0.081	2.78E-04	0.71	0.081	2.78E-04	0.51	0.26	--	--	--	3.30
Phosphorus metal, yellow or white	--	--	9.93E-04	1.13E-04	1.47E-04	9.93E-04	1.13E-04	1.47E-04	9.93E-04	1.13E-04	1.47E-04	--	--	--	--	--	0.0038
Polychlorinated biphenyls	--	--	3.00E-07	3.42E-08	4.44E-08	3.00E-07	3.42E-08	4.44E-08	3.00E-07	3.42E-08	4.44E-08	--	--	--	--	--	1.14E-06
Propionaldehyde	--	--	0.30	0.029	3.32E-04	0.26	0.029	3.32E-04	0.26	0.029	3.32E-04	0.52	0.26	--	--	--	1.67
Selenium compounds	--	--	1.05E-04	1.18E-05	1.53E-05	1.05E-04	1.18E-05	1.53E-05	1.05E-04	1.18E-05	1.53E-05	1.01E-06	4.74E-07	--	--	--	3.97E-04
Styrene	--	--	0.070	--	--	0.070	--	--	0.070	--	--	--	--	--	--	--	0.21
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	--	--	3.16E-10	3.61E-11	4.69E-11	3.16E-10	3.61E-11	4.69E-11	3.16E-10	3.61E-11	4.69E-11	--	--	--	--	--	1.20E-09
Toluene	--	--	0.0013	--	--	0.0013	--	--	0.0011	--	--	1.43E-04	6.72E-05	3.07E-04	9.38E-05	--	0.0044
Total PAH (POM)	--	--	0.095	5.25E-04	6.81E-04	0.095	5.25E-04	6.81E-04	0.095	5.25E-04	6.81E-04	1.72E-03	8.06E-04	2.32E-04	3.85E-05	1.75E-04	0.29
Trichloroethane, 1,1,1-	--	--	0.023	1.30E-04	1.69E-04	0.023	1.30E-04	1.69E-04	0.023	1.30E-04	1.69E-04	--	--	--	--	--	0.069
Trichloroethylene	--	--	0.0011	1.26E-04	1.64E-04	0.0011	1.26E-04	1.64E-04	0.0011	1.26E-04	1.64E-04	--	--	--	--	--	0.0042
Trichlorophenol, 2,4,6-	--	--	8.09E-07	9.24E-08	1.20E-07	8.09E-07	9.24E-08	1.20E-07	8.09E-07	9.24E-08	1.20E-07	--	--	--	--	--	3.07E-06
Vinyl chloride	--	--	6.62E-04	7.56E-05	9.81E-05	6.62E-04	7.56E-05	9.81E-05	6.62E-04	7.56E-05	9.81E-05	--	--	--	--	--	0.0025
Xylene	--	--	9.20E-04	--	--	9.20E-04	--	--	9.20E-04	--	--	--	--	2.11E-04	6.53E-05	--	0.0030
Total HAP Emissions[4] (tpy)	**0.44**	**0.27**	**9.37**	**0.50**	**0.17**	**6.33**	**0.50**	**0.17**	**6.33**	**0.50**	**0.17**	**7.64**	**3.82**	**0.0017**	**8.88E-04**	**0.010**	**36.2**
Maximum Individual HAP	**Methanol**	**Methanol**	**Methanol**	**Acetaldehyde**	**Hydrochloric acid**	**Hydrochloric acid**	**Acetaldehyde**	**Hydrochloric acid**	**Hydrochloric acid**	**Acetaldehyde**	**Hydrochloric acid**	**Methanol**	**Methanol**	**Benzene**	**Formaldehyde**	**Formaldehyde**	**Methanol**
Maximum Individual HAP Emissions (tpy)	**0.44**	**0.27**	**2.41**	**0.10**	**0.10**	**1.40**	**0.10**	**0.10**	**1.40**	**0.10**	**0.10**	**4.37**	**2.18**	**8.48E-04**	**2.71E-04**	**0.0066**	**11.5**

Notes:
[1] Includes emissions at outlet of the RTO stack as well as emissions resulting from combustion of propane or natural gas by the RTO burners. Emissions from the Green Hammermills will be routed through the Dryer Line 1 WESP and RTO. If Dryer Line 1 is not operational, the Green Hammermill exhaust will be routed to the WESP/RTO on Dryer Line 3. For purposes of potential emissions, emissions from the Green Hammermills are shown under Dryer Line 1 only to avoid double-counting.
[2] Includes emissions at outlet of the RCO-1 (AA-016) stack as well as emissions resulting from combustion of propane or natural gas by the RCO-1 burners. RCO-1 will control emissions from thirty-two (32) dry hammermills, sixteen (16) pellet mills, and eight (8) pellet coolers.
[3] Includes emissions at outlet of the RCO-2 (AA-017) stack as well as emissions resulting from combustion of propane or natural gas by the RCO-2 burners. RCO-2 will control emissions from sixteen (16) dry hammermills, eight (8) pellet mills, and four (4) pellet coolers.
[4] Because benzo(a)pyrene and naphthalene emissions were presented individually and as components of total PAH emissions, the total HAP emissions presented here do not match the sum of all pollutant emissions to avoid double counting benzo(a)pyrene and naphthalene emissions.

Abbreviations:
HAP - hazardous air pollutant
IA - insignificant activity
RCO - regenerative catalytic oxidizer
RTO - regenerative thermal oxidizer
tpy - tons per year
WESP - wet electrostatic precipitator

Table 4
Potential Emissions from Debarking
AA-001
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput[1]	238 ton/hr
Annual Throughput[1]	2,085,714 ton/yr

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor[2] (lb/ton)	Potential Emissions	
		(lb/hr)	(tpy)
TSP	0.020	4.76	20.9
PM_{10}	0.011	2.62	11.5

Notes:

1. Debarker throughput provided by Kai Simonsen (Enviva) via email on June 25, 2018.
2. Particulate matter emission factors from the USEPA document titled *AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants.* Source Classification Code 3-07-008-01 (Log Debarking). All PM is assumed to be larger than 2.5 microns in diameter.

Abbreviations:

hr - hour
lb - pound
ODT - oven dried tons
tpy - tons per year
yr - year

Reference:

EPA. 1990. AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants. Source Classification Code 3-07-008-01 (Log Debarking).

Table 5
Log Chipping Potential Emissions
AA-002
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput[1]	200 ton/hr, wet
	100 ODT/hr
Annual Throughput	876,000 ODT/yr

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor[2]	Potential Emissions	
		(lb/hr)	(tpy)
VOC as propane	5.00E-03 lb/ODT	0.50	2.19
Methanol	1.00E-03 lb/ODT	0.10	0.44

Notes:

1. Chipper throughput provided by Kai Simonsen (Enviva) via email on June 25, 2018. The chipper is located inside of a building. As such, there are no quantifiable particulate emissions.
2. Emission factor obtained from available emissions factors for chippers in AP-42 Section 10.6.3, Medium Density Fiberboard, 08/02, Table 7 and Section 10.6.4, Hardboard and Fiberboard, 10/02, Table 9.

Abbreviations:

hr - hour
lb - pound
ODT - oven dried tons
THC - total hydrocarbon
tpy - tons per year
yr - year

References:

EPA. AP-42, Section 10.6.3 - Medium Density Fiberboard, (08/02).
EPA. AP-42, Section 10.6.4 - Hardboard and Fiberboard, (10/02).

Table 6
Bark Hog Potential Emissions
AA-003
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput[1]	113 ton/hr, wet
	62 ODT/hr
Annual Throughput	544,893 ODT/yr
	990,714 ton/yr, wet
Approx. Moisture Content[1]	45% of total weight

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor	Potential Emissions	
		(lb/hr)	(tpy)
VOC as propane[2,3]	5.00E-03 lb/ODT	0.31	1.36
Methanol[2]	1.00E-03 lb/ODT	0.062	0.27
TSP[3]	2.00E-02 lb/ton	2.26	9.91
PM_{10}[3]	1.10E-02 lb/ton	1.24	5.45

Notes:

1. Bark hog throughput and approximate moisture content provided by Kai Simonsen (Enviva) via email on June 25, 2018.
2. Emission factor obtained from available emissions factors for chippers in AP-42 Section 10.6.3, Medium Density Fiberboard, 08/02, Table 7 and Section 10.6.4, Hardboard and Fiberboard, 10/02, Table 9.
3. Particulate matter emission factors from the USEPA document titled *AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants. Source Classification Code 3-07-008-01 (Log Debarking)*. All PM is assumed to be larger than 2.5 microns.

Abbreviations:

hr - hour
lb - pound
ODT - oven dried tons
THC - total hydrocarbon
tpy - tons per year
yr - year

References:

EPA. AP-42, Section 10.6.3 - Medium Density Fiberboard, (08/02).
EPA. AP-42, Section 10.6.4 - Hardboard and Fiberboard, (10/02).
EPA. 1990. AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Air Pollutants. Source Classification Code 3-07-008-01 (Log Debarking).

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Table 7
Green Wood, Bark, and Dry Shavings Material Handling
AA-004, AA-021, and Bark Handling IA
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Emission Point ID	Source Description	Transfer Activity	Number of Drop Points	Material Moisture Content[1]	PM Emission Factor[2]	PM_{10} Emission Factor[2]	$PM_{2.5}$ Emission Factor[2]	Potential Throughput		Potential PM Emissions		Potential PM_{10} Emissions		Potential $PM_{2.5}$ Emissions	
				(%)	(lb/ton)	(lb/ton)	(lb/ton)	(tph)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
AA-004	Greenwood Handling Operations	Chips to Pile via Conveyor	1	50%	4.06E-05	1.92E-05	2.91E-06	620	5,431,200	0.025	0.11	0.012	0.052	0.0018	0.0079
		Chip Truck Dump to Hoppers	3	50%	4.06E-05	1.92E-05	2.91E-06	140	1,226,400	0.017	0.075	0.0081	0.035	0.0012	0.0054
Total Green Wood Handling Emissions:										**0.042**	**0.19**	**0.020**	**0.088**	**0.0030**	**0.013**
IA[3]	Bark Handling Operations	Bark Truck Dump to Hopper	1	45%	4.71E-05	2.23E-05	3.37E-06	75	657,000	0.0035	0.015	0.0017	0.0073	0.00025	0.0011
		Bark to Pile via Conveyor	1	45%	4.71E-05	2.23E-05	3.37E-06	113	990,714	0.0053	0.023	0.0025	0.011	0.00038	0.0017
Total Bark Handling Emissions:										**0.0089**	**0.039**	**0.0042**	**0.018**	**6.34E-04**	**0.0028**
AA-021	Dry Shavings Handling	Dry Shavings Truck Dump to Hopper	1	8%	5.29E-04	2.50E-04	3.79E-05	72	630,720	0.038	0.17	0.018	0.079	0.0027	0.012
Total Dry Shavings Handling Emissions:										**0.038**	**0.17**	**0.018**	**0.079**	**0.0027**	**0.012**

Notes:
[1] Moisture content provided by Enviva.
[2] Emission factor calculation based on formula from AP-42, Section 13.2.4 - Aggregate Handling and Storage Piles, Equation 13.2.1, (11/06)

where: E = emission factor (lb/ton)
k = particle size multiplier (dimensionless) for PM 0.74
k = particle size multiplier (dimensionless) for PM_{10} 0.35
k = particle size multiplier (dimensionless) for $PM_{2.5}$ 0.053
U = mean wind speed (mph) 7.02 Average wind speed from the Mobile/Bates Field NWS station (KMOB) for 2013-2017

[3] Bark storage and handling are considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 1 R. 6.7.B(13).

Abbreviations:
hr - hour
IA - Insignificant Activity
lb - pound
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
tpy - tons per year
yr - year

References:
EPA. AP-42, Section 13.2.4 - Aggregate Handling and Storage Piles, (11/06).

Table 8
Green Screen
AA-005
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	159 ODT/hr
Annual Throughput	1,390,475 ODT/yr

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor	Potential Emissions[1]	
		(lb/hr)	(tpy)
$PM/PM_{10}/PM_{2.5}$	0.0038 lb/ODT	0.60	2.64

Notes:

1. Emission factor from NCASI Technical Bulletin No. 1020 Table 9.1 for chip screening converted from units of bone dry tons (BDT) to ODT based on a moisture content of 50%.

Abbreviations:

hr - hour
lb - pound
ODT - oven dried tons
THC - total hydrocarbon
tpy - tons per year
yr - year

References:

National Council for Air and Stream Improvement, Inc. (NCASI). 2013. *Compilation of criteria air pollutant emissions data for sources at pulp and paper mills including boilers – an update to Technical Bulletin No. 884.* Technical Bulletin No. 1020. Research Triangle Park, NC: National Council for Air and Stream Improvement, Inc.

Table 9
Storage Pile Wind Erosion
AA-006 and Bark Storage IA
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Source	Description	PM Emission Factor[1]		VOC Emission Factor[2]		Pile Diameter	Pile Height	Exposed Surface Area of Pile[3]	Potential PM Emissions		Potential PM_{10} Emissions		Potential $PM_{2.5}$ Emissions		Potential VOC Emissions as propane[4]	
		(lb/day/acre)	(lb/hr/ft²)	(lb/day/acre)	(lb/hr/ft²)	(ft)	(ft)	(ft²)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
AA-006	Green Wood Storage Pile	9.70	9.3E-06	3.60	3.4E-06	334	72	95,412	0.88	3.88	0.44	1.94	0.066	0.29	0.40	1.76
IA[5]	Bark Storage Pile	9.70	9.3E-06	3.60	3.4E-06	228	50	44,583	0.41	1.81	0.21	0.91	0.031	0.14	0.19	0.82
								Total Emissions:	**1.30**	**5.69**	**0.65**	**2.84**	**0.097**	**0.43**	**0.59**	**2.58**

Notes:
[1] PM emission factor based on U.S. EPA Control of Open Fugitive Dust Sources. Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988, Page 4-17.

$$E = 1.7\left(\frac{s}{1.5}\right)\left(\frac{365-p}{235}\right)\left(\frac{f}{15}\right)(lb/day/acre)$$

where:			
	s, silt content of wood chips (%):	8.4	s - silt content (%) for lumber sawmills (mean) from AP-42, Section 13.2.2 - Unpaved Roads, 11/06, Table 13.2.2-1
	p, number of days with rainfall greater than 0.01 inch:	110	Based on AP-42, Section 13.2.2 - Unpaved Roads, 11/06, Figure 13.2.1-2.
	f (time that wind exceeds 5.36 m/s - 12 mph) (%):	14.1	Based on meteorological data for 2013-2017 from the Mobile/Bates Field NWS station (KMOB).
	PM_{10}/TSP ratio:	50%	PM_{10} is assumed to equal 50% of TSP based on U.S. EPA Control of Open Fugitive Dust Sources, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.
	$PM_{2.5}$/TSP ratio:	7.5%	$PM_{2.5}$ is assumed to equal 7.5 % of TSP U.S. EPA Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors. November 2006.

[2] VOC emission factor obtained from NCASI document provided by the South Carolina Department of Health and Environmental Control (DHEC) for the calculation of fugitive VOC emissions from Douglas Fir wood storage piles. Emission factors ranged from 1.6 to 3.6 lb C/acre-day. The maximum emission factor has conservatively been selected.

[3] The exposed surface area of the pile is conservatively calculated as the lateral surface area of a cone $[\pi \cdot r \cdot (h^2+r^2)^{0.5}]$.

[4] Emission factor converted from as carbon to as propane by multiplying by 1.22.

[5] Bark storage and handling are considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 1 R. 6.7.B(13).

Abbreviations:
EPA - Environmental Protection Agency
ft - feet
ft² - square feet
IA - Insignificant Activity
lb - pound
mph - miles per hour
NCASI - National Council for Air and Stream Improvement, Inc.
NWS - National Weather Service
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
tpy - tons per year
TSP - Total Suspended Particulate
yr - year
VOC - volatile organic compound

References:

AP-42, Section 13.2.2 - Unpaved Roads, 11/06.
U.S. EPA Control of Open Fugitive Dust Sources, Research Triangle Park, North Carolina, EPA-450/3-88-008. September 1988.
U.S. EPA Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors. November 2006.

Table 10a
Potential Emissions at Outlet of Dryer Line 1 RTO Stack
AA-007
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput (per Dyer line)	42 ODT/hr
Annual Throughput (per Dryer line)	367,920 ODT/yr
Hourly Heat Input Capacity (per furnace)	168 MMBtu/hr
Annual Heat Input Capacity (per furnace)	1,471,680 MMBtu/yr
Hourly Throughput (Total GHM)[1]	159 ODT/hr
Annual Throughput (Total GHM)[1]	1,390,475 ODT/yr
Hours of Operation	8,760 hr/yr
Number of RTO Burners (per RTO)	2 burners
RTO Burner Rating	8 MMBtu/hr
Dryer Double Duct System - Num. of Burners[2]	2 burners
Double Duct System Burner Rating[2]	1 MMBtu/hr
Propane Heating Value[3]	91.5 MMBtu/Mgal
Natural Gas Heating Value[4]	1,020 Btu/scf
Hourly Fuel Consumption (total)[5]	0.022 Mgal/hr propane
	0.0020 MMscf/hr natural gas
RTO Control Efficiency[6]	95%

Potential Criteria Pollutant and Greenhouse Gas Emissions - Dryer and Green Hammermills

Pollutant	Controlled Emission Factor	Units	Potential Emissions from Dryer and Green Hammermills[7] (lb/hr)	(tpy)
CO	14.2	lb/hr[8]	14.2	62.2
NO_x	17.0	lb/hr[9]	17.0	74.5
SO_2	0.025	lb/MMBtu[10]	4.20	18.4
VOC as Propane	11.4	lb/hr[8]	11.4	50.1
$PM/PM_{10}/PM_{2.5}$ (Filterable)	4.69	lb/hr[11]	4.69	20.5
$PM/PM_{10}/PM_{2.5}$ (Condensable)	0.017	lb/MMBtu[12]	2.86	12.5
$PM/PM_{10}/PM_{2.5}$ (Condensable - Nat. Gas)	0.00056	lb/MMBtu[13]	0.0089	0.039
CO_2	780	lb/ODT[14]	32,760	143,489

Notes:

1. Emissions from the Green Hammermills will be routed through the Dryer Line 1 WESP and RTO. If Dryer Line 1 is not operational, the Green Hammermill exhaust will be routed to the WESP/RTO on Dryer Line 2. For purposes of potential emissions, emissions from the Green Hammermills are shown under Dryer Line 1 (AA-007) only to avoid double-counting emissions.
2. Each dryer system will include two (2) ducts (i.e., double ducts) that will each be heated by a 1 MMBtu/hr burner. There will be a total of six (6) burners, two (2) per dryer line. The burners will fire natural gas, with propane as a back-up, and will be low-NO_x burners.
3. Propane heat content from AP-42 Section 1.5 - Liquefied Petroleum Gas Production, 7/08.
4. Natural gas heating value from AP-42 Section 1.4 - Natural Gas Combustion, 07/98.
5. Total hourly fuel consumption for both burners. The burners will fire natural gas, with propane as a back-up.
6. Control efficiency based on RTO vendor guarantee.
7. Exhaust from the dryers are routed to a WESP and then RTO for control of VOC, HAP, and particulates. Each of the three (3) dryer lines will have a dedicated WESP and RTO.
8. CO and VOC emission rates based on vendor data and stack testing at similar Enviva plants.
9. NO_x emission factor based on stack testing at similar Enviva plants.
10. No emission factor is provided in AP-42, Section 10.6.2 for SO_2 for rotary dryers. Enviva has conservatively calculated SO_2 emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
11. Filterable particulate emission rate based on RTO vendor data.
12. Condensable particulate emission factor for biomass combustion obtained from AP-42 Section 1.6.
13. Natural gas combustion by the RTO burners will also result in emissions of condensable PM. Emission factor obtained from AP-42, Section 1.4 - Natural Gas Combustion, 07/98.
14. Emission factor for CO_2 from AP-42, Section 10.6.1 for rotary dryer with RTO control device. Enviva has conservatively calculated the CO_2 emissions using the hardwood emission factor because the dryers at the Lucedale plant will use a combination of hardwood and softwood and the hardwood emission factor is greater than the softwood emission factor.

Table 10a
Potential Emissions at Outlet of Dryer Line 1 RTO Stack
AA-007
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential Criteria Pollutant and Greenhouse Gas Emissions - Dryer System Double Duct Burners[1]

Pollutant	Natural Gas Emission Factor[2,3]	Potential Emissions - Natural Gas Combustion		Propane Emission Factor[4,5,6]	Potential Emissions - Propane Combustion	
	(lb/MMscf)	(lb/hr)	(tpy)	(lb/Mgal)	(lb/hr)	(tpy)
CO	84.0	0.16	0.72	7.50	0.16	0.72
NO_X	50.0	0.10	0.43	6.50	0.14	0.62
SO_2	0.60	0.0012	0.0052	0.054	0.0012	0.0052
VOC	5.50	5.39E-04	0.0024	1.00	0.0011	0.0048
$PM/PM_{10}/PM_{2.5}$ Condensable	5.70	5.59E-04	0.0024	0.50	5.46E-04	0.0024
$PM/PM_{10}/PM_{2.5}$ Filterable	1.90	1.86E-04	8.16E-04	0.20	2.19E-04	0.0010
Total $PM/PM_{10}/PM_{2.5}$	--	7.45E-04	0.0033	--	7.65E-04	0.0034
CO_2	120,000	235	1,031	12,500	273	1,197
CH_4	2.30	0.0045	0.020	0.20	0.0044	0.019
N_2O[2]	0.64	0.0013	0.0055	0.90	0.020	0.0862
CO_2e	--	236	1,033	--	279	1,223

Notes:

1 Two (2) low-NOx burners will be used to heat the dryer system ducts to prevent condensation of wood tar from occurring and thus reduce the fire risk. The burners will combust natural gas. Emissions from the burners will be routed to the WESP and RTO on each dryer line; therefore, a 95% control efficiency was applied to VOC and $PM/PM_{10}/PM_{2.5}$.

2 Emission factors for natural gas combustion from AP-42 Section 1.4 - Natural Gas Combustion, 07/98. Natural gas heating value of 1,020 Btu/scf assumed per AP-42.

3 Emission factors for NO_X and N_2O assume burners are low NO_X burners, per email from Kai Simonsen (Enviva) on August 8, 2018.

4 Emission factors for propane combustion obtained from AP-42 Section 1.5 - Liquefied Petroleum Gas Combustion, 07/08.

5 AP-42 Section 1.5 does not include an emission factor for low NO_X burners. Per AP-42 Section 1.4, low NO_X burners reduce NO_X emissions by accomplishing combustion in stages, reducing NO_X emissions 40 to 85% relative to uncontrolled emission levels. A conservative control efficiency of 50% was applied to the uncontrolled NO_X emission factor from AP-42 Section 1.5. This reduction is consistent with the magnitude of reduction between the uncontrolled and low NO_X emission factors in AP-42 Section 1.4.

6 SO_2 emissions are based on an assumed fuel sulfur content of 0.54 grains/100 ft^3 per *A National Methodology and Emission Inventory for Residential Fuel Combustion*.

Table 10a
Potential Emissions at Outlet of Dryer Line 1 RTO Stack
AA-007
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions

Pollutant	VOC	Emission Factor	Units	Footnote	Potential Emissions	
					(lb/hr)	(tpy)
Furnace - Biomass Combustion						
Acetaldehyde	Y	4.88E-03	lb/ODT	1	0.20	0.90
Acrolein	Y	2.43E-03	lb/ODT	1	0.10	0.45
Formaldehyde	Y	2.84E-03	lb/ODT	1	0.12	0.52
Methanol	Y	4.24E-03	lb/ODT	1	0.18	0.78
Phenol	Y	3.84E-03	lb/ODT	1	0.16	0.71
Propionaldehyde	Y	1.39E-03	lb/ODT	1	0.058	0.26
Acetophenone	Y	3.20E-09	lb/MMBtu	1	2.69E-08	1.18E-07
Antimony and compounds	N	7.90E-06	lb/MMBtu	2,4	6.64E-05	2.91E-04
Arsenic and compounds	N	2.20E-05	lb/MMBtu	2,4	1.85E-04	8.09E-04
Benzene	Y	4.20E-03	lb/MMBtu	2,3	0.035	0.15
Benzo(a)pyrene	Y	2.60E-06	lb/MMBtu	2,3	2.18E-05	9.57E-05
Beryllium metal	N	1.10E-06	lb/MMBtu	2,4	9.24E-06	4.05E-05
Cadmium metal	N	4.10E-06	lb/MMBtu	2,4	3.44E-05	1.51E-04
Carbon tetrachloride	Y	4.50E-05	lb/MMBtu	2,3	3.78E-04	1.66E-03
Chlorine	N	7.90E-04	lb/MMBtu	2	0.13	0.58
Chlorobenzene	Y	3.30E-05	lb/MMBtu	2,3	2.77E-04	1.21E-03
Chloroform	Y	2.80E-05	lb/MMBtu	2,3	2.35E-04	1.03E-03
Chromium-Other compounds	N	1.75E-05	lb/MMBtu	2,4	1.47E-04	6.44E-04
Cobalt compounds	N	6.50E-06	lb/MMBtu	2,4	5.46E-05	2.39E-04
Dichloroethane, 1,2-	Y	2.90E-05	lb/MMBtu	2,3	2.44E-04	1.07E-03
Dichloropropane, 1,2-	Y	3.30E-05	lb/MMBtu	2,3	2.77E-04	1.21E-03
Dinitrophenol, 2,4-	Y	1.80E-07	lb/MMBtu	2,3	1.51E-06	6.62E-06
Di(2-ethylhexyl)phthalate	Y	4.70E-08	lb/MMBtu	2,3	3.95E-07	1.73E-06
Ethyl benzene	Y	3.10E-05	lb/MMBtu	2,3	2.60E-04	1.14E-03
Hydrochloric acid	N	1.90E-02	lb/MMBtu	2,5	0.32	1.40
Lead and lead compounds	N	4.80E-05	lb/MMBtu	2,4	4.03E-04	0.0018
Manganese and compounds	N	1.60E-03	lb/MMBtu	2,4	0.013	0.059
Mercury	N	3.50E-06	lb/MMBtu	2,4	2.94E-05	1.29E-04
Methyl bromide	Y	1.50E-05	lb/MMBtu	2,3	1.26E-04	5.52E-04
Methyl chloride	Y	2.30E-05	lb/MMBtu	2,3	1.93E-04	8.46E-04
Methylene chloride	Y	2.90E-04	lb/MMBtu	2,3	0.0024	0.011
Naphthalene	Y	9.70E-05	lb/MMBtu	2,3	8.15E-04	0.0036
Nickel metal	N	3.30E-05	lb/MMBtu	2,4	2.77E-04	0.0012
Nitrophenol, 4-	Y	1.10E-07	lb/MMBtu	2,3	9.24E-07	4.05E-06
Pentachlorophenol	N	5.10E-08	lb/MMBtu	2	8.57E-06	3.75E-05
Perchloroethylene	N	3.80E-05	lb/MMBtu	2	0.0064	0.028
Phosphorus metal, yellow or white	N	2.70E-05	lb/MMBtu	2,4	2.27E-04	9.93E-04
Polychlorinated biphenyls	Y	8.15E-09	lb/MMBtu	2,3	6.85E-08	3.00E-07
Polycyclic Organic Matter	N	1.25E-04	lb/MMBtu	2	0.021	0.092
Selenium compounds	N	2.80E-06	lb/MMBtu	2,4	2.35E-05	1.03E-04
Styrene	Y	1.90E-03	lb/MMBtu	2,3	0.016	0.070
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	Y	8.60E-12	lb/MMBtu	2,3	7.22E-11	3.16E-10
Toluene	Y	3.00E-05	lb/MMBtu	2,3	2.52E-04	0.0011
Trichloroethane, 1,1,1-	N	3.10E-05	lb/MMBtu	2	0.0052	0.023
Trichloroethylene	Y	3.00E-05	lb/MMBtu	2,3	2.52E-04	0.0011
Trichlorophenol, 2,4,6-	Y	2.20E-08	lb/MMBtu	2,3	1.85E-07	8.09E-07
Vinyl chloride	Y	1.80E-05	lb/MMBtu	2,3	1.51E-04	6.62E-04
Xylene	Y	2.50E-05	lb/MMBtu	2,3	2.10E-04	9.20E-04
		Total HAP Emissions (biomass combustion)			**1.38**	**6.05**

Table 10a
Potential Emissions at Outlet of Dryer Line 1 RTO Stack
AA-007
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Pollutant	VOC	Emission Factor[1]	Units	Potential Emissions	
				(lb/hr)	(tpy)
Green Hammermills[6]					
Acetaldehyde	Y	8.40E-04	lb/ODT	0.13	0.58
Acrolein	Y	7.80E-04	lb/ODT	0.12	0.54
Formaldehyde	Y	1.20E-04	lb/ODT	0.019	0.083
Methanol	Y	2.34E-03	lb/ODT	0.37	1.63
Phenol	Y	2.40E-04	lb/ODT	0.038	0.17
Propionaldehyde	Y	6.00E-05	lb/ODT	0.0095	0.042
Total HAP Emissions (Green Hammermills)				**0.70**	**3.05**

Potential HAP Emissions - RTO Burners and Dryer System Double Duct Burners

Pollutant	VOC	Emission Factor[7]	Units	RTO Burners Potential Emissions		Double Duct Burners Potential Emissions[3,4]	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
Natural Gas Combustion							
2-Methylnaphthalene	Y	2.40E-05	lb/MMscf	3.76E-07	1.65E-06	2.35E-09	1.03E-08
3-Methylchloranthrene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
7,12-Dimethylbenz(a)anthracene	Y	1.60E-05	lb/MMscf	2.51E-07	1.10E-06	1.57E-09	6.87E-09
Acenaphthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Acenaphthylene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Anthracene	Y	2.40E-06	lb/MMscf	3.76E-08	1.65E-07	2.35E-10	1.03E-09
Arsenic and compounds	N	2.00E-04	lb/MMscf	3.14E-06	1.37E-05	1.96E-08	8.59E-08
Benz(a)anthracene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Benzene	Y	2.10E-03	lb/MMscf	3.29E-05	1.44E-04	2.06E-07	9.02E-07
Benzo(a)pyrene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Benzo(b)fluoranthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Benzo(g,h,i)perylene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Benzo(k)fluoranthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Beryllium metal	N	1.20E-05	lb/MMscf	1.88E-07	8.24E-07	1.18E-09	5.15E-09
Cadmium metal	N	1.10E-03	lb/MMscf	1.73E-05	7.56E-05	1.08E-07	4.72E-07
Chromium VI	N	1.40E-03	lb/MMscf	2.20E-05	9.62E-05	1.37E-07	6.01E-07
Chrysene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Cobalt compounds	N	8.40E-05	lb/MMscf	1.32E-06	5.77E-06	8.24E-09	3.61E-08
Dibenzo(a,h)anthracene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Dichlorobenzene	Y	1.20E-03	lb/MMscf	1.88E-05	8.24E-05	1.18E-07	5.15E-07
Fluoranthene	Y	3.00E-06	lb/MMscf	4.71E-08	2.06E-07	2.94E-10	1.29E-09
Fluorene	Y	2.80E-06	lb/MMscf	4.39E-08	1.92E-07	2.75E-10	1.20E-09
Formaldehyde	Y	0.075	lb/MMscf	0.0012	0.0052	7.35E-06	3.22E-05
Hexane	Y	1.80	lb/MMscf	0.028	0.12	1.76E-04	7.73E-04
Indeno(1,2,3-cd)pyrene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Lead and lead compounds	N	5.00E-04	lb/MMscf	7.84E-06	3.44E-05	4.90E-08	2.15E-07
Manganese and compounds	N	3.80E-04	lb/MMscf	5.96E-06	2.61E-05	3.73E-08	1.63E-07
Mercury	N	2.60E-04	lb/MMscf	4.08E-06	1.79E-05	2.55E-08	1.12E-07
Naphthalene	Y	6.10E-04	lb/MMscf	9.57E-06	4.19E-05	5.98E-08	2.62E-07
Nickel metal	N	2.10E-03	lb/MMscf	3.29E-05	1.44E-04	2.06E-07	9.02E-07
Phenanthrene	Y	1.70E-05	lb/MMscf	2.67E-07	1.17E-06	1.67E-09	7.30E-09
Pyrene	Y	5.00E-06	lb/MMscf	7.84E-08	3.44E-07	4.90E-10	2.15E-09
Selenium compounds	N	2.40E-05	lb/MMscf	3.76E-07	1.65E-06	2.35E-09	1.03E-08
Toluene	Y	3.40E-03	lb/MMscf	5.33E-05	2.34E-04	3.33E-07	1.46E-06
Total HAP Emissions (Natural Gas Combustion)[8]				**0.030**	**0.13**	**1.85E-04**	**8.11E-04**

Table 10a
Potential Emissions at Outlet of Dryer Line 1 RTO Stack
AA-007
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - RTO Burners and Dryer System Double Duct Burners

Pollutant	VOC	Emission Factor[9]	Units	RTO Burners Potential Emissions		Double Duct Burners Potential Emissions[3,4]	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
Propane Combustion							
Benzene	Y	7.10E-04	lb/MMBtu	0.011	0.050	7.10E-05	3.11E-05
Formaldehyde	Y	1.51E-03	lb/MMBtu	0.024	0.11	1.51E-04	6.61E-05
PAHs	N	4.00E-05	lb/MMBtu	6.40E-04	0.0028	8.00E-05	7.01E-04
Total HAP Emissions (Propane Combustion)[9]				**0.036**	**0.16**	**3.02E-04**	**7.98E-04**

Notes:

1. Emission factor derived based on stack testing data from comparable Enviva facilities.
2. Emission factors for wood combustion in a stoker boiler from AP-42 Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
3. A control efficiency of 95% for the RTOs is applied to all organic HAP for those emission factors that are not derived from Enviva stack test data.
4. A 95% control efficiency for the wet electrostatic precipitator (WESP) is applied to all metal HAP.
5. The WESP will employ a caustic solution in its operation in which hydrochloric acid will have high water solubility. This caustic solution will neutralize the acid and effectively control it by 90%, per conversation on October 18, 2011 with Steven A. Jaasund, P.E. of Lundberg Associates, a manufacturer of WESPs.
6. Emissions from the Green Hammermills will be routed through the Dryer Line 1 WESP and RTO. If Dryer Line 1 is not operational, the Green Hammermill exhaust will be routed to the WESP/RTO on Dryer Line 2. For purposes of potential emissions, emissions from the Green Hammermills are shown under Dryer Line 1 (AA-007) only to avoid double-counting.
7. Emission factors for natural gas combustion from AP-42 Section 1.4 - Natural Gas Combustion, 07/98. Natural gas heating value of 1,020 Btu/scf assumed per AP-42.
8. The RTO burners and burners for the dryer system double ducts will fire natural gas with propane as a back-up; however, propane is worst-case for HAP emissions.
9. Emission factors for propane combustion from the South Coast Air Quality Management District's Air Emissions Reporting Tool for external combustion equipment fired with LPG.

Abbreviations:

CAS - chemical abstract service
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
GHM - Green Hammermill
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
RTO - regenerative thermal oxidizer
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
WESP - wet electrostatic precipitator
yr - year

References:

AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03
AP-42, Section 1.4 - Natural Gas Combustion, 07/98
South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting

Table 10b
Potential Emissions - Dryer 1 Bypass (Full Capacity)[1]
AA-008
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	168 MMBtu/hr
Annual Heat Input Capacity	8,400 MMBtu/yr
Hours of Operation[1]	50 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Dryer Bypass Full Capacity

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	21.4	lb/hr[2]	21.4	0.54
NO_X	26.3	lb/hr[2]	26.3	0.66
SO_2	0.025	lb/MMBtu[3]	4.20	0.11
VOC	14.0	lb/hr[2]	14.0	0.35
$PM/PM_{10}/PM_{2.5}$ Condensable	0.017	lb/MMBtu[4]	2.86	0.071
$PM/PM_{10}/PM_{2.5}$ Filterable	0.33	lb/MMBtu[5]	55.4	1.39
Total $PM/PM_{10}/PM_{2.5}$			58.3	1.46
CO_2	93.8	kg/MMBtu[6]	34,741	869
CH_4	0.0072	kg/MMBtu[6]	2.67	0.067
N_2O	0.0036	kg/MMBtu[6]	1.33	0.033
CO_2e			35,205	880

Notes:

1. During startup and shutdown (for temperature control) or malfunction, emissions will be vented out either the dryer bypass stacks or the furnace bypass stacks. Use of each bypass stack at full capacity will not exceed 50 hours per 12-month rolling period for each dryer line.
2. CO, NO_X, and VOC emission rates based on vendor data.
3. No emission factor is provided in AP-42, Section 10.6.2 for SO_2 for rotary dryers. Enviva has conservatively calculated SO_2 emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
4. Emission factor for condensable PM based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
5. Uncontrolled filterable PM emission factor is based on testing at a comparable Enviva facility.
6. Emission factors for biomass combustion (dryer) from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

Table 10b
Potential Emissions - Dryer 1 Bypass (Full Capacity)[1]
AA-008
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Dryer Bypass Full Capacity

Pollutant	Emission Factor	Units	Footnote	Potential Emissions[1] (lb/hr)	Potential Emissions[1] (tpy)
Acetaldehyde	0.10	lb/ODT	2	4.10	0.10
Acrolein	0.049	lb/ODT	2	2.04	0.051
Formaldehyde	0.057	lb/ODT	2	2.39	0.060
Methanol	0.085	lb/ODT	2	3.56	0.089
Phenol	0.077	lb/ODT	2	3.23	0.081
Propionaldehyde	0.028	lb/ODT	2	1.16	0.029
Acetophenone	3.20E-09	lb/MMBtu	3	5.38E-07	1.34E-08
Antimony and compounds	7.90E-06	lb/MMBtu	3	1.33E-03	3.32E-05
Arsenic and compounds	2.20E-05	lb/MMBtu	3	3.70E-03	9.24E-05
Benzo(a)pyrene	2.60E-06	lb/MMBtu	3	4.37E-04	1.09E-05
Beryllium metal	1.10E-06	lb/MMBtu	3	1.85E-04	4.62E-06
Cadmium metal	4.10E-06	lb/MMBtu	3	6.89E-04	1.72E-05
Carbon tetrachloride	4.50E-05	lb/MMBtu	3	7.56E-03	1.89E-04
Chlorine	7.90E-04	lb/MMBtu	3	0.13	0.0033
Chlorobenzene	3.30E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Chromium-Other compounds	1.75E-05	lb/MMBtu	3	2.94E-03	7.35E-05
Cobalt compounds	6.50E-06	lb/MMBtu	3	1.09E-03	2.73E-05
Dinitrophenol, 2,4-	1.80E-07	lb/MMBtu	3	3.02E-05	7.56E-07
Di(2-ethylhexyl)phthalate	4.70E-08	lb/MMBtu	3	7.90E-06	1.97E-07
Ethyl benzene	3.10E-05	lb/MMBtu	3	5.21E-03	1.30E-04
Dichloroethane, 1,2-	2.90E-05	lb/MMBtu	3	4.87E-03	1.22E-04
Hydrochloric acid	1.90E-02	lb/MMBtu	3	3.19	0.080
Lead and lead compounds	4.80E-05	lb/MMBtu	3	8.06E-03	2.02E-04
Manganese and compounds	1.60E-03	lb/MMBtu	3	0.27	0.0067
Mercury	3.50E-06	lb/MMBtu	3	5.88E-04	1.47E-05
Methyl bromide	1.50E-05	lb/MMBtu	3	2.52E-03	6.30E-05
Methyl chloride	2.30E-05	lb/MMBtu	3	3.86E-03	9.66E-05
Trichloroethane, 1,1,1-	3.10E-05	lb/MMBtu	3	5.21E-03	1.30E-04
Naphthalene	9.70E-05	lb/MMBtu	3	0.016	4.07E-04
Nickel metal	3.30E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Nitrophenol, 4-	1.10E-07	lb/MMBtu	3	1.85E-05	4.62E-07
Pentachlorophenol	5.10E-08	lb/MMBtu	3	8.57E-06	2.14E-07
Perchloroethylene	3.80E-05	lb/MMBtu	3	6.38E-03	1.60E-04
Phosphorus metal, yellow or white	2.70E-05	lb/MMBtu	3	4.54E-03	1.13E-04
Polychlorinated biphenyls	8.15E-09	lb/MMBtu	3	1.37E-06	3.42E-08
Total PAH (POM)	1.25E-04	lb/MMBtu	3	0.021	5.25E-04
Dichloropropane, 1,2-	3.30E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Selenium compounds	2.80E-06	lb/MMBtu	3	4.70E-04	1.18E-05
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.60E-12	lb/MMBtu	3	1.44E-09	3.61E-11
Trichloroethylene	3.00E-05	lb/MMBtu	3	5.04E-03	1.26E-04
Trichlorophenol, 2,4,6-	2.20E-08	lb/MMBtu	3	3.70E-06	9.24E-08
Vinyl chloride	1.80E-05	lb/MMBtu	3	3.02E-03	7.56E-05
			Total HAP Emissions	**20.2**	**0.50**

Notes:

1. During dryer bypass emissions are not controlled by the WESP and RTO; however, combustion in the furnace still results in a reduction in organic HAP emission rates.
2. Organic HAP emissions rates were derived based on stack testing data from Cottondale and other similar Enviva plants.
3. Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

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Table 10b
Potential Emissions - Dryer 1 Bypass (Full Capacity)[1]
AA-008
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Abbreviations:

CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
RTO - regenerative thermal oxidizer
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
WESP - wet electrostatic precipitator
yr - year

Reference:

AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

Table 10c
Potential Emissions - Furnace 1 Bypass (Full Capacity)[1]
AA-009
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	168 MMBtu/hr
Annual Heat Input Capacity	8,400 MMBtu/yr
Hours of Operation[1]	50 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Furnace Bypass Full Capacity

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.60	lb/MMBtu[2]	101	2.52
NO_X	0.22	lb/MMBtu[2]	37.0	0.92
SO_2	0.025	lb/MMBtu[2]	4.20	0.11
VOC	0.017	lb/MMBtu[2]	2.86	0.071
Total $PM/PM_{10}/PM_{2.5}$	0.56	lb/MMBtu[3]	94.1	2.35
CO_2	93.8	lb/MMBtu[4]	34,741	869
CH_4	0.0072	lb/MMBtu[4]	2.67	0.067
N_2O	0.0036	lb/MMBtu[4]	1.33	0.033
CO_2e			35,205	880

Notes:

1. During startup and shutdown (for temperature control) or malfunction, emissions will be vented out either the dryer bypass stacks or the furnace bypass stacks. Use of each bypass stack at full capacity will not exceed 50 hours per 12-month rolling period for each dryer line.
2. CO, NO_X, SO_2, and VOC emission rates based on AP-42, Chapter 1.6 - Wood Residue Combustion in Boilers, 09/03 for bark/bark and wet wood/wet wood-fired boilers. VOC emission factor excludes formaldehyde.
3. Emission factor based on vendor data.
4. Emission factors for biomass combustion from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

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Table 10c
Potential Emissions - Furnace 1 Bypass (Full Capacity)[1]
AA-009
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Furnace Bypass Full Capacity

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
Acetaldehyde	8.30E-04	lb/MMBtu	1.39E-01	3.49E-03
Acrolein	4.00E-03	lb/MMBtu	6.72E-01	1.68E-02
Formaldehyde	4.40E-03	lb/MMBtu	7.39E-01	1.85E-02
Phenol	5.10E-05	lb/MMBtu	8.57E-03	2.14E-04
Propionaldehyde	6.10E-05	lb/MMBtu	1.02E-02	2.56E-04
Acetophenone	3.20E-09	lb/MMBtu	5.38E-07	1.34E-08
Antimony and compounds	7.90E-06	lb/MMBtu	1.33E-03	3.32E-05
Arsenic and compounds	2.20E-05	lb/MMBtu	3.70E-03	9.24E-05
Benzo(a)pyrene	2.60E-06	lb/MMBtu	4.37E-04	1.09E-05
Beryllium metal	1.10E-06	lb/MMBtu	1.85E-04	4.62E-06
Cadmium metal	4.10E-06	lb/MMBtu	6.89E-04	1.72E-05
Carbon tetrachloride	4.50E-05	lb/MMBtu	7.56E-03	1.89E-04
Chlorine	7.90E-04	lb/MMBtu	1.33E-01	3.32E-03
Chlorobenzene	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Chromium-Other compounds	1.75E-05	lb/MMBtu	2.94E-03	7.35E-05
Cobalt compounds	6.50E-06	lb/MMBtu	1.09E-03	2.73E-05
Dinitrophenol, 2,4-	1.80E-07	lb/MMBtu	3.02E-05	7.56E-07
Di(2-ethylhexyl)phthalate	4.70E-08	lb/MMBtu	7.90E-06	1.97E-07
Ethyl benzene	3.10E-05	lb/MMBtu	5.21E-03	1.30E-04
Dichloroethane, 1,2-	2.90E-05	lb/MMBtu	4.87E-03	1.22E-04
Hydrochloric acid	1.90E-02	lb/MMBtu	3.19E+00	7.98E-02
Lead and lead compounds	4.80E-05	lb/MMBtu	8.06E-03	2.02E-04
Manganese and compounds	1.60E-03	lb/MMBtu	2.69E-01	6.72E-03
Mercury	3.50E-06	lb/MMBtu	5.88E-04	1.47E-05
Methyl bromide	1.50E-05	lb/MMBtu	2.52E-03	6.30E-05
Methyl chloride	2.30E-05	lb/MMBtu	3.86E-03	9.66E-05
Trichloroethane, 1,1,1-	3.10E-05	lb/MMBtu	5.21E-03	1.30E-04
Naphthalene	9.70E-05	lb/MMBtu	1.63E-02	4.07E-04
Nickel metal	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Nitrophenol, 4-	1.10E-07	lb/MMBtu	1.85E-05	4.62E-07
Pentachlorophenol	5.10E-08	lb/MMBtu	8.57E-06	2.14E-07
Perchloroethylene	3.80E-05	lb/MMBtu	6.38E-03	1.60E-04
Phosphorus metal, yellow or white	2.70E-05	lb/MMBtu	4.54E-03	1.13E-04
Polychlorinated biphenyls	8.15E-09	lb/MMBtu	1.37E-06	3.42E-08
Total PAH (POM)	1.25E-04	lb/MMBtu	2.10E-02	5.25E-04
Dichloropropane, 1,2-	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Selenium compounds	2.80E-06	lb/MMBtu	4.70E-04	1.18E-05
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.60E-12	lb/MMBtu	1.44E-09	3.61E-11
Trichloroethylene	3.00E-05	lb/MMBtu	5.04E-03	1.26E-04
Trichlorophenol, 2,4,6-	2.20E-08	lb/MMBtu	3.70E-06	9.24E-08
Vinyl chloride	1.80E-05	lb/MMBtu	3.02E-03	7.56E-05
Total HAP Emissions (Biomass Combustion)			**5.28**	**0.13**

Notes:
1. Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Abbreviations:
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
lb - pound
MMBtu - Million British thermal units
NO_x - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:
AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

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Table 10d
Potential Emissions - Furnace 1 Bypass (Idle Mode)[1]
AA-009
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	5 MMBtu/hr
Annual Heat Input Capacity	2,500 MMBtu/yr
Hours of Operation[1]	500 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Furnace Bypass "Idle Mode"

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.60	lb/MMBtu[2]	3.00	0.75
NO_x	0.22	lb/MMBtu[2]	1.10	0.28
SO_2	0.025	lb/MMBtu[2]	0.13	0.031
VOC	0.017	lb/MMBtu[2]	0.085	0.021
Total PM	0.56	lb/MMBtu[3]	2.80	0.70
Total PM_{10}	0.52	lb/MMBtu[2]	2.59	0.65
Total $PM_{2.5}$	0.45	lb/MMBtu[2]	2.24	0.56
CO_2	93.8	kg/MMBtu[4]	1,034	258
CH_4	0.0072	kg/MMBtu[4]	0.079	0.020
N_2O	0.0036	kg/MMBtu[4]	0.040	0.010
CO_2e			1,048	262

Notes:

1. Idle mode is defined as operation at up to a maximum heat input rate of 5 MMBtu/hr.
2. CO, NO_x, SO_2, PM_{10}, $PM_{2.5}$, and VOC emission rates based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03 for bark/bark and wet wood/wet wood-fired boilers. PM_{10} and $PM_{2.5}$ factors equal to the sum of the filterable and condensable factors from Table 1.6-1. VOC emission factor excludes formaldehyde.
3. Emission factor based on vendor data.
4. Emission factors for biomass combustion from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

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Table 10d
Potential Emissions - Furnace 1 Bypass (Idle Mode)[1]
AA-009
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Furnace Bypass "Idle Mode"

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
Acetaldehyde	8.30E-04	lb/MMBtu	4.15E-03	1.04E-03
Acrolein	4.00E-03	lb/MMBtu	2.00E-02	5.00E-03
Formaldehyde	4.40E-03	lb/MMBtu	2.20E-02	5.50E-03
Phenol	5.10E-05	lb/MMBtu	2.55E-04	6.38E-05
Propionaldehyde	6.10E-05	lb/MMBtu	3.05E-04	7.63E-05
Acetophenone	3.2E-09	lb/MMBtu	1.60E-08	4.00E-09
Antimony and compounds	7.9E-06	lb/MMBtu	3.95E-05	9.88E-06
Arsenic and compounds	2.2E-05	lb/MMBtu	1.10E-04	2.75E-05
Benzo(a)pyrene	2.6E-06	lb/MMBtu	1.30E-05	3.25E-06
Beryllium metal	1.1E-06	lb/MMBtu	5.50E-06	1.38E-06
Cadmium metal	4.1E-06	lb/MMBtu	2.05E-05	5.13E-06
Carbon tetrachloride	4.5E-05	lb/MMBtu	2.25E-04	5.63E-05
Chlorine	7.9E-04	lb/MMBtu	3.95E-03	9.88E-04
Chlorobenzene	3.3E-05	lb/MMBtu	1.65E-04	4.13E-05
Chromium-Other compounds	2.1E-05	lb/MMBtu	1.05E-04	2.63E-05
Cobalt compounds	6.5E-06	lb/MMBtu	3.25E-05	8.13E-06
Dinitrophenol, 2,4-	1.8E-07	lb/MMBtu	9.00E-07	2.25E-07
Di(2-ethylhexyl)phthalate	4.7E-08	lb/MMBtu	2.35E-07	5.88E-08
Ethyl benzene	3.1E-05	lb/MMBtu	1.55E-04	3.88E-05
Dichloroethane, 1,2-	2.9E-05	lb/MMBtu	1.45E-04	3.63E-05
Hydrochloric acid	1.9E-02	lb/MMBtu	9.50E-02	2.38E-02
Lead and lead compounds	4.8E-05	lb/MMBtu	2.40E-04	6.00E-05
Manganese and compounds	1.6E-03	lb/MMBtu	8.00E-03	2.00E-03
Mercury	3.5E-06	lb/MMBtu	1.75E-05	4.38E-06
Methyl bromide	1.5E-05	lb/MMBtu	7.50E-05	1.88E-05
Methyl chloride	2.3E-05	lb/MMBtu	1.15E-04	2.88E-05
Trichloroethane, 1,1,1-	3.1E-05	lb/MMBtu	1.55E-04	3.88E-05
Naphthalene	9.7E-05	lb/MMBtu	4.85E-04	1.21E-04
Nickel metal	3.3E-05	lb/MMBtu	1.65E-04	4.13E-05
Nitrophenol, 4-	1.1E-07	lb/MMBtu	5.50E-07	1.38E-07
Pentachlorophenol	5.1E-08	lb/MMBtu	2.55E-07	6.38E-08
Perchloroethylene	3.8E-05	lb/MMBtu	1.90E-04	4.75E-05
Phosphorus metal, yellow or white	2.7E-05	lb/MMBtu	1.35E-04	3.38E-05
Polychlorinated biphenyls	8.2E-09	lb/MMBtu	4.08E-08	1.02E-08
Total PAH (POM)	1.3E-04	lb/MMBtu	6.25E-04	1.56E-04
Dichloropropane, 1,2-	3.3E-05	lb/MMBtu	1.65E-04	4.13E-05
Selenium compounds	2.8E-06	lb/MMBtu	1.40E-05	3.50E-06
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.6E-12	lb/MMBtu	4.30E-11	1.08E-11
Trichloroethylene	3.0E-05	lb/MMBtu	1.50E-04	3.75E-05
Trichlorophenol, 2,4,6-	2.2E-08	lb/MMBtu	1.10E-07	2.75E-08
Vinyl chloride	1.8E-05	lb/MMBtu	9.00E-05	2.25E-05
Total HAP Emissions (Biomass Combustion)			**0.16**	**0.039**

Notes:
1 Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Abbreviations:
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:
AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

Table 11a
Potential Emissions at Outlet of Dryer Line 2 RTO Stack[1]
AA-010
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput (per line)	42	ODT/hr
Annual Throughput (per line)	367,920	ODT/yr
Hourly Heat Input Capacity (per furnace)	168	MMBtu/hr
Annual Heat Input Capacity (per furnace)	1,471,680	MMBtu/yr
Hours of Operation	8,760	hr/yr
Number of RTO Burners (per RTO)	2	burners
RTO Burner Rating	8	MMBtu/hr
Dryer Double Duct System - Num. of Burners[2]	2	burners
Double Duct System Burner Rating[2]	1	MMBtu/hr
Propane Heating Value[3]	91.5	MMBtu/Mgal
Natural Gas Heating Value[4]	1,020	Btu/scf
Hourly Fuel Consumption (total)[5]	0.022	Mgal/hr propane
	0.0020	MMscf/hr natural gas
RTO Control Efficiency[6]	95%	

Potential Criteria Pollutant and Greenhouse Gas Emissions

Pollutant	Controlled Emission Factor	Units	Potential Emissions from Dryer[7] (lb/hr)	(tpy)
CO	14.2	lb/hr[8]	14.2	62.2
NO_X	17.0	lb/hr[9]	17.0	74.5
SO_2	0.025	lb/MMBtu[10]	4.20	18.4
VOC as Propane	8.75	lb/hr[8]	8.75	38.3
$PM/PM_{10}/PM_{2.5}$ (Filterable)	4.69	lb/hr[11]	4.69	20.5
$PM/PM_{10}/PM_{2.5}$ (Condensable)	0.017	lb/MMBtu[12]	2.86	12.5
$PM/PM_{10}/PM_{2.5}$ (Condensable - Nat. Gas)	0.00056	lb/MMBtu[13]	0.0089	0.039
CO_2	780	lb/ODT[14]	32,760	143,489

Notes:

1 Emissions from the Green Hammermills will be routed through the Dryer Line 1 WESP and RTO. If Dryer Line 1 is not operational, the Green Hammermill exhaust will be routed to the WESP/RTO on Dryer Line 2. For purposes of potential emissions, emissions from the Green Hammermills are shown under Dryer Line 1 (AA-007) only to avoid double-counting emissions.
2 Each dryer system will include two (2) ducts (i.e., double ducts) that will each be heated by a 1 MMBtu/hr burner. There will be a total of six (6) burners, two (2) per dryer line. The burners will fire natural gas, with propane as a back-up, and will be low-NO_X burners.
3 Propane heat content from AP-42 Section 1.5 - Liquefied Petroleum Gas Production, 7/08.
4 Natural gas heating value from AP-42 Section 1.4 - Natural Gas Combustion, 07/98.
5 Total hourly fuel consumption for both burners. The burners will fire natural gas, with propane as a back-up.
6 Control efficiency based on RTO vendor guarantee.
7 Exhaust from the dryers are routed to a WESP and then RTO for control of VOC, HAP, and particulates. Each of the three (3) dryer lines will have a dedicated WESP and RTO. Emissions for Dryer Lines 1 and 3 are calculated separately.
8 CO and VOC emission rates based on vendor data.
9 NO_x emission factor based on stack testing at similar Enviva plants.
10 No emission factor is provided in AP-42, Section 10.6.2 for SO_2 for rotary dryers. Enviva has conservatively calculated SO_2 emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
11 Filterable particulate emission rate based on RTO vendor data.
12 Condensable particulate emission factor for biomass combustion obtained from AP-42 Section 1.6.
13 Natural gas combustion by the RTO burners will also result in emissions of condensable PM. Emission factor obtained from AP-42, Section 1.4 - Natural Gas Combustion, 07/98.
14 Emission factor for CO_2 from AP-42, Section 10.6.1 for rotary dryer with RTO control device. Enviva has conservatively calculated the CO_2 emissions using the hardwood emission factor because the dryers at the Lucedale plant will use a combination of hardwood and softwood and the hardwood emission factor is greater than the softwood emission factor.

Table 11a
Potential Emissions at Outlet of Dryer Line 2 RTO Stack[1]
AA-010
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential Criteria Pollutant and Greenhouse Gas Emissions - Dryer System Double Duct Burners[1]

Pollutant	Natural Gas Emission Factor[2,3] (lb/MMscf)	Potential Emissions - Natural Gas Combustion (lb/hr)	Potential Emissions - Natural Gas Combustion (tpy)	Propane Emission Factor[4,5,6] (lb/Mgal)	Potential Emissions - Propane Combustion (lb/hr)	Potential Emissions - Propane Combustion (tpy)
CO	84.0	0.16	0.72	7.50	0.16	0.72
NO_x	50.0	0.10	0.43	6.50	0.14	0.62
SO_2	0.60	0.0012	0.0052	0.054	0.0012	0.0052
VOC	5.50	5.39E-04	0.0024	1.00	0.0011	0.0048
$PM/PM_{10}/PM_{2.5}$ Condensable	5.70	5.59E-04	0.0024	0.50	5.46E-04	0.0024
$PM/PM_{10}/PM_{2.5}$ Filterable	1.90	1.86E-04	8.16E-04	0.20	2.19E-04	0.0010
Total $PM/PM_{10}/PM_{2.5}$	--	7.45E-04	0.0033	--	7.65E-04	0.0034
CO_2	120,000	235	1,031	12,500	273	1,197
CH_4	2.30	0.0045	0.020	0.20	0.0044	0.019
N_2O[2]	0.64	0.0013	0.0055	0.90	0.020	0.0862
CO_2e	--	236	1,033	--	279	1,223

Notes:

1. Two (2) low-NOx burners will be used to heat the dryer system ducts to prevent condensation of wood tar from occurring and thus reduce the fire risk. The burners will combust natural gas. Emissions from the burners will be routed to the WESP and RTO on each dryer line; therefore, a 95% control efficiency was applied to VOC and $PM/PM_{10}/PM_{2.5}$.
2. Emission factors for natural gas combustion from AP-42 Section 1.4 - Natural Gas Combustion, 07/98. Natural gas heating value of 1,020 Btu/scf assumed per AP-42.
3. Emission factors for NO_x and N_2O assume burners are low NO_x burners, per email from Kai Simonsen (Enviva) on August 8, 2018.
4. Emission factors for propane combustion obtained from AP-42 Section 1.5 - Liquefied Petroleum Gas Combustion, 07/08.
5. AP-42 Section 1.5 does not include an emission factor for low NO_x burners. Per AP-42 Section 1.4, low NO_x burners reduce NO_x emissions by accomplishing combustion in stages, reducing NO_x emissions 40 to 85% relative to uncontrolled emission levels. A conservative control efficiency of 50% was applied to the uncontrolled NO_x emission factor from AP-42 Section 1.5. This reduction is consistent with the magnitude of reduction between the uncontrolled and low NO_x emission factors in AP-42 Section 1.4.
6. SO_2 emissions are based on an assumed fuel sulfur content of 0.54 grains/100 ft^3 per *A National Methodology and Emission Inventory for Residential Fuel Combustion*.

Table 11a
Potential Emissions at Outlet of Dryer Line 2 RTO Stack[1]
AA-010
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions

Pollutant	VOC	Emission Factor	Units	Footnote	Potential Emissions (lb/hr)	Potential Emissions (tpy)
Furnace - Biomass Combustion						
Acetaldehyde	Y	4.88E-03	lb/ODT	1	0.20	0.90
Acrolein	Y	2.43E-03	lb/ODT	1	0.10	0.45
Formaldehyde	Y	2.84E-03	lb/ODT	1	0.12	0.52
Methanol	Y	4.24E-03	lb/ODT	1	0.18	0.78
Phenol	Y	3.84E-03	lb/ODT	1	0.16	0.71
Propionaldehyde	Y	1.39E-03	lb/ODT	1	0.058	0.26
Acetophenone	Y	3.20E-09	lb/MMBtu	1	2.69E-08	1.18E-07
Antimony and compounds	N	7.90E-06	lb/MMBtu	2,4	6.64E-05	2.91E-04
Arsenic and compounds	N	2.20E-05	lb/MMBtu	2,4	1.85E-04	8.09E-04
Benzene	Y	4.20E-03	lb/MMBtu	2,3	0.035	0.15
Benzo(a)pyrene	Y	2.60E-06	lb/MMBtu	2,3	2.18E-05	9.57E-05
Beryllium metal	N	1.10E-06	lb/MMBtu	2,4	9.24E-06	4.05E-05
Cadmium metal	N	4.10E-06	lb/MMBtu	2,4	3.44E-05	1.51E-04
Carbon tetrachloride	Y	4.50E-05	lb/MMBtu	2,3	3.78E-04	1.66E-03
Chlorine	N	7.90E-04	lb/MMBtu	2	0.13	0.58
Chlorobenzene	Y	3.30E-05	lb/MMBtu	2,3	2.77E-04	1.21E-03
Chloroform	Y	2.80E-05	lb/MMBtu	2,3	2.35E-04	1.03E-03
Chromium-Other compounds	N	1.75E-05	lb/MMBtu	2,4	1.47E-04	6.44E-04
Cobalt compounds	N	6.50E-06	lb/MMBtu	2,4	5.46E-05	2.39E-04
Dichloroethane, 1,2-	Y	2.90E-05	lb/MMBtu	2,3	2.44E-04	1.07E-03
Dichloropropane, 1,2-	Y	3.30E-05	lb/MMBtu	2,3	2.77E-04	1.21E-03
Dinitrophenol, 2,4-	Y	1.80E-07	lb/MMBtu	2,3	1.51E-06	6.62E-06
Di(2-ethylhexyl)phthalate	Y	4.70E-08	lb/MMBtu	2,3	3.95E-07	1.73E-06
Ethyl benzene	Y	3.10E-05	lb/MMBtu	2,3	2.60E-04	1.14E-03
Hydrochloric acid	N	1.90E-02	lb/MMBtu	2,5	0.32	1.40
Lead and lead compounds	N	4.80E-05	lb/MMBtu	2,4	4.03E-04	1.77E-03
Manganese and compounds	N	1.60E-03	lb/MMBtu	2,4	0.013	0.059
Mercury	N	3.50E-06	lb/MMBtu	2,4	2.94E-05	1.29E-04
Methyl bromide	Y	1.50E-05	lb/MMBtu	2,3	1.26E-04	5.52E-04
Methyl chloride	Y	2.30E-05	lb/MMBtu	2,3	1.93E-04	8.46E-04
Methylene chloride	Y	2.90E-04	lb/MMBtu	2,3	0.0024	0.011
Naphthalene	Y	9.70E-05	lb/MMBtu	2,3	8.15E-04	0.0036
Nickel metal	N	3.30E-05	lb/MMBtu	2,4	2.77E-04	1.21E-03
Nitrophenol, 4-	Y	1.10E-07	lb/MMBtu	2,3	9.24E-07	4.05E-06
Pentachlorophenol	N	5.10E-08	lb/MMBtu	2	8.57E-06	3.75E-05
Perchloroethylene	N	3.80E-05	lb/MMBtu	2	0.0064	0.028
Phosphorus metal, yellow or white	N	2.70E-05	lb/MMBtu	2,4	2.27E-04	9.93E-04
Polychlorinated biphenyls	Y	8.15E-09	lb/MMBtu	2,3	6.85E-08	3.00E-07
Polycyclic Organic Matter	N	1.25E-04	lb/MMBtu	2	0.021	0.092
Selenium compounds	N	2.80E-06	lb/MMBtu	2,4	2.35E-05	1.03E-04
Styrene	Y	1.90E-03	lb/MMBtu	2,3	0.016	0.070
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	Y	8.60E-12	lb/MMBtu	2,3	7.22E-11	3.16E-10
Toluene	Y	3.00E-05	lb/MMBtu	2,3	2.52E-04	1.10E-03
Trichloroethane, 1,1,1-	N	3.10E-05	lb/MMBtu	2	5.21E-03	2.28E-02
Trichloroethylene	Y	3.00E-05	lb/MMBtu	2,3	2.52E-04	1.10E-03
Trichlorophenol, 2,4,6-	Y	2.20E-08	lb/MMBtu	2,3	1.85E-07	8.09E-07
Vinyl chloride	Y	1.80E-05	lb/MMBtu	2,3	1.51E-04	6.62E-04
Xylene	Y	2.50E-05	lb/MMBtu	2,3	2.10E-04	9.20E-04
		Total HAP Emissions (biomass combustion)			**1.38**	**6.05**

Table 11a
Potential Emissions at Outlet of Dryer Line 2 RTO Stack[1]
AA-010
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions

Pollutant	VOC	Emission Factor[6]	Units	RTO Burners Potential Emissions		Double Duct Burners Potential Emissions[3,4]	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
RTO Burners and Dryer System Double Duct Burners - Natural Gas Combustion							
2-Methylnaphthalene	Y	2.40E-05	lb/MMscf	3.76E-07	1.65E-06	2.35E-09	1.03E-08
3-Methylchloranthrene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
7,12-Dimethylbenz(a)anthracene	Y	1.60E-05	lb/MMscf	2.51E-07	1.10E-06	1.57E-09	6.87E-09
Acenaphthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Acenaphthylene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Anthracene	Y	2.40E-06	lb/MMscf	3.76E-08	1.65E-07	2.35E-10	1.03E-09
Arsenic and compounds	N	2.00E-04	lb/MMscf	3.14E-06	1.37E-05	1.96E-08	8.59E-08
Benz(a)anthracene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Benzene	Y	2.10E-03	lb/MMscf	3.29E-05	1.44E-04	2.06E-07	9.02E-07
Benzo(a)pyrene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Benzo(b)fluoranthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Benzo(g,h,i)perylene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Benzo(k)fluoranthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Beryllium metal	N	1.20E-05	lb/MMscf	1.88E-07	8.24E-07	1.18E-09	5.15E-09
Cadmium metal	N	1.10E-03	lb/MMscf	1.73E-05	7.56E-05	1.08E-07	4.72E-07
Chromium VI	N	1.40E-03	lb/MMscf	2.20E-05	9.62E-05	1.37E-07	6.01E-07
Chrysene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Cobalt compounds	N	8.40E-05	lb/MMscf	1.32E-06	5.77E-06	8.24E-09	3.61E-08
Dibenzo(a,h)anthracene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Dichlorobenzene	Y	1.20E-03	lb/MMscf	1.88E-05	8.24E-05	1.18E-07	5.15E-07
Fluoranthene	Y	3.00E-06	lb/MMscf	4.71E-08	2.06E-07	2.94E-10	1.29E-09
Fluorene	Y	2.80E-06	lb/MMscf	4.39E-08	1.92E-07	2.75E-10	1.20E-09
Formaldehyde	Y	0.075	lb/MMscf	0.0012	0.0052	7.35E-06	3.22E-05
Hexane	Y	1.80	lb/MMscf	0.028	0.12	1.76E-04	7.73E-04
Indeno(1,2,3-cd)pyrene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Lead and lead compounds	N	5.00E-04	lb/MMscf	7.84E-06	3.44E-05	4.90E-08	2.15E-07
Manganese and compounds	N	3.80E-04	lb/MMscf	5.96E-06	2.61E-05	3.73E-08	1.63E-07
Mercury	N	2.60E-04	lb/MMscf	4.08E-06	1.79E-05	2.55E-08	1.12E-07
Naphthalene	Y	6.10E-04	lb/MMscf	9.57E-06	4.19E-05	5.98E-08	2.62E-07
Nickel metal	N	2.10E-03	lb/MMscf	3.29E-05	1.44E-04	2.06E-07	9.02E-07
Phenanthrene	Y	1.70E-05	lb/MMscf	2.67E-07	1.17E-06	1.67E-09	7.30E-09
Pyrene	Y	5.00E-06	lb/MMscf	7.84E-08	3.44E-07	4.90E-10	2.15E-09
Selenium compounds	N	2.40E-05	lb/MMscf	3.76E-07	1.65E-06	2.35E-09	1.03E-08
Toluene	Y	3.40E-03	lb/MMscf	5.33E-05	2.34E-04	3.33E-07	1.46E-06
Total HAP Emissions (Natural Gas Combustion)[7]				**0.030**	**0.13**	**1.85E-04**	**8.10E-04**

Table 11a
Potential Emissions at Outlet of Dryer Line 2 RTO Stack[1]
AA-010
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions

Pollutant	VOC	Emission Factor[8]	Units	RTO Burners Potential Emissions		Double Duct Burners Potential Emissions[3,4]	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
RTO Burners - Propane Combustion							
Benzene	Y	7.10E-04	lb/MMBtu	0.011	0.050	7.10E-05	3.11E-05
Formaldehyde	Y	1.51E-03	lb/MMBtu	0.024	0.11	1.51E-04	6.61E-05
PAHs	N	4.00E-05	lb/MMBtu	6.40E-04	0.0028	8.00E-05	7.01E-04
Total HAP Emissions (Propane Combustion)[7]				**0.036**	**0.16**	**3.02E-04**	**7.98E-04**

Notes:

1. Emission factor derived based on stack testing data from comparable Enviva facilities.
2. Emission factors for wood combustion in a stoker boiler from AP-42 Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
3. A control efficiency of 95% for the RTOs is applied to all organic HAP for those emission factors that are not derived from Enviva stack test data.
4. A 95% control efficiency for the wet electrostatic precipitator (WESP) is applied to all metal HAP.
5. The WESP will employ a caustic solution in its operation in which hydrochloric acid will have high water solubility. This caustic solution will neutralize the acid and effectively control it by 90%, per conversation on October 18, 2011 with Steven A. Jaasund, P.E. of Lundberg Associates, a manufacturer of WESPs.
6. Emission factors for natural gas combustion from AP-42 Section 1.4 - Natural Gas Combustion, 07/98. Natural gas heating value of 1,020 Btu/scf assumed per AP-42.
7. The RTO burners and burners for the dryer system double ducts will fire natural gas with propane as a back-up; however, propane is worst-case for HAP emissions.
8. Emission factors for propane combustion from the South Coast Air Quality Management District's Air Emissions Reporting Tool for external combustion equipment fired with LPG.

Abbreviations:

CAS - chemical abstract service
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
RTO - regenerative thermal oxidizer
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
WESP - wet electrostatic precipitator
yr - year

References:

AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03
AP-42, Section 1.4 - Natural Gas Combustion, 07/98
South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting

Table 11b
Potential Emissions - Dryer 2 Bypass (Full Capacity)[1]
AA-011
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	168 MMBtu/hr
Annual Heat Input Capacity	8,400 MMBtu/yr
Hours of Operation[1]	50 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Dryer Bypass Full Capacity

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	21.4	lb/hr[2]	21.4	0.54
NO_X	26.3	lb/hr[2]	26.3	0.66
SO_2	0.025	lb/MMBtu[3]	4.20	0.11
VOC	14.0	lb/hr[2]	14.0	0.35
$PM/PM_{10}/PM_{2.5}$ Condensable	0.017	lb/MMBtu[4]	2.86	0.071
$PM/PM_{10}/PM_{2.5}$ Filterable	0.33	lb/MMBtu[5]	55.4	1.39
Total $PM/PM_{10}/PM_{2.5}$			58.3	1.46
CO_2	93.8	kg/MMBtu[6]	34,741	869
CH_4	0.0072	kg/MMBtu[6]	2.67	0.067
N_2O	0.0036	kg/MMBtu[6]	1.33	0.033
CO_2e			35,205	880

Notes:

1. During startup and shutdown (for temperature control) or malfunction, emissions will be vented out either the dryer bypass stacks or the furnace bypass stacks. Use of each bypass stack at full capacity will not exceed 50 hours per 12-month rolling period for each dryer line.
2. CO, NOX, and VOC emission rates based on vendor data.
3. No emission factor is provided in AP-42, Section 10.6.2 for SO_2 for rotary dryers. Enviva has conservatively calculated SO_2 emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
4. Emission factor for condensable PM based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
5. Uncontrolled filterable PM emission factor is based on testing at a comparable Enviva facility.
6. Emission factors for biomass combustion (dryer) from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

RAMBOLL

Table 11b
Potential Emissions - Dryer 2 Bypass (Full Capacity)[1]
AA-011
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Dryer Bypass Full Capacity

Pollutant	Emission Factor	Units	Footnote	Potential Emissions[1]	
				(lb/hr)	(tpy)
Acetaldehyde	0.10	lb/ODT	2	4.10	0.10
Acrolein	0.049	lb/ODT	2	2.04	0.051
Formaldehyde	0.057	lb/ODT	2	2.39	0.060
Methanol	0.085	lb/ODT	2	3.56	0.089
Phenol	0.077	lb/ODT	2	3.23	0.081
Propionaldehyde	0.028	lb/ODT	2	1.16	0.029
Acetophenone	3.20E-09	lb/MMBtu	3	5.38E-07	1.34E-08
Antimony and compounds	7.90E-06	lb/MMBtu	3	1.33E-03	3.32E-05
Arsenic and compounds	2.20E-05	lb/MMBtu	3	3.70E-03	9.24E-05
Benzo(a)pyrene	2.60E-06	lb/MMBtu	3	4.37E-04	1.09E-05
Beryllium metal	1.10E-06	lb/MMBtu	3	1.85E-04	4.62E-06
Cadmium metal	4.10E-06	lb/MMBtu	3	6.89E-04	1.72E-05
Carbon tetrachloride	4.50E-05	lb/MMBtu	3	7.56E-03	1.89E-04
Chlorine	7.90E-04	lb/MMBtu	3	0.13	0.0033
Chlorobenzene	3.30E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Chromium-Other compounds	1.75E-05	lb/MMBtu	3	2.94E-03	7.35E-05
Cobalt compounds	6.50E-06	lb/MMBtu	3	1.09E-03	2.73E-05
Dinitrophenol, 2,4-	1.80E-07	lb/MMBtu	3	3.02E-05	7.56E-07
Di(2-ethylhexyl)phthalate	4.70E-08	lb/MMBtu	3	7.90E-06	1.97E-07
Ethyl benzene	3.10E-05	lb/MMBtu	3	5.21E-03	1.30E-04
Dichloroethane, 1,2-	2.90E-05	lb/MMBtu	3	4.87E-03	1.22E-04
Hydrochloric acid	1.90E-02	lb/MMBtu	3	3.19	0.080
Lead and lead compounds	4.80E-05	lb/MMBtu	3	8.06E-03	2.02E-04
Manganese and compounds	1.60E-03	lb/MMBtu	3	0.27	6.72E-03
Mercury	3.50E-06	lb/MMBtu	3	5.88E-04	1.47E-05
Methyl bromide	1.50E-05	lb/MMBtu	3	2.52E-03	6.30E-05
Methyl chloride	2.30E-05	lb/MMBtu	3	3.86E-03	9.66E-05
Trichloroethane, 1,1,1-	3.10E-05	lb/MMBtu	3	5.21E-03	1.30E-04
Naphthalene	9.70E-05	lb/MMBtu	3	0.016	4.07E-04
Nickel metal	3.30E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Nitrophenol, 4-	1.10E-07	lb/MMBtu	3	1.85E-05	4.62E-07
Pentachlorophenol	5.10E-08	lb/MMBtu	3	8.57E-06	2.14E-07
Perchloroethylene	3.80E-05	lb/MMBtu	3	6.38E-03	1.60E-04
Phosphorus metal, yellow or white	2.70E-05	lb/MMBtu	3	4.54E-03	1.13E-04
Polychlorinated biphenyls	8.15E-09	lb/MMBtu	3	1.37E-06	3.42E-08
Total PAH (POM)	1.25E-04	lb/MMBtu	3	0.021	5.25E-04
Dichloropropane, 1,2-	3.30E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Selenium compounds	2.80E-06	lb/MMBtu	3	4.70E-04	1.18E-05
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.60E-12	lb/MMBtu	3	1.44E-09	3.61E-11
Trichloroethylene	3.00E-05	lb/MMBtu	3	5.04E-03	1.26E-04
Trichlorophenol, 2,4,6-	2.20E-08	lb/MMBtu	3	3.70E-06	9.24E-08
Vinyl chloride	1.80E-05	lb/MMBtu	3	3.02E-03	7.56E-05
			Total HAP Emissions	**20.2**	**0.50**

Notes:

1. During dryer bypass emissions are not controlled by the WESP and RTO; however, combustion in the furnace still results in a reduction in organic HAP emission rates.
2. Organic HAP emissions rates were derived based on stack testing data from Cottondale and other similar Enviva plants.
3. Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Table 11b
Potential Emissions - Dryer 2 Bypass (Full Capacity)[1]
AA-011
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Abbreviations:

CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
RTO - regenerative thermal oxidizer
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
WESP - wet electrostatic precipitator
yr - year

Reference:

AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

Table 11c
Potential Emissions - Furnace 2 Bypass (Full Capacity)[1]
AA-012
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	168 MMBtu/hr
Annual Heat Input Capacity	8,400 MMBtu/yr
Hours of Operation[1]	50 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Furnace Bypass Full Capacity

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.60	lb/MMBtu[2]	101	2.52
NO_x	0.22	lb/MMBtu[2]	37.0	0.92
SO_2	0.025	lb/MMBtu[2]	4.20	0.11
VOC	0.017	lb/MMBtu[2]	2.86	0.071
Total $PM/PM_{10}/PM_{2.5}$	0.56	lb/MMBtu[3]	94.1	2.35
CO_2	93.8	lb/MMBtu[4]	34,741	869
CH_4	0.0072	lb/MMBtu[4]	2.67	0.067
N_2O	0.0036	lb/MMBtu[4]	1.33	0.033
CO_2e			35,205	880

Notes:

1. During startup and shutdown (for temperature control) or malfunction, emissions will be vented out either the dryer bypass stacks or the furnace bypass stacks. Use of each bypass stack at full capacity will not exceed 50 hours per 12-month rolling period for each dryer line.
2. CO, NO_X, SO_2, and VOC emission rates based on AP-42, Chapter 1.6 - Wood Residue Combustion in Boilers, 09/03 for bark/bark and wet wood/wet wood-fired boilers. VOC emission factor excludes formaldehyde.
3. Emission factor based on vendor data.
4. Emission factors for biomass combustion from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

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Table 11c
Potential Emissions - Furnace 2 Bypass (Full Capacity)[1]
AA-012
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Furnace Bypass Full Capacity

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
Acetaldehyde	8.30E-04	lb/MMBtu	1.39E-01	3.49E-03
Acrolein	4.00E-03	lb/MMBtu	6.72E-01	1.68E-02
Formaldehyde	4.40E-03	lb/MMBtu	7.39E-01	1.85E-02
Phenol	5.10E-05	lb/MMBtu	8.57E-03	2.14E-04
Propionaldehyde	6.10E-05	lb/MMBtu	1.02E-02	2.56E-04
Acetophenone	3.20E-09	lb/MMBtu	5.38E-07	1.34E-08
Antimony and compounds	7.90E-06	lb/MMBtu	1.33E-03	3.32E-05
Arsenic and compounds	2.20E-05	lb/MMBtu	3.70E-03	9.24E-05
Benzo(a)pyrene	2.60E-06	lb/MMBtu	4.37E-04	1.09E-05
Beryllium metal	1.10E-06	lb/MMBtu	1.85E-04	4.62E-06
Cadmium metal	4.10E-06	lb/MMBtu	6.89E-04	1.72E-05
Carbon tetrachloride	4.50E-05	lb/MMBtu	7.56E-03	1.89E-04
Chlorine	7.90E-04	lb/MMBtu	1.33E-01	3.32E-03
Chlorobenzene	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Chromium-Other compounds	1.75E-05	lb/MMBtu	2.94E-03	7.35E-05
Cobalt compounds	6.50E-06	lb/MMBtu	1.09E-03	2.73E-05
Dinitrophenol, 2,4-	1.80E-07	lb/MMBtu	3.02E-05	7.56E-07
Di(2-ethylhexyl)phthalate	4.70E-08	lb/MMBtu	7.90E-06	1.97E-07
Ethyl benzene	3.10E-05	lb/MMBtu	5.21E-03	1.30E-04
Dichloroethane, 1,2-	2.90E-05	lb/MMBtu	4.87E-03	1.22E-04
Hydrochloric acid	1.90E-02	lb/MMBtu	3.19E+00	7.98E-02
Lead and lead compounds	4.80E-05	lb/MMBtu	8.06E-03	2.02E-04
Manganese and compounds	1.60E-03	lb/MMBtu	2.69E-01	6.72E-03
Mercury	3.50E-06	lb/MMBtu	5.88E-04	1.47E-05
Methyl bromide	1.50E-05	lb/MMBtu	2.52E-03	6.30E-05
Methyl chloride	2.30E-05	lb/MMBtu	3.86E-03	9.66E-05
Trichloroethane, 1,1,1-	3.10E-05	lb/MMBtu	5.21E-03	1.30E-04
Naphthalene	9.70E-05	lb/MMBtu	1.63E-02	4.07E-04
Nickel metal	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Nitrophenol, 4-	1.10E-07	lb/MMBtu	1.85E-05	4.62E-07
Pentachlorophenol	5.10E-08	lb/MMBtu	8.57E-06	2.14E-07
Perchloroethylene	3.80E-05	lb/MMBtu	6.38E-03	1.60E-04
Phosphorus metal, yellow or white	2.70E-05	lb/MMBtu	4.54E-03	1.13E-04
Polychlorinated biphenyls	8.15E-09	lb/MMBtu	1.37E-06	3.42E-08
Total PAH (POM)	1.25E-04	lb/MMBtu	2.10E-02	5.25E-04
Dichloropropane, 1,2-	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Selenium compounds	2.80E-06	lb/MMBtu	4.70E-04	1.18E-05
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.60E-12	lb/MMBtu	1.44E-09	3.61E-11
Trichloroethylene	3.00E-05	lb/MMBtu	5.04E-03	1.26E-04
Trichlorophenol, 2,4,6-	2.20E-08	lb/MMBtu	3.70E-06	9.24E-08
Vinyl chloride	1.80E-05	lb/MMBtu	3.02E-03	7.56E-05
Total HAP Emissions (Biomass Combustion)			**5.28**	**0.13**

Notes:
[1] Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Abbreviations:
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
lb - pound
MMBtu - Million British thermal units
NO_x - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:
AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

Table 11d
Potential Emissions - Furnace 2 Bypass (Idle Mode)[1]
AA-012
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	5 MMBtu/hr
Annual Heat Input Capacity	2,500 MMBtu/yr
Hours of Operation[1]	500 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Furnace Bypass "Idle Mode"

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.60	lb/MMBtu[2]	3.00	0.75
NO_X	0.22	lb/MMBtu[2]	1.10	0.28
SO_2	0.025	lb/MMBtu[2]	0.13	0.031
VOC	0.017	lb/MMBtu[2]	0.085	0.021
Total PM	0.56	lb/MMBtu[3]	2.80	0.70
Total PM_{10}	0.52	lb/MMBtu[2]	2.59	0.65
Total $PM_{2.5}$	0.45	lb/MMBtu[2]	2.24	0.56
CO_2	93.8	kg/MMBtu[4]	1,034	258
CH_4	0.0072	kg/MMBtu[4]	0.079	0.020
N_2O	0.0036	kg/MMBtu[4]	0.040	0.010
CO_2e			1,048	262

Notes:

1. Idle mode is defined as operation at up to a maximum heat input rate of 5 MMBtu/hr.
2. CO, NO_X, SO_2, PM_{10}, $PM_{2.5}$, and VOC emission rates based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03 for bark/bark and wet wood/wet wood-fired boilers. PM_{10} and $PM_{2.5}$ factors equal to the sum of the filterable and condensable factors from Table 1.6-1. VOC emission factor excludes formaldehyde.
3. Emission factor based on vendor data.
4. Emission factors for biomass combustion from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

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Table 11d
Potential Emissions - Furnace 2 Bypass (Idle Mode)[1]
AA-012
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Furnace Bypass "Idle Mode"

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
Acetaldehyde	8.30E-04	lb/MMBtu	4.15E-03	1.04E-03
Acrolein	4.00E-03	lb/MMBtu	2.00E-02	5.00E-03
Formaldehyde	4.40E-03	lb/MMBtu	2.20E-02	5.50E-03
Phenol	5.10E-05	lb/MMBtu	2.55E-04	6.38E-05
Propionaldehyde	6.10E-05	lb/MMBtu	3.05E-04	7.63E-05
Acetophenone	3.20E-09	lb/MMBtu	1.60E-08	4.00E-09
Antimony and compounds	7.90E-06	lb/MMBtu	3.95E-05	9.88E-06
Arsenic and compounds	2.20E-05	lb/MMBtu	1.10E-04	2.75E-05
Benzo(a)pyrene	2.60E-06	lb/MMBtu	1.30E-05	3.25E-06
Beryllium metal	1.10E-06	lb/MMBtu	5.50E-06	1.38E-06
Cadmium metal	4.10E-06	lb/MMBtu	2.05E-05	5.13E-06
Carbon tetrachloride	4.50E-05	lb/MMBtu	2.25E-04	5.63E-05
Chlorine	7.90E-04	lb/MMBtu	3.95E-03	9.88E-04
Chlorobenzene	3.30E-05	lb/MMBtu	1.65E-04	4.13E-05
Chromium-Other compounds	2.10E-05	lb/MMBtu	1.05E-04	2.63E-05
Cobalt compounds	6.50E-06	lb/MMBtu	3.25E-05	8.13E-06
Dinitrophenol, 2,4-	1.80E-07	lb/MMBtu	9.00E-07	2.25E-07
Di(2-ethylhexyl)phthalate	4.70E-08	lb/MMBtu	2.35E-07	5.88E-08
Ethyl benzene	3.10E-05	lb/MMBtu	1.55E-04	3.88E-05
Dichloroethane, 1,2-	2.90E-05	lb/MMBtu	1.45E-04	3.63E-05
Hydrochloric acid	1.90E-02	lb/MMBtu	9.50E-02	2.38E-02
Lead and lead compounds	4.80E-05	lb/MMBtu	2.40E-04	6.00E-05
Manganese and compounds	1.60E-03	lb/MMBtu	8.00E-03	2.00E-03
Mercury	3.50E-06	lb/MMBtu	1.75E-05	4.38E-06
Methyl bromide	1.50E-05	lb/MMBtu	7.50E-05	1.88E-05
Methyl chloride	2.30E-05	lb/MMBtu	1.15E-04	2.88E-05
Trichloroethane, 1,1,1-	3.10E-05	lb/MMBtu	1.55E-04	3.88E-05
Naphthalene	9.70E-05	lb/MMBtu	4.85E-04	1.21E-04
Nickel metal	3.30E-05	lb/MMBtu	1.65E-04	4.13E-05
Nitrophenol, 4-	1.10E-07	lb/MMBtu	5.50E-07	1.38E-07
Pentachlorophenol	5.10E-08	lb/MMBtu	2.55E-07	6.38E-08
Perchloroethylene	3.80E-05	lb/MMBtu	1.90E-04	4.75E-05
Phosphorus metal, yellow or white	2.70E-05	lb/MMBtu	1.35E-04	3.38E-05
Polychlorinated biphenyls	8.15E-09	lb/MMBtu	4.08E-08	1.02E-08
Total PAH (POM)	1.25E-04	lb/MMBtu	6.25E-04	1.56E-04
Dichloropropane, 1,2-	3.30E-05	lb/MMBtu	1.65E-04	4.13E-05
Selenium compounds	2.80E-06	lb/MMBtu	1.40E-05	3.50E-06
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.60E-12	lb/MMBtu	4.30E-11	1.08E-11
Trichloroethylene	3.00E-05	lb/MMBtu	1.50E-04	3.75E-05
Trichlorophenol, 2,4,6-	2.20E-08	lb/MMBtu	1.10E-07	2.75E-08
Vinyl chloride	1.80E-05	lb/MMBtu	9.00E-05	2.25E-05
Total HAP Emissions (Biomass Combustion)			**0.16**	**0.039**

Notes:
1. Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Abbreviations:
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_x - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:
AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

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Table 12a
Potential Emissions at Outlet of Dryer Line 3 RTO Stack
AA-013
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput (per line)	42	ODT/hr
Annual Throughput (per line)	367,920	ODT/yr
Hourly Heat Input Capacity (per furnace)	168	MMBtu/hr
Annual Heat Input Capacity (per furnace)	1,471,680	MMBtu/yr
Hours of Operation	8,760	hr/yr
Number of RTO Burners (per RTO)	2	burners
RTO Burner Rating	8	MMBtu/hr
Dryer Double Duct System - Num. of Burners[1]	2	burners
Double Duct System Burner Rating[1]	1	MMBtu/hr
Propane Heating Value[2]	91.5	MMBtu/Mgal
Natural Gas Heating Value[3]	1,020	Btu/scf
Hourly Fuel Consumption (total)[4]	0.022	Mgal/hr propane
	0.0020	MMscf/hr natural gas
RTO Control Efficiency[5]	95%	

Potential Criteria Pollutant and Greenhouse Gas Emissions

Pollutant	Controlled Emission Factor	Units	Potential Emissions from Dryer[6]	
			(lb/hr)	(tpy)
CO	14.2	lb/hr[7]	14.2	62.2
NO_X	17.0	lb/hr[8]	17.0	74.5
SO_2	0.025	lb/MMBtu[9]	4.20	18.4
VOC as Propane	8.75	lb/hr[7]	8.75	38.3
$PM/PM_{10}/PM_{2.5}$ (Filterable)	4.69	lb/hr[10]	4.69	20.5
$PM/PM_{10}/PM_{2.5}$ (Condensable)	0.017	lb/MMBtu[11]	2.86	12.5
$PM/PM_{10}/PM_{2.5}$ (Condensable - Nat. Gas)	0.00056	lb/MMBtu[12]	0.0089	0.039
CO_2	780	lb/ODT[13]	32,760	143,489

Notes:

1. Each dryer system will include two (2) ducts (i.e., double ducts) that will each be heated by a 1 MMBtu/hr burner. There will be a total of six (6) burners, two (2) per dryer line. The burners will fire natural gas, with propane as a back-up, and will be low-NO_X burners.
2. Propane heat content from AP-42 Section 1.5 - Liquefied Petroleum Gas Production, 7/08.
3. Natural gas heating value from AP-42 Section 1.4 - Natural Gas Combustion, 07/98.
4. Total hourly fuel consumption for both burners. The burners will fire natural gas, with propane as a back-up.
5. Control efficiency based on RTO vendor guarantee.
6. Exhaust from the dryers are routed to a WESP and then RTO for control of VOC, HAP, and particulates. Each of the three (3) dryer lines will have a dedicated WESP and RTO. Emissions for Dryer Lines 1 and 2 are calculated separately.
7. CO and VOC emission rates based on vendor data.
8. NO_x emission factor based on stack testing at similar Enviva plants.
9. No emission factor is provided in AP-42, Section 10.6.2 for SO_2 for rotary dryers. Enviva has conservatively calculated SO_2 emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
10. Filterable particulate emission rate based on RTO vendor data.
11. Condensable particulate emission factor for biomass combustion obtained from AP-42 Section 1.6.
12. Natural gas combustion by the RTO burners will also result in emissions of condensable PM. Emission factor obtained from AP-42, Section 1.4 - Natural Gas Combustion, 07/98.
13. Emission factor for CO_2 from AP-42, Section 10.6.1 for rotary dryer with RTO control device. Enviva has conservatively calculated the CO_2 emissions using the hardwood emission factor because the dryers at the Lucedale plant will use a combination of hardwood and softwood and the hardwood emission factor is greater than the softwood emission factor.

Table 12a
Potential Emissions at Outlet of Dryer Line 3 RTO Stack
AA-013
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential Criteria Pollutant and Greenhouse Gas Emissions - Dryer System Double Duct Burners[1]

Pollutant	Natural Gas Emission Factor[2,3] (lb/MMscf)	Potential Emissions - Natural Gas Combustion		Propane Emission Factor[4,5,6] (lb/Mgal)	Potential Emissions - Propane Combustion	
		(lb/hr)	(tpy)		(lb/hr)	(tpy)
CO	84.0	0.16	0.72	7.50	0.16	0.72
NO_X	50.0	0.10	0.43	6.50	0.14	0.62
SO_2	0.60	0.0012	0.0052	0.054	0.0012	0.0052
VOC	5.50	5.39E-04	0.0024	1.00	0.0011	0.0048
$PM/PM_{10}/PM_{2.5}$ Condensable	5.70	5.59E-04	0.0024	0.50	5.46E-04	0.0024
$PM/PM_{10}/PM_{2.5}$ Filterable	1.90	1.86E-04	0.0008	0.20	2.19E-04	0.0010
Total $PM/PM_{10}/PM_{2.5}$	--	7.45E-04	0.0033	--	7.65E-04	0.0034
CO_2	120,000	235	1,031	12,500	273	1,197
CH_4	2.30	0.0045	0.020	0.20	0.0044	0.019
N_2O[2]	0.64	0.0013	0.0055	0.90	0.020	0.0862
CO_2e	--	236	1,033	--	279	1,223

Notes:
1 Two (2) low-NOx burners will be used to heat the dryer system ducts to prevent condensation of wood tar from occurring and thus reduce the fire risk. The burners will combust natural gas. Emissions from the burners will be routed to the WESP and RTO on each dryer line; therefore, a 95% control efficiency was applied to VOC and $PM/PM_{10}/PM_{2.5}$.
2 Emission factors for natural gas combustion from AP-42 Section 1.4 - Natural Gas Combustion, 07/98. Natural gas heating value of 1,020 Btu/scf assumed per AP-42.
3 Emission factors for NO_X and N_2O assume burners are low NO_X burners, per email from Kai Simonsen (Enviva) on August 8, 2018.
4 Emission factors for propane combustion obtained from AP-42 Section 1.5 - Liquefied Petroleum Gas Combustion, 07/08.
5 AP-42 Section 1.5 does not include an emission factor for low NO_X burners. Per AP-42 Section 1.4, low NO_X burners reduce NO_X emissions by accomplishing combustion in stages, reducing NO_X emissions 40 to 85% relative to uncontrolled emission levels. A conservative control efficiency of 50% was applied to the uncontrolled NO_X emission factor from AP-42 Section 1.5. This reduction is consistent with the magnitude of reduction between the uncontrolled and low NO_X emission factors in AP-42 Section 1.4.
6 SO_2 emissions are based on an assumed fuel sulfur content of 0.54 grains/100 ft^3 per *A National Methodology and Emission Inventory for Residential Fuel Combustion*.

Table 12a
Potential Emissions at Outlet of Dryer Line 3 RTO Stack
AA-013
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions

Pollutant	VOC	Emission Factor	Units	Footnote	Potential Emissions	
					(lb/hr)	(tpy)
Furnace - Biomass Combustion						
Acetaldehyde	Y	4.88E-03	lb/ODT	1	0.20	0.90
Acrolein	Y	2.43E-03	lb/ODT	1	0.10	0.45
Formaldehyde	Y	2.84E-03	lb/ODT	1	0.12	0.52
Methanol	Y	4.24E-03	lb/ODT	1	0.18	0.78
Phenol	Y	3.84E-03	lb/ODT	1	0.16	0.71
Propionaldehyde	Y	1.39E-03	lb/ODT	1	0.058	0.26
Acetophenone	Y	3.20E-09	lb/MMBtu	1	2.69E-08	1.18E-07
Antimony and compounds	N	7.90E-06	lb/MMBtu	2,4	6.64E-05	2.91E-04
Arsenic and compounds	N	2.20E-05	lb/MMBtu	2,4	1.85E-04	8.09E-04
Benzene	Y	4.20E-03	lb/MMBtu	2,3	0.035	0.15
Benzo(a)pyrene	Y	2.60E-06	lb/MMBtu	2,3	2.18E-05	9.57E-05
Beryllium metal	N	1.10E-06	lb/MMBtu	2,4	9.24E-06	4.05E-05
Cadmium metal	N	4.10E-06	lb/MMBtu	2,4	3.44E-05	1.51E-04
Carbon tetrachloride	Y	4.50E-05	lb/MMBtu	2,3	3.78E-04	1.66E-03
Chlorine	N	7.90E-04	lb/MMBtu	2	0.13	0.58
Chlorobenzene	Y	3.30E-05	lb/MMBtu	2,3	2.77E-04	1.21E-03
Chloroform	Y	2.80E-05	lb/MMBtu	2,3	2.35E-04	1.03E-03
Chromium-Other compounds	N	1.75E-05	lb/MMBtu	2,4	1.47E-04	6.44E-04
Cobalt compounds	N	6.50E-06	lb/MMBtu	2,4	5.46E-05	2.39E-04
Dichloroethane, 1,2-	Y	2.90E-05	lb/MMBtu	2,3	2.44E-04	1.07E-03
Dichloropropane, 1,2-	Y	3.30E-05	lb/MMBtu	2,3	2.77E-04	1.21E-03
Dinitrophenol, 2,4-	Y	1.80E-07	lb/MMBtu	2,3	1.51E-06	6.62E-06
Di(2-ethylhexyl)phthalate	Y	4.70E-08	lb/MMBtu	2,3	3.95E-07	1.73E-06
Ethyl benzene	Y	3.10E-05	lb/MMBtu	2,3	2.60E-04	1.14E-03
Hydrochloric acid	N	1.90E-02	lb/MMBtu	2,5	0.32	1.40
Lead and lead compounds	N	4.80E-05	lb/MMBtu	2,4	4.03E-04	1.77E-03
Manganese and compounds	N	1.60E-03	lb/MMBtu	2,4	0.013	0.059
Mercury	N	3.50E-06	lb/MMBtu	2,4	2.94E-05	1.29E-04
Methyl bromide	Y	1.50E-05	lb/MMBtu	2,3	1.26E-04	5.52E-04
Methyl chloride	Y	2.30E-05	lb/MMBtu	2,3	1.93E-04	8.46E-04
Methylene chloride	Y	2.90E-04	lb/MMBtu	2,3	0.0024	0.011
Naphthalene	Y	9.70E-05	lb/MMBtu	2,3	8.15E-04	0.0036
Nickel metal	N	3.30E-05	lb/MMBtu	2,4	2.77E-04	1.21E-03
Nitrophenol, 4-	Y	1.10E-07	lb/MMBtu	2,3	9.24E-07	4.05E-06
Pentachlorophenol	N	5.10E-08	lb/MMBtu	2	8.57E-06	3.75E-05
Perchloroethylene	N	3.80E-05	lb/MMBtu	2	0.0064	0.028
Phosphorus metal, yellow or white	N	2.70E-05	lb/MMBtu	2,4	2.27E-04	9.93E-04
Polychlorinated biphenyls	Y	8.15E-09	lb/MMBtu	2,3	6.85E-08	3.00E-07
Polycyclic Organic Matter	N	1.25E-04	lb/MMBtu	2	0.021	0.092
Selenium compounds	N	2.80E-06	lb/MMBtu	2,4	2.35E-05	1.03E-04
Styrene	Y	1.90E-03	lb/MMBtu	2,3	0.016	0.070
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	Y	8.60E-12	lb/MMBtu	2,3	7.22E-11	3.16E-10
Toluene	Y	3.00E-05	lb/MMBtu	2,3	2.52E-04	1.10E-03
Trichloroethane, 1,1,1-	N	3.10E-05	lb/MMBtu	2	5.21E-03	0.023
Trichloroethylene	Y	3.00E-05	lb/MMBtu	2,3	2.52E-04	1.10E-03
Trichlorophenol, 2,4,6-	Y	2.20E-08	lb/MMBtu	2,3	1.85E-07	8.09E-07
Vinyl chloride	Y	1.80E-05	lb/MMBtu	2,3	1.51E-04	6.62E-04
Xylene	Y	2.50E-05	lb/MMBtu	2,3	2.10E-04	9.20E-04
		Total HAP Emissions (biomass combustion)			**1.38**	**6.05**

Table 12a
Potential Emissions at Outlet of Dryer Line 3 RTO Stack
AA-013
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions

Pollutant	VOC	Emission Factor[6]	Units	RTO Burners Potential Emissions		Double Duct Burners Potential Emissions[3,4]	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
RTO Burners and Dryer System Double Duct Burners - Natural Gas Combustion							
2-Methylnaphthalene	Y	2.40E-05	lb/MMscf	3.76E-07	1.65E-06	2.35E-09	1.03E-08
3-Methylchloranthrene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
7,12-Dimethylbenz(a)anthracene	Y	1.60E-05	lb/MMscf	2.51E-07	1.10E-06	1.57E-09	6.87E-09
Acenaphthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Acenaphthylene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Anthracene	Y	2.40E-06	lb/MMscf	3.76E-08	1.65E-07	2.35E-10	1.03E-09
Arsenic and compounds	N	2.00E-04	lb/MMscf	3.14E-06	1.37E-05	1.96E-08	8.59E-08
Benz(a)anthracene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Benzene	Y	2.10E-03	lb/MMscf	3.29E-05	1.44E-04	2.06E-07	9.02E-07
Benzo(a)pyrene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Benzo(b)fluoranthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Benzo(g,h,i)perylene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Benzo(k)fluoranthene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Beryllium metal	N	1.20E-05	lb/MMscf	1.88E-07	8.24E-07	1.18E-09	5.15E-09
Cadmium metal	N	1.10E-03	lb/MMscf	1.73E-05	7.56E-05	1.08E-07	4.72E-07
Chromium VI	N	1.40E-03	lb/MMscf	2.20E-05	9.62E-05	1.37E-07	6.01E-07
Chrysene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Cobalt compounds	N	8.40E-05	lb/MMscf	1.32E-06	5.77E-06	8.24E-09	3.61E-08
Dibenzo(a,h)anthracene	Y	1.20E-06	lb/MMscf	1.88E-08	8.24E-08	1.18E-10	5.15E-10
Dichlorobenzene	Y	1.20E-03	lb/MMscf	1.88E-05	8.24E-05	1.18E-07	5.15E-07
Fluoranthene	Y	3.00E-06	lb/MMscf	4.71E-08	2.06E-07	2.94E-10	1.29E-09
Fluorene	Y	2.80E-06	lb/MMscf	4.39E-08	1.92E-07	2.75E-10	1.20E-09
Formaldehyde	Y	0.075	lb/MMscf	0.0012	0.0052	7.35E-06	3.22E-05
Hexane	Y	1.80	lb/MMscf	0.028	0.12	1.76E-04	7.73E-04
Indeno(1,2,3-cd)pyrene	Y	1.80E-06	lb/MMscf	2.82E-08	1.24E-07	1.76E-10	7.73E-10
Lead and lead compounds	N	5.00E-04	lb/MMscf	7.84E-06	3.44E-05	4.90E-08	2.15E-07
Manganese and compounds	N	3.80E-04	lb/MMscf	5.96E-06	2.61E-05	3.73E-08	1.63E-07
Mercury	N	2.60E-04	lb/MMscf	4.08E-06	1.79E-05	2.55E-08	1.12E-07
Naphthalene	Y	6.10E-04	lb/MMscf	9.57E-06	4.19E-05	5.98E-08	2.62E-07
Nickel metal	N	2.10E-03	lb/MMscf	3.29E-05	1.44E-04	2.06E-07	9.02E-07
Phenanthrene	Y	1.70E-05	lb/MMscf	2.67E-07	1.17E-06	1.67E-09	7.30E-09
Pyrene	Y	5.00E-06	lb/MMscf	7.84E-08	3.44E-07	4.90E-10	2.15E-09
Selenium compounds	N	2.40E-05	lb/MMscf	3.76E-07	1.65E-06	2.35E-09	1.03E-08
Toluene	Y	3.40E-03	lb/MMscf	5.33E-05	2.34E-04	3.33E-07	1.46E-06
Total HAP Emissions (Natural Gas Combustion)[7]				**0.030**	**0.13**	**1.85E-04**	**8.10E-04**

Table 12a
Potential Emissions at Outlet of Dryer Line 3 RTO Stack
AA-013
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions

Pollutant	VOC	Emission Factor[8]	Units	RTO Burners Potential Emissions		Double Duct Burners Potential Emissions[3,4]	
				(lb/hr)	(tpy)	(lb/hr)	(tpy)
RTO Burners - Propane Combustion							
Benzene	Y	7.10E-04	lb/MMBtu	0.011	0.050	7.10E-05	3.11E-05
Formaldehyde	Y	1.51E-03	lb/MMBtu	0.024	0.11	1.51E-04	6.61E-05
PAHs	N	4.00E-05	lb/MMBtu	6.40E-04	0.0028	8.00E-05	7.01E-04
Total HAP Emissions (Propane Combustion)[7]				**0.036**	**0.16**	**3.02E-04**	**7.98E-04**

Notes:

1 Emission factor derived based on stack testing data from comparable Enviva facilities.
2 Emission factors for wood combustion in a stoker boiler from AP-42 Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
3 A control efficiency of 95% for the RTOs is applied to all organic HAP for those emission factors that are not derived from Enviva stack test data.
4 A 95% control efficiency for the wet electrostatic precipitator (WESP) is applied to all metal HAP.
5 The WESP will employ a caustic solution in its operation in which hydrochloric acid will have high water solubility. This caustic solution will neutralize the acid and effectively control it by 90%, per conversation on October 18, 2011 with Steven A. Jaasund, P.E. of Lundberg Associates, a manufacturer of WESPs.
6 Emission factors for natural gas combustion from AP-42 Section 1.4 - Natural Gas Combustion, 07/98. Natural gas heating value of 1,020 Btu/scf assumed per AP-42.
7 The RTO burners and burners for the dryer system double ducts will fire natural gas with propane as a back-up; however, propane is worst-case for HAP emissions.
8 Emission factors for propane combustion from the South Coast Air Quality Management District's Air Emissions Reporting Tool for external combustion equipment fired with LPG.

Abbreviations:

CAS - chemical abstract service
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
RTO - regenerative thermal oxidizer
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
WESP - wet electrostatic precipitator
yr - year

References:

AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03
AP-42, Section 1.4 - Natural Gas Combustion, 07/98
South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting

Table 12b
Potential Emissions - Dryer 3 Bypass (Full Capacity)[1]
AA-014
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	168 MMBtu/hr
Annual Heat Input Capacity	8,400 MMBtu/yr
Hours of Operation[1]	50 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Dryer Bypass Full Capacity

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	21.4	lb/hr[2]	21.4	0.54
NO_X	26.3	lb/hr[2]	26.3	0.66
SO_2	0.025	lb/MMBtu[3]	4.20	0.11
VOC	14.0	lb/hr[2]	14.0	0.35
$PM/PM_{10}/PM_{2.5}$ Condensable	0.017	lb/MMBtu[4]	2.86	0.071
$PM/PM_{10}/PM_{2.5}$ Filterable	0.33	lb/MMBtu[5]	55.4	1.39
Total $PM/PM_{10}/PM_{2.5}$			58.3	1.46
CO_2	93.8	kg/MMBtu[6]	34,741	869
CH_4	0.0072	kg/MMBtu[6]	2.67	0.067
N_2O	0.0036	kg/MMBtu[6]	1.33	0.033
CO_2e			35,205	880

Notes:
1. During startup and shutdown (for temperature control) or malfunction, emissions will be vented out either the dryer bypass stacks or the furnace bypass stacks. Use of each bypass stack at full capacity will not exceed 50 hours per 12-month rolling period for each dryer line.
2. CO, NO_X, and VOC emission rates based on vendor data.
3. No emission factor is provided in AP-42, Section 10.6.2 for SO_2 for rotary dryers. Enviva has conservatively calculated SO_2 emissions based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
4. Emission factor for condensable PM based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.
5. Uncontrolled filterable PM emission factor is based on testing at a comparable Enviva facility.
6. Emission factors for biomass combustion (dryer) from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

Table 12b
Potential Emissions - Dryer 3 Bypass (Full Capacity)[1]
AA-014
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Dryer Bypass Full Capacity

Pollutant	Emission Factor	Units	Footnote	Potential Emissions[1]	
				(lb/hr)	(tpy)
Acetaldehyde	0.10	lb/ODT	2	4.10	0.10
Acrolein	0.049	lb/ODT	2	2.04	0.051
Formaldehyde	0.057	lb/ODT	2	2.39	0.060
Methanol	0.085	lb/ODT	2	3.56	0.089
Phenol	0.077	lb/ODT	2	3.23	0.081
Propionaldehyde	0.028	lb/ODT	2	1.16	0.029
Acetophenone	3.2E-09	lb/MMBtu	3	5.38E-07	1.34E-08
Antimony and compounds	7.9E-06	lb/MMBtu	3	1.33E-03	3.32E-05
Arsenic and compounds	2.2E-05	lb/MMBtu	3	3.70E-03	9.24E-05
Benzo(a)pyrene	2.6E-06	lb/MMBtu	3	4.37E-04	1.09E-05
Beryllium metal	1.1E-06	lb/MMBtu	3	1.85E-04	4.62E-06
Cadmium metal	4.1E-06	lb/MMBtu	3	6.89E-04	1.72E-05
Carbon tetrachloride	4.5E-05	lb/MMBtu	3	7.56E-03	1.89E-04
Chlorine	7.9E-04	lb/MMBtu	3	0.13	0.0033
Chlorobenzene	3.3E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Chromium-Other compounds	1.8E-05	lb/MMBtu	3	2.94E-03	7.35E-05
Cobalt compounds	6.5E-06	lb/MMBtu	3	1.09E-03	2.73E-05
Dinitrophenol, 2,4-	1.8E-07	lb/MMBtu	3	3.02E-05	7.56E-07
Di(2-ethylhexyl)phthalate	4.7E-08	lb/MMBtu	3	7.90E-06	1.97E-07
Ethyl benzene	3.1E-05	lb/MMBtu	3	5.21E-03	1.30E-04
Dichloroethane, 1,2-	2.9E-05	lb/MMBtu	3	4.87E-03	1.22E-04
Hydrochloric acid	1.9E-02	lb/MMBtu	3	3.19	0.080
Lead and lead compounds	4.8E-05	lb/MMBtu	3	8.06E-03	2.02E-04
Manganese and compounds	1.6E-03	lb/MMBtu	3	0.27	0.0067
Mercury	3.5E-06	lb/MMBtu	3	5.88E-04	1.47E-05
Methyl bromide	1.5E-05	lb/MMBtu	3	2.52E-03	6.30E-05
Methyl chloride	2.3E-05	lb/MMBtu	3	3.86E-03	9.66E-05
Trichloroethane, 1,1,1-	3.1E-05	lb/MMBtu	3	5.21E-03	1.30E-04
Naphthalene	9.7E-05	lb/MMBtu	3	0.016	4.07E-04
Nickel metal	3.3E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Nitrophenol, 4-	1.1E-07	lb/MMBtu	3	1.85E-05	4.62E-07
Pentachlorophenol	5.1E-08	lb/MMBtu	3	8.57E-06	2.14E-07
Perchloroethylene	3.8E-05	lb/MMBtu	3	6.38E-03	1.60E-04
Phosphorus metal, yellow or white	2.7E-05	lb/MMBtu	3	4.54E-03	1.13E-04
Polychlorinated biphenyls	8.2E-09	lb/MMBtu	3	1.37E-06	3.42E-08
Total PAH (POM)	1.3E-04	lb/MMBtu	3	2.10E-02	5.25E-04
Dichloropropane, 1,2-	3.3E-05	lb/MMBtu	3	5.54E-03	1.39E-04
Selenium compounds	2.8E-06	lb/MMBtu	3	4.70E-04	1.18E-05
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.6E-12	lb/MMBtu	3	1.44E-09	3.61E-11
Trichloroethylene	3.0E-05	lb/MMBtu	3	5.04E-03	1.26E-04
Trichlorophenol, 2,4,6-	2.2E-08	lb/MMBtu	3	3.70E-06	9.24E-08
Vinyl chloride	1.8E-05	lb/MMBtu	3	3.02E-03	7.56E-05
		Total HAP Emissions		**20.2**	**0.50**

Notes:

1. During dryer bypass emissions are not controlled by the WESP and RTO; however, combustion in the furnace still results in a reduction in organic HAP emission rates.
2. Organic HAP emissions rates were derived based on stack testing data from Cottondale and other similar Enviva plants.
3. Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Table 12b
Potential Emissions - Dryer 3 Bypass (Full Capacity)[1]
AA-014
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Abbreviations:

CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
RTO - regenerative thermal oxidizer
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
WESP - wet electrostatic precipitator
yr - year

Reference:

AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

Table 12c
Potential Emissions - Furnace 3 Bypass (Full Capacity)[1]
AA-015
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	168 MMBtu/hr
Annual Heat Input Capacity	8,400 MMBtu/yr
Hours of Operation[1]	50 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Furnace Bypass Full Capacity

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.60	lb/MMBtu[2]	100.8	2.52
NO_x	0.22	lb/MMBtu[2]	36.96	0.92
SO_2	0.025	lb/MMBtu[2]	4.20	0.11
VOC	0.017	lb/MMBtu[2]	2.86	0.071
Total $PM/PM_{10}/PM_{2.5}$	0.56	lb/MMBtu[3]	94.1	2.35
CO_2	93.8	lb/MMBtu[4]	34,741	869
CH_4	0.0072	lb/MMBtu[4]	2.67	0.067
N_2O	0.0036	lb/MMBtu[4]	1.33	0.033
CO_2e			35,205	880

Notes:

1. During startup and shutdown (for temperature control) or malfunction, emissions will be vented out either the dryer bypass stacks or the furnace bypass stacks. Use of each bypass stack at full capacity will not exceed 50 hours per 12-month rolling period for each dryer line.
2. CO, NO_X, SO_2, and VOC emission rates based on AP-42, Chapter 1.6 - Wood Residue Combustion in Boilers, 09/03 for bark/bark and wet wood/wet wood-fired boilers. VOC emission factor excludes formaldehyde.
3. Emission factor based on vendor data.
4. Emission factors for biomass combustion from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

RAMBOLL

Table 12c
Potential Emissions - Furnace 3 Bypass (Full Capacity)[1]
AA-015
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Furnace Bypass Full Capacity

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
Acetaldehyde	8.30E-04	lb/MMBtu	1.39E-01	3.49E-03
Acrolein	4.00E-03	lb/MMBtu	6.72E-01	1.68E-02
Formaldehyde	4.40E-03	lb/MMBtu	7.39E-01	1.85E-02
Phenol	5.10E-05	lb/MMBtu	8.57E-03	2.14E-04
Propionaldehyde	6.10E-05	lb/MMBtu	1.02E-02	2.56E-04
Acetophenone	3.20E-09	lb/MMBtu	5.38E-07	1.34E-08
Antimony and compounds	7.90E-06	lb/MMBtu	1.33E-03	3.32E-05
Arsenic and compounds	2.20E-05	lb/MMBtu	3.70E-03	9.24E-05
Benzo(a)pyrene	2.60E-06	lb/MMBtu	4.37E-04	1.09E-05
Beryllium metal	1.10E-06	lb/MMBtu	1.85E-04	4.62E-06
Cadmium metal	4.10E-06	lb/MMBtu	6.89E-04	1.72E-05
Carbon tetrachloride	4.50E-05	lb/MMBtu	7.56E-03	1.89E-04
Chlorine	7.90E-04	lb/MMBtu	1.33E-01	3.32E-03
Chlorobenzene	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Chromium-Other compounds	1.75E-05	lb/MMBtu	2.94E-03	7.35E-05
Cobalt compounds	6.50E-06	lb/MMBtu	1.09E-03	2.73E-05
Dinitrophenol, 2,4-	1.80E-07	lb/MMBtu	3.02E-05	7.56E-07
Di(2-ethylhexyl)phthalate	4.70E-08	lb/MMBtu	7.90E-06	1.97E-07
Ethyl benzene	3.10E-05	lb/MMBtu	5.21E-03	1.30E-04
Dichloroethane, 1,2-	2.90E-05	lb/MMBtu	4.87E-03	1.22E-04
Hydrochloric acid	1.90E-02	lb/MMBtu	3.19E+00	7.98E-02
Lead and lead compounds	4.80E-05	lb/MMBtu	8.06E-03	2.02E-04
Manganese and compounds	1.60E-03	lb/MMBtu	2.69E-01	6.72E-03
Mercury	3.50E-06	lb/MMBtu	5.88E-04	1.47E-05
Methyl bromide	1.50E-05	lb/MMBtu	2.52E-03	6.30E-05
Methyl chloride	2.30E-05	lb/MMBtu	3.86E-03	9.66E-05
Trichloroethane, 1,1,1-	3.10E-05	lb/MMBtu	5.21E-03	1.30E-04
Naphthalene	9.70E-05	lb/MMBtu	1.63E-02	4.07E-04
Nickel metal	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Nitrophenol, 4-	1.10E-07	lb/MMBtu	1.85E-05	4.62E-07
Pentachlorophenol	5.10E-08	lb/MMBtu	8.57E-06	2.14E-07
Perchloroethylene	3.80E-05	lb/MMBtu	6.38E-03	1.60E-04
Phosphorus metal, yellow or white	2.70E-05	lb/MMBtu	4.54E-03	1.13E-04
Polychlorinated biphenyls	8.15E-09	lb/MMBtu	1.37E-06	3.42E-08
Total PAH (POM)	1.25E-04	lb/MMBtu	2.10E-02	5.25E-04
Dichloropropane, 1,2-	3.30E-05	lb/MMBtu	5.54E-03	1.39E-04
Selenium compounds	2.80E-06	lb/MMBtu	4.70E-04	1.18E-05
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.60E-12	lb/MMBtu	1.44E-09	3.61E-11
Trichloroethylene	3.00E-05	lb/MMBtu	5.04E-03	1.26E-04
Trichlorophenol, 2,4,6-	2.20E-08	lb/MMBtu	3.70E-06	9.24E-08
Vinyl chloride	1.80E-05	lb/MMBtu	3.02E-03	7.56E-05
Total HAP Emissions (Biomass Combustion)			**5.28**	**0.13**

Notes:
[1] Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Abbreviations:
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
lb - pound
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:
AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

Table 12d
Potential Emissions - Furnace 2 Bypass (Idle Mode)[1]
AA-015
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	42 ODT/hr
Hourly Heat Input Capacity	5 MMBtu/hr
Annual Heat Input Capacity	2,500 MMBtu/yr
Hours of Operation[1]	500 hr/yr

Potential Criteria Pollutant and Greenhouse Gas Emissions - Furnace Bypass "Idle Mode"

Pollutant	Controlled Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.60	lb/MMBtu[2]	3.00	0.75
NO_X	0.22	lb/MMBtu[2]	1.10	0.28
SO_2	0.025	lb/MMBtu[2]	0.13	0.031
VOC	0.017	lb/MMBtu[2]	0.085	0.021
Total PM	0.56	lb/MMBtu[3]	2.80	0.70
Total PM_{10}	0.52	lb/MMBtu[2]	2.59	0.65
Total $PM_{2.5}$	0.45	lb/MMBtu[2]	2.24	0.56
CO_2	93.8	kg/MMBtu[4]	1,034	258
CH_4	0.0072	kg/MMBtu[4]	0.079	0.020
N_2O	0.0036	kg/MMBtu[4]	0.040	0.010
CO_2e			1,048	262

Notes:

1. Idle mode is defined as operation at up to a maximum heat input rate of 5 MMBtu/hr.
2. CO, NO_X, SO_2, PM_{10}, $PM_{2.5}$, and VOC emission rates based on AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03 for bark/bark and wet wood/wet wood-fired boilers. PM_{10} and $PM_{2.5}$ factors equal to the sum of the filterable and condensable factors from Table 1.6-1. VOC emission factor excludes formaldehyde.
3. Emission factor based on vendor data.
4. Emission factors for biomass combustion from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

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Table 12d
Potential Emissions - Furnace 2 Bypass (Idle Mode)[1]
AA-015
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - Furnace Bypass "Idle Mode"

Pollutant	Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
Acetaldehyde	8.30E-04	lb/MMBtu	4.15E-03	1.04E-03
Acrolein	4.00E-03	lb/MMBtu	2.00E-02	5.00E-03
Formaldehyde	4.40E-03	lb/MMBtu	2.20E-02	5.50E-03
Phenol	5.10E-05	lb/MMBtu	2.55E-04	6.38E-05
Propionaldehyde	6.10E-05	lb/MMBtu	3.05E-04	7.63E-05
Acetophenone	3.20E-09	lb/MMBtu	1.60E-08	4.00E-09
Antimony and compounds	7.90E-06	lb/MMBtu	3.95E-05	9.88E-06
Arsenic and compounds	2.20E-05	lb/MMBtu	1.10E-04	2.75E-05
Benzo(a)pyrene	2.60E-06	lb/MMBtu	1.30E-05	3.25E-06
Beryllium metal	1.10E-06	lb/MMBtu	5.50E-06	1.38E-06
Cadmium metal	4.10E-06	lb/MMBtu	2.05E-05	5.13E-06
Carbon tetrachloride	4.50E-05	lb/MMBtu	2.25E-04	5.63E-05
Chlorine	7.90E-04	lb/MMBtu	3.95E-03	9.88E-04
Chlorobenzene	3.30E-05	lb/MMBtu	1.65E-04	4.13E-05
Chromium-Other compounds	2.10E-05	lb/MMBtu	1.05E-04	2.63E-05
Cobalt compounds	6.50E-06	lb/MMBtu	3.25E-05	8.13E-06
Dinitrophenol, 2,4-	1.80E-07	lb/MMBtu	9.00E-07	2.25E-07
Di(2-ethylhexyl)phthalate	4.70E-08	lb/MMBtu	2.35E-07	5.88E-08
Ethyl benzene	3.10E-05	lb/MMBtu	1.55E-04	3.88E-05
Dichloroethane, 1,2-	2.90E-05	lb/MMBtu	1.45E-04	3.63E-05
Hydrochloric acid	1.90E-02	lb/MMBtu	9.50E-02	2.38E-02
Lead and lead compounds	4.80E-05	lb/MMBtu	2.40E-04	6.00E-05
Manganese and compounds	1.60E-03	lb/MMBtu	8.00E-03	2.00E-03
Mercury	3.50E-06	lb/MMBtu	1.75E-05	4.38E-06
Methyl bromide	1.50E-05	lb/MMBtu	7.50E-05	1.88E-05
Methyl chloride	2.30E-05	lb/MMBtu	1.15E-04	2.88E-05
Trichloroethane, 1,1,1-	3.10E-05	lb/MMBtu	1.55E-04	3.88E-05
Naphthalene	9.70E-05	lb/MMBtu	4.85E-04	1.21E-04
Nickel metal	3.30E-05	lb/MMBtu	1.65E-04	4.13E-05
Nitrophenol, 4-	1.10E-07	lb/MMBtu	5.50E-07	1.38E-07
Pentachlorophenol	5.10E-08	lb/MMBtu	2.55E-07	6.38E-08
Perchloroethylene	3.80E-05	lb/MMBtu	1.90E-04	4.75E-05
Phosphorus metal, yellow or white	2.70E-05	lb/MMBtu	1.35E-04	3.38E-05
Polychlorinated biphenyls	8.15E-09	lb/MMBtu	4.08E-08	1.02E-08
Total PAH (POM)	1.25E-04	lb/MMBtu	6.25E-04	1.56E-04
Dichloropropane, 1,2-	3.30E-05	lb/MMBtu	1.65E-04	4.13E-05
Selenium compounds	2.80E-06	lb/MMBtu	1.40E-05	3.50E-06
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	8.60E-12	lb/MMBtu	4.30E-11	1.08E-11
Trichloroethylene	3.00E-05	lb/MMBtu	1.50E-04	3.75E-05
Trichlorophenol, 2,4,6-	2.20E-08	lb/MMBtu	1.10E-07	2.75E-08
Vinyl chloride	1.80E-05	lb/MMBtu	9.00E-05	2.25E-05
Total HAP Emissions (Biomass Combustion)			**0.16**	**0.039**

Notes:
[1] Emission factors for wood combustion in a stoker boiler from AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03.

Abbreviations:
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
HAP - hazardous air pollutant
hr - hour
kg - kilogram
lb - pound
MMBtu - Million British thermal units
NO_x - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:
AP-42, Section 1.6 - Wood Residue Combustion in Boilers, 09/03

Table 13

Potential VOC and HAP Emissions at Outlet of RCO-1 Stack

AA-016

Enviva Pellets Lucedale, LLC

Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	108 ODT/hr
Annual Throughput	947,026 ODT/yr
Hours of Operation	8,760 hr/yr
Propane Heating Value[1]	91.5 MMBtu/Mgal
Natural Gas Heating Value[2]	1,020 Btu/scf
Number of Burners	1 burners
RCO Burner Rating	9.8 MMBtu/hr
RCO Control Efficiency[3]	96.3%

Pellet Coolers, Pellet Mills, and Dry Hammermills Potential VOC and HAP Emissions

Pollutant	CAS No.	Controlled Emission Factor[4,5]	Units	Emissions at RCO Outlet[6]	
				(lb/hr)	(tpy)
Acetaldehyde	75-07-0	0.00065	lb/ODT	0.070	0.31
Acrolein	107-02-8	0.0023	lb/ODT	0.24	1.07
Formaldehyde	50-00-0	0.0015	lb/ODT	0.16	0.69
Methanol	67-56-1	0.0092	lb/ODT	1.00	4.37
Phenol	108-95-2	0.0011	lb/ODT	0.12	0.51
Propionaldehyde	123-38-6	0.0011	lb/ODT	0.12	0.52
		Total HAP Emissions		**1.70**	**7.47**
Total VOC as propane	--	7.73	lb/hr	7.73	33.9
$PM/PM_{10}/PM_{2.5}$ (Filterable + Condensable)		2.13	lb/hr	2.13	9.34

Notes:

1. Propane heat content from AP-42 Section 1.5 - Liquefied Petroleum Gas Production, 7/08.
2. Natural gas heating value from AP-42 Section 1.4 - Natural Gas Combustion, 07/98.
3. A 96.3% control efficiency for the RCO is applied to VOC and organic HAP emissions per vendor data provided by Kai Simonsen (Enviva) via email on June 26, 2018.
4. HAP emission factors were derived based on stack testing data from comparable Enviva facilities.
5. VOC emissions (as propane) and PM emissions based on vendor data.
6. Includes emissions at outlet of the RCO-1 (AA-010) stack as well as emissions resulting from combustion of natural gas by the RCO-1 (AA-010) burners. RCO-1 (AA-010) will control emissions from thirty-two (32) dry hammermills, sixteen (16) pellet mills, and eight (8) pellet coolers.

Table 13
Potential VOC and HAP Emissions at Outlet of RCO-1 Stack
AA-016
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Thermally Generated Potential Criteria Pollutant Emissions

Maximum high heating value of VOC constituents	0.018 MMBtu/lb
Uncontrolled VOC emissions	915 tons/yr
Heat input of uncontrolled VOC emissions	33,864 MMBtu/yr

Pollutant	Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.082	lb/MMBtu[1]	0.32	1.39
NO_x	0.10	lb/MMBtu[1]	0.38	1.66

Potential Criteria Pollutant and Greenhouse Gas Emissions - RCO Burners

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
RCO Burners - Natural Gas Combustion				
CO	0.082	lb/MMBtu	0.81	3.53
NO_x[2]	1.00	lb/hr	1.00	4.38
SO_2	5.88E-04	lb/MMBtu	0.0058	0.025
VOC	5.39E-03	lb/MMBtu	0.053	0.23
$PM/PM_{10}/PM_{2.5}$ Filterable	1.86E-03	lb/MMBtu	0.018	0.080
$PM/PM_{10}/PM_{2.5}$ Condensable	5.59E-03	lb/MMBtu	0.055	0.24
Total $PM/PM_{10}/PM_{2.5}$			0.073	0.32
CO_2	66.9	kg/MMBtu	1,445	6,329
CH_4	1.00E-03	kg/MMBtu	0.022	0.095
N_2O	1.00E-04	kg/MMBtu	0.0022	0.0095
CO_2e			1,446	6,334

Pollutant	Emission Factor[3]	Units	Potential Emissions	
			(lb/hr)	(tpy)
RCO Burners - Propane Combustion				
CO	7.50	lb/Mgal	0.80	3.52
NO_x	6.50	lb/Mgal	0.70	3.05
SO_2[4]	0.054	lb/Mgal	0.0058	0.025
VOC	1.00	lb/Mgal	0.11	0.47
$PM/PM_{10}/PM_{2.5}$ Condensable	0.50	lb/Mgal	0.054	0.23
$PM/PM_{10}/PM_{2.5}$ Filterable	0.20	lb/Mgal	0.021	0.094
Total $PM/PM_{10}/PM_{2.5}$			0.075	0.33
CO_2	12,500	lb/Mgal	1,339	5,864
CH_4	0.20	lb/Mgal	0.021	0.094
N_2O	0.90	lb/Mgal	0.10	0.42
CO_2e			1,339	5,864

Notes:

1. Emission factors from AP-42, Section 1.4 - Natural Gas Combustion, 07/98. Emission factors converted from lb/MMscf to lb/MMBtu based on assumed heating value of 1,020 Btu/scf for natural gas per AP-42 Section 1.4.
2. NO_x emissions from combustion of natural gas by the RCO burners are based on vendor data with additional contingency applied for conservatism.
3. Emission factors for propane combustion obtained from AP-42 Section 1.5 - Liquefied Petroleum Gas Combustion, 07/08.
4. SO_2 emissions are based on an assumed fuel sulfur content of 0.54 grains/100 ft^3 per *A National Methodology and Emission Inventory for Residential Fuel Combustion*.

Table 13
Potential VOC and HAP Emissions at Outlet of RCO-1 Stack
AA-016
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - RCO Burners

Pollutant	Emission Factor[1]	Units	Potential Emissions (lb/hr)	Potential Emissions (tpy)
RCO Burners - Natural Gas Combustion				
2-Methylnaphthalene	2.40E-05	lb/MMscf	2.31E-07	1.01E-06
3-Methylchloranthrene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	1.54E-07	6.73E-07
Acenaphthene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
Acenaphthylene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
Acrolein	1.80E-05	lb/MMscf	1.73E-07	7.57E-07
Anthracene	2.40E-06	lb/MMscf	2.31E-08	1.01E-07
Arsenic	2.00E-04	lb/MMscf	1.92E-06	8.42E-06
Benz(a)anthracene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
Benzene	2.10E-03	lb/MMscf	2.02E-05	8.84E-05
Benzo(a)pyrene	1.20E-06	lb/MMscf	1.15E-08	5.05E-08
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	1.15E-08	5.05E-08
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
Beryllium	1.20E-05	lb/MMscf	1.15E-07	5.05E-07
Cadmium	1.10E-03	lb/MMscf	1.06E-05	4.63E-05
Chromium VI	1.40E-03	lb/MMscf	1.35E-05	5.89E-05
Chrysene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
Cobalt	8.40E-05	lb/MMscf	8.07E-07	3.53E-06
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	1.15E-08	5.05E-08
Dichlorobenzene	1.20E-03	lb/MMscf	1.15E-05	5.05E-05
Fluoranthene	3.00E-06	lb/MMscf	2.88E-08	1.26E-07
Fluorene	2.80E-06	lb/MMscf	2.69E-08	1.18E-07
Formaldehyde	7.50E-02	lb/MMscf	7.21E-04	3.16E-03
Hexane	1.8	lb/MMscf	0.017	0.076
Indeno(1,2,3-cd)pyrene	1.80E-06	lb/MMscf	1.73E-08	7.57E-08
Lead	5.00E-04	lb/MMscf	4.80E-06	2.10E-05
Manganese	3.80E-04	lb/MMscf	3.65E-06	1.60E-05
Mercury	2.60E-04	lb/MMscf	2.50E-06	1.09E-05
Naphthalene	6.10E-04	lb/MMscf	5.86E-06	2.57E-05
Nickel	2.10E-03	lb/MMscf	2.02E-05	8.84E-05
Phenanathrene	1.70E-05	lb/MMscf	1.63E-07	7.15E-07
Pyrene	5.00E-06	lb/MMscf	4.80E-08	2.10E-07
Selenium	2.40E-05	lb/MMscf	2.31E-07	1.01E-06
Toluene	3.40E-03	lb/MMscf	3.27E-05	1.43E-04
Total HAP Emissions (natural gas combustion)			**0.018**	**0.079**

Table 13
Potential VOC and HAP Emissions at Outlet of RCO-1 Stack
AA-016
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Pollutant	Emission Factor[2]	Units	Potential Emissions	
			(lb/hr)	(tpy)
RCO Burners - Propane Combustion				
Benzene	7.10E-04	lb/MMBtu	6.96E-03	3.05E-02
Formaldehyde	1.51E-03	lb/MMBtu	1.48E-02	6.48E-02
PAHs	4.00E-05	lb/MMBtu	3.92E-04	1.72E-03
Total HAP Emissions (propane combustion)			**0.022**	**0.097**

Notes:

1. Emission factors from AP-42, Section 1.4 - Natural Gas Combustion, 07/98. Emission factors converted from lb/MMscf to lb/MMBtu based on assumed heating value of 1,020 Btu/scf for natural gas per AP-42 Section 1.4.
2. Emission factors for propane combustion from the South Coast Air Quality Management District's Air Emissions Reporting Tool for external combustion equipment fired with LPG.

Abbreviations:

CAS - chemical abstract service
HAP - hazardous air pollutant
hr - hour
lb - pound
ODT - oven dried tons
RCO - regenerative catalytic oxidizer
RTO - regenerative thermal oxidizer
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:

A National Methodology and Emission Inventory for Residential Fuel Combustion (2001). Retrieved from https://www3.epa.gov/ttnchie1/conference/ei12/area/haneke.pdf.
AP-42, Section 1.4 - Natural Gas Combustion, 07/98.
AP-42 Chapter 1.5, Liquid Petroleum Gas Combustion, 07/08.
South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting

Table 14
Potential VOC and HAP Emissions at Outlet of RCO-2 Stack
AA-017
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Hourly Throughput	54 ODT/hr
Annual Throughput	473,513 ODT/yr
Hours of Operation	8,760 hr/yr
Propane Heating Value[1]	91.5 MMBtu/Mgal
Natural Gas Heating Value[2]	1,020 Btu/scf
Number of Burners	1 burners
RCO Burner Rating	4.6 MMBtu/hr
RCO Control Efficiency[3]	96.3%

Pellet Coolers, Pellet Mills, and Dry Hammermills Potential VOC and HAP Emissions

Pollutant	CAS No.	Controlled Emission Factor[4,5]	Units	Emissions at RCO Outlet[6]	
				(lb/hr)	(tpy)
Acetaldehyde	75-07-0	0.00065	lb/ODT	0.035	0.15
Acrolein	107-02-8	0.0023	lb/ODT	0.12	0.54
Formaldehyde	50-00-0	0.0015	lb/ODT	0.078	0.34
Methanol	67-56-1	0.0092	lb/ODT	0.50	2.18
Phenol	108-95-2	0.0011	lb/ODT	0.059	0.26
Propionaldehyde	123-38-6	0.0011	lb/ODT	0.059	0.26
			Total HAP Emissions	**0.85**	**3.73**
Total VOC as propane	--	3.87	lb/hr	3.87	16.9
$PM/PM_{10}/PM_{2.5}$ (Filterable + Condensable)		1.07	lb/hr	1.07	4.67

Notes:

1. Propane heat content from AP-42 Section 1.5 - Liquefied Petroleum Gas Production, 7/08.
2. Natural gas heating value from AP-42 Section 1.4 - Natural Gas Combustion, 07/98.
3. A 96.3% control efficiency for the RCO is applied to VOC and organic HAP emissions per vendor data provided by Kai Simonsen (Enviva) via email on June 26, 2018.
4. HAP emission factors were derived based on stack testing data from comparable Enviva facilities.
5. VOC emissions (as propane) and PM emissions based on vendor data.
6. Includes emissions at outlet of the RCO-2 (AA-011) stack as well as emissions resulting from combustion of natural gas by the RCO-2 (AA-011) burners. RCO-2 (AA-011) will control emissions from sixteen (16) dry hammermills, eight (8) pellet mills, and four (4) pellet coolers.

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Table 14
Potential VOC and HAP Emissions at Outlet of RCO-2 Stack
AA-017
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Thermally Generated Potential Criteria Pollutant Emissions

Maximum high heating value of VOC constituents	0.018 MMBtu/lb
Uncontrolled VOC emissions	458 tons/yr
Heat input of uncontrolled VOC emissions	16,932 MMBtu/yr

Pollutant	Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	0.082	lb/MMBtu[1]	0.16	0.70
NO_X	0.10	lb/MMBtu[1]	0.19	0.83

Potential Criteria Pollutant and Greenhouse Gas Emissions - RCO Burners

Pollutant	Emission Factor	Units	Potential Emissions	
			(lb/hr)	(tpy)
RCO Burners - Natural Gas Combustion				
CO	0.082	lb/MMBtu[1]	0.38	1.66
NO_X	1.00	lb/hr[2]	1.00	4.38
SO_2	5.9E-04	lb/MMBtu[1]	0.0027	0.012
VOC	5.4E-03	lb/MMBtu[1]	0.025	0.11
$PM/PM_{10}/PM_{2.5}$ Filterable	1.9E-03	lb/MMBtu[1]	0.0086	0.038
$PM/PM_{10}/PM_{2.5}$ Condensable	5.6E-03	lb/MMBtu[1]	0.026	0.11
Total $PM/PM_{10}/PM_{2.5}$			0.034	0.15
CO_2	66.9	kg/MMBtu[3]	678	2,971
CH_4	1.0E-03	kg/MMBtu[3]	0.010	0.044
N_2O	1.0E-04	kg/MMBtu[3]	0.0010	0.0044
CO_2e			679	2,973

Pollutant	Emission Factor[3]	Units	Potential Emissions	
			(lb/hr)	(tpy)
RCO Burners - Propane Combustion				
CO	7.50	lb/Mgal	0.38	1.65
NO_X	6.50	lb/Mgal	0.33	1.43
SO_2[4]	0.054	lb/Mgal	0.0027	0.012
VOC	1.00	lb/Mgal	0.050	0.22
$PM/PM_{10}/PM_{2.5}$ Condensable	0.50	lb/Mgal	0.025	0.11
$PM/PM_{10}/PM_{2.5}$ Filterable	0.20	lb/Mgal	0.010	0.044
Total $PM/PM_{10}/PM_{2.5}$			0.035	0.15
CO_2	12,500	lb/Mgal	628	2,752
CH_4	0.20	lb/Mgal	0.010	0.044
N_2O	0.90	lb/Mgal	0.045	0.20
CO_2e			628	2,752

Notes:

1. Emission factors from AP-42, Section 1.4 - Natural Gas Combustion, 07/98. Emission factors converted from lb/MMscf to lb/MMBtu based on assumed heating value of 1,020 Btu/scf for natural gas per AP-42 Section 1.4.
2. NO_X emissions from combustion of natural gas by the RCO burners are based on vendor data with additional contingency applied for conservatism.
3. Emission factors for propane combustion obtained from AP-42 Section 1.5 - Liquefied Petroleum Gas Combustion, 07/08.
4. SO_2 emissions are based on an assumed fuel sulfur content of 0.54 grains/100 ft^3 per *A National Methodology and Emission Inventory for Residential Fuel Combustion*.

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Table 14
Potential VOC and HAP Emissions at Outlet of RCO-2 Stack
AA-017
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Potential HAP Emissions - RCO Burners

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
RCO Burners - Natural Gas Combustion				
2-Methylnaphthalene	2.40E-05	lb/MMscf	1.08E-07	4.74E-07
3-Methylchloranthrene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	7.22E-08	3.16E-07
Acenaphthene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
Acenaphthylene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
Acrolein	1.80E-05	lb/MMscf	8.12E-08	3.56E-07
Anthracene	2.40E-06	lb/MMscf	1.08E-08	4.74E-08
Arsenic	2.00E-04	lb/MMscf	9.02E-07	3.95E-06
Benz(a)anthracene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
Benzene	2.10E-03	lb/MMscf	9.47E-06	4.15E-05
Benzo(a)pyrene	1.20E-06	lb/MMscf	5.41E-09	2.37E-08
Benzo(b)fluoranthene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	5.41E-09	2.37E-08
Benzo(k)fluoranthene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
Beryllium	1.20E-05	lb/MMscf	5.41E-08	2.37E-07
Cadmium	1.10E-03	lb/MMscf	4.96E-06	2.17E-05
Chromium VI	1.40E-03	lb/MMscf	6.31E-06	2.77E-05
Chrysene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
Cobalt	8.40E-05	lb/MMscf	3.79E-07	1.66E-06
Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	5.41E-09	2.37E-08
Dichlorobenzene	1.20E-03	lb/MMscf	5.41E-06	2.37E-05
Fluoranthene	3.00E-06	lb/MMscf	1.35E-08	5.93E-08
Fluorene	2.80E-06	lb/MMscf	1.26E-08	5.53E-08
Formaldehyde	7.50E-02	lb/MMscf	3.38E-04	1.48E-03
Hexane	1.8	lb/MMscf	0.0081	0.036
Indeno(1,2,3-cd)pyrene	1.80E-06	lb/MMscf	8.12E-09	3.56E-08
Lead	5.00E-04	lb/MMscf	2.25E-06	9.88E-06
Manganese	3.80E-04	lb/MMscf	1.71E-06	7.51E-06
Mercury	2.60E-04	lb/MMscf	1.17E-06	5.14E-06
Naphthalene	6.10E-04	lb/MMscf	2.75E-06	1.20E-05
Nickel	2.10E-03	lb/MMscf	9.47E-06	4.15E-05
Phenanathrene	1.70E-05	lb/MMscf	7.67E-08	3.36E-07
Pyrene	5.00E-06	lb/MMscf	2.25E-08	9.88E-08
Selenium	2.40E-05	lb/MMscf	1.08E-07	4.74E-07
Toluene	3.40E-03	lb/MMscf	1.53E-05	6.72E-05
Total HAP Emissions (natural gas combustion)			**0.0085**	**0.037**

Table 14
Potential VOC and HAP Emissions at Outlet of RCO-2 Stack
AA-017
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Pollutant	Emission Factor[2]	Units	Potential Emissions	
			(lb/hr)	(tpy)
RCO Burners - Propane Combustion				
Benzene	7.10E-04	lb/MMBtu	3.27E-03	1.43E-02
Formaldehyde	1.51E-03	lb/MMBtu	6.95E-03	3.04E-02
PAHs	4.00E-05	lb/MMBtu	1.84E-04	8.06E-04
Total HAP Emissions (propane combustion)			**0.010**	**0.046**

Notes:

1. Emission factors from AP-42, Section 1.4 - Natural Gas Combustion, 07/98. Emission factors converted from lb/MMscf to lb/MMBtu based on assumed heating value of 1,020 Btu/scf for natural gas per AP-42 Section 1.4.
2. Emission factors for propane combustion from the South Coast Air Quality Management District's Air Emissions Reporting Tool for external combustion equipment fired with LPG.

Abbreviations:

CAS - chemical abstract service
HAP - hazardous air pollutant
hr - hour
lb - pound
ODT - oven dried tons
RCO - regenerative catalytic oxidizer
RTO - regenerative thermal oxidizer
tpy - tons per year
VOC - volatile organic compound
yr - year

Reference:

A National Methodology and Emission Inventory for Residential Fuel Combustion (2001). Retrieved from https://www3.epa.gov/ttnchie1/conference/ei12/area/haneke.pdf.
AP-42, Section 1.4 - Natural Gas Combustion, 07/98.
AP-42 Chapter 1.5, Liquid Petroleum Gas Combustion, 07/08.
South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting

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Table 15
Summary of Potential Emissions from Baghouses
AA-018, AA-019, AA-020
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Emission Unit ID	Source Description	Control Device Description	Exhaust Flow Rate[1]	Exit Grain Loading	Particulate Speciation		Potential Emissions					
							PM		PM_{10}		$PM_{2.5}$	
			(cfm)	(gr/cf)	PM_{10} (% of PM)	$PM_{2.5}$ (% of PM)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
AA-018	Finished Product Handling Two (2) Pellet Loadout Bins	One (1) baghouse[2]	3,000	0.004	91%	1.7%	0.10	0.45	0.094	0.41	0.0017	0.0077
AA-019	Additive Handling and Storage	One (1) baghouse[3]	1,000	0.004	100%	100%	0.034	0.15	0.034	0.15	0.034	0.15
AA-020	Dry Shavings Silo	One (1) baghouse[3]	1,000	0.004	100%	100%	0.034	0.15	0.034	0.15	0.034	0.15

Notes:
1. Control device flow rate (cfm) based on data provided by Kai Simonsen (Enviva) on June 25, 2018 and July 3, 2018.
2. Finished product handling particulate speciation based on April 2014 testing conducted at Enviva's Southampton plant.
3. No speciation data is available; therefore, all PM is conservatively assumed to be $PM_{2.5}$.

Abbreviations:
cf - cubic feet
cfm - cubic feet per minute
gr - grain
hr - hour
lb - pound
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
tpy - tons per year

Table 16
Emergency Generator Potential Emissions
AA-022
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Engine Output	500 kW
Horsepower Rating	671 brake hp
Diesel Heating Value	19,300 Btu/lb
Hours of Operation	500 hr/yr
Conversion factor	2,545 Btu/hr/hp
Hourly Fuel Consumption	31.9 gal/hr[1]
Energy Input	4.37 MMBtu/hr[2]

Notes:
1. Fuel consumption calculated using a factor of 0.0476 gal/hr-hp. Advanced Environmental Interface, Inc. (1998). General Permits for Emergency Engines. INSIGHTS, 98-2, 3.
2. Energy calculated on a fuel consumption basis, using an energy factor of 0.137 MMBtu/gal.

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor	Units	Potential Emissions[1] (lb/hr)	Potential Emissions[1] (tpy)
CO[2]	0.39	g/hp-hr	0.58	0.14
NO_x[2]	6.65	g/hp-hr	9.83	2.46
SO_2[3]	15	ppmw	0.0027	0.00066
VOC[2]	0.01	lb/hp-hr	6.71	1.68
PM[2]	0.021	g/hp-hr	0.031	0.0078
PM_{10}[2]	0.021	g/hp-hr	0.031	0.0078
$PM_{2.5}$[2]	0.021	g/hp-hr	0.031	0.0078
CO_2	74.0	kg/MMBtu[4]	713	178
CH_4	3.0E-03	kg/MMBtu[4]	0.029	0.0072
N_2O	6.0E-04	kg/MMBtu[4]	0.0058	0.0014
CO_2e			715	179

Notes:
1. NSPS allows for only 100 hrs/yr of non-emergency operation of these engines. Potential emissions for the emergency generator are conservatively based on 500 hr/yr.
2. Emission factors for Particulate Matter ($TSP/PM_{10}/PM_{2.5}$), Nitrous Oxide (NO_x), Volatile Organic Matter (VOC), and Carbon Monoxide (CO) obtained from generator's spec sheet. The generator's spec sheet does not include an emission factor for VOC so the hydrocarbon (HC) emission factor was used as a surrogate for VOC.
3. Sulfur content in accordance with Year 2013 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.
4. Emission factors from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

Potential HAP Emissions

Pollutant	CAS No.	VOC	Emission Factor[1] (lb/MMBtu)	Potential Emissions[2] (lb/hr)	Potential Emissions[2] (tpy)
Acetaldehyde	75-07-0	Y	2.52E-05	1.10E-04	2.75E-05
Acrolein	107-02-8	Y	7.88E-06	3.45E-05	8.61E-06
Benzene	71-43-2	Y	7.76E-04	3.39E-03	8.48E-04
Benzo(a)pyrene[3]	50-32-8	Y	2.57E-07	1.12E-06	2.81E-07
Formaldehyde	50-00-0	Y	7.89E-05	3.45E-04	8.62E-05
Naphthalene[3]	91-20-3	Y	1.30E-04	5.68E-04	1.42E-04
Total PAH (POM)	--	Y	2.12E-04	9.27E-04	2.32E-04
Toluene	108-88-3	Y	2.81E-04	1.23E-03	3.07E-04
Xylene	1330-20-7	Y	1.93E-04	8.44E-04	2.11E-04
			Total HAP Emissions	**6.88E-03**	**1.72E-03**

Notes:
1. Emission factors obtained from AP-42 Section 3.4 - Large Stationary Diesel and All Stationary Duel-fuel Engines, 10/96, Table 3.4-3 and Table 3.4-4.
2. NSPS allows for only 100 hrs/yr of non-emergency operation of these engines. Potential emissions for the emergency generator are conservatively based on 500 hr/yr.
3. Benzo(a)pyrene and naphthalene are included as HAPs in Total PAH.

Table 16
Emergency Generator Potential Emissions
AA-022
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Abbreviations:

Btu - British thermal unit
CAS - chemical abstract service
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
g - gram
gal - gallon
HAP - hazardous air pollutant
hp - horsepower
hr - hour
kg - kilogram
kW - kilowatt
lb - pound
MW - megawatt
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PAH - polycyclic aromatic hydrocarbon
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
POM - polycyclic organic matter
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

References:

Advanced Environmental Interface, Inc. (1998). General Permits for Emergency Engines. INSIGHTS, 98-2, 3.
AP-42 Chapter 3.3, Stationary Internal Combustion Engines, 10/96.

Table 17
Fire Pump Potential Emissions
AA-023
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Engine Output	0.10 MW
Horsepower Rating	131 hp
Diesel Density[1]	7.1 lb/gal
Hours of Operation	500 hr/yr
Hourly Fuel Consumption	9 gal/hr[1]
Energy Input	1.23 MMBtu/hr[2]

Notes:
1. Diesel density from AP-42 Section 3.4 - Large Stationary Diesel and All Stationary Dual-fuel Engines, 10/96, Table 3.4-1, footnote a.
2. Energy calculated on a fuel consumption basis, using an energy factor of 0.137 MMBtu/gal.

Potential Criteria Pollutant Emissions

Pollutant	Emission Factor	Units	Potential Emissions[1] (lb/hr)	(tpy)
CO[2]	1.3	g/kW-hr	0.28	0.070
NO_X[2]	3.4	g/kW-hr	0.72	0.18
SO_2[3]	15	ppmw	0.0019	4.79E-04
VOC[2]	0.15	g/kW-hr	0.032	0.0081
PM[2]	0.17	g/kW-hr	0.037	0.0092
PM_{10}[2]	0.17	g/kW-hr	0.037	0.0092
$PM_{2.5}$[2]	0.17	g/kW-hr	0.037	0.0092
CO_2	74	kg/MMBtu[4]	201	50.3
CH_4	3.0E-03	kg/MMBtu[4]	0.0082	0.0020
N_2O	6.0E-04	kg/MMBtu[4]	0.0016	4.08E-04
CO_2e			202	50.4

Notes:
1. NSPS allows for only 100 hrs/yr of non-emergency operation. Potential emissions for the fire pump are conservatively based on 500 hr/yr.
2. Emissions factors for $PM/PM_{10}/PM_{2.5}$, NO_X, hydrocarbons, and CO obtained from generator's spec sheet.
3. Sulfur content in accordance with Year 2013 standards of 40 CFR 80.510(a) as required by NSPS Subpart IIII.
4. Emission factors from Table C-1 and C-2 of 40 CFR Part 98 and Global Warming Potentials from Table A-1.

Potential HAP Emissions

Pollutant	CAS No.	VOC	Emission Factor[1] (lb/hp-hr)	Potential Emissions[2] (lb/hr)	(tpy)
Acetaldehyde	75-07-0	Y	5.4E-06	7.03E-04	1.76E-04
Acrolein	107-02-8	Y	6.5E-07	8.48E-05	2.12E-05
Benzene	71-43-2	Y	6.5E-06	8.56E-04	2.14E-04
Benzo(a)pyrene	50-32-8	Y	1.3E-09	1.72E-07	4.31E-08
1,3-Butadiene	106-99-0	Y	2.7E-07	3.59E-05	8.96E-06
Formaldehyde	50-00-0	Y	8.3E-06	1.08E-03	2.71E-04
Naphthalene	91-20-3	Y	5.9E-07	7.78E-05	1.95E-05
Total PAH (POM)[3]	--	Y	1.2E-06	1.54E-04	3.85E-05
Toluene	108-88-3	Y	2.9E-06	3.75E-04	9.38E-05
Xylene	1330-20-7	Y	2.0E-06	2.61E-04	6.53E-05
			Total HAP Emissions	**3.55E-03**	**8.88E-04**

Notes:
1. Emission factor obtained from AP-42 Section 3.3 - Stationary Internal Combustion Engines, 10/96, Table 3.3-2.
2. NSPS allows for only 100 hrs/yr of non-emergency operation. Potential emissions for the fire pump are conservatively based on 500 hr/yr.
3. The PAH emission factor includes all the PAH compounds listed in AP-42. Emissions for naphthalene and benzo(a)pyrene are also calculated separately. For the purposes of calculating total HAP emissions, the naphthalene and benzo(a)pyrene are not included separately to avoid double counting these emissions.

Table 17
Fire Pump Potential Emissions
AA-023
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Abbreviations:

Btu - British thermal unit
CAS - chemical abstract service
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
g - gram
gal - gallon
HAP - hazardous air pollutant
hp - horsepower
hr - hour
kg - kilogram
kW - kilowatt
lb - pound
MW - megawatt
MMBtu - Million British thermal units
NO_X - nitrogen oxides
N_2O - nitrous oxide
ODT - oven dried tons
PAH - polycyclic aromatic hydrocarbon
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
POM - polycyclic organic matter
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

References:

Advanced Environmental Interface, Inc. (1998). General Permits for Emergency Engines. INSIGHTS, 98-2, 3.
AP-42 Chapter 3.3, Stationary Internal Combustion Engines, 10/96.

Table 18
Potential Emissions from Paved Roads
AA-024
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Vehicle Activity	Distance Traveled per Roundtrip[1] (ft)	Trips Per Day	Daily VMT	Events Per Year	Empty Truck Weight	Loaded Truck Weight	Average Truck Weight	Annual VMT	PM Emission Factor[2]	PM_{10} Emission Factor[2]	$PM_{2.5}$ Emission Factor[2]	Potential PM Emissions[3]		Potential PM_{10} Emissions[3]		Potential $PM_{2.5}$ Emissions[3]	
				(days)	(lb)	(lb)	(ton)		(lb/VMT)	(lb/VMT)	(lb/VMT)	(lb/day)	(tpy)	(lb/day)	(tpy)	(lb/day)	(tpy)
Logs Delivery to Crane Storage Area	3,600	102	69	365	24,000	80,000	26	25,331	1.92	0.38	0.094	13.3	2.43	2.66	0.49	0.65	0.12
Chip Delivery	4,300	171	140	365	24,000	80,000	26	50,958	1.92	0.38	0.094	26.7	4.88	5.35	0.98	1.31	0.24
Bark Delivery	4,200	28	22	365	24,000	80,000	26	8,088	1.92	0.38	0.094	4.24	0.77	0.85	0.15	0.21	0.038
Dry Shavings Delivery	5,000	16	15	365	24,000	76,000	25	5,583	1.84	0.37	0.090	2.81	0.51	0.56	0.10	0.14	0.025
Pellet Truck Delivery to Pellet Loadout Area (Truck Back-up)	5,000	147	139	10	24,000	80,000	26	1,393	1.92	0.38	0.094	26.7	0.13	5.34	0.03	1.31	0.0065
Employee Car Parking	1,200	55	13	365	4,000	4,000	2	4,563	0.14	0.028	0.0069	0.17	0.032	0.035	0.006	0.0086	0.0016
Additive Delivery	5,000	3	3	213	24,000	64,000	22	605	1.62	0.32	0.079	0.46	0.049	0.092	0.0098	0.023	0.0024
											Total Emissions:	**74.4**	**8.81**	**14.9**	**1.76**	**3.65**	**0.43**

Notes:

[1] Distance traveled per round trip and daily trip counts provided by Enviva.

[2] Emission factors calculated based on Equation 2 from AP-42 Section 13.2.1 - Paved Roads, 01/11.

where

E = emission factor (lb/ton)
k = particle size multiplier (dimensionless) for PM 0.011
k = particle size multiplier (dimensionless) for PM_{10} 0.0022
k = particle size multiplier (dimensionless) for $PM_{2.5}$ 0.00054
sL - mean road surface silt loading from AP-42 Table 13.2.1-3 for quarries (g/m^2) 8.2
P - No. days with rainfall greater than 0.01 inch 110 Per AP-42, Section 13.2.1, Figure 13.2.1-2 (Lucedale, MS)

[3] Potential emissions calculated from appropriate emission factor times vehicle miles traveled with control efficiency of 90% for water / dust suppression activities followed by sweeping. Per Table 5 in Chapter 4 of the Air Pollution Engineering Manual, Air and Waste Management Association, page 141. Control efficiency (%) = 96-0.263*V, where V is the number of vehicle passes since application of water.

Abbreviations:

ft - feet
hr - hour
lb - pound
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
tpy - tons per year
yr - year
VMT - vehicle miles traveled
VOC - volatile organic compound

References:

AP-42, Section 13.2.1 - Paved Roads, 01/11
Air Pollution Engineering Manual, Air and Waste Management Association

Table 19
Diesel Storage Tanks
IAs
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Source ID[1]	Description	Design Volume[2]	Working Volume[3]	Tank Dimensions		Orientation	Throughput[3]	Turnovers	VOC Emissions[4]	
				Diameter	Length					
		(gal)	(gal)	(ft)	(ft)		(gal/yr)		(lb/hr)	(tpy)
IA	Emergency Generator Fuel Storage Tank	500	450	4.0	6	Horizontal	300	0.67	4.79E-05	2.10E-04
IA	Fire Pump Fuel Storage Tank[5]	185	93	3.3	3.3	Horizontal	4,500	48.6	4.22E-05	1.85E-04
IA	Mobile Fuel Diesel Storage Tank	5,000	2,500	6.0	23.7	Horizontal	200,000	80.0	8.76E-04	3.84E-03
								Total Emissions:	**9.66E-04**	**4.23E-03**

Notes:

1. Storage tanks used exclusively to store diesel are considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 1 R. 6.7.B(7).
2. Conservative design specifications.
3. Working volumes and throughputs provided by Kai Simonsen (Enviva) via email June 25, 2018.
4. Emissions calculated using EPA TANKS 4.0 software.
5. The TANKS program has a minimum allowable tank length of 5 feet. As such, emissions for the Fire Pump Fuel Storage tank are based on a length of 5 feet.

Abbreviations:

EPA - Environmental Protection Agency
ft - feet
gal - gallon
IA - Insignificant Activity
lb - pound
yr - year
VOC - volatile organic compound

Table 20
Propane Vaporizer Potential Emissions
IA[1]
Enviva Pellets Lucedale, LLC
Lucedale, George County, Mississippi

Calculation Basis

Propane Heating Value[2]	91.5 MMBtu/Mgal
Hours of Operation	8,760 hr/yr
Maximum Heat Input Rate	1.00 MMBtu/hr
Hourly Fuel Consumption	0.011 Mgal/hr

Notes:
1. The propane vaporizer is considered an insignificant activity per 11 Miss. Admin. Code Pt. 2 Ch. 6 R. 6.7.B(2).
2. Propane heat content from AP-42 Section 1.5 - Liquefied Petroleum Gas Production, 7/08.

Potential Criteria Pollutant and Greenhouse Gas Emissions

Pollutant	Emission Factor[1]	Units	Potential Emissions	
			(lb/hr)	(tpy)
CO	7.50	lb/Mgal	0.082	0.36
NO_x	13.0	lb/Mgal	0.14	0.62
SO_2[2]	0.054	lb/Mgal	5.90E-04	0.0026
VOC	1.00	lb/Mgal	0.011	0.048
$PM/PM_{10}/PM_{2.5}$ Condensable	0.50	lb/Mgal	0.0055	0.024
$PM/PM_{10}/PM_{2.5}$ Filterable	0.20	lb/Mgal	0.0022	0.010
Total $PM/PM_{10}/PM_{2.5}$			0.0077	0.034
CO_2	12,500	lb/Mgal	137	598
CH_4	0.20	lb/Mgal	0.0022	0.010
N_2O	0.90	lb/Mgal	0.010	0.043
CO_2e			140	611

Notes:
1. Emission factors obtained from AP-42 1.5- Liquefied Petroleum Gas Combustion, 07/08, Table 1.5-1.
2. SO_2 emissions are based on an assumed fuel sulfur content of 0.54 grains/100 ft^3 per *A National Methodology and Emission Inventory for Residential Fuel Combustion*.

Potential HAP Emissions

Pollutant	CAS No.	VOC	Emission Factor[1]	Potential Emissions	
			(lb/MMBtu)	(lb/hr)	(tpy)
Benzene	71-43-2	Y	7.10E-04	7.10E-04	3.11E-03
Formaldehyde	50-00-0	Y	1.50E-03	1.50E-03	6.57E-03
PAHs	--	N	4.00E-05	4.00E-05	1.75E-04
			Total HAP Emissions	**2.21E-03**	**9.86E-03**

Notes:
1. Emission factors for propane combustion from the South Coast Air Quality Management District's Air Emissions Reporting Tool for external combustion equipment fired with LPG.

Abbreviations:

Btu - British thermal unit
CAS - chemical abstract service
CH_4 - methane
CO - carbon monoxide
CO2 - carbon dioxide
CO_2e - carbon dioxide equivalent
gal - gallon
HAP - hazardous air pollutant
hr - hour
lb - pound
LPG - liquified petroleum gas
MMBtu - Million British thermal units
Mgal - Thousand gallons
NO_x - nitrogen oxides
N_2O - nitrous oxide
PAH - polycyclic aromatic hydrocarbon
PM - particulate matter
PM_{10} - particulate matter with an aerodynamic diameter less than 10 microns
$PM_{2.5}$ - particulate matter with an aerodynamic diameter of 2.5 microns or less
SO_2 - sulfur dioxide
tpy - tons per year
VOC - volatile organic compound
yr - year

References:

A National Methodology and Emission Inventory for Residential Fuel Combustion (2001). Retrieved from https://www3.epa.gov/ttnchie1/conference/ei12/area/haneke.pdf.
AP-42 Chapter 1.5, Liquid Petroleum Gas Combustion, 07/08.
South Coast Air Quality Management District. AER Reporting tool. Emission factors available in the Help and Support Manual at: http://www.aqmd.gov/home/rules-compliance/compliance/annual-emission-reporting

Chapter 173-400 WAC
GENERAL REGULATIONS FOR AIR POLLUTION SOURCES

Last Update: 10/25/18

WAC

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DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

173-400-080 Compliance schedules. [Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-080, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331.

	WSR 79-06-012 (Order DE 78-21), § 173-400-080, filed 5/8/79; Order DE 76-38, § 173-400-080, filed 12/21/76. Formerly WAC 18-04-080.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.
173-400-090	Sensitive area designation. [Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-090, filed 8/20/80; Order DE 76-38, § 173-400-090, filed 12/21/76. Formerly WAC 18-04-090.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.
173-400-130	Regulatory actions. [Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-130, filed 5/8/79; Order DE 76-38, § 173-400-130, filed 12/21/76. Formerly WAC 18-04-130.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.
173-400-135	Criminal penalties. [Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-135, filed 5/8/79.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.
173-400-140	Appeals. [Order DE 76-38, § 173-400-140, filed 12/21/76. Formerly WAC 18-04-140.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.
173-400-141	Prevention of significant deterioration (PSD). [Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-141, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 96-19-054 (Order 94-35), § 173-400-141, filed 9/13/96, effective 10/14/96; WSR 93-18-007 (Order 93-03), § 173-400-141, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-141, filed 2/19/91, effective 3/22/91.] Repealed by WSR 05-03-033 (Order 03-07), filed 1/10/05, effective 2/10/05. Statutory Authority: RCW 70.94.152.
173-400-150	Variance. [Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-150, filed 5/8/79; Order DE 76-38, § 173-400-150, filed 12/21/76. Formerly WAC 18-04-150.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.
173-400-160	Maintenance of pay. [Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-160, filed 5/8/79.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.
173-400-170	Requirements for boards and director. [Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-170, filed 5/8/79.] Repealed by WSR 83-09-036 (Order DE 83-13), filed 4/15/83. Statutory Authority: Chapters 43.21A and 70.94 RCW.

WAC 173-400-010 Policy and purpose. (1) It is the policy of the department of ecology (ecology) under the authority vested in it by chapter 43.21A RCW to provide for the systematic control of air pollution from air contaminant sources and for the proper development of the state's natural resources.

(2) It is the purpose of this chapter to establish technically feasible and reasonably attainable standards and to establish rules generally applicable to the control and/or prevention of the emission of air contaminants.

[Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-010, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-010, filed 4/15/83; Order DE 76-38, § 173-400-010, filed 12/21/76. Formerly WAC 18-04-010.]

EPA effective: 6/2/95 (60 FR 28726, 6/2/95)

WAC 173-400-020 Applicability. (1) The provisions of this chapter shall apply statewide, except for specific subsections where a local authority has adopted and implemented corresponding local rules that apply only to sources subject to local jurisdiction as provided under RCW 70.94.141 and 70.94.331.

(2) An authority may enforce this chapter and may also adopt standards or requirements. These standards or requirements may not be less stringent than the current state air quality rules and may be more stringent than the current regulations. Unless properly delegated by ecology, authorities do not have jurisdiction over the following sources:

(a) Specific source categories over which the state, by separate regulation, has assumed or hereafter does assume jurisdiction.

(b) Automobiles, trucks, aircraft.

(c) Those sources under the jurisdiction of the energy facility site evaluation council.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-020, filed 11/28/12, effective 12/29/12; WSR 91-05-064 (Order 90-06), § 173-400-020, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-020, filed 4/15/83. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-020, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-020, filed 5/8/79; Order DE 76-38, § 173-400-020, filed 12/21/76. Formerly WAC 18-04-020.]

EPA effective: 11/3/14 (79 FR 59653, 10/3/14)

WAC 173-400-025 Adoption of federal rules. Federal rules mentioned in this rule are adopted as they exist on January 24, 2018. Adopted or adopted by reference means the federal rule applies as if it was copied into this rule.

[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-025, filed 8/16/18, effective 9/16/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-025, filed 5/31/16, effective 7/1/16.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

WAC 173-400-030 Definitions. The definitions in this section apply statewide except where a permitting authority has redefined a specific term. Except as provided elsewhere in this chapter, the definitions in this section apply throughout the chapter:

(1) **"Actual emissions"** means the actual rate of emissions of a pollutant from an emission unit, as determined in accordance with (a) through (c) of this subsection.

(a) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. Ecology or an authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the emissions unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

(b) Ecology or an authority may presume that source-specific allowable emissions for the unit are equivalent to the actual emissions of the emissions unit.

(c) For any emissions unit which has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the emissions unit on that date.

(2) **"Adverse impact on visibility"** is defined in WAC 173-400-117.

(3) **"Air contaminant"** means dust, fumes, mist, smoke, other particulate matter, vapor, gas, odorous substance, or any combination thereof. "Air pollutant" means the same as "air contaminant."

(4) **"Air pollution"** means the presence in the outdoor atmosphere of one or more air contaminants in sufficient quantities, and of such characteristics and duration as is, or is likely to be, injurious to human health, plant or animal life, or property, or which unreasonably

interferes with enjoyment of life and property. For the purposes of this chapter, air pollution shall not include air contaminants emitted in compliance with chapter 17.21 RCW, the Washington Pesticide Application Act, which regulates the application and control of the use of various pesticides.

(5) **"Allowable emissions"** means the emission rate of a source calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits which restrict the operating rate, or hours of operation, or both) and the most stringent of the following:

(a) The applicable standards as in 40 C.F.R. Part 60, 61, 62, or 63;

(b) Any applicable SIP emissions standard including those with a future compliance date; or

(c) The emissions rate specified as a federally enforceable approval condition, including those with a future compliance date.

~~(6) **"Alternative emission limit"** or **"alternative emission limitation"** means an emission limitation that applies to a source or an emissions unit only during a specifically defined transient mode of operation. An alternative emission limitation is a component of a continuously applicable emission limit. An alternative emission limit may be a numerical limit or a design characteristic of the emission unit and associated emission controls, work practices, or other operational standard, such as a control device operating range.~~

(7) **"Ambient air"** means the surrounding outside air.

(8) **"Ambient air quality standard"** means an established concentration, exposure time, and frequency of occurrence of air contaminant(s) in the ambient air which shall not be exceeded.

(9) **"Approval order"** is defined in **"order of approval."**

(10) **"Attainment area"** means a geographic area designated by EPA at 40 C.F.R. Part 81 as having attained the National Ambient Air Quality Standard for a given criteria pollutant.

(11) **"Authority"** means any air pollution control agency whose jurisdictional boundaries are coextensive with the boundaries of one or more counties.

(12) **"Begin actual construction"** means, in general, initiation of physical on-site construction activities on an emission unit that are of a permanent nature. Such activities include, but are not limited to, installation of building supports and foundations, laying underground pipe work and construction of permanent storage structures. With respect to a change in method of operations, this term refers to those on-site activities other than preparatory activities which mark the initiation of the change.

(13) **"Best available control technology (BACT)"** means an emission limitation based on the maximum degree of reduction for each air pollutant subject to regulation under chapter 70.94 RCW emitted from or which results from any new or modified stationary source, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant. In no event shall application of the "best available control technology" result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard under 40 C.F.R. Part 60 and Part 61. Emissions from any source utilizing clean fuels, or any other means, to comply

with this paragraph shall not be allowed to increase above levels that would have been required under the definition of BACT in the federal Clean Air Act as it existed prior to enactment of the Clean Air Act Amendments of 1990.

(14) **"Best available retrofit technology (BART)"** means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by an existing stationary facility. The emission limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and nonair quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

(15) **"Brake horsepower (BHP)"** means the measure of an engine's horsepower without the loss in power caused by the gearbox, alternator, differential, water pump, and other auxiliary components.

(16) **"Bubble"** means a set of emission limits which allows an increase in emissions from a given emissions unit in exchange for a decrease in emissions from another emissions unit, pursuant to RCW 70.94.155 and WAC 173-400-120.

(17) **"Capacity factor"** means the ratio of the average load on equipment or a machine for the period of time considered, to the manufacturer's capacity rating of the machine or equipment.

(18) **"Class I area"** means any area designated under section 162 or 164 of the federal Clean Air Act (42 U.S.C., Sec. 7472 or 7474) as a Class I area. The following areas are the Class I areas in Washington state:

(a) Alpine Lakes Wilderness;
(b) Glacier Peak Wilderness;
(c) Goat Rocks Wilderness;
(d) Mount Adams Wilderness;
(e) Mount Rainier National Park;
(f) North Cascades National Park;
(g) Olympic National Park;
(h) Pasayten Wilderness; and
(i) Spokane Indian Reservation.

(19) **"Combustion and incineration units"** means units using combustion for waste disposal, steam production, chemical recovery or other process requirements; but excludes outdoor burning.

(20)(a) **"Commence"** as applied to construction, means that the owner or operator has all the necessary preconstruction approvals or permits and either has:

(i) Begun, or caused to begin, a continuous program of actual onsite construction of the source, to be completed within a reasonable time; or

(ii) Entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of actual construction of the source to be completed within a reasonable time.

(b) For the purposes of this definition, "necessary preconstruction approvals" means those permits or orders of approval required under federal air quality control laws and regulations, including state, local and federal regulations and orders contained in the SIP.

(21) **"Concealment"** means any action taken to reduce the observed or measured concentrations of a pollutant in a gaseous effluent while, in fact, not reducing the total amount of pollutant discharged.

(22) **"Criteria pollutant"** means a pollutant for which there is established a National Ambient Air Quality Standard at 40 C.F.R. Part 50. The criteria pollutants are carbon monoxide (CO), particulate matter, ozone (O_3) sulfur dioxide (SO_2), lead (Pb), and nitrogen dioxide (NO_2).

(23) **"Director"** means director of the Washington state department of ecology or duly authorized representative.

(24) **"Dispersion technique"** means a method that attempts to affect the concentration of a pollutant in the ambient air other than by the use of pollution abatement equipment or integral process pollution controls.

(25) **"Ecology"** means the Washington state department of ecology.

(26) **"Electronic means"** means email, fax, FTP site, or other electronic method approved by the permitting authority.

(27) **"Emission"** means a release of air contaminants into the ambient air.

(28) **"Emission reduction credit (ERC)"** means a credit granted pursuant to WAC 173-400-131. This is a voluntary reduction in emissions.

(29) **"Emission standard," "emission limitation"** and **"emission limit"** means a requirement established under the federal Clean Air Act or chapter 70.94 RCW which limits the quantity, rate, or concentration of emissions of air contaminants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction and any design, equipment, work practice, or operational standard adopted under the federal Clean Air Act or chapter 70.94 RCW.

(30) **"Emission threshold"** means an emission of a listed air contaminant at or above the following rates:

Air Contaminant	Annual Emission Rate
Carbon monoxide:	100 tons per year
Fluorides:	3 tons per year
Hydrogen sulfide (H_2S):	10 tons per year
Lead:	0.6 tons per year
Nitrogen oxides:	40 tons per year
Particulate matter (PM):	25 tons per year of PM HPLVVLRQV
	10 tons per year of PM-2.5
	15 tons per year of PM-10 emissions
Reduced sulfur compounds (including H_2S):	10 tons per year
Sulfur dioxide:	40 tons per year
Sulfuric acid mist:	7 tons per year
7otal reduced sulfur (including H_2S):	10 tons per year
9olatile organic compounds:	40 tons per year

(31) **"Emissions unit"** or **"emission unit"** means any part of a stationary source or source which emits or would have the potential to

emit any pollutant subject to regulation under the federal Clean Air Act, chapter 70.94 or 70.98 RCW.

~~(32) **"Excess emissions"** means emissions of an air pollutant in excess of any applicable emission standard or an emission limit established in a permit or order, including an alternative emission limit.~~

(33) **"Excess stack height"** means that portion of a stack which exceeds the greater of sixty-five meters or the calculated stack height described in WAC 173-400-200(2).

(34) **"Existing stationary facility (facility)"** is defined in WAC 173-400-151.

(35) **"Federal Clean Air Act (FCAA)"** means the federal Clean Air Act, also known as Public Law 88-206, 77 Stat. 392, December 17, 1963, 42 U.S.C. 7401 et seq., as last amended by the Clean Air Act Amendments of 1990, P.L. 101-549, November 15, 1990.

(36) **"Federal Class I area"** means any federal land that is classified or reclassified Class I. The following areas are federal Class I areas in Washington state:

(a) Alpine Lakes Wilderness;

(b) Glacier Peak Wilderness;

(c) Goat Rocks Wilderness;

(d) Mount Adams Wilderness;

(e) Mount Rainier National Park;

(f) North Cascades National Park;

(g) Olympic National Park; and

(h) Pasayten Wilderness.

(37) **"Federal land manager"** means the secretary of the department with authority over federal lands in the United States.

~~(38) **"Federally enforceable"** means all limitations and conditions which are enforceable by EPA, including those requirements developed under 40 C.F.R. Parts 60, 61, 62 and 63, requirements established within the Washington SIP, requirements within any approval or order established under 40 C.F.R. 52.21 or under a SIP approved new source review regulation, emissions limitation orders issued under WAC 173-400-081(4), 173-400-082, or 173-400-091.~~

(39) **"Fossil fuel-fired steam generator"** means a device, furnace, or boiler used in the process of burning fossil fuel for the primary purpose of producing steam by heat transfer.

(40) **"Fugitive dust"** means a particulate emission made airborne by forces of wind, man's activity, or both. Unpaved roads, construction sites, and tilled land are examples of areas that originate fugitive dust. Fugitive dust is a type of fugitive emission.

(41) **"Fugitive emissions"** means emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

(42) **"General process unit"** means an emissions unit using a procedure or a combination of procedures for the purpose of causing a change in material by either chemical or physical means, excluding combustion.

(43) **"Good engineering practice (GEP)"** refers to a calculated stack height based on the equation specified in WAC 173-400-200 (2)(a)(ii).

(44) **"Greenhouse gases (GHGs)"** includes carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

~~(45) **"Hog fuel"** (hogged fuel) means waste wood that is reduced in size to facilitate burning.~~

(46) **"Incinerator"** means a furnace used primarily for the thermal destruction of waste.

(47) **"In operation"** means engaged in activity related to the primary design function of the source.

(48) **"Mandatory Class I federal area"** means any area defined in Section 162(a) of the federal Clean Air Act (42 U.S.C., 7472(a)). The following areas are the mandatory Class I federal areas in Washington state:

(a) Alpine Lakes Wilderness;

(b) Glacier Peak Wilderness;

(c) Goat Rocks Wilderness;

(d) Mount Adams Wilderness;

(e) Mount Rainier National Park;

(f) North Cascades National Park;

(g) Olympic National Park; and

(h) Pasayten Wilderness;

(49) **"Masking"** means the mixing of a chemically nonreactive control agent with a malodorous gaseous effluent to change the perceived odor.

(50) **"Materials handling"** means the handling, transporting, loading, unloading, storage, and transfer of materials with no significant chemical or physical alteration.

(51) **"Modification"** means any physical change in, or change in the method of operation of, a stationary source that increases the amount of any air contaminant emitted by such source or that results in the emissions of any air contaminant not previously emitted. The term modification shall be construed consistent with the definition of modification in Section 7411, Title 42, United States Code, and with rules implementing that section.

(52) **"National Ambient Air Quality Standard (NAAQS)"** means an ambient air quality standard set by EPA at 40 C.F.R. Part 50 and includes standards for carbon monoxide (CO), particulate matter, ozone (O_3), sulfur dioxide (SO_2), lead (Pb), and nitrogen dioxide (NO_2).

(53) **"National Emission Standards for Hazardous Air Pollutants (NESHAP)"** means the federal rules in 40 C.F.R. Part 61.

(54) **"National Emission Standards for Hazardous Air Pollutants for Source Categories"** means the federal rules in 40 C.F.R. Part 63.

(55) **"Natural conditions"** means naturally occurring phenomena that reduce visibility as measured in terms of light extinction, visual range, contrast, or coloration.

(56) **"New source"** means:

(a) The construction or modification of a stationary source that increases the amount of any air contaminant emitted by such source or that results in the emission of any air contaminant not previously emitted; and

(b) Any other project that constitutes a new source under the federal Clean Air Act.

(57) **"New Source Performance Standards (NSPS)"** means the federal rules in 40 C.F.R. Part 60.

(58) **"Nonattainment area"** means a geographic area designated by EPA at 40 C.F.R. Part 81 as exceeding a National Ambient Air Quality Standard (NAAQS) for a given criteria pollutant. An area is nonattainment only for the pollutants for which the area has been designated nonattainment.

(59) **"Nonroad engine"** means:

(a) Except as discussed in (b) of this subsection, a nonroad engine is any internal combustion engine:

(i) In or on a piece of equipment that is self-propelled or serves a dual purpose by both propelling itself and performing another function (such as garden tractors, off-highway mobile cranes and bulldozers); or

(ii) In or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or

(iii) That, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to, wheels, skids, carrying handles, dolly, trailer, or platform.

(b) An internal combustion engine is not a nonroad engine if:

(i) The engine is used to propel a motor vehicle or a vehicle used solely for competition, or is subject to standards promulgated under section 202 of the federal Clean Air Act (42 U.S.C., Sec. 7521); or

(ii) The engine is regulated by a New Source Performance Standard promulgated under section 111 of the federal Clean Air Act (42 U.S.C., Sec. 7411); or

(iii) The engine otherwise included in (a)(iii) of this subsection remains or will remain at a location for more than twelve consecutive months or a shorter period of time for an engine located at a seasonal source. A location is any single site at a building, structure, facility, or installation. Any engine (or engines) that replaces an engine at a location and that is intended to perform the same or similar function as the engine replaced will be included in calculating the consecutive time period. An engine located at a seasonal source is an engine that remains at a seasonal source during the full annual operating period of the seasonal source. A seasonal source is a stationary source that remains in a single location on a permanent basis (i.e., at least two years) and that operates at that single location approximately three months (or more) each year. This paragraph does not apply to an engine after the engine is removed from the location.

(60) **"Notice of construction application"** means a written application to allow construction of a new source, modification of an existing stationary source or replacement or substantial alteration of control technology at an existing stationary source.

(61) **"Opacity"** means the degree to which an object seen through a plume is obscured, stated as a percentage.

(62) **"Outdoor burning"** means the combustion of material in an open fire or in an outdoor container, without providing for the control of combustion or the control of the emissions from the combustion. Waste wood disposal in wigwam burners or silo burners is not considered outdoor burning.

(63) **"Order"** means any order issued by ecology or a local air authority pursuant to chapter 70.94 RCW, including, but not limited to RCW 70.94.332, 70.94.152, 70.94.153, 70.94.154, and 70.94.141(3), and includes, where used in the generic sense, the terms order, corrective action order, order of approval, and regulatory order.

(64) **"Order of approval"** or **"approval order"** means a regulatory order issued by a permitting authority to approve the notice of construction application for a proposed new source or modification, or

the replacement or substantial alteration of control technology at an existing stationary source.

(65) **"Ozone depleting substance"** means any substance listed in Appendices A and B to Subpart A of 40 C.F.R. Part 82.

(66) **"Particulate matter"** or **"particulates"** means any airborne finely divided solid or liquid material with an aerodynamic diameter smaller than 100 micrometers.

(67) **"Particulate matter emissions"** means all finely divided solid or liquid material, other than uncombined water, emitted to the ambient air as measured by applicable reference methods, or an equivalent or alternative method specified in Title 40, chapter I of the Code of Federal Regulations or by a test method specified in the SIP.

(68) **"Parts per million (ppm)"** means parts of a contaminant per million parts of gas, by volume, exclusive of water or particulates.

(69) **"Permitting authority"** means ecology or the local air pollution control authority with jurisdiction over the source.

(70) **"Person"** means an individual, firm, public or private corporation, association, partnership, political subdivision, municipality, or government agency.

(71) **"PM-10"** means particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by a reference method based on 40 C.F.R. Part 50 Appendix J and designated in accordance with 40 C.F.R. Part 53 or by an equivalent method designated in accordance with 40 C.F.R. Part 53.

(72) **"PM-10 emissions"** means finely divided solid or liquid material, including condensable particulate matter, with an aerodynamic diameter less than or equal to a nominal 10 micrometers emitted to the ambient air as measured by an applicable reference method, or an equivalent or alternate method, specified in 40 C.F.R. Part 51, Appendix M (in effect on the date in WAC 173-400-025) or by a test method specified in the SIP.

(73) **"PM-2.5"** means particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers as measured by a reference method based on 40 C.F.R. Part 50 Appendix L and designated in accordance with 40 C.F.R. Part 53 or by an equivalent method designated in accordance with 40 C.F.R. Part 53.

(74) **"PM-2.5 emissions"** means finely divided solid or liquid material, including condensable particulate matter, with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers emitted to the ambient air as measured by an applicable reference method, or an equivalent or alternate method, specified in 40 C.F.R. Part 51 (in effect on the date in WAC 173-400-025) or by a test method specified in the SIP.

(75) **"Portable source"** means a type of stationary source which emits air contaminants only while at a fixed location but which is capable of being transported to various locations. Examples include a portable asphalt plant or a portable package boiler.

(76) **"Potential to emit"** means the maximum capacity of a source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is enforceable. Secondary emissions do not count in determining the potential to emit of a source.

(77) **"Prevention of significant deterioration (PSD)"** means the program in WAC 173-400-700 to 173-400-750.

(78) **"Projected width"** means that dimension of a structure determined from the frontal area of the structure, projected onto a plane perpendicular to a line between the center of the stack and the center of the building.

(79) **"Reasonably attributable"** means attributable by visual observation or any other technique the state deems appropriate.

(80) **"Reasonably available control technology (RACT)"** means the lowest emission limit that a particular source or source category is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. RACT is determined on a case-by-case basis for an individual source or source category taking into account the impact of the source upon air quality, the availability of additional controls, the emission reduction to be achieved by additional controls, the impact of additional controls on air quality, and the capital and operating costs of the additional controls. RACT requirements for any source or source category shall be adopted only after notice and opportunity for comment are afforded.

(81) **"Regulatory order"** means an order issued by a permitting authority that requires compliance with:

(a) Any applicable provision of chapter 70.94 RCW or rules adopted there under; or

(b) Local air authority regulations adopted by the local air authority with jurisdiction over the sources to whom the order is issued.

(82) **"Secondary emissions"** means emissions which would occur as a result of the construction or operation of a major stationary source or major modification, but do not come from the major stationary source or major modification itself. Secondary emissions must be specific, well defined, quantifiable, and impact the same general area as the major stationary source or major modification which causes the secondary emissions. Secondary emissions include emissions from any off-site support facility which would not be constructed or increase its emissions except as a result of the construction or operation of the major stationary source or major modification. Secondary emissions do not include any emissions which come directly from a mobile source such as emissions from the tailpipe of a motor vehicle, from a train, or from a vessel.

~~(83) **"Shutdown"** means, generally, the cessation of operation of a stationary source or emission unit for any reason.~~

(84) **"Source"** means all of the emissions unit(s) including quantifiable fugitive emissions, that are located on one or more contiguous or adjacent properties, and are under the control of the same person or persons under common control, whose activities are ancillary to the production of a single product or functionally related groups of products.

(85) **"Source category"** means all sources of the same type or classification.

(86) **"Stack"** means any point in a source designed to emit solids, liquids, or gases into the air, including a pipe or duct.

(87) **"Stack height"** means the height of an emission point measured from the ground-level elevation at the base of the stack.

(88) **"Standard conditions"** means a temperature of 20°C (68°F) and a pressure of 760 mm (29.92 inches) of mercury.

~~(89) **"Startup"** means, generally, the setting in operation of a stationary source or emission unit for any reason.~~

(90) **"State implementation plan (SIP)"** or **"Washington SIP"** means the Washington SIP in 40 C.F.R. Part 52, Subpart WW. The SIP contains state, local and federal regulations and orders, the state plan and compliance schedules approved and promulgated by EPA, for the purpose of implementing, maintaining, and enforcing the National Ambient Air Quality Standards.

(91) **"Stationary source"** means any building, structure, facility, or installation which emits or may emit any air contaminant. This term does not include emissions resulting directly from an internal combustion engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in Section 216(11) of the federal Clean Air Act (42 U.S.C., 7550(11)).

(92) **"Sulfuric acid plant"** means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, or acid sludge.

(93) **"Synthetic minor"** means any source whose potential to emit has been limited below applicable thresholds by means of an enforceable order, rule, or approval condition.

(94) **"Total reduced sulfur (TRS)"** means the sum of the sulfur compounds hydrogen sulfide, mercaptans, dimethyl sulfide, dimethyl disulfide, and any other organic sulfides emitted and measured by 40 C.F.R. Part 60, Appendix A, Test Method 16 (in effect on the date in WAC 173-400-025) or an EPA approved equivalent method and expressed as hydrogen sulfide.

(95) **"Total suspended particulate"** means particulate matter as measured by the method described in 40 C.F.R. Part 50 Appendix B.

~~(96) **"Toxic air pollutant (TAP)"** or **"toxic air contaminant"** means any toxic air pollutant listed in WAC 173-460-150. The term toxic air pollutant may include particulate matter and volatile organic compounds if an individual substance or a group of substances within either of these classes is listed in WAC 173-460-150. The term toxic air pollutant does not include particulate matter and volatile organic compounds as generic classes of compounds.~~

~~(97) **"Transient mode of operation"** means a short-term operating period of a source or an emission unit with a specific beginning and end, such as startup, shutdown, or maintenance.~~

(98) **"Unclassifiable area"** means an area that cannot be designated attainment or nonattainment on the basis of available information as meeting or not meeting the National Ambient Air Quality Standard for the criteria pollutant and that is listed by EPA at 40 C.F.R. Part 81.

(99) **"United States Environmental Protection Agency (USEPA)"** shall be referred to as EPA.

~~(100) **"Useful thermal energy"** means energy (steam, hot water, or process heat) that meets the minimum operating temperature, flow, and/or pressure required by any system that uses energy provided by the affected boiler or process heater.~~

(101) **"Visibility impairment"** means any humanly perceptible change in visibility (light extinction, visual range, contrast, or coloration) from that which would have existed under natural conditions.

(102) **"Volatile organic compound (VOC)"** means any carbon compound that participates in atmospheric photochemical reactions.

(a) Exceptions. The following compounds are not a VOC: Acetone; carbon monoxide; carbon dioxide; carbonic acid; metallic carbides or carbonates; ammonium carbonate, methane; ethane; methylene chloride (dichloromethane); 1,1,1-trichloroethane (methyl chloroform); 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113); trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (HCFC-22); trifluoromethane (HFC-23); 1,2-dichloro 1,1,2,2-tetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); 1,1,1-trifluoro 2,2-dichloroethane (HCFC-123); 1,1,1,2-tetrafluoroethane (HFC-134a); 1,1-dichloro 1-fluoroethane (HCFC-141b); 1-chloro 1,1-difluoroethane (HCFC-142b); 2-chloro 1,1,1,2-tetrafluoroethane (HCFC-124); pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC-152a); parachlorobenzotrifluoride (PCBTF); cyclic, branched, or linear completely methylated siloxanes; perchloroethylene (tetrachloroethylene); 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca); 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb); 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee); difluoromethane (HFC-32); ethylfluoride (HFC-161); 1,1,1,3,3,3-hexafluoropropane (HFC-236fa); 1,1,2,2,3-pentafluoropropane (HFC-245ca); 1,1,2,3,3-pentafluoropropane (HFC-245ea); 1,1,1,2,3-pentafluoropropane (HFC-245eb); 1,1,1,3,3-pentafluoropropane (HFC-245fa); 1,1,1,2,3,3-hexafluoropropane (HFC-236ea); 1,1,1,3,3-pentafluorobutane (HFC-365mfc); chlorofluoromethane (HCFC-31); 1 chloro-1-fluoroethane (HCFC-151a); 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a); 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane ($C_4F_9OCH_3$ or HFE-7100); 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ($(CF_3)_2CFCF_2OCH_3$); 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane ($C_4F_9OC_2H_5$ or HFE-7200); 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ($(CF_3)_2CFCF_2OC_2H_5$); methyl acetate; 1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane (n-$C_3F_7OCH_3$ or HFE-7000); 3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500); 1,1,1,2,3,3,3-heptafluoropropane (HFC 227ea); methyl formate ($HCOOCH_3$); 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300); dimethyl carbonate; propylene carbonate; trans-1,3,3,3-tetrafluoropropene; HCF2OCF2H (HFE-134); HCF2OCF2OCF2H (HFE-236cal2); HCF2OCF2CF2OCF2H (HFE-338pcc13); HCF2OCF2OCF2CF2OCF2H (H-Galden 1040x or H-Galden ZT 130 (or 150 or 180)); trans 1-chloro-3,3,3-trifluoroprop-1-ene; 2,3,3,3-tetrafluoropropene; 2-amino-2-methyl-1-propanol; t-butyl acetate; 1,1,2,2- tetrafluoro -1-(2,2,2-trifluoroethoxy) ethane; and perfluorocarbon compounds that fall into these classes:

(i) Cyclic, branched, or linear completely fluorinated alkanes;

(ii) Cyclic, branched, or linear completely fluorinated ethers with no unsaturations;

(iii) Cyclic, branched, or linear completely fluorinated tertiary amines with no unsaturations; and

(iv) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

(b) For the purpose of determining compliance with emission limits, VOC will be measured by the appropriate methods in 40 C.F.R. Part 60, Appendix A (in effect on the date in WAC 173-400-025). Where the method also measures compounds with negligible photochemical reactivity, these negligibly reactive compounds may be excluded as VOC if the amount of the compounds is accurately quantified, and the exclusion is approved by ecology, the authority, or EPA.

(c) As a precondition to excluding these negligibly reactive compounds as VOC or at any time thereafter, ecology or the authority may require an owner or operator to provide monitoring or testing methods and results demonstrating, to the satisfaction of ecology, the authority, or EPA the amount of negligibly reactive compounds in the source's emissions.

~~(103) **"Wigwam"** or **"silo burner"** means a cone-shaped or cylindrical structure that burns waste wood for disposal. A silo burner is a cylinder and may be made with refractory material rather than metal.~~

~~(104) **"Wood-fired boiler"** means an enclosed device using controlled flame combustion of wood or waste wood with the primary purpose of recovering thermal energy in the form of a steam or hot water boiler that burns wood or waste wood for fuel for the primary purpose of producing hot water or steam by heat transfer. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or air feed rates are controlled.~~

(105) **"Waste wood"** means wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, and the handling and storage of raw materials, trees, and stumps. This includes, but is not limited to, sawdust, chips, shavings, bark, pulp, log sort yard waste, and wood materials from forest health logging, land clearing or pruning, but does not include wood pieces or particles containing chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenate.

[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-030, filed 8/16/18, effective 9/16/18; WSR 12-24-027 (Order 11-10), § 173-400-030, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-030, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.395 and 70.94.331. WSR 07-11-039 (Order 06-03), § 173-400-030, filed 5/8/07, effective 6/8/07. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-030, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-030, filed 8/15/01, effective 9/15/01. Statutory Authority: RCW 70.94.152. WSR 98-01-183 (Order 96-01), § 173-400-030, filed 12/23/97, effective 1/23/98. Statutory Authority: Chapter 70.94 RCW. WSR 96-19-054 (Order 94-35), § 173-400-030, filed 9/13/96, effective 10/14/96; WSR 95-07-126 (Order 93-40), § 173-400-030, filed 3/22/95, effective 4/22/95; WSR 93-18-007 (Order 93-03), § 173-400-030, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-030, filed 2/19/91, effective 3/22/91. Statutory Authority: RCW 70.94.331, 70.94.395 and 70.94.510. WSR 85-06-046 (Order 84-48), § 173-400-030, filed 3/6/85. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-030, filed 4/15/83. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-030, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-030, filed 5/8/79; Order DE 76-38, § 173-400-030, filed 12/21/76. Formerly WAC 18-04-030.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

173-400-030 Definitions.

(30) "Excess emissions" means emissions of an air pollutant in excess of any applicable emission standard.

(36) "Federally enforceable" means all limitations and conditions which are enforceable by EPA, including those requirements developed under 40 C.F.R. Parts 60, 61, 62 and 63, requirements established within the Washington SIP, requirements within any approval or order established under 40 C.F.R. 52.21 or under a SIP approved new source review regulation, and emissions limitation orders issued under WAC 173-400-091.

State effective: 12/29/12; EPA effective: 11/3/14 (79 FR 59653,10/3/14)

WAC 173-400-036 Relocation of portable sources. (1) **Applicability.**

(a) Portable sources that meet the requirements of this section may without obtaining a site-specific or permitting authority-specific order of approval relocate and operate in any jurisdiction in which the permitting authority has adopted this section by reference. The owner or operator of a portable source may file a new notice of construction application in compliance with WAC 173-400-110 each time the portable source relocates in lieu of participating in the inter-jurisdictional provisions in this section.

(b) Permitting authority participation in the inter-jurisdictional provisions of this section is optional. This section applies only in those jurisdictions where the permitting authority has adopted it. Nothing in this section affects a permitting authority's ability to enter into an agreement with another permitting authority to allow inter-jurisdictional relocation of a portable source under conditions other than those listed here except that subsection (2) of this section applies statewide.

(c) This section applies to sources that move from the jurisdiction of one permitting authority to the jurisdiction of another permitting authority, inter-jurisdictional relocation. This section does not apply to intra-jurisdictional relocation.

(d) Engines subject to WAC 173-400-035 Nonroad engines are not portable sources subject to this section.

(2) **Portable sources in nonattainment areas.** If a portable source is locating in a nonattainment area and if the source emits the pollutants or pollutant precursors for which the area is classified as nonattainment, then the source must acquire a site-specific order of approval.

(3) **Major stationary sources.** If a portable source is a major stationary source then it must also comply with WAC 173-400-700 through 173-400-750 as applicable.

(4) **Relocation requirements.** Portable sources are allowed to operate at a new location without obtaining an order of approval from the permitting authority with jurisdiction over the new location provided that:

(a) A permitting authority in Washington state issued a notice of construction order of approval for the portable source after July 1, 2010, identifying the emission units as a "portable source";

(b) The owner/operator of the portable source submits a relocation notice on a form provided by the permitting authority and a copy of the applicable portable source order of approval to the permitting authority with jurisdiction over the intended operation location a minimum of fifteen calendar days before the portable source begins operation at the new location;

(c) The owner/operator submits the emission inventory required under WAC 173-400-105 to each permitting authority in whose jurisdiction the portable source operated during the preceding year. The data must be sufficient in detail to enable each permitting authority to calculate the emissions within its jurisdiction and the yearly aggregate.

(d) Operation at any location under this provision is limited to one year or less. Operations lasting more than one year must obtain a site specific order of approval.

(5) **Enforcement of the order of approval.** The permitting authority with jurisdiction over the location where a portable source is operating has authority to enforce the conditions of the order of appro-

val that authorizes the portable source operation, regardless of which permitting authority issued the order of approval. All persons who receive an order of approval must comply with all approval conditions contained in the order of approval.

(6) **Change of conditions to orders of approval.** To change the conditions in an order of approval, the owner/operator must obtain a new order of approval from the permitting authority with jurisdiction over the portable source.

(7) **Portable source modification.** Prior to beginning actual construction or installation of a modification of a portable source, the owner/operator must obtain a new order of approval from the permitting authority with jurisdiction over the portable source.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-036, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-036, filed 3/1/11, effective 4/1/11.]'

EPA effective: 5/29/15 (80 FR 23721, 4/29/15)

WAC 173-400-040 General standards for maximum emissions. (1) **General requirements.**

(a) All sources and emissions units are required to meet the emission standards of this chapter. Where an emission standard listed in another chapter is applicable to a specific emissions unit, such standard takes precedence over a general emission standard listed in this chapter.

(b) When two or more emissions units are connected to a common stack and the operator elects not to provide the means or facilities to sample emissions from the individual emissions units, and the relative contributions of the individual emissions units to the common discharge are not readily distinguishable, then the emissions of the common stack must meet the most restrictive standard of any of the connected emissions units.

(c) All emissions units are required to use reasonably available control technology (RACT) which may be determined for some sources or source categories to be more stringent than the applicable emission limitations of any chapter of Title 173 WAC. Where current controls are determined to be less than RACT, the permitting authority shall, as provided in RCW 70.94.154, define RACT for each source or source category and issue a rule or regulatory order requiring the installation of RACT.

~~(2) **Visible emissions.** No person shall cause or allow the emission for more than three minutes, in any one hour, of an air contaminant from any emissions unit which at the emission point, or within a reasonable distance of the emission point, exceeds twenty percent opacity as determined by ecology method 9A. The following are exceptions to this standard:~~

~~(a) Soot blowing or grate cleaning alternate visible emission standard.~~

~~(i) This provision is in effect until the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. The opacity emission standard in subsection (2) of this section shall apply except when the emissions occur due to soot blowing/grate cleaning and the operator can demonstrate that the emissions will not exceed twenty percent opacity for more than fifteen minutes in any eight consecutive hours. The intent of this provision is to allow the soot blowing and grate cleaning necessary to the operation of boiler facilities. This practice, except for testing and trouble shooting, is~~

~~to be scheduled for the same approximate times each day and the permitting authority must be advised of the schedule.~~'

~~(ii) This provision takes effect on the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. For emissions that occur due to soot blowing or grate cleaning of a hog fuel or wood-fired boiler: Visible emissions (as determined by ecology method 9A) shall not exceed twenty percent opacity; except that opacity shall not exceed forty percent for up to a fifteen minute period in any eight consecutive hours. For this provision to apply, the owner or operator must:~~

~~(A) Schedule the soot blowing and/or grate cleaning for the same approximate time(s) each day;~~

~~(B) Notify the permitting authority in writing of the schedule before using the forty percent standard; and~~

~~(C) Maintain contemporaneous records sufficient to demonstrate compliance. Records must include the date, start time, and stop time of each episode, and the results of opacity readings conducted during this time.~~

~~(b) When the owner or operator of a source supplies valid data to show that the presence of uncombined water is the only reason for the opacity to exceed twenty percent or an alternative opacity standard established in this section.~~

~~(c) When two or more emission units are connected to a common stack, the permitting authority may allow or require the use of an alternate time period if it is more representative of normal operations.~~

~~(d) When an alternative opacity limit has been established per RCW 70.94.331 (2)(c), WAC 173-400-081(4) or 173-400-082.~~

~~(e) Alternative visible emission standard for a hog fuel or wood-fired boiler in operation before January 24, 2018. This provision takes effect on the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. For emissions that occur due to planned startup or shutdown of a hog fuel or wood-fired boiler with dry particulate matter controls, an owner or operator may use the alternative standard in this subsection when all of the following requirements are met.~~

~~Note: This subsection does not apply to a combustion unit with wet particulate matter controls.~~

~~(i) A planned startup or shutdown means that the owner or operator notifies the permitting authority:~~

~~(A) At least twenty-four hours prior to the planned boiler startup or shutdown; or~~

~~(B) Within two hours after restarting the boiler for a startup within twenty-four hours after the end of an unplanned shutdown (i.e., malfunction or upset).~~

~~Note: A shutdown due to a malfunction is part of the malfunction.~~

~~(ii) Startup begins when fuel is ignited in the boiler fire box.~~

~~(iii) Startup ends:~~

~~(A) When the boiler starts supplying useful thermal energy; or~~

~~(B) Four hours after the boiler starts supplying useful thermal energy if the facility follows the work practices in (e)(vi)(B) of this subsection.~~

~~(iv) Shutdown begins when the boiler no longer supplies useful thermal energy, or when no fuel is being fed to the boiler or process heater, whichever is earlier.~~

~~(v) Shutdown ends when the boiler or process heater no longer supplies useful thermal energy and no fuel is being combusted in the boiler.~~

~~(vi) The facility complies with one of the following requirements:~~

~~(A) Visible emissions during startup or shutdown shall not exceed forty percent opacity for more than three minutes in any hour, as determined by ecology method 9A; or~~

~~(B) During startup or shutdown, the owner or operator shall:~~

~~(I) Operate all continuous monitoring systems;~~

~~(II) In the boiler, use only clean fuel identified in 5.b. in Table 3 in 40 C.F.R. Part 63, Subpart DDDDD;~~

~~(III) Engage all applicable control devices so as to comply with the twenty percent opacity standard within four hours of the start of supplying useful thermal energy;~~

~~(IV) Engage and operate particulate matter control within one hour of first feeding fuels that are not clean fuels; and~~

~~(V) Develop and implement a written startup and shutdown plan. The plan must minimize the startup period according to the manufacturer's recommended procedure. In the absence of manufacturer's recommendation, the owner or operator shall use the recommended startup procedure for a unit of a similar design. The plan must be maintained onsite and available upon request for public inspection.~~

~~(vii) The facility maintains records sufficient to demonstrate compliance with (e)(i) through (v) of this subsection. The records must include the following:~~

~~(A) The date and time of notification of the permitting authority;~~

~~(B) The date and time when startup and shutdown began;~~

~~(C) The date and time when startup and shutdown ended;~~

~~(D) The compliance option in (e)(vi) of this subsection that was chosen (either (A) or (B)) and documentation of how the conditions of that option were met.~~

~~(f) Furnace refractory alternative visible emission standard. This provision takes effect on the effective date of EPA's removal of the September 20, 1993, version of WAC 173-400-107 from the SIP. For emissions that occur during curing of furnace refractory in a lime kiln or boiler, visible emissions (as determined by ecology method 9A) shall not exceed forty percent opacity for more than three minutes in any hour, except when (b) of this subsection applies. For this provision to apply, the owner or operator must meet all of the following requirements:~~

~~(i) The total duration of refractory curing shall not exceed thirty-six hours; and~~

~~(ii) Use only clean fuel identified in 5.b. in Table 3 in 40 C.F.R. Part 63, Subpart DDDDD; and~~

~~(iii) The owner or operator provides a copy of the manufacturer's instructions on curing refractory to the permitting authority; and~~

~~(iv) The manufacturer's instructions on curing refractory must be followed, including all instructions on temperature increase rates and holding temperatures and time; and~~

~~(v) The emission controls must be engaged as soon as possible during the curing process; and~~

~~(vi) The permitting authority must be notified at least one working day prior to the start of the refractory curing process.~~

~~(g) Visible emissions reader certification testing. Visible emissions from the "smoke generator" used during testing and certifying visible emission readers are exempt from the twenty percent opacity limit. Testing must follow testing and certification requirements in 40 C.F.R. Part 60, Appendix A, Test Method 9 (in effect on the date in~~

~~WAC 173-400-025) and Source Test Methods 9A and 9B in *Source Test Manual - Procedures for Compliance Testing*, state of Washington, department of ecology, as of September 20, 2004, on file at ecology.~~

~~(h) Military training exercises. Visible emissions during military obscurant training exercises are exempt from the twenty percent opacity limit when the following requirements are met:~~

~~(i) No visible emissions shall cross the boundary of the military training site/reservation.~~

~~(ii) The operation shall have in place methods, which have been reviewed and approved by the permitting authority, to detect changes in weather that would cause the obscurant to cross the site boundary either during the course of the exercise or prior to the start of the exercise. The approved methods shall include provisions that result in cancellation of the training exercise, cease the use of obscurants during the exercise until weather conditions would allow such training to occur without causing obscurant to leave the site boundary of the military site/reservation.~~

~~(i) Firefighter training. Visible emissions from fixed and mobile firefighter training facilities occurring during the training of firefighters are exempt from the twenty percent opacity limit. Compliance with chapter 173-425 WAC is required.~~

~~(3) **Fallout.** No person shall cause or allow the emission of particulate matter from any source to be deposited beyond the property under direct control of the owner or operator of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.~~

(4) **Fugitive emissions.** The owner or operator of any emissions unit engaging in materials handling, construction, demolition or other operation which is a source of fugitive emission:

(a) If located in an attainment area and not impacting any nonattainment area, shall take reasonable precautions to prevent the release of air contaminants from the operation.

(b) If the emissions unit has been identified as a significant contributor to the nonattainment status of a designated nonattainment area, the owner or operator shall be required to use reasonable and available control methods, which shall include any necessary changes in technology, process, or other control strategies to control emissions of the air contaminants for which nonattainment has been designated.

~~(5) **Odors.** Any person who shall cause or allow the generation of any odor from any source or activity which may unreasonably interfere with any other property owner's use and enjoyment of her or his property must use recognized good practice and procedures to reduce these odors to a reasonable minimum.~~

(6) **Emissions detrimental to persons or property.** No person shall cause or allow the emission of any air contaminant from any source if it is detrimental to the health, safety, or welfare of any person, or causes damage to property or business.

(7) **Sulfur dioxide.** No person shall cause or allow the emission of a gas containing sulfur dioxide from any emissions unit in excess of one thousand ppm of sulfur dioxide on a dry basis, corrected to seven percent oxygen for combustion sources, and based on the average of any period of sixty consecutive minutes.

(8) **Concealment and masking.** No person shall cause or allow the installation or use of any means which conceals or masks an emission of an air contaminant which would otherwise violate any provisions of this chapter.

(9) **Fugitive dust.**

(a) The owner or operator of a source or activity that generates fugitive dust must take reasonable precautions to prevent that fugitive dust from becoming airborne and must maintain and operate the source to minimize emissions.

(b) The owner or operator of any existing source or activity that generates fugitive dust that has been identified as a significant contributor to a PM-10 or PM-2.5 nonattainment area is required to use reasonably available control technology to control emissions. Significance will be determined by the criteria found in WAC 173-400-113(4).

[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-040, filed 8/16/18, effective 9/16/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-040, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 11-06-060 (Order 09-01), § 173-400-040, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-040, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-040, filed 8/15/01, effective 9/15/01. Statutory Authority: [RCW 70.94.331, 70.94.510 and chapter 70.94 RCW.] WSR 00-23-130 (Order 98-27), § 173-400-040, filed 11/22/00, effective 12/23/00. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-040, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-040, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-040, filed 4/15/83. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-040, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-040, filed 5/8/79; Order DE 76-38, § 173-400-040, filed 12/21/76. Formerly WAC 18-04-040.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

173-400-040 General Standards for Maximum Emissions.

(2) Visible emissions. No person shall cause or allow the emission for more than three minutes, in any one hour, of an air contaminant from any emissions unit which at the emission point, or within a reasonable distance of the emission point, exceeds twenty percent opacity except:

(a) When the emissions occur due to soot blowing/grate cleaning and the operator can demonstrate that the emissions will not exceed twenty percent opacity for more than fifteen minutes in any eight consecutive hours. The intent of this provision is to allow the soot blowing and grate cleaning necessary to the operation of boiler facilities. This practice, except for testing and trouble shooting, is to be scheduled for the same approximate times each day and the permitting authority must be advised of the schedule.

(b) When the owner or operator of a source supplies valid data to show that the presence of uncombined water is the only reason for the opacity to exceed twenty percent.

~~(c) When two or more emission units are connected to a common stack, the permitting authority may allow or require the use of an alternate time period if it is more representative of normal operations.~~

~~(d) When an alternate opacity limit has been established per RCW 70.94.331 (2)(c).~~

(e) Exemptions from twenty percent opacity standard.

(i) Visible emissions reader certification testing. Visible emissions from the "smoke generator" used for testing and certification of visible emissions readers per the requirements of 40 C.F.R. Part 60, Appendix A, test method 9 (in effect on the date in WAC 173-400-025) and ecology methods 9A and 9B shall be exempt from compliance with the twenty percent opacity limitation while being used for certifying visible emission readers.

(ii) Military training exercises. Visible emissions resulting from military obscurant training - exercises are exempt from compliance with the twenty percent opacity limitation provided the - following criteria are met: -

(A) No visible emissions shall cross the boundary of the military training site/reservation.

(B) The operation shall have in place methods, which have been reviewed and approved by the permitting authority, to detect changes in weather that would cause the obscurant to cross the site boundary either during the course of the exercise or prior to the start of the exercise. The approved methods shall include provisions that result in cancellation of the training exercise, cease the use of obscurants during the exercise until weather conditions would allow such training to occur without causing obscurant to leave the site boundary of the military site/reservation.

(iii) Firefighter training. Visible emissions from fixed and mobile firefighter training facilities while being used to train firefighters and while complying with the requirements of chapter 173-425 WAC.

State effective: 07/01/16, EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

~~(9) **Fugitive dust.**~~

~~(a) The owner or operator of a source or activity that generates fugitive dust must take reasonable precautions to prevent that fugitive dust from becoming airborne and must maintain and operate the source to minimize emissions.~~

~~(b) The owner or operator of any existing source or activity that generates fugitive dust that has been identified as a significant contributor to a PM-10 or PM-2.5 nonattainment area is required to use reasonably available control technology to control emissions. Significance will be determined by the criteria found in WAC 173-400-113(4).~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-040, filed 8/16/18, effective 9/16/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-040, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 11-06-060 (Order 09-01), § 173-400-040, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-040, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-040, filed 8/15/01, effective 9/15/01. Statutory Authority: [RCW 70.94.331, 70.94.510 and chapter 70.94 RCW.] WSR 00-23-130 (Order 98-27), § 173-400-040, filed 11/22/00, effective 12/23/00. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-040, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-040, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-040, filed 4/15/83. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-040, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-040, filed 5/8/79; Order DE 76-38, § 173-400-040, filed 12/21/76. Formerly WAC 18-04-040.]~~

~~**WAC 173-400-045 Control technology fees.** Fees can be found in chapter 173-455 WAC.~~

~~[Statutory Authority: RCW 70.94.181, [70.94.]152, [70.94.]331, [70.94.]650, [70.94.]745, [70.94.]892, [70.94.]011. WSR 07-19-005 (Order 07-10), § 173-400-045, filed 9/6/07, effective 10/7/07. Statutory Authority: Chapter 70.94 RCW. WSR 96-19-054 (Order 94-35), § 173-400-045, filed 9/13/96, effective 10/14/96. Statutory Authority: RCW 70.94.153 and 70.94.154. WSR 94-17-070, § 173-400-045, filed 8/15/94, effective 9/15/94.]~~

WAC 173-400-050 Emission standards for combustion and incineration units. (1) Combustion and incineration emissions units must meet all requirements of WAC 173-400-040 and, in addition, no person shall cause or allow emissions of particulate matter in excess of 0.23 gram per dry cubic meter at standard conditions (0.1 grain/dscf), except, for an emissions unit combusting waste wood for the production of steam. No person shall allow the emission of particulate matter in excess of 0.46 gram per dry cubic meter at standard conditions (0.2 grain/dscf), as measured by 40 C.F.R. Part 60, Appendix A, Test Method 5 (in effect on the date in WAC 173-400-025) or approved procedures in *Source Test Manual - Procedures for Compliance Testing*, state of Washington, department of ecology, as of September 20, 2004, on file at ecology.

~~(2) For any incinerator, no person shall cause or allow emissions in excess of one hundred ppm of total carbonyls as measured by Source Test Method 14 procedures in *Source Test Manual - Procedures for Compliance Testing*, state of Washington, department of ecology, as of September 20, 2004, on file at ecology. An applicable EPA reference method or other procedures to collect and analyze for the same compounds collected in the ecology method may be used if approved by the permitting authority prior to its use.~~

~~(a) **Incinerators** not subject to the requirements of chapter 173-434 WAC or WAC 173-400-050 (4) or (5), or requirements in WAC 173-400-075 (40 C.F.R. Part 63, Subpart EEE in effect on the date in WAC 173-400-025) and WAC 173-400-115 (40 C.F.R. Part 60, Subparts E, Ea, Eb, Ec, AAAA, and CCCC (in effect on the date in WAC 173-400-025)) shall be operated only during daylight hours unless written permission to operate at other times is received from the permitting authority.~~

~~(b) Total carbonyls means the concentration of organic compounds containing the =C=O radical as collected by Source Test Method 14 procedures in *Source Test Manual - Procedures for Compliance Testing*, state of Washington, department of ecology, as of September 20, 2004, on file at ecology.~~

(3) Measured concentrations for combustion and incineration units shall be adjusted for volumes corrected to seven percent oxygen, except when the permitting authority determines that an alternate oxygen correction factor is more representative of normal operations such as the correction factor included in an applicable NSPS or NESHAP, actual operating characteristics, or the manufacturer's specifications for the emission unit.

~~(4) **Commercial and industrial solid waste incineration units** constructed on or before November 30, 1999.~~'

~~Note: Subsection (2) of this section (a state-only provision) does not apply to a unit subject to this subsection because this section is based on federal requirements.~~

~~(a) Definitions.~~

~~(i) "Commercial and industrial solid waste incineration (CISWI) unit" means any combustion device that combusts commercial and industrial waste, as defined in this subsection. The boundaries of a CISWI unit are defined as, but not limited to, the commercial or industrial solid waste fuel feed system, grate system, flue gas system, and bottom ash. The CISWI unit does not include air pollution control equipment or the stack. The CISWI unit boundary starts at the commercial and industrial solid waste hopper (if applicable) and extends through two areas:~~

~~(A) The combustion unit flue gas system, which ends immediately after the last combustion chamber.~~

~~(B) The combustion unit bottom ash system, which ends at the truck loading station or similar equipment that transfers the ash to final disposal. It includes all ash handling systems connected to the bottom ash handling system.~~

~~(ii) "Commercial and industrial solid waste" means solid waste combusted in an enclosed device using controlled flame combustion without energy recovery that is a distinct operating unit of any commercial or industrial facility (including field erected, modular, and custom built incineration units operating with starved or excess air), or solid waste combusted in an air curtain incinerator without energy recovery that is a distinct operating unit of any commercial or industrial facility.~~

(b) Applicability. This section applies to incineration units that meet all three criteria:

(i) The incineration unit meets the definition of CISWI unit in this subsection.

(ii) The incineration unit commenced construction on or before November 30, 1999.

(iii) The incineration unit is not exempt under (c) of this sub-' section.'

(c) The following types of incineration units are exempt from this subsection:

(i) *Pathological waste incineration* *units*. Incineration units burning 90 percent or more by weight (on a calendar quarter basis and excluding the weight of auxiliary fuel and combustion air) of pathological waste, low-level radioactive waste, and/or chemotherapeutic waste as defined in 40 C.F.R. 60.2265 (in effect on the date in WAC 173-400-025) are not subject to this section if you meet the two requirements specified in (c)(i)(A) and (B) of this subsection.

(A) Notify the permitting authority that the unit meets these criteria.

(B) Keep records on a calendar quarter basis of the weight of pathological waste, low-level radioactive waste, and/or chemotherapeutic waste burned, and the weight of all other fuels and wastes burned in the unit.

(ii) *Agricultural waste incineration* *units*. Incineration units burning 90 percent or more by weight (on a calendar quarter basis and excluding the weight of auxiliary fuel and combustion air) of agricultural wastes as defined in 40 C.F.R. 60.2265 (in effect on the date in WAC 173-400-025) are not subject to this section if you meet the two requirements specified in (c)(ii)(A) and (B) of this subsection.

(A) Notify the permitting authority that the unit meets these criteria.

(B) Keep records on a calendar quarter basis of the weight of agricultural waste burned, and the weight of all other fuels and wastes burned in the unit.

(iii) *Municipal waste combustion* *units*. Incineration units that meet either of the two criteria specified in (c)(iii)(A) and (B) of this subsection.

(A) Units are regulated under 40 C.F.R. Part 60, Subpart Ea or Subpart Eb (in effect on the date in WAC 173-400-025); Spokane County Air Pollution Control Authority Regulation 1, Section 6.17 (in effect on February 13, 1999); 40 C.F.R. Part 60, Subpart AAAA (in effect on the date in WAC 173-400-025); or WAC 173-400-050(5).

(B) Units burn greater than 30 percent municipal solid waste or refuse-derived fuel, as defined in 40 C.F.R. Part 60 (in effect on the date in WAC 173-400-025), Subparts Ea, Eb, and AAAA, and WAC 173-400-050(5), and that have the capacity to burn less than 35 tons (32 megagrams) per day of municipal solid waste or refuse-derived fuel, if you meet the two requirements in (c)(iii)(B)(I) and (II) of this subsection.

(I) Notify the permitting authority that the unit meets these criteria.

(II) Keep records on a calendar quarter basis of the weight of municipal solid waste burned, and the weight of all other fuels and wastes burned in the unit.

(iv) *Medical waste incineration units*. Incineration units regulated under 40 C.F.R. Part 60, Subpart Ec (Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction

~~is Commenced After June 20, 1996) (in effect on the date in WAC 173-400-025);~~

~~(v) *Small power production facilities*. Units that meet the three requirements specified in (c)(v)(A) through (C) of this subsection.~~

~~(A) The unit qualifies as a small power-production facility under section 3 (17)(C) of the Federal Power Act (16 U.S.C. 796 (17)(C)).~~

~~(B) The unit burns homogeneous waste (not including refuse-derived fuel) to produce electricity.~~

~~(C) You notify the permitting authority that the unit meets all of these criteria.~~

~~(vi) *Cogeneration facilities*. Units that meet the three requirements specified in (c)(vi)(A) through (C) of this subsection.~~

~~(A) The unit qualifies as a cogeneration facility under section 3 (18)(B) of the Federal Power Act (16 U.S.C. 796 (18)(B)).~~

~~(B) The unit burns homogeneous waste (not including refuse-derived fuel) to produce electricity and steam or other forms of energy used for industrial, commercial, heating, or cooling purposes.~~

~~(C) You notify the permitting authority that the unit meets all of these criteria.~~

~~(vii) *Hazardous waste combustion units*. Units that meet either of the two criteria specified in (c)(vii)(A) or (B) of this subsection.~~

~~(A) Units for which you are required to get a permit under section 3005 of the Solid Waste Disposal Act.~~

~~(B) Units regulated under 40 C.F.R. Part 63, Subpart EEE (National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors) (in effect on the date in WAC 173-400-025).~~

~~(viii) *Materials recovery units*. Units that combust waste for the primary purpose of recovering metals, such as primary and secondary smelters;~~

~~(ix) *Air curtain incinerators*. Air curtain incinerators that burn only the materials listed in (c)(ix)(A) through (C) of this subsection are only required to meet the requirements under "Air Curtain Incinerators" in 40 C.F.R. 60.2245 through 60.2260 (in effect on the date in WAC 173-400-025).~~

~~(A) 100 percent wood waste, as defined in 40 C.F.R. 60.2265.~~

~~(B) 100 percent clean lumber.~~

~~(C) 100 percent mixture of only wood waste, clean lumber, and/or yard waste, as these terms are defined in 40 C.F.R. 60.2265.~~

~~(x) *Cyclonic barrel burners*. See 40 C.F.R. 60.2265 (in effect on the date in WAC 173-400-025).~~

~~(xi) *Rack, part, and drum reclamation units*. See 40 C.F.R. 60.2265 (in effect on the date in WAC 173-400-025).~~

~~(xii) *Cement kilns*. Kilns regulated under 40 C.F.R. Part 63, Subpart LLL (National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry) (in effect on the date in WAC 173-400-025).~~

~~(xiii) *Sewage sludge incinerators*. Incineration units regulated under 40 C.F.R. Part 60, Subpart O (Standards of Performance for Sewage Treatment Plants) (in effect on the date in WAC 173-400-025).~~

~~(xiv) *Chemical recovery units*. Combustion units burning materials to recover chemical constituents or to produce chemical compounds where there is an existing commercial market for such recovered chemical constituents or compounds. The seven types of units described in (c)(xiv)(A) through (G) of this subsection are considered chemical recovery units.~~

(A) Units burning only pulping liquors (i.e., black liquor) that are reclaimed in a pulping liquor recovery process and reused in the pulping process.

(B) Units burning only spent sulfuric acid used to produce virgin sulfuric acid.

(C) Units burning only wood or coal feedstock for the production of charcoal.

(D) Units burning only manufacturing by-product streams/residues containing catalyst metals which are reclaimed and reused as catalysts or used to produce commercial grade catalysts.

(E) Units burning only coke to produce purified carbon monoxide that is used as an intermediate in the production of other chemical compounds.

(F) Units burning only hydrocarbon liquids or solids to produce hydrogen, carbon monoxide, synthesis gas, or other gases for use in other manufacturing processes.

(G) Units burning only photographic film to recover silver.

(xv) *Laboratory analysis units.* Units that burn samples of materials for the purpose of chemical or physical analysis.

(d) Exceptions.

(i) Physical or operational changes to a CISWI unit made primarily to comply with this section do not qualify as a "modification" or "reconstruction" (as defined in 40 C.F.R. 60.2815) (in effect on the date in WAC 173-400-025).

(ii) Changes to a CISWI unit made on or after June 1, 2001, that meet the definition of "modification" or "reconstruction" as defined in 40 C.F.R. 60.2815 (in effect on the date in WAC 173-400-025) mean the CISWI unit is considered a new unit and subject to WAC 173-400-115, which adopts 40 C.F.R. Part 60, Subpart CCCC (in effect on the date in WAC 173-400-025).

(e) A CISWI unit must comply with 40 C.F.R. 60.2575 through 60.2875 (in effect on the date in WAC 173-400-025). The federal rule contains these major components:

• Increments of progress towards compliance in 60.2575 through 60.2630;'

• Waste management plan requirements in 60.2620 through 60.2630;'

• Operator training and qualification requirements in 60.2635 through 60.2665;

• Emission limitations and operating limits in 60.2670 through 60.2685;'

• Performance testing requirements in 60.2690 through 60.2725;'

• Initial compliance requirements in 60.2700 through 60.2725;'

• Continuous compliance requirements in 60.2710 through 60.2725;'

• Monitoring requirements in 60.2730 through 60.2735;'

• Recordkeeping and reporting requirements in 60.2740 through 60.2800;'

• Title V operating permits requirements in 60.2805;'

• Air curtain incinerator requirements in 60.2810 through 60.2870;'

• Definitions in 60.2875; and'

• Tables in 60.2875. In Table 1, the final control plan must be submitted before June 1, 2004, and final compliance must be achieved by June 1, 2005.

(i) Exception to adopting the federal rule. For purposes of this section, "administrator" includes the permitting authority.

(ii) Exception to adopting the federal rule. For purposes of this section, "you" means the owner or operator.

~~(iii) Exception to adopting the federal rule. For purposes of this section, each reference to "the effective date of state plan approval" means July 1, 2002.~~

~~(iv) Exception to adopting the federal rule. The Title V operating permit requirements in 40 C.F.R. 60.2805(a) are not adopted. Each CISWI unit, regardless of whether it is a major or nonmajor unit, is subject to the air operating permit regulation, chapter 173-401 WAC, beginning on July 1, 2002. See WAC 173-401-500 for the permit application requirements and deadlines.~~

~~(v) Exception to adopting the federal rule. The following compliance dates apply:~~

~~(A) The final control plan (Increment 1) must be submitted no later than July 1, 2003. (See Increment 1 in Table 1.)~~

~~(B) Final compliance (Increment 2) must be achieved no later than July 1, 2005. (See Increment 2 in Table 1.)~~

~~(5) **Small municipal waste combustion units** constructed on or before August 30, 1999.~~

~~(a) Definition. "Municipal waste combustion unit" means any setting or equipment that combusts, liquid, or gasified municipal solid waste including, but not limited to, field-erected combustion units (with or without heat recovery), modular combustion units (starved air- or excess-air), boilers (for example, steam generating units), furnaces (whether suspension-fired, grate-fired, mass-fired, air-curtain incinerators, or fluidized bed-fired), and pyrolysis/combustion units. Two criteria further define municipal waste combustion units:~~

~~(i) Municipal waste combustion units do not include the following units:~~

~~(A) Pyrolysis or combustion units located at a plastics or rubber recycling unit as specified under the exemptions in this subsection (5)(c)(viii) and (ix).~~

~~(B) Cement kilns that combust municipal solid waste as specified under the exemptions in this subsection (5)(c)(x).~~

~~(C) Internal combustion engines, gas turbines, or other combustion devices that combust landfill gases collected by landfill gas collection systems.~~

~~(ii) The boundaries of a municipal waste combustion unit are defined as follows. The municipal waste combustion unit includes, but is not limited to, the municipal solid waste fuel feed system, grate system, flue gas system, bottom ash system, and the combustion unit water system. The municipal waste combustion unit does not include air pollution control equipment, the stack, water treatment equipment, or the turbine-generator set. The municipal waste combustion unit boundary starts at the municipal solid waste pit or hopper and extends through three areas:~~

~~(A) The combustion unit flue gas system, which ends immediately after the heat recovery equipment or, if there is no heat recovery equipment, immediately after the combustion chamber.~~

~~(B) The combustion unit bottom ash system, which ends at the truck loading station or similar equipment that transfers the ash to final disposal. It includes all ash handling systems connected to the bottom ash handling system.~~

~~(C) The combustion unit water system, which starts at the feed water pump and ends at the piping that exits the steam drum or superheater.~~

~~(b) Applicability. This section applies to a municipal waste combustion unit that meets these three criteria:~~

(i) The municipal waste combustion unit has the capacity to combust at least 35 tons per day of municipal solid waste but no more than 250 tons per day of municipal solid waste or refuse-derived fuel.

(ii) The municipal waste combustion unit commenced construction on or before August 30, 1999.

(iii) The municipal waste combustion unit is not exempt under (c) of this section.

(c) Exempted units. The following municipal waste combustion units are exempt from the requirements of this section:

(i) *Small municipal waste combustion units that combust less than 11 tons per day.* Units are exempt from this section if four requirements are met:

(A) The municipal waste combustion unit is subject to a federally enforceable order or order of approval limiting the amount of municipal solid waste combusted to less than 11 tons per day.

(B) The owner or operator notifies the permitting authority that the unit qualifies for the exemption.

(C) The owner or operator of the unit sends a copy of the federally enforceable order or order of approval to the permitting authority.

(D) The owner or operator of the unit keeps daily records of the amount of municipal solid waste combusted.

(ii) *Small power production units.* Units are exempt from this section if four requirements are met:

(A) The unit qualifies as a small power production facility under section 3 (17)(C) of the Federal Power Act (16 U.S.C. 796 (17)(C)).

(B) The unit combusts homogeneous waste (excluding refuse-derived fuel) to produce electricity.

(C) The owner or operator notifies the permitting authority that the unit qualifies for the exemption.

(D) The owner or operator submits documentation to the permitting authority that the unit qualifies for the exemption.

(iii) *Cogeneration units.* Units are exempt from this section if four requirements are met:

(A) The unit qualifies as a small power production facility under section 3 (18)(C) of the Federal Power Act (16 U.S.C. 796 (18)(C)).

(B) The unit combusts homogeneous waste (excluding refuse-derived fuel) to produce electricity and steam or other forms of energy used for industrial, commercial, heating, or cooling purposes.

(C) The owner or operator notifies the permitting authority that the unit qualifies for the exemption.

(D) The owner or operator submits documentation to the permitting authority that the unit qualifies for the exemption.

(iv) *Municipal waste combustion units that combust only tires.* Units are exempt from this section if three requirements are met:

(A) The municipal waste combustion unit combusts a single-item waste stream of tires and no other municipal waste (the unit can cofire coal, fuel oil, natural gas, or other nonmunicipal solid waste).

(B) The owner or operator notifies the permitting authority that the unit qualifies for the exemption.

(C) The owner or operator submits documentation to the permitting authority that the unit qualifies for the exemption.

(v) *Hazardous waste combustion units.* Units are exempt from this section if the units have received a permit under section 3005 of the Solid Waste Disposal Act.

~~(vi) *Materials recovery units.* Units are exempt from this section if the units combust waste mainly to recover metals. Primary and secondary smelters may qualify for the exemption.~~

~~(vii) *Cofired units.* Units are exempt from this section if four requirements are met:~~

~~(A) The unit has a federally enforceable order or order of approval limiting municipal solid waste combustion to no more than 30 percent of total fuel input by weight.~~

~~(B) The owner or operator notifies the permitting authority that the unit qualifies for the exemption.~~

~~(C) The owner or operator submits a copy of the federally enforceable order or order of approval to the permitting authority.~~

~~(D) The owner or operator records the weights, each quarter, of municipal solid waste and of all other fuels combusted.~~

~~(viii) *Plastics/rubber recycling units.* Units are exempt from this section if four requirements are met:~~

~~(A) The pyrolysis/combustion unit is an integrated part of a plastics/rubber recycling unit as defined in 40 C.F.R. 60.1940 (in effect on the date in WAC 173-400-025).~~

~~(B) The owner or operator of the unit records the weight, each quarter, of plastics, rubber, and rubber tires processed.~~

~~(C) The owner or operator of the unit records the weight, each quarter, of feed stocks produced and marketed from chemical plants and petroleum refineries.~~

~~(D) The owner or operator of the unit keeps the name and address of the purchaser of the feed stocks.~~

~~(ix) *Units that combust fuels made from products of plastics/rubber recycling plants.* Units are exempt from this section if two requirements are met:~~'

~~(A) The unit combusts gasoline, diesel fuel, jet fuel, fuel oils, residual oil, refinery gas, petroleum coke, liquefied petroleum gas, propane, or butane produced by chemical plants or petroleum refineries that use feed stocks produced by plastics/rubber recycling units.~~

~~(B) The unit does not combust any other municipal solid waste.~~

~~(x) *Cement kilns.* Cement kilns that combust municipal solid waste are exempt.~~

~~(xi) *Air curtain incinerators.* If an air curtain incinerator as defined under 40 C.F.R. 60.1910 combusts 100 percent yard waste, then those units must only meet the requirements under 40 C.F.R. 60.1910 through 60.1930 (in effect on the date in WAC 173-400-025).~~

~~(d) Exceptions.~~

~~(i) Physical or operational changes to an existing municipal waste combustion unit made primarily to comply with this section do not qualify as a modification or reconstruction, as those terms are defined in 40 C.F.R. 60.1940 (in effect on the date in WAC 173-400-025).~~

~~(ii) Changes to an existing municipal waste combustion unit made on or after June 6, 2001, that meet the definition of modification or reconstruction, as those terms are defined in 40 C.F.R. 60.1940 (in effect on the date in WAC 173-400-025), mean the unit is considered a new unit and subject to WAC 173-400-115, which adopts 40 C.F.R. Part 60, Subpart AAAA (in effect on the date in WAC 173-400-025).~~

~~(e) Municipal waste combustion units are divided into two subcategories based on the aggregate capacity of the municipal waste combustion plant as follows:~~

~~(i) Class I units. Class I units are small municipal waste combustion units that are located at municipal waste combustion plants~~

with an aggregate plant combustion capacity greater than 250 tons per day of municipal solid waste. See the definition of "municipal waste combustion plant capacity" in 40 C.F.R. 60.1940 (in effect on the date in WAC 173-400-025) for the specification of which units are included in the aggregate capacity calculation.

(ii) Class II units. Class II units are small municipal waste combustion units that are located at municipal waste combustion plants with an aggregate plant combustion capacity less than or equal to 250 tons per day of municipal solid waste. See the definition of "municipal waste combustion plant capacity" in 40 C.F.R. 60.1940 (in effect on the date in WAC 173-400-025) for the specification of which units are included in the aggregate capacity calculation.

(f) Compliance option 1.

(i) A municipal solid waste combustion unit may choose to reduce, by the final compliance date of June 1, 2005, the maximum combustion capacity of the unit to less than 35 tons per day of municipal solid waste. The owner or operator must submit a final control plan and the notifications of achievement of increments of progress as specified in 40 C.F.R. 60.1610 (in effect on the date in WAC 173-400-025).

(ii) The final control plan must, at a minimum, include two items:

(A) A description of the physical changes that will be made to accomplish the reduction.

(B) Calculations of the current maximum combustion capacity and the planned maximum combustion capacity after the reduction. Use the equations specified in 40 C.F.R. 60.1935 (d) and (e) (in effect on the date in WAC 173-400-025) to calculate the combustion capacity of a municipal waste combustion unit.

(iii) An order or order of approval containing a restriction or a change in the method of operation does not qualify as a reduction in capacity. Use the equations specified in 40 C.F.R. 60.1935 (d) and (e) (in effect on the date in WAC 173-400-025) to calculate the combustion capacity of a municipal waste combustion unit.

(g) Compliance option 2. The municipal waste combustion unit must comply with 40 C.F.R. 60.1585 through 60.1905, and 60.1935 (in effect on the date in WAC 173-400-025).

(i) The rule contains these major components:

(A) Increments of progress towards compliance in 60.1585 through 60.1640;

(B) Good combustion practices - Operator training in 60.1645 through 60.1670;

(C) Good combustion practices - Operator certification in 60.1675 through 60.1685;

(D) Good combustion practices - Operating requirements in 60.1690 through 60.1695;

(E) Emission limits in 60.1700 through 60.1710;

(F) Continuous emission monitoring in 60.1715 through 60.1770;

(G) Stack testing in 60.1775 through 60.1800;

(H) Other monitoring requirements in 60.1805 through 60.1825;

(I) Recordkeeping reporting in 60.1830 through 60.1855;

(J) Reporting in 60.1860 through 60.1905;

(K) Equations in 60.1935;

(L) Tables 2 through 8.

(ii) Exception to adopting the federal rule. For purposes of this section, each reference to the following is amended in the following manner:

(A) "State plan" in the federal rule means WAC 173-400-050(5).

~~(B) "You" in the federal rule means the owner or operator.~~

~~(C) "Administrator" includes the permitting authority.~~

~~(D) "The effective date of the state plan approval" in the federal rule means December 6, 2002.~~

~~(h) Compliance schedule.~~

~~(i) Small municipal waste combustion units must achieve final compliance or cease operation not later than December 1, 2005.~~

~~(ii) Small municipal waste combustion units must achieve compliance by May 6, 2005 for all Class II units, and by November 6, 2005 for all Class I units.~~

~~(iii) Class I units must comply with these additional requirements:~~

~~(A) The owner or operator must submit the dioxins/furans stack test results for at least one test conducted during or after 1990. The stack test must have been conducted according to the procedures specified under 40 C.F.R. 60.1790 (in effect on the date in WAC 173-400-025).~~

~~(B) Class I units that commenced construction after June 26, 1987, must comply with the dioxins/furans and mercury limits specified in Tables 2 and 3 in 40 C.F.R. Part 60, Subpart BBBB (in effect on the date in WAC 173-400-025) by the later of two dates:~~

~~(I) December 6, 2003; or~~

~~(II) One year following the issuance of an order of approval (revised construction approval or operation permit) if an order or order of approval or operation modification is required.~~

~~(i) Air operating permit. Applicability to chapter 173-401 WAC, the air operating permit regulation, begins on July 1, 2002. See WAC 173-401-500 for the permit application requirements and deadlines.~~

~~(6) **Hazardous/medical/infectious waste incinerators** constructed on or before December 1, 2008. Hospital/medical/infectious waste incinerators constructed on or before December 1, 2008, must comply with the requirements in 40 C.F.R. Part 62, Subpart HHH (in effect on the date in WAC 173-400-025).~~

[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-050, filed 8/16/18, effective 9/16/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-050, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-050, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-050, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-050, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-050, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-050, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-050, filed 4/15/83. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-050, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-050, filed 5/8/79; Order DE 76-38, § 173-400-050, filed 12/21/76. Formerly WAC 18-04-050.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

WAC 173-400-060 Emission standards for general process units. General process units are required to meet all applicable provisions of WAC 173-400-040 and, no person shall cause or allow the emission of particulate material from any general process operation in excess of 0.23 grams per dry cubic meter at standard conditions (0.1 grain/dscf) of exhaust gas. Test methods from 40 C.F.R. Parts 51, 60, 61, and 63 (in effect on the date in WAC 173-400-025) and any other approved test procedures in ecology's "*Source Test Manual - Procedures For Compliance Testing*" as of September 20, 2004, must be used to determine compliance.

[Statutory Authority: Chapter 70.94 RCW, RCW 70.94.151, 70.94.153, and 70.94.892. WSR 18-22-006 (Order 16-09), § 173-400-060, filed 10/25/18, effective 11/25/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-060, filed 5/31/16, effective 7/1/16. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-060, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-060, filed 8/15/01, effective 9/15/01. Statutory Authority: [RCW 70.94.331, 70.94.510 and chapter 70.94 RCW.] WSR 00-23-130 (Order 98-27), § 173-400-060, filed 11/22/00, effective 12/23/00. Statutory Authority: RCW 70.94.860, 70.94.510 and 70.94.331. WSR 98-15-129 (Order 98-04), § 173-400-060, filed 7/21/98, effective 8/21/98. Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-060, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-060, filed 4/15/83. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-060, filed 8/20/80; Order DE 76-38, § 173-400-060, filed 12/21/76. Formerly WAC 18-04-060.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

~~(i) Air operating permit. Applicability to chapter 173-401 WAC, the air operating permit regulation, begins on July 1, 2002. See WAC 173-401-500 for the permit application requirements and deadlines.~~

~~(6) Hazardous/medical/infectious waste incinerators constructed on or before December 1, 2008. Hospital/medical/infectious waste incinerators constructed on or before December 1, 2008, must comply with the requirements in 40 C.F.R. Part 62, subpart HHH (in effect on the date in WAC 173-400-025).~~

~~*State effective: 07/01/16; EPA effective: 11/07/16 (81 FR 69385, October 6, 2016)*~~

~~173-400-060 Emission Standards for General Process Units.~~

~~General process units are required to meet all applicable provisions of WAC 173-400-040 and, no person shall cause or allow the emission of particulate material from any general process operation in excess of 0.23 grams per dry cubic meter at standard conditions (0.1 grain/dscf) of exhaust gas. Test methods (in effect on the date in WAC 173-400-025) from 40 C.F.R. Parts 51, 60, 61, and 63 and any other approved test procedures in ecology's "Source Test Manual - Procedures For Compliance Testing" as of September 20, 2004, will be used to determine compliance.~~

~~*State effective: 07/01/16; EPA effective: 11/07/16 (81 FR 69385, October 6, 2016)*~~

173-400-070 Emission Standards for Certain Source Categories.

Ecology finds that the reasonable regulation of sources within certain categories requires separate standards applicable to such categories. The standards set forth in this section shall be the maximum allowable standards for emissions units within the categories listed. Except as specifically provided in this section, such emissions units shall not be required to meet the provisions of WAC 173-400-040, 173-400-050 and 173-400-060.

(1) Wigwam and silo burners.

(a) All wigwam and silo burners designed to dispose of wood waste must meet all provisions of WAC 173-400-040 (3), (4), (5), (6), (7), (8), and WAC 173-400-050(4) or 173-400-115 (40 C.F.R. Part 60, subpart DDDD in effect on the date in WAC 173-400-025) as applicable.

(b) All wigwam and silo burners must use RACT. All emissions units shall be operated and maintained to minimize emissions. These requirements may include a controlled tangential vent overfire air system, an adequate underfire system, elimination of all unnecessary openings, a controlled feed and other modifications determined necessary by ecology or the permitting authority.

(c) It shall be unlawful to install or increase the existing use of any burner that does not meet all requirements for new sources including those requirements specified in WAC 173-400-040 and 173-400-050, except operating hours.

(d) The permit authority may establish additional requirements for wigwam and silo burners. These requirements may include, but shall not be limited to:

(i) A requirement to meet all provisions of WAC 173-400-040 and 173-400-050. Wigwam and silo burners will be considered to be in compliance if they meet the requirements contained in WAC 173-400-040(2), visible emissions. An exception is made for a startup period not to exceed thirty minutes in any eight consecutive hours.

(ii) A requirement to apply BACT.

(iii) A requirement to reduce or eliminate emissions if ecology establishes that such emissions unreasonably interfere with the use and enjoyment of the property of others or are a cause of violation of ambient air standards.

(2) Hog fuel boilers.

(a) Hog fuel boilers shall meet all provisions of WAC 173-400-040 and 173-400-050(1), except that emissions may exceed twenty percent opacity for up to fifteen consecutive minutes once in any eight hours. The intent of this provision is to allow soot blowing and grate cleaning necessary to the operation of these units. This practice is to be scheduled for the same specific times each day and the permitting authority shall be notified of the schedule or any changes.

(b) All hog fuel boilers shall utilize RACT and shall be operated and maintained to minimize emissions.

(3) Orchard heating.

(a) Burning of rubber materials, asphaltic products, crankcase oil or petroleum wastes, plastic, or garbage is prohibited.

(b) It is unlawful to burn any material or operate any orchard-heating device that causes a visible emission exceeding twenty percent opacity, except during the first thirty minutes after such device or material is ignited.

(4) Grain elevators.

Any grain elevator which is primarily classified as a materials handling operation shall meet all the provisions of WAC 173-400-040 (2), (3), (4), and (5).

(5) Catalytic cracking units.

(a) All existing catalytic cracking units shall meet all provisions of WAC 173-400-040 (2), (3), (4), (5), (6), and (7) and:

(i) No person shall cause or allow the emission for more than three minutes, in any one hour, of an air contaminant from any catalytic cracking unit which at the emission point, or within a reasonable distance of the emission point, exceeds forty percent opacity.

(ii) No person shall cause or allow the emission of particulate material in excess of 0.46 grams per dry cubic meter at standard conditions (0.20 grains/dscf) of exhaust gas.

(b) All new catalytic cracking units shall meet all provisions of WAC 173-400-115.

(6) Other wood waste burners.

(a) Wood waste burners not specifically provided for in this section shall meet all applicable provisions of WAC 173-400-040. In addition, wood waste burners subject to WAC 173-400-050(4) or 173-400-115 (40 C.F.R. Part 60 subpart DDDD in effect on the date in WAC 173-400-025) must meet all applicable provisions of those sections.

(b) Such wood waste burners shall utilize RACT and shall be operated and maintained to minimize emissions.

~~(7) Sulfuric acid plants.~~

~~No person shall cause to be discharged into the atmosphere from a sulfuric acid plant, any gases which contain acid mist, expressed as H2SO4, in excess of 0.15 pounds per ton of acid produced. Sulfuric acid production shall be expressed as one hundred percent H2SO4.~~

~~(8) Municipal solid waste landfills constructed, reconstructed, or modified before May 30, 1991. A municipal solid waste landfill (MSW landfill) is an entire disposal facility in a contiguous geographical space where household waste is placed in or on the land. A MSW landfill may also receive other types of waste regulated under Subtitle D of the Federal Recourse Conservation and Recovery Act including the following: Commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Portions of an MSW landfill may be separated by access roads. A MSW landfill may be either publicly or privately owned. A MSW landfill may be a new MSW landfill, an existing MSW landfill, or a lateral expansion. All references in this subsection to 40 C.F.R. Part 60 rules mean those rules in effect on the date in WAC 173-400-025.~~

~~(a) Applicability. These rules apply to each MSW landfill constructed, reconstructed, or modified before May 30, 1991; and the MSW landfill accepted waste at any time since November 8, 1987 or the landfill has additional capacity for future waste deposition. (See WAC~~

~~173-400-115 for the requirements for MSW landfills constructed, reconstructed, or modified on or after May 30, 1991.) Terms in this subsection have the meaning given them in 40 C.F.R. 60.751, except that every use of the word "administrator" in the federal rules referred to in this subsection includes the "permitting authority."~~

~~(b) Exceptions. Any physical or operational change to an MSW landfill made solely to comply with these rules is not considered a modification or rebuilding.~~

~~(c) Standards for MSW landfill emissions.~~

~~(i) A MSW landfill having a design capacity less than 2.5 million megagrams or 2.5 million cubic meters must comply with the requirements of 40 C.F.R. 60.752(a) in addition to the applicable requirements specified in this section.~~

~~(ii) A MSW landfill having design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters must comply with the requirements of 40 C.F.R. 60.752(b) in addition to the applicable requirements specified in this section.~~

~~(d) Recordkeeping and reporting. A MSW landfill must follow the recordkeeping and reporting requirements in 40 C.F.R. 60.757 (submittal of an initial design capacity report) and 40 C.F.R. 60.758 (recordkeeping requirements), as applicable, except as provided for under (d)(i) and (ii).~~

~~(i) The initial design capacity report for the facility is due before September 20, 2001.~~

~~(ii) The initial nonmethane organic compound (NMOC) emissions rate report is due before September 20, 2001.~~

~~(e) Test methods and procedures.~~

~~(i) A MSW landfill having a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters must calculate the landfill nonmethane organic compound emission rates following the procedures listed in 40 C.F.R. 60.754, as applicable, to determine whether the rate equals or exceeds 50 megagrams per year.~~

~~(ii) Gas collection and control systems must meet the requirements in 40 C.F.R. 60.752 (b)(2)(ii) through the following procedures:~~

~~(A) The systems must follow the operational standards in 40 C.F.R. 60.753.~~

~~(B) The systems must follow the compliance provisions in 40 C.F.R. 60.755 (a)(1) through (a)(6)~~

~~to determine whether the system is in compliance with 40 C.F.R. 60.752 (b)(2)(ii).~~

~~(C) The system must follow the applicable monitoring provisions in 40 C.F.R. 60.756.~~

~~(f) Conditions. Existing MSW landfills that meet the following conditions must install a gas collection and control system:~~

~~(i) The landfill accepted waste at any time since November 8, 1987, or the landfill has additional design capacity available for future waste deposition;~~

~~(ii) The landfill has design capacity greater than or equal to 2.5 million megagrams or 2.5 million cubic meters. The landfill may calculate design capacity in either megagrams or cubic meters for comparison with the exception values. Any density conversions shall be documented and submitted with the report; and~~

~~(iii) The landfill has a nonmethane organic compound (NMOC) emission rate of 50 megagrams per year or greater.~~

~~(g) Change in conditions. After the adoption date of this rule, a landfill that meets all three conditions in (e) of this subsection must comply with all the requirements of this section within thirty months of the date when the conditions were met. This change will usually occur because the NMOC emission rate equaled or exceeded the rate of 50 megagrams per year.~~

~~(h) Gas collection and control systems.~~

~~(i) Gas collection and control systems must meet the requirements in 40 C.F.R. 60.752 (b)(2)(ii).~~

~~(ii) The design plans must be prepared by a licensed professional engineer and submitted to the permitting authority within one year after the adoption date of this section.~~

~~(iii) The system must be installed within eighteen months after the submittal of the design plans.~~

~~(iv) The system must be operational within thirty months after the adoption date of this section.~~

~~(v) The emissions that are collected must be controlled in one of three ways:~~

~~(A) An open flare designed and operated according to 40 C.F.R. 60.18;~~

~~(B) A control system designed and operated to reduce NMOC by 98 percent by weight; or~~

~~(C) An enclosed combustor designed and operated to reduce the outlet NMOC concentration to 20 parts per million as hexane by volume, dry basis to three percent oxygen, or less.~~

~~(i) Air operating permit.~~

~~(i) A MSW landfill that has a design capacity less than 2.5 million megagrams or 2.5 million cubic meters on January 7, 2000, is not subject to the air operating permit regulation, unless the landfill is subject to chapter 173-401 WAC for some other reason. If the design capacity of an exempted MSW landfill subsequently increases to equal or exceed 2.5 million megagrams or 2.5 million cubic meters by a change that is not a modification or reconstruction, the landfill is subject to chapter 173-401 WAC on the date the amended design capacity report is due.~~

~~(ii) A MSW landfill that has a design capacity equal to or greater than 2.5 million megagrams or 2.5 million cubic meters on January 7, 2000, is subject to chapter 173-401 WAC beginning on the effective date of this section. (Note: Under 40 C.F.R. 62.14352(e), an applicable MSW landfill must have submitted its application so that by April 6, 2001, the permitting authority was able to determine that it was timely and complete. Under 40 C.F.R. 70.7(b), no source may operate after the time that it is required to submit a timely and complete application.)~~

~~(iii) When a MSW landfill is closed, the owner or operator is no longer subject to the requirement to maintain an operating permit for the landfill if the landfill is not subject to chapter 173-401 WAC for some other reason and if either of the following conditions are met:~~

~~(A) The landfill was never subject to the requirement for a control system under 40 C.F.R. 62.14353; or~~

~~(B) The landfill meets the conditions for control system removal specified in 40 C.F.R. 60.752 (b)(2)(v).~~

State effective: 07/01/16; EPA effective: 11/07/16 (81 FR 69385, October 6, 2016)

173-400-081 Startup and Shutdown.

(1) In promulgating technology-based emission standards and making control technology determinations (e.g., BACT, RACT, LAER, BART) the permitting authorities will consider any physical constraints on the ability of a source to comply with the applicable standard during startup or shutdown.

(2) Where the permitting authority determines that the source or source category, when operated and maintained in accordance with good air pollution control practice, is not capable of

achieving continuous compliance with an emission standard during startup or shutdown, the permitting authority must include in the standard appropriate emission limitations, operating parameters, or other criteria to regulate the performance of the source during startup or shutdown conditions.

(3) In modeling the emissions of a source for purposes of demonstrating attainment or maintenance of national ambient air quality standards, the permitting authorities shall take into account any incremental increase in allowable emissions under startup or shutdown conditions authorized by an emission limitation or other operating parameter adopted under this rule.

(4) Any emission limitation or other parameter adopted under this rule which increases allowable emissions during startup or shutdown conditions over levels authorized in Washington's state implementation plan shall not take effect until approved by EPA as a SIP amendment.

State effective: 4/1/11; EPA effective: 11/3/14 79 FR 59653, 10/3/14

~~(e) Monitoring, recordkeeping and reporting requirements sufficient to ensure that the source complies with each condition in the order.~~

~~(6) Fees. A permitting authority may assess and collect fees for processing the request for an alternative emission limit according to its fee schedule for processing a permit application.~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-082, filed 8/16/18, effective 9/16/18.]~~

WAC 173-400-091 Voluntary limits on emissions. (1) Upon request by the owner or operator of a new or existing source or stationary source, the permitting authority with jurisdiction over the source shall issue a regulatory order that limits the potential to emit any air contaminant or contaminants to a level agreed to by the owner or operator and the permitting authority with jurisdiction.

(2) A condition contained in an order issued under this section shall be less than the source's or stationary source's otherwise allowable annual emissions of a particular contaminant under all applicable requirements of the chapter 70.94 RCW and the FCAA, including any standard or other requirement provided for in the Washington state implementation plan. The term "condition" refers to limits on production or other limitations, in addition to emission limitations.

(3) Any order issued under this section shall include monitoring, recordkeeping and reporting requirements sufficient to ensure that the source or stationary source complies with any condition established under this section. Monitoring requirements shall use terms, test methods, units, averaging periods, and other statistical conventions consistent with the requirements of WAC 173-400-105.

(4) Any order issued under this section must comply with WAC 173-400-171.

(5) The terms and conditions of a regulatory order issued under this section are enforceable. Any proposed deviation from a condition contained in an order issued under this section shall require revision or revocation of the order.

[Statutory Authority: Chapter 70.94 RCW. WSR 11-06-060 (Order 09-01), § 173-400-091, filed 3/1/11, effective 4/1/11; WSR 93-18-007 (Order 93-03), § 173-400-091, filed 8/20/93, effective 9/20/93.]

EPA effective: 11/3/14 (79 FR 59653, 10/3/14)

~~**WAC 173-400-099 Registration program.** (1) Program purpose.~~

~~(a) The registration program is a program to develop and maintain a current and accurate record of air contaminant sources. Information collected through the registration program is used to evaluate the effectiveness of air pollution control strategies and to verify source compliance with applicable air pollution requirements.~~

~~(b) Permit program sources, as defined in RCW 70.94.030(18), are not required to comply with the registration requirements of WAC 173-400-100 through 173-400-104.~~

~~(2) Program components. The components of the registration program consist of:~~

~~(a) Initial registration and annual or other periodic reports from stationary source owners providing information on location, size, height of contaminant outlets, processes employed, nature and quantity of the air contaminant emissions, and other information that is rele-~~

~~filed 1/10/05, effective 2/10/05. Statutory Authority: [RCW 70.94.331, 70.94.510 and chapter 70.94 RCW.] WSR 00-23-130 (Order 98-27), § 173-400-104, filed 11/22/00, effective 12/23/00. Statutory Authority: Chapter 70.94 RCW. WSR 95-07-126 (Order 93-40), § 173-400-104, filed 3/22/95, effective 4/22/95.]~~

WAC 173-400-105 Records, monitoring, and reporting. The owner or operator of a source must upon notification by ecology, maintain records on the type and quantity of emissions from the source and other information deemed necessary to determine whether the source is in compliance with applicable emission limitations and control measures.

(1) **Emission inventory.** The owner and operator of an air contaminant source must submit an inventory of emissions from the source each year. The inventory must include stack and fugitive emissions of particulate matter, PM-10, PM-2.5, sulfur dioxide, oxides of nitrogen, carbon monoxide, total reduced sulfur compounds (TRS), fluorides, lead, VOCs, ammonia, and other contaminants. Sources must provide registration information in a manner prescribed by the permitting authority for the submittal of these inventories. When the permitting authority requests emission inventory information for a calendar year, the owner or operator must submit the emissions inventory no later than April 15th after the end of the calendar year for which the emissions inventory was requested. If April 15th falls on a weekend, then the deadline to file shall be the next business day. The owner and operator must maintain records of information necessary to substantiate any reported emissions, consistent with the averaging times for the applicable standards. The owner or operator may base emission estimates used in the inventory on the most recent published EPA emission factors for a source category, or other information available to the owner and operator, whichever is the better estimate.

(2) **Monitoring.** Ecology must conduct a continuous surveillance program to monitor the quality of the ambient atmosphere as to concentrations and movements of air contaminants. As a part of this program, the director of ecology or an authorized representative may require any source under the jurisdiction of ecology to conduct stack and/or ambient air monitoring and to report the results to ecology.

(3) **Investigation of conditions.** Upon presentation of appropriate credentials, for the purpose of investigating conditions specific to the control, recovery, or release of air contaminants into the atmosphere, personnel from ecology or an authority must have the power to enter at reasonable times upon any private or public property, excepting nonmultiple unit private dwellings housing one or two families.

(4) **Source testing.** To demonstrate compliance, the permitting authority may conduct or require that the owner or operator of a source conduct a test using approved test methods from 40 C.F.R. Parts 51, 60, 61, 62, 63, 75 and 1065, as applicable (in effect on the date in WAC 173-400-025) or procedures contained in "*Source Test Manual - Procedures for Compliance Testing*," state of Washington, department of ecology, as of September 20, 2004, on file at ecology. The permitting authority may require the operator of a source to provide the necessary platform and sampling ports for ecology personnel or others to perform a test of an emissions unit. The source owner or operator must allow the permitting authority to obtain a sample from any emissions unit. The permitting authority shall give the operator of the source an opportunity to observe the sampling and to obtain a sample at the same time.

(5) **Continuous monitoring and recording.** Owners and operators of the following categories of sources must install, calibrate, maintain and operate equipment for continuously monitoring and recording those emissions specified.

(a) Fossil fuel-fired steam generators.

(i) Opacity, except where:

(A) Steam generator capacity is less than two hundred fifty million BTU per hour heat input; or

(B) Only gaseous fuel is burned.

(ii) Sulfur dioxide, except where steam generator capacity is less than two hundred fifty million BTU per hour heat input or if sulfur dioxide control equipment is not required.

(iii) Percent oxygen or carbon dioxide where such measurements are necessary for the conversion of sulfur dioxide continuous emission monitoring data.

(iv) General exception. These requirements do not apply to a fossil fuel-fired steam generator with an annual average capacity factor of less than thirty percent, as reported to the Federal Power Commission for calendar year 1974, or as otherwise demonstrated to ecology or the authority by the owner(s) or operator(s).

(b) **Sulfuric acid plants.** Sulfur dioxide where production capacity is more than three hundred tons per day, expressed as one hundred percent acid, except for those facilities where conversion to sulfuric acid is used primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.

(c) Fluid bed catalytic cracking units catalyst regenerators at petroleum refineries. Opacity where fresh feed capacity is more than twenty thousand barrels per day.

(d) Wood residue fuel-fired steam generators.

(i) Opacity, except where steam generator capacity is less than one hundred million BTU per hour heat input.

(ii) Continuous monitoring equipment. The requirements of (e) of this subsection do not apply to wood residue fuel-fired steam generators, but continuous monitoring equipment required by (d) of this subsection must be subject to approval by ecology.

(e) Owners and operators of those sources required to install continuous monitoring equipment under this subsection must demonstrate to ecology or the authority, compliance with the equipment and performance specifications and observe the reporting requirements contained in 40 C.F.R. Part 51, Appendix P, Sections 3, 4 and 5 (in effect on the date in WAC 173-400-025).

(f) Special considerations. If for reason of physical plant limitations or extreme economic situations, ecology determines that continuous monitoring is not a reasonable requirement, the permitting authority will establish alternative monitoring and reporting procedures on an individual basis. These will generally take the form of stack tests conducted at a frequency sufficient to establish the emission levels over time and to monitor deviations in these levels.

(g) Exemptions. This subsection (5) does not apply to any emission unit which is:

(i) Required to continuously monitor emissions due to a standard or requirement contained in 40 C.F.R. Parts 60, 61, 62, 63, or 75 (all in effect on the date in WAC 173-400-025) or a permitting authority's adoption by reference of the federal standards. Emission units and sources subject to those standards must comply with the data collection requirements that apply to those standards.

(ii) Not subject to an applicable emission standard.

(6) No person shall make any false material statement, representation or certification in any form, notice or report required under chapter 70.94 or 70.120 RCW, or any ordinance, resolution, regulation, permit or order in force pursuant thereto.

(7) Continuous emission monitoring system operating requirements. All continuous emission monitoring systems (CEMS) required by 40 C.F.R. Parts 60, 61, 62, 63, or 75 (all in effect on the date in WAC 173-400-025), or a permitting authority's adoption of those federal standards must meet the continuous emission monitoring systems (CEMS) performance specifications and data recovery requirements imposed by those standards. All CEMS required under an order, PSD permit, or regulation issued by a permitting authority and not subject to CEMS performance specifications and data recovery requirements imposed by 40 C.F.R. Parts 60, 61, 62, 63, or 75 must follow the continuous emission monitoring rule of the permitting authority, or if the permitting authority does not have a continuous emission monitoring rule, must meet the following requirements:

(a) The owner or operator must recover valid hourly monitoring data for at least ninety-five percent of the hours that the equipment (required to be monitored) is operated during each calendar month except for periods of monitoring system downtime, provided that the owner or operator demonstrated that the downtime was not a result of inadequate design, operation, or maintenance, or any other reasonably preventable condition, and the source conducts any necessary repairs to the monitoring system in a timely manner.

Note: This means that a continuous emissions monitor (CEM) must provide valid data for all but thirty-six hours for each month (ninety-five percent standard).

(b) The owner or operator must install a continuous emission monitoring system that meets the performance specification in 40 C.F.R. Part 60, Appendix B in effect at the time of its installation, and must operate this monitoring system in accordance with the quality assurance procedures in Appendix F of 40 C.F.R. Part 60 (in effect on the date in WAC 173-400-025), and EPA's "Recommended Quality Assurance Procedures for Opacity Continuous Monitoring Systems" (EPA) 340/1-86-010.

(c) An owner or operator must reduce monitoring data commencing on the clock hour and containing at least forty-five minutes of monitoring data to one hour averages. An owner or operator must reduce monitoring data for opacity six minute block averages unless otherwise specified in the order of approval or permit. An owner or operator must include all monitoring data in these averages except for data collected during calibration drift tests and cylinder gas audits, and for data collected subsequent to a failed quality assurance test or audit. After a failed quality assurance test or audit, a source must collect no valid data until the monitoring system passes a quality assurance test or audit.

(d) An owner or operator must maintain continuous operation of all continuous monitoring systems except for instances of system breakdowns, repairs, calibration checks, and zero and span adjustments required under (a) of this subsection.

(i) Continuous monitoring systems for measuring opacity shall complete a minimum of one cycle of sampling and analyzing for each successive ten second period and one cycle of data recording for each successive six minute period.

(ii) Continuous monitoring systems for measuring emissions other than opacity must complete a minimum of one cycle of sampling, analyzing, and recording for each successive fifteen minute period.

(e) The owner or operator must retain all monitoring data averages for at least five years, including copies of all reports submitted to the permitting authority and records of all repairs, adjustments, and maintenance performed on the monitoring system.

(f) The owner or operator must submit a monthly report (or other frequency as directed by terms of an order, air operating permit or regulation) to the permitting authority within thirty days after the end of the month (or other specified reporting period) in which the owner or operator recorded the data. The owner or operator may combine the report required by this section with any excess emission report required by WAC 173-400-108. This report must include:

(i) The number of hours that the monitored emission unit operated each month and the number of valid hours of monitoring data that the monitoring system recovered each month;

(ii) The date, time period, and cause of each failure to meet the data recovery requirements of (a) of this subsection and any actions taken to ensure adequate collection of such data;

(iii) The date, time period, and cause of each failure to recover valid hourly monitoring data for at least ninety percent of the hours that the equipment (required to be monitored) was operated each day;

Note: A continuous emissions monitor (CEM) must provide valid data for all but two hours per day (ninety percent standard).

(iv) The results of all cylinder gas audits conducted during the month; and

(v) A certification of truth, accuracy, and completeness signed by an authorized representative of the owner or operator.

(8) No person shall render inaccurate any monitoring device or method required under chapter 70.94 or 70.120 RCW, or any ordinance, resolution, regulation, permit, or order in force pursuant thereto.

[Statutory Authority: Chapter 70.94 RCW, RCW 70.94.151, 70.94.153, and 70.94.892. WSR 18-22-006 (Order 16-09), § 173-400-105, filed 10/25/18, effective 11/25/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-105, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-105, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-105, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.395 and 70.94.331. WSR 07-11-039 (Order 06-03), § 173-400-105, filed 5/8/07, effective 6/8/07. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-105, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-105, filed 8/15/01, effective 9/15/01. Statutory Authority: RCW 70.94.860, 70.94.510 and 70.94.331. WSR 98-15-129 (Order 98-04), § 173-400-105, filed 7/21/98, effective 8/21/98. Statutory Authority: Chapter 70.94 RCW. WSR 96-19-054 (Order 94-35), § 173-400-105, filed 9/13/96, effective 10/14/96; WSR 93-18-007 (Order 93-03), § 173-400-105, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-105, filed 2/19/91, effective 3/22/91; WSR 87-20-019 (Order 87-12), § 173-400-105, filed 9/30/87.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

~~**WAC 173-400-107 Excess emissions.** This section is in effect until the effective date of EPA's removal of the September 20, 1993, version of this section from the SIP. This section is not effective starting on that date.~~

~~(iii) The date, time period, and cause of each failure to recover valid hourly monitoring data for at least 90 percent of the hours that the equipment (required to be monitored) was operated each day;~~

~~(iv) The results of all cylinder gas audits conducted during the month; and~~

~~(v) A certification of truth, accuracy, and completeness signed by an authorized representative of the owner or operator.~~

~~(8) No person shall render inaccurate any monitoring device or method required under chapter 70.94 or 70.120 RCW, or any ordinance, resolution, regulation, permit, or order in force pursuant thereto.~~

~~*State effective: 07/01/16; EPA effective: 11/07/16 (81 FR 69385, October 6, 2016)*~~

173-400-107 Excess Emissions.

(1) The owner or operator of a source shall have the burden of proving to ecology or the authority or the decision-making authority in an enforcement action that excess emissions were unavoidable. This demonstration shall be a condition to obtaining relief under subsections (4), (5) and (6) of this section.

(2) Excess emissions determined to be unavoidable under the procedures and criteria in this section shall be excused and not subject to penalty.

(3) Excess emissions which represent a potential threat to human health or safety or which the owner or operator of the source believes to be unavoidable shall be reported to ecology or the authority as soon as possible. Other excess emissions shall be reported within thirty days after the end of the month during which the event occurred or as part of the routine emission monitoring reports. Upon request by ecology or the authority, the owner(s) or operator(s) of the source(s) shall submit a full written report including the known causes, the corrective actions taken, and the preventive measures to be taken to minimize or eliminate the chance of recurrence.

(4) Excess emissions due to startup or shutdown conditions shall be considered unavoidable provided the source reports as required under subsection (3) of this section and adequately demonstrates that the excess emissions could not have been prevented through careful planning and design and if a bypass of control equipment occurs, that such bypass is necessary to prevent loss of life, personal injury, or severe property damage.

(5) Maintenance. Excess emissions due to scheduled maintenance shall be considered unavoidable if the source reports as required under subsection (3) of this section and adequately demonstrates that the excess emissions could not have been avoided through reasonable design, better scheduling for maintenance or through better operation and maintenance practices.

(6) Excess emissions due to upsets shall be considered unavoidable provided the source reports as required under subsection (3) of this section and adequately demonstrates that:

(a) The event was not caused by poor or inadequate design, operation, maintenance, or any other reasonably preventable condition;

(b) The event was not of a recurring pattern indicative of inadequate design, operation, or maintenance; and

(c) The operator took immediate and appropriate corrective action in a manner consistent with good air pollution control practice for minimizing emissions during the event, taking into account the total emissions impact of the corrective action, including slowing or shutting down the emission unit as necessary to minimize emissions, when the operator knew or should have known that an emission standard or permit condition was being exceeded.

State effective: 9/20/93; EPA effective: 6/2/95 60 FR 28726, 6/2/95

~~**173-400-110 New Source Review (NSR) for Sources and Portable Sources.**~~

~~(1) Applicability.~~

~~(a) WAC 173-400-110, 173-400-111, 173-400-112, and 173-400-113 apply statewide except where a permitting authority has adopted its own new source review regulations.~~

~~(b) This section applies to new sources and stationary sources as defined in RCW 70.94.030, and WAC 173-400-030, but does not include nonroad engines.~~

~~(c) For purposes of this section:~~

~~(i) "Establishment" means to begin actual construction;~~

~~(ii) "New source" includes:~~

~~(A) A modification to an existing stationary source, as "modification" is defined in WAC 173-400-030;~~

~~(B) The construction, modification, or relocation of a portable source as defined in WAC 173-400-030, except those relocating in compliance with WAC 173-400-036;~~

~~(C) The establishment of a new or modified toxic air pollutant source, as defined in WAC 173-460-020; and~~

~~(D) A major modification to an existing major stationary source, as defined in WAC 173-400-710 and 173-400-810.~~

~~(d) New source review of a modification is limited to the emission unit or units proposed to be modified and the air contaminants whose emissions would increase as a result of the~~

~~(i) A violation subject to WAC 173-400-230 (3), (4), and (6); but~~
~~(ii) Not subject to civil penalty under WAC 173-400-230(2).~~

~~Note: Nothing in a state rule limits a federal court's jurisdiction or discretion to determine the appropriate remedy in an enforcement action.~~

~~(2) The owner or operator of a source shall have the burden of proving to the permitting authority in an enforcement action that excess emissions were unavoidable. This demonstration shall be a condition to obtaining relief under subsection (5) of this section.~~

~~(3) This section does not apply to an exceedance of an emission standard in 40 C.F.R. Parts 60, 61, 62, 63, and 72, or a permitting authority's adoption by reference of these federal standards.~~

~~(4) Excess emissions that occur due to an upset or malfunction during a startup or shutdown event are treated as an upset or malfunction under subsection (5) of this section.~~

~~(5) Excess emissions due to an upset or malfunction will be considered unavoidable provided the source reports as required by WAC 173-400-108 and adequately demonstrates to the permitting authority that:~~

~~(a) The event was not caused by poor or inadequate design, operation, maintenance, or any other reasonably preventable condition;~~

~~(b) The event was not of a recurring pattern indicative of inadequate design, operation, or maintenance;~~

~~(c) When the operator knew or should have known that an emission standard or other permit condition was being exceeded, the operator took immediate and appropriate corrective action in a manner consistent with safety and good air pollution control practice for minimizing emissions during the event, taking into account the total emissions impact of the corrective action. Actions taken could include slowing or shutting down the emission unit as necessary to minimize emissions;~~

~~(d) If the emitting equipment could not be shutdown during the malfunction or upset to prevent the loss of life, prevent personal injury or severe property damage, or to minimize overall emissions, repairs were made in an expeditious fashion;~~

~~(e) All emission monitoring systems and pollution control systems were kept operating to the extent possible unless their shutdown was necessary to prevent loss of life, personal injury, or severe property damage;~~

~~(f) The amount and duration of the excess emissions (including any bypass) were minimized to the maximum extent possible; and~~

~~(g) All practicable steps were taken to minimize the impact of the excess emissions on ambient air quality.~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-109, filed 8/16/18, effective 9/16/18; WSR 11-06-060 (~~Order 09-01), § 173-400-109, filed 3/1/11, effective 4/1/11.]

WAC 173-400-110 New source review (NSR) for sources and portable sources. (1) **Applicability.**

(a) WAC 173-400-110, 173-400-111, 173-400-112, and 173-400-113 apply statewide except where a permitting authority has adopted its own new source review regulations.

(b) This section applies to new sources and stationary sources as defined in RCW 70.94.030, and WAC 173-400-030, but does not include nonroad engines.

(c) For purposes of this section:

(i) "Establishment" means to begin actual construction;

(ii) "New source" includes:

(A) A modification to an existing stationary source, as "modification" is defined in WAC 173-400-030:

(B) The construction, modification, or relocation of a portable source as defined in WAC 173-400-030, except those relocating in compliance with WAC 173-400-036;

~~(C) The establishment of a new or modified toxic air pollutant source, as defined in WAC 173-460-020; and~~

(D) A major modification to an existing major stationary source, as defined in WAC 173-400-710 and 173-400-810.

(d) New source review of a modification is limited to the emission unit or units proposed to be modified and the air contaminants whose emissions would increase as a result of the modification. Review of a major modification must comply with WAC 173-400-700 through 173-400-750 or 173-400-800 through 173-400-860, as applicable.

~~(e) The procedural requirements pertaining to NOC applications and orders of approval for new sources that are not major stationary sources, as defined in WAC 173-400-710 and 173-400-810, shall not apply to any person conducting a remedial action at a facility pursuant to a consent decree, order, or agreed order issued pursuant to chapter 70.105D RCW, Model Toxics Control Act, or to the department of ecology when it conducts a remedial action under chapter 70.105D RCW. The department of ecology shall ensure compliance with the substantive requirements of this chapter through the consent decree, order, or agreed order issued pursuant to chapter 70.105D RCW using the procedures outlined in WAC 173-340-710(9) or during a department-conducted remedial action, through the procedures outlined in WAC 173-340-710(9).~~

(2) **Preconstruction approval requirements.** The applicant must evaluate the proposed project and submit an application addressing all applicable new source review requirements of this chapter.

(a) A notice of construction application must be filed and an order of approval must be issued by the permitting authority prior to the establishment of any new source or modification except for those new sources or modifications exempt from permitting under subsections (4), (5), and (6) of this section.

(b) If the proposed project is a new major stationary source or a major modification, located in a designated nonattainment area, and if the project emits the air pollutant or precursors of the air pollutant for which the area is designated nonattainment, and the project meets the applicability criteria in WAC 173-400-820, then the project is subject to the permitting requirements of WAC 173-400-800 through 173-400-860.

(c) If the proposed project is a new major stationary source or a major modification that meets the applicability criteria of WAC 173-400-720, then the project is subject to the PSD permitting requirements of WAC 173-400-700 through 173-400-750.

~~(d) If the proposed project will increase emissions of toxic air pollutants regulated under chapter 173-460 WAC, then the project must meet all applicable requirements of that program.~~

(3) **Modifications.**

New source review is required for any modification to a stationary source that requires:

(a) An increase in a plant-wide cap; or

(b) An increase in an emission unit or activity specific emission limit.

(4) **Emission unit and activity exemptions.**

The construction or modification of emission units or an activity in one of the categories listed below is exempt from new source review, provided that the modified unit continues to fall within one of the listed categories. The construction or modification of an emission unit or an activity exempt under this subsection does not require the filing of a notice of construction application.

(a) Maintenance/construction:

(i) Cleaning and sweeping of streets and paved surfaces;

(ii) Concrete application, and installation;

(iii) Dredging wet spoils handling and placement;

(iv) Paving application and maintenance. This provision does not exempt asphalt plants from this chapter;

(v) Plant maintenance and upkeep activities (grounds keeping, general repairs, house keeping, plant painting, welding, cutting, brazing, soldering, plumbing, retarring roofs, etc.);

(vi) Plumbing installation, plumbing protective coating application and maintenance activities;

(vii) Roofing application and maintenance;

(viii) Insulation application and maintenance;

(ix) Janitorial services and consumer use of janitorial products;

(x) Construction activities that do not result in new or modified stationary sources or portable stationary sources.

(b) Storage tanks:

Note: It can be difficult to determine requirements for storage tanks. Ecology strongly recommends that an owner or operator contact the permitting authority to determine the exemption status of storage tanks prior to their installation.

(i) Lubricating oil storage tanks. This provision does not exempt wholesale distributors of lubricating oils from this chapter;

(ii) Polymer tanks and storage devices and associated pumping and handling equipment, used for solids dewatering and flocculation;

(iii) Storage tanks, reservoirs, pumping and handling equipment of any size containing soaps, vegetable oil, grease, animal fat, and nonvolatile aqueous salt solutions;

(iv) Process and white water storage tanks;

(v) Operation, loading and unloading of storage tanks and storage vessels, with lids or other appropriate closure and less than 260-gallon capacity (35 cubic feet);

(vi) Operation, loading and unloading of storage tanks, ≤ 1100 gallon capacity, with lids or other appropriate closure, ~~not for use with materials containing toxic air pollutants, as listed in chapter 173-460 WAC~~, max. VP 550 mm mercury at 21°C;

(vii) Operation, loading and unloading storage of butane, propane, or liquefied petroleum gas with a vessel capacity less than 40,000 gallons;

(viii) Tanks, vessels and pumping equipment, with lids or other appropriate closure for storage or dispensing of aqueous solutions of inorganic salts, bases and acids.

(c) New or modified emission units with combined aggregate heat inputs to combustion units (excluding emergency engines exempted by subsection (4)(h)(xxxix) of this section), less than or equal to all of the following, as applicable:

(i) ≤ 500,000 Btu/hr using coal with ≤ 0.5% sulfur or other solid fuels with ≤ 0.5% sulfur;

(ii) ≤ 500,000 Btu/hr using used oil, per the requirements of RCW 70.94.610;

(iii) ≤ 400,000 Btu/hr using wood waste or paper;

(iv) $\leq$ 1,000,000 Btu/hr using gasoline, kerosene, #1, or #2 fuel oil and with $\leq$0.05% sulfur;'

(v) $\leq$ 4,000,000 Btu/hr using natural gas, propane, or LPG.'

(d) Material handling:'

(i) Continuous digester chip feeders;'

(ii) Grain elevators not licensed as warehouses or dealers by either the Washington state department of agriculture or the U.S. Department of Agriculture;

(iii) Storage and handling of water based lubricants for metal working where organic content of the lubricant is $\leq$ 10%;

(iv) Equipment used exclusively to pump, load, unload, or store high boiling point organic material in tanks less than one million gallon, material with initial atmospheric boiling point not less than 150°C or vapor pressure not more than 5 mm mercury at 21°C, with lids or other appropriate closure.

(e) Water treatment:

(i) Septic sewer systems, not including active wastewater treatment facilities;

(ii) NPDES permitted ponds and lagoons used solely for the purpose of settling suspended solids and skimming of oil and grease;

(iii) De-aeration (oxygen scavenging) of water ~~where toxic air pollutants as defined in chapter 173-460 WAC are not emitted;~~'

(iv) Process water filtration system and demineralizer vents;'

(v) Sewer manholes, junction boxes, sumps and lift stations associated with wastewater treatment systems;

(vi) Demineralizer tanks;

(vii) Alum tanks;

(viii) Clean water condensate tanks.

(f) Environmental chambers and laboratory equipment:

(i) Environmental chambers and humidity chambers using only gases ~~that are not toxic air pollutants listed in chapter 173-460 WAC;~~

(ii) Gas cabinets using only gases that are not toxic air pollutants regulated under chapter 173-460 WAC;

(iii) Installation or modification of a single laboratory fume hood;

(iv) Laboratory research, experimentation, analysis and testing at sources whose primary purpose and activity is research or education. To be exempt, these sources must not engage in the production of products, or in providing commercial services, for sale or exchange for commercial profit except in a de minimis manner. Pilot-plants or pilot scale processes at these sources are not exempt.

(v) Laboratory calibration and maintenance equipment.

(g) Monitoring/quality assurance/testing:

(i) Equipment and instrumentation used for quality control/assurance or inspection purpose;

(ii) Hydraulic and hydrostatic testing equipment;

(iii) Sample gathering, preparation and management;

(iv) Vents from emission monitors and other analyzers.

(h) Miscellaneous:

(i) Single-family residences and duplexes;

(ii) Plastic pipe welding;

(iii) Primary agricultural production activities including soil preparation, planting, fertilizing, weed and pest control, and harvesting;'

(iv) Comfort air conditioning;'

(v) Flares used to indicate danger to the public;'

(vi) Natural and forced air vents and stacks for bathroom/toilet activities;

(vii) Personal care activities;

(viii) Recreational fireplaces including the use of barbecues, campfires, and ceremonial fires;

(ix) Tobacco smoking rooms and areas;

(x) Noncommercial smokehouses;

(xi) Blacksmith forges for single forges;

(xii) Vehicle maintenance activities, not including vehicle surface coating;

(xiii) Vehicle or equipment washing (see (c) of this subsection for threshold for boilers);

(xiv) Wax application;

(xv) Oxygen, nitrogen, or rare gas extraction and liquefaction equipment not including internal and external combustion equipment;

(xvi) Ozone generators and ozonation equipment;

(xvii) Solar simulators;

(xviii) Ultraviolet curing processes, ~~to the extent that toxic air pollutant gases as defined in chapter 173-460 WAC are not emitted;~~

(xix) Electrical circuit breakers, transformers, or switching equipment installation or operation;

(xx) Pulse capacitors;

(xxi) Pneumatically operated equipment, including tools and hand held applicator equipment for hot melt adhesives;

(xxii) Fire suppression equipment;

(xxiii) Recovery boiler blow-down tank;

(xxiv) Screw press vents;

(xxv) Drop hammers or hydraulic presses for forging or metal working;

(xxvi) Production of foundry sand molds, unheated and using binders less than 0.25% free phenol by sand weight;

(xxvii) Kraft lime mud storage tanks and process vessels;

(xxviii) Lime grits washers, filters and handling;

(xxix) Lime mud filtrate tanks;

(xxx) Lime mud water;

(xxxi) Stock cleaning and pressurized pulp washing down process of the brown stock washer;

(xxxii) Natural gas pressure regulator vents, excluding venting at oil and gas production facilities and transportation marketing facilities;

(xxxiii) Solvent cleaners less than 10 square feet air-vapor interface with solvent vapor pressure not more than 30 mm mercury at 21°C ~~where no toxic air pollutants as listed under chapter 173-460 WAC are emitted~~;

(xxxiv) Surface coating, aqueous solution or suspension containing ≤ 1% (by weight) VOCs, ~~or ≤ 1% (by weight) toxic air pollutants as listed in chapter 173-460 WAC~~;

(xxxv) Cleaning and stripping activities and equipment using solutions having ≤ 1% VOCs (by weight) ~~or ≤ 1% (by weight) toxic air pollutants~~. Acid solutions used on metallic substances are not exempt;

(xxxvi) Dip coating operations, using materials less than 1% VOCs (by weight) ~~or ≤ 1% (by weight) toxic air pollutants as listed in chapter 173-460 WAC~~.

(xxxvii) Abrasive blasting performed inside a booth or hangar designed to capture the blast grit or overspray.

(xxxviii) For structures or items too large to be reasonably handled indoors, abrasive blasting performed outdoors that employs control measures such as curtailment during windy periods and enclosure of the area being blasted with tarps and uses either steel shot or an abrasive containing less than one percent (by mass) which would pass through a No. 200 sieve.

(xxxix) Stationary emergency internal combustion engines with an aggregate brake horsepower that is less than or equal to 500 brake horsepower.

(xl) Gasoline dispensing facilities with annual gasoline throughputs less than those specified in WAC 173-491-040 (4)(a). ~~Gasoline dispensing facilities subject to chapter 173-491 WAC are exempt from toxic air pollutant analysis pursuant to chapter 173-460 WAC.~~

(5) **Exemptions based on emissions.**

(a) Except as provided in this subsection:

(i) Construction of a new emissions unit that has a potential to emit below each of the levels listed in Table 110(5) Exemption levels is exempt from new source review.

(ii) A modification to an existing emissions unit that increases the unit's actual emissions by less than each of the threshold levels listed in Table 110(5) Exemption levels of this subsection is exempt from new source review.

(b) Greenhouse gas emissions are exempt from new source review requirements except to the extent required under WAC 173-400-720, prevention of significant deterioration. The owner or operator of a source or emission unit, may request that the permitting authority impose emission limits and/or operation limitations for greenhouse gas in any new source review order of approval.

Table 110(5) Exemption levels:

POLLUTANT	LEVEL (TONS PER YEAR)
Carbon monoxide	5.0
/HDG	0.005
Nitrogen oxides	2.0
PM-10	0.75
PM-2.5	0.5
7otal suspended particulates	1.25
Sulfur dioxide	2.0
9olatile Organic Compounds, total	2.0
Ozone Depleting Substances, total	1.0
~~7oxic Air Pollutants~~	~~The de minimis emission rate specified for each 7AP in WAC 173-460-150.~~

(6) **Portable source with order of approval.** A portable source is authorized to operate without obtaining a site-specific or a permitting authority specific approval order to relocate if the portable source complies with the provisions of WAC 173-400-036.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-110, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-110, filed 3/1/11, effective 4/1/11. Statutory Authority: Washington Clean Air Act, RCW 70.94.152. WSR 09-11-131 (Order 05-19), § 173-400-110, filed 5/20/09, effective 6/20/09. Statutory Authority: RCW 70.94.395 and 70.94.331. WSR 07-11-039 (Order 06-03), § 173-400-110, filed 5/8/07, effective 6/8/07. Statutory Authority: RCW

70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-110, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-110, filed 8/15/01, effective 9/15/01. Statutory Authority: RCW 70.94.860, 70.94.510 and 70.94.331. WSR 98-15-129 (Order 98-04), § 173-400-110, filed 7/21/98, effective 8/21/98. Statutory Authority: RCW 70.94.152. WSR 98-01-183 (Order 96-01), § 173-400-110, filed 12/23/97, effective 1/23/98. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-110, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-110, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-110, filed 4/15/83. Statutory Authority: RCW 70.94.331, 70.94.510, and 70.94.785. WSR 81-03-002 (Order DE 80-53), § 173-400-110, filed 1/8/81. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-110, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-110, filed 5/8/79; Order DE 76-38, § 173-400-110, filed 12/21/76. Formerly WAC 18-04-110.]

EPA effective: 11/28/16 (81 FR 66825, 9/29/16)

WAC 173-400-111 Processing notice of construction applications for sources, stationary sources and portable sources. WAC 173-400-110, 173-400-111, 173-400-112, and 173-400-113 apply statewide except where a permitting authority has adopted its own new source review regulations.

(1) Completeness determination.

(a) Within thirty days after receiving a notice of construction application, the permitting authority must either notify the applicant in writing that the application is complete or notify the applicant in writing of all additional information necessary to complete the application.

(b) A complete application contains all the information necessary for processing the application. At a minimum, the application must provide information on the nature and amounts of emissions to be emitted by the proposed new source or increased as part of a modification, as well as the location, design, construction, and operation of the new source as needed to enable the permitting authority to determine that the construction or modification will meet the requirements of WAC 173-400-113. Designating an application complete for purposes of permit processing does not preclude the reviewing authority from requesting or accepting any additional information.

(c) For a project subject to the special protection requirements for federal Class I areas under WAC 173-400-117(2), a completeness determination includes a determination that the application includes all information required for review of that project under WAC 173-400-117(3). The applicant must send a copy of the application and all amendments to the application to the EPA and the responsible federal land manager.

(d) For a project subject to the major new source review requirements in WAC 173-400-800 through 173-400-860, the completeness determination includes a determination that the application includes all information required for review under those sections.

(e) An application is not complete until any permit application fee required by the permitting authority has been paid.

(2) Coordination with chapter 173-401 WAC, operating permit regulation. A person seeking approval to construct or modify a source that

requires an operating permit may elect to integrate review of the operating permit application or amendment required under chapter 173-401 WAC and the notice of construction application required by this section. A notice of construction application designated for integrated review must be processed in accordance with operating permit program procedures and deadlines in chapter 173-401 WAC and must comply with WAC 173-400-171.

(3) Criteria for approval of a notice of construction application. An order of approval cannot be issued until the following criteria are met as applicable:

(a) The requirements of WAC 173-400-112;

(b) The requirements of WAC 173-400-113;

(c) The requirements of WAC 173-400-117;

(d) The requirements of WAC 173-400-171;

(e) The requirements of WAC 173-400-200 and 173-400-205;

(f) The requirements of WAC 173-400-700 through 173-400-750;

(g) The requirements of WAC 173-400-800 through 173-400-860;

~~(h) The requirements of chapter 173-460 WAC;~~ and

(i) All fees required under chapter 173-455 WAC (or the applicable new source review fee table of the local air pollution control authority) have been paid.

(4) Final determination - Time frame and signature authority.

(a) Within sixty days of receipt of a complete notice of construction application, the permitting authority must either:

(i) Issue a final decision on the application; or

(ii) Initiate notice and comment for those projects subject to WAC 173-400-171 followed as promptly as possible by a final decision.

(b) Every final determination on a notice of construction application must be reviewed and signed prior to issuance by a professional engineer or staff under the direct supervision of a professional engineer in the employ of the permitting authority.

(5) Distribution of the final decision.

(a) The permitting authority must promptly provide copies of each order approving or denying a notice of construction application to the applicant and to any other party who submitted timely comments on the application, along with a notice advising parties of their rights of appeal to the pollution control hearings board.

(b) If the new source is a major stationary source or the change is a major modification subject to the requirements of WAC 173-400-800 through 173-400-860, the permitting authority must:

(i) Submit any control technology (LAER) determination included in a final order of approval to the RACT/BACT/LAER clearinghouse maintained by EPA; and

(ii) Send a copy of the final approval order to EPA.

(6) Appeals. Any conditions contained in an order of approval, or the denial of a notice of construction application may be appealed to the pollution control hearings board as provided under chapters 43.21B RCW and 371-08 WAC.

(7) Construction time limitations.

(a) Approval to construct or modify a stationary source becomes invalid if construction is not commenced within eighteen months after receipt of the approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The permitting authority may extend the eighteen-month period upon a satisfactory showing by the permittee that an extension is justified.

(b) The extension of a project that is either a major stationary source, as defined in WAC 173-400-810, in a nonattainment area or a major modification, as defined in WAC 173-400-810, of a major stationary source in a nonattainment area must also require LAER, for the pollutants for which the area is classified as nonattainment, as LAER exists at the time of the extension for the pollutants that were subject to LAER in the original approval.

(c) This provision does not apply to the time period between construction of the approved phases of a phased construction project. Each phase must commence construction within eighteen months of the projected and approved commence construction date.

(8) Change of conditions or revisions to orders of approval.

(a) The owner or operator may request, at any time, a change in the conditions of an approval order and the permitting authority may approve the request provided the permitting authority finds that:

(i) The change in conditions will not cause the source to exceed an emissions standard set by regulation or rule;

(ii) No ambient air quality standard will be exceeded as a result of the change;

(iii) The change will not adversely impact the ability of the permitting authority to determine compliance with an emissions standard;

(iv) The revised order will continue to require BACT for each new source approved by the order except where the Federal Clean Air Act requires LAER; and

(v) The revised order meets the requirements of WAC 173-400-111, 173-400-112, 173-400-113, 173-400-720, 173-400-830, ~~and 173-460-040,~~ as applicable.

(b) Actions taken under this subsection are subject to the public involvement provisions of WAC 173-400-171 or the permitting authority's public notice and comment procedures.

(c) The applicant must consider the criteria in 40 C.F.R. 52.21 (r)(4) (in effect on the date in WAC 173-400-025) or 173-400-830(3), as applicable, when determining which new source review approvals are required.

~~(9) Fees. Chapter 173-455 WAC lists the required fees payable to ecology for various permit actions.~~

(10) Enforcement. All persons who receive an order of approval must comply with all approval conditions contained in the order of approval.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-111, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-111, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-111, filed 3/1/11, effective 4/1/11.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-112 Requirements for new sources in nonattainment areas—Review for compliance with regulations. WAC 173-400-110, 173-400-111, 173-400-112, and 173-400-113 apply statewide except where a permitting authority has adopted its own new source review regulations. The permitting authority that is reviewing an application required by WAC 173-400-110(2) to establish a new source in a nonattainment area shall issue the order of approval if it determines that the proposed project satisfies each of the following requirements:

(1) The proposed new source or modification will comply with all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, emission standards adopted under chapter 70.94 RCW and, for sources regulated by an authority, the applicable emission standards of that authority.

(2) The proposed new source or modification will achieve LAER for any air contaminants for which:

(a) The area has been designated nonattainment; and

(b)(i) The proposed new source is major; or

(ii) The existing source is major and the major modification is significant.

(3) The proposed new source will employ BACT for those air contaminants not subject to LAER that the new source will emit or for which the proposed modification will cause an emissions increase.

(4) The proposed new source or modification will not cause any ambient air quality standard to be exceeded, will not violate the requirements for reasonable further progress established by the SIP and will comply with WAC 173-400-113 (3) and (4) for all air contaminants for which the area has not been designated nonattainment.

(5) If the proposal is a new major stationary source or a major modification as those terms are defined in WAC 173-400-810 then it must also comply with WAC 173-400-800 through 173-400-860.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-112, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-112, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-112, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-112, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-112, filed 8/20/93, effective 9/20/93.]

EPA effective: 11/28/16 (81 FR 66825, 9/29/16)

WAC 173-400-113 New sources in attainment or unclassifiable areas—Review for compliance with regulations. WAC 173-400-110, 173-400-111, 173-400-112, and 173-400-113 apply statewide except where a permitting authority has adopted its own new source review regulations. The permitting authority that is reviewing an application to establish a new source or modification in an attainment or unclassifiable area shall issue an order of approval if it determines that the proposed project satisfies each of the following requirements:

(1) The proposed new source or modification will comply with all applicable new source performance standards, national emission standards for hazardous air pollutants, national emission standards for hazardous air pollutants for source categories, emission standards adopted under chapter 70.94 RCW and, for sources regulated by an authority, the applicable emission standards of that authority.

(2) The proposed new source or modification will employ BACT for all pollutants not previously emitted or whose emissions would increase as a result of the new source or modification.

(3) Allowable emissions from the proposed new source or the increase in emissions from the proposed modification will not cause or contribute to a violation of any ambient air quality standard. ~~If the modeled concentrations of allowable emissions from the proposed new source or the increase in emissions from the proposed modification are below the levels in Table 4a, the proposed source does not contribute to a violation of an ambient air quality standard.~~

(4)(a) If the projected impact of the allowable emissions from the proposed new major stationary source (as defined in WAC 173-400-810) or the projected impact of the increase in allowable emissions from the proposed major modification (as defined in WAC 173-400-810) at any location within a nonattainment area does not exceed the following levels for the pollutants for which the area has been designated nonattainment, then the proposed new source or modification will not be considered to cause or contribute to a violation of an ambient air quality standard:

Table 4a:
Cause or Contribute Threshold Values for Nonattainment Area Impacts

3ROOXWDQW	Annual $YHUDJH	24-Hour $YHUDJH	8-Hour $YHUDJH	3-Hour $YHUDJH	1-Hour $YHUDJH
CO-	-		0.5 mg/m^3	-	2 mg/m^3
62 2	1.0 µg/m^3	5 µg/m^3	-	25 µg/m^3	30 µg/m^3
30 10	1.0 µg/m^3	5 µg/m^3	-	-	-
30 2.5	0.3 µg/m^3	1.2 µg/m^3			
12 2	1.0 µg/m^3	-	-	-	-

(b) If the projected impact of the allowable emissions from the proposed new major stationary source (as defined in WAC 173-400-810) or the projected impact of the increase in allowable emissions from the proposed major modification (as defined in WAC 173-400-810) results in a projected impact at any location inside a nonattainment area above the appropriate value in Table 4a of this section may use an offsetting emission reduction or other method identified in 40 C.F.R. Part 51 Appendix S, Sections III and IV.A which reduce the projected impacts to the above values or less. If the owner or operator of the proposed new major stationary source or major source proposed to be modified is unable to reduce emissions or obtain offsetting emissions reductions adequate to reduce modeled impacts below the values in Table 4a of this section, then the permitting authority shall deny approval to construct and operate the proposed new major stationary source or major modification.

(5) If the proposal is a new major stationary source or a major modification as defined in WAC 173-400-720, then it must also comply with WAC 173-400-700 through 173-400-750.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-113, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-113, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-113, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-113, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-113, filed 8/20/93, effective 9/20/93.]

EPA effective: 5/29/15 (80 FR 23721, 4/29/15)

~~**WAC 173-400-114 Requirements for replacement or substantial alteration of emission control technology at an existing stationary source.** (1) Any **person** proposing to replace or substantially alter the **emission** control technology installed on an existing **stationary source** or **emission unit** shall file a **notice of construction application** with the appropriate **authority**, or with **ecology** in areas or for **sources** over which **ecology** has jurisdiction. Replacement or substantial alteration of control technology does not include routine maintenance, repair or similar parts replacement.~~

~~(2) A project to replace or substantially alter emission control technology at an existing stationary source that results in an increase in emissions of any air contaminant is subject to new source review as provided in WAC 173-400-110. For any other project to replace or significantly alter control technology the permitting **authority** may:~~

~~(a) Require that the owner or operator employ **RACT** for the affected **emission unit;**~~

~~(b) Prescribe reasonable operation and maintenance conditions for the control equipment; and~~

~~(c) Prescribe other requirements as authorized by chapter 70.94 RCW.~~

~~(3) Within thirty days of receipt of a **notice of construction application** under this section **ecology** or the **authority** shall either notify the applicant in writing that the application is complete or notify the applicant in writing of all additional information necessary to complete the application. Within thirty days of receipt of a complete **notice of construction application** under this section **ecology** or the **authority** shall either issue an **order of approval** or a proposed **RACT** determination for the proposed project.~~

~~(4) Construction shall not **"commence,"** as defined in WAC 173-400-030, on a project subject to review under this section until **ecology** or the **authority** issues a final **order of approval**. However, any **notice of construction application** filed under this section shall be deemed to be approved without conditions if **ecology** or the **authority** takes no action within thirty days of receipt of a complete **notice of construction application.**~~

~~(5) Approval to replace or substantially alter **emission** control technology shall become invalid if construction is not **commenced** within eighteen months after receipt of such approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. **Ecology** or the **authority** may extend the eighteen-month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within eighteen months of the projected and approved commencement date.~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-114, filed 11/28/12, effective 12/29/12. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-114, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-114, filed 8/20/93, effective 9/20/93.]~~

~~**WAC 173-400-115 Standards of performance for new sources. NSPS.** Standards of performance for new sources are called New Source Performance Standards, or NSPS.~~

~~(1) **Adoption of federal rules.**~~

~~(a) 40 C.F.R. Part 60 and Appendices (in effect on the date in WAC 173-400-025) are adopted. Exceptions are listed in (b) of this subsection.~~

~~(b) Exceptions to adopting 40 C.F.R. Part 60.~~

~~(i) The term "administrator" in 40 C.F.R. Part 60 includes the permitting authority.~~

~~(ii) The following sections and subparts of 40 C.F.R. Part 60 are not adopted:~~

~~(A) 40 C.F.R. 60.5 (determination of construction or modification);~~

~~(B) 40 C.F.R. 60.6 (review of plans);~~

~~(C) 40 C.F.R. Part 60, subpart B (Adoption and Submittal of State Plans for Designated Facilities), and subparts C, Cb, Cc, Cd, Ce, BBBB, DDDD, FFFF, MMMM, UUUU (emission guidelines); and~~

~~(D) 40 C.F.R. Part 60, Appendix G, Provisions for an Alternative Method of Demonstrating Compliance With 40 C.F.R. 60.43 for the Newton Power Station of Central Illinois Public Service Company.~~

~~(2) Where EPA has delegated to the permitting authority, the authority to receive reports under 40 C.F.R. Part 60, from the affected facility in lieu of providing such report to EPA, the affected facility is required to provide such reports only to the permitting authority unless otherwise requested in writing by the permitting authority or EPA.~~

~~Note: Under RCW 80.50.020(14), larger energy facilities subject to subparts D, Da, GG, J, K, Kb, Y, KKK, LLL, and QQQ are regulated by the HQHU facility site evaluation council (EFSEC).~~

~~[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-115, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-115, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-115, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.395 and 70.94.331. WSR 07-11-039 (Order 06-03), § 173-400-115, filed 5/8/07, effective 6/8/07. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-115, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-115, filed 8/15/01, effective 9/15/01. Statutory Authority: [RCW 70.94.331, 70.94.510 and chapter 70.94 RCW.] WSR 00-23-130 (Order 98-27), § 173-400-115, filed 11/22/00, effective 12/23/00. Statutory Authority: RCW 70.94.785. WSR 98-22-019 (Order 98-02), § 173-400-115, filed 10/23/98, effective 11/23/98. Statutory Authority: Chapter 70.94 RCW. WSR 96-19-054 (Order 94-35), § 173-400-115, filed 9/13/96, effective 10/14/96; WSR 93-05-044 (Order 92-34), § 173-400-115, filed 2/17/93, effective 3/20/93; WSR 91-05-064 (Order 90-06), § 173-400-115, filed 2/19/91, effective 3/22/91. Statutory Authority: RCW 70.94.331, 70.94.395 and 70.94.510. WSR 85-06-046 (Order 84-48), § 173-400-115, filed 3/6/85. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 83-09-036 (Order DE 83-13), § 173-400-115, filed 4/15/83; WSR 82-16-019 (Order DE 82-20), § 173-400-115, filed 7/27/82. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-115, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-115, filed~~

~~5/8/79; Order DE 76-38, § 173-400-115, filed 12/21/76. Formerly WAC 18-04-115.]~~

WAC 173-400-116 Increment protection. This section takes effect on the effective date of EPA's incorporation of this section into the Washington state implementation plan.

(1) Ecology will periodically review increment consumption. Within sixty days of the time that information becomes available to ecology that an applicable increment is or may be violated, ecology will review the state implementation plan for its adequacy to protect the increment from being exceeded. The plan will be revised to correct any inadequacies identified or to correct the increment violation. Any changes to the state implementation plan resulting from the review will be subject to public involvement in accordance with WAC 173-400-171 and EPA approval.

(2) PSD increments are published in 40 C.F.R. 52.21(c) (in effect on the date in WAC 173-400-025).

(3) Exclusions from increment consumption. The following concentrations are excluded when determining increment consumption:'

(a) Concentrations of particulate matter, PM-10, or PM-2.5, attributable to the increase in emissions from construction or other temporary emission-related activities of new or modified sources;

(b) The increase in concentrations attributable to new sources outside the United States over the concentrations attributable to existing sources which are included in the baseline concentration; and

(c) Concentrations attributable to the temporary increase in emissions of sulfur dioxide, particulate matter, or nitrogen oxides from stationary sources, which are affected by a revision to the SIP approved by EPA. Such a revision must:

(i) Specify the time over which the temporary emissions increase of sulfur dioxide, particulate matter, or nitrogen oxides would occur. Such time is not to exceed two years in duration unless a longer time is approved by EPA.

(ii) Specify that the time period for excluding certain contributions in accordance with (c)(i) of this subsection is not renewable;'

(iii) Allow no emissions increase from a stationary source, which would:

(A) Impact a Class I area or an area where an applicable increment is known to be violated; or

(B) Cause or contribute to the violation of a national ambient air quality standard.

(iv) Require limitations to be in effect by the end of the time period specified in accordance with (c)(i) of this subsection, which would ensure that the emissions levels from stationary sources affected by the plan revision would not exceed those levels occurring from such sources before the plan revision was approved.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-116, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 11-17-037 (Order 11-04), § 173-400-116, filed 8/10/11, effective 9/10/11; WSR 11-06-060 (Order 09-01), § 173-400-116, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.181, [70.94.]152, [70.94.]331, [70.94.]650, [70.94.]745, [70.94.]892, [70.94.]011. WSR 07-19-005 (Order 07-10), § 173-400-116, filed 9/6/07, effective 10/7/07. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-116, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-116, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 96-19-054 (Order 94-35), § 173-400-116, filed 9/13/96, effective 10/14/96. Statutory Authority: RCW 70.94.153 and 70.94.154. WSR 94-17-070, § 173-400-116, filed 8/15/94, effective 9/15/94.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-117 Special protection requirements for federal Class I areas. (1) **Definitions.** The following definitions apply to this section:

(a) **"Adverse impact on visibility"** means visibility impairment that interferes with the management, protection, preservation, or enjoyment of the visitor's visual experience of the federal Class I area. This determination must be made on a case-by-case basis taking into account the geographic extent, intensity, duration, frequency, and time of visibility impairment, and how these factors correlate with:

(i) Times of visitor use of the federal Class I area; and

(ii) The frequency and timing of natural conditions that reduce visibility.

(b) The terms "major stationary source," "major modification," and "net emissions increase" are defined in WAC 173-400-720 for projects located in areas designated as attainment or unclassifiable for the pollutants proposed to increase as a result of the project and are defined in WAC 173-400-810 for projects located in areas designated as nonattainment for the pollutants proposed to increase as a result of the project.

(2) **Applicability.** The requirements of this section apply to all of the following permitting actions:

(a) A PSD permit application for a new major stationary source or a major modification; or

(b) A notice of construction application for a major stationary source or a major modification to a stationary source in a nonattainment area, as either of those terms are defined in WAC 173-400-810.

(3) **Contents and distribution of application.**

(a) The application shall include an analysis of the anticipated impacts of the project on visibility in any federal Class I area.

(b) The applicant must mail a copy of the application for the project and all amendments to the application to the permitting authority, EPA and to the responsible federal land managers. Ecology will provide a list of the names and addresses of the federal land manager.

(4) **Notice to federal land manager.**

(a) The permitting authority shall send a copy of the completeness determination to the responsible federal land manager.

(b) If, prior to receiving a notice of construction application or a PSD permit application, the permitting authority receives notice of a project described in subsection (2) of this section that may affect visibility in a federal Class I area, the permitting authority shall notify the responsible federal land manager within thirty days of the notification.

(5) **Analysis by federal land manager.**

(a) The permitting authority will consider any demonstration presented by the responsible federal land manager that emissions from a proposed new major stationary source or the net emissions increase from a proposed major modification described in subsection (2) of this section would have an adverse impact on visibility in any federal Class I area, provided that the demonstration is received by the permitting authority within thirty days of the federal land manager's receipt of the complete application.

(b) If the permitting authority concurs with the federal land manager's demonstration, the PSD permit or approval order for the project either shall be denied, or conditions shall be included in the approval order to prevent the adverse impact.

(c) If the permitting authority finds that the federal land manager's analysis does not demonstrate that the project will have an adverse impact on visibility in a federal Class I area, the permitting authority shall explain its decision in compliance with the notice requirements of WAC 173-400-171 for those permits subject to WAC 173-400-800 through 173-400-860. For permits subject to the prevention of significant deterioration program, the permitting authority shall state in the public notice required by WAC 173-400-740 that an explanation of the decision appears in the Technical Support Document for the proposed permit.

(6) **Additional requirements for projects that require a PSD permit.**

(a) For sources impacting federal Class I areas, the permitting authority shall provide notice to EPA of every action related to consideration of the PSD permit.

(b) The permitting authority shall consider any demonstration received from the responsible federal land manager prior to the close of the public comment period on a proposed PSD permit that emissions from the proposed new major stationary source or the net emissions increase from a proposed major modification would have an adverse impact on the air quality-related values (including visibility) of any mandatory Class I federal area.

(c) If the permitting authority concurs with the demonstration, the PSD permit either shall be denied, or conditions shall be included in the PSD permit to prevent the adverse impact.

(7) **Additional requirements for projects located in nonattainment areas.** In reviewing a PSD permit application or notice of construction application for a new major stationary source or major modification proposed for construction, as those terms are defined in WAC 173-400-810, in an area classified as nonattainment, the permitting authority must ensure that the proposed new source's emissions or the proposed modification's increase in emissions will be consistent with making reasonable progress toward meeting the national goal of preventing any future, and remedying any existing, impairment of visibility by human-caused air pollution in mandatory Class I federal areas. In determining the need for approval order conditions to meet this requirement, the permitting authority may take into account the costs of compliance, the time necessary for compliance, the energy and nonair quality environmental impacts of compliance, and the useful life of the source.

(8) **Monitoring.** The permitting authority may require post-construction monitoring of the impact from the project. The monitoring shall be limited to the impacts on visibility in any federal Class I area near the proposed project.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-117, filed 11/28/12, effective 12/29/12. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-117, filed

1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-117, filed 8/15/01, effective 9/15/01.]

EPA effective: 5/29/15 (80 FR 23721, 4/29/15)

WAC 173-400-118 Designation of Class I, II, and III areas. (1) **Designation.**

(a) Lands within the exterior boundaries of Indian reservations may be proposed for redesignation by an Indian governing body or EPA. This restriction does not apply to nontrust lands within the 1873 Survey Area of the Puyallup Indian Reservation.

(b) All areas of the state must be designated either Class I, II or III.

(i) The following areas are the Class I areas in Washington state:

(A) Alpine Lakes Wilderness;

(B) Glacier Peak Wilderness;

(C) Goat Rocks Wilderness;

(D) Adams Wilderness;

(E) Mount Rainier National Park;

(F) North Cascades National Park;

(G) Olympic National Park;

(H) Pasayten Wilderness; and

(I) Spokane Indian Reservation.[1]

(ii) All other areas of the state are Class II, but may be redesignated as provided in subsections (2) and (3) of this section.

1. (3 A redesignated this land based on a request from the Spokane 7ribal Council. See 40 C.F.R. 52.2497 and 56 FR 14862, April 12, 1991, for details.

(2) **Restrictions on area classifications.**

(a) Except for the Spokane Indian Reservation, the Class I areas listed in subsection (1) of this section may not be redesignated.

(b) Except as provided in (a) of this subsection, the following areas that exceed 10,000 acres in size may be redesignated as Class I or II:

(i) Areas in existence on August 7, 1977:

(A) A national monument;

(B) A national primitive area;

(C) A national preserve;

(D) A national wild and scenic river;

(E) A national wildlife refuge;

(F) A national lakeshore or seashore; or

(G) A national recreation area.

(ii) Areas established after August 7, 1977:

(A) A national park;

(B) A national wilderness area; or

(C) Areas proposed by ecology for designation or redesignation.

(3) **Redesignation of area classifications.**

(a) Ecology shall propose the redesignation of an area classification as a revision to the SIP.

(b) Ecology may submit to EPA a proposal to redesignate areas of the state as Class I or II if:

(i) Ecology followed the public involvement procedures in WAC 173-400-171(12);

(ii) Ecology explained the reasons for the proposed redesignation, including a description and analysis of the health, environmental, economic, social, and energy effects of the proposed redesignation;

(iii) Ecology made available for public inspection at least thirty days before the hearing the explanation of the reasons for the proposed redesignation;

(iv) Ecology notified other states, tribal governing bodies, and federal land managers (as defined in 40 C.F.R. 52.21 (b)(24)) whose lands may be affected by the proposed redesignation at least thirty days prior to the public hearing;

(v) Ecology consulted with the elected leadership of local governments in the area covered by the proposed redesignation before proposing the redesignation; and

(vi) Ecology followed these procedures when a redesignation includes any federal lands:

(A) Ecology notified in writing the appropriate federal land manager on the proposed redesignation. Ecology allowed forty-five days for the federal land manager to confer with ecology and to submit written comments.

(B) Ecology responded to any written comments from the federal land manager that were received within forty-five days of notification. Ecology's response was available to the public in advance of the notice of the hearing.

(I) Ecology sent the written comments of the federal land manager, along with ecology's response to those comments, to the public location as required in WAC 173-400-171 (2)(a).

(II) If ecology disagreed with the federal land manager's written comments, ecology published a list of any inconsistency between the redesignation and the comments of the federal land manager, together with the reasons for making the redesignation against the recommendation of the federal land manager.

(c) Ecology may submit to EPA a proposal to redesignate any area other than an area to which subsection (1) of this section applies as Class III if:

(i) The redesignation followed the public involvement requirements of WAC 173-400-171 and 173-400-118(3);

(ii) The redesignation has been specifically approved by the governor of Washington state, after consultation with the appropriate committees of the legislature if it is in session, or with the leadership of the legislature, if it is not in session;

(iii) The redesignation has been approved by local governments representing a majority of the residents of the area to be redesignated. The local governments enacted legislation or passed resolutions concurring in the redesignation;

(iv) The redesignation would not cause, or contribute to, a concentration of any air contaminant which would exceed any maximum allowable increase permitted under the classification of any other area or any National Ambient Air Quality Standard; and

(v) A PSD permit under WAC 173-400-720 for a new major stationary source or major modification could be issued only if the area in question were redesignated as Class III, and material submitted as part of that application was available for public inspection prior to any public hearing on redesignation of the area as Class III.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-118, filed 11/28/12, effective 12/29/12. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-118, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW,

RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-118, filed 8/15/01, effective 9/15/01.]

EPA effective: 11/3/14 (79 FR 59653, 10/3/14)

~~**WAC 173-400-120 Bubble rules.** (1) Applicability. The owner(s) or operator(s) of any source(s) may apply for a bubble for any contaminant regulated by state or federal law for which the emission requirement may be stated as an allowable limit in weight of contaminant per unit time for the emissions units involved.~~

~~(2) Conditions. A bubble may be authorized provided the following conditions have been demonstrated to the satisfaction of the permitting authority.~~

~~(a) The contaminants exchanged must be of the same type, that is, PM_{10} for PM_{10}, sulfur dioxide for sulfur dioxide, etc.~~

~~(b) The bubble will not interfere with the attainment and maintenance of air quality standards. No bubble shall be authorized in a nonattainment area unless there is an EPA-approved SIP which demonstrates attainment for that area.~~

~~(c) The bubble will not result in a delay in compliance by any source, nor a delay in any existing enforcement action.~~

~~(d) The bubble will not supersede NSPS, NESHAPS, BACT, or LAER. The emissions of hazardous contaminants shall not be increased.~~

~~(e) The bubble will not result in an increase in the sum of actual emission rates of the contaminant involved from the emissions units involved.~~

~~(f) A bubble may not be authorized only for opacity limits. However, if the emission limit for particulates for a given emissions unit is increased as part of a bubble, the opacity limit for the given emissions unit may be increased subject to the following limitations:~~

~~(i) The new opacity limit shall be specific for the given emissions unit;~~

~~(ii) The new opacity limit shall be consistent with the new particulates limit;~~

~~(iii) An opacity greater than sixty percent shall never be authorized;~~

~~(iv) If the given emissions unit emits or has the potential to emit one hundred tons per year or more of particulate matter, the opacity shall be monitored continuously.~~

~~(g) The emission limits of the bubble are equivalent to existing limits in enforceability.~~

~~(h) Concurrent with or prior to the authorization of a bubble, each emission unit involved in a bubble shall receive or have received a regulatory order or permit that establishes total allowable emissions from the source for the contaminant being bubbled, expressed as weight of the contaminant per unit time.~~

~~(i) There will be no net adverse impact upon air quality from the establishment of new emission requirements for a specific source or emissions unit. Determination of net adverse impact shall include but not be limited to public perception of opacity and public perception of odorous contaminants.~~

~~(j) Specific situations may require additional demonstration as requested by the permitting authority.~~

~~(3) Jurisdiction. Whenever a bubble application involves emissions units, some of which are under the jurisdiction of an authority, approval will require concurrence by both authorities. The new emis-~~

~~sion limits for each emissions unit will be enforced by the authority of original jurisdiction.~~

~~(4) Additional information. Within thirty days, after the receipt of a bubble application and all supporting data and documentation, the permitting authority may require the submission of additional information needed to review the application.~~

~~(5) Approval. Within thirty days after all the required information has been received, the permitting authority shall approve or deny the application, based on a finding that conditions in subsection (2)(a) through (j) of this section have been satisfied or not. If the application is approved, a regulatory order or equivalent document shall be issued which includes new allowable emissions limits expressed in weight of pollutant per unit time for each emissions unit affected by the bubble. The regulatory order or equivalent document shall include any conditions required to assure that subsection (2)(a) through (j) of this section will be satisfied. If the bubble depends in whole or in part upon the shutdown of equipment, the regulatory order or equivalent document must prohibit operation of the affected equipment. The regulatory order establishing the bubble is subject to the public involvement requirements of WAC 173-400-171.~~

~~[Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-120, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-120, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-120, filed 2/19/91, effective 3/22/91. Statutory Authority: Chapters 43.21A and 70.94 RCW. WSR 89-02-055 (Order 88-39), § 173-400-120, filed 1/3/89; WSR 83-09-036 (Order DE 83-13), § 173-400-120, filed 4/15/83. Statutory Authority: RCW 70.94.331. WSR 80-11-059 (Order DE 80-14), § 173-400-120, filed 8/20/80. Statutory Authority: RCW 43.21A.080 and 70.94.331. WSR 79-06-012 (Order DE 78-21), § 173-400-120, filed 5/8/79; Order DE 76-38, § 173-400-120, filed 12/21/76. Formerly WAC 18-04-120.]~~

WAC 173-400-131 Issuance of emission reduction credits. (1) **Applicability.** The owner or operator of any source may apply to the permitting authority for an emission reduction credit (ERC) if the source proposes to reduce its actual emissions rate for any contaminant regulated by state or federal law for which the emission requirement may be stated as an allowable limit in weight of contaminant per unit time for the emissions units involved.

(2) **Time of application.** The application for an ERC must be made prior to or within one hundred eighty days after the emission reduction has been accomplished.

(3) **Conditions.** An ERC may be authorized provided the following conditions have been demonstrated to the satisfaction of the permitting authority.

(a) The quantity of emissions in the ERC shall be less than or equal to the old allowable emissions rate or the old actual emissions rate, whichever is the lesser, minus the new allowable emissions rate. The old actual emissions rate is the average emissions rate occurring during the most recent twenty-four-month period preceding the request for an ERC. An alternative twenty-four-month period from within the previous five years may be accepted by the permitting authority if the owner or operator of the source demonstrates to the satisfaction of the permitting authority that the alternative period is more representative of actual operations of the unit or source.

(b) The ERC application must include a description of all the changes that are required to accomplish the claimed emissions reduction, such as, new control equipment, process modifications, limitation of hours of operation, permanent shutdown of equipment, specified control practices, etc.

(c) The reduction must be: Greater than otherwise required by an applicable emission standard, order of approval, or regulatory order and be permanent, quantifiable, and federally enforceable.

(d) The reduction must be large enough to be readily quantifiable relative to the source strength of the emissions unit(s) involved.

(e) No part of the emission reductions claimed for credit shall have been used as part of a determination of net emission increase, nor as part of an offsetting transaction under WAC 173-400-113(4) or 173-400-830, nor as part of a bubble transaction under WAC 173-400-120.

(f) No part of the emission reduction was included in the emission inventory used to demonstrate attainment or for reasonable further progress in an amendment to the state implementation plan.

(g) Concurrent with or prior to the authorization of an ERC, the applicant shall receive (have received) a federally enforceable regulatory order or permit that establishes total allowable emissions from the source or emissions unit of the contaminant for which the ERC is requested, expressed as weight of contaminant per unit time.

(h) The use of any ERC shall be consistent with all other federal, state, and local requirements of the program in which it is used.

(4) **Additional information.** Within thirty days after the receipt of an ERC application and all supporting data and documentation, the permitting authority may require the submission of additional information needed to review the application.

(5) **Approval.** Within thirty days after all required information has been received, the permitting authority shall approve or deny the application, based on a finding that conditions in subsection (3)(a) through (h) of this section have been satisfied or not. If the application is approved, the permitting authority shall:

(a) Issue a regulatory order or equivalent document to assure that the emissions from the source will not exceed the allowable emission rates claimed in the ERC application, expressed in weight of pollutant per unit time for each emission unit involved. The regulatory order or equivalent document shall include any conditions required to assure that subsection (3)(a) through (h) of this section will be satisfied. If the ERC depends in whole or in part upon the shutdown of equipment, the regulatory order or equivalent document must prohibit operation of the affected equipment; and

(b) Issue a certificate of emission reduction credit. The certificate shall specify the issue date, the contaminants involved, the emission decrease expressed as weight of pollutant per unit time, the nonattainment area involved, if applicable, and the person to whom the certificate is issued. The emission reduction credit listed in the certificate shall be less than the amount of emission reduction achieved by the source. The difference between the emission reduction and the emission reduction credit must be a decrease of at least one ton per year or one percent of the emission reduction, whichever decrease is greater.

(c) The certificate of emission reduction credit shall include the expiration date of the credit.

[Statutory Authority: Chapter 70.94 RCW. WSR 11-06-060 (Order 09-01), § 173-400-131, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-131, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-131, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-131, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-131, filed 2/19/91, effective 3/22/91.]

EPA effective: 12/8/14 (79 FR 66291, 11/7/14)

WAC 173-400-136 Use of emission reduction credits (ERC). (1) **Permissible use.** An ERC may be used to:

(a) Satisfy the requirements for authorization of a bubble under WAC 173-400-120;

(b) As an offsetting reduction to satisfy the requirements for new source review in WAC 173-400-830 or 173-400-113(4);

(c) Or if the reduction meets the criteria to be a creditable contemporaneous emission reduction, to demonstrate a creditable contemporaneous emission reduction for determining a net emissions increase under WAC 173-400-700 through 173-400-750 and 173-400-800 through 173-400-860.

(2) **Surrender of ERC certificate.** When an ERC is used under subsection (1) of this section, the certificate for the ERC must be surrendered to the permitting authority. If only a portion of the ERC is used, the amended certificate will be returned to the owner.

(3) **Conditions of use.**

(a) An ERC may be used only for the air contaminants for which it was issued.

(b) The permitting authority may impose additional conditions of use to account for temporal and spatial differences between the emissions units that generated the ERC and the emissions units that use the ERC.

(4) **Sale of an ERC.** An ERC may be sold or otherwise transferred to a person other than the person to whom it was originally issued. Within thirty days after the transfer of ownership, the certificate must be surrendered to the issuing authority. After receiving the certificate, the issuing authority shall reissue the certificate to the new owner.

(5) **Redemption period.** An unused ERC expires ten years after date of original issue.

(6) **Discount due to change in SIP.** If reductions in emissions beyond those identified in the SIP are required to meet an ambient air quality standard, issued ERCs may be discounted as necessary to reach attainment.

(a) Issued ERCs may be discounted if:

(i) Reductions in emissions beyond those identified in the SIP are required to meet an ambient air quality standard;

(ii) The ambient standard cannot be met through controls on operating sources; and

(iii) The plan must be revised.

(b) The discount shall not exceed the percentage of additional emission reduction needed to reach attainment.

(c) ERCs may be discounted by the permitting authority only after notice to the public according to WAC 173-400-171 and the owners of affected ERCs.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-136, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-136, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-136, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-136, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-136, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-136, filed 2/19/91, effective 3/22/91.]

EPA effective: 12/8/14 (79 FR 66291, 11/7/14)

WAC 173-400-151 Retrofit requirements for visibility protection. (1) The requirements of this section apply to an existing stationary facility. An "existing stationary facility" means a stationary source of air contaminants that meets all of these conditions:

(a) The stationary source must have the potential to emit 250 tons per year or more of any air contaminant. Fugitive emissions, to the extent quantifiable, must be counted in determining the potential to emit; and

(b) The stationary source was not in operation prior to August 7, 1962, and was in existence on August 7, 1977; and

(c) Is in one of the following 26 source categories:

Fossil-fuel fired steam electric plants of more than 250 million British thermal units per hour heat input,	Coke oven batteries,
Coal cleaning plants (thermal dryers),	Sulfur recovery plants,
Kraft pulp mills,	Carbon black plants (furnace process),
Portland cement plants,	Primary lead smelters,
Primary zinc smelters,	Fuel conversion plants,
Iron and steel mill plants,	Sintering plants,
Primary aluminum ore reduction plants,	Secondary metal production facilities,
Primary copper smelters,	Chemical process plants,
Municipal incinerators capable of charging more than 250 tons of refuse per GD\	Fossil-fuel boilers of more than 250 million British thermal units per hour heat input,
Hydrofluoric, sulfuric, and nitric acid plants,	Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels,
Petroleum refineries,	7aconite ore processing facilities,
Lime plants,	Glass fiber processing plants, and
Phosphate rock processing plants,	Charcoal production facilities.

(d) For purposes of determining whether a stationary source is an existing stationary facility, the term "building, structure, facility, or installation" means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities shall be considered as part of the same major group (i.e., which have the same two digit code) as described in the *Standard Industrial Classification Manual, 1972*, as amended in the 1977 supplement.

(2) Ecology shall identify each existing stationary facility which may reasonably be anticipated to cause or contribute to visibility impairment in any mandatory Class 1 federal area in Washington and any adjacent state.

(3) For each existing stationary facility identified under subsection (2) of this section, ecology, in consultation with the permitting authority shall determine BART for each air contaminant of concern and any additional air pollution control technologies that are to be required to reduce impairment from the existing stationary facility.

(4) Each existing stationary facility shall apply BART as new technology for control of the air contaminant becomes reasonably available if:

(a) The existing stationary facility emits the air contaminant contributing to visibility impairment;

(b) Controls representing BART for that air contaminant have not previously been required under this section; and

(c) The impairment of visibility in any mandatory Class 1 federal area is reasonably attributable to the emissions of the air contaminant.

[Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-151, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-151, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-151, filed 2/19/91, effective 3/22/91.]

EPA effective: 11/3/14 (79 FR 59653, 10/3/14)

WAC 173-400-161 Compliance schedules. (1) **Issuance.** Whenever a source is found to be in violation of an emission standard or other provision of this chapter, ecology or the authority may issue a regulatory order requiring that the source be brought into compliance within a specified time. The order shall contain a schedule for installation, with intermediate benchmark dates and a final completion date, and shall constitute a compliance schedule. Requirements for public involvement (WAC 173-400-171) must be met.

(2) **Federal action.** A source shall be considered to be in compliance with this chapter if all the provisions of its individual compliance schedule included with a regulatory order are being met. Such compliance does not preclude federal enforcement action by the EPA until and unless the schedule is submitted and adopted as an amendment to the state implementation plan.

(3) **Penalties for delayed compliance.** Sources on a compliance schedule but not meeting emissions standards may be subject to penalties as provided in the Federal Clean Air Act.

[Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-161, filed 2/19/91, effective 3/22/91.]

EPA effective: 6/2/95 (60 FR 28726, 6/2/95)

WAC 173-400-171 Public notice and opportunity for public comment. The purpose of this section is to specify the requirements for notifying the public about air quality actions and to provide opportunities for the public to participate in those actions. This section applies statewide except that the requirements of WAC 173-400-171 (1) through (11) do not apply where the permitting authority has adopted its own public notice provisions.

(1) **Applicability to prevention of significant deterioration, and relocation of portable sources.** This section does not apply to:

(a) A notice of construction application designated for integrated review with actions regulated by WAC 173-400-700 through 173-400-750. In such cases, compliance with the public notification requirements of WAC 173-400-740 is required.

(b) Portable source relocation notices as regulated by WAC 173-400-036, relocation of portable sources.

(2) **Internet notice of application.**

(a) For those applications and actions not subject to a mandatory public comment period per subsection (3) of this section, the permitting authority must post an announcement of the receipt of notice of construction applications and other proposed actions on the permitting authority's internet web site.

(b) The internet posting must remain on the permitting authority's web site for a minimum of fifteen consecutive days.

(c) The internet posting must include a notice of the receipt of the application, the type of proposed action, and a statement that the public may request a public comment period on the proposed action.

(d) Requests for a public comment period must be submitted to the permitting authority in writing via letter, or electronic means during the fifteen-day internet posting period.

(e) A public comment period must be provided for any application or proposed action that receives such a request. Any application or proposed action for which a public comment period is not requested may be processed without further public involvement at the end of the fifteen-day internet posting period.

(3) **Actions subject to a mandatory public comment period.** The permitting authority must provide public notice and a public comment period before approving or denying any of the following types of applications or other actions:

(a) Any application, order, or proposed action for which a public comment period is requested in compliance with subsection (2) of this section.

(b) Any notice of construction application for a new or modified source, including the initial application for operation of a portable source, if there is an increase in emissions of any air pollutant at a rate above the emission threshold rate (defined in WAC 173-400-~~030) or any increase in emissions of a toxic air pollutant above the acceptable source impact level for that toxic air pollutant as regulated under chapter 173-460 WAC~~; or

(c) Any use of a modified or substituted air quality model, other than a guideline model in Appendix W of 40 C.F.R. Part 51 (in effect on the date in WAC 173-400-025) as part of review under WAC 173-400-110, 173-400-113, or 173-400-117; or

(d) Any order to determine reasonably available control technology, RACT; or

(e) An order to establish a compliance schedule issued under WAC 173-400-161, or a variance issued under WAC 173-400-180; or

Note: Mandatory notice is not required for compliance orders issued under WAC 173-400-230.

(f) An order to demonstrate the creditable height of a stack which exceeds the good engineering practice, GEP, formula height and sixty-five meters, by means of a fluid model or a field study, for the purposes of establishing an emission limit; or

(g) An order to authorize a bubble; or

(h) An action to discount the value of an emission reduction credit, ERC, issued to a source per WAC 173-400-136; or

(i) A regulatory order to establish best available retrofit technology, BART, for an existing stationary facility; or

(j) A notice of construction application or regulatory order used to establish a creditable emission reduction; or

(k) An order issued under WAC 173-400-091 that establishes limitations on a source's potential to emit; or

(l) The original issuance and the issuance of all revisions to a general order of approval issued under WAC 173-400-560 (this does not include coverage orders); or

(m) An extension of the deadline to begin actual construction of a "major stationary source" or "major modification" in a nonattainment area; or

(n) An application or other action for which the permitting authority determines that there is significant public interest; or

~~(o) An order issued under WAC 173-400-081(4) or 173-400-082 that establishes an emission limitation that exceeds a standard in the SIP.~~

(4) **Advertising the mandatory public comment period.**

(a) Public notice of all applications, orders, or actions listed in subsection (3) of this section must be posted on the permitting authority web site for the duration of the public comment period.

(i) The permitting authority may supplement this method of notification by advertising in a newspaper of general circulation in the area of the proposed action or by other methods appropriate to notify the local community. The applicant or other initiator of the action must pay the publishing cost for all supplemental noticing.

(ii) A permitting authority must publish a notice of the public comment period in a newspaper of general circulation in the area of the proposed action until June 30, 2019. We recommend that a permitting authority continue publishing a notice in a newspaper for a project with high interest. The applicant or other initiator of the action must pay this publishing cost.

(b) This public notice can be posted or given only after all of the information required by the permitting authority has been submitted and after the applicable preliminary determinations, if any, have been made.

(c) The notice must be posted or given before any of the applications or other actions listed in subsection (3) of this section are approved or denied.

(5) **Information available for public review.**

(a) Administrative record. The information submitted by the applicant, and any applicable preliminary determinations, including analyses of the effects on air quality, must be available for public inspection. A permitting authority may comply with this requirement by making these materials available on its web site or in at least one physical location near the proposed project.

(b) The permitting authority must post the following information on its web site for the duration of the public comment period:

(i) Public notice complying with subsection (6) of this section;

(ii) Draft permit, order, or action; and

(iii) Information on how to access the administrative record.

(c) Exemptions from this requirement include information protected from disclosure under any applicable law including, but not limited to, RCW 70.94.205 and chapter 173-03 WAC.

(6) **Public notice components.**

(a) The notice must include:

(i) The date the notice is posted;

(ii) The name and address of the owner or operator and the facility;

(iii) A brief description of the proposal and the type of facility, including a description of the facility's processes subject to the permit;

(iv) A description of the air contaminant emissions including the type of pollutants and quantity of emissions that would increase under the proposal;

(v) The location where those documents made available for public inspection may be reviewed;

(vi) Start date and end date for a public comment period consistent with subsection (7) of this section;

(vii) A statement that a public hearing will be held if the permitting authority determines that there is significant public interest;

(viii) The name, address, and telephone number and email address of a person at the permitting authority from whom interested persons may obtain additional information, including copies of the permit draft, the application, all relevant supporting materials, including any compliance plan, permit, and monitoring and compliance certification report, and all other materials available to the permitting authority that are relevant to the permit decision, unless the information is exempt from disclosure;

(b) For projects subject to special protection requirements for federal Class I areas, as required by WAC 173-400-117, public notice must include an explanation of the permitting authority's draft decision or state that an explanation of the draft decision appears in the support document for the proposed order of approval.

(7) **Length of the public comment period.**

(a) The public comment period must consist of a minimum of thirty days and start at least thirty days prior to any hearing. The first day of the public comment period begins on the next calendar day after the permitting authority posts the public notice on their web site.

(b) If a public hearing is held, the public comment period must extend through the hearing date.

(c) The final decision cannot be issued until the public comment period has ended and any comments received during the public comment period have been considered.

(8) **Requesting a public hearing.** The applicant, any interested governmental entity, any group, or any person may request a public

hearing within the public comment period. All hearing requests must be submitted to the permitting authority in writing via letter, or electronic means. A request must indicate the interest of the entity filing it and why a hearing is warranted.

(9) **Setting the hearing date and providing hearing notice.** If the permitting authority determines that significant public interest exists, then it will hold a public hearing. The permitting authority will determine the location, date, and time of the public hearing.

(10) **Notice of public hearing.**

(a) At least thirty days prior to the hearing the permitting authority must provide notice of the hearing as follows:

(i) Post the public hearing notice on the permitting authority web site as directed by subsections (4) and (7) of this section;

(ii) The permitting authority may supplement the web posting by advertising in a newspaper of general circulation in the area of the proposed source or action, or by other methods appropriate to notify the local community; and

(iii) Distribute by electronic means or via the United States postal service the notice of public hearing to any person who submitted written comments on the application or requested a public hearing and in the case of a permit action, to the applicant.

(b) This notice must include the date, time and location of the public hearing and the information described in subsection (6) of this section.

(c) In the case of a permit action, the applicant must pay all supplemental notice costs when the permitting authority determines a supplemental notice is appropriate. Supplemental notice may include, but is not limited to, publication in a newspaper of general circulation in the area of the proposed project.

(11) **Notifying the EPA.** The permitting authority must distribute by electronic means or via the United States postal service a copy of the notice for all actions subject to a mandatory public comment period to the EPA Region 10 regional administrator.

~~(12) **Special requirements for ecology only actions.**~~

~~(a) This subsection applies to ecology only actions including:~~

~~(i) A Washington state recommendation to EPA for the designation of an area as attainment, nonattainment or unclassifiable after EPA promulgation of a new or revised ambient air quality standard or for the redesignation of an unclassifiable or attainment area to nonattainment;~~

~~(ii) A Washington state submittal of a SIP revision to EPA for approval including plans for attainment and maintenance of ambient air quality standards, plans for visibility protection, requests for revision to the boundaries of attainment and maintenance areas, requests for redesignation of Class I, II, or III areas under WAC 173-400-118, and rules to strengthen the SIP.~~

~~(b) Ecology must provide a public hearing or an opportunity for requesting a public hearing on an ecology only action. The notice providing the opportunity for a public hearing must specify the manner and date by which a person may request the public hearing and either provide the date, time and place of the proposed hearing or specify that ecology will publish a notice specifying the date, time and place of the hearing at least thirty days prior to the hearing. When ecology provides the opportunity for requesting a public hearing, the hearing must be held if requested by any person. Ecology may cancel the hearing if no request is received.~~

~~(c) The public notice for ecology only actions must comply with the requirements of 40 C.F.R. 51.102 (in effect on the date in WAC 173-400-025).~~

(13) **Other requirements of law.** Whenever procedures permitted or mandated by law will accomplish the objectives of public notice and opportunity for comment, those procedures may be used in lieu of the provisions of this section.

[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-171, filed 8/16/18, effective 9/16/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-171, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-171, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-171, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.395 and 70.94.331. WSR 07-11-039 (Order 06-03), § 173-400-171, filed 5/8/07, effective 6/8/07. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-171, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW, RCW 70.94.141, [70.94.]152, [70.94.]331, [70.94.]510 and 43.21A.080. WSR 01-17-062 (Order 99-06), § 173-400-171, filed 8/15/01, effective 9/15/01. Statutory Authority: Chapter 70.94 RCW. WSR 95-07-126 (Order 93-40), § 173-400-171, filed 3/22/95, effective 4/22/95; WSR 93-18-007 (Order 93-03), § 173-400-171, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-171, filed 2/19/91, effective 3/22/91.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

WAC 173-400-175 Public information. All information, except in-' formation protected from disclosure under any applicable law, includ-' ing, but not limited to, RCW 70.94.205, is available for public in-' spection at the issuing agency. This includes copies of notice of con-' struction applications, orders, and applications to modify orders.'

[Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-175, filed 1/10/05, effective 2/10/05.]

EPA effective: 11/3/14 (79 FR 59653, 10/3/14)

~~**WAC 173-400-180 Variance.** Any person who owns or is in control of a plant, building, structure, establishment, process, or equipment may apply to ecology for a variance from provisions of this chapter governing the quality, nature, duration, or extent of discharges of air contaminants in accordance with the provisions of RCW 70.94.181.~~

~~(1) **Jurisdiction.** Sources in any area over which a local air pollution control authority has jurisdiction shall make application to that authority rather than ecology. Variances to state rules shall require ecology's approval prior to being issued by an authority. Ecology or the authority may grant such variance, but only after public involvement per WAC 173-400-171.~~

~~(2) **Full faith and credit.** Variances granted in compliance with state and federal laws by an authority for sources under their jurisdiction will be accepted as variances to this regulation.~~

~~(3) **EPA concurrence.** No variance or renewal shall be construed to set aside or delay any requirements of the Federal Clean Air Act except with the approval and written concurrence of the USEPA.~~

~~(4) Fees relating to this section can be found in chapter 173-455 WAC.~~

~~[Statutory Authority: RCW 70.94.181, [70.94.]152, [70.94.]331, [70.94.]650, [70.94.]745, [70.94.]892, [70.94.]011. WSR 07-19-005 (Order 07-10), § 173-400-180, filed 9/6/07, effective 10/7/07. Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-180, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-180, filed 2/19/91, effective 3/22/91.]~~

WAC 173-400-190 Requirements for nonattainment areas. The development of specific requirements for nonattainment areas shall include consultation with local government in the area and shall include public involvement per WAC 173-400-171.

[Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-190, filed 2/19/91, effective 3/22/91.]

EPA effective: 6/2/95 (60 FR 28726, 6/2/95)

WAC 173-400-200 Creditable stack height and dispersion techniques. (1) Applicability. These provisions shall apply to all sources except:

(a) Stacks for which construction had commenced on or before December 31, 1970, except where pollutants are being emitted from such stacks used by sources which were constructed, or reconstructed, or for which major modifications were carried out after December 31, 1970;

(b) Coal-fired steam electric generating units subject to the provisions of Section 118 of the Federal Clean Air Act, which commenced operation before July 1, 1957, and for whose stacks construction commenced before February 8, 1974;

(c) Flares;

(d) Outdoor burning for agricultural or silvicultural purposes as covered under the smoke management plan;

(e) Residential wood combustion and open burning for which episodic restrictions apply.

These provisions shall not be construed to limit the actual stack height.

(2) Prohibitions. No source may use dispersion techniques or excess stack height to meet ambient air quality standards or PSD increment limitations.

(a) Excess stack height. Excess stack height is that portion of a stack which exceeds the greater of:

(i) Sixty-five meters, measured from the ground level elevation at the base of the stack; or

(ii) $H_g = H + 1.5L$

where: H_g "good engineering practice" (GEP) stack height, measured from the ground level elevation at the base of the stack,

H = height of nearby structure(s) measured from the ground level elevation at the base of the stack,

L = lesser dimension, height or projected width, of nearby structure(s), subject to the proviso below.

"Nearby," as used in this subsection for purposes of applying the GEP formula means that distance up to five times the lesser of the height or the width dimension of a structure, but not greater than 0.8 kilometer (1/2 mile).

(b) Dispersion techniques. Increasing final exhaust gas plume rise by manipulating source process parameters, exhaust gas parameters, stack parameters, or combining exhaust gases from several existing stacks into one stack; or other selective handling of exhaust gas streams so as to increase the exhaust gas plume rise. This does not include:

(i) The reheating of a gas stream, following the use of a pollution control system, for the purpose of returning the gas to the temperature at which it was originally discharged from the facility generating the gas stream;

(ii) The merging of gas streams where:

(A) The source was originally designed and constructed with such merged gas streams, as demonstrated by the source owner(s) or operator(s).

(B) Such merging is part of a change in operation at the facility that includes the installation of pollution controls and is accompanied by a net reduction in the allowable emissions of a pollutant. This exclusion shall apply only to the emission limitation for the pollutant affected by such change in operation.

(C) Before July 8, 1985, such merging was part of a change in operation at the facility that included the installation of emissions control equipment or was carried out for sound economic or engineering reasons, and not primarily motivated by an intent to gain emissions credit for greater dispersion.

(3) Exception. EPA, ecology, or a permitting authority may require the use of a field study or fluid model to verify the creditable stack height for the source. This also applies to a source seeking credit after the effective date of this rule for an increase in existing stack height up to that established by the GEP formula. A fluid model or field study shall be performed according to the procedures described in the EPA Guideline for Determination of Good Engineering Practice Height (Technical Support Document of the Stack Height Regulations). The creditable height demonstrated by a fluid model or field study shall ensure that the emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, nearby structures or nearby terrain features.

(a) "Nearby," as used in this subsection for conducting a field study or fluid model, means not greater than 0.8 km, except that the portion of a terrain feature may be considered to be nearby which falls within a distance of up to ten times the maximum height of the feature, not to exceed two miles if such feature achieves a height 0.8 km from the stack that is at least forty percent of the GEP stack height or twenty-six meters, whichever is greater, as measured from the ground-level elevation at the base of the stack. The height of the structure or terrain feature is measured from the ground-level elevation at the base of the stack.

(b) "Excessive concentration" is defined for the purpose of determining creditable stack height under this subsection and means a maximum ground-level concentration owing to a significant downwash effect which contributes to excursion over an ambient air quality standard. For sources subject to PSD review (WAC 173-400-720 and 40 C.F.R. 52.21) an excessive concentration alternatively means a maximum ground-level concentration owing to a significant downwash effect which contributes to excursion over a PSD increment. The emission rate used in this demonstration shall be the emission rate specified in the state implementation plan, or in the absence of such, the actual emission rate of the source. "Significant downwash effect" means a maximum ground-level concentration due to emissions from a stack due in whole or in part to downwash, wakes, and eddy effects produced by nearby structures or nearby terrain features which individually is at least forty percent in excess of the maximum concentration experienced in the absence of such downwash, wakes, or eddy effects.

[Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-200, filed 1/10/05, effective 2/10/05. Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-200, filed 2/19/91, effective 3/22/91.]

EPA effective: 11/3/14 (79 FR 59653, 10/3/14)

WAC 173-400-205 Adjustment for atmospheric conditions. Varying the rate of emission of a pollutant according to atmospheric conditions or ambient concentrations of that pollutant is prohibited, except as directed according to air pollution episode regulations.

[Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-205, filed 2/19/91, effective 3/22/91.]

EPA effective: 6/2/95 (60 FR 28726, 6/2/95)

WAC 173-400-210 Emission requirements of prior jurisdictions. Any emissions unit that was under the jurisdiction of an authority and now is under the jurisdiction of ecology, shall meet all emission requirements that were applicable prior to transfer of jurisdiction if those standards are more stringent than the standards of this chapter or the specific chapter relating to that source.

[Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-210, filed 2/19/91, effective 3/22/91.]

EPA effective: 6/2/95 (60 FR 28726, 6/2/95)

~~**WAC 173-400-220 Requirements for board members.** (1) **Public interest.** A majority of the members of any ecology or authority board shall represent the public interest. A majority of the members of such boards, shall not derive any significant portion of their income from persons subject to enforcement orders pursuant to the state and federal clean air acts. An elected public official and the board shall be presumed to represent the public interest. In the event that a member derives a significant portion of his/her income from persons subject to enforcement orders, he/she shall delegate sole responsibility for administration of any part of the program which involves these persons to an assistant.~~

~~(2) **Disclosure.** Each member of any ecology or authority board shall adequately disclose any potential conflict of interest in any matter prior to any action or consideration thereon, and the member shall remove themselves from participation as a board member in any action or voting on such matter.~~

~~(3) **Define significant income.** For the purposes of this section, "significant portion of income" shall mean twenty percent of gross personal income for a calendar year. In the case of a retired person, "significant portion of income" shall mean fifty percent of income in the form of pension or retirement benefits from a single source other than Social Security. Income derived from employment with local or state government shall not be considered in the determination of "significant portion of income."~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-220, filed 2/19/91, effective 3/22/91.]~~

~~**WAC 173-400-230 Regulatory actions.** Ecology may take any of the following regulatory actions to enforce this chapter to meet the provisions of RCW 43.21B.300 which is incorporated by reference.~~

~~(1) **Enforcement actions by ecology—Notice to violators.** At least thirty days prior to the commencement of any formal enforcement action under RCW 70.94.430 and 70.94.431, the department of ecology shall cause written notice to be served upon the alleged violator or violators. The notice shall specify the provision of this chapter or the rule or regulation alleged to be violated, and the facts alleged to constitute a violation thereof, and may include an order that necessary corrective action be taken within a reasonable time. In lieu of an order, ecology may require that the alleged violator or violators appear before it for the purpose of providing ecology information pertaining to the violation or the charges complained of. Every notice of violation shall offer to the alleged violator an opportunity to meet with ecology prior to the commencement of enforcement action.~~

~~(2) **Civil penalties.**~~

~~(a) In addition to or as an alternate to any other penalty provided by law, any person who violates any of the provisions of chapter 70.94 or 70.120 RCW, or any of the rules in force under such chapters may incur a civil penalty in an amount as set forth in RCW 70.94.431. Each such violation shall be a separate and distinct offense, and in case of a continuing violation, each day's continuance shall be a separate and distinct violation.~~

~~Any person who fails to take action as specified by an order issued pursuant to this chapter shall be liable for a civil penalty as set forth by RCW 70.94.431 for each day of continued noncompliance.~~

~~(b) Penalties incurred but not paid shall accrue interest, beginning on the ninety-first day following the date that the penalty becomes due and payable, at the highest rate allowed by RCW 19.52.020 on the date that the penalty becomes due and payable. If violations or penalties are appealed, interest shall not begin to accrue until the thirty-first day following final resolution of the appeal.~~

~~The maximum penalty amounts established in RCW 70.94.431 may be increased annually to account for inflation as determined by the state office of the economic and revenue forecast council.~~

~~(c) Each act of commission or omission which procures, aids, or abets in the violation shall be considered a violation under the provisions of this section and subject to the same penalty. The penalties provided in this section shall be imposed pursuant to RCW 43.21B.300.~~

~~(d) All penalties recovered under this section by ecology shall be paid into the state treasury and credited to the air pollution control account established in RCW 70.94.015 or, if recovered by the authority, shall be paid into the treasury of the authority and credited to its funds. If a prior penalty for the same violation has been paid to a local authority, the penalty imposed by ecology under subsection (a) of this section shall be reduced by the amount of the payment.~~

~~(e) To secure the penalty incurred under this section, the state or the authority shall have a lien on any vessel used or operated in violation of this chapter which shall be enforced as provided in RCW 60.36.050.~~

~~(f) Public or private entities that are recipients or potential recipients of ecology grants, whether for air quality related activities or not, may have such grants rescinded or withheld by ecology for failure to comply with provisions of this chapter.~~

~~(g) In addition to other penalties provided by this chapter, persons knowingly under-reporting emissions or other information used to set fees, or persons required to pay emission or permit fees who are more than ninety days late with such payments may be subject to a penalty equal to three times the amount of the original fee owed.~~

~~(3) **Assurance of discontinuance.** Personnel of ecology or an authority may accept an assurance of discontinuance of any act or practice deemed in violation of this chapter. Any such assurance shall specify a time limit during which discontinuance is to be accomplished. Failure to perform the terms of any such assurance shall constitute prima facie proof of a violation of this chapter or any order issued thereunder which make the alleged act or practice unlawful for the purpose of securing an injunction or other relief from the superior court.~~

~~(4) **Restraining orders, injunctions.** Whenever any person has engaged in, or is about to engage in, any acts or practices which constitute or will constitute a violation of any provision of this chapter, the director, after notice to such person and an opportunity to comply, may petition the superior court of the county wherein the violation is alleged to be occurring or to have occurred for a restraining order or a temporary or permanent injunction or another appropriate order.~~

~~(5) **Emergency episodes.** Ecology may issue such orders as authorized by chapter 173-435 WAC via chapter 70.94 RCW, whenever an air pollution episode forecast is declared.~~

~~(6) **Compliance orders.** Ecology may issue a compliance order in conjunction with a notice of violation. The order shall require the recipient of the notice of violation either to take necessary corrective action or to submit a plan for corrective action and a date when such action will be initiated.~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 93-05-044 (Order 92-34), § 173-400-230, filed 2/17/93, effective 3/20/93; WSR 91-05-064 (Order 90-06), § 173-400-230, filed 2/19/91, effective 3/22/91.]~~

~~**WAC 173-400-240 Criminal penalties.** Persons in violation of Title 173 WAC may be subject to the provisions of RCW 70.94.430.~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-240, filed 2/19/91, effective 3/22/91.]~~

~~**WAC 173-400-250 Appeals.** Decisions and orders of ecology or an authority may be appealed to the pollution control hearings board pursuant to chapter 43.21B RCW and chapter 371-08 WAC.~~

~~[Statutory Authority: Chapter 70.94 RCW. WSR 93-18-007 (Order 93-03), § 173-400-250, filed 8/20/93, effective 9/20/93; WSR 91-05-064 (Order 90-06), § 173-400-250, filed 2/19/91, effective 3/22/91.]~~

~~**WAC 173-400-260 Conflict of interest.** All board members and officials acting or voting on decisions affecting air pollution sources, must comply with the Federal Clean Air Act, as it pertains to conflict of interest (Section 128).~~

~~[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-260, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 91-05-064 (Order 90-06), § 173-400-260, filed 2/19/91, effective 3/22/91.]~~

WAC 173-400-560 General order of approval. In lieu of filing a notice of construction application under WAC 173-400-110, the owner or operator may apply for coverage under a general order of approval issued under this section. Coverage under a general order of approval satisfies the requirement for new source review under RCW 70.94.152.

(1) **Issuance of general orders of approval.** A permitting authority may issue a general order of approval applicable to a specific type of emission unit or source, not including nonroad engines as defined in section 216 of the Federal Clean Air Act, subject to the conditions in this section. A general order of approval shall identify criteria by which an emission unit or source may qualify for coverage under the associated general order of approval and shall include terms and conditions under which the owner or operator agrees to install and/or operate the covered emission unit or source. At a minimum, these terms and conditions shall include:

(a) Applicable emissions limitations and/or control requirements;

(b) Best available control technology;

(c) Appropriate operational restrictions, such as:

(i) Criteria related to the physical size of the unit(s) covered;

(ii) Criteria related to raw materials and fuels used;

(iii) Criteria related to allowed or prohibited locations; and

(iv) Other similar criteria determined by a permitting authority;

(d) Monitoring, reporting and recordkeeping requirements to ensure compliance with the applicable emission limits and control requirements;

(e) Appropriate initial and periodic emission testing requirements;

(f) Compliance with ~~chapter 173-460 WAC,~~ WAC 173-400-112 and 173-400-113 as applicable;

(g) Compliance with 40 C.F.R. Parts 60, 61, 62, and 63; and

(h) The application and approval process to obtain coverage under the specific general order of approval.

(2) **Public comment.** Compliance with WAC 173-400-171 is required for a proposed new general order of approval or modification of an existing general order of approval.

(3) **Modification of general orders of approval.** A permitting authority may review and modify a general order of approval at any time. Only the permitting authority that issued a general order of approval may modify that general order of approval. Modifications to general orders of approval shall follow the procedures of this regulation and shall only take effect prospectively.

(4) **Application for coverage under a general order of approval.**

(a) In lieu of applying for an individual order of approval under WAC 173-400-110, an owner or operator of an emission unit or source may apply for and receive coverage from a permitting authority under a general order of approval if:

(i) The owner or operator of the emission unit or source applies for coverage under a general order of approval in accordance with this regulation and any conditions of the approval related to application for and granting coverage under the general order of approval;

(ii) The emission unit or source meets all the qualifications listed in the requested general order of approval;

(iii) The requested emission unit or source is not part of a new major stationary source or major modification of a major stationary source subject to the requirements of WAC 173-400-113 (3) and (4), 173-400-700 through 173-400-750 or 173-400-800 through 173-400-860; and

(iv) The requested emission unit or source does not trigger applicability of the operating permit program under chapter 173-401 WAC or trigger a required modification of an existing operating permit.

(b) Owners or operators of emission units or sources applying for coverage under a general order of approval shall do so using the forms supplied by a permitting authority and include the required fee. The application must include all information necessary to determine qualification for, and to assure compliance with, a general order of approval.

(c) An application shall be incomplete until a permitting authority has received any required fees.

(d) The owner or operator of a new source or modification of an existing source that qualifies for coverage under a general order of approval may not begin actual construction of the new source or modification until its application for coverage has been approved or accepted under the procedures established in subsection (5) of this section.

(5) **Processing applications for coverage under a general order of approval.** Each general order of approval shall include a section on how an applicant is to request coverage and how the permitting authority will grant coverage. The section of the general order of approval will include either the method in (a) or (b) of this subsection to describe the process for the applicant to be granted coverage.

(a) Within thirty days of receipt of an application for coverage under a general order of approval, the permitting authority shall notify an applicant in writing that the application is incomplete, approved, or denied. If an application is incomplete, the permitting authority shall notify an applicant of the information needed to complete the application. If an application is denied, the permitting authority shall notify an applicant of the reasons why the application is denied. Coverage under a general order of approval is effective as of the date of issuance of approval by the permitting authority.

(b) The applicant is approved for coverage under the general order of approval thirty-one days after an application for coverage is received by the permitting authority, unless the owner or operator receives a letter from the permitting authority, postmarked within thirty days of when the application for coverage was received by the permitting authority, notifying the owner or operator that the emissions unit or source does not qualify for coverage under the general order of approval. The letter denying coverage shall notify the applicant of the disqualification and the reasons why coverage is denied.

(6) **Termination of coverage under a general order of approval.** An owner or operator who has received approval of an application for coverage under a general order of approval may later request to be excluded from coverage under that general order of approval by applying to the same permitting authority for an individual order of approval, un-

der WAC 173-400-110, or for coverage under another general order of approval. If the same permitting authority issues an individual order of approval or other permit or order serving the same purpose as the original general order of approval, or approves coverage under a different general order of approval, coverage under the original general order of approval is automatically terminated, effective on the effective date of the individual order of approval, order or permit or new general order of approval.

(7) **Failure to qualify or comply.** An owner or operator who requests and is granted approval for coverage under a general order of approval shall be subject to enforcement action for establishment of a new source in violation of WAC 173-400-110 if a decision to grant coverage under a general order of approval was based upon erroneous information submitted by the applicant.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-560, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-560, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-560, filed 1/10/05, effective 2/10/05.]

EPA effective: 5/29/15 (80 FR 23721, 4/29/15)

PERMITTING OF MAJOR STATIONARY SOURCES AND MAJOR MODIFICATIONS TO MAJOR STATIONARY SOURCES

WAC 173-400-700 Review of major stationary sources of air pollution. (1) The following sections are to be used by ecology when reviewing and permitting new major stationary sources and major modifications to major stationary sources located in attainment or unclassified areas in Washington.

(2) WAC 173-400-700 through 173-400-750 apply statewide except:

(a) Where the authority has received delegation of the federal PSD program from EPA or has a SIP approved PSD program.

(b) To projects under the jurisdiction of the energy facility site evaluation council site certification process pursuant to chapter 80.50 RCW.

(3) The construction of a major stationary source or major modification subject to the permitting requirements of the following section might also be subject to the permitting programs in WAC 173-400-110 and 173-400-800 through 173-400-860.

[Statutory Authority: Chapter 70.94 RCW. WSR 11-06-060 (Order 09-01), § 173-400-700, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-700, filed 1/10/05, effective 2/10/05.]

EPA effective: 5/29/15 (80 FR 23721, 4/29/15)

WAC 173-400-710 Definitions. (1) For purposes of WAC 173-400-720 through 173-400-750 the definitions in 40 C.F.R. 52.21(b) (in effect on the date in WAC 173-400-025) must be used. Exception: The definition of "secondary emissions" as defined in WAC 173-400-030 must be used.

(2) All usage of the term "source" in WAC 173-400-710 through 173-400-750 and in 40 C.F.R. 52.21 must be interpreted to mean "stationary source" as defined in 40 C.F.R. 52.21 (b)(5). A stationary source (or source) does not include emissions resulting directly from

an internal combustion engine for transportation purposes, from a non-road engine, or a nonroad vehicle as defined in section 216 of the Federal Clean Air Act.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-710, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-710, filed 11/28/12, effective 12/29/12. Statutory Authority: RCW 70.94.395 and 70.94.331. WSR 07-11-039 (Order 06-03), § 173-400-710, filed 5/8/07, effective 6/8/07. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-710, filed 1/10/05, effective 2/10/05.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-720 Prevention of significant deterioration (PSD). (1) No major stationary source or major modification to which the requirements of this section apply is authorized to begin actual construction without having received a PSD permit.

(2) **Early planning encouraged.** In order to develop an appropriate application, the source should engage in an early planning process to assess the needs of the facility. An opportunity for a preapplication meeting with ecology is available to any potential applicant.

(3) **Enforcement.** Ecology or the permitting authority with jurisdiction over the source under chapter 173-401 WAC, the Operating permit regulation, shall:

(a) Receive all reports required in the PSD permit;

(b) Enforce the requirement to apply for a PSD permit when one is required; and

(c) Enforce the conditions in the PSD permit.

(4) **Applicable requirements.**

(a) A PSD permit must assure compliance with the following requirements:

~~(i) WAC 173-400-113 (1) through (4);~~

~~(ii) WAC 173-400-117 - Special protection requirements for federal Class I areas;~~

~~(iii) WAC 173-400-200;~~

~~(iv) WAC 173-400-205;~~

(v) Allowable emission limits established under WAC 173-400-081 must also meet the criteria of 40 C.F.R. 52.21 (k)(1) and 52.21 (p)(1) through (4) (in effect on the date in WAC 173-400-025); and

(vi) The following subparts of 40 C.F.R. 52.21 (in effect on the date in WAC 173-400-025) are adopted. Exceptions are listed in (b)(i), (ii), (iii), and (iv) of this subsection:

6HFWLRQ	7LWOH
40 C.F.R. 52.21 (a)(2)	Applicability Procedures.
40 C.F.R. 52.21 (b)	Definitions, except the definition of "secondary emissions."
40 C.F.R. 52.21 (c)	Ambient air increments.
40 C.F.R. 52.21 (d)	Ambient air ceilings.
40 C.F.R. 52.21 (h)	Stack heights.
40 C.F.R. 52.21 (i)	Review of major stationary sources and major modifications - Source applicability and exemptions.
40 C.F.R. 52.21 (j)	Control technology review.

6HFWLRQ	7LWOH
40 C.F.R. 52.21 (k)	Source impact analysis.
40 C.F.R. 52.21 (l)	Air quality models.
40 C.F.R. 52.21 (m)	Air quality analysis.
40 C.F.R. 52.21 (n)	Source information.
40 C.F.R. 52.21 (o)	Additional impact analysis.
40 C.F.R. 52.21 (p)(1) through (4)	Sources impacting federal Class I areas - Additional UHTXLUHPHQWV
40 C.F.R. 52.21 (r)	Source obligation.
40 C.F.R. 52.21 (v)	Innovative control technology.
40 C.F.R. 52.21 (w)	Permit rescission.
40 C.F.R. 52.21 (aa)	Actuals Plantwide Applicability Limitation.

(b) Exceptions to adopting 40 C.F.R. 52.21 by reference.

(i) Every use of the word "administrator" in 40 C.F.R. 52.21 means ecology except for the following:

(A) In 40 C.F.R. 52.21 (b)(17), the definition of federally enforceable, "administrator" means the EPA administrator.

(B) In 40 C.F.R. 52.21 (l)(2), air quality models, "administrator" means the EPA administrator.

(C) In 40 C.F.R. 52.21 (b)(43) the definition of prevention of significant deterioration program, "administrator" means the EPA administrator.

(D) In 40 C.F.R. 52.21 (b)(48)(ii)(c) related to regulations promulgated by the administrator, "administrator" means the EPA administrator.

(E) In 40 C.F.R. 52.21 (b)(50)(i) related to the definition of a regulated NSR pollutant, "administrator" means the EPA administrator.

(F) In 40 C.F.R. 52.21 (b)(37) related to the definition of repowering, "administrator" means the EPA administrator.

(G) In 40 C.F.R. 52.21 (b)(51) related to the definition of reviewing authority, "administrator" means the EPA administrator.

(ii) Each reference in 40 C.F.R. 52.21(i) to "paragraphs (j) through (r) of this section" is amended to state "paragraphs (j) through (p)(1), (2), (3) and (4) of this section, paragraph (r) of this section, WAC 173-400-720, and 173-400-730."

(iii) The following paragraphs replace the designated paragraphs of 40 C.F.R. 52.21:

(A) In 40 C.F.R. 52.21 (b)(1)(i)(a) and (b)(1)(iii)(h), the size threshold for municipal waste incinerators is changed to 50 tons of refuse per day.

(B) 40 C.F.R. 52.21 (b)(23)(i) After the entry for municipal solid waste landfills emissions, add Ozone Depleting Substances: 100 tpy.

~~(C) 40 C.F.R. 52.21(c) after the effective date of EPA's incorporation of this section into the Washington state implementation plan, the concentrations listed in WAC 173-400-116(2) are excluded when determining increment consumption.~~

(D) 40 C.F.R. 52.21 (r)(6)

"The provisions of this paragraph (r)(6) apply with respect to any regulated NSR pollutant from projects at an existing emissions unit at a major stationary source (other than projects at a source with a PAL) in circumstances where there is a reasonable possibility that a project that is not a part of a major modification may result in a significant emissions increase of such pollutant and the owner or operator elects to use the method specified in paragraphs 40 C.F.R. 52.21 (b)(41)(ii)(a) through (c) for calculating projected actual emissions.

(i) Before beginning actual construction of the project, the owner or operator shall document and maintain a record of the following information:

(a) A description of the project;

(b) Identification of the emissions unit(s) whose emissions of a regulated NSR pollutant could be affected by the project; and

(c) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded under paragraph 40 C.F.R. 52.21 (b)(41)(ii)(c) and an explanation for why such amount was excluded, and any netting calculations, if applicable.

(ii) The owner or operator shall submit a copy of the information set out in paragraph 40 C.F.R. 52.21 (r)(6)(i) to the permitting authority before beginning actual construction. This information may be submitted in conjunction with any NOC application required under the provisions of WAC 173-400-110. Nothing in this paragraph (r)(6)(ii) shall be construed to require the owner or operator of such a unit to obtain any PSD determination from the permitting authority before beginning actual construction.

(iii) The owner or operator shall monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any emissions unit identified in paragraph 40 C.F.R. 52.21 (r)(6)(i)(b); and calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit that regulated NSR pollutant at such emissions unit.

(iv) The owner or operator shall submit a report to the permitting authority within 60 days after the end of each year during which records must be generated under paragraph 40 C.F.R. 52.21 (r)(6)(iii) setting out the unit's annual emissions during the calendar year that preceded submission of the report.

(v) The owner or operator shall submit a report to the permitting authority if the annual emissions, in tons per year, from the project identified in paragraph 40 C.F.R. 52.21 (r)(6)(i), exceed the baseline actual emissions (as documented and maintained pursuant to paragraph 40 C.F.R. 52.21 (r)(6)(i)(c)), by a significant amount (as defined in paragraph 40 C.F.R. 52.21 (b)(23)) for that regulated NSR pollutant, and if such emissions differ from the preconstruction projection as documented and maintained pursuant to paragraph 40 C.F.R. 52.21 (r)(6)(i)(c). Such report shall be submitted to the permitting authority within 60 days after the end of such year. The report shall contain the following:

(a) The name, address and telephone number of the major stationary source;

(b) The annual emissions as calculated pursuant to paragraph (r)(6)(iii) of this section; and

(c) Any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection).

(vi) A "reasonable possibility" under this subsection occurs when the owner or operator calculates the project to result in either:

(a) A projected actual emissions increase of at least fifty percent of the amount that is a "significant emissions increase," (without reference to the amount that is a significant net emissions increase), for the regulated NSR pollutant; or

(b) A projected actual emissions increase that, added to the amount of emissions excluded under the definition of projected actual emissions sums to at least fifty percent of the amount that is a "significant emissions increase," (without reference to the amount that is a significant net emissions increase), for the regulated NSR pollutant. For a project for which a reasonable possibility occurs only within the meaning of (r)(6)(vi)(b) of this subsection, and not also within the meaning of (r)(6)(vi)(a) of this subsection, then the provisions of (r)(6)(vi)(ii) through (v) of this subsection do not apply to the project."

(E) 40 C.F.R. 52.21 (r)(7) "The owner or operator of the source shall submit the information required to be documented and maintained pursuant to paragraphs 40 C.F.R. 52.21 (r)(6)(iv) and (v) annually within 60 days after the anniversary date of the original analysis. The original analysis and annual reviews shall also be available for review upon a request for inspection by the permitting authority or the general public pursuant to the requirements contained in 40 C.F.R. 70.4 (b)(3)(viii)."

(F) 40 C.F.R. 52.21 (aa)(2)(ix) "PAL permit means the PSD permit, an ecology issued order of approval issued under WAC 173-400-110, or regulatory order issued under WAC 173-400-091 issued by ecology that establishes a PAL for a major stationary source."

(G) 40 C.F.R. 52.21 (aa)(5) "Public participation requirements for PALs. PALs for existing major stationary sources shall be established, renewed, or expired through the public participation process in WAC 173-400-171. A request to increase a PAL shall be processed in accordance with the application processing and public participation process in WAC 173-400-730 and 173-400-740."

(H) 40 C.F.R. 52.21 (aa)(9)(i)(b) "Ecology, after consultation with the permitting authority, shall decide whether and how the PAL allowable emissions will be distributed and issue a revised order, order of approval or PSD permit incorporating allowable limits for each emissions unit, or each group of emissions units, as ecology determines is appropriate."

(I) 40 C.F.R. 52.21 (aa)(14) "Reporting and notification requirements. The owner or operator shall submit semiannual monitoring reports and prompt deviation reports to the permitting authority in accordance with the requirements in chapter 173-401 WAC. The reports shall meet the requirements in paragraphs 40 C.F.R. 52.21 (aa)(14)(i) through (iii)."

(J) 40 C.F.R. 52.21 (aa)(14)(ii) "Deviation report. The major stationary source owner or operator shall promptly submit reports of any deviations or exceedance of the PAL requirements, including periods where no monitoring is available. A report submitted pursuant to WAC 173-401-615 (3)(b) and within the time limits prescribed shall satisfy this reporting requirement. The reports shall contain the information found at WAC 173-401-615(3)."

(iv) 40 C.F.R. 52.21 (r)(2) is not adopted.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-720, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-720, filed 11/28/12, effective 12/29/12; WSR 11-17-037 (Order 11-04), § 173-400-720, filed 8/10/11, effective 9/10/11; WSR 11-06-060 (Order 09-01), § 173-400-720, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.395 and 70.94.331. WSR 07-11-039 (Order 06-03), § 173-400-720, filed 5/8/07, effective 6/8/07. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-720, filed 1/10/05, effective 2/10/05.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-730 Prevention of significant deterioration application processing procedures. (1) **Application submittal.**

(a) The applicant shall submit an application that provides complete information necessary for ecology to determine compliance with all PSD program requirements.

(b) The applicant shall submit complete copies of its PSD application or an application to increase a PAL, distributed in the following manner:

(i) Three copies to ecology: Air Quality Program, P.O. Box 47600, Olympia, WA 98504-7600.

(ii) One copy to each of the following federal land managers:

(A) U.S. Department of the Interior - National Park Service; and

(B) U.S. Department of Agriculture - U.S. Forest Service.

(iii) One copy to the permitting authority with authority over the source under chapter 173-401 WAC.

(iv) One copy to EPA.

(c) Application submittal and processing for the initial request, renewal or expiration of a PAL under 40 C.F.R. 52.21(aa) shall be done as provided in 40 C.F.R. 52.21(aa)(3) through (5) (in effect on the date in WAC 173-400-025). Exception: Public participation must comply with WAC 173-400-740.

(2) **Application processing.**

(a) Completeness determination.

(i) Within thirty days after receiving a PSD permit application, ecology shall either notify the applicant in writing that the application is complete or notify the applicant in writing of all additional information necessary to complete the application. Ecology may request additional information clarifying aspects of the application after it has been determined to be complete.

(ii) The effective date of the application is the date on which ecology notifies the applicant that the application is complete pursuant to (a)(i) of this subsection.

(iii) If an applicant fails or refuses to correct deficiencies in the application, the permit may be denied and appropriate enforcement action taken.

(iv) The permitting authority shall send a copy of the completeness determination to the responsible federal land manager.

(b) Preparation and issuance of the preliminary determination.

(i) When the application has been determined to be complete, ecology shall begin developing the preliminary determination to approve or deny the application.

(ii) As expeditiously as possible after receipt of a complete application, ecology shall provide the applicant with a preliminary determination along with a technical support document and a public notice.

(c) Issuance of the final determination.

(i) Ecology shall make no final decision until the public comment period has ended and all comments received during the public comment period have been considered.

(ii) Within one year of the date of receipt of the complete application and as expeditiously as possible after the close of the public comment period, or hearing if one is held, ecology shall prepare and issue the final determination.

(d) Once the PSD program set forth in WAC 173-400-700 through 173-400-750 is incorporated into the Washington SIP, the effective date of a determination will be either the date of issuance of the final determination, or a later date if specified in the final determination.

Until the PSD program set forth in WAC 173-400-700 through 173-400-750 is incorporated into the Washington SIP, the effective date of a final determination is one of the following dates:

(i) If no comments on the preliminary determination were received, the date of issuance; or

(ii) If comments were received, thirty days after receipt of the final determination; or

(iii) A later date as specified within the PSD permit approval.

(3) **PSD technical support document.** Ecology shall develop a technical support document for each preliminary PSD determination. The preliminary technical support document will be updated prior to issuance of the final determination to reflect changes to the final determination based on comments received. The technical support document shall include the following information:

(a) A brief description of the major stationary source, major modification, or activity subject to review;

(b) The physical location, ownership, products and processes involved in the major stationary source or major modification subject to review;

(c) The type and quantity of pollutants proposed to be emitted into the air;

(d) A brief summary of the BACT options considered and the reasons why the selected BACT level of control was selected;

(e) A brief summary of the basis for the permit approval conditions;

(f) A statement on whether the emissions will or will not cause a state and national ambient air quality standard to be exceeded;

(g) The degree of increment consumption expected to result from the source or modification;

(h) An analysis of the impacts on air quality related values in federal Class I areas and other Class I areas affected by the project; and

(i) An analysis of the impacts of the proposed emissions on visibility in any federal Class I area following the requirements in WAC 173-400-117.

(4) **Appeals.** A PSD permit, any conditions contained in a PSD permit, or the denial of PSD permit may be appealed to the pollution control hearings board as provided in chapter 43.21B RCW. A PSD permit issued under the terms of a delegation agreement can be appealed to the EPA's environmental appeals board as provided in 40 C.F.R. 124.13 and 40 C.F.R. 124.19.

(5) **Construction time limitations.**

(a) Approval to construct or modify a major stationary source becomes invalid if construction is not commenced within eighteen months of the effective date of the approval, if construction is discontinued for a period of eighteen months or more, or if construction is not completed within a reasonable time. The time period between construction of the approved phases of a phased construction project cannot be extended. Each phase must commence construction within eighteen months of the projected and approved commencement date.

(b) Ecology may extend the eighteen-month effective period of a PSD permit upon a satisfactory showing that an extension is justified. A request to extend the effective time to begin or complete actual construction under a PSD permit may be submitted. The request may result from the cessation of on-site construction before completion or failure to begin actual construction of the project(s) covered by the PSD permit.

(i) Request requirements.

(A) A written request for the extension, submitted by the PSD permit holder, as soon as possible prior to the expiration of the current PSD permit.

(B) An evaluation of BACT and an updated ambient impact, including an increment analysis, for all pollutants subject to the approval conditions in the PSD permit.

(ii) Duration of extensions.

(A) No single extension of time shall be longer than eighteen months.

(B) The cumulative time prior to beginning actual construction under the original PSD permit and all approved time extensions shall not exceed fifty-four months.

(iii) Issuance of an extension.

(A) Ecology may approve and issue an extension of the current PSD permit.

(B) The extension of approval shall reflect any revised BACT limitations based on the evaluation of BACT presented in the request for extension and other information available to ecology.

(C) The issuance of an extension is subject to the public involvement requirements in WAC 173-400-740.

(iv) For the extension of a PSD permit, ecology must prepare a technical support document consistent with WAC 173-400-730(3) only to the extent that those criteria apply to a request to extend the construction time limitation.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-730, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-730, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-730, filed 3/1/11, effective 4/1/11. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-730, filed 1/10/05, effective 2/10/05.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-740 PSD permitting public involvement requirements. (1) **Actions requiring notification of the public.** Ecology must provide public notice before approving or denying any of the following types of actions related to implementation of the PSD program contained in WAC 173-400-720:

(a) Any preliminary determination to approve or disapprove a PSD permit application; or

(b) An extension of the time to begin construction or suspend construction under a PSD permit; or

(c) A revision to a PSD permit, except an administrative amendment to an existing permit; or

(d) Use of a modified or substituted model in Appendix W of 40 C.F.R. Part 51 (in effect on the date in WAC 173-400-025) as part of review of air quality impacts.

(2) **Notification of the public.** As expeditiously as possible after the receipt of a complete PSD application, and as expeditiously as possible after receipt of a request for extension of the construction time limit under WAC 173-400-730(6) or after receipt of a nonadministrative revision to a PSD permit under WAC 173-400-750, ecology shall:

(a) Administrative record. Make available for public inspection in at least one location in the vicinity where the proposed source would be constructed, or for revisions to a PSD permit where the permittee exists, a copy of the information submitted by the applicant, and any applicable preliminary determinations, including analyses of the effects on air quality and air quality related values, considered in making the preliminary determination. Ecology may comply with this requirement by making these materials available on ecology's web site or at a physical location.

(i) Some materials comprising the administrative record (such as air quality modeling data) may be too large to post on a web site but may be made available as part of the record either in hard copy or on a data storage device.

(ii) Exemptions from this requirement include information protected from disclosure under any applicable law, including, but not limited to, RCW 70.94.205 and chapter 173-03 WAC.

(b) Notify the public.

(i) Public notice must be posted on ecology's web site for a minimum of thirty days. Day one of the public comment period begins on the next calendar day after ecology posts the public notice.

(ii) The following information must be posted for the duration of the public comment period:

(A) Public notice elements in subsection (3) of this section;

(B) PSD draft permit;

(C) PSD technical support document; and
(D) Information on how to access the administrative record.
(iii) If ecology grants a request to extend the public comment period, ecology must:
(A) Post the extension notice on the same web page where the original notice was posted;
(B) Specify the closing date of the extended comment period in the extension notice; and
(C) Distribute a copy of the extension notice by electronic means or via the United States postal service to whomever requested the extension and the organizations and individuals listed in (c) and (d) of this subsection.
(iv) If a hearing is held, the public comment period must extend through the hearing date and comply with the notice requirements in subsection (4)(c) of this section.
(v) If ecology determines a supplemental notice is appropriate, the applicant or other initiator of the action must pay the cost of providing this supplemental public notice. Supplemental notice may include, but is not limited to, publication in a newspaper of general circulation in the area of the proposed project.
(c) Distribute by electronic means or via the United States postal service a copy of the public notice to:
(i) Any Indian governing body whose lands may be affected by emissions from the project;
(ii) The chief executive of the city where the project is located;
(iii) The chief executive of the county where the project is located;
(iv) Individuals or organizations that requested notification of the specific project proposal;
(v) Other individuals who requested notification of PSD permits;
(vi) Any state within 100 km of the proposed project.
(d) Distribute by electronic means or via the United States postal service a copy of the public notice, PSD preliminary determination, and the technical support document to:
(i) The applicant;
(ii) The affected federal land manager;
(iii) EPA Region 10;
(iv) The permitting authority with authority over the source under chapter 173-401 WAC; and
(v) Individuals or organizations who request a copy.
(3) **Public notice content.** The public notice shall contain at least the following information:
(a) The name and address of the applicant;
(b) The location of the proposed project;
(c) A brief description of the project proposal;
(d) The preliminary determination to approve or disapprove the application;
(e) How much increment is expected to be consumed by this project;
(f) The name, address, and telephone number of the person to contact for further information;
(g) A brief explanation of how to comment on the project;
(h) An explanation on how to request a public hearing;
(i) The start date and end date of the public comment period consistent with subsection (2)(b)(i) of this section;

(j) A statement that a public hearing may be held if ecology determines within the public comment period that significant public interest exists;

(k) The length of the public comment period in the event of a public hearing; and

(l) For projects subject to special protection requirements for federal Class I areas, in WAC 173-400-117, and where ecology disagrees with the analysis done by the federal land manager, ecology shall explain its decision in the public notice or state that an explanation of the decision appears in the technical support document for the proposed approval or denial.

(4) **Public hearings.**

(a) The applicant, any interested governmental entity, any group, or any person may request a public hearing within the public comment period established consistent with subsection (2)(b)(i) of this section. A request must indicate the interest of the entity filing it and why a hearing is warranted. Whether a request for a hearing is filed or not, ecology may hold a public hearing if it determines significant public interest exists. Ecology will determine the location, date, and time of the public hearing.

(b) Notification of a public hearing will be accomplished per the requirements of WAC 173-400-740(2).

(c) The public must be notified at least thirty days prior to the date of the hearing (or first of a series of hearings).

(5) **Consideration of public comments.** Ecology shall make no final decision on any application or action of any type described in subsection (1) of this section until the public comment period has ended and any comments received during the public comment period have been considered. Ecology shall make all public comments available for public inspection at the same web site where the preconstruction information on the proposed major source or major modification was made available.

(6) **Issuance of a final determination.**

(a) The final approval or disapproval determination must be made within one year of receipt of a complete application and must include the following:

(i) A copy of the final PSD permit or the determination to deny the permit;

(ii) A summary of the comments received;

(iii) Ecology's response to those comments;

(iv) A description of what approval conditions changed from the preliminary determination; and

(v) A cover letter that includes an explanation of how the final determination may be appealed.

(b) Ecology shall post the final determination on the same web page where the draft permit and public notice was posted according to subsection (2)(b) of this section.

(c) Ecology shall distribute by electronic means or via the United States postal service a copy of the cover letter that accompanies the final determination to:

(i) Individuals or organizations that requested notification of the specific project proposal; and

(ii) Other individuals who requested notification of PSD permits.

(d) Ecology shall distribute a copy of the final determination to:

(i) The applicant;

(ii) U.S. Department of the Interior - National Park Service;

(iii) U.S. Department of Agriculture - Forest Service;

(iv) EPA Region 10;
(v) The permitting authority with authority over the source under chapter 173-401 WAC; and
(vi) Any person who commented on the preliminary determination.

[Statutory Authority: Chapter 70.94 RCW. WSR 18-17-111 (Order 15-07), § 173-400-740, filed 8/16/18, effective 9/16/18. Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-740, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-740, filed 11/28/12, effective 12/29/12. Statutory Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-740, filed 1/10/05, effective 2/10/05.]

EPA effective: 3/25/20 (85 FR 10301, 2/24/20)

WAC 173-400-750 Revisions to PSD permits. (1) The owner or operator may request, at any time, a change in conditions of a PSD permit and ecology may approve the request provided ecology finds that:
(a) The change in conditions will not cause the source to exceed an emissions standard established by regulation;
(b) No ambient air quality standard or PSD increment will be exceeded as a result of the change;
(c) The change will not adversely impact the ability of ecology or the authority to determine compliance with an emissions standard;
(d) The revised PSD permit will continue to require BACT for each new or modified emission unit approved by the original PSD permit; and
(e) The revised PSD permit continues to meet the requirements of WAC 173-400-800 through 173-400-860, and 173-400-113, as applicable.
(2) A request to revise a PSD permit must be acted upon using the timelines found in WAC 173-400-730. ~~The fee schedule found in chapter 173-455 WAC also applies.~~
(3) All revisions to PSD permits are subject to public involvement except for the following administrative revisions:
(a) Change of the owner or operator's business name and/or mailing address;
(b) Corrections to typographical errors;
(c) Revisions to compliance monitoring methods that provide for more frequent monitoring, replace a periodic monitoring requirement with a continuous monitoring, result in replacement of a manual emission testing method with an instrumental method, or other similar changes that based on ecology's technical evaluation of the proposal, do not reduce the ability of the permittee, the public, the permitting authority, EPA, or ecology to determine compliance with the emission limitations;
(d) Revisions to reporting requirements contained in a PSD permit to coordinate reporting with reporting requirements contained in the air operating permit issued to the source or that result in more frequent reporting by the permittee; or
(e) Any other revision, similar to those listed above, that based on ecology's technical evaluation of the proposal, does not reduce the stringency of the emission limitations in the PSD permit or the ability of ecology, the permitting authority, EPA, or the public to determine compliance with the approval conditions in the PSD permit.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-750, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-750, filed 3/1/11, effective 4/1/11. Statutory

Authority: RCW 70.94.152. WSR 05-03-033 (Order 03-07), § 173-400-750, filed 1/10/05, effective 2/10/05.]

EPA effective: 5/29/15 (80 FR 23721, 4/29/15)

WAC 173-400-800 Major stationary source and major modification in a nonattainment area. WAC 173-400-800 through 173-400-860 apply statewide except where a permitting authority has a permitting program for major stationary sources in a nonattainment area incorporated into the Washington state implementation plan as replacement for these sections.

These requirements apply to any new major stationary source or major modification of an existing major stationary source located in a designated nonattainment area that is major for the pollutant or pollutants for which the area is designated as not in attainment of one or more national ambient air quality standards.

[Statutory Authority: Chapter 70.94 RCW. WSR 11-06-060 (Order 09-01), § 173-400-800, filed 3/1/11, effective 4/1/11.]

EPA effective: 12/8/14 (79 FR 66291, 11/7/14)

WAC 173-400-810 Major stationary source and major modification definitions. The definitions in this section must be used in the major stationary source nonattainment area permitting requirements in WAC 173-400-800 through 173-400-860. If a term is defined differently in the federal program requirements for issuance, renewal and expiration of a Plant Wide Applicability Limitation (WAC 173-400-850), then that definition must be used for purposes of the Plant Wide Applicability Limitation program.

(1) Actual emissions means:

(a) The actual rate of emissions of a regulated NSR pollutant from an emissions unit, as determined in accordance with (b) through (d) of this subsection. This definition does not apply when calculating whether a significant emissions increase has occurred, or for establishing a PAL under WAC 173-400-850. Instead, "projected actual emissions" and "baseline actual emissions" as defined in subsections (2) and (23) of this section apply for those purposes.

(b) In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a consecutive twenty-four-month period which precedes the particular date and which is representative of normal source operation. The permitting authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

(c) The permitting authority may presume that source-specific allowable emissions for the unit are equivalent to the actual emissions of the unit.

(d) For any emissions unit that has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date.

(2) Baseline actual emissions means the rate of emissions, in tons per year, of a regulated NSR pollutant, as determined in accordance with (a) through (d) of this subsection.

(a) For any existing electric utility steam generating unit, baseline actual emissions means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive twenty-four-month period selected by the owner or operator within the five-year period immediately preceding when the owner or operator begins actual construction of the project. The permitting authority shall allow the use of a different time period upon a determination that it is more representative of normal source operation.

(i) The average rate shall include emissions associated with startups, shutdowns, and malfunctions; and, for an emissions unit that is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or for an emissions unit that is located at a major stationary source that belongs to one of the listed source categories, the average rate shall include fugitive emissions (to the extent quantifiable).

(ii) The average rate shall be adjusted downward to exclude any noncompliant emissions that occurred while the source was operating above any emission limitation that was legally enforceable during the consecutive twenty-four-month period.

(iii) For a regulated NSR pollutant, when a project involves multiple emissions units, only one consecutive twenty-four-month period must be used to determine the baseline actual emissions for the emissions units being changed. A different consecutive twenty-four-month period can be used for each regulated NSR pollutant.

(iv) The average rate shall not be based on any consecutive twenty-four-month period for which there is inadequate information for determining annual emissions, in tons per year, and for adjusting this amount if required by (a)(ii) of this subsection.

(b) For an existing emissions unit (other than an electric utility steam generating unit), baseline actual emissions means the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive twenty-four-month period selected by the owner or operator within the ten-year period immediately preceding either the date the owner or operator begins actual construction of the project, or the date a complete permit application is received by the permitting authority for a permit required either under WAC 173-400-800 through 173-400-860 or under a plan approved by EPA, whichever is earlier, except that the ten-year period shall not include any period earlier than November 15, 1990.

(i) The average rate shall include emissions associated with startups, shutdowns, and malfunctions; and, for an emissions unit that is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or for an emissions unit that is located at a major stationary source that belongs to one of the listed source categories, the average rate shall include fugitive emissions (to the extent quantifiable).

(ii) The average rate shall be adjusted downward to exclude any noncompliant emissions that occurred while the source was operating above an emission limitation that was legally enforceable during the consecutive twenty-four-month period.

(iii) The average rate shall be adjusted downward to exclude any emissions that would have exceeded an emission limitation with which the major stationary source must currently comply, had such major stationary source been required to comply with such limitations during the consecutive twenty-four-month period. However, if an emission limitation is part of a maximum achievable control technology standard that EPA proposed or promulgated under 40 C.F.R. Part 63, the baseline actual emissions need only be adjusted if the state has taken credit for such emissions reductions in an attainment demonstration or maintenance plan as part of the demonstration of attainment or as reasonable further progress to attain the NAAQS.

(iv) For a regulated NSR pollutant, when a project involves multiple emissions units, only one consecutive twenty-four-month period must be used to determine the baseline actual emissions for the emissions units being changed. A different consecutive twenty-four-month period can be used for each regulated NSR pollutant.

(v) The average rate shall not be based on any consecutive twenty-four-month period for which there is inadequate information for determining annual emissions, in tons per year, and for adjusting this amount if required under (b)(ii) and (iii) of this subsection.

(c) For a new emissions unit, the baseline actual emissions for purposes of determining the emissions increase that will result from the initial construction and operation of such unit shall equal zero; and thereafter, for all other purposes, shall equal the unit's potential to emit. In the latter case, fugitive emissions, to the extent quantifiable, shall be included only if the emissions unit is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or if the emissions unit is located at a major stationary source that belongs to one of the listed source categories.

(d) For a PAL for a major stationary source, the baseline actual emissions shall be calculated for existing electric utility steam generating units in accordance with the procedures contained in (a) of this subsection, for other existing emissions units in accordance with the procedures contained in (b) of this subsection, and for a new emissions unit in accordance with the procedures contained in (c) of this subsection, except that fugitive emissions (to the extent quantifiable) shall be included regardless of the source category.

(3) Building, structure, facility, or installation means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same major group (i.e., which have the same two-digit code) as described in the *Standard Industrial Classification Manual*, 1972, as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0065 and 003-005-00176-0, respectively).

(4) Clean coal technology means any technology, including technologies applied at the precombustion, combustion, or post combustion stage, at a new or existing facility which will achieve significant reductions in air emissions of sulfur dioxide or oxides of nitrogen associated with the utilization of coal in the generation of electricity, or process steam which was not in widespread use as of November 15, 1990.

(5) Clean coal technology demonstration project means a project using funds appropriated under the heading "Department of Energy-Clean Coal Technology," up to a total amount of two and one-half billion dollars for commercial demonstration of clean coal technology, or similar projects funded through appropriations for the Environmental Protection Agency. The federal contribution for a qualifying project shall be at least twenty percent of the total cost of the demonstration project.

(6) Construction means any physical change or change in the method of operation (including fabrication, erection, installation, demo-

lition, or modification of an emissions unit) that would result in a change in emissions.

(7) Continuous emissions monitoring system (CEMS) means all of the equipment that may be required to meet the data acquisition and availability requirements of this section, to sample, condition (if applicable), analyze, and provide a record of emissions on a continuous basis.

(8) Continuous parameter monitoring system (CPMS) means all of the equipment necessary to meet the data acquisition and availability requirements of this section, to monitor process and control device operational parameters (for example, control device secondary voltages and electric currents) and other information (for example, gas flow rate, O_2 or CO_2 concentrations), and to record average operational parameter value(s) on a continuous basis.

(9) Continuous emissions rate monitoring system (CERMS) means the total equipment required for the determination and recording of the pollutant mass emissions rate (in terms of mass per unit of time).

(10) Electric utility steam generating unit means any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 MW electrical output to any utility power distribution system for sale. Any steam supplied to a steam distribution system for the purpose of providing steam to a steam-electric generator that would produce electrical energy for sale is also considered in determining the electrical energy output capacity of the affected facility.

(11) Emissions unit means any part of a stationary source that emits or would have the potential to emit any regulated NSR pollutant and includes an electric steam generating unit. For purposes of this section, there are two types of emissions units:

(a) A new emissions unit is any emissions unit which is (or will be) newly constructed and which has existed for less than two years from the date such emissions unit first operated.

(b) An existing emissions unit is any emissions unit that is not a new emissions unit. A replacement unit, as defined in subsection (25) of this section is an existing emissions unit.

(12) Fugitive emissions means those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Fugitive emissions, to the extent quantifiable, are addressed as follows for the purposes of this section:

(a) In determining whether a stationary source or modification is major, fugitive emissions from an emissions unit are included only if the emissions unit is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or the emissions unit is located at a stationary source that belongs to one of those source categories. Fugitive emissions are not included for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source and that are not, by themselves, part of a listed source category.

(b) For purposes of determining the net emissions increase associated with a project, an increase or decrease in fugitive emissions is creditable only if it occurs at an emissions unit that is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or if the emission unit is located at a major stationary source that belongs to one of the listed source categories. Fugitive emission increases or decreases are not creditable for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, and that are not, by themselves, part of a listed source category.

(c) For purposes of determining the projected actual emissions of an emissions unit after a project, fugitive emissions are included only if the emissions unit is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or if the emission unit is located at a major stationary source that belongs to one of the listed source categories. Fugitive emissions are not included for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, and that are not, by themselves, part of a listed source category.

(d) For purposes of determining the baseline actual emissions of an emissions unit, fugitive emissions are included only if the emissions unit is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or if the emission unit is located at a major stationary source that belongs to one of the listed source categories, except that, for a PAL, fugitive emissions shall be included regardless of the source category. With the exception of PALs, fugitive emissions are not included for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, and that are not, by themselves, part of a listed source category.

(e) In calculating whether a project will cause a significant emissions increase, fugitive emissions are included only for those emissions units that are part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or for any emissions units that are located at a major stationary source that belongs to one of the listed source categories. Fugitive emissions are not included for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, and that are not, by themselves, part of a listed source category.

(f) For purposes of monitoring and reporting emissions from a project after normal operations have been resumed, fugitive emissions are included only for those emissions units that are part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or for any emissions units that are located at a major stationary source that belongs to one of the listed source categories. Fugitive emissions are not included for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, and that are not, by themselves, part of a listed source category.

(g) For all other purposes of this section, fugitive emissions are treated in the same manner as other, nonfugitive emissions. This includes, but is not limited to, the treatment of fugitive emissions for offsets (see WAC 173-400-840(7)) and for PALs (see WAC 173-400-850).

(13) Lowest achievable emission rate (LAER) means, for any source, the more stringent rate of emissions based on the following:

(a) The most stringent emissions limitation which is contained in the implementation plan of any state for such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or

(b) The most stringent emissions limitation which is achieved in practice by such class or category of stationary sources. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within a stationary source. In no event shall the application of the term permit a proposed new or modified stationary source to emit any pollutant in excess of the amount allowable under an applicable new source standard of performance.

(14)(a) Major stationary source means any stationary source of air pollutants that emits, or has the potential to emit, one hundred tons per year or more of any regulated NSR pollutant, except that lower emissions thresholds apply in areas subject to sections 181-185B, sections 186 and 187, or sections 188-190 of the Federal Clean Air Act. In those areas the following thresholds apply:

(i) Fifty tons per year of volatile organic compounds in any serious ozone nonattainment area;

(ii) Fifty tons per year of volatile organic compounds in an area within an ozone transport region, except for any severe or extreme ozone nonattainment area;

(iii) Twenty-five tons per year of volatile organic compounds in any severe ozone nonattainment area;

(iv) Ten tons per year of volatile organic compounds in any extreme ozone nonattainment area;

(v) Fifty tons per year of carbon monoxide in any serious nonattainment area for carbon monoxide, where stationary sources contribute significantly to carbon monoxide levels in the area (as determined under rules issued by EPA);

(vi) Seventy tons per year of PM-10 in any serious nonattainment area for PM-10.

(b) For the purposes of applying the requirements of WAC 173-400-830 to stationary sources of nitrogen oxides located in an ozone nonattainment area or in an ozone transport region, any stationary source which emits, or has the potential to emit, one hundred tons per year or more of nitrogen oxides emissions, except that the emission thresholds in (b)(i) through (vi) of this subsection shall apply in areas subject to sections 181-185B of the Federal Clean Air Act.

(i) One hundred tons per year or more of nitrogen oxides in any ozone nonattainment area classified as marginal or moderate.

(ii) One hundred tons per year or more of nitrogen oxides in any ozone nonattainment area classified as a transitional, submarginal, or incomplete or no data area, when such area is located in an ozone transport region.

(iii) One hundred tons per year or more of nitrogen oxides in any area designated under section 107(d) of the Federal Clean Air Act as attainment or unclassifiable for ozone that is located in an ozone transport region.

(iv) Fifty tons per year or more of nitrogen oxides in any serious nonattainment area for ozone.

(v) Twenty-five tons per year or more of nitrogen oxides in any severe nonattainment area for ozone.

(vi) Ten tons per year or more of nitrogen oxides in any extreme nonattainment area for ozone.

(c) Any physical change that would occur at a stationary source not qualifying under (a) and (b) of this subsection as a major stationary source, if the change would constitute a major stationary source by itself.

(d) A major stationary source that is major for volatile organic compounds shall be considered major for ozone.

(e) The fugitive emissions of a stationary source shall not be included in determining for any of the purposes of subsection (14) of this section whether it is a major stationary source, unless the source belongs to one of the following categories of stationary sources:

(i) Coal cleaning plants (with thermal dryers);

(ii) Kraft pulp mills;

(iii) Portland cement plants;

(iv) Primary zinc smelters;

(v) Iron and steel mills;

(vi) Primary aluminum ore reduction plants;

(vii) Primary copper smelters;

(viii) Municipal incinerators capable of charging more than fifty tons of refuse per day;

(ix) Hydrofluoric, sulfuric, or nitric acid plants;

(x) Petroleum refineries;

(xi) Lime plants;

(xii) Phosphate rock processing plants;

(xiii) Coke oven batteries;

(xiv) Sulfur recovery plants;

(xv) Carbon black plants (furnace process);

(xvi) Primary lead smelters;

(xvii) Fuel conversion plants;

(xviii) Sintering plants;

(xix) Secondary metal production plants;

(xx) Chemical process plants - The term chemical processing plant shall not include ethanol production facilities that produce ethanol by natural fermentation included in NAICS codes 325193 or 312140;

(xxi) Fossil-fuel boilers (or combination thereof) totaling more than two hundred fifty million British thermal units per hour heat input;

(xxii) Petroleum storage and transfer units with a total storage capacity exceeding three hundred thousand barrels;

(xxiii) Taconite ore processing plants;

(xxiv) Glass fiber processing plants;

(xxv) Charcoal production plants;

(xxvi) Fossil fuel-fired steam electric plants of more than two hundred fifty million British thermal units per hour heat input; and

(xxvii) Any other stationary source category which, as of August 7, 1980, is being regulated under section 111 or 112 of the Federal Clean Air Act.

(15)(a) Major modification means any physical change in or change in the method of operation of a major stationary source that would result in:

(i) A significant emissions increase of a regulated NSR pollutant; and

(ii) A significant net emissions increase of that pollutant from the major stationary source.

(b) Any significant emissions increase from any emissions units or net emissions increase at a major stationary source that is significant for volatile organic compounds shall be considered significant for ozone.

(c) A physical change or change in the method of operation shall not include:

(i) Routine maintenance, repair and replacement;

(ii) Use of an alternative fuel or raw material by reason of an order under sections 2 (a) and (b) of the Energy Supply and Environmental Coordination Act of 1974 (or any superseding legislation) or by reason of a natural gas curtailment plan pursuant to the Federal Power Act;

(iii) Use of an alternative fuel by reason of an order or rule section 125 of the Federal Clean Air Act;

(iv) Use of an alternative fuel at a steam generating unit to the extent that the fuel is generated from municipal solid waste;

(v) Use of an alternative fuel or raw material by a stationary source which:

(A) The source was capable of accommodating before December 21, 1976, unless such change would be prohibited under any federally enforceable permit condition which was established after December 12, 1976, pursuant to 40 C.F.R. 52.21 or under regulations approved pursuant to 40 C.F.R. Part 51, Subpart I or 40 C.F.R. 51.166; or

(B) The source is approved to use under any permit issued under regulations approved by EPA implementing 40 C.F.R. 51.165.

(vi) An increase in the hours of operation or in the production rate, unless such change is prohibited under any federally enforceable permit condition which was established after December 21, 1976, pursuant to 40 C.F.R. 52.21 or regulations approved pursuant to 40 C.F.R. Part 51, Subpart I or 40 C.F.R. 51.166;

(vii) Any change in ownership at a stationary source;

(viii) The installation, operation, cessation, or removal of a temporary clean coal technology demonstration project, provided that the project complies with:

(A) The state implementation plan for the state in which the project is located; and

(B) Other requirements necessary to attain and maintain the National Ambient Air Quality Standard during the project and after it is terminated.

(d) This definition shall not apply with respect to a particular regulated NSR pollutant when the major stationary source is complying with the requirements for a PAL for that pollutant. Instead, the definitions in 40 C.F.R. Part 51, Appendix S (in effect on the date in WAC 173-400-025) shall apply.

(e) For the purpose of applying the requirements of WAC 173-400-830 (1)(i) to modifications at major stationary sources of nitrogen oxides located in ozone nonattainment areas or in ozone transport regions, whether or not subject to sections 181-185B, Part D, Title I of the Federal Clean Air Act, any significant net emissions increase of nitrogen oxides is considered significant for ozone.

(f) Any physical change in, or change in the method of operation of, a major stationary source of volatile organic compounds that results in any increase in emissions of volatile organic compounds from any discrete operation, emissions unit, or other pollutant emitting activity at the source shall be considered a significant net emissions increase and a major modification for ozone, if the major stationary source is located in an extreme ozone nonattainment area that is subject to sections 181-185B, Part D, Title I of the Federal Clean Air Act.

(g) Fugitive emissions shall not be included in determining for any of the purposes of this section whether a physical change in or change in the method of operation of a major stationary source is a major modification, unless the source belongs to one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source.

(16) Necessary preconstruction approvals or permits means those permits or orders of approval required under federal air quality control laws and regulations or under air quality control laws and regulations which are part of the applicable state implementation plan.

(17)(a) Net emissions increase means with respect to any regulated NSR pollutant emitted by a major stationary source, the amount by which the sum of the following exceeds zero:

(i) The increase in emissions from a particular physical change or change in the method of operation at a stationary source as calculated pursuant to WAC 173-400-820 (2) and (3); and

(ii) Any other increases and decreases in actual emissions at the major stationary source that are contemporaneous with the particular change and are otherwise creditable. In determining the net emissions increase, baseline actual emissions for calculating increases and decreases shall be determined as provided in the definition of baseline actual emissions, except that subsection (2)(a)(iii) and (b)(iv) of this section, in the definition of baseline actual emissions, shall not apply.

(b) An increase or decrease in actual emissions is contemporaneous with the increase from the particular change only if it occurs before the date that the increase from the particular change occurs;

(c) An increase or decrease in actual emissions is creditable only if:

(i) It occurred no more than one year prior to the date of submittal of a complete notice of construction application for the particular change, or it has been documented by an emission reduction credit (ERC). Any emissions increases occurring between the date of issuance of the ERC and the date when a particular change becomes operational shall be counted against the ERC; and

(ii) The permitting authority has not relied on it in issuing a permit for the source under regulations approved pursuant to 40 C.F.R. 51.165, which permit is in effect when the increase in actual emissions from the particular change occurs; and

(iii) As it pertains to an increase or decrease in fugitive emissions (to the extent quantifiable), it occurs at an emissions unit that is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or it occurs at an emissions unit that is located at a major stationary source that belongs to one of the listed source categories. Fugitive emission increases or decreases are not creditable for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, and that are not, by themselves, part of a listed source category.

(d) An increase in actual emissions is creditable only to the extent that the new level of actual emissions exceeds the old level;

(e) A decrease in actual emissions is creditable only to the extent that:

(i) The old level of actual emission or the old level of allowable emissions whichever is lower, exceeds the new level of actual emissions;

(ii) It is enforceable as a practical matter at and after the time that actual construction on the particular change begins;

(iii) The permitting authority has not relied on it as part of an offsetting transaction under WAC 173-400-113(4) or 173-400-830 or in issuing any permit under regulations approved pursuant to 40 C.F.R. Part 51, Subpart I or the state has not relied on it in demonstrating attainment or reasonable further progress;

(iv) It has approximately the same qualitative significance for public health and welfare as that attributed to the increase from the particular change; and

(f) An increase that results from a physical change at a source occurs when the emissions unit on which construction occurred becomes operational and begins to emit a particular pollutant.

(g) Any replacement unit that requires shakedown becomes operational only after a reasonable shakedown period, not to exceed one hundred eighty days.

(h) Subsection (1)(b) of this section, in the definition of actual emissions, shall not apply for determining creditable increases and decreases or after a change.

(18) Nonattainment major new source review (NSR) program means the major source preconstruction permit program that has been approved by EPA and incorporated into the plan to implement the requirements of 40 C.F.R. 51.165, or a program that implements 40 C.F.R. Part 51, Appendix S, sections I through VI. Any permit issued under either program is a major NSR permit.

(19) Pollution prevention means any activity that through process changes, product reformulation or redesign, or substitution of less polluting raw materials, eliminates or reduces the release of air pollutants (including fugitive emissions) and other pollutants to the environment prior to recycling, treatment, or disposal; it does not mean recycling (other than certain "in-process recycling" practices), energy recovery, treatment, or disposal.

(20) Predictive emissions monitoring system (PEMS) means all of the equipment necessary to monitor process and control device operational parameters (for example, control device secondary voltages and electric currents) and other information (for example, gas flow rate, O_2 or CO_2 concentrations), and calculate and record the mass emissions rate (for example, lb/hr) on a continuous basis.

(21) Prevention of significant deterioration (PSD) permit means any permit that is issued under the major source preconstruction permit program that has been approved by EPA and incorporated into the plan to implement the requirements of 40 C.F.R. 51.166, or under the program in 40 C.F.R. 52.21.

(22) Project means a physical change in, or change in the method of operation of, an existing major stationary source.

(23)(a) Projected actual emissions means the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the five years (twelve-month period) following the date the unit resumes regular operation after the project, or in any one of the ten years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit of that regulated NSR pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source.

(b) In determining the projected actual emissions before beginning actual construction, the owner or operator of the major stationary source:

(i) Shall consider all relevant information including, but not limited to, historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of business activity, the company's filings with the state or federal regulatory authorities, and compliance plans under the approved plan; and

(ii) Shall include emissions associated with startups, shutdowns, and malfunctions; and, for an emissions unit that is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source, or for an emissions unit that is located at a major stationary source that belongs to one of the listed source categories, shall include fugitive emissions (to the extent quantifiable); and

(iii) Shall exclude, in calculating any increase in emissions that results from the particular project, that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive twenty-four-month period used to establish the baseline actual emissions and that are also unrelated to the particular project, including any increased utilization due to product demand growth; or

(iv) In lieu of using the method set out in (b)(i) through (iii) of this subsection, the owner or operator may elect to use the emissions unit's potential to emit, in tons per year. For this purpose, if the emissions unit is part of one of the source categories listed in subsection (14)(e) of this section, the definition of major stationary source or if the emissions unit is located at a major stationary source that belongs to one of the listed source categories, the unit's potential to emit shall include fugitive emissions (to the extent quantifiable).

(24)(a) Regulated NSR pollutant, means the following:

(i) Nitrogen oxides or any volatile organic compounds;

(ii) Any pollutant for which a National Ambient Air Quality Standard has been promulgated;

(iii) Any pollutant that is identified under this subsection as a constituent or precursor of a general pollutant listed in (a)(i) or (ii) of this subsection, provided that such constituent or precursor pollutant may only be regulated under NSR as part of regulation of the general pollutant. For purposes of NSR precursor pollutants are the following:

(A) Volatile organic compounds and nitrogen oxides are precursors to ozone in all ozone nonattainment areas.

(B) Sulfur dioxide is a precursor to PM-2.5 in all PM-2.5 nonattainment areas.

(C) Nitrogen oxides are precursors to PM-2.5 in all PM-2.5 nonattainment areas.

(b) PM-2.5 emissions and PM-10 emissions shall include gaseous emissions from a source or activity which condense to form particulate matter at ambient temperatures. On or after January 1, 2011, such condensable particulate matter shall be accounted for in applicability determinations and in establishing emissions limitations for PM-2.5 in nonattainment major NSR permits. Compliance with emissions limitations for PM-2.5 issued prior to this date shall not be based on condensable particulate matter unless required by the terms and conditions of the permit or the applicable implementation plan. Applicability determinations for PM-2.5 made prior to the effective date of WAC 173-400-800 through 173-400-850 made without accounting for condensable particulate matter shall not be considered in violation of WAC 173-400-800 through 173-400-850.

(25)(a) Replacement unit means an emissions unit for which all the criteria listed below are met:

(i) The emissions unit is a reconstructed unit within the meaning of 40 C.F.R. 60.15 (b)(1), or the emissions unit completely takes the place of an existing emissions unit.

(ii) The emissions unit is identical to or functionally equivalent to the replaced emissions unit.

(iii) The replacement does not alter the basic design parameters of the process unit. Basic design parameters are:

(A) Except as provided in (a)(iii)(C) of this subsection, for a process unit at a steam electric generating facility, the owner or operator may select as its basic design parameters either maximum hourly heat input and maximum hourly fuel consumption rate or maximum hourly electric output rate and maximum steam flow rate. When establishing fuel consumption specifications in terms of weight or volume, the minimum fuel quality based on British thermal units content must be used for determining the basic design parameter(s) for a coal-fired electric utility steam generating unit.

(B) Except as provided in (a)(iii)(C) of this subsection, the basic design parameter(s) for any process unit that is not at a steam electric generating facility are maximum rate of fuel or heat input, maximum rate of material input, or maximum rate of product output. Combustion process units will typically use maximum rate of fuel input. For sources having multiple end products and raw materials, the owner or operator should consider the primary product or primary raw material of the process unit when selecting a basic design parameter.

(C) If the owner or operator believes the basic design parameter(s) in (a)(iii)(A) and (B) of this subsection is not appropriate for a specific industry or type of process unit, the owner or operator may propose to the reviewing authority an alternative basic design parameter(s) for the source's process unit(s). If the reviewing authority approves of the use of an alternative basic design parameter(s), the reviewing authority will issue a new permit or modify an existing permit that is legally enforceable that records such basic design parameter(s) and requires the owner or operator to comply with such parameter(s).

(D) The owner or operator shall use credible information, such as results of historic maximum capability tests, design information from the manufacturer, or engineering calculations, in establishing the magnitude of the basic design parameter(s) specified in (a)(iii)(A) and (B) of this subsection.

(E) If design information is not available for a process unit, then the owner or operator shall determine the process unit's basic design parameter(s) using the maximum value achieved by the process unit in the five-year period immediately preceding the planned activity.

(F) Efficiency of a process unit is not a basic design parameter.

(iv) The replaced emissions unit is permanently removed from the major stationary source, otherwise permanently disabled, or permanently barred from operation by a permit that is enforceable as a practical matter. If the replaced emissions unit is brought back into operation, it shall constitute a new emissions unit.

(b) No creditable emission reductions shall be generated from shutting down the existing emissions unit that is replaced.

(26) Reviewing authority means "permitting authority" as defined in WAC 173-400-030.

(27) Significant means:

(a) In reference to a net emissions increase or the potential of a source to emit any of the following pollutants, a rate of emissions that would equal or exceed any of the following rates:

3ROOXWDQW	Emission Rate
Carbon monoxide	100 tons per year (tpy)
Nitrogen oxides	40 tons per year
Sulfur dioxide	40 tons per year
2]RQH	40 tons per year of volatile RUganic compounds or nitrogen R[LGHV
/HDG	0.6 tons per year
PM-10	15 tons per year
PM-2.5	10 tons per year of direct PM-2.5 emissions; 40 tons per year of nitrogen oxide emissions; 40 tons per year of sulfur dioxide emissions

(b) Notwithstanding the significant emissions rate for ozone, significant means, in reference to an emissions increase or a net emissions increase, any increase in actual emissions of volatile organic compounds that would result from any physical change in, or change in the method of operation of, a major stationary source locating in a serious or severe ozone nonattainment area that is subject to sections 181-185B, of the Federal Clean Air Act, if such emissions increase of volatile organic compounds exceeds twenty-five tons per year.

(c) For the purposes of applying the requirements of WAC 173-400-830 (1)(i) to modifications at major stationary sources of nitrogen oxides located in an ozone nonattainment area or in an ozone transport region, the significant emission rates and other requirements for volatile organic compounds in (a), (b), and (e) of this subsection, of the definition of significant, shall apply to nitrogen oxides emissions.

(d) Notwithstanding the significant emissions rate for carbon monoxide under (a) of this subsection, the definition of significant, significant means, in reference to an emissions increase or a net emissions increase, any increase in actual emissions of carbon monoxide that would result from any physical change in, or change in the method of operation of, a major stationary source in a serious nonattainment area for carbon monoxide if such increase equals or exceeds fifty tons per year, provided EPA has determined that stationary sources contribute significantly to carbon monoxide levels in that area.

(e) Notwithstanding the significant emissions rates for ozone under (a) and (b) of this subsection, the definition of significant, any increase in actual emissions of volatile organic compounds from any emissions unit at a major stationary source of volatile organic compounds located in an extreme ozone nonattainment area that is subject to sections 181-185B of the Federal Clean Air Act shall be considered a significant net emissions increase.

(28) Significant emissions increase means, for a regulated NSR pollutant, an increase in emissions that is significant for that pollutant.

(29) Source and stationary source means any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant.

(30) Temporary clean coal technology demonstration project means a clean coal technology demonstration project that is operated for a period of five years or less, and which complies with the state implementation plan for the state in which the project is located and other requirements necessary to attain and maintain the National Ambient Air Quality Standards during the project and after it is terminated.

(31) Best available control technology (BACT) means an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each regulated NSR pollutant which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 C.F.R. Part 60 or 61. If the reviewing authority determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

[Statutory Authority: For chapter 173-423 WAC is RCW 70.120A.010; and for chapters 173-400 and 173-476 WAC is RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-810, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-810, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-810, filed 3/1/11, effective 4/1/11.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-820 Determining if a new stationary source or modification to a stationary source is subject to these requirements. (1) Any new major stationary source located anywhere in a nonattainment area designated under section 107 (d)(1)(A)(i) of the Federal Clean Air Act, that is major for the pollutant for which the area is designated nonattainment is subject to the permitting requirements of WAC 173-400-830 through 173-400-850. Any major modification of an existing major stationary source that is major for the pollutant for which the area is designated nonattainment and is located anywhere in a nonattainment area designated under section 107 (d)(1)(A)(i) of the Federal Clean Air Act, and that has a significant net emissions increase of the pollutant for which the area is designated nonattainment is subject to the permitting requirements of WAC 173-400-830 through 173-400-850. A modification to an existing major stationary source must use the following procedures to determine if the modification would result in a significant net emissions increase of the nonattainment pollutant.

(2) Except as otherwise provided in subsection (4) of this section, and consistent with the definition of major modification, a project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases - A significant emissions increase, and a significant net emissions increase. The project is not a major modification if it does not cause a significant emissions increase. If the project causes a significant emissions increase, then the project is a major modification only if it also results in a significant net emissions increase.

(3) The procedure for calculating (before beginning actual construction) whether a significant emissions increase (i.e., the first step of the process) will occur depends upon the type of emissions units being modified, according to (a) through (c) of this subsection. For these calculations, fugitive emissions (to the extent quantifiable) are included only if the emissions unit is part of one of the source categories listed in the definition of major stationary source contained in WAC 173-400-810 (14)(e) or if the emissions unit is located at a major stationary source that belongs to one of the listed source categories. Fugitive emissions are not included for those emissions units located at a facility whose primary activity is not represented by one of the source categories listed in the definition of major stationary source contained in WAC 173-400-810 (14)(e) and that are not, by themselves, part of a listed source category. The procedure for calculating (before beginning actual construction) whether a significant net emissions increase will occur at the major stationary source (i.e., the second step of the process) is contained in the definition of net emission increase. Regardless of any such preconstruction projections, a major modification results if the project causes a significant emissions increase and a significant net emissions increase.

(a) Actual-to-projected-actual applicability test for projects that only involve existing emissions units. A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions and the baseline actual emissions, for each existing emissions unit, equals or exceeds the significant amount for that pollutant.

(b) Actual-to-potential test for projects that only involve construction of a new emissions unit(s). A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit from each new emissions unit following completion of the project and the baseline actual emissions of these units before the project equals or exceeds the significant amount for that pollutant.

(c) Hybrid test for projects that involve multiple types of emissions units. A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the emissions increases for each emissions unit, using the method specified in (a) and (b) of this subsection as applicable with respect to each emissions unit, for each type of emissions unit equals or exceeds the significant amount for that pollutant.

(4) Any major stationary source which has a PAL for a regulated NSR pollutant shall comply with requirements in WAC 173-400-850.

(5) The following specific provisions apply with respect to any regulated NSR pollutant emitted from projects at existing emissions units at a major stationary source (other than projects at a source with a PAL) in circumstances where there is a reasonable possibility that a project that is not a part of a major modification may result in a significant emissions increase of such pollutant, and the owner or operator elects to use the method specified in the definition of projected actual emissions contained in WAC 173-400-810 (23)(b)(i) through (iii) for calculating projected actual emissions.

(a) Before beginning actual construction of the project, the owner or operator shall document, and maintain a record of the following information:

(i) A description of the project;

(ii) Identification of the emissions unit(s) whose emissions of a regulated NSR pollutant could be affected by the project; and

(iii) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded under the definition of projected actual emissions contained in WAC 173-400-810 (23)(b)(iii) and an explanation for why such amount was excluded, and any netting calculations, if applicable.

(b) Before beginning actual construction, the owner or operator shall provide a copy of the information set out in (a) of this subsection to the permitting authority. This information may be submitted in conjunction with any NOC application required under the provisions of WAC 173-400-110. Nothing in this subsection shall be construed to require the owner or operator of such a unit to obtain any determination from the permitting authority before beginning actual construction.

(c) The owner or operator shall monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any emissions units identified in (a)(ii) of this subsection; and calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five years following resumption of regular operations after the change, or for a period of ten years following resumption of regular operations after the change if the project increases the design capacity or potential to emit of that regulated NSR pollutant at such emissions unit.

(d) The owner or operator shall submit a report to the permitting authority within sixty days after the end of each year during which records must be generated under (c) of this subsection setting out the unit's annual emissions, as monitored pursuant to (c) of this subsection, during the year that preceded submission of the report.

(e) The owner or operator shall submit a report to the permitting authority if the annual emissions, in tons per year, from the project identified in (a) of this subsection, exceed the baseline actual emissions (as documented and maintained pursuant to (a)(iii) of this subsection), by a significant amount (as defined in the definition of significant) for that regulated NSR pollutant, and if such emissions differ from the preconstruction projection as documented and maintained pursuant to (a)(iii) of this subsection. Such report shall be submitted to the permitting authority within sixty days after the end of such year. The report shall contain the following:

(i) The name, address and telephone number of the major stationary source;

(ii) The annual emissions as calculated pursuant to (d) of this subsection; and

(iii) Any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection).

(f) A "reasonable possibility" under this subsection occurs when the owner or operator calculates the project to result in either:

(i) A projected actual emissions increase of at least fifty percent of the amount that is a "significant emissions increase," (without reference to the amount that is a significant net emissions increase), for the regulated NSR pollutant; or

(ii) A projected actual emissions increase that, added to the amount of emissions excluded under the definition of projected actual emissions sums to at least fifty percent of the amount that is a "significant emissions increase," (without reference to the amount that is a significant net emissions increase), for the regulated NSR pollutant. For a project for which a reasonable possibility occurs only within the meaning of (f)(ii) of this subsection, and not also within the meaning of (f)(i) of this subsection, then (c) through (f) of this subsection does not apply to the project.

(6) For projects not required to submit the above information to the permitting authority as part of a notice of construction application, the owner or operator of the source shall make the information required to be documented and maintained pursuant to subsection (5) of this section available for review upon a request for inspection by the permitting authority or the general public pursuant to the requirements contained in chapter 173-401 WAC.

[Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-820, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-820, filed 3/1/11, effective 4/1/11.]

EPA effective: 12/8/14 (79 FR 66291, 11/7/14)

WAC 173-400-830 Permitting requirements. (1) The owner or operator of a proposed new major stationary source or a major modification of an existing major stationary source, as determined according to WAC 173-400-820, is authorized to construct and operate the proposed project provided the following requirements are met:

(a) The proposed new major stationary source or a major modification of an existing major stationary source will not cause any ambient air quality standard to be exceeded, will not violate the requirements for reasonable further progress established by the SIP and will comply with WAC 173-400-113 (3) and (4) for all air contaminants for which the area has not been designated nonattainment.

(b) The permitting authority has determined, based on review of an analysis performed by the owner or operator of a proposed new major stationary source or a major modification of an existing major stationary source of alternative sites, sizes, production processes, and environmental control techniques, that the benefits of the project significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification.

(c) The proposed new major stationary source or a major modification of an existing major stationary source will comply with all applicable New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants, National Emission Standards for Hazardous Air Pollutants for Source Categories, and emission standards adopted by ecology and the permitting authority.

(d) The proposed new major stationary source or a major modification of an existing major stationary source will employ BACT for all air contaminants and designated precursors to those air contaminants, except that it will achieve LAER for the air contaminants and designated precursors to those air contaminants for which the area has been designated nonattainment and for which the proposed new major stationary source is major or for which the existing source is major and the proposed modification is a major modification.

(e) Allowable emissions from the proposed new major stationary source or major modification of an existing major stationary source of that air contaminant and designated precursors to those air contaminants are offset by reductions in actual emissions from existing sources in the nonattainment area. All offsetting emission reductions must satisfy the requirements in WAC 173-400-840.

(f) The owner or operator of the proposed new major stationary source or major modification of an existing major stationary source has demonstrated that all major stationary sources owned or operated by such person (or by any entity controlling, controlled by, or under common control with such person) in Washington are subject to emission limitations and are in compliance, or on a schedule for compliance, with all applicable emission limitations and standards under the Federal Clean Air Act, including all rules in the SIP.

(g) If the proposed new source is also a major stationary source within the meaning of WAC 173-400-720, or the proposed modification is also a major modification within the meaning of WAC 173-400-720, it meets the requirements of the PSD program under 40 C.F.R. 52.21 delegated to ecology by EPA Region 10, while such delegated program remains in effect. The proposed new major stationary source or major modification will comply with the PSD program in WAC 173-400-700 through 173-400-750 for all air contaminants for which the area has not been designated nonattainment when that PSD program has been approved into the Washington SIP.

(h) The proposed new major stationary source or the proposed major modification meets the special protection requirements for federal Class I areas in WAC 173-400-117.

(i) All requirements of this section applicable to major stationary sources and major modifications of volatile organic compounds shall apply to nitrogen oxides emissions from major stationary sources and major modifications of nitrogen oxides in an ozone transport region or in any ozone nonattainment area, except in an ozone nonattainment area or in portions of an ozone transport region where EPA has granted a NO_X waiver applying the standards set forth under section 182(f) of the Federal Clean Air Act and the waiver continues to apply.

(j) The requirements of this section applicable to major stationary sources and major modifications of PM-10 and PM-2.5 shall also apply to major stationary sources and major modifications of PM-10 and PM-2.5 precursors, except where EPA determines that such sources do not contribute significantly to PM-10 levels that exceed the PM-10 ambient standards in the area.

(2) Approval to construct shall not relieve any owner or operator of the responsibility to comply fully with applicable provisions of the state implementation plan and any other requirements under local, state or federal law.

(3) At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements of regulations approved pursuant to 40 C.F.R. 51.165, or the requirements of 40 C.F.R. Part 51, Appendix S, as applicable, shall apply to the source or modification as though construction had not yet commenced on the source or modification. 40 C.F.R. Part 51, Appendix S shall not apply to a new or modified source for which enforceable limitations are established after WAC 173-400-800 through 173-400-850 have been approved into Washington's SIP.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-830, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-830, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-830, filed 3/1/11, effective 4/1/11.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-840 Emission offset requirements. (1) The ratio of total actual emissions reductions to the emissions increase shall be 1.1:1 unless an alternative ratio is provided for the applicable nonattainment area in subsection (2) through (4) of this section.

(2) In meeting the emissions offset requirements of WAC 173-400-830 for ozone nonattainment areas that are subject to sections 181-185B of the Federal Clean Air Act, the ratio of total actual emissions reductions of VOC to the emissions increase of VOC shall be as follows:

(a) In any marginal nonattainment area for ozone - 1.1:1;

(b) In any moderate nonattainment area for ozone - 1.15:1;

(c) In any serious nonattainment area for ozone - 1.2:1;

(d) In any severe nonattainment area for ozone - 1.3:1; and

(e) In any extreme nonattainment area for ozone - 1.5:1.

(3) Notwithstanding the requirements of subsection (2) of this section for meeting the requirements of WAC 173-400-830, the ratio of total actual emissions reductions of VOC to the emissions increase of VOC shall be 1.15:1 for all areas within an ozone transport region that is subject to sections 181-185B of the Federal Clean Air Act, except for serious, severe, and extreme ozone nonattainment areas that are subject to sections 181-185B of the Federal Clean Air Act.

(4) In meeting the emissions offset requirements of this section for ozone nonattainment areas that are subject to sections 171-179b of the Federal Clean Air Act (but are not subject to sections 181-185B of the Federal Clean Air Act, including eight-hour ozone nonattainment areas subject to 40 C.F.R. 51.902(b)), the ratio of total actual emissions reductions of VOC to the emissions increase of VOC shall be 1.1:1.

(5) Emission offsets used to meet the requirements of WAC 173-400-830 (1)(e), must be for the same regulated NSR pollutant.

(6) If the offsets are provided by another source, the reductions in emissions from that source must be federally enforceable by the time the order of approval for the new or modified source is effective. An emission reduction credit issued under WAC 173-400-131 may be

used to satisfy some or all of the offset requirements of this subsection.

(7) Emission offsets are required for the incremental increase in allowable emissions occurring during startup and shutdown operations at the new or modified emission units subject to nonattainment area major new source review. The incremental increase is the difference between the allowable emissions during normal operation and the allowable emissions for startup and shutdown contained in the nonattainment new source review approval.

(8) Emission offsets including those described in an emission reduction credit issued under WAC 173-400-131, must meet the following criteria:

(a) The baseline for determining credit for emissions reductions is the emissions limit under the applicable state implementation plan in effect at the time the notice of construction application is determined to be complete, except that the offset baseline shall be the actual emissions of the source from which offset credit is obtained where:

(i) The demonstration of reasonable further progress and attainment of ambient air quality standards is based upon the actual emissions of sources located within the designated nonattainment area; or

(ii) The applicable state implementation plan does not contain an emissions limitation for that source or source category.

(b) Other limitations on emission offsets.

(i) Where the emissions limit under the applicable state implementation plan allows greater emissions than the potential to emit of the source, emissions offset credit will be allowed only for control below the potential to emit;

(ii) For an existing fuel combustion source, credit shall be based on the allowable emissions under the applicable state implementation plan for the type of fuel being burned at the time the notice of construction application is determined to be complete. If the existing source commits to switch to a cleaner fuel at some future date, an emissions offset credit based on the allowable (or actual) emissions reduction resulting from the fuels change is not acceptable, unless the permit or other enforceable order is conditioned to require the use of a specified alternative control measure which would achieve the same degree of emissions reduction should the source switch back to the higher emitting (dirtier) fuel at some later date. The permitting authority must ensure that adequate long-term supplies of the new fuel are available before granting emissions offset credit for fuel switches;

(iii) Emission reductions.

(A) Emissions reductions achieved by shutting down an existing emission unit or curtailing production or operating hours may be generally credited for offsets if:

(I) Such reductions are surplus, permanent, quantifiable, and federally enforceable; and

(II) The shutdown or curtailment occurred after the last day of the base year for the SIP planning process. For purposes of this subsection, the permitting authority may choose to consider a prior shutdown or curtailment to have occurred after the last day of the base year if the projected emissions inventory used to develop the attainment demonstration explicitly includes the preshutdown or precurtailment emissions from the previously shutdown or curtailed emission units. However, in no event may credit be given for shutdowns that occurred before August 7, 1977.

(B) Emissions reductions achieved by shutting down an existing emissions unit or curtailing production or operating hours and that do not meet the requirements in subsection (8)(b)(iii)(A) of this section may be generally credited only if:

(I) The shutdown or curtailment occurred on or after the date the construction permit application is filed; or

(II) The applicant can establish that the proposed new emissions unit is a replacement for the shutdown or curtailed emissions unit, and the emissions reductions achieved by the shutdown or curtailment met the requirements of (7)(b)(iii)(A)(I) of this section.

(iv) All emission reductions claimed as offset credit shall be federally enforceable;

(v) Emission reductions used for offsets may only be from any location within the designated nonattainment area. Except the permitting authority may allow use of emission reductions from another area that is nonattainment for the same pollutant, provided the following conditions are met:

(A) The other area is designated as an equal or higher nonattainment status than the nonattainment area where the source proposing to use the reduction is located; and

(B) Emissions from the other nonattainment area contribute to violations of the standard in the nonattainment area where the source proposing to use the reduction is located.

(vi) Credit for an emissions reduction can be claimed to the extent that the reduction has not been relied on in issuing any permit under 40 C.F.R. 52.21 or regulations approved pursuant to 40 C.F.R. Part 51, subpart I or the state has not relied on it in demonstration of attainment or reasonable further progress.

(vii) The total tonnage of increased emissions, in tons per year, resulting from a major modification that must be offset in accordance with Section 173 of the Federal Clean Air Act shall be determined by summing the difference between the allowable emissions after the modification and the actual emissions before the modification for each emissions unit.

(9) No emissions credit may be allowed for replacing one hydrocarbon compound with another of lesser reactivity, except for those compounds listed in Table 1 of EPA's "Recommended Policy on Control of Volatile Organic Compounds" (42 FR 35314, July 8, 1977). This document is also available from Office of Air Quality Planning and Standards, (MD-15) Research Triangle Park, NC 27711.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-840, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-840, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-840, filed 3/1/11, effective 4/1/11.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-850 Actual emissions plantwide applicability limitation (PAL). The Actuals Plantwide Applicability Limitations (PAL) program in Section IV.K of Appendix S (Emission Offset Interpretive Ruling) to 40 C.F.R. Part 51, (in effect on the date in WAC 173-400-025) is adopted with the following exceptions:

(1) The term "reviewing authority" means "permitting authority" as defined in WAC 173-400-030.

(2) "PAL permit" means the major or minor new source review permit issued that establishes the PAL and those PAL terms as they are incorporated into an air operating permit issued pursuant to chapter 173-401 WAC.

(3) The reference to 40 C.F.R. 70.6 (a)(3)(iii)(B) in subsection IV.K.14 means WAC 173-401-615 (3)(b).

(4) No PAL permit can be issued under this provision until EPA adopts this section into the state implementation plan.

[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-850, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-850, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-850, filed 3/1/11, effective 4/1/11.]

EPA effective: 11/7/16 (81 FR 69385, 10/6/16)

WAC 173-400-860 Public involvement procedures. The public involvement procedures in WAC 173-400-171 shall be followed, including joint public notifications (integrated review) with any proposed notice of construction approval for the project. Any permit issued pursuant to WAC 173-400-830 or 173-400-850 must comply with WAC 173-400-171.

[Statutory Authority: Chapter 70.94 RCW. WSR 11-06-060 (Order 09-01), § 173-400-860, filed 3/1/11, effective 4/1/11.]

EPA effective: 12/8/14 (79 FR 66291, 11/7/14)

~~**WAC 173-400-930 Emergency engines.** (1) **Applicability.**~~

~~(a) This section applies statewide except where a permitting authority has not adopted this section in rule.~~'

~~(b) This section applies to diesel-fueled compression ignition emergency engines with a cumulative BHP rating greater than 500 BHP and equal to or less than 2000 BHP.~~

~~(c) This section is not applicable to emergency engines proposed to be installed as part of a new major stationary source, as defined in WAC 173-400-710 and 173-400-810, or major modification, as defined in WAC 173-400-710 and 173-400-810.~~

~~(d) In lieu of filing a notice of construction application under WAC 173-400-110, the owner or operator may comply with the requirements of this section for emergency engines.~~

~~(e) Compliance with this section satisfies the requirement for new source review of emergency engines under RCW 70.94.152 and chapter 173-460 WAC.~~

~~(f) An applicant may choose to submit a notice of construction application in accordance with WAC 173-400-110 for a site specific review of criteria and toxic air pollutants in lieu of using this section's provisions.~~

~~(g) If an applicant cannot meet the requirements of this section, then they must file a notice of construction application.~~

~~(2) **Operating requirements for emergency engines.** Emergency engines using this section must:~~'

~~(a) Meet EPA emission standards applicable to all new nonroad compression-ignition engines in 40 C.F.R. 89.112 Table 1 and 40 C.F.R. 1039.102 Tables 6 and 7 (in effect on the date in WAC 173-400-025), as applicable for the year that the emergency engine is put in operation.~~

~~(b) Be fueled by ultra low sulfur diesel or ultra low sulfur biodiesel, with a sulfur content of 15 ppm or 0.0015% sulfur by weight or less.~~

~~(c) Operate a maximum of fifty hours per year for maintenance and testing or other nonemergency use.~~

~~(3) **Definitions.**~~

~~(a) **Emergency engine** means a new diesel-fueled stationary compression ignition engine. The engine must meet all the criteria specified below. The engine must be:~~

~~(i) Installed for the primary purpose of providing electrical power or mechanical work during an emergency use and is not the source of primary power at the facility; and~~

~~(ii) Operated to provide electrical power or mechanical work during an emergency use.~~

~~(b) **Emergency use** means providing electrical power or mechanical work during any of the following events or conditions:~~

~~(i) The failure or loss of all or part of normal power service to the facility beyond the control of the facility; or~~

~~(ii) The failure or loss of all or part of a facility's internal power distribution system.~~

~~Examples of emergency operation include the pumping of water or sewage and the powering of lights.~~

~~(c) **Maintenance and testing** means operating an emergency engine to:~~

~~(i) Evaluate the ability of the engine or its supported equipment to perform during an emergency; or~~

~~(ii) Train personnel on emergency activities; or~~

~~(iii) Test an engine that has experienced a breakdown, or failure, or undergone a preventative overhaul during maintenance; or~~

~~(iv) Exercise the engine if such operation is recommended by the engine or generator manufacturer.~~

~~[Statutory Authority: RCW 70.94.152, 70.94.331, 70.94.860. WSR 16-12-099 (Order 16-01), § 173-400-930, filed 5/31/16, effective 7/1/16. Statutory Authority: Chapter 70.94 RCW. WSR 12-24-027 (Order 11-10), § 173-400-930, filed 11/28/12, effective 12/29/12; WSR 11-06-060 (Order 09-01), § 173-400-930, filed 3/1/11, effective 4/1/11.]~~

Appendix F
Model Inputs and Outputs

F-1 Model Inputs and Outputs

```
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       17:15:55

                                  PAGE   1
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses RURAL Dispersion Only.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: CO

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      3 Source(s);       4 Source Group(s); and   11358
Receptor(s)

                with:      3 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.
```

```
 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      6.3 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_CO_1HR.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_CO_1HR.SUM

↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                        ***        17:15:55

                                   PAGE   2
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                              (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
```

1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54,   3.09,   5.14,   8.23,   10.80,

↑ *** AERMOD - VERSION 22112 ***   *** C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P *** 06/30/23
*** AERMET - VERSION 22112 ***   *** ***   17:15:55

PAGE   3

*** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: KHQM.5Y.SFC
Met Version: 22112
Profile file: KHQM.5Y.PFL

Surface format: FREE

Profile format: FREE

Surface station no.:   94225   Upper air station no.:   72797
Name: BOWERMAN_AIRPORT   Name: QUILLAYUTE

Year: 2018   Year: 2018

First 24 hours of scalar data
YR MO DY JDY HR   H0   U*   W* DT/DZ ZICNV ZIMCH M-O LEN   Z0 BOWEN

```
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
1.00    5.89   66.   10.0  276.4    2.0
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
```

```
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:15:55

                                  PAGE   4
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                    ** CONC OF CO       IN MICROGRAMS/M**3
               **

                                                      DATE
                                         NETWORK
GROUP ID                                  AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

EG        HIGH   1ST HIGH VALUE IS     207.37941  ON 20100203: AT (  430213.66,
5202866.50,     5.56,     5.56,    0.00)  DC

EP04      HIGH   1ST HIGH VALUE IS     457.29325  ON 21062719: AT (  430164.06,
5203787.50,    68.49,    92.43,    0.00)  DC

EP08      HIGH   1ST HIGH VALUE IS       0.68735  ON 19082924: AT (  430748.25,
5203500.50,     4.25,    92.43,    0.00)  DC

ALL       HIGH   1ST HIGH VALUE IS     457.56545  ON 21062719: AT (  430164.06,
5203787.50,    68.49,    92.43,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
```

```
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:15:55

                                  PAGE   5
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           2 Warning Message(s)
 A Total of         758 Informational Message(s)

 A Total of       43824 Hours Were Processed

 A Total of         398 Calm Hours Identified

 A Total of         360 Missing Hours Identified (  0.82 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320      44        PPARM: Input Parameter May Be Out-of-Range for Parameter
     VS
 ME W187   11559       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       17:22:57

                                 PAGE   1
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses RURAL Dispersion Only.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: CO

 **Model Calculates  1 Short Term Average(s) of:   8-HR

 **This Run Includes:      3 Source(s);       4 Source Group(s); and   11358
Receptor(s)

                with:      3 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.
```

```
 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      6.3 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_CO_8HR.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_CO_8HR.SUM

↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:22:57

                                  PAGE   2
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                               (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
```

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: KHQM.5Y.SFC
Met Version: 22112
Profile file: KHQM.5Y.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 94225 Upper air station no.: 72797
Name: BOWERMAN_AIRPORT Name: QUILLAYUTE

Year: 2018 Year: 2018

First 24 hours of scalar data
YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN

```
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
1.00    5.89   66.   10.0  276.4    2.0
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
```

```
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
```


```
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                   *** THE SUMMARY OF HIGHEST  8-HR RESULTS ***

                          ** CONC OF CO       IN MICROGRAMS/M**3         **

                                                       DATE          NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

EG       HIGH   1ST HIGH VALUE IS      10.76708  ON 21011808: AT (  430176.34,
5202878.50,     5.62,     5.62,    0.00)  DC

EP04     HIGH   1ST HIGH VALUE IS      97.14015  ON 18081124: AT (  430164.06,
5203787.50,    68.49,    92.43,    0.00)  DC

EP08     HIGH   1ST HIGH VALUE IS       0.36763  ON 19122724: AT (  430188.78,
5203015.50,     4.70,    92.43,    0.00)  DC

ALL      HIGH   1ST HIGH VALUE IS      97.15248  ON 18081124: AT (  430164.06,
5203787.50,    68.49,    92.43,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

```
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                      ***        17:22:57

                                 PAGE   5
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of          758 Informational Message(s)

 A Total of        43824 Hours Were Processed

 A Total of          398 Calm Hours Identified

 A Total of          360 Missing Hours Identified (  0.82 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320      44        PPARM: Input Parameter May Be Out-of-Range for Parameter
       VS
 ME W187   11559       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       17:29:54

                                  PAGE   1
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Ambient Ratio Method Ver 2 (ARM2) Used for NO2 Conversion
         with a Minimum NO2/NOx Ratio of  0.500
         and a Maximum NO2/NOx Ratio of  0.900
      * Model Uses RURAL Dispersion Only.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: NO2

 **Note that special processing requirements apply for the 1-hour NO2 NAAQS - check
available guidance.
   Model will process user-specified ranks of daily maximum 1-hour values averaged
across the number of years modeled.
   For annual NO2 NAAQS modeling, the multi-year maximum of PERIOD values can be
simulated using the MULTYEAR keyword.
   Multi-year PERIOD and 1-hour values should only be done in a single model run
using the MULTYEAR option with a
   single multi-year meteorological data file using STARTEND keyword.

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:      3 Source(s);       4 Source Group(s); and   11358
Receptor(s)
```

```
                 with:      3 POINT(s), including
                            0 POINTCAP(s) and      0 POINTHOR(s)
                  and:      0 VOLUME source(s)
                  and:      0 AREA type source(s)
                  and:      0 LINE source(s)
                  and:      0 RLINE/RLINEXT source(s)
                  and:      0 OPENPIT source(s)
                  and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                  and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)
          Model Outputs External File(s) of Maximum Daily 1-hr Values by Day
(MAXDAILY Keyword)
          Model Outputs External File(s) of Maximum Daily 1-hr Values by Year
(MXDYBYYR Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                              ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =     11.0 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_NO2_1HR.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_NO2_1HR.SUM
```

*** MODELOPTs: CONC ELEV ARM2 RURAL ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: CONC ELEV ARM2 RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL

```
DATA ***

   Surface file:   KHQM.5Y.SFC
                  Met Version:  22112
   Profile file:   KHQM.5Y.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    94225                  Upper air station no.:    72797
                  Name: BOWERMAN_AIRPORT                              Name: QUILLAYUTE

                  Year:   2018                                        Year:   2018

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
```

```
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
1.00    5.89   66.   10.0  276.4    2.0
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:29:54

                                  PAGE   4
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

                      *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST MAX DAILY  1-HR
RESULTS AVERAGED OVER   5 YEARS ***


                                    ** CONC OF NO2      IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

EG        1ST HIGHEST VALUE IS     137.10549 AT (  430213.66,  5202866.50,     5.56,
    5.56,    0.00)  DC
```

```
          2ND HIGHEST VALUE IS     137.02914 AT (  430213.66,  5202878.50,     5.21,
    5.21,    0.00)  DC
          3RD HIGHEST VALUE IS     136.89795 AT (  430201.22,  5202866.50,     5.54,
    5.54,    0.00)  DC
          4TH HIGHEST VALUE IS     136.88320 AT (  430226.09,  5202878.50,     5.11,
    5.11,    0.00)  DC
          5TH HIGHEST VALUE IS     136.83707 AT (  430226.23,  5202887.43,     4.82,
    4.82,    0.00)  DC
          6TH HIGHEST VALUE IS     136.70627 AT (  430188.78,  5202866.50,     5.51,
    5.51,    0.00)  DC
          7TH HIGHEST VALUE IS     136.57314 AT (  430237.07,  5202886.76,     4.99,
    4.99,    0.00)  DC
          8TH HIGHEST VALUE IS     136.41638 AT (  430188.78,  5202854.00,     5.09,
    5.09,    0.00)  DC
          9TH HIGHEST VALUE IS     136.41481 AT (  430226.09,  5202866.50,     5.59,
    5.59,    0.00)  DC
         10TH HIGHEST VALUE IS     136.32913 AT (  430201.22,  5202878.50,     5.16,
    5.16,    0.00)  DC

EP04      1ST HIGHEST VALUE IS     231.60448 AT (  430413.00,  5203787.50,    72.04,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS     206.12485 AT (  430164.06,  5203787.50,    68.49,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS     198.43931 AT (  430188.97,  5203787.50,    69.43,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS     196.93895 AT (  430213.84,  5203787.50,    71.57,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS     192.75789 AT (  430437.91,  5203787.50,    65.49,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS     192.55521 AT (  430388.09,  5203762.50,    64.80,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS     191.03345 AT (  430139.16,  5203787.50,    71.39,
   89.87,    0.00)  DC
          8TH HIGHEST VALUE IS     189.96155 AT (  430388.09,  5203787.50,    81.43,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS     187.64676 AT (  430139.16,  5203812.50,    73.55,
   89.87,    0.00)  DC
         10TH HIGHEST VALUE IS     187.47058 AT (  430114.28,  5203787.50,    68.69,
   89.87,    0.00)  DC

EP08      1ST HIGHEST VALUE IS       1.31390 AT (  430648.78,  5203562.50,     4.74,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.31278 AT (  430648.78,  5203550.00,     4.78,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.30919 AT (  430648.78,  5203537.50,     4.77,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.30270 AT (  430648.78,  5203525.00,     4.69,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.30195 AT (  430661.94,  5203587.50,     4.88,
   92.43,    0.00)  DC
```

```
          6TH HIGHEST VALUE IS       1.30074 AT (  430661.94,  5203612.50,     4.82,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.30045 AT (  430661.22,  5203562.50,     4.87,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.29872 AT (  430648.78,  5203513.00,     4.69,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.29693 AT (  430661.94,  5203637.50,     4.81,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.29664 AT (  430661.22,  5203550.00,     4.85,
   92.43,    0.00)  DC

ALL       1ST HIGHEST VALUE IS     231.61609 AT (  430413.00,  5203787.50,    72.04,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS     206.23750 AT (  430164.06,  5203787.50,    68.49,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS     198.50641 AT (  430188.97,  5203787.50,    69.43,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS     196.98366 AT (  430213.84,  5203787.50,    71.57,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS     192.78588 AT (  430437.91,  5203787.50,    65.49,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS     192.57038 AT (  430388.09,  5203762.50,    64.80,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS     191.09243 AT (  430139.16,  5203787.50,    71.39,
   89.87,    0.00)  DC
          8TH HIGHEST VALUE IS     189.97931 AT (  430388.09,  5203787.50,    81.43,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS     187.69158 AT (  430139.16,  5203812.50,    73.55,
   89.87,    0.00)  DC
         10TH HIGHEST VALUE IS     187.58005 AT (  430114.28,  5203787.50,    68.69,
   89.87,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:29:54

                                  PAGE   5
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

                      *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST MAX DAILY  1-HR
RESULTS AVERAGED OVER   5 YEARS ***


                                    ** CONC OF NO2      IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
```

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ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

EG         1ST HIGHEST VALUE IS     128.63206 AT (  430176.34,  5202891.00,     5.57,
    5.57,    0.00)  DC
           2ND HIGHEST VALUE IS     128.59427 AT (  430176.34,  5202878.50,     5.62,
    5.62,    0.00)  DC
           3RD HIGHEST VALUE IS     128.49123 AT (  430201.22,  5202866.50,     5.54,
    5.54,    0.00)  DC
           4TH HIGHEST VALUE IS     128.27339 AT (  430213.66,  5202878.50,     5.21,
    5.21,    0.00)  DC
           5TH HIGHEST VALUE IS     128.11470 AT (  430198.73,  5202890.43,     4.91,
    4.91,    0.00)  DC
           6TH HIGHEST VALUE IS     128.09502 AT (  430201.22,  5202878.50,     5.16,
    5.16,    0.00)  DC
           7TH HIGHEST VALUE IS     127.99671 AT (  430188.78,  5202866.50,     5.51,
    5.51,    0.00)  DC
           8TH HIGHEST VALUE IS     127.97319 AT (  430176.34,  5202903.50,     5.56,
    5.56,    0.00)  DC
           9TH HIGHEST VALUE IS     127.79011 AT (  430188.78,  5202903.50,     4.79,
    4.79,    0.00)  DC
          10TH HIGHEST VALUE IS     127.78295 AT (  430188.78,  5202878.50,     5.48,
    5.48,    0.00)  DC

EP04       1ST HIGHEST VALUE IS     134.68411 AT (  430528.06,  5203862.50,    71.41,
   92.43,    0.00)  DC
           2ND HIGHEST VALUE IS     134.31399 AT (  430413.00,  5203787.50,    72.04,
   92.43,    0.00)  DC
           3RD HIGHEST VALUE IS     133.83107 AT (  430388.09,  5203762.50,    64.80,
   92.43,    0.00)  DC
           4TH HIGHEST VALUE IS     133.57192 AT (  430626.53,  5203862.50,    65.38,
   92.43,    0.00)  DC
           5TH HIGHEST VALUE IS     133.32558 AT (  430487.69,  5203812.50,    72.07,
   92.43,    0.00)  DC
           6TH HIGHEST VALUE IS     133.30431 AT (  430675.75,  5203912.50,    66.85,
   81.74,    0.00)  DC
           7TH HIGHEST VALUE IS     131.82432 AT (  430577.28,  5203912.50,    72.20,
   91.58,    0.00)  DC
           8TH HIGHEST VALUE IS     131.62134 AT (  430331.13,  5203862.50,    70.78,
   92.43,    0.00)  DC
           9TH HIGHEST VALUE IS     131.21753 AT (  430626.53,  5203912.50,    65.68,
   92.43,    0.00)  DC
          10TH HIGHEST VALUE IS     130.65646 AT (  430363.22,  5203762.50,    63.14,
   92.43,    0.00)  DC

EP08       1ST HIGHEST VALUE IS       1.03793 AT (  430710.94,  5203376.00,     4.80,
   92.43,    0.00)  DC
           2ND HIGHEST VALUE IS       1.03279 AT (  430706.77,  5203323.96,     4.62,
   92.43,    0.00)  DC
```

```
         3RD HIGHEST VALUE IS       1.03189 AT (  430686.09,  5203338.50,     4.91,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       1.03134 AT (  430686.09,  5203363.50,     4.57,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       1.03097 AT (  430698.50,  5203351.00,     4.64,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       1.03070 AT (  430710.94,  5203338.50,     4.43,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       1.03028 AT (  430698.50,  5203338.50,     4.61,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       1.02906 AT (  430698.50,  5203363.50,     4.35,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       1.02881 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       1.02869 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC

ALL      1ST HIGHEST VALUE IS     135.38364 AT (  430413.00,  5203787.50,    72.04,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS     135.04348 AT (  430528.06,  5203862.50,    71.41,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS     134.11855 AT (  430388.09,  5203762.50,    64.80,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS     134.04070 AT (  430626.53,  5203862.50,    65.38,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS     133.89082 AT (  430487.69,  5203812.50,    72.07,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS     133.81313 AT (  430675.75,  5203912.50,    66.85,
   81.74,    0.00)  DC
         7TH HIGHEST VALUE IS     132.39832 AT (  430577.28,  5203912.50,    72.20,
   91.58,    0.00)  DC
         8TH HIGHEST VALUE IS     132.25378 AT (  430331.13,  5203862.50,    70.78,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS     131.92889 AT (  430626.53,  5203912.50,    65.68,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS     131.07192 AT (  430437.91,  5203787.50,    65.49,
   92.43,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

```
*** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            2 Warning Message(s)
A Total of          758 Informational Message(s)

A Total of        43824 Hours Were Processed

A Total of          398 Calm Hours Identified

A Total of          360 Missing Hours Identified (  0.82 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320      46        PPARM: Input Parameter May Be Out-of-Range for Parameter
      VS
ME W187   11561       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       17:46:08

                                  PAGE   1
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Ambient Ratio Method Ver 2 (ARM2) Used for NO2 Conversion
         with a Minimum NO2/NOx Ratio of  0.500
         and a Maximum NO2/NOx Ratio of  0.900
      * Model Uses RURAL Dispersion Only.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: NO2

 **NOTE: Special processing requirements applicable for the 1-hour NO2 NAAQS have
been disabled!!!
         User has specified non-standard averaging periods:

         High ranked 1-hour values are NOT averaged across the number of years
modeled, and
         complete years of data are NOT required.

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:      3 Source(s);       4 Source Group(s); and   11358
Receptor(s)

                with:      3 POINT(s), including
```

```
                      0 POINTCAP(s) and      0 POINTHOR(s)
            and:      0 VOLUME source(s)
            and:      0 AREA type source(s)
            and:      0 LINE source(s)
            and:      0 RLINE/RLINEXT source(s)
            and:      0 OPENPIT source(s)
            and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
            and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      5.7 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_NO2_ANNUAL.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_NO2_ANNUAL.SUM

 *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:46:08

                                  PAGE   2
```

```
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

                                            *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                               (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                            (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,
10.80,
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       17:46:08

                                  PAGE   3
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   KHQM.5Y.SFC
                 Met Version:  22112
   Profile file:   KHQM.5Y.PFL

   Surface format: FREE
```

```
   Profile format: FREE

   Surface station no.:    94225                 Upper air station no.:    72797
                  Name: BOWERMAN_AIRPORT                            Name: QUILLAYUTE

                  Year:   2018                                      Year:   2018

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
```

```
1.00    5.89   66.   10.0  276.4    2.0
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:46:08

                                  PAGE   4
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF NO2      IN MICROGRAMS/M**3
               **


                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

EG        1ST HIGHEST VALUE IS       0.06538 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          2ND HIGHEST VALUE IS       0.06525 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
          3RD HIGHEST VALUE IS       0.06494 AT (  430188.78,  5202916.00,     4.78,
    4.78,    0.00)  DC
          4TH HIGHEST VALUE IS       0.06473 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC
          5TH HIGHEST VALUE IS       0.06460 AT (  430176.34,  5202916.00,     5.53,
```

```
    5.53,    0.00)  DC
          6TH HIGHEST VALUE IS       0.06451 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          7TH HIGHEST VALUE IS       0.06451 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          8TH HIGHEST VALUE IS       0.06439 AT (  430176.34,  5202928.50,     5.54,
    5.54,    0.00)  DC
          9TH HIGHEST VALUE IS       0.06376 AT (  430176.34,  5202903.50,     5.56,
    5.56,    0.00)  DC
         10TH HIGHEST VALUE IS       0.06361 AT (  430188.78,  5202903.50,     4.79,
    4.79,    0.00)  DC

EP04      1ST HIGHEST VALUE IS       1.57095 AT (  430797.97,  5203015.50,     6.01,
    6.01,    0.00)  DC
          2ND HIGHEST VALUE IS       1.56370 AT (  430847.69,  5203003.00,     5.45,
    5.45,    0.00)  DC
          3RD HIGHEST VALUE IS       1.56369 AT (  430822.84,  5203040.50,     5.93,
    7.90,    0.00)  DC
          4TH HIGHEST VALUE IS       1.56297 AT (  430835.28,  5202990.50,     5.59,
    6.29,    0.00)  DC
          5TH HIGHEST VALUE IS       1.56098 AT (  430810.41,  5203040.50,     6.01,
    7.15,    0.00)  DC
          6TH HIGHEST VALUE IS       1.56090 AT (  430835.28,  5203003.00,     5.28,
    6.29,    0.00)  DC
          7TH HIGHEST VALUE IS       1.55841 AT (  430810.41,  5203028.00,     5.56,
    5.56,    0.00)  DC
          8TH HIGHEST VALUE IS       1.55794 AT (  430822.84,  5203003.00,     5.23,
    5.23,    0.00)  DC
          9TH HIGHEST VALUE IS       1.55726 AT (  430847.69,  5202990.50,     5.48,
    5.48,    0.00)  DC
         10TH HIGHEST VALUE IS       1.55258 AT (  430835.28,  5203015.50,     4.98,
    4.98,    0.00)  DC

EP08      1ST HIGHEST VALUE IS       0.06708 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.06695 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.06665 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.06647 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.06643 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.06634 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.06627 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.06561 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.06558 AT (  430188.78,  5203003.00,     4.68,
```

```
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.06556 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC

ALL       1ST HIGHEST VALUE IS       1.61463 AT (  430797.97,  5203015.50,     6.01,
    6.01,    0.00)  DC
          2ND HIGHEST VALUE IS       1.61196 AT (  430822.84,  5203040.50,     5.93,
    7.90,    0.00)  DC
          3RD HIGHEST VALUE IS       1.60944 AT (  430847.69,  5203003.00,     5.45,
    5.45,    0.00)  DC
          4TH HIGHEST VALUE IS       1.60842 AT (  430810.41,  5203040.50,     6.01,
    7.15,    0.00)  DC
          5TH HIGHEST VALUE IS       1.60645 AT (  430835.28,  5202990.50,     5.59,
    6.29,    0.00)  DC
          6TH HIGHEST VALUE IS       1.60599 AT (  430835.28,  5203003.00,     5.28,
    6.29,    0.00)  DC
          7TH HIGHEST VALUE IS       1.60476 AT (  430810.41,  5203028.00,     5.56,
    5.56,    0.00)  DC
          8TH HIGHEST VALUE IS       1.60218 AT (  430822.84,  5203003.00,     5.23,
    5.23,    0.00)  DC
          9TH HIGHEST VALUE IS       1.60148 AT (  430847.69,  5202990.50,     5.48,
    5.48,    0.00)  DC
         10TH HIGHEST VALUE IS       1.59892 AT (  430835.28,  5203015.50,     4.98,
    4.98,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
06/30/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:46:08

                                  PAGE   5
 *** MODELOPTs:    CONC  ELEV  ARM2  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           2 Warning Message(s)
 A Total of         758 Informational Message(s)

 A Total of       43824 Hours Were Processed

 A Total of         398 Calm Hours Identified
```

```
A Total of          360 Missing Hours Identified (  0.82 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320      46        PPARM: Input Parameter May Be Out-of-Range for Parameter
      VS
ME W187   11561       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       04:30:18

                                  PAGE   1
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses RURAL Dispersion Only.
      * Option for Capped & Horiz Stacks Selected With:
          0 Capped Stack(s); and         3 Horizontal Stack(s)
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: PM-2.5

 **Note that special processing requirements apply for the 24-hour PM2.5 NAAQS -
check available guidance.
   Model will process user-specified ranks of high 24-hour values averaged across
the number of years modeled, and
   the multi-year average of individual ANNUAL values, averaged across the number of
years modeled.

 **Model Calculates  1 Short Term Average(s) of:  24-HR

 **This Run Includes:    652 Source(s);      30 Source Group(s); and   11358
Receptor(s)

                with:     14 POINT(s), including
                           0 POINTCAP(s) and      3 POINTHOR(s)
                 and:    635 VOLUME source(s)
```

```
                 and:       3 AREA type source(s)
                 and:       0 LINE source(s)
                 and:       0 RLINE/RLINEXT source(s)
                 and:       0 OPENPIT source(s)
                 and:       0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:       0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =     56.5 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_PM2P5_24HR.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_PM2P5_24HR.SUM
```



```
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*
```

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23,
10.80,

*** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: KHQM.5Y.SFC
Met Version: 22112
Profile file: KHQM.5Y.PFL

Surface format: FREE

```
   Profile format: FREE

   Surface station no.:    94225               Upper air station no.:    72797
                  Name: BOWERMAN_AIRPORT                             Name: QUILLAYUTE

                  Year:   2018                                       Year:   2018

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
1.00    5.89   66.   10.0  276.4    2.0
```

```
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE   4
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

EG        1ST HIGHEST VALUE IS       0.09475 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          2ND HIGHEST VALUE IS       0.09469 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
          3RD HIGHEST VALUE IS       0.09340 AT (  430206.98,  5202890.68,     5.02,
    5.02,    0.00)  DC
          4TH HIGHEST VALUE IS       0.09281 AT (  430176.34,  5202928.50,     5.54,
    5.54,    0.00)  DC
          5TH HIGHEST VALUE IS       0.09277 AT (  430215.23,  5202890.93,     5.02,
    5.02,    0.00)  DC
```

```
          6TH HIGHEST VALUE IS       0.09260 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          7TH HIGHEST VALUE IS       0.09233 AT (  430198.73,  5202890.43,     4.91,
    4.91,    0.00)  DC
          8TH HIGHEST VALUE IS       0.09208 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          9TH HIGHEST VALUE IS       0.09129 AT (  430176.34,  5202916.00,     5.53,
    5.53,    0.00)  DC
         10TH HIGHEST VALUE IS       0.09125 AT (  430176.34,  5202878.50,     5.62,
    5.62,    0.00)  DC

EP01      1ST HIGHEST VALUE IS       1.42291 AT (  430114.19,  5203102.50,     4.91,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.41982 AT (  430126.63,  5203102.50,     4.83,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.41702 AT (  430101.75,  5203102.50,     4.91,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.40943 AT (  430139.06,  5203102.50,     4.64,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.40797 AT (  430076.91,  5203090.00,     4.86,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.40634 AT (  430151.50,  5203102.50,     4.69,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.40490 AT (  430089.31,  5203102.50,     4.86,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.40433 AT (  430089.31,  5203090.00,     4.81,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.40009 AT (  430039.59,  5203090.00,     5.16,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.39910 AT (  430064.47,  5203090.00,     4.74,
   92.43,    0.00)  DC

EP02      1ST HIGHEST VALUE IS       0.62783 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.62691 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.62325 AT (  430176.34,  5203065.00,     5.11,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.62297 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.62217 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.61225 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.60778 AT (  430163.91,  5203053.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.60488 AT (  430163.91,  5203065.00,     4.66,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.59857 AT (  430151.50,  5203053.00,     4.76,
   92.43,    0.00)  DC
```

```
         10TH HIGHEST VALUE IS       0.59697 AT (  430151.50,  5203065.00,     4.78,
   92.43,    0.00)  DC

EP03      1ST HIGHEST VALUE IS       0.63589 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.63245 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.63243 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.63120 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.62933 AT (  430176.34,  5203065.00,     5.11,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.62357 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.61226 AT (  430163.91,  5203053.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.61066 AT (  430163.91,  5203065.00,     4.66,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.60225 AT (  430151.50,  5203065.00,     4.78,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.60176 AT (  430151.50,  5203053.00,     4.76,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE   5
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - 
- - - - - - - - - - - - - - - - - - 

EP04      1ST HIGHEST VALUE IS       6.75332 AT (  430164.06,  5203787.50,    68.49,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       6.72935 AT (  430487.69,  5203812.50,    72.07,
   92.43,    0.00)  DC
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         3RD HIGHEST VALUE IS       6.70881 AT (  430478.81,  5203862.50,    68.62,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       6.68426 AT (  430512.56,  5203812.50,    62.27,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       6.67497 AT (  430188.97,  5203787.50,    69.43,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       6.63361 AT (  430437.91,  5203787.50,    65.49,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       6.54664 AT (  430413.00,  5203787.50,    72.04,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       6.47936 AT (  430528.06,  5203862.50,    71.41,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       6.28126 AT (  430139.16,  5203787.50,    71.39,
   89.87,    0.00)  DC
        10TH HIGHEST VALUE IS       6.26582 AT (  430213.84,  5203787.50,    71.57,
   92.43,    0.00)  DC

EP05     1ST HIGHEST VALUE IS       0.25337 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       0.25277 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.24862 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.24495 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.23863 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.23643 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.23604 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.23373 AT (  430163.91,  5203028.00,     4.71,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.23144 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.23142 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC

EP06     1ST HIGHEST VALUE IS       0.25042 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       0.25038 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.24595 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.24219 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.23613 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.23456 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
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          7TH HIGHEST VALUE IS       0.23319 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.23133 AT (  430163.91,  5203028.00,     4.71,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.22932 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.22894 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC

EP08      1ST HIGHEST VALUE IS       2.56454 AT (  430713.97,  5203151.14,     4.86,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       2.54750 AT (  430714.00,  5203163.34,     4.79,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       2.28478 AT (  430714.04,  5203175.55,     4.84,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       2.20948 AT (  430713.94,  5203138.94,     4.91,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       2.15081 AT (  430723.38,  5203152.00,     4.83,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       2.13717 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       2.13170 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       2.12860 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       2.11720 AT (  430195.44,  5203091.41,     4.39,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       2.11638 AT (  430714.10,  5203199.95,     5.08,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                           PAGE   6
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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- - - - - - - - - - - - - - - - - -

EP09      1ST HIGHEST VALUE IS       0.41588 AT (  430731.77,  5203037.94,     5.11,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.41226 AT (  430724.77,  5203047.94,     5.10,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.40625 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.40036 AT (  430744.02,  5203016.94,     5.14,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.39180 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.38956 AT (  430735.81,  5203040.50,     5.09,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.38584 AT (  430738.77,  5203027.94,     5.10,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.38485 AT (  430748.25,  5203015.50,     5.09,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.37664 AT (  430749.27,  5203005.94,     5.13,
    5.13,    0.00)  DC
         10TH HIGHEST VALUE IS       0.37256 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC

EP10      1ST HIGHEST VALUE IS       2.16039 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       2.12350 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       2.04664 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       2.04424 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.98248 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.96837 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.94617 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.93206 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.84028 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.82804 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC

EP11      1ST HIGHEST VALUE IS       1.78866 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.78332 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.77443 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
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          4TH HIGHEST VALUE IS       1.74694 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.71837 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.70945 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.70894 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.69040 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.65225 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.63969 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC

EP12      1ST HIGHEST VALUE IS       0.71211 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.69571 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.69148 AT (  430724.77,  5203047.94,     5.10,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.67898 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.66856 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.64041 AT (  430797.97,  5203077.50,     6.14,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.63881 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.63763 AT (  430810.41,  5203077.50,     6.36,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.63408 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.63352 AT (  430785.53,  5203077.50,     6.08,
   92.43,    0.00)  DC
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                           *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
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                               NETWORK
GROUP ID                               AVERAGE CONC                    RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

EP13      1ST HIGHEST VALUE IS       2.23627 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       2.18095 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       2.17966 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       2.15965 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       2.13463 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       2.10683 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       2.06483 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       2.05268 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       2.01772 AT (  430713.94,  5203138.94,     4.91,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       2.00088 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC

EP14      1ST HIGHEST VALUE IS       1.93031 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.91990 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.84456 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.82434 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.82307 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.77850 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.77569 AT (  430713.94,  5203138.94,     4.91,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.76625 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.71151 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.69107 AT (  430723.38,  5203127.50,     5.09,
   92.43,    0.00)  DC
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FEL_P1    1ST HIGHEST VALUE IS       3.42478 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       3.33586 AT (  430188.78,  5203140.00,     4.72,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       3.33391 AT (  430197.37,  5203128.59,     4.30,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       3.23135 AT (  430198.66,  5203153.38,     4.42,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       3.22348 AT (  430188.78,  5203127.50,     4.71,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       3.16589 AT (  430188.78,  5203152.00,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       3.14830 AT (  430176.34,  5203140.00,     4.88,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       3.03702 AT (  430176.34,  5203127.50,     4.91,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       3.00728 AT (  430196.73,  5203116.20,     4.25,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       2.99991 AT (  430176.34,  5203152.00,     4.84,
   92.43,    0.00)  DC

FEL_P2    1ST HIGHEST VALUE IS       1.80031 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.79105 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.75801 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.73358 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.69876 AT (  430176.34,  5203065.00,     5.11,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.64768 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.64322 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.63658 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.59878 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.59538 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
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                              *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***

                                       ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **

                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

FEL_P3    1ST HIGHEST VALUE IS       1.42170 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.41700 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.37912 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.37244 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.34875 AT (  430176.34,  5202990.50,     5.33,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.33889 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.32181 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.30581 AT (  430176.34,  5202978.00,     5.39,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.27304 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
         10TH HIGHEST VALUE IS       1.27074 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC

LOAD_P    1ST HIGHEST VALUE IS       0.03007 AT (  430196.09,  5203103.80,     4.32,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.02954 AT (  430195.44,  5203091.41,     4.39,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.02947 AT (  430188.78,  5203102.50,     4.73,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.02863 AT (  430188.78,  5203090.00,     4.72,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.02819 AT (  430176.34,  5203102.50,     5.00,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.02803 AT (  430196.73,  5203116.20,     4.25,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.02799 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.02776 AT (  430188.78,  5203115.00,     4.70,
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   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.02760 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.02747 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC

PILE1     1ST HIGHEST VALUE IS       4.35930 AT (  430199.30,  5203165.77,     4.48,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       4.26810 AT (  430199.94,  5203178.16,     4.29,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       4.09833 AT (  430188.78,  5203177.00,     4.70,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       4.05627 AT (  430198.66,  5203153.38,     4.42,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       4.03760 AT (  430188.78,  5203164.50,     4.71,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       3.96906 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       3.80717 AT (  430188.78,  5203152.00,     4.73,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       3.79693 AT (  430188.78,  5203140.00,     4.72,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       3.74299 AT (  430176.34,  5203177.00,     4.73,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       3.72007 AT (  430200.59,  5203190.56,     4.44,
   92.43,    0.00)  DC

PILE2     1ST HIGHEST VALUE IS       5.10956 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       5.02981 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       4.80746 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       4.79438 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       4.79382 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       4.79287 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       4.78519 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       4.73628 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       4.65726 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       4.63780 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
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*** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM 1ST-HIGHEST 24-HR RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM-2.5 IN MICROGRAMS/M**3 **

```
                         NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

PILE3     1ST HIGHEST VALUE IS       5.02034 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       4.95938 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       4.58142 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          4TH HIGHEST VALUE IS       4.57245 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          5TH HIGHEST VALUE IS       4.56445 AT (  430188.78,  5202965.50,     4.77,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       4.54972 AT (  430190.51,  5202965.05,     4.56,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       4.52832 AT (  430176.34,  5202953.50,     5.50,
    5.50,    0.00)  DC
          8TH HIGHEST VALUE IS       4.49693 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          9TH HIGHEST VALUE IS       4.47983 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
         10TH HIGHEST VALUE IS       4.39413 AT (  430176.34,  5202965.50,     5.47,
   92.43,    0.00)  DC

T_P       1ST HIGHEST VALUE IS       0.24057 AT (  430401.24,  5202869.68,     5.67,
    5.67,    0.00)  DC
          2ND HIGHEST VALUE IS       0.22987 AT (  430400.13,  5202866.50,     5.93,
    5.93,    0.00)  DC
          3RD HIGHEST VALUE IS       0.21417 AT (  430389.49,  5202871.55,     5.49,
    5.49,    0.00)  DC
          4TH HIGHEST VALUE IS       0.20363 AT (  430387.69,  5202866.50,     5.92,
    5.92,    0.00)  DC
          5TH HIGHEST VALUE IS       0.18926 AT (  430377.74,  5202873.43,     5.40,
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     5.40,    0.00)  DC
           6TH HIGHEST VALUE IS       0.17910 AT (  430371.74,  5202875.68,     5.23,
     5.23,    0.00)  DC
           7TH HIGHEST VALUE IS       0.17670 AT (  430375.28,  5202866.50,     5.91,
     5.91,    0.00)  DC
           8TH HIGHEST VALUE IS       0.17203 AT (  430412.99,  5202867.80,     5.95,
     5.95,    0.00)  DC
           9TH HIGHEST VALUE IS       0.17075 AT (  430365.74,  5202877.93,     5.16,
     5.16,    0.00)  DC
          10TH HIGHEST VALUE IS       0.16431 AT (  430424.74,  5202865.93,     6.02,
     6.02,    0.00)  DC

 T_P1      1ST HIGHEST VALUE IS       1.23784 AT (  430196.73,  5203116.20,     4.25,
    92.43,    0.00)  DC
           2ND HIGHEST VALUE IS       1.15522 AT (  430188.78,  5203115.00,     4.70,
    92.43,    0.00)  DC
           3RD HIGHEST VALUE IS       1.13642 AT (  430196.09,  5203103.80,     4.32,
    92.43,    0.00)  DC
           4TH HIGHEST VALUE IS       1.10912 AT (  430188.78,  5203102.50,     4.73,
    92.43,    0.00)  DC
           5TH HIGHEST VALUE IS       1.06487 AT (  430190.34,  5202928.38,     4.63,
     5.40,    0.00)  DC
           6TH HIGHEST VALUE IS       1.06439 AT (  430188.78,  5202928.50,     4.81,
     5.40,    0.00)  DC
           7TH HIGHEST VALUE IS       1.04465 AT (  430424.74,  5202865.93,     6.02,
     6.02,    0.00)  DC
           8TH HIGHEST VALUE IS       1.04202 AT (  430401.24,  5202869.68,     5.67,
     5.67,    0.00)  DC
           9TH HIGHEST VALUE IS       1.02040 AT (  430188.78,  5203127.50,     4.71,
    92.43,    0.00)  DC
          10TH HIGHEST VALUE IS       1.01500 AT (  430195.44,  5203091.41,     4.39,
    92.43,    0.00)  DC

 T_P1EX    1ST HIGHEST VALUE IS       0.97541 AT (  430210.43,  5203290.86,     4.37,
    92.43,    0.00)  DC
           2ND HIGHEST VALUE IS       0.88032 AT (  430201.22,  5203289.00,     3.87,
    92.43,    0.00)  DC
           3RD HIGHEST VALUE IS       0.83009 AT (  430204.83,  5203219.25,     4.33,
    92.43,    0.00)  DC
           4TH HIGHEST VALUE IS       0.82776 AT (  430204.93,  5203229.55,     4.37,
    92.43,    0.00)  DC
           5TH HIGHEST VALUE IS       0.79792 AT (  430201.22,  5203227.00,     4.18,
    92.43,    0.00)  DC
           6TH HIGHEST VALUE IS       0.79226 AT (  430188.78,  5203289.00,     5.02,
    92.43,    0.00)  DC
           7TH HIGHEST VALUE IS       0.77996 AT (  430204.73,  5203208.95,     4.43,
    92.43,    0.00)  DC
           8TH HIGHEST VALUE IS       0.77204 AT (  430201.22,  5203214.50,     4.09,
    92.43,    0.00)  DC
           9TH HIGHEST VALUE IS       0.76818 AT (  430205.03,  5203239.85,     4.31,
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92.43,   0.00) DC
        10TH HIGHEST VALUE IS   0.76746 AT (430201.22, 5203301.50,   3.49,
   92.43,   0.00) DC
↑ *** AERMOD - VERSION 22112 ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION 22112 ***   ***
                       ***   04:30:18

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 *** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM   1ST-HIGHEST 24-HR RESULTS AVERAGED OVER   5 YEARS ***

** CONC OF PM-2.5   IN MICROGRAMS/M**3 **

NETWORK
GROUP ID   AVERAGE CONC   RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
- -

T_P2   1ST HIGHEST VALUE IS   0.68451 AT (430194.80, 5203079.01,   4.42,
   92.43,   0.00) DC
          2ND HIGHEST VALUE IS   0.64230 AT (430188.78, 5203077.50,   4.73,
   92.43,   0.00) DC
          3RD HIGHEST VALUE IS   0.62125 AT (430194.16, 5203066.62,   4.29,
   92.43,   0.00) DC
          4TH HIGHEST VALUE IS   0.61060 AT (430188.78, 5203065.00,   4.67,
   92.43,   0.00) DC
          5TH HIGHEST VALUE IS   0.59962 AT (430188.78, 5203090.00,   4.72,
   92.43,   0.00) DC
          6TH HIGHEST VALUE IS   0.58675 AT (430188.78, 5202928.50,   4.81,
    5.40,   0.00) DC
          7TH HIGHEST VALUE IS   0.58641 AT (430190.34, 5202928.38,   4.63,
    5.40,   0.00) DC
          8TH HIGHEST VALUE IS   0.57568 AT (430195.44, 5203091.41,   4.39,
   92.43,   0.00) DC
          9TH HIGHEST VALUE IS   0.57421 AT (430424.74, 5202865.93,   6.02,
    6.02,   0.00) DC
         10TH HIGHEST VALUE IS   0.57408 AT (430401.24, 5202869.68,   5.67,
    5.67,   0.00) DC

T_P2EX   1ST HIGHEST VALUE IS   0.51287 AT (430210.43, 5203290.86,   4.37,
   92.43,   0.00) DC
          2ND HIGHEST VALUE IS   0.49558 AT (430201.22, 5203289.00,   3.87,

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   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.45404 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.45323 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.44920 AT (  430188.78,  5203301.50,     5.13,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.44741 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.43688 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.42705 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.42247 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.42223 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC

T_P3      1ST HIGHEST VALUE IS       0.66016 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.64062 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.59308 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.58475 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.57634 AT (  430176.34,  5203003.00,     5.28,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.54581 AT (  430176.34,  5202990.50,     5.33,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.50462 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.49290 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.49098 AT (  430176.34,  5202978.00,     5.39,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.48422 AT (  430163.91,  5203003.00,     4.99,
   92.43,    0.00)  DC

T_P3EX    1ST HIGHEST VALUE IS       0.40509 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.37244 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.36127 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.36097 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.34775 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.33965 AT (  430204.73,  5203208.95,     4.43,
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   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.33736 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.33598 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.33558 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.32415 AT (  430188.78,  5203214.50,     4.72,
   92.43,    0.00)  DC
 *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  11
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                    *** THE SUMMARY OF MAXIMUM   1ST-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                             ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

T_PEX     1ST HIGHEST VALUE IS       0.66255 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.59648 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.52093 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.52059 AT (  430201.22,  5203301.50,     3.49,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.49992 AT (  430210.13,  5203302.26,     3.15,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.49831 AT (  430188.78,  5203301.50,     5.13,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.47682 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.44793 AT (  430176.34,  5203289.00,     4.43,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.44015 AT (  430176.34,  5203301.50,     4.99,
   92.43,    0.00)  DC
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         10TH HIGHEST VALUE IS       0.42396 AT (  430201.22,  5203276.50,     3.94,
   92.43,    0.00)  DC

ALL       1ST HIGHEST VALUE IS      14.86394 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS      14.66255 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS      14.56175 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS      14.53223 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS      14.39953 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS      14.25461 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS      14.22765 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS      14.22415 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS      14.17366 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS      14.10201 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  12
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   6TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

EG        1ST HIGHEST VALUE IS       0.06797 AT (  430188.78,  5202903.50,     4.79,
    4.79,    0.00)  DC
          2ND HIGHEST VALUE IS       0.06778 AT (  430190.23,  5202903.93,     4.63,
    4.63,    0.00)  DC
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         3RD HIGHEST VALUE IS       0.06746 AT (  430188.78,  5202928.50,     4.81,
   5.40,    0.00)  DC
         4TH HIGHEST VALUE IS       0.06733 AT (  430190.34,  5202928.38,     4.63,
   5.40,    0.00)  DC
         5TH HIGHEST VALUE IS       0.06684 AT (  430188.78,  5202916.00,     4.78,
   4.78,    0.00)  DC
         6TH HIGHEST VALUE IS       0.06681 AT (  430176.34,  5202903.50,     5.56,
   5.56,    0.00)  DC
         7TH HIGHEST VALUE IS       0.06675 AT (  430190.29,  5202916.15,     4.59,
   5.41,    0.00)  DC
         8TH HIGHEST VALUE IS       0.06627 AT (  430176.34,  5202928.50,     5.54,
   5.54,    0.00)  DC
         9TH HIGHEST VALUE IS       0.06599 AT (  430206.98,  5202890.68,     5.02,
   5.02,    0.00)  DC
        10TH HIGHEST VALUE IS       0.06581 AT (  430198.73,  5202890.43,     4.91,
   4.91,    0.00)  DC

EP01     1ST HIGHEST VALUE IS       1.06734 AT (  430176.34,  5203065.00,     5.11,
  92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       1.06734 AT (  430114.19,  5203065.00,     4.73,
  92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       1.06729 AT (  430126.63,  5203065.00,     4.72,
  92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       1.06552 AT (  430151.50,  5203065.00,     4.78,
  92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       1.06130 AT (  430101.75,  5203065.00,     4.74,
  92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       1.06125 AT (  430163.91,  5203065.00,     4.66,
  92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       1.06091 AT (  430089.31,  5203065.00,     4.94,
  92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       1.05917 AT (  430139.06,  5203065.00,     4.66,
  92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       1.05186 AT (  430076.91,  5203065.00,     5.05,
  92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       1.04810 AT (  430176.34,  5203077.50,     5.06,
  92.43,    0.00)  DC

EP02     1ST HIGHEST VALUE IS       0.48861 AT (  430188.78,  5203040.50,     4.68,
  92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       0.48635 AT (  430176.34,  5203040.50,     5.19,
  92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.48510 AT (  430192.87,  5203041.83,     4.23,
  92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.46779 AT (  430163.91,  5203040.50,     4.76,
  92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.45622 AT (  430151.50,  5203040.50,     4.81,
  92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.45555 AT (  430188.78,  5203053.00,     4.70,
  92.43,    0.00)  DC
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          7TH HIGHEST VALUE IS       0.45159 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.45025 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.44955 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.44684 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC

EP03      1ST HIGHEST VALUE IS       0.49040 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.48791 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.48364 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.46461 AT (  430163.91,  5203040.50,     4.76,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.45803 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.45627 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.45479 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.45449 AT (  430151.50,  5203040.50,     4.81,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.45339 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.45284 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
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                           *** THE SUMMARY OF MAXIMUM   6TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
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                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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- - - - - - - - - - - - - - - - - -

EP04      1ST HIGHEST VALUE IS       3.99114 AT (  430413.00,  5203787.50,    72.04,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       3.91311 AT (  430487.69,  5203812.50,    72.07,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       3.90998 AT (  430528.06,  5203862.50,    71.41,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       3.88258 AT (  430388.09,  5203762.50,    64.80,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       3.82398 AT (  430437.91,  5203787.50,    65.49,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       3.74472 AT (  430478.81,  5203862.50,    68.62,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       3.60920 AT (  430577.28,  5203912.50,    72.20,
   91.58,    0.00)  DC
          8TH HIGHEST VALUE IS       3.50547 AT (  430462.78,  5203812.50,    77.60,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       3.50366 AT (  430512.56,  5203812.50,    62.27,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       3.49780 AT (  430626.53,  5203862.50,    65.38,
   92.43,    0.00)  DC

EP05      1ST HIGHEST VALUE IS       0.16351 AT (  430675.64,  5202899.18,     5.44,
    5.44,    0.00)  DC
          2ND HIGHEST VALUE IS       0.16152 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.16028 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.15792 AT (  430682.76,  5202907.93,     5.36,
    5.36,    0.00)  DC
          5TH HIGHEST VALUE IS       0.15735 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.15723 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.15658 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.15623 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.15600 AT (  430686.09,  5202903.50,     5.38,
    5.38,    0.00)  DC
         10TH HIGHEST VALUE IS       0.15547 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC

EP06      1ST HIGHEST VALUE IS       0.16042 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.15764 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.15546 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
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          4TH HIGHEST VALUE IS       0.15512 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.15419 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.15372 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.15359 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.15178 AT (  430176.34,  5203003.00,     5.28,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.14946 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.14938 AT (  430176.34,  5203015.50,     5.23,
   92.43,    0.00)  DC

EP08      1ST HIGHEST VALUE IS       1.69801 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.68553 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.68402 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.67445 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.67371 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.66700 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.65970 AT (  430176.34,  5203077.50,     5.06,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.64781 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.64744 AT (  430176.34,  5203065.00,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.64322 AT (  430195.44,  5203091.41,     4.39,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  14
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   6TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
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                        NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

EP09      1ST HIGHEST VALUE IS       0.31036 AT (  430744.02,  5203016.94,     5.14,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.30831 AT (  430738.77,  5203027.94,     5.10,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.30110 AT (  430748.25,  5203015.50,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.29219 AT (  430749.27,  5203005.94,     5.13,
    5.13,    0.00)  DC
          5TH HIGHEST VALUE IS       0.28950 AT (  430731.77,  5203037.94,     5.11,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.28449 AT (  430724.77,  5203047.94,     5.10,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.28025 AT (  430748.25,  5203028.00,     5.07,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.27944 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.27255 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.27249 AT (  430760.69,  5203015.50,     5.14,
   92.43,    0.00)  DC

EP10      1ST HIGHEST VALUE IS       1.76087 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.75282 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.68524 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.60033 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.58518 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.58356 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.56726 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.56000 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.53304 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.49625 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC
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EP11      1ST HIGHEST VALUE IS       1.53859 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.53367 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.52331 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.47921 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.45395 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.45140 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.44348 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.44311 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.38054 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.34417 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC

EP12      1ST HIGHEST VALUE IS       0.60608 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.59058 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.58440 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.57177 AT (  430724.77,  5203047.94,     5.10,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.56942 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.56287 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.55835 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.54969 AT (  430785.53,  5203053.00,     5.88,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.54655 AT (  430797.97,  5203053.00,     6.12,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.54635 AT (  430785.53,  5203065.00,     5.88,
   92.43,    0.00)  DC
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*** THE SUMMARY OF MAXIMUM 6TH-HIGHEST 24-HR RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM-2.5 IN MICROGRAMS/M**3 **

```
                              NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

EP13      1ST HIGHEST VALUE IS       1.77886 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.77776 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.76196 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.74250 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.65869 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.62549 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.60747 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.58820 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.57766 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.56507 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC

EP14      1ST HIGHEST VALUE IS       1.54374 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.53752 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.48782 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.48275 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.44650 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.43152 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.42472 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.40652 AT (  430723.38,  5203090.00,     5.16,
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   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       1.39554 AT (  430713.94,  5203138.94,     4.91,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       1.39523 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC

FEL_P1    1ST HIGHEST VALUE IS       2.44999 AT (  430196.73,  5203116.20,     4.25,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       2.42231 AT (  430197.37,  5203128.59,     4.30,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       2.36137 AT (  430188.78,  5203115.00,     4.70,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       2.33367 AT (  430196.09,  5203103.80,     4.32,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       2.33363 AT (  430188.78,  5203127.50,     4.71,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       2.27400 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       2.27293 AT (  430188.78,  5203102.50,     4.73,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       2.19827 AT (  430188.78,  5203140.00,     4.72,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       2.19031 AT (  430195.44,  5203091.41,     4.39,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       2.17725 AT (  430176.34,  5203115.00,     4.96,
   92.43,    0.00)  DC

FEL_P2    1ST HIGHEST VALUE IS       1.23851 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       1.23090 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       1.22935 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       1.22749 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       1.19900 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       1.19536 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       1.18365 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       1.17701 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       1.15984 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       1.14504 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
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*** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM 6TH-HIGHEST 24-HR RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM-2.5 IN MICROGRAMS/M**3 **

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                         NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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FEL_P3    1ST HIGHEST VALUE IS       0.97742 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.97295 AT (  430190.51,  5202965.05,     4.56,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.97291 AT (  430188.78,  5202965.50,     4.77,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.96791 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.96351 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.95586 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.92209 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.91951 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.90743 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
         10TH HIGHEST VALUE IS       0.90405 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC

LOAD_P    1ST HIGHEST VALUE IS       0.01907 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.01888 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.01873 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.01872 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.01870 AT (  430192.87,  5203041.83,     4.23,
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   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.01865 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.01865 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.01857 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.01849 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.01844 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC

PILE1     1ST HIGHEST VALUE IS       3.16795 AT (  430198.66,  5203153.38,     4.42,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       3.15345 AT (  430199.30,  5203165.77,     4.48,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       2.95869 AT (  430188.78,  5203152.00,     4.73,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       2.93558 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       2.91643 AT (  430188.78,  5203164.50,     4.71,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       2.86593 AT (  430199.94,  5203178.16,     4.29,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       2.81279 AT (  430188.78,  5203140.00,     4.72,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       2.71871 AT (  430197.37,  5203128.59,     4.30,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       2.71301 AT (  430188.78,  5203177.00,     4.70,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       2.64380 AT (  430176.34,  5203152.00,     4.84,
   92.43,    0.00)  DC

PILE2     1ST HIGHEST VALUE IS       3.85074 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       3.84552 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       3.77311 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       3.63030 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       3.57921 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       3.57298 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       3.54761 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       3.42966 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       3.31962 AT (  430188.78,  5203003.00,     4.68,
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   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       3.30417 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  17
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   6TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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PILE3     1ST HIGHEST VALUE IS       3.61292 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          2ND HIGHEST VALUE IS       3.61185 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       3.58217 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          4TH HIGHEST VALUE IS       3.53383 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       3.34159 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
          6TH HIGHEST VALUE IS       3.33512 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          7TH HIGHEST VALUE IS       3.26171 AT (  430176.34,  5202941.00,     5.52,
    5.52,    0.00)  DC
          8TH HIGHEST VALUE IS       3.16267 AT (  430176.34,  5202953.50,     5.50,
    5.50,    0.00)  DC
          9TH HIGHEST VALUE IS       3.14166 AT (  430176.34,  5202928.50,     5.54,
    5.54,    0.00)  DC
         10TH HIGHEST VALUE IS       3.14072 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC

T_P       1ST HIGHEST VALUE IS       0.16726 AT (  430401.24,  5202869.68,     5.67,
    5.67,    0.00)  DC
          2ND HIGHEST VALUE IS       0.16039 AT (  430400.13,  5202866.50,     5.93,
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     5.93,    0.00)  DC
            3RD HIGHEST VALUE IS       0.14725 AT (  430389.49,  5202871.55,     5.49,
     5.49,    0.00)  DC
            4TH HIGHEST VALUE IS       0.14015 AT (  430387.69,  5202866.50,     5.92,
     5.92,    0.00)  DC
            5TH HIGHEST VALUE IS       0.12992 AT (  430377.74,  5202873.43,     5.40,
     5.40,    0.00)  DC
            6TH HIGHEST VALUE IS       0.12555 AT (  430371.74,  5202875.68,     5.23,
     5.23,    0.00)  DC
            7TH HIGHEST VALUE IS       0.12475 AT (  430424.74,  5202865.93,     6.02,
     6.02,    0.00)  DC
            8TH HIGHEST VALUE IS       0.12196 AT (  430375.28,  5202866.50,     5.91,
     5.91,    0.00)  DC
            9TH HIGHEST VALUE IS       0.12168 AT (  430412.99,  5202867.80,     5.95,
     5.95,    0.00)  DC
           10TH HIGHEST VALUE IS       0.12156 AT (  430365.74,  5202877.93,     5.16,
     5.16,    0.00)  DC

 T_P1       1ST HIGHEST VALUE IS       1.01630 AT (  430196.73,  5203116.20,     4.25,
    92.43,    0.00)  DC
            2ND HIGHEST VALUE IS       0.93113 AT (  430188.78,  5203115.00,     4.70,
    92.43,    0.00)  DC
            3RD HIGHEST VALUE IS       0.90403 AT (  430196.09,  5203103.80,     4.32,
    92.43,    0.00)  DC
            4TH HIGHEST VALUE IS       0.85436 AT (  430188.78,  5203102.50,     4.73,
    92.43,    0.00)  DC
            5TH HIGHEST VALUE IS       0.79359 AT (  430195.44,  5203091.41,     4.39,
    92.43,    0.00)  DC
            6TH HIGHEST VALUE IS       0.77001 AT (  430188.78,  5203090.00,     4.72,
    92.43,    0.00)  DC
            7TH HIGHEST VALUE IS       0.76434 AT (  430188.78,  5202928.50,     4.81,
     5.40,    0.00)  DC
            8TH HIGHEST VALUE IS       0.76384 AT (  430190.34,  5202928.38,     4.63,
     5.40,    0.00)  DC
            9TH HIGHEST VALUE IS       0.75206 AT (  430401.24,  5202869.68,     5.67,
     5.67,    0.00)  DC
           10TH HIGHEST VALUE IS       0.75168 AT (  430176.34,  5203115.00,     4.96,
    92.43,    0.00)  DC

 T_P1EX     1ST HIGHEST VALUE IS       0.70418 AT (  430210.43,  5203290.86,     4.37,
    92.43,    0.00)  DC
            2ND HIGHEST VALUE IS       0.67551 AT (  430201.22,  5203289.00,     3.87,
    92.43,    0.00)  DC
            3RD HIGHEST VALUE IS       0.65252 AT (  430204.93,  5203229.55,     4.37,
    92.43,    0.00)  DC
            4TH HIGHEST VALUE IS       0.64308 AT (  430204.83,  5203219.25,     4.33,
    92.43,    0.00)  DC
            5TH HIGHEST VALUE IS       0.63001 AT (  430205.03,  5203239.85,     4.31,
    92.43,    0.00)  DC
            6TH HIGHEST VALUE IS       0.61654 AT (  430204.73,  5203208.95,     4.43,
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   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.61311 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.60628 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.59972 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.59521 AT (  430201.22,  5203239.50,     4.05,
   92.43,    0.00)  DC
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                           *** THE SUMMARY OF MAXIMUM   6TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                         NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

T_P2      1ST HIGHEST VALUE IS       0.55610 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.51687 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.49097 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.47032 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.43766 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.43573 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.42725 AT (  430176.34,  5203077.50,     5.06,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.42377 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          9TH HIGHEST VALUE IS       0.42351 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
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         10TH HIGHEST VALUE IS       0.42002 AT (  430188.78,  5203090.00,     4.72,
   92.43,    0.00)  DC

T_P2EX    1ST HIGHEST VALUE IS       0.38944 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.36891 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.35873 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.35580 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.34674 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.34196 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.33872 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.33678 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.33316 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.32969 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC

T_P3      1ST HIGHEST VALUE IS       0.47785 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.46572 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.45852 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.43296 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.42738 AT (  430176.34,  5202990.50,     5.33,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.42593 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.41490 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.39863 AT (  430176.34,  5202978.00,     5.39,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.37901 AT (  430176.34,  5203003.00,     5.28,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.36919 AT (  430188.78,  5202965.50,     4.77,
   92.43,    0.00)  DC

T_P3EX    1ST HIGHEST VALUE IS       0.29189 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.28768 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.28475 AT (  430204.83,  5203219.25,     4.33,
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   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.28288 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.27495 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.27163 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.27039 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.26687 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.26595 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.26008 AT (  430201.22,  5203239.50,     4.05,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  19
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   6TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - 

T_PEX     1ST HIGHEST VALUE IS       0.48255 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.45885 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.39380 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.38294 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.34207 AT (  430201.22,  5203276.50,     3.94,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.33165 AT (  430201.22,  5203301.50,     3.49,
   92.43,    0.00)  DC
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         7TH HIGHEST VALUE IS       0.32654 AT (  430210.13,  5203302.26,     3.15,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.31739 AT (  430188.78,  5203276.50,     4.92,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.31620 AT (  430188.78,  5203301.50,     5.13,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.31321 AT (  430176.34,  5203289.00,     4.43,
   92.43,    0.00)  DC

ALL      1ST HIGHEST VALUE IS      12.14241 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS      12.08975 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS      12.07017 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS      11.94006 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS      11.87274 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS      11.73906 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS      11.69480 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS      11.65013 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS      11.57526 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS      11.45520 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
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                           *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***

                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
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                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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- - - - - - - - - - - - - - - - - -

EG        1ST HIGHEST VALUE IS       0.06385 AT (  430188.78,  5202903.50,     4.79,
    4.79,    0.00)  DC
          2ND HIGHEST VALUE IS       0.06378 AT (  430176.34,  5202916.00,     5.53,
    5.53,    0.00)  DC
          3RD HIGHEST VALUE IS       0.06369 AT (  430190.23,  5202903.93,     4.63,
    4.63,    0.00)  DC
          4TH HIGHEST VALUE IS       0.06364 AT (  430176.34,  5202903.50,     5.56,
    5.56,    0.00)  DC
          5TH HIGHEST VALUE IS       0.06363 AT (  430206.98,  5202890.68,     5.02,
    5.02,    0.00)  DC
          6TH HIGHEST VALUE IS       0.06331 AT (  430215.23,  5202890.93,     5.02,
    5.02,    0.00)  DC
          7TH HIGHEST VALUE IS       0.06320 AT (  430188.78,  5202916.00,     4.78,
    4.78,    0.00)  DC
          8TH HIGHEST VALUE IS       0.06315 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC
          9TH HIGHEST VALUE IS       0.06301 AT (  430198.73,  5202890.43,     4.91,
    4.91,    0.00)  DC
         10TH HIGHEST VALUE IS       0.06249 AT (  430191.23,  5202892.43,     4.68,
    4.68,    0.00)  DC

EP01      1ST HIGHEST VALUE IS       1.00715 AT (  430114.19,  5203077.50,     4.76,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.00357 AT (  430126.63,  5203077.50,     4.69,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.00066 AT (  430101.75,  5203077.50,     4.76,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.99931 AT (  430139.06,  5203077.50,     4.62,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.99566 AT (  430176.34,  5203077.50,     5.06,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.99395 AT (  430151.50,  5203077.50,     4.67,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.99324 AT (  430089.31,  5203077.50,     4.89,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.98676 AT (  430089.31,  5203065.00,     4.94,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.98604 AT (  430076.91,  5203065.00,     5.05,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.98596 AT (  430114.19,  5203065.00,     4.73,
   92.43,    0.00)  DC

EP02      1ST HIGHEST VALUE IS       0.45669 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.45628 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.45047 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
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          4TH HIGHEST VALUE IS       0.44095 AT (  430163.91,  5203040.50,     4.76,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.43225 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.43123 AT (  430151.50,  5203040.50,     4.81,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.42950 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.42907 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.42694 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.42668 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC

EP03      1ST HIGHEST VALUE IS       0.46201 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.45908 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.45532 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.44102 AT (  430163.91,  5203040.50,     4.76,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.43746 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.43332 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.43309 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.43273 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.42915 AT (  430176.34,  5203053.00,     5.12,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.42863 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  21
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
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                        NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

EP04      1ST HIGHEST VALUE IS       3.60596 AT (  430413.00,  5203787.50,    72.04,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       3.51651 AT (  430487.69,  5203812.50,    72.07,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       3.44995 AT (  430437.91,  5203787.50,    65.49,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       3.42927 AT (  430577.28,  5203912.50,    72.20,
   91.58,    0.00)  DC
          5TH HIGHEST VALUE IS       3.42487 AT (  430528.06,  5203862.50,    71.41,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       3.39539 AT (  430388.09,  5203762.50,    64.80,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       3.30974 AT (  430478.81,  5203862.50,    68.62,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       3.24354 AT (  430626.53,  5203862.50,    65.38,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       3.20779 AT (  430429.59,  5203862.50,    66.08,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       3.12562 AT (  430462.78,  5203812.50,    77.60,
   92.43,    0.00)  DC

EP05      1ST HIGHEST VALUE IS       0.14928 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.14866 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.14795 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.14606 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.14563 AT (  430675.64,  5202899.18,     5.44,
    5.44,    0.00)  DC
          6TH HIGHEST VALUE IS       0.14549 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.14525 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.14428 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.14394 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.14391 AT (  430176.34,  5203003.00,     5.28,
   92.43,    0.00)  DC
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EP06      1ST HIGHEST VALUE IS       0.14783 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.14763 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.14602 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.14452 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.14365 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.14351 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.14316 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.14300 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.14278 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.14275 AT (  430176.34,  5203003.00,     5.28,
   92.43,    0.00)  DC

EP08      1ST HIGHEST VALUE IS       1.60925 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.58956 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.58718 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.58701 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.58283 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.57950 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.57592 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.57034 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.56755 AT (  430176.34,  5203065.00,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.56368 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
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                           *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***

                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **

                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

EP09      1ST HIGHEST VALUE IS       0.30051 AT (  430744.02,  5203016.94,     5.14,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.29091 AT (  430738.77,  5203027.94,     5.10,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.29006 AT (  430748.25,  5203015.50,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.27881 AT (  430749.27,  5203005.94,     5.13,
    5.13,    0.00)  DC
          5TH HIGHEST VALUE IS       0.27168 AT (  430731.77,  5203037.94,     5.11,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.26617 AT (  430724.77,  5203047.94,     5.10,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.26579 AT (  430748.25,  5203028.00,     5.07,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.26252 AT (  430760.69,  5203015.50,     5.14,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.26217 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.25704 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC

EP10      1ST HIGHEST VALUE IS       1.71868 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.71557 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.64478 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.56359 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.54992 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.54827 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.51863 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.48405 AT (  430723.38,  5203102.50,     5.18,
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   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.46610 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.45963 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC

EP11      1ST HIGHEST VALUE IS       1.51417 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.50081 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.49223 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.44073 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.43405 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.41788 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.41075 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.40471 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.34814 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.31532 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC

EP12      1ST HIGHEST VALUE IS       0.58831 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.58132 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.56482 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.56128 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.55395 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.55004 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.53451 AT (  430724.77,  5203047.94,     5.10,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.53304 AT (  430797.97,  5203053.00,     6.12,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.53059 AT (  430785.53,  5203053.00,     5.88,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.52897 AT (  430785.53,  5203065.00,     5.88,
   92.43,    0.00)  DC
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*** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** THE SUMMARY OF MAXIMUM 8TH-HIGHEST 24-HR RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM-2.5 IN MICROGRAMS/M**3 **

```
                          NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

EP13      1ST HIGHEST VALUE IS       1.72239 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.71009 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.69055 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.66777 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.61029 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.55793 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.54975 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.54806 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.51129 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.50061 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC

EP14      1ST HIGHEST VALUE IS       1.48910 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.48774 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.44494 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.42829 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.41192 AT (  430723.38,  5203102.50,     5.18,
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   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.37980 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.37804 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.35201 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.32779 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.32078 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC

FEL_P1    1ST HIGHEST VALUE IS       2.30339 AT (  430197.37,  5203128.59,     4.30,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       2.28460 AT (  430196.73,  5203116.20,     4.25,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       2.21973 AT (  430188.78,  5203127.50,     4.71,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       2.20864 AT (  430188.78,  5203115.00,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       2.20714 AT (  430196.09,  5203103.80,     4.32,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       2.16934 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       2.14117 AT (  430188.78,  5203102.50,     4.73,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       2.11679 AT (  430195.44,  5203091.41,     4.39,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       2.09564 AT (  430188.78,  5203140.00,     4.72,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       2.06887 AT (  430188.78,  5203090.00,     4.72,
   92.43,    0.00)  DC

FEL_P2    1ST HIGHEST VALUE IS       1.17965 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.17095 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.16439 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.15240 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.13244 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.13096 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.11313 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.11145 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.09887 AT (  430188.78,  5203015.50,     4.70,
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   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       1.09837 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  24
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

FEL_P3    1ST HIGHEST VALUE IS       0.92351 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.92230 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.91903 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.91609 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.91121 AT (  430190.51,  5202965.05,     4.56,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.91028 AT (  430188.78,  5202965.50,     4.77,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.88502 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          8TH HIGHEST VALUE IS       0.88252 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          9TH HIGHEST VALUE IS       0.86753 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.85958 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC

LOAD_P    1ST HIGHEST VALUE IS       0.01785 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.01770 AT (  430713.87,  5203114.54,     4.99,
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   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.01766 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.01763 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.01759 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.01756 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.01755 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.01746 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.01743 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.01740 AT (  430195.44,  5203091.41,     4.39,
   92.43,    0.00)  DC

PILE1    1ST HIGHEST VALUE IS       3.01610 AT (  430198.66,  5203153.38,     4.42,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       2.94220 AT (  430199.30,  5203165.77,     4.48,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       2.84990 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       2.77988 AT (  430188.78,  5203152.00,     4.73,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       2.72652 AT (  430199.94,  5203178.16,     4.29,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       2.71787 AT (  430188.78,  5203140.00,     4.72,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       2.71455 AT (  430188.78,  5203164.50,     4.71,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       2.61844 AT (  430197.37,  5203128.59,     4.30,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       2.57490 AT (  430188.78,  5203177.00,     4.70,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       2.51565 AT (  430188.78,  5203127.50,     4.71,
   92.43,    0.00)  DC

PILE2    1ST HIGHEST VALUE IS       3.67291 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       3.66359 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       3.53450 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       3.45087 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       3.40786 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       3.40130 AT (  430188.78,  5203040.50,     4.68,
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   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       3.35828 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       3.29274 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       3.23393 AT (  430176.34,  5203015.50,     5.23,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       3.15753 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
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                           *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

PILE3     1ST HIGHEST VALUE IS       3.45502 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          2ND HIGHEST VALUE IS       3.43192 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          3RD HIGHEST VALUE IS       3.41337 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       3.32402 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       3.28358 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          6TH HIGHEST VALUE IS       3.27687 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
          7TH HIGHEST VALUE IS       3.11544 AT (  430176.34,  5202941.00,     5.52,
    5.52,    0.00)  DC
          8TH HIGHEST VALUE IS       3.04531 AT (  430176.34,  5202928.50,     5.54,
    5.54,    0.00)  DC
          9TH HIGHEST VALUE IS       2.98485 AT (  430188.78,  5202916.00,     4.78,
    4.78,    0.00)  DC
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        10TH HIGHEST VALUE IS       2.97654 AT (  430190.29,  5202916.15,     4.59,
     5.41,    0.00)  DC

T_P       1ST HIGHEST VALUE IS       0.16068 AT (  430401.24,  5202869.68,     5.67,
     5.67,    0.00)  DC
          2ND HIGHEST VALUE IS       0.15292 AT (  430400.13,  5202866.50,     5.93,
     5.93,    0.00)  DC
          3RD HIGHEST VALUE IS       0.13853 AT (  430389.49,  5202871.55,     5.49,
     5.49,    0.00)  DC
          4TH HIGHEST VALUE IS       0.13065 AT (  430387.69,  5202866.50,     5.92,
     5.92,    0.00)  DC
          5TH HIGHEST VALUE IS       0.12371 AT (  430377.74,  5202873.43,     5.40,
     5.40,    0.00)  DC
          6TH HIGHEST VALUE IS       0.12044 AT (  430424.74,  5202865.93,     6.02,
     6.02,    0.00)  DC
          7TH HIGHEST VALUE IS       0.11697 AT (  430371.74,  5202875.68,     5.23,
     5.23,    0.00)  DC
          8TH HIGHEST VALUE IS       0.11612 AT (  430365.74,  5202877.93,     5.16,
     5.16,    0.00)  DC
          9TH HIGHEST VALUE IS       0.11453 AT (  430375.28,  5202866.50,     5.91,
     5.91,    0.00)  DC
         10TH HIGHEST VALUE IS       0.10920 AT (  430412.99,  5202867.80,     5.95,
     5.95,    0.00)  DC

T_P1      1ST HIGHEST VALUE IS       0.97521 AT (  430196.73,  5203116.20,     4.25,
    92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.88528 AT (  430188.78,  5203115.00,     4.70,
    92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.86733 AT (  430196.09,  5203103.80,     4.32,
    92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.82917 AT (  430188.78,  5203102.50,     4.73,
    92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.77208 AT (  430195.44,  5203091.41,     4.39,
    92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.75323 AT (  430188.78,  5203090.00,     4.72,
    92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.73073 AT (  430176.34,  5203115.00,     4.96,
    92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.72912 AT (  430176.34,  5203102.50,     5.00,
    92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.72633 AT (  430190.29,  5202916.15,     4.59,
     5.41,    0.00)  DC
         10TH HIGHEST VALUE IS       0.72601 AT (  430188.78,  5202916.00,     4.78,
     4.78,    0.00)  DC

T_P1EX    1ST HIGHEST VALUE IS       0.67576 AT (  430210.43,  5203290.86,     4.37,
    92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.63449 AT (  430201.22,  5203289.00,     3.87,
    92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.62878 AT (  430204.93,  5203229.55,     4.37,
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   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.62223 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.59575 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.59547 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.59524 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.58040 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.57877 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.56342 AT (  430201.22,  5203239.50,     4.05,
   92.43,    0.00)  DC
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↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  26
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

T_P2      1ST HIGHEST VALUE IS       0.53300 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.49363 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.47175 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.45895 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.42307 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.41925 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
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          7TH HIGHEST VALUE IS       0.40773 AT (  430176.34,  5203077.50,     5.06,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.40762 AT (  430176.34,  5203065.00,     5.11,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.40142 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC
         10TH HIGHEST VALUE IS       0.40050 AT (  430188.78,  5202916.00,     4.78,
    4.78,    0.00)  DC

T_P2EX    1ST HIGHEST VALUE IS       0.37290 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.34898 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.34722 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.34205 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.33003 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.32926 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.32905 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.32502 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.32078 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.31387 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC

T_P3      1ST HIGHEST VALUE IS       0.46361 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.45580 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.43497 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.41352 AT (  430176.34,  5202990.50,     5.33,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.41294 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.39732 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.39113 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.37948 AT (  430176.34,  5202978.00,     5.39,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.35982 AT (  430176.34,  5203003.00,     5.28,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.34952 AT (  430188.78,  5202965.50,     4.77,
   92.43,    0.00)  DC
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T_P3EX    1ST HIGHEST VALUE IS       0.27880 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.27443 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.27091 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.26528 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.26407 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.26396 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.26231 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.25383 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.25371 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.24931 AT (  430201.22,  5203239.50,     4.05,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/14/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        04:30:18

                                  PAGE  27
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                           *** THE SUMMARY OF MAXIMUM   8TH-HIGHEST 24-HR RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - 

T_PEX     1ST HIGHEST VALUE IS       0.45123 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.43622 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.37705 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
```

```
         4TH HIGHEST VALUE IS       0.35457 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.32510 AT (  430201.22,  5203276.50,     3.94,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.30917 AT (  430201.22,  5203301.50,     3.49,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.30380 AT (  430210.13,  5203302.26,     3.15,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.30081 AT (  430188.78,  5203276.50,     4.92,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.29621 AT (  430176.34,  5203289.00,     4.43,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.29520 AT (  430188.78,  5203301.50,     5.13,
   92.43,    0.00)  DC

ALL       1ST HIGHEST VALUE IS      11.58601 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS      11.53046 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS      11.45455 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS      11.35663 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS      11.35518 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS      11.25114 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS      11.22254 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS      11.19461 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS      11.14072 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS      11.12400 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

```
*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of           22 Warning Message(s)
A Total of          758 Informational Message(s)

A Total of        43824 Hours Were Processed

A Total of          398 Calm Hours Identified

A Total of          360 Missing Hours Identified (  0.82 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320    1503        PPARM: Input Parameter May Be Out-of-Range for Parameter
      VS
ME W187   13687       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET

OU W565   13768       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13769       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13770       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13771       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13772       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13773       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13774       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13775       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13776       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13777       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13778       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13779       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
OU W565   13780       OUPLOT: Possible Conflict With Dynamically Allocated FUNIT
PLOTFILE
```

OU W565   13781   OUPLOT: Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
OU W565   13782   OUPLOT: Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
OU W565   13783   OUPLOT: Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
OU W565   13784   OUPLOT: Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
OU W565   13785   OUPLOT: Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
OU W565   13786   OUPLOT: Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
OU W565   13787   OUPLOT: Possible Conflict With Dynamically Allocated FUNIT PLOTFILE

```
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/12/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       17:53:29

                                  PAGE   1
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses RURAL Dispersion Only.
      * Option for Capped & Horiz Stacks Selected With:
          0 Capped Stack(s); and         3 Horizontal Stack(s)
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: PM-2.5

 **Note that special processing requirements apply for the 24-hour PM2.5 NAAQS -
check available guidance.
   Model will process user-specified ranks of high 24-hour values averaged across
the number of years modeled, and
   the multi-year average of individual ANNUAL values, averaged across the number of
years modeled.

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:    652 Source(s);      30 Source Group(s); and   11358
Receptor(s)

                with:     14 POINT(s), including
                           0 POINTCAP(s) and      3 POINTHOR(s)
                 and:    635 VOLUME source(s)
```

```
                 and:      3 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:      0 SWPOINT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                               ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =     20.1 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_PM2P5_ANNUAL.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_PM2P5_ANNUAL.SUM
```



```
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*
```

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** MODELOPTs: CONC ELEV RURAL ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: KHQM.5Y.SFC
Met Version: 22112
Profile file: KHQM.5Y.PFL

Surface format: FREE

Profile format: FREE

```
   Surface station no.:    94225                 Upper air station no.:    72797
                 Name: BOWERMAN_AIRPORT                            Name: QUILLAYUTE

                 Year:   2018                                      Year:   2018

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
1.00    5.89   66.   10.0  276.4    2.0
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
```

```
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/12/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:53:29

                                  PAGE   4
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **


                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

EG        1ST HIGHEST VALUE IS       0.00363 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          2ND HIGHEST VALUE IS       0.00363 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
          3RD HIGHEST VALUE IS       0.00361 AT (  430188.78,  5202916.00,     4.78,
    4.78,    0.00)  DC
          4TH HIGHEST VALUE IS       0.00360 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC
          5TH HIGHEST VALUE IS       0.00359 AT (  430176.34,  5202916.00,     5.53,
    5.53,    0.00)  DC
          6TH HIGHEST VALUE IS       0.00358 AT (  430190.40,  5202940.60,     4.77,
```

```
     5.44,     0.00)  DC
           7TH HIGHEST VALUE IS       0.00358 AT (  430188.78,  5202941.00,     4.95,
     4.95,     0.00)  DC
           8TH HIGHEST VALUE IS       0.00358 AT (  430176.34,  5202928.50,     5.54,
     5.54,     0.00)  DC
           9TH HIGHEST VALUE IS       0.00354 AT (  430176.34,  5202903.50,     5.56,
     5.56,     0.00)  DC
          10TH HIGHEST VALUE IS       0.00353 AT (  430188.78,  5202903.50,     4.79,
     4.79,     0.00)  DC

 EP01      1ST HIGHEST VALUE IS       0.21642 AT (  430151.50,  5203065.00,     4.78,
    92.43,     0.00)  DC
           2ND HIGHEST VALUE IS       0.21586 AT (  430176.34,  5203065.00,     5.11,
    92.43,     0.00)  DC
           3RD HIGHEST VALUE IS       0.21558 AT (  430139.06,  5203065.00,     4.66,
    92.43,     0.00)  DC
           4TH HIGHEST VALUE IS       0.21535 AT (  430126.63,  5203065.00,     4.72,
    92.43,     0.00)  DC
           5TH HIGHEST VALUE IS       0.21491 AT (  430139.06,  5203053.00,     4.68,
    92.43,     0.00)  DC
           6TH HIGHEST VALUE IS       0.21488 AT (  430151.50,  5203053.00,     4.76,
    92.43,     0.00)  DC
           7TH HIGHEST VALUE IS       0.21487 AT (  430126.63,  5203053.00,     4.71,
    92.43,     0.00)  DC
           8TH HIGHEST VALUE IS       0.21424 AT (  430114.19,  5203053.00,     4.77,
    92.43,     0.00)  DC
           9TH HIGHEST VALUE IS       0.21417 AT (  430163.91,  5203065.00,     4.66,
    92.43,     0.00)  DC
          10TH HIGHEST VALUE IS       0.21400 AT (  430114.19,  5203065.00,     4.73,
    92.43,     0.00)  DC

 EP02      1ST HIGHEST VALUE IS       0.10180 AT (  430188.78,  5203028.00,     4.70,
    92.43,     0.00)  DC
           2ND HIGHEST VALUE IS       0.10158 AT (  430188.78,  5203015.50,     4.70,
    92.43,     0.00)  DC
           3RD HIGHEST VALUE IS       0.10135 AT (  430191.48,  5203021.69,     4.36,
    92.43,     0.00)  DC
           4TH HIGHEST VALUE IS       0.10107 AT (  430192.23,  5203029.44,     4.28,
    92.43,     0.00)  DC
           5TH HIGHEST VALUE IS       0.10098 AT (  430190.73,  5203013.94,     4.44,
    92.43,     0.00)  DC
           6TH HIGHEST VALUE IS       0.10067 AT (  430176.34,  5203015.50,     5.23,
    92.43,     0.00)  DC
           7TH HIGHEST VALUE IS       0.10057 AT (  430176.34,  5203028.00,     5.19,
    92.43,     0.00)  DC
           8TH HIGHEST VALUE IS       0.09974 AT (  430188.78,  5203040.50,     4.68,
    92.43,     0.00)  DC
           9TH HIGHEST VALUE IS       0.09968 AT (  430188.78,  5203003.00,     4.68,
    92.43,     0.00)  DC
          10TH HIGHEST VALUE IS       0.09936 AT (  430176.34,  5203003.00,     5.28,
```

```
   92.43,    0.00)  DC

EP03      1ST HIGHEST VALUE IS       0.10258 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.10252 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.10233 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.10203 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.10199 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.10122 AT (  430176.34,  5203015.50,     5.23,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.10099 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.10081 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.10041 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.10009 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
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                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - 

EP04      1ST HIGHEST VALUE IS       0.42774 AT (  430797.97,  5203015.50,     6.01,
    6.01,    0.00)  DC
          2ND HIGHEST VALUE IS       0.42577 AT (  430847.69,  5203003.00,     5.45,
    5.45,    0.00)  DC
          3RD HIGHEST VALUE IS       0.42577 AT (  430822.84,  5203040.50,     5.93,
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     7.90,    0.00)  DC
           4TH HIGHEST VALUE IS       0.42557 AT (  430835.28,  5202990.50,     5.59,
     6.29,    0.00)  DC
           5TH HIGHEST VALUE IS       0.42503 AT (  430810.41,  5203040.50,     6.01,
     7.15,    0.00)  DC
           6TH HIGHEST VALUE IS       0.42501 AT (  430835.28,  5203003.00,     5.28,
     6.29,    0.00)  DC
           7TH HIGHEST VALUE IS       0.42433 AT (  430810.41,  5203028.00,     5.56,
     5.56,    0.00)  DC
           8TH HIGHEST VALUE IS       0.42420 AT (  430822.84,  5203003.00,     5.23,
     5.23,    0.00)  DC
           9TH HIGHEST VALUE IS       0.42401 AT (  430847.69,  5202990.50,     5.48,
     5.48,    0.00)  DC
          10TH HIGHEST VALUE IS       0.42274 AT (  430835.28,  5203015.50,     4.98,
     4.98,    0.00)  DC

 EP05      1ST HIGHEST VALUE IS       0.03179 AT (  430190.45,  5202952.82,     5.21,
    92.43,    0.00)  DC
           2ND HIGHEST VALUE IS       0.03177 AT (  430190.51,  5202965.05,     4.56,
    92.43,    0.00)  DC
           3RD HIGHEST VALUE IS       0.03172 AT (  430188.78,  5202965.50,     4.77,
    92.43,    0.00)  DC
           4TH HIGHEST VALUE IS       0.03166 AT (  430188.78,  5202953.50,     5.22,
    92.43,    0.00)  DC
           5TH HIGHEST VALUE IS       0.03116 AT (  430190.56,  5202977.27,     4.52,
    92.43,    0.00)  DC
           6TH HIGHEST VALUE IS       0.03107 AT (  430188.78,  5202978.00,     4.73,
    92.43,    0.00)  DC
           7TH HIGHEST VALUE IS       0.03045 AT (  430190.62,  5202989.49,     4.43,
    92.43,    0.00)  DC
           8TH HIGHEST VALUE IS       0.03045 AT (  430744.02,  5203016.94,     5.14,
    92.43,    0.00)  DC
           9TH HIGHEST VALUE IS       0.03040 AT (  430188.78,  5202990.50,     4.68,
    92.43,    0.00)  DC
          10TH HIGHEST VALUE IS       0.03029 AT (  430176.34,  5202965.50,     5.47,
    92.43,    0.00)  DC

 EP06      1ST HIGHEST VALUE IS       0.03175 AT (  430744.02,  5203016.94,     5.14,
    92.43,    0.00)  DC
           2ND HIGHEST VALUE IS       0.03151 AT (  430190.45,  5202952.82,     5.21,
    92.43,    0.00)  DC
           3RD HIGHEST VALUE IS       0.03149 AT (  430190.51,  5202965.05,     4.56,
    92.43,    0.00)  DC
           4TH HIGHEST VALUE IS       0.03145 AT (  430738.77,  5203027.94,     5.10,
    92.43,    0.00)  DC
           5TH HIGHEST VALUE IS       0.03142 AT (  430188.78,  5202965.50,     4.77,
    92.43,    0.00)  DC
           6TH HIGHEST VALUE IS       0.03139 AT (  430188.78,  5202953.50,     5.22,
    92.43,    0.00)  DC
           7TH HIGHEST VALUE IS       0.03089 AT (  430190.56,  5202977.27,     4.52,
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   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.03077 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.03067 AT (  430731.77,  5203037.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.03064 AT (  430748.25,  5203015.50,     5.09,
   92.43,    0.00)  DC

EP08      1ST HIGHEST VALUE IS       0.36335 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.36265 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.36102 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.36005 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.35982 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.35935 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.35894 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.35539 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.35520 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.35509 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
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                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **


                         NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -
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EP09      1ST HIGHEST VALUE IS       0.08146 AT (  430738.77,  5203027.94,     5.10,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.08014 AT (  430744.02,  5203016.94,     5.14,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.07781 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.07719 AT (  430724.77,  5203047.94,     5.10,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.07687 AT (  430731.77,  5203037.94,     5.11,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.07653 AT (  430748.25,  5203015.50,     5.09,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.07423 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.07328 AT (  430748.25,  5203028.00,     5.07,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.07323 AT (  430749.27,  5203005.94,     5.13,
    5.13,    0.00)  DC
         10TH HIGHEST VALUE IS       0.07036 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC

EP10      1ST HIGHEST VALUE IS       0.54223 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.53957 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.52506 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.51808 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.49273 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.48830 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.48392 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.47910 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.44749 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.43743 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC

EP11      1ST HIGHEST VALUE IS       0.50769 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.49401 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.49028 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.47019 AT (  430715.77,  5203067.94,     5.15,
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   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.46451 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.46400 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.46154 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.45195 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.42104 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.40409 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC

EP12     1ST HIGHEST VALUE IS       0.18203 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       0.18060 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.18006 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.17437 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.17122 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.16673 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.16607 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.16435 AT (  430723.38,  5203065.00,     5.01,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.16369 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.15135 AT (  430723.38,  5203053.00,     5.09,
   92.43,    0.00)  DC
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                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **
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                        NETWORK
GROUP ID                      AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

EP13      1ST HIGHEST VALUE IS       0.56661 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.55695 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.55256 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.52981 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.50964 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.50799 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.50359 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.49669 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.46110 AT (  430717.77,  5203057.94,     5.11,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.45635 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC

EP14      1ST HIGHEST VALUE IS       0.49076 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.48878 AT (  430713.84,  5203102.34,     5.03,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.46626 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.46235 AT (  430713.87,  5203114.54,     4.99,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.45208 AT (  430723.38,  5203102.50,     5.18,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.44579 AT (  430723.38,  5203090.00,     5.16,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.43549 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.42627 AT (  430723.38,  5203077.50,     5.13,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.42072 AT (  430723.38,  5203115.00,     5.09,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.41284 AT (  430713.90,  5203126.74,     4.97,
   92.43,    0.00)  DC

FEL_P1    1ST HIGHEST VALUE IS       0.66441 AT (  430196.73,  5203116.20,     4.25,
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   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.65364 AT (  430197.37,  5203128.59,     4.30,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.64480 AT (  430196.09,  5203103.80,     4.32,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.63595 AT (  430188.78,  5203115.00,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.62202 AT (  430188.78,  5203127.50,     4.71,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.62043 AT (  430188.78,  5203102.50,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.60304 AT (  430195.44,  5203091.41,     4.39,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.60038 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.58306 AT (  430176.34,  5203115.00,     4.96,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.58266 AT (  430188.78,  5203090.00,     4.72,
   92.43,    0.00)  DC

FEL_P2    1ST HIGHEST VALUE IS       0.33244 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.32808 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.32712 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.32334 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.32038 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.31647 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.31597 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.30454 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.30163 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.30146 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/12/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:53:29

                                  PAGE   8
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
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AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **


                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -

FEL_P3    1ST HIGHEST VALUE IS       0.25962 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.25651 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.25464 AT (  430190.51,  5202965.05,     4.56,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.25295 AT (  430188.78,  5202965.50,     4.77,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.24315 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.24036 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.23989 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          8TH HIGHEST VALUE IS       0.23976 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          9TH HIGHEST VALUE IS       0.23357 AT (  430176.34,  5202953.50,     5.50,
    5.50,    0.00)  DC
         10TH HIGHEST VALUE IS       0.23272 AT (  430176.34,  5202965.50,     5.47,
   92.43,    0.00)  DC

LOAD_P    1ST HIGHEST VALUE IS       0.00116 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.00116 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.00115 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.00115 AT (  430713.77,  5203077.94,     5.23,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.00115 AT (  430713.80,  5203090.14,     5.09,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.00115 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.00114 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.00114 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
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         9TH HIGHEST VALUE IS       0.00114 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.00114 AT (  430715.77,  5203067.94,     5.15,
   92.43,    0.00)  DC

PILE1    1ST HIGHEST VALUE IS       0.84891 AT (  430198.66,  5203153.38,     4.42,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       0.81948 AT (  430199.30,  5203165.77,     4.48,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.79204 AT (  430198.02,  5203140.98,     4.33,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.77214 AT (  430188.78,  5203152.00,     4.73,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.73919 AT (  430188.78,  5203164.50,     4.71,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.73795 AT (  430188.78,  5203140.00,     4.72,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.69273 AT (  430197.37,  5203128.59,     4.30,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.68493 AT (  430199.94,  5203178.16,     4.29,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.67599 AT (  430176.34,  5203152.00,     4.84,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.66073 AT (  430176.34,  5203140.00,     4.88,
   92.43,    0.00)  DC

PILE2    1ST HIGHEST VALUE IS       1.06232 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       1.05568 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       1.04158 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.99158 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.97587 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.97156 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.96702 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.92732 AT (  430176.34,  5203028.00,     5.19,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.89360 AT (  430176.34,  5203015.50,     5.23,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.85140 AT (  430176.34,  5203040.50,     5.19,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/12/23
 *** AERMET - VERSION  22112 ***   ***
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                    ***        17:53:29

                                 PAGE   9
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **


                        NETWORK
GROUP ID                         AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

PILE3     1ST HIGHEST VALUE IS       0.98395 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          2ND HIGHEST VALUE IS       0.97798 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          3RD HIGHEST VALUE IS       0.96165 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.93397 AT (  430188.78,  5202953.50,     5.22,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.91223 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
          6TH HIGHEST VALUE IS       0.91097 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          7TH HIGHEST VALUE IS       0.86559 AT (  430176.34,  5202941.00,     5.52,
    5.52,    0.00)  DC
          8TH HIGHEST VALUE IS       0.83492 AT (  430176.34,  5202928.50,     5.54,
    5.54,    0.00)  DC
          9TH HIGHEST VALUE IS       0.80609 AT (  430176.34,  5202953.50,     5.50,
    5.50,    0.00)  DC
         10TH HIGHEST VALUE IS       0.78306 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC

T_P       1ST HIGHEST VALUE IS       0.01297 AT (  430401.24,  5202869.68,     5.67,
    5.67,    0.00)  DC
          2ND HIGHEST VALUE IS       0.01179 AT (  430400.13,  5202866.50,     5.93,
    5.93,    0.00)  DC
          3RD HIGHEST VALUE IS       0.01135 AT (  430389.49,  5202871.55,     5.49,
    5.49,    0.00)  DC
          4TH HIGHEST VALUE IS       0.01032 AT (  430424.74,  5202865.93,     6.02,
    6.02,    0.00)  DC
          5TH HIGHEST VALUE IS       0.01025 AT (  430387.69,  5202866.50,     5.92,
    5.92,    0.00)  DC
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           6TH HIGHEST VALUE IS       0.01016 AT (  430377.74,  5202873.43,     5.40,
     5.40,    0.00)  DC
           7TH HIGHEST VALUE IS       0.00974 AT (  430371.74,  5202875.68,     5.23,
     5.23,    0.00)  DC
           8TH HIGHEST VALUE IS       0.00946 AT (  430365.74,  5202877.93,     5.16,
     5.16,    0.00)  DC
           9TH HIGHEST VALUE IS       0.00899 AT (  430375.28,  5202866.50,     5.91,
     5.91,    0.00)  DC
          10TH HIGHEST VALUE IS       0.00858 AT (  430355.41,  5202877.60,     5.06,
     5.06,    0.00)  DC

 T_P1      1ST HIGHEST VALUE IS       0.33309 AT (  430196.73,  5203116.20,     4.25,
    92.43,    0.00)  DC
           2ND HIGHEST VALUE IS       0.31044 AT (  430196.09,  5203103.80,     4.32,
    92.43,    0.00)  DC
           3RD HIGHEST VALUE IS       0.29440 AT (  430188.78,  5203115.00,     4.70,
    92.43,    0.00)  DC
           4TH HIGHEST VALUE IS       0.28954 AT (  430188.78,  5203102.50,     4.73,
    92.43,    0.00)  DC
           5TH HIGHEST VALUE IS       0.27250 AT (  430195.44,  5203091.41,     4.39,
    92.43,    0.00)  DC
           6TH HIGHEST VALUE IS       0.27133 AT (  430401.24,  5202869.68,     5.67,
     5.67,    0.00)  DC
           7TH HIGHEST VALUE IS       0.25888 AT (  430188.78,  5203090.00,     4.72,
    92.43,    0.00)  DC
           8TH HIGHEST VALUE IS       0.25269 AT (  430389.49,  5202871.55,     5.49,
     5.49,    0.00)  DC
           9TH HIGHEST VALUE IS       0.24958 AT (  430400.13,  5202866.50,     5.93,
     5.93,    0.00)  DC
          10TH HIGHEST VALUE IS       0.24706 AT (  430194.80,  5203079.01,     4.42,
    92.43,    0.00)  DC

 T_P1EX    1ST HIGHEST VALUE IS       0.21663 AT (  430210.43,  5203290.86,     4.37,
    92.43,    0.00)  DC
           2ND HIGHEST VALUE IS       0.20893 AT (  430204.93,  5203229.55,     4.37,
    92.43,    0.00)  DC
           3RD HIGHEST VALUE IS       0.20821 AT (  430201.22,  5203289.00,     3.87,
    92.43,    0.00)  DC
           4TH HIGHEST VALUE IS       0.20508 AT (  430210.73,  5203279.46,     4.32,
    92.43,    0.00)  DC
           5TH HIGHEST VALUE IS       0.20502 AT (  430204.83,  5203219.25,     4.33,
    92.43,    0.00)  DC
           6TH HIGHEST VALUE IS       0.19741 AT (  430205.03,  5203239.85,     4.31,
    92.43,    0.00)  DC
           7TH HIGHEST VALUE IS       0.19717 AT (  430201.22,  5203227.00,     4.18,
    92.43,    0.00)  DC
           8TH HIGHEST VALUE IS       0.19459 AT (  430204.73,  5203208.95,     4.43,
    92.43,    0.00)  DC
           9TH HIGHEST VALUE IS       0.18958 AT (  430201.22,  5203214.50,     4.09,
    92.43,    0.00)  DC
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        10TH HIGHEST VALUE IS       0.18591 AT (  430201.22,  5203239.50,     4.05,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/12/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:53:29

                                  PAGE  10
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

T_P2      1ST HIGHEST VALUE IS       0.18163 AT (  430194.80,  5203079.01,     4.42,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.16737 AT (  430194.16,  5203066.62,     4.29,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.16572 AT (  430188.78,  5203077.50,     4.73,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.15939 AT (  430188.78,  5203065.00,     4.67,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.14957 AT (  430401.24,  5202869.68,     5.67,
    5.67,    0.00)  DC
          6TH HIGHEST VALUE IS       0.14701 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.14441 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.13929 AT (  430389.49,  5202871.55,     5.49,
    5.49,    0.00)  DC
          9TH HIGHEST VALUE IS       0.13757 AT (  430400.13,  5202866.50,     5.93,
    5.93,    0.00)  DC
         10TH HIGHEST VALUE IS       0.13704 AT (  430176.34,  5203065.00,     5.11,
   92.43,    0.00)  DC

T_P2EX    1ST HIGHEST VALUE IS       0.12391 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.11608 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
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         3RD HIGHEST VALUE IS       0.11600 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.11382 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.11097 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.10995 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.10953 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.10821 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.10538 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
        10TH HIGHEST VALUE IS       0.10359 AT (  430201.22,  5203239.50,     4.05,
   92.43,    0.00)  DC

T_P3     1ST HIGHEST VALUE IS       0.15608 AT (  430188.78,  5202990.50,     4.68,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       0.15571 AT (  430190.62,  5202989.49,     4.43,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.13624 AT (  430188.78,  5202978.00,     4.73,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.13466 AT (  430190.56,  5202977.27,     4.52,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.13247 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.12967 AT (  430176.34,  5202990.50,     5.33,
   92.43,    0.00)  DC
         7TH HIGHEST VALUE IS       0.12436 AT (  430176.34,  5202978.00,     5.39,
   92.43,    0.00)  DC
         8TH HIGHEST VALUE IS       0.12295 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
         9TH HIGHEST VALUE IS       0.11972 AT (  430401.24,  5202869.68,     5.67,
    5.67,    0.00)  DC
        10TH HIGHEST VALUE IS       0.11962 AT (  430188.78,  5202965.50,     4.77,
   92.43,    0.00)  DC

T_P3EX   1ST HIGHEST VALUE IS       0.09302 AT (  430204.93,  5203229.55,     4.37,
   92.43,    0.00)  DC
         2ND HIGHEST VALUE IS       0.09142 AT (  430204.83,  5203219.25,     4.33,
   92.43,    0.00)  DC
         3RD HIGHEST VALUE IS       0.08937 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
         4TH HIGHEST VALUE IS       0.08798 AT (  430205.03,  5203239.85,     4.31,
   92.43,    0.00)  DC
         5TH HIGHEST VALUE IS       0.08788 AT (  430201.22,  5203227.00,     4.18,
   92.43,    0.00)  DC
         6TH HIGHEST VALUE IS       0.08774 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
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        7TH HIGHEST VALUE IS       0.08710 AT (  430204.73,  5203208.95,     4.43,
   92.43,    0.00)  DC
        8TH HIGHEST VALUE IS       0.08558 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
        9TH HIGHEST VALUE IS       0.08474 AT (  430201.22,  5203214.50,     4.09,
   92.43,    0.00)  DC
       10TH HIGHEST VALUE IS       0.08288 AT (  430201.22,  5203239.50,     4.05,
   92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/12/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:53:29

                                  PAGE  11
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM-2.5   IN MICROGRAMS/M**3
               **


                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

T_PEX     1ST HIGHEST VALUE IS       0.03571 AT (  430210.43,  5203290.86,     4.37,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       0.03483 AT (  430201.22,  5203289.00,     3.87,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       0.03282 AT (  430210.73,  5203279.46,     4.32,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       0.02745 AT (  430201.22,  5203276.50,     3.94,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       0.02665 AT (  430188.78,  5203289.00,     5.02,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       0.02474 AT (  430207.98,  5203269.96,     4.21,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       0.02431 AT (  430188.78,  5203276.50,     4.92,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       0.02271 AT (  430210.13,  5203302.26,     3.15,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       0.02124 AT (  430201.22,  5203301.50,     3.49,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       0.02105 AT (  430176.34,  5203289.00,     4.43,
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   92.43,    0.00)  DC

ALL       1ST HIGHEST VALUE IS       3.85737 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       3.85160 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       3.82952 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       3.82263 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       3.81205 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       3.76575 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       3.74427 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       3.70218 AT (  430188.78,  5203053.00,     4.70,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       3.69627 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       3.68520 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/12/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        17:53:29

                                  PAGE  12
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           2 Warning Message(s)
 A Total of         758 Informational Message(s)

 A Total of       43824 Hours Were Processed

 A Total of         398 Calm Hours Identified

 A Total of         360 Missing Hours Identified (  0.82 Percent)
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   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
SO W320    1503        PPARM: Input Parameter May Be Out-of-Range for Parameter
      VS
ME W187   13687       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
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↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/13/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        12:02:54

                                  PAGE   1
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses RURAL Dispersion Only.
      * Option for Capped & Horiz Stacks Selected With:
          0 Capped Stack(s); and         3 Horizontal Stack(s)
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: PM-10

 **Model Calculates  1 Short Term Average(s) of:  24-HR

 **This Run Includes:    652 Source(s);      30 Source Group(s); and   11358
Receptor(s)

                with:     14 POINT(s), including
                           0 POINTCAP(s) and      3 POINTHOR(s)
                 and:    635 VOLUME source(s)
                 and:      3 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:      0 SWPOINT source(s)
```

```
 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                               ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =     43.5 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_PM10_24HR.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_PM10_24HR.SUM

 *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/13/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        12:02:54

                                  PAGE   2
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                                    *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
```

```
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                            (METERS/SEC)

                                                  1.54,   3.09,   5.14,   8.23,
10.80,
```


```
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   KHQM.5Y.SFC
                 Met Version:  22112
   Profile file:   KHQM.5Y.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    94225              Upper air station no.:    72797
                  Name: BOWERMAN_AIRPORT                           Name: QUILLAYUTE

                  Year:   2018                                     Year:   2018
```

```
 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
1.00    5.89   66.   10.0  276.4    2.0
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
```

```
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/13/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        12:02:54

                                  PAGE   4
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST 24-HR
RESULTS ***


                                    ** CONC OF PM-10    IN MICROGRAMS/M**3
               **

                                                      DATE
                                         NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

EG       HIGH   1ST HIGH VALUE IS       0.14237  ON 18010824: AT (  430206.98,
5202890.68,     5.02,     5.02,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       0.10917  ON 18010824: AT (  430237.07,
5202886.76,     4.99,     4.99,    0.00)  DC

EP01     HIGH   1ST HIGH VALUE IS      13.53708  ON 18010824: AT (  430188.78,
5202965.50,     4.77,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      10.21316  ON 18122224: AT (  430190.45,
5202952.82,     5.21,    92.43,    0.00)  DC

EP02     HIGH   1ST HIGH VALUE IS       5.10098  ON 21121724: AT (  430176.34,
5203053.00,     5.12,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       3.90770  ON 19110924: AT (  430188.78,
5203040.50,     4.68,    92.43,    0.00)  DC

EP03     HIGH   1ST HIGH VALUE IS       5.13034  ON 21121724: AT (  430188.78,
5203053.00,     4.70,    92.43,    0.00)  DC
```

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         HIGH   6TH HIGH VALUE IS       3.94270  ON 19121024: AT (  430188.78,
5203040.50,     4.68,    92.43,    0.00)  DC

EP04     HIGH   1ST HIGH VALUE IS      11.06247  ON 18081124: AT (  430188.97,
5203787.50,    69.43,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       6.06878  ON 19123024: AT (  430478.81,
5203862.50,    68.62,    92.43,    0.00)  DC

EP05     HIGH   1ST HIGH VALUE IS       0.36411  ON 19110924: AT (  430188.78,
5203040.50,     4.68,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       0.24667  ON 19120324: AT (  430191.48,
5203021.69,     4.36,    92.43,    0.00)  DC

EP06     HIGH   1ST HIGH VALUE IS       0.35753  ON 19110924: AT (  430188.78,
5203040.50,     4.68,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       0.24463  ON 19122924: AT (  430191.48,
5203021.69,     4.36,    92.43,    0.00)  DC

EP08     HIGH   1ST HIGH VALUE IS       3.06648  ON 20010624: AT (  430713.97,
5203151.14,     4.86,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       2.27580  ON 19120224: AT (  430194.80,
5203079.01,     4.42,    92.43,    0.00)  DC

EP09     HIGH   1ST HIGH VALUE IS       0.50520  ON 18081224: AT (  430713.77,
5203077.94,     5.23,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       0.39333  ON 22102124: AT (  430744.02,
5203016.94,     5.14,    92.43,    0.00)  DC

EP10     HIGH   1ST HIGH VALUE IS       6.60974  ON 18060324: AT (  430713.84,
5203102.34,     5.03,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       5.32779  ON 20052924: AT (  430715.77,
5203067.94,     5.15,    92.43,    0.00)  DC

EP11     HIGH   1ST HIGH VALUE IS       5.26853  ON 18060324: AT (  430713.84,
5203102.34,     5.03,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       4.66711  ON 20070224: AT (  430713.87,
5203114.54,     4.99,    92.43,    0.00)  DC

EP12     HIGH   1ST HIGH VALUE IS       2.64842  ON 22102124: AT (  430735.81,
5203115.00,     4.52,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       1.87171c ON 22090724: AT (  430717.77,
5203057.94,     5.11,    92.43,    0.00)  DC

EP13     HIGH   1ST HIGH VALUE IS       7.22745  ON 18060324: AT (  430713.80,
5203090.14,     5.09,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       5.60468  ON 20070224: AT (  430713.84,
5203102.34,     5.03,    92.43,    0.00)  DC

EP14     HIGH   1ST HIGH VALUE IS       5.68117  ON 18060324: AT (  430713.80,
5203090.14,     5.09,    92.43,    0.00)  DC
```

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         HIGH   6TH HIGH VALUE IS       5.11478  ON 20073124: AT (  430713.84,
5203102.34,     5.03,    92.43,    0.00)  DC

FEL_P1   HIGH   1ST HIGH VALUE IS      53.27246  ON 19110924: AT (  430198.02,
5203140.98,     4.33,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      33.90110  ON 19111224: AT (  430198.02,
5203140.98,     4.33,    92.43,    0.00)  DC

FEL_P2   HIGH   1ST HIGH VALUE IS      28.27852  ON 19110924: AT (  430194.16,
5203066.62,     4.29,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      17.88216  ON 20102624: AT (  430193.52,
5203054.23,     4.25,    92.43,    0.00)  DC
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/13/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        12:02:54

                                  PAGE   5
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST 24-HR
RESULTS ***


                                     ** CONC OF PM-10    IN MICROGRAMS/M**3
               **

                                                           DATE
                                         NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

FEL_P3   HIGH   1ST HIGH VALUE IS      22.42140  ON 19110924: AT (  430188.78,
5202990.50,     4.68,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      14.30871  ON 20102624: AT (  430188.78,
5202978.00,     4.73,    92.43,    0.00)  DC

LOAD_P   HIGH   1ST HIGH VALUE IS       0.33401  ON 19110924: AT (  430196.09,
5203103.80,     4.32,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       0.21315  ON 21012024: AT (  430195.44,
5203091.41,     4.39,    92.43,    0.00)  DC

PILE1    HIGH   1ST HIGH VALUE IS      18.07892  ON 19110924: AT (  430199.94,
5203178.16,     4.29,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      12.14224  ON 20120324: AT (  430199.30,
5203165.77,     4.48,    92.43,    0.00)  DC
```

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PILE2    HIGH   1ST HIGH VALUE IS      21.13546  ON 19110924: AT (  430188.78,
5203040.50,     4.68,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      14.63581  ON 19111224: AT (  430188.78,
5203040.50,     4.68,    92.43,    0.00)  DC

PILE3    HIGH   1ST HIGH VALUE IS      18.30004  ON 19110924: AT (  430190.45,
5202952.82,     5.21,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      12.81595  ON 20120324: AT (  430190.45,
5202952.82,     5.21,    92.43,    0.00)  DC

T_P      HIGH   1ST HIGH VALUE IS       3.19693  ON 22121224: AT (  430401.24,
5202869.68,     5.67,     5.67,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       2.38276  ON 18122424: AT (  430401.24,
5202869.68,     5.67,     5.67,    0.00)  DC

T_P1     HIGH   1ST HIGH VALUE IS      16.76364  ON 19122724: AT (  430196.73,
5203116.20,     4.25,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      13.36307  ON 22120624: AT (  430196.73,
5203116.20,     4.25,    92.43,    0.00)  DC

T_P1EX   HIGH   1ST HIGH VALUE IS      14.11413  ON 19110924: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      10.08010  ON 20120324: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC

T_P2     HIGH   1ST HIGH VALUE IS       9.32573  ON 19122724: AT (  430194.80,
5203079.01,     4.42,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       7.48887  ON 22102924: AT (  430194.80,
5203079.01,     4.42,    92.43,    0.00)  DC

T_P2EX   HIGH   1ST HIGH VALUE IS       7.46022  ON 19110924: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       5.32952  ON 20120324: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC

T_P3     HIGH   1ST HIGH VALUE IS       9.59991  ON 19110924: AT (  430190.67,
5203001.72,     4.41,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       6.88169  ON 20120324: AT (  430190.67,
5203001.72,     4.41,    92.43,    0.00)  DC

T_P3EX   HIGH   1ST HIGH VALUE IS       5.90165  ON 19110924: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       4.21596  ON 20120324: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC

T_PEX    HIGH   1ST HIGH VALUE IS       9.69190  ON 19110924: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       6.65653  ON 20102624: AT (  430210.43,
5203290.86,     4.37,    92.43,    0.00)  DC
```

```
ALL      HIGH   1ST HIGH VALUE IS      95.17407  ON 19110924: AT (  430188.78,
5203127.50,     4.71,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS      79.82504  ON 19120324: AT (  430188.78,
5203077.50,     4.73,    92.43,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/13/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        12:02:54

                                  PAGE   6
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of          758 Informational Message(s)

 A Total of        43824 Hours Were Processed

 A Total of          398 Calm Hours Identified

 A Total of          360 Missing Hours Identified (  0.82 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320    1503        PPARM: Input Parameter May Be Out-of-Range for Parameter
       VS
 ME W187   13687       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/05/23
 *** AERMET - VERSION  22112 ***   ***
                       ***       13:10:17

                                  PAGE   1
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 ** Model Options Selected:
      * Model Allows User-Specified Options
      * Model Is Setup For Calculation of Average CONCentration Values.
      * NO GAS DEPOSITION Data Provided.
      * NO PARTICLE DEPOSITION Data Provided.
      * Model Uses NO DRY DEPLETION. DDPLETE  =  F
      * Model Uses NO WET DEPLETION. WETDPLT  =  F
      * Stack-tip Downwash.
      * Model Accounts for ELEVated Terrain Effects.
      * Use Calms Processing Routine.
      * Use Missing Data Processing Routine.
      * No Exponential Decay.
      * Model Uses RURAL Dispersion Only.
      * ADJ_U*   - Use ADJ_U* option for SBL in AERMET
      * CCVR_Sub - Meteorological data includes CCVR substitutions
      * TEMP_Sub - Meteorological data includes TEMP substitutions
      * Model Assumes No FLAGPOLE Receptor Heights.
      * The User Specified a Pollutant Type of: TAP

 **Model Calculates  2 Short Term Average(s) of:   1-HR  24-HR
     and Calculates ANNUAL Averages

 **This Run Includes:      3 Source(s);      4 Source Group(s); and   11358
Receptor(s)

                with:      3 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:      0 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)
                 and:      0 SWPOINT source(s)
```

```
 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  22112

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and
Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     5.50 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =     13.3 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   HOQUIAMPROJECT_TAPS.ERR

 **File for Summary of Results:   HOQUIAMPROJECT_TAPS.SUM

↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/05/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        13:10:17

                                  PAGE   2
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                            *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
```

```
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                            (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,
10.80,
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/05/23
 *** AERMET - VERSION  22112 ***   ***
                      ***       13:10:17

                                  PAGE   3
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   KHQM.5Y.SFC
                 Met Version:  22112
   Profile file:   KHQM.5Y.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:    94225                Upper air station no.:    72797
                  Name: BOWERMAN_AIRPORT                             Name: QUILLAYUTE

                  Year:   2018                                       Year:   2018
```

```
 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -
 18 01 01   1 01  -33.0  0.317 -9.000 -9.000 -999.  429.    110.6  0.01   0.28
1.00    5.51   67.   10.0  275.9    2.0
 18 01 01   1 02  -42.0  0.403 -9.000 -9.000 -999.  614.    178.7  0.07   0.28
1.00    5.10   51.   10.0  275.3    2.0
 18 01 01   1 03  -42.5  0.408 -9.000 -9.000 -999.  625.    183.1  0.07   0.28
1.00    5.16   54.   10.0  275.3    2.0
 18 01 01   1 04  -35.4  0.339 -9.000 -9.000 -999.  477.    126.4  0.07   0.28
1.00    4.32   50.   10.0  275.3    2.0
 18 01 01   1 05  -35.2  0.337 -9.000 -9.000 -999.  469.    124.6  0.07   0.28
1.00    4.29   58.   10.0  274.8    2.0
 18 01 01   1 06  -36.6  0.350 -9.000 -9.000 -999.  498.    135.1  0.07   0.28
1.00    4.46   50.   10.0  274.8    2.0
 18 01 01   1 07  -32.7  0.340 -9.000 -9.000 -999.  475.    126.8  0.07   0.28
0.58    4.32   51.   10.0  274.8    2.0
 18 01 01   1 08   -0.5  0.283 -9.000 -9.000 -999.  363.   4158.0  0.01   0.28
0.35    4.71   62.   10.0  276.4    2.0
 18 01 01   1 09   14.1  0.378  0.287  0.007   61.  558.   -351.0  0.01   0.28
0.26    6.19   68.   10.0  277.5    2.0
 18 01 01   1 10   23.1  0.354  0.427  0.008  123.  506.   -175.6  0.01   0.28
0.22    5.72   63.   10.0  278.8    2.0
 18 01 01   1 11   25.3  0.448  0.480  0.010  160.  720.   -325.6  0.01   0.28
0.21    7.33   72.   10.0  279.2    2.0
 18 01 01   1 12   20.7  0.394  0.464  0.008  176.  597.   -270.7  0.01   0.28
0.23    6.43   65.   10.0  280.3    2.0
 18 01 01   1 13    9.6  0.397  0.365  0.008  184.  599.   -591.9  0.01   0.28
0.28    6.53   73.   10.0  280.3    2.0
 18 01 01   1 14  -19.9  0.452 -9.000 -9.000 -999.  729.    426.1  0.07   0.28
0.41    5.60   59.   10.0  278.8    2.0
 18 01 01   1 15  -33.5  0.324 -9.000 -9.000 -999.  454.    115.3  0.01   0.28
1.00    5.62   72.   10.0  278.1    2.0
 18 01 01   1 16  -32.9  0.317 -9.000 -9.000 -999.  429.    110.7  0.01   0.28
1.00    5.51   71.   10.0  277.5    2.0
 18 01 01   1 17  -25.5  0.246 -9.000 -9.000 -999.  295.     66.7  0.01   0.28
1.00    4.32   62.   10.0  277.0    2.0
 18 01 01   1 18  -30.6  0.295 -9.000 -9.000 -999.  385.     95.7  0.01   0.28
1.00    5.14   62.   10.0  277.5    2.0
 18 01 01   1 19  -35.3  0.340 -9.000 -9.000 -999.  476.    127.2  0.01   0.28
1.00    5.89   66.   10.0  276.4    2.0
 18 01 01   1 20  -39.1  0.376 -9.000 -9.000 -999.  552.    155.2  0.01   0.28
1.00    6.48   67.   10.0  276.4    2.0
 18 01 01   1 21  -31.0  0.298 -9.000 -9.000 -999.  394.     97.7  0.01   0.28
1.00    5.19   65.   10.0  276.4    2.0
 18 01 01   1 22  -29.6  0.285 -9.000 -9.000 -999.  365.     89.2  0.01   0.28
1.00    4.97   62.   10.0  276.4    2.0
 18 01 01   1 23  -31.5  0.303 -9.000 -9.000 -999.  400.    100.8  0.01   0.28
```

```
1.00    5.27   61.   10.0  276.4    2.0
 18 01 01   1 24  -31.5  0.304 -9.000 -9.000 -999.  402.    101.6  0.01   0.28
1.00    5.29   63.   10.0  277.0    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 18 01 01 01   10.0 1   67.    5.51   276.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/05/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        13:10:17

                                  PAGE   4
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                    ** CONC OF TAP      IN MICROGRAMS/M**3
               **



                        NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV,
ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

EG         1ST HIGHEST VALUE IS      15.27243 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
           2ND HIGHEST VALUE IS      15.24241 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
           3RD HIGHEST VALUE IS      15.16923 AT (  430188.78,  5202916.00,     4.78,
    4.78,    0.00)  DC
           4TH HIGHEST VALUE IS      15.12195 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC
           5TH HIGHEST VALUE IS      15.09059 AT (  430176.34,  5202916.00,     5.53,
    5.53,    0.00)  DC
           6TH HIGHEST VALUE IS      15.06984 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
           7TH HIGHEST VALUE IS      15.06891 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
           8TH HIGHEST VALUE IS      15.04053 AT (  430176.34,  5202928.50,     5.54,
    5.54,    0.00)  DC
           9TH HIGHEST VALUE IS      14.89514 AT (  430176.34,  5202903.50,     5.56,
```

```
    5.56,    0.00)  DC
         10TH HIGHEST VALUE IS      14.85942 AT (  430188.78,  5202903.50,     4.79,
    4.79,    0.00)  DC

EP04      1ST HIGHEST VALUE IS       0.26641 AT (  430797.97,  5203015.50,     6.01,
    6.01,    0.00)  DC
          2ND HIGHEST VALUE IS       0.26518 AT (  430847.69,  5203003.00,     5.45,
    5.45,    0.00)  DC
          3RD HIGHEST VALUE IS       0.26518 AT (  430822.84,  5203040.50,     5.93,
    7.90,    0.00)  DC
          4TH HIGHEST VALUE IS       0.26506 AT (  430835.28,  5202990.50,     5.59,
    6.29,    0.00)  DC
          5TH HIGHEST VALUE IS       0.26472 AT (  430810.41,  5203040.50,     6.01,
    7.15,    0.00)  DC
          6TH HIGHEST VALUE IS       0.26471 AT (  430835.28,  5203003.00,     5.28,
    6.29,    0.00)  DC
          7TH HIGHEST VALUE IS       0.26429 AT (  430810.41,  5203028.00,     5.56,
    5.56,    0.00)  DC
          8TH HIGHEST VALUE IS       0.26421 AT (  430822.84,  5203003.00,     5.23,
    5.23,    0.00)  DC
          9TH HIGHEST VALUE IS       0.26409 AT (  430847.69,  5202990.50,     5.48,
    5.48,    0.00)  DC
         10TH HIGHEST VALUE IS       0.26330 AT (  430835.28,  5203015.50,     4.98,
    4.98,    0.00)  DC

EP08      1ST HIGHEST VALUE IS       1.52297 AT (  430192.23,  5203029.44,     4.28,
   92.43,    0.00)  DC
          2ND HIGHEST VALUE IS       1.52003 AT (  430191.48,  5203021.69,     4.36,
   92.43,    0.00)  DC
          3RD HIGHEST VALUE IS       1.51321 AT (  430190.73,  5203013.94,     4.44,
   92.43,    0.00)  DC
          4TH HIGHEST VALUE IS       1.50914 AT (  430188.78,  5203028.00,     4.70,
   92.43,    0.00)  DC
          5TH HIGHEST VALUE IS       1.50814 AT (  430188.78,  5203015.50,     4.70,
   92.43,    0.00)  DC
          6TH HIGHEST VALUE IS       1.50618 AT (  430192.87,  5203041.83,     4.23,
   92.43,    0.00)  DC
          7TH HIGHEST VALUE IS       1.50448 AT (  430188.78,  5203040.50,     4.68,
   92.43,    0.00)  DC
          8TH HIGHEST VALUE IS       1.48958 AT (  430193.52,  5203054.23,     4.25,
   92.43,    0.00)  DC
          9TH HIGHEST VALUE IS       1.48880 AT (  430188.78,  5203003.00,     4.68,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS       1.48833 AT (  430190.67,  5203001.72,     4.41,
   92.43,    0.00)  DC

ALL       1ST HIGHEST VALUE IS      16.57903 AT (  430188.78,  5202928.50,     4.81,
    5.40,    0.00)  DC
          2ND HIGHEST VALUE IS      16.53791 AT (  430190.34,  5202928.38,     4.63,
    5.40,    0.00)  DC
```

```
          3RD HIGHEST VALUE IS      16.42536 AT (  430188.78,  5202941.00,     4.95,
    4.95,    0.00)  DC
          4TH HIGHEST VALUE IS      16.42389 AT (  430190.40,  5202940.60,     4.77,
    5.44,    0.00)  DC
          5TH HIGHEST VALUE IS      16.41818 AT (  430188.78,  5202916.00,     4.78,
    4.78,    0.00)  DC
          6TH HIGHEST VALUE IS      16.36961 AT (  430190.29,  5202916.15,     4.59,
    5.41,    0.00)  DC
          7TH HIGHEST VALUE IS      16.33871 AT (  430176.34,  5202928.50,     5.54,
    5.54,    0.00)  DC
          8TH HIGHEST VALUE IS      16.33477 AT (  430176.34,  5202916.00,     5.53,
    5.53,    0.00)  DC
          9TH HIGHEST VALUE IS      16.19502 AT (  430190.45,  5202952.82,     5.21,
   92.43,    0.00)  DC
         10TH HIGHEST VALUE IS      16.08449 AT (  430176.34,  5202903.50,     5.56,
    5.56,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/05/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        13:10:17

                                  PAGE   5
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                               *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                    ** CONC OF TAP      IN MICROGRAMS/M**3
               **


                                                     DATE
                                                NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)            RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

EG       HIGH   1ST HIGH VALUE IS     574.28145  ON 20100203: AT (  430213.66,
5202866.50,     5.56,     5.56,    0.00)  DC

EP04     HIGH   1ST HIGH VALUE IS      86.41408  ON 21062719: AT (  430164.06,
5203787.50,    68.49,    92.43,    0.00)  DC
```

```
EP08     HIGH   1ST HIGH VALUE IS      33.00423  ON 19082924: AT (  430748.25,
5203500.50,     4.25,    92.43,    0.00)  DC

ALL      HIGH   1ST HIGH VALUE IS     584.39295  ON 20100203: AT (  430213.66,
5202866.50,     5.56,     5.56,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/05/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        13:10:17

                                  PAGE   6
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST 24-HR
RESULTS ***


                                    ** CONC OF TAP      IN MICROGRAMS/M**3
               **

                                                      DATE
                                             NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -

EG       HIGH   1ST HIGH VALUE IS     164.01279  ON 18010824: AT (  430206.98,
5202890.68,     5.02,     5.02,    0.00)  DC
         HIGH   6TH HIGH VALUE IS     125.75817  ON 18010824: AT (  430237.07,
5202886.76,     4.99,     4.99,    0.00)  DC

EP04     HIGH   1ST HIGH VALUE IS       6.89011  ON 18081124: AT (  430188.97,
5203787.50,    69.43,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       3.77986  ON 19123024: AT (  430478.81,
5203862.50,    68.62,    92.43,    0.00)  DC

EP08     HIGH   1ST HIGH VALUE IS      12.85289  ON 20010624: AT (  430713.97,
5203151.14,     4.86,    92.43,    0.00)  DC
         HIGH   6TH HIGH VALUE IS       9.53884  ON 19120224: AT (  430194.80,
5203079.01,     4.42,    92.43,    0.00)  DC
```

```
ALL      HIGH   1ST HIGH VALUE IS     171.46792  ON 18010824: AT (  430206.98,
5202890.68,     5.02,     5.02,    0.00)  DC
         HIGH   6TH HIGH VALUE IS     131.55741  ON 18122524: AT (  430237.07,
5202886.76,     4.99,     4.99,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 22112  ***   ***
C:\MODEL\HOQUIAMPROJECT\HOQUIAMPROJECT_PM2P5-ANNUAL\HOQUIAMPROJECT_P ***
07/05/23
 *** AERMET - VERSION  22112 ***   ***
                       ***        13:10:17

                                  PAGE   7
 *** MODELOPTs:    CONC  ELEV  RURAL  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of          758 Informational Message(s)

 A Total of        43824 Hours Were Processed

 A Total of          398 Calm Hours Identified

 A Total of          360 Missing Hours Identified (  0.82 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 SO W320      44        PPARM: Input Parameter May Be Out-of-Range for Parameter
       VS
 ME W187   11559       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

Appendix A

NOC Application Forms and SEPA Documentation

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

FORM 1- NOTICE OF CONSTRUCTION

TO CONSTRUCT - INSTALL - ESTABLISH OR MODIFY AN AIR CONTAMINANT SOURCE

Form 1 Instructions:

1. Please complete all the fields below. **This NOC application is considered incomplete until signed.**
2. If the application contains any confidential business information, please complete a Request of Confidentiality of Records (www.orcaa.org).
3. Duty to Correction Application: An applicant has the duty to supplement or correct an application. Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application must, upon becoming aware of such failure or incorrect submittal, promptly submit supplementary factors or corrected information.

Business Name: Pacific Northwest Renewable Energy	**For ORCAA use only**
Mailing Address: P.O. Box 391, Sth Egrement, MA 01258	File No: 432 County No: 27 Source No: 926 Application No: 23 NOC 1606
Physical Address of Project or New Source: 411 Moon Island Road, Hoquiam, WA 98550	Date Received: Received JUL 20 2023 ORCAA
Billing Address: P.O. Box 391, Sth Egrement, MA 01258	

Project or Equipment to be installed/established:

Wood pellet manufacturing facility

Anticipated startup date: 02 / 01 / 2025 Is facility currently registered with ORCAA? Yes ☐ No ☑

This project must meet the requirements of the State Environmental Policy Act (SEPA) before ORCAA can issue final approval. Indicate the SEPA compliance option:

- ☐ SEPA was satisfied by ______________ (government agency) on __/__/__ (date) - Include a copy of the SEPA determination
- ☑ SEPA threshold determination by City of Hoquiam (government agency) is pending - Include a copy of the environmental checklist
- ☐ ORCAA is the only government agency requiring a permit - Include ORCAA Environmental Checklist
- ☐ This project is exempt from SEPA per ______________ (WAC citation).

Name of Owner of Business: Farnese Partners, LTD		Agency Use Only
Title: Owner		
Email: pheasman@pnwrenewable.com	Phone:	
Authorized Representative for Application (if different than owner): Mark Boivin		
Title: CEO		
Email: mboivin@pnwrenewable.com	Phone: (413) 244-7360	
I hereby certify that the information contained in this application is, to the best of my knowledge, complete and correct.		
Signature of Owner or Authorized Representative: (sign in Blue Ink)		
MD Boivin	Date: 7/20/23	

IMPORTANT: Do not send via email or other electronic means. ORCAA must receive Original, hardcopy, signed application and payment prior to processing application.

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

FORM 1D- Contact Information

Business Name	FOR ORCAA USE
Pacific Northwest Renewable Energy	FILE # 432
Physical Site Address (Street address, city, state, zip) 411 Moon Island Road Hoquiam, WA 98550	CTY # 27 SRC # 926
Previous Business Name (if applicable)	**Date Received** Received JUL 20 2023 ORCAA

Contact Information

Inspection Contact	
Name Kim Alexander	Title VP of Operations
Phone (864) 367-2767	Email kalexander@pnwrenewable.com
Billing Contact	
Name Steeve Wintle	Title CFO
Phone (207) 651-4580	Email swintle@pnwrenewable.com
Emission Inventory Contact	
Name Kim Alexander	Title VP of Operations
Phone (864) 367-2767	Email kalexander@pnwrenewable.com
Complaint Contact	
Name Kim Alexander	Title VP of Operations
Phone (864) 367-2767	Email kalexander@pnwrenewable.com
Permit Contact	
Name Brandon Henderson	Title Director of Engineering
Phone (254) 813-3260	Email bhenderson@pnwrenewable.com

The **inspection contact** is the on-site person responsible for the everyday operation of the site and is available for inspections.
The **billing contact** is the person invoices are sent.
The **emission inventory contact** is the person requests for emissions information and material use information are sent.
The **complaint contact** is the person who receives and responds to complaints received on-site and who is contacted regarding complaints ORCAA receives.
The **permit contact** is the person responsible for filling out permit applications and receiving approval from ORCAA.

FORM 4
FACILITY EMISSIONS SUMMARY

Facility: Pacific Northwest Renewable Energy - Port of Grays Harbor Wood Pellet Facility

Instructions: on back.

Emission Unit ID#	TSP	PM-10	SOx	NOx	VOC	CO
TD-01	0.41	0.19	0	0	0	0
TD-02	0.46	0.22	0.03	0	0	0
TD-03	0.27	0.13	0	0	0	0
SP-01	0.65	0.32	0.16	0	0	0
SP-02	0.65	0.32	0.16	0	0	0
SP-03	0.65	0.32	0.16	0	0	0
VEH-01	10.70	3.18	0	0	0	0
VEH-02	17.69	5.29	0	0	0	0
EP-01	29.81	7.45	0	0	0	0
EP-02	8.38	2.10	0	0	0	0
EP-03	8.38	2.10	0	0	0	0
Facility Total						

FORM 4
FACILITY EMISSIONS SUMMARY

Facility: Pacific Northwest Renewable Energy - Port of Grays Harbor Wood Pellet Facility

Instructions: on back.

Emission Unit ID#	TSP	PM-10	SOx	NOx	VOC	CO
EP-04	33.88	55.81	18.05	227.76	28.80	183.96
EP-05	0.07	0.07	0	0	0	0
EP-06	0.07	0.07	0	0	0	0
EP-08	8.19	8.30	0.01	1.70	37.67	0.72
EP-09	0.07	0.07	0	0	0	0
EP-10	3.85	2.35	0	0	0	0
EP-11	3.85	2.35	0	0	0	0
EP-12	3.85	2.35	0	0	0	0
EP-13	3.85	2.35	0	0	0	0
EP-14	3.85	2.35	0	0	0	0
EP-15	0.02	0.01	0	0	0	0
Facility Total						

FORM 4
FACILITY EMISSIONS SUMMARY

Facility: Pacific Northwest Renewable Energy - Port of Grays Harbor Wood Pellet Facility

Instructions: on back.

Emission Unit ID#	TSP	PM-10	SOx	NOx	VOC	CO
GEN-01	0.01	0.01	0.05	0.17	0.06	0.14
Facility Total	108	88	18	230	67	185

FORM 5
EMISSIONS OF HAZARDOUS AIR POLLUTANTS

Facility: PNWRE - Port of Grays Harbor **Emission Unit ID#:** Facility-wide

Pollutant Name	CAS #	Maximum Emission Rate (lbs/hr)	Annual Emission Rate (tons/yr)
1,1,1-Trichloroethane	71-55-6	2.69E-01	1.34E-04
Acetaldehyde	75-07-0	4.17E-01	1.65E-01
Acetophenone	98-86-2	1.64E-04	7.16E-04
Acrolein	107-02-8	5.77E-02	5.27E-02
Benz(a)anthracene	56-55-3	8.40E-04	4.21E-05
Benzene	71-43-2	4.69E-01	3.45E-02
Benzo(a)pyrene	50-32-8	9.40E-05	4.76E-06
Benzo(b)fluoranthene	205-99-2	4.96E-05	2.57E-06
Benzo(k)fluoranthene	207-08-9	7.75E-05	3.97E-06
Biphenyl	92-52-4	9.96E-05	4.36E-04
Facility Total			

FORM 5
EMISSIONS OF HAZARDOUS AIR POLLUTANTS

Facility: PNWRE - Port of Grays Harbor **Emission Unit ID#:** Facility-wide **Page** 2 **of** 5

Pollutant Name	CAS #	Maximum Emission Rate (lbs/hr)	Annual Emission Rate (tons/yr)
Bis-(2-ethylhexyl phthalate)	117-81-7	8.18E-04	3.58E-03
Bromomethane	74-83-9	7.15E-05	3.13E-04
Carbon disulfide	75-15-0	4.60E-05	2.01E-04
Carbon tetrachloride	56-23-5	3.07E-05	1.34E-04
Chloromethane	74-87-3	2.81E-04	1.23E-03
Cumene	98-82-8	1.76E-04	7.72E-04
Di-N-butyl phthalate	84-74-2	5.88E-05	2.57E-04
Dibenzo(a,h)anthracene	53-70-3	2.92E-04	1.46E-05
Ethyl benzene	100-41-4	9.71E-06	4.25E-05
Formaldehyde	50-00-0	6.55E-01	3.13E-01
Facility Total			

FORM 5
EMISSIONS OF HAZARDOUS AIR POLLUTANTS

Facility: PNWRE - Port of Grays Harbor **Emission Unit ID#:** Facility-wide

Pollutant Name	CAS #	Maximum Emission Rate (lbs/hr)	Annual Emission Rate (tons/yr)
Hexane	110-54-3	2.21E-02	9.69E-02
Hydroquinone	123-31-9	1.53E-04	6.71E-04
Indeno(1,2,3,c,d)pyrene	193-39-5	1.88E-04	9.47E-06
m,p-Xylene	1330-20-7	1.44E-01	1.44E-01
Methanol	67-56-1	5.41E-02	2.37E-01
Methyl isobutyl ketone	108-10-1	6.13E-03	2.69E-02
n-Hexane	110-54-3	2.21E-02	9.69E-02
Naphthalene	91-20-3	4.63E-02	2.35E-03
o-Xylene	95-47-6	3.58E-05	1.57E-04
Phenol	108-95-2	2.82E-02	1.23E-01
Facility Total			

FORM 5
EMISSIONS OF HAZARDOUS AIR POLLUTANTS

Facility: PNWRE - Port of Grays Harbor **Emission Unit ID#:** Facility-wide

Pollutant Name	CAS #	Maximum Emission Rate (lbs/hr)	Annual Emission Rate (tons/yr)
Propionaldehyde	123-38-6	8.18E-03	3.58E-02
Styrene	100-42-5	3.07E-04	1.34E-03
Toluene	108-88-3	2.10E-01	3.39E-02
Antimony	7440-36-0	6.51E-05	6.51E-05
Arsenic	7440-38-2	1.84E-04	8.05E-04
Beryllium	7440-41-7	9.21E-06	4.03E-05
Cadmium	7440-43-9	4.73E-05	2.07E-04
Chromium, hexavalent	CRVICOMP	2.88E-05	1.26E-04
Chromium, total	7440-47-3	1.90E-04	8.33E-04
Cobalt	7440-48-4	5.46E-05	2.39E-04
Facility Total			

FORM 5
EMISSIONS OF HAZARDOUS AIR POLLUTANTS

Facility: PNWRE - Port of Grays Harbor **Emission Unit ID#:** Facility-wide

Pollutant Name	CAS #	Maximum Emission Rate (lbs/hr)	Annual Emission Rate (tons/yr)
Lead	7439-92-1	4.02E-04	1.76E-03
Manganese	7439-96-5	1.32E-02	5.78E-02
Mercury	7439-97-6	5.80E-04	2.54E-03
Nickel	7440-02-0	2.98E-04	1.30E-03
Phosphorus	7723-14-0	2.22E-04	9.75E-04
Selenium	7782-49-2	2.34E-05	1.02E-04
1,3-Butadiene	106-99-0	1.96E-02	9.78E-04
Methylene Chloride	75-09-2	1.61E-03	7.05E-03
Facility Total		2.18	1.32

WASHINGTON STATE DEPARTMENT OF ECOLOGY

FORM 7

PSD APPLICABILITY FORM

This form is an aid to help determine if a proposed project will be required to undergo PSD review. Please submit this form with the cover sheet of the Notice of Construction application to the Local Air Authority. For locations in eastern Washington where the Department of Ecology is the delegated local air authority, submit this form to the appropriate Ecology Regional Office.

It is the responsibility of the applicant to ensure that all preconstruction permits are obtained before commencement of construction.

COMPANY INFORMATION

Company or owner name: Pacific Northwest Renewable Energy - Port of Grays Harbor

Mailing address: P.O. Box 391
Sth Egrement, MA 01258

Facility address: 411 Moon Island Road
Hoquiam, WA 98550

Contact: Brandon Henderson

Telephone: (254) 813-3260

Facility industrial classification and SIC: 2499

PROCESS INFORMATION AND EMISSIONS CALCULATIONS

This section is intended to furnish a best estimate of annual emissions and sufficient information for agency technical staff to verify the applicant's conclusions in answering the questions in the next section. Please provide:

(1) A description of the process with a flow diagram indicating points of emissions to the air.

(2) Design and operating parameters for the process (i.e., hours of operation per year, maximum and normal production rates, fuel and raw material requirements).

(3) Estimates of the potential emissions for all air pollutants from each emissions point and a description of the method or basis used to make the emission estimates (in enough detail so that one can follow the logic and the calculation steps). Potential emissions are based on the maximum rate from each emission point taking into account air pollution control equipment.

For either a new or modified source, calculate its potential to emit each regulated pollutant based on operation at maximum capacity (such as 8760 hours/year) with emissions control equipment operating.

For a modified source, subtract the actual emissions of the existing source from the potential to emit of the modified source to calculate the emissions increase(decrease). Actual emissions are the average of the last 24 months of operation, if that period is representative of normal operations.

Regulated Pollutant Under PSD	Potential To Emit Tons/Year	Actual Emissions Tons/Year	Emissions Increase (Decrease)	Significant PSD Rate Tons/Year
Carbon Monoxide	185			100
Nitrogen oxides	230			40
Sulfur dioxide	18			40
Particulate matter PM_{10}	88 / 71			25 15
Ozone (VOCs)	67			40
Lead (elemental)	1.76E-03			0.6
Fluorides	--			3
Sulfuric acid mist	--			7
Total reduced sulfur (including H_2S)	--			10
Reduced sulfur compounds (including H_2S)	--			10
Municipal waste combustor organics Dioxins and furans Metals	--			 3.5×10^{-6} 15
Municipal waste combustor acid gasses	--			40

QUESTION 1

Does the proposed source or, in the case of a modification to a source, the existing source fall within one of the following 28 source categories?

1. Fossil fuel-fired steam electric plants of more than 250 million Btu/hr heat input
2. Coal cleaning plants with thermal dryers
3. Kraft pulp mills
4. Portland cement plants
5. Primary zinc smelters
6. Iron and steel mill plants
7. Primary aluminum ore reduction plants
8. Primary copper smelters
9. Municipal incinerators capable of charging more than 250 tons of refuse per day
10. Hydrofluoric acid plants
11. Sulfuric acid plants
12. Nitric acid plants
13. Petroleum refineries
14. Lime plants
15. Phosphate rock processing plants
16. Coke oven batteries
17. Sulfur recovery plants
18. Carbon black plants (furnace process)
19. Primary lead smelters
20. Fuel conversion plants
21. Sintering plants
22. Secondary metal production plants
23. Chemical process plants
24. Fossil fuel boilers (or combinations) totaling more than 250 million Btu/hr heat input
25. Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels
26. Taconite ore processing plants
27. Glass fiber processing plants
28. Charcoal production plants

YES____ (Please circle number.) GO TO QUESTION 2.
NO x_____ GO TO QUESTION 3.

QUESTION 2
Will emissions of any one regulated pollutant (including fugitive emissions) from the proposed or existing source exceed 100 tons per year?
YES____ GO TO QUESTION 6.
NO_____ PSD IS NOT REQUIRED. DO NOT ANSWER ANY MORE QUESTIONS. SUBMIT THIS FORM WITH THE NOTICE OF CONSTRUCTION APPLICATION.

QUESTION 3
Does the proposed source or, in the case of a modification to a source, the existing source fall within one of the following source categories?
1. Municipal Incinerators (□ 50 tons/day)
2. Asphalt concrete plants
3. Storage vessels for petroleum liquids, □40,000 gallons, construction after 06/11/73 and prior to 05/19/78.
4. Storage vessels for petroleum liquids, □40,000 gallons, construction after 05/18/78
5. Sewage treatment plants with sludge incinerators
6. Phosphate fertilizer industry: Plants manufacturing wet-process phosphoric acid, superphosphoric acid, diammonium phosphate, triple superphosphate, and granular triple superphosphate storage facilities.
7. Glass melting furnace □4,555 kilograms glass/day, (except all electric melters)
8. Grain elevators
9. Stationary gas turbines □ 10.7 gigajoules/hour heat input
10. Lead acid battery manufacturing plants
11. Automobile and light-duty truck assembly plant surface coating operations

YES____ (Please Circle Number) GO TO QUESTION 4
NO x_____ GO TO QUESTION 5

QUESTION 4
Will the emissions of any one regulated pollutant (including fugitive emissions) from the proposed or existing source exceed 250 tons/year?

YES____ GO TO QUESTION 6
NO_____ PSD IS NOT REQUIRED. DO NOT ANSWER ANY MORE QUESTIONS. SUBMIT THIS FORM WITH THE NOTICE OF CONSTRUCTION APPLICATION.

QUESTION 5
Will emissions of any one pollutant (not including fugitive emissions) from the proposed or existing source exceed 250 tons per year?
YES____ GO TO QUESTION 6.
NO x____ PSD IS NOT REQUIRED. DO NOT ANSWER ANY MORE QUESTIONS. SUBMIT THIS FORM WITH THE NOTICE OF CONSTRUCTION APPLICATION.

QUESTION 6
Is the project located within 10 kilometers (6.2 miles) of the boundary of a Class I area? Class I areas in Washington State are Mount Rainier National Park, North Cascade National Park, Olympic National Park, Alpine Lakes Wilderness Area, Glacier Peak Wilderness Area, Goat Rocks Wilderness Area, Mount Adams Wilderness Area, Pasayten Wilderness Area, and the Spokane Indian Reservation.

YES____ PSD REVIEW IS REQUIRED IF THE IMPACT OF ANY REGULATED POLLUTANT IS EQUAL TO OR GREATER THAN 1 $\mu g/m^3$, (24-hour average).
NO_____ CONTINUE

QUESTION 7
Is the proposed project a
1. ____ new source? GO TO QUESTION 8.
2. ____ modification, expansion, or addition to an existing source? GO TO QUESTION 9.

QUESTION 8
For which regulated pollutants does the potential to emit of the new source exceed the PSD significant rate?
____
____

PSD REVIEW IS REQUIRED FOR THESE POLLUTANTS. YOU MUST MEET WITH THE DEPARTMENT OF ECOLOGY TO DISCUSS THE PSD APPLICATION PROCEDURE.

QUESTION 9
For which regulated pollutants do the emissions increase from the modified source exceed the PSD significant rate?
____
____

PSD REVIEW IS REQUIRED FOR THESE POLLUTANTS. YOU MUST MEET WITH THE DEPARTMENT OF ECOLOGY TO DISCUSS THE PSD APPLICATION PROCEDURE.

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

NOC FORM 13
CYCLONES

GENERAL INFORMATION

Facility Name: Pacific Northwest Renewable Energy Port of Grays Harbor Wood Pellet Facility	Contact Person: Brandon Henderson Phone Number: (254) 813-3260 Email: bhenderson@pnwrenewable.com
Facility Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun	**Cyclone** Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun

X new unit ____ modification ____ # identical units	Manufacturer: TBD	Model & Serial #s: TBD

TECHNICAL SPECIFICATIONS

Air Flow: design acfm 37664 operating acfm	System Parameters: pressure drop (inches water) fan power (hp) temperature (°F or ambient) ambient

Cyclone Design Parameters

S (in.)

H (in.)

De (in.)

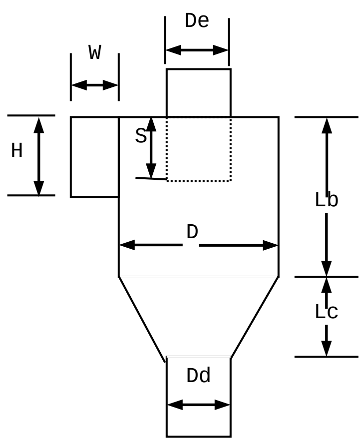
Dd (in.)

W (in.)

D (in.)

Lb (in.)

Lc (in.)



Describe location of cyclone including height and related stack (use additional pages if necessary):

Chips Cleaning Line Cyclone EP-01
Stack diameter = 47 inches
Stack height = 50 feet

Describe operation of cyclone including use of safety bypass stacks (use additional pages if necessary):

A scalper roll sorts forest residual chips from impurities/overs and cyclone captures airborne particulate, cyclone product capture sent to dryer.

PARTICULATE EMISSIONS DATA

Describe Particulate Emissions:

wood and dirt residue

OTHER INFORMATION

The following information is needed to complete the application:

1. Manufacturer brochure or technical fact sheet for cyclone.

Note: See back side of form for ORCAA approved equipment and operations.

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

NOC FORM 13
CYCLONES

GENERAL INFORMATION

Facility Name: Pacific Northwest Renewable Energy Port of Grays Harbor Wood Pellet Facility	Contact Person: Brandon Henderson Phone Number: (254) 813-3260 Email: bhenderson@pnwrenewable.com
Facility Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun	**Cyclone** Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun

X new unit ____ modification ____ # identical units	Manufacturer: TBD	Model & Serial #s: TBD

TECHNICAL SPECIFICATIONS

Air Flow: design acfm 10593 operating acfm	System Parameters: pressure drop (inches water) fan power (hp) temperature (°F or ambient) ambient

Cyclone Design Parameters

S (in.)

H (in.)

De (in.)

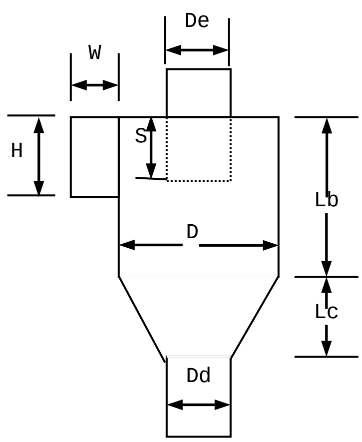
Dd (in.)

W (in.)

D (in.)

Lb (in.)

Lc (in.)



Describe location of cyclone including height and related stack (use additional pages if necessary):

Wet Hammermill Cyclones EP-02 and EP-03
Stack diameter = 24 inches
Stack height = 50 feet

Describe operation of cyclone including use of safety bypass stacks (use additional pages if necessary):

2 wet hammermills reduce wet wood material size for optimum drying. One cyclone per wet hammermill recovers airborne product and sends to the dryer.

PARTICULATE EMISSIONS DATA

Describe Particulate Emissions:

wood dust

OTHER INFORMATION

The following information is needed to complete the application:

1. Manufacturer brochure or technical fact sheet for cyclone.

Note: See back side of form for ORCAA approved equipment and operations.

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

FORM 35
Oxidizer

General Information

Facility Name: Pacific Northwest Renewable Energy - RTO EP-04

Contact Person: Brandon Henderson
Phone Number: (254) 813-3260
Email: bhenderson@pnwrenewable.com

Facility Operating Schedule:

24 hrs/day, 7 days/wk, 52 wks/yr

Circle days when operating:
M T W Th F Sat Sun

Oxidizer Operating Schedule:

24 hrs/day, 7 days/wk, 52 wks/yr

Circle days when operating:
M T W Th F Sat Sun

X new unit installation
____ modification

Manufacturer: TBD

Model & Serial #s: TBD

Technical Specifications (attach additional pages if needed)

Oxidizer Type:

____ catalytic oxidizer
X regenerative thermal oxidizer
____ recuperative thermal oxidizer
____ thermal (direct fired) oxidizer

Air Flow:

blower acfm 124031
blower hp ____
combustion retention time (sec.) ____
pressure drop (in. H_2O) 25

Burner:

type of fuel Natural Gas
maximum fuel usage 8 MMBtu/hr
gas inlet temperature (°F) 176
set point temperature (°F) 1500

For catalytic oxidizers:
1. What is the catalyst material?
2. What is the expected catalyst lifetime?
3. Describe the catalyst cleaning and replacement procedures and frequency.

For regenerative thermal oxidizers:
1. What is the media type? Ceramic
2. How many chambers are there and what are the chamber dimensions? 4 chambers. 11 feet wide by 23 feet long by 8 feet tall

For recuperative thermal oxidizers:
1. Describe the type of heat exchanger?
2. What are the dimensions of the combustion chamber?

For direct fired thermal oxidizers:
1. What are the dimensions of the combustion chamber?

Describe monitoring of oxidizer, including temperature, airflow, fuel consumption, and pressure drop. Include a description of the data analyzer and how records will be kept: TBD

Emissions

VOC control efficiency (%) > 95%
Maximum VOC emissions (ppm or lbs/hr) 6.575 lb/hr
Maximum NOx emissions (ppm or lbs/hr) 52 lb/hr
Maximum CO emissions (ppm or lbs/hr) 42 lb/hr

Exhaust Parameters

Stack height (feet) 90
Stack internal diameter (feet) 87 inches
Exhaust airflow (scfm) 103229
Exhaust temperature (°F) 131

Other Information

The following information is needed to complete the application:
1. Brochure or technical fact sheet from manufacturer or consultant. See Appendix D
2. Scaled technical drawings of the oxidizer, including location of thermocouple and other monitoring equipment. TBD
3. Plan of facility showing locations of oxidizer, stack, and nearby buildings (including maximum heights). See Appendix B
4. Describe any concentrators or particulate control devices associated with the oxidizer. 2 cyclone precleaners, wet electrostatic precipitator

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

FORM 12
BAGHOUSE

GENERAL INFORMATION

Facility Name: Pacific Northwest Renewable Energy Dry Hammer Mill Cyclofilters (x4)	Contact Person: Brandon Henderson Phone Number: (254) 813-3260 Email: bhenderson@pnwrenewable.com
Facility Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun	Baghouse Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun

X new unit installation ____ modification	Manufacturer: TBD	Model & Serial #s: TBD

TECHNICAL SPECIFICATIONS

Air Flow: design acfm 29500 operating acfm temperature (F°)	System Parameters: pressure drop (inches water) water vapor content (lbs water/lb dry air) fan power (hp)

Describe filter material:

Describe bag cleaning mechanism and cycle:

Describe operation of baghouse including use of safety bypasses, monitoring and maintenance schedules and any other pertinent information relating to particulate emissions (use additional pages if necessary):

PARTICULATE EMISSIONS DATA

Particulate Emissions: inlet (gr/scf) ______ outlet (gr/scf) 0.002	Particulate Control Efficiency: filtering velocity (acfm/ft^2 cloth) particulate control efficiency (%):

Describe Particulate Emissions: Wood residue from pellet cooling and handling

Micron Range:	Inlet Loading (% of total)	Outlet Loading (% of total)
0 - 5	______%	______%
5 - 10	______%	______%
greater than 10	______%	______%

OTHER INFORMATION

The following information is needed to complete the application:

1. Manufacturer brochure or technical fact sheet for filter material.
2. Scaled technical drawings of the baghouse including top, side and interior views.
3. Manufacturer brochure or technical fact sheet for baghouse.

Note: See back side of form for ORCAA approved equipment and operations.

REQUIREMENTS FOR NEW BAGHOUSES
ORCAA 1/4/96

1. **BACT for Particulate Control:** ORCAA may require demonstration of compliance based on measured stack grain loading in accordance to the procedures outlined in 40CFR Part 60 and in accordance with ORCAA's approved particulate source test procedures.

1.1 Low Temperature Process Streams - Grain Elevators, Barley Processing, Forest Products Dust, Large Cabinet Shops:

Particulate Limit: 0.01 gr/dscf
Opacity Limit: 5% for entire process stream.

These limits are appropriate for low temperature dust control when NOMEX bags are feasible.

1.2 High Temperature Process Streams - Ceramics, Metal Dust:

Particulate Limit: 0.01 gr/dscf
Opacity Limit: 5% for entire process stream.

1.3 Combustion Sources - Boilers, Asphalt Plants:

Particulate Limit: 0.02 gr/dscf (back half included)

Opacity Limit: 5% for entire process stream.

2. **Stack**: Emissions shall exit through a vertical stack at least 2 meters above the highest point of the baghouse. Permanent sampling ports and platforms shall be installed on the stack prior to commencement of operation. The sampling ports shall meet the requirements of 40, CFR Part 60, Appendix A, Method 1.

3. **Opacity Monitor (wood fired boilers):** Owners and operators of baghouses installed on wood fired boilers shall install, calibrate, maintain, and operate a continuous emissions monitoring system (CEMS) for continuously monitoring the boiler stack gas opacity prior to exiting to the atmosphere.

3.1 The opacity CEMS shall be certified and installed in accordance 40CFR Part 60, Performance Specification 1 (appendix B).
3.2 The opacity CEMS shall be equipped with a strip chart recorder or data acquisition system (DAS) capable of computing and recording stack gas opacity in three consecutive minute averages. The data acquisition system or strip chart recorder shall record and display opacity values to 0.5% opacity.
3.3 Prior to installation of the CEMS, the owner or operator shall provide ORCAA a written manufacturers certificate of conformance with Performance Specification 1.
3.4 An opacity CEMS quality assurance plan conforming with 40 CFR Part 60 Appendix F and the EPA publication "Recommended Quality Assurance Procedures for Opacity Continuous Emissions Monitoring Systems" (EPA 340/1-86-010) shall be developed and submitted to ORCAA for approval no later than 180 days after commencement of operation.
3.5 The opacity CEMS shall be operational and tested for compliance with 40 CFR Part 60, Appendix B Performance Specification 1 no later than 90 days after initial startup.

4. **Other:** Other requirements include; 1) monitoring of pressure drop across baghouse, 2) bag monitoring and maintenance schedule, 3) full set of replacement bags on-site, 4) emission inventory reporting, and 5) excess emissions reporting.

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

FORM 12
BAGHOUSE

GENERAL INFORMATION

Facility Name: Pacific Northwest Renewable Energy	Contact Person: Brandon Henderson Phone Number: (254) 813-3260 Email: bhenderson@pnwrenewable.com
Facility Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun	Baghouse Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Check days when operating: M T W Th F Sat Sun

x new unit installation ____ modification	Manufacturer: TBD	Model & Serial #s: TBD

TECHNICAL SPECIFICATIONS

Air Flow: design acfm operating acfm temperature (F°)	System Parameters: pressure drop (inches water) water vapor content (lbs water/lb dry air) fan power (hp)

Describe filter material:

Describe bag cleaning mechanism and cycle:

Describe operation of baghouse including use of safety bypasses, monitoring and maintenance schedules and any other pertinent information relating to particulate emissions (use additional pages if necessary):

PARTICULATE EMISSIONS DATA

Particulate Emissions: inlet (gr/scf) ______________ outlet (gr/scf) 0.002	Particulate Control Efficiency: filtering velocity (acfm/ft^2 cloth) particulate control efficiency (%):

Describe Particulate Emissions: Wood residue from pellet cooling and handling

Micron Range:	Inlet Loading (% of total)	Outlet Loading (% of total)
0 - 5	______%	______%
5 - 10	______%	______%
greater than 10	______%	______%

OTHER INFORMATION

The following information is needed to complete the application:

1. Manufacturer brochure or technical fact sheet for filter material.
2. Scaled technical drawings of the baghouse including top, side and interior views.
3. Manufacturer brochure or technical fact sheet for baghouse.

Note: See back side of form for ORCAA approved equipment and operations.

REQUIREMENTS FOR NEW BAGHOUSES
ORCAA 1/4/96

1. **BACT for Particulate Control:** ORCAA may require demonstration of compliance based on measured stack grain loading in accordance to the procedures outlined in 40CFR Part 60 and in accordance with ORCAA's approved particulate source test procedures.

1.1 Low Temperature Process Streams - Grain Elevators, Barley Processing, Forest Products Dust, Large Cabinet Shops:

Particulate Limit: 0.01 gr/dscf
Opacity Limit: 5% for entire process stream.

These limits are appropriate for low temperature dust control when NOMEX bags are feasible.

1.2 High Temperature Process Streams - Ceramics, Metal Dust:

Particulate Limit: 0.01 gr/dscf
Opacity Limit: 5% for entire process stream.

1.3 Combustion Sources - Boilers, Asphalt Plants:

Particulate Limit: 0.02 gr/dscf (back half included)

Opacity Limit: 5% for entire process stream.

2. **Stack**: Emissions shall exit through a vertical stack at least 2 meters above the highest point of the baghouse. Permanent sampling ports and platforms shall be installed on the stack prior to commencement of operation. The sampling ports shall meet the requirements of 40, CFR Part 60, Appendix A, Method 1.

3. **Opacity Monitor (wood fired boilers):** Owners and operators of baghouses installed on wood fired boilers shall install, calibrate, maintain, and operate a continuous emissions monitoring system (CEMS) for continuously monitoring the boiler stack gas opacity prior to exiting to the atmosphere.

3.1 The opacity CEMS shall be certified and installed in accordance 40CFR Part 60, Performance Specification 1 (appendix B).
3.2 The opacity CEMS shall be equipped with a strip chart recorder or data acquisition system (DAS) capable of computing and recording stack gas opacity in three consecutive minute averages. The data acquisition system or strip chart recorder shall record and display opacity values to 0.5% opacity.
3.3 Prior to installation of the CEMS, the owner or operator shall provide ORCAA a written manufacturers certificate of conformance with Performance Specification 1.
3.4 An opacity CEMS quality assurance plan conforming with 40 CFR Part 60 Appendix F and the EPA publication "Recommended Quality Assurance Procedures for Opacity Continuous Emissions Monitoring Systems" (EPA 340/1-86-010) shall be developed and submitted to ORCAA for approval no later than 180 days after commencement of operation.
3.5 The opacity CEMS shall be operational and tested for compliance with 40 CFR Part 60, Appendix B Performance Specification 1 no later than 90 days after initial startup.

4. **Other:** Other requirements include; 1) monitoring of pressure drop across baghouse, 2) bag monitoring and maintenance schedule, 3) full set of replacement bags on-site, 4) emission inventory reporting, and 5) excess emissions reporting.

OLYMPIC REGION CLEAN AIR AGENCY

2940 Limited Lane NW - Olympia, Washington 98502 - 360-539-7610 – Fax 360-491-6308

FORM 35
Oxidizer

General Information

Facility Name: Pacific Northwest Renewable Energy - RCO EP-08	Contact Person: Brandon Henderson Phone Number: (254) 813-3260 Email: bhenderson@pnwrenewable.com
Facility Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Circle days when operating: M T W Th F Sat Sun	Oxidizer Operating Schedule: 24 hrs/day, 7 days/wk, 52 wks/yr Circle days when operating: M T W Th F Sat Sun

X new unit installation ____ modification	Manufacturer: TBD	Model & Serial #s: TBD

Technical Specifications (attach additional pages if needed)

Oxidizer Type:	Air Flow:	Burner:
X catalytic oxidizer ____ regenerative thermal oxidizer ____ recuperative thermal oxidizer ____ thermal (direct fired) oxidizer	blower acfm 137000 blower hp ____ combustion retention time (sec.) ____ pressure drop (in. H_2O) 25	type of fuel Natural Gas maximum fuel usage 4.5 MMBtu/hr gas inlet temperature (°F) 176 set point temperature (°F) 1500

For catalytic oxidizers:

1. What is the catalyst material?
2. What is the expected catalyst lifetime?
3. Describe the catalyst cleaning and replacement procedures and frequency.

For regenerative thermal oxidizers:

1. What is the media type?
2. How many chambers are there and what are the chamber dimensions?

For recuperative thermal oxidizers:

1. Describe the type of heat exchanger?
2. What are the dimensions of the combustion chamber?

For direct fired thermal oxidizers:

1. What are the dimensions of the combustion chamber?

Describe monitoring of oxidizer, including temperature, airflow, fuel consumption, and pressure drop. Include a description of the data analyzer and how records will be kept: TBD

Emissions

VOC control efficiency (%) > 95%	Maximum NOx emissions (ppm or lbs/hr) 0.04 lb/hr
Maximum VOC emissions (ppm or lbs/hr) 8.6 lb/hr	Maximum CO emissions (ppm or lbs/hr) 0.02 lb/hr

Exhaust Parameters

Stack height (feet) 90	Exhaust airflow (scfm) 99795
Stack internal diameter (feet) 83 inches	Exhaust temperature (°F) 214

Other Information

The following information is needed to complete the application:

1. Brochure or technical fact sheet from manufacturer or consultant. See Appendix D
2. Scaled technical drawings of the oxidizer, including location of thermocouple and other monitoring equipment. TBD
3. Plan of facility showing locations of oxidizer, stack, and nearby buildings (including maximum heights). See Appendix B
4. Describe any concentrators or particulate control devices associated with the oxidizer. cyclones and combined cyclone/fabric filters

SEPA ENVIRONMENTAL CHECKLIST

A. Background

1. Name of proposed project, if applicable:

Port of Grays Harbor Plant Project

2. Name of applicant:

Pacific Northwest Renewable Energy (PNWRE)

3. Address and phone number of applicant and contact person:

Applicant:
Mark Boivin, CEO
PO Box 391 South Egremont, MA 01258
413.244.7360
mboivin@pnwrenewable.com

Contact:
Sharese Graham
1201 Third Ave, Suite 550, Seattle, WA 98101
206.739.5454
sharese.graham@scjalliance.com

4. Date checklist prepared:

June 14, 2023

5. Agency requesting checklist:

City of Hoquiam

6. Proposed timing or schedule (including phasing, if applicable):

Construction is anticipated to begin in January 2024.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

There are no plans for additional construction after commencement of normal operations identified in the project description.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- Air Quality Analysis
- Contaminated Media Management Plan
- Federal Aviation Administration (FAA) Obstruction Review
- Phase I Environmental Site Assessment
- Wetlands and Streams Delineation (prepared for a previous proposal at the same site)
- Cultural Resources Assessment (prepared for a previous proposal at the same site)

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

There are no known pending applications for other projects or proposals directly affecting the property for this proposed project.

10. List any government approvals or permits that will be needed for your proposal, if known.

State Approvals/Permits

- ORCAA – Air Quality Permit
- Department of Ecology – National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit and Industrial Stormwater Permit
- FAA – Clearance Letter

Local Approvals/Permits

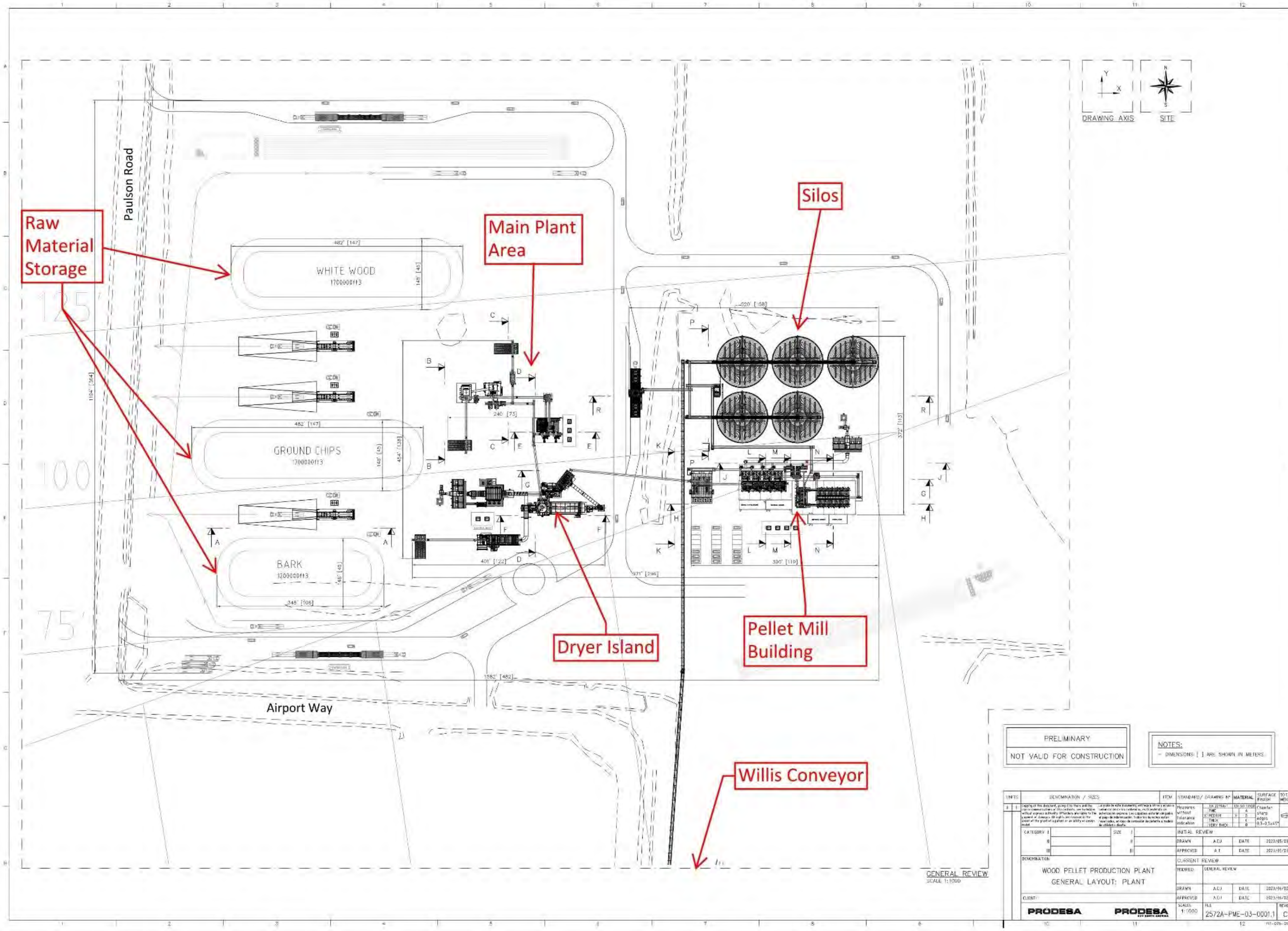
- City of Hoquiam – Zoning Conditional Use Permit, Critical Areas Review, Floodplain Permit, Construction Permits, Binding Site Plan
- Port of Grays Harbor – Approval of Operation Agreement and Lease Agreement

11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

PNWRE is proposing to construct and operate a biomass facility (pellet plant) in Hoquiam, Grays Harbor County. Wood pellets will be manufactured at the project site and exported, via vessel, to international markets, including Asia and Europe. The adjacent chip mill site is expected to be one of the sources of raw material, thus reducing truck trips to and from the site.

The processing of wood chips at the proposed facility includes the use of three truck tippers, a chips cleaning line, two wet hammermills controlled by cyclones, one hog fuel furnace and dryer controlled by a wet electrostatic precipitator (WESP) and a regenerative thermal oxidizer (RTO), four dry hammermills each controlled by a cyclone, 12 pellet production and cooling lines controlled by two cyclones, and a regenerative catalytic oxidizer (RCO) controlling the combined dry hammermills and pellet cooling lines, five wood pellet storage silos, and a ship loadout area. The wet raw materials for pellet production and hog fuel for the furnace will be delivered to the facility via truck. The facility could process up to 440,800 tons per year (TPY) of dried wood pellets. The Project Site Plan is shown in Figure 1.

Figure 1 Project Site Plan



The steel silos (which are similar to grain silos) and conveyor will connect to the existing conveyor that leads from the Willis Enterprises chip plant to Terminal 3. The conveyor was recently renovated by Willis Enterprises. The storage silos will have a total capacity of up to 50,000 metric tons and shall aggregate pellets until enough volume is accumulated for bulk shipments of 20,000-45,000 metric tons per ship.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of areas, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The project address is 411 Moon Island Road, TLN 056401000400, at the corner of Paulson Road and Airport Way near an existing wood chip plant (Willis Enterprises), and the Port of Grays Harbor Terminal 3 in the City of Hoquiam (Figure 2).

Figure 2 Project Location Map

B. Environmental Elements

1. Earth

a. General description of the site:

Circle or highlight one: Flat, rolling, hilly, steep slopes, mountainous, other:

The project site is generally bare, undeveloped ground.

The lowlands were formed by historic tidelands and riverine floodplains from the mainstem Hoquiam River and its major lower tributaries.

b. What is the steepest slope on the site (approximate percent slope)?

The steepest slope is less than 2%.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The Natural Resource Conservation Service indicates the following soils in or near the project site:

- Fluvaquents, tidal, 24.0%
- Udorthents, level, 76.0%

The Project site was initially filled over 50 years ago. The initial fill included placement of sandy material dredged from Grays Harbor, while subsequent fill included angular rock used.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

According to the City of Hoquiam, the project site is mapped as having High Liquefaction susceptibility. The capacity of soft soils to amplify earthquakes has been mapped by the Department of Natural Resources.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Grading will be needed to prepare the building site, and other site components. Approximately 110,279 cubic yards of material will be excavated at the Project Site, from within an area approximately 46.5 acres in size, associated with construction of the facilities. A total of approximately 41.2 acres of the site will be graded to prepare the site.

Table 1 describes the grading quantities for the project site.

Table 1 Project Grading Quantities

Site Area	Depth of Excavation (feet)	Area of Excavation/Clearing (square feet)	Total Quantity (cubic feet)
Silos	8.2	49406	405,129
Pelleting line building		21797	178,735
Wet milling line building		5167	42,369
Truck dumper 1		1550	12,710
Truck dumper 2		1550	12,710
Truck dumper 3		1550	12,710
Rampa truck dumper 1	4.9	6329	31,012
Rampa truck dumper 2		6329	31,012
Rampa truck dumper 3		6329	31,012
Truck scale 1		1,507	7,384
Truck scale 2		1,507	7,384
Moving floor 1		1,130	5,537
Moving floor 2		1,130	5,537
Moving floor 3		1,130	5,537
Chips cleaning system		3,617	17,723
Drying island		51,150	250,635
Pelleting silos + RCO		5,328	26,107
North pound	2.0	35,715	71,430
South pound		27,728	55,456
Clearing for circulation, parking, etc.	1.0	1,795,689	1,795,689
		TOTAL CUBIC FEET	**3,005,818**
		(Cubic yards)	111,327

f. Could erosion occur because of clearing, construction, or use? If so, generally describe.

There is a minimal, temporary risk that short-term soil erosion will occur during construction as a result of grading and earthwork activities at the project site. There are no significant cumulative impacts to earth resources resulting from the project.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Around 16% of the site will be covered with impervious surfaces after completion of construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any.

The use of construction Best Management Practices (BMPs) will reduce the minimal risks and will include the adherence to a Temporary Erosion and Sediment Control (TESC) plan. PNWRE will obtain a National Pollution Discharge Elimination System (NPDES) Construction Stormwater Permit and a City of Hoquiam grading permit prior to construction and grading activities at the project site.

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Air quality impacts at the project site resulting from construction are not expected to be significant. Construction activities could result in temporary, localized increases in particulate concentrations due to emissions from typical construction-related sources. Emissions from diesel equipment could temporarily reduce ambient air quality, but the project will use equipment that complies with applicable current regulations to minimize risk. Implementation of reasonable precautions during construction and compliance with regulations regarding engines, off-site odors, and off-site dust are expected to prevent significant air quality impacts. Additionally, compliance with the Olympic Regional Clean Air Agency (ORCAA) permit will be required.

Operational air impacts from the project will result from equipment and vehicle emissions. Particulate matter and visible emissions will be emitted during facility, vehicle, and vessel operations.

Stationary sources of diesel particulate matter (DPM) would be emitted at rates greater than regulatory de minimis levels by the emergency generator and diesel engines that power the emergency fire water pumps, but these sources would only operate during an emergency, and would fall within acceptable cancer risk and ORCAA thresholds.

Mobile DPM source emissions would result from diesel-powered trucks and marine bulk vessels traveling to and from the Project Site to deliver fiber feedstock and receive pellets respectively. Feedstock will be trucked to the site each day. It is assumed that construction workers will contribute to a temporary increase in traffic in the area.

Although the final number of truck movements will depend on the capacity of trailers, compaction rates of fiber feedstock (mill and harvest residuals) and pellets, it is estimated that at full operations, approximately 128 trucks per day, operating 7 days per week, will serve the site.

Trucks delivering fiber feedstock to the terminal, and vessels carrying the product from the Project Site, will be operated by third parties. Total GHG emissions from the Project would represent minor contributions to local, regional, and global GHGs and would not be a significant source of emissions when compared to standard benchmarks.

The project will induce emissions of air contaminants in the region, thereby requiring an approved Notice of Construction (NOC) application from the Olympic Region Clean Air Agency (ORCAA). The facility is not expected to generate criteria pollutant emissions in quantities that would trigger the need for a Prevention of Significant Deterioration (PSD) permit but is anticipated to trigger the need for a Title V Air Operating Permit. The facility would be an area source of hazardous air pollutants (HAP) as potential emissions of each individual HAP are less than the applicable major source threshold of 10 TPY. Total HAP is less than the combined HAP major source threshold of 25 TPY.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no known off-site emissions or odors that may affect the proposed project.

c. Proposed measures to reduce or control emissions or other impacts to the air, if any.

Implementation of reasonable precautions during construction and compliance with regulations regarding engines, off-site odors, and off-site dust are expected to prevent significant air impacts. Additionally, the contractor will comply with the ORCAA permit.

3. Water

a. Surface Water:

1. **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe the type and provide names. If appropriate, state what stream or river it flows into.**

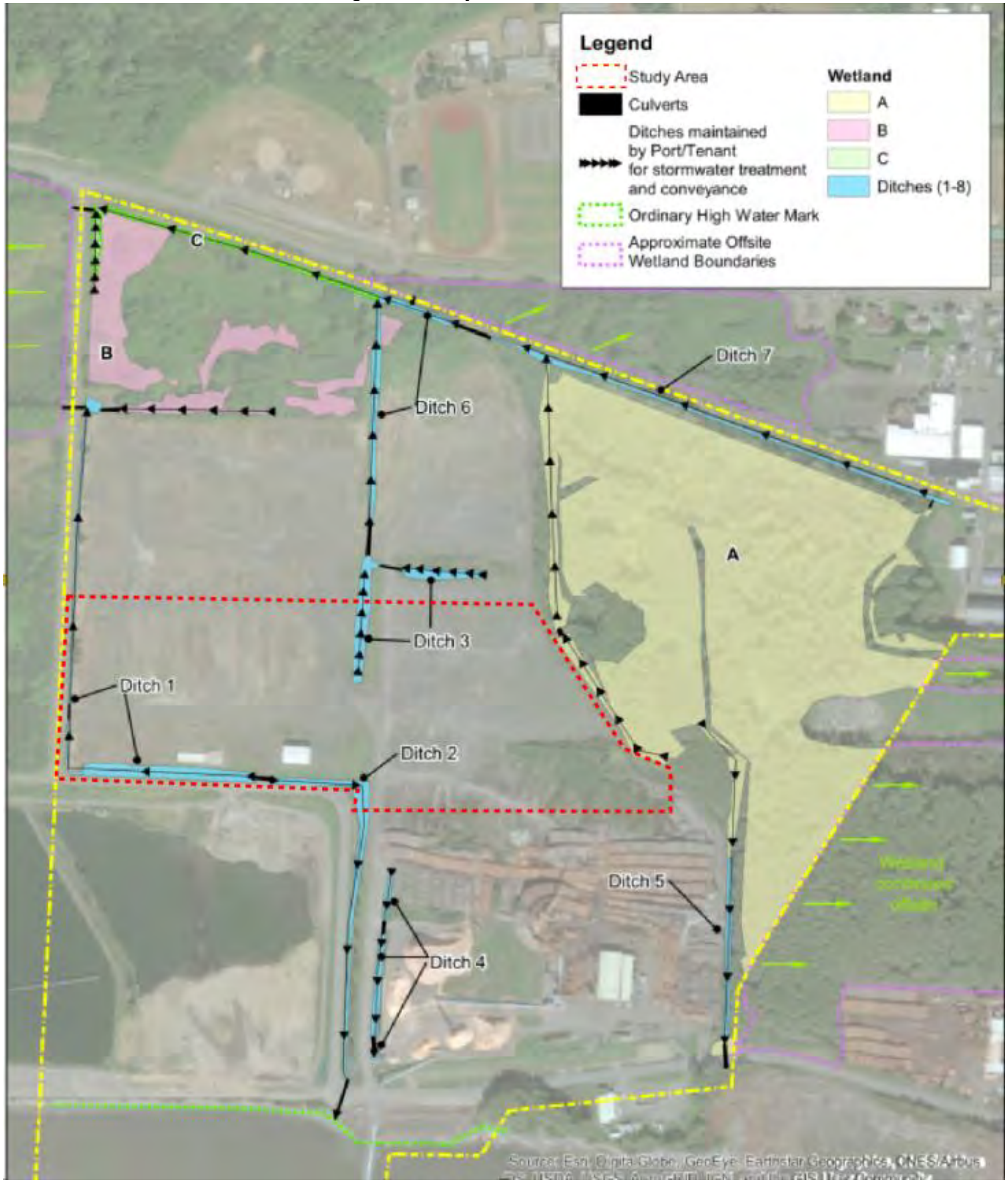
The following is a summary of the Wetland and Waterbody Delineation and Assessment Report (WSP, 2019), which was conducted for a previously proposed potash export facility (proposed by BHP but not constructed) that was included on the subject parcel.

Wetland A (offsite) is directly to the west of the Project Area. Wetland B and C are north of the Project site. Based on the City's SMP (HMC 11.05) which establishes buffers for all regulated wetlands, there is a 150-foot buffer associated with Wetland A. Ditches are exempt from regulation as wetland under the SMP, and as such, they do not have a regulatory buffer.

According to the *Wetland and Waterbody Delineation and Assessment Report* (BergerABAM, December 2017), there are wetlands offsite to the north and west and three ditches (Ditches 1, 2 and 3) within the Project Area. The water features are shown on Figure 3.

Ditch #1 is a shallow ditch that runs parallel to the north side of a portion of Airport Way. And then continues north along the east side of Paulson Road. The ditch collects stormwater and runoff from the western half of the site and conveys it north to an outfall at the north end of the ditch which conveys water to the Refuge to the west. This ditch was constructed as part of the NPDES general permit (WAR000130), to convey treated stormwater to an outfall to the west toward the Refuge and Grays Harbor. Vegetation identified in Ditch 1 includes reed canary grass, soft rush, colonial bent grass, velvet grass, white clover, horsetail, and cattail, among other species. Soils within this ditch exhibited primary indicators of hydrology at the time of the field investigations, as well as indicators of hydric soil conditions.

Figure 3 Project Water Features



Ditch #2 is a shallow ditch that flows east along Airport way, and then south along the eastern side of Paulson Road. Ditches #1 and #2 are hydrologically isolated from one another by a rock-filled driveway/access. This ditch was constructed as part of NPDES general permit (WAY000132), to convey treated stormwater to an outfall south of the study area along Grays Harbor shoreline. Vegetation, hydrology, and soil conditions are similar to those in Ditch #1.

Ditch #3 consists of two wide, shallow ponds/swales located near the center of the study area. These two ponds are hydrologically connected by a culvert, though the culvert is currently in disrepair. These ponds were created as part of NPDES general permit (WAR000131), for the purpose of detaining and treating stormwater and then conveying it northward toward similar drainage features excavated into Wetlands B and C, and ultimately on to waters of Grays Harbor through the outlet in the northwest corner of Wetland C. Vegetation, hydrology, and soil conditions in the ponds that comprise Ditch #3 are similar to those species present in Ditch #1 and Ditch #2. At the time of the site investigation, the eastern pond appears to have had a recent modification in hydrologic regime, as most of the vegetation, including several willows, has died.

The project has been designed to avoid all direct impacts to the water features described.

2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The project will not require any work over, nor within 200 feet, of state shorelines.

3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

There will be no fill or dredge material that would be placed in or removed from the surface water or wetlands.

4. Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.

The project will not require any surface water withdrawal or diversion.

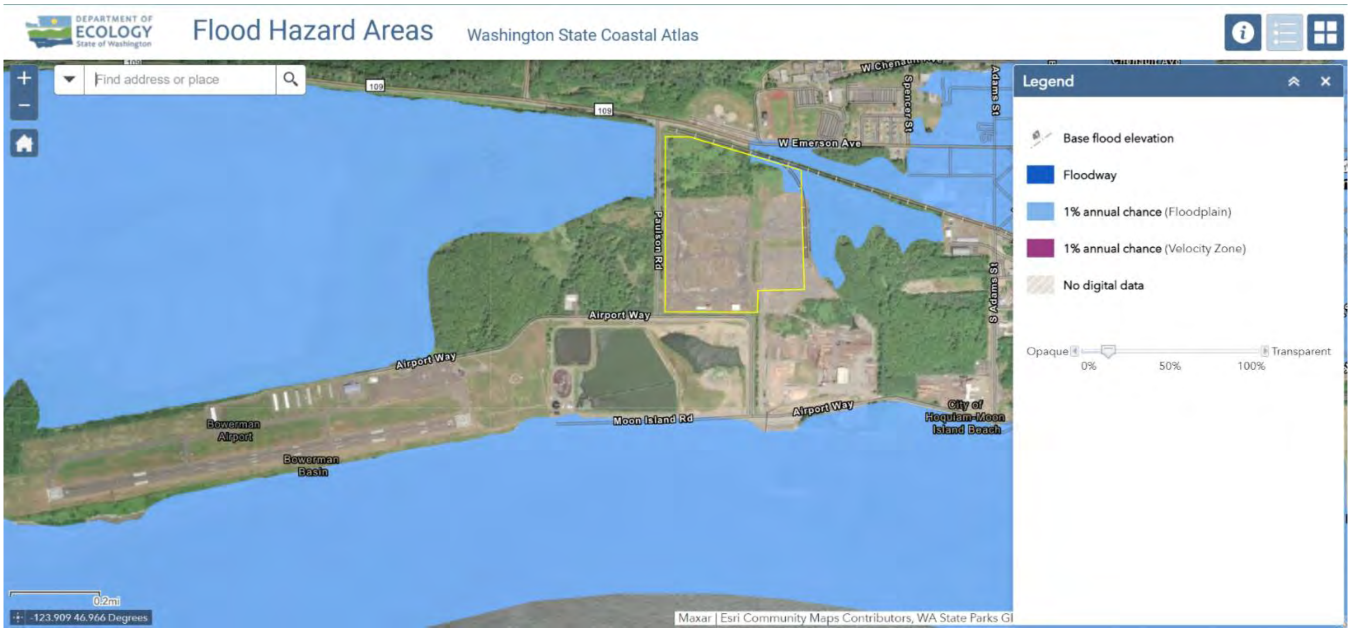
5. Does the proposal lie within a 100-year floodplain? If so, note the location on the site plan.

A small portion of the northeast corner of the parcel is within the 1% annual chance floodplain, but that section is outside of the project footprint (Figure 4)

6. Does the proposal involve any discharge of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

The project does not involve any discharge of waste materials to surface waters.

Figure 4 Flood Hazard Areas



b. Ground Water:

1. **Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.**

No groundwater will be withdrawn from a well for drinking water or other purposes. The City of Hoquiam's municipal drinking water will be used on the project site.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (domestic sewage; industrial, containing the following chemicals…; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

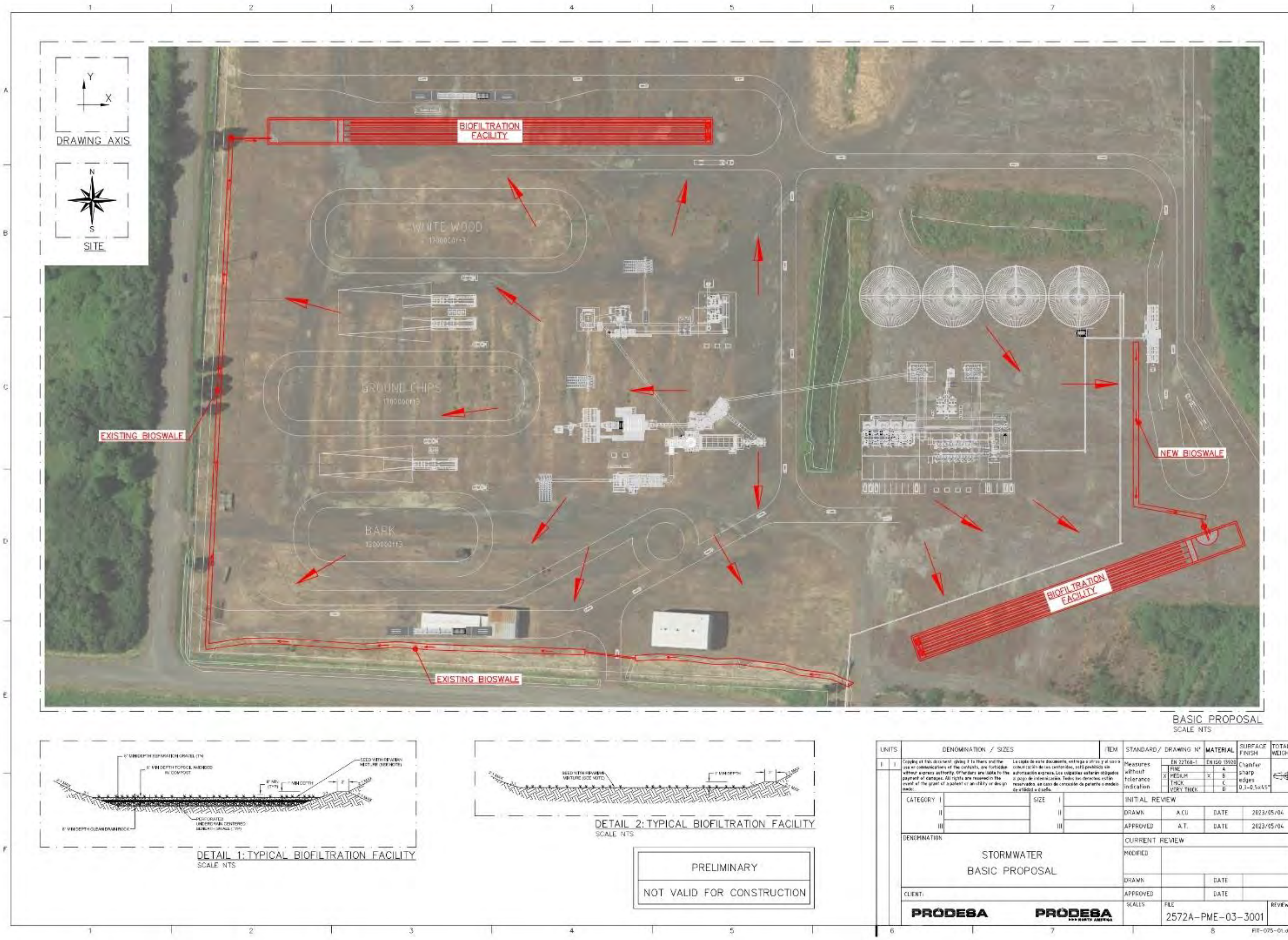
No waste material will be discharged into the groundwater from septic tanks or other sources.

c. Water Runoff (including stormwater):

1. **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

A stormwater basic proposal is provided below, which depicts the locations of two biofiltration facilities, one existing bioswale, and one new bioswale (Figure 5).

Figure 5 Stormwater Plan



Stormwater runoff during construction will be managed through implementation of BMPs consistent with construction stormwater permit requirements and plans, and may include the following:

- Construction activities will be conducted in compliance with Ecology's construction stormwater NPDES permit requirements, the Surface Water Quality Standards for Washington (WAC 173-201A), or other conditions as specified in the Water Quality Certificate (WQC).
- Project construction will be completed subject to a water quality certification and in compliance with Washington State Water Quality Standards (WAC 173-201A), including limits on turbidity.
- Petroleum products, fresh cement, lime, concrete, chemicals, or other toxic or deleterious materials will not be allowed to enter into surface waters or onto land where there is a potential for reentry into surface waters.
- Fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc., will be checked regularly for leaks, and materials will be maintained and stored properly to prevent spills.
- The contractor will prepare a Spill Prevention Control and Countermeasure (SPCC) plan and use it during all in-water demolition and construction operations. A copy of the plan will be maintained at the work site.
- The SPCC plan will outline BMPs, responsive actions in the event of a spill or release, and notification and reporting procedures. The plan will also outline management elements, such as personnel responsibilities, Project Site security, site inspections, and training.
- The SPCC plan will outline the measures to prevent the release or spread of hazardous materials found on site and encountered during construction but not identified in contract documents, including any hazardous materials that are stored, used, or generated on the construction site during construction activities. These items include, but are not limited to, gasoline, diesel fuel, oils, and chemicals.
- Applicable spill response equipment and material will be designated in the SPCC plan.

2. Could waste materials enter ground or surface waters? If so, generally describe.

Stormwater at the site has a low potential to be impacted; cleanup of any spills of dry material in the facility would be accomplished with vacuum equipment and the material would be returned to product storage, loaded into the vessel, or disposed off-site.

3. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The project will not alter or otherwise affect drainage patterns in the vicinity of the project site.

4. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any.

The project will include the following mitigation measures to reduce impacts associated with stormwater runoff below the level of significance:

- The proposed stormwater detention and treatment facilities have been designed at two locations (shown on stormwater basic proposal above) to preserve existing drainage patterns to the largest extent possible.

- The project will comply with City of Hoquiam stormwater regulations (HMC 11.05).
- The project will include new stormwater detention and treatment ponds to provide flow control and water quality treatment of stormwater, if necessary, before discharge through existing outfalls on the site.
- Catch basins will be blocked in the event of a pellet spill, and potentially impacted runoff will be contained and discharged to the wastewater system or to an approved disposal facility.
- Stormwater management will be conducted and managed in accordance with state and local regulatory requirements.

The project will comply with the following measures to protect water resources during project operations:

- Secondary containment will be provided at the onsite fueling station to contain any accidental releases.
- The facility will control risks during operations by following the industrial Stormwater Pollution Prevention Plan (SWPPP) and SPCC plan to prevent liquid products from leaving the containment areas. Spill kits will be placed in strategic and easily accessible locations for use if small spills occur; containment, control, and cleanup procedures will be immediately implemented, including notifying Ecology and other resource agencies as required by law.
- Stormwater treatment facilities would infiltrate stormwater runoff from new and existing impervious surfaces to the extent possible, or the stormwater runoff will be collected, treated, and discharged to the bay via existing outfalls. Stormwater treatment would comply with the most current version of Ecology's Stormwater Management Manual for Western Washington.
- The wood biomass pellets will be transferred to the product storage building and vessels via covered conveyors in order to protect pellets from rain exposure and avoid fiber feedstock or pellets blowing or spilling from the conveyors. Spill pans and side skirts will contain spills or fugitive dust from the return belt.
- All equipment will be routinely checked for leaks and other problems that could result in the discharge of petroleum-based products or other materials into the waters of Grays Harbor.
- Pellet spills on land will be cleaned up by sweeping, vacuum truck, or other means, and returned to product storage or disposal.

4. Plants

a. Check the types of vegetation found on the site:

☒ **deciduous tree: alder, maple, aspen, other**
☐ **evergreen tree: fir, cedar, pine, other**
☒ **shrubs**
☒ **grass**
☐ **pasture**
☐ **crop or grain**
☐ **orchards, vineyards, or other permanent crops.**
☐ **wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other**
☐ **water plants: water lily, eelgrass, milfoil, other**
☒ **other types of vegetation**

b. What kind and amount of vegetation will be removed or altered?

The impacts to onsite vegetation at the project site have been minimized and avoided to the extent practicable by locating buildings and roads in previously disturbed areas where possible; however, the majority of the site has been previously disturbed and will be cleared for construction of the new facility. The project will require the removal and/or alteration of all vegetation that is within the footprint.

c. List threatened and endangered species known to be on or near the site.

The US Fish and Wildlife Service (USFWS) Information for Planning and Consulting (IPaC) tool does not indicate the presence of any threatened or endangered plant species known to be on or near the project site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

Prior to the issuance of building permits, PNWRE will develop a landscape design for the project to control erosion and to satisfy the City of Hoquiam Landscaping and Screening ordinance (HMC 10.05.065).

e. List all noxious weeds and invasive species known to be on or near the site.

Reed canary grass and Himalayan blackberry were both identified in the project vicinity.

5. Animals https://ecology.wa.gov/Regulations-Permits/SEPA/Environmental-review/SEPA-guidance/SEPA-checklist-guidance/SEPA-Checklist-Section-B-Environmental-elements/Environmental-elements-5-Animals

a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- **Birds:** hawk, heron, eagle, songbirds, other: osprey
- **Mammals:** deer, bear, elk, beaver, other:
- **Fish:** bass, salmon, trout, herring, shellfish, other:

b. List any threatened and endangered species known to be on or near the site.

Information regarding listed species was obtained from the U.S. Fish and Wildlife Service (USFWS) Information Planning and Consultation (IPaC), the WDFW database Priority Habitats and Species (PHS) on the Web and SalmonScape, and NOAA Fisheries Northwest Region website. Table 2 identifies the species listed under the ESA that have the potential to occur within or near the Project Site.

Table 2 ESA-listed Species in the Project Area

Species Name	ESA Listing Status	Critical Habitat
Birds		
Marbled Murrelet (*Brachyramphus marmaroatus*)	Threatened	None
Western Snowy Plover (*Charadrius nivosus nivosus*)	Threatened	None
Yellow-billed Cuckoo (*Coccyzus americanus*)	Threatened	None
Fishes		
Bull Trout (*Salvelinus confluentus*)	Threatened	None
Insects		
Monarch Butterfly (*Danaus plexippus*)	Candidate	None

c. Is the site part of a migration route? If so, explain.

The City of Hoquiam is located in the Pacific Flyway, which extends from Mexico northward into Canada and the state of Alaska. Non-ESA listed migratory birds that are likely to be found in the area include but are not limited to: eagles, osprey, swifts, gulls, grebes, grosbeaks, flycatchers, hummingbirds, and dowitchers.

d. Proposed measures to preserve or enhance wildlife, if any.

According to the Biological Evaluation (WSP, May 2019) and Critical Areas Assessment (WSP, July 2019), birds, fish, and mammals may experience minimal, temporary impacts during construction, increased vessel traffic, noise, and construction lighting, but these impacts do not rise to a level of significance.

Even though the impacts to animals are not considered significant, PNWRE has incorporated mitigation measures into its Project to minimize water quality and noise impacts, which will also reduce construction impacts to terrestrial animals.

Construction activities with the potential to affect nesting migratory birds, such as tree and vegetation removal, would be conducted consistent with the provisions of the Migratory Bird Treaty Act (MBTA), which requires that nests of migratory birds be removed only at times when nests are inactive. Tree and vegetation removal would be conducted outside the active nesting season to the extent practicable. If any tree or vegetation removal is required within the time when nests could potentially be active (generally January to August), pre-disturbance nest surveys would be conducted to document whether any trees or vegetation to be removed contain active nests.

An osprey nest that is located on a power pole on the western boundary of the site may be affected by the project, so it will be relocated when the nest is inactive as part of the project, in accordance with USFWS best practices. Finally, to minimize the likelihood that vehicles will strike wildlife during construction, PNWRE will require that construction contractors operating vehicles receive training for awareness and avoidance of wildlife in the area.

Because the Project is located in a developed, industrial area, no significant, adverse environmental impacts to birds, fish, and mammals are anticipated from the Project's operation. The Project may slightly increase the impacts from truck traffic, noise, and lighting, but these impacts do not rise to a level of significance.

e. List any invasive animal species known to be on or near the site.

There are no known invasive animal species known to be on or near the site.

6. Energy and Natural Resources

1. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Construction of the project will require the use of electric, natural gas, and petroleum fuels.

The project will use electric and natural gas energy to meet the completed project's needs. The electricity will be provided by Grays Harbor Public Utilities District and will power conveyors, rotating equipment, the WESP/RTO/RCO/Drying system, the ship loader, other equipment, and support facilities (e.g., heating, lighting, etc.) needed to operate the site. The site will also include emergency diesel powered generators and fire pumps. These will be used only when power is not available to the site in an emergency or during a fire and during routine testing. The generators will only supply power to safely shut down the facility and not to operate all systems.

The biomass drying system will use natural gas to start-up the grate furnace, operate the RTO, and operate the RCO. PNWRE estimated the energy consumption for the proposed biomass export facility for use in the air quality and GHG analysis. The total energy consumption is estimated to be 18.5MW.

2. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The project includes the construction of five, 105-foot diameter by 102-foot-high silos, which will be the largest structures on the site. The silos would not interfere with the use of solar energy by adjacent properties, nor would any other part of the project.

3. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.

Energy conservation measures that will be part of the facility design will include the following.

- Compliance with the Washington State Energy code.
- Selecting energy-efficient equipment, including electrical motors designed for energy efficiency.
- Using LED lighting at the site

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.

A Phase I Environmental Site Assessment (Phase I) was performed by Stantec Consulting Services, Inc. and is summarized in this section (Stantec, May 11, 2023).

The property was tidal mudflats until the early 1970s when dredged material was used to raise the surface grade and rock was imported for surfacing material. Aerial photographs indicate the Subject Property was used for lumber storage for most of the 1980s and 1990s. Lumber storage was phased out in the late 1990s and there has been no apparent use since that time.

The site has two prefabricated metal buildings located along Airport Way. The buildings appear to have been constructed in the late 1970s or early 1980s and were used for office space, storage space, and vehicle maintenance. The buildings have not been used in approximately 25 years and are currently in poor condition. There is a small wood-frame building associated with truck scales on the north side of the westernmost building.

During the construction of the plant, silos and new conveyor system, the contractor will adhere to the City of Hoquiam's noise, dust, vibration, and hazardous waste standards.

The environmental health hazards within the plant are noise, vibration, dust, and potential for fire. The specialized equipment and techniques will be implemented to limit dust emission, degradation in storage, self-heating and potential ignition. The plant, storage, and conveyor systems will be constructed to meet all the relevant safety guidelines. See Noise section, below, for relevant standards.

The Project will adhere to the City of Hoquiam Air Quality Standards (10.05.120, Chapter 70.94, 173-400 through 173-401, and 173-460 WAC).

The Project will adhere to the City of Hoquiam's Vibration and Concussion standards, which state that no use on a parcel shall generate vibration or concussion that other parcels can detect without the aid of instruments except during periods of construction (Ord. 04-07 §19, 2004; Ord. 00-09 §4, 2000).

The Project will adhere to the City of Hoquiam's Use and Storage of Hazardous Substances. The use and/or storage of hazardous substances, as defined in RCW 70.105.010(14) shall be permitted only in the C-1, C-2, and I district. All hazardous substances shall be stored and/or transported in approved containers that prevent any leakage to the air, earth, and/or surface or ground water.

The Project is not anticipated to have impacts from spills, noise, or vibration associated with construction or the completed project.

1. **Describe any known or possible contamination of the site from present or past uses.**

The Project site appears on the Recovered Government Archive State Hazardous Waste Site (RGA HWS) List. The listing is dated 1995 and this corresponds to the Project area's use as a log and lumber storage yard for the adjoining Rayonier mill. The Rayonier mill is listed as having had previous soil and groundwater impacts from petroleum products, lead, PCBs, and dioxins and furans. The facility was also included on the CSCSL list. Ecology's Site Cleanup Details database indicates that the initial investigation of the Rayonier facility was conducted in July 1992 and Ecology issued an Early Notice Letter in September 1992. The database information indicates that confirmed impacts to soil from petroleum, lead, PCBs, dioxins, and groundwater impacts from petroleum and lead were remediated and the facility received a No Further Action (NFA) determination in January 2002. The reports reference sampling and remedial excavation of soil in the "east ditch" along Airport Way and remedial excavation of lead-impacted soil from the maintenance area. The NFA Letter references several investigations and reports beginning in September 1992 reviewed towards the NFA determination.

2. **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

Phase I identified the presence of arsenic in groundwater and dioxins/furans in soil above their applicable allowable levels. No other contaminants were identified. All soil excavated during construction will be handled and disposed of in accordance with the Contaminated Media Management Plan prepared for the project. Soil excavated as part of Project development will be isolated and stored on an impervious layer prior to disposal offsite at an approved facility.

3. **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

Construction equipment will use petroleum-based fuels and petroleum- or vegetable- based lubricants. The contractor will prepare and implement an SPCC plan to avoid, minimize, and, if necessary, respond to fuel and lubricant releases during construction. Toxic or hazardous chemicals will be stored within containment. Basic safety measures for storage of any chemicals are detailed on the individual safety data sheets, and PNWRE will follow those prevention, response, and storage directions.

Because fiber feedstock is not a hazardous substance, the risks to human health and the environment from a fiber feedstock spill are low. Generally, any fiber feedstock spill is likely to be of a small quantity (from a trace amount to pounds) and would be readily cleaned up due to Project design (impervious surfaces at points where spill could occur). The risk of a marine spill is low based on the Project's location relative to the marine environment. The risk of a truck spill is highest on the Project Site, but truck speeds and impervious site conditions would minimize the risk of spill and allow for cleanup to occur should a spill occur.

4. **Describe special emergency services that might be required.**

Fire suppression equipment (sprinklers) will be installed and used throughout the process. Buildings will comply with local and Washington State requirements for fire suppression systems. The storage silos will be designed with nitrogen injections systems. No special emergency services are anticipated at this time.

5. **Proposed measures to reduce or control environmental health hazards, if any.**

No additional measures to reduce or control environmental health hazards beyond those previously mentioned are required.

b. Noise

1. **What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

Noise in the project area is generated by adjacent uses and includes heavy equipment, rotating equipment operation, conveyance equipment, marine shipping traffic, vehicle traffic, and air traffic from a nearby airport. There is no noise in the area that is anticipated to affect the project.

2. **What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?**

Noise would be generated during construction from the use of equipment such as:

- Bulldozers
- Front-End Loaders
- Cranes
- Excavators
- Road Graders
- Dump Trucks
- Semi-Trucks
- Pile Driving Equipment
- Concrete trucks
- Skid Steer

After construction, operation of the facility would be a new source of noise. The primary source of noise would be operation of the hammermill equipment. The estimated noise levels for planned equipment are shown in Table 3 below. The facility will include noise suppression within the plant to minimize the effects offsite.

Table 3 Equipment Noise Levels

Equipment	Noise Level	Placement
Wet Hammer mill	100 dBA	Outdoor

Wet Hammer mill fan	88 dBA	Outdoor
Dry Hammer mill	96 dBA	Indoor
Dry Hammer mill fan	85 dBA	Outdoor
Pellet mill	93 dBA	Indoor
Cooler fan	97 dBA	Indoor

The land used immediately adjacent to the site is mostly industrial in nature and would not be affected by the noise from the pellet plant. There is a forested area between the facility and the schools and residences to the northeast of the railroad tracks that will provide a noise buffer.

3. Proposed measures to reduce or control noise impacts, if any.

Construction of the project would adhere to City of Hoquiam code (HMC 3A.30.010) for the generation of construction noise only between the hours of 7:00 am through 8:00 pm. Noise minimization methods will include prohibiting pure-tone backup alarms, restrictive diesel-powered equipment locations, using continuous loading methods, and installing temporary noise barriers.

Equipment at the completed plant will be mounted to isolation pads to reduce vibration and sound impacts.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The Project is located in an existing industrial area zoned and designated for industrial use by the Hoquiam Municipal Code (HMC) and Comprehensive Plan and designated as High Intensity by the Shoreline Master Program. The Project will have no significant, adverse environmental impacts to land and shoreline use because it will comply with the policies and regulations of the Hoquiam Municipal Code and Shoreline Master Program. The Project is outside of the Shoreline Buffer. The Project will not affect current land uses nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The project site has not been used as working farmlands or working forest lands.

1. Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?

The Project will not affect or be affected by surrounding working farm or forest land normal business operations.

c. Describe any structures on the site.

The site has two prefabricated metal buildings located along Airport Way. The buildings appear to have been constructed in the late 1970s or early 1980s and were used for office space, storage space, and vehicle maintenance. The buildings have not been used in approximately 25 years and are currently in poor condition. There is a small wood-frame building associated with truck scales on the north side of the westernmost building.

d. Will any structures be demolished? If so, what?

All structures on the site will be demolished.

e. What is the current zoning classification of the site?

The site is zoned as Industrial.

f. What is the current comprehensive plan designation of the site?

The site has a comprehensive plan designation of Industrial.

g. If applicable, what is the current shoreline master program designation of the site?

The project site is not within the shoreline zone.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

According to the City of Hoquiam's Comprehensive land Use Plan (February 2009), HMC 11.05.830 states "The city does not contain any critical aquifer recharge areas." Therefore, CARAs will not be impacted by the project.

The Project area is classified as a Tsunami hazard zone. The Project site also is mapped as having High Liquefaction susceptibility. The capacity of soft soils to amplify earthquakes has been mapped by DNR.

The Project site is mapped class D to E, as susceptibility to earthquake damage.

i. Approximately how many people would reside or work in the completed project?

No people would reside at the Project Site. The completed facility will employ approximately 52 employees.

j. Approximately how many people would the completed project displace?

The project will not displace anyone.

k. Proposed measures to avoid or reduce displacement impacts, if any.

No measures are required.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

The Project is consistent with existing land uses and the current Hoquiam Comprehensive Plan and zoning requirements.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any.

The project will not affect any agricultural or forest lands.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing is included as part of the Project.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing would be eliminated as part of the Project.

c. Proposed measures to reduce or control housing impacts, if any.

No measures are required.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The tallest structures included in the Project are four, 102-foot-high storage silos, which will be constructed of metal. The exhaust stack will be approximately 80 feet high.

b. What views in the immediate vicinity would be altered or obstructed?

The Project would be visible from the east, north and south views and would alter some views in the area, however these existing views are of an industrial site. No views would be obstructed or materially blocked by the Project. The Project will have no impact on adjacent residential views of the shoreline.

c. Proposed measures to reduce or control aesthetic impacts, if any.

No measures are required to reduce or control aesthetic impacts.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Lighting used during night-time construction or times of low light, if needed, will be used only in active work areas and for safety. Construction night-time lighting, if nighttime construction is needed, will be directional and will minimize glare and light spillage to the extent practicable.

Light spillage onto adjacent properties or to water during nighttime construction will be minimized to the extent practicable using shaded fixtures and directional lighting aimed only in areas for worker comfort and safety.

The Project will adhere to the City of Hoquiam Light and Glare Standards. Any land use creating intensive glare or light shall obscure the view of this glare or light from any point along the property line through the use of fences, walls, or hedge. Outside lighting will point away from the Wildlife Refuge.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

Lights will be generally aimed downward and back towards the site if close to property line, thus reducing spillage. The Project will incorporate lighting design and associated directional lighting to minimize glare and light spillage to the extent practicable while still providing the necessary lighting levels for workers' safety and for Federal Aviation Administration (FAA) lighting requirements due to the proximity to Bowerman Airport.

c. What existing off-site sources of light or glare may affect your proposal?

Off-site lighting is typical of urban areas and consists of street and building lights. The adjacent Bowerman Airport includes high-intensity runway lights that are activated on approach. This existing lighting will not affect the project as it does not include activities that are sensitive to light. Lighting of adjacent industrial sites and the high school property to the north also have no effect on the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any.

The project will incorporate lighting design and associated directional lighting to minimize glare and light spillage to the extent practicable. FAA-approved lighting will be mounted on buildings and structures for aviation safety. No other measures are required.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

The John Gable Community Park and Hoquiam Skate Park are located north of the Project Site, north of Emerson Avenue. The facilities include concrete structures for skating, playground equipment, baseball fields, and parking.

The Grays Harbor National Wildlife Refuge is located west of the Project site and is part of the Grays Harbor Estuary. The refuge, established in 1990, encompasses almost 1,500 acres of intertidal flats, open water, salt marsh, and forested habitats and contains walking trails.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Construction of the Project could result in indirect impacts from noise to recreational uses on lands adjacent to or near the site, but these impacts will be temporary and are not expected to rise to the level of significance.

The Project Site is an existing industrial facility that does not have any recreational uses. Existing recreational uses would be indirectly affected, but not displaced, by Project construction. Operation of the proposed facility is not anticipated to significantly displace or restrict access to any recreational uses as the proposed facility will be an industrial site used similarly to the existing wood chip facility and current shipping uses at Terminal 3.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any.

Recreational facilities in the area have some exposure to noise and diesel emissions from truck traffic, and other diesel vehicles from existing industrial uses in the area. The Project is not anticipated to significantly add to the existing noise and emissions; thus, no measures are required.

13. Historic and Cultural Preservation

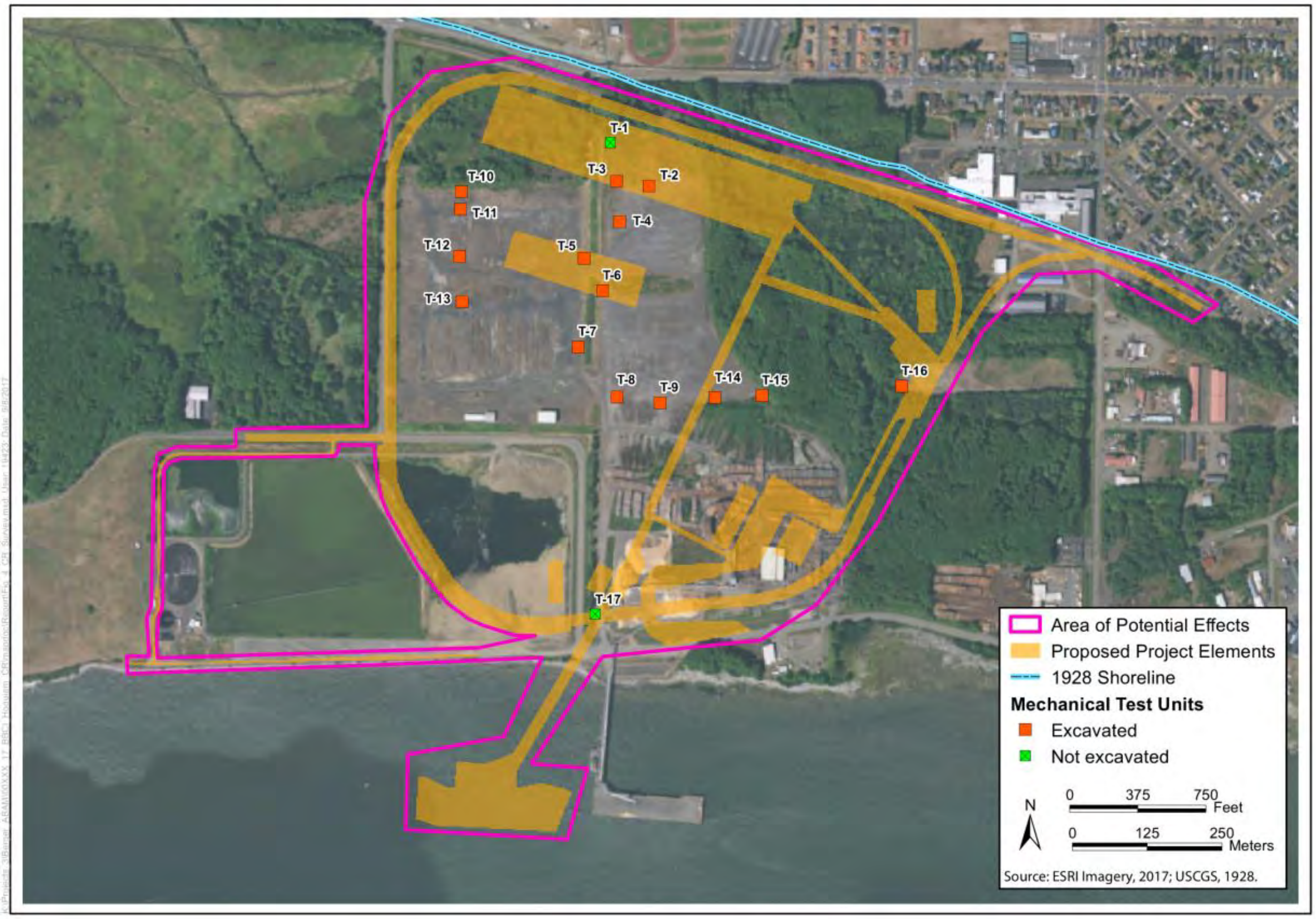
a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

There are no buildings, structures, or sites located on or near the site that are over 45 years listed in or eligible for listing in the national, state, or local preservation registers.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

No archaeological deposits were identified during subsurface investigations for the previous BHP proposal (*Cultural Resources Tech Report*, ICF 2019). Across much of the Area of Potential Effects (APE), the pre-development ground surface appears to be between 17 and 18 feet below the ground surface, with the exception of four locations where the pre-development ground surface was at a greater depth than the maximum reach of the excavator that was being used (21 feet).

Figure 6 Area of Potential Effects and Cultural Survey Sites (BHP Proposal)



c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

The APE is defined as a geographic area or areas within which the proposed project may directly or indirectly cause a change of character or use of historic properties.

According to the Cultural Resources Report (*Cultural Resources Tech Report*, ICF 2019), the City of Hoquiam maintains a local register of historic places which includes individually registered city landmarks, historic districts, or conservation districts (Hoquiam Municipal Code, Chapter 10.06). The upland portions of the Project Site are not currently accessed by tribal members and use of the uplands would not affect access to the Quinault's treaty resource areas. The Quinault Indian Nation have indicated that members fish in Grays Harbor near the Project Site and areas required for the positioning of vessels for product loading and shipment.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

There are no measures proposed to avoid, minimize, or compensate for loss, changes to, and disturbance to resources, as there were none identified within the APE. The Project would have minor effects on fishing by Quinault Indian Nation members during construction and operation of the PNWRE Project. PNWRE is currently coordinating with the Quinault Indian Nation to inform them of the Project and receive input on the proposal.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The street network in the Project vicinity is shown on the site plan and vicinity maps (Figures 1 and 2) in Section A, above. Roadways in the vicinity include Highway 101, State Route 109/West Emerson Avenue, Paulson Road, and Airport Way.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The site is not directly served by public transit. The closest Grays Harbor Transit bus stop is located at Emerson Avenue and Adams Street, approximately one mile from the Project site.

c. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

Private roads connecting the site to the existing roadway network and for interior circulation will be constructed of aggregate for facility traffic and employees only.

d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The operation of the Project will use shipping vessels from Terminal #3, which is in existing use by Willis Enterprises. The Project would increase vessel traffic by approximately one ship every 5 to 6 weeks, or 10 per year.

There is a rail spur located to the north, between the Project site and Emerson Avenue. The Project will not use rail and is not anticipated to affect existing rail traffic.

The Project Site is located approximately 0.25 miles to the east of Bowerman Airport. The Project was designed to minimize indirect impacts to Bowerman Airport. The layout of the storage building and other structures at the site are dictated primarily by the FAA's regulations governing the safe, efficient use and preservation of the navigable airspace in 40 C.F.R. Part 77. Consultation with the FAA is ongoing to ensure the proposed facility does not represent an obstruction to air navigation. The Project will comply with FAA provisions for lighting to ensure no impacts to Bowerman Airport.

e. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?

The completed Project will include approximately 128 traffic trips per day (truck and employee traffic).

f. Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The Project would not interfere with, affect, or be affected by the movement of agricultural and forest products on road or streets in the area.

g. Proposed measures to reduce or control transportation impacts, if any.

Truck traffic from the completed Project will be routed to avoid local surface streets and rail crossings within plant design requirements. No other measures are required.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, others)? If so, generally describe.

PNWRE plans to provide its own site security and utilize fire protection and emergency systems that meet or exceed applicable building standards. It is not anticipated that the Project will result in an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

No measures are required.

16. Utilities

a. Circle utilities currently available at the site:
<u>electricity</u>, <u>natural gas</u>, <u>water</u>, refuse service, telephone, sanitary sewer, septic system, other:

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

The facilities will use potable water (City), sanitary sewer (City), electricity (Grays Harbor PUD), natural gas (Cascade Natural Gas) and communication services (private). All services will tie into existing nearby utility lines.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Type name of signee: Mark D. Boivin

Position and agency/organization: CEO, PNWRE

Date submitted: 6/19/2023

UNITED STATE ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27111

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

MEMORANDUM

SUBJECT: Release of AERMOD & AERMET Version 23132 and MMIF Version 4.1

FROM: Clint Tillerson, Model Development Team Lead
Air Quality Modeling Group
Air Quality Assessment Division, Office of Air Quality Planning and Standards

TO: EPA Regional Modeling Contacts

The United States Environmental Protection Agency (EPA), Office of Air Quality Planning and Standards (OAQPS) is releasing new versions (23132) of the AERMOD dispersion model and the AERMET preprocessor AERMOD, replacing AERMOD version 22112 and AERMET version 22112 as the regulatory versions of AERMOD and AERMET. Released concurrently with AERMOD and AERMET is MMIF 4.1 which replaces MMIF 4.0.

This memorandum provides information on these updated programs, including the nature of the updates and the status of the releases regarding regulatory applications. If there are any questions about this new release of the AERMOD Modeling System or issues found with the updated model components, please send an email to Tillerson.Clint@epa.gov.

Background

In 2005, the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) was promulgated as the EPA's preferred near-field dispersion model for regulatory applications, replacing the Industrial Source Complex (ISC) model. AERMET is the regulatory meteorological preprocessor for AERMOD and can process National Weather Service (NWS) surface data, NWS upper air data, site-specific data, (i.e., data collected at a nearby representative meteorological station), and pre-processed prognostic meteorological data.

AERMET processes the input meteorological data to calculate boundary layer parameters for input to the AERMOD model.

This release is concurrent with a Notice of Proposed Rulemaking (NPRM) to revise Appendix W to CFR 40 Part 51, *Guideline on Air Quality Models* (*Guideline*). The revision to the *Guideline* proposes updates to the regulatory formulation of AERMOD and AERMET and implementation. The proposed updates are included in this release as BETA options and cannot be used for regulatory applications of the modeling system without approval as an alternative model by the appropriate EPA Regional Office and subsequent concurrence by the EPA Model Clearinghouse (MCH). The EPA anticipates the proposed *Guideline* to be finalized in the Spring of 2024.

For more information regarding the regulatory application of the AERMOD Modeling System, please consult the *Guideline*.

AERMOD

AERMOD 23132 replaces the regulatory version 22112. In summary, updates in AERMOD 23132 include numerous small bug fixes related to the BUOYLINE, AREACIRC, RLINE, RLINEXT and SWPOINT source types; updates to error and warning messages; enhancements to the BUOYLINE and URBANOPT debug files; formulation updates and enhancements to the RLINE and RLINEXT source types, addition of new ALPHA options; and the BETA flag requirement to accept meteorological data processed with the COARE algorithm implemented in AERMET 23132. Note that the ALPHA and BETA options in AERMOD 23132 cannot be used in regulatory applications of the AERMOD Modeling System without EPA Region Office approval as an alternative model and concurrence from EPA's MCH. Refer to the AERMOD Model Change Bulletin #17 for a complete list of changes in AERMOD 23132. Some of the more substantial updates and new options of interest include the following:

Proposed Regulatory Updates

- Reformulation of RLINE source type to bring the RLINE source type into better agreement with other AERMOD source types. There were three main aspects of the reformulation: (1) Wind Speed calculation, (2) Harmonization with AERMOD sources, and (3) Dispersion Coefficients (RLINE - BETA option proposed as formulation update).
- Formulation updates to the Generic Reaction Set Method (GRSM) Tier 3 screening option for NO_2 conversion (GRSM - BETA option proposed as formulation update).

- Requirement of the BETA flag in the AERMOD control file if 'COARE' is found in the SFC meteorological input file header. The presence of 'COARE' in the SFC file header indicates the meteorological data were processed with the COARE algorithm in AERMET ('COARE' SFC Header Flag - BETA option).

New ALPHA Options

- A treatment for highly buoyant plumes when they penetrate the top of the mixed layer (HBP).
- Area meander for area source types (AREAMNDR).
- Characterization for aircraft sources as area and/or volume source types that accounts for plume rise from aircraft (ARCFTOPT).

Bug Fixes and Enhancements

- Capability to account for elevated terrain with RLINE and RLINEXT source types. **NOTE: When modeling project level conformity and hot-spot analyses, refer to the Office of Transportation and Air Quality (OTAQ) for current guidance for modeling roadway sources**.
- New debug file for urban debug option that reports temperature and vertical potential temperature profiles.
- Ability to use a mixture of 2-digit and 4-digit years across data input files (e.g., SFC meteorology, PFL meteorology, hourly emissions, and hourly background).
- Correction to conversion of 2-digit year to 4-digit year for check on SRFDATA keyword in control file. Year is assumed to be in the 1900s if the year is >=50 and in the 2000s if < 50.
- Correction to conflicts with source group IDs during event processing with BUOYLINE source type.
- Correction for NaN in the urban debug file.
- Correction for false warning message "Julian Day Out of Range" that was issued when using DAYRANGE keyword.
- Requirement of ALPHA flag when RLINEXT source type is specified.
- Correction when AREACIRC sources are listed in an INCLUDED file. Sources were overwritten when multiple reads of AREACIRC sources caused memory conflicts between array sizing and source ID assignments.

- Correction to ARMRATIO minimum and maximum values to match the ranges provided in the AERMOD User's Guide, based on whether the DFAULT keyword is specified.
- Warning message added when the SCREEN option is used with RLINE, RLINEXT, BUOYLINE, SWPOINT, AREA, or LINE source types.
- Correction for inconsistent results between BUOYLINE, RLINE, and RLINEXT source types when modeling for FLAT terrain and depending on how FLAT terrain was specified.

AERMET and MMIF

AERMET 23132 replaces the regulatory version 22112. Version 22112 represented a complete overhaul of the AERMET source code structure, though no updates to the formulation of AERMET were introduced. Version 23132 corrects various bugs reported since the code overhaul. In addition, several enhancements were included related to quality assurance (QA) checks on the number of site-specific sub-hourly observations and data reported in the QA output file. Perhaps the most substantial update to AERMET is the addition of the Coupled Ocean Atmosphere Response Experiment (COARE) air-sea flux procedure for processing meteorological data representative of a marine boundary layer needed for modeling offshore sources. The implementation of COARE in AERMET is being proposed as a regulatory update to AERMET in the proposed *Guideline* updates and replaces the stand-alone AERCOARE meteorological processor which has recently been approved as an alternative model for several offshore source permit applications. Note that the use of meteorological data processed with the COARE option in AERMET is a BETA option in AERMOD and requires EPA Regional Office approval and EPA MCH concurrence until this updated formulation of AERMET has been finalized in the *Guideline*. Refer to the AERMET Model Change Bulletin #13 for a complete list of changes in AERMET 23132. Some of the more substantial updates and new options of interest include the following:

Proposed Regulatory Update

- Addition of COARE air-sea flux procedure (BETA flag required in AERMOD).

Bug Fixes and Enhancements

- Additional QA on the number of observations/hour in sub-hourly site-specific data.

- Added NWS elevation to SURFACE EXTRACT and QAOUT file when derived from ISHD data.
- Additional QA checks to ONSITE/PROG heights when OSHEIGHTS is not specified.
- Updated AERMET to allow multi-level data to be out of ascending order.
- Check added on OUTPUT and PROFILE file for format overflows and NaN.
- Modified PBL_PROC and WRITE_SRSS to only get target sounding hours and UPPERAIR sunrise/sunset times when UPPERAIR data being used in Stage 2.
- Correction in subroutine MECH_HT to use unsmoothed mixing height when u* is missing for the hour.
- Initialized variables to correct issues with Linux compilation.
- Correction to allow primary surface characteristics keywords to be used with AERSURF2 file in subroutine AERSURF.
- Correction for sounding target hours when beginning of window is in previous day of sounding in subroutines PBL_PROC and CHECK_OBS.
- Correction in UPPERAIR location when using ONSITE/PROG mixing heights and no UPPERAIR data.
- Correction to SURFACE winds to only set to calm if not missing.
- Correction to sum ONSITE sub-hourly precipitation variables instead of averaging.

The addition of COARE in AERMET subsequently required updates to the Mesoscale Model Interface Program (MMIF) to extract additional meteorological parameters from prognostic model output for input to AERMET and modify the AERMET control files generated by MMIF. MMIF 4.1 replaces MMIF 4.0.

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May 26, 1992

MEMORANDUM

SUBJECT: Applicability of Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) to the Cleveland Electric, Incorporated, Plant in Willoughby, Ohio

FROM: Edward J. Lillis, Chief
Permits Programs Branch, AQMD (MD-15)

TO: George T. Czerniak, Chief
Air Enforcement Branch, Region V

This memorandum responds to your request for a written applicability determination for a Cleveland Electric, Incorporated, facility in Willoughby, Ohio. As discussed below, my staff has determined that this Cleveland Electric facility is subject to a 100 tons per year (tpy), major source applicability threshold for the PSD requirements at 40 CFR 51.21. If this facility has commenced construction with a minor source construction permit from Ohio, but without undergoing new source review (NSR), as required by 40 CFR 52.21, the source may be in violation of Federal PSD requirements. At this time, the Cleveland Electric Plant does not appear to be subject to the current emissions guideline for municipal waste combustors or NSPS of 40 CFR Part 60, subparts Ca and Ea, respectively. This response has been coordinated with the Compliance Monitoring Branch of the Stationary Source Compliance Division (SSCD), to whom your applicability request was addressed, and with the Standards Development Branch of the Emission Standards Division (ESD) on the applicability of NSPS and emissions guidelines.

In reviewing the information forwarded to our office, we have determined that, for PSD applicability purposes, the Cleveland Electric facility is both a municipal waste incinerator and a fuel conversion plant, as listed at 40 CFR 52.21(b)(1)(c)(iii), and would be major if the source "...emits, or has the potential to emit, 100 tpy of any pollutant subject to regulation under the (Clean Air) Act". The facility appears to meet the criteria for both categories by disposing of municipal waste using combustion and by producing a low heat value fuel gas. While there are no definitions in the PSD regulations for "municipal waste incinerator," "fuel conversion plant," and other categories listed as subject to the 100 tpy, major source threshold, the Environmental Protection Agency (EPA) has relied on case-by-case determinations in assessing source applicability. These assessments are based on precedents established by NSPS and other regulatory definitions, as well as technical analysis of the character and functions of both the proposed source and the listed source categories. We have used these guidelines in determining that the Cleveland Electric plant is considered listed under two source categories for which the lower PSD applicability threshold applies.

The NSPS regulations define "municipal waste combustor" at 40 CFR 60.51a to mean "... any device that combusts solid, liquid, or gasified (municipal solid waste) including, but not limited to, field-erected incinerators (with or without heat recovery), modular incinerators (starved air or excess air), furnaces (whether suspension-fired, grate-fired, mass-fired, or fluidized bed-fired) and gasification/combustion units." The emissions guideline of subpart Ca also incorporates this definition by reference (40 CFR 60.31a). On page 10 of Cleveland Electric's December 20, 1991 permit application submittal, the source is described as consisting of seven units, charging 50 tons per day (tpd) per unit, "...converting municipal solid waste into...fuel gas." For NSPS purposes, the Cleveland Electric source is a municipal waste combustor and would be subject to the NSPS standards of 40 CFR Part 60, subpart Ea, if each unit were not below the 250 tpd of refuse combustion capacity per unit applicability threshold of subpart Ea [40 CFR 60.50a(a)].

A municipal waste incinerator "combusts" solid waste and thus is functionally synonymous with municipal waste combustor. Accordingly, EPA has adopted the NSPS definition of municipal waste combustor for determining if a source is subject to the 100 tpy applicability threshold for PSD in section 16(1) of the-3- CAA. Section 169(1), as amended by Section 305(b) of the CAA Amendments of 1990 [P.L. 101-549, sec. 305(b)], lists "municipal incinerators capable of charging more than 50 tons of refuse per day" as being subject to the 100 ton emissions threshold. Under EPA's sourcewide plant definition [40 CFR 52.21(b)(5 and 6)], the 50 tpd charging rate applies to the sum of all units at the Cleveland Electric facility (which will be capable of charging a total of 350 tons of refuse per day). Therefore , the Cleveland Electric facility will be a major source for PSD purposes if the source emits, or has the potential to emit, 100 tpy of any pollutant regulated under the CAA [except HAP's listed under §112(b) of the CAA].

The production of low heat value fuel gas at the Cleveland Electric facility also classifies the source as a fuel conversion plant. Fuel conversion plants obviously include those plants which accomplish a change in state (e.g., solid to liquid to gas) for a fuel. This definition includes conversion of the following fuels: fossil (e.g., coal or oil shale); biomass (e.g., wood or peat); and anthropogenic (e.g., municipal waste derived fuel and inorganic fuel). The majority of such sources are likely to accomplish these changes through either gasification, liquefaction, or solidification. The category of fuel conversion plants may include, but is not limited to, some types of sources within standard industrial classifications 1311, 2819, 2969, 2421, and 2999. Generally, however, applicability for this source category is determined by whether a facility changes the state (e.g., solid to gas) or form (e.g., process sawdust into a pellet) of a fuel. Therefore, the Cleveland Electric facility fits into the fuel conversion plant category as well. In both cases, as a municipal waste incinerator and as a fuel conversion plant, the source is major and subject to PSD requirements if the source has the potential to emit 100 tpy of a regulated pollutant other than a HAP.

If you have any questions concerning our PSD applicability determination, please contact Bill Lamason of my staff at (919) 541-5374. Questions concerning NSPS should be directed to Walt Stevenson, ESD, at (919) 541-5264. On compliance issues, you may contact Clara Poffenberger, SSCD, at (703) 308-8709.

cc: NSR Contacts, EPA Regions I-X.
K. Berry, AQMD
C. Poffenburger, SSCD
W. Stevenson, ESD
B. Tyndall, OGC
J. Domike, OE
B. Lamason, PPB

Attachment HH

DEC 1 2 2014

Georgia Department of Natural Resources

Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

MEMORANDUM:

TO: Sean Taylor
THROUGH: Ross Winne, Richard Taylor
FROM: Jeff Babb
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Hazlehurst Wood Pellets, LLC
COMPANY LOCATION	Hazlehurst, GA
SOURCE TESTED	Pellet Cooler Baghouse S1B Exhaust
POLLUTANT DETERMINED	Volatile Organic Compounds
REPORT REVIEWED BY	Jeff Babb
TEST WITNESSED BY	Jeff Babb
DATE(S) OF TEST	August 28, 2014
DATE RECEIVED BY APB	October 27, 2014
MAXIMUM EXPECTED OPERATING CAPACITY	20 ODT/HR
OPERATING CAPACITY	21 ODT/HR
ALLOWABLE EMISSION RATE	249 Tons/Year
APPLICABLE REGULATION	Air Quality Permit No. 2499-161-0023-E-01-0, Condition 2.1
CONTROL EQUIPMENT AND MONITORING DATA	N/A

TEST RUN #	1	2	3	AVERAGE
POLLUTANT CONCENTRATION (PPM Carbon)	145.9	142.8	153.9	147.5
EMISSION RATE (LB/HR Carbon)	6.62	6.07	6.55	6.41

PERCENT ALLOWABLE (%)	19.2
OTHER INFORMATION	ISMP calculated M25A emission rate = 7.8 LB/HR as Propane Ref. No. 201401158 results for M25A VOC Propane = 3.0 LB/HR Ref. No. 201401159 results for Formaldehyde = 0.01 LB/HR Ref. No. 201401160 results for Methanol = 0.01 LB/HR Ref. No. 201401161 results for Acetaldehyde = 0.02 LB/HR Ref. No. 201401159 results for M25A VOC S1B = 7.8 LB/HR Ref. No. 201401165 results for Formaldehyde = 0.01 LB/HR Ref. No. 201401166 results for Methanol = 0.09 LB/HR Ref. No. 201401167 results for Acetaldehyde = 0.06 LB/HR At a production rate of 21.0 ODT/HR the OTR26 (NCASI WPP1) Total VOC emission rate = 10.9 LB/HR On an ODT basis is 0.52 LB VOC/ODT. Therefore the OTM 26 (WPP1) potential total annual VOC emission rate is 47.7 LB/Year or 19.2% of the allowable VOC emission rate of 249 TON/Year.

cc: Ross Winne
Reference Number: 201401164

AIRS Number: 16100023
Printed: 12/12/2014

TEST REPORT TRANSMISSION SUMMARY

(Submit separate summary sheet for each pollutant test report)

Submit to:
Ross Winne, Program Manager
Industrial Source Monitoring Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

ISMP Database
(Air Protection Branch use only)
No.

Facility Name: **Hazlehurst Wood Pellets, LLC**

Facility Address: **430 Hullett Wooten Farms Road** **Hazlehurst** **GA** **31539**

Facility Contact: **Chris Tanner** Phone No. **(912) 551-9251 ext. 109**

PART A

Emission Point (one only): **S2B Pellet Cooler Baghouse Exhaust**

Pollutant (one only): **Total VOC** Date test performed: **12-16-15**

Applicable Rule(s), Regulation(s) or Permit Conditions: **Permit 2499-161-0023-V-02-0**
Condition 2.1.1 (249 tpy) PSD avoidance

Maximum expected operating capacity: **20 ODT/hr, output, 12% moisture**

Operating capacity during test: **20 ODT/hr, output, 12% moisture**

Computed allowable emission rate(s) or limitation(s): **None**

Reported emissions to atmosphere: **12.4 lb/hr (as propane)**

The test report should include a compilation of all CEMS data, control devise parameters and process operating data related to the test. **No CEMS present. Control device parameters and process operating data are provided in Appendix D of test report.**

PART B

For any facility operating under a Part 70 Permit, Condition 8.8.3 of that permit requires the following certification should be signed by a responsible official and included with the report:

I certify that based on my information and belief formed after reasonable inquiry, the statements and information in this report are true, accurate, and complete.

Chris Tanner	Chris Tanner	Corp. Environmental Mgr	2-10-16
NAME	**SIGNATURE**	**TITLE**	**DATE**

Rev. 05/30/06

October 28, 2003

Mr. Michael Cathey
Managing Director
El Paso Energy Bridge Gulf of Mexico, L.L.C.
1001 Louisiana Street
Houston TX 77002

Diana Dutton, Esquire
Akin, Gump, Strauss, Hauer & Feld, L.L.P.
1700 Pacific Avenue, Suite 4100
Dallas TX 75201-4675

Dear Mr. Cathey and Ms. Dutton:

This letter responds to communications from El Paso Energy Bridge Gulf of Mexico, L.L.C. (El Paso), regarding preliminary views the Environmental Protection Agency (EPA) Region 6 expressed in a letter dated March 28, 2003, to the United States Coast Guard, and in several subsequent meetings and telephone calls. El Paso's objections to these views are set forth in an "Analysis of Deepwater Port Permitting Requirements" it provided EPA Region 6 at a meeting on May 9, 2003; in Mr. Cathey's June 16, 2003, letter to Commander Mark Prescott; and in Ms. Dutton's letters of July 18, 2003, and August 18, 2003, to EPA attorneys Patrick Rankin and Michael Boydston. EPA's understanding of the facts in this matter is based on representations in that correspondence, in El Paso's Application to the United States Coast Guard for a Deepwater Port (December 2002) (license application), in National Pollutant Discharge Elimination System (NPDES), Prevention of Significant Deterioration (PSD) and Title V permit applications El Paso filed under protest on September 4, 2003, and in El Paso's statements at a meeting with the Regional Administrator for EPA Region 6 on September 12, 2003.

BACKGROUND

Given the Nation's expanding demand for natural gas, a number of entities are in the process of developing plans and permit applications for deepwater ports through which that commodity may be imported from overseas gasification plants. Typically, such deepwater ports would be located on the outer continental shelf of the United States and use existing natural gas pipelines associated with offshore natural gas production to transport the imported gas ashore. Because the vessels transporting the gas carry it in a liquified state and the pipelines carry it in a gaseous state, the primary industrial process that would occur at offshore natural gas ports is conversion of natural gas from liquified to gaseous state for transport ashore. A major capital expense associated with the ports is generally the construction of offshore fixed facilities on which the re-gasification process will occur. El Paso's proposal, however, is somewhat different.

El Paso proposes to construct and operate a natural gas deepwater port approximately 120 miles off the coast of Louisiana. The proposed port would feature a "submerged turret system" (STS)[1] connected to a short (1.93 miles) pipeline leading to a metering platform. Two other short (3.93 and 1.38 miles) pipelines would convey the natural gas from the metering platform to existing natural gas pipelines operated by other entities for transport ashore. This fixed infrastructure would not include facilities for LNG storage or re-gasification and, under normal circumstances, would not be manned. As explained below, El Paso contends these relatively modest fixed facilities would constitute its entire deepwater port for purposes of federal regulation under the Deepwater Port Act (DPA), Clean Air Act (CAA), and Clean Water Act (CAA).

Only specially designed and equipped liquefied natural gas (LNG) vessels, two of which are now under construction, would be able to deliver natural gas to the fixed infrastructure of the proposed port. Those vessels are identified in El Paso's license application as El Paso Energy Bridge Vessels (EPEBVs). Like most LNG carriers, the EPEBVs would be propelled by steam turbines. The boilers generating the steam would normally be fired with natural gas "boil off" from the cargo on their voyage to the buoy, but by diesel oil while discharging cargo and on the return voyage. Unlike any LNG carrier previously constructed, however, the EPEBVs would be specially outfitted so they could be attached to the STS and re-gasify their LNG cargo before offloading it.

The operator of an EPEBV calling on the port would retrieve the STS, winch it into an opening in the bottom of the vessel's hull, and attach it to the vessel with hydraulically operated locking jacks. It would then ring up "finished with engines" and set a "moored condition" bridge watch. Thereafter, an El Paso representative, a.k.a., "person in charge" (PIC), and "other entities involved in cargo transfer process" would board the vessel. License Application, Appendix M, p. 3. The PIC would inspect the re-gasification system, determine the quantity and quality of the cargo, calibrate metering equipment, assure coordination with the pipeline operators so that maximum operating pressures would not be exceeded, and "issue permission to the vessel operator" to commence the re-gasification and transfer process. *Id,* p. 4.

Onboard re-gasification would be accomplished by warming the LNG until it turned into a gas, a process employing an "open loop" system, "closed loop" system, or a combination of the two. In the open loop mode, warm seawater would be drawn into the EPEBV, then passed through a shell and loop vaporizer, converting the LNG to a gaseous state by heating it, and then

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[1] The proposed STS would be a special purpose buoy equipped with a flexible riser and pipeline manifold and would be affixed to the seabed by chains and anchors. When not in use, it would be submerged, but marked by a smaller lighted buoy on the surface.

would be discharged back to the sea at a reduced temperature. In the closed loop mode, steam from the EPEBV's boilers would be used to heat water circulated through the shell and loop vaporizer in a closed system from which there would be no warming water discharge. El Paso would normally use the open loop system at its proposed Gulf of Mexico facility, but could rely on the closed loop system if necessary. After re-gasification, the natural gas would be conveyed through the buoy, riser, and manifold to the 1.93 mile pipeline leading to the metering platform.

In its letter of March 28, 2003, EPA explained its views on how the CWA would apply to the discharges from the open loop re-gasification system as well as discharges from the metering platform. It also explained its views on how the CAA would apply to emissions associated with both the re-gasification processes and emissions from the metering platform. El Paso objects to regulation of any discharges or emissions originating on the EPEBVs and to the process for authorizing discharges and emissions from the metering platform.

SOURCE OF EPA AUTHORITY TO REGULATE ACTIVITIES ASSOCIATED WITH DEEPWATER PORTS

EPA regards a provision of the DPA, 33 U.S.C. § 1501, *et seq,* as the primary source of its authority to apply the CAA and CWA to activities associated with deepwater ports. In relevant part, 33 U.S.C. § 1518(a)(1) extends the Constitution and laws of the United States "to deepwater ports . . . and to activities connected, associated, or potentially interfering with the use or operation of any such port, in the same manner as if such port were an area of exclusive Federal jurisdiction located within a State." In addition, 33 U.S.C. § 1518(b) "federalizes" consistent laws of the adjacent state and directs that they be applied by federal officials. These statutory provisions are similar to Section 4 of the Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. § 1333(a)(1), and serve the same general purpose, i.e., defining the body of law that applies to activities within the purview of the respective acts. *See generally, e.g., Rodrique v. Aetna Casualty & Surety Co.*, 395 U.S. 352 (1969); *Wentz v. Kerr-McGee Corp*., 784 F.2d 699 (5th Cir. 1986); *Village of False Pass v. Clark*, 733 F.2d 605 (9th Cir. 1984). OCSLA § 4 has been long viewed by EPA as the source of its authority to regulate discharges from oil and gas operations on the outer continental shelf. *See* "Outer Continental Shelf Applicability of FWPCA," Opinion of the General Counsel (August 3, 1973), *published at* 2 Gen. Couns. Ops. (Water Pollution) 181, 182 (Environmental Law Publishing Service, 1979).

El Paso contends, however, that the DPA establishes a "one window" licensing process that shifts responsibility for issuing authorizations required by the CWA and CAA from EPA to the Secretary of Transportation. According to El Paso, EPA's role in that unified licensing process is limited to developing conditions implementing those statutes for inclusion in the deepwater port license issued by the Secretary. El Paso further argues that this unified licensing procedure has substantive consequences. According to El Paso, the Secretary's authority to regulate *via* this unified license is circumscribed by the exclusion of "vessels" in the DPA's definition of "deepwater port" and EPA could thus neither recommend nor require the Secretary's imposition of license conditions on vessels, regardless of whether the CWA and CAA authorize EPA to impose such conditions in independent permits. Under that view, only discharges and emissions from the metering platform would be subject to federal regulation.

EPA is informed, however, that the Secretary of Transportation interprets the DPA as requiring a unified application for all necessary federal permits and close coordination between responsible federal agencies, but not as requiring issuance of a single permit. "Federal Agencies with permit responsibilities such as the EPA and MMS will retain all distinct permit issuance authority." USCG Memorandum, "Environmental Planning Aspects of the Deepwater Port Act" (1 April 2003).[2] Because the Secretary has primary responsibility for administration of the DPA, EPA defers to that interpretation and does not address the merits of El Paso's argument. Nor does EPA address the merits of El Paso's argument on the scope of the DPA's vessel exclusion.[3]

INTERNATIONAL LAW

El Paso argues that EPA must interpret the grant of authority under 33 U.S.C. § 1518 in view of constraints imposed by international law, primarily the 1982 United Nations Convention on the Law of the Sea (UNCLOS), which generally prohibits nations from exercising sovereignty over vessels on the high seas.[4] EPA's interpretation is fully consistent with international law, however, as reflected in UNCLOS.

The United States has not acceded to UNCLOS, but it has been U.S. policy since 1983 to act in a manner consistent with the Convention's provisions regarding traditional uses of the ocean. Nothing in UNCLOS III and no general principle of international law, however, limits a nation's sovereignty over its own ports and internal waters, including the authority to impose conditions for entry. *See, e.g., Nevada v. Hall*, 440 U.S. 410 (1979); *United States v. Royal Caribbean Cruises, Ltd.*, 11 F. Supp. 2d 1358 (S.D. Fla. 1998). Assuming that the relevant UNCLOS provisions reflect customary international law and that EPA must interpret §1518 consistently with those provisions, the potential EPA requirements at issue are fully consistent with UNCLOS. Article 60 of UNCLOS explicitly recognizes that coastal States, in their exclusive economic zones (EEZs), "have the exclusive right to construct and to authorize and regulate the construction, operation, and use of . . . installations and structures for the purposes

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[2] Under transition provisions of the Homeland Security Act, the United States Coast Guard remains responsible for processing El Paso's license application, despite its transfer to the recently created Department of Homeland Security. In this context, Coast Guard interpretations of the DPA are attributable to the Secretary of Transportation, who retains ultimate authority for issuance or denial of El Paso's deepwater port license.

[3] The DPA defines "vessel" as "every description of watercraft or other artificial contrivance used as a means of transportation on or through the water." 15 U.S.C. §1506(19).

[4] In addition, El Paso notes the DPA licensing prerequisite that "the deepwater port . . . not unreasonably interfere with international navigation or other reasonable uses of the high seas, as defined by treaty, convention, or customary international law." 33 U.S.C. § 1503(c)(4).

provided for in article 56 [pertaining to the EEZ] and other economic purposes." Deepwater ports fall within this provision.

Moreover, EPA's regulation of discharges and emissions associated with onboard re-gasification performed by ships that are physically attached to El Paso's submerged turret system in no way interferes with the freedom of navigation. There is thus no need for EPA to interpret its authority under the DPA restrictively in order to maintain consistency with international law.

To the extent you contend the re-gasification operations occur on the "high seas" rather than at ports over which the United States is sovereign, your argument appears directed at the authority of Congress to extend U.S. sovereignty to the area in which you propose to locate a deepwater port. EPA notes that Congress was aware of constraints imposed by international law when it enacted the DPA in 1974. It decided that, under the 1958 United Nations Convention on the High Seas, Article 2, "a nation might properly execute jurisdiction on the High Seas in order to license and regulate such [deepwater port] facilities." Senate Report 93-1217, 1974 U.S. Code Congressional and Administrative News 7529, 7536. Of course, UNCLOS further clarifies the authority of a coastal state to establish a deepwater port in its EEZ.

In support of its international law argument, El Paso also relies on Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL). However, El Paso's arguments related to Annex VI are without merit. First, as El Paso acknowledges, Annex VI is not in force and has not yet been ratified by the United States. Second, El Paso claims that regulating emissions of vessels, as proposed by EPA here, "would undermine the international uniformity sought in MARPOL Annex VI," and alleges that EPA has reaffirmed its "deference to emerging international standards" in a recent rulemaking setting standards for Category 3 marine diesel engines. June 16 Cathey letter at 5 (citing 68 Fed. Reg. 9746, at 9759 (Feb. 28, 2003)). But, although EPA endeavors, where possible, to work within international standards, EPA did not "reaffirm[] its deference to emerging international standards" in that rulemaking. The text in question explains EPA's decision to not exercise its discretion to apply the standards contained in that rulemaking to marine diesel engines installed on foreign flag vessels. One of the reasons for that decision was "to facilitate the development of more stringent consensus international requirements" that have the potential of maximizing emission reductions from all vessels that visit U.S. ports. At the same time, EPA clearly noted that it would reconsider this issue in a future rulemaking. In addition, Annex VI does not address air emissions from re-gasification activities. Nor does MARPOL preclude Parties from imposing more stringent conditions on ships entering their ports. Again, EPA does not intend to impose any requirement on vessels exercising their navigational rights on the high seas, but is instead addressing activities conducted at the port. As earlier stated, this regulatory approach is consistent with Article 60 of UNCLOS, which gives "exclusive jurisdiction over . . . artificial islands, installations and structures" in the EEZ to coastal states.

CWA REGULATION OF VESSEL DISCHARGES

CWA § 502(12)(B), 33 U.S.C. § 1362(12), excludes addition of a pollutant from "a vessel or other floating craft" to the ocean or contiguous zone from its definition of "discharge of a pollutant." Based on that statutory exclusion, El Paso argues the CWA provides EPA no authority to regulate discharges from the EPEBVs. Under the 33 U.S.C. § 1518(a)(1), however, discharges from the EPEBVs must be regulated "as if" they occurred "in an area of exclusive Federal jurisdiction located within a State," i.e., in the territorial seas or inland waters. 33 U.S.C. § 1518(a)(1). The statutory exclusion for vessel discharges to the contiguous zone and ocean would not thus apply.

EPA has, however, promulgated a regulatory exclusion for vessel discharges that applies to the territorial seas and inland waters as well as to the contiguous zone and ocean. 40 C.F.R. §122.3 provides in pertinent part:

> The following discharges do not require NPDES permits:
>
> (a) any discharge of sewage from vessels, effluent from properly functioning marine engines, laundry, shower, and galley sink wastes, or any other discharge incidental to the normal operation of a vessel. This exclusion does not apply to rubbish, trash, garbage, or other such materials discharged overboard; nor to other discharges when the vessel is operating in a capacity other than as a means of transportation such as when used as an energy or mining facility, a storage facility or a seafood processing facility, or when secured to the bed of the ocean, contiguous zone or waters of the United States for the purpose of mineral or oil exploration or development . . . .

The first sentence of this regulation describes the fundamental ambit of the exclusion and the second sentence serves two purposes. The second sentence first clarifies that refuse discharged overboard is not excluded from NPDES permit requirements as "discharges incidental to the normal operation of a vessel." Second, it serves as a "recapture clause" for incidental discharges that might otherwise be subject to the exclusion of the first sentence "when the vessel is operating in a capacity other than as a means of transportation." This recapture provision is based on long-standing interpretations that Congress intended to exclude only "vessels or other floating craft" engaged in transportation from CWA permit requirements and that discharges from vessels operating other than as a means of transportation should be regulated under CWA § 402.

El Paso contends the re-gasification process that it would perform aboard EPEBVs is part of those vessels' transportation function, arguing that "[t]he Port [sic], while producing some wastewater pursuant to re-gasification operations, is only conducting those operations in furtherance of its sole purpose – the transportation of natural gas." August 18, 2003, Dutton Letter, pp. 8-9. On this basis El Paso distinguishes the EPEBVs from the seafood processing and drill ships the regulation's recapture provision references as examples, because the primary use of such vessels is not transportation, i.e., they only move to reach the locations in which they will operate in a non-transportation capacity.

There is no need to reach the question of how the recapture provision of the regulation might apply because the warming water discharges from the LNG re-gasification process that EPA would regulate under the port's NPDES permit are not "incidental to the normal operation of a vessel." LNG re-gasification is an industrial process that does not occur as part of the normal operation of a vessel. It is instead an industrial process normally performed at fixed facilities, e.g., onshore terminals, not on vessels delivering the LNG. Moreover, the proposed Port Pelican and Port Cabrillo, subjects of the only other deepwater port applications now pending, would use gravity-based fixed structures on which the LNG would be re-gasified after its delivery. At those facilities, discharges associated with re-gasification would be regulated in the facilities' NPDES permits.

Re-gasification would not even be "incidental to the normal operation" of the EPEBVs themselves. Re-gasification would not occur while the LNG is loaded aboard those vessels nor during their transit of ocean waters. Onboard re-gasification would also not occur should an EPEBV ever offload its cargo at any LNG terminal other than El Paso's. Indeed, the vessel's crew, although it would be fully qualified to transport LNG *via* steam powered vessels to any LNG terminal in the world, would only be allowed to operate the re-gasification system under the direct supervision of El Paso's PIC. Despite its physical location aboard the EPEBVs, the re-gasification process that would occur at this port would be part of El Paso's industrial operation, not part of the vessels' transportation operation. The warming water discharges from this port process should thus be regulated under an NPDES permit in the same fashion as warming water discharges from the same process at competing LNG terminals.

CAA REGULATION OF VESSEL EMISSIONS

El Paso has acknowledged that sources on the port metering platform will produce air emissions of an estimated 9.48 tons per year of NOx, 0.07 tons per year of SO_2, and 0.73 tons per year of PM_{10}. These emissions should be included in the applicability determinations for CAA preconstruction and operating permits. In addition, the much greater vessel emissions associated with the re-gasification process and the transfer of gas to the port should be included. Information submitted by El Paso indicates that these emissions may be as much as 1090 tons per year of NOx.[5] A detailed explanation of our position and a response to your various comments follows.

Fuel Conversion Facility

[5]This figure is derived from El Paso's air permit application, which apparently includes "hotelling" emissions along with re-gasification emissions, and should therefore be viewed as an upper boundary rather than a precise estimate of emissions associated with re-gasification and transfer of gas to the port.

First, in response to your concerns regarding the potential treatment of the port as a "fuel conversion facility," I am attaching a memorandum from EPA's Office of Air Quality Planning and Standards addressing this question. *See* Attachment A, Memorandum from Racqueline Shelton to Guy Donaldson (July 31, 2003). Based on this memorandum and on our current understanding of the nature of the LNG vaporization process at the port, we do not intend to treat the port as a "fuel conversion plant" for new source review (NSR) purposes.

Indirect Source Review

El Paso further asserts that EPA's view that it has permitting jurisdiction over the port "appears to be based on vessels being attracted by the Port, thus making the Port an indirect source of emissions," and that asserting jurisdiction on that basis constitutes a prohibited federally-federally imposed "indirect source review" program under Section 110(a)(5) of the CAA. June 16, 2003, Cathey letter, p. 8. This argument relies on a faulty premise. EPA is not considering the port's potential to attract mobile sources, but is instead examining the activities directly associated with the port and conducted as a part of its operations. This approach is consistent with the CAA:

> it is assuredly not the case that the ban on indirect source review was intended to go so far as to prohibit the attribution to a stationary source of all emissions which happen to emanate from or even merely physically contact a mobile source. Indeed, the statute itself provides that "direct emissions sources or facilities at, within, or associated with, any indirect source shall not be deemed indirect sources for the purpose of this [ban on indirect source review]."

Natural Resources Defense Council, Inc. v. EPA, 725 F.2d 761, 771 (D.C. Cir. 1984) (*NRDC)* (quoting 42 U.S.C. § 7410(a) (5) (C)). All emissions being considered are direct emissions, and are from stationary sources as defined under Section 302(z) of the Act, as further discussed below.[6]

"Stationary Sources" Under the CAA

El Paso maintains that EPA air permitting programs generally cover only stationary sources, and that the CAA defines all vessel emissions as mobile emissions sources. We agree with the first conclusion, but not the second.

Our determination that vessel emissions generated in handling LNG at the port should be included in the applicability determination stems from our reading of the plain language of the CAA. Specifically, its definition of "stationary source" gives EPA the authority to consider emissions from external combustion engine vessels in preconstruction and operating permits. This

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[6]We also note that the CAA's requirement is that EPA not mandate inclusion of an indirect source review program in a State Implementation Plan (SIP) or include it in a Federal Implementation Plan (FIP). CAA Section 110(a)(5)(A), 42 U.S.C. § 7410. EPA's review of the port for permitting purposes is not equivalent to action on a SIP or FIP.

general definition, which is applicable to both preconstruction permits and operating permits, appears at Section 302(z):

> Stationary Source. The term "stationary source" means generally any source of an air pollutant except those emissions resulting directly from an internal combustion engine for transportation purposes or from a nonroad engine or nonroad vehicle as defined in section 216.

42 U.S.C. § 7602(z). In turn, the Section 216 definitions of "nonroad engine" and "nonroad vehicle" are limited to internal combustion engines. 42 U.S.C. § 7550(10), (11). Thus, a vessel powered by external combustion engines would be a "stationary source" for permitting purposes, because only internal-combustion-driven vehicles are excluded from the Section 302(z) definition of stationary source.[7]

El Paso disagrees with this approach, saying that EPA's "rigid" reading of the plain language of the statute would lead to the "illogical result" of treating internal and external combustion engines differently. "A more sensible reading of the CAA," El Paso contends, "is to exempt from permitting the emissions from all nonroad engines and also engines used for propulsion." July 18 Dutton Letter, p. 1. Such an exemption, however, is not present in the CAA. Whether Congress could have used a different approach when it wrote the CAA is not relevant to EPA's decision here, given the plain words of the statute. It is not EPA that has decided to treat external and internal combustion engines differently for purposes of determining what is a stationary source under the CAA. It is instead the express language enacted by Congress.[8]

However, we believe that these statutory definitions do not require EPA to include "to and fro" emissions from marine vessels powered by external combustion engines, or the vessels' "hotelling" emissions not directly associated with the activities of the port as part of the emissions attributable to the port facility. We draw this distinction because under the DPA other U.S. laws apply "to deepwater ports . . . and to activities connected, associated, or potentially interfering with the use or operation of any such port." 33 U.S.C. § 1518(a)(1). The "to and fro" emissions and "hotelling" emissions from the vessels are associated with the normal seagoing activities of the

---

[7]As you have informed us, the vessels used in this operation are powered by external combustion engines, not reciprocating internal combustion engines or gas turbines, which generally combust internally. Also, these engines are distinguished from any auxiliary engines on the vessel that may be internal combustion engines.

[8]Whether the Act as a whole would authorize similar treatment of internal-combustion-propelled vessels is not relevant. In this letter we take no position on the applicability of NSR or Title V to emissions from vessels propelled by internal combustion engines. We simply find that the plain language of the Clean Air Act directs that, when making NSR and Title V applicability determinations, EPA is to consider the re-gasification-related emissions from vessels calling at the port.

vessels and not with the industrial activities associated with the port. We thus intend to consider only the emissions from activities in support of the port's function – i.e., those related to processing and transferring gas at the port, regardless of whether they occur on the metering platform or on marine vessels propelled by external combustion engines, as stationary emissions of the port for CAA Title I and Title V purposes. The nature of controls, if any, EPA will propose to impose on those emissions will be reflected in a draft preconstruction/Title V permit.

EPA PSD Regulations and the *NRDC* Decision

El Paso argues that EPA regulations bar consideration of vessel emissions in CAA permitting applicability determinations. July 18 Dutton Letter, p. 3 (citing 40 C.F.R. §§ 51.166(b)(6); 52.21(b)(6)). The cited EPA regulations indeed exclude "the activities of any vessel" from the scope of a regulated stationary source in PSD permitting. EPA promulgated that exemption in 1982, in a rule withdrawing previous regulations that had provided for consideration of vessel emissions on a "control and proximity" basis. See 47 Fed. Reg. 27554 (July 25, 1982). The 1982 rulemaking amended various regulations, including the two cited by El Paso,[9] by adding the phrase "except the activities of any vessel." In the *NRDC* decision, however, the D.C. Circuit Court of Appeals unambiguously vacated the provisions on which El Paso relies:

> [W]e vacate that portion of EPA's revocation [i.e., its 1982 rule withdrawing the previous rules] which "excepts the activities of any vessel" from the emissions attributable to marine terminals, *see, e.g.,* 40 C.F.R. § 51.24(b)(6) (1983), 47 Fed. Reg. 27,560 (1982).

NRDC, 725 F.2d at 775. El Paso correctly notes that the Court also remanded the matter to EPA for further action consistent with its opinion. Nonetheless, the *vacatur* leaves no legally effective regulation that would exempt "the activities of any vessel" from consideration for port permitting purposes. *See Action on Smoking and Health v. Civil Aeronautics Board*, 713 F.2d 795, 797 ("To 'vacate' . . . means 'to annul; to cancel or rescind; to declare, to make, or to render, void; to defeat; to deprive of force; to make of no authority or validity; to set aside.'") El Paso therefore cannot rely on the language added to the regulations by the 1982 rulemaking.

El Paso also asserts that even under EPA's 1980 "control and proximity" regulations, which were withdrawn by the 1982 rule partly vacated in *NRDC*, EPA could still not consider any vessel emissions in permitting the port. Without assessing the merits of El Paso's interpretation of those regulations, we note that the *NRDC* court did not re-promulgate them. Accordingly, the statute rather than these regulations governs our decision here. Our conclusion is reinforced by the fact that the definition of stationary source was added in 1990, after both the rules and the D.C. Circuit opinion had been written. Therefore, nothing in the statute supports the conclusion that re-gasification of LNG occurring at a fixed location using power generated by an external

---

[9] 40 C.F.R. § 51.24, which is referenced in the 1983 rulemaking partially vacated in *NRDC*, has since been renumbered as 40 C.F.R. § 166. *See* 51 Fed. Reg. 40656 (Nov. 7, 1986).

combustion engine must be regulated as a mobile source, even when the re-gasification process occurs on a vessel used to transport the LNG and re-gasification equipment to that fixed location.

CONCLUSION

As explained above, EPA Region 6 concludes that:

(1) All discharges from the metering platform and discharges of warming water from the re-gasification process performed aboard EPEBVs are subject to regulation under CWA §402.

(2) Emissions related to the re-gasification and transfer of gas at the port will be included in the CAA operating and preconstruction permit applicability determinations without regard to whether those emissions originate on the metering platforms or EPEBVs. The PSD/Title V permit applications El Paso submitted on September 4, 2003, provide a "worst case" estimate of El Paso's potential to emit. Regional technical staff will be contacting El Paso representatives to discuss potential terms of the draft preconstruction and operating permit.

EPA recognizes and appreciates that El Paso has different views on these matters. Nothing in this letter, however, precludes El Paso from acting on its own interpretation of applicable laws and regulations. The views explained in this letter, if and when applied in a permit, would be subject to administrative review by EPA's Environmental Appeals Board. This letter, therefore, does not constitute "final agency action" for purposes of obtaining judicial review. Final agency action occurs upon completion of the permit appeal processes.

Thank you for your patience in this matter. The views of both El Paso and EPA on these difficult issues of first impression have changed substantially since you originally raised them in May, and substantial time was necessary to provide El Paso full opportunity to express its views and to coordinate this response with various affected programs in EPA and other federal agencies. I assure you that EPA Region 6 will give fair and timely consideration to El Paso's permit applications.

Sincerely yours,

Charles J. Sheehan
Regional Counsel

Enclosure

cc: Commander Mark Prescott
United States Coast Guard

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November 5, 2018

Via Email and Hand Delivery

Tim Aultman
Environmental Compliance & Enforcement Division
Mississippi Department of Environmental Quality
515 East Amite Street
Jackson, Mississippi 39201

Re: Amite BioEnergy, LLC

Dear Mr. Aultman:

I am writing this as legal counsel for Amite BioEnergy, LLC ("Amite"). Pursuant to Miss. Code Ann. § 49-17-43(7)(g), Amite is voluntarily disclosing information that indicates its facility (Air Pollution Control Permit To Construct Air Emissions Equipment, Permit No. 0080-00031) located in Gloster, Mississippi, may not be in full compliance with 11 Miss. Admin. Code Part 2 Chapter 2, Permit Regulations for the Construction and/or Operation of Air Emissions Equipment, and Chapter 5, Regulations for the Prevention of Significant Deterioration of Air Quality.

The basis for this notice is information identified during work at a sister facility which indicated different emission rates than expected. The actual conditions at the Gloster facility have not yet been determined but ongoing testing will be available in the near term. This will include Volatile Organic Compound EPA Method 25a and Fourier Transform Infrared Spectroscopy EPA Method 320 testing. Upon completion of the testing, Amite will supplement this notice and schedule a meeting with Mississippi Department of Environmental Quality ("MDEQ") staff to review the findings and determine an appropriate path forward. In the meantime, if you need additional information or have questions about this notice please call my office at the number listed above. We appreciate your assistance going forward as Amite addresses this matter and look forward to working with the MDEQ on a satisfactory resolution.

Very truly yours,

Keith W. Turner

RECEIVED
NOV 07 2018

KWT:sd
cc: Gretchen Zmitrovich (via email and hand delivery)
Krystal Rudolph (via email and hand delivery)
Todd Tolkinen (via email)
Michael Bellow (via email)
Sharon Killian (via email)

One Galleria Boulevard | Suite 1030 | Metairie, LA 70001 | P (504) 828-5845
trinityconsultants.com

Trinity Consultants

February 22, 2019

Mr. Thomas Tynes
Enforcement Branch Manager
Mississippi Department of Environmental Quality (MDEQ)
515 E. Amite Street
Jackson, MS 39201

RE: Submittal of Stack Test Report
Amite BioEnergy LLC; Gloster, MS
AI #57796

Dear. Mr. Tynes,

On behalf of Amite BioEnergy LLC (Amite), a company owned by Drax Biomass Inc., Trinity Consultants, Inc. (Trinity) submits the attached stack test report for testing performed at Amite on November 26-30, 2018. The testing was performed by Sanders Engineering & Analytical Services, Inc.

Also included as an attachment is a summary of tables of the tested emissions from each source. The Primary Hammermills, the Secondary Hammermills, the Pellet Coolers, the Loadout Silo, and the Regenerative Thermal Oxidizer (RTO) were all tested for VOCs. Additionally, the RTO was also tested for formaldehyde.

Below is a summary of the emissions from each source.

Amite BioEnergy – Emissions from Stack Test

Equipment	Average Volatile Organic Compound Emissions [1] (tons/yr)	Average Formaldehyde Emissions (tons/yr) [1]
Primary Hammermill 1A (AA-004)	11.21	N/A
Primary Hammermill 1B (AA-004)	18.73	N/A
Primary Hammermill 2A (AA-004)	36.51	N/A
Primary Hammermill 2B (AA-004)	23.17	N/A
Primary Hammermill 3A (AA-004)	16.33	N/A
Primary Hammermill 3B (AA-004)	11.95	N/A
Secondary Hammermill 1 (AA-007)	31.0	N/A
Secondary Hammermill 2 (AA-007)	29.5	N/A
Secondary Hammermill 3 (AA-007)	30.9	N/A
Cooler 1AB	91.0	N/A
Cooler 1CD	77.9	N/A
Cooler 2AB	82.9	N/A
Cooler 2CD	88.2	N/A
Cooler 3AB	84.7	N/A
Cooler 3CD	74.0	N/A
Loadout Silo	7.74	N/A
RTO	79.87	2.44
Total	**795.58**	**2.44**

(1) Emissions are the average of three 1-hour runs.

If you have any questions about the attached report, please call either me at (504) 828-5845, ext 1001, or ______________.

Sincerely,

TRINITY CONSULTANTS

Sharon Killian
Principal Consultant
Manager of Consulting Services – New Orleans

Attachments

Summary of Average Volatile Organic Compound (VOC) and Average Formaldehyde Emissions Test Results
Amite BioEnergy LLC
Testing Conducted: November 26-30, 2018

Equipment	Average Volatile Organic Compound Emissions (lbs/hr)	Average Volatile Organic Compound Emissions (tons/yr)	Average Formaldehyde Emissions (lbs/hr)	Average Formaldehyde Emissions (tons/yr)
Primary Hammermill 1A (AA-004)	2.56	11.21	-	-
Primary Hammermill 1B (AA-004)	4.28	18.73	-	-
Primary Hammermill 2A (AA-004)	8.34	36.51	-	-
Primary Hammermill 2B (AA-004)	5.29	23.17	-	-
Primary Hammermill 3A (AA-004)	3.73	16.33	-	-
Primary Hammermill 3B (AA-004)	2.73	11.95	-	-
Secondary Hammermill 1 (AA-007)	7.07	31.0	-	-
Secondary Hammermill 2 (AA-007)	6.74	29.5	-	-
Secondary Hammermill 3 (AA-007)	7.06	30.9	-	-
Cooler 1AB	20.78	91.0	-	-
Cooler 1CD	17.78	77.9	-	-
Cooler 2AB	18.93	82.9	-	-
Cooler 2CD	20.14	88.2	-	-
Cooler 3AB	19.33	84.7	-	-
Cooler 3CD	16.90	74.0	-	-
Loadout Silo	1.77	7.74	-	-
RTO	18.24	79.87	0.55754	2.44
Total	**181.64**	**795.58**	**0.55754**	**2.44**

Summary of Volatile Organic Compound (VOC) and Formaldehyde Emissions Test Results
Amite BioEnergy LLC
Testing Conducted: November 26-30, 2018

Equipment	Test Run	Start Time (Military)	Stop Time (Military)	Stack Gas Flow Rate (standard wet ft³/minute)	Water Vapor in Stack Gas (percent)	Volatile Organic Compound Emissions (as propane, ppm-wet)	Volatile Organic Compound Emissions (lbs/hr)	Volatile Organic Compound Emissions (tons/yr)
Primary Hammermill 1A (AA-004)	RUN 1	14:20	15:20	8,809	-	42.8	2.59	11.36
	RUN 2	15:28	16:28	8,901	-	38.7	2.37	10.37
	RUN 3	16:37	17:37	8,716	-	45.3	2.72	11.90
	Average			8,809	-	42.3	2.56	11.21
Primary Hammermill 1B (AA-004)	RUN 1	14:20	15:20	9,529	-	62.0	4.06	17.79
	RUN 2	15:28	16:28	9,507	-	61.9	4.04	17.72
	RUN 3	16:37	17:37	9,416	-	73.0	4.72	20.70
	Average			9,484	-	65.6	4.28	18.73
Primary Hammermill 2A (AA-004)	RUN 1	9:35	10:35	8,929	-	140.0	8.59	37.63
	RUN 2	11:00	12:00	9,233	-	131.4	8.34	36.51
	RUN 3	12:19	13:19	9,593	-	122.6	8.08	35.39
	Average			9,252	-	131.3	8.34	36.51
Primary Hammermill 2B (AA-004)	RUN 1	9:35	10:35	6,766	-	123.0	5.72	25.06
	RUN 2	11:00	12:00	6,820	-	113.3	5.31	23.26
	RUN 3	12:19	13:19	6,758	-	104.2	4.84	21.20
	Average			6,781	-	113.5	5.29	23.17
Primary Hammermill 3A (AA-004)	RUN 1	14:13	15:13	8,455	-	64.9	3.77	16.52
	RUN 2	15:40	16:40	8,445	-	65.8	3.82	16.72
	RUN 3	17:00	18:00	8,538	-	61.3	3.60	15.76
	Average			8,479	-	64.0	3.73	16.33
Primary Hammermill 3B (AA-004)	RUN 1	14:13	15:13	8,733	-	43.5	2.61	11.43
	RUN 2	15:40	16:40	8,604	-	47.2	2.79	12.23
	RUN 3	17:00	18:00	8,636	-	46.9	2.78	12.19
	Average			8,658	-	45.9	2.73	11.95
Secondary Hammermill 1 (AA-007)	RUN 1	9:20	10:20	7,317	-	131.5	6.6	29.0
	RUN 2	10:32	11:32	7,291	-	141.6	7.1	31.1
	RUN 3	11:48	12:48	7,241	-	150.9	7.5	32.9
	Average			7,283	-	141.3	7.07	31.0
Secondary Hammermill 2 (AA-007)	RUN 1	9:20	10:20	8,824	-	115.5	7.0	30.7
	RUN 2	10:32	11:32	8,565	-	114.1	6.7	29.4
	RUN 3	11:48	12:48	8,362	-	113.1	6.5	28.5
	Average			8,584	-	114.2	6.74	29.5
Secondary Hammermill 3 (AA-007)	RUN 1	9:20	10:20	10,121	-	87.2	6.1	26.6
	RUN 2	10:32	11:32	10,076	-	109.8	7.6	33.3
	RUN 3	11:48	12:48	10,182	-	107.2	7.5	32.9
	Average			10,126	-	101.4	7.06	30.9

Summary of Volatile Organic Compound (VOC) and Formaldehyde Emissions Test Results
Amite BioEnergy LLC
Testing Conducted: November 26-30, 2018

Equipment	Test Run	Start Time (Military)	Stop Time (Military)	Stack Gas Flow Rate (standard wet ft^3/minute)	Water Vapor in Stack Gas (percent)	Volatile Organic Compound Emissions (as propane, ppm-wet)	Volatile Organic Compound Emissions (lbs/hr)	Volatile Organic Compound Emissions (tons/yr)
Cooler 1AB	RUN 1	7:05	8:05	21,075	-	142.8	20.7	90.6
	RUN 2	8:12	9:12	21,138	-	143.7	20.9	91.5
	RUN 3	9:21	10:21	21,048	-	143.5	20.8	90.9
	Average			21,087	-	143.4	20.78	91.0
Cooler 1CD	RUN 1	11:35	12:57	17,644	-	156.8	19.0	83.3
	RUN 2	13:06	14:06	17,683	-	137.5	16.7	73.2
	RUN 3	14:13	15:13	17,816	-	143.7	17.6	77.1
	Average			17,714	-	146.0	17.78	77.9
Cooler 2AB	RUN 1	14:26	15:26	16,171	-	169.9	18.9	82.7
	RUN 2	15:31	16:31	16,084	-	170.1	18.8	82.4
	RUN 3	16:38	17:38	16,295	-	170.6	19.1	83.7
	Average			16,183	-	170.2	18.93	82.9
Cooler 2CD	RUN 1	7:05	8:05	15,953	-	191.4	21.0	91.9
	RUN 2	8:12	9:12	15,991	-	197.3	21.7	95.0
	RUN 3	9:21	10:21	15,624	-	165.2	17.7	77.7
	Average			15,856	-	184.6	20.14	88.2
Cooler 3AB	RUN 1	10:54	11:55	17,132	-	176.3	20.8	90.9
	RUN 2	12:38	13:38	17,319	-	168.5	20.1	87.9
	RUN 3	17:57	18:57	17,452	-	143.1	17.2	75.2
	Average			17,301	-	162.6	19.33	84.7
Cooler 3CD	RUN 1	15:25	17:35	17,262	-	142.9	17.0	74.3
	RUN 2	17:40	18:40	17,177	-	140.5	16.6	72.7
	RUN 3	18:45	19:45	17,158	-	145.4	17.2	75.1
	Average			17,199	-	143.0	16.90	74.0
Loadout Silo	RUN 1	10:37	11:37	45,788	-	4.68	1.47	6.45
	RUN 2	11:41	12:41	46,377	-	5.43	1.73	7.58
	RUN 3	12:45	13:45	46,583	-	6.55	2.10	9.18
	Average			46,249	-	5.55	1.77	7.74
RTO	RUN 1	16:24	17:24	137,942	42.7	26.0	24.6	107.9
	RUN 2	17:50	18:50	137,936	42.7	20.4	19.3	84.5
	RUN 3	19:16	20:16	139,995	41.8	11.2	10.8	47.2
	Average			138,624	42.4	19.18	18.24	79.87
Equipment	**Test Run**	**Start Time (Military)**	**Stop Time (Military)**	**Stack Gas Flow Rate (standard wet ft^3/minute)**	**Water Vapor in Stack Gas (percent)**	**Formaldehyde Emissions (ppm-wet)**	**Formaldehyde Emissions (lbs/hr)**	**Formaldehyde Emissions (tons/yr)**
RTO	RUN 1	16:24	17:24	137,942	42.7	1.28	0.82623	3.62
	RUN 2	17:50	18:50	138,405	42.7	0.84	0.54403	2.38
	RUN 3	19:16	20:16	140,465	41.8	0.46	0.30236	1.32
	Average			138,937	42.4	0.9	0.55754	2.44

TABLE V. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
PRIMARY HAMMERMILL 1A
Wednesday, November 28, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	14:20	15:20	8,809	42.8	2.59	11.36
RUN 2	15:28	16:28	8,901	38.7	2.37	10.37
RUN 3	16:37	17:37	8,716	45.3	2.72	11.90
Average			8,809	42.3	2.56	11.21

TABLE VI. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
PRIMARY HAMMERMILL 1B
Wednesday, November 28, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	14:20	15:20	9,529	62.0	4.06	17.79
RUN 2	15:28	16:28	9,507	61.9	4.04	17.72
RUN 3	16:37	17:37	9,416	73.0	4.72	20.70
Average			9,484	65.6	4.28	18.73

TABLE VII. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
PRIMARY HAMMERMILL 2A
Wednesday, November 28, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	9:35	10:35	8,929	140.0	8.59	37.63
RUN 2	11:00	12:00	9,233	131.4	8.34	36.51
RUN 3	12:19	13:19	9,593	122.6	8.08	35.39
Average			9,252	131.3	8.34	36.51

TABLE VIII. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
PRIMARY HAMMERMILL 2B
Wednesday, November 28, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	9:35	10:35	6,766	123.0	5.72	25.06
RUN 2	11:00	12:00	6,820	113.3	5.31	23.26
RUN 3	12:19	13:19	6,758	104.2	4.84	21.20
Average			6,781	113.5	5.29	23.17

TABLE I. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY
PRIMARY HAMMERMILL 3A
Monday, November 26, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	14:13	15:13	8,455	64.9	3.77	16.52
RUN 2	15:40	16:40	8,445	65.8	3.82	16.72
RUN 3	17:00	18:00	8,538	61.3	3.60	15.76
Average			8,479	64.0	3.73	16.33

TABLE II. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
PRIMARY HAMMERMILL 3B
Monday, November 26, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	14:13	15:13	8,733	43.5	2.61	11.43
RUN 2	15:40	16:40	8,604	47.2	2.79	12.23
RUN 3	17:00	18:00	8,636	46.9	2.78	12.19
Average			8,658	45.9	2.73	11.95

TABLE XV. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
SECONDARY HAMMERMILL 1
Friday, November 30, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	9:20	10:20	7,317	131.5	6.6	29.0
RUN 2	10:32	11:32	7,291	141.6	7.1	31.1
RUN 3	11:48	12:48	7,241	150.9	7.5	32.9
Average			7,283	141.3	7.07	31.0

TABLE XVI. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
SECONDARY HAMMERMILL 2
Friday, November 30, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	9:20	10:20	8,824	115.5	7.0	30.7
RUN 2	10:32	11:32	8,565	114.1	6.7	29.4
RUN 3	11:48	12:48	8,362	113.1	6.5	28.5
Average			8,584	114.2	6.74	29.5

TABLE XVII. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
SECONDARY HAMMERMILL 3
Friday, November 30, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	9:20	10:20	10,121	87.2	6.1	26.6
RUN 2	10:32	11:32	10,076	109.8	7.6	33.3
RUN 3	11:48	12:48	10,182	107.2	7.5	32.9
Average			10,126	101.4	7.06	30.9

TABLE IX. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
COOLER 1AB
Thursday, November 29, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	7:05	8:05	21,075	142.8	20.7	90.6
RUN 2	8:12	9:12	21,138	143.7	20.9	91.5
RUN 3	9:21	10:21	21,048	143.5	20.8	90.9
Average			21,087	143.4	20.78	91.0

TABLE XII. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
COOLER 1CD
Thursday, November 29, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	11:35	12:57	17,644	156.8	19.0	83.3
RUN 2	13:06	14:06	17,683	137.5	16.7	73.2
RUN 3	14:13	15:13	17,816	143.7	17.6	77.1
Average			17,714	146.0	17.78	77.9

TABLE XIV. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
COOLER 2AB
Thursday, November 29, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	14:26	15:26	16,171	169.9	18.9	82.7
RUN 2	15:31	16:31	16,084	170.1	18.8	82.4
RUN 3	16:38	17:38	16,295	170.6	19.1	83.7
Average			16,183	170.2	18.93	82.9

TABLE X. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
COOLER 2CD
Thursday, November 29, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	7:05	8:05	15,953	191.4	21.0	91.9
RUN 2	8:12	9:12	15,991	197.3	21.7	95.0
RUN 3	9:21	10:21	15,624	165.2	17.7	77.7
Average			15,856	184.6	20.14	88.2

TABLE XI. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
COOLER 3AB
Thursday, November 29, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	10:54	11:55	17,132	176.3	20.8	90.9
RUN 2	12:38	13:38	17,319	168.5	20.1	87.9
RUN 3	17:57	18:57	17,452	143.1	17.2	75.2
Average			17,301	162.6	19.33	84.7

TABLE XIII. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
COOLER 3CD
Thursday, November 29, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	15:25	17:35	17,262	142.9	17.0	74.3
RUN 2	17:40	18:40	17,177	140.5	16.6	72.7
RUN 3	18:45	19:45	17,158	145.4	17.2	75.1
Average			17,199	143.0	16.90	74.0

TABLE III. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
LOADOUT SILO
Tuesday, November 27, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	10:37	11:37	45,788	4.68	1.47	6.45
RUN 2	11:41	12:41	46,377	5.43	1.73	7.58
RUN 3	12:45	13:45	46,583	6.55	2.10	9.18
Average			46,249	5.55	1.77	7.74

TABLE IV. SUMMARY OF EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
RTO - VOC EMISSIONS
Monday, November 26, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Water Vapor in Stack Gas (Percent)	Volatile Organic Compounds Emissions (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	16:24	17:24	137,942	42.7	26.0	24.6	107.9
RUN 2	17:50	18:50	137,936	42.7	20.4	19.3	84.5
RUN 3	19:16	20:16	139,995	41.8	11.2	10.8	47.2
Average			138,624	42.4	19.18	18.24	79.87

TABLE XVIII. FORMALDEHYDE EMISSIONS TEST RESULTS
AMITE BIOENERGY LLC
RTO - FORMALDEHYDE EMISSIONS
Monday, November 26, 2018

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Wet Cubic Feet per Minute)	Water Vapor in Stack Gas (Percent)	Formaldehyde Emissions (ppm-wet)	Formaldehyde Emissions (Lbs/hour)	Formaldehyde Emissions (Tons/Year)
RUN 1	16:24	17:24	137,942	42.7	1.28	0.82623	3.62
RUN 2	17:50	18:50	138,405	42.7	0.84	0.54403	2.38
RUN 3	19:16	20:16	140,465	41.8	0.46	0.30236	1.32
Average			138,937	42.4	0.9	0.55754	2.44

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: January 20, 1976

SUBJECT*:* Clarification of Sources Subject to Prevention of Significant Deterioration (PSD) Review

FROM: D. Kent Berry, Director
Policy Analysis Staff

TO*:* Asa B. Foster, Jr., Director
Air and Hazardous Materials Division
Region IV

This is in response-to your November 26, 1975, memo to Dr. Steigerwald requesting clarification of the emission points in phosphate rock processing plants and fuel conversion plants that should be subject to PSD review. I understand from discussions with your staff that you are mainly interested in a clarification of the general processes and -operations covered by the PSD review rather than the specific emission points that would normally be associated with each process or facility. As a general policy, all emission points of SO 2 and particulate matter at a facility covered by the PSD review should be considered in determining the air quality impact of the facility. A BACT determination should generally be made for all emission points also, although you have the flexibility not to specify a BACT emission limit for certain emission points if little would be gained.

Fuel conversion plants are defined for purposes of PSD as those plants which accomplish a change in state for a given fossil fuel. The large majority of these plants are likely to accomplish these changes through coal gasification, coal liquefaction, or oil shale processing. The recently promulgated NSPS governing new coal preparation plants regulate most particulate emissions from pre-gasification or liquefaction operations and thereby define BACT for them. NSPS for both SO 2 and PM already exist for the boilers which are necessary in most fuel conversion operations to generate process steam. An SSEIS for coal gasification plants is being drafted with the intent to include the gasification process itself for sulfur and HC emissions in cases where pipeline quality gas would be produced.

We have examined several of the first-generation fuel-conversion processes and can provide, if you need it, more detailed information on specific emission points and typical emission rates as well as the location of a number of proposed plants. Mike Trutna in Jean Schueneman's division should be the contact for additional information in this area, including assistance on BACT determinations (see Jean's memo to you of December 2, 1975).

With respect to phosphate rock processing, the same philosophy stated above should apply: all processes emitting SO_2 and/or particulate matter located on the same premises with phosphate rock preparation operations are subject to PSD review. A list of the processes commonly associated with phosphate rock preparation is presented in Table 1 and shown in Figure 1. If, however, any of the chemical or fertilizer production processes are not associated with the phosphate rock processing operation, we feel there is no basis for their inclusion under the PSD regulation as presently worded. In addition, the particulate impact of these processes meeting NSPS is relatively minor.

In our opinion, the measures required to meet the NSPS fluoride standards for the fertilizer production operations also represent BACT for particulate matter and therefore a separate BACT determination for particulate matter is not necessary. However, some estimate of the particulate emissions is needed to complete the air quality impact analysis and an estimate of these emissions is presented in Table 1. Further assistance in quantifying the particulate emissions can be provided on a case-by-case basis.

In addition to the process sources, fugitive dust emissions from haul roads, tailings piles etc. may need to be examined with respect to BACT (probably by specifying operating and maintenance practices) and also for their air quality impact (although where the plant covers a large land area, the concentration may have dropped off substantially by the time the plume reaches the plant boundary).

I hope this adequately answers your questions. If you need further assistance or want to discuss our response in more detail, please contact Mike Trutna (8-629-5365) or myself (8-629-5543). Enclosures

cc: Dick Denney
Barbara Brown
Cheryl Wasserman

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: Nov 26, 1975

SUBJECT: Definition of Sources Subject to Prevention of Significant Deterioration (PSD) New Source Review

FROM: Asa B. Foster, Jr., Director
Air & Hazardous Materials Division

TO: Dr. Bernard J. Steigerwald
Deputy Assistance Administrator
Air Quality Planning & Standards

<ins>Summary</ins>

Two of the source categories contained in the Prevention of Significant Deterioration (PSD) regulations are Phosphate Rock Processing Plants and Fuel Conversion Plants. In implementing these regulations there is some confusion as to the emission points actual covered in the definition. Any further definition and/or clarification is desirable.

<ins>Action</ins>

Please provide-me with a clarification of the emission points that EPA intends to be included in the definitions of Phosphate Rock Processing and Fuel Conversion Plants.

<ins>Background</ins>
40 CFR 52.21(d).

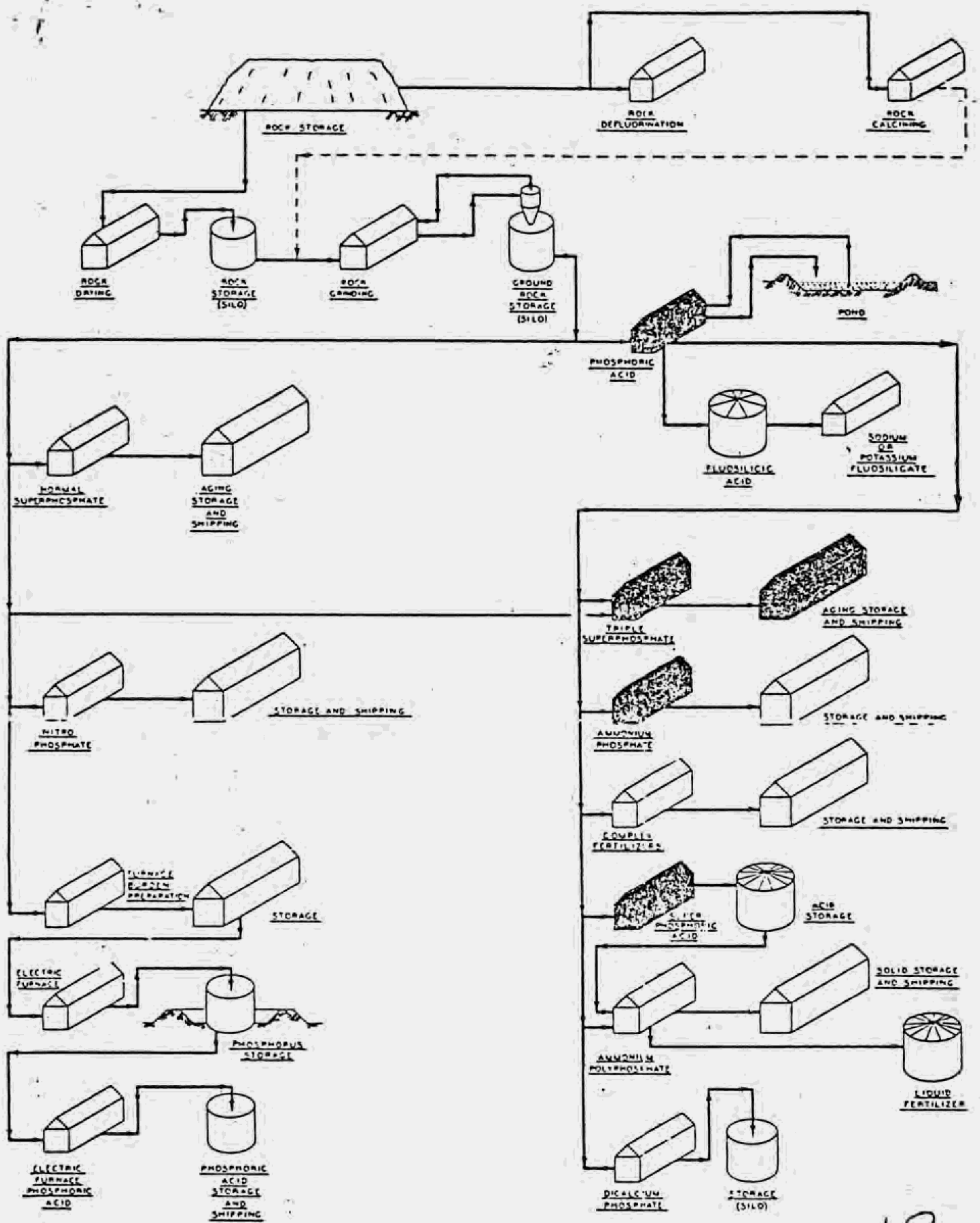

FIGURE 1
PHOSPHATE ROCK PROCESSING INDUSTRY

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Table 1 - Processes Commonly Associated with Phosphate Rock Preparation

Emission Source	Emission Factors: Potential[1]	Emission Factors: BACT[2]	BACT[2]	Typical Size of New Facility	Emissions from Typical Facility	Comments
I. Phosphate Rock Preparation						
Mining	Negl.	NA	NA			Mining wet rock (10 - 15% moisture)
Beneficiation	Negl.	NA	NA			Concentration processes occur in a wet slurry
Drying	3.3-14#/ton	.086#/ton	Scrubber(99%)	250tons/hr	21.5#/hr	
Calcining	7.9#/ton	.159#/ton	Scrubber(98%)	50tons/hr	8.0#/hr	
Nodulizing						None expected
Grinding	1.8 to 4.4#/ton	.031#/ton	Baghouse(99%)	50tons/hr	4.3#/hr	
Thermal Defluorination	7.5#/ton	.075#/ton	Scrubber(99%)	NA	--	
Material Handling and Storage	1.3 to 2#/ton	.017#/ton	Scrubber(99%)	50tons/hr	0.9#/hr	
II. Phosphate Fertilizer Industry						
Phosphoric Acid Mfg						
Wet Process	Negl.	NA	NA	500tons/day		Covered under NSPS/fluorides, low part impact
Thermal Process	134#/ton	.134#/ton	Scrubber(99%)			None expected
Superphosphoric Acid Plant						
Vacuum Evaporation (evaporators, cooling tanks, hot wells) Submerged combustion	1.3#/ton	.013#/ton	Venturi Scrubber w/packed tower	200tons/day	0.1#/hr	
Diammonium Phosphate Plants (reactor, granulator, dryer, cooler, screens, mills)	82#/ton	1.64#/ton	Scrubber(98%) w/packed tower	500tons/day	34.2#/hr	
Run-of-Pile Triple Superphosphate (mixer, curing belt, conveyors, storage)	2.5#/ton	0.05#/ton	Scrubber(98%) w/packed tower	600tons/day	1.25#/hr	
Granular Triple Superphosphate (reactor, granulator, dryer, cooler, screens, mills, storage)	1.51#/ton	0.03#/ton	Scrubber(98%) w/packed tower	500tons/day	0.6#/hr	
III. Other Products						
Elemental phosphorous	None expected					
Animal feed	No data					

1. Estimates only, especially in II.

2. Intended to be indications only.

3 of 3

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

MICHAEL ABRACZINSKAS
Director

NORTH CAROLINA
Environmental Quality

January 14, 2019

Mr. Royal Smith
EVP of Operations
Enviva Pellets Hamlet, LLC
7200 Wisconsin Avenue
Bethesda, Maryland 20814

Dear Mr. Smith:

SUBJECT: Air Quality Permit No. 10365R03
Facility ID: 7700096
Enviva Pellets Hamlet, LLC
Hamlet, North Carolina
Richmond County
PSD Status: Minor
Fee Class: Title V

In accordance with your Air Permit Application received on May 14, 2018 we are forwarding herewith Air Quality Permit No. 10365R03 to Enviva Pellets Hamlet, LLC, 1125 North NC Highway 177, Hamlet, North Carolina, authorizing the construction and operation, of the emission source(s) and associated air pollution control device(s) specified herein. Additionally, any emissions activities determined from your Air Quality Permit Application as being insignificant per 15A North Carolina Administrative Code 2Q .0503(8) have been listed for informational purposes as an "ATTACHMENT."

As the designated responsible official it is your responsibility to review, understand, and abide by all of the terms and conditions of the attached permit. It is also your responsibility to ensure that any person who operates any emission source and associated air pollution control device subject to any term or condition of the attached permit reviews, understands, and abides by the condition(s) of the attached permit that are applicable to that particular emission source.

If any parts, requirements, or limitations contained in this Air Quality Permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. This hearing request must be in the form of a written petition, conforming to NCGS (North Carolina General Statutes) 150B-23, and filed with both the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, North Carolina 27699-6714 and the Division of Air Quality, Permitting Section, 1641 Mail Service Center, Raleigh, North Carolina 27699-1641. The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Please note that this permit will be stayed in its entirety upon receipt of the request for a hearing. Unless a request for a hearing is made pursuant to NCGS 150B-23, this Air Quality Permit shall be final and binding 30 days after issuance.

You may request modification of your Air Quality Permit through informal means pursuant to NCGS 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that this Air Quality Permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under NCGS 150B-23.

The construction of new air pollution emission source(s) and associated air pollution control device(s), or modifications to the emission source(s) and air pollution control device(s) described in this permit must be covered under an Air Quality Permit issued by the Division of Air Quality prior to construction unless the Permittee has fulfilled the requirements of GS 143-215-108A(b) and received written approval from the Director of the Division of Air Quality to commence construction. Failure to receive an Air Quality Permit or written approval prior to commencing construction is a violation of GS 143-215.108A and may subject the Permittee to civil or criminal penalties as described in GS 143-215.114A and 143-215.114B.

Richmond County has triggered increment tracking under PSD for NOx, PM-10, and PM-2.5. This modification will result in an increase of 3.61 pounds per hour of NOx, a decrease of 7.12 pounds per hour of PM-10, and a decrease of 4.26 pounds per hour of PM-2.5.

This Air Quality Permit shall be effective from January 14, 2019 until February 28, 2021, is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein. Should you have any questions concerning this matter, please contact Kevin Godwin at (919) 707-8480 or kevin.godwin@ncdenr.gov.

Sincerely yours,

Mark Cuilla

for William D. Willets, P.E., Chief, Permitting Section
Division of Air Quality, NCDEQ

c: EPA Region 4
Heather Carter, Supervisor, Fayetteville Regional Office
Shannon Vogel, Stationary Source Compliance Branch
Central Files
Connie Horne (Cover letter only)

ATTACHMENT

Insignificant Activities per 15A NCAC 02Q .0503(8)

Emission Source ID No.	Emission Source Description
IES-CHIP-1	Log chipping (138 tons per hour)
IES-BARKHOG	Bark hog (25 tons per hour)
IES-GWH	Green wood handling operations
IES-GN	Emergency generator (671 brake horsepower)
IES-FWP	Fire water pump (131 brake horsepower)
IES-DRYSHAVE	Dried shaving material handling (25 tons per hour)
IES-TK-1	Diesel fuel storage tank (1,000 gallons capacity)
IES-TK-2	Diesel fuel storage tank (185 gallons capacity)
IES-TK-3	Diesel fuel storage tank (5,000 gallons capacity)
IES-GWSP-1 through IES-GWSP-4	Green wood storage piles
IES-BFSP-1 and IES-BFP-2	Bark fuel storage piles
IES-BFB	Bark fuel bin
IES-DEBARK-1	De-barker (275 tons per hour)

1. Because an activity is insignificant does not mean that the activity is exempted from an applicable requirement or that the Permittee is exempted from demonstrating compliance with any applicable requirement.
2. When applicable, emissions from stationary source activities identified above shall be included in determining compliance with the permit requirements for toxic air pollutants under 15A NCAC 02D .1100 "Control of Toxic Air Pollutants" or 02Q .0711 "Emission Rates Requiring a Permit."
3. For additional information regarding the applicability of MACT or GACT see the DAQ page titled "Specific Permit Conditions Regulatory Guide." The link to this site is as follows: http://deq.nc.gov/about/divisions/air-quality/air-quality-permits/specific-permit-conditions-regulatory-guide.

Summary of Changes to Permit

The following changes were made to the existing Air Permit:

Page No.	Section	Description of Changes
N/A	Attachment – List of Insignificant Activities	<u>Included the following sources:</u> Log Chipping (ID No. IES-CHIP-1), Bark Hog (ID No. IES-BARKHOG), Emergency Generator (ID No. IES-GN), Fire water pump (ID No. IES-FWP), Dried shaving material handling (ID No. IES-DRYSHAVE), Bark fuel storage piles (ID No. IES-BFSP-1 and 2), Bark fuel bin (ID No. IES-BFB). <u>Updated storage tank capacities as follows:</u> Diesel fuel storage tank (ID No. IES-TK-1, 1,000 gallons capacity), Diesel fuel storage tank (ID No. IES-TK-2, 185 gallons capacity), Diesel fuel storage tanks (ID No. IES-TK-3, 5,000 gallons capacity).

Page No.	Section	Description of Changes
3	Table of Permitted Emission Sources	Removed the PSD designation throughout the table. Included the following sources and control devices: Hammermill collection conveyor (ID No. ES-HMC) controlled by bagfilter (ID No. CD-HMC-BH), Pellet cooler high-pressure fines relay (ID No. ES-PCHP) controlled by bagfilter (ID No. CD-PCHP-BH), Pellet cooler low-pressure fines relay (ID No. ES-PCLP) controlled by bagfilter (ID No. CD-PCLP-BH), Pellet dust collection transfer bin (ID No. PDCTB) controlled by bagfilter (ID No. CD-PDCTB-BH), Additive handling and storage (ID No. ES-ADD) controlled by bagfilter (ID No. CD-ADD-BH). Removed cyclones as control devices. Removed Hammermill Area (ID No. ES-HMA) emission point. Changed the Pellet Loadout Bins from eight (8) to two (2) bins (ID Nos. ES-PB-1 and 2) Included new regenerative thermal oxidizer (ID No. CD-RTO-1) installed on Green wood hammermills (ID No. GMH-1 through 3) and Rotary dryer (ID No. ES-DRYER). Included new wet scrubber (ID No. CD-WSB) and regenerative catalytic oxidizer (ID No. CD-RCO) installed on Pellet coolers (ID Nos. ES-CLR-1 through 6) Moved the following sources to the insignificant activity list: Log Chipping (ID No. IES-CHIP-1), Bark Hog (ID No. IES-BARKHOG), Emergency Generator (ID No. IES-GM), and Fire water pump (ID No. IES-FWP).
4	2.1 A.	Updated emission source description to reflect the proposed emission source configuration.
5	2.1 A.1	Updated the 15A NCAC 02D .0515 condition to reflect the proposed control device configuration.
8	2.2 A.2.	Removed the existing PSD condition and replaced with a PSD avoidance condition.

NORTH CAROLINA
Department of Environmental Quality

State of North Carolina
Department of Environmental Quality
Division of Air Quality

AIR QUALITY PERMIT

Permit No.	Replaces Permit No.(s)	Effective Date	Expiration Date
10365R03	10365R02	January 14, 2019	February 28, 2021

Until such time as this permit expires or is modified or revoked, the below named Permittee is permitted to construct and operate the emission source(s) and associated air pollution control device(s) specified herein, in accordance with the terms, conditions, and limitations within this permit. This permit is issued under the provisions of Article 21B of Chapter 143, General Statutes of North Carolina as amended, and Title 15A North Carolina Administrative Codes (15A NCAC), Subchapters 2D and 2Q, and other applicable Laws.

Pursuant to Title 15A NCAC, Subchapter 2Q, the Permittee shall not construct, operate, or modify any emission source(s) or air pollution control device(s) without having first submitted a complete Air Quality Permit Application to the permitting authority and received an Air Quality Permit, except as provided in this permit.

Permittee:	**Enviva Pellets Hamlet, LLC**
Facility ID:	**7700096**
Facility Site Location:	**1125 North NC Highway 177**
City, County, State, Zip:	**Hamlet, Richmond County, North Carolina, 28345**
Mailing Address:	**7200 Wisconsin Avenue**
City, State, Zip:	**Bethesda, Maryland 20814**
Application Number:	**7700096.18A**
Complete Application Date:	**June 6, 2017**
Primary SIC Code:	**2499**
Division of Air Quality,	**Fayetteville Regional Office**
Regional Office Address:	**Systel Building**
	225 Green Street, Suite 714
	Fayetteville, North Carolina, 28301

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SECTION 1- PERMITTED EMISSION SOURCE(S) AND ASSOCIATED AIR POLLUTION CONTROL DEVICE(S) AND APPURTENANCES

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-GHM-1, ES-GHM-2, and ES-GHM-3	Green wood hammermills	CD-WESP CD-RTO-1	One wet electrostatic precipitator (square feet of collector plate area to be determined) in series with One natural gas-fired regenerative thermal oxidizer (32 million Btu per hour heat input)
ES-DRYER **02D .1112 Case-by-case MACT**	Green wood direct-fired rotary dryer system (250.4 million Btu per hour heat input)	CD-WESP CD-RTO-1	One wet electrostatic precipitator (square feet of collector plate area to be determined) in series with One natural gas-fired regenerative thermal oxidizer (32 million Btu per hour heat input)
ES-DWH	Dried wood handling	CD-DWH-BH-1 and CD-DWH-BH-2	Two bagfilters (square feet filter surface to be determined) operating in parallel
ES-HM-1 through ES-HM-8 **02D .1112 Case-by-case MACT**	Eight (8) hammermills	CD-HM-BH-1 through CD-HM-BH-8	Eight (8) bagfilters (square feet filter surface area to be determined)
ES-HMC	Hammermill collection conveyor	CD-HMC-BH	One bagfilter (square feet filter surface area to be determined)
ES-PMFS	Pellet mill feed silo	CD-PMFS-BH	One bagfilter (square feet of filter surface area to be determined)
ES-CLR-1 through ES-CLR-6 **02D .1112 Case-by-case MACT**	Six (6) pellet coolers	CD-WSB CD-RCO	One wet scrubber (minimum liquid injection rate to be determined) One natural gas-fired regenerative catalytic oxidizer (32 million Btu per hour heat input)
ES-PCHP	One pellet cooler high-pressure fines relay system	CD-PCHP-BH	One bagfilter (square feet of filter surface area to be determined)
ES-PCLP	One pellet cooler low-pressure fines relay system	CD-PCLP-BH	One bagfilter (square feet of filter surface area to be determined)
ES-PDCTB	One pellet dust collection transfer bin	CD-PDCTB-BH	One bagfilter (square feet of filter surface area to be determined)
ES-FPH, ES-PB1, ES-PB2, ES-PL-1 through ES-PL-3	Finished product handling and two (2) pellet loadout bins and three (3) pellet mill loadouts	CD-FPH-BH	One bagfilter (square feet of filter surface area to be determined)

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-ADD	Additive handling and storage	CD-ADD-BH	One bagfilter (square feet of filter surface area to be determined)

SECTION 2 - SPECIFIC LIMITATIONS AND CONDITIONS

2.1- Emission Source(s) and Control Devices(s) Specific Limitations and Conditions

The emission source(s) and associated air pollution control device(s) and appurtenances listed below are subject to the following specific terms, conditions, and limitations, including the testing, monitoring, recordkeeping, and reporting requirements as specified herein:

A. Green wood hammermills (ID Nos. ES-GHM-1, 2, and 3), Rotary dryer system (ID No. ES-DRYER), Dried wood handling (ID No. ES-DWH), Hammermills (ID Nos. ES-HM-1 through ES-HM-8), Hammermill collection conveyor (ID No. ES-HMC), Pellet mill feed silo (ID No. ES-PMFS), Pellet coolers (ID Nos. ES-CLR-1 through ES-CLR-6), Pellet cooler high-pressure fines relay system (ID No. ES-PCHP), Pellet cooler low-pressure fines relay system (ID No. ES-PCLP), Pellet dust collection system transfer bin (ID No. ES-PDCTB), Finished product handling and load-out bins (ID Nos. ES-FPH, ES-PB-1 and ES-PB-2), and Additive handling and storage (ID No. ES-ADD)

The following table provides a summary of limits and standards for the emission source(s) described above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter	$E = 4.10 \times P^{0.67}$ for $P < 30$ tph $E = 55 \times P^{0.11} - 40$ for $P \geq 30$ tph where, E = allowable emission rate (lb/hr) P = process weight rate (tph)	15A NCAC 02D .0515
Sulfur dioxide	2.3 pounds per million Btu	15A NCAC 02D .0516
Visible emissions	20 percent opacity when averaged over a 6-minute period	15A NCAC 02D .0521
Hazardous Air Pollutants (HAP)	See Section 2.1 A.4.	15A NCAC 02D .1112 [§ 112(g) Case-by-case MACT]

Regulated Pollutant	Limits/Standards	Applicable Regulation
Volatile organic compounds (VOC), Nitrogen Oxides (NOx), and Carbon Monoxide (CO)	Less than 250 tons per consecutive 12-month period, See Section 2.2 A.2.	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530

1. **15A NCAC 02D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES**
   a. Emissions of particulate matter from these sources shall not exceed an allowable emission rate as calculated by the following equation: [15A NCAC 02D .0515(a)]

      $E = 4.10 \times P^{0.67}$ for $P < 30$ tph
      $E = 55 \times P^{0.11} - 40$ for $P \geq 30$ tph

      Where E = allowable emission rate in pounds per hour
      P = process weight in tons per hour

      Liquid and gaseous fuels and combustion air are not considered as part of the process weight.

   Testing [15A NCAC 02Q .0308(a)]

   b. Under the provisions of NCGS 143-215.108, the Permittee shall test the outlet of the regenerative thermal oxidizer (ID No. CD-RTO-1) and the regenerative catalytic oxidizer (ID No. CD-RCO) for total suspended particulate (TSP) in accordance with a testing protocol approved by the DAQ. Testing shall be completed and the results submitted within 180 days of commencement of operation unless an alternate date is approved by the DAQ.

   Monitoring/Recordkeeping [15A NCAC 02Q .0308(a)]

   c. The Permittee shall maintain production records such that the process rates "P" in tons per hour, as specified by the formulas contained above (or the formulas contained in 15A NCAC 02D .0515), can be derived, and shall make these records available to a DAQ authorized representative upon request.

   d. Particulate matter emissions from the green wood hammermills (ID No. ES-GHM-1, 2, and 3) and rotary dryer (ID No. ES-DRYER) shall be controlled by one wet electrostatic precipitator (ID No. CD-WESP) in series with on regenerative thermal oxidizer (ID No. CD-RTO-1). Particulate matter emissions from dried wood handling (ID No. ES-DWH) shall be controlled by two bagfilters (ID Nos. CD-DWH-BH-1 and 2) operating in parallel. Particulate matter emissions from hammermills (ID No. ES-HM-1 through 8) shall be controlled by bagfilters (ID No. CD-HM-BH-1 through 8). Particulate matter emissions from the hammermill collection conveyor (ID No. ES-HMC) shall be controlled by a bagfilter (ID No. CD-HMC-BH). Particulate matter emissions from the pellet mill feed silo (ID No. ES-PMFS) shall be controlled by a bagfilter (ID No. CD-PMFS-BH). Particulate matter emissions from pellet coolers (ID Nos. ES-CLR-1 through 6) shall be controlled by a wet scrubber (ID No. CD-WSB) in series with a regenerative catalytic oxidizer (ID No. CD-RCO). Particulate matter emissions from the pellet cooler high-pressure fines relay system (ID No. ES-PCHP) shall be controlled by a bagfilter (ID No. CD-PCHP-BH). Particulate matter emissions from the pellet cooler low-pressure fines relay system (ID No. ES-PCLP) shall be controlled by a bagfilter (ID No. CD-PCLP). Particulate matter from the pellet dust collection transfer bin (ID No. ES-

PDCTB) shall be controlled by a bagfilter (ID No. CD-PDCTB-BH). Particulate matter emissions from the finished product handling (ID No. ES-FPH) and pellet loadout bins (ID No. ES-PB1 and 2) shall be controlled by a bagfilter (ID No. CD-FPH-BH). Particulate matter emissions from the additive handling and storage (ID No. ES-ADD) shall be controlled by a bagfilter (ID No. CD-ADD-BH).

For bagfilters:
To ensure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there are no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

i. a monthly visual inspection of the system ductwork and material collection unit for leaks, and
ii. an annual (for each 12-month period following the initial inspection) internal inspection of the bagfilters' structural integrity.

For WESP:
To ensure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there are no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

The Permittee shall establish the minimum primary voltage and minimum current within the first 30 days following the commencement of operation of the dryer. To assure compliance and effective operation of the wet electrostatic precipitator, the Permittee shall monitor and record the primary voltage and minimum current through the precipitator for each day of the calendar year period that the dryer system is operated. The Permittee shall be allowed three (3) days of absent observations per semi-annual period.

For RTO and RCO:
To ensure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer.

e. The results of inspection and maintenance shall be maintained in a log (written or electronic format) on-site and made available to an authorized representative upon request. The log shall record the following:
   i. the date and time of each recorded action;
   ii. the results of each inspection;
   iii. the results of any maintenance performed; and
   iv. any variance from manufacturer's recommendations, if any, and corrections made.

Reporting

f. The Permittee shall submit the results of any maintenance performed on the WESP, bagfilters, and bin vent filters within 30 days of a written request by the DAQ.

2. 15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

a. Emissions of sulfur dioxide from these sources shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard. [15A NCAC 2D .0516]

Testing [15A NCAC 02Q .0308(a)]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17. found in Section 3.

<u>**Monitoring/Recordkeeping/Reporting**</u> [15A NCAC 02Q .0308(a)]

c. No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from firing biomass in the dryer system or natural gas in the thermal oxidizers.

3. 15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS

a. Visible emissions from these sources shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity. [15A NCAC 02D .0521 (d)]

<u>**Testing**</u> [15A NCAC 02Q .0308(a)]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17. found in Section 3.

<u>**Monitoring**</u> [15A NCAC 02Q .0308(a)]

c. To ensure compliance, once a month the Permittee shall observe the emission points of these sources for any visible emissions above normal. The monthly observation must be made for each month of the calendar year period to ensure compliance with this requirement. The Permittee shall establish "normal" for the source in the first 30 days following the effective date of the permit. If visible emissions from this source are observed to be above normal, the Permittee shall either:
   i. take appropriate action to correct the above-normal emissions as soon as practicable and within the monitoring period and record the action taken as provided in the recordkeeping requirements below, or
   ii. demonstrate that the percent opacity from the emission points of the emission source in accordance with 15A NCAC 2D .2610 (Method 9) for 12 minutes is below the limit given in Section 2.1 A.3. a. above.

<u>**Recordkeeping**</u> [15A NCAC 02Q .0308(a)]

d. The results of the monitoring shall be maintained in a log (written or electronic format) on-site and made available to an authorized representative upon request. The log shall record the following:
   i. the date and time of each recorded action;
   ii. the results of each observation and/or test noting those sources with emissions that were observed to be in noncompliance along with any corrective actions taken to reduce visible emissions; and
   iii. the results of any corrective actions performed.

<u>**Reporting**</u> [15A NCAC 02Q .0308(a)]

e. No reporting is required.

4. 15A NCAC 02D .1112 National Emissions Standards for Hazardous Air Pollutants, 112(g) Case-by-Case Maximum Achievable Control Technology

<u>**Testing**</u> [15A NCAC 02Q .0308(a)]

a. <u>Initial Performance Tests</u> – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall establish emission factors for HAPs by conducting an initial performance test on the wood-fired direct heat drying system (ID No. ES-DRYER), the green wood hammermills (ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3), the dry hammermills (ID Nos. ES-HM-1 to ES-HM-8), the dry wood handling operations (ID Nos. ES-DWH), and the pellet presses and coolers (ID Nos. ES-CLR-1 through ES-CLR-6). Initial testing shall be conducted in accordance with the following:
   i. The pollutants and emission sources to be tested during the initial performance test are listed in the following table:

Emission Source	Pollutant
Dryer system/greenwood hammermills controlled via a RTO	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde
Pellet coolers pellet presses controlled via a RCO	
One dry hammermill	
Dry wood handling operations	

ii. Initial testing shall be conducted in accordance with Section 2.2 A.2. c. ii. through x. below.

b. Periodic Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall establish emission factors for HAPs by conducting an initial performance test on the wood-fired direct heat drying system (ID No. ES-DRYER), the green wood hammermills (ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3), the dry hammermills (ID Nos. ES-HM-1 to ES-HM-8), the dry wood handling operations (ID Nos. ES-DWH), and the pellet presses and coolers (ID Nos. ES-CLR-1 through ES-CLR-6). Periodic testing shall be conducted in accordance with the following:

i. The pollutants and emission sources to be tested during the periodic performance tests are listed in the following table:

Emission Sources	Pollutant
Dryer system/greenwood hammermills controlled via a RTO	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde
Pellet coolers pellet presses controlled via a RCO	
One dry hammermill	
Dry wood handling operations	

ii. Periodic testing shall be conducted in accordance with Section 2.2 A.2. d. ii. through ix. below.

c. **Monitoring/Recordkeeping/Reporting** [15A NCAC 02Q .0308(a)]
Monitoring, recordkeeping, and reporting shall be performed in accordance with 2.2 A.2.

2.2- Multiple Emission Source(s) Specific Limitations and Conditions

A. Facility-wide Emission Sources

The following table provides a summary of limits and standards for the emission source(s) describe above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Fugitive dust	Minimize fugitive dust beyond property boundary	15A NCAC 02D .0540
VOC NOx CO	Less than 250 tons per 12-month period, Less than 250 tons per 12-month period, Less than 250 tons per 12-month period	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530

1. **Fugitive Dust Control Requirement** [15A NCAC 02D .0540] - STATE ENFORCEABLE ONLY
As required by 15A NCAC 2D .0540 "Particulates from Fugitive Dust Emission Sources," the Permittee shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 02D .0540(f).
"Fugitive dust emissions" means particulate matter from process operations that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

2. **15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530: PREVENTION OF SIGNIFICANT DETERIORATION**
   a. In order to avoid applicability of 15A NCAC 2D .0530(g), the above emission sources shall discharge into the atmosphere less than 250 tons of volatile organic compounds (VOC), nitrogen oxides (NOx), and carbon monoxide (CO) per consecutive 12-month period. [15A NCAC 2D .0530]

   b. To ensure that the limits established above are not exceeded,
      i. the greenwood hammermills and pellet dryer will be controlled by a regenerative thermal oxidizer (ID No. CD-RTO-1),
      ii. the pellet mills and pellet coolers will be controlled by a regenerative catalytic oxidizer (ID No. CD-RCO), and
      iii. the facility will not process more than 625,011 oven dried tons per year (ODT/year) with a maximum of 85% softwood, on a rolling 12-month average basis.

   Testing [15A NCAC 02Q .0308(a)]

   c. Initial Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with PSD avoidance limits in Section 2.2 A.2.a. above by conducting an initial performance test on the wood-fired direct heat drying system (ID No. ES-DRYER), the green wood hammermills (ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3), the dry hammermills (ID Nos. ES-HM-1 to ES-HM-8), the dry wood handling operations (ID Nos. ES-DWH), and the pellet presses and coolers (ID Nos. ES-CLR-1 through ES-CLR-6). Initial testing shall be conducted in accordance with the following:
      i. The pollutants and emission sources to be tested during the initial performance test are listed in the following table:

Emission Sources	Pollutant
Dryer system/greenwood hammermills controlled via a RTO	VOC
	PM/PM10/PM2.5
	NOx
	CO
Pellet coolers pellet presses controlled via a RCO	VOC
	PM/PM10/PM2.5
One dry hammermill	VOC
	PM/PM10/PM2.5
Dry wood handling operations	VOC
	PM/PM10/PM2.5

      ii. The Permittee shall utilize EPA reference methods contained in 40 CFR 60, Appendix A, 40 CFR Part 63, and OTM 26 AND in accordance with a testing protocol (using testing protocol submittal form) approved by the DAQ.
      iii. The Permittee shall submit a protocol to the DAQ at least 45 days prior to compliance testing.

iv. The Permittee shall be responsible for ensuring, within practicable limits, that the equipment or processes being tested are operated at or near the maximum normal production rate or at a lesser rate if specified by the Director or his delegate.
v. To the extent possible, testing shall be conducted at the maximum normal operating softwood percentage.
vi. The Permittee shall establish the firebox temperature of the regenerative thermal oxidizer (ID No. CD-RTO-1) during testing. The firebox temperature shall be based upon the average temperature over the span of the test runs. Documentation for the firebox temperature shall be submitted to the DAQ as part of the test report for the regenerative thermal oxidizer.
vii. The Permittee shall establish the temperature at the inlet of the catalytic oxidizer (ID No. CD-RCO) during testing when operating in both modes. The inlet temperature shall be based upon the average temperature over the span of the test runs. Documentation for the inlet temperature shall be submitted to the DAQ as part of the test report for the catalytic oxidizer.
viii. Testing is required on only one of the dry hammermills. The Permittee shall ensure that the dry hammermill selected for testing is representative of operations of all the dry hammermills.
ix. Testing shall be completed within 180 days of commencement of operation.
x. The Permittee shall submit a written report of the test results to the Regional Supervisor, DAQ, within 60 days of completion of the test.

d. Periodic Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with the PSD avoidance in Section 2.2 A.2.a. above by conducting periodic performance tests on the wood-fired direct heat drying system (ID No. ES-DRYER), the green wood hammermills (ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3), the dry hammermills (ID Nos. ES-HM-1 to ES-HM-8), the dry wood handling operations (ID Nos. ES-DWH), and the pellet presses and coolers (ID Nos. ES-CLR-1 through ES-CLR-6). Periodic testing shall be conducted in accordance with the following:

i. The pollutants and emission sources to be tested during the periodic performance tests are listed in the following table:

Emission Source	Pollutant
Dryer system/greenwood hammermills controlled via a RTO	VOC
	PM/PM10/PM2.5
	NOx
	CO
Pellet coolers pellet presses controlled via a RCO	VOC
	PM/PM10/PM2.5
One dry hammermill	VOC
	PM/PM10/PM2.5
Dry wood handling operations	VOC
	PM/PM10/PM2.5

ii. Testing shall be conducted in accordance with Section 2.2 A.2. c. ii. through v. above.
iii. Testing is required on only one of the dry hammermills. The Permittee shall ensure that the dry hammermill selected for testing is representative of operations of all the dry hammermills. A different hammermill shall be tested for each periodic performance tests, until all the hammermills have been tested.
iv. The Permittee shall conduct performance tests when the following conditions are met:
(A) As the softwood content increases by more than 10 percentage points over what was established during the initial test up to 85%, or
(B) As the production rate increases by more than 10 percentage points over what was established during the initial test up to 625,011 ODT/year.

(C) At a minimum testing shall be conducted annually. Annual performance tests shall be completed no later than 13 months after the previous performance test.

v. The Permittee shall conduct the periodic performance test and submit a written report of the test results to the Regional Supervisor, DAQ, within 90 days from the date the monthly softwood content or overall production rate increased as described in Section 2.2 A.2.d.iv (A) and (B) above. The Permittee shall submit a written report of results for the periodic performance test as described in Section 2.2.A.2.d.iv (C) to the Regional Supervisor, DAQ, within 60 days of completion of the test.

vi. When performance testing has occurred at 85 percent softwood AND 90 percent of the maximum permitted throughput, subsequent periodic performance testing shall occur on an annual basis and shall be completed no later than 13 months after the previous performance test. The Permittee shall submit a written report of the periodic performance test results to the Regional Supervisor, DAQ, within 60 days of completion of the test.

vii. The Permittee may re-establish any parametric operating value during periodic testing. Compliance with previously approved parametric operating values is not required during periodic required testing or other tests undertaken to re-establish parametric operating values by the Permittee.

viii. When establishing new parametric monitoring values via source testing, the Permittee shall include an application for an Administrative Amendment to the permit with the submittal of the test results.

ix. The Permittee shall comply with applicable emission standards at all times, including during periods of testing.

Monitoring and Recordkeeping [15A NCAC 02Q .0308(a)]

Regenerative Thermal Oxidizer and Regenerative Catalytic Oxidizer

e. The Permittee shall install, calibrate, operate, maintain, and inspect a continuous temperature monitoring, and recording system, in accordance with manufacturer's recommendations, for the regenerative thermal oxidizer and regenerative catalytic oxidizer (ID Nos. CD-RTO-1 and CD-RCO) to monitor the temperature in the combustion chamber (the second half of the oxidizer away from the flame zone) to ensure the average combustion temperature does not drop below the temperature range established during the performance test.

f. The Permittee shall develop and maintain a written malfunction plan for the temperature monitoring and recording system that describes, in detail, the operating procedures for periods of malfunction and a protocol to address malfunctions so that corrective actions can immediately be investigated. The malfunction plan shall identify malfunctions, as described by the manufacturer, and ensure the operators are prepared to correct such malfunctions as soon as practical. The Permittee shall keep any necessary parts for routine repairs of the temperature monitoring and recording system readily available.

g. The Permittee shall perform periodic inspection and maintenance for the oxidizers as recommended by the manufacturer. At a minimum, the Permittee shall perform an annual internal inspection of the primary heat exchanger and associated inlet/outlet valves of the control device to ensure structural integrity.

h. The process rate and hardwood/softwood mix shall be recorded in a monthly log kept on site.

The results of the calculations and the total amount of VOC, NOx, and CO emissions shall be recorded monthly in a logbook (written or electronic format) and made available to an authorized representative upon request.

i. For the dryer system, GHG (CO_2e) emissions shall be calculated on a monthly basis and compliance demonstrated using the applicable Part 98 emission factors. Compliance shall be documented on a 12-month rolling basis.

Reporting [15A NCAC 02Q .0308(a)]

j. The Permittee shall submit a semi-annual summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December, and July 30 of each calendar year for the preceding six-month period between January and June. The report shall contain the following:

   i. The monthly VOC, NOx, and CO emissions for the previous 17 months. The emissions must be calculated for each of the 12-month periods over the previous 17 months.
   ii. A report indicating and explaining all instances of the average minimum regenerative thermal oxidizer and regenerative catalytic oxidizer combustion chamber temperature falling below the temperature range established during the performance test or noting that no such instances have occurred.

k. All instances of deviations from the requirements of this permit must be clearly identified.

3. **15A NCAC 02Q .0207: ANNUAL EMISSIONS REPORTING**
The Permittee shall report by **June 30** of each year the actual emissions of each air pollutant listed in 15A NCAC 02Q .0207(a) from each emission source within the facility during the previous calendar year. The report shall be in or on such form as may be established by the Director. The accuracy of the report shall be certified by the responsible official of the facility.

4. **15A NCAC 02Q. 0304: APPLICATIONS**
The Permittee, at least 90 days prior to the expiration date of this permit, shall request permit renewal by letter in accordance with 15A NCAC 02Q .0304(d) and (f). Pursuant to 15A NCAC 02Q .0203(i), no permit application fee is required for renewal of an existing air permit. The renewal request should be submitted to the Regional Supervisor, DAQ.

5. **15A NCAC 02Q .0504: OPTION FOR OBTAINING CONSTRUCTION AND OPERATION PERMIT**
The Permittee shall file a Title V Air Quality Permit Application pursuant to 15A NCAC 02Q .0504. to modify the construction and operation permit on or before **12 months after commencing operation of any of the sources listed in this permit**.

SECTION 3 - GENERAL CONDITIONS

1. In accordance with G.S. 143-215.108(c)(1), TWO COPIES OF ALL DOCUMENTS, REPORTS, TEST DATA, MONITORING DATA, NOTIFICATIONS, REQUESTS FOR RENEWAL, AND ANY OTHER INFORMATION REQUIRED BY THIS PERMIT shall be submitted to:

   Heather Carter
   Regional Air Quality Supervisor
   North Carolina Division of Air Quality
   Fayetteville Regional Office
   Systel Building
   225 Green Street, Suite 714
   Fayetteville, NC 28301-5043
   (910) 433-3300

   For identification purposes, each submittal should include the facility name as listed on the permit, the facility identification number, and the permit number.

2. RECORDS RETENTION REQUIREMENT - In accordance with 15A NCAC 2D .0605, any records required by the conditions of this permit shall be kept on site and made available to DAQ personnel for inspection upon request. These records shall be maintained in a form suitable and readily available for expeditious inspection and review. These records must be kept on site for a minimum of 2 years, unless another time period is otherwise specified.

3. ANNUAL FEE PAYMENT - Pursuant to 15A NCAC 2Q .0203(a), the Permittee shall pay the annual permit fee within 30 days of being billed by the DAQ. Failure to pay the fee in a timely manner will cause the DAQ to initiate action to revoke the permit.

4. EQUIPMENT RELOCATION - In accordance with 15A NCAC 2Q .0301, a new air permit shall be obtained by the Permittee prior to establishing, building, erecting, using, or operating the emission sources or air cleaning equipment at a site or location not specified in this permit.

5. REPORTING REQUIREMENT - In accordance with 15A NCAC 2Q .0309, any of the following that would result in previously unpermitted, new, or increased emissions must be reported to the Regional Supervisor, DAQ:

   a. changes in the information submitted in the application regarding facility emissions;

   b. changes that modify equipment or processes of existing permitted facilities; or

   c. changes in the quantity or quality of materials processed.

   If appropriate, modifications to the permit may then be made by the DAQ to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause a violation of the emission limitations specified herein.

6. In accordance with 15A NCAC 2Q .0309, this permit is subject to revocation or modification by the DAQ upon a determination that information contained in the application or presented in the support thereof is incorrect, conditions under which this permit was granted have changed, or violations of conditions contained in this permit have occurred. In accordance with G.S. 143-215.108(c)(1), the facility shall be properly operated and maintained at all times in a manner that will effect an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air cleaning device(s) and appurtenances.

7. In accordance with G.S. 143-215.108(c)(1), this permit is nontransferable by the Permittee. Future owners and operators must obtain a new air permit from the DAQ.

8. In accordance with G.S. 143-215.108(c)(1), the issuance of this permit in no way absolves the Permittee of liability for any potential civil penalties which may be assessed for violations of State law which have occurred prior to the effective date of this permit.

9. In accordance with G.S. 143-215.108(c)(1), this permit does not relieve the Permittee of the responsibility of complying with all applicable requirements of any Federal, State, or Local water quality or land quality control authority.

10. In accordance with 15A NCAC 2D .0605, reports on the operation and maintenance of the facility shall be submitted by the Permittee to the Regional Supervisor, DAQ at such intervals and in such form and detail as may be required by the DAQ. Information required in such reports may include, but is not limited to, process weight rates, firing rates, hours of operation, and preventive maintenance schedules.

11. A violation of any term or condition of this permit shall subject the Permittee to enforcement pursuant to G.S. 143-215.114A, 143-215.114B, and 143-215.114C, including assessment of civil and/or criminal penalties.

12. Pursuant to North Carolina General Statute 143-215.3(a)(2), no person shall refuse entry or access to any authorized representative of the DAQ who requests entry or access for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representative while in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

13. In accordance with G.S. 143-215.108(c)(1), this permit does not relieve the Permittee of the responsibility of complying with any applicable Federal, State, or Local requirements governing the handling, disposal, or incineration of hazardous, solid, or medical wastes, including the Resource Conservation and Recovery Act (RCRA) administered by the Division of Waste Management.

14. PERMIT RETENTION REQUIREMENT - In accordance with 15A NCAC 2Q .0110, the Permittee shall retain a current copy of the air permit at the site. The Permittee must make available to personnel of the DAQ, upon request, the current copy of the air permit for the site.

15. CLEAN AIR ACT SECTION 112(r) REQUIREMENTS - Pursuant to 15A NCAC 2D .2100 "Risk Management Program," if the Permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the Federal Clean Air Act, then the Permittee is required to register this plan with the USEPA in accordance with 40 CFR Part 68.

16. PREVENTION OF ACCIDENTAL RELEASES - GENERAL DUTY - Pursuant to Title I Part A Section 112(r)(1) of the Clean Air Act "Hazardous Air Pollutants - Prevention of Accidental Releases - Purpose and General Duty," although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release. **This condition is federally-enforceable only.**

17. GENERAL EMISSIONS TESTING AND REPORTING REQUIREMENTS - If emissions testing is required by this permit, or the DAQ, or if the Permittee submits emissions testing to the DAQ in support of a permit application or to demonstrate compliance, the Permittee shall perform such testing in accordance with 15A NCAC 2D .2600 and follow all DAQ procedures including protocol approval, regional notification, report submittal, and test results approval.

Permit issued this the 14th day of January, 2019.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

for William D. Willets, P.E., Chief, Permitting Section
Division of Air Quality, NCDEQ
By Authority of the Environmental Management Commission

Air Permit No. 10365R03

July 31, 2003

MEMORANDUM

SUBJECT: Request for Guidance on the Definition of Fuel Conversion Plants for Purposes of Prevention of Significant Deterioration (PSD)

FROM: Racqueline Shelton
Group Leader
Integrated Implementation Group C-339-03

TO: Guy Donaldson
Acting Chief
Air Permits Section (6PD-R)

Your June 17, 2003, memorandum requests assistance in making an official determination regarding the definition of the PSD source category "fuel conversion plants" found in 40 CFR Subpart 52.21. Stationary sources considered "fuel conversion plants" have a 100 tpy major source threshold for PSD applicability purposes. Specifically, you ask if the classification of "fuel conversion plants" applies to off-shore gas delivery systems that will vaporize liquefied natural gas (LNG) for delivery to a downstream infrastructure. The issue regards two project proposals you are reviewing, including the Chevron Texaco, Port Pelican Terminal that is proposed as SIC Code 4491, a marine cargo handling facility where LNG is transferred from ships to pipelines. We have reviewed your request, your suggested interpretation, the legislative history on the issue, and prior EPA guidance, including EPA's memorandum dated May 26, 1992, entitled "Applicability of Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) to the Cleveland Electric, Incorporated, Plant in Willoughby, Ohio" from Edward J. Lillis, Chief Air Programs Branch to George T. Czerniak, Chief Air Enforcement Branch, Region V. Based on this information and as discussed below, we conclude that the process of vaporization of LNG to natural gas at these sources does not qualify these sources as "fuel conversion plants" under the Federal PSD rules at 40 CFR 52.21(b)(1)(i)(*a*) and (iii)(*q*).

It is our understanding that the vaporization of LNG, which is a change of state from a liquid to a gas, occurs at temperatures above -260 degrees F. As a result, LNG vaporizes naturally at ambient temperatures and that indirect contact with seawater, which is warmer than LNG, is used to speed up the vaporization. We understand that vaporization of LNG occurs without the need for chemical or process change that generally occurs at other sources that EPA considers as “fuel conversion plants”(e.g., coal gasification, oil shale processing , conversion of municipal waste to fuel gas, processing of sawdust into pellets) under the PSD rules.

The vaporization of LNG to natural gas differs from the fuel conversion processes discussed in EPA’s memorandum regarding Cleveland Electric since the vaporization would occur naturally at ambient conditions without additional processing. Our view is that the PSD rules are not intended to include the vaporization of LNG to natural gas in the source category of “fuel conversion plants”

If you have any questions please contact me or Mike Sewell of this group at (919) 541-0873.

cc: Regional Air Program Managers
Teresa Dykes OECA
Carol Holmes OGC
John Averbeck OGC

Teresa Dykes of OECA and Jonathan Averbeck of OGC concur.

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

MICHAEL ABRACZINSKAS
Director

NORTH CAROLINA
Environmental Quality

October 2, 2019

Mr. Steven Schaar
Plant Manager
Enviva Pellets Sampson, LLC
5 Connector Road, US 117
Faison, NC 28341

SUBJECT: Air Quality Permit No. 10386R04
Facility ID: 8200152
Enviva Pellets Sampson, LLC
Faison, North Carolina
Sampson County
Fee Class: Title V
PSD Status: Major

Dear Mr. Schaar:

In accordance with your complete Prevention of Significant Deterioration (PSD) permit application received April 3, 2018, and State Renewal application received August 2, 2019, we are forwarding herewith Air Quality Permit No. 10386R04 to Enviva Pellets Sampson, LLC, 5 Connector Road, US 117, Faison, North Carolina, authorizing the construction and operation, of the emission source(s) and associated air pollution control device(s) specified herein. Additionally, any emissions activities determined from your Air Quality Permit Application as being insignificant per 15A North Carolina Administrative Code 02Q .0503(8) have been listed for informational purposes as an "ATTACHMENT."

As the designated responsible official, it is your responsibility to review, understand, and abide by all of the terms and conditions of the attached permit. It is also your responsibility to ensure that any person who operates any emission source and associated air pollution control device subject to any term or condition of the attached permit reviews, understands, and abides by the condition(s) of the attached permit that are applicable to that particular emission source.

If any parts, requirements, or limitations contained in this Air Quality Permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. This hearing request must be in the form of a written petition, conforming to NCGS (North Carolina General Statutes) 150B-23, and filed with both the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, North Carolina 27699-6714 and the Division of Air Quality, Permitting Section, 1641 Mail Service Center, Raleigh, North Carolina 27699-1641. The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Please note that this permit will be stayed in its entirety upon receipt of the request for a hearing. Unless a request for a hearing is made pursuant to NCGS 150B-23, this Air Quality Permit shall be final and binding 30 days after issuance.

You may request modification of your Air Quality Permit through informal means pursuant to NCGS 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that this Air Quality Permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under NCGS 150B-23.

The construction of new air pollution emission source(s) and associated air pollution control device(s), or modifications to the emission source(s) and air pollution control device(s) described in this permit must be covered under an Air Quality Permit issued by the Division of Air Quality prior to construction unless the Permittee has fulfilled the requirements of NCGS 143-215.108A(b) and received written approval from the Director of the Division of Air Quality to commence construction. Failure to receive an Air Quality Permit or written approval prior to commencing construction is a violation of NCGS 143-215.108A and may subject the Permittee to civil or criminal penalties as described in NCGS 143-215.114A and 143-215.114B.

Sampson County has triggered increment tracking under PSD for PM10, PM2.5, and NOx. This modification will result in a decrease of 0.023 pounds per hour of PM10, a decrease of 4.6 pounds per hour of PM2.5, and a decrease of 0.091 pounds per hour of NOx.

This Air Quality Permit shall be effective from October 2, 2019 until September 30, 2027, is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein. Should you have any questions concerning this matter, please contact Betty Gatano, P.E., at (919) 707-8736 or Betty.Gatano@ncdenr.gov.

Sincerely yours,

for Booker T. Pullen

William D. Willets, P.E., Chief, Permitting Section
Division of Air Quality, NCDEQ

c: Kelly Fortion, EPA Region 4
Fayetteville Regional Office
Central Files
Connie Horne (cover letter only)

ATTACHMENT

Insignificant Activities per 15A NCAC 02Q .0503(8)

Emission Source ID No.	Emission Source Description
IES-GWH **PSD**	Green wood handling and sizing operations
IES-BARKHOG **PSD**	Bark Hog
IES-TK-1 **PSD**	Diesel fuel storage tank (up to 2,500 gallons capacity)
IES-TK-2 **PSD**	Diesel fuel storage tank (up to 1,000 gallons capacity)
IES-TK-3 **PSD**	Diesel fuel storage tank (up to 2,500 gallons capacity)
IES-GWSP-1 through IES-GWSP-4 **PSD**	Four (4) green wood storage piles
IES-BFSP-1 and IES-BFSP-2 **PSD**	Two (2) bark fuel storage piles
IES-DEBARK-1 **PSD**	Debarker
IES-CHIP-1 **PSD**	Log chipping
IES-DRYSHAVE **PSD**	Dry shaving material handling
IES-BFB **PSD**	Bark fuel bin
IES-PAVEDROADS **PSD**	Paved roads
IES-EG **NSPS Subpart IIII** **MACT Subpart ZZZZ**	689 HP diesel-fired emergency generator
IES-FWP **NSPS Subpart IIII** **MACT Subpart ZZZZ**	131 HP diesel-fired fire water pump

1. Because an activity is insignificant does not mean that the activity is exempted from an applicable requirement or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement.
2. When applicable, emissions from stationary source activities identified above shall be included in determining compliance with the permit requirements for toxic air pollutants under 15A NCAC 02D .1100 "Control of Toxic Air Pollutants" or 02Q .0711 "Emission Rates Requiring a Permit".
3. For additional information regarding the applicability of MACT or GACT see the DAQ page titled "Specific Permit Conditions Regulatory Guide." The link to this site is as follows: http://deq.nc.gov/about/divisions/air-quality/air-quality-permits/specific-permit-conditions-regulatory-guide.

Summary of Changes to Permit

The following changes were made to Enviva Pellets Sampson, LLC, Sampson, NC., Air Permit No. 10386R03.

Pages	Section	Description of Changes
Cover and throughout	--	Updated all dates and permit revision numbers.
Insignificant Activities list	--	• Added log chipping (ID No. IES-CHIP-1). • Added the bark hog (ID No. IES-BARKHOG). • Removed the dry wood handling and sizing operations (ID No. IES-DWHS). • Added two greenwood storage piles (ID No. IES-GWSP-3 and -4). • Added two bark fuel storage piles (ID No. IES-BFSP-1 and -2). • Added dry shaving materials handling (ID No. IES-DRYSHAVE). • Removed greenwood fuel bin (ID No. IES-GWFB). • Added bark fuel bin (ID No. IES-BFB). • Added paved roads (ID No. IES-PAVEDROADS) • Reformatted listing for the emergency generator (ID No. IES-EG) and the fire water pump (ID No. IES-FWP). • Added the "PSD" label to all applicable equipment.
3	Section 1 – Equipment Table	• Changed reference to bagfilters and bin vent filters to baghouses and renamed control devices accordingly. • Removed log chipping (ID No. ES-CHIP-1) and moved emission source to the insignificant activities list. • Removed the bark hog (ID No. ES-BARKHOG) and moved emission source to the insignificant activities list. • Removed baghouses (ID Nos. CD-GHM-BH-1 through -3) as control devices for the green wood hammermills (ID Nos. ES-GHM-1 through -3). The WESP (ID No. CD-WESP) and the regenerative thermal oxidizer (RTO) (ID No. RTO) will be used as PM, VOC, and HAP control for the green wood hammermills. • Removed the cyclones (ID Nos. CD-DC1 through DC4) as control devices for the dryer (ID No. ES-DRYER). These cyclones are used for product recovery rather than as control devices. The WESP (ID No. CD-WESP) and the RTO (ID No. RTO) will be used as PM, VOC, and HAP control for the dryer. • Added RTO (ID No. CD-RTO) as control on the dryer (ID No. ES-DRYER). • Added a furnace bypass (ID No. ES-FBYPASS) and a dryer bypass (ID No. ES-DBYPASS). • Added dried wood handling operations (ID No. ES-DWH) controlled by two baghouses (ID No. CD-DWH-BH-1 and -2). • Removed the cyclones (ID Nos. CD-HM-CYC-1 through -8) on the dry hammermills (ID No. ES-HM-1 through -8). These cyclones are used for product recovery rather than as control devices. The baghouses (ID Nos. CD-HM-BH1 through 8) are used as PM control for the dry hammermills.

Pages	Section	Description of Changes
3	Section 1 – Equipment Table (continued)	• Added hammermill conveying system (ID No. ES-HMC) controlled by a baghouse (ID No. CD-HMC-BH). • Added additive handling and storage (ID No. ES-ADD) controlled by a baghouse (ID No. CD-ADD-BH). • Changed the name of the pellet fine bins (ID No. ES-PFB) to the pellet cooler HP fines relay system (ID No. ES-PCHP) controlled by baghouse (ID No. CD-PCHP-BH), to reflect the nomenclature at the facility. • Added references to presses to the pellet coolers (ID Nos. ES-CLR-1 through -6). • Changed the name of the pellet cooler recirculation (ID No. ES-PCR) to the pellet cooler LP fines relay system (ID No. ES-PCLP) controlled by a baghouse (ID No. CD-PCLP-BH), to reflect the nomenclature at the facility.
5	2.1 A Equipment List	Updated and reformatted equipment list.
6	2.1 A.1.b	Removed requirements to test WESP (ID No. WESP) because this requirement has been met. Replaced with shell testing language.
--	2.1 A.1.c (old)	Removed requirement for the facility to maintain process rates. This requirement is typically for emission sources with no controls. All the permitted emission sources of PM are controlled.
6	2.1 A.1.c (new)	Added testing requirements to demonstrate compliance with 15A NCAC 02D .0515 for the dryer (ID No. ES-DRYER), green wood hammermills (ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3), dry hammermills (ID No. ES-HM-1 through -8), and pellet presses and pellet coolers (ID Nos. ES-CLR-1 through ES-CLR-6).
6 – 7	2.1 A.1.d	Specified that each PM emission source shall be controlled by baghouse or cyclone.
7	2.1 A.1.f through i	Clarified the inspection, maintenance, and operating requirements of the WESP (ID No. CD-WESP) and RTO (ID No. CD-RTO) for PM control from the dryer (ID No. ES-DRYER) and green wood hammermills (ID No. ES-GHM-1 through -3).
7	2.1 A.1.k	Added semiannual reporting requirement.
8	2.1 A.3.c	Added requirement to re-establish normal VE after exhaust from the green wood hammermills has been rerouted to the WESP (ID No. CD-WESP) and the RTO (ID No. CD-RTO).
9	2.1 A.3.e	Added semiannual reporting requirement.
9 -10	2.1 A.4	Modified the permitting language for the 112(g), Case-by-Case, MACT.
11 – 16	2.2 A.1	• Updated BACT emission limits and controls for the Softwood Expansion Project (SWEP). • Removed footnote and permit language stating that the BACT emission limits do not apply during startup, shutdown, or malfunction (SSM). The emission limits do apply during SSM and DAQ has added work practice standards and operating limits to the permit to ensure compliance. • Updated requirements to reflect revised emission limits and BACT.
16	2.2 A.2	Added condition for reporting of excess emissions under 15A NCAC 02D .0535.
17	2.2 A.3	Added condition for 15A NCAC 02D .0540, Particulates from Fugitive Dust Emission Sources.
17	2.2 A.4	Added condition for 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions.
17	2.2 A.5	Added condition for 15A NCAC 02Q .0207, Annual Emissions Reporting, requiring Permittee to submit emissions inventory annually.

Pages	Section	Description of Changes
17	2.2 A.6	Added condition for 15A NCAC 02Q .0304, Applications, requiring Permittee to submit permit renewal at least 90 days from permit expiration date.
18	2.2 A.7	Added condition for 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation Permit, requiring Permittee to submit amended Title V permit application within 12 months of operating any of the new sources or control devices.

State of North Carolina
Department of Environmental Quality
Division of Air Quality

AIR QUALITY PERMIT

Permit No.	Replaces Permit No.(s)	Effective Date	Expiration Date
10386R04	10386R03	October 2, 2019	September 30, 2027

Until such time as this permit expires or is modified or revoked, the below named Permittee is permitted to construct and operate the emission source(s) and associated air pollution control device(s) specified herein, in accordance with the terms, conditions, and limitations within this permit. This permit is issued under the provisions of Article 21B of Chapter 143, General Statutes of North Carolina as amended, and Title 15A North Carolina Administrative Codes (15A NCAC), Subchapters 02D and 02Q, and other applicable Laws.

Pursuant to Title 15A NCAC, Subchapter 02Q, the Permittee shall not construct, operate, or modify any emission source(s) or air pollution control device(s) without having first submitted a complete Air Quality Permit Application to the permitting authority and received an Air Quality Permit, except as provided in this permit.

Permittee:	**Enviva Pellets Sampson, LLC**
Facility ID:	**8200152**
Facility Site Location: **City, County, State, Zip:**	**5 Connector Road, US 117** **Faison, Sampson County, North Carolina, 28341**
Mailing Address: **City, State, Zip:**	**5 Connector Road, US 117** **Faison, North Carolina, 28341**
Application Number: **Complete Application Date:**	**8200152.18A and 8200152.19A** **April 3, 2018 and August 2, 2019**
Primary SIC Code:	**2499**
Division of Air Quality, **Regional Office Address:**	**Fayetteville Regional Office** **Systel Building** **225 Green Street, Suite 714** **Fayetteville, North Carolina, 28301**

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SECTION 1- PERMITTED EMISSION SOURCE (S) AND ASSOCIATED AIR POLLUTION CONTROL DEVICE (S) AND APPURTENANCES

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-GHM-1, ES-GHM-2, ES-GHM-3 **PSD** **Case-by-Case MACT**	Three (3) green wood hammermills	CD-WESP CD-RTO	One wet electrostatic precipitator (29,904 square feet of collector plate area) in series with one natural gas/propane-fired regenerative thermal oxidizer (maximum firing rate of 32 million Btu per hour)
ES-DRYER **PSD** **Case-by-Case MACT**	Wood-fired direct heat drying system (250.4 million Btu per hour heat input)	CD-WESP CD-RTO	One wet electrostatic precipitator (29,904 square feet of collector plate area) in series with one natural gas/propane-fired regenerative thermal oxidizer (maximum firing rate of 32 million Btu per hour)
ES-FBYPASS **PSD**	Furnace bypass	N/A	N/A
ES-DBPYASS **PSD**	Dryer bypass	N/A	N/A
ES-DWH **PSD** **Case-by-Case MACT**	Dried wood handling operations	CD-DWH-BH-1 and CD-DWH-BH-2	Two (2) baghouses (377 square feet of filter area, each)
ES-HM-1 through ES-HM-8 **PSD** **Case-by-Case MACT**	Eight (8) dry hammermills	CD-HM-BH1 through CD-HM-BH8	Eight (8) baghouses (2,168 square feet of filter area each)
ES-HMC **PSD**	Hammermill conveying system	CD-HMC-BH	One baghouse (377 square feet of filter area)
ES-PMFS **PSD**	Pellet mill feed silo	CD-PMFS-BH	One baghouse (377 square feet of filter area)
ES-ADD **PSD**	Additive Handling and Storage	CD-ADD-BH	One baghouse (942 square feet of filter area)
ES-HMA and ES-PCHP **PSD** **Case-by-Case MACT**	Hammermill area and pellet cooler HP fines relay system	CD-PCHP-BH	One baghouse (1,520 square feet of filter area)

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-CLR-1 through ES-CLR-6 **PSD** **Case-by-case MACT**	Six (6) pellet coolers and twelve (12) pellet presses (two (2) pellet presses are associated with each pellet cooler)	CD-CLR-1 through CD-CLR-6	Six (6) simple cyclones (54 inches in diameter) installed one each on the coolers
ES-PCLP **PSD**	Pellet cooler LP fines relay system	CD-PCLP-BH	One baghouse (942 square feet of filter area)
ES-PSTB **PSD**	Pellet sampling transfer bin	CD-PSTB-BH	One baghouse (377 square feet of filter area)
ES-FPH, ES-PB-1 through ES-PB-4, ES-PL-1 and ES-PL-2 **PSD**	Finished product handling, four (4) pellet load-out bins, and two (2) pellet mill loadouts	CD-FPH-BH	One baghouse (4,842 square feet of filter area)

SECTION 2 - SPECIFIC LIMITATIONS AND CONDITIONS

2.1- Emission Source(s) and Control Devices(s) Specific Limitations and Conditions

The emission source(s) and associated air pollution control device(s) and appurtenances listed below are subject to the following specific terms, conditions, and limitations, including the testing, monitoring, recordkeeping, and reporting requirements as specified herein:

A. **Three (3) green wood hammermills (ID Nos. ES-GHM-1, ES-GHM-2 and ES-GHM-3) controlled by a wet electrostatic precipitator (ID No. CD-WESP) and a regenerative thermal oxidizer (ID No. CD-RTO)**

Wood-fired direct heat drying system (ID No. ES-DRYER) controlled by a wet electrostatic precipitator (ID No. CD-WESP) and a regenerative thermal oxidizer (ID No. CD-RTO)

Furnace bypass (ID No. ES-FBYPASS) and dryer bypass (ID No. ES-DBYPASS)

Dry wood handling operations (ID No. ES-DWH) controlled by baghouses (ID Nos. CD-DWH-BH-1 and 2)

Eight (8) hammermills (ID Nos. ES-HM-1 through ES-HM-8) controlled by baghouses (ID Nos. CD-HM-BH1 through CD-HM-BH8)

Hammermill conveying system (ID No. ES-HMC) controlled by baghouse (ID No. CD-HMC-BH)

Hammermill area (ID No. ES-HMA) and pellet cooler HP fines relay system (ID No. ES-PCHP) controlled by a baghouse (ID No. CD-PCHP-BH)

Pellet mill feed silo (ID No. ES-PMFS) controlled by a baghouse (ID No. CD-PMFS-BH)

Pellet presses and pellet coolers (ID Nos. ES-CLR-1 through ES-CLR-6) controlled by cyclones (ID Nos. CD-CLR-1 through CD-CLR-6)

Pellet cooler LP fines relay system (ID No. ES-PCLP) controlled by a baghouse (ID No. CD-PCLP-BH)

Pellet sampling transfer bin (ID No. ES-PSTB) controlled by a baghouse (ID No. CD-PSTB-BH)

Finished product handling (ID No. ES-FPH), pellet load-out bins (ID Nos. ES-PB-1 through ES-PB-4), and pellet mill load-out (ID No. ES-PL-1 and ES-PL-2) controlled by a baghouse (ID No. CD-FPH-BH)

The following table provides a summary of limits and standards for the emission source(s) described above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter	$E = 4.10 \times P^{0.67}$ for $P < 30$ tph $E = 55 \times P^{0.11} - 40$ for $P \geq 30$ tph where, E = allowable emission rate (lb/hr) P = process weight rate (tph)	15A NCAC 02D .0515
Sulfur dioxide	*ID No. ES-DRYER only:* 2.3 pounds per million Btu	15A NCAC 02D .0516
Visible emissions	20 percent opacity	15A NCAC 02D .0521
Hazardous Air Pollutants	See Section 2.1 A.4.	15A NCAC 02D .1112 [112(g) Case-by-Case MACT]
PM/PM10/PM2.5 Nitrogen oxides Volatile organic carbon Carbon monoxide Greenhouse gases	See Section 2.2 A.1.	15A NCAC 02D .0530

1. **15A NCAC 02D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES**
   a. Emissions of particulate matter from these sources shall not exceed an allowable emission rate as calculated by the following equation:

   $E = 4.10 \times P^{0.67}$ for $P < 30$ tph
   $E = 55 \times P^{0.11} - 40$ for $P \geq 30$ tph

   Where E = allowable emission rate in pounds per hour
   P = process weight in tons per hour

   Liquid and gaseous fuels and combustion air are not considered as part of the process weight.

   Testing [15A NCAC 02Q .0308(a)]
   b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17.
   c. Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with emission limits in Section 2.1 A.1.a for the wood-fired direct heat drying system **(ID No. ES-DRYER),** green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)**, dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8),** and pellet presses and pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Testing shall be conducted as specified in Section 2.2 A.1.d.

   Monitoring [15A NCAC 02Q .0308(a)]

   For baghouses and/or cyclones:
   d. Particulate matter emissions shall be controlled as follows:
      i. Particulate matter emissions from the dry wood handling operations **(ID No. ES-DWH)** shall be controlled by baghouses **(ID Nos. CD-DWH-BH-1 and CD-DWH-2);**
      iii. Particulate matter emissions from eight (8) hammermills **(ID Nos. ES-HM-1 through ES-HM-8)** shall be controlled by baghouses **(ID Nos. CD-HM-BH1 through CD-HM-BH8);**
      iv. Particulate matter emissions from the hammermill conveying system **(ID No. ES-HMC)** shall be controlled by baghouse **(ID No. CD-HMC-BH);**

v. Particulate matter emissions from the hammermill area **(ID No. ES-HMA)** and pellet cooler HP fines relay system **(ID No. ES-PCHP)** shall be controlled by baghouse **(ID No. CD-PCHP-BH)**;
vi. Particulate matter emissions from the pellet mill feed silo **(ID No. ES-PMFS)** shall be controlled by baghouse **(ID No. CD-PMFS-BH)**;
vii. Particulate matter emissions from the pellet presses and pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)** shall be controlled by cyclones **(ID Nos. CD-CLR-1 through CD-CLR-6)**;
viii. Particulate matter emissions from pellet cooler LP fines relay system **(ID No. ES-PCLP)** shall be controlled by baghouse **(ID No. CD-PCLP-BH)**;
ix. Particulate matter emissions from the pellet sampling transfer bin **(ID No. ES-PSTB)** shall be controlled by baghouse **(ID No. CD-PSTB-BH)**; and
x. Particulate matter emissions from finished product handling **(ID No. ES-FPH)**, pellet load-out bins **(ID Nos. ES-PB-1 through ES-PB-4)**, and pellet mill load-out **(ID No. ES-PL-1 and ES-PL-2)** shall be controlled by baghouse **(ID No. CD-FPH-BH)**.

e. To ensure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there are no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:
i. a monthly visual inspection of the system ductwork and material collection units for leaks; and
ii. an annual (for each 12-month period following the initial inspection) internal inspection of the baghouses' structural integrity.

For wet electrostatic precipitator and regenerative thermal oxidizer:

f. Particulate matter emissions shall be controlled as follows:
i. Particulate matter emissions from the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2 and ES-GHM-3)** shall be controlled by a wet electrostatic precipitator **(ID No. CD-WESP)** in series with a regenerative thermal oxidizer **(ID No. CD-RTO)**.
ii. Particulate matter emissions from the wood-fired direct heat drying system **(ID No. ES-DRYER)** shall be controlled by a wet electrostatic precipitator **(ID No. CD-WESP)** in series with a regenerative thermal oxidizer **(ID No. CD-RTO)**.

g. To ensure compliance and effective operation of the wet electrostatic precipitator **(ID No. CD-WESP)**, the Permittee shall:
i. operate the wet electrostatic precipitator with at least the minimum number of grids operating during compliance testing specified in Section 2.1 A.1.c above;
ii. maintain the minimum secondary voltage and minimum current at the level established during compliance testing specified in Section 2.1 A.1.c above.
iii. monitor and record the secondary voltage and current for each grid of the precipitator daily. The daily observation must be made for each day of the calendar year period. The Permittee shall be allowed three (3) days of absent observations per semiannual period.
iv. The Permittee may re-establish any parametric operating value during periodic testing. Compliance with previously approved parametric operating values is not required during periodic required testing or other tests undertaken to re-establish parametric operating values by the Permittee. If the new parametric operating values re-established during periodic testing are more stringent, the Permittee shall submit a request to revise the value(s) in the permit at the same time the test report required pursuant to General Condition 17 is submitted. The permit revision will be processed pursuant to 15A NCAC 02Q .0514. If, during performance testing, the new parametric operating values are less stringent, the Permittee may request to revise the value(s) in the permit pursuant to 15A NCAC 02Q .0515.

h. To ensure compliance, the Permittee shall perform inspections and maintenance on the wet electrostatic precipitator **(ID No. CD-WESP)** and the regenerative thermal oxidizer **(ID No. CD-RTO)**, as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there are no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:

i. a monthly visual inspection of the system ductwork and material collection units for leaks;
ii. an annual (for each 12-month period following the initial inspection) internal inspection of the heat transfer medium and associated inlet/outlet valves on the regenerative thermal oxidizer **(ID No. CD-RTO)**; and
iii. an annual (for each 12-month period following the initial inspection) internal inspection of the wet electrostatic precipitator **(ID No. CD-WESP)**. This inspection must include (but is not limited to) the following:
    (A) visual checks of critical components,
    (B) checks for any equipment that does not alarm when de-energized, to ensure it is operational,
    (C) checks for signs of plugging in the hopper and gas distribution equipment, and
    (D) replacement of broken equipment as required.

Recordkeeping [15A NCAC 02Q .0308(a)]

i. The results of inspection and maintenance shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The logbook shall record the following:
    i. the date and time of each recorded action;
    ii. the results of each inspection;
    iii. the results of any maintenance performed on the control devices; and
    iv. any variance from manufacturer's recommendations, if any, and corrections made.

Reporting [15A NCAC 02Q .0308(a), 15A NCAC 02D .0605(b)(3)]

j. The Permittee shall submit the results of any maintenance performed on the wet electrostatic precipitator, regenerative thermal oxidizer, cyclones, and/or baghouses within 30 days of a written request by the DAQ.
k. The Permittee shall submit a summary report of the monitoring and recordkeeping activities given in Sections 2.1 A.1.d through i above postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

2. **15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES**
    a. Emissions of sulfur dioxide from this source **(ID No. ES-DRYER)** shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard

    Testing [15A NCAC 02Q .0308(a)]

    b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17.

    Monitoring/Recordkeeping/Reporting [15A NCAC 02Q .0308(a)]

    c. No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from firing biomass in the wood-fired direct heat drying system **(ID No. ES-DRYER)**.

3. **15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS**
    a. Visible emissions from these sources shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

    Testing [15A NCAC 02Q .0308(a)]

    b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17.

Monitoring [15A NCAC 02Q .0308(a)]

c. To ensure compliance, once a month the Permittee shall observe the emission points of the sources in Section 2.1 A for any visible emissions above normal. The monthly observation must be made for each month of the calendar year period to ensure compliance with this requirement. For the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2 and ES-GHM-3)** and wood-fired direct heat drying system **(ID No. ES-DRYER)**, the Permittee shall establish "normal" in the first 30 days following the commencement of operation after exhaust from the green wood hammermills has been rerouted to the WESP **(ID No. CD-WESP)** and the RTO **(ID No. CD-RTO)**. If visible emissions from the sources in Section 2.1 A are observed to be above normal, the Permittee shall either:
   i. take appropriate action to correct the above-normal emissions as soon as practicable and within the monitoring period and record the action taken as provided in the recordkeeping requirements below, or
   ii. demonstrate that the percent opacity from the emission points of the emission source in accordance with 15A NCAC 02D .2610 (Method 9) for 12 minutes is below the limit given in Section 2.1 A.3.a. above.

Recordkeeping [15A NCAC 02Q .0308(a)]

d. The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The logbook shall record the following:
   i. the date and time of each recorded action;
   ii. the results of each observation and/or test noting those sources with emissions that were observed to be in noncompliance along with any corrective actions taken to reduce visible emissions; and
   iii. the results of any corrective actions performed.

Reporting [15A NCAC 02Q .0308(a), 15A NCAC 02D .0605(b)(3)]

e. The Permittee shall submit a summary report of the monitoring and recordkeeping activities given in Sections 2.1 A.3.c and d above postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

4. 15A NCAC 02D .1112: 112(g) CASE BY CASE MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

a. The Permittee shall comply with all applicable provisions, including the notification, testing, reporting, recordkeeping, and monitoring requirements contained in Environmental Management Commission Standard 15A NCAC 02D .1112, "Case-By-Case Maximum Achievable Control Technology," and as promulgated in 40 CFR 63, including Subpart A "General Provisions." The Permittee shall comply with the following:
   i. For the wood pellet mill dryer **(ID No. ES-DRYER)**, the Permittee shall use a low HAP emitting dryer design not requiring add-on control.
   ii. Within six months of issuance of this permit (10386R04), the Permittee shall submit to DAQ an application requesting authorization for installation of a regenerative catalytic oxidizer or regenerative thermal oxidizer (RCO/RTO) to control HAP emissions from the pellet presses and pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Installation and startup of the control device shall be completed by no later than June 1, 2021, provided that, if a permit authorizing the same is not issued until after June 1, 2020, installation and startup of the control device shall be completed within twelve months of permit issuance. Initial compliance for the RCO/RTO shall be demonstrated in accordance with the future issued permit.
   iii. Within six months of issuance of this permit (10386R04), the Permittee shall submit to DAQ an application requesting authorization for either of the following:

(A) the installation of an RCO/RTO to control VOC and HAP emissions from the dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)**, or

(B) an engineering solution that will result in an equivalent or greater reduction in VOC and HAP emissions from the dry hammermills.

Installation and startup of the control device or engineering solution shall be completed by no later than June 1, 2021, provided that, if a permit authorizing the same is not issued until after June 1, 2020, installation and startup of the control device shall be completed within twelve months of permit issuance. Initial compliance for the RCO/RTO or engineering solution shall be demonstrated in accordance with the future issued permit.

Testing [15A NCAC 02Q .0308(a)]

b. Initial Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall establish emission factors for HAPs by conducting an initial performance test on the wood-fired direct heat drying system **(ID No. ES-DRYER)**, the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)**, the dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)**, the dry wood handling operations **(ID Nos. ES-DWH)**, and the pellet presses and coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Initial testing shall be conducted in accordance with the following:

i. The pollutants and emission sources to be tested during the initial performance test are listed in the following table:

Emission Source	Pollutant
Dryer system/green wood hammermills controlled via WESP and RTO	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde
One pellet cooler cyclone	
One dry hammermill baghouse	
Dry wood handling operations	

ii. Initial testing shall be conducted in accordance with Section 2.2 A.1.d.ii through vi. below.

c. Periodic Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall establish emission factors for HAPs by conducting periodic performance tests on the wood-fired direct heat drying system **(ID No. ES-DRYER)**, the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)**, the dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)**, and the pellet presses and coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Periodic testing shall be conducted in accordance with the following:

i. The pollutants and emission sources to be tested during the periodic performance tests are listed in the following table:

Emission Sources	Pollutant
Dryer system/green wood hammermills controlled via WESP and RTO	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde
One pellet cooler cyclone	
One dry hammermill baghouse	

ii. Periodic testing shall be conducted in accordance with Section 2.2 A.1.e.ii through xiv below.

Monitoring/Recordkeeping/Reporting [15A NCAC 02Q .0308(a)]

d. No monitoring recordkeeping, or reporting is required for any emission source subject to 112(g) Case-by-Case MACT.

2.2- Multiple Emission Source(s) Limitations and Conditions

A. Facility-wide Emission Sources

The following table provides a summary of limits and standards for the emission source(s) describe above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
PM/PM10/PM2.5 Nitrogen oxides Volatile organic carbon Carbon monoxide Greenhouse gases	BACT Limits	15A NCAC 02D .0530
Fugitive dust	Minimize fugitive dust beyond property boundary	15A NCAC 02D .0540
Odor	State-enforceable only odor control	15A NCAC 02D .1806
N/A	Annual Emission Reporting due June 30	15A NCAC 02Q .0207
N/A	Permit renewal application due 90 days prior to permit expiration	15A NCAC 02Q .0304
N/A	Option for obtaining construction and operation permit	15A NCAC 02Q .0504

1. 15A NCAC 02D .0530: PREVENTION OF SIGNIFICANT DETERIORATION

a. The Permittee shall comply with all applicable provisions, including the notification, testing, reporting, recordkeeping, and monitoring requirements in accordance with 15A NCAC 02D .0530, "Prevention of Significant Deterioration of Air Quality" (PSD) as promulgated in 40 CFR 51.166.

b. For PSD purposes, the following "Best Available Control Technology" (BACT) emissions limits shall not be exceeded:

Emission Source	Pollutant	Control Technology or Work Practice	BACT Emission Limit	Averaging Period
Wood-fired Direct Heat Drying System **(ID No. ES-DRYER)**	NOx	Good Combustion Practices	0.20 lb/million Btu	3-hour
	CO	Process Design	0.21 lb/ million Btu	3-hour
	GHG	Good Operating Practices	230,000 tpy (CO_2e)	Annual
Wood-fired Direct Heat Drying System **(ID No. ES-DRYER)** Green Wood Hammermills **(ID Nos. ES-GHM-1 to ES-GHM-3)**	VOC**	RTO	0.15 lb/ODT	3-hour
	PM/PM10/2.5	WESP	0.105 lb/ODT (filterable only)	3-hour
Dry Hammermills **(ID Nos. ES-HM-1 to ES-HM-8)**	VOC**	Good Operating Procedures	0.60 lb/ODT	3-hour
	PM	Baghouse	0.004 gr/scf	3-hour
	PM10		0.004 gr/scf (filterable only)	3-hour
	PM2.5		0.000014 gr/scf (filterable only)	3-hour
Hammermill Conveying System **(ID No. ES-HMC)**	PM	Baghouse	0.004 gr/scf	3-hour
Dried Wood Handling **(ID No. ES-DWH)**	VOC**	Good Operating Procedures	0.12 lb/ODT	3-hour

Emission Source	Pollutant	Control Technology or Work Practice	BACT Emission Limit	Averaging Period
	PM	Baghouses	0.004 gr/scf	3-hour
Pellet Presses and Coolers **(ID No. ES-CLR-1 to ES-CLR-6)**	VOC**	Good Operating Procedures	1.74 lb/ODT	3-hour
	PM	Cyclones - Proper Design and Good Operating Procedures	0.04 gr/scf	3-hour
	PM10		0.0057 gr/scf (filterable only)	3-hour
	PM2.5		0.0007 gr/scf (filterable only)	3-hour
Pellet cooler LP Fines Relay System **(ID No. ES-PCLP)**	PM2.5/PM10/PM	Baghouse	0.004 gr/scf	3-hour
Pellet Sampling Transfer Bin **(ID No. ES-PSTB)**	PM2.5/PM10/PM	Baghouse	0.004 gr/scf	3-hour
Hammermill Area/Pellet cooler HP Fines Relay System **(ID Nos. ES-HMA and ES-PCHP)**	PM2.5/PM10/PM	Baghouse	0.004 gr/scf	3-hour
Pellet Mill Feed Silo **(ID No. ES-PMFS)**	PM2.5/PM10/PM	Baghouse	0.004 gr/scf	3-hour
Finished Product Handling/Pellet Loadout Bins/Pellet Mill Loadouts **(ID Nos. ES-FPH, ES-PB-1 to 4/ ES-PL-1 and 2)**	PM	Baghouse	0.004 gr/scf	3-hour
	PM10	Baghouse	0.004 gr/scf	3-hour
	PM2.5	Baghouse	0.000014 gr/scf	3-hour
Paved Roads **(ID No. IES-PAVEDROADS)**	PM/PM10/PM2.5	Combination of watering of paved roads, vehicle speed control, and good housekeeping	Not Applicable	
Green Wood Handling **(ID No. IES-GWH)**	PM/PM10/PM2.5	None	Not Applicable	
Green Wood Storage Piles **(ID Nos. IES-GWSP-1 to IES-GWPS-4)**	VOC			
	PM/PM10/PM2.5			
Bark Fuel Storage Piles **(ID Nos. IES-BFSP-1 and IES-BFSP-2)**	VOC			
	PM/PM10/PM2.5			
Bark Fuel Bin **(ID No. IES-BFB)**	PM/PM10/PM2.5			
Dry Shavings Material Handling **(ID No. IES-DRYSHAVE)**	PM			
Debarker **(ID No. IES-DEBARK-1)**	PM/PM10/PM2.5			
Log Chipping **(ID No. IES-CHIP-1)**	VOC			
Bark Hog **(ID No. IES-BARKHOG)**	VOC			
	PM			
Diesel storage tanks **(ID Nos. IES-TK1, IES-TK2, and IES-TK3)**	VOC	Good operation practices	Not Applicable	

* The VOC limit is expressed as alpha pinene basis per the procedures in EPA OTM 26.

<u>**Notifications**</u> [15A NCAC 02Q .0308(a)]

c. The completion of the Softwood Expansion Project (SWEP) is defined as the replacement of pellet presses that allow throughput of up to 657,000 ODT/year on an annual basis and the rerouting of the exhaust from the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)** to the wet electrostatic precipitator **(ID No. CD-WESP)** and the regenerative thermal oxidizer **(ID No. CD-RTO)**. The Permittee shall notify the DAQ of the actual completion date of the SWEP postmarked within 15 days after such date.

<u>**Testing**</u> [15A NCAC 02Q .0308(a)]

d. <u>Initial Performance Tests</u> – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with the BACT emission limits in Section 2.2 A.1.b above by conducting an initial performance test on the wood-fired direct heat drying system **(ID No. ES-DRYER)**, the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)**, the dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)**, the dry wood handling operations **(ID Nos. ES-DWH)**, and the pellet presses and coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Initial testing shall be conducted in accordance with the following:

i. The pollutants and emission sources to be tested during the initial performance test are listed in the following table:

Emission Sources	Pollutant
Dryer system/green wood hammermills controlled via WESP and RTO	VOC
	PM/PM10/PM2.5
	NOx
	CO
One pellet cooler cyclone	VOC
	PM/PM10/PM2.5
One dry hammermill baghouse	VOC
	PM/PM10/PM2.5
Dry wood handling operations	VOC

ii. The Permittee shall conduct initial compliance testing in accordance with a testing protocol approved by the DAQ.

iii. The Permittee shall submit a protocol to DAQ at least 45 days prior to initial compliance testing and shall submit a notification of initial compliance testing at least 15 days in advance of the testing.

iv. The RTO **(ID No. CD-RTO)** is comprised of two fireboxes, each containing two temperature probes. During the initial compliance test, the Permittee shall establish the minimum average firebox temperature for each of the two fireboxes comprising the regenerative thermal oxidizer **(ID No. CD-RTO)**, for a total of two average temperatures per regenerative thermal oxidizer. "Average firebox temperature" means the average temperature of the two temperature probes in each firebox. The minimum average firebox temperature for each firebox shall be based upon the average temperature of the two temperature probes over the span of the test runs. Documentation for the minimum average firebox temperature for each firebox shall be submitted to the DAQ as part of the initial compliance test report.

v. Initial compliance testing shall be completed as follows:

(A) The Permittee shall be responsible for ensuring, within practicable limits, that the equipment or processes being tested are operated at or near the maximum normal production rate but at a rate not to exceed 71.71 ODT per hour (not to exceed 537,625 ODT per year on an annual basis).

(B) Testing shall be conducted at the maximum normal operating softwood percentage, not to exceed 80% softwood.

(C) Testing shall be completed and results submitted to the DAQ within 90 days of permit issuance, unless an alternate date is approved in advance by DAQ.

vi. Additional initial compliance testing upon completion of the SWEP shall be completed as follows:

(A) The Permittee shall be responsible for ensuring, within practicable limits, that the equipment or processes being tested are operated at or near the maximum normal production rate but at a rate not to exceed 120 ODT per hour (not to exceed 657,000 ODT per year on an annual basis).
(B) Testing shall be conducted at the maximum normal operating softwood percentage, not to exceed 80% softwood.
(C) Testing shall be completed and results submitted to the DAQ within 120 days completion of the construction of the SWEP, unless an alternate date is approved in advance by DAQ,

e. Periodic Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with the BACT emission limits in Section 2.2 A.1.b above by conducting periodic performance tests on the wood-fired direct heat drying system **(ID No. ES-DRYER)**, the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)**, the dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)**, and the pellet presses and coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Periodic testing shall be conducted in accordance with the following:

i. The pollutants and emission sources to be tested during the periodic performance tests are listed in the following table:

Emission Sources	Pollutant
Dryer system/green wood hammermills controlled via WESP and RTO	VOC
	PM/PM10/PM2.5
	NOx
	CO
One pellet cooler cyclone	VOC
	PM/PM10/PM2.5
One dry hammermill baghouse	VOC
	PM/PM10/PM2.5

ii. The Permittee shall conduct periodic compliance testing in accordance with a testing protocol approved by the DAQ.
iii. The Permittee shall submit a protocol to DAQ at least 45 days prior to periodic compliance testing and shall submit a notification of periodic compliance testing at least 15 days in advance of the testing.
iv. The Permittee shall be responsible for ensuring, within practicable limits, that the equipment or processes being tested are operated at or near the maximum normal production rate.
v. To the extent possible, testing shall be conducted at the maximum normal operating softwood percentage.
vi. The Permittee shall conduct periodic performance tests when the following conditions are met:
(A) The monthly average softwood content exceeds the average softwood percentage documented during prior performance testing by more than 10 percentage points, or
(B) The monthly production rate exceeds the average production rate documented during prior performance testing by more than 10 percentage points, or
(C) At a minimum testing shall be conducted annually, unless a longer duration is otherwise approved pursuant to Section 2.2.A.1.e.x. Annual performance tests shall be completed no later than 13 months after the previous performance test.
vii. The Permittee shall notify the DAQ within 15 days when the conditions specified in Section 2.2 A.1.e.vi (A) or (B) are met.
viii. The Permittee shall conduct the periodic performance test and submit a written report of the test results to the DAQ within 90 days from the date the monthly softwood content or overall production rate increased as described in Section 2.2 A.1.e.vi (A) and (B) above, unless an alternate date is approved in advance by DAQ,
ix. When periodic performance testing has occurred at 90 percent softwood AND at 90 percent of the maximum permitted throughput, subsequent periodic performance testing shall occur on an annual

basis and shall be completed no later than 13 months after the previous performance test, unless a longer duration is otherwise approved pursuant to Section 2.2.A.1.e.x.

x. The Permittee may request that the performance tests be conducted less often for a given pollutant if the performance tests for at least 3 consecutive years show compliance with the emission limit. If the request is granted, the Permittee shall conduct a performance test no more than 36 months after the previous performance test for the given pollutant.

xi. If a performance test shows noncompliance with an emission limit for a given pollutant, the Permittee shall return to conducting annual performance tests (no later than 13 months after the previous performance test) for that pollutant.

xii. Except as specified in Section 2.2 A.1.e.viii above, the Permittee shall submit a written report of results for any periodic performance test to the DAQ, not later than 30 days after sample collection, in accordance with 15A NCAC 02D .2602(h).

xiii. The Permittee may re-establish any parametric operating value during periodic testing. Compliance with previously approved parametric operating values is not required during periodic required testing or other tests undertaken to re-establish parametric operating values by the Permittee. If the new parametric operating values re-established during periodic testing are more stringent, the Permittee shall submit a request to revise the value(s) in the permit at the same time the test report required pursuant to General Condition 17 is submitted. The permit revision will be processed pursuant to 15A NCAC 02Q .0514. If, during performance testing, the new parametric operating values are less stringent, the Permittee may request to revise the value(s) in the permit pursuant to 15A NCAC 02Q .0515.

xiv. The Permittee shall comply with applicable emission standards at all times, except as allowed by Section 2.2 A.1.b, including during periods of testing.

Monitoring/Recordkeeping [15ANCAC 02Q .0308(a)]

f. Within six months of issuance of this permit (10386R04), the Permittee shall submit to the DAQ a permit application that includes one of the following:
   i. A revised BACT analysis for VOC emissions from the dry hammermills **(ID Nos. ES-HM-1 to ES-HM-8)** and the pellet presses and pellet coolers **(ID No. ES-CLR-1 to ES-CLR-6)**, OR
   ii. A request for an avoidance condition for 15A NCAC 02D .0530, Prevention of Significant Deterioration, for VOC emissions.
g. Regardless of the actual completion date of the SWEP, the Permittee shall complete the rerouting of the exhaust from green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)** to the wet electrostatic precipitator **(ID No. CD-WESP)** and the regenerative thermal oxidizer **(ID No. CD-RTO)** within twelve (12) months of issuance of this permit (10368R04).
h. The Permittee shall not increase production beyond 537,625 oven-dried tons (ODT) of pellets per consecutive 12-month period (the permitted maximum production rate in Air Permit No. 10386R03) until exhaust from the green wood hammermills **(ID Nos. ES-GHM-1, ES-GHM-2, and ES-GHM-3)** has been rerouted to the wet electrostatic precipitator **(ID No. CD-WESP)** and the regenerative thermal oxidizer **(ID No. CD-RTO)**.
i. Upon completion of the SWEP, the Permittee shall not process more than 657,000 ODT of pellets per consecutive 12-month period. The process rate shall be recorded monthly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request.
j. Upon completion of the SWEP, the Permittee shall not process more than 558,450 ODT of pellets per consecutive 12-month period (85% of the permitted maximum production rate of 657,000 ODT per consecutive 12-month period) from the eight dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)**. The dry hammermill process rate shall be recorded monthly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request.
k. The furnace bypass **(ID No. ES-FBYPASS)** shall be limited to less than 50 hours per year for startups (for temperature control) and shutdowns. The furnace bypass shall be limited to a cold startup of 15% maximum heat input (or 37.6 million Btu per hour). The cold startup period of time begins when the wood-fired furnace is started up and lasts until the wood-fired furnace's refractory

is heated to a temperature sufficient to sustain combustion operations at a minimal level or 8 hours, whichever is less.

l. The furnace bypass **(ID No. ES-FBYPASS)** in idle mode, defined as maximum heat input of 5 million Btu per hour, shall be limited to less than 500 hours per year.
m. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate all emission sources including associated control devices in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
n. The Permittee shall record the hardwood/softwood mix monthly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request.
o. The Permittee shall calculate the total emissions of NOx, filterable PM, CO, and VOC monthly and shall record the emissions monthly in a logbook (written or electronic format) kept on-site and made available to DAQ personnel upon request.
p. For the wood-fired direct heat drying system **(ID No. ES-DRYER)**, GHG (CO_2e) emissions shall be calculated monthly and compliance demonstrated using the applicable Part 98 emission factors. Compliance shall be documented on a 12-month rolling basis.
q. To ensure compliance and effective operation of the RTO **(ID No. CD-RTO)**, the Permittee shall maintain a 3-hour rolling average firebox temperature for each of the two fireboxes comprising the RTO at or above the minimum average temperatures established during the most recent performance testing. The Permittee shall maintain records of the 3-hour rolling average temperatures for each firebox. The Permittee shall also perform inspections and maintenance on the RTO as specified above in Section 2.1 A.1.h.
r. To ensure compliance and effective operation of the wet electrostatic precipitator **(ID No. CD-WESP)**, the Permittee shall perform inspections and maintenance as specified above in Section 2.1 A.1.h. The Permittee shall also maintain the minimum secondary voltage and minimum current of the wet electrostatic precipitator as specified above in Section 2.1 A.1.g.
s. To ensure compliance and effective operation of the baghouses and cyclones, the Permittee shall perform inspections and maintenance as specified above in Section 2.1 A.1.e.
t. Monitoring and recordkeeping are not required for the following emission sources:
    i. Paved roads;
    ii. VOC emissions from storage tanks; and
    iii. Emission sources with no BACT emission limits or work practice standards.

Reporting [15A NCAC 02Q .0308(a), 15A NCAC 02D .0605(b)(3)]

u. The Permittee shall submit the results of any maintenance performed on the wet electrostatic precipitator, regenerative thermal oxidizer, cyclones, and/or baghouses within 30 days of a written request by the DAQ.
v. The Permittee shall submit a summary report of the monitoring and recordkeeping activities given in Sections 2.2 A.1.f through u above postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

2. 15A NCAC 02D .0535 EXCESS EMISSIONS REPORTING AND MALFUNCTION

As required by 15A NCAC 2D .0535, the Permittee of a source of excess emissions that last for more than four hours and that results from a malfunction, a breakdown of process or control equipment or any other abnormal conditions, shall:

a. Notify the Director or his designee of any such occurrence by 9:00 a.m. Eastern time of the Division's next business day of becoming aware of the occurrence and describe:
   i. the name and location of the facility,
   ii. the nature and cause of the malfunction or breakdown,
   iii. the time when the malfunction or breakdown is first observed,
   iv. the expected duration, and
   v. an estimated rate of emissions.

b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

This reporting requirement does not allow the operation of the facility in excess of Environmental Management Commission Regulations.

3. 15A NCAC 02D .0540: PARTICULATES FROM FUGITIVE DUST EMISSION SOURCES

As required by 15A NCAC 02D .0540 "Particulates from Fugitive Dust Emission Sources," the Permittee shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 02D .0540(e) and (f).

"Fugitive dust emissions" means particulate matter from process operations that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

State-enforceable only

4. 15A NCAC 02D .1806: CONTROL AND PROHIBITION OF ODOROUS EMISSIONS

The Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

5. 15A NCAC 02Q .0207: ANNUAL EMISSIONS REPORTING

The Permittee shall report by **June 30** of each year the actual emissions of each air pollutant listed in 15A NCAC 02Q .0207(a) from each emission source within the facility during the previous calendar year. The report shall be in or on such form as may be established by the Director. The accuracy of the report shall be certified by the responsible official of the facility.

6. 15A NCAC 02Q. 0304: APPLICATIONS

The Permittee, at least 90 days prior to the expiration date of this permit, shall request permit renewal by letter in accordance with 15A NCAC 02Q .0304(d) and (f). Pursuant to 15A NCAC 02Q .0203(i), no permit application fee is required for renewal of an existing air permit. The renewal request should be submitted to the Regional Supervisor, DAQ.

7. 15A NCAC 02Q .0504: OPTION FOR OBTAINING CONSTRUCTION AND OPERATION PERMIT

a. The Permittee shall file a Title V Air Quality Permit Application pursuant to 15A NCAC 02Q .0504 to amend the existing Title V first time application (8200152.17B) on or before 12 months after commencing operation of any of the new sources or control devices listed in this permit.

Reporting [15A NCAC 02Q .0504]

b. The Permittee shall notify the Regional Office in writing of the date of beginning operation of any of the new sources or control devices listed in this permit, postmarked no later than 30 days after

SECTION 3 - GENERAL CONDITIONS

1. In accordance with G.S. 143-215.108(c)(1), TWO COPIES OF ALL DOCUMENTS, REPORTS, TEST DATA, MONITORING DATA, NOTIFICATIONS, REQUESTS FOR RENEWAL, AND ANY OTHER INFORMATION REQUIRED BY THIS PERMIT shall be submitted to:

   Heather Carter
   Regional Air Quality Supervisor
   North Carolina Division of Air Quality
   Fayetteville Regional Office
   Systel Building, 225 Green Street, Suite 714
   Fayetteville, NC 28301
   (910) 433-3300

   For identification purposes, each submittal should include the facility name as listed on the permit, the facility identification number, and the permit number.

2. RECORDS RETENTION REQUIREMENT - In accordance with 15A NCAC 02D .0605, any records required by the conditions of this permit shall be kept on site and made available to DAQ personnel for inspection upon request. These records shall be maintained in a form suitable and readily available for expeditious inspection and review. These records must be kept on site for a minimum of 2 years, unless another time period is otherwise specified.

3. ANNUAL FEE PAYMENT - Pursuant to 15A NCAC 02Q .0203(a), the Permittee shall pay the annual permit fee within 30 days of being billed by the DAQ. Failure to pay the fee in a timely manner will cause the DAQ to initiate action to revoke the permit.

4. EQUIPMENT RELOCATION - In accordance with 15A NCAC 02Q .0301, a new air permit shall be obtained by the Permittee prior to establishing, building, erecting, using, or operating the emission sources or air cleaning equipment at a site or location not specified in this permit.

5. REPORTING REQUIREMENT - In accordance with 15A NCAC 02Q .0309, any of the following that would result in previously unpermitted, new, or increased emissions must be reported to the Regional Supervisor, DAQ:

   a. changes in the information submitted in the application regarding facility emissions;

   b. changes that modify equipment or processes of existing permitted facilities; or

   c. changes in the quantity or quality of materials processed.

   If appropriate, modifications to the permit may then be made by the DAQ to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause a violation of the emission limitations specified herein.

6. In accordance with 15A NCAC 02Q .0309, this permit is subject to revocation or modification by the DAQ upon a determination that information contained in the application or presented in the support thereof is incorrect, conditions under which this permit was granted have changed, or violations of conditions contained in this permit have occurred. In accordance with G.S. 143-215.108(c)(1), the facility shall be properly operated and maintained at all times in a manner that will effect an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air cleaning device(s) and appurtenances.

7. In accordance with G.S. 143-215.108(c)(1), this permit is nontransferable by the Permittee. Future owners and operators must obtain a new air permit from the DAQ.

8. In accordance with G.S. 143-215.108(c)(1), this issuance of this permit in no way absolves the Permittee of liability for any potential civil penalties which may be assessed for violations of State law which have occurred prior to the effective date of this permit.

9. In accordance with G.S. 143-215.108(c)(1), this permit does not relieve the Permittee of the responsibility of complying with all applicable requirements of any Federal, State, or Local water quality or land quality control authority.

10. In accordance with 15A NCAC 02D .0605, reports on the operation and maintenance of the facility shall be submitted by the Permittee to the Regional Supervisor, DAQ at such intervals and in such form and detail as may be required by the DAQ. Information required in such reports may include, but is not limited to, process weight rates, firing rates, hours of operation, and preventive maintenance schedules.

11. A violation of any term or condition of this permit shall subject the Permittee to enforcement pursuant to G.S. 143-215.114A, 143-215.114B, and 143-215.114C, including assessment of civil and/or criminal penalties.

12. Pursuant to North Carolina General Statute 143-215.3(a)(2), no person shall refuse entry or access to any authorized representative of the DAQ who requests entry or access for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representative while in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

13. In accordance with G.S. 143-215.108(c)(1), this permit does not relieve the Permittee of the responsibility of complying with any applicable Federal, State, or Local requirements governing the handling, disposal, or incineration of hazardous, solid, or medical wastes, including the Resource Conservation and Recovery Act (RCRA) administered by the Division of Waste Management.

14. PERMIT RETENTION REQUIREMENT - In accordance with 15A NCAC 02Q .0110, the Permittee shall retain a current copy of the air permit at the site. The Permittee must make available to personnel of the DAQ, upon request, the current copy of the air permit for the site.

15. CLEAN AIR ACT SECTION 112(r) REQUIREMENTS - Pursuant to 15A NCAC 02D .2100 "Risk Management Program," if the Permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the Federal Clean Air Act, then the Permittee is required to register this plan with the USEPA in accordance with 40 CFR Part 68.

16. PREVENTION OF ACCIDENTAL RELEASES - GENERAL DUTY - Pursuant to Title I Part A Section 112(r)(1) of the Clean Air Act "Hazardous Air Pollutants - Prevention of Accidental Releases - Purpose and General Duty," although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release. **This condition is federally-enforceable only.**

17. GENERAL EMISSIONS TESTING AND REPORTING REQUIREMENTS - If emissions testing is required by this permit, or the DAQ, or if the Permittee submits emissions testing to the DAQ in support of a permit application or to demonstrate compliance, the Permittee shall perform such testing in accordance with 15A NCAC 02D .2600 and follow all DAQ procedures including protocol approval, regional notification, report submittal, and test results approval.

Permit issued this the 2nd day of October, 2019.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

for

William D. Willets, P.E., Chief, Permitting Section
Division of Air Quality, NCDEQ
By Authority of the Environmental Management Commission

Air Permit No. 10386R04

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 4, 2007

Ms. E.A. Veronica Barringer
Bureau of Air Quality
South Carolina Department of Health
and Environmental Services
2600 Bull Street
Columbia, South Carolina 29201

Dear Ms. Barringer:

By letter dated June 14, 2005, the Region 4 office of the U.S. Environmental Protection Agency (EPA) sent an opinion to the South Carolina Department of Health and Environmental Control (SCDHEC) on whether operations at two South Carolina emissions sources should be considered "fuel conversion plants" for prevention of significant deterioration (PSD) applicability purposes. The operations in question were wood waste (biomass) gasification operations at the Norbord South Carolina, Inc. (Norbord) oriented strandboard manufacturing facility and at the University of South Carolina (USC) campus in Columbia. In our letter we expressed the opinion that both biomass gasification operations should be considered fuel conversion plants. We also stated that our opinion did not mean the entire Norbord and USC facilities should be considered fuel conversion plants. Rather, our opinion was that just the operations (and emissions units) associated directly with biomass gasification constitute a fuel conversion plant for these facilities.

After our opinion letter was submitted, Norbord provided additional information to SCDHEC and asked for further review. SCDHEC in turn requested reconsideration by EPA. Upon further review of the statutory and regulatory history of the PSD rules and of past EPA statements on the activities constituting a fuel conversion plant, we now are of the opinion that the biomass gasification operation at the Norbord facility should not be considered a fuel conversion plant for PSD applicability purposes. The rationale for our revised opinion is provided below.

As stated in our original opinion letter, we are responding to SCDHEC's request based on how we believe such a request would be resolved under the federal PSD rules in Title 40 Code of Federal Regulations and under EPA policies. Our response does not represent final agency action. Instead, this letter provides guidance for SCDHEC to consider in its role as the PSD reviewing authority.

Background

The PSD rules applicable to Norbord are South Carolina's rules in Regulation 61-62.5, Standard No. 7. SCDHEC's PSD rules, just like federal PSD rules in 40 CFR 52.21, contain a list of source categories for which the major source emissions threshold is 100 tons per year (tpy) of any individual regulated new source review (NSR) pollutant. One of these source categories is "fuel conversion plants." Sources not listed have a major source emissions threshold of 250 tpy.

Norbord operates three rotary gasifier/burner oxidizer systems at its oriented strandboard facility. Each system includes a rotary kiln gasifier generating a synthetic gas from gasification of wood waste. The synthetic gas is burned in a secondary combustion chamber producing hot exhaust gases used to produce steam and (in one system) hot oil for manufacturing process needs. A feature essential to the opinion expressed below is that the gasification process at Norbord does not involve fossil fuels. All of the material feeding the gasification process is a biomass, non-fossil material.

Review of History on the Fuel Conversion Plant Source Category

As part of our reconsideration, we have reviewed the history of the PSD program as related to the establishment of the list of specific source categories now embodied in the definition of "major source." A summary of our review is as follows, starting with a summary of the statutory and regulatory history.

- Congress established the basic framework for a national air quality control program in the Clean Air Act as amended in 1970. These amendments, however, did not contain any explicit requirements on preventing significant deterioration of air quality.

- Responding to a lawsuit, the U.S. District Court for the District of Columbia issued an opinion (*Sierra Club v. Ruckelshaus*) on May 30, 1972, directing EPA to establish rules for preventing significant deterioration of air quality. On November 1, 1972, the U.S. Court of Appeals for the District of Columbia affirmed the opinion of the District Court. The District Court opinion was then stayed by the U.S. Supreme Court until June 11, 1973, when the Supreme Court (in an equally divided opinion) affirmed the judgment of the Court of Appeals, thereby upholding the District Court opinion.

- EPA proposed PSD rules on July 16, 1973 (38 FR 18986) and listed 16 source categories covered by the rules. This list did not include fuel conversion plants. Also, as of that time EPA had not introduced the 100 tpy/250 tpy two-tier approach to defining major sources.

- On August 27, 1974 (39 FR 31000), EPA re-proposed the PSD rules and included this statement in the preamble: "The list of sources subject to review has been expanded to include three additional source types - fuel conversion plants (such as coal gasification and oil shale plants) ...." The re-proposed rule itself did not contain a definition of the term fuel conversion plants. In addition, the two-tier approach was still not part of PSD regulations.

- On December 5, 1974 (39 FR 42510), EPA promulgated the first set of PSD rules. These rules contained "fuel conversion plants" as a listed source category but without a definition of the term. The two-tier approach was still absent.

- In August 1977, Congress adopted the Clean Air Act Amendments of 1977 with a statutory PSD section. The 1977 amendments included the PSD 100 tpy/250 tpy two-tier concept along with a list of the source categories having a 100-tpy PSD major source threshold. The listed categories included fuel conversion plants, but without any definition of the term.

- Pursuant to the Clean Air Act Amendments of 1977, EPA issued implementing PSD regulations in June 1978 and revised them in August 1980 in response to the holdings in *Alabama Power Company v. Costle*. The 1980 PSD rules contained the 100-tpy source category list with fuel conversion plants as one of the categories but again without definition. This list (still without definitions) remains in current federal PSD rules and in current SCDHEC PSD rules.

We next proceed to a summary of EPA statements on the meaning of the term fuel conversion as expressed in various documents.

- PSD source clarification memo; January 20, 1976 - This memo was from EPA headquarters in response to an EPA Region 4 request for clarification on sources subject to PSD review. The memo contains this statement: "Fuel conversion plants are defined for purposes of PSD as those plants which accomplish a change in state for a given fossil fuel. The large majority of these plants are likely to accomplish these changes through coal gasification, coal liquefaction, or oil shale processing."

- Cleveland Electric memo; May 26, 1992 - At the plant in question, Cleveland Electric proposed to produce fuel gas by means of gasifying municipal waste. EPA concluded that this process qualified as a fuel conversion plant and made the following statement: "Fuel conversion plants obviously include those plants which accomplish a change in state (e.g., solid to liquid to gas) for a fuel. This definition includes conversion of the following fuels: fossil (e.g., coal or oil shale); biomass (e.g., wood or peat); and anthropogenic (e.g., municipal waste derived fuel and inorganic fuel). The majority of such sources are likely to accomplish these changes through either gasification, liquefaction, or solidification. ... Generally, however, applicability for this source category is determined by whether a facility changes state (e.g., solid to gas) or form (e.g., process sawdust into a pellet) of a fuel."

- Pencor-Masada Oxynol order; May 2, 2001 - In this order (referred to as the Masada I order) issued by the EPA Administrator in response to a title V operating permit petition, the Administrator covered various topics related to a refuse recycling and ethanol production facility. One of these topics was whether a gasifier associated with refuse processing was a fuel conversion process. EPA's conclusion reads in part as follows: "Based on our review, EPA policy has historically defined this category [fuel conversion plants] as 'plants which accomplish a change in state for a given fossil fuel. The large majority of these plants are likely to accomplish these changes through coal gasification, coal liquefaction or oil shale processing.' In this case, where fossil fuels are not involved and where the processing involves hydrolysis, a chemical process, it is EPA's judgment that the Masada facility is not a fuel conversion plant." [The embedded quote is from the January 20, 1976 memo listed above.]

The 1976 memo and the 2001 order support the idea that the term fuel conversion plants is limited to facilities engaged in the processing of fossil fuels, whereas the 1992 memo does not.

Revised Opinion

By this letter we now revise our opinion for the Norbord gasifier operation based on the likely meaning of the term fuel conversion projects at the time it was first introduced (as indicated by the preamble statement in the August 1974 re-proposal of PSD rules and in the January 1976 memo), recognizing that there have been no statutory or regulatory changes since that time necessitating a different view of the term. Our revised opinion is that the Norbord gasifier operation is not a fuel conversion plant because it does not involve a fossil fuel. This opinion is consistent with the Masada I order issued by the EPA Administrator in May 2001. Concurrence with this opinion has been obtained from EPA's Office of Air and Radiation (including the Office of Air Quality Planning and Standards) and Office of General Counsel.

If you have any questions concerning the opinion expressed in this letter, please call Jim Little at 404-562-9118.

Sincerely,

James W. Little, for

Gregg M. Worley
Chief
Air Permits Section

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

MICHAEL ABRACZINSKAS
Director

NORTH CAROLINA
Environmental Quality

October 30, 2019

Mr. Mark Jordan
Plant Manager
Enviva Pellets Northampton, LLC
7200 Wisconsin Avenue
Bethesda, Maryland 20814

Dear Mr. Jordan:

SUBJECT: Air Quality Permit No. 10203R06
Facility ID: 6600167
Enviva Pellets Northampton, LLC
Garysburg, North Carolina
Northampton County
Fee Class: Title V

In accordance with your Air Permit Applications received on October 1, 2018 and amended version received on April 1, 2019, we are forwarding herewith Air Quality Permit No. 10203R06 to Enviva Pellets Northampton, LLC, 309 Enviva Boulevard, Garysburg, North Carolina, authorizing the construction and operation, of the emission source(s) and associated air pollution control device(s) specified herein. Additionally, any emissions activities determined from your Air Quality Permit Application as being insignificant per 15A North Carolina Administrative Code 02Q .0102 have been listed for informational purposes as an "ATTACHMENT." Please note the requirements for the annual compliance certification are contained in General Condition P in Section 3. The current owner is responsible for submitting a compliance certification for the entire year regardless of who owned the facility during the year.

As the designated responsible official it is your responsibility to review, understand, and abide by all of the terms and conditions of the attached permit. It is also your responsibility to ensure that any person who operates any emission source and associated air pollution control device subject to any term or condition of the attached permit reviews, understands, and abides by the condition(s) of the attached permit that are applicable to that particular emission source.

If any parts, requirements, or limitations contained in this Air Quality Permit are unacceptable to you, you have the right to request a formal adjudicatory hearing within 30 days following receipt of this permit, identifying the specific issues to be contested. This hearing request must be in the form of a written petition, conforming to NCGS (North Carolina General Statutes) 150B-23, and filed with both the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, North Carolina 27699-6714 and the Division of Air Quality, Permitting Section, 1641 Mail Service Center, Raleigh, North Carolina 27699-1641. The form for requesting a formal adjudicatory hearing may be obtained upon request from the Office of Administrative Hearings. Please note that this permit will be stayed in its entirety upon receipt of the request for a hearing. Unless a request for a hearing is made pursuant to NCGS 150B-23, this Air Quality Permit shall be final and binding 30 days after issuance.

You may request modification of your Air Quality Permit through informal means pursuant to NCGS 150B-22. This request must be submitted in writing to the Director and must identify the specific provisions or issues for which the modification is sought. Please note that this Air Quality Permit will become final and binding regardless of a request for informal modification unless a request for a hearing is also made under NCGS 150B-23.

The construction of new air pollution emission source(s) and associated air pollution control device(s), or modifications to the emission source(s) and air pollution control device(s) described in this permit must be covered under an Air Quality Permit issued by the Division of Air Quality prior to construction unless the Permittee has fulfilled the requirements of NCGS 143-215.108A(b) and received written approval from the Director of the Division of Air Quality to commence construction. Failure to receive an Air Quality Permit or written approval prior to commencing construction is a violation of NCGS 143-215.108A and may subject the Permittee to civil or criminal penalties as described in NCGS 143-215.114A and 143-215.114B.

Northampton County has triggered increment tracking under PSD for NOx, SO_2, PM-10, and PM-2.5. This modification will result in an increase of 26.4 pounds per hour of NOx, an increase of 4.6 pounds per hour of SO_2, a decrease of 0.7 pounds per hour of PM-10, and a decrease of 2.3 pounds per hour of PM-2.5.

This Air Quality Permit shall be effective from October 30, 2019 until February 28, 2025, is nontransferable to future owners and operators, and shall be subject to the conditions and limitations as specified therein. Should you have any questions concerning this matter, please contact Richard Simpson at (919) 707-8476 or richard.simpson@ncdenr.gov.

Sincerely yours,

Mark J Cuilla

for William D. Willets, P.E., Chief, Permitting Section
Division of Air Quality, NCDEQ

c: EPA Region 4
Ray Stewart, Supervisor, Raleigh Regional Office
Central Files
Connie Horne (Cover letter only)

ATTACHMENT

Insignificant Activities per 15A NCAC 02Q .0102

Emission Source ID No.	Emission Source Description
IES-Debark	Debarker
IES-Bark	Bark Hog
IES-DDB-1 through IES-DDB-4	Four natural gas/propane-fired low NOx double duct burners (each rated at 1 MMBtu/hour)
IES DLH	Dry line hopper
IES-EPWC	Electric powered green wood chipper
IES-GWFB	Green wood fuel storage bin
IES-DRYSHAVE	Dry shaving handling and storage systems
IES-DRYSHAVE-1	Dry shaving handling and storage systems with one bagfilter CD-DSR-BF (2,577 square feet of filter area)
IES-PVAP	Propane vaporizer
IES-ADD	Additive handling and storage with one bagfilter CD-ADD-BF (TBDXXX square feet of filter area)
IES-GN-1 **NSPS IIII, GACT ZZZZ**	One emergency use generator (350 brake horsepower)
IES-GN-2 **NSPS IIII, GACT ZZZZ**	One emergency use generator (671 brake horsepower)
IES-FWP **NSPS IIII, GACT ZZZZ**	One fire water pump (300 brake horsepower)
IES-TK1 and IES-TK2	Two diesel storage tanks (2,500 gallon and 600 gallon capacity)
IES-TK3	Mobile diesel storage tank (5,000 gallon)
IES-TK4	Diesel storage tank (1,000 gallon)

1. Because an activity is insignificant does not mean that the activity is exempted from an applicable requirement or that the Permittee is exempted from demonstrating compliance with any applicable requirement.
2. When applicable, emissions from stationary source activities identified above shall be included in determining compliance with the permit requirements for toxic air pollutants under 15A NCAC 02D .1100 "Control of Toxic Air Pollutants" or 02Q .0711 "Emission Rates Requiring a Permit."
3. For additional information regarding the applicability of MACT or GACT see the DAQ page titled "Specific Permit Conditions Regulatory Guide." The link to this site is as follows: http://deq.nc.gov/about/divisions/air-quality/air-quality-permits/specific-permit-conditions-regulatory-guide.

Summary of Changes to Permit

The following changes were made to Enviva Pellets Northampton, LLC, Garysburg, NC., Air Permit No. 10203R05 (*Table of Changes as sent to public notice July 19, 2019*).

Page No.	Section	Description of Changes
Cover Letter	N/A	Updated cover letter with application number, permit numbers, dates, fee class, and Director name.
NA	Insignificant Activities	Added new sources debarker IES-Debark, bark hog IES-Bark, four natural gas/propane double duct burners IES-DDB-1 through IES-DDB-4, dry shaving handling and storage systems IES-DRYSHAVE, dry shaving handling and storage systems IES-DRYSHAVE-1 with one bagfilter CD-DSR-BF, propane vaporizer IES-PVAP, additive handling and storage IES-ADD with one bagfilter CD-ADD-BF, one emergency use generator IES-GN-2, mobile diesel storage tank IES-TK3, and diesel storage tank IES-TK4.
NA	Insignificant Activities	Reclassified dry line hopper to an insignificant source and changed ID No. to IES-DLH.
NA	Insignificant Activities	Reclassified dry wood handling IES-DWH and green wood handling and storage IES-GWHS as significant sources and changed ID Nos. to ES-DWH-1 and ES-GWHS.
NA	Insignificant Activities	Pellet press system IES-PP was deleted since it is incorporated with the pellet coolers.
NA	Insignificant Activities	Finished product handling IES-FPH was deleted since it is incorporated with handling ES-FPH.
NA	Insignificant Activities	Log chipper IES-CHIP-1 was deleted since it is incorporated with chipper IES-EPWC.
NA	Insignificant Activities	Two electric powered wood re-chippers, IES-RCHP-1 and IES-RCHP-2, were deleted since they are being replaced by five new green hammermills (ES-GHM-1 through ES-GHM-5).
NA	Insignificant Activities	Generator ID No. was changed from IES-GN to IES-GN-1. Diesel storage tanks ID Nos. were changed from IS-TK1 and IS-TK2 to IES-TK1 and IES-TK2. IES-TK2 capacity was updated from 500 gallons to 600 gallons.
3, 6	Section 1 and Section 2.1 A.	Add five (5) new closed-loop green hammermills (ES-GHM-1 through ES-GHM-5) and route the exhaust to the existing wet electrostatic precipitator (CD-WESP-1) and the new regenerative thermal oxidizer (CD-RTO-1). The Green hammermills exhaust will also have the ability to be routed and controlled by new CD-WESP-2 and new CD-RTO-2 when the CD-WESP-1 and CD-RTO-1 are shut down. Simple cyclone CD-DC is for product handling and deleted from the permit as a control device.
3, 6	Section 1 and Section 2.1 A.	Updated wood dryer ID No. from (ES-DRYER) to (ES-DRYER-1). The exhaust will route to existing wet electrostatic precipitator (CD-WESP-1) and the new regenerative thermal oxidizer (CD-RTO-1).
3, 6	Section 1 and Section 2.1 A.	Added dryer 1 bypass ES-DRYERBYP-1 and furnace 1 bypass (ES-FURNACEBYP-1).
3, 6	Section 1 and Section 2.1 A.	Added a new direct heat wood fired dryer (ES-DRYER-2) controlled by new wet electrostatic precipitator CD-WESP-2 in series with a new regenerative thermal oxidizer (CD-RTO-2).
3, 6	Section 1 and Section 2.1 A.	Added dryer 2 bypass (ES-DRYERBYP-2) and furnace 2 bypass (ES-FURNACEBYP-2).

Page No.	Section	Description of Changes
3, 6	Section 1 and Section 2.1 A.	Added a new dry wood handling (ES-DWH-2) controlled by a new bagfilter (CD-DWH-BF-2).
3, 6	Section 1 and Section 2.1 A.	Assigned source ID Nos. (ES-PS-1) and (ES-PS-2) to existing dry hammermill pre-screeners.
4, 6	Section 1 and Section 2.1 A.	The eight existing dry hammermills exhaust will also route through new wet scrubber (CD-WS-1) and regenerative catalytic oxidizer (CD-RCO-1) that can also operate as an RTO.
4, 6	Section 1 and Section 2.1 A.	Renamed existing nuisance system to dust control system (ES-DCS) and update the permit to reflect that the exhaust will route through new wet scrubber (CD-WS-1) and regenerative catalytic oxidizer (CD-RCO-1) that can operate as an RTO.
4, 6	Section 1 and Section 2.1 A.	Added a new dry shavings reception (ES-DSR) controlled by a new bagfilter (CD-DSR-BF).
4, 6	Section 1 and Section 2.1 A.	Added a new dry shavings silo (ES-DSS) controlled by a new bagfilter (CD-DSS-BF).
4, 6	Section 1 and Section 2.1 A.	Added two new dry shavings hammermills (ES-DSHM-1 and ES-DSHM-2) controlled by new wet scrubber (CD-WS-1) and regenerative catalytic oxidizer (CD-RCO-1) that can operate as an RTO.
5, 6	Section 1 and Section 2.1 A.	The six existing pellet coolers exhaust will also route through new wet scrubber (CD-WS-2) and regenerative catalytic oxidizer (CD-RCO-2) that can operate as an RTO.
5, 6	Section 1 and Section 2.1 A.	Rename the currently permitted Pellet Fines Bin (ES-PFB-1) and associated bin vent filter (CD-PFB-BV) to Pellet Cooler Fines Relay System (ES-PCHP) and baghouse (CD-PCHP-BV.)
NA	Section 1 and Section 2.1 A.	Since the sources will not be utilized, deleted bagging system conveyor and screens (ES-BSC-1, ES-BSS-1, and ES-BSS-2) and associated filters (CD-BS-BF-1 and CD-BS-BF-2).
NA	Section 1 and Section 2.1 A.	Since the sources will not be utilized, deleted bagging systems (ES-BSC-2, ES-BSC-3, ES-BSB-1, and ES-BSB-2).
6, 11	Section 2.1 A. and Section 2.1 4.	Added 15A NCAC 02D .0535 Excess emissions reporting and malfunctions rule to the table and section.
6	Section 2.1 A.	Added PM, NOx, and CO to the table for PSD avoidance.
8	Section 2.1 A.1.c.	To demonstrate compliance with 15A NCAC 02D .0515, added particulate testing.
8, 9	Section 2.1 A.1.d through i.	Added the new control devices for monitoring requirements.
9	Section 2.1 A.1.j.	Added the recordkeeping requirements.
10	Section 2.1 A.2.	Added the new wood dryer to the 15A NCAC 02D .0516 requirements.
11	Section 2.2 A.	Added the table for the regulated pollutants and applicable standards.
12	Section 2.2 A.1.	Added regulation 15A NCAC 02D .0540 Particulates from Fugitive Dust Emissions.
12	Section 2.2 A.2.	Included existing PSD avoidance conditions until the facility meets Construction Schedule per Section 2.3. Also updated conditions to include dryer, dry hammermill, and pellet cooler systems throughput limitations along with associated percent softwood limitations on a rolling 12-month average basis.

Page No.	Section	Description of Changes
13	Section 2.2 A.3.	Added regulation 15A NCAC 02Q .0317 Avoidance Condition for 15A NCAC 02D .0530: Prevention of Significant Deterioration facility-wide for PM, VOCs, and NOx. Conditions include throughput and softwood limits along with initial and periodic testing, monitoring, recordkeeping, and reporting for the proposed modification.
18	Section 2.2 A.4.	Added regulation 15A NCAC 02Q .0317 Avoidance Condition for 15A NCAC 02D .1111: Maximum Available Control Technology (MACT) Standards facility-wide for HAPs. Conditions include initial and periodic testing, monitoring, recordkeeping, and reporting.
18	Section 2.2 A.5.	Included existing 15A NCAC 02D .1100 Toxics Air Pollutant Emissions Limitation and Requirement until the facility meets Construction Schedule per Section 2.3.
19	Section 2.2 A.6.	Added eleven toxics pollutants and new associated equipment to 15A NCAC 02D .1100 Toxics Air Pollutant Emissions Limitation and Requirement.
20	Section 2.2 A.7.	Deleted the eleven toxics pollutants that were moved to Section 2.2 A.4.
22	Section 2.2 A.8.	Added regulation 15A NCAC 02Q .1806 Control and Prohibition of Odorous Emissions.
23	Section 2.2 A.9.	Added regulation 15A NCAC 02Q .0207 Annual Emissions Reporting.
23	Section 2.2 A.10.	Added regulation 15A NCAC 02Q .0304 Applications Annual Emissions Reporting.
23	Section 2.2 A.11.	Added regulation 15A NCAC 02Q .0504 Option for Obtaining Construction and Operation Permit.
23	Section 2.3.	Added Section 2.3 for a Construction Schedule.
25-27	Section 3	The General Conditions were updated to the latest version of DAQ shell.

Summary of Changes to Permit

The following changes were made to Enviva Pellets Northampton, LLC, Garysburg, NC., Air Permit No. 10203R05 (*Table of Changes in response to Hearing Officer's recommendations*).

Page No.	Section	Description of Changes
10	Section 2.1 A.1.l.	Added semiannual reporting requirements.
11	Section 2.1 A.3.e.	Added semiannual reporting requirements.
12	Section 2.2 A.2.b.i. and 2.2 A.2.b.ii.	Changed the word pellets to wood.
14	Section 2.2 A.3.c.vii.	Deleted dryer bypass malfunction hours and reserved the section
14	Section 2.2 A.3.c.viii.	Deleted furnace bypass malfunction hours. Added maximum heat input percentage for cold startup. Added description:"The cold startup period of time begins when a wood-fired furnace is started up and lasts until the wood-fired furnace's refractory is heated to a temperature sufficient to sustain combustion operations at a minimal level or 8 hours, whichever is less;".

Page No.	Section	Description of Changes
17	Section 2.2 A.3.o.	Deleted "for malfunctions".
17	Section 2.2 A.3.q.	Added an equation to calculate monthly NOx emissions.
18	Section 2.2 A.3.t.	Added reporting requirements: "The monthly ODT of pellets per year for the previous 17 months." and "The monthly hardwood/softwood mix for the previous 17 months."
22	Section 2.2 A.6.b.	Added current shell language for 15A NCAC 02D .1100 regulations including the date the facility submitted the modeling analysis and the date the modeling analysis was reviewed and approved by the AQAB.
23	Section 2.2 A.11.a.	Changed 15A NCAC 02Q .0504 condition to: "Pursuant to 15A NCAC 02Q .0504, the Permittee filed its first time Title V Air Quality Permit Application (6600167.14B) on April 22, 2014."
23	Section 2.2 A.11.b.	Changed 15A NCAC 02Q .0504 condition to: "The Permittee shall amend the first time Title V Air Quality Permit Application (6600167.14B) within 90 days of the issuance of Permit No. 10203R06." Deleted the reporting requirements.

State of North Carolina
Department of Environmental Quality
Division of Air Quality

AIR QUALITY PERMIT

Permit No.	Replaces Permit No.(s)	Effective Date	Expiration Date
10203R06	10203R05	October 30, 2019	February 28, 2025

Until such time as this permit expires or is modified or revoked, the below named Permittee is permitted to construct and operate the emission source(s) and associated air pollution control device(s) specified herein, in accordance with the terms, conditions, and limitations within this permit. This permit is issued under the provisions of Article 21B of Chapter 143, General Statutes of North Carolina as amended, and Title 15A North Carolina Administrative Codes (15A NCAC), Subchapters 02D and 02Q, and other applicable Laws.

Pursuant to Title 15A NCAC, Subchapter 02Q, the Permittee shall not construct, operate, or modify any emission source(s) or air pollution control device(s) without having first submitted a complete Air Quality Permit Application to the permitting authority and received an Air Quality Permit, except as provided in this permit.

Permittee:	**Enviva Pellets Northampton, LLC**
Facility ID:	**6600167**
Facility Site Location: **City, County, State, Zip:**	**309 Enviva Boulevard** **Garysburg, Northampton County, North Carolina, 27831**
Mailing Address: **City, State, Zip:**	**7200 Wisconsin Avenue** **Bethesda, Maryland 20814**
Application Number: **Complete Application Date:**	**6600167.18A** **October 1, 2018 and April 1, 2019**
Primary SIC Code:	**2499**
Division of Air Quality, **Regional Office Address:**	**Raleigh Regional Office** **3800 Barrett Drive** **Raleigh, North Carolina, 27609**

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- 2.2- Multiple Emission Source(s) Specific Limitations and Conditions
  (Including specific requirements, testing, monitoring, recordkeeping, and reporting requirements)
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SECTION 3: GENERAL PERMIT CONDITIONS

SECTION 1- PERMITTED EMISSION SOURCE(S) AND ASSOCIATED AIR POLLUTION CONTROL DEVICE(S) AND APPURTENANCES

The following table contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-GWHS	Green wood handling and storage	NA	NA
ES-GHM-1 through ES-GHM-5	Five green hammermills	CD-WESP-1 and CD-RTO-1 OR CD-WESP-2 and CD-RTO-2	One wet electrostatic precipitator (29,904 square feet of total collection plate area) One propane or natural gas-fired regenerative thermal oxidizer (32 million Btu per hour) OR One wet electrostatic precipitator (29,904 square feet of total collection plate area) One propane or natural gas-fired regenerative thermal oxidizer (32 million Btu per hour)
ES-DRYER-1	Direct heat, wood-fired dryer (175.3 million Btu per hour heat input, 71.71 ODT/hr)	CD-WESP-1 and CD-RTO-1	One wet electrostatic precipitator (29,904 square feet of total collection plate area) One propane or natural gas-fired regenerative thermal oxidizer (32 million Btu per hour)
ES-DRYERBYP-1	Dryer 1 bypass	NA	NA
ES-FURNACEBYP-1	Furnace 1 bypass	NA	NA
ES-DRYER-2	Direct heat, wood-fired dryer (180 million Btu per hour heat input, 82.1 ODT/hr)	CD-WESP-2 and CD-RTO-2	One wet electrostatic precipitator (29,904 square feet of total collection plate area) One propane or natural gas-fired regenerative thermal oxidizer (32 million Btu per hour)
ES-DRYERBYP-2	Dryer 2 bypass	NA	NA
ES-FURNACEBYP-2	Furnace 2 bypass	NA	NA
ES-DWH-1	Dried wood handling	CD-DWH-BF-1	Bagfilter (2,577 square feet of filter area)
ES-DWH-2	Dried wood handling	CD-DWH-BF-2	Bagfilter (2,577 square feet of filter area)
ES-PS-1 and ES-PS-2	Dry hammermills pre-screeners 1 and 2	NA	NA

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-HM-1 through ES-HM-8	Eight dry hammermills	CD-HM-CYC-1 through 8, and CD-HM-BF-1 through CD-HM-3, and CD-WS-1, and CD-RCO-1	Eight simple cyclones (120 inches in diameter each) Three bagfilters (6,250 square feet of filter area each) One wet scrubber (1,485 gallons per minute) One propane or natural gas-fired regenerative catalytic oxidizer (19.6 million Btu per hour heat input) that can also operate as a regenerative thermal oxidizer
ES-DCS	Dust control system	CD-HM-BF-3, and CD-WS-1, and CD-RCO-1	One bagfilter (6,250 square feet of filter area) One wet scrubber (1,485 gallons per minute) One propane or natural gas-fired regenerative catalytic oxidizer (19.6 million Btu per hour heat input) that can operate as a regenerative thermal oxidizer
ES-DLC-1	Dry line feed conveyor	NA	NA
ES-DSR	Dry shavings reception	CD-DSR-BF	One bagfilter (2,577 square feet of filter area)
ES-DSS	Dry shavings silo	CD-DSS-BF	One bagfilter (88 square feet of filter area)
ES-DSHM-1 and ES-DSHM-2	Dry shavings hammermill 1 and 2	CD-WS-1, and CD-RCO-1	One wet scrubber (1,485 gallons per minute) One propane or natural gas-fired regenerative catalytic oxidizer (19.6 million Btu per hour heat input) that can operate as a regenerative thermal oxidizer
ES-PMFS	Pellet feed mill silo	CD-PMFS-BV	One bin vent filter (377 square feet of filter area)

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-CLR-1 through ES-CLR-6	Pellet coolers	CD-CLR-1 through CD-CLR-6, and	Six high efficiency cyclones (54 inches in diameter each)
		CD-WS-2, and	One wet scrubber (990 gallons per minute)
		CD-RCO-2	One propane or natural gas-fired regenerative catalytic oxidizer (19.6 million Btu per hour heat input) that can operate as a regenerative thermal oxidizer
ES-PCHP	Pellet cooler fines relay system	CD-PCHP-BV	One bagfilter (780 square feet of filter area)
ES-FPH	Finished product handling	CD-FPH-BF	One bagfilter (4,842 square feet of filter area)
ES-PB-1 through ES-PB-12	Twelve (12) pellet load-out bins		
ES-PL-1 ES-PL-2	Pellet mill load-out 1 and 2		

SECTION 2 - SPECIFIC LIMITATIONS AND CONDITIONS

2.1- Emission Source(s) and Control Devices(s) Specific Limitations and Conditions

The emission source(s) and associated air pollution control device(s) and appurtenances listed below are subject to the following specific terms, conditions, and limitations, including the testing, monitoring, recordkeeping, and reporting requirements as specified herein:

A. Green wood handling and storage (ID No. ES-GWHS)

Five (5) green hammermills (ID Nos. ES-GHM-1 through ES-GHM-5) controlled by a wet electrostatic precipitator (ID No. CD-WESP-1) and a regenerative thermal oxidizer (ID No. CD-RTO-1) or controlled by a wet electrostatic precipitator (ID No. CD-WESP-2) and a regenerative thermal oxidizer (ID No. CD-RTO-2);

Wood-fired direct heat drying system (ID No. ES-DRYER-1) controlled by a wet electrostatic precipitator (ID No. CD-WESP-1) and a regenerative thermal oxidizer (ID No. CD-RTO-1);
Dryer 1 bypass (ID No. ES-DRYERBYP-1) and Furnace 1 bypass (ID No. ES-FURNACEBYP-1);

Wood-fired direct heat drying system (ID No. ES-DRYER-2) controlled by a wet electrostatic precipitator (ID No. CD-WESP-1) and a regenerative thermal oxidizer (ID No. CD-RTO-2);
Dryer 2 bypass (ID No. ES-DRYERBYP-2) and Furnace 2 bypass (ID No. ES-FURNACEBYP-2);

Dry wood handling (ID No. ES-DWH-1) with associated bagfilter (ID No. CD-DWH-BF-1);
Dry wood handling (ID No. ES-DWH-2) with associated bagfilter (ID No. CD-DWH-BF-2);

Two (2) dry hammermill pre-screeners (ID No. ES-PS-1 and ES-PS-2);
Eight (8) hammermills (ID Nos. ES-HM-1 through ES-HM-8) with associated cyclones (ID Nos. CD-HM-CYC-1 through CD-HM-CYC-8) in series with three bagfilters (ID Nos. CD-HM-BF-1 through CD-HM-BF3) in series with a wet scrubber (CD-WS-1) in series with a regenerative catalytic oxidizer (ID No. CD-RCO-1) that can also operate as a regenerative thermal oxidizer;
Dust control system (ID No. ES-DCS) with associated bagfilter(ID No. CD-HM-BF-3) in series with a wet scrubber (CD-WS-1) in series with a regenerative catalytic oxidizer (ID No. CD-RCO-1) that can also operate as a regenerative thermal oxidizer;

Dry line feed conveyor (ID No. ES-DLC-1);

Dry shavings reception (ID No. ES-DSR) with associated bagfilter (ID No. CD-DSR-BF);
Dry shavings silo (ID No. ES-DSS) with associated bagfilter (ID No. CD-DSS-BF);
Two dry shavings hammermills (ID Nos. ES-DSHM-1 and ES-DSHM-2) controlled by a wet scrubber (CD-WS-1) in series with a regenerative catalytic oxidizer (ID No. CD-RCO-1) that can also operate as a regenerative thermal oxidizer;

Pellet mill feed silo (ID No. ES-PMFS) with associated bin vent filter (ID No. CD-PMFS-BV);
Pellet coolers (ID Nos. ES-CLR-1 through ES-CLR-6) with associated cyclones (ID Nos. CD-CLR-1 through CD-CLR-6) in series with a wet scrubber (CD-WS-2) in series with a regenerative catalytic oxidizer (ID No. CD-RCO-2) that can also operate as a regenerative thermal oxidizer;
Pellet cooler fines relay system (ID No. ES-PCHP) with associated bagfilter (ID No. CD-PCHP-BF);

Finished product handling (ID No. ES-FPH), pellet load-out bins (ID Nos. ES-PB-1 through ES-PB-12), and pellet mill load-outs (ID Nos. ES-PL-1 and ES-PL-2) with associated bagfilter (ID No. CD-FPH-BF)

The following table provides a summary of limits and standards for the emission source(s) described above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter	$E = 4.10 \times P^{0.67}$ for $P < 30$ tph $E = 55 \times P^{0.11} - 40$ for $P \geq 30$ tph where, E = allowable emission rate (lb/hr) P = process weight rate (tph)	15A NCAC 02D .0515
Sulfur dioxide	*ID Nos. ES-DRYER-1 and ES-DRYER-2 only:* 2.3 pounds per million Btu	15A NCAC 02D .0516
Visible emissions	20 percent opacity when averaged over a 6-minute period	15A NCAC 02D .0521
n/a	Excess emissions reporting and malfunctions	15A NCAC 02D .0535
Fugitive dust	State-enforceable only Minimize fugitive dust beyond property boundary See Section 2.2 A.1.	15A NCAC 02D .0540
Volatile organic compounds (VOC), and Carbon monoxide (CO)	Less than 456.4 tons of VOC and 250 tons of CO per consecutive 12-month period, See Section 2.2 A.2.	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530
PM/PM10/PM2.5 VOC NOx CO	Less than 250 tons per 12-month period, Less than 250 tons per 12-month period, Less than 250 tons per 12-month period Less than 250 tons per 12-month period See Section 2.2 A.3.	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530
Hazardous Air Pollutants (HAP)	See Section 2.2 A.4.	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .1111 MACT
Toxic air pollutants	State-enforceable only See Section 2.2 A.5. and 2.2 A.6.	15A NCAC 02D .1100
Toxic air pollutants	State-enforceable only See Section 2.2 A.7.	15A NCAC 02D .0711

1. 15A NCAC 02D .0515: PARTICULATES FROM MISCELLANEOUS INDUSTRIAL PROCESSES

a. Emissions of particulate matter from these sources shall not exceed an allowable emission rate as calculated by the following equation:

$E = 4.10 \times P^{0.67}$ for $P < 30$ tph
$E = 55 \times P^{0.11} - 40$ for $P \geq 30$ tph

Where E = allowable emission rate in pounds per hour
P = process weight in tons per hour

Liquid and gaseous fuels and combustion air are not considered as part of the process weight.

Testing [15A NCAC 02Q .0308(a)]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17.

c. Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with emission limit in Section 2.1 A.1.a for the wood-fired direct heat drying systems **(ID Nos. ES-DRYER-1 and ES-DRYER-2)**, green hammermills **(ID Nos. ES-GHM-1 through ES-GHM-5)**, the dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)** and pellet coolers **(ID Nos. ES-CLR-1 through CLR-6)**. Testing shall be conducted as specified in Section 2.2 A.2.

Monitoring [15A NCAC 02Q .0308(a)]

For baghouses and/or cyclones:

d. Particulate matter emissions shall be controlled as follows:
   i. Particulate matter emissions from the dry wood handling operations **(ID Nos. ES-DWH-1 and ES-DWH-2)** shall be controlled by baghouses **(ID Nos. CD-DWH-BF-1 and CD-DWH-BF-2);**
   ii. Particulate matter emission from eight (8) dry hammermills **(ID Nos. ES-HM-1 through ES-HM-8)** shall be controlled by cyclones **(ID Nos. CD-HM-CYC-1 through CD-HM-CYC-8)** in series with baghouses **(ID Nos. CD-HM-BH1 through CD-HM-BH3);**
   iii. Particulate matter emission from the dust control system **(ID No. ES-DCS)** shall be controlled by baghouse **(ID No. CD-HM-BF-3);**
   iv. Particulate matter emissions from the dry shavings reception **(ID No. ES-DSR)** shall be controlled by a baghouse **(ID No. CD-DSR-BF)**;
   v. Particulate matter emissions from the dry shavings silo **(ID No. ES-DSS)** shall be controlled by a baghouse **(ID No. CD-DSS-BF)**;
   vi. Particulate matter emissions from the pellet mill feed silo **(ID No. ES-PMFS)** shall be controlled by baghouse **(ID No. CD-PMFS-BV)**;
   vii. Particulate matter emissions from the pellet coolers **(ID Nos. ES-CLR-1 through CLR-6)** shall be controlled cyclones **(ID Nos. CD-CLR-1 through CD-CLR-6)**;
   viii. Particulate matter emissions from pellet cooler fines relay system **(ID No. ES-PCHP)** shall be controlled by baghouse **(ID No. CD-PCHP-BV)**;
   xi. Particulate matter emissions from finished product handling **(ID No. ES-FPH)**, pellet load-out bins **(ID Nos. ES-PB-1 through PB-12)**, and pellet mill load-out **(ID No. ES-PL-1 and PL-2)** shall be controlled by baghouse **(ID No. CD-FPH-BF)**.

e. To ensure compliance, the Permittee shall perform inspections and maintenance as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there are no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:
   i. a monthly visual inspection of the system ductwork and material collection units for leaks; and
   ii. an annual (for each 12-month period following the initial inspection) internal inspection of the baghouses' structural integrity.

For wet electrostatic precipitator, wet scrubbers, and regenerative thermal or catalytic oxidizers:

f. Particulate matter emissions shall be controlled as follows:
   i. Particulate matter emissions from the green hammermills **(ID Nos. ES-GHM-1, through ES-GHM-5)** shall be controlled by a wet electrostatic precipitator **(ID No. CD-WESP-1)** in series with a regenerative thermal oxidizer **(ID No. CD-RTO-1)** or controlled by a wet electrostatic precipitator **(ID No. CD-WESP-2)** in series with a regenerative thermal oxidizer **(ID No. CD-RTO-2)**
   ii. Particulate matter emissions from the wood-fired direct heat drying system **(ID No. ES-DRYER-1)** shall be controlled by a wet electrostatic precipitator **(ID No. CD-WESP-1)** in series with a regenerative thermal oxidizer **(ID No. CD-RTO-1);**
   iii. Particulate matter emissions from the wood-fired direct heat drying system **(ID No. ES-DRYER-2)** shall be controlled by a wet electrostatic precipitator **(ID No. CD-WESP-2)** in series with a regenerative thermal oxidizer **(ID No. CD-RTO-2);**
   iv. Particulate matter emissions from the eight (8) dry hammermills **(ID Nos. ES-HM-1 through**

ES-HM-8) shall be controlled by a wet scrubber **(ID No. CD-WS-1)** in series with a regenerative catalytic/thermal oxidizer **(ID No. CD-RCO-1);**

v. Particulate matter emissions from pellet coolers **(ID Nos. ES-CLR-1 through CLR-6)** shall be controlled by a wet scrubber **(ID No. CD-WS-2)** in series with a regenerative catalytic/thermal oxidizer **(ID No. CD-RCO-2);**

g. To ensure compliance and effective operation of the wet electrostatic precipitators **(ID No. CD-WESP-1 and CD-WESP-2)**, the Permittee shall:
   i. operate the wet electrostatic precipitator with at least the minimum number of grids operating during compliance testing specified in Section 2.2 A.2;
   ii. maintain the minimum secondary voltage and minimum current at the level established during compliance testing specified in Section 2.2 A.2;
   iii. monitor and record the secondary voltage and current for each grid of the precipitator daily. The daily observation must be made for each day of the calendar year period. The Permittee shall be allowed three (3) days of absent observations per semiannual period.

h. To ensure compliance and effective operation of the wet scrubbers **(ID No. CD-WS-1 and CD-WS-2)**, the Permittee shall maintain the required minimum liquid recirculation rate at the level established during compliance testing as specified in Section 2.2 A.2. The Permittee shall monitor and record the required minimum liquid recirculation rate daily. The daily observation must be made for each day of the calendar year period. The Permittee shall be allowed three (3) days of absent observations per semiannual period.

i. To ensure compliance, the Permittee shall perform inspections and maintenance on the wet electrostatic precipitators **(ID Nos. CD-WESP-1 and CD-WESP-2)**, the wet scrubbers **(ID Nos. CD-WS-1 and CD-WS-2),** the regenerative thermal oxidizers **(ID Nos. CD-RTO-1 and CD-RTO-2)**, and the regenerative catalytic/thermal oxidizers **(ID Nos. CD-RCO-1 and CD RCO-2)** as recommended by the manufacturer. In addition to the manufacturer's inspection and maintenance recommendations, or if there are no manufacturer's inspection and maintenance recommendations, as a minimum, the inspection and maintenance requirement shall include the following:
   i. a monthly visual inspection of the system ductwork and material collection units for leaks;
   ii. an annual (for each 12-month period following the initial inspection) internal inspection of the heat transfer medium and associated inlet/outlet valves on the regenerative thermal and catalytic oxidizers **(ID No. CD-RTO-1, CD-RTO-2, CD-RCO-1 and CD RCO-2)**; and
   iii. an annual (for each 12-month period following the initial inspection) internal inspection of the wet electrostatic precipitators **(ID No. CD-WESP1 and CD-WESP-2).** This inspection must include (but is not limited to) the following:
      (A) visual checks of critical components,
      (B) checks for any equipment that does not alarm when de-energized, to ensure it is operational,
      (C) checks for signs of plugging in the hopper and gas distribution equipment, and
      (D) replacement of broken equipment as required.
   iv. an annual (for each 12-month period following the initial inspection) internal inspection of spray nozzles and the cleaning/calibration of all associated instrumentation on the wet scrubbers **(ID Nos. CD-WS-1 and CD-WS-2).**

Recordkeeping [15A NCAC 02Q .0308(a)]

j. The results of inspection and maintenance shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The logbook shall record the following:
   i. the date and time of each recorded action;
   ii. the results of each inspection;
   iii. the results of any maintenance performed on the control devices; and
   iv. any variance from manufacturer's recommendations, if any, and corrections made.

Reporting [15A NCAC 02Q .0308(a)]

k. The Permittee shall submit the results of any maintenance performed on any control device within 30 days of a written request by the DAQ.
l. The Permittee shall submit a summary report of the monitoring and recordkeeping activities given in Sections 2.1 A.1.d through j above postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

2. 15A NCAC 02D .0516: SULFUR DIOXIDE EMISSIONS FROM COMBUSTION SOURCES

a. Emissions of sulfur dioxide from these sources **(ID Nos. ES-DRYER-1 and ES-DRYER-2)** shall not exceed 2.3 pounds per million Btu heat input. Sulfur dioxide formed by the combustion of sulfur in fuels, wastes, ores, and other substances shall be included when determining compliance with this standard.

Testing [15A NCAC 02Q .0308(a)]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17.

Monitoring/Recordkeeping/Reporting [15A NCAC 02Q .0308(a)]

c. No monitoring/recordkeeping/reporting is required for sulfur dioxide emissions from the firing of biomass in the wood-fired direct heat drying systems **(ID Nos. ES-DRYER-1 and ES-DRYER-2)**.

3. 15A NCAC 02D .0521: CONTROL OF VISIBLE EMISSIONS

a. Visible emissions from these sources shall not be more than 20 percent opacity when averaged over a six-minute period. However, six-minute averaging periods may exceed 20 percent not more than once in any hour and not more than four times in any 24-hour period. In no event shall the six-minute average exceed 87 percent opacity.

Testing [15A NCAC 02Q .0308(a)]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition 17.

Monitoring [15A NCAC 02Q .0308(a)]

c. To ensure compliance, once a week the Permittee shall observe the emission points of these sources for any visible emissions above normal. The weekly observation must be made for each week of the calendar year period to ensure compliance with this requirement. For all new emission sources or control devices listed in the above table, the Permittee shall establish "normal" in the first 30 days following the commencement of operation. If visible emissions from these sources are observed to be above normal, the Permittee shall either:
   i. take appropriate action to correct the above-normal emissions as soon as practicable and within the monitoring period and record the action taken as provided in the recordkeeping requirements below, or
   ii. demonstrate that the percent opacity from the emission points of the emission source in accordance with 15A NCAC 02D .2610 (Method 9) for 12 minutes is below the limit given in Section 2.1 A.3.a above.

Recordkeeping [15A NCAC 02Q .0308(a)]

d. The results of the monitoring shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The logbook shall record the following:
   i. the date and time of each recorded action;

ii. the results of each observation and/or test noting those sources with emissions that were observed to be in noncompliance along with any corrective actions taken to reduce visible emissions; and
iii. the results of any corrective actions performed.

Reporting [15A NCAC 02Q .0308(a), 15A NCAC 02D .0605(b)(3)]

e. The Permittee shall submit a summary report of the monitoring and recordkeeping activities given in Sections 2.1 A.3.c and d above postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

4. 15A NCAC 02D .0535: EXCESS EMISSIONS REPORTING AND MALFUNCTIONS

1. NOTIFICATION REQUIREMENT - As required by 15A NCAC 2D .0535, the Permittee of a source of excess emissions that last for more than four hours and that results from a malfunction, a breakdown of process or control equipment or any other abnormal conditions, shall:
   a. Notify the Director or his designee of any such occurrence by 9:00 a.m. Eastern time of the Division's next business day of becoming aware of the occurrence and describe:
      i. the name and location of the facility,
      ii. the nature and cause of the malfunction or breakdown,
      iii. the time when the malfunction or breakdown is first observed,
      iv. the expected duration, and
      v. an estimated rate of emissions.
   b. Notify the Director or his designee immediately when the corrective measures have been accomplished.

This reporting requirement does not allow the operation of the facility in excess of Environmental Management Commission Regulations.

2.2- Multiple Emission Source(s) Specific Limitations and Conditions

A. Facility-wide Emission Sources

The following table provides a summary of limits and standards for the emission source(s) describe above:

Regulated Pollutant	Limits/Standards	Applicable Regulation
Fugitive dust	State-enforceable only Minimize fugitive dust beyond property boundary	15A NCAC 02D .0540
VOC CO	Less than 456.4 tons per 12-month period Less than 250 tons per 12-month period	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530
PM/PM10/PM2.5 VOC NOx CO	Less than 250 tons per 12-month period, Less than 250 tons per 12-month period, Less than 250 tons per 12-month period Less than 250 tons per 12-month period	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530
Hazardous Air Pollutants (HAP)	Less than 25 tons for combined HAPs per 12-month period Less than 10 tons for single a HAP per 12-month period.	15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .1111 MACT
Toxic air pollutants	State-enforceable only Less than modeled emission rates	15A NCAC 02D .1100
Toxic air pollutants	State-enforceable only Less than toxic permitted emission rates	15A NCAC 02D .0711

Regulated Pollutant	Limits/Standards	Applicable Regulation
Odor	State-enforceable only odor control	15A NCAC 02D .1806
N/A	Annual Emission Reporting due June 30	15A NCAC 02Q .0207
N/A	Permit renewal application due 90 days prior to permit expiration	15A NCAC 02Q .0304
N/A	Option for obtaining construction and operation permit	15A NCAC 02Q .0504

State-enforceable only

1. 15A NCAC 02D .0540: PARTICULATES FROM FUGITIVE DUST EMISSION SOURCES

As required by 15A NCAC 02D .0540 "Particulates from Fugitive Dust Emission Sources," the Permittee shall not cause or allow fugitive dust emissions to cause or contribute to substantive complaints or excess visible emissions beyond the property boundary. If substantive complaints or excessive fugitive dust emissions from the facility are observed beyond the property boundaries for six minutes in any one hour (using Reference Method 22 in 40 CFR, Appendix A), the owner or operator may be required to submit a fugitive dust plan as described in 02D .0540(f).

"Fugitive dust emissions" means particulate matter from process operations that does not pass through a process stack or vent and that is generated within plant property boundaries from activities such as: unloading and loading areas, process areas stockpiles, stock pile working, plant parking lots, and plant roads (including access roads and haul roads).

2. 15A NCAC 02Q .0317: AVOIDANCE CONDITIONS for 15A NCAC 02D .0530: PREVENTION OF SIGNIFICANT DETERIORATION

a. The following conditions in this section are enforceable until all of the requirements from Section 2.3 A., "Actions to be Taken by the Permittee", have been met. Until such time as this condition (Section 2.2. A.2) is no longer applicable, the facility remains classified as PSD major.

b. In order to avoid applicability of 15A NCAC 2D .0530(g), facility-wide emission sources shall discharge into the atmosphere less than 456.4 tons of volatile organic compounds (VOC) and 250 tons of carbon monoxide (CO) per consecutive 12-month period. To ensure compliance with the above limitations, the Permittee shall:
   i. not process more than 537,625 oven-dried tons (ODT) of wood per year with an average maximum of 30% softwood from the wood-fired dryer system **(ID No. ES-DRYER-1)**; and
   ii. not process more than 531,441 ODT of wood per year with an average maximum of 30% softwood from the dry hammermill system **(ID No. ES-HM-1 through ES-HM-8)**; and
   iii. not process more than 625,225 ODT of pellets per year with an average maximum of 30% softwood from the pellet cooler system **(ID No. ES-CLR-1 through ES-CLR-6)**.

<u>**Monitoring and Recordkeeping [15A NCAC 02Q .0308(a)]**</u>

c. The Permittee shall demonstrate compliance with the facility-wide VOC and CO emission limitations by calculating the rolling 12-month annual facility-wide VOC and CO emissions on a monthly basis (by the 30th day following the end of each calendar month) as follows. The VOC and CO emissions shall be calculated in a manner consistent with the calculation methodologies in the air permit supporting this limitation. Emission factors used in the calculations for each source shall be appropriate for the annual average softwood content that has been processed in the previous 12-month period. All emission factors used shall be reviewed and approved by DAQ.

i. The process rates and percent softwood from the dryer, dry hammermill, and pellet cooler systems shall be recorded monthly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request.
ii. Calculations of CO emissions from the dryer system (ID No. ES-DRYER-1) shall be made at the end of each month. CO emissions shall be determined by multiplying the approved CO emission factor (0.023 lb/ODT) by the process rate.
iii. Calculations and the facility-wide VOC and dryer CO emissions shall be recorded monthly in a log (written or electronic format).

Reporting Requirements [15A NCAC 02Q .0308(a)]

d. The Permittee shall submit the results of any maintenance performed on the wet electrostatic precipitator, cyclones, and/or baghouses within 30 days of a written request by the DAQ.
e. The Permittee shall submit a semi-annual summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December, and July 30 of each calendar year for the preceding six-month period between January and June. The report shall contain the following:
   i. The monthly VOC and CO emissions for the previous 17 months. The emissions must be calculated for each of the 12-month periods over the previous 17 months.
   ii. The monthly ODT of pellets per year for the previous 17 months.
   iii. The monthly hardwood/softwood mix for the previous 17 months.
   iv. The 30 day rolling average product moisture content.

3. 15A NCAC 02Q .0317: AVOIDANCE CONDITIONS for 15A NCAC 02D .0530: PREVENTION OF SIGNIFICANT DETERIORATION

a. The following conditions in this section are enforceable after all of the requirements from Section 2.3 A., "Actions to be Taken by the Permittee", have been met. Following the applicability of this condition (Section 2.2 A.3), the facility will be classified as PSD minor.

b. In order to avoid applicability of 15A NCAC 2D .0530(g), facility-wide emission sources shall discharge into the atmosphere less than 250 tons of particulate matter, particulate matter 10 micrometers, particulate matter 2.5 micrometers, volatile organic compounds (VOC), nitrogen oxides (NOx), and carbon monoxide (CO) per consecutive 12-month period.

c. To ensure that the limits established above are not exceeded,
   i. the facility will not process more than 781,255 oven dried tons per year (ODT/year) with a maximum of 80% softwood, on a rolling 12-month average basis;
   ii. the green hammermills and wood dryers will be controlled by wet electrostatic precipitators **(ID No. CD-WESP-1 and CD-WESP-2)** in series with regenerative thermal oxidizers **(ID No. CD-RTO-1 and CD-RTO-2)**;
   iii. dry hammermills will not process more than 85% of the maximum facility throughput or a total of 664,067 oven dried tons per year (ODT/year) on a rolling 12-month average basis;
   iv. the dry hammermills will be controlled by three bagfilters **(ID Nos. CD-HM-BF-1 through CD-HM-BF3)** in series with a wet scrubber **(ID No. CD-WS-1)** in series with a regenerative catalytic oxidizer **(ID No. CD-RCO-1)** that can also operate as a regenerative thermal oxidizer;
   v. the dry shavings hammermills **(ID Nos. ES-DSHM-1 and ES-DSHM-2)** shall be controlled by a wet scrubber **(ID No. CD-WS-1)** in series with a regenerative catalytic oxidizer **(ID No. CD-RCO-1)** that can also operate as a regenerative thermal oxidizer;
   vi. the pellet coolers will be controlled by a wet scrubber **(ID No. CD-WS-2)** in series with a regenerative catalytic oxidizer **(ID No. CD-RCO-2)** that can also operate as a regenerative thermal oxidizer;
   vii. Reserved.

viii. the furnace bypasses **(ID Nos. ES-FURNACEBYP-1 and ES-FURNACEBYP-2)** shall be limited to less than 50 hours per year per furnace for start-ups (for temperature control) and shutdowns. The furnace bypasses shall not be utilized at the same time and be limited to a cold startup of 15% maximum heat input or 26.3 million Btu/hr for furnace 1 and 27.0 million Btu/hr for furnace 2. The cold startup period of time begins when a wood-fired furnace is started up and lasts until the wood-fired furnace's refractory is heated to a temperature sufficient to sustain combustion operations at a minimal level or 8 hours, whichever is less;

ix. the furnace bypasses **(ID Nos. ES-FURNACEBYP-1 and ES-FURNACEBYP-2)** in idle mode, defined as maximum heat input of 5 million Btu per hour each, shall be limited to less than 500 hours per year per furnace.

x. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate all emission sources including associated control devices in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

Notifications [15A NCAC 02Q .0308(a)]

d. The completion of the modification is defined as the installation of equipment that allow throughput of up to 781,255 ODT/year on an annual basis, and
   i. the rerouting of the exhaust from the wood-fired direct heat drying system **(ID No. ES-DRYER-1)** to the wet electrostatic precipitator **(ID No. CD-WESP-1)** and the regenerative thermal oxidizer **(ID No. CD-RTO-1)**.
   ii. the rerouting of the exhaust from the dry hammermills **(ID Nos. ES-HM-1 to ES-HM-8)** and bagfilters **(ID Nos. CD-HM-BH1 through CD-HM-BH3)** to wet scrubber **(ID No. CD-WS-1)** and the regenerative catalytic/thermal oxidizer **(ID No. CD-RCO-1)**.
   iii. the rerouting of the exhaust from the pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)** to wet scrubber **(ID No. CD-WS-2)** and the regenerative catalytic/thermal oxidizer **(ID No. CD-RCO-2)**.

   The Permittee shall notify the DAQ of the actual completion date of the modification postmarked within 15 days after such date.

Testing [15A NCAC 02Q .0308(a)]

e. Initial Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with PSD avoidance limits in Section 2.2 A.3.b. above by conducting an initial performance test on the green hammermills **(ID Nos. ES-GHM-1 through ES-GHM-5)**, the wood-fired direct heat drying systems **(ID No. ES-DRYER-1 and ES-DRYER-2)**, the dry hammermills **(ID Nos. ES-HM-1 to ES-HM-8)**, the dry shavings hammermills **(ID Nos. ES-DSHM-1 and ES-DSHM-2)**, and the pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Initial testing shall be conducted in accordance with the following:
   i. The pollutants and emission sources to be tested during the initial performance test are listed in the following table:

Emission Sources	Pollutant
Green hammermills and dryer system controlled via RTO	VOC
	PM/PM10/PM2.5
	NOx
	CO
Dry and dry shavings hammermills controlled via RCO	VOC
	PM/PM10/PM2.5
Pellet coolers controlled	VOC

Emission Sources	Pollutant
via RCO	PM/PM10/PM2.5

ii. The Permittee shall conduct initial compliance testing in accordance with a testing protocol approved by the DAQ.
iii. The Permittee shall submit a protocol to DAQ at least 45 days prior to initial compliance testing and shall submit a notification of initial compliance testing at least 15 days in advance of the testing.
iv. The regenerative thermal oxidizer/regenerative catalytic oxidizer **(ID Nos. CD-RTO-1, CD-RTO-2, CD-RCO-1 and CD-RCO-2)** are comprised of one or more fireboxes per oxidizer, each containing two temperature probes. During the initial compliance test, the Permittee shall establish the minimum average firebox temperature for each firebox(s) comprising each regenerative thermal oxidizer/regenerative catalytic oxidizer **(ID Nos. CD-RTO-1, CD-RTO-2, CD-RCO-1 and CD-RCO-2)**, for an average temperature for each firebox per regenerative thermal/catalytic oxidizer. "Average firebox temperature" means the average temperature of the two temperature probes in each firebox. The minimum average firebox temperature for each firebox shall be based upon the average temperature of the two temperature probes over the span of the test runs. Documentation for the minimum average firebox temperature for each firebox shall be submitted to the DAQ as part of the initial compliance test report.
v. Testing shall be completed within 180 days of commencement of operation of the new equipment.
vi. The Permittee shall submit a written report of the test results to the Regional Supervisor, DAQ, within 60 days of completion of the test.

f. <u>Periodic Performance Tests</u> – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall demonstrate compliance with the PSD avoidance in Section 2.2 A.3.b. above by conducting periodic performance tests on the green hammermills **(ID Nos. ES-GHM-1 through ES-GHM-5)**, the wood-fired direct heat drying systems **(ID No. ES-DRYER-1 and ES-DRYER-2),** the dry hammermills **(ID Nos. ES-HM-1 to ES-HM-8)**, the dry shavings hammermills **(ID Nos. ES-DSHM-1 and ES-DSHM-2)**, and the pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Periodic testing shall be conducted in accordance with the following:
i. The pollutants and emission sources to be tested during the periodic performance tests are listed in the following table:

Emission Source	Pollutant
Green hammermills and dryer system controlled via RTO	VOC
	PM/PM10/PM2.5
	NOx
	CO
Dry and dry shavings hammermills controlled via RCO	VOC
	PM/PM10/PM2.5
Pellet coolers controlled via RCO	VOC
	PM/PM10/PM2.5

ii. The Permittee shall conduct periodic compliance testing in accordance with a testing protocol approved by the DAQ.
iii. The Permittee shall submit a protocol to DAQ at least 45 days prior to periodic compliance testing and shall submit a notification of periodic compliance testing at least 15 days in advance of the testing.
iv. The Permittee shall be responsible for ensuring, within practicable limits, that the equipment or processes being tested are operated at or near the maximum normal production rate.
v. To the extent possible, testing shall be conducted at the maximum normal operating softwood

percentage.

vi. The Permittee shall conduct periodic performance tests when the following conditions are met:
   (A) The monthly average softwood content exceeds the average softwood percentage documented during prior performance testing by more than 10 percentage points, or
   (B) The monthly production rate exceeds the average production rate documented during prior performance testing by more than 10 percentage points, or
   (C) At a minimum testing shall be conducted annually. Annual performance tests shall be completed no later than 13 months after the previous performance test.

vii. The Permittee shall notify the DAQ within 15 days when the conditions specified in Section 2.2 A.3.f.vi (A) or (B) are met.

viii. The Permittee shall conduct the periodic performance test and submit a written report of the test results to the DAQ within 90 days from the date the monthly softwood content or overall production rate increased as described in Section 2.2 A.3.f.vi. (A) and (B) above, unless an alternate date is approved in advance by DAQ,

ix. When periodic performance testing has occurred at 80 percent softwood AND at 90 percent of the maximum permitted throughput, subsequent periodic performance testing shall occur on an annual basis and shall be completed no later than 13 months after the previous performance test.

x. The Permittee may request that the performance tests be conducted less often for a given pollutant if the performance tests for at least 3 consecutive years show compliance with the emission limit. If the request is granted, the Permittee shall conduct a performance test no more than 36 months after the previous performance test for the given pollutant.

xi. If a performance test shows noncompliance with an emission limit for a given pollutant, the Permittee shall return to conducting annual performance tests (no later than 13 months after the previous performance test) for that pollutant.

xii. Except as specified in Section 2.2 A.3.f.viii. above, the Permittee shall submit a written report of results for any periodic performance test to the DAQ, not later than 30 days after sample collection, in accordance with 15A NCAC 02D .2602(h).

xiii. The Permittee may re-establish any parametric operating value during periodic testing. Compliance with previously approved parametric operating values is not required during periodic required testing or other tests undertaken to re-establish parametric operating values by the Permittee.

xiv. The Permittee shall comply with applicable emission standards at all times, including during periods of testing.

Monitoring and Recordkeeping: [15A NCAC 02Q .0308(a)]

g. The Permittee shall install, calibrate, operate, maintain, and inspect a continuous temperature monitoring, and recording system, in accordance with manufacturer's recommendations for the regenerative thermal oxidizers and the regenerative catalytic oxidizers **(ID Nos. CD-RTO-1, CD-RTO-2, CD-RCO-1, and CD-RCO-2)**. To ensure compliance and effective operation of the oxidizers, the Permittee shall maintain a 3-hour rolling average firebox temperature for each firebox comprising the RTO or RCO at or above the minimum average temperatures established during the most recent performance testing. The Permittee shall maintain records of the 3-hour rolling average temperatures for each firebox. The Permittee shall also perform inspections and maintenance on the RTO as specified above in Section 2.1 A.1.i.

h. For the oxidizers, the Permittee shall develop and maintain a malfunction plan for the temperature monitoring and recording system that describes, in detail, the operating procedures for periods of malfunctions.

i. The Permittee shall perform periodic inspection and maintenance for the oxidizers as recommended by the manufacturer. At a minimum, the Permittee shall perform an annual internal inspection of the primary heat exchanger and associated inlet/outlet valves of the control device to ensure structural integrity.

j. To ensure compliance and effective operation of wet scrubbers **(ID No. CD-WS-1 and CD-WS-2)**, the Permittee shall perform inspections, maintenance, and maintain the required minimum recirculation rate specified above in Section 2.1 A.1.h.

k. To ensure compliance and effective operation of the wet electrostatic precipitators **(ID No. CD-WESP-1**

and CD-WESP-2), the Permittee shall perform inspections and maintenance as specified above in Section 2.1 A.1.i. The Permittee shall also maintain the minimum secondary voltage and minimum current of the wet electrostatic precipitator as specified above in Section 2.1 A.1.g.

l. To ensure compliance and effective operation of the bagfilters and cyclones, the Permittee shall perform inspections and maintenance as specified above in Section 2.1 A.1.e.

m. The Permittee shall not process more than 781,255 oven-dried tons (ODT) of pellets per year. The process rate shall be recorded monthly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request.

n. The Permittee shall record the hardwood/softwood mix monthly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request.

o. The Permittee shall install a time monitoring and recording system for the bypass hours on the dryers and furnaces during startup, shutdowns, and malfunctions. The bypass hours for each source shall be recorded weekly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request. The Permittee must develop and maintain a written malfunction plan for the time monitoring and recording system that describes, in detail, the operating procedures for periods of malfunctions.

p. To ensure compliance and effective operation of the furnace bypasses **(ID Nos. ES-FURNACEBYP-1 and ES-FURNACEBYP-2)** at idle mode, defined as maximum heat input of 5 million Btu per hour each, the Permittee shall record the hours and heat input for each source weekly in a logbook (written or electronic format) kept on-site and made available to an authorized representative upon request.

q. The Permittee shall calculate the total emissions of NOx, filterable PM, CO, and VOC monthly and shall record the emissions monthly in a logbook (written or electronic format) kept on-site and made available to DAQ personnel upon request. Monthly NOx emissions, in tons, shall be calculated by the following equations and emission factors:

$$E_{\mathrm{NOx(Total)}} = \sum E_{\mathrm{NOx(Dryer1)}} + \sum E_{\mathrm{NOx(Dryer2)}} + \sum E_{\mathrm{NOx(RTO1)}} + \sum E_{\mathrm{NOx(RTO2)}} + 3.94$$

$$E_{\mathrm{NOx(Dryer1\ or\ Dryer2)}} = \frac{(0.47\ x\ Q_D)}{2{,}000}$$

$$E_{\mathrm{NOx(RTO1\ or\ RTO2)}} = \left(\frac{(4.55 \times P_{\mathrm{RTO}}) + (3.15 \times NG_{\mathrm{RTO}})}{2{,}000}\right)$$

Where:

$E_{NOx(Total)}$	=	total tons of NOx emissions per month from the facility.
$E_{NOx(Dryer1\ or\ 2)}$	=	total tons of NOx emissions per month from each dryer.
$E_{NOx(RTO1)}$	=	number of tons of NOx emissions per month from RTO1 fuel combustion.
$E_{NOx(RTO2)}$	=	number of tons of NOx emissions per month from RTO2 fuel combustion.
Q_D	=	the oven dried tons of processed wood through the dryers per month.
0.47	=	dryer line NOx emission factor of 0.47 lb/ODT is derived from the October 2013 site specific stack test of 33.48 lb/hr at a maximum throughput.
$P_{RTO1\ or\ RTO2}$	=	propane hours per month when oxidizer deemed "in operation", is not bypassed, and oxidizer temperature is greater than or equal to the hourly block average temperature specified per stack test with an emission factor of 4.55 lb/hr (from DAQ combustion spreadsheet).
$NG_{RTO1\ or\ RTO2}$	=	natural gas hours per month when oxidizer deemed "in operation", is not bypassed, and oxidizer temperature is greater than or equal to the hourly block average temperature specified per stack test with an emission factor of 3.15 lb/hr (from DAQ combustion spreadsheet).
3.94	=	equates to the monthly PTE for the miscellaneous sources including; double duct burners, propane vaporizer, catalytic oxidizers, bypass stacks, emergency generators, and a fire water pump (per application 6600167.18A).

r. For the wood-fired direct heat drying systems **(ID Nos. ES-DRYER-1 and ES-DRYER-2)**, GHG (CO_2e) emissions shall be calculated on a monthly basis and compliance demonstrated using the applicable Part 98 emission factors. Compliance shall be documented on a 12-month rolling basis.

Reporting Requirements: [15A NCAC 02Q .0308(a)]

s. The Permittee shall submit the results of any maintenance performed on the wet electrostatic precipitator, regenerative thermal oxidizers, regenerative catalytic oxidizers, cyclones, and/or baghouses within 30 days of a written request by the DAQ.

t. The Permittee shall submit a semi-annual summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December, and July 30 of each calendar year for the preceding six-month period between January and June. The report shall contain the following:
   i. The monthly PM, PM10, PM2.5, VOC, NOx, and CO emissions for the previous 17 months. The emissions must be calculated for each of the 12-month periods over the previous 17 months.
   ii. The monthly ODT of pellets per year for the previous 17 months.
   iii. The monthly hardwood/softwood mix for the previous 17 months.
   iv. A report indicating and explaining all instances of the average minimum regenerative thermal oxidizer and regenerative catalytic oxidizer combustion chamber temperature falling below the minimum temperature range established during the performance test or noting that no such instances have occurred.

u. All instances of deviations from the requirements of this permit must be clearly identified.

4. 15A NCAC 02Q .0317: AVOIDANCE CONDITIONS for 15A NCAC 02D .1111: Maximum Available Control Technology (MACT) Standards

a. The following conditions in this section are enforceable after all of the requirements from Section 2.3 A., "Actions to be Taken by the Permittee", have been met. Following the applicability of this condition (Section 2.2 A.3), the facility will be classified as HAP minor.

b. In order to remain classified a minor source for hazardous air pollutants (HAP) and avoid applicability of 15A NCAC 02D .1111, "Maximum Achievable Control Technology," facility-wide HAP emissions shall be less than the following limitations:
   a. 25 tons per consecutive 12-month period of total, combined HAP; and,
   b. 10 tons per consecutive 12-month period of any individual HAP.

Testing [15A NCAC 02Q .0308(a)]

c. Initial Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall establish emission factors for HAPs by conducting an initial performance test on the green hammermills **(ID Nos. ES-GHM-1 through ES-GHM-5)**, the wood-fired direct heat drying systems **(ID No. ES-DRYER-1 and ES-DRYER-2),** the dry hammermills **(ID Nos. ES-HM-1 to ES-HM-8)**, the dry shavings hammermills **(ID Nos. ES-DSHM-1 and ES-DSHM-2)**, and the pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6)**. Initial testing shall be conducted in accordance with the following:
   i. The pollutants and emission sources to be tested during the initial performance test are listed in the following table:

Emission Source	Pollutant
Green hammermills and dryer system controlled via RTO	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde
Dry and dry shavings hammermills controlled via RCO	
Pellet coolers controlled via RCO	

ii. Initial testing shall be conducted in accordance with Section 2.2 A.3.f.ii through vii above.

d. Periodic Performance Tests – Under the provisions of North Carolina General Statute 143-215.108, the Permittee shall establish emission factors for HAPs by conducting performance test on the green hammermills **(ID Nos. ES-GHM-1 through ES-GHM-5)**, the wood-fired direct heat drying systems **(ID No. ES-DRYER-1 and ES-DRYER-2),** the dry hammermills **(ID Nos. ES-HM-1 to ES-HM-8)**, the dry shavings hammermills **(ID Nos. ES-DSHM-1 and ES-DSHM-2)**, and the pellet coolers **(ID Nos. ES-CLR-1 through ES-CLR-6**. Periodic testing shall be conducted in accordance with the following:

i. The pollutants and emission sources to be tested during the periodic performance tests are listed in the following table:

Emission Sources	Pollutant
Green hammermills and dryer system controlled via RTO	Acetaldehyde Acrolein Formaldehyde Methanol Phenol Propionaldehyde
Dry and dry shavings hammermills controlled via RCO	
Pellet coolers controlled via RCO	

ii. Periodic testing shall be conducted in accordance with Section 2.2 A.3.f.ii through xiv above.

e. **Monitoring/Recordkeeping/Reporting** [15A NCAC 02Q .0308(a)]
Monitoring, recordkeeping, and reporting shall be performed in accordance with Section 2.2 A.3.g through u above.

State-enforceable only

5. **TOXIC AIR POLLUTANT EMISSIONS LIMITATION AND REQUIREMENT** - The following emission limitations and requirements in this section are enforceable until all of the requirements from Section 2.3 A., "Actions to be Taken by the Permittee", have been met. Pursuant to 15A NCAC 02D .1100 and in accordance with the approved application for an air toxic compliance demonstration, the following permit limit shall not be exceeded.

EMISSION SOURCE	TOXIC AIR POLLUTANTS	EMISSION LIMITS
Dryer system (ID No. ES-DRYER-1)	Acrolein Formaldehyde	2.93 lb/hr 6.65 lb/hr
Hammermill Filter #1	Acrolein Formaldehyde	0.177 lb/hr 0.299 lb/hr
Hammermill Filter #2	Acrolein Formaldehyde	0.177 lb/hr 0.299 lb/hr
Hammermill Filter #3	Acrolein Formaldehyde	0.118 lb/hr 0.199 lb/hr
Pellet Cooler #1 Aspiration Stack	Acrolein Formaldehyde	0.149 lb/hr 0.0945 lb/hr
Pellet Cooler #2 Aspiration Stack	Acrolein Formaldehyde	0.149 lb/hr 0.0945 lb/hr
Pellet Cooler #3 Aspiration Stack	Acrolein Formaldehyde	0.149 lb/hr 0.0945 lb/hr
Pellet Cooler #4 Aspiration Stack	Acrolein Formaldehyde	0.149 lb/hr 0.0945 lb/hr
Pellet Cooler #5 Aspiration Stack	Acrolein Formaldehyde	0.149 lb/hr 0.0945 lb/hr
Pellet Cooler #6 Aspiration Stack	Acrolein Formaldehyde	0.149 lb/hr 0.0945 lb/hr
Emergency generator (ID No. IES-GN)	Acrolein Formaldehyde	2.27E-04 lb/hr 2.89E-03 lb/hr
Fire water pump (ID No. IES-FWP)	Acrolein Formaldehyde	1.94E-04 lb/hr 2.48E-03 lb/hr

a. No reporting is required.

State-enforceable only

6. **TOXIC AIR POLLUTANT EMISSIONS LIMITATION AND REQUIREMENT** - The following conditions in this section are enforceable after all of the requirements from Section 2.3 A., "Actions to be Taken by the Permittee", have been met. Pursuant to 15A NCAC 02D .1100 and in accordance with the approved application for an air toxic compliance demonstration, the following permit limit shall not be exceeded.

TOXIC AIR POLLUTANTS (CAS NUMBER)	UNITS	RTO1	FBYP-1 and 2 EACH IDLE-MODE	FBYP1 Cold startup	RTO2	FBYP2 Cold startup	RCO1
Acetaldehyde (75-07-0)	lb/hour	3.3E-01	4.2E-03	2.2E-02	3.5E-01	2.2E-02	6.3E-02
Acrolein (107-02-8)	lb/hour	2.6E-01	2.0E-02	1.1E-01	2.3E-01	1.1E-01	7.9E-02
Arsenic and compounds	lb/year	2.5+00	5.5E-02	2.9E-02	2.6E+00	3.0E-02	3.4E-02
Benzene (71-43-2)	lb/year	3.6E+02	--	--	3.6E+02	--	1.2E+02
Beryllium (7440-41-7)	lb/year	1.3E-01	2.8E-03	1.4E-03	1.3E-01	1.5E-03	2.0E-03
Cadmium (7440-43-9)	lb/year	7.6E-01	1.0E-02	5.4E-03	7.7E-01	5.5E-03	1.9E-01

TOXIC AIR POLLUTANTS (CAS NUMBER)	UNITS	RTO1	FBYP-1 and 2 EACH IDLE-MODE	FBYP1 Cold startup	RTO2	FBYP2 Cold startup	RCO1
Chlorine (7782-50-5)	lb/hour lb/day	1.4E-01 3.3E+00	4.0E-03 9.5E-02	2.1E-02 5.0E-01	1.4E-01 3.4E+00	2.1E-02 5.1E-01	--
Formaldehyde (50-00-0)	lb/hour	3.2E-01	2.2E-02	1.2E-01	3.4E-01	1.2E-01	9.0E-02
Hydrogen chloride (7647-01-0)	lb/hour	3.3E-01	9.5E-02	5.0E-01	3.4E-01	5.1E-01	--
Manganese & compounds	lb/day	4.9E-01	1.9E-01	1.0E+00	5.0E-01	1.0E+00	1.8E-04
Mercury, vapor (7439-97-6)	lb/day	1.3E-03	4.2E-04	2.2E-03	1.3E-03	2.3E-03	1.2E-04
Nickel (7440-02-0)	lb/day	1.2E-02	4.0E-03	2.1E-02	1.2E-02	2.1E-02	9.7E-04
Phenol (108-95-2)	lb/hour	1.2E-01	2.6E-04	1.3E-03	1.2E-01	1.4E-03	2.4E-02

TOXIC AIR POLLUTANTS (CAS NUMBER)	UNITS	RCO2	DWH 1 and 2 EACH	PVAP	DDB 1 through 4 EACH	GN1	FWP	GN2
Acetaldehyde (75-07-0)	lb/hour	1.8E-01	--	--	1.5E-08	1.9-E03	1.6-E03	1.2-E04
Acrolein (107-02-8)	lb/hour	3.6E-01	--	--	1.8E-08	2.3E-04	1.9E-04	3.7E-05
Arsenic and compounds	lb/year	3.4E-02	--	--	1.7E-03	--	--	--
Benzene (71-43-2)	lb/year	1.2E+02	--	6.2E+00	6.2E+00	1.1E+00	9.8E-01	1.8+00
Beryllium (7440-41-7)	lb/year	2.0E-03	--	--	1.0E-04	--	--	--
Cadmium (7440-43-9)	lb/year	1.9E-01	--	--	9.4E-03	--	--	--
Chlorine (7782-50-5)	lb/hour lb/day	--	--	--	--	--	--	--
Formaldehyde (50-00-0)	lb/hour	7.4E-02	6.5E-02	1.5E-03	1.5E-03	2.9E-03	2.5E-03	3.7E-04
Hydrogen chloride (7647-01-0)	lb/hour	--	--	--	--	--	--	--
Manganese & compounds	lb/day	1.8E-04	--	--	8.9E-06	--	--	--
Mercury, vapor (7439-97-6)	lb/day	1.2E-04	--	--	6.1E-07	--	--	--
Nickel (7440-02-0)	lb/day	9.7E-04	--	--	4.9E-05	--	--	--
Phenol (108-95-2)	lb/hour	1.8E-01	--	--	--	--	--	--

a. No reporting is required.

b. The Permittee has submitted a toxic air pollutant dispersion modeling analysis dated May 23, 2019 for the facility's toxic air pollutant emissions as listed in the above table. The modeling analysis was reviewed and approved by the AQAB on June 3, 2019. Placement of the emission sources, configuration of the emission points, and operation of the sources shall be in accordance with the submitted dispersion modeling analysis and should reflect any changes from the original analysis submittal as outlined in the AQAB review memo.

State-enforceable only

7. **TOXIC AIR POLLUTANT EMISSION RATES REQUIRING A PERMIT** – Pursuant to 15A NCAC 02Q .0711, a permit to emit toxic air pollutants is required for any facility whose actual rate of emissions from all sources are greater than any one of the following rates:

Pollutant (CAS Number)	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
1,3-Butadiene (106-99-0)	11			
Ammonia (7664-41-7)				0.68
Benzo(a)pyrene (50-32-8)	2.2			
Carbon tetrachloride (56-23-5)	460			
Chlorobenzene (108-90-7)		46		
Chloroform (67-66-3)	290			
Di(2-ethylhexyl)phthalate (117-81-7)		0.63		
Ethylene dichloride (107-06-2)	260			
Hexachlorodibenzo-p-dioxin (57653-85-7)	0.0051			
Methyl chloroform (71-55-6)		250		
Methyl ethyl ketone (78-93-3)		78		
Methyl isobutyl ketone (108-10-1)		52		7.6
Methylene chloride (75-09-2)	1600		0.39	
Pentachlorophenol (87-86-5)		0.063	0.0064	
Perchloroethylene (127-18-4)	13000			
Polychlorinated biphenyls (1336-36-3)	5.6			
Styrene (100-42-5)			2.7	
Tetrachlorodibenzo-p-dioxin (1746-01-6)	0.00020			
Trichloroethylene (79-01-6)	4000			
Toluene (108-88-3)		98		14.4
Trichlorofluoromethane (75-01-4)			140	
Vinyl chloride (75-01-4)	26			
Xylene (1330-20-7)		57		16.4

State-enforceable only

8. **15A NCAC 02D .1806: CONTROL AND PROHIBITION OF ODOROUS EMISSIONS**
The Permittee shall not operate the facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary.

9. **15A NCAC 02Q .0207: ANNUAL EMISSIONS REPORTING**
The Permittee shall report by **June 30** of each year the actual emissions of each air pollutant listed in 15A NCAC 02Q .0207(a) from each emission source within the facility during the previous calendar year. The report shall be in or on such form as may be established by the Director. The accuracy of the report shall be certified by the responsible official of the facility.

10. **15A NCAC 02Q. 0304: APPLICATIONS**
The Permittee, at least 90 days prior to the expiration date of this permit, shall request permit renewal by letter in accordance with 15A NCAC 02Q .0304(d) and (f). Pursuant to 15A NCAC 02Q .0203(i), no permit application fee is required for renewal of an existing air permit. The renewal request should be submitted to the Regional Supervisor, DAQ.

11. **15A NCAC 02Q .0504: OPTION FOR OBTAINING CONSTRUCTION AND OPERATION PERMIT**
   a. Pursuant to 15A NCAC 02Q .0504, the Permittee filed its first time Title V Air Quality Permit Application (6600167.14B) on April 22, 2014.
   b. The Permittee shall amend the first time Title V Air Quality Permit Application (6600167.14B) within **90 days of the issuance of Permit No. 10203R06.**

2.3 Construction Schedule

The new pollution control devices are subject to the construction schedule described below.

A. **Actions to be Taken by the Permittee** - The Permittee shall comply with the following construction schedule:

   1. Within 6 months from permit issuance (10203R06), the Permittee shall purchase the new pollution control devices **(I.D. Nos. CD-RTO-1, CD-WS-1, CD-WS-2, CD-RCO-1, CD-RCO-2, CD-DWH-BF-1, CD-DWH-2, CD-DSR-BF, CD-DSS-BF, and CD-ADD-BF excluding Dryer Line 2 controls in the event Line 2 equipment is not installed)**;
   2. Within 12 months from permit issuance (10203R06), the Permittee shall begin installation of the new control devices **(I.D. Nos. CD-RTO-1, CD-WS-1, CD-WS-2, CD-RCO-1, CD-RCO-2, CD-DWH-BF-1, CD-DWH-2, CD-DSR-BF, CD-DSS-BF, and CD-ADD-BF excluding Dryer Line 2 controls in the event Line 2 equipment is not installed)**; and
   3. Within 24 months from permit issuance (10203R06), the Permittee shall complete installation of new control devices **(I.D. Nos. CD-RTO-1, CD-WS-1, CD-WS-2, CD-RCO-1, CD-RCO-2, CD-DWH-BF-1, CD-DWH-2, CD-DSR-BF, CD-DSS-BF, and CD-ADD-BF excluding Dryer Line 2 controls in the event Line 2 equipment is not installed)**; and demonstrate final compliance with 15A NCAC 02D .0515, .0516, .0521, .0535, .0540, .0711, .1100, 15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .0530, and 15A NCAC 02Q .0317 for avoidance of 15A NCAC 02D .1111 MACT.

B. **Activity Reporting** - No later than 30 calendar days after any date identified for accomplishment of any activity listed above, the Permittee shall submit written notice of what action was taken to the DAQ. If the action dates above are not met, the notice shall include an explanation of why the action date was not met, remedial action(s) taken, and a statement identifying the extent to which subsequent dates or times for accomplishment of listed activities may be affected.

B. GENERAL CONDITIONS AND LIMITATIONS

1. In accordance with G.S. 143-215.108(c)(1), TWO COPIES OF ALL DOCUMENTS, REPORTS, TEST DATA, MONITORING DATA, NOTIFICATIONS, REQUESTS FOR RENEWAL, AND ANY OTHER INFORMATION REQUIRED BY THIS PERMIT shall be submitted to the:

   Regional Supervisor
   North Carolina Division of Air Quality
   Raleigh Regional Office
   3800 Barrett Drive
   Raleigh, NC 27609
   919-791-4200

   For identification purposes, each submittal should include the facility name as listed on the permit, the facility identification number, and the permit number.

2. RECORDS RETENTION REQUIREMENT - In accordance with 15A NCAC 02D .0605, any records required by the conditions of this permit shall be kept on site and made available to DAQ personnel for inspection upon request. These records shall be maintained in a form suitable and readily available for expeditious inspection and review. These records must be kept on site for a minimum of 2 years, unless another time period is otherwise specified.

3. ANNUAL FEE PAYMENT - Pursuant to 15A NCAC 02Q .0203(a), the Permittee shall pay the annual permit fee within 30 days of being billed by the DAQ. Failure to pay the fee in a timely manner will cause the DAQ to initiate action to revoke the permit.

4. EQUIPMENT RELOCATION - In accordance with 15A NCAC 02Q .0301, a new air permit shall be obtained by the Permittee prior to establishing, building, erecting, using, or operating the emission sources or air cleaning equipment at a site or location not specified in this permit.

5. REPORTING REQUIREMENT - In accordance with 15A NCAC 02Q .0309, any of the following that would result in previously unpermitted, new, or increased emissions must be reported to the Regional Supervisor, DAQ:

   a. changes in the information submitted in the application regarding facility emissions;

   b. changes that modify equipment or processes of existing permitted facilities; or

   c. changes in the quantity or quality of materials processed.

   If appropriate, modifications to the permit may then be made by the DAQ to reflect any necessary changes in the permit conditions. In no case are any new or increased emissions allowed that will cause a violation of the emission limitations specified herein.

6. In accordance with 15A NCAC 02Q .0309, this permit is subject to revocation or modification by the DAQ upon a determination that information contained in the application or presented in the support thereof is incorrect, conditions under which this permit was granted have changed, or violations of conditions contained in this permit have occurred. In accordance with G.S. 143-215.108(c)(1), the facility shall be properly operated and maintained at all times in a manner that will effectuate an overall reduction in air pollution. Unless otherwise specified by this permit, no emission source may be operated without the concurrent operation of its associated air cleaning device(s) and appurtenances.

7. In accordance with G.S. 143-215.108(c)(1), this permit is nontransferable by the Permittee. Future owners and operators must obtain a new air permit from the DAQ.

8. In accordance with G.S. 143-215.108(c)(1), this issuance of this permit in no way absolves the Permittee of liability for any potential civil penalties which may be assessed for violations of State law which have occurred prior to the effective date of this permit.

9. In accordance with G.S. 143-215.108(c)(1), this permit does not relieve the Permittee of the responsibility of complying with all applicable requirements of any Federal, State, or Local water quality or land quality control authority.

10. In accordance with 15A NCAC 02D .0605, reports on the operation and maintenance of the facility shall be submitted by the Permittee to the Regional Supervisor, DAQ at such intervals and in such form and detail as may be required by the DAQ. Information required in such reports may include, but is not limited to, process weight rates, firing rates, hours of operation, and preventive maintenance schedules.

11. A violation of any term or condition of this permit shall subject the Permittee to enforcement pursuant to G.S. 143-215.114A, 143-215.114B, and 143-215.114C, including assessment of civil and/or criminal penalties.

12. Pursuant to North Carolina General Statute 143-215.3(a)(2), no person shall refuse entry or access to any authorized representative of the DAQ who requests entry or access for purposes of inspection, and who presents appropriate credentials, nor shall any person obstruct, hamper, or interfere with any such representative while in the process of carrying out his official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.

13. In accordance with G.S. 143-215.108(c)(1), this permit does not relieve the Permittee of the responsibility of complying with any applicable Federal, State, or Local requirements governing the handling, disposal, or incineration of hazardous, solid, or medical wastes, including the Resource Conservation and Recovery Act (RCRA) administered by the Division of Waste Management.

14. PERMIT RETENTION REQUIREMENT - In accordance with 15A NCAC 02Q .0110, the Permittee shall retain a current copy of the air permit at the site. The Permittee must make available to personnel of the DAQ, upon request, the current copy of the air permit for the site.

15. CLEAN AIR ACT SECTION 112(r) REQUIREMENTS - Pursuant to 15A NCAC 02D .2100 "Risk Management Program," if the Permittee is required to develop and register a risk management plan pursuant to Section 112(r) of the Federal Clean Air Act, then the Permittee is required to register this plan with the USEPA in accordance with 40 CFR Part 68.

16. PREVENTION OF ACCIDENTAL RELEASES - GENERAL DUTY - Pursuant to Title I Part A Section 112(r)(1) of the Clean Air Act "Hazardous Air Pollutants - Prevention of Accidental Releases - Purpose and General Duty," although a risk management plan may not be required, if the Permittee produces, processes, handles, or stores any amount of a listed hazardous substance, the Permittee has a general duty to take such steps as are necessary to prevent the accidental release of such substance and to minimize the consequences of any release. **This condition is federally-enforceable only.**

17. GENERAL EMISSIONS TESTING AND REPORTING REQUIREMENTS - If emissions testing is required by this permit, or the DAQ, or if the Permittee submits emissions testing to the DAQ in support of a permit application or to demonstrate compliance, the Permittee shall perform such testing in accordance with 15A NCAC 02D .2600 and follow all DAQ procedures including protocol approval, regional notification, report submittal, and test results approval. Additionally, in accordance with 15A

NCAC 02D .0605, the Permittee shall follow the procedures for obtaining any required audit sample and reporting those results.

Permit issued this the 30th of October, 2019.
NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

for William D. Willets, P.E., Chief, Permitting Section

Division of Air Quality, NCDEQ
By Authority of the Environmental Management Commission

Air Permit No. 10203R06

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
AIR AND WASTE

SEP 26 2017

Ms. Claudia Davis
Western Region Air Quality Manager
Oregon Department of Environmental Quality
4026 Fairview Industrial Drive S.E.
Salem, Oregon 97302-1142

Dear Ms. Davis:

This letter is in response to the Oregon Department of Environmental Quality's (ODEQ) letter dated June 29, 2017, regarding whether the proposed Jordan Cove liquefied natural gas (LNG) facility is a "fuel conversion plant" and/or a "petroleum storage and transfer plant with a total capacity more than 300,000 barrels" as these terms are used in provisions in the Clean Air Act (CAA) and the Environmental Protection Agency regulations that establish and govern the prevention of significant deterioration (PSD) permitting program. As explained below and based on the information ODEQ provided the EPA Region 10 in the letter, which included the applicability request as well as an attachment containing the facility's reasoning for it not being a fuel conversion plant, in our view, the proposed project should not be considered a fuel conversion plant as that term is used in the PSD permitting program provisions in CAA and the EPA regulations. Additionally, in our view, the proposed project should not be considered a petroleum storage and transfer facility as that term is used in the PSD permitting program provisions.

In part, CAA § 169(1) defines "major emitting facility" as "any of the following stationary sources of air pollutants which emit, or have the potential to emit, one hundred tons per year or more of any air pollutant from the following types of stationary sources: … fuel conversion plants, … petroleum storage and transfer facilities with a capacity exceeding three hundred thousand barrels, …" There is no definition of the terms "fuel conversion plants" or "petroleum storage and transfer facilities" in the statute and the statute does not otherwise contain a description of such types of facilities or plants. When the EPA defined the term "major stationary source" in its PSD regulations, the EPA incorporated these source category terms from the statutory definition of "major emitting facility" without further defining them. Thus, in the absence of more specific direction in the CAA and the EPA regulations, the EPA (and air agencies with approved programs) have some discretion to determine what types of facilities should be included in the "fuel conversion plant" and "petroleum storage and transfer facility" source categories.

The EPA has exercised this discretion in several prior situations. With respect to "fuel conversion plants," the EPA's past guidance describes such facilities as those which accomplish a change in state of a fuel.[1] However, the examples of "fuel conversion plants" given in the guidance statements involve

[1] *See* Memorandum from Kent Berry, Director Policy Analysis Staff, U.S. EPA, to Asa B. Foster, Jr., Director, Air and Hazardous Materials Division, U.S. EPA Region IV, "Clarification of Sources Subject

more than a simple change in state of a given fuel. The Clarification Memo, the EPA's earliest guidance on defining the source category, offers coal gasification, coal liquefaction, and oil shale processing as examples, all of which irreversibly produce a new type of fuel as the end product. Clarification Memo at 1. Similarly, the fuel conversion process described in the Cleveland Electric Memo involved the "production of low heat value fuel gas" from municipal solid waste and the facility was said to meet the source category criteria by "producing a low heat value fuel gas." Cleveland Electric Memo at 2-3. Implicit in these examples are irreversible changes to an initial fuel and a distinct final product that has generally undergone both a change in state and other chemical or physical changes.

More recent the EPA guidance regarding fuel conversion plants has directly addressed LNG facilities. For example, in 2003, the EPA's Region 6 office concluded, in response to a request for assistance regarding two proposed off-shore gas delivery systems, that the process of vaporization of LNG to natural gas at the proposed facilities would not qualify the facilities as fuel conversion plants as that term is used in the PSD permitting program.[2] While these facilities were not deemed to be fuel conversion plants, Region 6 based the conclusion on the nature of the conversion from LNG to natural gas as its rationale, rather than the fact that the natural gas itself is not converted into another type of fuel and the change in state is a temporary change, solely conducted for transport purposes. In 2007, the EPA's Region 10 office provided the State of Alaska its view that the ConocoPhillips Kenai LNG Plant was a fuel conversion plant for purposes of the best available retrofit technology requirement of the CAA regional haze program.[3] Region 10 followed the approach in the 2003 determination and focused its analysis on the process by which natural gas becomes LNG and whether such a process was naturally occurring.

In similar fashion to the Kenai LNG Plant, the proposed Jordan Cove LNG project would receive natural gas by pipeline, purify the incoming gas, cool it to form LNG, and store and load the LNG into marine tankers for export. However, after further consideration of the EPA's guidance in a context other than the LNG facility and the legislative history described below, it is now our view that LNG plants at marine terminals that cool natural gas into LNG for the purpose of transporting natural gas should not be considered "fuel conversion plants" as that term is used in the statutory definition of "major emitting facility" and the definition of "major stationary source" in the EPA regulations. Both the 2003 Region 6 and 2007 Region 10 letters assumed that a simple change of state was sufficient and moved on to other factors without considering an implicit characteristic of the earlier the EPA guidance—whether the facility was irreversibly converting one fuel type to another.

After a closer examination of the EPA's historical approach, our view is that a change in state is a possible characteristic of a fuel conversion plant but not the sole characteristic – i.e., not everything that accomplishes a change in state is a fuel conversion plant. Where a change of state occurs only for

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to Prevention of Significant Deterioration (PSD) Review" (Jan 20, 1976) (hereinafter Clarification Memo), available at: https://www.epa.gov/sites/production/files/2015-07/documents/phosphat.pdf; *see also* Memorandum from Edward J. Lillis, Chief-Permits Program Branch, the U.S. EPA, to George T. Czerniak, Chief Air Enforcement Branch, U.S. EPA Region V, "Applicability of Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) to the Cleveland Electric, Incorporated, Plant in Willoughby, Ohio" (May 26, 1992) (hereinafter Cleveland Electric Memo), available at: https://www.epa.gov/sites/production/files/2015-07/documents/clvlndel.pdf.

[2] Letter from C.J. Sheehan, Office of Regional Counsel, EPA Region 6 to M. Cathey, Managing Director, El Paso Energy Bridge Gulf of Mexico (October 28, 2003).

[3] Mahbubal Islam, Manager, State and Tribal Air Programs Unit, the U.S. EPA Region 10, to Tom Turner, Alaska Department of Environmental Conservation (Nov. 14, 2007).

transportation needs, the fuel remains natural gas throughout the process, and the process is necessarily reversible. Notably, in the case of an LNG export facility the change of state must be subsequently reversed at another facility before the natural gas is used as a fuel.

This view also appears to be consistent with the history and development of the source category. The term "fuel conversion plant" first appeared in EPA's re-proposed PSD rules on August 27, 1974. 39 FR 31000. The re-proposal included the following statement in the preamble: "[t]he list of sources subject to review has been expanded to include three additional source types - fuel conversion plants (such as coal gasification and oil shale plants) ...." Id. at 31003. The re-proposed rule itself did not contain a definition of the term "fuel conversion plants." Congress, when incorporating this term into the 1977 CAA Amendments, based on the July 29, 1976 debate of S. 3219, appears to have relied on the draft study developed by the Research Corp. of New England for EPA for the purpose of developing New Source Performance Standards. *See* Cong. Research Serv., A Leg. History of the Clean Air Act Amends. of 1977, Vol. 6 (Comm. Print 1980) at 5192. In this report, coal gasification again appears to be the predominant example referenced for the fuel conversion plants category. Id. at 5192-5199. There is no mention of LNG plants, let alone as fuel conversion plants, in the legislative history of the 1977 CAA Amendments.

Your letter also inquired as to whether the Jordan Cove LNG project should be included in the PSD source category "petroleum storage and transfer plant with a total capacity of more than 300,000 barrels." In one prior statement, the EPA has viewed this source category to be limited to those sources falling within SIC 5171 Petroleum Bulk Stations and Terminals, which includes "establishments primarily engaged in the wholesale distribution of crude petroleum and petroleum products, including liquefied petroleum gas, from bulk liquid storage facilities petroleum products."[4] Within the regional haze program, the EPA has also stated that this category includes the storage and transfer of gasoline and other petroleum-derived liquids.[5] Natural gas, by definition, is neither "a petroleum product" nor a "petroleum-derived liquid." Thus, in our view LNG storage tanks at LNG plants like the Jordan Cove LNG project, should not be considered part of the petroleum storage and transfer plant source category as that term is used in the PSD provisions described above.

Since the EPA Region 10 is not presently reviewing or taking action on a specific permit application for Jordan Cove facility or any other LNG facility, this letter does not have any legal force or effect or represent a final agency action with respect to any specific facility. Rather, this letter merely provides the EPA's view on one element of the PSD permitting requirements that ODEQ may consider as it evaluates which permitting requirements are applicable to the proposed Jordan Cove LNG project. We hope this letter is helpful. Please feel free to contact Dave Bray at (208) 553-4253 or me at (208) 553-1783 if you have any additional questions.

Sincerely,

Donald Dossett

Donald Dossett, P.E., Manager
Stationary Source Unit

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[4] Pamela Blakeley, Chief, Air Permits Section, U.S. EPA Region 5, to Don Smith, Minnesota Pollution Control Agency (Nov. 6, 2003).

[5] Proposed Guideline for Best Available Retrofit Technology Determinations Under the Regional Haze Regulations, 66 FR 38118 (July 20, 2001).

DIRTY DECEPTION:

How the Wood Biomass Industry Skirts the Clean Air Act

ENVIRONMENTAL INTEGRITY PROJECT

April 26, 2018

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THE ENVIRONMENTAL INTEGRITY PROJECT

The Environmental Integrity Project (http://www.environmentalintegrity.org) is a nonpartisan, nonprofit organization established in March of 2002 by former EPA enforcement attorneys to advocate for effective enforcement of environmental laws. EIP has three goals: 1) to provide objective analyses of how the failure to enforce or implement environmental laws increases pollution and affects public health; 2) to hold federal and state agencies, as well as individual corporations, accountable for failing to enforce or comply with environmental laws; and 3) to help local communities obtain the protection of environmental laws.

For questions about this report, please contact EIP Director of Communications
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PHOTO CREDITS

Cover photo: Enviva Ahoskie wood pellet mill in North Carolina, courtesy of Dogwood Alliance.

DIRTY DECEPTION:

How the Wood Biomass Industry Skirts the Clean Air Act

Executive Summary

Across the U.S. South, industrial-scale "wood pellet" facilities are converting trees into pellets and shipping them to Europe to be burned for electricity. The industry has grown almost 10-fold since 2009, converting millions of tons of trees into pellet fuel for power plants under the mistaken notion that this is carbon neutral and therefore good for the climate. In the midst of this fast growth, relatively little attention has been paid to the high levels of air pollution—such as soot and volatile organic compounds—generated by wood pellet manufacturing, pollution which can lead to a wide array of health and environmental problems. The Environmental Integrity Project (EIP) examined air permits and emissions information in federal and state records for 21 wood pellet mills in the U.S. that are exporting to Europe and found numerous schemes to skirt federal Clean Air Act regulations. EIP's survey also revealed a troubling record of dangerous fires and explosions, which cause serious episodes of heightened air pollution. EIP focused particular attention on the 15 "new generation" mills constructed since 2008 specifically to supply the international demand for wood pellets. These mills operate on a much larger scale and emit substantially more air pollution than traditional pellet mills that supply a domestic heating market.

Key Findings:

- In 2017, at least a third of the wood pellet plants (7 out of 21) violated their permit limits by releasing illegal amounts of pollution, while another four plants had faulty permits issued by state governments that failed to require pollution control equipment required by the federal Clean Air Act. Overall, more than half of the plants (11 out of 21) either failed to keep emissions below legal limits or failed to install required pollution controls.
- The 21 wood pellet mills exporting to Europe emit a total of 16,000 tons of health-threatening air pollutants per year, including more than 2,500 tons of particulate matter (soot), 3,200 tons of nitrogen oxides, 2,100 tons of carbon monoxide, and 7,000 tons of volatile organic compounds. These plants also emit 3.1 million tons of greenhouse gases annually.
- A factory northeast of Houston owned by German Pellets has emitted nearly ten times its permitted limits of volatile organic compound pollution since it began operation in 2013, releasing 580 tons per year. Rather than require the facility to comply with legal limits, Texas officials are proposing to simply raise the limits to let the facility continue to emit dangerous levels of pollution.
- At the Enviva Biomass wood pellet plant in Southampton County, Virginia, plant operators actually removed the pollution control equipment to evade upgrade requirements and switched from processing softwood to hardwood, which results in more carbon dioxide pollution and other harmful environmental impacts.

- Of the 15 largest operating facilities, at least eight have had fires or explosions since 2014, including at factories in North Carolina, Georgia, Arkansas, Alabama, and Texas that released vast amounts of air pollution and/or injured employees. A blaze at the German Pellets storage silo in Port Arthur, Texas, burned for two months in 2017, releasing smoke that forced dozens of local residents to seek medical attention and killed a worker during cleanup.

One of the most troubling trends in the wood pellet industry is that facilities that should face the most rigorous air permitting standards are actually the least controlled and dirtiest. Under a Clean Air Act program called "new source review," new or modified major sources of air pollution are required to reduce emissions to the level achievable by using the best available control technology. Contrary to that legal requirement, states allow construction of the country's largest wood pellet manufacturing plants without controls, or with inadequate controls, for volatile organic compounds (VOCs), an air pollutant that causes smog and respiratory problems. This is despite the fact that extremely effective VOC controls capable of reducing emissions by 90 to 95 percent are in widespread use at similar wood pellet manufacturing plants. These same controls are also very effective at reducing hazardous air pollutants, which can cause a variety of health effects including cancer. For instance, in North Carolina, wood dryers at two recently permitted major source facilities owned by Enviva Biomass emit nearly six times more VOCs and 50 to 60 times more hazardous air pollutants than comparable facilities with appropriate pollution control systems.

In other instances, states allow facilities to emit well beyond legal limits for years at a time. In Mississippi, Florida, and North Carolina, state permitting authorities continue to allow wood pellet manufacturing plants to emit well above a 250 ton per year threshold for major sources without installing legally required air pollution controls. For example, the Drax plant in Amite County, Mississippi, near McComb, emits more than 900 tons per year of VOCs – more than three times the amount that normally triggers a requirement for the installation of best available pollution control equipment. An Enviva plant in Jackson County, Florida, north of Panama City, emits more than 500 tons per year, and an Enviva plant in Northampton County, North Carolina near Roanoke Rapids emits 377 tons per year. In each of these cases, the Clean Air Act mandates that state permitting authorities require the facility to either reduce its VOC emissions to below 250 tons per year or undergo major source permitting and install the best available control technology. But these states have largely failed to follow the law.[1]

Finally, in addition to the air pollution emitted during the manufacturing process directly, pellet mills and storage facilities have experienced a rash of fires and explosions, injuring workers and releasing large amounts of uncontrolled air pollution. Because wood pellets are stored in massive and concentrated piles, these fires can burn for days or weeks. In fact, in the summer of 2017, a fire at a German Pellets in storage facility in Port Arthur, Texas, burned for 52 days, emitting vast amounts of air pollution and sickening nearby residents.

This report calls on state permitting authorities to take these pollution problems seriously and require full compliance with the federal Clean Air Act. In particular, EIP requests that states take the following steps to ensure wood pellet facilities operate legally:

1. **Reexamine existing air permits in light of new testing that shows much higher emissions of volatile organic compounds and hazardous air pollutants.** If a facility is polluting above legal limits, states must take immediate action to ensure facilities cease violating pollution limits, either by accepting enforceable production limits or by installing adequate pollution controls.

2. **Require major sources of air pollution to install the best available control technology.** Many pellet mills with major source permits evade using the best available control technology, or any control technology at all, while facilities with minor source permits, often the same size or larger, do use controls. States must not reward companies for refusing to install controls that would reduce emissions to minor levels. Rather, states must require new or modified major sources utilize controls that are at least as effective as those used by the best-controlled minor sources.

3. **Institute pellet production limits at facilities that claim to be too minor for the best available pollution controls.** If pollution controls will not keep emissions below legal limits when a facility is operated at full capacity, the facility's permit must restrict maximum production to a level that ensures the facility will not exceed the major source threshold. Although a few permits EIP surveyed do incorporate production limits, most minor source permits do not and are therefore legally deficient.

4. **Ensure Communities are Notified of and Able to Participate in Permitting Decisions.** Many of the air permits EIP surveyed were issued without any public notice or the ability to comment, including permits for the initial construction of facilities, in contravention of the Clean Air Act. This means communities were not informed of the decision to allow sources of air pollution to locate in their backyard. States should revise their regulations and procedures to include public notice and opportunity for meaningful input from those closest to proposed facilities.

5. **Require annual emissions testing for volatile organic compounds and hazardous air pollutants from all of the major emission points at pellet mills.** Many permits rely on emissions estimates—frequently outdated and inaccurate—rather than source-specific emissions testing to determine the level of emissions. While continuous emissions monitoring is the best method to determine actual levels of pollution emitted, where states do not require this they must at least require annual testing of each of the major units at pellet mills for volatile organic compounds and hazardous air pollutants.

6. **Reduce the risk of fires and explosions by requiring facilities to comply with their general duty under the Clean Air Act to design and maintain a safe facility.** Fires and explosions from wood dust plague the industry, and states should utilize a section of the Clean Air Act, called the "general duty clause," to develop site-specific management plans that will lower the risk of dangerous fires and explosions.

Introduction

The wood pellet manufacturing industry exploded in the U.S. South beginning in the late 2000s, when the European Union began subsidizing burning wood for electricity under the false presumption that doing so would be carbon neutral. Under a loophole in the EU carbon accounting system, neither the loss of carbon-absorbing trees in U.S. South, nor the emissions from burning trees in EU are accounted for in assessing greenhouse gas emissions from wood biomass. Many climate scientists have refuted the EU's premise that cutting whole trees to burn for electricity is carbon neutral, especially in a time scale relevant to fighting the worst impacts of climate change. While the industry frequently claims to process mostly forest residuals, multiple investigations have shown this to be false.[2] Ecologists have also pointed out that the industry is having a major impact on forests in the South, especially ecologically valuable hardwood forests which are being cut and replanted with faster-growing softwood plantations to feed expected demand.

Although the EU has provided substantial subsidies to enable the growth of the wood pellet industry, narrow profit margins have caused European power plants to look beyond the EU for cheap sources of wood. The U.S. South, with its vast forests growing on mostly unprotected private lands, along with state and local governments eager to provide their own industry subsidies, provide the EU plants with just such a source. In the span of only a few years, the U.S. South became the world's largest wood pellet supplier. At present, EU power companies import over 4.7 million metric tons of U.S. wood pellets each year, up from just 500,000 tons in 2009 – a nearly tenfold growth over a decade.[3] Projections show this growth rate continuing, and possibly accelerating if Asian nations begin importing comparable amounts of wood pellets, as many in the industry predict.[4]

As the industry has grown, so too have concerns over just how clean and sustainable it is to burn trees for electricity. Recent reports document the wood bioenergy industry's adverse impacts on southern forests as well as its role in causing global climate change.[5] This report is the first to focus on air pollution generated by wood pellet manufacturing plants and the industry's unlawful evasion of air pollution control requirements intended to protect human health and the environment in the communities where these plants are located.

To ascertain the local and regional impacts of air pollution from wood pellet plants, EIP analyzed air permits, emissions information, and other documents related to the 21 plants exporting wood pellets, as well as 10 facilities under construction or proposed which have air permits. EIP also estimated emissions from nine proposed facilities which do not yet have air permits. This survey placed particular attention on the 15 new-generation mills built specifically to supply the international biomass demand, all of which have production rates above 300,000 tons per year, and all but one of which were built after 2010. The vast majority of pellets produced at these plants are exported to Europe, while a limited but growing portion is exported to Japan and other Asian nations.

EIP's survey reveals that these facilities emit dangerous amounts of air pollution, and further finds that state agencies consistently fall well short of their duty to ensure that these facilities control their pollution to the levels required by law, frequently due to misleading information supplied by the industry. As a result, many large pellet mills have been allowed to emit air pollution, especially volatile organic compounds (VOCs) and hazardous air pollutants at levels well above legal limits for years at a time. When states do address these issues, they frequently fail to require actual compliance with Clean Air Act requirements. For instance, those states that have issued major new source review permits to large wood pellet plants concluded that the "best available control technology" for reducing VOCs is no controls, despite the fact that controls are in use at similar (and sometimes nearly identical) facilities. EIP's findings are particularly concerning when viewed in conjunction with another recent report showing that wood pellet mills are substantially more likely to be located in communities living below the median income level and with large minority populations, communities frequently burdened with excess pollution from multiple industrial sources.[6] This report provides a state-by-state analysis of the state failures and industry deceptions that riddle this emerging industry. Additionally, this report details the lengthy history of fires and explosions at pellet mills, which emit dangerous levels of air pollution.

How Pellet Mills Pollute

Before 2010, typical U.S. wood pellet mills were relatively small, producing between 10,000 and 100,000 tons of pellets per year for domestic consumption in home heating stoves. While these mills still had the potential to emit considerable amounts of air pollution, especially particulate matter, they weren't generally large enough to trigger significant attention from permitting agencies or watchdog groups. The newer generation of mills built to feed Europe's demand, on the other hand, are massive, producing up to 800,000 tons of wood pellets per year. While the large increase in scale came with an equally large increase in pollution, the full magnitude of emissions has not been well understood by permitting authorities. Consequently, states issued construction permits to many recent facilities under the assumption they would emit relatively low levels of air pollution (making them "minor" air pollution sources that are exempt from many control requirements), only to subsequently find that these facilities actually emit five or six times more pollution than legally allowed (making them "major" air pollution sources that should be subject to much more stringent pollution control requirements).

To understand the air pollution issues in the wood pellet industry, it is useful to understand the basics of how the facilities operate. A wood pellet manufacturing plant has two main tasks: to dry the wood to a point where it is efficient to burn in power plants, and to turn the wood into pellets for easy transport. To begin the process, wood arrives by truck (frequently whole trees from clear-cutting operations), often a half-dozen or more trucks per hour.[7] Once at the facility, the trees are debarked and then chipped in shredding machines called hammermills. The wood is then conveyed to the dryer, usually a large rotary dryer heated by burning wood and bark, where the moisture in the wood is reduced from about 50% by weight to around 10%. After the dryer, the wood is again processed by hammermills to reduce its size to a point where it can be formed into pellets. The next unit is the pellet press, which presses the wood through holes in a die to create pellets, a process that requires large amounts of pressure and heat. The pellets are then deposited into a pellet cooler to reduce their temperature back to safe levels. A typical facility produces between 50 and 70 tons of wood pellets per hour, or between 450,000 and 650,000 tons per year. The pellets are then ready for transport to a port, where they are usually stored for some time before being shipped to Europe.

Each step in the process has the potential to emit large amounts of air pollution. The most obvious source is the drying process, as burning wood emits substantial amounts of fine particulate matter, carbon monoxide, nitrogen oxides, and greenhouse gases. While each of these pollutants has serious health or environmental impacts, fine particular matter ($PM_{2.5}$) is particularly harmful to human health. $PM_{2.5}$ consists of airborne particles less than 2.5 micrometers which can pass deep into a person's lungs and even into the bloodstream, causing heart attacks, decreased lung function, worsening asthma symptoms, and premature death. Recent research published in the New England Journal of Medicine found that reducing $PM_{2.5}$ by just 1 microgram per cubic meter throughout the United States could save 12,000 lives each year.[8] Many wood pellet mills frequently emit 60 to 80 tons per year of $PM_{2.5}$, even after installing controls.[9]

In addition to the particulate matter emitted from burning wood, drying wood actually emits the largest share of air pollution. Green wood (that is, wood before it has been dried), contains significant amounts of volatile organic compounds (VOCs), and applying heat or mechanical energy to the wood releases the VOCs into the air. Once in the atmosphere, VOCs combine with sunlight to produce ground-level ozone, a major constituent of smog. Breathing ozone can trigger a variety of health problems, particularly for children, the elderly, and people of all ages who have lung diseases such as asthma. In addition to the ozone risk, VOC emissions from wood pellet mills also contain numerous individual pollutants which are classified by the EPA as hazardous air pollutants, such as acetaldehyde, formaldehyde, and methanol. Hazardous air pollutants are those pollutants which EPA has identified as especially toxic or carcinogenic even in small amounts and are the most tightly regulated pollutants under the Clean Air Act.

The industry and permitting agencies have long understood that drying wood emits large amounts of VOCs and hazardous air pollutants, in large part because the drying process at pellet plants is similar to the drying process in more traditional industries like particle board manufacturing. Because of this knowledge, even the earliest of the large wood pellet plants generally utilized control technology to reduce emissions from the dryers. The most common form of control is known as a regenerative thermal oxidizer, which uses very high temperatures to destroy 95 to 99 percent of the VOCs and organic hazardous air pollutants.

What the industry and permitting agencies did not understand at the outset is that units other than the dryer also emit substantial amounts of VOCs. Until recently, many permitting authorities simply assumed the hammermills, pellet presses, and pellet coolers did not emit any VOCs at all. That assumption began to fall apart in 2012, when a large facility, Georgia Biomass in Waycross, Georgia, decided to test all of the facility's units for VOC emissions. The results showed that not only did these units emit VOCs after all, they emitted a lot of them. Georgia Biomass found that their hammermills, pellet presses, and pellet coolers emitted more than 1,000 tons per year of VOCs, whereas the facility and the state previously believed the entire facility emitted less than 250 tons per year. This meant the facility had been operating in violation of its permit limits and the Clean Air Act's major source requirements for several years, leading Georgia to levy heavy fines and issue a consent order requiring the facility to reduce its facility-wide VOC emissions to below 250 tons per year.

Testing at a Florida facility in 2013 and an Alabama facility in 2014 soon confirmed Georgia's findings. Both tests showed that the facilities had likewise been emitting VOCs well beyond legal limits. Unfortunately, though by 2014 three sets of testing showed that large pellet mills emitted substantially more VOCs than most permits allowed, most states have yet to take meaningful action to address the problem.

Clean Air Act Permitting 101

In order to understand the systematic issues identified by EIP, this section provides a brief primer on the basic framework of Clean Air Act permitting and how it applies to the wood pellet industry (Appendix A contains a lengthier explanation). The basic scheme of Clean Air Act permitting is that facilities which either actually emit or have the potential to emit various pollutants above certain thresholds must apply for corresponding permits before beginning construction and/or operating, which contain certain requirements such as using pollution controls or limiting emissions. The key permits at issue in the wood pellet industry are "major source" permits and hazardous air pollutant permits. Major source permitting is a rigorous set of requirements meant to reduce emissions from the largest sources of air pollutants. For the wood pellet industry, facilities must go through major source permitting and install the best available control technology if they have the *potential* to emit more than 250 tons per year of any pollutant. Permitting for hazardous air pollutants, meanwhile, requires the use of the maximum achievable control technology, an even more stringent standard, for facilities which emit or have the potential to emit more than 10 tons per year of any hazardous pollutant, or more than 25 tons per year of all hazardous air pollutants. Note that both permitting requirements are triggered not only by actual emissions, but by potential emissions (which are usually the level of emissions when a facility operates at full capacity). Finally, one key thing to recognize is that these permitting programs are primarily administered by state environmental agencies, and while the federal EPA has some oversight, the vast majority of decision-making and enforcement occurs at the state level. This means permits and enforcement vary considerably from state to state.

Part One: State-by-State Analysis of Permits Reveals a Troubling Pattern

After the initial revelations that wood pellet mills emit substantially more VOCs than initially believed, states reacted in many different ways. A few states took the violations seriously and required some facilities to install controls and/or reduce their pollution levels. This includes Georgia, where the VOC discovery was first made, and Alabama, which required the installation of a second pollution control system at a facility after it discovered the violation. Most other states failed to address the problem in an adequate manner. This section details those issues and other permitting deficiencies which have allowed the industry to pollute above legal limits for years.

North Carolina

North Carolina is home to three wood pellet manufacturing plants owned by a company called Enviva Biomass in Sampson, Northampton, and Hertford Counties, and a fourth Enviva facility is under construction in Richmond County. The state has been the most egregious in terms of allowing unnecessary and unlawful pollution from the industry. While most wood pellet plants utilize at least some VOC and hazardous air pollutant controls, North Carolina illegally allows all three Enviva plants to operate without any VOC or hazardous air pollutant controls whatsoever and will do the same for the fourth when it begins operations. In fact, out of all of the large pellet mills in the country, only one other facility operates without VOC or hazardous air pollutant controls of any kind: the Enviva Southampton plant just across the border in southern Virginia, near Chesapeake. Due to North Carolina's lax oversight and Enviva's reluctance to install controls, the Enviva plants are the largest emitters of VOCs and hazardous air pollutants in the industry, emitting five to six times the level of VOCs and 50 times the level of hazardous air pollutants as comparable facilities.

Table A. Annual Air Pollution from Exporting Pellet Mills in North Carolina (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (3)	366	337	529	1,396	552,655
Existing (3) and Under-Construction (1)	511	568	749	2,024	782,483

Many North Carolina Plants Avoid Installing Best Available Control Technology

Typically, industrial facilities seek to avoid the most stringent Clean Air Act control requirements by voluntarily limiting their air pollution levels that qualify them as "synthetic minor" sources (synthetic in the sense that they could be major sources but have limited themselves to minor source levels of emissions). Ironically, the current situation in the wood pellet manufacturing industry is that the "synthetic minor" air pollution sources usually utilize VOC controls while the "major" sources that are subject to more stringent control requirements do virtually nothing to control VOC pollution. Enviva's existing Sampson plant, located 35 miles east of Fayetteville, NC, and Enviva's proposed Hamlet plant (40 miles west of Fayetteville) are prime examples of this phenomenon. Enviva conceded at the outset that both plants qualified as "major" sources due to their VOC emissions.[10] Accordingly, major source permitting requirements applied to both plants, including the requirement to control air pollution to the level that can be achieved using "best available control technology." The decision of what constitutes the best available control technology for controlling VOC emissions should be straightforward: what is the best type of pollution control technology utilized at similar facilities? As discussed above, every other non-Enviva facility of similar size operates with a regenerative thermal oxidizer controlling the facility's dryer. Many also reduce VOC emissions from other units by using additional pollution controls. These controls can reduce VOC and hazardous air pollutant emissions by 95% or more.[11] Accordingly, North Carolina plainly should have selected these same controls as "best available control technology" for the Enviva Hamlet and Enviva Sampson plants. It did not. Rather, North Carolina concluded that Enviva need not install any VOC controls whatsoever. The problem is clear when Enviva's plants are compared to similar facilities. For example, an older facility in Georgia, Georgia Biomass, actually produces more wood pellets than Enviva Sampson, yet the Georgia plant emits just 130 tons of VOC per year compared to Enviva Sampson's 628 tons per year. This is because Georgia Biomass utilizes VOC control technology, despite being a synthetic minor source, while Enviva Sampson, a major source that should use the best available control technology, uses no controls at all.

Neither Enviva nor North Carolina indicated it was infeasible to install the VOC controls—regenerative thermal oxidizers—on the Sampson and Hamlet plants.[12] Rather, Enviva argued that a regenerative thermal oxidizer would be cost prohibitive, despite the fact that every other comparable company in the industry is able to afford the technology at least for the wood drying operations.[13] Enviva further argued that adequate VOC reductions could be achieved at both facilities by restricting the wood processed to 25% hardwood and 75% softwood, rather than 100% softwood. This is because softwood emits more VOCs than hardwood.[14] While this reduction in softwood does result in a small reduction of VOCs, perhaps 20%, it pales in comparison to the reduction achievable by the use of regenerative thermal oxidizers, which reduce VOC and organic hazardous air pollutant emissions by at least 95%.[15] With the use of regenerative thermal oxidizers, Enviva would lower VOC emissions from 628 tons per year to less than 50 tons per year.

In addition to not being an effective control technology to reduce VOC and hazardous air pollutant emissions, processing hardwood presents other significant environmental impacts. The use of slow-growing hardwood forests as feedstock, forests which sequester more carbon than softwood pine forests, results in more carbon in the atmosphere, even decades after the wood pellets have been burned.[16] The harvesting of bottomland hardwood forests is also concerning because of the critical ecosystem services that will be lost if these wetland habitats are decimated. Wetland forests buffer communities from storms and floods, and remove nutrients and other pollutants from water to maintain the quality of streams, rivers, and estuaries.[17] Destruction of hardwood forests also depletes habitats of endangered and imperiled species.[18]

Violations of Air Pollution Regulations at Plants in Richmond and Sampson Counties Means Massive Emissions of Hazardous Air Pollutants.

In addition to allowing dangerously high VOCs, North Carolina's failure to require Enviva to install control devices at Enviva Hamlet and Enviva Sampson also means these facilities emit hazardous air pollutants at more than twice the legal threshold. In fact, emissions testing at Enviva Sampson recently revealed the facility's dryer emits up to 50 times more hazardous air pollution than comparable facilities, simply because North Carolina has not required pollution controls at the facility, and Enviva has refused to install the controls voluntarily.

Manufacturing wood pellets emits significant levels of hazardous air pollutants, especially acetaldehyde, formaldehyde, and methanol. EPA lists acetaldehyde and formaldehyde as probable human carcinogens, and both cause additional short term respiratory problems and chronic symptoms occur from long term exposure.[19] The health risks of methanol emissions, meanwhile, include "a decrease in gestation time, an increase in the number of required

Caesarian-section births, and, in prenatally exposed children, instances of a severe wasting syndrome, concentration-related delay in sensorimotor development and lower performance on an infant intelligence test."[20]

The Clean Air Act requires that major sources of hazardous air pollutants like Enviva Hamlet and Enviva Sampson utilize the maximum achievable control technology, which is meant to be even more stringent than the "best available control technology" standard for other pollutants. Unfortunately, North Carolina has not required any control technology at all to reduce hazardous air pollutants at Enviva Sampson and Enviva Hamlet. This is extremely problematic, as control technology which can massively reduce these hazardous air pollutant emissions is standard in the wood pellet industry.[21] The hazardous air pollutants emitted at wood pellet facilities are largely emitted from the burning and drying of wood, and because these hazardous air pollutants are also VOCs, control technologies that reduce VOCs also reduce these particular hazardous air pollutant emissions.[22] This means installing a regenerative thermal oxidizer on the dryers at Enviva Sampson and Enviva Hamlet would reduce hazardous air pollutant emissions by 95% or more. Every other non-Enviva facility that EIP surveyed has installed a regenerative thermal oxidizer on their dryer, vastly lowering their hazardous air pollutant emissions.

Without this technology, the Enviva plants emit 300 times more formaldehyde and 71 times more acetaldehyde than Hazlehurst Wood Pellets, a Georgia facility with a similar process rate but that uses a regenerative thermal oxidizer. The Enviva facilities' hazardous air pollutant emissions are substantially higher even than Georgia Biomass, the largest pellet mill in the country, because Georgia Biomass has installed regenerative thermal oxidizers while the Enviva plants have not. Although testing for hazardous air pollutant emissions is unfortunately rather rare, Table B below compares the available testing at similar facilities to the Enviva Sampson and Enviva Hamlet plants.

Table B. Enviva Sampson and Enviva Hamlet Emit Much More Hazardous Air Pollutants Than Comparable Facilities That Utilize Regenerative Thermal Oxidizers

Facility	State	Production Rate (tons per year)	Acetaldehyde Emissions (tons per year)	Formaldehyde Emissions (tons per year)	Methanol Emissions (tons per year)	Total HAP Emissions (tons per year)
Georgia Biomass	GA	826,000	1.7	7.6	5.0	15.4
Drax Amite	MS	578,000	No Data	0.4	No Data	No Data
Hazlehurst	GA	525,000	0.16	0.08	0.87	1.1
Enviva Sampson/Enviva Hamlet[A] (Initial Test)	NC	535,000	19.9	23.7	13.4	70.1
Enviva Sampson/Enviva Hamlet[A] (Second Test)[B]	NC	535,000	11.4	24.4	8.14	55.5

A. Although Enviva Hamlet is not yet operating, it is very similar to the Sampson facility.

B. After the first round of testing showed the facility was exceeding its VOC limits, Enviva tweaked their dryer, which somewhat reduced VOC emissions and some HAP emissions. It is unclear whether Enviva will continue to operate in this manner, but even if they do, emissions are still much higher than other facilities.

If Enviva Sampson and Enviva Hamlet installed regenerative thermal oxidizers on their dryers, hazardous air pollutant emissions would be cut by at least 95%.[23] Total hazardous air pollutants would be reduced from 55.5 tons per year to just 2.7 tons per year, and formaldehyde emissions would be lowered from around 24 tons per year to 1.2 tons. Acetaldehyde and methanol would both be reduced to less than one ton per year.

Enviva's Illegal Scheme to Avoid Major Source Permitting in Northampton County

North Carolina impermissibly removed limits intended to reduce VOCs from Enviva's mill in Northampton County, allowing the facility to emit 200 tons more VOCs than similar facilities. Like the other Enviva facilities, Enviva Northampton's VOC emissions are uncontrolled, despite the fact that it emits well over the 250 ton per year major source threshold that should require the use of the best available control technology. Initially, North Carolina allowed Enviva to construct without VOC controls based on Enviva's agreement to accept enforceable limits designed to ensure that the facility's emissions qualified as "minor" (and therefore exempt from control requirements).[24] Specifically, Enviva agreed to reduce VOC emissions by processing no more than 10% softwood and to not dry the wood to lower than 13% moisture content.[25] But only two years later, Enviva apparently decided those restrictions no longer fit within its business plan and asked North Carolina to remove them from the Northampton facility's air permit.[26] North Carolina obliged, but still did not require Enviva to comply with the permitting and pollution control requirements applicable to major air pollution sources.[27] The law is clear that North Carolina acted illegally: when a facility takes a limit to avoid stringent Clean Air Act requirements applicable to "major" sources, as Enviva Northampton did, any subsequent relaxation of that limit that allows the source to emit more than the major source threshold (here, 250 tons per year of VOCs) triggers the requirement to obtain a major source construction permit and install required pollution controls.[28] North Carolina disregarded that requirement and allowed Enviva to continue operating the Northampton plant without VOC controls. The facility now emits 377 tons per year of VOCs, and is authorized to emit up to 456 tons per year—despite being constructed as a "minor" air pollution source.[29]

Table C on the following page shows that Enviva Northampton is the largest wood pellet mill in the country that does not utilize VOC control technology. To further illustrate the high emissions, other facilities which process various rates of softwood are adjusted to operating at 30% softwood, the same rate the Enviva Northampton currently processes. Once this adjustment is made, it is clear that Enviva Northampton's VOC emissions are substantially higher than they could be if Enviva utilized a regenerative thermal oxidizer on their dryer. Further, had the facility gone through legitimate major source permitting, VOC emissions from the hammermills and pellet coolers would also be reduced because major source permitting's best available control technology requirement applies to each emission unit with significant emissions.

Table C. VOC Controls on Dryers at Pellet Mills Above 300,000 Tons Per Year Production Rate; Enviva Northampton Highlighted

Facility	State	Production Rate	VOC Controls On Dryer	Softwood Content	Actual VOC Emissions (tons per year)	VOC Emissions at 30% Softwood[A] (tons per year)
Georgia Biomass	GA	826,000	Yes (RTO and RCO)	100%	120	36
Enviva Cottondale	FL	821,000	Yes (RTO)	100%	517	155
Zilkha Monticello[B]	AR	661,000	Yes (RTO)	100%	249	74
Enviva Northampton	NC	628,000	No	30%	377	377
Drax Amite	MS	578,000	Yes (RTO)	100%	249[C]	63
German Pellets	TX	578,000	Yes (RTO)	100%	580	174
Enviva Southampton	VA	535,000	No	10%	245	321
Enviva Sampson	NC	535,000	No	75%	628	251
Enviva Hamlet[B]	NC	535,000	No	75%	628	251
Colombo (Now Enviva Greenwood)	SC	175,000[D]	Yes (RTO)	100%	249[D]	74
Hazlehurst	GA	525,600	Yes (Sent to burner, 90% reduction)	100%	216	64
Highland Pellets	AR	500,000	Yes (Sent to burner, 90% reduction)	100%	245	73
Drax Morehouse	LA	500,000	Yes (RTO)	98%	249[E]	76
Drax LaSalle	LA	500,000	Yes (RTO)	100%	611	183
Enviva Ahoskie	NC	420,000	No	30%	280	280
Westervelt	AL	320,000	Yes (Two RTOs)	100%	28	8
Zilkha	AL	300,000	Yes (RTO)	50-100%	246	73

A. Facilities utilize a range of softwood content, however, for comparison purposes, we assume in this column that all facilities are utilizing 30% softwood, which is what the Enviva Northampton plant currently utilizes.
B. Facility is permitted but not yet operating.
C. This facility's permit limit is 249 tons per year, but research by EIP shows it likely emits much higher levels, up 1,000 tons per year; see the section on Mississippi below.
D. Colombo Energy has the capacity to produce 669,000 tons per year, but without VOC controls on its post-dryer emissions, the facility must limit operations to avoid exceeding the 250 ton per year major source threshold. See the discussion on this facility below in the South Carolina section.
E. This facility's permit limit is 249 tons per year, but research by EIP shows it likely emits much higher levels, potentially more than 700 tons per year, see the section on Louisiana below.

Complete Lack of Public Input at Enviva's Northampton and Hamlet Plants When It Mattered.

The most troubling aspect of Enviva Northampton's permitting history is that it was completely opaque; the public never had notice or the opportunity to comment on the facility's construction or subsequent modification to emit more than 250 tons per year of VOCs.[30] This is because North Carolina's regulations do not require public notice or comment for minor source permits such as the one obtained by Enviva for Northampton, likely in contravention of the Clean Air Act.[31] This is in contrast to the major source permit process, for which North Carolina does require public notice and comment. In other words, residents who live near the Northampton facility—now emitting at major source levels—never knew about the levels of pollution emitted, or the decision to allow the facility to increase its emission above the major source threshold. Had the facility initially proposed to emit 377 tons per year of VOCs, the permits would have been subject to public notice and comment, but Enviva craftily avoided these requirements by taking initial limits and then eliminating those limits just two years later.

The public also lacked an adequate opportunity to provide input for the permit for Enviva Hamlet in Richmond County. As noted above, this permit allows the highest level of air pollution in the industry. In issuing this permit, the state failed to follow clear regulations which serve to inform the public about the proposed facility near the predominantly African American community of Dobbins Heights. North Carolina never held a public hearing on the permit, notwithstanding the Clean Air Act's clear mandate to do so and despite requests by the community.[32] North Carolina also issued public notice and draft permits for the facility with incorrect addresses, making it difficult for citizens to learn whether the facility would be built in their backyard or elsewhere.[33] While North Carolina dismisses these issues as minor typos, the failure to give the proper address meant that those who were most impacted could not reasonably discover the true location of the plant until after the opportunity to file comments or request a hearing.

Texas

Texas only has one exporting pellet plant, German Pellets northeast of Houston, but the facility has had a serious history of failing to comply with the Clean Air Act, as well as the worst record of fires in the industry, with at least five fires or explosions since 2014. One fire at a German Pellet's storage facility in Port Arthur burned for more than 50 days, sickening residents and leading to multiple lawsuits.

Table D. Annual Air Pollution from Exporting Pellet Mills in Texas (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing plants (1)	72	98	175	580	190,923

Pellet Plant in Woodville Has Violated Clean Air Law for Years, but Texas Proposes no New Controls

The German Pellets facility in the community of Woodville, Texas, 90 miles northeast of Houston, has emitted VOCs at nearly double its permitted limits and the major source threshold since it began operation in 2013, with VOC emissions approaching 600 tons per year. Despite the testing at multiple facilities dating to 2012 that proved large facilities like German Pellets could not remain below the major source threshold without additional controls, German Pellets apparently did not discover that it was itself violating its permit limit of 64 ton per year (as well as the 250 ton per year major source threshold) until late 2014. It turns out the facility actually emits 580 tons of VOCs per year.[34] Instead of punishing the facility for violating the terms of its permit and exceeding the Clean Air Act's major source threshold for nearly five years, Texas has allowed the facility to continue to operate at full capacity, emitting the same level of illegal VOC emissions. In fact, Texas is now proposing to issue a major source permit to the facility that simply raises the emissions limits to levels with which German Pellets can comply while requiring no additional VOC control measures.

While German Pellets does utilize a regenerative thermal oxidizer on its dryer, the hammermills and pelletizing lines are uncontrolled and emit substantial amounts of VOCs. The two pellet coolers emit 446 tons per year of VOCs, and the total post-dryer emissions are 514 tons per year. As discussed above, the major source permitting process must limit emissions to the level that can be achieved by using best available control technology. A regenerative thermal oxidizer or a regenerative catalytic oxidizer—controls which have been installed on hammermills and pelletizing units at several other facilities—should have been chosen as the best available control technology.

German Pellets submitted misleading information to the Texas permitting authority to justify not installing control technology. In particular, German Pellets dismissed from consideration all facilities which utilize control technology for the hammermills and pellet coolers on the grounds they were permitted as minor sources, and only submitted information on facilities that do not use controls.[35] German Pellets further stated that it was "consistent with other similar operations" not to install VOC controls on the post dryer units.[36] The fact of the matter is that many wood pellet mills do utilize these controls, as Table E below shows. The Clean Air Act's best available control technology mandate therefore requires the same level of controls at German Pellets, regardless of the type of permit in place at similar facilities (in fact a proper analysis must even evaluate international facilities if they achieve greater emission reductions).[37] Yet based on German Pellets' application, Texas authorities may not have even been aware that such controls were in use in the industry because the facility only submitted information on plants that do not use controls on their post-dryer units.

A regenerative thermal oxidizer, in use at several other facilities, would reduce the total post-dryer emissions from 514 tons per year to just 25 tons per year. Another alternative, in use at several facilities, is to route the post-dryer emissions to the dryer and its regenerative thermal oxidizer, a technique that achieves at least 95% VOC reduction. These are not extreme options; as Table E below shows, most similar facilities (i.e. facilities processing mostly softwood) utilize some form of technological control to reduce VOCs. Yet Texas is proposing a permit which would not require any technological controls on the relevant units, despite the best available technology requirement.

Table E. Despite German Pellets' Claim, Many Facilities Utilize Controls to Reduce Post-Dryer VOC Emissions

Post-Dryer Controls at Synthetic Minor Pellet Mills Processing More than 50% Softwood							
Facility Name	State	Production Rate	Softwood Content	Major Source	VOC Controls on Hammermills	VOC Controls on Pellet Presses and/or Coolers	Facility-wide VOC Emissions
Georgia Biomass	GA	826,000	100%	No	RTO (95% control)	RTO (95% control)	130
Enviva Cottondale	FL	821,000	100%	No	Sent to Burner-RTO (95% control)	Sent to Burner-RTO (95% control)	517
Zilkha Monticello (proposed and permitted)	AR	661,912	100%	No	Sent to Burner-RTO (95% control)	Sent to Burner-RTO (95% control)	249
Drax Amite	MS	578,000	100%	No	None	None	900+[A]
Colombo Energy (Now Enviva Greenwood)	SC	168,000[B]	100%	No	Limited Operating Hours	Limited Operating Hours	249
Hazlehurst	GA	525,600	100%	No	Sent to Burner-RTO (95% control)	Sent to Burner-RTO (95% control)	216
Highland Pellets	AR	500,000	100%	No	Sent to Burner (90% control)	Sent to burner (90% control)	208
Highland Pellets South (proposed)	AR	500,000	100%	No	Sent to Burner (90% control)	Sent to burner (90% control)	208
Drax Morehouse	LA	500,000	100%	No	None	None	465[C]
Bord na Mona (proposed and permitted)	GA	330,000	50-100%	No	Sent to Burner-RTO (95% control)	None	192
Westervelt	AL	320,000	100%	No	RTO (95% Control)	RTO (95% Control)	139
Post-Dryer Controls at PSD Major Source Pellet Mills							
German Pellets	TX	578,000	100%	Yes	None	None	580
Enviva Sampson	NC	535,000	75%	Yes	None	None	628
Enviva Hamlet (proposed and permitted)	NC	535,000	75%	Yes	None	None	628
Drax LaSalle	LA	500,000	100%	Yes	None	None	611

A. This facility has never tested its post-dryer units; emissions based on Georgia Biomass emission factors. See the Mississippi section below.
B. Facility has the capacity to operate at up to 669,000 tons per year but is limiting operating hours to avoid exceeding permit limits.
C. This facility has never tested its pellet coolers. Pellet cooler emissions estimated based on average emission factor for pellet coolers derived from stack testing (see Louisiana section below). Actual emissions could be as high as 745 tons per year.

Mississippi

Mississippi is home to three pellet mills exporting to Europe: two relatively small Enviva plants, Enviva Amory ear Tupelo and Enviva Wiggins near Gulfport (Enviva is in the process of selling the Wiggins plant), and one large facility in Amite County owned by Drax Biomass. Drax also owns and operates the Drax power plant in the UK, which is the largest consumer of wood pellets in the world, and the single largest emitter of CO_2 in the UK. The Drax power plant is almost exclusively supplied by pellet plants in the U.S. South, including Drax's own mills, Enviva's mills, and others. In addition to the existing mills, a fourth facility is proposed in the state, Enviva Lucedale, north of Biloxi.

Table F. Annual Air Pollution from Exporting Pellet Mills in Mississippi (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (3)	462	309	325	1,400	270,617
Existing (3) and proposed (1)	607	540	545	2,028	500,445

Note: Particulate, CO, and Nitrogen Oxide emissions from Enviva Wiggins and Amory estimated based on similar facilities as this data was not available. Emissions from the proposed Enviva Lucedale are the same as Enviva Sampson, Enviva's most recently-constructed plant.

Drax Plant in Gloster Misleads Mississippi on VOC Emissions

Drax Biomass appeared to mislead Mississippi officials in order to avoid major source permitting requirements at its Drax Amite facility in Gloster. Drax submitted extremely low emissions estimates for certain units based on testing that Drax should have known was invalid. By doing so, Drax was able to convince Mississippi that the Amite facility's VOC emissions were below the 250 ton per year major source threshold, when more reliable testing data showed the facility's emissions were likely to be around 1,000 tons per year. Troublingly, Mississippi has never required that the facility conduct emissions testing on the relevant units, and instead has accepted Drax's estimates.

As with other large facilities initially permitted before 2013, Drax initially assumed that only Amite's dryer would emit VOCs. It took until 2016 for Drax to acknowledge that other units emit any VOCs at all.[38] Drax then asserted that these emissions were minor, and that emissions from these units would be just "0.704 lb/ton [pounds of VOCs per ton of wood pellet produced], based on testing performed at Green Circle Bio Energy with 10% additional margin included."[39] Drax did not provide the cited test data with its application, and supplied no further information on the test. It turns out that Drax was referring to 2010 tests performed at Green Circle Bio Energy in Florida.[40] Subsequent testing performed at that facility in 2013 showed that the 2010 tests were completely invalid, and that the Green Circle facility actually emitted more than 1,000 tons of VOCs per year.[41] The true emissions rate at Green Circle (now Enviva Cottondale) for all post-dryer units was 3.25 lb/ton, almost five times higher than the .704 lb/ton proposed by Drax.[42] Further, the 3.25 lb/ton rate is completely consistent with other wood pellet plant manufacturing plant tests such as the Georgia Biomass testing (showing 3 lb/ton).[43] This means Drax Amite's true facility-wide emissions are likely above 900 tons per year, vastly exceeding the major source threshold of 250 tons per year.

While it is hard to prove that Drax intentionally misled Mississippi, it is difficult to fathom that Drax, one of the most prominent companies in the industry, was not aware of the elevated VOC issue when it submitted its Title V permit application in August 2016, or likewise was unaware that Green Circle had conducted subsequent testing in 2013 disproving the 2010 tests. Regardless, it may have worked: Mississippi proposed to issue the operating permit without questioning the assumed .706 lb/ton emission rate Drax provided. Mississippi states that testing at Drax Amite showed a "large margin of compliance" with the 249 ton per year VOC limit.[44] The problem is that these tests only tested the facility's dryer and not the other significant sources of VOCs like hammermills and pellet coolers. In other words, Mississippi is still apparently operating under the impression that post-dryer units do not emit any VOCs, a completely incorrect assumption given the numerous tests conducted in the industry since 2013.

Mississippi's proposed permit continues to treat Drax Amite as a minor source, despite likely VOC emissions of nearly 1,000 tons per year, four times higher than the 250 ton-per-year major source threshold. Further, Mississippi did not even propose to require Drax to test the Amite facility's post-dryer units, so Drax can continue avoiding major source control requirements with impunity. EIP and a coalition of other concerned public interest groups recently filed comments with Mississippi during the public comment period on the draft permit that raised the above concerns regarding VOC emissions. Mississippi is currently reviewing the comments.

Mississippi Allows Unlawful Hazardous Air Pollutant Emissions from Enviva Mills in Stone and Monroe Counties

Enviva Wiggins in Stone County, north of Gulfport, and Enviva Amory in Monroe County southeast of Tupelo, are two relatively small pellet mills which Enviva purchased in 2010. Despite being smaller than Enviva's newer mills, both facilities have troublingly high hazardous air pollutant emissions because, as with the other Enviva mills, Enviva does not utilize any hazardous air pollutant controls, in contravention of the Clean Air Act. As explained below, potential hazardous air pollutant emissions from each of these facilities easily exceeds the level that triggers major source maximum achievable control technology requirements under the Clean Air Act, yet both sources claim to be minor sources that are exempt from these requirements. A compounding problem is that Mississippi issued utterly deficient permits to the two facilities authorizing wood pellet production rates that clearly lead to hazardous air pollutant emissions in excess of the major source threshold.

At Enviva Wiggins, emissions testing revealed that the facility, when operating at the permitted production rate of 185,550 tons per year, emitted 31 tons per year of hazardous air pollutants, including 10.3 tons of methanol.[45] The rates meant the facility was exceeding the threshold that triggers maximum achievable control technology for hazardous air pollutant emissions. Rather than install these controls, the facility decided to lower its emissions by restricting production. Based on the testing, Enviva's own consultant calculated that the facility would need to limit production to 140,000 tons per year to remain below the hazardous air pollutant limit, yet Mississippi inexplicably authorized wood pellet production of up to 165,000 tons per year, which only reduced total hazardous air pollutant emissions to 28 tons per year.[46] This means the facility is still a major source of hazardous air pollutants, but is not complying with the major source requirement to install maximum achievable control technology. Notably, if the facility installed a regenerative thermal oxidizer, total emissions would be less than two tons per year.

The hazardous air pollutant situation at Enviva Amory is also troublesome. Emissions testing there purportedly showed that the facility's hazardous air pollutant emissions were either zero or essentially zero, which is simply not plausible given that it has no hazardous air pollutant controls and operates at similar rates to Enviva Wiggins.[47] The testing found no acetaldehyde at all and just .64 tons per year of formaldehyde. These rates are highly inconsistent with stack tests at similar facilities, which generally show that wood drying emits considerable amounts of formaldehyde and acetaldehyde.[48] Although Mississippi apparently accepted Enviva's Amory test results, North Carolina rejected them when Enviva offered them as justification for not installing hazardous air pollutant control devices at its North Carolina facilities.[49] North Carolina's Stationary Source Compliance Branch found that the consultant that performed the testing for both Enviva facilities had used incorrect values for several significant pollutants, including acetaldehyde and formaldehyde, meaning the testing for both facilities underrepresented the facilities' hazardous air pollutant emissions.[50]

Enviva Facility Near Tupelo is Violating Major Source Permitting Requirements and Avoiding the Use of Pollution Controls

Enviva Amory, the Enviva facility southeast of Tupelo, also has major issues with its VOC emissions, with several past and continuing violations. Most concerning is that the facility is currently operating in violation of the Clean Air Act's major source requirements. Facilities that have the potential to emit 250 tons per year or more of pollutants like VOCs must go through major source permitting (which requires the use of the best available control technology) or take legally enforceable limits to ensure that actual emissions stay below the major source applicability threshold. As shown below, Enviva Amory has the potential to emit VOCs well above 250 tons per year but has neither obtained a major source permit nor agreed to an enforceable emissions limit that would enable it to avoid major source permitting. Further, the facility is operating without any VOC controls whatsoever, meaning it is not complying with major source permitting's best available control technology requirement.

When initially constructed, Enviva claimed that the Amory facility's VOC emissions would not only be below the 250 ton-per-year major source applicability threshold, but also below the 100 ton-per-year required to apply for a federal operating permit known as a Title V permit.[51] Accordingly, Enviva accepted a VOC emissions limit of 99 tons per year and a production limit of 99,000 tons of wood pellets per year to keep its actual emissions below the Title V threshold.[52] Subsequent emission testing at Enviva Amory in 2013 showed that VOC emissions were 185 tons per year when producing 99,000 tons per year of pellets, far exceeding its 99 tons-per-year permit limit and the Title V threshold.[53] In light of the test results, Enviva applied for a Title V operating permit, but when Mississippi issued the new permit, it altogether eliminated the limits on the facility's VOC emissions and production rate.[54] The new permit also does not limit the kind of wood the facility can process.[55] This is highly problematic, because the facility could easily emit more VOCs than the major source threshold of 250 tons even without increasing capacity beyond its current rate. Because softwood emits much higher levels of VOCs than hardwood, any increase in the softwood processed in the mix increases VOCs. Troublingly, the testing did not report what ratio the facility processed during the testing. This is basic information that is almost always included in testing reports. For instance, the Enviva Wiggins test states that it was conducted at 60% softwood.[56] If the testing at Amory occurred when the facility was processing relatively low levels of softwood, which is likely based on the results compared to similar facilities, then the resulting rate of 185 tons per year would not be representative of what the facility is capable of emitting. Since the permit contains no limit on the amount of softwood processed, Enviva Amory can process whatever it wants, including 100% softwood like many other wood pellet plants. At 100% softwood, the facility would emit 562 tons per year of VOCs at the current production rate.[57] This means the facility is currently violating major source rules, which require compliance with major source permitting and best available control requirements based on a facility's *potential* to emit pollution. Enviva Wiggins clearly has the potential to emit above 250 tons per year of VOCs and its permit has zero limits preventing it from doing so.

To illustrate how easy it would be for the facility to have emissions above the 250 ton per year major source threshold—assuming that during testing the facility was processing the same rate of softwood as Enviva Wiggins, 60% softwood—then an increase to just 65% softwood would place the facility's actual emissions beyond 250 tons per year (this is in part because Enviva Amory's testing occurred at a production rate of 99,000 tons per year, but now operates at 121,000 tons per year).[58]

Louisiana

Louisiana hosts two large pellet mills; both are currently owned by Drax Biomass. The Drax Morehouse facility is located about 30 miles north of Monroe, Louisiana, while Drax Lasalle is located 35 miles north of Alexandria.

Table G. Annual Air Pollution from Exporting Pellet Mills in Louisiana (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (2)	223	271	590	911	367,810

Drax Plant North of Monroe, Louisiana Likely Exceeds Major Source Limits, Yet Louisiana has Never Required Testing

Drax's plant in Morehouse County does not control VOC emissions from its post-dryer units, and likely emits well above the 250 ton per year major source threshold. Unfortunately, although Louisiana did require VOC emissions testing from the facility's dryers and hammermills, for reasons that are not clear the state did not require emissions testing on Drax Morehouse's pellet coolers. Pellet coolers can be massive sources of VOC emissions, with testing at several similar facilities finding VOC emissions above 400 tons per year.[59] Drax, however, claims the Morehouse facility's pellet coolers emit just 20 tons per year of VOCs based on their own in-house testing.[60] Such in-house testing is not subject to the rigorous regulations and review procedures meant to ensure testing is an accurate reflection of true emissions. For instance, unlike legitimate testing, Drax did not need to comply with any EPA-approved methodology, did not need to submit data and records from the test for review, did not need to test at full capacity (in fact the testing occurred at 35% capacity, which is well below the 80% or 90% minimum required by most states), nor did Drax need to notify the state that they were conducting the testing in order to allow state oversight. Nonetheless, Louisiana accepted Drax's proposed emissions rate without even reviewing Drax's testing protocols or the actual test results.[61]

Without adequate testing, it is hard to believe that Drax's self-reported emission rate, which is 20 to 30 times lower than similar facilities, is trustworthy. Table H below shows how Drax's emission factor compares to similar facilities:

Table H. Drax Morehouse's Self-Reported Emission Factor is an Extreme Outlier

Facility	State	Facility Production Rate at the Time of Testing (tons per year)	Uncontrolled Pellet Cooler VOC Emissions (tons per year)	Uncontrolled Pellet Cooler VOC Emission Factor (lb/ton)	Comparison to Drax Morehouse's Self-Reported Emission factor of .065 lb/ton
Drax Morehouse "engineering testing data"	LA	578,000	20	.065	-
Enviva Amory	MS	99,000	101	2.04	31 times higher
German Pellets	TX	578,000	446	1.54	23 times higher
Enviva Cottondale	FL	610,000	460	1.5	23 times higher
Georgia Biomass (with steam injection)	GA	820,000	533	1.3	20 times higher
Hazlehurst Wood Pellets	GA	525,000	166	.62	9.5 times higher
			Average Emission Factor:	1.07	16.4 times higher

Sources: Stack testing reports from plants other than Drax; Drax's emission factor from permit applications.

The issue of Drax Morehouse's pellet cooler emissions is not trivial. At the emission factors Louisiana accepted from Drax, Louisiana states that the facility is currently emitting 249.21 tons per year.[62] This means even a minute error in the pellet cooler emission rate would push the facility above the 250 ton per year major source threshold. In fact, applying any of the above test-derived emission rates to Drax Morehouse's pellet cooler results in a facility-wide VOC emission rate of at least 300 tons per year, and could be as high as 745 tons per year. Applying the average mission factor from the table above places the facility's total VOC emissions at 465 tons per year.

Notably, if Drax Morehouse installed a regenerative thermal oxidizer or other VOC control technology to its post dryer units, whether to remain below the major source threshold or to comply with major source permitting's best available control technology mandate, Drax could reduce VOC emissions to less than 50 tons per year.[63]

Virginia

One pellet plant, owned by Enviva, is currently operating in Virginia, and Enviva has proposed a second facility in the state. The existing facility, Enviva Southampton, is located about 40 miles west of Norfolk, and the proposed facility will be just outside of Danville.

Table I. Annual Air Pollution from Exporting Pellet Mills in Virginia (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (1)	88	56	163	245	160,535
Existing (1) and Proposed (1)*	223	287	383	873	390,363

* Emissions from the proposed Enviva Danville facility assume the new plant will have the same emissions as Enviva Sampson, the most recently-constructed Enviva plant.

After Discovering They Were Violating Limits, Enviva Southampton Actually Removed Pollution Control Technology

Enviva's Virginia facility, located in Southampton County, was originally permitted as a synthetic minor source processing 90% softwood in 2012.[64] Predictably, after the Georgia Biomass testing showed facilities like this could not comply with their synthetic minor limits without additional controls, Enviva found that the Southampton facility was indeed emitting well above 250 tons per year.[65] Rather than installing additional control technology or reduce production like other companies have done, Enviva actually *removed* their VOC and hazardous air pollutant control technology (a regenerative thermal oxidizer) and switched to processing hardwoods.[66] While this did allow Enviva Southampton to begin complying with the VOC limit, it is far from environmentally sound given the larger ecological footprint of harvesting hardwood trees. Furthermore—and of particular importance to nearby residents—the removal of the regenerative thermal oxidizer means Enviva Southampton is no longer controlling its hazardous air pollutant emissions in any way, and the facility almost certainly emits major levels of hazardous air pollutants, triggering the Clean Air Act's hazardous air pollutant requirements to install the maximum achievable control technology. Despite this, Virginia has not required any technology to reduce hazardous air pollutants. Worse yet, Virginia has not even required that Enviva test for hazardous air pollutants, so the true rates are impossible to know.

Rather than requiring emissions testing for hazardous air pollutants, a requirement found in almost every other state, Virginia has apparently relied on Enviva's in-house estimates of the total amount of hazardous air pollutants emitted by the facility, estimates which are based on unsupported assumptions.[67] Enviva assumes that the difference in emissions for each individual hazardous air pollutant is uniform between hardwood and softwood, such that decreasing the amount of softwood processed will uniformly reduce each hazardous air pollutant by an identical rate.[68] This is simply not true. Research and recent testing at other facilities indicates that drying hardwood actually emits certain hazardous air pollutants at higher levels than drying softwood.[69] At the very least, Enviva's assumption that reducing softwood content will reduce each hazardous air pollutant at the same rate is not scientifically sound. Instead, EIP estimated emissions of hazardous air pollutants individually, based on how each pollutant is emitted at 100% softwood and at 50% softwood, because these are known emission rates available in EPA databases.[70] From there, EIP can make a reasonable extrapolation to 10% softwood (the rate the Enviva Southampton currently processes). For formaldehyde, this produced an emission rate of 16.2 tons per year from the dryer alone, well above the 10 tons per year threshold for utilizing maximum achievable control technology, and three times higher than Enviva's own estimate for its dryer emissions of 5.87 tons per year.[71] The increase in formaldehyde emissions also means the facility is exceeding the 25 ton per year threshold for total hazardous air pollutant emissions, at 31 tons per year.[72]

Further, applying actual test results from a Georgia pellet mill that processes a similar ratio of hardwood shows that Enviva Southampton is almost certainly exceeding both its permit limits and the Clean Air Act's maximum achievable control technology threshold.[73] Based on those tests, Enviva Southampton emits 21.2 tons per year of methanol and 16.5 tons of formaldehyde, and emissions of total hazardous air pollutants are at least 46 tons per year. These rates are substantially higher than the 10 ton per year threshold for individual hazardous air pollutants and 25 tons per year for total hazardous air pollutants, meaning the facility should be required to install maximum available control technology—a regenerative thermal oxidizer. Had Enviva retained the regenerative thermal oxidizer to control hazardous air pollutants, these emissions would be less than one ton per year of formaldehyde, and total hazardous air pollutant emissions would be less than three tons per year.

Florida

Florida only has only one wood pellet plant exporting to Europe, Enviva Cottondale located near Panama City, but the plant is the second largest pellet mill in the nation, producing more than 800,000 tons of pellets per year. The facility has correspondingly high emissions of air pollutants, as detailed below. A second facility, Cornerstone Biomass, is proposed in Florida, which would be located between Tallahassee and Gainesville.

Table J. Annual Air Pollution from Exporting Pellet Mills in Florida (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (1)	411	22	245	517	229,336
Existing (1) and proposed (1)*	511	85	370	767	293,546

* Emissions from the proposed Cornerstone Biomass facility estimated based on similar-sized facilities.

Enviva Plant Near Panama City Emits More than 500 Tons Per Year of VOCs Without a Required Permit or Sufficient Controls

Enviva Cottondale, formerly Green Circle Bio Energy, was one of the first facilities to test and find higher than expected VOC emissions after learning of the original Georgia Biomass testing in 2013. As with Georgia Biomass, the facility-wide VOC emissions were well over 1,000 tons per year, violating that facility's 250 ton per year permit limit and exceeding the major source threshold. While Florida did require the facility to take some action to reduce

VOC emissions, the facility still emits more than 500 tons per year of VOCs because the facility's pellet coolers remain uncontrolled.[74]

Despite Florida's acknowledgement in 2013 that Enviva Cottondale emits VOCs at more than twice the major source threshold, Florida did not require the facility to go through major source permitting until EIP and a coalition of concerned public interest organizations submitted comments on the facility's permit renewal in August of 2017.[75] In 2013, Florida had excused the facility from complying with major source requirements, including the use of best available control technology, in part because the original owners acted in "good faith" when they originally represented that hammermills and pellet coolers do not emit VOCs.[76] While Green Circle, the owners at the time, may have indeed acted in good faith when they operated the facility prior to knowing about the VOC emissions, the Clean Air Act does not contain an exception for pollution emitted in good faith. While EIP is glad to see that Florida is now requiring the facility to go through major source permitting, it is imperative that Florida require the use of the best available control technology for the facility's pellet coolers. Major source permitting requires an analysis of the best available control technology for each unit which emits a significant amount of a pollutant, and the pellet coolers currently have no controls at all. Given that the similar-sized Georgia Biomass has been able to reduce facility-wide VOC emissions to 130 tons per year by installing a regenerative catalytic oxidizer that controls pellet cooler emissions, Florida must require Enviva to utilize this control technology, or other technology that is equally effective.

South Carolina

South Carolina has two pellet plants which export to Europe, and up to four more are proposed in the state. The largest facility, Colombo Energy, is located just outside of Greenwood and has the capacity to produce 669,000 ton of pellets per year. The facility was built in 2016 by the Portuguese paper company Portucel Soporcel, but was acquired by Enviva Biomass in February of 2018. A smaller facility, Thunderbolt Biomass, is located in Allendale County. The four proposed plants include an Enviva plant in Laurens County and a Drax Biomass plant in Abbeville County, each with a production capacity of 550,000 tons per year.

Table K. Annual Air Pollution from Exporting Pellet Mills in South Carolina (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (2)	94	244	243	786	218,347
Existing (2) and Proposed (4)*	665	876	1,094	2,742	984,822

* Emissions from proposed plants based on recently constructed Drax and Enviva facilities.

Greenwood Facility Fails to Meet Testing Requirements, Fast-Tracks Inadequate Permit Behind Closed Doors

In February 2018, Enviva Biomass acquired the Colombo wood pellet manufacturing facility in Greenwood, South Carolina, with plans to more than triple production. The plant is permitted as a synthetic minor source, meaning that it is exempt from the Clean Air Act's requirement that it reduce air pollution using best available control technology. However, the Colombo plant discovered recently that it generates far more VOC emissions than it previously thought, and that it was capable of emitting more than 600 tons of VOCs per year. At that time, plant operators started limiting the plant's production to less than a third of its designed capacity to keep emissions to legal levels (the facility is designed to produce 669,000 tons per year, and Colombo has been operating at less than 200,000 tons per year). Now, Enviva has publicly stated that it wants to increase actual production to 660,000 tons per year, and to do that, the plant must install controls to reduce its VOC emissions.[77] While Enviva plans to install controls on some of the plant's VOC-emitting sources, it does not plan to install controls on its hammermills. As a result, the facility would still emit more than 300 tons per year of VOCs when operating at the capacity Enviva desires.[78] Based on its potential emissions, even with the new controls the plant plainly qualifies as a major source which must utilize the best available control technology on all of its sources. Instead, South Carolina issued a permit with no public notice or opportunity to comment which did not contain a production limit necessary to restrict the facility's emissions to legal levels.[79] In response to pressure from EIP and other groups, the facility agreed to amend their permit to include an enforceable production limit of 500,000 metric tons.

Another troubling issue with the Colombo facility is that it failed to conduct legally adequate emission testing, with one set of tests the facility submitted to South Carolina wildly inaccurate. After first failing to meet the permit deadline to submit testing within 180 days of start-up, Colombo eventually sent South Carolina test results that anyone familiar with emissions from wood pellet manufacturing plants could tell were wildly inaccurate. That testing underrepresented VOC emissions from the facility's pellet coolers by at least 259 tons per year, conveniently showing that the facility could operate at full production rates without exceeding the major source threshold.[80] Eventually, even Colombo acknowledged these tests were flawed, and arranged for a different consultant to perform a new round of testing in October 2017. The new testing showed significantly higher VOC emissions from the facility's pellet coolers: 370 tons per year compared to the original test's result of 111 tons per year.[81] However, this subsequent testing also failed to fulfill Colombo's testing obligation because Colombo did not follow proper procedures regarding planning and notification. Colombo's permit and South Carolina regulations set out numerous requirements for emission testing, including prior approval of a site-specific test plan and notification to South Carolina officials of the test date. Notification of the test date is crucial, because it allows South Carolina officials the ability to observe the testing. Despite these legal requirements, Colombo conducted its tests without notifying South Carolina and without an approved site-specific test plan.[82] This means the tests were conducted without approval and without any outside observers. While the facility may conduct proper testing in the future, the fact remains that South Carolina has allowed the facility to operate for 18 months without satisfying its requirement to conduct legitimate emissions testing.

Georgia

Georgia is home to five pellet mills exporting to Europe, and four more proposed facilities have either received permits or are under construction. The two largest mills, Georgia Biomass in Waycross, and Hazlehurst Wood Pellets in Jeff Davis County, produce more than 1.3 million tons of wood pellets per year. While Georgia was the first state to recognize the VOC issue from pellet mills and has generally done the best of any state to address the issue, permits in the state still allow for facilities to emit more VOCs and hazardous air pollutants than the Clean Air Act allows without installing pollution controls.

Table L. Annual Air Pollution from Exporting Pellet Mills in Georgia (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (5)	499	510	584	999	649,836
Existing (5) and Proposed (4)*	1,138	1,259	1,357	1,932	1,233,545

* Emissions from proposed plants based on permitting materials and similar facilities.

Georgia Permits Lack Enforceable Pollution Limits.

Permits for at least two facilities, Appling County Wood Pellets near Brunswick and Varn Wood Pellets near Waycross, fail to require best available control technology, or alternatively, fail to adequately limit emissions. At Appling County Pellets, which does not utilize any pollution controls for VOCs, the permit lacks any facility-wide VOC limit. While the latest draft permit does contain a production limit, which is a step in the right direction, the production limit fails to ensure the facility will not emit more than 250 tons per year of VOCs. This is because the facility could exceed 250 tons per year of VOCs even while producing less than the production limit. Georgia relied on emission factors—rates of pollution emitted per ton of product produced—to show that the production limit contained in the permit would keep emissions below 250 tons per year. The problem is, those emission factors are based on stack testing which does not adequately represent the maximum emissions. The facility processed mostly hardwood during the testing, but could process up to 100% softwood if it desired, because the permit does not restrict the softwood processed at the facility. Softwood emits substantially more VOCs than hardwood, and at the current production limit the facility would emit 540 tons per year of VOCs if it processed 100% softwood. Georgia must therefore implement facility-wide VOC limit. The problem with Varn Wood Pellets' permit is basically the opposite of that at Appling County: the permit contains a facility-wide limit on VOCs, but no production limit. For facilities like Varn Wood Pellets, which do not utilize adequate pollution controls to reduce VOC emissions below the major source threshold when operating at full capacity, permits must restrict production to a point where emissions are below the major source threshold. In response to comments submitted by EIP on behalf of other environmental groups, Georgia has proposed to issue a new permit that will contain a production limit.

Pellet Mill Near Valdosta Begins Construction Without Permit.

Under the Clean Air Act and Georgia law, it is illegal to commence construction of a source of air pollution without obtaining a permit. Blue Sky Biomass, however, ignored the law and began constructing a 400,000 ton per year pellet mill north of Valdosta, Georgia. The company's website shows considerable concrete work, and the installation of at least four pellet presses. Georgia officials have apparently not taken action to halt construction or require the facility to apply for a permit. Because the facility has not applied for a permit, it is impossible to know exactly how the facility will be designed and whether it will adequately control for VOC and hazardous air pollutants.

Alabama

Alabama hosts three pellet mills exporting to Europe, including Zilkha Biomass, near Selma, and Mohegan Renewable Energy (formerly Lee Energy Solutions) near Birmingham. Three new mills are proposed in the state, including two large Enviva plants—Enviva Childersburg outside of Birmingham, and Enviva Abbeville, north of Dothan.

Table M. Annual Air Pollution from Exporting Pellet Mills in Alabama (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (3)	499	510	584	999	649,836
Existing (3) and Proposed (3)*	1,138	1,259	1,357	1,932	1,233,545

* Emissions from proposed plants based on permitting materials and similar facilities.

Pellet Mill in Selma Vastly Exceeds Limits on Carbon Monoxide and VOC Emissions.

The Zilkha Biomass mill just east of Selma is regulated as a minor air pollution source based on permit restrictions that serve to limit facility-wide emissions of pollutants like VOCs and carbon monoxide to below the major source threshold of 250 tons per year. When Zilkha Biomass first conducted emissions testing in 2017, however, the tests revealed that the facility emits 456 tons of CO per year when operating at the plant's design capacity—nearly twice the major source threshold. This means the facility has triggered the Clean Air Act's New Source Review requirements for major sources, including the obligation to install the best available control technology. This technology would likely be a regenerative catalytic oxidizer.

The facility is also almost certainly a major source of VOCs. The permit improperly exempts units known as hammermills and pellet coolers from emissions testing requirements, so the true rate is not known. However, emissions testing from every comparable wood pellet mill shows these units emit hundreds of tons more VOCs than Alabama believes. Emission factors from tests at a pellet mill in Georgia show Zilkha's hammermills and pellet coolers emit between 450 and 570 tons per year; emission factors from tests at a mill in Florida show these units emit 487 tons per year, and emission factors from tests at a mill in South Carolina show these units emitting 316 tons per year. Given that the wood dryer and the facility's unique and proprietary "black pellet" system also emit substantial amounts of VOCs, it is simply not plausible that Zilkha's facility-wide VOC emissions are below the 250 ton per year major source threshold.

Alabama Facility Emitted Twice as Much Particulate Matter Pollution than Permitted and Exceeded the Title V Threshold Without Obtaining a Title V Permit.

Until late 2017, Lee Energy Solutions was a wood pellet manufacturer northeast of Birmingham (the facility is now owned and operated by Mohegan Renewable Energy). The facility has a capacity of 225,000 tons per year, although operations are limited to 150,000 tons per year in an attempt to avoid Title V permitting.[83] Unfortunately, even at this lower rate, the facility has violated both its permit limits and the Title V threshold for particulate emissions. In fact, the facility emitted more than double its hourly permit limits of particulates, and emitted 189 tons of particulates per year, well above the Title V threshold of 100 tons per year.[84] The facility claimed that the issue was a poorly functioning multicyclone control device on the dryer. Multicyclones are relatively low-tech devices which can be efficient at removing large particulates but remove 10% or less of the smallest particulates, which are the deadliest.[85] While a faulty multicyclone may have contributed somewhat, the larger issue is that the facility was utilizing only a multicyclone rather than control technology with much better removal capacity. All of the large facilities EIP surveyed utilize a particulate matter control device known as a wet electrostatic precipitator, which removes 99% of all particulate matter, and at least 90% of fine particulates ($PM_{2.5}$).[86] Many smaller facilities like Lee Energy do not utilize this technology, and consequently have higher than necessary particulate matter emissions.

Arkansas

Arkansas is home to one wood pellet facility currently operating, the Highland Pellets mill in Pine Bluff, and two proposed mills which have applied for or received initial construction permits (Zilkha Biomass in Monticello, and Highland Pellets South, in Ouachita County).

Table N. Annual Air Pollution from Exporting Pellet Mills in Arkansas (Tons)

	Particulates	CO	NOx	VOCs	CO_2
Existing Plants (1)*	174	191	201	245	238,510
Existing (1) and Proposed (2)*	631	631	651	739	655,902

* All emissions are estimates from permit reviews or applications, Highland Pellets has not submitted stack testing.

Arkansas Fails to Require Crucial Emissions Testing at Pine Bluff Mill

The Highland Pellets mill is one of the newer and larger mills constructed, and it controls VOC and hazardous air pollutants from most of its units by routing emissions to the wood dryer's furnace. This process generally achieves 90% destruction of VOCs and hazardous air pollutants. The problem is, Highland Pellets does not do this for its pellet cooler emissions.[87] As noted above, pellet coolers can be massive sources of VOC emissions, with uncontrolled pellet coolers at some facilities emitting around 500 tons of VOCs per year (see the Table H above). These rates would mean Highland Pellets is greatly exceeding the 250 ton per year major source threshold as well as its permit limits. Despite this fact, Arkansas has not required emissions testing for VOCs from the pellet coolers—in fact the pellet coolers are the only major unit that is not required to test for VOCs. Given that the total VOC emissions for the plant are estimated to be up to 245 tons per year, the facility only has a 5 ton per year margin of error to avoid exceeding the major source threshold.[88] Therefore, the true rate of VOC emissions from the pellet coolers is crucial to ensuring the facility does not exceed the major source threshold; yet Arkansas has inexplicably exempted these particular units from testing requirements.

Piles of Wood Smolder Endlessly at Pine Bluff Pellet Mill

In addition to the potential VOC issue identified above, the Highland Pellets mill in Pine Bluff has had major issues with smoke emissions. When nearby residents complained, stating that "smoke was leaving the site and blanketing the surrounding community," Arkansas officials inspected the site but apparently did not take any corrective action.[89] According to the inspection, wood piles at the facility smolder and emit smoke continuously. The inspector's report states: "As you drive by the property you will see several large piles of material . . . This morning, both of these kinds of piles were smoking, or more accurately, smoldering. Normal rainfall amounts do a good job of keeping the temperature inside the pile down and the wood wet enough to keep the smoldering in check. With the severe lack of rain this fall, that was evidently not the case and the smoke was worse than normal."[90]

Improperly stored wood chips will frequently spontaneously combust, as large piles of decomposing wood produce heat. The smoke from this combustion is particularly harmful, as the low heat and incomplete combustion produces substantially higher levels of particulate matter, carbon monoxide, and VOCs than other forms of burning wood.[91] Studies have shown that smoldering pine emits 75 times more particulate matter pollution and 7 times more carbon monoxide than flaming fires.[92] In addition to the smoke, smoldering wood chips present an obvious risk of larger fires. As discussed in Part Three below, fires are a common problem at wood pellet industries. Highland Pellets has already had one fire since commencing operations in 2017.

Part Two: Enviva is a Clear Outlier, Failing to Utilize Pollution-Reducing Controls Which are Standard in the Industry

As discussed above, most large pellet mills utilize at least a regenerative thermal oxidizer or other control device on their dryer. The only exceptions are facilities owned and operated by Enviva Biomass. Most of these are located in North Carolina, where the state has repeatedly allowed Enviva to avoid reducing pollution. EIP's survey of new-generation pellet mills in the nation reveals that regenerative thermal oxidizers or other control technology are fundamental control devices which greatly reduce VOCs, yet Enviva has consistently claimed such controls are too expensive to install.[93] The fact is, however, that Enviva's competitors are able to utilize controls not only on their dryers, but frequently on additional units as well.

Two of Enviva's mills, Enviva Sampson (constructed in 2017) and Enviva Hamlet (under construction), both of which are near Fayetteville, North Carolina, are subject to the Clean Air Act's "best available control technology" and "maximum available control technology" requirements. Under both requirements, the facility is required to reduce emissions to the level achieved by the best-controlled pellet mill in operation. Despite these requirements and the fact that other facilities do use very effective pollution controls, the two Enviva facilities utilize no control devices whatsoever for VOCs or hazardous air pollutants. Each facility will emit more than 600 tons of VOCs and more than 50 tons of hazardous air pollutants once they reach full operation. Had the facilities actually complied with the Clean Air Act's control technology requirements and installed controls used by other pellet mills, each plant would emit less than 100 tons of VOCs and less than three tons of hazardous air pollution per year.

Table O on the following page shows VOC controls on wood dryers at the largest wood pellet mills in the country. Notably, the only Enviva plants which do utilize controls, Enviva Cottondale and the Colombo plant, were built by previous owners. Enviva acquired both plants after states had required the facilities to utilize controls.

Table O. Enviva's Failure to Control Dryer VOC Emissions Makes Them the Dirtiest in the Industry

VOC Controls on Dryers at Pellet Mills Above 300,000 Tons Per Year Production Rate					
Facility	State	Production Capacity	VOC Controls on Dryer?	Current Softwood Percent	Dryer VOC Emissions (in tons per year)
Enviva Sampson	NC	535,000	No	75%	306
Enviva Hamlet (proposed and permitted)	NC	535,000	No	75%	306
Enviva Ahoskie	NC	420,000	No	30%	164
Enviva Cottondale	FL	821,000	Yes (RTO)	100%	136
Enviva Northampton	NC	628,179	No	30%	135
Drax LaSalle	LA	500,000	Yes (RTO)	100%	128
Enviva Southampton	VA	535,000	No	10%	122
Georgia Biomass	GA	826,000	Yes (RTO)	100%	55
Zilkha Monticello (proposed and permitted)	AR	661,000	Yes (RTO)	100%	51
Hazlehurst	GA	525,600	Yes (Sent to burner)[A]	100%	32
Highland Pellets	AR	500,000	Yes (Sent to burner)[A]	100%	22
Highland Pellets South (proposed, permit application submitted)	AR	500,000	Yes (Sent to burner)[A]	100%	22
German Pellets	TX	578,000	Yes (RTO)	100%	21
Westervelt	AL	320,000	Yes (RTO)	100%	20
Colombo (Now Enviva Greenwood)	SC	669,000	Yes (RTO)	100%	13
Zilkha	AL	300,000	Yes (RTO)	50-100%[B]	9
Drax Amite	MS	578,000	Yes (RTO)	100%	7
Drax Morehouse	LA	500,000	Yes (RTO)	98%	6

A. Emissions are routed to the furnace for VOC and HAP destruction, achieving 90% reduction
B. Facility processes a range of softwood, but is permitted as if it processed 100% softwood

Part Three: Fires and Explosions

Wood pellets are designed to burn as efficiently as possible, so it shouldn't be surprising that the facilities manufacturing and storing wood pellets face a substantial risk of fires and explosions. What is surprising, however, is just how common and severe these fires and explosions are.[94] Of the 15 new generation pellet mills EIP surveyed, at least eight have had fires or explosions since 2010, including several resulting in injuries.[95] A "flash fire" at the Hazlehurst pellet mill in Hazlehurst, Georgia—the facility's second fire since commencing operations in 2014—seriously injured four employees.[96] The Westervelt wood pellet mill in Tuscaloosa, Alabama had an explosion in 2016 which injured an employee.[97] Enviva has had news-worthy fires at its Florida facility (Enviva Cottondale near Panama City), two fires at its Virginia facilities (Enviva Southampton and its port storage facilities, both in or near Chesapeake), and a North Carolina facility (Enviva Ahoskie north of Greenville).[98] German Pellets Texas alone had fires or explosions in April 2014, April 2015, May 2015, and February 2017, culminating in a two-month long fire in 2017 at German Pellets storage's silo in Port Arthur, Texas.[99] The silo ultimately collapsed, and smoke from the smoldering pellets caused dozens of Port Arthur residents to seek medical attention. The city of Port Arthur and residents have filed multiple lawsuits over the fire, and a court has ordered German Pellets to empty all of its silos and install proper fire-fighting technology. During the process of removing the pellets, a worker was killed when a pile of wood pellets collapsed.

Fires in silos can be particularly difficult to fight, as the German Pellets silo fire demonstrated. Fires can start deep in the silo under many tons of wood pellets thanks to spontaneous combustion, a common phenomenon when a large amount of wood is not properly stored, due to the heat generated from decomposing wood and lack of ventilation. Once a silo fire begins, it may burn for days, weeks, or months. Water is usually ineffective in fighting these fires, as water causes the top layer of pellets to expand, creating an impenetrable crust, preventing water from reaching the fire itself. In the case of the German Pellets fire, even after the silo collapsed more than a month after the fire began, fire fighters still struggled for weeks to stop the fire.[100] In another instance, after a fire burned for four days at a small pellet mill in in West Monroe, Louisiana and injured a firefighter, the local fire chief reported that the fire was very difficult to extinguish, and that "there was really no safe way to do it quickly with a lot of wood chips smoldering and smoking."[101] The uncontrolled burning of so much wood biomass accounts for huge amounts of harmful air pollution.

Beyond fires, explosions also occur. The primary culprit of explosions at wood pellet facilities is airborne wood dust, which is generated at all stages of manufacturing, storage, and transporting of wood pellets. Once this fine dust is suspended in the air it is extremely combustible. For instance, a 2011 blast at Georgia Biomass in Waycross, Georgia, rattled windows up to five miles from the facility.[102] While mills in the U.S. South have thus far escaped fatal explosions, an employee was killed by a dust explosion at a mill in British Colombia in 2012.[103]

The Clean Air Act addresses the risk of fires and explosions, yet many states are not fully implementing the Act's provisions in order to best reduce the risk. The Clean Air Act contains a General Duty Clause which requires facilities producing or handling extremely hazardous substances to design, maintain, and operate their facilities in a safe manner.[104] As the long list of fires and explosions at wood pellet facilities show, wood dust qualifies as an extremely hazardous substance.[105] Unfortunately, permits issued to wood pellet manufacturing plants either fail even to mention the General Duty Clause, or provide only brief, non-specific references to it which do not discuss measures the facility needs to take to properly manage combustible dust. This is insufficient to prevent fires and explosions, and instead EIP believes permits must state that the General Duty Clause applies to the facility's handling of explosive dust and require the facility to perform specific steps that are sufficient to ensure that workers and others who live, work, recreate, or simply commute in the facility's vicinity are protected from the dangers posed by combustible dust. At a minimum, the permits should:

1. Identify the Clean Air Act's General Duty Clause as an applicable requirement with respect to the facility's handling of combustible dust.

2. Specifically require the facility to prepare a hazard analysis identifying the hazards associated with explosive dust and the facility's processes, potential fire and explosion scenarios, and the consequences of a fire or explosion.

3. Establish specific design and operation standards that the facility must meet to prevent a dust-related fire or explosion.

4. Establish recordkeeping and reporting requirements sufficient to demonstrate that the facility is meeting its General Duty Clause obligations.

Implementing these more specific requirements will not only aid in preventing releases of air pollution, but will serve to protect workers and neighbors from harm. Plant managers will benefit too, as EPA has brought enforcement actions against plants for failure to comply with the General Duty clause after accidents, and plant managers have responded that they were not aware of the Clause or its full requirements.

Conclusion and Recommendations

The Clean Air Act only works to protect health and the environment when state agencies are fully implementing all of the Act's requirements. EIP calls on state agencies across the U.S. South to address the errors and omissions identified in this report, and to further make proactive moves to better understand and control emissions from this emerging industry in the future. EIP makes the following recommendations as initial steps to remedy the numerous deficiencies identified in this survey:

1. **Reexamine existing air permits and reissue stronger permits where needed.** Many of the air permits for wood pellet mills were issued before permitting agencies fully understood the scope of VOC and hazardous air pollutant emissions from the industry. These permits allow facilities to exceed the Clean Air Act's major source threshold and are legally deficient. States should take a careful look at permits for

wood pellet mills and assess whether the existing permits account for VOC and hazardous air pollutant emissions from each of the major units at the facility. Where exceedances exist, states should take immediate action to ensure facilities cease violating pollution limits.

2. **Require "major" sources of air pollution to install the best available control technology.** As this report reveals, many pellet mills with major source permits evade using the best available control technology, or any control technology at all, while facilities with minor source permits, often the same size or larger, do utilize controls. This is an unacceptable perversion of the Clean Air Act. States must require facilities with major source permits to reduce emissions to at least the level achieved by the best-controlled minor source facility.

3. **Institute production limits at minor source facilities.** Court decisions and EPA guidance dictate that production limits are necessary aspects of ensuring that facilities do not exceed the major source threshold. This is especially vital at minor source facilities which do not utilize sufficient controls to keep their emissions below legal limits when operating at full capacity. If a facility can exceed legal limits when operating at or near maximum production rates, states must require production limits that ensure the facility does not emit more pollution than legally allowed. Further, production limits allow state agencies and the public a reasonable method to determine whether a facility is exceeding Clean Air Act thresholds. Although a few permits EIP surveyed do incorporate production limits, the overwhelming majority of permits which should have production limits do not and are therefore legally deficient.

4. **Ensure Communities are Notified of and Able to Participate in Permitting Decisions.** As noted above, several permits allowing the construction or modification of wood pellet plants were issued without public notice. Communities near the proposed facilities were not adequately informed of the decision to allow sources of air pollution to locate in their backyard. States should revise their regulations and procedures to include public notice and opportunity for meaningful input from those most affected by a plant's air pollution.

5. **Require annual emissions testing.** Many permits rely on emissions estimates—frequently outdated and inaccurate—rather than source-specific emissions testing to determine the level of air pollution emitted from wood pellet mills. This is especially true for VOC and hazardous air pollution, and from units other than the wood dryer such as pellet coolers and hammermills. While continuous emissions monitoring is the best method to determine actual levels of pollution emitted, where states do not require this they must at least require annual testing of each of the major units at pellet mills for volatile organic compounds and hazardous air pollutants.

6. **Reduce the risk of fires and explosions.** Fires and explosions from wood dust plague the wood pellet industry, and the Clean Air Act gives states a powerful tool to address the problem in the General Duty Clause. States must begin utilizing the

Genera Duty Clause effectively and require facilities to comply with their general duty under the Clean Air Act to design and maintain a safe facility.

Appendix A: Clean Air Act Permitting in the Context of Wood Pellet Manufacturing

This Appendix provides a brief primer on the basic framework of the Clean Air Act and how it applies to the wood pellet industry. The Clean Air Act requires sources of air pollution to obtain various types of permits based on the amount and type of pollution emitted, as well as the nature and location of the source. These permits generally contain emission limits, operating standards, or other requirements to protect air quality. One key thing to remember is that these permitting programs are primarily administered by state environmental agencies, and while the federal EPA has some oversight, the vast majority of decision-making and enforcement occurs at the state level. This means that permits and enforcement can vary considerably from state to state.

State Construction Permits

In general, sources of air pollution must obtain at least a state permit to construct and operate a new source of air pollution. These permits may or may not be open to public notice and comment, and states are relatively free to issue these permits on their own terms. Unless a facility triggers one of the other types of permits, this may be the only permit a facility needs. Wood pellet plants, especially large export-based plants, need additional permits due to their high emission rates.

Title V Permits

Title V of the Clean Air Act establishes a federal operating permit program. Title V permits incorporate all legal requirements for air pollution that apply to a facility into a single permit. Most importantly, Title V permits require facilities to demonstrate how they will comply with each of the legal requirements, with conditions for monitoring, record keeping, and reporting. Facilities which emit or have the potential to emit more than 100 tons per year of any regulated pollutant, 25 tons per year of HAPs, or 10 tons per year of any single HAP must apply for a Title V permit within a year after they begin operation. Large wood pellet facilities all emit VOCs, and frequently other regulated pollutants or HAPs, above the Title V threshold, so every facility in this report has at least a Title V permit. Finally, although Title V is a federal operating permit in that the requirement are specified by the Clean Air Act, responsibility for the issuance and enforcement of these permits rests mostly with state agencies.

New Source Review and Prevention of Significant Deterioration Permits

New Source Review is the Clean Air Act's permitting program designed to limit emissions from large sources of air pollution by requiring a permit before a "major source" begins construction or undertakes a modification. Although EPA has created a stricter definition of "major source" for many industries (a facility with the potential to emit 100 tons per year of a regulated pollutant), for wood pellet mills, "major source" means a facility with the potential to emit more than 250 tons per year of a regulated pollutant. It is worth pointing out that that the threshold is based on potential emissions rather than actual emissions, so even if a facility usually operates at 75% capacity, the relevant emissions are those produced while operating at 100% capacity.

New Source Review consists of several types of permits, but the permit at issue in the wood pellet industry is known as a Prevention of Significant Deterioration (PSD) permit. PSD permitting requires facilities to conduct impact analyses, air dispersion modelling, and other protective steps, but the heart of PSD permitting is the "best available control technology" requirement. On a technical level, PSD does not actually require a facility to install the best available control technology, but it does require a facility to limit emissions to the level achievable by using the best available control technology. In practice, however, PSD is synonymous with utilizing the best available control technology, and permitting agencies are supposed to select the best available control technology on a case-by-case basis and implement corresponding emission limits.

PSD permitting is meant to be rigorous, and most of the wood pellet industry has attempted to remain below the 250 ton per year threshold to avoid it (see the section on synthetic minor limits below). Only three facilities have gone through New Source Review and PSD permitting before construction: Enviva Hamlet, Enviva Sampson, and Drax LaSalle. Two other facilities, German Pellets and Enviva Cottondale, are currently going through PSD permitting after discovering they were exceeding 250 tons per year of VOCs. Many of the issues revealed in EIP's survey involve facilities either exceeding the 250 ton per year threshold and not going through PSD, or states failing to select controls which are widely used in the industry as the best available control technology.

Hazardous Air Pollutants and Permitting

Hazardous air pollutants (HAPs) are those pollutants which EPA considers especially toxic or carcinogenic, and are more strictly regulated under the Clean Air Act. Unlike the permits discussed above, there is no unique permit needed to emit HAPs; instead, facilities which have the potential to emit more than 10 tons per year of any single HAP, or more than 25 tons per year of all HAPs combined, must apply for a Title V permit and utilize the maximum achievable control technology, which is meant to be stricter than other requirements such as PSD's best available control technology. For most industries, EPA has promulgated national standards and limits which represent the maximum achievable control technology. The wood pellet industry, however, is so new that EPA has not established any standards. This means it is up to the states to develop, on a case-by-case basis, maximum achievable control technology standards and emissions limits for wood pellet facilities. Unfortunately, for facilities which qualify, states have frequently failed to require any control technology at all, and several facilities emit substantially more HAPs than they would if states actually required maximum achievable control technology.

Synthetic Minor Sources

Each of the above permitting realms has a triggering pollution threshold, e.g. 250 tons per year of any PSD pollutant. The key to these thresholds is that they are triggered by the *potential* to emit that pollutant, rather than whether a facility actually emits more than the threshold in a given 12-month period. Facilities with such a potential are known as "major sources," for example a facility which has the potential to emit more than 100 tons per year of a regulated pollutant is a major source in terms of Title V permitting. Facilities which have a potential to emit above a given threshold but wish to avoid the stricter permitting can opt to take limits to remain a minor source. These are known as "synthetic minor limits" because the facility is not truly a minor source, but will be treated as such if it complies with the limit. To be valid synthetic minor limit, the limit must be enforceable, ideally in terms of a production or operating limit. A good example would be a facility which would emit 275 tons per year of VOCs when operating at a production rate of 400,000 tons per year (and would therefore be a major source for PSD), but takes a legal limit which restricts operations to just 350,000 tons per year, which lowers VOC emissions to below 250 tons per year. Most wood pellet facilities are permitted as synthetic minor sources for PSD, but only have a blanket emission limit in their permits, such as "the facility shall emit less than 249 tons per year of VOCs," rather than an actual production limit. Unfortunately, such blanket limits are difficult to enforce in the real world if a facility does not accurately understand its rate of emissions. This is why many large pellet mills were in fact exceeding their 249 ton per year limits, because states and the industry did not realize that many units emitted much more VOCs than they believed.

Notes

[1] Florida has agreed to require Enviva Cottondale wood pellet plant to go through major source permitting in response to recent comments submitted by EIP. It remains to be seen whether Florida will require the best available control technology, despite the fact that the Clean Air Act requires it.
[2] Dogwood Alliance, Natural Resources Defense Council, Southern Environmental Law Center, "European Imports of Wood Pellets for "Green Energy" are Devastating US Forests," https://www.dogwoodalliance.org/wp-content/uploads/2017/05/NRDC_2014-2017Booklet_DigitalVersion-resize.pdf; Drouin, Roger, "Wood Pellets: Green Energy or New Source of CO2 Emissions," Yale Environment 360 (Jan. 22, 2015), http://e360.yale.edu/features/wood_pellets_green_energy_or_new_source_of_co2_emissions.
[3] Copley, Andrew. "Wood Bioenergy Update and Wood Pellet Exports: Q1 2017," Forisk Consulting (Feb. 17, 2017), http://forisk.com/blog/2017/02/17/wood-bioenergy-update-wood-pellet-exports-q1-2017/ ; National Renewable Energy Laboratory, Energy Analysis, International Trade of Wood Pellets,(DATE), *available at* https://www.nrel.gov/docs/fy13osti/56791.pdf.
[4] Campilho, Pedro. "The Asian Biomass Market: Challenges and Opportunities Ahead." *Biomass Magazine,* November 30, 2017. http://biomassmagazine.com/articles/14854/the-asian-biomass-market-challenges-and-opportunities-ahead.
[5] Science Advisory Board Review of EPA's Accounting Framework for Biogenic CO_2 Emissions from Stationary Sources 7 (Sept. 28, 2012); "Letter from Over 100 Scientists to North Carolina Governor Roy Cooper," November 14, 2017; Mitchell, S.R. et al., Carbon debt and carbon sequestration parity in forest bioenergy production. Global Change Biology Bioenergy 4: 818-827 (2012); Schulze, E.-D. et al., Large-scale bioenergy from additional harvest of forest biomass is neither sustainable nor greenhouse gas neutral. Global Change Biology Bioenergy 4: 611-616 (Apr. 2, 2012); McKechnie, J. et al., Forest bioenergy or forest carbon? Assessing trade-offs in greenhouse gas mitigation with wood-based fuels. Environ. Sci. Technol. 45: 789-795 (2011); Repo, A. et al., Indirect carbon dioxide emissions from producing bioenergy from forest harvest residues. Global Change Biology Bioenergy 3: 107-115 (2010); Gunn, J., et al., Manomet Center for Conservation Sciences, Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy Resources (2010).
[6] Koester, Stefan and Davis, Sam, Siting of Wood Pellet Production Facilities in Environmental Justice Communities in the Southeastern United States. Environmental Justice (ahead of print) (Jan. 2018).
[7] Dogwood Alliance, Wetland Logging Investigation Southampton, VA & Ahoskie, NC: May 13/14th, 2015, https://www.dogwoodalliance.org/wp-content/uploads/2015/06/Wetlands-Logging-Investigation-Flyer.pdf.
[8] Qian Di, M.S. et al., Air Pollution and Mortality in the Medicare Population. *New England Journal of Medicine* 377:15, 1497-1499. (2017), http://www.nejm.org/doi/full/10.1056/NEJMoa1702747.
[9] For instance, German Pellets Texas reports 63 tons per year in its PSD application, Enviva Northampton reports 75 tons per year in their Title V Permit application, and Enviva Southampton reports 77 tons per year in their Title V Permit Application. *See* German Pellets Texas Permit Amendment Application, Permit No. 98014, (Sep. 2016); North Carolina DAQ Application Review for Enviva Pellets Northampton, Permit No. 10203T06; Enviva Pellets Southampton Title V Permit Application, Permit No. 61653 (Jan. 4, 2016).
[10] Revised PSD Air Quality Construction and Operating Permit Application for Enviva Pellets Sampson, August, 2014; PSD Air Quality Construction and Operating Permit Application for Enviva Hamlet, January, 2014.
[11] EPA, Air Pollution Control Technology Fact Sheet for Regenerative Incinerator. EPA-452/F-03-021.
[12] *See supra,* note 10; *see also* North Carolina DEQ Application Review Including Final Determination for Enviva Pellets Sampson (Nov. 17, 2014); North Carolina DEQ Application Review Including Final Determination for Enviva Pellets Hamlet (Mar. 29, 2016).
[13] Revised PSD Air Quality Construction and Operating Permit Application, Enviva Pellets Sampson, Prepared by Trinity Consulting (Aug. 2014), § 4.4.3.5. ("RTO abatement technology is deemed to be cost prohibitive"); *see also* PSD Air Quality Construction and Operating Permit Application, Enviva Pellets Hamlet, Prepared by Trinity Consulting (Jan. 2015), § 4.4.3.5 ("RTO abatement technology is deemed to be cost prohibitive").

[14] Compare, for instance, AP-42 emission factors for particle board dryers at 100% softwood of 4.9 lb/ODT to 100% hardwood at .24 lb/ODT. (AP-42 § 10.6.2, Table 10.6.2-3).
[15] EPA Air Pollution Control Technology Fact Sheet, Regenerative Incinerator, EPA-452/F-03-021.
[16] Sterman, John et al., Does Replacing Coal with Wood Lower CO2 Emissions? Dynamic Lifecycle Analysis of Wood Bioenergy. Environ. Res. Lett. 13 (2013); UK Department of Energy and Climate Change, Life Cycle Impacts of Biomass Electricity in 2020 at 12-13 (July 2014).
[17] Forest Stewards Guild, Ecological Forestry Practices for Bottomland Hardwood Forests of the Southeastern U.S., May 2016, http://www.forestguild.org/publications/research/2016/FSG_Bottomland_Hardwoods.pdf.
[18] *Id.*
[19] U.S. EPA, Integrated Risk Information System.
[20] *Ass'n of Irritated Residents v. Fred Schakel Dairy*, 634 F.Supp.2d 1081 (E.D. Cal., 2008), *see also American Forest and Paper Association v. EPA,* 294 F.3d 113, 118-119 (D.C. Cir. 2002).
[21] *See* Table O, showing control devices on dryers at the facilities surveyed by EIP. Only Enviva facilities operate without an RTO or similar device.
[22] Memorandum from Manny Patel, Georgia EPD, to Eric Cornwell, Georgia EPD, entitled "Emission Factors for Wood Pellet Manufacturing" (Jan. 29, 2013), containing stack testing results from Georgia Biomass showing 95% reduction of formaldehyde, acetaldehyde, and methanol with the use of an RTO.
[23] *See supra,* note 15.
[24] North Carolina DEQ Air Quality Permit for Enviva Northampton, Permit No. 10203R00 (Mar. 9, 2012).
[25] *Id.* at 11.
[26] Application to Modify Air Permit No. 10203R03 for Enviva Pellets Northampton (May 2015).
[27] North Carolina DEQ Air Quality Permit for Enviva Northampton, Permit No. 10203R04 (Oct. 12, 2015).
[28] North Carolina State Implementation 15A NCAC 2D .0530(i) ("[w]hen a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980 on the capacity of the source or modification to emit a pollutant … then the provisions of [North Carolina's PSD regulations] shall apply to the source or modification as though construction had not yet begun on the source or modification."). The most recent version of North Carolina's PSD regulations includes the same language but in a different place: 15A NCAC 2D. 0530(k). Nearly identical language appears in EPA's federal PSD regulations at 40 C.F.R. 52.21(r)(4).
[29] *See supra,* note 15.
[30] The permit review document for both the original construction permit and the permit to increase VOC emissions contain the following statement: "Public notice is not required for this state-only construction permit under 15A NCAC 02Q .0300." North Carolina DEQ Air Permit Reviews for Air Permits No. 10203R00 and 10203R04.
[31] 40 CFR Part 51, Subpart I (Requirements for Preparation, Adoption, and Submittal of Implementation Plans—Review of New Sources and Modifications) requires 30 days public notice and opportunity to comment for both minor and major new sources of air pollution. 40 CFR §51.161.
[32] The Clean Air Act is clear that before a permit can be issued to a major facility like Enviva Hamlet, the state must hold a public hearing. North Carolina, however, believes it is their prerogative whether to hold a hearing, based on whether North Carolina regulators determine that there is sufficient public interest in the proposed permit. Even if this were a valid interpretation, North Carolina still failed to hold a hearing under the state's own guidelines. North Carolina ignored repeated requests for a hearing, and approximately 300 public comments, showing there was indeed substantial public interest.
[33] *See, e.g.* North Carolina DEQ Air Quality Permit for Enviva Hamlet, Permit No. 10365R00 (Mar. 29, 2016) (listing the facility's address with an incorrect zip code placing the facility some 90 miles east of its intended location). Other errors include public notice documents with no street address or an incorrect street address.
[34] German Pellets Draft Permit No. 98014, Maximum Allowable Emission Rates table (showing maximum emissions at 579 tons per year based on stack testing at the facility).
[35] Permit Amendment Application for German Pellets, Prepared by Trinity Consulting (Sep. 2016), § 10.2.2.
[36] *Id.,* § 11.1.2.
[37] EPA New Source Review Workshop Manual, Chapter B, § IV.A, at B.11, *available at* https://www.epa.gov/sites/production/files/2015-07/documents/1990wman.pdf.

[38] Title V Issuance Application, Drax Amite, prepared by FC&E Engineering (Aug. 2016), Appendix B: Emissions Calculations.
[39] *Id.*
[40] *See* Florida DEP Technical Evaluation & Preliminary Determination for Green Circle Bio Energy Permit No. 0630058-014, August 6. 2013, at 5 (referencing the 2010 testing and giving an emission rate of .639 lb/ODT. When a 10% margin is added to this rate the resulting emission rate is .703 lb/ODT, almost exactly the .704 lb/ODT Drax cited.).
[41] *Id.*
[42] *Id.* The emission factor of 3.25 lb/ton is back calculated from the reported post-dryer annual VOC emissions (1,344 tons per year) and a production rate of 827,000 tons per year.
[43] *See supra,* note 15.
[44] Mississippi DEQ Statement of Basis for Drax Amite's Draft Title V Permit (Jun. 20, 2017), at 4.
[45] Air Emission Test Report for Enviva Wiggins, Prepared by Air Control Techniques (Oct. 31, 2013), at 1.
[46] *Id.*; State of Mississippi Air Pollution Control Title V Permit No. 2540-00025 (Nov. 30, 2015), at 15.
[47] Air Emission Test Report for Enviva Amory, Prepared by Air Control Techniques (Oct. 31, 2013), at 1.
[48] *See, e.g.*, emissions in Table B, note that the emission rates for facilities like Hazlehurst and Drax Amite are after an RTO has removed 95% of HAP emission, which is not the case at Enviva Amory, meaning emissions at Enviva Amory should be much higher.
[49] Memorandum from Shannon Vogel, NC DEQ Stationary Source Compliance Branch to Robert Fisher, NC DEQ Washington Regional Office and Yuki Puram, Air Quality Permitting Section, Re: Emissions Testing Performed in Amory and Wiggins Mississippi (Oct. 9, 2015).
[50] *Id.*
[51] State of Mississippi and Federally Enforceable Air Pollution Control Permit for Enviva Amory, Permit No. 1840-00082, Issued May 2, 2007 and Modified April 16, 2008, October 19, 2010, and March 4, 2011.
[52] *Id.* at 16.
[53] Memorandum from Manny Patel, Georgia EPD, to Eric Cornwell, Georgia EPD, entitled "Emission Factors for Wood Pellet Manufacturing" (Jan. 29, 2013).
[54] State of Mississippi Air Pollution Control Title V Permit No. 1840-00082 for Enviva Amory (Aug. 4, 2015).
[55] *Id.*
[56] *See supra*, note 54.
[57] Because the stack testing report did not include the rate of softwood processed, it is impossible to develop a source-specific emission factor for Enviva Amory. Instead, EIP applied the emission factors from Georgia Biomass, which are widely considered to be the best emission factors for 100% softwood facilities, and applied those emission factors to Enviva Amory's capacity of 125,000 tons per year. *See supra* note 15. Notably, even if the Georgia Biomass factors give relatively higher-than-actual emission estimates, the facility would still be well above the 250 ton per year threshold.
[58] 185 tons per year of VOC emissions at 60% softwood and 99,000 tons per year production rate gives an emission factor of 3.73 lb/ODT. Scaling this emission factor to 65% softwood gives an emission factor of 4.04 lb/ODT, which applied to the facility's current production rate of 121,000 tons per year results in 253 tons per year of VOCs.
[59] Drax Morehouse operates at 620,000 tons per year and claims to emit 20 tons per year of VOCs, for comparison testing at Enviva Cottondale found 460 tons per year of VOCs when operating at 610,000 tons per year, testing at Georgia Biomass found up to 533 tons per year of VOCs while operating at 820,000 tons per year, and testing at German Pellets Texas reports up to 446 tons per year of VOC emissions when operating at 578,000 tons per year.
[60] Drax Title V Air Permit Modification Application for Drax Morehouse (Aug. 2016), Section 5.0 Emissions Calculations. Note that when Drax submitted this same testing to Mississippi to support its claims of low VOCs at Drax Amite, they added an asterisk to the pellet cooler testing, labelling it "engineering testing data." No other portion of Drax's testing contained such an asterisk, and EIP assumes this is to denote that the pellet cooler testing was not conducted pursuant to any requirement or EPA-methodology.
[61] Louisiana's Air Permit Briefing Sheet for the November 17, 2017 Title V Air Permit Modification gives 20.95 tons per year of VOCs from the pellet coolers, an identical rate to Drax's emission factor from their permit application, showing that Louisiana accepted Drax's emission factor. A December 22, 2017 phone conversation with Steven Schwartz, Louisiana DEQ's Waste Permits Division (the Division's officer responsible for reviewing Drax Morehouse's stack tests), confirmed that the department never received any

stack testing data concerning the pellet coolers. Further, Drax Morehouse's stack testing report only shows PM testing from the pellet coolers, and Louisiana DEQ's review of these tests also only show PM testing from the pellet coolers. *See* Letter from James Meyers, Engineering Manager, Waste Permits Division, LDEQ to Michael Bellow, Drax Environmental Health & Safety Monitor, RE: Compliance Tests Conducted February 10-24, 2016.

[62] Louisiana's Air Permit Briefing Sheet for the November 17, 2017 Title V Air Permit Modification.

[63] Assuming the worst-case scenario that the facility-wide emissions are 708 tons per year, and a VOC destruction rate for an RTO of 95%, total emissions from the dryer, hammermills, and pelletizing lines would be 35.4 tons per year.

[64] Virginia DEQ Stationary Source Permit to Construct and Operate, Registration No. 61653 for Enviva Pellets Southampton (Sep. 5, 2012).

[65] The exact rate is not available, but applying Georgia Biomass emission factors approximately 900 to 1,000 tons per year of VOCs.

[66] Letter from Joe Sullivan, Trinity Consultants to Troy Breathwaite, Virginia DEQ, Re: Air Quality Permit Application (May 9, 2013). *See also* Virginia DEQ Stationary Source Permit to Construct and Operate, Registration No. 61653 for Enviva Pellets Southampton (Aug. 15, 2013).

[67] A thorough review of Virginia DEQ permitting documents related to Enviva Southampton provided by the state in response to an EIP Freedom of Information Act request reveals no discussion of HAP emissions after the switch to hardwoods. The only reference to HAP emissions are found in Enviva's applications.

[68] Enviva developed a weighted emission factor by scaling HAP emissions based on VOC emissions, as such: "To account for hardwood HAP & TAP [toxic air pollutants] emissions, factors were conservatively calculated by taking the AP-42 HAP factors for 100% softwood (green) and multiplying by the ratio of the total listed VOC emission factors for hardwood and softwood (0.24 / 4.7)." Enviva Pellets Southampton Title V Air Permit Application (Jan. 4, 2016), Table 5 ("Rotary Dryer -HAP and TAP Wood Combustion Emissions"). Under this method, Enviva assumes each HAP is therefore reduced at the same rate total VOCs are reduced. Rather than base all the HAP emission factors for a given hardwood content on the sliding VOC scale, EIP used the ratio between a given HAP in in the 100% softwood AP-42 source category and the emission factor for the same HAP in the 40 to 60% source category to create a HAP-specific rate of decrease (AP-42 Table 10.6.2-3 SCC 3-07-006-25 and SCC 3-07-006-26 respectively). This method does not assume that all HAPs are reduced at the same rate, but instead accounts for the unique emission rates of each HAP. For formaldehyde the emission factor at 100% softwood is .14 lb/ODT, and at 50% softwood (e.g. the middle point of the 40 to 60% AP-42 category), the emission factor is .096 lb/ODT. This amounts to a reduction in formaldehyde emissions of 31.43%, whereas total VOCs between the same two source categories are reduced from 4.7 lb/ODT to 1.6 lb/ODT, for a reduction of 65.96%. This shows that formaldehyde emissions do not decrease at the same rate as total VOCs, and instead decrease much more slowly.

[69] Appling County Wood Pellets, a facility in Georgia, conducted three sets of HAP testing in 2017. In each set of testing, Appling tested at 70% hardwood, 80% hardwood, and 100% hardwood. In two out of three tests, acetaldehyde and formaldehyde increased as hardwood increased. Averages of all three tests revealed emissions of formaldehyde at .85 lb/hour at 70% hardwood and 1.11 lb/hour at 100% hardwood; acetaldehyde at .52 lb/hour at 70% hardwood and .61 lb/hour at 100% hardwood; methanol was emitted at 1.33 lb/hour at both 70% and 100% hardwood. Further, studies of lumber and engineered wood dryers show that during the wood drying process, hardwood emits significantly more methanol than softwood. For instance, one study assessing HAP emissions from oriented strandboard drying showed hardwood emitting nearly three times as much methanol as softwood southern pine, at .33 lb/ODT and .12 lb/ODT respectively. *See* Milota, Michael, "Emissions from Wood Drying: the Science and the Issues," Forest Products Journal, 2000, Issue 50(6). Another study of wood drying, conducted at lumber kilns, tested five species of softwood and one species hardwood for HAP emissions, including methanol. The results again showed that the hardwood species emitted much higher rates of methanol than any of the softwoods. *See* Milota, Mike and Mosher, Paul, "Emissions of Hazardous Air Pollutants from Lumber Drying," Forest Products Journal, July 2008 Issue 7/8, at 50-55. Notably, the raw data which Enviva relies upon for its methanol emission rate (known as AP-42 emission factors) is based on just three particle board dryers, and EPA gave the data one of the lowest reliability ratings. Enviva relies on the methanol emission factor at AP-42 § 10.6.2, Table 10.6.2-3 SCC 3-07-006-26. Out of the wood-fired rotary dryers tested to develop the methanol AP-42 emission factors,

there are only five sources processing any significant amount of hardwood (all of which processed 55% hardwood and 45% softwood pine). Of these five, two are noted to be pre-dryers and have substantially lower emissions than the other dryers, and therefore should not be used to estimate emissions from a full-scale rotary dryer. AP-42's emission factor, however, does not exclude the pre-dryer tests from the average for the emission factor, which means the final emission factor is biased low by these pre-dryer tests. *See* AP-42 § 10.6.2 Data Sets, Rotary Dryer category, Excel spreadsheet available at https://www3.epa.gov/ttn/chief/ap42/ch10/index.html.

[70] AP-42 § 10.6, *see* note 77.

[71] *See* note 77. At 10% softwood the emission factor is .0608 lb/ton. This rate applied to Enviva Southampton's production rate is 16.2 tons per year.

[72] Enviva estimated the dryer formaldehyde emissions at 5.87 tpy and facility wide HAP emissions at 21.8, while EIP estimates formaldehyde dryer emissions at 16.2 tpy, which pushes facility wide emissions to 31.4 tpy. See Title V Permit Application for Enviva Southampton.

[73] Appling County Wood Pellets, a facility in Georgia, conducted three sets of HAP testing in 2017. In each set of testing, Appling tested at 70% hardwood, 80% hardwood, and 100% hardwood. EIP averaged all three sets of testing at each softwood ratio, then averaged the emission factor for 80% hardwood and 100% hardwood to estimate emissions at 90% hardwood, which is what Enviva Southampton processes. These emission factors are .08 lb/odt for methanol, .033 lb/odt for acetaldehyde, and .061 lb/odt for formaldehyde.

[74] Florida DEP Draft Statement of Basis for Title V Air Operation Permit Renewal, Permit No. 0630058-020-AV.

[75] Florida DEP Consent Order OCG File No. 17-1134 (Nov. 15, 2017).

[76] Florida DEP Technical Evaluation & Preliminary Determination for Green Circle Bio Energy, Project No. 0630058-014-AC, Aug. 6, 2013 at 4.

[77] South Carolina DHEC, Bureau of Air Quality Construction Permit No. 1240-0133-CB (Jan. 12, 2018); Statement of Basis for Air Permit No. 1240-0133-CB (Jan. 12, 2018).

[78] *Id.*

[79] *Id.*

[80] Custom Stack Analysis, LLC Report on Stack Tests at Colombo Energy, June 19 through July 8, 2017. Colombo submitted this testing to SC DHEC, with the caveat that they were not submitting the June testing in order to meet its source testing obligation.

[81] Air Emission Test Report for Colombo Energy, Prepared by John Richards, Ph.D., P.E., Air Control Techniques (Dec. 4, 2017).

[82] Phone conversation between Patrick Anderson, EIP, and Michael Shroup, Manager, SC DHEC Source Evaluation Section (Jan. 25, 2018).

[83] Alabama DEM Synthetic Minor Operating Permit Nos. 703-0041-X001 through X003 for Lee Energy Solutions, August 12, 2009 (restricting operations to 5,840 hours per year).

[84] *In re: Lee Energy Solutions, LLC,* Alabama Department of Environmental Managements, Consent Order No. 16-023-CAP (Dec. 29, 2015).

[85] Biomass Energy Resource Center, Particulate Matter Emissions-Control Options, 2011, table at 9. Link: http://www.biomasscenter.org/images/stories/FSE_PM_Emissions.pdf

[86] *Id.*

[87] ADEQ Operating Air Permit No. 2341-AOP-R1 for Highland Pellets, LLC (Sep. 15, 2015), at 26.

[88] *Id.*

[89] Arkansas Department of Environmental Quality Air Division Complaint Report, PDS # 23234, Dec. 14, 2017.

[90] *Id.*

[91] Ho Kim, Yong et al., "Mutagenicity and Lung Toxicity of Smoldering vs. Flaming Emissions from Various Biomass Fuels: Implications for Health Effects from Wildland Fires," Environ Health Perpect. 126(1):017011 (Jan. 2018); Holder, Amara, at al, EPA Office of Research and Development, PM and VOC Speciation by Combustion Phase (2017).

[92] *Id.*

[93] For instance, in each case of each of Enviva's two most recent facilities in North Carolina, Enviva Sampson and Enviva Hamlet, as well as at the Virginia Enviva Southampton plant, Enviva dismissed regenerative

thermal oxidizers as "clearly cost prohibitive." Air Quality Permit Application, Enviva Pellets Southampton, Prepared by Trinity Consultants (May 9, 2013); *see also* Revised PSD Air Quality Construction and Operating Permit Application, Enviva Pellets Sampson, Prepared by Trinity Consulting (Aug. 2014), § 4.4.3.5. ("RTO abatement technology is deemed to be cost prohibitive"); PSD Air Quality Construction and Operating Permit Application, Enviva Pellets Hamlet, Prepared by Trinity Consulting (Jan. 2015), § 4.4.3.5 ("RTO abatement technology is deemed to be cost prohibitive").

[94] Melin, Staffan, Wood Pellet Association of Canada, Determination of Explosibility of Dust Layers in Pellet Manufacturing Plants (Aug. 30, 2012)("Dust explosions and fires has become a major issue in the pellets industry as well as in other woodworking industries with devastating consequences in many cases.); Biomass Handling, *Biomass Dust Fire and Explosion Control* (Apr. 24, 2013), at 2 ("Historically, wood pellet production was a small industry with more than its share of fires and explosions. However with the emphasis on green energy, wood pellet production has skyrocketed and very large plants are being constructed. There have been several recent major fires and explosions within the wood pellet manufacturing, shipping, receiving, storage and power plant facilities. These new facilities are learning that they have to employ safe handling practices for dry wood materials.").

[95] "2 Burn Victims Remain Hospitalized after Hazlehurst Flash Fire," WALB (June 4, 2015), http://www.walb.com/story/28983516/4-seriously-burned-after-fire-at-hazlehurst-wood-pellets; "Fire Reported at Highland Pellets Plant," *The Pine Bluff Commercial* (Aug. 16, 2017), http://www.pbcommercial.com/news/20170816/fire-reported-at-highland-pellets-plant; "Enviva's Cottondale Facility Damaged by Fire," *mypanhandle.com*, (June 11, 2017), http://www.mypanhandle.com/news/envivas'cottondale-facility-damaged-by-fire/737627383; Voegele, Erin. "Fire at Enviva Facility Not Expected to Result in Major Downtime." *Biomass Magazine* (Jan. 9, 2014), http://biomassmagazine.com/articles/9882/fire-at-enviva-facility-not-expected-to-result-in-major-downtime; Bryant, Cal. "Enviva Fire Quickly Contained." *Roanoke-Chowan News-Herald* (Jan. 24, 2013), http://www.roanoke-chowannewsherald.com/2013/01/24/enviva-fire-quickly-contained/; Taylor, Stephanie. "Aliceville Plant Closed After Explosion." *Tuscaloosa News* (Oct. 24, 2016), http://www.tuscaloosanews.com/news/20161024/aliceville-plant-closed-after-explosion Taylor, Stephanie. "Aliceville Plant Closed After Explosion." *Tuscaloosa News* (Oct. 24, 2016), http://www.tuscaloosanews.com/news/20161024/aliceville-plant-closed-after-explosion; "German Pellet Plant in Woodville has Fire in Silo." *Beaumont Enterprise* (Apr. 30, 2014), http://www.beaumontenterprise.com/jasper/news/article/German-pellet-Plant-in-Woodville-has-fire-in-Silo-5442052.php; Waldrep, Emily. "Firefighters Respond to Second Fire at Woodville German Pellet Plant." *Tyler County Booster* (May 07, 2015), https://www.tylercountybooster.com/index.php/news/1848-firefighters-respond-to-second-fire-at-woodville-german-pellet-plant; Langford, Cameron. "Residents Go to Court Over Months-Long Texas Plant Fire." *Courthouse News* (Oct. 27, 2017), https://www.courthousenews.com/residents-go-court-months-long-texas-plant-fire/

[96] "2 Burn Victims Remain Hospitalized after Hazlehurst Flash Fire," WALB, (June 4, 2015), http://www.walb.com/story/28983516/4-seriously-burned-after-fire-at-hazlehurst-wood-pellets.

[97] Taylor, Stephanie. "Aliceville Plant Closed After Explosion." *Tuscaloosa News* (Oct, 2016), http://www.tuscaloosanews.com/news/20161024/aliceville-plant-closed-after-explosion

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[105] Although the Clean Air Act does not define "extremely hazardous substances," the legislative history provides criteria which EPA may use to determine if a substance is extremely hazardous. Specifically, the Senate Report states that "extremely hazardous substance" would include any agent "which may or may not be listed or otherwise identified by any Government agency which may as the result of short-term exposures associated with releases to the air cause death, injury or property damage due to its toxicity, reactivity, flammability, volatility, or corrosivity." Senate Committee on Environment and Public Works, Clean Air Act Amendments of 1989, Senate Report No. 228, 101st Congress, 1st Session 211 (1989), at 211.

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Judson H. Turner, Director

MEMORANDUM

DATE: 1-29-2013

TO: Eric Cornwell- Stationary Source Permitting Manager

FROM: Manny Patel- VOC unit Manager

SUBJECT: Emission factors for Wood Pellet Manufacturing

BACKGROUND:

We are seeing a lot of wood pellet manufacturing application being submitted to GAEPD. These applications are all using different emission factors. It is GAEPD's desire to provide standardized emission factors for applicant's to use in wood pellet manufacturing application. This will make the applications consistent and aide in faster review of these applications.

GAEPD has done extensive testing at Georgia Biomass and have come to conclusion that in addition to dryers there a significant amount of VOC emissions from Hammermill, Pellet Coolers and storage and handling from wood pellet manufacturing operations.

BASIS OF RECOMMENDATION:

1. **VOC Emissions:**

   a. **Dryers:**
   It is our understanding that from the applications submitted to us that the operating temperatures of the dryer's used in pellet mill are very similar to that of particle board dryers. Additionally, the moisture content of the chips entering and exiting the pellet mill dryer and green particle board dryers are very similar. Hence, VOC emissions from the pellet mill dryers are same in amount and characteristics of particle board dryers.

   This approach was further validated when we took VOC emissions test from Georgia Biomass (May 2012, Agri Products Thomasville, GA (March 22, 2010), Agri products Fitzgerald, GA(March 19 2009), Telfair Products, Lumber City GA(August 27,2009) and compared to that of particle board dryer emissions factors from AP-42 for green wood as shown in the attached Table. Based on the comparison of different VOC emission factors we concluded that the particleboard dryers VOC emission factors from AP-42 Chapter 10, Table 10.6.2-3(SCC 3-07-006-25) are a good representation for the wood pellet dryers.

   b. **Hammermill, Pellet Cooler and Storage and Handling**

   The VOC emission factors for Hammermill, Pellet Cooler and storage were taken from May 16, 2012 testing for Georgia Biomass. This is the only current data we have so we suggest using these until more test becomes available.

2. HAP and HCl Emissions:

a. Dryers:

The emission of Formaldehyde, Acetaldehyde and Methanol from Georgia Biomass test (May 16,2012) were compared to emissions from Particle board dryers from AP-42 Chapter 10, Table 10.6.2-3(SCC 3-07-006-25) and OSB dryes from AP-42 Chapter 10, Table 10.6.1-3(SCC3-07-010-09). All of these emission factors are almost identical to each other. Hence it is suggested that HAP emission factors for Particle board dryer from AP-42 Chapter 10, Table 10.6.2-3(SCC 3-07-006-25) be used for Formaldehdye, acetaldehyde and methanol and adjusted where deemed necessary for worst case emissions.

HCl emissions from AP-42 Chapter 1, Table 1.6-3 for wood residue combustion should be used for estimating HCl emissions from wood pellet dryers.

b. Hammermill, Pellet Cooler and Storage and Handling

Georgia Biomass has performed HAP testing on the pellet cooler exhaust. We estimated the HAP emissions from the Hammermill and storage areas by taking the ratio of the VOC emissions from pellet cooler to hammer mill and storage areas and applied the same ratio to estimate HAP emissions.

3. NOX and CO and PM emissions:

a. Dryers:

Both NOx and CO are temperature dependent. OSB dryer operate at lower temperature and hence generate more CO and less NOx. While particle board dryers operate at higher temperature and hence generate less CO and more NOx. Hence, a worst case emission from both data sources is recommended for CO and NOx.

NOx emission factor from AP-42 Chapter 10 Table 10.6.2-2 for particleboard dryer (SCC3-07-007-08) should be used.

CO emission factor from AP-42 Chapter 10 Table 10.6.1-2 for OSB dryer (SCC3-07-0010-09) should be used.

b. **PM Total and Condensible**:

PM total and condensible should be calculated by using AP-42 Chapter 6, Table 10.6.2-1 for Particle board dryer (SCC 3-07-006-25).

GAEPD RECOMMENDED EMISSION FACTORS FOR WOOD PELLET MANUFACTURING

Emission Source	**Uncontrolled Emission Factor**	**Basis of Emission factor**	**Control Device**
Rotary Dryer Direct wood fired processing green softwood	6.0 lb/ODT for VOC	AP-42 Table 10.6.2-3 SCC 3-07-006-25 (Adjusted)	If emissions are routed to the dryer with WESP/RTO controls use 95% DRE for VOC and HAP
	5.3 lb/ODT for CO	AP-42 Table 10.6.1-2 SCC3-07-010-09	
	2.7 lb/ODT for NOx	AP-42 Table 10.6.2-2 SCC 3-07-006-25	
	2.2 lb/ODT for PM total	AP-42 Table 10.6.2-1 SCC 3-07-006-25	
	1.1 lb/ODT for PM Condensible	AP-42 Table 10.6.2-1 SCC 3-07-006-25	
	0.11 lb/ODT for Acetaldehyde	AP-42 Table 10.6.2-3 SCC 3-07-006-25 (Adjusted)	
	0.14 lb/ODT for Formaldehyde	AP-42 Table 10.6.2-3 SCC 3-07-006-25	
	0.11 lb/ODT ton for Methanol	AP-42 Table 10.6.2-3 SCC 3-07-006-25	If WESP is used for PM control use 70% removal efficiency for HCl (pH of the water needs to be monitored and maintained)
	1.9 E-02 lb/MM Btu for HCl	AP-42 Table 1.6-3	
Hammermill	2.5 lb VOC/ton product	Georgia Biomass Testing	If emissions are routed to dryer 90 % DRE for VOC and HAP
	0.004 lb/ton of product for Acetaldehyde	Georgia Biomass- prorated from Pellet Cooler testing	
	0.008 lb/ton of product for Formaldehyde	Georgia Biomass-prorated from Pellet Cooler testing	If emissions are routed to RTO use 95 % DRE for VOC and HAP. .
	0.004 lb/ton for Methanol	Georgia Biomass-prorated from Pellet Cooler testing	

Emission Source	Uncontrolled Emission Factor	Basis of Emission factor	Control Device
Pelletizer/Pellet Cooler (without Steam injection or extraction)	0.5 lb VOC/ton of Product	Georgia Biomass Testing	If emissions are routed to dryer 90 % DRE for VOC and HAP
	0.001 lb/ton of product for Acetaldehyde	Georgia Biomass Testing	
	0.002 lb/ton of product for Formaldehyde	Georgia Biomass Testing	If emissions are routed to RTO use 95 % DRE for VOC and HAP.
	0.001 lb/ton of product for Methanol	Georgia Biomass Testing	
Pelletizer/Pellet Cooler (with Steam injection)	1.3 lb VOC/ton of product	Georgia Biomass Testing	If emissions are routed to dryer 90 % DRE for VOC and HAP
	0.002 lb/ton of product for Acetaldehyde	Georgia Biomass- prorated from Pellet Cooler testing	
	0.004 lb/ton of product for Formaldehyde	Georgia Biomass- prorated from Pellet Cooler testing	If emissions are routed to RTO use 95 % DRE for VOC and HAP.
	0.002 lb/ton of product for Methanol	Georgia Biomass- prorated from Pellet Cooler testing	
Storage/Handling	0.4 lb VOC/ton of product	Georgia Biomass Testing	If emissions are routed to dryer 90 % DRE for VOC and HAP
	0.001 lb/ton of product for Acetaldehyde	Georgia Biomass- prorated from Pellet Cooler testing	
	0.002 lb/ton of product for Formaldehyde	Georgia Biomass- prorated from Pellet Cooler testing	If emissions are routed to RTO use 95 % DRE for VOC and HAP
	0.001 lb/ton of product for Methanol	Georgia Biomass- prorated from Pellet Cooler testing	

Note: These are GAEPD recommended emission factors. Use of these emission factors does not guarantee compliance with all state and federal regulations

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Washington, D.C. 20460

JUN 13 1989

MEMORANDUM

SUBJECT: Guidance on Limiting Potential to Emit in New Source Permitting

FROM: Terrell E. Hunt
Associate Enforcement Counsel
Air Enforcement Division
Office of Enforcement and Compliance Monitoring

John S. Seitz, Director
Stationary Source Compliance Division
Office of Air Quality Planning and Standards

TO: Addressees

This memorandum transmits the final guidance on conditions in construction permits which can legally limit a source's potential to emit to minor or de minimis levels. We received many helpful comments on the January 24, 1989 draft of this guidance, and have incorporated the comments into the final document wherever possible. A summary of the major changes which have been made to the guidance in response to these comments is provided below.

Several commenters noted that the draft guidance used the term "federally enforceable" to mean both federally enforceable as defined in the new source regulations (40 C.F.R. Sections 52.21(b) (17), 51.165(a) (1) (xiv), 51.166(b) (17)), and enforceable as a practical matter. We have tried to distinguish the places where each term should be used, explained the relationship between the two terms, and indicated that in order to properly restrict potential to emit, limitations must be both federally enforceable as defined in the regulations and practically enforceable.

Some commenters requested that the section on averaging times for production limits be more specific as to when it is appropriate to use limitations which exceed a one month time basis. We have tried to explain why it is not possible to develop generic criteria for making this distinction, and to indicate situations where exceptions to the policy that production and operation limitations not exceed one month may be warranted.

There were some requests for a section on enforcement. We have included a new Section VI which addresses this topic. We also received many good suggestions on the example permit limitations. The section on examples has been substantially reworked to reflect your comments.

Finally, we learned through the comments that in two specific circumstances, short term emission limits are the most useful and reasonable way to restrict and verify limits on potential to emit. These circumstances are: 1) when control equipment is installed but control equipment operating parameters are difficult to measure during enforcement inspections; and 2) in surface coating operations with numerous and unpredictable use of coatings containing varying VOC content, where add-on control equipment is not employed. Therefore, we have made a narrow exception to the flat prohibition on use of emission limits to restrict potential to emit for these specific circumstances, and only when certain additional conditions have been met.

Again, we appreciate the thoughtful comments we have received on this guidance. Please insert this document into your Clean Air Act Compliance/Enforcement Policy Compendium as Item Number H.3. If you have any questions, please contact Judith Katz in the Air Enforcement Division at FTS 382-2843, or Sally Farrell in the Stationary Source Compliance Division at FTS 382-2875.

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DOJ

LIMITING POTENTIAL TO EMIT IN NEW SOURCE PERMITTING

JUNE 13, 1989

AIR ENFORCEMENT DIVISION
OFFICE OF ENFORCEMENT AND COMPLIANCE MONITORING

STATIONARY SOURCE COMPLIANCE DIVISION
OFFICE OF AIR QUALITY PLANNING AND STANDARDS

Limiting Potential to Emit in New Source Permitting

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II. The Louisiana-Pacific Case

III. Types of Limitations that will Limit Potential to Emit

IV. Time Periods for Limiting Production and Operation

V. Sham Operational Limits

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    1. Sham permits are not allowed by 40 CFR 52.21(r) (4)

    2. Sham permits are not allowed by the definition of potential to emit: 40 CFR 52.21(b) (4), 51.165(a) (1) (iii), 51.166(b) (4)

    3. Sham permits are not allowed by the Clean Air Act

  B. Guidelines for determining when minor source construction permits are shams.

    1. Filing a PSD or nonattainment NSR application

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Limiting Potential to Emit in New Source Permitting

I. Introduction

Whether a new source or modification is major and subject to new source review under Parts C and D of the Clean Air Act is dependent on whether that source or modification has or will have the potential to emit major or significant amounts of a regulated pollutant. Therefore, the definition of "potential to emit" under the new source regulations is extremely important in determining the applicability of new source review to a particular source. The federal regulations define "potential to emit" as:

> the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of fuel combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.

40 C.F.R Sections 52.21(b) (4), 51.165(a) (1) (iii), 51.166(b) (4).

Permit limitations are very significant in determining whether a source is subject to major new source review. This is because they are the easiest and most common way for a source to obtain restrictions on its potential to emit. A permit does not have to be a major source permit to legally restrict potential emissions. A minor source construction permit issued pursuant to a state program approved by EPA as meeting the requirements of 40 C.F.R. Section 51.160 is federally enforceable. In fact, any permit limitation can legally restrict potential to emit if it meets two criteria: 1) it is federally enforceable as defined by 40 C.F.R. Sections 52.21(b) (17), 51.165(a) (1) (xiv), 51.166(b) (17), i.e., contained in a permit issued pursuant to an EPA-approved permitting program or a permit directly issued by EPA, or has been submitted to EPA as a revision to a State Implementation Plan and approved as such by EPA; and 2) it is enforceable as a practical matter. The second criterion is an implied requirement of the first criterion. A permit requirement may purport to be federally enforceable, but, in reality cannot be federally enforceable if it cannot be enforced as a practical matter.

Non-permit limitations can also legally restrict potential to emit. These limitations include New Source Performance Standards codified at 40 C.F.R. Part 60 and National Emission Standards for Hazardous Air Pollutants codified at 40 C.F.R. Part 61.

The appropriate means of restricting potential to emit through permit conditions has been an issue in recent enforcement cases. Through these cases and through guidance issued by EPA, the Agency has addressed three questions: what types of permit limitations can legally limit potential to emit; whether long averaging times for production limitations are enforceable as a practical matter; and whether sources may limit potential to emit to minor source levels as a means of circumventing the preconstruction review requirements of major source review.

II. The Louisiana-Pacific Case

In United States v. Louisiana-Pacific Corporation, 682 F. Supp. 1122 (D. Colo. Oct. 30, 1987) and 682 F. Supp. 1141 (D. Colo. March 22, 1988), Judge Alfred Arraj discussed the type of permit restrictions which can be used to limit a source's potential to emit. The Judge concluded that:

> ... not all federally enforceable restrictions are properly considered in the calculation of a source's potential to emit. While restrictions on hours of operation and on the amount of materials combusted or produced are properly included, blanket restrictions on actual emissions are not.

682 F. Supp. at 1133.

The Court held that Louisiana-Pacific's permit conditions which limited carbon monoxide emissions to 78 tons per year and volatile organic compounds to 101.5 tons per year should not be considered in determining "potential to emit" because these blanket emission limits did not reflect the type of permit conditions which restricted operations or production such as limits on hours of operation, fuel consumption, or final product.

The Louisiana-Pacific court was guided in its reasoning by the D.C. Circuit's holding in Alabama Power v. Costle, 636 F. 2d 323 (D.C. Circuit 1979). Before Alabama Power, EPA regulations required potential to emit to be calculated according to a source's maximum uncontrolled emissions. In Alabama Power, the D. C. Circuit remanded those regulations to EPA with instructions that the Agency include the effect of in-place control equipment in defining potential to emit. EPA went beyond the minimum dictates of the D.C. Circuit in promulgating revised regulations in 1980 to include, in addition to control equipment, any federally enforceable physical or operational limitation. The Louisiana-Pacific court found that blanket limits on emissions did not fit within the concept of proper restrictions on potential to emit as set forth by Alabama Power.

Moreover, Judge Arraj found that:

> ...a fundamental distinction can be drawn between the federally enforceable limitations which are expressly included in the definition of potential to emit and (emission) limitations.... Restrictions on hours of operation or on the amount of material which may be combusted or produced ... are, relatively speaking, much easier to "federally enforce." Compliance with such conditions could be easily verified through the testimony of officers, all manner of internal correspondence and accounting, purchasing and production records. In contrast, compliance with blanket restrictions on actual emissions would be virtually impossible to verify or enforce.

Id. Thus, Judge Arraj found that blanket emission limits were not enforceable as a practical matter.

Finally, the Court reasoned that allowing blanket emission limitation to restrict potential to emit would violate the intent of Congress in establishing the Prevention of Significant Deterioration (PSD) program.

III. Types of Limitations that will Restrict Potential to Emit

As an initial matter in this discussion, a few important terms should be defined. Emission limits are restrictions over a given period of time on the amount of a pollutant which may be emitted from a source into the outside air. Production limits are restrictions on the amount of final product which can be manufactured or otherwise produced at a source. Operational limits are all other restrictions on the manner in which a source is run, including hours of operation, amount of raw material consumed, fuel combusted, or conditions which specify that the source must install and maintain add-on controls that operate at a specified emission rate or efficiency. All production and operational limits except for hours of operation are limits on a source's capacity utilization. Potential emissions are defined as the product of a source's emission rate at maximum operating capacity, capacity utilization, and hours of operation.

To appropriately limit potential to emit consistent with the opinion in Louisiana-Pacific, all permits issued pursuant to 40 C.F.R. Sections 51.160, 51.166, 52.21 and 51.165 must contain a production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment. Restrictions on production or operation that will limit potential to emit include limitations on quantities of raw materials consumed, fuel combusted, hours of operation, or conditions which specify that the source must install and maintain controls that reduce emissions to a specified emission rate or to a specified efficiency level. Production and operational limits must be stated as conditions that can be enforced independently of one another. For example, restrictions on fuel which relates to both type and amount of fuel combusted should state each as an independent condition in the permit. This is necessary for purposes of practical enforcement so that, if one of the conditions is found to be difficult to monitor for any reason, the other may still be enforced.

When permits contain production or operational limits, they should also have recordkeeping requirements that allow a permitting agency to verify a source's compliance with its limits. For example, permits with limits on hours of operation or amount of final product should require an operating log to be kept in which the hours of operation and the amount of final product produced are recorded. These logs should be available for inspection should staff of a permitting agency wish to check a source's compliance with the terms of its permit.

When permits require add-on controls operated at a specified efficiency level, permit writers should include, so that the operating efficiency condition is enforceable as a practical matter, those operating parameters and assumptions which the permitting agency depended upon to determine that the control equipment would have a given efficiency.

An emission limitation alone would limit potential to emit only when it reflects the absolute maximum that the source could emit without controls or other operational restrictions. When a permit contains no limits on capacity utilization or hours of operation, the potential to emit calculation should assume operation at maximum design or achievable capacity (whichever is higher) and continuous operation (8760 hours per year).

The particular circumstances of some individual sources make it difficult to state operating parameters for control equipment limits in a manner that is easily enforceable as a practical matter. Therefore, there are two exceptions to the absolute prohibition on using blanket emission limits to restrict potential to emit. If the permitting agency determines that setting operating parameters for control equipment is infeasible in a particular situation, a federally enforceable permit containing short term emission limits (e.g. lbs per hour) would be sufficient to limit potential to emit, provided that such limits reflect the operation of the control equipment, and the permit includes requirements to install, maintain, and operate a continuous emission monitoring (CEM) system and to retain CEM data, and specifies that CEM data may be used to determine compliance with the emission limit.

Likewise, for volatile organic compound (VOC) surface coating operations where no add-on control is employed but emissions are restricted through limiting VOC contents and quantities of coatings used, emission limits may be used to restrict potential to emit under the following limited circumstances. If the permitting agency determines for a particular surface coating operation that operating and production parameters (e.g. gallons of coating, quantities produced) are not readily limited due to the wide variety of coatings and products and due to the unpredictable nature of the operation, emission limits coupled with a requirement to calculate daily emissions may be used to restrict potential to emit. The source must be required to keep the records necessary for this calculation, including daily quantities and the VOC content of each coating used. Emission limits may be used in this limited circumstance to restrict potential to emit since, in this case, emission limits are more easily enforceable than operating or production limits.

IV. Time Periods For Limiting Production and Operation

As discussed above, a limitation specifically recognized by the regulations as reducing potential to emit is a limitation on production or operation. However, for these limitations to be enforceable as a practical matter, the time over which they extend should be as short term as possible and should generally not exceed one month. This policy was explained in a March 13, 1987 memorandum from John Seitz to Bruce Miller, Region IV. The requirement for a monthly limit prevents the enforcing agency from having to wait for long periods of time to establish a continuing violation before initiating an enforcement action.

EPA recognizes that in some rare situations, it is not reasonable to hold a source to a one month limit. In these cases, a limit spanning a longer time is appropriate if it is a rolling limit. However, the limit should not exceed an annual limit rolled on a monthly basis. EPA cannot now set out all inclusive categories of sources where a production limit longer than a month will be acceptable because every situation that may arise in the future cannot now be anticipated. However, permits where longer rolling limits are used to restrict production should be issued only to sources with substantial and unpredictable annual variation in production, such as emergency boilers. Rolling limits could be used as well for sources which shut down or curtail operation during part of a year on a regular seasonal cycle, but the permitting authority should first explore the possibility of imposing a month-by-month limit. For example, if a pulp drier is periodically shut down from December to April, the permit could contain a zero hours of operation limit for each of those months, and then the appropriate hourly operation limit for each of the remaining months. Under no circumstances would a production or operation limit expressed on a calendar year annual basis be considered capable of legally restricting potential to emit.

V. Sham Operational Limits

In the past year, several sources have obtained purportedly federally enforceable permits with operating restrictions limiting their potential to emit to minor or de minimis levels for the purpose of allowing them to commence construction prior to receipt of a major source permit. In such cases where EPA can demonstrate an intent to operate the source at major source levels, EPA considers the minor source construction permit void ab initio and will take appropriate enforcement action to prevent the source from constructing or operating without a major source permit.

The following example illustrates the kind of situation addressed in this section: An existing major stationary source proposes to add a 12.5 megawatt electric utility steam generating unit, and applies for a federally enforceable minor source permit which restricts operation at the unit to 240 hours per year. Because the project is designed as a baseload facility, EPA does not believe that the source intends to operate the facility for only 240 hours a year. Further investigation would probably uncover documentation of the source's intent to operate at higher levels than those for which it is permitted.

This situation raises the question of whether a source can lawfully bypass the preconstruction or premodification review requirements of Prevention of Significant Deterioration (PSD) and nonattainment New Source Review by committing to permit conditions which restrict production to a level at which the source does not intend to operate for any extensive time. If, after constructing and commencing operation, the source obtains a relaxation of its original permit conditions prior to exceeding them, does this constitute a violation of the preconstruction review requirements? This section discusses why it is improper to construct a source with a minor source permit when there is intent to operate as a major source, and provides guidelines for identifying these "sham" permits.

A. Permits with conditions that do not reflect a source's planned mode of operation are void ab initio and cannot act to shield the source from the requirement to undergo preconstruction review.

1. Sham permits are not allowed by 40 CFR Section 52.21(r) (4) Section

52.21(r) (4) states:

> At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation which was established after August 7, 1980 on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then (PSD) shall apply to the source or modification as though construction had not yet commenced on the source or modification.

When a source that is minor because of operating restrictions in a construction permit later applies for a relaxation of that construction permit which would make the source major, Section 52.21(r) (4) prescribes the methodology for determining best available control technology (BACT). However, it does not foreclose EPA's ability, in addition to the retroactive application of BACT and other requirements of the PSD program, to pursue enforcement where the Agency believes that the initial minor source permit was a sham. EPA will limit its activity to requiring application of 40 CFR 52.21(r) (4) only for the cases where a source legitimately changes a project after finding that the operating restrictions which were taken in good faith cannot be complied with. Whether a source has acted in good faith is a factual question which is answered by available evidence in the particular case.

2. Sham permits are not allowed by the definition of potential to emit:

40 C.F.R. Sections 52.21(b) (4), 51.165(a) (1) (iii), 51.166(b) (4).

The definition of potential to emit enables sources to obtain federally enforceable permits with operational restrictions as a means of limiting emissions to minor source levels. However, implicit in the application of these limitations is the understanding that they comport with the true design and intended operation of the project.

3. Sham permits are not allowed by the Clean Air Act

Parts C and D of the Clean Air Act exhibit Congress's clear intent that new major sources of air pollution be subject to preconstruction review. The purposes for these programs cannot be served without this essential element. Therefore, attempts to expedite construction by securing minor source status through the receipt of operational restrictions from which the source intends to free itself shortly after operation are to be treated as circumvention of the preconstruction review requirements.

B. Guidelines for determining when minor source construction permits are shams.

EPA's determination that a purportedly federally enforceable construction permit is a sham is made based on an evaluation of specific facts and evidence in each individual case. The following are criteria which should be scrutinized when making such a determination:

1. Filing a PSD or nonattainment NSR permit application

If a major source or major modification permit application is filed simultaneously with or at approximately the same time as the minor source construction permit, this is strong evidence of an intent to circumvent the requirements of preconstruction review. Even a major source application filed after the minor source application, but either before operation has commenced or after less than a year of operation should be looked at closely.

2. Applications for funding

Applications for commercial loans or, for public utilities, bond issues, should be scrutinized to see if the source has guaranteed a c ertain level of operation which is higher than that in its construction permit. If the project would not be funded or if it would not be economically viable if operated on an extended basis (at least a year) at the permitted level of production, this should be considered as evidence of circumvention.

3. Reports on consumer demand and projected production levels.

Stockholder reports, reports to the Securities and Exchange Commission, utility board reports, or business permit applications should be reviewed for projected operation or production levels. Ifreported levels are necessary to meet projected consumer demand but are higher than permitted levels, this is additional evidence of circumvention.

4. Statements of authorized representatives of the source regarding plans for operation.

Statements by representatives of the source to EPA or to state or local permitting agencies about the source's plans for operation can be evidence to show intent to circumvent preconstruction review requirements.

Note that if a determination is made that a permit is a "sham" for one pollutant and, therefore, the source is a major source or major modification, the permit may possibly still contain valid limits on potential to emit for other pollutants.

In such cases, the entire source must still go through new source review, during which, for PSD review, all pollutants for which there is a net significant increase must be analyzed for BACT. In nonattainment new source review, new sources must have LAER determinations only for pollutants for which they are major. Major modifications, however, must have LAER determinations for all nonattainment pollutants emitted in significant amounts. If the valid limits in a partially void minor source construction permit keep certain pollutants below significance levels, then those pollutants would not have to be analyzed for BACT or LAER. However, if a source or modification is determined to be major for PSD or NSR because part of its minor permit is deemed void, it would have to undergo BACT or LAER analysis for all significant pollutants.

VI. Enforcement Procedures

This guidance has discussed permit conditions which will legally restrict potential to emit, shielding a source from the requirement to comply with major new source permitting regulation. Failure by a permitting agency to adhere to these guidelines may result in a permit that does not legally restrict potential to emit, thereby subjecting a source to major new source review. If that source has not gone through preconstruction review, it is a significant violator of the Clean Air Act and is subject to enforcement for constructing or modifying without a major new source permit.

The enforcement options available to EPA in these situations include administrative action under Sections 167 or 113 (a) (5) of the Act or federal judicial action under Sections 113 (b) (2), 113 (b) (5), 113(c), or 167. Which enforcement option is selected depends on the facts of the particular situation. (See July 15, 1988 guidance on EPA Procedures for Addressing Deficient New Source Permits.)

VII. Examples

The following examples are provided to illustrate the type of permit restrictions which would and would not legally limit potential to emit to less than major source thresholds. These examples are provided for purposes of clarifying the potential to emit and averaging time guidance only. They are not intended to reflect all the permit conditions necessary for a valid permit. Specific test methods, compliance monitoring and recordkeeping and reporting requirements are necessary to make permit limitations enforceable as a practical matter. The use of examples where averaging times are the longest times allowed under EPA policies is not intended to necessarily condone the selection of the longest averaging times; averaging times should in practice be as short as possible.

1. The minor source construction permit for a boiler contains the following restrictions: 250,000 gal fuel/month; 0.8% S fuel; 8000 hours/year.

These conditions are federally enforceable production and operation limits, but do not limit potential to emit because one of them does not meet EPA policies on enforceability as a practical matter. The averaging time for hours of operation, one of the operational limits necessary to restrict emissions to less than 250 tpy, exceeds a monthly or rolling yearly limit. If, instead of 8000 hours/year, the hourly restriction were stated as 666 hours/month, the permit would serve to keep the source a minor source, assuming the permit contains appropriate recordkeeping provisions.

2. A waferboard plant which has the physical capacity to emit over 300 tpy of carbon monoxide in the absence of using specific combustion techniques has the following permit restriction as the sole emission limitation: 249 tpy.

This does not limit potential to emit since an operational or production restriction is necessary for the source to be restricted to 249 tpy. The permit must contain a restriction on hours of operation or capacity utilization which, when multiplied by the maximum emission rate for the CO sources at the plant, results in emissions of 249 tpy. Additionally, while the emission limit alone cannot restrict potential to emit, the emission limit is unenforceable as a practical matter since it is limited on an annual basis. The permit should contain a short term emission limit (in addition to the annual emission limit), consistent with the compliance period or parameter in the applicable test method for determining compliance.

3. A small scale rock crushing plant that cannot emit more than 240 tpy under maximum operation without controls (including plant-wide particulate emissions from transfer and storage operations) has the following permit restriction as the sole emission limitation: 240 tpy particulate matter.

Since no operational limitations are necessary for the source to emit below 250 tpy, no operational restrictions need be in the permit to limit potential to emit. However, although this is not a major source, the state agency should express the emission limit in this permit as a lb/hour measure or gr/dscf so that it will be enforceable as a practical matter.

4. A plant consisting solely of a small rock crusher has the following permit restrictions: 0.05 lb gr PM/dscf; fabric filter must be employed and maintained at 99% efficiency.

Assuming that maintaining the fabric filter at 99% efficiency will result in emissions of less than 250 tpy, this permit would limit potential to emit if it also contained either 1) parameters that allowed the permitting agency to verify the fabric filter's operating efficiency or 2) a requirement to install and operate continuous opacity monitors (COMs) and a specification that COM data may be used to verify compliance with emission limits. Note that if this second alternative were adopted, it would not be necessary to require that the fabric filter be maintained at 99% efficiency.

To determine potential to emit, the efficiency rate of the fabric filter would be multiplied by the maximum uncontrolled emission rate, the maximum number of operating hours and maximum throughput capacity since there are no other operating or production limits. However, the efficiency rate of the fabric filter would not be enforceable as a practical matter unless there were an enforceable means to monitor ESP performance on a short term basis. The two alternatives mentioned above would satisfy this requirement.

5. A surface coating operation has the capability of utilizing 15,000 gal coating/month, with the following permit restrictions: 3.0 lb VOC/gal coating minus water; 20.5 tons VOC/month; monthly VOC emissions to be determined from records of the daily volumes of coatings used times the manufacturers specified VOC content.

This does not limit potential to emit since the source has the physical capacity to exceed 250 tpy of VOC, and the permit does not contain a production or an operational limitation. A monthly limit on gallons of coating used which when multiplied by 3.0 lb/gal equates to less than the 250 tpy threshold 13,500 gallons/month), with appropriate recordkeeping, would generally be necessary to limit potential to emit. If, however, the permitting agency determines, due to the wide variety of coatings employed and products produced, that restrictions on operation or production are not practically enforceable, then the above emission limits could restrict potential to emit if there are requirements that the source calculate emissions daily, and keep the appropriate records.

If the source was alternatively to meet the 20.5 ton/month limit by employing add-on controls, the permit would need to contain an operational limit, such as the requirement to install and operate an incinerator at 99% efficiency. A requirement to monitor incinerator efficiency (either directly or indirectly via temperature monitoring for example), and appropriate recordkeeping retirements to verify compliance with each of the permit conditions would also be necessary to make the permit conditions enforceable as a practical matter. Note, however, that in the case where add-on controls are employed, the source may be able to meet a shorter term emission limit than the ton per month figure.

VIII. Conclusion

We hope this guidance will help EPA Regions identify sources which have the potential to emit major amounts of an air pollutant which will subject those sources to the requirements of preconstruction new source review. Every source which is subject to these requirements but has not obtained a major new source permit should be seriously considered for enforcement action.

Facility Name: **Hazlehurst Wood Pellets, LLC**
City: Hazlehurst
County: Jeff Davis
AIRS #: 04-13-16100023 Application #: TV-352816

Date SIP Application Received: n/a
Date Title V Application Received: May 6, 2019
Permit No: 2499-161-0023-V-02-4

Program	Review Engineers	Review Managers
SSPP	S. Ganapathy	Ginger Payment
SSCP	n/a	n/a
ISMU	n/a	n/a
TOXICS	n/a	n/a
Permitting Program Manager		Eric Cornwell

Introduction

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and draft operating permit amendment. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1) and 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public comment period and EPA review process will be described in an addendum to this narrative.

I. Facility Description

A. Existing Permits

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments.

Table 1: Current Title V Permit and Amendments

Permit/Amendment Number	Date of Issuance	Description
2499-161-0023-V-02-0	8/18 2015	Initial Title V Permit
2499-161-0023-V-02-1	5/25/2016	502(b)(10) change wood-fired burner replacement
2499-161-0023-V-02-2	7/6/2016	Sig Mod without construction – removal of fuel oil firing in burners and remove pressure drop monitors in exhaust recycle duct from hammermills, pellet press and pellet coolers
2499-161-0023-V-02-3	11/15/2017	502(b)(10) change – addition of a baghouse parallel to existing baghouse in each production line

B. Regulatory Status

1. PSD/NSR/RACT

The facility is synthetic minor under PSD/NSR regulations for CO, NOx and VOC. Emissions of CO, VOC and NOx are limited to 249 tons/year in order to avoid going through a New Source Review under the PSD rules. The facility will continue to be a PSD SM source for CO, NOx and VOC after the proposed modifications. This permit amendment also limits PM emissions to less than 250 tpy as a matter of precaution.

2. Title V Major Source Status by Pollutant

Table 2: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	yes	✓		
PM_{10}	yes	✓		
$PM_{2.5}$	yes	✓		
SO_2	yes			✓
VOC	yes	✓		
NO_x	yes	✓		
CO	yes	✓		
Individual HAP	yes			✓
Total HAPs	yes			✓

II. Proposed Modification

A. Description of Modification

The Permittee proposes to construct and operate one new furnace, one new dryer, one new chipper, 2 green hammermills, 7 dry hammermills, and 3 pellet lines with a total of 15 presses and 3 coolers. Some of the equipment will be new, some existing. The new wood-fired furnace will be rated at a nominal, approximate 200 MMBTU/hour. Particulate (PM) emissions from the furnace and dryer will be controlled with a wet electrostatic precipitator (WESP). PM emissions from the dry hammermills will be controlled by cyclofilters. PM emissions from the presses and coolers will be controlled by baghouses. Volatile organic compound (VOC) and organic hazardous air pollutant (HAP) emissions from the furnace and dryer will be controlled with a Regenerative Thermal Oxidizer (RTO). VOC and HAP emissions from the dry hammermills, presses, and coolers will be controlled with a Regenerative Catalytic Oxidizer (RCO). The RTO and RCO will each have a gas-fired burner rated at 6 MMBTU/hour. The new dryer has a capacity of 78 oven dried tons per hour, and an annual throughput capacity of 675,000 oven dried tons (ODT). ODT = weight of wood in short tons at 11% moisture, calculated.

No pre-dried wood product will be brought from off-site; all wood will be routed through the dryer through the pellet-forming equipment.

Because of the significant changes to the plant, and to the permit requirements, all Conditions in the existing permit and its amendments (in Sections 2-6) are deleted and completely replaced by the conditions in Amendment 2.

B. Emissions Change

After the proposed change emissions of PM, PM_{10}, $PM_{2.5}$ are expected to be lower for the furnace/dryer, dry hammermills, pellet press and pellet coolers due to WESP (dryer control) and baghouses for the downstream units. The regenerative thermal oxidizer and catalytic oxidizer (RTO and RCO) will result in more than 95% reduction of VOC and HAPs emissions from the furnace/dryer, dry hammermills, pellet press and pellet coolers. Due to the proposed PM, VOC and HAPs controls, the facility will be able to increase production from the dryers, hammermills, pellet presses and pellet coolers without becoming a PSD major source.

Development of emission factors

Dryer DRY RTO

VOC: GA EPD default emission factor of 6lb/ODT x 95% DRE

HAP: GA EPD default emission factors for acetaldehyde, formaldehyde, and methanol x 95% DRE; other HAP emission factor from Appling County Pellets testing x 95% DRE.

NOx: Applicant provided emission factor of .25 lb/mmbtu x 200 mmbtu/hr 8760 (219 tpy)
219 tpy divided by production limit of 675,000 ODT/yr = 0.65 lb/ODT- then a slight buffer is added yielding 0.66 lb/ODT. This EF compares conservatively to the results from a similar sized dryer with RTO controls at GA Biomass – the latest NOx test there yields an EF of 0.38 lb/ODT

CO: Applicant provided emission factor of .25 lb/mmbtu x 200 mmbtu/hr 8760 (219 tpy)
219 tpy divided by production limit of 675,000 ODT/yr = 0.65 lb/ODT- then a slight buffer is added yielding 0.66 lb/ODT. This EF compares conservatively to the results from a similar sized dryer with RTO controls at GA Biomass – the latest CO test there yields an EF of 0.07 lb/ODT

PM: Applicant provided emission factor of ..015 gr/cf exhaust airflow x airflow x 8760 = 98 tpy
98 tpy divided by production limit of 675,000 ODT/yr = 0.29 lb/ODT- then a slight buffer is added yielding 0.30 lb/ODT. This EF compares conservatively to the results from a similar sized dryer with RTO controls at GA Biomass – the latest CO test there yields an EF of 0.05 lb/ODT

Hammermill/Pellet Presses/Cooler RCO

VOC: GA EPD default emission factors of 2.5 lb/ ton (hammermills) + 1.3 lb/ton (steam injected pelletmills/coolers) x 95% DRE

HAP: GA EPD default emission factors for acetaldehyde, formaldehyde, and methanol x 95% DRE;

NOx: Applicant provided AP-42 fuel burning emission factor of .1 lb/mmbtu x 6 mmbtu/hr 8760 (2.6 tpy) 2.6 tpy divided by production limit of 675,000 ODT/yr = 0.008lb/ODT- then a large buffer is added to account for btu from voc-laden exhaust burned yielding 0.06 lb/ODT.

CO: Applicant provided AP-42 emission factor of .084 lb/mmbtu x 6 mmbtu/hr 8760 (2.2 tpy)
2.2 tpy divided by production limit of 650,000 ODT/yr = 0.007 lb/ODT- then a large buffer is added yielding 0.06 lb/ODT.

PM: Applicant provided emission factor of .015 gr/cf exhaust airflow x airflow x 8760 = 98 tpy

98 tpy divided by production limit of 650,000 ODT/yr = 0.30 lb/ODT- then a slight buffer is added yielding 0.31 lb/ODT.

HAND silos
VOC: GA EPD default factor is 0.4 lb/ODT; the applicant argues that the default factor is based on a test configuration at GA Biomass that handled uncooled pellets, yielding a higher than normal emission factor. GA EPD will allow a factor of ½ the default factor (0.2 lb/ODT); the permittee will be required to test to determine the validity of the factor and use the higher of the factor or the test result.

PM: GA EPD estimates a conservative value of 18 tons per year from the storage silos in the handling group HAND

HAP: GA EPD default emission factors for acetaldehyde, formaldehyde, and methanol

Emissions from the woodyard (Unit ID WOOD), including chip piles, and chipper are estimated using the Applicant's estimates, however these emissions are fugitive in nature and not accounted toward PSD applicability because the pellet plant is not one of the "list of 28" in 40 CFR 52.21.

Emission Factors

	VOC EF	meoh ef	hcoh ef	acet ef	Other hap ef	PM EF	NOX EF	CO EF	Production (per year)
RTO	0.300	0.006	0.007	0.006	0.010	0.300	0.660	0.660	675000 ODT
RCO	0.190	0.001	0.001	0.001	0.000	0.310	0.060	0.060	650000 tons
HAND	0.200	0.001	0.002	0.001	0.000				650000 tons
Annual Emissions									
	voc	meoh	hcoh	acet	Other hap	PM	Nox	CO	total HAP
RTO	101.250	2.025	2.363	2.025	3.375	101.250	222.750	222.750	9.788
RCO	61.750	0.163	0.325	0.163	0.000	100.750	19.500	19.500	0.650
HAND	65.000	0.325	0.650	0.325	0.000	0.000	0.000	0.000	1.300
Total	**228.000**	**2.513**	**3.338**	**2.513**	**3.375**	**202.000**	**242.250**	**242.250**	**11.738**

Emission factors are in lb/actual ton. For the dryer RTO, this is measured as ODT, for other downstream equipment it is measured as actual tons. The production rate listed in the above table for the RCO-controlled equipment is the production weight existing the dry hammermills.

The moisture content of the wood exiting the dryer ("oven dried) is typically 11% . As the wood is further processed, the moisture content continues to decrease slightly. For example, the estimated moisture content of the wood fibers after the hammermills is 8%, and the moisture content of the pellets exiting the coolers is 4%. Converting 675,000 ODT to actual tons existing the cooler is:

Actual tons at 8% moisture = 675,000 x (1-11%) / 1-8%) = 653,000 tons
Actual tons at 4% moisture = 675,000 x (1-11%)/(1-4%) = 625,800 tons.

C. PSD/NSR Applicability

Currently the facility is a PSD minor source for VOC, CO, NOx and PM. The facility will continue to be a PSD minor source after the proposed modification since potential emissions of all PSD pollutant will be less than 250 tons per year.

III. Facility Wide Requirements

All existing Conditions in Section 2 are deleted and replaced with conditions limiting HAP below 10/25 to avoid 112(g), limiting PM, VOC, NOx, and CO below 250 tons per year to avoid PSD major source status, and a dryer production limit of 675,000 ODT/yr to further bolster the PSD avoidance limits. It should be noted that production limit may be changed in the future via a permit action if the Division determines that the operations at the plant have lower emission factors than those currently established in this permit. These facility-wide emission limits are made enforceable by tracking production throughput in both the dryer and the pelletizing process, and using emission factors to calculate emissions.

The applicant submitted a Toxic Impact Assessment following Georgia's 2017 Toxic Guidelines. The compounds evaluated were formaldehyde, methanol, and acetaldehyde. The results demonstrate that compliance with the Acceptable Ambient Concentrations (AACs) for these compounds.

IV. Regulated Equipment Requirements

A. Brief Process Description

The facility has proposed to replace the existing three burners/dryers with one single wood-fired burner/furnace (FUR) rated at 200 MMBTU/hr for providing direct heat to a new dryer (DRY). PM emissions from the new burner/dryer will be controlled using a new wet electrostatic precipitator (WESP). VOC and HAPs emissions will be controlled using a Regenerative Thermal Oxidizer (RTO).

Downstream of the dryer, the 7 dry hammermills will be vented individually to its own cyclo-filter (CYFL1-7) and then to a regenerative catalytic oxidizer (RCO) which is shared with the pellet presses and pellet coolers.

PM and VOC emissions from the 15 pellet presses and 3 pellet coolers (3 pellet lines) will be controlled using a baghouse on each line, then all baghouse exhausts will be routed to the RCO.

Hazlehurst Pellet Plant is designed to produce up to 675,000 Oven dry ton/year (625,000 actual tons at final moisture of ~4%) of wood pellets. The dryer DRY can product up to 675,000 ODT/yr of wood pellet sawdust furnish. The difference in production between 675k tpy and 625k tpy was explained as water loss; although the measuring unit is the same (Oven dried tons = 11% moisture), actual moisture content goes from 11% out of the dryer to 8% out of the hammermills, to 4% out of the pellet cooler.

The applicant does not intend to purchase pre-dried material and pelletize that material. However, if they do, the emissions from the pelletizing will be accounted for because production will be tracked both from the dryer exit and the finished pellet exit (after the pellet coolers near the final product handling and loadout area (HAND).

B. Equipment List for the Process

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	**Description**	**Applicable Requirements/Standards**	**Corresponding Permit Conditions**	**ID No.**	**Description**
WOOD	Log storage/handling Debarking/screening Chipper Chip piles	391-3-1-.02(2)(n)	3.4.3, 3.4.4, 5.2.7, 5.2.8		
GHM	Green Hammermills (2)	391-3-1-.02(2)(n)	3.4.3, 3.4.4, 5.2.7, 5.2.8		
FUR	Wood fired furnace 200 MMBTU/hr	391-3-1-.02(2)(g) 391-3-1-.02(2)(b) 391-3-1-.02(2)(g)	3.2.1, 3.2.3, 3.4.1, 3.4.2, 3.4.5, 4.2.1, 4.2.4, 4.2.5, 5.2.1, 5.2.2, 5.2.5, 5.2.6, 5.2.14, 5.2.15, 6.2.1-6.2.7	WESP RTO	Wet Electrostatic Precipitator Regenerative Thermal Oxidizer
DRY	Pellet Dryer 78 ODT/hr	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	2.1.6, 3.2.1, 3.2.3, 3.4.1, 3.4.2, 3.4.3, 3.4.4, 4.2.1, 4.2.4, 5.2.1, 5.2.2, 5.2.5, 5.2.6, 5.2.9, 5.2.14, 5.2.15, 6.2.1-6.2.7		
HAM1-7	Dry Hammermills (7)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.10-5.2.17, 6.2.3-6.2.7	CYFL1-7 RCO	Cyclofilters 1-7 Regenerative Catalytic Oxidizer
PEL1-5	Line 1 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH1 RCO	Baghouse 1 Regenerative Catalytic Oxidizer
COOL1	Line 1 Cooler				
PEL6-10	Line 2 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH2 RCO	Baghouse 2 Regenerative Catalytic Oxidizer
COOL2	Line 2 Cooler				
PEL11-15	Line 3 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH3 RCO	Baghouse 3 Regenerative Catalytic Oxidizer
COOL3	Line 3 Cooler				
HAND	Pellet Handling/storage/ Loadout/silos 1-4	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.4.1-3.4.5, 4.2.3, 6.2.4, 6.2.5		

* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards and corresponding permit conditions are intended as a compliance tool and may not be definitive.

C. Equipment & Rule Applicability

NSPS Subpart Dc does not apply to the proposed wood burner/furnace since it supplies direct heat to the pellet furnish dryer. The burner/furnace does not produce steam, heat water or other heat transfer fluid and is not a boiler or fuel burning equipment. The opacity of visible emissions from the dryers, hammermills, pellet presses and pellet coolers are limited to 40% by Georgia Rule (b). PM emissions from the pellet furnish dryer, hammermill, pellet presses and pellet coolers will be subject to Georgia Rule (e).

The sulfur content of sawdust fired in the dryer burner is limited to 3% by weight by Georgia Rule (g)2 ; no sulfur monitoring is necessary due to the natural low sulfur content of the wood. Fugitive emissions from the dryer, Hammermills, Pellet presses and Pellet coolers are limited to 20% by Georgia Rule (n)2.

D. Permit Conditions

Condition 3.2.1 requires the operation of WESP and RTO whenever the pellet furnish dryer operates for compliance with the VOC and HAPs PSD avoidance limit.

Condition 3.2.2 requires the Permittee to operate and maintain all baghouses and RCO during operation of the dry hammermills, pellet presses and pellet coolers to comply with the PSD avoidance limits for PM, CO and VOC.

Condition 3.2.3 requires operation of RTO at 1500 ^{o}F or the temperature established during the most recent destruction efficiency test that demonstrates compliance with the 95% reduction/destruction efficiency, whichever is higher.

Condition 3.2.4 requires operation of RCO at 800 ^{o}F or the temperature established during the most recent destruction efficiency test that demonstrates compliance with the 95% reduction/destruction efficiency, whichever is higher.

Existing Condition 3.3.1 and 3.3.2 were deleted since the new wood-fired burner/furnace is not subject to the requirements of NSPS Subpart Dc. The new burner is not a boiler or a fuel burning equipment and it does not heat water or any other heat transfer fluid or generate steam.

Existing Conditions 3.4.3 and 3.4.4 are not included in this permit amendment since the sources to which the conditions pertain will no longer be at the facility.

Existing Conditions 3.4.8 and 3.4.9 are not included in this permit amendment, since the sources to which the conditions pertain will no longer be at the facility.

Existing Condition 3.5.3, 3.5.4 and 3.5.5 are not included in this permit amendment since the sources to which the conditions apply will no longer be at the facility.

V. Testing Requirements (with Associated Record Keeping and Reporting)

To ensure that the emission factors used reflect actual emissions, the facility must test the RTO and RCO within 120 days after startup and thereafter every 3 years. If the test results are higher than the permitted emission factors, the permittee must use the new, higher test result-based factor and submit an application to revise the permitted factor upward accordingly. If the tests show lower emission factors, the permitted factors will still be used. The permitted emission factors can be altered down only via a permit application that has been reviewed and permit amendment issued by GEPD.

HAND must be tested for VOC since the factor to be used is lower than the EPD default factor. EPD proposes to require testing on only one silo in HAND to represent the emissions profile for the four identical silos. This is a one-time test requirement.

VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

The control device operating parameters to be monitored are pressure drop across the three baghouses (even though the downstream RCO will also serve as additional PM control), total power in the WESP (even though the downstream RTO will also serve as additional PM control), and RTO/RCO temperature.

The daily visibility check has a 20% opacity action level, which is lower than the 30% proposed because EPD has determined that any opacity from these sources over 20% would likely indicate a mechanical problem and the applicant has not provided any data demonstrating that opacity above 20% is normal "compliant" operation.

To ensure proper operation of the RCO, the permit will require a maintenance plan, as well as annual catalyst bed core samples to ensure activity.

CAM conditions address the selected operating parameters accordingly. VOC and PM from both RTO and RCO are subject to CAM because pre-control emissions exceed 100 tpy and controls are used to comply. PM is subject to the emission standard of Georgia Rule (e). It is not clear in Part 64 if annualized PSD avoidance limits are considered "emissions standards" for the purposes of CAM, but in an abundance of caution, EPD has included this for VOC.

Existing Condition 5.2.13 is not included in this permit amendment since the baghouse Preventive Maintenance Program (PMP) is addressed by Condition 5.2.4.

VII. Other Record Keeping and Reporting Requirements

Condition 6.1.7.c. requires reporting of excursion of wood-fired furnace exhaust visible emissions, visible emission exceeding the 20% opacity action level from dry hammermills, pellet presses and pellet coolers for two or more consecutive days. RTO and RCO combustion temperature excursions also need to be reported. Fugitive dust emission episodes need to be reported as excursions. Any failure to perform the daily fugitive dust source inspection need to be reported as well. Any baghouse pressure drops outside the normal range also needs reporting.

Conditions 6.2.1-6.2.6 require tracking of production and calculation of emissions using the factors cited in previous sections of this amendment.

VIII. Specific Requirements

A. Operational Flexibility
None requested in this permit application.

B. Alternative Requirements
None

C. Insignificant Activities
No insignificant activities are added as part of this minor modification.

D. Temporary Sources
Not applicable.

E. Short-Term Activities
No short term activities were included in this modification.

F. Compliance Schedule/Progress Reports
Not applicable.

G. Emissions Trading
Not applicable.

H. Acid Rain Requirements/CAIR/CSPAR
Not applicable.

I. Prevention of Accidental Releases
This modification doesn’t change the source's applicability which remains non-applicable

J. Stratospheric Ozone Protection Requirements
This modification doesn’t change the source's applicability to Title VI.

K. Pollution Prevention
None.

L. Specific Conditions
None.

Addendum to Narrative

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//

https://www.hannapub.com/ouachitacitizen/news/local_state_headlines/homeowners-seek-epa-s-help-with-pollution-complaints/article_5d11a19e-650b-11e4-8331-001a4bcf6878.html

Homeowners seek EPA's help with pollution complaints

By Zach Parker The Citizen
Nov 5, 2014

1 of 2

HOMEOWNERS IN in the Cheniere Drew community in West Monroe are reaching out to the EPA for help over the emission of sawdust from Bayou Wood Pellets on Hwy 15 (above) over their homes and properties. The group of homeowners claim the sawdust falls so regularly that washed vehicles accumulate thick layers of dust over several hours.

Citizen photo by Zach Parker

A group of homeowners in the Cheniere Drew community in West Monroe asked the Environmental Protection Agency to investigate sawdust emissions from a wood pellets factory near their homes.

Representatives of the Drew Community of Concerned Citizens group sent a letter to the EPA's Region 6 headquarters in Dallas, Texas, last month, asking the agency to investigate Bayou Wood Pellet LLC's plant off Highway 15. The group is made up of homeowners who live near the plant, which manufactures wood pellets.

The plant has "been polluting our community for many months with wood dust and noise," the group's letter said. "Many people have recently moved from this area because of the pollution and noise."

The group claims its complaints and pleas to the state Department of Environmental Quality (DEQ) have not yielded a reduction in the pollution. The group decided to reach out to the EPA since DEQ inspections of Bayou Wood did not halt sawdust emissions.

“They (DEQ) have not helped us in any manner,” the letter said.

In its letter, the group describes the area as a “nice community,” made up of churches, businesses, many homes, Glenwood Family Medical Practice and Drew Elementary School. Some 800 students attend Drew Elementary, which is located across the highway from Bayou Wood’s plant.

“The sawdust falling on us is a fine powdered dust and it goes everywhere,” said Johnny Holyfield, a spokesman for the group. Holyfield and his family live in the neighborhood around Bayou Wood’s plant. He also is a minister at Faith Christian Church, located next door to the wood pellet factory.

Holyfield said Bayou Wood’s plant sprays dust continually over the area’s homes and vehicles. The dust covering their properties was not simply the result of seasonal pollen or of dust kicked up in yards or on blacktop roadways, Holyfield said.

On several occasions, members of the group showed The Ouachita Citizen sawdust falling from the sky onto their properties as well as thick layers of sawdust on area foliage.

“When the leaves fall during autumn, the dust gets twice as bad,” said Jerry Walker, a group member whose home is located west of Bayou Wood’s plant.

According to group members, the sawdust sprayed over their community has made enjoying the outdoors difficult. The sawdust, the group’s members claim, falls into their swimming pools like sand, infiltrates automobile engines, slips into attic spaces and has become a breathing hazard for humans as well as for pets and Drew Elementary students at recess.

“We’ve lived here 17 years, built this deck so we could sit outside but we can’t because of the dust,” said Walker’s wife, Kaila Walker. “I have asthma, and have to take breathing treatments sometimes when it’s so heavy. Sometimes, the smell of fresh sawdust gets overpowering. It’s terrible.”

In its letter, the group said it approached Steve Tippen, president at Bayou Wood, on numerous occasions.

“He has flatly refused to help,” the letter said. “Mr. Tippen has at night, on many occasions, turned out the lights and run machinery at maximum effort, possibly without filters and polluting our wildlife and domestic animals.”

Tippen was unavailable for comment.

“They (Bayou Wood) seem to be running the most at night, and they used to have lights on at night so you could easily see all the dust but they don’t turn those lights on at night anymore,” Holyfield said.

Since the beginning of the year, the group contends the plant runs machinery 24 hours a day, seven days a week, often becoming much louder at night than during the day and resulting in a heavier spread of sawdust over their community.

“They’re (Bayou Wood) not supposed to have the trucks going at night but that happens all the time,” Kaila Walker said. “Late at night, those trucks keep going and the front loader as well and it all sounds like a train coming through my bedroom wall.”

The group’s members agreed the sawdust emissions and factory noise did not become a problem until about a year ago.

“More than a year ago, Mr. Tippen would only run it during daylight hours,” Kaila Walker said. “I don’t understand. We didn’t have this problem back then.”

According to published reports, Bayou Wood was bought in August 2013 by Gulf Coast Renewable Energy LLC. At the time of the purchase, Bayou Wood's plant had the capacity to produce 54,000 metric tons of wood pellets per year. Gulf Coast Renewable Energy announced last year it would expand production capacity to 120,000 metric tons per year with the expansion set to be completed by the end of January 2014.

In January and February, DEQ observed wood particle emissions released at the facility's unloading and loading bay areas during two separate inspections. The emissions detailed during the two inspections were in violation of state law and department regulations since the facility was not permitted to emit wood particles from those areas.

"The trucks going in and out of the plant create dust going everywhere," Holyfield said. "They're supposed to have curtains, an enclosed space, everything to keep these trucks from creating dust, too."

According to reports filed with DEQ, the department issued a warning letter to Bayou Wood Products (Pellets) in February concerning the facility's compliance with the Louisiana Environmental Quality Act and Air Quality Regulations. Bayou Wood responded to DEQ after a third inspection on May 1 with

details of measures taken to ensure compliance with environmental regulations.
At the end of May, DEQ inspector Blake Watson conducted an inspection at the facility and surrounding area. The reports and citizen complaints prompting the inspection indicated “the facility was releasing sawdust into the air covering the community,” according to Watson’s field interview form.

“At the time of arrival (on May 27), emissions were observed at the loading and unloading area,” Watson said in his field interview form.

When Watson contacted Jerry Coleman, general manager at Bayou Wood, about the emissions during his inspection, Coleman said the wood pellet company was still in the process of installing a damper in the plant’s exhaust stack to reduce emissions.

Following Watson’s inspection, DEQ issued a compliance order to Bayou Wood on June 11 for violations of environmental regulations. The compliance order required Bayou Wood to become compliant by Aug. 15 in light of the unlawful emissions observed throughout the year.

On June 30, PPM Consultants Inc., submitted a response to DEQ on behalf of Bayou Wood, claiming the wood pellet company “immediately addressed wood particulate emissions that were documented” in the January inspection. Bayou Wood, according to PPM’s letter, also installed control measures and began building other facilities to help contain emissions in response to DEQ’s compliance order.

PPM Consultants is an environmental consulting firm headquartered in Monroe.

According to Greg Langley, a spokesman for DEQ Secretary Peggy Hatch, Bayou Wood had met all requirements in the compliance order by the deadline.

“They are under compliance according to the compliance order for their earlier violations,” Langley said.

Langley said DEQ had received additional citizen complaints after the compliance order’s deadline and that the issue was still under investigation.

Though Bayou Wood said it would add a damper to the plant’s exhaust stack, members of the homeowner’s group claim the damper is only used on some occasions.

“The Sunday after they first had the crane up putting the filter in the exhaust stack, a fire truck responded,” Holyfield said. “There was a fire inside, smoke, but still a fire. After that, the stack began blowing like usual again.”

The group’s members contend the factory does not use the damper most of the time because it impedes the plant’s production.

Appendix C
Emission Calculations

Table C-1 - Facility-Wide Potential Emissions

Emissions ID	Emissions Source	Fugitive or Point?	PM Filterable	PM_{10} Total[1]	$PM_{2.5}$ Total[1]	NO_x	CO	VOC	SO_2	CO_2e
TD-01	Truck Dumper - White Wood	Fugitive	0.41	0.19	0.03	-	-	-	-	-
TD-02	Truck Dumper - Chips	Fugitive	0.46	0.22	0.03	-	-	-	-	-
TD-03	Truck Dumper - Bark	Fugitive	0.27	0.13	0.02	-	-	-	-	-
SP-01	Storage Pile - White Wood	Fugitive	0.65	0.32	0.16	-	-	-	-	-
SP-02	Storage Pile - Chips	Fugitive	0.65	0.32	0.16	-	-	-	-	-
SP-03	Storage Pile - Bark	Fugitive	0.65	0.32	0.16	-	-	-	-	-
VEH-01	Vehicle Traffic - Trucks	Fugitive	10.70	3.18	0.32	-	-	-	-	-
VEH-02	Vehicle Traffic - Front End Loader	Fugitive	17.69	5.29	0.53	-	-	-	-	-
EP-01	Chips Cleaning Line Cyclone	Point	29.81	7.45	1.27	-	-	-	-	-
EP-02	Wet Hammer Mill Cyclone 1	Point	8.38	2.10	0.36	-	-	-	-	-
EP-03	Wet Hammer Mill Cyclone 2	Point	8.38	2.10	0.36	-	-	-	-	-
EP-04	Drying Line (cyclones, WESP, RTO)	Point	33.88	55.81	55.81	227.76	183.96	28.80	18.05	161244
EP-05	Dry Product Intermediate Storage 1	Point	0.07	0.07	0.07	-	-	-	-	-
EP-06	Dry Product Intermediate Storage 2	Point	0.07	0.07	0.07	-	-	-	-	-
EP-08	Dry Hammer Mill and Pellet Cooler (RCO)	Point	8.19	8.30	8.30	1.82	0.77	37.67	0.01	2319
EP-09	Milled Dry Product Intermediate Storage	Point	0.07	0.07	0.07	-	-	-	-	-
EP-10	Pellet Storage Silo 1	Point	3.85	2.35	0.89	-	-	-	-	-
EP-11	Pellet Storage Silo 2	Point	3.85	2.35	0.89	-	-	-	-	-
EP-12	Pellet Storage Silo 3	Point	3.85	2.35	0.89	-	-	-	-	-
EP-13	Pellet Storage Silo 4	Point	3.85	2.35	0.89	-	-	-	-	-
EP-14	Pellet Storage Silo 5	Point	3.85	2.35	0.89	-	-	-	-	-
EP-15	Product Loadout (truck)	Fugitive	0.02	0.01	0.00	-	-	-	-	-
GEN-01	Emergency Generator	Point	0.01	0.01	0.01	0.17	0.14	0.06	0.05	29
	Point Source Total Emissions:		**108**	**88**	**71**	**230**	**185**	**67**	**18**	**163592**
	Title V Threshold (Point Sourced Only):		--	100	100	100	100	100	100	--
	Title V Threshold Exceeded? (Yes/No):		--	No	No	Yes	Yes	No	No	--
	PSD New Major Source Threshold (Point Sources Only):		--	250	250	250	250	250	250	100000
	PSD New Major Source Threshold Exceeded? (Yes/No):		--	No	No	No	No	No	No	No[2]
	Facility-wide Total Emissions:		140	98	72	230	185	67	18	163592

Notes:

1 PM_{10} and $PM_{2.5}$ Total includes condensable PM

"-" Indicates that pollutant is not emitted from this source

2 CO_2e cannot trigger PSD unless already triggered by another pollutant

Table C-2 - Facility HAP/TAP Emissions				Dry Hammermills and Pelletizers				Dryer				RTO (Natural gas combustion)				RCO (Natural gas combustion)				Emergency Backup Generator				Totals				WAC TAP Review							
CAS	Pollutant Name	HAP?	TAP?	ton/yr	lb/yr	lb/hr	lb/24hr	ton/yr	lb/yr	lb/hr	lb/24hr	ton/yr	lb/yr	lb/hr	lb/24hr	ton/yr	lb/yr	lb/hr	lb/24hr	ton/yr	lb/yr	lb/hr	lb/24hr	ton/yr	lb/yr	lb/hr	lb/24hr	de minimis level lb/avg per	averaging period	TAP lb/avg per	De Minimis Check?	SQER lb/avg per	SQER Check?	ASIL µg/m^3	Modeling Result µg/m^3
56-49-5	3-Methylcholanthrene	No	Yes	0	0	0	0	0	0	0	0	6.18E-08	0.000124	1.41E-08	3.39E-07	3.48E-08	6.96E-05	7.94E-09	1.91E-07	0	0	0	0	9.66E-08	1.93E-04	2.21E-08	5.29E-07	0.00078	year	0.00019324	de minimis	0.016	< SQER	----	----
106-99-0	1,3-Butadiene	Yes	Yes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000978	1.955	0.01955	0.01955	9.78E-04	1.96E+00	1.96E-02	1.96E-02	0.27	year	1.955	Exceeds	5.4	< SQER	----	----
57-97-6	7,12-Dimethylbenz(a)anthracene	No	Yes	0	0	0	0	0	0	0	0	5.5E-07	0.001099	1.25E-07	3.01E-06	3.09E-07	0.000618	7.06E-08	1.69E-06	0	0	0	0	8.59E-07	1.72E-03	1.96E-07	4.71E-06	0.000069	year	1.72E-03	Exceeds	1.40E-03	Exceeds	8.50E-06	1.42E-08
71-55-6	1,1,1-Trichloroethane	Yes	Yes	0	0	0	0	0.000134	0.268582	3.07E-05	0.000736	0	0	0	0	0	0	0	0	0	0	0	0	1.34E-04	2.69E-01	3.07E-05	7.36E-04	19	24-hr	0.00073584	de minimis	370	< SQER	----	----
95-63-6	1,2,4-Trimethyl benzene	No	Yes	0	0	0	0	0.001007	2.014362	0.00023	0.005519	0	0	0	0	0	0	0	0	0	0	0	0	1.01E-03	2.01E+00	2.30E-04	5.52E-03	0.22	24-hr	0.0055188	de minimis	4.4	< SQER	----	----
75-07-0	Acetaldehyde	Yes	Yes	0	0	0	0	0.145482	290.9634	0.033215	0.79716	0	0	0	0	0	0	0	0	0.019175	38.35	0.3835	0.3835	1.65E-01	3.29E+02	4.17E-01	1.18E+00	3	year	3.29E+02	Exceeds	6.00E+01	Exceeds	3.70E-01	8.58E-03
98-86-2	Acetophenone	Yes	No	0	0	0	0	0.000716	1.432435	0.000164	0.003924	0	0	0	0	0	0	0	0	0	0	0	0	7.16E-04	1.43E+00	1.64E-04	3.92E-03	N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	----
107-02-8	Acrolein	Yes	Yes	0	0	0	0	0.050359	100.7181	0.011498	0.27594	0	0	0	0	0	0	0	0	0.002313	4.625	0.04625	0.04625	5.27E-02	1.05E+02	5.77E-02	3.22E-01	0.0013	24-hr	3.22E-01	Exceeds	2.60E-02	Exceeds	3.50E-01	4.09E-02
56-55-3	Benz(a)anthracene	Yes	Yes	0	0	0	0	0	0	0	0	6.18E-08	0.000124	1.41E-08	3.39E-07	3.48E-08	6.96E-05	7.94E-09	1.91E-07	0.000042	0.084	0.00084	0.00084	4.21E-05	8.42E-02	8.40E-04	8.41E-04	0.045	year	8.42E-02	Exceeds	8.90E-01	< SQER	----	----
71-43-2	Benzene	Yes	Yes	0	0	0	0	0.011079	22.15798	0.002529	0.060707	7.21E-05	0.144282	1.65E-05	0.000395	4.06E-05	0.081159	9.26E-06	0.000222	0.023325	46.65	0.4665	0.4665	3.45E-02	6.90E+01	4.69E-01	5.28E-01	1	year	6.90E+01	Exceeds	2.10E+01	Exceeds	1.30E-01	1.03E-02
50-32-8	Benzo(a)pyrene	Yes	Yes	0	0	0	0	0	0	0	0	4.12E-08	8.24E-05	9.41E-09	2.26E-07	2.32E-08	4.64E-05	5.29E-09	1.27E-07	4.7E-06	0.0094	0.000094	0.000094	4.76E-06	9.53E-03	9.40E-05	9.44E-05	0.0082	year	9.53E-03	Exceeds	1.60E-01	< SQER	----	----
205-99-2	Benzo(b)fluoranthene	Yes	Yes	0	0	0	0	0	0	0	0	6.18E-08	0.000124	1.41E-08	3.39E-07	3.48E-08	6.96E-05	7.94E-09	1.91E-07	2.48E-06	0.004955	4.96E-05	4.96E-05	2.57E-06	5.15E-03	4.96E-05	5.01E-05	0.045	year	0.00514824	de minimis	0.89	< SQER	----	----
207-08-9	Benzo(k)fluoranthene	Yes	Yes	0	0	0	0	0	0	0	0	6.18E-08	0.000124	1.41E-08	3.39E-07	3.48E-08	6.96E-05	7.94E-09	1.91E-07	3.88E-06	0.00775	7.75E-05	7.75E-05	3.97E-06	7.94E-03	7.75E-05	7.80E-05	0.045	year	0.00794324	de minimis	0.89	< SQER	----	----
92-52-4	Biphenyl	Yes	No	0	0	0	0	0.000436	0.87289	9.96E-05	0.002391	0	0	0	0	0	0	0	0	0	0	0	0	4.36E-04	8.73E-01	9.96E-05	2.39E-03	N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	----
117-81-7	Bis-(2-ethylhexyl phthalate)	Yes	Yes	0	0	0	0	0.003581	7.162176	0.000818	0.019622	0	0	0	0	0	0	0	0	0	0	0	0	3.58E-03	7.16E+00	8.18E-04	1.96E-02	3.4	year	7.16E+00	Exceeds	6.80E+01	< SQER	----	----
74-83-9	Bromomethane	Yes	Yes	0	0	0	0	0.000313	0.62669	7.15E-05	0.001717	0	0	0	0	0	0	0	0	0	0	0	0	3.13E-04	6.27E-01	7.15E-05	1.72E-03	0.019	24-hr	0.00171696	de minimis	0.37	< SQER	----	----
75-15-0	Carbon disulfide	Yes	Yes	0	0	0	0	0.000201	0.402872	4.6E-05	0.001104	0	0	0	0	0	0	0	0	0	0	0	0	2.01E-04	4.03E-01	4.60E-05	1.10E-03	3	24-hr	0.00110376	de minimis	59	< SQER	----	----
56-23-5	Carbon tetrachloride	Yes	Yes	0	0	0	0	0.000134	0.268582	3.07E-05	0.000736	0	0	0	0	0	0	0	0	0	0	0	0	1.34E-04	2.69E-01	3.07E-05	7.36E-04	1.4	year	0.2685816	de minimis	27	< SQER	----	----
74-87-3	Chloromethane	Yes	Yes	0	0	0	0	0.001231	2.461998	0.000281	0.006745	0	0	0	0	0	0	0	0	0	0	0	0	1.23E-03	2.46E+00	2.81E-04	6.75E-03	0.33	24-hr	0.0067452	de minimis	6.7	< SQER	----	----
218-01-9	Chrysene	No	Yes	0	0	0	0	0	0	0	0	6.18E-08	0.000124	1.41E-08	3.39E-07	3.48E-08	6.96E-05	7.94E-09	1.91E-07	8.83E-06	0.01765	0.000177	0.000177	8.92E-06	1.78E-02	1.77E-04	1.77E-04	0.45	year	0.01784324	de minimis	8.9	< SQER	----	----
98-82-8	Cumene	Yes	Yes	0	0	0	0	0.000772	1.544344	0.000176	0.004231	0	0	0	0	0	0	0	0	0	0	0	0	7.72E-04	1.54E+00	1.76E-04	4.23E-03	1.5	24-hr	0.00423108	de minimis	30	< SQER	----	----
84-74-2	Di-N-butyl phthalate	Yes	No	0	0	0	0	0.000257	0.514781	5.88E-05	0.00141	0	0	0	0	0	0	0	0	0	0	0	0	2.57E-04	5.15E-01	5.88E-05	1.41E-03	N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	----
53-70-3	Dibenzo(a,h)anthracene	Yes	Yes	0	0	0	0	0	0	0	0	4.12E-08	8.24E-05	9.41E-09	2.26E-07	2.32E-08	4.64E-05	5.29E-09	1.27E-07	1.46E-05	0.02915	0.000292	0.000292	1.46E-05	2.93E-02	2.92E-04	2.92E-04	0.0041	year	2.93E-02	Exceeds	8.20E-02	< SQER	----	----
100-41-4	Ethyl benzene	Yes	Yes	0	0	0	0	4.25E-05	0.085051	9.71E-06	0.000233	0	0	0	0	0	0	0	0	0	0	0	0	4.25E-05	8.51E-02	9.71E-06	2.33E-04	3.2	year	0.08505084	de minimis	65	< SQER	----	----
50-00-0	Formaldehyde	Yes	Yes	0	0	0	0	0.279773	559.545	0.063875	1.533	0.002576	5.152941	0.000588	0.014118	0.001449	2.898529	0.000331	0.007941	0.0295	59	0.59	0.59	3.13E-01	6.27E+02	6.55E-01	2.15E+00	1.4	year	6.27E+02	Exceeds	2.70E+01	Exceeds	1.70E-01	1.33E-02
110-54-3	Hexane	Yes	Yes	0	0	0	0	0.000291	0.581927	6.64E-05	0.001594	0.061835	123.6706	0.014118	0.338824	0.034782	69.56471	0.007941	0.190588	0	0	0	0	9.69E-02	1.94E+02	2.21E-02	5.31E-01	2.6	24-hr	0.53100608	de minimis	52	< SQER	----	----
123-31-9	Hydroquinone	Yes	No	0	0	0	0	0.000671	1.342908	0.000153	0.003679	0	0	0	0	0	0	0	0	0	0	0	0	6.71E-04	1.34E+00	1.53E-04	3.68E-03	N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	----
193-39-5	Indeno(1,2,3,c,d)pyrene	Yes	Yes	0	0	0	0	0	0	0	0	6.18E-08	0.000124	1.41E-08	3.39E-07	3.48E-08	6.96E-05	7.94E-09	1.91E-07	9.38E-06	0.01875	0.000188	0.000188	9.47E-06	1.89E-02	1.88E-04	1.88E-04	0.045	year	0.01894324	de minimis	0.89	< SQER	----	----
1330-20-7	m,p-Xylene	Yes	Yes	0	0	0	0	0.006155	12.30999	0.001405	0.033726	0	0	0	0	0	0	0	0	0.007125	14.25	0.1425	0.1425	1.33E-02	2.66E+01	1.44E-01	1.76E-01	0.82	24-hr	1.76E-01	de minimis	1.60E+01	< SQER	----	----
67-56-1	Methanol	Yes	Yes	0.080446	160.892	0.018367	0.4408	0.156673	313.3452	0.03577	0.85848	0	0	0	0	0	0	0	0	0	0	0	0	2.37E-01	4.74E+02	5.41E-02	1.30E+00	74	24-hr	1.29928	de minimis	1500	< SQER	----	----
78-93-3	Methyl ethyl ketone	No	Yes	0	0	0	0	0.054835	109.6708	0.01252	0.300468	0	0	0	0	0	0	0	0	0	0	0	0	5.48E-02	1.10E+02	1.25E-02	3.00E-01	19	24-hr	0.300468	de minimis	370	< SQER	----	----
108-10-1	Methyl isobutyl ketone	Yes	Yes	0	0	0	0	0.026858	53.71632	0.006132	0.147168	0	0	0	0	0	0	0	0	0	0	0	0	2.69E-02	5.37E+01	6.13E-03	1.47E-01	11	24-hr	0.147168	de minimis	220	< SQER	----	----
75-09-2	Methylene chloride	Yes	Yes	0	0	0	0	0.00705	14.10053	0.00161	0.038632	0	0	0	0	0	0	0	0	0	0	0	0	7.05E-03	1.41E+01	1.61E-03	3.86E-02	490	year	14.100534	de minimis	9800	< SQER	----	----
110-54-3	n-Hexane	Yes	Yes	0	0	0	0	0.000291	0.581927	6.64E-05	0.001594	0.061835	123.6706	0.014118	0.338824	0.034782	69.56471	0.007941	0.190588	0	0	0	0	9.69E-02	1.94E+02	2.21E-02	5.31E-01	2.6	24-hr	0.53100608	de minimis	52	< SQER	----	----
91-20-3	Naphthalene	Yes	Yes	0	0	0	0	0	0	0	0	2.1E-05	0.041911	4.78E-06	0.000115	1.18E-05	0.023575	2.69E-06	6.46E-05	0.002313	4.625	0.04625	0.04625	2.35E-03	4.69E+00	4.63E-02	4.64E-02	0.24	year	4.69E+00	Exceeds	4.80E+00	< SQER	----	----
95-47-6	o-Xylene	Yes	Yes	0	0	0	0	0.000157	0.313345	3.58E-05	0.000858	0	0	0	0	0	0	0	0	0	0	0	0	1.57E-04	3.13E-01	3.58E-05	8.58E-04	0.82	24-hr	0.00085848	de minimis	16	< SQER	----	----
108-95-2	Phenol	Yes	Yes	0.04959	99.18	0.011322	0.271726	0.07386	147.7199	0.016863	0.404712	0	0	0	0	0	0	0	0	0	0	0	0	1.23E-01	2.47E+02	2.82E-02	6.76E-01	0.74	24-hr	0.67643803	de minimis	15	< SQER	----	----
115-07-1	Propylene	No	Yes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0645	129	1.29	1.29	6.45E-02	1.29E+02	1.29E+00	1.29E+00	11	24-hr	1.29	de minimis	220	< SQER	----	----
123-38-6	Propionaldehyde	Yes	Yes	0	0	0	0	0.035811	71.62176	0.008176	0.196224	0	0	0	0	0	0	0	0	0	0	0	0	3.58E-02	7.16E+01	8.18E-03	1.96E-01	0.03	24-hr	1.96E-01	Exceeds	5.90E-01	< SQER	----	----
100-42-5	Styrene	Yes	Yes	0	0	0	0	0.001343	2.685816	0.000307	0.007358	0	0	0	0	0	0	0	0	0	0	0	0	1.34E-03	2.69E+00	3.07E-04	7.36E-03	3.2	24-hr	0.0073584	de minimis	65	< SQER	----	----
108-88-3	Toluene	Yes	Yes	0	0	0	0	0.023501	47.00178	0.005366	0.128772	0.000117	0.2336	2.67E-05	0.00064	6.57E-05	0.1314	0.000015	0.00036	0.010225	20.45	0.2045	0.2045	3.39E-02	6.78E+01	2.10E-01	3.34E-01	19	24-hr	0.334272	de minimis	370	< SQER	----	----
7440-36-0	Antimony	Yes	No	0	0	0	0	0.000285	0.570276	6.51E-05	0.001562	0	0	0	0	0	0	0	0	0	0	0	0	2.85E-04	5.70E-01	6.51E-05	1.56E-03	N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	----
7440-38-2	Arsenic	Yes	Yes	0	0	0	0	0.000794	1.588109	0.000181	0.004351	6.87E-06	0.013741	1.57E-06	3.76E-05	3.86E-06	0.007729	8.82E-07	2.12E-05	0	0	0	0	8.05E-04	1.61E+00	1.84E-04	4.41E-03	2.50E-03	year	1.61E+00	Exceeds	4.90E-02	Exceeds	3.00E-04	6.21E-06
7440-41-7	Beryllium	Yes	Yes	0	0	0	0	3.97E-05	0.079405	9.06E-06	0.000218	4.12E-07	0.000824	9.41E-08	2.26E-06	2.32E-07	0.000464	5.29E-08	1.27E-06	0	0	0	0	4.03E-05	8.07E-02	9.21E-06	2.21E-04	3.40E-03	year	8.07E-02	Exceeds	6.80E-02	Exceeds	4.20E-04	3.12E-07
7440-43-9	Cadmium	Yes	Yes	0	0	0	0	0.000148	0.295966	3.38E-05	0.000811	3.78E-05	0.075576	8.63E-06	0.000207	2.13E-05	0.042512	4.85E-06	0.000116	0	0	0	0	2.07E-04	4.14E-01	4.73E-05	1.13E-03	1.90E-03	year	4.14E-01	Exceeds	3.90E-02	Exceeds	2.40E-04	1.89E-06
CRVICOMP	Chromium, hexavalent	Yes	Yes	0	0	0	0	0.000126	0.252654	2.88E-05	0.000692	0	0	0	0	0	0	0	0	0	0	0	0	1.26E-04	2.53E-01	2.88E-05	6.92E-04	3.30E-05	year	2.53E-01	Exceeds	6.50E-04	Exceeds	4.00E-06	9.68E-07
7440-47-3	Chromium, total	Yes	Yes	0	0	0	0	0.000758	1.515922	0.000173	0.004153	4.81E-05	0.096188	1.1E-05	0.000264	2.71E-05	0.054106	6.18E-06	0.000148	0	0	0	0	8.33E-04	1.67E+00	1.90E-04	4.56E-03	3.70E-04	24-hr	4.56E-03	Exceeds	7.40E-03	< SQER	----	----
7440-48-4	Cobalt	Yes	Yes	0	0	0	0	0.000235	0.469214	5.36E-05	0.001286	2.89E-06	0.005771	6.59E-07	1.58E-05	1.62E-06	0.003246	3.71E-07	8.89E-06	0	0	0	0	2.39E-04	4.78E-01	5.46E-05	1.31E-03	0.00037	24-hr	1.31E-03	Exceeds	7.40E-03	< SQER	----	----
7439-92-1	Lead	Yes	Yes	0	0	0	0	0.001732	3.464965	0.000396	0.009493	1.72E-05	0.034353	3.92E-06	9.41E-05	9.66E-06	0.019324	2.21E-06	5.29E-05	0	0	0	0	1.76E-03	3.52E+00	4.02E-04	9.64E-03	1.00E+01	year	3.51864191	de minimis	1.40E+01	< SQER	----	----
7439-96-5	Manganese	Yes	Yes	0	0	0	0	0.057749	115.4988	0.013185	0.316435	1.31E-05	0.026108	2.98E-06	7.15E-05	7.34E-06	0.014686	1.68E-06	4.02E-05	0	0	0	0	5.78E-02	1.16E+02	1.32E-02	3.17E-01	1.10E-03	24-hr	3.17E-01	Exceeds	2.20E-02	Exceeds	3.00E-01	1.14E-02
7439-97-6	Mercury	Yes	Yes	0	0	0	0	0.002527	5.053075	0.000577	0.013844	8.93E-06	0.017864	2.04E-06	4.89E-05	5.02E-06	0.010048	1.15E-06	2.75E-05	0	0	0	0	2.54E-03	5.08E+00	5.80E-04	1.39E-02	0.00011	24-hr	1.39E-02	Exceeds	2.20E-03	Exceeds	3.00E-02	5.03E-04
7440-02-0	Nickel	Yes	Yes	0	0	0	0	0.001191	2.382164	0.000272	0.006526	7.21E-05	0.144282	1.65E-05	0.000395	4.06E-05	0.081159	9.26E-06	0.000222	0	0	0	0	1.30E-03	2.61E+00	2.98E-04	7.14E-03	3.10E-02	year	2.61E+00	Exceeds	6.20E-01	Exceeds	3.80E-03	1.05E-05
7723-14-0	Phosphorus	Yes	Yes	0	0	0	0	0.000975	1.949043	0.000222	0.00534	0	0	0	0	0	0	0	0	0	0	0	0	9.75E-04	1.95E+00	2.22E-04	5.34E-03	0.074	24-hr	0.00533984	de minimis	1.5	< SQER	----	----
7782-49-2	Selenium	Yes	Yes	0	0	0	0	0.000101	0.202123	2.31E-05	0.000554	8.24E-07	0.001649	1.88E-07	4.52E-06	4.64E-07	0.000928	1.06E-07	2.54E-06	0	0	0	0	1.02E-04	2.05E-01	2.34E-05	5.61E-04	7.40E-02	24-hr	0.00056082	de minimis	1.5	< SQER	----	----
7440-62-2	Vanadium	No	Yes	0	0	0	0	3.54E-05	0.070743	8.08E-06	0.000194	7.9E-05	0.158024	1.8E-05	0.000433	4.44E-05	0.088888	1.01E-05	0.000244	0	0	0	0	1.59E-04	3.18E-01	3.63E-05	8.70E-04	0.00037	24-hr	8.70E-04	Exceeds	7.40E-03	< SQER	----	----

Note:

"#N/A" indicates that the pollutant is not a TAP and therefore there are no related TAP review elements.

If column "SQER Check?" says "Exceeds", then modeling was performed to check predicted concentration against the ASIL.

Summary	
Total Facility HAP Emissions (TPY):	1.32
Maximum individual HAP (TPY):	0.31 Formaldehyde

Table C-3 - Raw Material Received - Handling

Emission Point ID	Point or Fugitive	Emission Source	Throughput [1] (short tons/year)	Annual Hours of Operation (hours/year)	Pollutant	Emission factor[2] (lb/BDton)	Number of "Drops" [3]	Potential Emissions (lb/hr)	Potential Emissions (ton/year)
TD1	Fugitive	Truck Dumper - White Wood[4]	367333	8760	Filterable PM	0.00075	3	0.09	0.41
					Filterable PM_{10}	0.00035		0.04	0.19
					Filterable $PM_{2.5}$	0.00005		0.01	0.03
TD2	Fugitive	Truck Dumper - Chips	411413	8760	Filterable PM	0.00075	3	0.11	0.46
					Filterable PM_{10}	0.00035		0.05	0.22
					Filterable $PM_{2.5}$	0.00005		0.01	0.03
TD3	Fugitive	Truck Dumper - Bark (Hog Fuel)	242440	8760	Filterable PM	0.00075	3	0.06	0.27
					Filterable PM_{10}	0.00035		0.03	0.13
					Filterable $PM_{2.5}$	0.00005		0.00	0.02

1. Wet material based on mass balance flowchart provided by client.
2. PM emission factors from USEPA Memo "Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country," May 8, 2014. While the emission factors are in units of pounds per bone dry ton of material, the calculation conservatively uses the heavier estimate of "wet" material throughput to represent material flow through this process.
3. Emissions are generated from each "drop" of material from one surface to another. This includes each mechanical conveyance drop between point of generation and storage bin. In this instance, there is (1) drop from truck dumper to ground, (2) front end loader drop to storage pile, and (3) front end loader drop to walking floor bin.
4. As an alternating stockpiling scenario for white wood, PNWRE is considering using a radial stacker rather than using a front end loader for moving and stacking the white wood. Using a radial stacker would represent the same number of drop points as the front end loader method (truck unload to conveyor pickup, drop from conveyor to storage pile, conveyor drop to walking floor bin) while eliminating any associated front end loader traffic emissions for that material.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

OFFICE OF
AIR, WASTE, AND TOXICS

MAY 08 2014

MEMORANDUM

SUBJECT: Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country

FROM: Dan Meyer, Environmental Engineer
Air Permits & Diesel Unit

THRU: Donald A. Dossett, P.E., Manager
Air Permits & Diesel Unit

TO: Permit File

EPA Region 10 has compiled the attached list of particulate matter (PM – CAA § 111 pollutant, PM_{10} and $PM_{2.5}$ – criteria pollutants) emission factors ("EFs") for use in determining the potential emissions, more commonly referred to as potential to emit ("PTE"), for activities at sawmills, excluding boilers, located in Pacific Northwest Indian Country.[1] The EFs are presented in units appropriate for the particular activity. PTE generally represents the maximum capacity of a source to emit a pollutant under its physical and operational design taking into consideration restrictions that are federally enforceable. While PM, PM_{10} and $PM_{2.5}$ PTE are all used to determine applicability of the Compliance Assurance Monitoring program and Prevention of Significant Deterioration construction permit program, only PM_{10} and $PM_{2.5}$ are employed to determine applicability of the Title V operating permit program.[2]

The Federal Air Rules for Reservations ("FARR") limit particulate matter emissions from applicable activities at sawmills. The rules and the rationale for not employing them to determine PTE are as follows: (a) 20 percent opacity limit (40 CFR § 49.124) – lack of a correlation between opacity and particulate matter emissions, (b) requirements for limiting fugitive emissions (40 CFR § 49.126) – lack of a correlation between compliance with requirements and particulate matter emissions, (c) non-combustion stack 0.1 grain per dry standard cubic foot PM emission limit (40 CFR § 49.125) – resultant PTE would be unrealistically high as we assume that an unreasonable amount of wood residue is exhausted to atmosphere rather than recovered for sale or combustion in on-site boiler.

There are no other federal regulations beyond the FARR that limit particulate matter emissions from activities addressed by this memorandum. Under the circumstances, it is appropriate to employ the EFs presented in the attachment to estimate PTE, unless a more representative (e.g. site-specific) EF is available.

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[1] Activities include log bucking and debarking, sawing, lumber drying, mechanical and pneumatic conveyance of wood residue, wind erosion of wood residue piles and traffic along paved and unpaved roads.
[2] October 16, 1995 EPA memorandum entitled, "Definition of Regulated Pollutant for Particulate Matter for Purposes of Title V"

EPA Region 10 Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country, May 2014

EF Reference No.	Emissions Generating Activity[1]	PM^2 EF	PM_{10} % of PM	PM_{10} EF	$PM_{2.5}$ % of PM	$PM_{2.5}$ EF	Units
1, 2, 3, 4	Log Bucking[3]	0.035	50	0.0175	25	0.00875	lb/ton log
1, 2, 3, 5	Log Debarking[3]	0.024	50	0.012	25	0.006	lb/ton log
1, 2, 3, 6	Sawing[3]	0.350	50	0.175	25	0.0875	lb/ton log
1, 3, 7	Lumber Drying - Resinous Softwood Species[4]	0.02	100	0.02	100	0.02	lb/mbf
1, 3, 7	Lumber Drying - Non-Resinous Softwood Species[5]	0.05	100	0.05	100	0.05	lb/mbf
1, 2, 3, 8	"Drop" of "wet" material[5] from one surface to another including, but not limited to, (a) each mechanical conveyance drop between point of generation and storage bin (but not including bin unless open to atmosphere) (b) loadout from storage bin into a truck bed or railcar and (c) drop onto a pile. Apply EF to each "drop."	0.00075	N/A	0.00035	N/A	0.00005	lb/bdt material
1, 2, 3, 8	"Drop" of "dry" material[5] from one surface to another including, but not limited to, (a) each mechanical conveyance drop between point of generation and storage bin (but not including bin unless open to atmosphere) (b) loadout from storage bin into a truck bed or railcar and (c) drop onto a pile. Apply EF to each "drop."	0.0015	N/A	0.0007	N/A	0.0001	lb/bdt material
1, 3, 9	Pneumatically convey material[6] through medium efficiency cyclone to bin	0.5	85	0.425	50	0.25	lb/bdt material
1, 3, 9	Pneumatically convey material[6] through high efficiency cyclone to bin	0.2	95	0.19	80	0.16	lb/bdt material
1, 3, 9	Pneumatically convey material[6] through cyclone to bin. Exhaust routed through baghouse.	0.001	99.5	0.000995	99	0.00099	lb/bdt material
1, 3, 9	Pneumatically convey material[6] into target box	0.1	85	0.085	50	0.05	lb/bdt material
1, 2, 10	Wind Erosion of Pile	0.38	50	0.19	25	0.095	ton/acre-yr
1, 2, 11	Paved Roads	Emission factors based upon site-specific parameters.					lb/VMT
1, 2, 12	Unpaved Roads	Emission factors based upon site-specific parameters.					lb/VMT

Acronyms

bdt: bone dry ton
mbf: 1000 board foot lumber
VMT: vehicle mile traveled

1 If any activity occurs within a building, reduce the PM, PM_{10} and $PM_{2.5}$ emission factor ("EF") by 100 percent (engineering judgement) as emissions struggle to escape through doorways and other openings. If an activity's by-products are evacuated pneumatically to a target box, cyclone or bag filter system, then only the associated downstream conveyance emissions are counted.

2 PM refers to the CAA § 111 pollutant generally measured using EPA Reference Method 5 to determine the filterable fraction of particulate matter. "Particulate matter" is a term used to define an air pollutant that consists of a mixture of solid particles and liquid droplets found in the ambient air. PM does not include a condensable fraction.

3 EF for log bucking, debarking and sawing are expressed in units of "lb/ton log" in the table above. The EF can be expressed in units of "lb/mbf" lumber as follows:

$$\text{lb/mbf} = (\text{lb PM/ton log}) \times (\text{ton/2000 lb}) \times (\text{LD lb/ft}^3) \times (\text{LRF bf lumber/ft}^3\text{ log}) \times (\text{1000 bf/mbf})$$

where "LD" stands for log density and "LRF" stands for log recovery factor

• LD values are species-specific and are provided by The Engineering ToolBox and are listed at http://www.engineeringtoolbox.com/weigt-wood-d_821.html

• LRF value of 6.33 bf/ft^3 log is specific to softwood species of the Pacific Coast East. See Section 2 of Appendix D to Forest Products Measurements and Conversion Factors with Special Emphasis on the U.S. Pacific Northwest. College of Forest Resources, University of Washington. 1994. See http://www.ruraltech.org/projects/conversions/briggs_conversions/briggs_append2/appendix02_combined.pdf

4 Douglas Fir, Engelmann Spruce, Larch, Lodgepole Pine, Ponderosa Pine and Western White Pine

5 White Fir, Western Hemlock and Western Red Cedar

6 The "material" in this entry refers to bark, hogged fuel, green chips, dry chips, green sawdust, dry sawdust, shavings and any other woody by-product of lumber production.

<table>
<tr><th>No.</th><th>EF Reference</th></tr>
<tr><td>1</td><td>Although this activity may be subject to the FARR visible emissions limit of 20% opacity (40 CFR § 124(d)), the limit was not further considered in deriving an emission factor due to the lack of a correlation between opacity and particulate matter emissions.</td></tr>
<tr><td>2</td><td>Although this activity may be subject to the FARR requirements for limiting fugitive particulate matter emissions (40 CFR §126), those requirements were not further considered in deriving an emission factor due to lack of a correlation between compliance with requirements and particulate matter emissions.</td></tr>
<tr><td>3</td><td>Although this activity may be subject to the FARR stack PM emission limit of 0.1 gr/dscf (40 CFR § 125(d)(3)), that limit was not further considered in deriving an emission factor because the resultant PTE would be unrealistically high.</td></tr>
<tr><td>4</td><td>For PM, PM_{10}, and $PM_{2.5}$ EF, apply engineering judgement to estimate that log bucking emissions are one-tenth sawing emissions. EPA has stated that log bucking is normally a negligible source of fugitive PM emissions. See page 2-125 of Assessment of Fugitive Particulate Emission Factor for Industrial Processes, EPA-450/3-78-107, September 1978. The document can be downloaded from internet at http://nepis.epa.gov/Simple.html by entering EPA publication number. For sawing emissions details, see Reference No. 3 below.</td></tr>
<tr><td>5</td><td>• For PM EF, see Table 2-47 of Assessment of Fugitive Particulate Emission Factor for Industrial Processes, EPA-450/3-78-107, September 1978. See also Table 2-59 of Technical Guidance for Controls of Industrial Process Fugitive Particulate Emissions, EPA-450/3-77-010, March 1977. Both documents can be downloaded from internet at http://nepis.epa.gov/Simple.html by entering EPA publication number. EPA revoked the PM EF from WebFIRE on January 1, 2002. See detailed search results for SCC 3-07-008-01 (include revoked factors) at http://cfpub.epa.gov/webfire/index.cfm?action=fire.detailedSearch

• For PM_{10} and $PM_{2.5}$ EF, apply engineering judgement to estimate that (a) PM_{10} emissions are one-half PM emissions and (b) $PM_{2.5}$ emissions are one-half PM_{10} emissions.</td></tr>
<tr><td>6</td><td>• Sawing consists of the following cummulative activities: breaking the log into cants and flitches with a smooth edge, breaking cant further down into multiple flitches and/or boards, taking the flitch and trim off all irregular edges to leave four-sided lumber and trimming to square the ends.

• For PM EF, see Table 2-47 of Assessment of Fugitive Particulate Emission Factor for Industrial Processes, EPA-450/3-78-107, September 1978. See also Table 2-59 of Technical Guidance for Controls of Industrial Process Fugitive Particulate Emissions, EPA-450/3-77-010, March 1977. Both documents can be downloaded from internet at http://nepis.epa.gov/Simple.html by entering EPA publication number. EPA revoked the PM EF from WebFIRE on January 1, 2002. See detailed search results for SCC 3-07-008-01 (include revoked factors) at http://cfpub.epa.gov/webfire/index.cfm?action=fire.detailedSearch

• For PM_{10} and $PM_{2.5}$ EF, apply engineering judgement to estimate that (a) PM_{10} emissions are one-half PM emissions and (b) $PM_{2.5}$ emissions are one-half PM_{10} emissions.</td></tr>
<tr><td>7</td><td>• For PM EF, see ODEQ ACDP Application Guidance AQ-EF02 (4/25/00). Douglas fir is a resinous softwood species and western hemlock is a non-resinous softwood species.
• For PM_{10} and $PM_{2.5}$ EF, apply engineering judgement to estimate that all PM emitted is organic aerosols and fully PM_{10} and $PM_{2.5}$ emissions.</td></tr>
<tr><td>8</td><td>• See Section 13.2.4 of EPA's AP-42, November 2006 at http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf. Apply Equation 1 on page 13.2.4-4 to estimate emissions resulting from material drops as follows: E [lb PM/ton] = (k) X (0.0032) X $(U/5)^{1.3}$ / $(M/2)^{1.4}$

<u>Wet</u> Material Drop
<table>
<tr><th>Particulate</th><th>k ×</th><th>0.0032 ×</th><th>$(U/5)^{1.3}$ /</th><th>$(M/2)^{1.4}$ =</th><th><u>lb PM</u>
ton</th></tr>
<tr><td>PM</td><td>0.74</td><td rowspan="3">0.0032</td><td rowspan="3">6.6693</td><td rowspan="3">21.0552</td><td>0.00075</td></tr>
<tr><td>PM_{10}</td><td>0.35</td><td>0.00035</td></tr>
<tr><td>$PM_{2.5}$</td><td>0.053</td><td>0.00005</td></tr>
</table>
The following conservative assumptions were made in applying Equation 1:
Mean wind speed (U) = 15 miles per hour
$(U/5)^{1.3}$ = 6.66930
Material moisture content (M) = 34 percent. Value based upon observations
$(M/2)^{1.4}$ = 21.05520

Note: • Mean wind speed of 15 mph is a reasonable upper bounder estimate.
• Moisture content of 34 percent for "wet" material is based upon observation that average moisture content (dry basis) of green douglas fir lumber (common to the Pacific Northwest) is 51 percent as recorded prior to lab scale kiln VOC emissions testing conducting by Oregon State University's Mike Milota and organized in Microsoft Excel workbook entitled, "EPA Region 10 HAP and VOC Emission Factors for Lumber Drying, December 2012." 51 percent moisture content (dry basis) is equivalent to 34 percent moisture content (wet basis) as illustrated below:
MCD = MCW / (1-MCW); where
MCD: moisture content dry basis
MCW: moisture content wet basis

0.51 = MCW / (1 - MCW)
0.51 - (0.51)(MCW) = MCW
(1.51)(MCW) = 0.51
MCW = 0.34, or 34 percent</td></tr>
</table>

	<u>Dry</u> Material Drop Particulate | k × 0.0032 × (U/5)^1.3 / (M/2)^1.4 = lb PM/ton PM | 0.74 | 0.0032 | 6.6693 | 10.5552 | 0.0015 PM_{10} | 0.35 | 0.0032 | 6.6693 | 10.5552 | 0.0007 $PM_{2.5}$ | 0.053 | 0.0032 | 6.6693 | 10.5552 | 0.0001

Dry Material Drop

Particulate	k ×	0.0032 ×	$(U/5)^{1.3}$ /	$(M/2)^{1.4}$ =	lb PM / ton
PM	0.74	0.0032	6.6693	10.5552	0.0015
PM_{10}	0.35				0.0007
$PM_{2.5}$	0.053				0.0001

The following conservative assumptions were made in applying Equation 1:

Mean wind speed (U) =	15	miles per hour
$(U/5)^{1.3}$ =	6.6693	
Material moisture content (M) =	13	percent
$(M/2)^{1.4}$ =	10.5552	

Note: • Mean wind speed of 15 mph is a reasonable upper bounder estimate.

• Moisture content of 13 percent for "dry" material is based upon observation that typical moisture content (dry basis) of kiln-dried lumber is 15 percent as recorded during lab scale kiln emissions testing conducting by Oregon State University's Mike Milota and organized in Microsoft Excel workbook entitled, "EPA Region 10 HAP and VOC Emission Factors for Lumber Drying, December 2012." 15 percent moisture content (dry basis) is equivalent to 13 percent moisture content (wet basis) as illustrated below:

MCD = MCW / (1-MCW); where
MCD: moisture content dry basis
MCW: moisture content wet basis

0.15 = MCW / (1 - MCW)
0.15 - (0.15)(MCW) = MCW
(1.15)(MCW) = 0.15
MCW = 0.13, or 13 percent

9	• For PM EF, see Oregon Department of Environmental Quality (ODEQ) Wood Products Emission Factors, AQ-EF02 Revised 08/01/11. http://www.deq.state.or.us/aq/permit/acdp/docs/AQ-EF02.pdf • For PM_{10} and $PM_{2.5}$ EF, see ODEQ Wood Products Emission Factors - PM_{10}/$PM_{2.5}$ Fractions, AQ-EF03 Revised 08/01/11. http://www.deq.state.or.us/aq/permit/acdp/docs/AQ-EF03.pdf
10	• For PM EF, see last row of Table 11.9-4 on page 11.9-11 of Section 11.9 of EPA's AP-42, July 1998 at http://www.epa.gov/ttn/chief/ap42/ch11/final/c11s09.pdf. • For PM_{10} and $PM_{2.5}$ EF, apply engineering judgement to estimate that (a) PM_{10} emissions are one-half PM emissions and (b) $PM_{2.5}$ emissions are one-half PM_{10} emissions.
11	See Equation 1 on page 13.2.1-4 of Chapter 13.2.1 of AP-42, January 2011 at http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0201.pdf
12	See Equation 1a on page 13.2.2-4 of Chapter 13.2.2 of AP-42, November 2006 at http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0204.pdf

Table C-4 - Raw Material Received - Storage Piles

Emission Point ID	Point or Fugitive	Emission Source	Throughput [1] (short tons/year)	Size of Storage Pile [2] (acre)	PM Emission Factor [3] (ton/acre-year)	PM10 Emission Factor [3] (ton/acre-year)	PM2.5 Emission Factor [3] (ton/acre-year)	PM (ton/year)	PM_{10} (ton/year)	$PM_{2.5}$ (ton/year)
SP-01	Fugitive	White Wood	367333	1.7	0.38	0.19	0.095	0.65	0.32	0.16
SP-02	Fugitive	Chips	411413	1.7	0.38	0.19	0.095	0.65	0.32	0.16
SP-03	Fugitive	Bark (Hog Fuel)	242440	1.7	0.38	0.19	0.095	0.65	0.32	0.16

1. Throughput rates based on client-provided mass balance.
2. Assumed individual storage pile size of 1.7 acres based on client information.
3. PM emission factors from USEPA Memo "Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country," May 8, 2014.

Table C-5 - Vehicle Traffic - Haul Trucks (VEH-01)

Emission Factors

Equation 1a from AP-42 Section 13.2.2

$$E = k \times \left(\frac{s}{12}\right)^{a} \times \left(\frac{W}{3}\right)^{b}$$

Equation 2 from AP-42 Section 13.2.2

$$E_{ext} = E \times [(365 - P)/365]$$

kPM30	4.9	lb/VMT	*from AP-42 Table 13.2.2-2, assumed equivalent to total suspended particulate*
kPM10	1.5	lb/VMT	*from AP-42 Table 13.2.2-2*
kPM2.5	0.15	lb/VMT	*from AP-42 Table 13.2.2-2*
s	8.4	%	*from AP-42 Table 13.2.2-1, mean for Lumber sawmills*
WE	11.3		*estimate from client info*
WF	44.0		*client info for GVWR with possum belly trailers*
a	0.9		*for PM10 & PM2.5, from AP-42 Table 13.2.2-2*
a	0.7		*for PM30, from AP-42 Table 13.2.2-2*
b	0.45		*from AP-42 Table 13.2.2-2*
P	180	days	*number of days with ≥0.01 inch of precipitation, AP-42 Figure 13.2.2-1*
	85%	CE	*Control efficiency applied from control measures: 10 mph speed limit, regular wet suppression, pickup broom truck. Source: WRAP Fugitive Dust Handbook (2006), Executive Summary Table, Page 3.* R110344-02 (wrapair.org)

Emission Factor E without natural mitigation

EPM_empty	6.94	lb/VMT
EPM10_empty	1.98	lb/VMT
EPM2.5_empty	0.20	lb/VMT
EPM_full	11.90	lb/VMT
EPM10_full	3.64	lb/VMT
EPM2.5_full	0.36	lb/VMT

Emission Factor E_{ext} with natural mitigation

EextPM_empty	3.52	lb/VMT
EextPM10_empty	1.00	lb/VMT
EextPM2.5_empty	0.10	lb/VMT
EextPM_full	6.03	lb/VMT
EextPM10_full	1.85	lb/VMT
EextPM2.5_full	0.18	lb/VMT

Emission Estimates

Annual Emissions

		Onsite Trip Length*		Onsite Trip Length		PM Emissions		PM10 Emissions		PM2.5 Emissions	
Delivery/Export Area	Annual Loads	Entering (m)	Exiting (m)	Entering (mi)	Exiting (mi)	Entering (tpy)	Exiting (tpy)	Entering (tpy)	Exiting (tpy)	Entering (tpy)	Exiting (tpy)
White Wood Storage	16688	656.2	793.9	0.408	0.493	3.079	2.173	0.942	0.619	0.094	0.062
Ground Chips Storage	9242	618	833	0.384	0.518	1.606	1.262	0.492	0.360	0.049	0.036
Bark Storage	7364	545.3	916.6	0.339	0.570	1.129	1.107	0.346	0.316	0.035	0.032
Product Loadout	980	273.3	489.3	0.339	0.570	0.088	0.252	0.025	0.077	0.002	0.008

**Source length generated in Lake's AERMOD View TM*

Product Loadout annual loads estimated based on 32,000 tons of pellets and average SGT/load values

Max Daily Emissions (based on 5 day a week)

		Onsite Trip Length*		Onsite Trip Length		PM Emissions		PM10 Emissions		PM2.5 Emissions	
Delivery/Export Area	Max Daily Loads	Entering (m)	Exiting (m)	Entering (mi)	Exiting (mi)	Entering (ppd)	Exiting (ppd)	Entering (ppd)	Exiting (ppd)	Entering (ppd)	Exiting (ppd)
White Wood Storage	64	656.2	793.9	0.408	0.493	23.61	16.66	7.23	4.75	0.72	0.48
Ground Chips Storage	36	618	833	0.384	0.518	12.51	9.84	3.83	2.80	0.38	0.28
Bark Storage	28	545.3	916.6	0.339	0.570	8.59	8.42	2.63	2.40	0.26	0.24
Product Loadout	10	273.3	489.3	0.339	0.570	3.07	3.01	0.94	0.86	0.09	0.09

**Source length generated in Lake's AERMOD View TM*

Product Loadout daily loads estimated based on 10 trucks per day proposed limitation and average SGT/load values

Emissions Totals With Natural Mitigation and Wet Suppression

Pollutant	Annual (tpy)	Max Daily (ppd)
PM	10.70	85.70
PM10	3.18	25.43
PM2.5	0.32	2.54

Truck Traffic Flow and Traffic (7 Days Per week)

Combined Feedstock	Annual SGT	SGT/ Load	Annual Loads	Loads per Week	Loads per Day	Ave Loads Per Hour	OP Hours	Load Every # Minute	Combined Feedstock	Figure Names Match
Slash	305,000	33	9242	178	36	3	12	20.0	Slash	Ground Chips
Mill Resid	534,000	32	16688	321	**46**	3	18	23.6	Mill Residuals	White wood
Hog Fuel	243,000	33	7364	142	**20**	1	18	53.4	Hog Fuel	Bark
Total	1,082,000		25930	499	102	7		9.0	Combined	

Truck Traffic Flow and Traffic (5 Days Per Week)

Combined Feedstock	Annual SGT	SGT/ Load	Annual Loads	Loads per Week	Loads per Day	Ave Loads Per Hour	OP Hours	Load Every # Minute	Combined Feedstock	Figure Names Match
Slash	305,000	33	9242	178	36	3	12	20.0	Slash	Ground Chips
Mill Resid	534,000	32	16688	321	**64**	4	18	16.8	Mill Residuals	White wood
Hog Fuel	243,000	33	7364	142	**28**	2	18	38.1	Hog Fuel	Bark
Total	1,082,000		25930	499	128	8		7.4	Combined	

Table C-6 - Vehicle Traffic - Front End Loader (VEH-02)
Assumptions: Client indicates FEL with 10-12 yd^3 capacity so CAT 950M data used as representative
950M Wheel Loader | Cat | Caterpillar

Emission Factors

Equation 1a from AP-42 Section 13.2.2

$$E = k \times \left(\frac{s}{12}\right)^a \times \left(\frac{W}{3}\right)^b$$

Equation 2 from AP-42 Section 13.2.2

$$E_{ext} = E \times [(365 - P)/365]$$

kPM30	4.9	lb/VMT	*from AP-42 Table 13.2.2-2, assumed equivalent to total suspended particulate*
kPM10	1.5	lb/VMT	*from AP-42 Table 13.2.2-2*
kPM2.5	0.15	lb/VMT	*from AP-42 Table 13.2.2-2*
s	8.4	%	*from AP-42 Table 13.2.2-1, mean for Lumber sawmills*
WE	26	tons	*Front End Loader Empty Bucket Weight*
WF	29	tons	*Front End Loader Full Bucket Weight*
a	0.9		*for PM10 & PM2.5, from AP-42 Table 13.2.2-2*
a	0.7		*for PM30, from AP-42 Table 13.2.2-2*
b	0.45		*from AP-42 Table 13.2.2-2*
P	180	days	*number of days with ≥0.01 inch of precipitation, AP-42 Figure 13.2.2-1*
	85%	CE	*Control efficiency applied from control measures: 10 mph speed limit, regular wet suppression, pickup broom truck. Source: WRAP Fugitive Dust Handbook (2006), Executive Summary Table, Page 3.*
	10	yd^3	*estimated FEL bucket capacity*
	3	tons	*estimated weight per bucket load*

Emission Factor E without natural mitigation

EPM_empty	10.12	lb/VMT
EPM10_empty	2.88	lb/VMT
EPM2.5_empty	0.29	lb/VMT
EPM_full	9.89	lb/VMT
EPM10_full	3.03	lb/VMT
EPM2.5_full	0.30	lb/VMT

Emission Factor E_{ext} with natural mitigation

EextPM_empty	5.13	lb/VMT
EextPM10_empty	1.46	lb/VMT
EextPM2.5_empty	0.15	lb/VMT
EextPM_full	5.01	lb/VMT
EextPM10_full	1.53	lb/VMT
EextPM2.5_full	0.15	lb/VMT

Emission Estimates

Annual Emissions

		Onsite Trip Length*		Onsite Trip Length		PM Emissions		PM10 Emissions		PM2.5 Emissions	
Delivery Area	Annual Loads	Full (m)	Empty (m)	Full (mi)	Empty (mi)	Full (tpy)	Empty (tpy)	Full (tpy)	Empty (tpy)	Full (tpy)	Empty (tpy)
White Wood Storage	178000	148	86	0.092	0.053	6.161	3.660	1.886	1.043	0.189	0.104
Ground Chips Storage	101667	130	64	0.081	0.039	3.079	1.544	0.943	0.440	0.094	0.044
Bark Storage	81000	124	46	0.077	0.029	2.353	0.897	0.720	0.256	0.072	0.026

**Source length estimated from facility diagram*

Max Daily Emissions (based on 5 day a week)

		Onsite Trip Length*		Onsite Trip Length		PM Emissions		PM10 Emissions		PM2.5 Emissions	
Delivery Area	Max Daily Loads	Full (m)	Empty (m)	Full (mi)	Empty (mi)	Full (ppd)	Empty (ppd)	Full (ppd)	Empty (ppd)	Full (ppd)	Empty (ppd)
White Wood Storage	685	148	86	0.092	0.053	47.39	28.15	14.51	8.03	1.45	0.80
Ground Chips Storage	391	130	64	0.081	0.039	23.68	11.88	7.25	3.38	0.73	0.34
Bark Storage	312	124	46	0.077	0.029	18.10	6.90	5.54	1.97	0.55	0.20

**Source length estimated from facility diagram*

Emissions Totals With Natural Mitigation and Wet Suppression

Pollutant	Annual (tpy)	Max Daily (ppd)
PM	17.69	136.10
PM10	5.29	40.68
PM2.5	0.53	4.07

FEL Traffic Flow and Traffic (7 Days Per week)

Combined Feedstock	Annual SGT	SGT/ Load	Annual Loads	Loads per Week	Loads per Day	Ave Loads Per Hour	OP Hours	Load Every # Minute	Combined Feedstock	Figure Names Match
Slash	305,000	3	101667	1955	279	23	12	2.6	Slash	Ground Chips
Mill Resid	534,000	3	178000	3423	489	27	18	2.2	Mill Residuals	White wood
Hog Fuel	243,000	3	81000	1558	223	12	18	4.9	Hog Fuel	Bark
Total	1,082,000		360667	6936	991	63		10	Combined	

FEL Traffic Flow and Traffic (5 Days Per Week)

Combined Feedstock	Annual SGT	SGT/ Load	Annual Loads	Loads per Week	Loads per Day	Ave Loads Per Hour	OP Hours	Load Every # Minute	Combined Feedstock	Figure Names Match
Slash	305,000	3	101667	1955	391	33	12	1.8	Slash	Ground Chips
Mill Resid	534,000	3	178000	3423	685	38	18	1.6	Mill Residuals	White wood
Hog Fuel	243,000	3	81000	1558	312	17	18	3.5	Hog Fuel	Bark
Total	1,082,000		360667	6936	1387	88		7	Combined	

Input Material Densities	kg/m^3	ton/yd^3
White Wood	350	0.294
Ground Chips	350	0.294
Bark	305	0.256

1 kg --> 0.0011 ston
1 m^3 --> 1.308 yd^3
Densities provided by client/vendor

Table C-7 - Vendor Rates and Calculated Particle Size Distribution for Filterable Particulate Matter

Emission Point ID	Point or Fugitive	Emission Source	Control Device	Potential Operation (hours/year)	Flow rate[1] Nm^3/h	Flow rate[1] (cfm)	Grain Loading[1] mg/Nm^3	Grain Loading[1] (gr/cf)	PM[1] (ton/year)	PM_{10} (ton/year)	$PM_{2.5}$ (ton/year)
EP-01	Point	Chip Cleaning Line	Cyclone[2]	8760	61740	36334	50	0.022	29.81	7.45	1.27
EP-02	Point	Wet Hammer Mill 1	Cyclone[2]	8760	17364	10219	50	0.022	8.38	2.10	0.36
EP-03	Point	Wet Hammer Mill 2	Cyclone[2]	8760	17364	10219	50	0.022	8.38	2.10	0.36
EP-04	Point	Drying Line	Cyclone, WESP, RTO[3]	8760	175410	103229	20	0.009	33.88	33.88	33.88
EP-05	Point	Dry Product Intermediate Storage 1	Filter[3]	8760	1447	852	5	0.002	0.07	0.07	0.07
EP-06	Point	Dry Product Intermediate Storage 2	Filter[3]	8760	1447	852	5	0.002	0.07	0.07	0.07
EP-08	Point	Dry Hammer Mills & Pellet Coolers	Cyclone, Filter, RCO[3]	8760	169576	99795	5	0.002	8.19	8.19	8.19
EP-09	Point	Milled Dry Product Intermediate Storage	Filter[3]	8760	1447	852	5	0.002	0.07	0.07	0.07
EP-10	Point	Pellet Storage Silo 1	Extractor[4]	8760	26567	15635	15	0.007	3.85	2.35	0.89
EP-11	Point	Pellet Storage Silo 2	Extractor[4]	8760	26567	15635	15	0.007	3.85	2.35	0.89
EP-12	Point	Pellet Storage Silo 3	Extractor[4]	8760	26567	15635	15	0.007	3.85	2.35	0.89
EP-13	Point	Pellet Storage Silo 4	Extractor[4]	8760	26567	15635	15	0.007	3.85	2.35	0.89
EP-14	Point	Pellet Storage Silo 5	Extractor[4]	8760	26567	15635	15	0.007	3.85	2.35	0.89

1. Flow rates, grain loading factors, and PM emission rates provided by vendor in metric units, which have been converted to Imperial units.
2. For units with cyclone control only, size speciation based on EPA AP42 Chapter 9.9, Table 9.9.1-1 footnote for Grain Cleaning/Internal Vibrating with cyclone control, where PM_{10} = 25% of PM and $PM_{2.5}$ = 17% PM_{10}.
3. Assumption of PM = PM_{10} = $PM_{2.5}$ for filterable emissions.
4. Pellet Storage Silos utilize aeration fans and venting to maintain low pellet temperature. PM_{10} and $PM_{2.5}$ speciation estimated based on EPA AP42 Appendix B.2, Table B.2.2, Category 7 for Grain Processing as the pellets experience some forced air flow. Category 7 Cumulative Particle Size Table indicates PM_{10} = 61% of PM and $PM_{2.5}$ = 23% of PM.

Conversions

m3=	1	-->	35.31	cf
mg=	1	-->	0.01543236	grain
mg/Nm3=	1	-->	0.000437054	gr/cf
m3/hr=	1	-->	0.5885	cfm
gr=	1	-->	0.00014286	lb

Table C-8a - Drying Line Emissions (EP-04)

Parameter	Value	Units	Notes
Max Annual Throughput	440800	ODT/yr	Dried product, maximum plant capacity
Max Hourly Throughput	51.1	ODT/hr	Dryer Design Rating
Furnace Burner Capacity	164.81	MMBtu/hr	Burner Design Rating
RTO Burner capacity	8	MMBtu/hr	Burner Design Rating
RTO Burner capacity	7.84E-03	MMcf/hr	Conversion from MMBtu/hr, 1020 Btu/scf NG heat content
Max Annual Operation	8760	hr/year	Unrestricted operation

Vendor Design Rates for WESP/RTO Stack Emissions

Pollutant	Emission factor	Units	Potential Annual Emissions (TPY)
PM filterable	7.735	lb/hr	33.9
PM10 filterable	7.735	lb/hr	33.9
PM2.5 filterable	7.735	lb/hr	33.9
NOx	52	lb/hr	227.8
CO	42	lb/hr	184.0
VOC	6.575	lb/hr	28.8

Notes:

Emission rates are based on vendor data

Estimated Maximum Rates from Furnace and Dryer for Other Pollutants for WESP/RTO Stack

Pollutant	Emission factor	Units	Potential Annual Emissions (TPY)
PM condensable	0.098	lb/ODT	21.9
Methane (CH4)	0.013	lb/ODT	2.9
SO2	0.025	lb/MMBtu	18.0
CO2	720	lb/ODT	161149

Notes:

PM condensable emission factor is from AP 42, Table 10.6.1-1, Rotary dryer, direct wood-fired, softwood, WESP/RTO, 3/02

Methane emission factor is from AP 42, Table 10.6.2-3, Rotary dryer, direct wood-fired, softwood, 6/02, with 95% control applied

SO2 emission factor is from AP 42, Table 1.6-2, Bark/Bark and Wet wood - No Control, 9/03

CO2 emission factor is from AP 42, Table 10.6.1-2, Rotary dryer, direct wood-fired, softwood, RTO, 3/02

Estimated RTO Combustion Emissions Not Already Accounted for Above

Pollutant	Emission factor	Units	Potential Annual Emissions (TPY)
SO2	0.6	lb/MMcf	0.0
Nitrous Oxide (N2O)	2.2	lb/MMcf	0.1

Notes:

RTO natural gas combustion emissions are from AP 42, Table 1.4-2, 7/98

Greenhouse Gas Emission Summary for WESP/RTO Stack

Pollutant	TPY	GWP	CO2e
Methane (CH4)	2.9	25	73
Nitrous Oxide (N2O)	0.1	298	23
CO2	161149	1	161149
Total CO2e			161244

Notes:

Global Warming Potential (GWP) from 40 CFR 98, Subpart A, Table A-1

CO2e = emission rate multiplied by its GWP

Table C-8b - Furnace Hog-fuel Combustion Organics and Metals (EP-04)

51.1 =dryer output flowrate ODT/hr

164.81 =furnace capacity MMBtu/hr

ODT/hr	hours/yr	CAS	Pollutant Name	Emission Factor	Units	Rating	HAP?	TAP?	WESP control	RTO control	ton/yr	lb/yr	lb/hr	lb/24hr
									Control Efficiency 95%	95%				
51.1	8760	71-55-6	1,1,1-Trichloroethane	0.000012	lb/ODT	D	Yes	Yes		Yes	1.34E-04	2.69E-01	3.07E-05	7.36E-04
51.1	8760	95-63-6	1,2,4-Trimethyl benzene	0.00009	lb/ODT	D	No	Yes		Yes	1.01E-03	2.01E+00	2.30E-04	5.52E-03
51.1	8760	5779-94-2	2,5-Dimethyl benzaldehyde	0.000033	lb/ODT	E	No	No		Yes	3.69E-04	7.39E-01	8.43E-05	2.02E-03
51.1	8760	13466-78-9	3-Carene	0.076	lb/ODT	D	No	No		Yes	8.51E-01	1.70E+03	1.94E-01	4.66E+00
51.1	8760	75-07-0	Acetaldehyde *	0.013	lb/ODT	D	Yes	Yes		Yes	1.45E-01	2.91E+02	3.32E-02	7.97E-01
51.1	8760	67-64-1	Acetone	0.084	lb/ODT	D	No	No		Yes	9.40E-01	1.88E+03	2.15E-01	5.15E+00
51.1	8760	98-86-2	Acetophenone	0.000064	lb/ODT	D	Yes	No		Yes	7.16E-04	1.43E+00	1.64E-04	3.92E-03
51.1	8760	107-02-8	Acrolein *	0.0045	lb/ODT	D	Yes	Yes		Yes	5.04E-02	1.01E+02	1.15E-02	2.76E-01
51.1	8760	80-56-8	Alpha-pinene	0.39	lb/ODT	D	No	No		Yes	4.36E+00	8.73E+03	9.96E-01	2.39E+01
51.1	8760	100-52-7	Benzaldehyde	0.0026	lb/ODT	E	No	No		Yes	2.91E-02	5.82E+01	6.64E-03	1.59E-01
51.1	8760	71-43-2	Benzene *	0.00099	lb/ODT	D	Yes	Yes		Yes	1.11E-02	2.22E+01	2.53E-03	6.07E-02
51.1	8760	127-91-3	Beta-pinene	0.12	lb/ODT	D	No	No		Yes	1.34E+00	2.69E+03	3.07E-01	7.36E+00
51.1	8760	92-52-4	Biphenyl *	0.000039	lb/ODT	D	Yes	No		Yes	4.36E-04	8.73E-01	9.96E-05	2.39E-03
51.1	8760	117-81-7	Bis-(2-ethylhexyl phthalate)	0.00032	lb/ODT	D	Yes	Yes		Yes	3.58E-03	7.16E+00	8.18E-04	1.96E-02
51.1	8760	74-83-9	Bromomethane *	0.000028	lb/ODT	D	Yes	Yes		Yes	3.13E-04	6.27E-01	7.15E-05	1.72E-03
51.1	8760	123-72-8	Butylaldehyde	0.0031	lb/ODT	E	No	No		Yes	3.47E-02	6.94E+01	7.92E-03	1.90E-01
51.1	8760	85-68-7	Butylbenzyl phthalate	0.000014	lb/ODT	E	No	No		Yes	1.57E-04	3.13E-01	3.58E-05	8.58E-04
51.1	8760	75-15-0	Carbon disulfide *	0.000018	lb/ODT	D	Yes	Yes		Yes	2.01E-04	4.03E-01	4.60E-05	1.10E-03
51.1	8760	56-23-5	Carbon tetrachloride *	0.000012	lb/ODT	D	Yes	Yes		Yes	1.34E-04	2.69E-01	3.07E-05	7.36E-04
51.1	8760	74-87-3	Chloromethane *	0.00011	lb/ODT	D	Yes	Yes		Yes	1.23E-03	2.46E+00	2.81E-04	6.75E-03
51.1	8760	98-82-8	Cumene *	0.000069	lb/ODT	D	Yes	Yes		Yes	7.72E-04	1.54E+00	1.76E-04	4.23E-03
51.1	8760	84-74-2	Di-N-butyl phthalate	0.000023	lb/ODT	D	Yes	No		Yes	2.57E-04	5.15E-01	5.88E-05	1.41E-03
51.1	8760	75-18-3	Dimethyl sulfide	0.000014	lb/ODT	E	No	No		Yes	1.57E-04	3.13E-01	3.58E-05	8.58E-04
51.1	8760	74-84-0	Ethane	0.015	lb/ODT	D	No	No		Yes	1.68E-01	3.36E+02	3.83E-02	9.20E-01
51.1	8760	100-41-4	Ethyl benzene *	0.0000038	lb/ODT	E	Yes	Yes		Yes	4.25E-05	8.51E-02	9.71E-06	2.33E-04
51.1	8760	50-00-0	Formaldehyde *	0.025	lb/ODT	C	Yes	Yes		Yes	2.80E-01	5.60E+02	6.39E-02	1.53E+00
51.1	8760	66-25-1	Hexaldehyde	0.016	lb/ODT	E	No	No		Yes	1.79E-01	3.58E+02	4.09E-02	9.81E-01
51.1	8760	123-31-9	Hydroquinone	0.00006	lb/ODT	E	Yes	No		Yes	6.71E-04	1.34E+00	1.53E-04	3.68E-03
51.1	8760	590-86-3	Isovaleraldehyde	0.00052	lb/ODT	E	No	No		Yes	5.82E-03	1.16E+01	1.33E-03	3.19E-02
51.1	8760	138-86-3	Limonene	0.034	lb/ODT	D	No	No		Yes	3.80E-01	7.61E+02	8.69E-02	2.08E+00
51.1	8760	1330-20-7	m,p-Xylene	0.00055	lb/ODT	D	Yes	Yes		Yes	6.15E-03	1.23E+01	1.41E-03	3.37E-02
51.1	8760	620-23-5	m-Tolualdehyde	0.00045	lb/ODT	E	No	No		Yes	5.04E-03	1.01E+01	1.15E-03	2.76E-02
51.1	8760	64-82-8	Methane	0.26	lb/ODT	D	No	No		Yes	2.91E+00	5.82E+03	6.64E-01	1.59E+01
51.1	8760	67-56-1	Methanol *	0.014	lb/ODT	D	Yes	Yes		Yes	1.57E-01	3.13E+02	3.58E-02	8.58E-01
51.1	8760	78-93-3	Methyl ethyl ketone *	0.0049	lb/ODT	D	No	Yes		Yes	5.48E-02	1.10E+02	1.25E-02	3.00E-01
51.1	8760	108-10-1	Methyl isobutyl ketone *	0.0024	lb/ODT	D	Yes	Yes		Yes	2.69E-02	5.37E+01	6.13E-03	1.47E-01
51.1	8760	75-09-2	Methylene chloride *	0.00063	lb/ODT	D	Yes	Yes		Yes	7.05E-03	1.41E+01	1.61E-03	3.86E-02
51.1	8760	110-54-3	n-Hexane*	0.000026	lb/ODT	E	Yes	Yes		Yes	2.91E-04	5.82E-01	6.64E-05	1.59E-03
51.1	8760	95-47-6	o-Xylene *	0.000014	lb/ODT	D	Yes	Yes		Yes	1.57E-04	3.13E-01	3.58E-05	8.58E-04
51.1	8760	108-95-2	Phenol *	0.0066	lb/ODT	D	Yes	Yes		Yes	7.39E-02	1.48E+02	1.69E-02	4.05E-01
51.1	8760	123-38-6	Propionaldehyde *	0.0032	lb/ODT	D	Yes	Yes		Yes	3.58E-02	7.16E+01	8.18E-03	1.96E-01
51.1	8760	100-42-5	Styrene *	0.00012	lb/ODT	E	Yes	Yes		Yes	1.34E-03	2.69E+00	3.07E-04	7.36E-03
51.1	8760	108-88-3	Toluene *	0.0021	lb/ODT	D	Yes	Yes		Yes	2.35E-02	4.70E+01	5.37E-03	1.29E-01
51.1	8760	110-62-3	Valeraldehyde	0.0016	lb/ODT	E	No	No		Yes	1.79E-02	3.58E+01	4.09E-03	9.81E-02
164.81	8760	7440-36-0	Antimony	7.90E-06	lb/MMBtu	C	Yes	No	Yes		2.85E-04	5.70E-01	6.51E-05	1.56E-03
164.81	8760	7440-38-2	Arsenic	2.20E-05	lb/MMBtu	A	Yes	No	Yes		7.94E-04	1.59E+00	1.81E-04	4.35E-03
164.81	8760	7440-39-3	Barium	1.70E-04	lb/MMBtu	C	No	No	Yes		6.14E-03	1.23E+01	1.40E-03	3.36E-02
164.81	8760	7440-41-7	Beryllium	1.10E-06	lb/MMBtu	B	Yes	No	Yes		3.97E-05	7.94E-02	9.06E-06	2.18E-04
164.81	8760	7440-43-9	Cadmium	4.10E-06	lb/MMBtu	A	Yes	No	Yes		1.48E-04	2.96E-01	3.38E-05	8.11E-04
164.81	8760	7440-47-3	Chromium, total	2.10E-05	lb/MMBtu	A	Yes	No	Yes		7.58E-04	1.52E+00	1.73E-04	4.15E-03
164.81	8760	CRVICOMP	Chromium, hexavalent	3.50E-06	lb/MMBtu	C	Yes	No	Yes		1.26E-04	2.53E-01	2.88E-05	6.92E-04
164.81	8760	7440-48-4	Cobalt	6.50E-06	lb/MMBtu	C	Yes	Yes	Yes		2.35E-04	4.69E-01	5.36E-05	1.29E-03
164.81	8760	7440-50-8	Copper	4.90E-05	lb/MMBtu	A	No	No	Yes		1.77E-03	3.54E+00	4.04E-04	9.69E-03
164.81	8760	7439-89-6	Iron	9.90E-04	lb/MMBtu	C	No	No	Yes		3.57E-02	7.15E+01	8.16E-03	1.96E-01
164.81	8760	7439-92-1	Lead	4.80E-05	lb/MMBtu	A	Yes	No	Yes		1.73E-03	3.46E+00	3.96E-04	9.49E-03
164.81	8760	7439-96-5	Manganese	1.60E-03	lb/MMBtu	A	Yes	No	Yes		5.77E-02	1.15E+02	1.32E-02	3.16E-01
164.81	8760	7439-97-6	Mercury	3.50E-06	lb/MMBtu	A	Yes	Yes	No		2.53E-03	5.05E+00	5.77E-04	1.38E-02
164.81	8760	7439-98-7	Molybdenum	2.10E-06	lb/MMBtu	D	No	No	Yes		7.58E-05	1.52E-01	1.73E-05	4.15E-04
164.81	8760	7440-02-0	Nickel	3.30E-05	lb/MMBtu	A	Yes	No	Yes		1.19E-03	2.38E+00	2.72E-04	6.53E-03
164.81	8760	7723-14-0	Phosphorus	2.70E-05	lb/MMBtu	D	Yes	Yes	Yes		9.75E-04	1.95E+00	2.22E-04	5.34E-03
164.81	8760	7440-09-7	Potassium	3.90E-02	lb/MMBtu	D	No	No	Yes		1.41E+00	2.82E+03	3.21E-01	7.71E+00
164.81	8760	7782-49-2	Selenium	2.80E-06	lb/MMBtu	A	Yes	No	Yes		1.01E-04	2.02E-01	2.31E-05	5.54E-04
164.81	8760	7440-22-4	Silver	1.70E-03	lb/MMBtu	D	No	No	Yes		6.14E-02	1.23E+02	1.40E-02	3.36E-01
164.81	8760	7440-23-5	Sodium	3.60E-04	lb/MMBtu	D	No	No	Yes		1.30E-02	2.60E+01	2.97E-03	7.12E-02
164.81	8760	7440-24-6	Strontium	1.00E-05	lb/MMBtu	D	No	No	Yes		3.61E-04	7.22E-01	8.24E-05	1.98E-03
164.81	8760	7440-31-5	Tin	2.30E-05	lb/MMBtu	D	No	No	Yes		8.30E-04	1.66E+00	1.90E-04	4.55E-03
164.81	8760	7440-32-6	Titanium	2.00E-05	lb/MMBtu	D	No	No	Yes		7.22E-04	1.44E+00	1.65E-04	3.96E-03
164.81	8760	7440-62-2	Vanadium	9.80E-07	lb/MMBtu	D	No	Yes	Yes		3.54E-05	7.07E-02	8.08E-06	1.94E-04
164.81	8760	7440-65-5	Yttrium	3.00E-07	lb/MMBtu	D	No	No	Yes		1.08E-05	2.17E-02	2.47E-06	5.93E-05
164.81	8760	7440-66-6	Zinc	4.20E-04	lb/MMBtu	A	No	No	Yes		1.52E-02	3.03E+01	3.46E-03	8.31E-02

1. Organic HAP emission factors from USEPA AP-42 10.6.2, Tables 10.6.2-3 Rotary dryer, direct wood-fired, softwood
2. Metal HAP emission factors from USEPA AP-42 1.6.2, Tables 1.6.2-4.
3. Dryer hog-fuel burner is rated at 164.81 MMBtu/hr HHV
4. 95% control/destruction efficiency for WESP/RTO based on vendor data.
   Metals assumed controlled as PM by WESP (except mercury), organics controlled by RTO

Table C-8c - Dryer RTO Natural Gas Combustion Organics and Metals (EP-04)

8 =RTO MMBtu/hr

1020 Btu/Scf natural gas heating value

EF based on MDL

MMBtu/hr	hours/yr	CAS	Pollutant Name	Emission Factor	Units	Rating	HAP?	TAP?	ton/yr	lb/yr	lb/hr	lb/24hr
8	8760	91-57-6	2-Methylnaphthalene	0.000024	lb/MMscf	D	No	No	0.00	0.001648941	1.8824E-07	4.5176E-06
8	8760	56-49-5	3-Methylcholanthrene	1.80E-06	lb/MMscf	E	No	Yes	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	57-97-6	7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	E	No	Yes	0.00	0.001099294	1.2549E-07	3.0118E-06
8	8760	83-32-9	Acenaphthene	1.80E-06	lb/MMscf	E	No	No	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	208-96-8	Acenaphthylene	1.80E-06	lb/MMscf	E	No	No	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	120-12-7	Anthracene	2.40E-06	lb/MMscf	E	No	No	0.00	0.000164894	1.8824E-08	4.5176E-07
8	8760	56-55-3	Benz(a)anthracene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	71-43-2	Benzene	0.0021	lb/MMscf	B	Yes	Yes	0.00	0.144282353	1.6471E-05	0.00039529
8	8760	50-32-8	Benzo(a)pyrene	1.20E-06	lb/MMscf	E	Yes	Yes	0.00	8.24471E-05	9.4118E-09	2.2588E-07
8	8760	205-99-2	Benzo(b)fluoranthene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	191-24-2	Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	E	No	No	0.00	8.24471E-05	9.4118E-09	2.2588E-07
8	8760	207-08-9	Benzo(k)fluoranthene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	106-97-8	Butane	2.1	lb/MMscf	E	No	No	0.07	144.2823529	0.01647059	0.39529412
8	8760	218-01-9	Chrysene	1.80E-06	lb/MMscf	E	No	Yes	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	53-70-3	Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	E	Yes	Yes	0.00	8.24471E-05	9.4118E-09	2.2588E-07
8	8760	25321-22-6	Dichlorobenzene	0.0012	lb/MMscf	E	No	No	0.00	0.082447059	9.4118E-06	0.00022588
8	8760	74-84-0	Ethane	3.1	lb/MMscf	E	No	No	0.11	212.9882353	0.02431373	0.58352941
8	8760	206-44-0	Fluoranthene	0.000003	lb/MMscf	E	No	No	0.00	0.000206118	2.3529E-08	5.6471E-07
8	8760	86-73-7	Fluorene	0.0000028	lb/MMscf	E	No	No	0.00	0.000192376	2.1961E-08	5.2706E-07
8	8760	50-00-0	Formaldehyde	0.075	lb/MMscf	B	Yes	Yes	0.00	5.152941176	0.00058824	0.01411765
8	8760	110-54-3	Hexane	1.8	lb/MMscf	E	Yes	Yes	0.06	123.6705882	0.01411765	0.33882353
8	8760	193-39-5	Indeno(1,2,3,c,d)pyrene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	0.000123671	1.4118E-08	3.3882E-07
8	8760	91-20-3	Naphthalene	0.00061	lb/MMscf	E	Yes	Yes	0.00	0.041910588	4.7843E-06	0.00011482
8	8760	109-66-0	Pentane	2.6	lb/MMscf	E	No	No	0.09	178.6352941	0.02039216	0.48941176
8	8760	85-01-8	Phenanathrene	0.000017	lb/MMscf	D	No	No	0.00	0.001168	1.3333E-07	0.0000032
8	8760	74-98-6	Propane	1.6	lb/MMscf	E	No	No	0.05	109.9294118	0.01254902	0.30117647
8	8760	129-00-0	Pyrene	0.000005	lb/MMscf	E	No	No	0.00	0.000343529	3.9216E-08	9.4118E-07
8	8760	108-88-3	Toluene	0.0034	lb/MMscf	C	Yes	Yes	0.00	0.2336	2.6667E-05	0.00064
8	8760	7440-38-2	Arsenic	0.0002	lb/MMscf	E	Yes	No	0.00	0.013741176	1.5686E-06	3.7647E-05
8	8760	7440-39-3	Barium	0.0044	lb/MMscf	D	No	No	0.00	0.302305882	3.451E-05	0.00082824
8	8760	7440-41-7	Beryllium	1.20E-05	lb/MMscf	E	Yes	No	0.00	0.000824471	9.4118E-08	2.2588E-06
8	8760	7440-43-9	Cadmium	0.0011	lb/MMscf	D	Yes	No	0.00	0.075576471	8.6275E-06	0.00020706
8	8760	7440-47-3	Chromium, total	0.0014	lb/MMscf	D	Yes	No	0.00	0.096188235	1.098E-05	0.00026353
8	8760	7440-48-4	Cobalt	0.000084	lb/MMscf	D	Yes	Yes	0.00	0.005771294	6.5882E-07	1.5812E-05
8	8760	7440-50-8	Copper	0.00085	lb/MMscf	C	No	No	0.00	0.0584	6.6667E-06	0.00016
8	8760	7439-92-1	Lead	0.0005	lb/MMscf	D	Yes	No	0.00	0.034352941	3.9216E-06	9.4118E-05
8	8760	7439-96-5	Manganese	0.00038	lb/MMscf	D	Yes	No	0.00	0.026108235	2.9804E-06	7.1529E-05
8	8760	7439-97-6	Mercury	0.00026	lb/MMscf	D	Yes	Yes	0.00	0.017863529	2.0392E-06	4.8941E-05
8	8760	7439-98-7	Molybdenum	0.0011	lb/MMscf	D	No	No	0.00	0.075576471	8.6275E-06	0.00020706
8	8760	7440-02-0	Nickel	0.0021	lb/MMscf	C	Yes	No	0.00	0.144282353	1.6471E-05	0.00039529
8	8760	7782-49-2	Selenium	2.40E-05	lb/MMscf	E	Yes	No	0.00	0.001648941	1.8824E-07	4.5176E-06
8	8760	7440-62-2	Vanadium	0.0023	lb/MMscf	D	No	Yes	0.00	0.158023529	1.8039E-05	0.00043294
8	8760	7440-66-6	Zinc	0.029	lb/MMscf	E	No	No	0.00	1.992470588	0.00022745	0.00545882

POM

1. HAP emission factors from USEPA AP-42 1.4, Tables 1.4.1-4. 1.4_natural_gas_combustion.pdf (epa.gov)
2. **Blue Cell**: CAS not identified as HAP; however, AP-42 footnote assigns as a HAP as Polycyclic Organic Matter (POM).
3. RTO burner capacity of 8 MMBtu/hr
4. Natural gas heating value 1020 Btu/scf

Table C-9a - Dry Hammermill and Pellet Cooler Combined/RCO Stack Emissions (EP-08)

Parameter	Value	Units	Notes
RCO Burner capacity	4.5	MMBtu/hr	Burner Design Rating
RCO Burner capacity	4.41E-03	MMcf/hr	Conversion from MMBtu/hr, 1020 Btu/scf NG heat content
Max Annual Operation	8760	hr/year	Unrestricted operation

Vendor Design Rates for RCO Stack Emissions

Pollutant	Emission factor	Units	Potential Annual Emissions (TPY)
PM filterable	1.87	lb/hr	8.19
PM10 filterable	1.87	lb/hr	8.19
PM2.5 filterable	1.87	lb/hr	8.19
VOC	8.6	lb/hr	37.67

Estimated RCO Combustion Emissions Not Already Accounted for Above

Pollutant	Emission factor	Units	Potential Annual Emissions (TPY)
PM condensable	5.7	lb/MMcf	0.11
NOx	94	lb/MMcf	1.82
CO	40	lb/MMcf	0.77
SO2	0.6	lb/MMcf	0.01
CO2	120000	lb/MMcf	2319
Methane (CH4)	2.3	lb/MMcf	0.04
Nitrous Oxide (N2O)	2.2	lb/MMcf	0.04

Notes:
PM condensable, NOx, CO, SO2, and CO2 emissions are from combustion of natural gas in RCO.
Combustion emission factors are from AP 42, Table 1.4-1, No SCC - Uncontrolled, 7/98, and Table 1.4-2

Greenhouse Gas Emission Summary for RCO Stack

Pollutant	TPY	GWP	CO2e
Methane (CH4)	0.0	25	1
Nitrous Oxide (N2O)	0.0	298	13
CO2	2319	1	2319
Total CO2e			2333

Notes:
Global Warming Potential (GWP) from 40 CFR 98, Subpart A, Table A-1
CO2e = emission rate multiplied by its GWP

Table C-9b - Dry Hammermill and Pelletizing organics

50.3196347 =process capacity ODT/hr

Control Efficiency 95%

ODT/hr	hours/yr	CAS	Pollutant Name	Emission Factor	Units	Rating	HAP?	TAP?	RCO control	ton/yr	lb/yr	lb/hr	lb/24hr
50.3196347	8760	67-64-1	Acetone	6.40E-03	lb/ODT	D	No	No	Yes	7.05E-02	1.41E+02	1.61E-02	3.86E-01
50.3196347	8760	80-56-8	Alpha-pinene	4.90E-01	lb/ODT	D	No	No	Yes	5.40E+00	1.08E+04	1.23E+00	2.96E+01
50.3196347	8760	127-91-3	Beta-pinene	1.50E-01	lb/ODT	D	No	No	Yes	1.65E+00	3.31E+03	3.77E-01	9.06E+00
50.3196347	8760	67-56-1	Methanol	7.30E-03	lb/ODT	D	Yes	Yes	Yes	8.04E-02	1.61E+02	1.84E-02	4.41E-01
50.3196347	8760	108-95-2	Phenol	4.50E-03	lb/ODT	E	Yes	Yes	Yes	4.96E-02	9.92E+01	1.13E-02	2.72E-01

1. Organics emission factors from USEPA AP-42 10.6.2, Table 10.6.2-7 for Hammermills. 95% control efficiency provided by RCO.
2. Process is rated at 440800 ODT/yr (50.32 ODT/hr at 8760 hours per year)

Table C-9c - Dry Hammermill and Pelletizer RCO Natural Gas Combustion Organics and Metals (EP-08)

4.5 =RCO MMBtu/hr

1020 Btu/Scf natural gas heating value

EF based on MDL

MMBtu/hr	hours/yr	CAS	Pollutant Name	Emission Factor	Units	Rating	HAP?	TAP?	ton/yr	lb/yr	lb/hr	lb/24hr
4.5	8760	91-57-6	2-Methylnaphthalene	0.000024	lb/MMscf	D	No	No	0.00	0.000927529	1.0588E-07	2.5412E-06
4.5	8760	56-49-5	3-Methylcholanthrene	1.80E-06	lb/MMscf	E	No	Yes	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	57-97-6	7,12-Dimethylbenz(a)anthracene	1.60E-05	lb/MMscf	E	No	Yes	0.00	0.000618353	7.0588E-08	1.6941E-06
4.5	8760	83-32-9	Acenaphthene	1.80E-06	lb/MMscf	E	No	No	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	208-96-8	Acenaphthylene	1.80E-06	lb/MMscf	E	No	No	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	120-12-7	Anthracene	2.40E-06	lb/MMscf	E	No	No	0.00	9.27529E-05	1.0588E-08	2.5412E-07
4.5	8760	56-55-3	Benz(a)anthracene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	71-43-2	Benzene	0.0021	lb/MMscf	B	Yes	Yes	0.00	0.081158824	9.2647E-06	0.00022235
4.5	8760	50-32-8	Benzo(a)pyrene	1.20E-06	lb/MMscf	E	Yes	Yes	0.00	4.63765E-05	5.2941E-09	1.2706E-07
4.5	8760	205-99-2	Benzo(b)fluoranthene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	191-24-2	Benzo(g,h,i)perylene	1.20E-06	lb/MMscf	E	No	No	0.00	4.63765E-05	5.2941E-09	1.2706E-07
4.5	8760	207-08-9	Benzo(k)fluoranthene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	106-97-8	Butane	2.1	lb/MMscf	E	No	No	0.04	81.15882353	0.00926471	0.22235294
4.5	8760	218-01-9	Chrysene	1.80E-06	lb/MMscf	E	No	Yes	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	53-70-3	Dibenzo(a,h)anthracene	1.20E-06	lb/MMscf	E	Yes	Yes	0.00	4.63765E-05	5.2941E-09	1.2706E-07
4.5	8760	25321-22-6	Dichlorobenzene	0.0012	lb/MMscf	E	No	No	0.00	0.046376471	5.2941E-06	0.00012706
4.5	8760	74-84-0	Ethane	3.1	lb/MMscf	E	No	No	0.06	119.8058824	0.01367647	0.32823529
4.5	8760	206-44-0	Fluoranthene	0.000003	lb/MMscf	E	No	No	0.00	0.000115941	1.3235E-08	3.1765E-07
4.5	8760	86-73-7	Fluorene	0.0000028	lb/MMscf	E	No	No	0.00	0.000108212	1.2353E-08	2.9647E-07
4.5	8760	50-00-0	Formaldehyde	0.075	lb/MMscf	B	Yes	Yes	0.00	2.898529412	0.00033088	0.00794118
4.5	8760	110-54-3	Hexane	1.8	lb/MMscf	E	Yes	Yes	0.03	69.56470588	0.00794118	0.19058824
4.5	8760	193-39-5	Indeno(1,2,3,c,d)pyrene	1.80E-06	lb/MMscf	E	Yes	Yes	0.00	6.95647E-05	7.9412E-09	1.9059E-07
4.5	8760	91-20-3	Naphthalene	0.00061	lb/MMscf	E	Yes	Yes	0.00	0.023574706	2.6912E-06	6.4588E-05
4.5	8760	109-66-0	Pentane	2.6	lb/MMscf	E	No	No	0.05	100.4823529	0.01147059	0.27529412
4.5	8760	85-01-8	Phenanathrene	0.000017	lb/MMscf	D	No	No	0.00	0.000657	7.5E-08	0.0000018
4.5	8760	74-98-6	Propane	1.6	lb/MMscf	E	No	No	0.03	61.83529412	0.00705882	0.16941176
4.5	8760	129-00-0	Pyrene	0.000005	lb/MMscf	E	No	No	0.00	0.000193235	2.2059E-08	5.2941E-07
4.5	8760	108-88-3	Toluene	0.0034	lb/MMscf	C	Yes	Yes	0.00	0.1314	0.000015	0.00036
4.5	8760	7440-38-2	Arsenic	0.0002	lb/MMscf	E	Yes	No	0.00	0.007729412	8.8235E-07	2.1176E-05
4.5	8760	7440-39-3	Barium	0.0044	lb/MMscf	D	No	No	0.00	0.170047059	1.9412E-05	0.00046588
4.5	8760	7440-41-7	Beryllium	1.20E-05	lb/MMscf	E	Yes	No	0.00	0.000463765	5.2941E-08	1.2706E-06
4.5	8760	7440-43-9	Cadmium	0.0011	lb/MMscf	D	Yes	Yes	0.00	0.042511765	4.8529E-06	0.00011647
4.5	8760	7440-47-3	Chromium, total	0.0014	lb/MMscf	D	Yes	No	0.00	0.054105882	6.1765E-06	0.00014824
4.5	8760	7440-48-4	Cobalt	0.000084	lb/MMscf	D	Yes	Yes	0.00	0.003246353	3.7059E-07	8.8941E-06
4.5	8760	7440-50-8	Copper	0.00085	lb/MMscf	C	No	No	0.00	0.03285	0.00000375	0.00009
4.5	8760	7439-92-1	Lead	0.0005	lb/MMscf	D	Yes	Yes	0.00	0.019323529	2.2059E-06	5.2941E-05
4.5	8760	7439-96-5	Manganese	0.00038	lb/MMscf	D	Yes	No	0.00	0.014685882	1.6765E-06	4.0235E-05
4.5	8760	7439-97-6	Mercury	0.00026	lb/MMscf	D	Yes	Yes	0.00	0.010048235	1.1471E-06	2.7529E-05
4.5	8760	7439-98-7	Molybdenum	0.0011	lb/MMscf	D	No	No	0.00	0.042511765	4.8529E-06	0.00011647
4.5	8760	7440-02-0	Nickel	0.0021	lb/MMscf	C	Yes	No	0.00	0.081158824	9.2647E-06	0.00022235
4.5	8760	7782-49-2	Selenium	2.40E-05	lb/MMscf	E	Yes	No	0.00	0.000927529	1.0588E-07	2.5412E-06
4.5	8760	7440-62-2	Vanadium	0.0023	lb/MMscf	D	No	Yes	0.00	0.088888235	1.0147E-05	0.00024353
4.5	8760	7440-66-6	Zinc	0.029	lb/MMscf	E	No	No	0.00	1.120764706	0.00012794	0.00307059

POM

1. HAP emission factors from USEPA AP-42 1.4, Tables 1.4.1-4. 1.4_natural_gas_combustion.pdf (epa.gov)
2. **Blue Cell**: CAS not identified as HAP; however, AP-42 footnote assigns as a HAP as Polycyclic Organic Matter (POM).
3. RCO burner capacity of 1.8 MMBtu/hr
4. Natural gas heating value 1020 Btu/scf

Table C-10 - Product Loadout - Truck Loadout (EP-15)

Emission Point ID	Point or Fugitive	Emission Source	Throughput [1] (short tons/year)	(short tons/day)	Pollutant[2]	Emission factor (lb/ton)	Number of "Drops" [3]	Potential Emissions (lb/day)	(ton/year)
EP-15	Fugitive	Truck Loadout	32000	330	Filterable PM[3]	0.0015	1	0.50	0.02
					Filterable PM_{10}[3]	0.0007		0.23	0.01
					Filterable $PM_{2.5}$[3]	0.0001		0.03	0.00

1. PNWRE proposes no more than 32,000 tons per year for use of the truck loadout capability for annual emissions and and no more than 10 trucks per day (330 tons of product per day, assuming no more than 33 tons of product per loaded truck) for daily emissions.
2. PM emission factors for truck loadout from US EPA Memo "Particulate Matter Potential to Emit Emission Factors for Activities at Sawmills, Excluding Boilers, Located in Pacific Northwest Indian Country," May 8, 2014.
3. Emissions are generated from each "drop" of material from one surface to another. All conveyor transitions are enclosed; therefore, not counted as emissions points. There is one drop from loadout spout to truck.

Table C-12a - Emergency Generator (GEN-01)

Parameter	Value	Units	Notes
Engine size	500	hp	Assumed size for 300 kW generator
Max Annual Non-Emergency Operation	100	hours	Limited by 40 CFR 60, Subpart IIII

Estimated Maximum Rates from Emergency Generator

Pollutant	Emission Factor	Units	Potential Annual Emissions (TPY)
$PM/PM_{10}/PM_{2.5}$	3.31E-04	lbs/hp-hr	0.01
NO_x	6.61E-03	lbs/hp-hr	0.17
CO	5.73E-03	lbs/hp-hr	0.14
VOC	2.51E-03	lbs/hp-hr	0.06
SO_2	2.05E-03	lbs/hp-hr	0.05
CO_2	1.15E+00	lbs/hp-hr	28.75

Notes:

Emission factors for PM, NOx, and CO are based on EPA Tier 3 emission standards

All PM assumed to be less than 2.5 micron diameter; therefore, PM=PM10=PM2.5

Emission factors for VOC, SO2 and CO2 are based on EPA AP-42, Section 3.3, Table 3.3-1, 10/96

Table C-11b - Emergency Generator Organics (GEN-01)
500 =engine hp

hp	hours/yr	CAS	Pollutant Name	Emission Factor [1]	Units	Rating	HAP?	TAP?	ton/yr	lb/yr	lb/hr	lb/24hr [2]
500	100	71-43-2	Benzene	0.000933	lb/hp-hr	E	Yes	Yes	0.02	4.67E+01	4.67E-01	4.67E-01
500	100	108-88-3	Toluene	4.09E-04	lb/hp-hr	E	Yes	Yes	0.01	2.05E+01	2.05E-01	2.05E-01
500	100	1330-20-7	Xylenes	2.85E-04	lb/hp-hr	E	Yes	Yes	0.01	1.43E+01	1.43E-01	1.43E-01
500	100	115-07-1	Propylene	2.58E-03	lb/hp-hr	E	No	Yes	0.06	1.29E+02	1.29E+00	1.29E+00
500	100	106-99-0	1,3-Butadiene	3.91E-05	lb/hp-hr	E	Yes	Yes	0.00	1.96E+00	1.96E-02	1.96E-02
500	100	50-00-0	Formaldehyde	1.18E-03	lb/hp-hr	E	Yes	Yes	0.03	5.90E+01	5.90E-01	5.90E-01
500	100	75-07-0	Acetaldehyde	7.67E-04	lb/hp-hr	E	Yes	Yes	0.02	3.84E+01	3.84E-01	3.84E-01
500	100	107-02-8	Acrolein	0.0000925	lb/hp-hr	E	Yes	Yes	0.00	4.63E+00	4.63E-02	4.63E-02
500	100	91-20-3	Naphthalene	9.25E-05	lb/hp-hr	E	Yes	Yes	0.00	4.63E+00	4.63E-02	4.63E-02
500	100	208-96-8	Acenaphthylene	5.06E-06	lb/hp-hr	E	No	No	0.00	2.53E-01	2.53E-03	2.53E-03
500	100	83-32-9	Acenaphthene	1.42E-06	lb/hp-hr	E	No	No	0.00	7.10E-02	7.10E-04	7.10E-04
500	100	86-73-7	Fluorene	2.92E-05	lb/hp-hr	E	No	No	0.00	1.46E+00	1.46E-02	1.46E-02
500	100	85-01-8	Phenanthrene	0.0000294	lb/hp-hr	E	No	No	0.00	1.47E+00	1.47E-02	1.47E-02
500	100	120-12-7	Anthracene	1.87E-06	lb/hp-hr	E	No	No	0.00	9.35E-02	9.35E-04	9.35E-04
500	100	206-44-0	Fluoranthene	7.61E-06	lb/hp-hr	E	No	No	0.00	3.81E-01	3.81E-03	3.81E-03
500	100	129-00-0	Pyrene	0.00000478	lb/hp-hr	E	No	No	0.00	2.39E-01	2.39E-03	2.39E-03
500	100	56-55-3	Benz(a)anthracene	0.00000168	lb/hp-hr	E	Yes	Yes	0.00	8.40E-02	8.40E-04	8.40E-04
500	100	218-01-9	Chrysene	0.000000353	lb/hp-hr	E	No	Yes	0.00	1.77E-02	1.77E-04	1.77E-04
500	100	205-99-2	Benzo(b)fluoranthene	9.91E-08	lb/hp-hr	E	Yes	Yes	0.00	4.96E-03	4.96E-05	4.96E-05
500	100	207-08-9	Benzo(k)fluoranthene	0.000000155	lb/hp-hr	E	Yes	Yes	0.00	7.75E-03	7.75E-05	7.75E-05
500	100	50-32-8	Benzo(a)pyrene	0.000000188	lb/hp-hr	E	Yes	Yes	0.00	9.40E-03	9.40E-05	9.40E-05
500	100	193-39-5	Indeno(1,2,3-cd)pyrene	3.75E-07	lb/hp-hr	E	Yes	Yes	0.00	1.88E-02	1.88E-04	1.88E-04
500	100	53-70-3	Dibenz(a,h)anthracene	0.000000583	lb/hp-hr	E	Yes	Yes	0.00	2.92E-02	2.92E-04	2.92E-04
500	100	191-24-2	Benzo(g,h,l)perylene	0.000000489	lb/hp-hr	E	No	No	0.00	2.45E-02	2.45E-04	2.45E-04
500	100	PAH	Total Polycyclic Aromatic Hydrocarbons (PAH)	0.000168	lb/hp-hr	E	No	No	0.00	8.40E+00	8.40E-02	8.40E-02

1. HAP emission factors from USEPA AP-42 3.3, Table 3.3-2.
2. Because an emergency generator is an intermittent source and would only operate for short periods of time for maintenance checks and readiness testing, the 24-hour rates are assumed to be equal to the hourly rates.

FILE COPY

STATE OF MISSISSIPPI
PHIL BRYANT
GOVERNOR
MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
GARY C. RIKARD, EXECUTIVE DIRECTOR

May 23, 2017

CERTIFIED MAIL: 7010 1670 0000 1401 4884

Mr. Joe Harrell, Corp. EHS Mgr.
Enviva Pellets Amory LLC
142 N C Route 561 East
Ahoskie, NC 27910

Re: Notice of Violation
Enviva Pellets Amory LLC
Amory, Mississippi
Monroe County
Air-Title V Operating Permit No. 1840-00082

Dear Mr. Harrell:

Our office has received multiple complaints over the past year pertaining to sawdust and smoke leaving the above referenced facility impacting neighboring properties and vehicles. It has also been stated that the dust and smoke is causing respiratory problems for some of the citizens in the area.

As a result of these complaints, our Regional Office inspectors have been on site to investigate, and I was in contact with Enviva personnel to discuss the means by which the facility decided would prevent or minimize the dust that leaves the site. The controls and operating procedures put in place as a result of our conversations are proving to be insufficient in preventing further contamination of the surrounding properties and problems for the citizens. An inspector was on site as recent as April 6, 2017 to investigate additional complaints received in March and April, 2017. While our inspector was on site, he spoke with Mr. Paul Pigg and Davis Lovelace, both personnel of Enviva about potential dust and smoke areas of concern. Since the April 6th investigation, we have continued to receive similar complaints. Based upon our findings during the investigations, we hereby cite the following alleged violations:

- Failure to prevent materials, particularly sawdust and smoke, in unnecessary amounts from leaving the site.

Agency Interest No. 24301
ENF20170001

No person shall cause, permit, or allow the emission of particles or any contaminants in sufficient amounts or of such duration from any process as to be injurious to humans, animals, plants, or property, or to be a public nuisance, or create a condition of air pollution.

(1) No person shall cause or permit the handling or transporting or storage of any material in a manner which allows or may allow unnecessary amounts of particulate matter to become airborne.

(2) When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape from a building or equipment in such a manner and amount as to cause a nuisance to property other than that from which it originated or to violate any other provision of this regulation, the Commission may order such corrected in a way that all air and gases or air and gasborne material leaving the building or equipment are controlled or removed prior to discharge to the open air. ***(Ref: Title V Operating Permit No. 1840-00082, Item 3.B.6 and 11 Miss. Admin. Code Pt. 2, R.1.3.C.(1 & 2))***

We request that you respond to these alleged violations no later than ***June 9, 2017***. We will review the information submitted before determining if further action is warranted. Failure to submit a response to this request may result in enforcement action.

If you have any questions concerning this matter, please contact me at (601) 961-5793.

Sincerely,

Trayce Moore-Thomas

Trayce Moore-Thomas
Timber and Wood Products Branch
Environmental Compliance and Enforcement Division

Cc: Mr. John Burns, Enviva, Amory

Agency Interest No. 24301
ENF20170001

+1 (240) 482 3825 (direct line)
cell (240) 459 0128
robert.mcculloch@envivabiomass.com

From: Matt Hannon [mailto:valveman@americancontrols.com]
Sent: Wednesday, April 05, 2017 4:37 PM
To: Robert McCulloch <Robert.McCulloch@envivabiomass.com>
Cc: tim_aultman@deq.state.ms.us; mayor@cityofamoryms.com; zackmc@cityofamoryms.com; john@creekmorelawoffice.com
Subject: RE: Enviva Amory MS Facility

Dear all,

This email intent is just to notify that the weather today has duplicated the conditions we continue to have issues with. I have contacted our regional DEQ rep per his request. I know the entire town is experiencing this as I have had many complaints of smoke and saw dust as we are preparing for the annual railroad festival. This email is just for documentation, I will continue to send these as record of the problems as they occur. Our shop is filled with smoke and lose flying saw dust that continues to cause health and safety risk for my workers as well as in the open air around the area.

Best Regards,

Matt Hannon - VP
A.C.T., Inc.
311 Front Street North
Amory, MS 38821
Phone: 662-257-9952 Ext. 501
Fax: 662-256-4118
Email: valveman@americancontrols.com
James 1:12 (NIV)

From: Matt Hannon [mailto:valveman@americancontrols.com]
Sent: Thursday, March 23, 2017 3:10 PM
To: 'robert.mcculloch@envivabiomass.com'
Cc: 'tim_aultman@deq.state.ms.us'; 'mayor@cityofamoryms.com'; 'zackmc@cityofamoryms.com'; 'john@creekmorelawoffice.com'
Subject: Enviva Amory MS Facility

Good day Mr. McCulloch,

Thank you for your time on the phone Tuesday regarding our ongoing issues here with the Amory Enviva facility impacting our business and health. I have a link below to a Dropbox folder that contains stills and video of the issues we have experienced for many years. Some of the photos are from Google Earth and reference the date taken from satellite imagery and you can see the condition of our roof deteriorate as the plant increased its production over time to the point of having to replace our entire roof in 2015 as it expedited the rusting process with the saw dust and smoke that is air borne combined with rain water to form acid rain. Also notice the buildings surround had the same effect from year 2012 -2013. The brunt of the major affect is driven by the weather behavior and seems to coincide with days the facility is not functioning as to spec by MDEQ and operating efficiently. We just want a fair approach to this matter especially on days where the weather is pushing this material into our facility and affecting the health and safety of my workers. Please feel free to contact myself, the Amory Mayor Mr. Brad Blalock @ 662-256-5635, the Amory City Attorney Mr. John Creekmore @ 662-256-8208 or Mr. Tim Aultman with Mississippi Department of Environmental Quality @ 601-961-5653 as they are all aware from myself as well as MANY other individuals in the community who are ready to speak to you and voice their experiences and issues it has physically caused to their facilities and health of the ongoing and growing issue. If you need others in the community to hear from I can provide as many contacts as you would like or have them contact you directly. The photos and video do not do the issue justice as to the level of health danger on the days like we had on Tuesday when the plant manager came over and witnessed firsthand the direct affects and admitted the issue is real and needful of addressing. I am grateful for you working with us and look forward to your response and plan of action going forward.

https://www.dropbox.com/sh/k7n0manlsp19l8u/AACUt7v-PRrBDVVMx3z_239Za?dl=0

CC: Mr. Brad Blalock - Mayor
Mr. John Creekmore - Attorney
Mr. Tim Aultman - MDEQ
Mr. Zack McGonagil - Fire Chief

Best Regards,

Matt Hannon - VP
A.C.T., Inc.
311 Front Street North
Amory, MS 38821
Phone: 662-257-9952 Ext. 501
Fax: 662-256-4118
Email: valveman@americancontrols.com
James 1:12 (NIV)

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Emission of Hexanal and Carbon Monoxide from Storage of Wood Pellets, a Potential Occupational and Domestic Health Hazard

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Received 23 June 2003; in final form 15 October 2003; published online on 10 March 2004

Objectives: The objective of the present study was to investigate and describe the emissions of volatile compounds, particularly hexanal and carbon monoxide, from large- and small-scale storage of wood pellets.

Methods: Air sampling was performed with Fourier transform infrared spectroscopy and adsorbent sampling in pellet warehouses, domestic storage rooms, lumber kiln dryers and experimental set-ups. Literature studies were included to describe the formation of hexanal and carbon monoxide and the toxicology of hexanal.

Results: A geometric mean aldehyde level of 111 ± 32 mg/m^3 was found in one warehouse, with a peak reading of 156 mg/m^3. A maximum aldehyde reading of 457 mg/m^3 was recorded at the surface of a pellet pile. Hexanal (70–80% w/w) and pentanal (10–15% w/w) dominated, but acetone (83 ± 24 mg/m^3), methanol (18 ± 7 mg/m^3) and carbon monoxide (56 ± 4 mg/m^3) were also found. The emissions in a domestic storage room varied with the ambient temperature and peaked after 2 months storage in the midst of the warm season. Aldehyde levels of 98 ± 4 mg/m^3 and carbon monoxide levels of 123 ± 10 mg/m^3 were recorded inside such storage rooms. Elevated levels of hexanal (0.084 mg/m^3) were recorded inside domestic housing and 6 mg/m^3 in a room adjacent to a poorly sealed storage area. Experimental laboratory studies confirmed the findings of the field studies. A field study of the emissions from industrial lumber drying also showed the formation of aldehydes and carbon monoxide.

Conclusions: High levels of hexanal and carbon monoxide were strongly associated with storage of wood pellets and may constitute an occupational and domestic health hazard. The results from lumber drying show that the emissions of hexanal and carbon monoxide are not limited to wood pellets but are caused by general degradation processes of wood, facilitated by drying at elevated temperature. Emission of carbon monoxide from wood materials at low temperatures (<100°C) has not previously been reported in the literature. We postulate that carbon monoxide is formed due to autoxidative degradation of fats and fatty acids. A toxicological literature survey showed that the available scientific information on hexanal is insufficient to determine the potential risks to health. However, the data presented in this paper seem sufficient to undertake preventive measures to reduce exposure to hexanal.

Keywords: air sampling; exposure; FTIR; work environment

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INTRODUCTION

The production of wood pellets is a relatively new industrial activity in Sweden. Wood pellets are increasingly used as a source of renewable energy for industrial, municipal and domestic heating. According to the Swedish Pellet Producers Association the annual production in Sweden increased from 90 000 tons in 1994 to 714 000 tons in 2001. The raw material for wood pellets in Scandinavia is primarily wooden by-products from the sawmill industry. The dominant timbers are the common Scandinavian conifers Norway spruce (*Picea abies*) and Scots pine (*Pinus sylvestris*). The unprocessed material is stored in the open. It is ground and dried to ~8% water content and without any other additives pressed to pellets. The raw material is handled in a closed process under negative air pressure until the pellets are pressed, after which it is handled in the open in the warehouses. The typical wood pellet is 6 or 8 mm in diameter and 10–12 mm long and shipped to customers in sacks or in bulk on trucks or cargo vessels.

Information about the potential health hazards associated with the production and handling of wood pellets is sparse in the scientific literature and the emissions and occupational exposures in the workers' zones of wood pellet manufacturing have not previously been described. A screening study was performed in a pellet factory, initiated by workers' complaints of odour and irritation of the eyes and respiratory system, particularly while working in the pellet warehouse (Svedberg and Galle, 2001). Hexanal, pentanal, methanol, acetone and carbon monoxide were identified by Fourier transform infrared (FTIR) spectroscopy and adsorbent sampling in the pellet warehouse. The closed production system minimized emissions inside the production plant.

The objective of the present study was to investigate and describe the presence and formation of volatile compounds, particularly hexanal and carbon monoxide, from storage of wood pellets. Supplementary monitoring of emissions from kiln drying of wood was performed to determine if the emissions were specific for wood pellet production or more general in nature. Experimental laboratory studies were carried out to confirm the results from the field studies. Literature surveys were made on the formation of hexanal and carbon monoxide and on the toxicology of hexanal.

MATERIALS AND METHODS

FTIR sampling

Air sampling was performed using FTIR technique. An FTIR instrument (MB100; Bomem, Quebec, Canada) was equipped with a mercury–cadmium–tellurium (MCT) detector with a 1 mm^2 detector area (Belov Technology, New Brunswick, NJ). The sample air was continuously pumped (4–30 l/min) through a Teflon tube (13 mm) into the analytical gas cell (5.7 l, variable path length, 0.75–20.25 m; Foxboro Inc.). During sampling in the field, a particle filter type P3 was installed at the sampling tube inlet to protect the tubing and the analytical cell from contamination. The spectral information generated by the FTIR instrument was stored in a computer and the succeeding spectral analysis was made at the end of the sampling sessions. One location was sampled by filling Tedlar sampling bags (SKC) with sample air, that was then evacuated into the FTIR gas cell.

Spectral information was collected in the 600–4000 cm^{-1} wavelength region with 1 cm^{-1} spectral resolution. Qualitative and quantitative analysis was performed using LabCalc software (Galactic Inc., Salem, NH). When the spectral information displayed stable baselines with no interference by unknown compounds in the regions of interest, a classical least squares (CLS) method was used for the quantitative analysis, analogous to our application described elsewhere (Svedberg and Galle, 2000). The CLS analysis was modified to fit each set of sample spectra embracing the choice of the wavelength region, inclusion or exclusion of compounds and baseline adjustment. When the CLS method did not work satisfactorily, a peak area proportionality comparison was used. Both methods required the use of pre-calibrated spectra that were either generated in the laboratory by injecting known aliquots into the analytical cell or obtained from commercial spectral databases (Infrared Analysis).

The limits of detection (LOD) were calculated as three times the peak-to-peak noise level in an absorbance spectrum at 258 scans created by ratioing two consecutive background spectra. The LOD obtained for the identified compounds are presented in Table 1. The actual LOD may be less, due to spectral noise, skewed baselines and interfering peaks. The IR signal in the 'fingerprint region' (600–1300 cm^{-1}) is too weak to resolve individual straight chain aldehydes at the concentrations found. The strong aldehyde peak at 2712 cm^{-1} has approximately equal absorption for

Table 1. Limits of detection (LOD) limits with the FTIR system for identified compounds

	IR frequency (cm^{-1})	LOD (mg/m^3)
Aldehydes	2680–2740	1
Formaldehyde	2775–2783	0.5
Formic acid	1061–1144	0.03
Acetone	1180–1250	0.15
Methanol	970–1096	0.15
Carbon monoxide	2109–2092	0.27

the dominant straight chain aldehydes found in this study and the FTIR results are therefore expressed as hexanal equivalents based on this peak. Formaldehyde has a characteristic spectrum and can be singled out from other aldehydes.

Adsorbent sampling and analysis

Pumped and diffusion sampling was performed using thermal desorption tubes with Tenax TA and Air Toxics™ adsorbents (Supelco) (200 mg, 60–80 mesh). All pumped sampling was carried out with SKC pumps (model 224-30) and a flow rate of 30 ml/min.

Thermal desorption was performed with an automatic thermal desorption system (ATD-400; Perkin-Elmer). The sample was desorbed from the adsorbent into a cold trap packed with ~10–20 mg of Tenax TA. After injection the cold trap was heated at a rate of 40°C/s to the specified temperature. An outlet split was used. The parameters for the ATD-systems were: desorption temperature 250°C, desorption time 5 min, purge time 1 min, cold trap low temperature –30°C, cold trap high temperature 300°C, cold trap time at high temperature 5 min, desorption flow rate 30 ml/min, inlet split 0 ml/min, outlet split 10 ml/ min.

Gas chromatographic separation using an Autosystem XL (Perkin-Elmer) was performed by the use of a high resolution capillary column (CP Wax 52CB, catalogue no. CP8073; Varian), 60 m × 0.32 mm, DF 1.2 µm. The temperature program was 60°C (0 min), 6°C/min to 250°C (5 min). Detection was performed with a TurboMass mass selective detector (Perkin-Elmer).

Data collection was done at full scan in the mass range 35–300 *m/e*. The calculations were done by use of both full scan areas and areas at specified *m/e* values, depending on which compound was to be determined. The analyses were performed by Chemik Lab AB, Sweden.

Sample locations

Industrial warehouses. Three industrial production plants (A, B and C) using different methods for drying the raw material were included in the study. Plant A used a direct drying method with flue gases from a pellet-fired hot gas generator (400–500°C); plant B used a direct drying method using flue gases from a nearby iron blast furnace (450°C); plant C used an indirect drying method with a heat exchanger where the sawdust did not come into contact with the drying gases (195°C). Air sampling was carried out in the pellet warehouses. In plants A and B the samples were collected on the service walkways suspended over the pellet piles. Below and along the walkways, conveyor belts distributed freshly produced pellets into oblong piles. In plant C the samples were collected on top of the pile in Tedlar sampling bags.

Domestic storage rooms. In Sweden, wood pellets are increasingly finding their way into domestic houses, replacing in particular oil as the principal source of energy for heating purposes. Many house owners have built or set aside separate rooms where 3–6 tons of wood pellets can be stored. The rooms are normally filled with pellets by means of compressed air from bulk loading trucks. The emissions from three household storage rooms were investigated. In one storage, after delivery of 5 tons of freshly produced pellets in a closed storage bin, the emissions and the temperature in the centre and above the pile were monitored continuously over 3 months. FTIR samples were collected in the air space (7 m^3) above the pellet pile. The air was circulated to the FTIR and back to the bin. The specific air exchange rate of the bin was calculated using a tracer gas (N_2O) decay method and FTIR for detection. A second continuous measurement lasted for 18 h after delivery of 6 tons of freshly produced pellets. This time the air was pumped from the bin to the gas cell and vented outdoors (30 l/min). The concentration due to leakage of emissions into the room adjacent to the storage bin was also determined. Emission leakage was further investigated inside two other houses adjacent to the in-house closed storage rooms. Sampling was performed by diffusion sampling on Tenax adsorbent over 10 days.

Laboratory tests. Emissions from wood pellets produced at the three production plants A, B and C were investigated in the laboratory. Pellets (10 kg) were placed in a galvanized steel canister, with a 1 cm air gap, on a thermostatically controlled hot plate. The canister had an air inlet in the bottom and an outlet at the top that was connected by Teflon tubing to the FTIR analytical cell and an air pump. The room air was thus pulled through the pellets and into the analytical cell. The flow rates were either 4 or 30 l/min depending on the application. Temperature sensors were positioned at the bottom and in the surface layer of the pellet bed. The thermostat was adjusted until a dynamic temperature at the bottom of the canister of ~80°C was achieved, producing a surface temperature of 35–40°C. To minimize the risk of condensation the analytical cell was heated to ~70°C and the canister and the connecting tubing were thermally insulated. Samples of the room air were used as reference spectra, thus reducing possible interference from background levels of carbon monoxide.

Kiln drying of lumber. The emissions from industrial kiln drying of Scots pine were investigated. The dryer was loaded with 115.5 m^3 of lumber (25 × 125 mm). The FTIR instrument was connected by 10 m of Teflon tubing to the exhaust duct of the kiln. The analytical cell was preheated to ~70°C. The

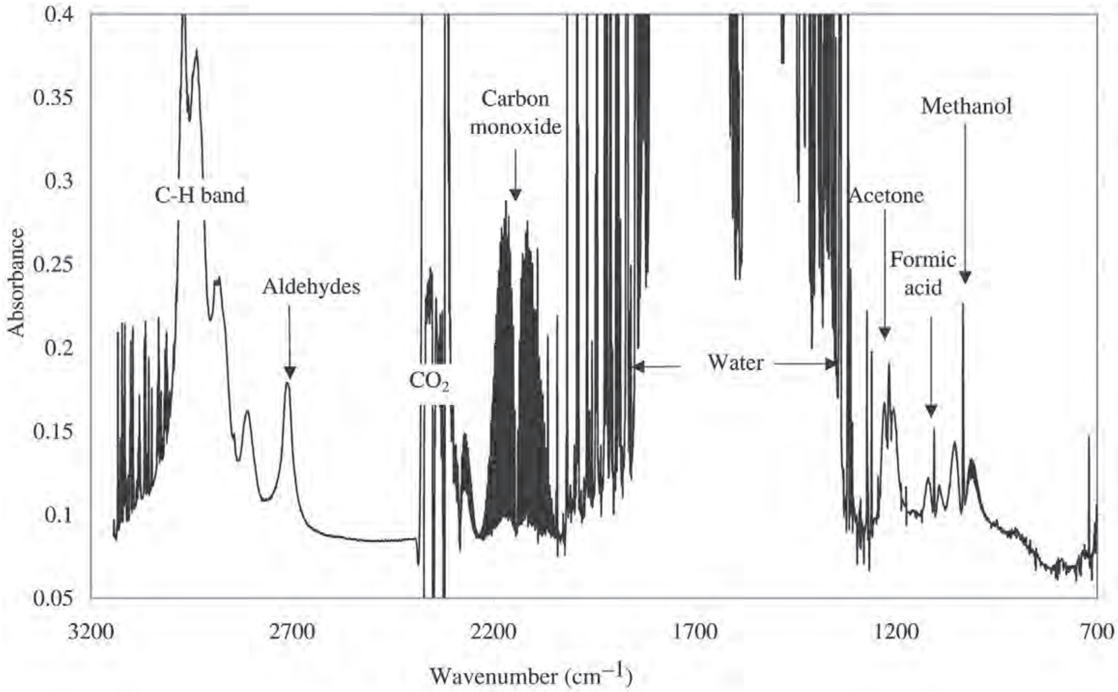

Fig. 1. An FTIR spectrum from the service walkway in plant A.

drying schedule was automatically regulated to control the rate of water removal. Initially the drying chamber was heated to 55°C before ventilation was started. The temperature was then slowly increased to a final value of 68°C. The total drying time was 95 h, during which the moisture content was reduced from ~50 to 10% (w/v).

RESULTS

Industrial warehouses

The FTIR measurements inside the warehouses at plants A (3 h) and B (18 h) showed that the dominant organic compounds were aldehydes (50–60% w/w), acetone (30–40% w/w) and methanol (10% w/w) (Fig. 1). A geometric mean aldehyde level of 111 ± 32 mg/m^3 was found in plant B on the service walkway, with a peak reading of 156 mg/m^3. Hexanal (70–80% w/w) and pentanal (10–15% w/w) predominated, but acetone (83 ± 24 mg/m^3), methanol (18 ± 7 mg/m^3) and carbon monoxide (56 ± 4 mg/m^3) were also found. A maximum aldehyde reading of 457 mg/m^3 was recorded with the sampling probe resting on the top of the pellet pile. The measurement was taken during a period with elevated pile surface temperature (0.2 m down the temperature was 88°C; 1.5 m down, 67°C; and 2.0 m down, 54°C.). A Tenax sample taken in parallel with the FTIR sample in Plant B showed the presence of the compounds indicated in Fig. 2, some of which are quantified and listed in Table 2. Formic acid was only found in plant A at a level of 1.6 ± 0.4 mg/m^3, while the levels of the other compounds were two to three times lower than in plant B. The warehouse at plant C had low pellet levels and an ambient temperature of –10°C during sampling. The measured concentrations were below the detection limit for FTIR except for carbon monoxide (0.8 mg/m^3).

Domestic storage rooms

The first measurement during 3 months inside a closed but passively ventilated storage bin showed that the emissions increased with the ambient temperature (Fig. 3). The mean aldehyde level was 21 ± 7 mg/m^3 and that of carbon monoxide was 21 ± 8 mg/m^3 (geometric means). The highest level, 49 mg/m^3, was recorded 2 months after delivery of the pellets. The second measurement during the initial 18 h after a new pellet delivery showed considerably higher levels of aldehyde (98 ± 4 mg/m^3) and carbon monoxide (123 ± 10 mg/m^3). The aldehyde level in the room adjacent to the storage bin reached 6 mg/m^3 during this period. The mean specific emissions of aldehydes for the two different loads of pellets were 96 and 703 mg/ton/day, respectively. The corresponding emissions for carbon monoxide were 100 and 885 mg/ton/day. The carbon monoxide levels correlated roughly with the aldehydes, but with a larger diurnal amplitude (r^2 = 0.72). Diffusion sampling on Tenax adsorbent inside two domestic houses

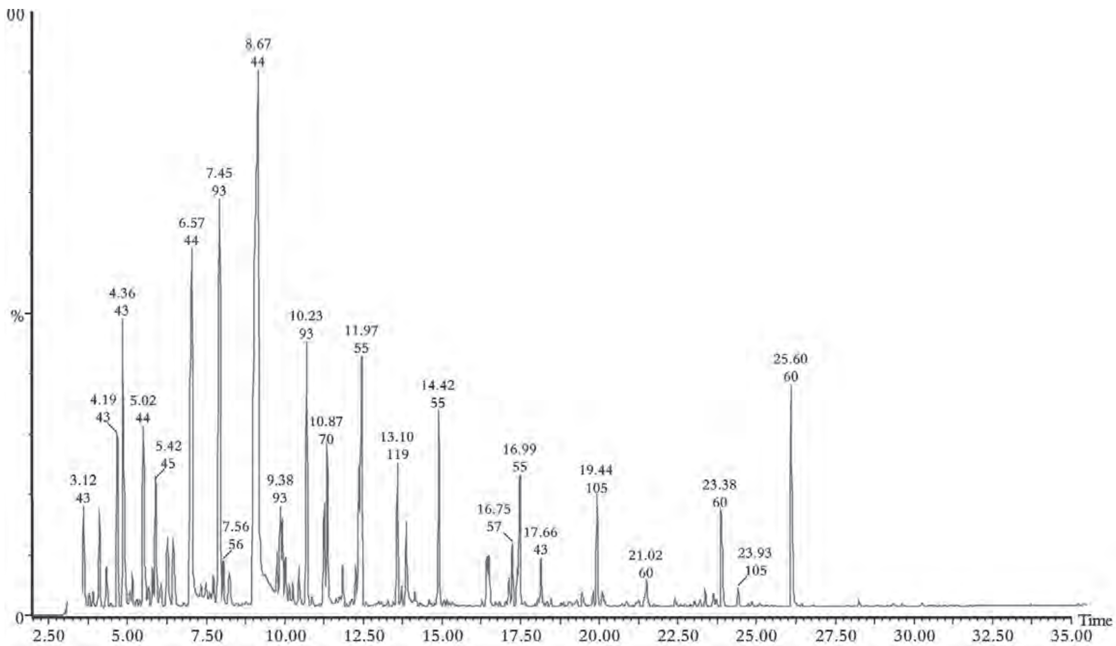

Fig. 2. GC-MS chromatogram from a Tenax sample also described in Table 2. The identified peaks with retention times are: 3.12, hydrocarbon; 4.19, acetone; 4.36, butanal; 5.02, isopropanol; 5.42, pentanal; 6.57, a-pinene; 7.45, *n*-hexanal; 8.67, b-pinene; 9.38, carene; 10.23, heptanal; 10.87, hydrocarbon (?); 11.97, methyl-isopropylbenzene; 13.10, octanal; 13.25, 2-heptenal; 14.42, nonanal; 16.00, 2-ethylhexanal; 16.99, benzaldehyde; 19.44, an acid; 21.02, pentanoic acid; 23.38, hexanoic acid; 25.60. Overloading of the sample is shown by the tailing of the peak for hexanal (8.67) and pentanal (6.57). This does not seriously affect the quantification according to laboratory sources.

Table 2. Sampling with Tenax adsorbent on a service walkway in plant A

	mg/m^3
Butanal	3.3
Pentanal	9.9
Hexanal	82.7
Heptanal	1.9
2-Heptenal	2.9
Nonanal	0.6
Decanal	n.d.
Terpenes	3.6
Toluene	0.36
n-Butanol	1.7

n.d., not detected.

adjacent to the closed pellet storage rooms showed raised levels of hexanal (0.056 and 0.084 mg/m^3), compared with zero levels in a reference sample outdoors.

Laboratory tests

The emission during an experiment with a 4 l/min air flow rate through the pellet bed is illustrated in Fig. 4. Aldehydes, methanol, acetone, monoterpenes, hexanoic acid and carbon monoxide were identified. The temperature at the bottom of the pellet bed was 40°C after 20 min, 50°C after 60 min and 60°C after 4 h. A steady temperature range of 72–75°C was reached after ~15 h. A flow rate of 30 l/min yielded 63% more total emissions after 130 h (5728 versus 3475 mg), compared with a flow rate of 4 l/min (Table 3). The total weight of the pellet bed decreased by 580 (30 l/min) and 502 g (4 l/min). The removal of water explains 99% of the weight loss.

Parallel sampling with Air Toxics, Tenax and FTIR for 8 min showed good agreement between the FTIR and Tenax samples, while the Air Toxics sample appeared to underestimate the concentrations (Table 4). Neither acetaldehyde nor its oxidized form acetic acid was detected.

Drying of lumber

The gradual formation of aldehydes and carbon monoxide during a complete drying cycle of lumber is described in Fig. 5. The levels were strongly correlated ($r^2 = 0.96$). The formation of other compounds like terpenes, methanol and ethanol were also detected, but are not described further.

DISCUSSION

Emission monitoring

Hexanal and carbon monoxide were found in the emissions from wood pellets and drying of lumber. The levels of carbon monoxide were at times above

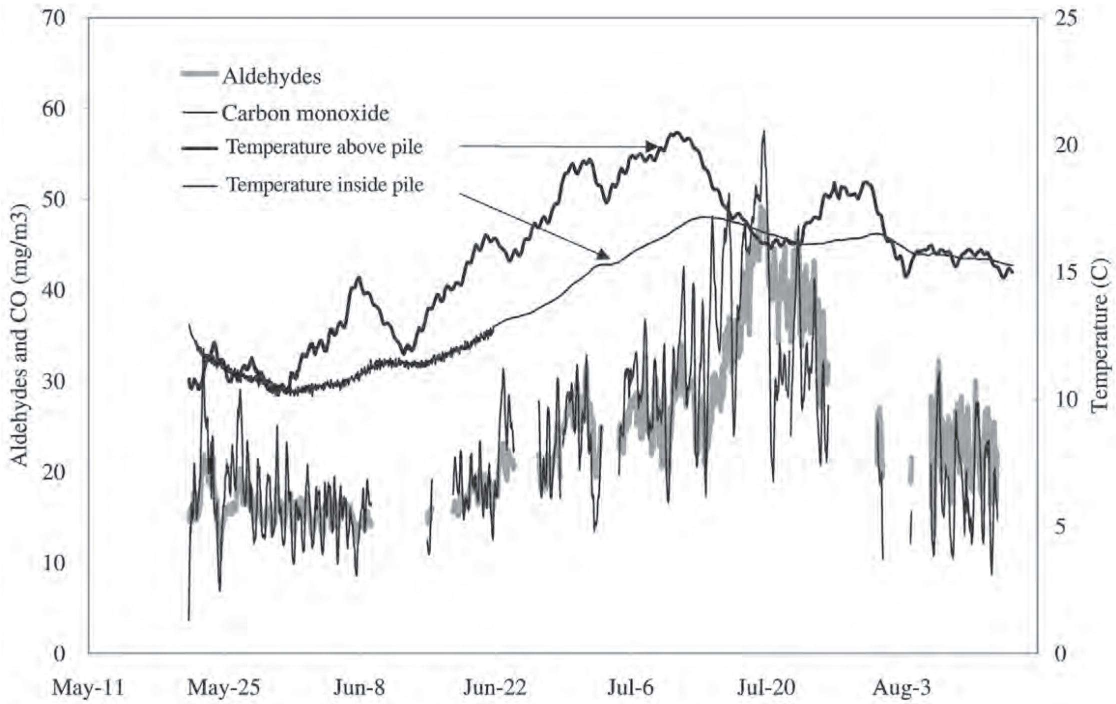

Fig. 3. Long-term FTIR measurement of aldehydes and carbon monoxide in a domestic storage room.

Table 3. Comparison of emissions in a flow-through experiment

	Emitted amount (mg)	
	4 l/min	30 l/min
Aldehydes	1739	1800
Hexanoic acid	406	2634
Acetone	422	294
Methanol	118	139
Carbon monoxide	705	820
Monoterpenes	85	41
Total	3476	5728

The samples are from the same batch where the 30 l/min sample was kept in a plastic bag at room temperature for 10 days. Aldehydes are expressed as hexanal equivalents.

Table 4. Parallel sampling during flow-through measurements

	FTIR (mg/m^3)	Tenax (mg/m^3)	Air Toxics (mg/m^3)
Butanal		n.d	1.3
Pentanal		16.3	8.3
Hexanal		48.1	4.9
Heptanal		1.7	0.4
Octanal		1.4	0.1
Nonanal		0.07	n.d
Decanal		0.02	n.d
Total aldehydes	66.6	67.6	15.0

the permissible occupational exposure level in the warehouses. The formation of hexanal and carbon monoxide in the experimental studies confirmed the findings of the field studies.

Pentanal, methanol, acetone and formic acid were identified and quantified by the FTIR method. Monoterpenes, other aldehydes and organic acids were found in substantially lower levels and required adsorbent sampling and GC-MS analysis for detection.

During the laboratory experiments the occasional occurrence of formaldehyde was observed at levels close to the detection limit of FTIR. Formaldehyde was not detected in the warehouses but it is likely that it would be detected using a more sensitive method. The absence of acetaldehyde in the results from the Air Toxics adsorbent samples indicate that high levels of acetaldehyde are not likely to occur in pellet warehouses. The laboratory experiments further showed no significant qualitative difference in the emissions from pellets produced by different drying methods.

Monoterpenes dominate the organic compounds emitted from fresh pine and spruce wood. However, both adsorbent sampling and FTIR results showed low monoterpene concentrations in the warehouses. The conclusion is that the greater part of the monoterpenes is emitted during the production of sawdust in the sawmills and the following storage, grinding and drying processes, before pressing of the pellets. A previous study has shown that the escape of

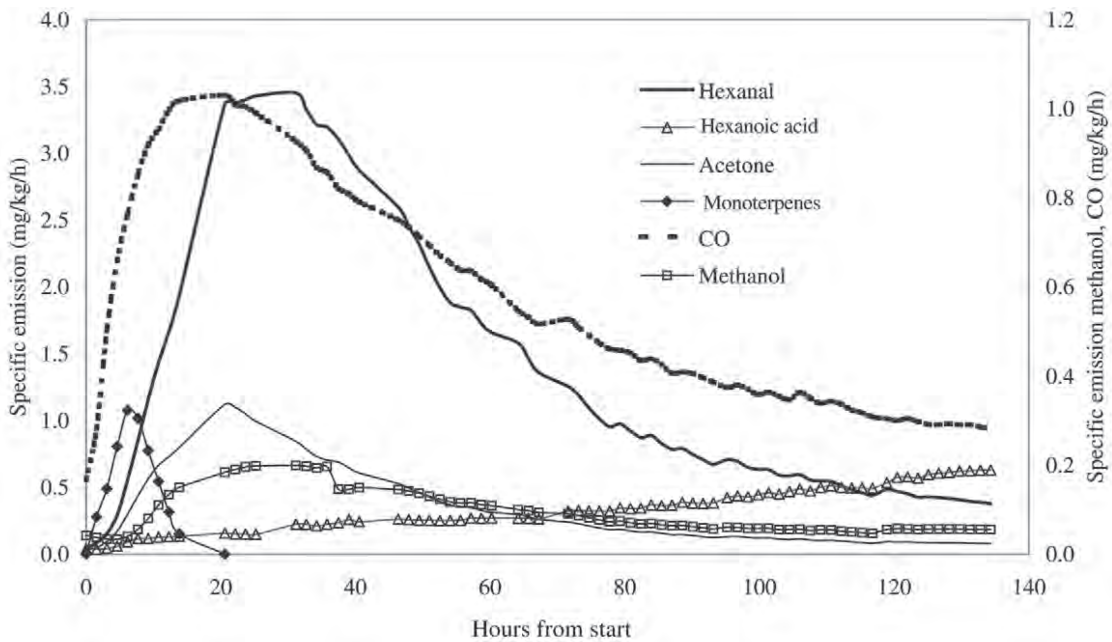

Fig. 4. Specific emissions from 10 kg pellets exposed to 4 l/min airflow.

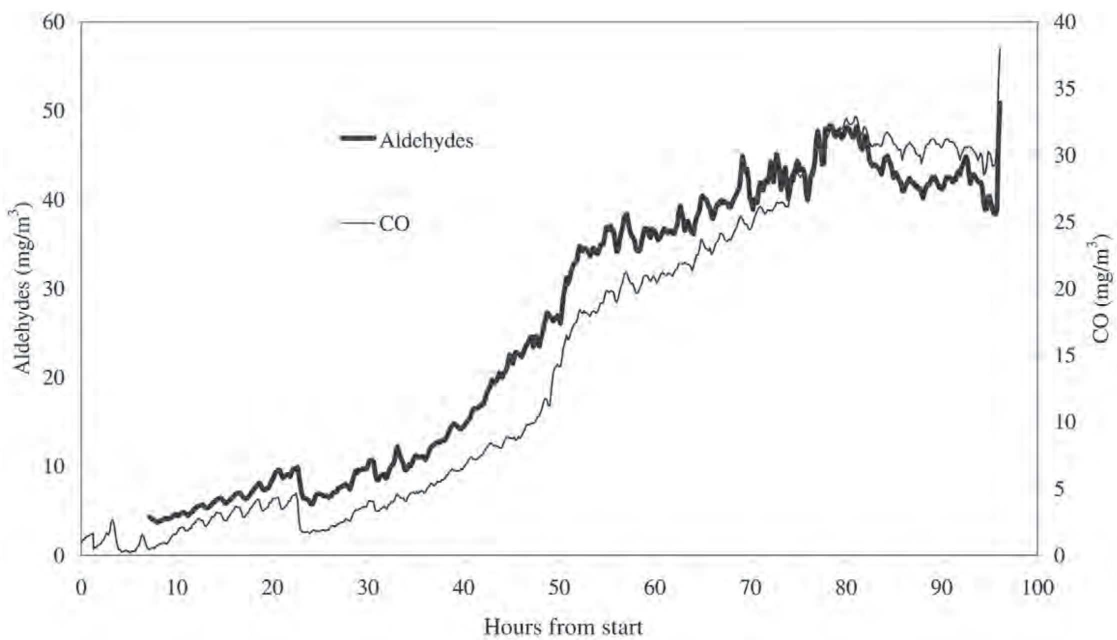

Fig. 5. The concentration of aldehyde and carbon monoxide in emissions from pine lumber drying.

terpenes from sawdust may be rapid (Risholm-Sundman *et al.*, 1998).

Considering the results from lumber drying it is concluded that the dominant emissions from wood pellets originate from general degradation processes in wood, which are initiated or facilitated by drying at elevated temperatures. When the processes take place in a confined space with large amounts of pellets, leading to a large surface area, the concentration of the emitted compounds may become high. From a working environment perspective the aldehyde levels in the warehouses may become too high. A maximum value of 457 mg/m^3 was recorded at the top of a pellet pile. It is not unlikely that operators may be exposed to such levels while working on the pile, for example, during leveling of the pile with graders and while sampling temperature data. Carbon monoxide is well known to be toxic (Clayton and Clayton, 1982). The carbon monoxide levels were at times above the Swedish permissible exposure level of 40 mg/m^3 and it may be justified to install carbon monoxide alarms in warehouses and confined storage places which people enter. Formic acid levels sporadically reached 2 mg/m^3 in the warehouse, almost half the permissible exposure level in Sweden.

The laboratory tests with wood pellets identified the same group of compounds as found in the warehouses. The conclusion is that the drying process that takes place in the warehouses is well simulated by the experimental set-up used in the laboratory tests, although not driven to such an extreme. It was assumed that a limited upward air flow also exists inside the pellet piles in the warehouses. Heating of the laboratory sample aimed to resemble the conditions in the warehouse when elevated pile temperatures prevail. The total amount of aldehydes emitted was identical after 130 h, regardless of the flow rate. When all compounds were considered, the result was a higher total emission with the higher flow rate, which is principally explained by the increased emission of hexanoic acid, an oxidation product of hexanal. However, this was not accompanied by a corresponding decrease in the hexanal emission, which would be expected. The formation of degradation compounds may be limited by diffusion of oxygen into the wood structure analogous to what is described for other wood products (Back and Allen, 2000).

The conclusion is that the same compounds that were found in the warehouses caused the odour noticed by the end-user. The episodes with odour from the pellets seem to be more frequent during the winter months, based on informal discussions with end-users. The results show that the emissions vary greatly with different loads of pellets. A plausible explanation is that pellets that are produced, stored and distributed in the warm season have already emitted a large part of their volatile compounds in the warehouses. During the cold season the warehouse storage time of newly produced pellets is short and the emissions are released instead in the storage rooms of the end-users. A poorly designed storage room may cause leakage to the adjacent rooms and constitute a potential exposure risk, as demonstrated by the 6 mg/m^3 level measured outside a storage bin, accompanied by a strong odour. Measurements outside two closed domestic storage rooms, during a period when odour was not reported, indicated levels of hexanal of 0.056–0.085 mg/m^3, compared with 0–0.005 mg/m^3 normally found in the indoor environment (Brown *et al.*, 1994). The results show that the emissions from a domestic storage room can linger for several months and increase if the ambient temperature increases. If pellets are additionally vented or stored in the production step, it might reduce emissions in the storage rooms of end-users, however, storing at cold temperatures limits the release of emissions, as demonstrated in Fig. 3. Storage rooms should also be equipped with ventilation systems designed to prevent emissions from entering the living space.

The FTIR method is subject to calibration errors, spectral interference and sampling errors. The calibration error is estimated to be <5% and the error due to spectral interference <10%, but increasing when approaching the LOD. Condensation in sampling lines and leakage from line connections are potential sampling errors. Leakage was checked by periodic monitoring of the flow rate at the sampling tube inlet. Condensation of water was a problem in the kiln drying study. The condensate was therefore collected and analysed separately. The local variation in airborne concentrations in the pellet warehouses was probably the principal factor of measurement uncertainty. The measurements in the kiln dryer, the domestic storage room and in the experimental set-up were not affected by such variations. The present study further shows that the principal risk of relying on adsorbent sampling alone is that essential compounds in the investigated environments are simply not detected.

Formation of hexanal

Hexanal (CAS no. 66-25-1) was the predominant straight chain aldehyde found in the volatile organic compound mixture emitted from wood pellets. Apart from carbon monoxide, the volatile compounds identified in this report are previously known as low level emittants from wood and wood products and are often identified in indoor air investigations. Medium density fiberboard products (MDF) have been shown to emit hexanal for several months (Brown, 1999). The short chain aldehydes make up >50% of the volatile organic compounds which are emitted from MDF (Baumann *et al.*, 2000).

Hexanal and the other alkanals are probably formed by the oxidative degradation of natural lipids present in wood. The dry woods of Scots pine and Norway spruce contain 3–5% triglycerides and free fatty acids. A polyunsaturated acid, linoleic acid, is the major constituent in the mixture of free fatty acids and triglycerides found in such wood (Hoell and Piezconka, 1978; Piispanen and Saranpaa, 2002). Radical-induced oxidation by oxygen of linoleic acids or its esters yields hexanal as the major volatile component (Back and Allen, 2000). Such reactions can be either enzyme catalysed or occur through a so-called autoxidation process (Schieberle and Grosch, 1981; Frankel *et al.*, 1989; Noordermeer *et al.*, 2001). Because of the high temperature involved in pellet production, with enzyme denaturation as a probable consequence, the major path for this process in pellets most likely proceeds through autoxidation.

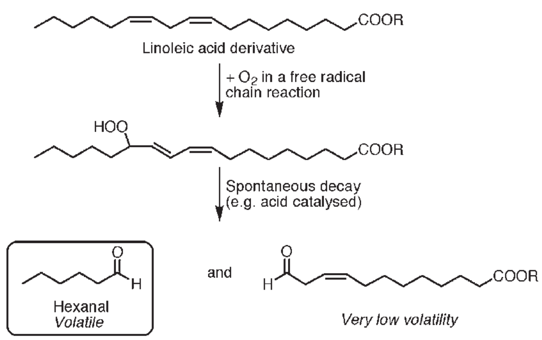

Fig. 6. Proposed pathway for the formation of the volatile aldehyde hexanal in wood pellets.

One possible route leading to hexanal is shown in Fig. 6.

Formation of carbon monoxide

The emission of one carbon compounds containing oxygen and hydrogen, such as methanol, formaldehyde and formic acid, from pellets is not surprising. The last two compounds may be autoxidation products of methanol. Other one carbon compounds are carbon monoxide and carbon dioxide. The high levels of carbon monoxide found in each of the measurements presented in this report were unexpected. It is well known that during the thermal anaerobic degradation of wood (pyrolysis) carbon monoxide emission occurs. The low temperature emission of carbon monoxide from wood products such as pellets has not been reported previously and the underlying chemical mechanism is uncertain. Carbon monoxide has a characteristic infrared spectrum and cannot be mistakenly identified. The possible interference of external sources of carbon monoxide was ruled out by the results obtained from laboratory tests with pellets produced by indirect drying (not exposed to drying gases containing carbon monoxide) and the results from the lumber dryer.

When various organic matters were stored at room temperature, particularly in the presence of air and light, small amounts of carbon monoxide were observed and the formation was enhanced by increased temperature (Levitt *et al.*, 1995). Microsomal lipids also produce carbon monoxide during peroxidation, initiated via different Fe(III) complexes. After initiation the reaction appears to be non-enzymatic, i.e. an autoxidative process (Wolff and Bidlack, 1976). Carbon monoxide (300–400 p.p.m.) has been observed in the air above 7000 tons of rapeseed stored in a sealed warehouse and the calculated specific emission rate has been estimated to be 200 mg/ton/day (Reuss and Pratt, 2001). Carbon monoxide has also been found in a wheat grain warehouse with a calculated specific emission rate of 9 mg/ton/day (Whittle *et al.*, 1994). These emission rates can be compared with the specific emission rates we found in the small pellet storage, ranging from 100 to 885 mg/ton/day.

The more rapid formation of carbon monoxide in materials with a high fat content (rapeseed) compared with those with a low fat content (wheat) indicates that carbon monoxide may be formed through the autoxidative degradation of fats. The measurements in this study indicate that the carbon monoxide and hexanal emissions are often correlated. We suggest that carbon monoxide formation during storage of the wood pellets is caused by the autoxidation of residual lipophilic extractives present in pellets, mainly fats and fatty acids. However, carbon monoxide formation from other organic materials present in wood, like cellulose, hemicellulose and lignin, cannot be ruled out.

Toxicology of hexanal

Hexanal was identified as a major component in emissions from wood pellets stored in industrial warehouses and under experimental conditions. Occupational exposure routes for aldehydes include inhalation and skin uptake. Food intake may also contribute to exposure (Feron *et al.*, 1991). Hexanal is rapidly metabolized in the body, the aldehyde being oxidized by aldehyde dehydrogenase to the corresponding acid (Marselos and Lindahl, 1988; Yoshino *et al.*, 1993; Fujita *et al.*, 1994; Townsend *et al.*, 2001). This seems to be the dominant metabolic route, but reduction of hexanal to the alcohol has also been suggested (Jaar *et al.*, 1999).

Low molecular weight aldehydes are strongly irritant to the mucous membranes in the nose, mouth and airways in humans (Clayton and Clayton, 1981). In eye irritation tests on rabbits hexanal was given grade 5 on a 10 grade scale (Grant, 1986). There are some reports concerning the genotoxicity of hexanal, however, most authors conclude that the risk to humans is negligible (Marinari *et al.*, 1984; Brambilla *et al.*, 1989; Martelli *et al.*, 1994).

Hexanal has cytotoxic potential in most cells tested but only in relatively high doses (Kaneko *et al.*, 1988; Martelli *et al.*, 1994; Muller *et al.*, 1996; Girona *et al.*, 2001). It should be noted, however, that *in vitro* studies suggest that insulin-producing cells in pancreas and sperm might be more sensitive than other cell types (Suarez-Pinzon *et al.*, 1996).

It is not possible to define a critical effect for hexanal. However, the high readings for hexanal and the relatively low readings for other emissions, as well as a general knowledge of the irritating effects of aldehydes, suggest that hexanal in the present settings can cause skin and mucous irritations and possibly also other health problems. As indicated in the Introduction, complaints about odour and irritation have been reported among exposed workers, but the frequency as compared with that in control groups is not known.

Conclusions

High levels of hexanal and carbon monoxide were strongly associated with storage of wood pellets and may constitute an occupational and domestic health hazard. The results from lumber drying show that the emissions of hexanal and carbon monoxide are not limited to wood pellets but are caused by general degradation processes of wood, facilitated by drying at elevated temperature. Emission of carbon monoxide from wood materials at low temperatures (<100°C) has not previously been reported in the literature. We postulate that carbon monoxide is formed due to autoxidative degradation of fats and fatty acids. The depletion of oxygen and simultaneous formation of carbon monoxide may be particularly dangerous in closed spaces.

A toxicological literature survey showed that the available scientific information on hexanal is insufficient to determine the potential risks to health. However, the data presented in this paper seem sufficient to undertake preventive measures to reduce exposure to hexanal both in the industrial environment as well in the domestic setting, where children and sensitive persons may be involuntarily exposed.

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Amory board of aldermen discusses deficit, dust complaints and a tank

jward

Oct 13, 2016

AMORY – The majority of the time during the Oct. 4 board of aldermen meeting was devoted to revisiting an item tabled from its last meeting. Tracy Hadley, representing the local Order of the Eastern Star, returned to continue her petition to the board for waiver of rental fee to use community center space for their meetings.

The petition launched a wide-ranging discussion of the financial standing of the city's community centers. City clerk Lee Barnett provided reports, stating most of the city's revenue to operate the facilities is derived from space rentals.

The bad news was that the rent collected has not even come close to paying the cost of utilities, let alone salaries and maintenance – to the tune of $24,000 in the red for the past year. Barnett went on to say that the expenses to operate the West Amory Community Center were more than its East Amory counterpart due to the fact that East Amory Community Center was equipped with a newer, more energy-efficient HVAC system.

“If we keep giving stuff away, how can we continue to operate,” asked Ward 4 Alderman Glen Bingham, citing a long previous record of helping community service providers with free or reduced rent.

He asked Hadley if the $30 rent is an excessive fee. She said she would take the matter back to her board to reconsider its request to the city but asked whether other nonprofit community service groups would be asked to step up and pay rent to which Bingham replied, “Yes.”

The discussion branched out even further to explore community response to enhancements at East Amory Community Center, located in a predominantly white neighborhood, as opposed to West Amory, where the population of the service area is predominantly African-American.

Hadley emphasized that equal treatment to both centers was vital to prevent racial friction in the city.

“A lot of issues are due to ignorance of the facts, not race,” Hadley said.

Ward 2 Alderman John Darden said that people who don't go to meetings need to be informed of events such as church services.

“The problem is perception. Effective communication is the key,” said Mayor Brad Blalock, who pledged to meet with Hadley and Amory Park and Recreation Director Rory Thornton to work out suitable arrangements for the Eastern Star chapter as well as other nonprofit community groups that would follow suit.

As the discussion wound down, the motion to grant Hadley’s request for a fee waiver died for lack of a second to Darden’s motion.

Another scheduled guest appearance from Monroe County Veteran’s Association representative Carolyn Goldsboro presented to the city a very unusual proposition. An M60A1 Patton battle tank from the deactivated Nettleton National Guard Armory was offered to the City of Amory for adoption at no cost if the city could provide a site.

Goldsboro provided a visual of not only the tank but a map showing the proposed location on a city-owned island across Highway 278 from the existing Veteran’s Memorial near Wilkerson’s Furniture. The development of the site would consist primarily of the installation of a suitable concrete pad for the 50-ton tank.

Goldsboro said the veteran’s group would approach local contractor Hob Sanderson about donating the concrete for the project. Blalock expressed his support for the initiative, as did Amory Police Chief Ronnie Bowen, who didn’t foresee any traffic issues that might result from locating the tank at the site.

Goldsboro added that funds are in place for landscaping the site once the installation is complete. Further action on this item is pending.

Finally, Darden relayed complaints from residents of his ward, who he said are wheezing, coughing and constantly washing the dust off of their vehicles generated by the Enviva pellet plant.

Blalock responded that while the plant was in compliance with Mississippi Department of Environmental Quality (MDEQ) standards, he would follow up on looking into any remedies possible, while the area still waits for relief from the extended hot and dusty summer conditions.

Amory Street Department Director David Moore added that recently, the prevailing winds have been easterly, causing more dust over sections of Ward 2.

Ironically, Enviva's introductory statement on its website proclaims its mission is to "develop a cleaner energy alternative to fossil fuels." It continues to say, "We work for lower emissions, healthy forests and strong communities."

While the emissions may not be environmentally threatening, the funnel cloud of dust over the plant can be unsettling when seen reaching into another cloud above, and the dust by-product persists for the time being.

Local officials at Enviva did not return request for comment.

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Exposures to Carbon Monoxide from Off-Gassing of Bulk Stored Wood Pellets

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Supporting Information

ABSTRACT: There has been a significant increase in use of wood pellets in residential and commercial scale boiler systems within New York State, such an increase will lead to increased storage of bulk pellets in homes and buildings. Serious accidents in Europe have been reported over the past decade in which high concentrations of carbon monoxide (CO) have been found in bulk pellet storage bins. Thus, additional exposure data for CO in pellet bin storage areas are needed to assess the potential hazards. Using calibrated CO sensors, continuous CO measurements were made from the spring 2013 to spring 2014 in a number of wood pellet storage bins in New York State. The CO sensors, in some cases, in conjunction with sensors for CO_2, O_2, relative humidity, and temperature, were installed in a residential basement, an external storage silo, and several boiler room storage areas in schools and a museum. Peak concentrations in these pellet storage locations ranged from 14 ppm in the basement residence to 155 ppm inside the storage silo at a school. One-hour CO concentrations in the boiler rooms were typically 10−15 ppm. The measured concentrations were compared to regulatory standards of 50 ppm and recommended guidelines of 35 and 9 ppm for work and nonworking environments, respectively. The concentrations at the three locations in the middle school never exceeded the 35 ppm guideline. At the museum, the CO concentrations after pellets delivery did reach a maximum of 55 ppm for a 1-h average. However, high concentrations remained for only 4 days due to natural ventilation in this storage location. Storage areas for pellets must be considered confined spaces and require appropriate entry procedures. As the biomass heating with pellets becomes more prevalent, improved designs for storage bins must be considered to minimize the risk of exposure to CO to building occupants.

■ INTRODUCTION

The rise in fossil fuels costs, the need of energy security, and the desire for clean and renewable energy has stimulated the use of alternative heating fuels. Wood pellets are a biofuel that has gain popularity in many places, such as the Northeastern United States.[1,2] The New York State Energy Research and Development Authority (NYSERDA) has initiated multiple demonstration projects to introduce advanced wood-pellet fired boilers into New York State (NYS) including a European-built 150 kW (500 MBTU/h) wood pellet boiler installed at the Walker Center at Clarkson University and a 500 kW (1.7 MMBTU/h) installed at the Wild Center Museum in Tupper Lake, NY.

Storage of bulk wood pellets can involve a variety of storage bins. Many pellet bin configurations have been developed, including bins within the structure and bins external to the building. Supporting Information Figure S1 shows an external pellet silo. Interior bins can be configured in a number of ways as shown in Supporting Information Figures S2−S6. The most common storage bin designed for homes is the fabric storage bins (Supporting Information Figure S6). The best storage bin for a building depends on the budget, space available, among other factors. The bins can range in size according to the consumer needs from 3 tons to more than 100 tons.

The storage of wood pellets in confined spaces produce various gases including carbon monoxide (CO), carbon dioxide (CO_2), methane (CH_4), and volatile organic carbons (VOCs)[3−6] that will accumulate in the air and can potentially reach toxic levels. Fatal accidents have been reported on maritime vessels providing bulk transport of wood pellets[7,8] and in large pellet storerooms of private households in Europe.[9] Thus, it is important to understand the potential health threat posed by stored pellets.

Elevated levels of CO can cause serious illness and death of exposed people. The adverse health effects associated with CO vary with its concentration and duration of exposure.[10,11] The most important health effects associated with exposure to CO are due to its strong bond with the hemoglobin molecule, forming carboxy-hemoglobin (COHb). COHb impairs the oxygen-carrying capacity of the blood, putting a strain on tissues with high oxygen demand, such as the heart and the brain.[10−13] Health effects observed from exposure to 10−2500 ppm of CO include early onset of cardiovascular disease, behavioral impairment; decreased exercise performance, reduced birth weight, sudden infant death syndrome, increase daily mortality rate, serious headache, dizziness, nauseas, unconscious, convulsions, and death, among others.[10,11,14] In order to protect peoples' health, a COHb level of 2.5% should not be exceeded.[10] Recommended guidelines for homes are 9 ppm of CO averaged over 8 h as proposed by American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) and the World Health Organization (WHO). The National Institute of Occupational Safety and Health (NIOSH) guideline for work environments is 35 ppm over 8 h

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Table 1. Sites of the Pellets Bin in Use, Theirs Sizes, Time of Monitoring, Description of Place Being Monitor, and Types of Sensor Being Deployed to Monitor Pellet Emissions

No.	site	storage capacity (ton)	time of monitoring	sensor location	monitoring sensors
1	residential basement at Massena	10	March 5, 2013–April 18, 2014	basement near storage bag	CO
2	Malone Middle School, Malone	room capacity of 100, filled with 20	Sept. 27, 2013–April 23, 2014	air flow from room bin (air duct)	CO and PM
			Feb. 27, 2013–April 22, 2013; Oct. 2, 2013–April 23, 2014	hallway near bin	CO
			Feb. 27, 2013–April 22, 2013; Sept. 27, 2013–April 23, 2014	boiler room	CO
3	Saranac Lake Petrova Elementary School, Saranac Lake		March 27, 2013–April 22, 2013	boiler room	CO
		20	March 27, 2013–April 22, 2013; Aug. 27, 2013–April 22, 2012	silo	CO
4	Wild Center Museum, Tupper Lake	30	Sept. 27, 2013–Oct. 22, 2013	pellet bin	CO, CO_2, O_2, RH, and T
5	Walker Center, Clarkson University, Potsdam	10	Sept. 21, 2013–April 25, 2014	pellet bin	CO, CO_2, O_2, RH, and T
6	Energy Cabin, Clarkson University, Potsdam	3	Sept. 18, 2013–April 23, 2014	pellet bin	CO, CO_2, O_2, RH, and T

while the Occupational Safety and Health Administration (OSHA) has established a standard of 50 ppm over 8 h that is not to be exceeded. More detailed information on CO health effects and recommended maximum exposures is provided in the Supporting Information and Table S1.

The CO generation in bulk storage bins, such as the ones in this study, is the result of an oxidation process of the wood pellets that produces CO, CO_2, CH_4, and VOCs.[4,5] The nature of this process still needs to be determined. Prior studies found the process to be mass, temperature, moisture content, and volume dependent.[5−7] In addition, it has been hypothesized that the mechanism of formation of VOCs is due to the oxidation of fatty/resin acids by observing the emitted amount of aldehydes and ketones decreased by 45% during storage.[15] However, that study does not relate any of these carbonyl concentrations to the CO emissions, raising the question of how the CO is formed. Other research has related the CO emissions to microbial activities in the wood pellets and wood chips.[9,16] However, wood pellets are dried at around 500 °C in the production process and have a low water content (<7%) that creates unfavorable conditions for microbiological activity.[9]

In an attempt to understand the emission rates of stored wood pellets and be able to predict indoor concentrations, Fan and Bi studied the kinetics of CO off-gassed from stored wood pellets in small containers and developed a model that predicts the CO emissions per unit mass of stored pellets.[17] While Fan and Bi's model provided a framework for understanding the emission rates, validation of the model is still necessary particularly since the only data they employed was for softwood pellets. Models can never account for all aspects of an in situ situation (actual environments). Hence, field sampling is necessary to characterize the actual airborne CO concentrations in in-use systems. The purpose of this study is to characterize the potential exposures of CO from bulk storage pellets used in different typical U.S. storage systems, including in-use bins in schools, work places, and a residence.

EXPERIMENTAL DETAILS

Sampling Sites. Six different pellet bins were monitored during this study: the Walker Center and Energy Cabin at Clarkson University, the Wild Center Museum in Tupper Lake, NY, Malone Middle School in Malone, NY, Petrova Elementary School in Saranac Lake, NY, and a residential basement in Massena, NY. In several cases, multiple monitors were deployed to assess leakage of CO from the storage bins into normally occupied spaces. Table 1 summarizes the specific sites together with the monitoring system deployed.

Monitoring Systems. Sensor systems were constructed from commercially available gas sensors as described in Table 2 and the Supporting Information for this report. Two types of systems were developed. One system included only a CO sensor and in the other, CO, CO_2 and O_2 as well as temperature (T) and relative humidity (RH) were measured.

The systems were then deployed into the various locations monitored. At the Petrova Elementary School, the pellet storage system is a silo external to the building with 20 tons capacity. The sensor was connected at the end of the pneumatic delivery tube as shown in Supporting Information Figure S1.

For Malone Middle School, the CO and particulate matter (PM) sensors were placed in an air duct constructed to ventilate the storage bin at this site. The air in the duct should be representative of the concentrations within the bin. Supporting Information Figure S2 shows the CO and PM monitor connected into the side of the duct.

The more complete sensor systems were placed into the Walker Center pellet bin with 10 ton capacity (Supporting Information Figure S3), the container that serves as the pellet bin at the Wild Center with 30 ton capacity (Supporting Information Figure S4) and into the Energy Cabin pellet bin at Clarkson University with 3 tons capacity (Supporting Information Figure S5).

A monitor was placed in the basement of a home heated with a wood pellet boiler (Supporting Information Figure S6). The pellets are stored in a 10 ton gas permeable bag storage system. This bag system is a commercially available storage system that has been commonly installed in homes although more commonly as a 3 ton system rather than this 10 ton facility.

The monitoring systems came online at various times. The Massena, Saranac Lake, and Malone sites started in spring 2013. Most locations consumed their pellets by the end of April 2013 so there were little or no pellets in most of the storage facilities over the summer, so no monitoring was performed. New pellets were obtained at the end of the summer 2013 with different locations staring their monitoring (Tupper Lake and Potsdam sites) for the first time during summer 2013 and getting deliveries at different times until April 2014. The sampling dates are provided in Table 1. All of the CO concentration presented here are 1-h averages in order to understand the dynamics of the CO build up in storage bins. However, the 8-h guidance values are shown for reference since they provide conservative values. The 8-h average values that exceed the guidance levels are discussed since most of the sampling sites are occupational spaces. Only the Massena residence and the Energy Cabin at Clarkson University are nonworking environments.

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Table 2. Sensors and Their Respective Performance Used for This Field Study

sensors ID	measurement	detection limit	accuracy	reproducibility	range of detection
Vaisala Model HMT120[a]	temperature and relative humidity	%RH: 0 (4 mA) T (°C): −50	0−90%: ±3.0%RH 90−100%: ±4.0%RH −40 to +0, +40 to +80 °C: ± 0.4	±2%RH for 2 years. T (°C): not reported	%RH: 0−100 T (°C): −40 to 80
City Tech T3E/F[b]	CO (ppm)	4−20 mA d.c. 0.10 ± 0.02 μA/ppm	<9 ppm equiv.	linear range, 1 ppm	0−500
T7OXV CiTiceL[b]	% O_2	4−20 mA d.c., (0.0 ± 0.5)%, just accounting for the maximum error	maximum error in the 0−25% range is 0.5% at around 10% O_2	linear range, 0.1% vol	0−25%
IRceL Evaluation Kit[b]	%CO_2	0−1 V, 0%	−20 °C TO +50 °C: ± (0.1% vol CO_2 + 4% of concn.)	< ± 0.075% CO_2 (at all range) < ± 0.003% CO_2 (at zero)	0−5%
AEROCET 831 Aerosol Mass Monitor[c]	PM1, PM2.5, PM4 and PM10	0 μg/m^3	±10% calibration aerosol	0.5 μm/0.1 μg·m^3	0−1000 μg/m^3 ·1 min

[a]http://www.vaisala.com/. [b]http://www.citytech.com/. [c]http://www.metone.com/particulate-831.php/

■ RESULTS AND DISCUSSION

Massena Residence. The measurements in the Massena residence started on March 5, 2013 as shown in Figure 1a). Based on health guidelines presented in Supporting Information Table S1, 8-h exposure guidance levels of 9 and 35 ppm, respectively, are highlighted with dash−dot lines in all of the presented results. An initial spike of ∼60 ppm of CO was observed. Subsequently, the values decreased to less than 9 ppm (ASHRAE threshold limit) for the rest of the spring 2013 heating season. In June, a rise in CO was observed although there was only a small quantity of pellets (∼less than a ton) in storage as reported by the owner. Thus, the origin of this peak is not understood. The sensor was tested and recalibrated and reconnected on Aug. 2. Fresh softwood pellets were added to the storage bin in August. Figure 1b highlights this period. Concentrations above 9 ppm were observed, but as reported by the house owner, ventilation was applied because of the intense VOC odors emitted by the pellets. The concentration of CO decreased to below 9 ppm in less than 3 days and throughout the winter heating season with the measurements ending on April 18, 2014. Clearly, the ventilation (natural and/or mechanical) together with the difference in temperature (inside and outside the storage) reduced the concentration of CO as suggested by Emhofer.[18]

Petrova Elementary School. At the Petrova Elementary School in Saranac Lake, the storage bin is an outdoor silo (Supporting Information Figure S1) with a CO sensor at the bottom. In the spring of 2013, CO was monitored at the silo and at the containerized boiler room, and then, from the end of August 2013, only the silo was monitored. The monitoring at two sites was performed to check for leaks from the silo into the boiler room.

Figure 2 shows a 1-h CO value of approximately 20 ppm in the boiler room (maximum of 14 ppm for 1-h and 9 ppm for 8-h average), below the occupational guidelines, and up to approximately 155 ppm in the silo that is well above the guidelines and standards. By April 15, 2013, most of the pellets had been consumed and the concentrations returned to background conditions (<5 ppm). In the summer of 2013, the sensors were recalibrated and installed in just the silo. New pellets were delivered in October 2013. Concentrations at the silo rose to approximately 50 ppm in average, and only in one occasion reached to approximately 150 ppm. The values might be lower than previous heating season because of colder condition or pellets had an opportunity to age before they were delivered to the site. However, clearly enclosed silos such as this one need to be treated as confined spaces as per OSHA regulations if maintenance is required.

Malone Middle School. The Malone school uses the space in the basement that had been the coal bin for pellet storage. This bin had an active ventilation system producing a flow of 300 cubic feet meter. Three CO sensors were installed in this facility along with a particulate matter monitor (PM). One of the CO sensors was placed in hallway near the entrance door to the bin. A second sensor was deployed in the area around the two 1 MMBTU/h boilers. The third CO sensor and the PM monitor were installed in the outlet duct for the ventilation system (Supporting Information Figure S2). Data were collected in the spring of 2013 at the hallway and boiler room only. CO concentration increases as spikes between 10 and 15 ppm during the month of April for data averaged for 15 min and 1 h. The spikes lasted for less than an hour. It is likely

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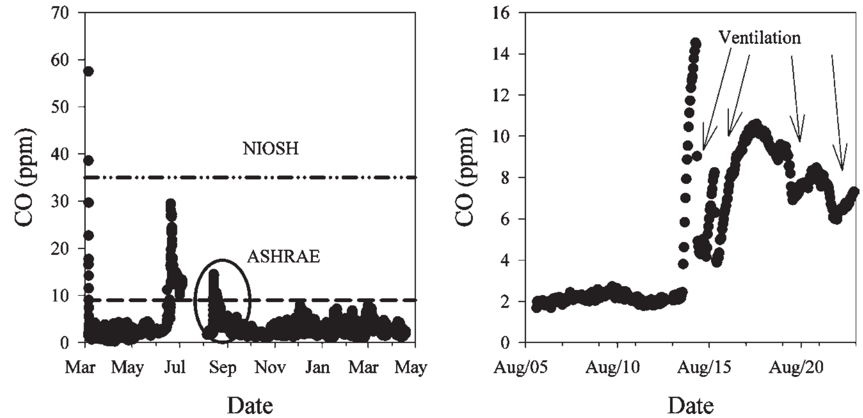

Figure 1. (a) CO measurement at the Massena Residence Basement (March 2013−April 2014). Dashed line refers to the ASHRAE limit (9 ppm of CO) and dotted line to NIOSH guidance level of 35 ppm of CO. (b) Time series (August 2−23, 2013) of CO measurement enlarged (inside the circle) from part a).

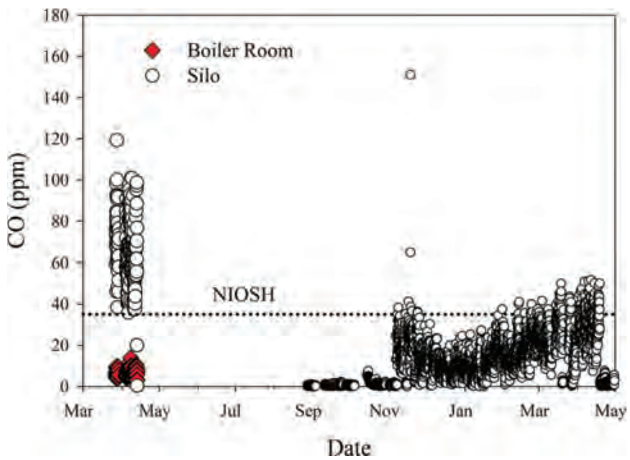

Figure 2. Time series of CO measurements inside the boiler room and pellet silo located outside of the Petrova Elementary School.

that the high CO concentrations were due to other causes (gasoline powered equipment brought in from outdoors and still operating) and not due to the storing of wood pellets.

The sensors were returned to the laboratory for calibration and reinstall at the end of September and beginning of October 2013. Figure 3 shows the 1-h average CO concentrations at the three locations in the school basement. Peaks of CO were observed in the month of October that were reported as a result of storing and operating various gasoline-powered grounds keeping equipment in the hallway where the motors might be running as they moved them in from outside the building.

There were no pellets in the bin until November fourth when the first delivery of the season was made. At the hallway door, there are 6 peaks that correlate with high concentrations of CO in the air duct ventilation, but they were only spikes for short periods of less than 5 ppm. The pattern in boiler room from November until December suggest that the two boilers were leaking CO or that there might be a leak from storage bin to the boiler room. However, concentrations never exceeded the NIOSH recommendation (35 ppm) and OSHA limits (50 ppm) for occupational space. From the end of January, these concentrations diminished to well below guideline levels.

Since the delivery of the wood pellets generate combustible wood dust, it was imperative to measure the concentration of

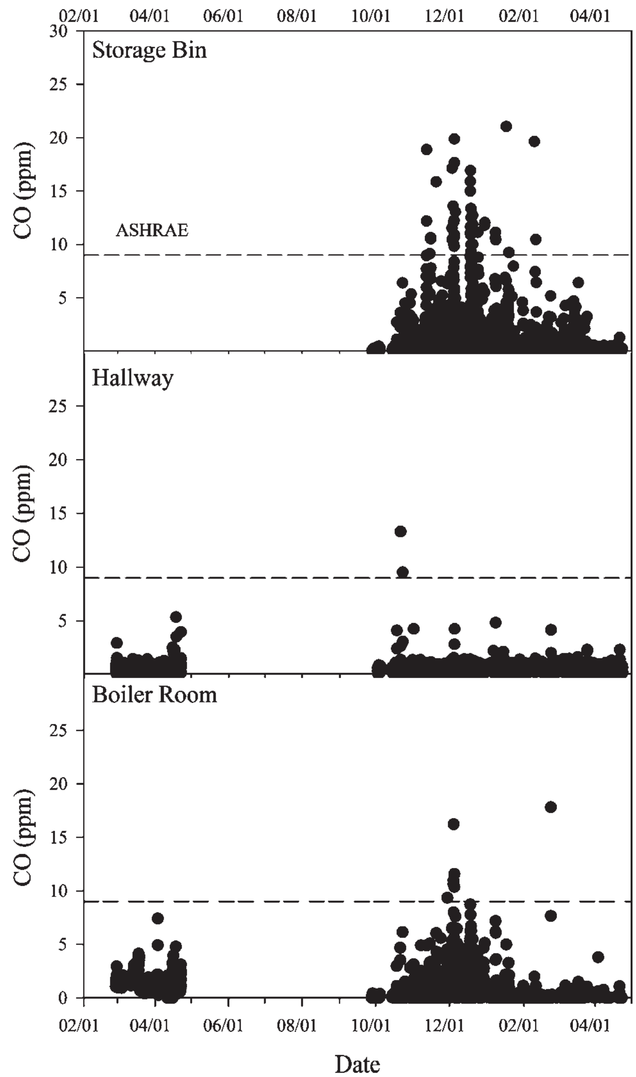

Figure 3. Time series of CO measurements at three locations (storage bin, hallway, and boiler room) in Malone Middle School.

particles generated at this site. One of the major contributors to the risk of an explosion is the size of the dust particles. In general, the finer the combustible particle is the higher the risk

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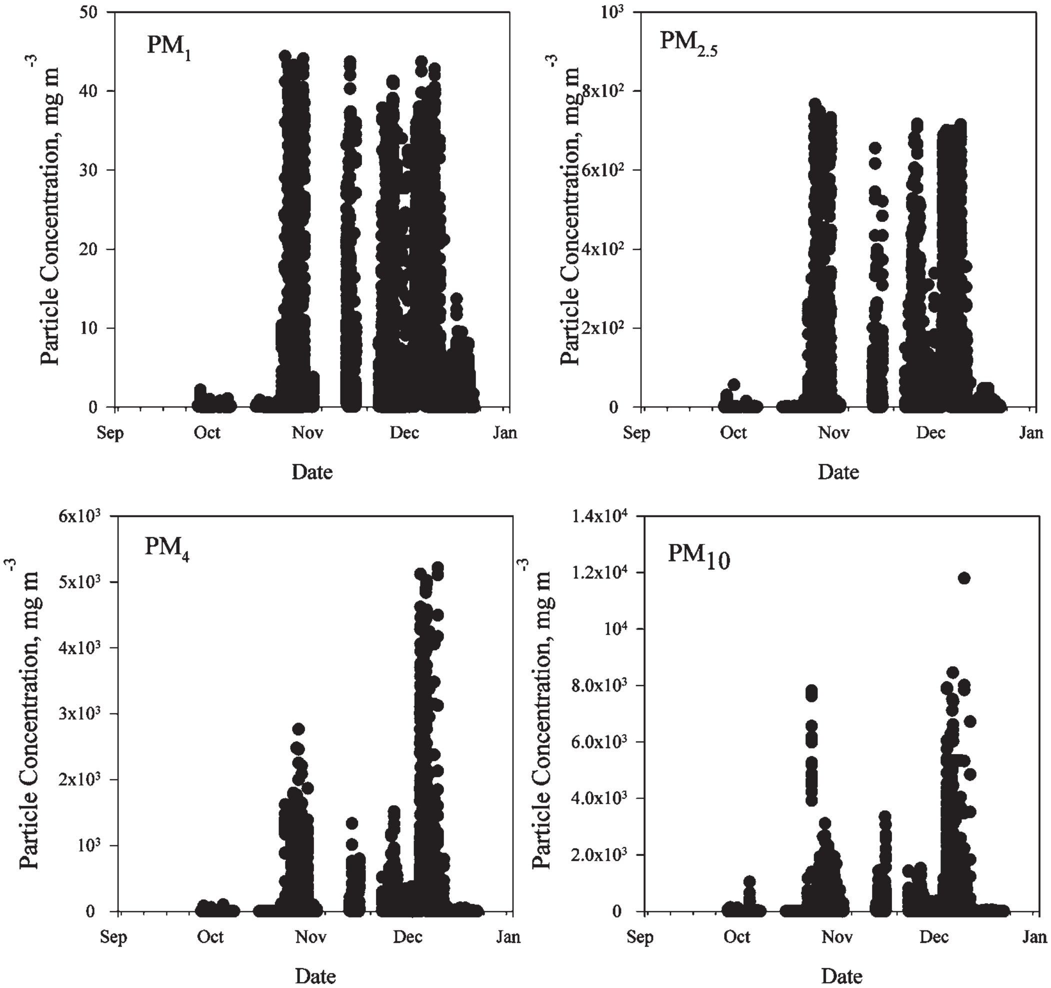

Figure 4. Particle concentration in the air duct exhaust at the storage bin in Malone Middle School.

of explosion. The National Fire Protection Association (NFPA) defines wood dust as a deflagrable (combustible dust) wood particulate with a median diameter of 420 μm or smaller, having a moisture content of less than 25%. The level of explosion limit for wood dust suspended on air is 40 g m^{-3} (4000 mg m^{-3}). Results of concentration of particles are shown in Figure 4. The sensor started having problems after mid-December, so these results are not presented. The data from November until mid-December clearly shows that the concentration of any of the particle sizes measured do not exceeds the concentration of airborne particles in the safety standards established (Max: PM10 ~ 12 000 μg m^{-3}; PM4 ~ 5000 μg m^{-3}; PM2.5 ~ 750 μg m^{-3}; and PM1 ~ 45 μg m^{-3}).

Wild Center. Background sampling started at the beginning of September, but there were unexpected spikes on all sensors that suggested an interference with the signal. The first pellets delivery was on Sept. 29, 2013. Data presented here is ranges Oct. 1–22, 2013; after this period, the system continues with interferences. Figure 5 shows the results of the five sensors for about 20 days in Oct. 2013. CO concentrations reached a maximum 1-h average of around 55 ppm. The 8 h average value reached 35 ppm that is the NIOSH guideline, but it did not exceed the OSHA regulatory standard of 50 ppm. The elevated concentrations only persist until Oct. 4 (around 5 days). These data show a relationship among temperature, CO, and CO_2 that suggests that with an increase in temperature CO and CO_2 will increase the rate of off-gassing from the pellets. The maximum peaks of temperature match with the minimum peaks of %RH and %O_2, suggesting that the off-gassing occurs with a depletion of oxygen and lower RH. This result has been observed in a previous field study of larger scale storage bins (silo) were higher temperatures shows higher emission factors of CO and lower concentration of O_2.[19] The occasionally high temperature in the pellets bin appears to be a leak of heat from the solar-thermal panels on the side of the container. Nevertheless, the O_2 (21%–20.5%) and CO_2 (700–450 ppm) concentrations are quite constant over the rest of the sample period (Oct. 5–22). Thus, the limited decomposition of the pellets and the natural ventilation into this bin resulted in relatively constant atmospheric compositions.

Walker Center. This location has the first imported high-efficiency wood pellet boiler in the Northeastern U.S.A. Walker had a pellet delivery (softwood) on Nov. 4, 2013. The measured values are shown in Figure 6. CO concentrations rose to approximately 40 ppm. Concentrations remained above 10 ppm for 7 days (Nov. 4–11), and after Nov. 17, the concentration dropped to background conditions (<2 ppm). During these 7 days, the temperature showed a weak relationship with the CO and CO_2 off-gassing, in contrast with the observations from the Wild Center (Figure 5).

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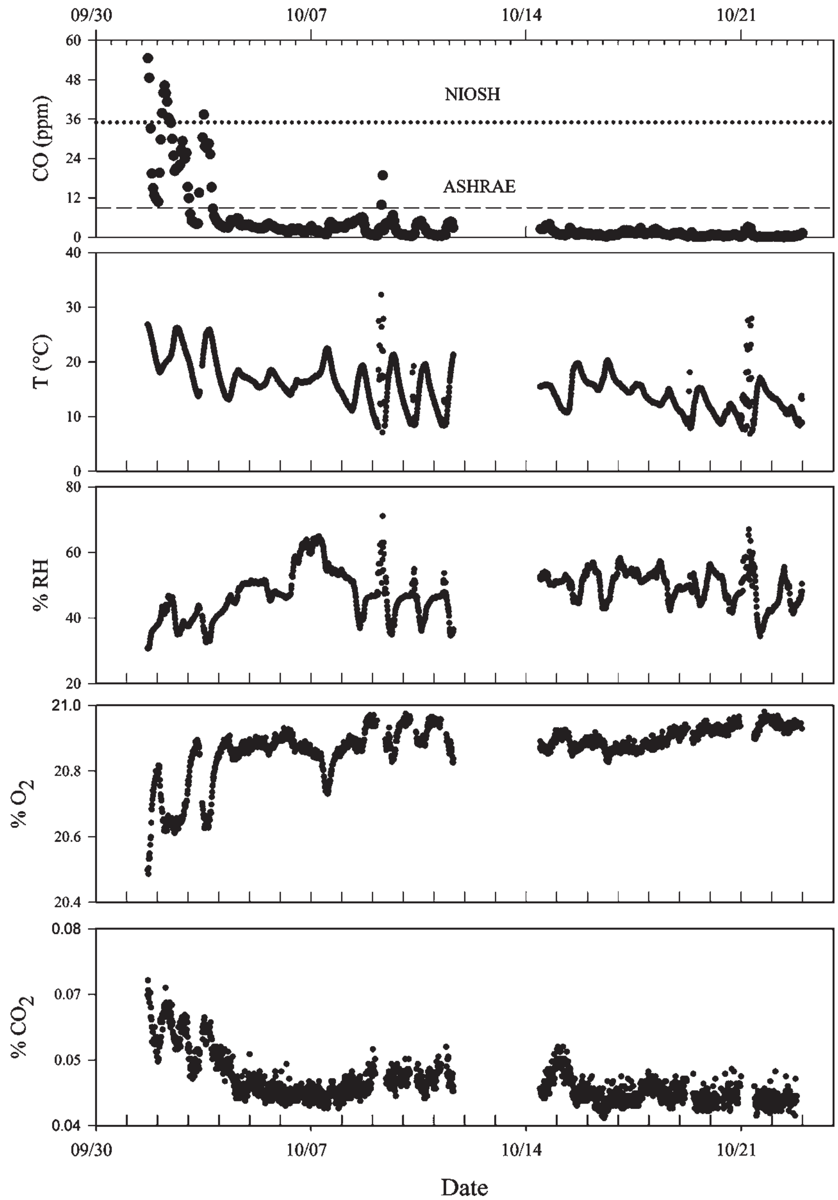

Figure 5. Time series for CO, temperature (T), relative humidity (%RH), $\%O_2$, and $\%CO_2$ in the Wild Center Museum in Tupper Lake, NY.

However, the lower values of RH (from 55 to 25%) and $\%O_2$ (from 20.0 to 19.8%) align with the peaks of CO and CO_2 (600−700 ppm). For O_2, this behavior can be due to the oxidation of the wood pellets. The water vapor variations may be attributed to the infiltration or ventilation in the building, while CO and CO_2 are being produced within the storage bin. The observed results do not suggest that water vapor reduction is attributable to water uptake by the pellets based on a moisture content analysis of the pellets in this storage bin after 4 months that showed a value of 4.5% (manufacturer's specifications for fresh pellets <5%).

During the winter, mid-December to the end of January, all sensors responded with ordinary spikes or off sets, especially the temperature sensor (range: 20−60 °C). This behavior might be the result of a malfunctioning room heater inside the bin that activates at low temperatures to ensure that the pellets do not freeze. In addition, there is an increase in CO (<10 ppm) and CO_2 (0.12%) concentrations at the end of February until the beginning of March that correspond to the starting of the boiler during this limited period. Because of modifications to the boiler system that were being performed, the boiler was not operated during this heating season at any other time. The results presented in the Walker Center shows that this site is not as well ventilated as the Wild Center resulting in a longer period for the CO to dilute. However, the fresh pellets delivered in November generated sufficient CO to exceed the occupational guideline value. Therefore, this storage bin has been defined as a confined place.

Energy Cabin. The Energy Cabin is the smallest bin in this study. The delivery of pellets is performed manually from 40 pounds bags that had been stored and placed outside the cabin generally for more than 2 weeks of storage. Figure 7 shows very low values of CO (<5 ppm) during the entire sampling period except for April when values reached approximately 10 ppm, above the 9 ppm of ASHRAE guideline. This CO off-gassing is followed by an increase in temperature in the bin that coincides

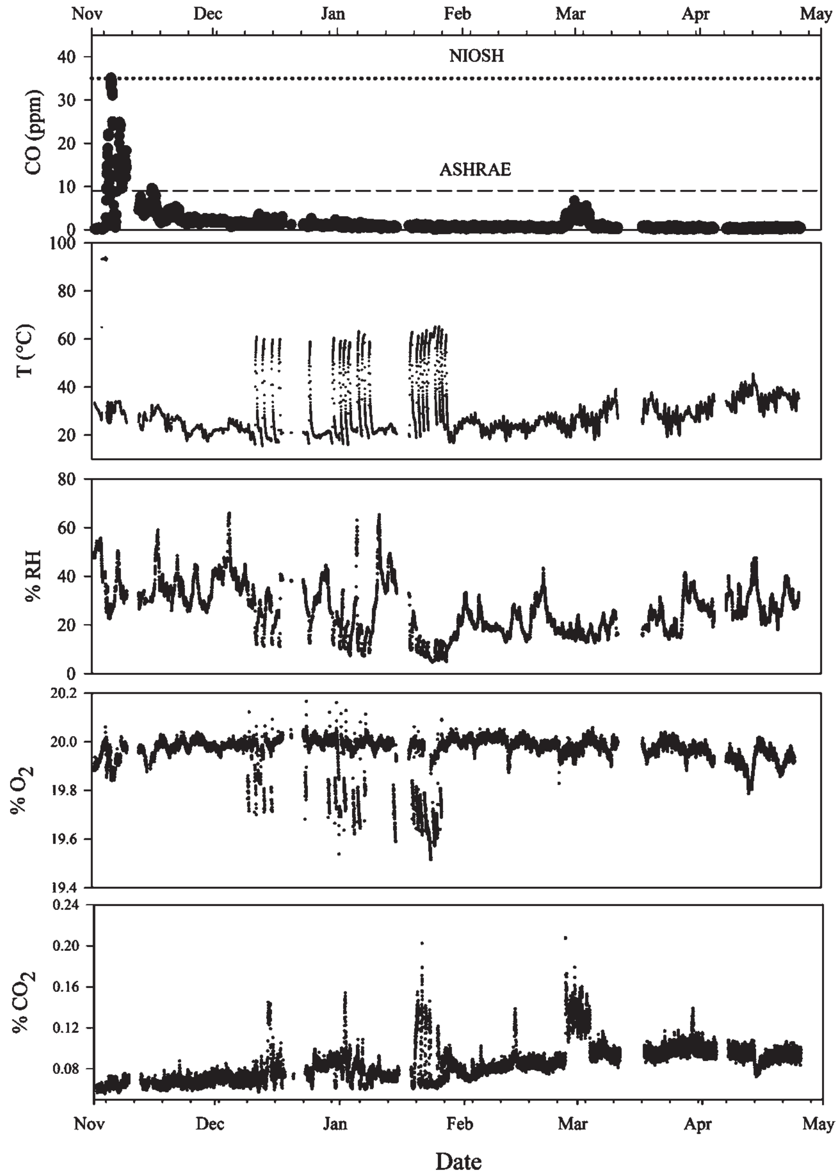

Figure 6. Time series for CO, temperature, relative humidity, $\%O_2$, and $\%CO_2$ in the Walker Center at Clarkson University in Potsdam, NY.

with the minimum RH and O_2 values during this period. In general, there is a weak relation between the CO off-gassing and the temperature, % RH, % O_2, and CO_2 over the entire period at this site. CO (<10 ppm), O_2 (21%), and CO_2 (450 ppm) concentrations are relatively constant over the entire period probably because the wood pellets had an opportunity to age before they were placed inside the bin.

The results presented here for the six different small-scale pellet storage bins show, in general, that the concentration were not as high as reported by Gauthier[9] and Emhofer[18] with all of the concentrations being below 200 ppm. This behavior might be in part due to the intrinsic ventilation of all the sites under study and the chemical composition and quality of the wood pellets manufacturer here (low ash and moisture content). Prior studies showed that commercial wood pellets produce less CO and PM than other solid fuels.[20] Also, the data show that CO levels increased only during the days immediately following the delivery of fresh pellets. It then decreases slowly to background values. Emhofer[18] concludes that storage rooms should not be entered within 4 weeks after pellet deliver, but our data suggest a significantly shorter time, more on the order ~1 week, may be acceptable. However, measurements of the CO concentrations should be made before entry.

Natural ventilation has been recommended by Emhofer,[18] such as utilizing caps on the filling tubes that allow air exchange between the storeroom and the surroundings to reduce CO concentrations. However, caution should be taken with respect to cross ventilation and differences in temperatures between the storeroom and surroundings. Also, as shown in our results at Massena residence, by opening windows (natural ventilation) and installing an exhaust fan (mechanical ventilation); the CO and VOCs (odors) were readily reduced.

■ CONCLUSIONS

This field study demonstrated that there is off-gassing of sufficient CO from stored pellets to represent a hazard that needs to be adequately addressed. Although no concentrations that would directly produce short-term extreme health effects

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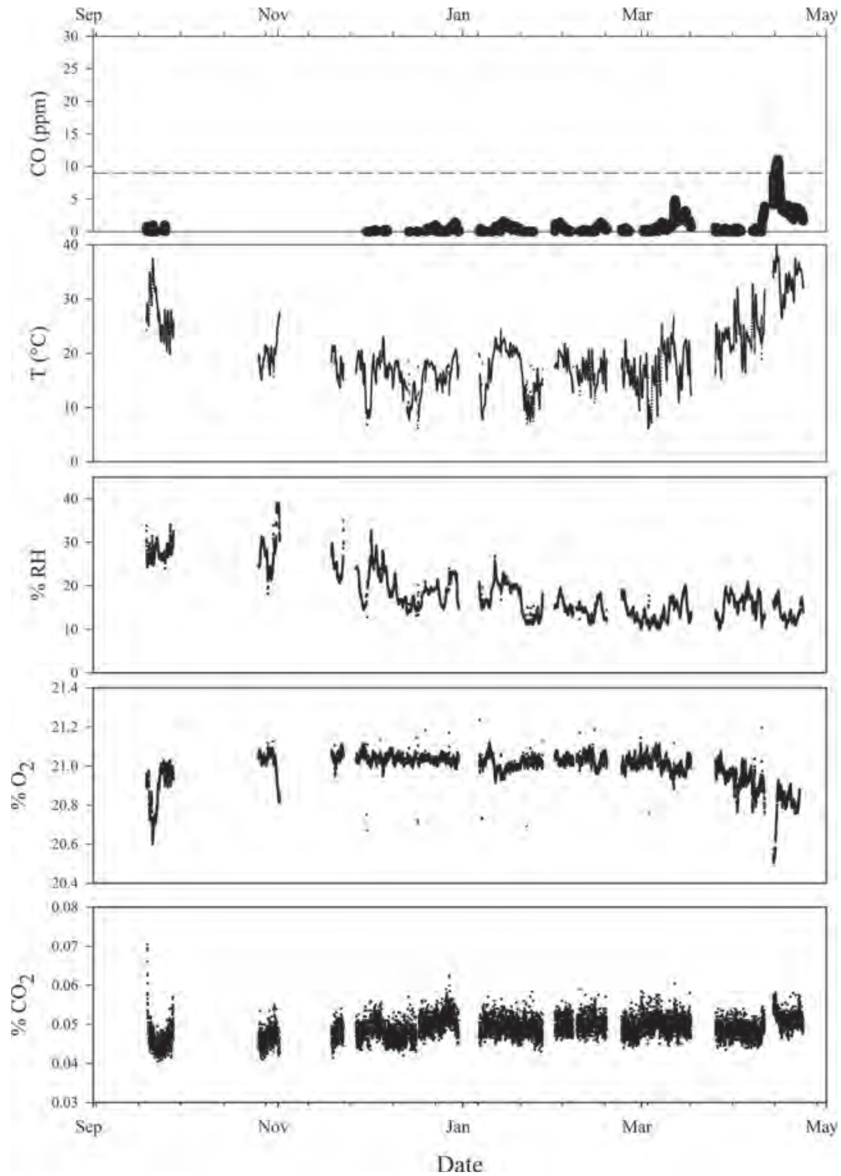

Figure 7. Time series for CO, temperature, relative humidity, $\%O_2$, and $\%CO_2$ in the Energy Cabin at Clarkson University in Potsdam, NY.

were observed, concentrations above levels set as exposure guidelines of 35 ppm in occupational settings and 9 ppm in homes were exceeded, especially immediately after pellet delivery. The concern is that as biomass boilers become more widely used, a broad array of homes with varying levels of natural ventilation will install pellet heating systems with inside the structure storage bins. In energy efficient (low air exchange rates) homes, this situation could produce unacceptable CO concentrations. These results raise a safety question regarding how pellets storage bins are designed and sited. Active and natural ventilation clearly reduces the average concentrations, although higher values were still occasionally observed. Pellet aging clearly reduced the amount of observed CO. There was a clear positive relationship with the off-gassing of CO and CO_2 and temperature where higher temperatures produce higher off-gassing production. Thus, bin temperatures need to be considered when designing or choosing a pellet storage bin.

■ ASSOCIATED CONTENT

Ⓢ Supporting Information

Additional information regarding the health effect and exposure limits of CO, and a detail description of the experimental setup with respect to the sensor systems and sampling sites. This material is available free of charge via the Internet at http://pubs.acs.org/.

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Notes

The authors declare no competing financial interest.

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FACTSHEET
AIR EMISSIONS

July 2011

Wood Pellet Manufacturing Facilities

Under the *Environmental Management Act* (EMA), all high-risk, and some medium-risk, industrial operations in British Columbia are required to have government authorization[1] prior to discharging emissions or waste to the environment. These authorizations are legally enforceable and are subject to pollution preventing conditions and criteria. Authorizations for new, or significantly modified, wood pellet manufacturing facilities are developed based on the Ministry's Guideline for Emissions from Wood Pellet Manufacturing Facilities.

The purpose of this document is to summarize key emissions information contained in the Ministry's Guideline for Emissions from Wood Pellet Manufacturing Facilities.

What are guidelines used for?

Guidelines provide assistance to directors, appointed under EMA, when preparing and issuing authorizations for industrial facilities.

What are wood pellets?

Wood pellets are a type of wood fuel, usually produced as a by-product of sawmilling and other wood transformation activities. The pellets are generally made from compacted sawdust and shavings. The sawdust and shavings may be blended with smaller amounts of processed bark, hog fuel, processed standing dead timber and processed landing debris.

Wood pellets are usually 6 to 8mm in diameter and 2cm in length. However, they can be manufactured in other configurations, such as pucks or logs.

[1] Authorizations may include permits, approvals, operational certificates or regulations. For more information on waste discharge authorizations, see: http://www.env.gov.bc.ca/epd/waste_discharge_auth/index.htm

How are wood pellets produced?

Wood pellets are normally produced by compressing dry wood materials to a desired size. First, raw wood materials are passed through a hammer mill and dryer to achieve consistent moisture content. Then, the dry wood particles are fed to a press. In the press they are squeezed through a die having holes of the required size.

The high pressure causes the temperature of the wood to increase greatly, causing the lignin to plasticize slightly and form a natural 'glue' that holds the pellet together.

How are air emissions produced during the wood pellet manufacturing process?

Air emissions may be produced during the wood pellet manufacturing process from sources such as dryers, coolers, pelletizers, hammermills, and conveyors. Fugitive emissions are also released during the handling, storage and transportation of the materials.

What are the emission limits?

The Guideline for Emissions from Wood Pellet Manufacturing Facilities outlines emission limits for total particulate matter (TPM) and fugitive emissions.

The guideline is based on best achievable technology and describes requirements for both new and significantly modified existing facilities.

New Facilities

The guideline stipulates that all new facilities should install control technologies that will at minimum, achieve the emission limits listed in Tables 1 and 2.

Existing Facilities

The guideline specifies that existing facilities that have undergone significant modifications are expected to meet the applicable monitoring and control requirements listed in Tables 1 and 2. Existing wood pellet manufacturing facilities that have not been significantly modified may continue to operate in accordance with the limits of their current permit.

When has a facility been "significantly modified"?

A facility has been significantly modified if it has undergone a physical or operational change resulting in an increase of 10% or more in the volume of discharge or the total amount of any contaminant released to the environment, based on authorized values.

What is Total Particulate Matter (TPM)?

Particulate matter refers to tiny solid or liquid particles that float in the air. TPM consists of filterable and condensable particulate matter. Filterable particulate matter includes all PM_{10} and $PM_{2.5}$ emissions, where PM_{10} and $PM_{2.5}$ are comprised of particulate matter with aerodynamic diameters less than 10 and 2.5 micrometers respectively. Condensable particulate matter is any material that is not particulate matter at stack conditions, but condenses and/or reacts to form particulate matter immediately after discharge from the stack.

Why are TPM emissions limited?

TPM emissions are limited because they can have negative impacts on local air quality and human health. $PM_{2.5}$ is known to cause aggravation of respiratory and cardiovascular disease, reduced lung function, increased respiratory symptoms and premature death. TPM also impairs visibility, affects climate and can damage and/or discolour structures and property.[2]

TPM emission limits

The TPM emission limits and monitoring frequency for wood pellet manufacturing facilities outlined in the Ministry's guideline are summarized in Table 1.

In addition to emission limits listed below, facilities should strive to maintain opacity below 10%. Opacity can be thought of as the amount of light blocked by TPM.

How frequently should TPM emissions be monitored?

The monitoring frequency listed in Table 1 should be followed except in the case of the implementation of new process units. For new units, an operator should undertake baseline monitoring (stack testing) within six months of start up. Thereafter, the operator should continue monitoring at the prescribed monitoring frequency stated in Table 1.

What are fugitive emissions?

Fugitive emissions are unintentional or incidental releases. The significance of fugitive emissions at wood pellet manufacturing facilities may vary depending on the type of raw material, method of transportation and specific process used in the production of the wood pellets. Major sources of these emissions include raw material handling, raw material storage piles, conveyor transfer points, yard dust, haul road dust and engine exhaust.

Fugitive emission limits

Table 2 provides a summary of the limits and monitoring and control strategies detailed in the guideline to mitigate fugitive emissions.

What are the effluent handling requirements?

If the applied emission control technology uses a solution, such as water, any resulting effluent should be delivered to an approved facility for treatment or disposed of in a manner approved by a director.

[2] More information on how air quality affects human health can be found in the State of the Air Report 2010 at: http://www.bc.lung.ca/airquality/documents/StateOfTheAir2010webrevised.pdf

Are there other considerations?

The information contained in the Ministry's guideline documents are just one of the main pieces of information taken into consideration by the director when approving an authorization. Additional sources of information considered by the director may include environmental impact assessments, local air shed plans, other guidelines and stakeholder input. The director also has the authority to impose emission standards other than those that are recommended in these types of guidelines.

For more information, contact the Environmental Standards Branch at envprotdiv@victoria1.gov.bc.ca

Or, consult our website at http://www.env.gov.bc.ca/epd/industrial/pulp_paper_lumber/pdf/moe-pellet-industry-051410.pdf.

Table 1: Total Particulate Matter Emissions Limits for Wood Pellet Manufacturing Facilities.

Source	Limit[a] (mg/m^3)	Monitoring[b]
Dryer Exhaust	60[c]	Quarterly
Pellet Cooler Exhaust	115[e]	Annual
Other Plant Processes[d]	20[e]	Annual

(a) Concentration limits measured at standard conditions of 20°C, 101.3kPa, dry gas.
(b) All monitoring for this guideline must be carried out in accordance with the latest version of the: *British Columbia Field Sampling Manual – For Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment and Biological Samples.*
(c) The dryer exhaust limit includes filterable and condensable particulate matter. It is an interim two year limit. This limit may be adjusted as more data becomes available.
(d) Other plant processes may include pelletizers, hammermills, storage, screening and conveyors.
(e) Includes filterable particulate matter only.

Table 2. Fugitive Emissions from Raw Material Storage Piles and Road Dust

Source	Limit	Monitoring and Control
Sawdust and Wet Material	No Visible downwind carry over	Visual monitoring with controls as required including: limiting pile heights and limiting exposed pile faces to high winds (e.g. wind breaks; vegetative or screens). Include meteorological controls and planning.
Planer Shavings and Dry Material		As above, plus three sided and covered containment. Prevent vehicle traffic from grinding material finer.
Onsite Haul Roads		Dust suppression in dry season or paving.

Carbon Monoxide Off-Gassing From Bags of Wood Pellets

Mohammad Arifur Rahman, Alan Rossner, Philip K Hopke

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Abstract

Wood pellets are increasingly used for space heating in the United States and globally. Prior work has shown that stored bulk wood pellets produce sufficient carbon monoxide (CO) to represent a health concern and exceed regulatory standards for occupational exposures. However, most of the pellets used for residential heating are sold in 40-pound (18.1 kg) plastic bags. This study measured CO emission factors from fresh, bagged-wood pellets as a function of temperature and relative humidity. CO concentrations increased with increasing temperature and moisture in the container. CO measurements in a pellet mill warehouse with stored pallets of bagged pellets had 8-h average CO concentrations up to 100 ppm exceeding occupational standards for worker exposure. Thus, manufacturers, distributors, and home owners should be aware of the potential for CO in storage areas and design facilities with appropriate ventilation and CO sensors.

Keywords: bagged-wood pellets, CO off-gassing, emission factors, exposure

Issue Section: Short Communication

Introduction

The worldwide wood pellet market has grown rapidly. Growth rates have been about 10% annually from ~19.5 million metric tons in 2012 to ~28 million metric tons in 2015 (WPAC, 2017). In 2016, the demand for industrial wood pellets was estimated to be ~13.8 million metric tons (WPAC, 2017). However, a problem exists with respect to the safe handling of wood pellets and that is off-gassing of carbon monoxide (CO) and aldehydes into storage bins and shipping vessels (Svedberg *et al.*, 2004, 2008, 2009; Arshadi and Gref, 2005; Hagström *et al.*, 2008; Kuang *et al.*, 2008; Arshadi *et al.*, 2009; Granström, 2010; Soto-Garcia *et al.*, 2015a). Fourteen fatal accidents have been reported since 2002 resulting from the storage or transport of bulk wood pellets (Gauthier *et al.*, 2012).

Soto-Garcia *et al.* (2015a) measured 8-h average CO concentrations up to 35 ppm in a residential basement. Recently, Rossner *et al.* (2017) measured CO concentrations in areas with indoor storage of bulk wood pellets in homes and reported that 6 of the 16 homes tested exceeded the 9-ppm American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE, 2009) guidance concentration on multiple occasions. These studies were performed using bulk wood pellets, but most wood pellets in the United States are sold and distributed in plastic bags containing 10 to 25 kg (Safe Pellets, 2012). To store and transport the bagged pellets, they are normally stacked on pallets with typically a ton per pallet. The bags are perforated to allow for stacking on the pallets without the air in the bags inflating them and thereby preventing effective packing.

After purchasing bagged-wood pellets, consumers often store 1–3 tons of pellets in an inside storage room or in the basement until they are needed. Pellet manufacturers and distributors generate or store large quantities of bagged pellets in warehouses for extended periods before selling them to the customers. The perforations of the plastic bags suggest that the CO generated from these pellets can emanate from the bags, enter the storage area, and result in exposures to building occupants. There is currently no published information regarding the off-gassing of CO from the stored bagged-wood pellets and the resulting impacts on air quality in occupational or residential spaces.

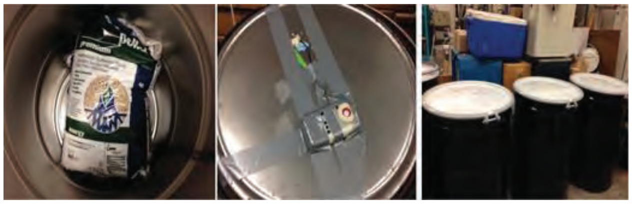
Soto-Garcia *et al.* (2015b) measured the emission factors for CO off-gassing from loose hardwood, softwood, and blended pellets by storing pellets in steel drums and measuring the resulting CO under varying temperature and moisture conditions. Similar results have been obtained in other studies (Kuang *et al.*, 2008; Emhofer *et al.*, 2014). The objective of this present study was to understand the impact of storing bagged pellets by manufacturers, distributers, and consumers by estimating the emission factors for CO off-gassing. CO emissions from bagged pellets were studied as a function of temperature, and relative humidity (RH) that could mimic storage conditions in a warehouse, basement, or garage. Wood type (hardwood, softwood, and blended) affects CO emissions (Soto-Garcia *et al.*, 2015b) and off-gassing from hardwood, softwood, and hardwood/softwood blended bagged pellets was measured. To ascertain if these emissions represented an occupational hazard, measurements were made in the warehouse of an active pellet mill.

Skip to Main Content

Methods

The experiments were conducted in a manner similar to that described by Soto-Garcia *et al.* (2015b) except using 55-gallon (208.2 l) carbon steel drums. The 55-gallon drums were sealed by a metal ring to maintain an airtight fit against a gasket. Two sealed bags of pellets were inserted into each drum for each experiment. A CO monitor (Model ZDL-500, Environmental Sensors Co., USA) and a temperature (T)/RH (EL-USB-2+, EasyLog, LASCAR electronics, China) monitor were attached to the inside bottom of the cover (Fig. 1). The drum was sealed for 20 days to continuously monitor the resulting CO concentrations as well as temperature and RH. The CO monitors measured from ~1 to 2000 ppm and they were calibrated using high purity CO gas (99.999%) diluted with zero air in a Model 146i multigas calibrator and a Model 111 zero air supply (ThermoScientific). Fresh (<2 days after production) bags of pellets (40 lbs, 18.14 kg) were obtained from a local manufacturer. The pellets were typically ~6 mm in diameter and 6–25 mm in length, with a bulk density of (40 lbs ft^{-3}, ~650 kg m^{-3}). Tests were run under different environmental conditions for each type of wood pellets. Three replicate tests of each type of wood pellet were performed. Measurements of CO were data logged every 3 min, and T and RH was measured every 5 min. Each set of measurements was performed for up to 20 days.

Figure 1.



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Experimental setup of the bag-pellets drum experiment.

Details of these experiments are provided in the Supplemental Information file (available at *Annals of Work Exposures and Health* online). CO emission factors were then calculated from the data. At constant temperature (T) and pressure (P), the concentration of CO off-gassing was converted to an emission factor, *f* (milligram of off-gas per kilogram of wood pellets) using the equation of Yazdanpanah *et al.* (2014) and Tumuluru *et al.* (2015).

$$f = \frac{PCVgMwt}{RTM} * 1000 \tag{1}$$

Where, T = temperature (K); R = gas constant (8.31 J mol^{-1}.K^{-1}); M_{wt} = gas molecular weight (g mole^{-1}); M = mass of the pellets in the drum (kg); V_g = volume of the gas in the drum (m^3); P = pressure in the container.

Field study

To monitor CO in a large-scale pellet storage, a CO logger was place in a large pellet warehouse (Rahman *et al.*, 2017). The warehouse can store 269000 bags (40-lbs bags), equivalent to ~5000 tons of pellets. The warehouse represents a volume of ~480000 ft^3 (13592 m^3). Measurements were made from 25 April to 21 July 2016 and 21 July to 26 October 2016. The break in measurements was to download the data and clear the memory. During these periods, the warehouse was being filled with ~5000 and 2500 tons of pellets, respectively, in anticipation of the 2016–2017 heating season. CO was measured at 5-min intervals in the middle of the storage area at 3.66 m (12 ft) and 1.52 m (5 ft) above the floor level with Lascar CO monitors. When pellets were being loaded into the warehouse or removed for shipment, one of the large doors was open. The warehouse configuration and sampling position are illustrated schematically in Supplementary Fig. S3 (available at *Annals of Work Exposures and Health* online).

Results and discussions

Laboratory study results

A detailed discussion of the laboratory results are provided in the Supplemental Information file (available at *Annals of Work Exposures and Health* online). The maximum CO emission factors are presented in Table 1. The results show that CO emissions increase with temperature at 30% RH for all types of bagged pellets. However, the emission rates are higher for blended wood (70% softwood, 30% hardwood) and softwood compared to hardwood (100%) pellets at all temperatures. Temperature has a significant effect on CO production for all wood pellet types as seen in prior studies (Soto-Garcia *et al.*, 2015b).

Table 1.

Summary of the maximum CO emission factors at different temperature and moisture.

Temperature (°C)	Hardwood		Softwood		Blended wood	
	Max. emission factor (mg kg^{-1})		Max. emission factor (mg kg^{-1})		Max. emission factor (mg kg^{-1})	
	30% RH	70% RH	30% RH	70% RH	30% RH	70% RH

Sk

	Max. emission factor (mg kg^{-1})		Max. emission factor (mg kg^{-1})		Max. emission factor (mg kg^{-1})	
	30% RH	70% RH	30% RH	70% RH	30% RH	70% RH
0–6	0.35 ± 0.06	1.17 ± 0.08	0.42 ± 0.10	1.88 ± 0.06	0.99 ± 0.11	2.52 ± 0.15
22	3.18 ± 0.12	3.27 ± 0.11	5.73 ± 0.21	7.74 ± 0.41	7.66 ± 0.45	9.52 ± 0.55
30	4.47 ± 0.22	6.10 ± 0.14	9.66 ± 0.52	10.4 ± 0.6	9.95 ± 0.53	10.41 ± 0.49

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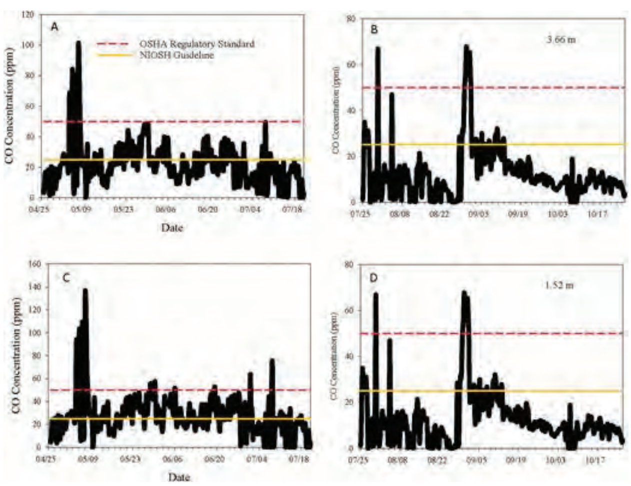
In the United States, the Occupational Safety and Health Administration (OSHA, 1997) permissible exposure limits is 50 parts per million (ppm) averaged over an 8-h time period. Other guidance values like that of the ACGIH are lower (25 ppm over an 8-h period).The CO concentrations for all pellet types at room temperature (22°C) and elevated temperature (30°C) at both RH values were high enough to produce potential in-building concentrations that exceed the ACGIH health-based guidelines of 25 ppm (ACGIH, 2007) and OSHA-regulatory concentration of 50 ppm for occupational settings. In addition, the 9 ppm (ASHRAE, 2009) guideline for homes could be exceeded.

Measured CO concentrations in the warehouse

Fig. 2 presents the 8-h rolling average CO concentrations calculated from the 5-min data. Fig. 2A and B show the CO measured at 3.66 m above the floor while Fig. 2C and D show the measurements at 1.52 m. Temperature and RH were measured in the warehouse. The temperature during the April to June period ranged from 5 to 20°C and the opposite trend of 20 to 5°C during the July to October period. RH was ~30%, similar to what was observed in the drums without added water. These measurements confirmed that concentrations can reach concentrations of regulatory concern. The peaks occurred after a substantial mass of fresh pellets was brought into the warehouse. Workers would bring in a truck load, off-load it, and stack the pallets and leave so the space was not routinely occupied for a continuous 8 h. In April, the warehouse was about 30% full and in May, it was 50% full. In June, the warehouse was at capacity. The maximum 8-h value was 109 ppm exceeding both OSHA regulations and the ACGIH guidance value. Shipments reduced the inventory and additional fresh pellets then were added several times resulting in the peaks observed during the July to October period. There were no short-term spikes to extreme concentrations since the maximum 15-min CO concentrations at 1.52 m were 155 and 113 ppm, respectively, for the two sampling periods.

Figure 2.



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Time series of rolling 8-h average concentrations of carbon monoxide measured in the storage warehouse of the pellet mill. (A) and (B) show the CO measured at 3.66 m above the floor, while (C) and (D) show the measurements at 1.52 m during the two measurement periods.

Conclusions

The results of this study demonstrated that CO emissions from wood pellets stored in plastic bags within a building are a concern with respect to undesirable exposures of the building's occupants analogous to the problems associated with stored bulk pellets. Environmental factors such as temperature and RH influence the CO emissions. Storage temperature affects CO off-gassing more than the moisture. Faster emissions and higher concentrations were observed with increasing temperature. Pellets stored at high RH showed increased emission rates and higher CO concentrations for all types of pellets than lower RH. Therefore, bagged pellets are best stored in cool and dry places. All types of bagged pellets could produce concentrations exceeding exposure health base limits and prior work in Europe had suggested there are limitations to the effectiveness of passive ventilation (Emhofer *et al.*, 2014), it is essential to design pellet storage spaces with active ventilation and CO monitors for both domestic and commercial buildings storing large quantities of wood pellets.

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Declaration

The authors declare no conflict of interest relating to the material presented in this Article. Its contents, including any opinions and/or conclusions expressed, are solely those of the authors.

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Supplementary data

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Fugitive Dust

NHDES limits activities that result in the creation of fugitive dust.

Fugitive dust is an air pollutant generated during commercial or business activities such as sand, gravel and rock crushing, road construction, parking lot and roadway cleaning, building construction and demolition, and earthmoving operations. It is also generated during loading and unloading of materials, wind-blown from material stockpiles and exposed soils, and from vehicular traffic. Fine dust inhaled deep into the lungs has been linked to a variety of health problems, ranging from nose and throat irritation to respiratory illnesses, such as bronchitis, lung-damage and asthma. Dust can migrate into nearby surface water. Fugitive dust that settles on nearby vegetation can weaken or kill the vegetation. Dust restricts visibility at the job site and off-site and contributes to regional haze. Regional haze consists of fine dust particles, smoke, and moisture suspended in the air that impairs visibility. Learn about other impacts to health and the environment.

NHDES regulates fugitive dust created by commercial or business activities pursuant to Env-A 1002. NHDES limits activities that result in the creation of fugitive dust by requiring that fugitive dust be controlled on-site and not allow to migrate beyond the property boundary. Some exceptions to the rule are driving on dirt or gravel roads; application of sand or de-icing chemicals for pedestrian and vehicular safety; and agricultural or forestry industry operations.

Env-A 1002.03 requires that "any person engaged in any activity that emits fugitive dust . . . shall take precautions throughout the duration of the activity in order to prevent, abate, and control the emission of fugitive dust." One way to do that is to develop a fugitive dust control plan and follow best management practices. Further guidance on methods for prevention, abatement and control of fugitive dust.

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Article

Analysis on Storage Off-Gas Emissions from Woody, Herbaceous, and Torrefied Biomass

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Abstract: Wood chips, torrefied wood chips, ground switchgrass, and wood pellets were tested for off-gas emissions during storage. Storage canisters with gas-collection ports were used to conduct experiments at room temperature of 20 °C and in a laboratory oven set at 40 °C. Commercially-produced wood pellets yielded the highest carbon monoxide (CO) emissions at both 20 and 40 °C (1600 and 13,000 ppmv), whereas torrefied wood chips emitted the lowest of about <200 and <2000 ppmv. Carbon dioxide (CO_2) emissions from wood pellets were 3000 ppmv and 42,000 ppmv, whereas torrefied wood chips registered at about 2000 and 25,000 ppmv, at 20 and 40 °C at the end of 11 days of storage. CO emission factors (milligrams per kilogram of biomass) calculated were lowest for ground switchgrass and torrefied wood chips (2.68 and 4.86 mg/kg) whereas wood pellets had the highest CO of about 10.60 mg/kg, respectively, at 40 °C after 11 days of storage. In the case of CO_2, wood pellets recorded the lowest value of 55.46 mg/kg, whereas switchgrass recorded the highest value of 318.72 mg/kg. This study concludes that CO emission factor is highest for wood pellets, CO_2 is highest for switchgrass and CH_4 is negligible for all feedstocks except for wood pellets, which is about 0.374 mg/kg at the end of 11-day storage at 40 °C.

Keywords: storage off-gas; wood chips; torrefied wood chips; wood pellets; switchgrass; emission factor

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1. Introduction

Woody and herbaceous biomasses, stored in humid environments for long periods, will absorb moisture and decompose, bringing about changes in physical properties, chemical composition and energy value [1]. The same authors found that after one year of storage, wood chips lost about 25%–55% of their energy value, which is mainly due to moisture adsorption. These changes in the physical, chemical and energy properties can decrease the market value of the fuels. Wood chips with high moisture are sensitive to biochemical reactions during storage [2,3]. Zoch *et al.* [4] indicated that chips from whole-tree aspen release much more heat and lose dry weight six times faster than clean, debarked chips. Moran [5] reported that the decay rate for mixed hardwood whole-tree chips (mainly oak) stored in an outside pile was roughly three times that for clean, debarked chips. Their research indicated that temperature profile of the wood chips stored for 7–14 days rose to 60–70 °C due to chemical and biological reactions that release oxygen-depleting off gases, such as CO, CO_2, and CH_4, during storage. Quantification of these off-gases has been considered important because fatal accidents have been reported at wood-chip and pellet warehouses during material unloading [6]. The risks associated with the transportation of seemingly harmless cargo (wood pellets and wood chips) are now well known and recorded. Several researchers have indicated that at storage temperatures >30 °C wood chips and wood pellets emit high amounts of CO (>10,000 ppmv), CO_2 (>30,000 ppmv), and CH_4 emission (>2000 ppmv) [7–13]. These reported CO and CO_2 emissions for wood chips and wood pellets are well above the threshold concentration levels established by U.S. Department of Labor Occupational Safety and Health Administration. According to Back and Allen [14], Höll and Pieczonka [15], and Piispanen and Saranpää [16], dry woods like Scots pine and Norway spruce contain about 3%–5% triglycerides, which can undergo oxidation and yield hexanal and other off-gases (such as CO). Svedberg *et al.* [11] indicated that in addition to CO, wood pellets also emitted hexanal during storage.

The threshold level established by U.S. Department of Labor Occupational Safety and Health Administration for carbon monoxide concentration is 35 ppm for a time-weighted 8-h period. Concentration levels ≥800 ppm for 45 min can result in dizziness, nausea, and convulsions resulting in death after a 2–3 h period. The threshold level of CO_2 is 5000 ppm as an 8-h time-weighted average. At very high levels (30,000 ppm (short-term exposure level) and above), CO_2 can cause asphyxiation as it replaces oxygen in the blood resulting in loss of judgment, dizziness, drowsiness, and rapid breathing. The CH_4 threshold level is 500,000 ppm over 8-h time-weighted average. Higher concentrations can result in asphyxiation by displacing oxygen. CH_4 is also one of the main constituents of natural gas, which can result in explosions [7]. In addition to the safety issues, the emissions from biomass can have a significant effect on the greenhouse gas emissions. Emery and Mosier [17] indicated that during storage of biomass, the dry matter losses can increase net greenhouse gas emissions. The same authors suggested a greater understanding of the biomass storage losses and greenhouse gas fluxes is necessary to accurately assess biomass storage options to ensure the design of the biomass supply logistics system meets the greenhouse gas reduction mandates required for biofuel production.

Increasing the storage stability or reducing reactivity of the biomass to the storage environment can help reduce the storage off-gas emissions. In general, both woody and herbaceous biomass is dried to 10% (w.b.) moisture content in a rotary drier to increase their storage stability. This dried biomass is further used for pelletization [18]. Pellets are considered as stable products as they have moisture in the range of 5%–7% (w.b.). Currently, torrefaction (a thermal pretreatment process) helps reduce the biomass moisture content to a very low value about <2% (w.b.) making it hydrophobic and suitable for thermochemical applications like pyrolysis, gasification, and co-firing [19–23]. Torrefaction of biomass is a thermochemical process that can be described as a mild form of pyrolysis at temperatures typically ranging between 200 and 300 °C in an inert and reduced environment, resulting in a solid, uniform product with lower moisture and higher energy content [24–27]. Tumuluru *et al.* [19] described the physiochemical and structural changes in biomass at different temperature regimes. Torrefaction temperatures >200 °C result in breakage of inter- and intra-molecular, hydrogen, C–O, and C–C bonds. Breaking chemical bonds leads to the emission of hydrophilic and oxygenated compounds [19]. Also, the destruction of OH groups during torrefaction makes biomass hydrophobic and increases storage stability [28].

Objective

There is a great deal of interest in understanding the off-gas emissions during storage of different biomass forms used for energy applications. Most of the data reported on storage off-gas emissions were for wood pellets and wood chips. Our earlier work on profiling and quantifying the off-gases [7–10,13] from wood pellets has helped the Wood Pellets Association of Canada to develop material safety data sheets for storage and transportation. Off-gas emissions data for other feedstocks—like switchgrass, and thermally pretreated (torrefied) biomass—that are gaining popularity for bioenergy applications, are not available. The off-gas emission data for herbaceous and torrefied biomass will be very useful in understanding the health-hazard risks and proposing mitigation methods and also will help to develop material safety data sheets for their safe storage and transportation. Our earlier studies on wood pellets indicated that increasing the storage temperature to >30 °C increases the off-gas emissions exponentially during the first 10 days of storage, whereas storage temperatures ≤20 °C resulted in a linear increase in off-gas emission with respect to storage time [7,13]. The specific objective of this study is to examine off-gas-emission concentration from torrefied wood chips, ground switchgrass, raw wood chips, and wood pellets at a 20 °C room temperature and an elevated storage temperature of 40 °C for an 11-day storage period. Further emission-concentration data for all the feedstock was used to calculate an emission factor (milligrams of off-gas emitted per kilogram of biomass).

2. Material and Methods

2.1. Raw Material and Properties

Clean pine-wood chips and wood pellets were collected from a shipping location in Vancouver, BC, Canada (Fibreco, Inc., North Vancouver) and tested for moisture content. The procured wood chips were further torrefied at 250 °C for 30 min in a fixed-bed reactor and then cooled and stored in airtight containers. Wood chips were dried to about 10% moisture content (w.b.) in a convective oven at 40–50 °C. Switchgrass (*Panicum virgatum*) was procured from a farm in Manitoba and ground to a 2-mm particle size using a hammer mill. The ground samples were stored in air-sealed bags in a commercial refrigerator set at 4 °C. Off-gassing experiments were conducted in the same year (2007–2008) the feedstocks were procured. The moisture content of the wood chips, ground switchgrass, torrefied wood chips, and wood pellets at the beginning of these experiments was determined using the AOAC method (*i.e.*, the oven method, where the biomass was kept at 105 °C for 24 h and was expressed in wet basis) [29]. The reported values are an average of three measurements. All raw materials were further tested for bulk and particle density following the ASABE S267 standard procedure [30,31].

2.2. Particle Density and Porosity

A gas multi-pycnometer (QuantaChrome, Boynton Beach, FL, USA) was used to determine the particle density of the feedstocks by calculating the displaced volume of nitrogen gas by a known mass of sample material [31]. The pressure was set at around 40 kPa (near maximum as specified by the instrument specifications). Equation (1) is used to calculate the sample volume (Vp):

$$V_P = V_C - V_R \left(\frac{P_1}{P_2} - 1\right) \tag{1}$$

where:

P_1 = pressure reading after pressurizing the reference cell (kPa)

P_2 = pressure after connecting the reference cell to the sample cell

V_c = sample volume

V_R = reference volume.

The particle density (ρ_s) of the sample is calculated by dividing mass (m_p) by the pycnometer particle volume (V_{pvc}). The experiments were conducted in triplicates. The porosity values were calculated using the bulk and particle-density values using Equations (2) and (3):

$$\rho_s = \frac{m_p}{V_{pvc}} \tag{2}$$

$$\text{Porosity} = \left(1 - \frac{\rho_b}{\rho_s}\right) \tag{3}$$

where:

ρ_b = bulk density

ρ_s = particle density.

2.3. Off-Gas Measurement

Canisters were used to conduct the storage studies (Figure 1). Canisters were filled to about 95% of their volume with different feedstocks. A 3.125-mm-diameter port with a control valve installed on the canister lid was used to collect the off-gas samples. The different biomass materials (*i.e.*, wood chips, wood pellets, torrefied wood chips, and ground switchgrass) were placed in the canister, leaving a headspace of about 5%. In the present study, a minimum head space of 5% was selected based on our earlier study on storage of wood pellets at both low and high storage temperatures [13]. Studies at 20 °C were carried out in a laboratory set at 20 °C and the higher temperature of 40 °C using a laboratory oven. A gas chromatography (GC)-14A fuel-cell analyzer (Shimadzu, Kyoto, Japan) was used to analyze the off-gas samples. A standard gas composition of CO: 1000 ppmv; CO_2: 5000 ppmv; and CH_4: 1000 ppmv was used to calibrate the GC. Approximately 10-mL off-gas sample was collected using an airtight syringe (A-85137-20 mL SGE Gas-Tight Syringe, Luer-Lock, Mandel Scientific, Guelph, ON, Canada) and injected into the GC-14A [7,13]. In the present study off-gas measurements reported are from single measurements by other researchers [7–13,32].

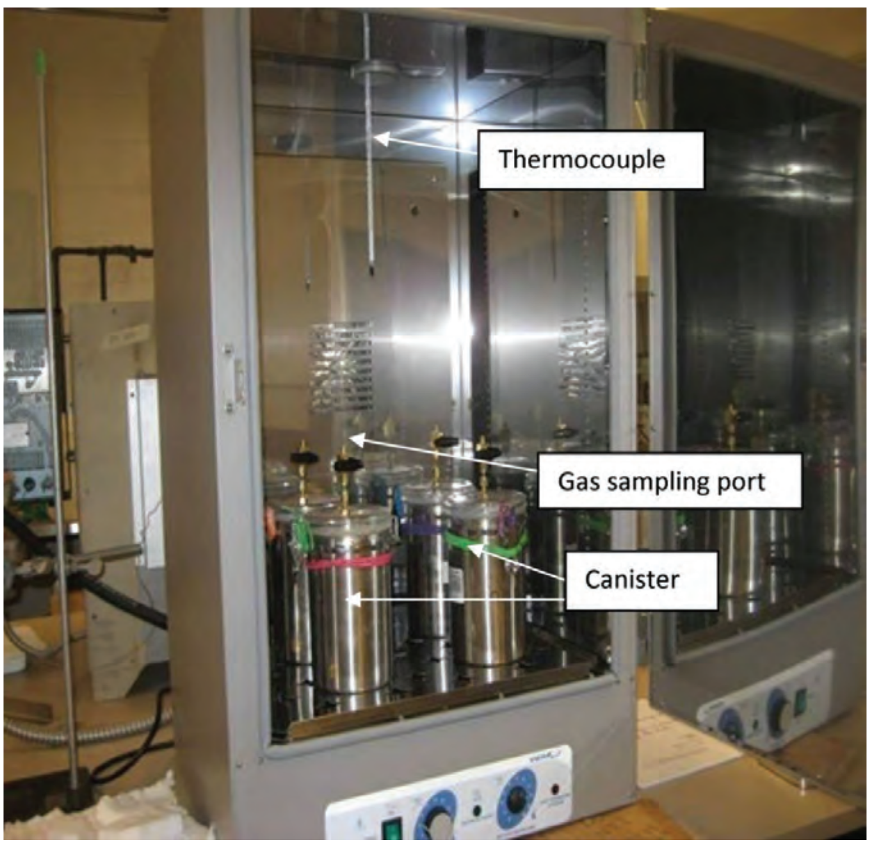

Figure 1. Storage canisters filled with different feedstocks.

2.4. Emission Factor Calculation

Yazdanpanah *et al.* [32] used concentration data to calculate the emission factor (milligrams of off-gas per kilogram of material). Table 1 indicates the equations constants used in the emission factor calculation. At constant temperature *T* (K) and pressure *P* (Pa), the emission factor (f_i) (milligrams of off-gas per kilogram of materials, mg/kg) is related to volumetric gas concentration (C_i), as expressed in Equation (4):

$$f_i = \frac{PC_iVgM_{wt}}{RTM} \times 1000 \quad (4)$$

where:

R = gas constant (8.31 J/mol·K)
T = temperature (K)
M_{wt} = gas molecular weight (g/mole)
M = mass of material in the container (kg)
V_g = gas volume in the container (m^3)
P_a = absolute pressure of the container (generally, there is minimal change in P_a at relatively low temperatures associated with the observed tests [7]). In their study, pressure in the storage container was measured using a pressure transducer (PX143-01BD5V, 91 Pa, Omega, Laval, QC, Canada) and the data was logged into a computer using LabVIEW software
C_i = volumetric concentration of a particular off-gassing measure by GC (expressed as fraction volume/volume).

Table 1. Constants used for emission factor (g/kg) calculation based on off-gas concentration data.

S. No.	Equation Parameters	Value
1	Molecular weight of CO, CO_2, and CH_4 (M_{wt})	28, 44, and 16
2	Volumetric concentration of particular off gas (m^3)	Gas concentrations measured using GC (ppmv/1,000,000)
3	Temperature (K)	293 and 313
4	Pressure (Pa)	101,300
5	Gas constant (R) (J/mol·K)	8.31
6	Mass of the biomass stored in the container (m_w) (kg)	Ground switchgrass: 0.36 Wood pellets: 1.60 Wood chips: 0.64 Torrefied wood chips: 0.54
7	Volume of the gas in the container, including headspace of 5% (m^3)	Ground switchgrass: 0.0021 Wood pellets: 0.00119 Wood chips: 0.00152 Torrefied wood chips: 0.00154

Note: Volume of gas in the container calculation was based on the bulk porosity of the materials. The porosity calculation was based on the bulk and particle-density values.

Equation (5) presents the sample calculation for emission factor (mg/kg) for off-gas CO at the end of 11-day storage at 40 °C storage temperature. The various constants used for calculation of emission factor are given below:

$$\frac{101300 \times 13294.7 \times 0.00118 \times 28 \times 1000}{8.31 \times 313 \times 1.6 \times 1000000} = 10.69\ mg/kg \quad (5)$$

where CO concentration at 40 °C for wood pellets at the end of 11-day storage: 13,294 ppmv (0.013294 m^3); storage temperature: 40 °C (313 K); porosity: 0.41 (calculated using bulk density: 710 kg/m^3; and particle density: 1210 kg/m^3); total porosity (including headspace of 5% of the container): 0.41 + 0.05 = 0.46; volume of the container (m^3): 0.00256; gas volume in the container: total porosity (including 5% of headspace) × volume of the container: 0.00118 m^3; mass of wood pellets in the container: 1.60 kg; molecular weight of CO: 28 (g/mole); absolute pressure in the container: 101,300 (Pa) and gas constant (R): 8.31 (J/mol·K).

3. Results and Discussion

3.1. Physical Properties

The moisture content and bulk- and particle-density of wood chips, ground switchgrass, torrefied wood chips, and wood pellets are given in Table 2. Leaving a headspace of 5%, ground switchgrass of about 0.36 kg, wood pellets of about 1.60 kg, wood chips of about 0.64 kg, and torrefied wood chips of about of 0.54 kg were used to fill the storage canister.

Table 2. Physical properties of herbaceous, woody and torrefied biomass (n = 3).

S. No.	Biomass Feedstock	Moisture Content (%, w.b.)	Bulk Density (kg/m^3)	Particle Density (kg/m^3)	Porosity
1	Ground switchgrass	10.21 ± 0.21	151 ± 9	650 ± 21	0.76
2	Wood pellets	5.02 ± 0.16	710 ± 19	1210 ± 8	0.41
3	Wood chips	12.12 ± 0.12	265 ± 12	580 ± 17	0.54
4	Torrefied wood chips	1.8 ± 0.19	225 ± 23	505 ± 11	0.55

3.2. Off-Gas Concentrations

Figures 2 through 7 indicate the emission levels of CO, CO_2, and CH_4 from ground switchgrass, wood chips, torrefied wood chips, and wood pellets at both 20 and 40 °C for a storage period of 11 days. Figure 2 indicates that the maximum CO emissions were recorded by wood pellets (about 1600 ppmv), followed by wood chips (about 600 ppmv); torrefied wood chips and switchgrass emitted significantly less CO (less than 200 ppmv). Figure 3 shows that a maximum concentration of about 13,000 ppmv was recorded for wood pellets at 40 °C; however, torrefied wood chips show the lowest recorded amount of about 2000 ppmv. Wood chips and ground switchgrass recorded about 3000 ppmv. CO_2 emissions from the four biomass feedstocks at 20 °C indicated that wood pellets emitted a maximum of about 3000 ppmv; switchgrass and torrefied wood chips recorded the lowest amounts (2000 ppmv) (see Figure 4). At 40 °C, wood pellets emitted about 42,000 ppmv, which corroborates results reported in the literature [7–13], whereas torrefied wood chips emitted the lowest CO_2 amounts at about 25,000 ppmv. Wood chips and switchgrass registered at about 30,000 ppmv (see Figure 5). Figures 6 and 7 show the CH_4 emissions at 20 °C and at 40 °C. The torrefied wood chips recorded the lowest CH_4 amounts (about 5 ppmv) at 20 °C, while the wood pellets registered about 45 ppmv. These concentrations can be considered marginal when compared to CO and CO_2 emissions. At 40 °C, the wood pellet samples registered at about 1300 ppmv, which was by far the highest compared with other feedstocks. The torrefied wood chips recorded the lowest amounts, less than 100 ppmv.

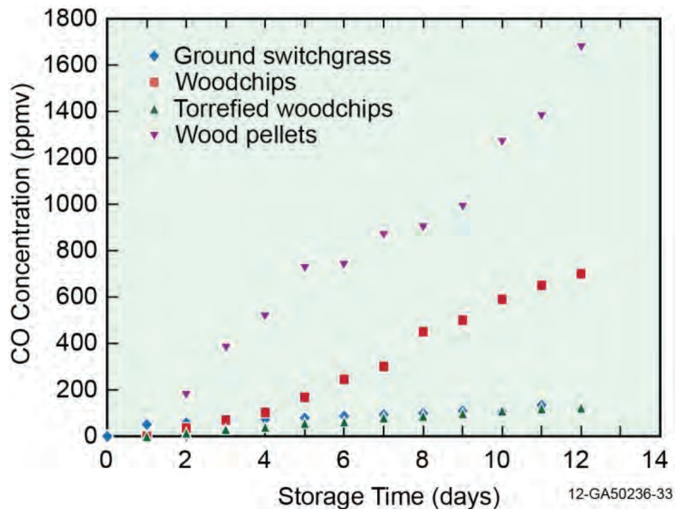

Figure 2. CO concentration at 20 °C storage temperature.

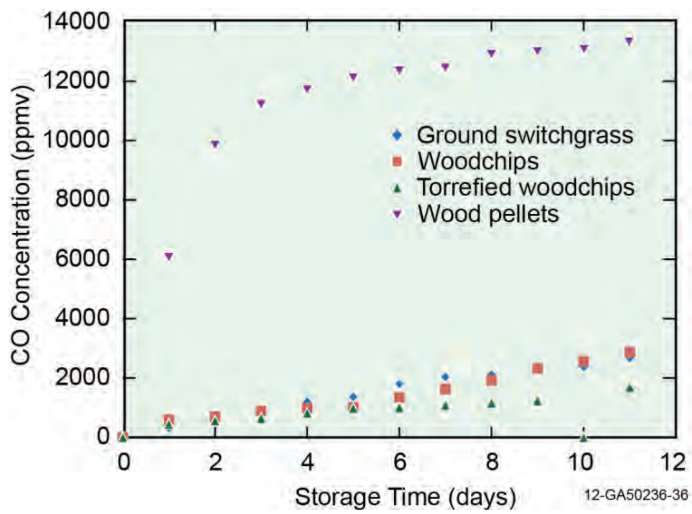

Figure 3. CO concentration at 40 °C storage temperature.

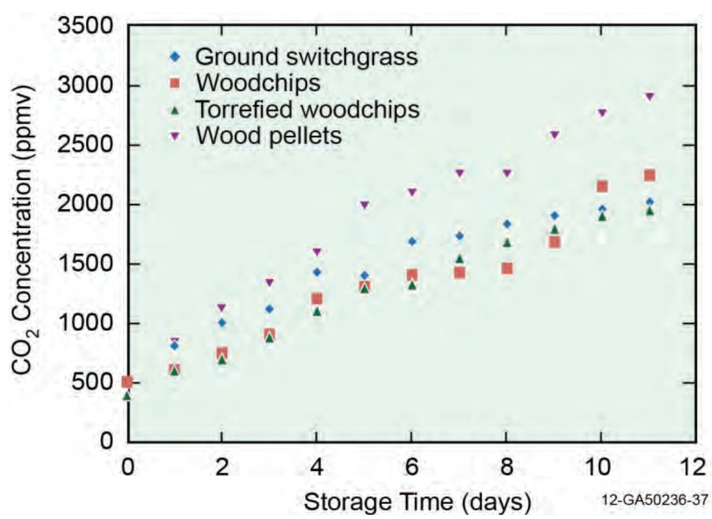

Figure 4. CO_2 concentration at 20 °C storage temperature.

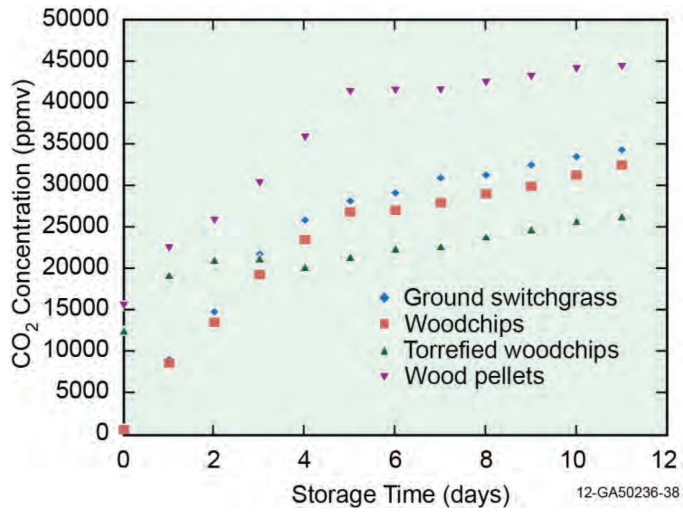

Figure 5. CO_2 concentration at 40 °C storage temperature.

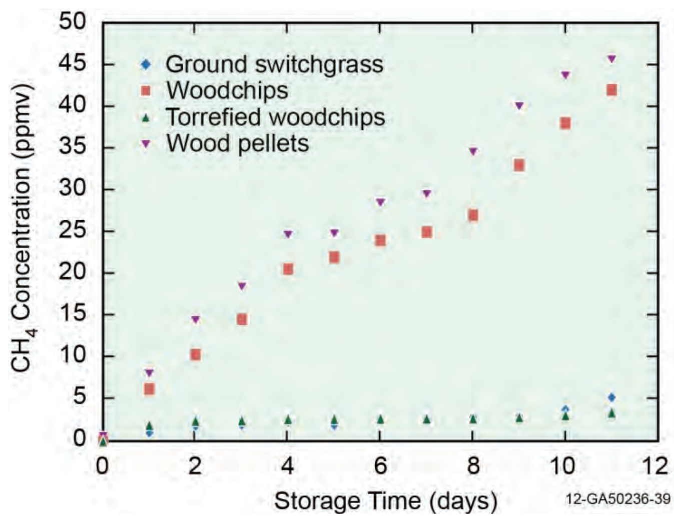

Figure 6. CH_4 concentration at 20 °C storage temperature.

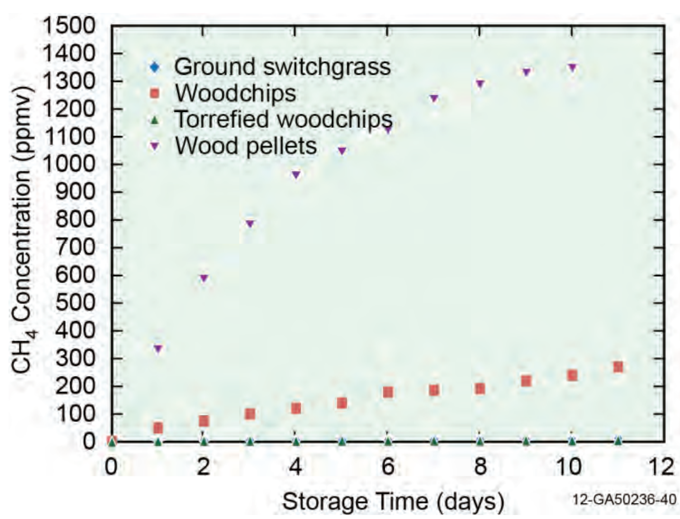

Figure 7. CH_4 concentration at 40 °C storage temperature.

3.3. Emission Factor (mg/kg)

Based on the concentration data, emissions factors were calculated for CO, CO_2, and CH_4 from ground switchgrass, wood chips, torrefied wood chips, and wood pellets stored at both 20 and at 40 °C for an 11-day period. A maximum CO-emission factor of about 10.60 and 6.96 mg/kg was recorded by wood pellets and wood chips, respectively. The lowest CO-emission factor for ground switchgrass was recorded at about 2.67 mg/kg at 40 °C, whereas in the case of torrefied woodchips and ground switchgrass it was about 4.85 and 2.68 mg/kg at the end of the 11-day storage period. At 20 °C, the highest CO-emission factor of 1.81 and 1.43 mg/kg were recorded for wood chips and wood pellets, whereas ground switchgrass and torrefied woodchips recorded 0.38 and 0.85 mg/kg at the end of the 11-day storage period.

For CO_2 stored at 40 °C, a maximum emission factor was recorded for ground switchgrass at about 318.72 mg/kg, followed by 123.50 and 118.68 mg/kg for wood chips and torrefied wood chips, respectively, whereas wood pellets recorded the lowest at about 55.45 mg/kg at the end of the 11-day storage period. At 20 °C, the trend was similar, where ground switchgrass recorded the highest value of 19.98 mg/kg, followed by torrefied and regular wood chips of about 9.39 and 9.09 mg/kg, respectively. Wood pellets recorded the lowest of 3.86 mg/kg at the end of the 11-day storage period. The calculated CH_4-emission factor indicated that at 20 °C, the values are very low for all the feedstocks, whereas, at 40 °C, wood pellets recorded the highest emission factor of about 0.76 mg/kg, and torrefied wood chips, the lowest, at about 0.0104 mg/kg. The emission-factor data for CO, CO_2 and CH_4 calculated for wood pellets has corroborated observations reported in the literature [32]. The same authors indicated that the emission factors calculated for off gases like CO, CO_2, and CH_4 from wood pellets for two different-sized storage containers (5200 L and 45 L) were close and also matched closely with the present observations. We have learned from this study that the emission factor calculated based on the concentrations, is strongly dependent on physical properties like bulk and particle density and porosity, which determines the gas volume in the storage container.

3.4. Discussion

In the present study, torrefied wood chips emitted less CO and CH_4 at both 20 and 40 °C than ground switchgrass, woodchips, or wood pellets. Tumuluru *et al.* [19] suggested that, during torrefaction, the biomass loses some of the low-volatility components and extractives, resulting in a hydrophobic product low in moisture content. These changes in the biomass might result in reduced biomass reactivity in the storage environment and fewer chemical-oxidation reactions during storage. Emissions from torrefied biomass reported in this paper indicate that microbial degradation may not be the reason for off-gas emission, because torrefied biomass has less moisture (Table 2) and absorbs little moisture during storage [19]. The measured emissions could have occurred mainly due to chemical oxidation of the chemical components present in the biomass. According to Yazdanpanah [33], torrefied pellets adsorbed about 20% more CO_2 compared to regular pellets. This may be explained by the rate of reaction between off-gas and biomass solid, which is generally proportional to the accessible surface area of the solid. The lower CO_2 emission detected by torrefied samples in this study could be attributed to the higher adsorption of CO_2 by torrefied samples. The speculation is that the torrefaction process causes dehydration and thus initiates and propagates cracks in the lignocellulosic structure of material. The mass loss also induced changes in density and porosity.

Our earlier studies on off-gases from woody pellets at lower (≤20 °C) and higher (≥30 °C) temperatures indicated that CO and CO_2 emissions and O_2 depletion in the headspace of the storage container are significantly lower at low storage temperatures compared to higher storage temperature. This study has helped us conclude that it is mostly chemical oxidation that results in off-gas emissions from stored wood pellets [7,13], where higher storage temperature accelerates the rate of the oxidation process. The CO, CO_2, and CH_4 off-gas emissions observed from different biomass in the present study can be due to auto-oxidation of the chemical compounds in the biomass. The storage temperature acts as a catalyst to accelerate the chemical oxidation process. Research studies conducted by Back and Allen [14], Höll and Pieczonka [15], and Piispanen and Saranpää [16] on woody biomass (Scots pine and Norway spruce) indicated that triglycerides undergo auto-oxidation in the presence of temperature and emit off-gases like CO and hexanal. Springer and Hajny [34], Kuber *et al* [35], and Kuber [36,37] have established that auto-oxidation of unsaturated fatty acids and other extractives leads to spontaneous heating of wood chips and sawdust during storage. According to Levitt *et al*. [38], when stored at room temperature (particularly in the presence of air and light), organic matter emits small amounts of CO and the emissions are accelerated at elevated temperatures. Svedberg *et al*. [11,12] and Tumuluru *et al.* [13] reported that the emission of these off-gases during storage is due to chemical oxidation of fatty acids, leading to the formation of free radicals. These types of reactions are accelerated by: (a) the environmental conditions of storage, such as temperature and relative humidity; and (b) the biomass-feedstock moisture content and chemical composition. Also, the present study indicates that the off-gas emission concentration varies with the type of the biomass. One major reason for different concentrations observed for different raw and thermally-pretreated biomass feedstock can be different chemical composition (*i.e.*, woody biomass has higher fatty acids and lignin compared to herbaceous biomass). On the other hand, herbaceous biomasses are lower in lignin and free fatty acids [39,40]. Further research is needed to understand the chemistry behind different quantities of off-gas emissions from different biomass feedstocks.

At present, there is a great need to understand the biomass storage losses in terms of dry matter and greenhouse gas fluxes to assess biomass storage options to ensure the design of the biomass supply logistics system which can meet the greenhouse gas reduction requirements for biofuel production. According to Steele *et al*. [41], CO_2 gas emitted during storage due to decomposition process can be used to estimate the dry matter loss. According to their analysis the dry matter breakdown into simple sugars during storage and emits CO_2. Also, the off-gas emission data collected for different woody, herbaceous, and pretreated biomass will help design storage silos by taking into account the hazards associated with off-gases that are emitted and avoid fatal accidents that have been reported in pellet warehouses. This will help mitigate the risks, adopt active control measures, and implement safe working strategies. The off-gas data on herbaceous and thermally-pretreated biomass (like torrefied biomass presented in this paper) will also support developing material safety data sheets for safe storage and transportation of woody, herbaceous and thermally pretreated biomasses.

4. Conclusions

The present experimental study demonstrates that there is off-gassing from stored wood pellets, wood chips, ground switchgrass, and torrefied wood chips posing potential hazards that require mitigation by the proper design of silos and development of safe handling procedures. CO emissions for all the feedstocks at room temperature (20 °C) are above the threshold-level exposure guidelines of 35 ppmv for an occupational setting and 9 ppmv for homes. At the elevated storage temperature of 40 °C, the off-gases CO and CO_2 increase to levels where they could produce fatal accidents within short exposure times. The results indicate that torrefied wood chip emits less CO, CO_2, and CH_4 when compared to wood pellets, untreated wood chips, and ground switchgrass. At 20 and 40 °C, wood pellets recorded the maximum CO concentrations of 1600 and 13,000 ppmv, whereas torrefied wood chips emitted less than 200 and 2000 ppmv. CH_4 emissions recorded for all the feedstocks were less than 100 ppmv at both 20 and 40 °C, except for wood pellets, which recorded 1300 ppmv at 40 °C. The calculated CO emission factors (based on the bulk and particle density and porosity) indicate that wood pellets have the highest emission factor (10.60 mg/kg) at 40 °C, whereas in the case of CO_2, the wood pellets recorded the lowest value (55.46 mg/kg), and switchgrass the highest value (318.72 mg/kg).

Acknowledgments

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Author Contributions

Jaya Shankar Tumuluru conducted the experiments, collected and analyzed the off-gas data, and prepared the draft manuscript. Xingya Kuang and Fahimeh Yazdanpanah supported the experimental work and data analysis, Shahab Sokhansanj, C. Jim Lim, and Xiaotao T. Bi are research advisors on biomass storage, and Staffan Melin is research advisor on wood pellet storage.

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Conflicts of Interest

The authors declare no conflict of interest.

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PERMIT AMENDMENT NO. 2499-161-0023-V-02-4
ISSUANCE DATE:

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Air Quality - Part 70 Operating Permit Amendment

Facility Name:	**Hazlehurst Wood Pellets, LLC**
Facility Address:	**430 Hulett Wooten Farms Road**
	Hazlehurst, Georgia 31539 (Jeff Davis County)
Mailing Address:	**P. O. Box 1810** **Hazlehurst, Georgia 31539**
Parent/Holding Company:	**Hazlehurst Wood Pellets**
Facility AIRS Number:	**04-13-161-00023**

In accordance with the provisions of the Georgia Air Quality Act, O.C.G.A. Section 12-9-1, et seq and the Georgia Rules for Air Quality Control, Chapter 391-3-1, adopted pursuant to and in effect under the Act, the Permittee described above is issued a construction permit for:

Construction and operation of a new furnace and a dryer controlled by a WESP and RTO, 2 Green Hammermills, 7 Dry Hammermills controlled by cyclofilters and an RTO, 15 presses and 3 coolers controlled by baghouses and an RCO, and a chipper. All permit conditions in Sections 2 through Section 6 of the current permit are replaced. Section 1 of the current permit is updated.

This Permit Amendment shall also serve as a final amendment to the Part 70 Permit unless objected to by the U.S. EPA or withdrawn by the Division. The Division will issue a letter when this Operating Permit amendment is finalized.

This Permit Amendment is conditioned upon compliance with all provisions of The Georgia Air Quality Act, O.C.G.A. Section 12-9-1, et seq, the Rules, Chapter 391-3-1, adopted and in effect under that Act, or any other condition of this Amendment and Permit No. 2499-161-0023-V-02-0. Unless modified or revoked, this Amendment expires upon issuance of the next Part 70 Permit for this source. This Amendment may be subject to revocation, suspension, modification or amendment by the Director for cause including evidence of noncompliance with any of the above; or for any misrepresentation made in App No. **TV-352816** dated **May 6, 2019**; any other applications upon which this Amendment or Permit No. 2499-161-0023-V-02-0 are based; supporting data entered therein or attached thereto; or any subsequent submittal or supporting data; or for any alterations affecting the emissions from this source.

This Amendment is further subject to and conditioned upon the terms, conditions, limitations, standards, or schedules contained in or specified on the attached **22** pages.

Richard E. Dunn, Director
Environmental Protection Division

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PART 1.0 FACILITY DESCRIPTION

1.3 Process Description of Modification

The Permittee proposes to construct and operate one new furnace, one new dryer, one new chipper, 2 green hammermills, 7 dry hammermills, and 3 pellet lines with a total of 15 presses and 3 coolers. Some of the equipment will be new, some existing. The new wood-fired furnace will be rated at a nominal, approximate 200 MMBTU/hour. Particulate (PM) emissions from the furnace and dryer will be controlled with a wet electrostatic precipitator (WESP). PM emissions from the dry hammermills will be controlled by cyclofilters. PM emissions from the presses and coolers will be controlled by baghouses. Volatile organic compound (VOC) and organic hazardous air pollutant (HAP) emissions from the furnace and dryer will be controlled with a Regenerative Thermal Oxidizer (RTO). VOC and HAP emissions from the dry hammermills, presses, and coolers will be controlled with a Regenerative Catalytic Oxidizer (RCO). The RTO and RCO will each have a gas-fired burner rated at 6 MMBTU/hour. The new dryer has a capacity of 78 oven dried tons per hour, and an annual throughput capacity of 675,000 oven dried tons (ODT). ODT = weight of wood in short tons at 11% moisture, calculated.

PART 2.0 REQUIREMENTS PERTAINING TO THE ENTIRE FACILITY

2.1 Facility Wide Emission Caps and Operating Limits

2.1.1 The Permittee shall not discharge or cause the discharge into the atmosphere from the entire facility, any emissions which contain carbon monoxide (CO) in excess of 249 tons during any twelve consecutive months.
[Avoidance of 40 CFR 52.21]

2.1.2 The Permittee shall not discharge or cause the discharge into the atmosphere from the entire facility, any emissions which contain nitrogen oxides (NOx) in excess of 249 tons during any twelve consecutive months.
[Avoidance of 40 CFR 52.21]

2.1.3 The Permittee shall not discharge or cause the discharge into the atmosphere from the entire facility, any emissions which contain volatile organic compounds (VOC) in excess of 249 tons during any twelve consecutive months.
[Avoidance of 40 CFR 52.21]

2.1.4 The Permittee shall not discharge or cause the discharge into the atmosphere from the entire facility, any emissions which contain particulate matter (PM) in excess of 249 tons during any twelve consecutive months.
[Avoidance of 40 CFR 52.21]

2.1.5 The Permittee shall not discharge or cause the discharge into the atmosphere from the entire facility any single hazardous air pollutant which is listed in Section 112 of the Clean Air Act, in an amount equal to or exceeding 10 tons during any twelve consecutive months, or any combination of such listed pollutants in an amount equal to or exceeding 25 tons during any twelve consecutive months.
[Avoidance of Major Source MACT per 40 CFR 63]

2.1.6 The Permittee shall not process through the dryer (DRY) greater than 675,000 ODT of wood during any twelve consecutive months. ODT = weight of wood in short tons at 11% moisture, calculated.
[Avoidance of 40 CFR 52.21]

PART 3.0 REQUIREMENTS FOR EMISSION UNITS

Note: Except where an applicable requirement specifically states otherwise, the averaging times of any of the Emissions Limitations or Standards included in this permit are tied to or based on the run time(s) specified for the applicable reference test method(s) or procedures required for demonstrating compliance.

3.1.1 Updated Emission Units

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	ID No.	Description
WOOD	Log storage/handling Debarking/screening Chipper Chip piles	391-3-1-.02(2)(n)	3.4.3, 3.4.4, 5.2.7, 5.2.8		
GHM	Green Hammermills (2)	391-3-1-.02(2)(n)	3.4.3, 3.4.4, 5.2.7, 5.2.8		
FUR	Wood fired furnace 200 MMBTU/hr	391-3-1-.02(2)(g) 391-3-1-.02(2)(b) 391-3-1-.02(2)(g)	3.2.1, 3.2.3, 3.4.1, 3.4.2, 3.4.5, 4.2.1, 4.2.4, 4.2.5, 5.2.1, 5.2.2, 5.2.5, 5.2.6, 5.2.14, 5.2.15, 6.2.1-6.2.7	WESP RTO	Wet Electrostatic Precipitator Regenerative Thermal Oxidizer
DRY	Pellet Dryer 78 ODT/hr	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	2.1.6, 3.2.1, 3.2.3, 3.4.1, 3.4.2, 3.4.3, 3.4.4, 4.2.1, 4.2.4, 5.2.1, 5.2.2, 5.2.5, 5.2.6, 5.2.9, 5.2.14, 5.2.15, 6.2.1-6.2.7		
HAM1-7	Dry Hammermills (7)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.10-5.2.17, 6.2.3-6.2.7	CYFL1-7 RCO	Cyclofilters 1-7 Regenerative Catalytic Oxidizer
PEL1-5	Line 1 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH1 RCO	Baghouse 1 Regenerative Catalytic Oxidizer
COOL1	Line 1 Cooler				
PEL6-10	Line 2 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH2 RCO	Baghouse 2 Regenerative Catalytic Oxidizer
COOL2	Line 2 Cooler				
PEL11-15	Line 3 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH3 RCO	Baghouse 3 Regenerative Catalytic Oxidizer
COOL3	Line 3 Cooler				
HAND	Pellet Handling/storage/ Loadout/silos 1-4	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.4.1-3.4.5, 4.2.3, 6.2.4, 6.2.5		

* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards and corresponding permit conditions are intended as a compliance tool and may not be definitive.

3.2 Equipment Emission Caps and Operating Limits

3.2.1 The Permittee shall operate and maintain the WESP and the RTO during all periods in which the furnace (FUR) and the Dryer (DRY) are in operation.
[391-3-1-.03(2)(c)]

3.2.2 The Permittee shall operate and maintain the cyclofilters (CYFL1-7), baghouses (BH1, 2, and 3), and Regenerative Catalytic Oxidizer (RCO) during all periods in which the Dry Hammermills (HAM1-7), Presses (PEL1-15), and Coolers (COOL1-3) are in operation.
[391-3-1-.03(2)(c)]

3.2.3 The 3-hour rolling combustion temperature of the RTO shall be at least 1500°F or the temperature approved by the Division based upon the most recent destruction efficiency test (whichever is higher).
[391-3-1-.03(2)(c)]

3.2.4 The 3-hour rolling combustion temperature of the RCO shall be at least 800°F or the temperature approved by the Division based upon the most recent destruction efficiency test (whichever is higher).
[391-3-1-.03(2)(c)]

3.3 Equipment Federal Rule Standards

Not applicable.

3.4 Equipment SIP Rule Standards

3.4.1 The Permittee shall not cause, let, suffer, permit or allow emissions from any stack, including the Furnace/Dryer RTO stack (S1) or the Dry Hammermill/Press/Cooler RCO stack (S2) the opacity of which is equal to or greater than forty percent.
[391-3-1-.02(2)(b)1.]

3.4.2 The Permittee shall not cause, let, permit, suffer or allow the rate of emissions from the Furnace/Dryer RTO stack (S1) or the Dry Hammermill/Press/Cooler RCO stack (S2) Particulate Matter (PM) in total quantities equal to or exceeding the allowable rate, calculated as follows:
[391-3-1-.02(2)(e)]

$E = 4.1P^{0.67}$; for process input weight rate up to and including 30 tons per hour, or
$E = 55P^{0.11} - 40$; for process input weight above 30 tons per hour

Where:

E = emission rate in pounds per hour
P = process input weight rate in tons per hour

3.4.3 The Permittee shall take all reasonable precautions to prevent dust from any operation, process, handling, transportation or storage facility from becoming airborne. Reasonable precautions that could be taken to prevent dust from becoming airborne include, but are not limited to, the following:
[391-3-1-.02(2)(n)]

a. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;

b. Application of asphalt, water, or suitable chemicals on dirt roads, materials, stockpiles, and other surfaces that can give rise to airborne dusts;

c. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;

d. Covering, at all times when in motion, open bodied trucks that are transporting materials likely to give rise to airborne dusts; and

e. The prompt removal of earth or other material from paved streets onto which earth or other material has been deposited.

3.4.4 The opacity from any fugitive dust source shall not equal or exceed 20 percent.
[391-3-1-.02(2)(n)]

3.4.5 The Permittee shall not burn fuel containing more than 3 percent sulfur by weight in the Furnace (FUR), the Furnace/Dryer RTO, or the Dry Hammermill/Press/Cooler RCO. The Permittee shall comply with this rule by only burning wood or natural gas.
[391-3-1-.02(2)(g)]

3.5 Equipment Standards Not Covered by a Federal or SIP Rule and Not Instituted as an Emission Cap or Operating Limit

3.5.1 Routine maintenance shall be performed on all air pollution control equipment. Maintenance records shall be in a form suitable for inspection or submittal to the Division and shall be maintained for a period of five (5) years from date of entry.
[391-3-1-.02(6)(b)1(i)]

3.5.2 The Permittee shall maintain an inventory of baghouse filter bags such that an adequate supply of bags is on hand to replace any defective ones.
[391-3-1-.02(6)(b)1(i)]

PART 4.0 REQUIREMENTS FOR TESTING

4.1 General Testing Requirements

4.1.1 The Permittee shall cause to be conducted a performance test at any specified emission unit when so directed by the Environmental Protection Division ("Division"). The test results shall be submitted to the Division within 60 days of the completion of the testing. Any tests shall be performed and conducted using methods and procedures that have been previously specified or approved by the Division.
[391-3-1-.02(6)(b)1(i)]

4.1.2 The Permittee shall provide the Division thirty (30) days (or sixty (60) days for tests required by 40 CFR Part 63) prior written notice of the date of any performance test(s) to afford the Division the opportunity to witness and/or audit the test, and shall provide with the notification a test plan in accordance with Division guidelines.
[391-3-1-.02(3)(a) and 40 CFR 63.7(b)(1)]

4.1.3 Performance and compliance tests shall be conducted, and data reduced in accordance with applicable procedures and methods specified in the Division's Procedures for Testing and Monitoring Sources of Air Pollutants. The methods for the determination of compliance with emission limits listed under Sections 3.2, 3.3, 3.4 and 3.5 are as follows:

a. Method 1 shall be used for the determination of sample point locations.

b. Method 2 shall be used for the determination of stack gas flow rate.

c. Method 3 or 3A shall be used for the determination of stack gas molecular weight. Method 3B shall be used for the determination of emission rate correction factor or excess air. Method 3A may be used as an alternative.

d. Method 4 shall be used for the determination of stack gas moisture.

e. Method 5/Method 202 shall be used for determination of total PM emissions, to include condensable particulates + filterable particulates for Rule (e).

f. Method 7 or 7E shall be used for determination of NOx emissions.

g. Method 9 and the procedures of the above referenced document shall be used to determine the opacity.

h. Method 10 shall be used for the determination of CO concentrations.

i. Method 19 shall be used when applicable; to convert particulate matter, carbon monoxide, and nitrogen oxides concentrations (i.e., grains/dscf for PM, ppm for gaseous pollutants), as determined using other methods specified in this section, to mass emission rates (i.e., lb/MM Btu, lb/hr).

j. Method 26 or 26A shall be used to determine Hydrogen Chloride emission concentrations.

k. Method 25A shall be used for the determination of VOC concentrations in the dryer exhaust stacks.

l. NCASI 105.1 shall be used for the determination of methanol, formaldehyde and acetaldehyde concentrations.

m. Modified EPA OTM-26 Interim VOC Measurement Protocol for the Wood Products Industry (July 2007) or (WPP1) shall be used for the calculation and summation of VOC emissions.

Minor changes in methodology may be specified or approved by the Director or his designee when necessitated by process variables, changes in facility design, or improvement or corrections that, in his opinion, render those methods or procedures, or portions thereof, more reliable.
[391-3-1-.02(3)(a)]

4.1.4 The Permittee shall submit performance test results to the US EPA's Central Data Exchange (CDX) using the Compliance and Emissions Data Reporting Interface (CEDRI) in accordance with any applicable NSPS or NESHAP standards (40 CFR 60 or 40 CFR 63) that contain electronic data reporting requirements. This Condition is only applicable if required by an applicable standard and for the pollutant(s) subject to said standard.
[391-3-1-.02)(8)(a) and 391-3-1-.02(9)(a)]

4.2 Specific Testing Requirements

4.2.1 Within 120 days after initial startup, the Permittee shall conduct performance tests for the following pollutants on the Furnace/Dryer RTO stack (S1):

a. Total particulate matter (PM) emissions including condensable and filterable PM

b. NOx

c. CO

d. VOC

e. Formaldehyde

f. Methanol

g. Acetaldehyde

Subsequent testing shall be conducted at least once every 36 months. The performance tests for NOx and CO, and the tests for VOC and organic HAP must be conducted simultaneously each time a test is required for one of these pollutants.

During the performance tests the Permittee shall continuously measure and record the combustion zone temperature for the RTO and the total power in the WESP. These measurements shall be submitted along with the test reports. During the performance testing, the Permittee shall record and submit the amount of product dried (in both actual and bone-dry tonnages per hour) in the dryer. The tests shall be conducted at the maximum anticipated drying rate.
[391-3-1-.02(3)(a)]

4.2.2 Within 120 days after initial startup, the Permittee shall conduct performance tests for the following pollutants on the Dry Hammermill/Press/Cooler RCO stack (S2):

a. Total particulate matter (PM) emissions including condensable and filterable PM

b. NOx

c. CO

d. VOC

e. Formaldehyde

f. Methanol

g. Acetaldehyde

Subsequent testing shall be conducted at least once every 36 months. The performance tests for NOx and CO, and the tests for VOC and organic HAP must be conducted simultaneously each time a test is required for one of these pollutants. During the performance tests the Permittee shall continuously measure and record the combustion zone temperature for RCO. These measurements shall be submitted along with the test reports. During the performance testing, the Permittee shall record the amount of pellets produced (in both actual and bone-dry tonnages per hour). The tests shall be conducted at the maximum anticipated operating rate.
[391-3-1-.02(3)(a)]

4.2.3 Within 120 days after initial startup, the Permittee shall conduct performance tests for VOC on a silo in the equipment group HAND. During the performance testing, the Permittee shall record the amount of pellets produced. The emission factor shall be based on the results of the test from one silo and the facility production divided by 4 (four silos). The tests shall be conducted on a silo that is loaded at a minimum of 25% of the total HAND throughput.
[391-3-1-.02(3)(a)]

4.2.4 If the results of a PM, VOC, HAP, CO or NOx performance test required in this Section 4 exceed the factor currently being used in Section 6, then the Permittee must calculate emissions using the new, higher factor starting on the test date. The Permittee shall also submit a permit application within 180 days after testing, either requesting the higher emission factor or demonstrating that the emission factor derived is not representative of normal emissions.
[391-3-1-.02(6)(b)1(i)]

4.2.5 The Permittee shall not use monitors or test equipment during performance tests that are not used in normal day to day operations of the facility, to adjust/fine tune the burners prior to performance testing. The Permittee shall submit all test data for pre-tests and post-tests conducted before and following the test along with the source test data to the Division upon request.
[391-3-1-.02(3) and 391-3-1-.03(2)(c)]

PART 5.0 REQUIREMENTS FOR MONITORING (Related to Data Collection)

5.1 General Monitoring Requirements

5.1.1 Any continuous monitoring system required by the Division and installed by the Permittee shall be in continuous operation and data recorded during all periods of operation of the affected facility except for continuous monitoring system breakdowns and repairs. Monitoring system response, relating only to calibration checks and zero and span adjustments, shall be measured and recorded during such periods. Maintenance or repair shall be conducted in the most expedient manner to minimize the period during which the system is out of service.
[391-3-1-.02(6)(b)1]

5.2 Specific Monitoring Requirements

5.2.1 The Permittee shall install, calibrate, maintain, and operate a system to continuously monitor and record the indicated parameters on the following equipment. Each system shall meet the applicable performance specification(s) of the Division's monitoring requirements.
[391-3-1-.02(6)(b)1]

a. The combustion temperature of RTO and RCO. The temperature monitoring device shall have an accuracy of ±2% (°F).

b. The secondary voltage for each field of the WESP. Such devices shall have a required accuracy of ±2%.

c. The secondary current for each field of the WESP. Such devices shall have a required accuracy of ±2%.

5.2.2 The Permittee shall, using the data required to be recorded by Condition 5.2.1, determine the total power for each hour of operation. Total WESP power shall be calculated using the following equation:
[391-3-1-.02(6)(b)1]

$$P_t = \sum_{i=1}^{n} V_i I_i$$

Where:
P_t = Total Wet ESP power (watts)
V_i = secondary voltage (kV) in wet ESP field i
I_i = secondary current (ma) in ESP field i
n = Total number of fields in ESP
i = ith field in ESP (i =1 to n)

5.2.3 The Permittee shall install, calibrate, maintain, and operate pressure drop indicators on the Dry Hammermill cyclofilters (CYFL1-7) and the Press/Cooler baghouses (BH1, BH2, and BH3). Where such performance specification(s) exist, each system shall meet the applicable performance specification(s) of the Division's monitoring requirements. The Permittee shall read and record the pressure drop at least once per day of operation. A logbook containing these records shall be available for inspection and/or submittal to the Division, upon request.
[391-3-1-.02(6)(b)1]

5.2.4 The Permittee shall implement a Preventive Maintenance Program (PMP) for the Dry Hammermill cyclofilters (CYFL1-7) and the Press/Cooler baghouses (BH1, 2, and 3). The program shall be subject to review and if necessary, to assure compliance, modification by the Division and shall include the pressure drop ranges that indicate proper operation for each baghouse. At a minimum, the following operation and maintenance checks shall be made on at least a weekly basis and a record of the findings and corrective actions taken shall be kept in a maintenance log:
[391-3-1-.02(6)(b)1]

a. For baghouses equipped with compressed air cleaning systems, check the system for proper operation. This may include checking for low pressure, leaks, proper lubrication and proper operation of timer and valves.

b. For baghouses equipped with reverse air cleaning systems, check the system for proper operation. This may include checking damper, bypass and isolation valves for proper operation.

c. For baghouses equipped with shaker cleaning systems, check the system for proper operation. This may include checking shaker mechanism for loose or worn bearings, drive components, mounting; proper operation of outlet/isolation valves; proper lubrication.

d. Check dust collector hoppers and conveying systems for proper operation.

e. Check the cyclone filters for clogging and air leaks

5.2.5 The Permittee shall calculate three-hour average WESP secondary power using data measured per Condition 5.2.2.
[391-3-1-.02(6)(b)1]

5.2.6 The Permittee shall ensure that temperatures in the RTO and RCO combustion zones are maintained at or above the levels required by Conditions 3.2.3 and 3.2.4 on a 3-hour rolling average using a temperature sensor. The Permittee shall calculate the rolling three-hour average combustion temperature using data measured per Condition 5.2.1.
[391-3-1-.02(6)(b)1]

5.2.7 The Permittee shall conduct daily inspections of all sources of fugitive dust emissions, including but not limited to the units listed in Table 3.1 of this permit as subject to Georgia Rule 391-3-1-.02(2)(n). Records of each daily inspection shall be maintained and available for inspection or submittal to the Division upon request. The inspection shall include, at a minimum:
[391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

a. Check of the working condition of dust control measures such as loadout boots.

b. Verify that baghouses, filters and cyclones used to minimize fugitive dust are operating

c. Documentation of any visible emissions present from any fugitive dust source, including but not limited to the green hammermills (GHM1&2), and the wood piles. Any adverse condition discovered by this inspection shall be corrected in the most expedient manner possible. The Permittee shall record the incident as an excursion and note the corrective action taken.

5.2.8 The Permittee shall perform daily checks of visible emissions from Log Storage/Handling, Debarking/Screening, Chipper, and Chip Piles (WOOD); Green Hammermills (GHM1&2); Furnace/Dryer RTO stack (S1), and the Dry Hammermill/Press/Cooler RCO stack (S2) while the underlying process equipment is operating at the normal, expected operating rate using the procedures below, except when atmospheric conditions or sun positioning prevent any opportunity to perform a VE check. The Permittee shall retain a record in a daily visible emissions (VE) log suitable for inspection or submittal.
[391-3-1-.02(6)(b)1]

a. Determine, in accordance with the procedures specified in paragraph d of this condition, if visible emissions are present at the discharge point to the atmosphere and record the results in the daily VE log. For sources that exhibit visible emissions, the Permittee shall comply with paragraph b of this condition.

b. For each check where a stack is determined to be emitting visible emissions, a qualified observer shall determine whether the emissions equal or exceed a 20% opacity action level, using the procedure specified in paragraph d of this condition. For the purposes of this condition a qualified observer is one that has met the certification requirements of EPA Method 9 – *Visual Determination of the Opacity of Emissions from Stationary Sources*. Also, this determination shall cover a period of six minutes. The results shall be recorded in the daily VE log. For sources that exhibit visible emissions of greater than or equal to the opacity action level of 20%, the Permittee shall comply with paragraph c of this condition.

c. For each occurrence that requires action in accordance with paragraph b of this condition, the Permittee shall determine the cause of the visible emissions and correct the problem in the most expedient manner possible. The Permittee shall note the cause of the visible emissions, raw material feed rate, and any other pertinent operating parameters as well as the corrective action taken, in the maintenance log.

d. The person performing the determination shall stand at a distance of at least three stack heights, which is sufficient to provide a clear view of the plume against a contrasting background with the sun in the 140 degree sector at his/her back.

Consistent with this requirement, the determination shall be made from a position such that the line of vision is approximately perpendicular to the plume direction. Only one plume shall be in the line of sight at any time when multiple stacks are in proximity to each other.

5.2.9 The Permittee shall install, calibrate, maintain, and operate systems to monitor the dried wood rate (ODT/hr) exiting the dryer (DRY), and the pellet production rate (ton/hr) through the Coolers (COOLl-3). The data shall be recorded hourly. Performance specification(s) of the Division's monitoring requirements.
[391-3-1-.02(6)(b)1]

5.2.10 The Permittee shall develop and implement a Preventive Maintenance Program for the catalytic oxidizer (RCO) to assure that the provisions of Condition 1.1 are met. The program shall be subject to review and, if necessary to assure compliance, modification by the Division. At a minimum, the following operation and maintenance checks shall be made on at least an annual basis, and a record of the findings and corrective actions taken shall be kept in a maintenance log:
[391-3-1-.02(6)(b)1]

a. Clean burner

b. Tighten burner valve linkage

c. Visually inspect catalyst bed for plugging. Catalyst bed should be free of particulate matter.

d. Visually inspect the inlet and outlet thermocouples, have thermocouples calibrated for proper operation

e. Visually inspect the inlet and outlet pressure sensors, have sensors calibrated for proper operation

f. Visually inspect crossflow for plugging on burner side. If crossflow is dirty remove and clean with hose and water

g. Visually inspect chamber for cracks

h. Visually inspect process fan rotor for warpage, cracking, abnormal noise, and free spin

i. Rotate the catalyst media annually according to the manufacturer's recommendations

5.2.11 The Permittee shall prepare a core sampling plan for the catalytic oxidizer (RCO) per manufacturer's recommendation and submit to the Division thirty (30) days in advance of conducting any core sampling activity required by Condition 5.2.12.

The following information shall be included in the required core sampling plan:
[391-3-1-.02(6)(b)1, and 40 CFR 70.6(a)(3)(i)]

a. Location of samples taken.

b. Size of samples taken.

c. Number of samples taken.

5.2.12 The Permittee shall take a core sample of the catalyst bed at approximately one year intervals not to exceed fourteen months between tests per the plan submitted in Condition 5.2.11 and test core sample for catalyst activity. The first such sampling shall occur at 12 months from the from the last performance test.
[391-3-1-.02(6)(b)1, and 40 CFR 70.6(a)(3)(i)]

5.2.13 The Permittee shall replace or clean the catalyst per manufacturer's recommendation if the core sample tested per Condition 5.2.12 shows a catalyst removal efficiency of less than 90 percent. This cleaning and/or replacement shall be done no later than thirty (30) days of the facility receiving the test results.
[391-3-1-.02(6)(b)1, and 40 CFR 70.6(a)(3)(i)]

5.2.14 The following pollutant specific emission unit(s) (PSEU) are subject to the Compliance Assurance Monitoring (CAM) Rule in 40 CFR 64.

Emission Unit	Pollutant
Furnace/Dryer (WESP/RTO)	PM and VOC
Dry Hammermills (CYFL1-7/RCO)	PM and VOC
Presses and Coolers (BH1-3/RCO)	PM and VOC

Permit conditions in this permit for the PSEU(s) listed above with regulatory citation 40 CFR 70.6(a)(3)(i) are included for the purpose of complying with 40 CFR 64. In addition, the Permittee shall meet the requirements, as applicable, of 40 CFR 64.7, 64.8, and 64.9.
[40 CFR 64]

5.2.15 The Permittee shall comply with the performance criteria listed in the table below for the PM emissions from Furnace/Dryer.
[40 CFR 64.6(c)(1)(iii)]

Performance Criteria [64.4(a)(3)]	Indicator No. 1 WESP Secondary Power	Indicator No. 2 Water Flow to WESP
A. Representativeness [64.3(b)(1)]	Total power greater than or equal to 80% of the power during the most recent filterable PM performance test for three consecutive readings	Per test
B. Verification [64.3(b)(2)]	N/A	N/A
C. QA/QC Criteria [64.3(b)(3)]	Routine maintenance and annual calibration checks	N/A

D. Frequency [64.3(b)(4)]	Continuous	Continuous
E. Data Collection [64.3(b)(4)]	Data Logger	Data Logger
F. Averaging Period [64.3(b)(4)]	3 hours	3 hours

5.2.16 The Permittee shall comply with the performance criteria listed in the table below for the PM emissions from the Dry Hammermills, Presses, and Coolers.
[40 CFR 64.6(c)(1)(iii)]

Performance Criteria [64.4(a)(3)]	**Indicator No. 1** **Visible Emission**	**Indicator No. 2** **Pressure Drop**
A. Representativeness [64.3(b)(1)]	Daily VE check - Action Level 20% or more opacity of Visible	1” to 10” W.C.(for BH1,2,3)
B. Verification [64.3(b)(2)]	N/A	N/A
C. QA/QC Criteria [64.3(b)(3)]	N/A	Pressure gauges are calibrated and maintained per manufacturer specs.
D. Frequency [64.3(b)(4)]	Daily	Daily
E. Data Collection [64.3(b)(4)]	VE log	Pressure drops are recorded electronically by a Data logger
F. Averaging Period [64.3(b)(4)]	6 minutes	N/A

5.2.17 The Permittee shall comply with the performance criteria listed in the table below for the VOC emissions from Furnace/Dryer, Dry Hammermills, Presses, and Coolers.
[40 CFR 64.6(c)(1)(iii)]

Performance Criteria [64.4(a)(3)]	**Indicator No. 1** **RTO and RCO Combustion temperatures**
A. Representativeness [64.3(b)(1)]	Thermocouples measure combustion zone temperature; not less than 1500 and 800F.
B. Verification [64.3(b)(2)]	n/a
C. QA/QC Criteria [64.3(b)(3)]	Temperature ranges and minimum temperature are established during performance testing. Thermocouples replaced per manufacturer suggested intervals
D. Frequency [64.3(b)(4)]	Continuous
E. Data Collection [64.3(b)(4)]	Temperature are recorded electronically using a data logger
F. Averaging Period [64.3(b)(4)]	3 hour average

PART 6.0 OTHER RECORD KEEPING AND REPORTING REQUIREMENTS

6.1 General Record Keeping and Reporting Requirements

6.1.1 Unless otherwise specified, all records required to be maintained by this Permit shall be recorded in a permanent form suitable for inspection and submission to the Division and to the EPA. The records shall be retained for at least five (5) years following the date of entry. [391-3-1-.02(6)(b)1(i) and 40 CFR 70.6(a)(3)]

6.1.2 In addition to any other reporting requirements of this Permit, the Permittee shall report to the Division in writing, within seven (7) days, any deviations from applicable requirements associated with any malfunction or breakdown of process, fuel burning, or emissions control equipment for a period of four hours or more which results in excessive emissions. The Permittee shall submit a written report that shall contain the probable cause of the deviation(s), duration of the deviation(s), and any corrective actions or preventive measures taken.
[391-3-1-.02(6)(b)1(iv), 391-3-1-.03(10)(d)1(i) and 40 CFR 70.6(a)(3)(iii)(B)]

6.1.3 The Permittee shall submit written reports of any failure to meet an applicable emission limitation or standard contained in this permit and/or any failure to comply with or complete a work practice standard or requirement contained in this permit which are not otherwise reported in accordance with Conditions 6.1.4 or 6.1.2. Such failures shall be determined through observation, data from any monitoring protocol, or by any other monitoring which is required by this permit. The reports shall cover each semiannual period ending June 30 and December 31 of each year, shall be postmarked by August 29 and February 28, respectively following each reporting period, and shall contain the probable cause of the failure(s), duration of the failure(s), and any corrective actions or preventive measures taken.
[391-3-1-.03(10)(d)1.(i) and 40 CFR 70.6(a)(3)(iii)(B)]

6.1.4 The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending June 30 and December 31 of each year. All reports shall be postmarked by August 29 and February 28, respectively following each reporting period. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring Sources of Air Pollutants and shall contain the following:
[391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(iii)(A)]

a. A summary report of excess emissions, exceedances and excursions, and monitor downtime, in accordance with Section 1.5(c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

b. Total process operating time during each reporting period.

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of occurrence.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken, or preventive measures adopted.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

f. Certification by a Responsible Official that, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

6.1.5 Where applicable, the Permittee shall keep the following records:
[391-3-1-.03(10)(d)1(i) and 40 CFR 70.6(a)(3)(ii)(A)]

a. The date, place, and time of sampling or measurement;

b. The date(s) analyses were performed;

c. The company or entity that performed the analyses;

d. The analytical techniques or methods used;

e. The results of such analyses; and

f. The operating conditions as existing at the time of sampling or measurement.

6.1.6 The Permittee shall maintain files of all required measurements, including continuous monitoring systems, monitoring devices, and performance testing measurements; all continuous monitoring system or monitoring device calibration checks; and adjustments and maintenance performed on these systems or devices. These files shall be kept in a permanent form suitable for inspection and shall be maintained for a period of at least five (5) years following the date of such measurements, reports, maintenance and records.
[391-3-1-.03(10)(d)1(i) and 40 CFR 70.6 (a)(3)(ii)(B)]

6.1.7 For the purpose of reporting excess emissions, exceedances or excursions in the report required in Condition 6.1.4, the following excess emissions, exceedances, and excursions shall be reported:
[391-3-1-.02(6)(b)1 and 40 CFR 70.6(a)(3)(i)]

a. Excess emissions: (means for the purpose of this Condition and Condition 6.1.4, any condition that is detected by monitoring or record keeping which is specifically defined, or stated to be, excess emissions by an applicable requirement)

None required to be reported in accordance with Condition 6.1.4.

b. Exceedances: (means for the purpose of this Condition and Condition 6.1.4, any condition that is detected by monitoring or record keeping that provides data in terms of an emission limitation or standard and that indicates that emissions (or opacity) do not meet the applicable emission limitation or standard consistent with the averaging period specified for averaging the results of the monitoring)

i. Any consecutive twelve month total PM, CO, NOx or VOC emissions from the entire facility equal to or exceeding of 249 tons.

ii. Any consecutive twelve month total of any single hazardous air pollutant (HAP) or two or more HAPs emissions from the facility equal to or exceeding 10 tons or 25 tons respectively.

iii. Any consecutive twelve month total dryer production that exceeds 675,000 ODT. ODT = weight of wood in tons at 11% moisture, calculated.

c. Excursions: (means for the purpose of this Condition and Condition 6.1.4, any departure from an indicator range or value established for monitoring consistent with any averaging period specified for averaging the results of the monitoring)

i. Any instance in which VE exceed the 20% action level (monitored in accordance with Condition 5.2.4) for two or more consecutive days.

ii. Any three-hour average combustion temperature of the RTO or RCO measured and recorded per Condition 5.2.1 below 1,500°F (for RTO) or 800°F (for RCO) or the combustion temperature established during the most recent Division-approved performance test if used to establish Destruction efficiency.

iii. Any three-hour period during which the average total power for the WESP is less than 80 percent of the value determined during the most recent performance test for PM.

iv. Any adverse condition regarding fugitive dust emissions as required per Condition 3.4.3.

v. Any failure to perform the daily inspections of all sources of fugitive dust emissions (monitored in accordance with Condition 5.2.6).

vi. Any instance in which a Dry Hammermill cyclofilter (CYFL1-7) or a Press/Cooler baghouse (BH1, BH2, and BH3) pressure drop reading (monitored in accordance with Condition 5.2.3) is outside of normal ranges for two or more consecutive days.

vii. Any time period that the annual catalyst bed core sampling was not performed as required by Condition 5.2.11.

viii. Any time period that the catalyst was not cleaned or replaced as required by Condition 5.2.12.

6.2 Specific Record Keeping and Reporting Requirements

6.2.1 The Permittee shall keep operating records to determine the total amount of wood dried in the Dryer (DRY), in ODT on a monthly basis. ODT = weight of wood in tons at 11% moisture, calculated. The Permittee shall also keep operating records to determine the total amount of pellets processed through the Coolers (COOL1-3) in actual tons.
[Avoidance of 40 CFR 52.21]

6.2.2 The Permittee shall submit, with the report required by Condition 6.1.4, a semiannual report that contains the following records. The records shall be available for inspection or submittal to the Division upon request and contain:
[391-3-1-.02(6)(b)1, and 40 CFR 70.6(a)(3)(i)]

a. The total quantity of wood dried (in ODT) in the dryer (DRY) during each calendar month in the semiannual reporting period.

b. The total quantity of pellets produced (in actual tons) through the Coolers (COOL1-3) for the 12 consecutive month period ending with each calendar month in the semiannual reporting period.

6.2.3 The Permittee shall calculate the monthly NOx and CO emissions from the facility (consisting of the RTO and RCO exhaust) using the records from Condition 6.2.1 and the following equations. All emission factors and calculations shall be kept as part of the monthly records, available for inspection or submittal.
[391-3-1-.02(6)(b)1, and 40 CFR 70.6(a)(3)(i)]

$$E_{NOX} = [(EF1_{NOX} \text{ x } DRY) + (EF2_{NOX} \text{ x } COOL)]/2000$$

$$E_{CO} = [(EF1_{CO} \text{ x } DRY) + (EF2_{CO} \text{ x } COOL)]/2000$$

Where:

E_{NOX}	=	Monthly NOx emission in tons
E_{CO}	=	Monthly CO emission in tons
$EF1_{NOX}$	=	Emission Factor (lb NOx/ODT) from the RTO (S1)
$EF1_{CO}$	=	Emission Factor (lb CO/ODT) from the RTO (S1)
DRY	=	Monthly wood production through DRY (ODT)
$EF2_{NOX}$	=	Emission Factor (lb NOx/ton) from the RCO (S2)
$EF2_{CO}$	=	Emission Factor (lb CO/ton) from the RCO (S2)
COOL	=	Monthly pellet production through COOL1-3 (tons)

The Permittee shall calculate NOx and CO emissions by using the following emission factors and the equation provided in this condition. If the emissions testing required in Section 4 reveals emission factors higher than these listed below, the Permittee shall comply with Condition 4.2.4

Emission Point	NOx	CO
RTO (S1)	$EF1_{NOX}$ = 0.66 lb/ODT	$EF1_{CO}$ = 0.66 lb/ODT
RCO (S2)	$EF2_{NOX}$ = 0.06 lb/ton	$EF2_{CO}$ = 0.06 lb/ton

ODT = weight of wood in tons at 11% moisture, calculated. The Permittee shall notify the Division in writing if facility-wide NOx or CO emissions exceed 20.7 tons during any calendar month. This notification shall be postmarked by the fifteenth day of the following month.

6.2.4 The Permittee shall calculate the monthly total PM emissions from the facility (consisting of RTO, RCO, and HAND) using the records from Condition 6.2.1 and the following equations. All emission factors and calculations shall be kept as part of the monthly records, available for inspection or submittal.
[391-3-1-.02(6)(b)1, and 40 CFR 70.6(a)(3)(i)]

$$EPM = [(EF1_{PM} \times DRY) + (EF2_{PM} \times COOL) + SILO]/2000$$

Where:

E_{PM}	=	Monthly total PM emission in tons
$EF1_{PM}$	=	Emission Factor (lb PM/ODT) from the RTO (S1)
$EF2_{PM}$	=	Emission Factor (lb PM/ton) from the RCO (S2)
DRY	=	Monthly wood production through DRY (ODT)
COOL	=	Monthly pellet production through COOL1-3 (tons)
SILO	=	Monthly potential PM emissions from silos = 3,000 pounds

The Permittee shall calculate PM emissions by using the following emission factors and the equation provided in this condition. If the emissions testing required in Section 4 reveals emission factors higher than these listed below, the Permittee shall comply with Condition 4.2.4

Emission Point	PM
RTO (S1)	$EF1_{PM}$ = 0.30 lb/ODT

RCO (S2)	$EF2_{PM}$ = 0.31 lb/ton

ODT = weight of wood in tons at 11% moisture, calculated. The Permittee shall notify the Division in writing if facility-wide total PM emissions exceed 20.7 tons during any calendar month. This notification shall be postmarked by the fifteenth day of the following month.

6.2.5 The Permittee shall calculate the monthly VOC, Formaldehyde, Acetaldehyde, Methanol, and other HAP emissions using the records from Condition 4.2.3 and the following equation(s). All emission factors and calculations shall be kept as part of the monthly records, readily available for inspection or submittal. VOC emissions shall be calculated using EPA OTM-26: VOC = [Method 25A VOC as propane + Methanol as methanol + Formaldehyde as formaldehyde + Acetaldehyde as acetaldehyde] – [(0.65) Methanol expressed as propane]
[391-3-1-.02(6)(b)1, and 40 CFR 70.6(a)(3)(i)]

For each pollutant per month using the following equation.

E_i = $[(EF1_i \times DRY) + (EF2_i \times COOL) + (EF3_i \times SILO)]/2000$

Where:

E_i	=	Monthly emission in tons of pollutant
i	=	VOC, Formaldehyde, Acetaldehyde, Methanol, and other HAP
$EF1_i$	=	RTO emission factor (lb/ODT) for each pollutant
DRY	=	Monthly wood production through DRY (ODT)
$EF2_i$	=	RCO Emission Factor (lb/ton) for each pollutant
COOL	=	Monthly pellet production through COOL1-3 (tons)
$EF3_i$	=	Silo emission factor (lb/ton) for each pollutant
SILO	=	Monthly pellet production through SILOS (tons)

Emission Point	VOC	Methanol	Formaldehyde	Acetaldehyde	Other HAP
$EF1_i$ (RTO) (S1)	0.30 lb/ODT	0.006 lb/ODT	0.007 lb/ODT	0.006 lb/ODT	0.01 lb/ODT
$EF2_i$ (RCO) (S2)	0.19 lb/ton	0.0005 lb/ton	0.001 lb/ton	0.0005 lb/ton	-
$EF3_i$ (SILOS)	0.20 lb/ton	0.001 lb/ton	0.002 lb/ton	0.001 lb/ton	-

VOC and HAP emission factors are EPD emission factors reduced by an estimated 95% reduction from the RTOs.

ODT = weight of wood in tons at 11% moisture, calculated.

The Dryer (DRY) VOC and HAP emission factors ($EF1_i$) shall be multiplied by 20 any time the three (3) hour average RTO combustion temperature falls below 1500 ^{o}F or the target set in the most recent performance test. The hammermill/press/cooler VOC and HAP emission factors shall be multiplied by 20 any time the three (3) hour average RCO combustion temperature falls below 800 ^{o}F or the target set in the most recent performance test.

The Permittee shall notify the Division in writing if facility-wide total VOC emissions exceed 20.7 tons during any calendar month, if any facility-wide individual HAP emissions exceed 0.83 tons during any calendar month, or if any facility-wide combined HAP emissions exceed 2.08 tons during any calendar month. This notification shall be postmarked by the fifteenth day of the following month.

6.2.6 The Permittee shall use the monthly NOx, CO, total VOC, formaldehyde, methanol, and acetaldehyde emission data to calculate the 12-month rolling total of each pollutant emissions for each calendar month in the reporting period. These records shall be kept available for inspection or submittal.
[391-3-1-.03(2)(c)]

6.2.7 The Permittee shall notify the Division in writing within 15 days after startup of the new Dryer (DRY).
[391-3-1-.03(2)(c)]

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Rate and Peak Concentrations of Off-Gas Emissions in Stored Wood Pellets—Sensitivities to Temperature, Relative Humidity, and Headspace Volume

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Wood pellets emit CO, CO_2, CH_4, and other volatiles during storage. Increased concentration of these gases in a sealed storage causes depletion of concentration of oxygen. The storage environment becomes toxic to those who operate in and around these storages. The objective of this study was to investigate the effects of temperature, moisture, and the relative size of storage headspace on emissions from wood pellets in an enclosed space. Twelve 10-l plastic containers were used to study the effects of headspace ratio (25, 50, and 75% of container volume) and temperatures (10–50°C). Another eight containers were set in uncontrolled storage relative humidity (RH) and temperature. Concentrations of CO_2, CO, and CH_4 were measured by gas chromatography (GC). The results showed that emissions of CO_2, CO, and CH_4 from stored wood pellets are more sensitive to storage temperature than to RH and the relative volume of headspace. Higher peak emission factors are associated with higher temperatures. Increased headspace volume ratio increases peak off-gas emissions because of the availability of oxygen associated with pellet decomposition. Increased RH in the enclosed container increases the rate of off-gas emissions of CO_2, CO, and CH_4 and oxygen depletion.

Keywords: biomass; emission factors; headspace ratio; moisture effect; off-gassing emission; storage; temperature effect; wood pellets

INTRODUCTION

Wood pellets are used for heat and electricity production. More than 800 000 tonnes of wood pellets were exported from Canada to Europe in 2008, mainly from British Columbia. The reaction mechanisms for biomass combustion and emissions from wood pellet combustion have been extensively investigated (Chen and Workman, 1990; Dinu, 2006; Wadso, 2007). Recently, more attention has been given to the emissions from wood pellets during their storage and transportation because these emissions can become a potential health risk (Svedberg *et al.*, 2008).

It is well known that a biomass gradually decomposes chemically and biologically and during these processes it slowly releases toxic gases, leading to depleting oxygen (Reuss and Pratt, 2000; Johansson *et al.*, 2004; Arshadi and Gref, 2005). Svedberg *et al.* (2004) has reported the composition of the off-gas emissions from stored wood pellets, with CO, CO_2, CH_4, and non-methane organic compounds being commonly identified in the off-gases from biomass (Johansson *et al.*, 2004). Kuang *et al.* (2008) developed a kinetic model of off-gas emissions from wood pellets in sealed containers to predict the evolution of emission rate factors at different storage temperatures. Many factors may contribute to the buildup of gas pollutants emitted from wood pellets in storage. Pellets made from aged sawdust might generate less volatile organic compounds (VOCs) than pellets made from fresh sawdust. The level of off-gas emissions was also found to depend on wood species. Pellets made from spruce sawdust emitted less VOCs

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than pellets made from pine (Arshadi and Gref, 2005). Although the chemical/physical property changes of wood pellets influence the amounts of emissions, the storage environment and conditions should also be fully considered in the development of off-gassing mechanisms and characterization of emissions from wood pellets in storage.

The objective of this study was to investigate the effect of temperature, relative humidity (RH), and storage headspace on the off-gas emissions from wood pellets in an enclosed storage space.

METHODS

Materials and equipments

Twelve 10-l plastic containers (200 mm diameter and 320 mm high) were used to study gas emissions by loading different weights of wood pellets at different temperatures. Three containers were filled with 1.75, 3.5, and 5.25 kg of wood pellets to fill 25, 50, and 75% of the container volume. The average bulk density of pellets was 700 kg m^{-3}. A pellet mill in British Columbia supplied the pellets. The raw material for wood pellets was fresh pine sawdust and planer shavings from mountain pine (*Pinus contorta* Douglas) beetle-infested trees with an estimated 2 years beyond mortality. The moisture content of pellets as received was 5.1% (wet mass basis).

Four containers having the same head space ratio were each placed in one of the four temperature controlled ovens. Each oven was set at 10, 23 (room temperature), 35, or 45°C. These temperature treatments were repeated for each of the three head space ratios. Ten milliliters of gas samples were drawn daily from the containers by a gastight syringe. The composition of the sampled gas was analyzed by a gas chromatographic method [hydrogen flame ionization detector, (FID) and thermal conductivity detector (TCD)] using a GC-14A (SHIMADZU Corporation, Japan) to quantify concentrations of CO, CO_2, CH_4, O_2, and N_2. Prior to measurements, the temperatures of TCD and FID were set at 100 and 200°C, respectively. The gas chromatography (GC) was calibrated with standard CO, CO_2, and CH_4 gases. The standard CO, CO_2, and CH_4 gas concentrations were 1000, 5000, and 1000 p.p.m., respectively. The certified corresponding purity for each standard gas was 969 p.p.m. for CO based on HP 6890 method, 4898 p.p.m. for CO based on Carle 400 AGC, and 995 p.p.m. for CH_4 based on HP 6890 method. Argon and compressed air were used as the reference and carrier gases. A fused silica capillary column of inner diameter of 0.1 mm and 50 m long was used. Gas removal from each container at each time step and composition analysis were repeated twice.

Another set of eight 10-l plastic containers was used to investigate the effects RH and temperature had on wood pellet emissions. Two containers were loaded with 3.5 kg of wood pellets (50% of container volume). A 500-ml dish was filled with water and placed at the bottom of one of the containers to create a humid space. The wood pellets were loaded on a screen (diameter < 1 mm) installed above the water-filled dish. Four groups of containers with the same set were sealed airtight and set at temperatures of 10°C, room temperature (~23°C), 35, and 45°C. A wireless temperature and humidity sensor was placed inside the container on the top of wood pellets. Temperature and moisture were recorded daily. During the first 3 days, 10 ml gas samples were drawn every day. The remaining 27 days, gas samples were drawn every 5 days. A total of 10 samples were removed from each container and measured daily by GC to determine the concentration of CO, CO_2, and CH_4. Tests were run until the concentration of CO, CO_2, and CH_4 did not increase any further, which usually happened after ~30 days.

Data analysis

The concentrations of CO, CO_2, and CH_4 were converted to emission factors using the N_2 balance method (Kuang *et al.*, 2008). As an inert gas, N_2 is assumed not consumed or generated during the storage period. The N_2 concentration measured at the beginning (79%) over that measured after time t is used to calculate the change in the total moles of gas species in the container. Under constant temperature (T) and pressure (P), the concentration can be converted to an emission factor, f_i (in off-gas species per kilogram of pellets), for gas species i by

$$f_i = \frac{P\left(C_i V_g\right) M_{\mathrm{wt}} C_{n0}}{RTM_p \quad C_{nt}}, \tag{1}$$

where C_{n0} is the initial concentration of N_2, C_{nt} is the measured concentration of N_2 at time t, M_p is the total mass of wood pellets in the container calculated by N_2 balance method, and M_{wt} is the molecular weight of the gas species. V_g is the gas volume in the container which equals the difference between container volume (V) and pellets volume (V_{p}) (i.e. $V_{\mathrm{g}} = V - V_{\mathrm{p}}$). P is gas pressure. The volume occupied by pellets (V_{p}) was calculated based on the weight of pellets divided by the average density of a single pellet. The density of a single pellet is calculated as the average values of the weight of single pellets divided by the volume of single pellets. Volume is calculated from measuring diameter and length of the cylindrical pellet.

The previously developed first-order kinetic model (Kuang *et al.*, 2008) for evolution of gas emissions was used to fit the data of each gas species. The concentration (C) and the emission factor (f) for CO, CO_2, and CH_4 were derived from the first-order reaction equation:

$$C_i(t) = C_{i,\infty}\left[1 - \exp\left(-k_i t\right)\right], \qquad (2)$$

$$f_i(t) = f_{i,\infty}\left[1 - \exp\left(-k_i t\right)\right], \qquad (3)$$

where $C_{i,\infty}$ represents the maximum asymptote value for concentration, and $f_{i,\infty}$ represents the maximum asymptote value for emission factor. k_i is the rate constant of the kinetic equation. The time for the emission concentration to reach half of its asymptote value ($\tau_{1/2}$) is calculated to indicate how fast a gas is emitted from the stored pellets.

RESULTS

Headspace volume ratio (V_h/V)

Equation (1) was used to calculate the emission factor for each gas. Figure 1 shows the emission factor for CO_2 measured in 12 containers, three headspace ratios and four temperatures as a function of storage time. The emission factors for CO_2 increase over the storage time, a sharp rise at the beginning but approaching a plateau gradually. At the same temperature, as the headspace volume increased from 25 to 75% of the container volume, the peak emission factor for CO_2 increased. Under the same headspace ratio, the peak emission factor for CO_2 increased as the temperature increased. Figure 2a,b shows the same time dependence of emission factors for CO and CH_4. Table 1 lists peak emission factors. These asymptote factors (f_∞) were calculated by least-square fitting of equation (3) to the experimental data.

Figure 3 shows the rate of oxygen depletion with time. At the same temperature, as the headspace volume increased from 25 to 75% of the container volume, the oxygen depletion decreased. Under the same headspace ratio, the oxygen depletion increased as the temperature increased. Therefore, a larger oxygen depletion occurs at a high temperature and at a low headspace.

The peak emission factors for CO_2, CO, and CH_4 at high temperatures (35 and 45°C) were larger than those at low temperatures (10 and 23°C). A peak emission factor increases monotonously with increasing the headspace. In other words, both

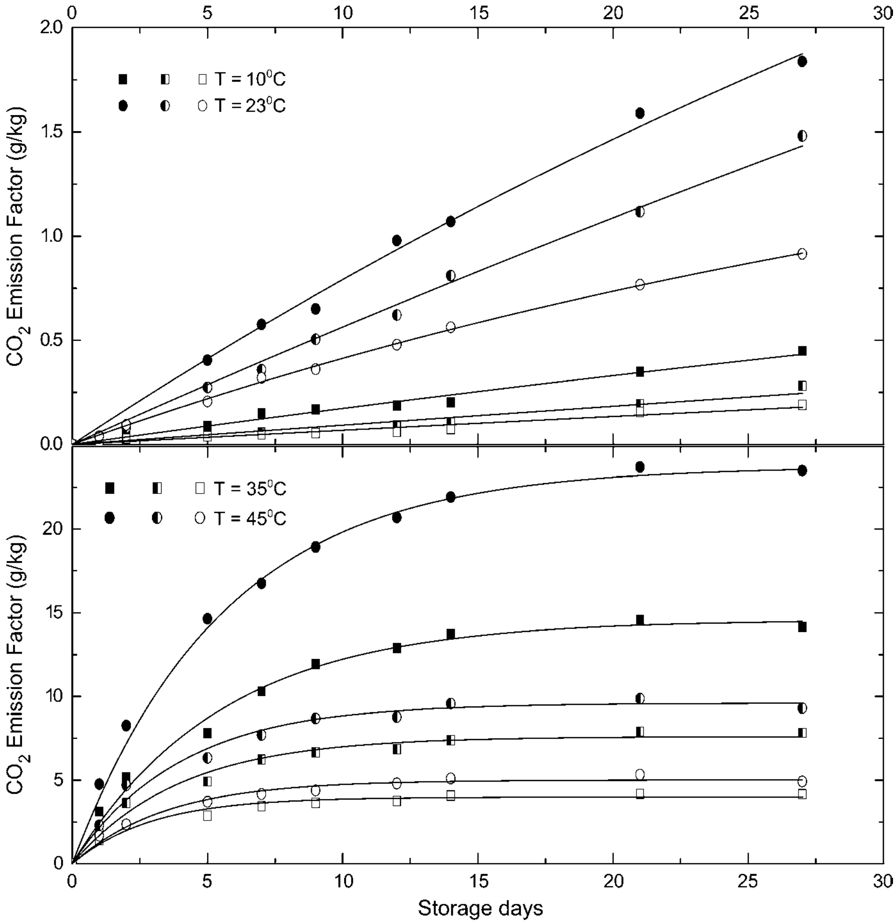

Fig. 1. CO_2 emission factor at different headspaces and temperatures (closed symbols: headspace = 75%; half-closed symbols: headspace = 50%; open symbols: headspace = 25%).

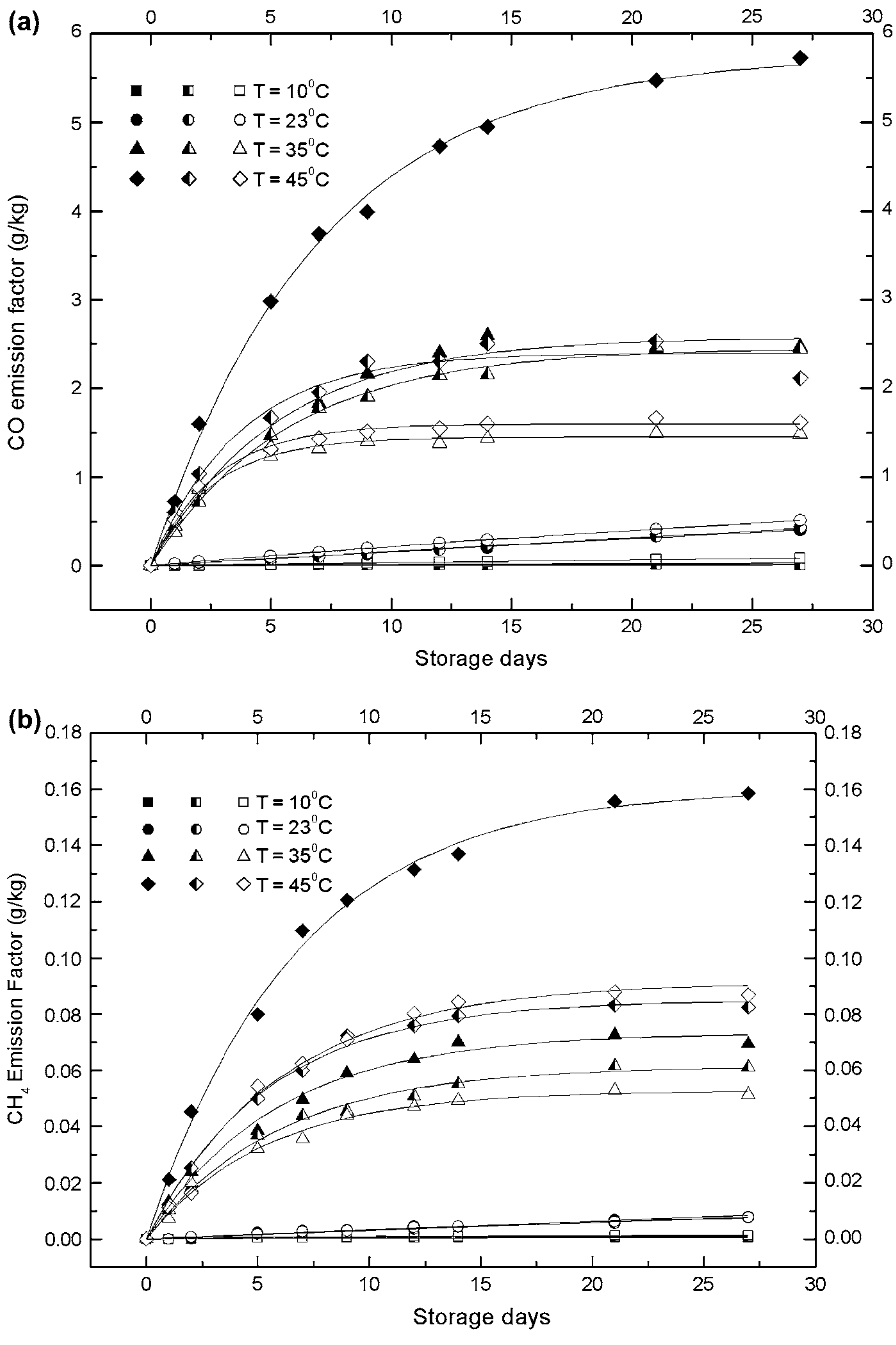

Fig. 2. CO and CH_4 emission factor over time at different headspaces and temperatures (closed symbols: headspace = 75%; half-closed symbols: headspace = 50%; open symbols: headspace = 25%). (a) CO emission factor at different headspaces and temperatures. (b) CH_4 emission factor at different headspaces and temperatures.

temperature and headspaces are important factors affecting the off-gas emissions from wood pellets in storage.

Relative humidity

Figure 4 shows the RH inside each container as a function of storage time. The RH in each container drops sharply initially after loading of wood pellets, indicating that wood pellets absorb the moisture available in the space. Unfortunately, we did not measure the moisture content of samples after each test. In an earlier experiment, Kuang *et al.*, (2008) found an average of 1% point reduction in moisture content when pellets stored in sealed and heated containers. The RH in the container with water placed at the bottom increased gradually over time, with

Table 1. Maximum emission factors for CO_2, CO, and CH_4 at different temperatures and headspace (HS) ratios (%)

Temperature (°C)	Maximum emission factor, f_∞ (g kg^{-1})								
	CO_2			CO			CH_4		
	HS 75%	HS 50%	HS 25%	HS 75%	HS 50%	HS 25%	HS 75%	HS 50%	HS 25%
10	2.84	2.47	2.27	0.09	0.07	0.06	0.00	0.00	0.00
23	3.71	2.27	1.87	0.74	0.62	0.56	0.05	0.03	0.02
35	14.58	7.60	3.99	3.58	2.45	1.45	0.07	0.06	0.05
45	23.73	9.61	5.01	5.77	2.40	1.60	0.16	0.09	0.09

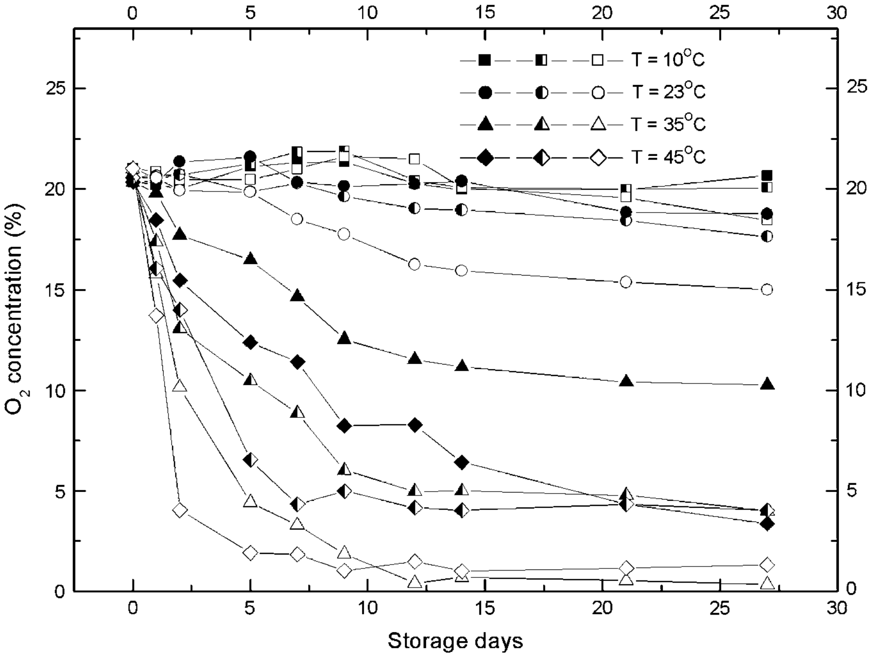

Fig. 3. Oxygen depletion at different headspaces and temperatures (closed symbols: headspace = 75%; half-closed symbols: headspace = 50%; open symbols: headspace = 25%).

higher RH at higher temperatures. Although the RH did not remain constant, the average RH in the container with water was generally higher than that in the container without water at the same temperature.

Figure 4a–c shows emission factors for CO_2, CO, and CH_4 measured in the eight containers at different temperatures and RH as a function of storage time. Emission factors increased over time, faster at the beginning but slower when approaching a plateau. The values of peak emission factor (f_∞) and the time to reach the half peak emission factor ($\tau_{1/2}$) are obtained by least-square fitting of experimental data using equations (2) and (3). Table 2 lists the results. The peak emission factor of CO_2, CO, and CH_4 increased as the temperature increased from 10 to 45°C regardless of the RH level. It is also seen that the peak emission factor was higher at high RH at the same temperature. The differences between low and high RH were more significant for CO_2 and CH_4 as temperature increased. Although the peak emission factor did not change a lot between the low and high RH for CO, the time to reach half of the peak emission factor was shorter at high RH than that at low RH.

Figure 5 shows the oxygen depletion over against time in the containers. The oxygen level in the containers decreased more significantly at higher temperatures. The storage RH also affected the oxygen depletion, with a faster oxygen depletion at a higher RH level.

DISCUSSION

The dependence of headspace gas concentrations on temperature has been investigated in our previously published data (Kuang *et al.*, 2008). The current investigation demonstrated that both the headspace volume and the temperature have significant impacts on emission factors and the concentration

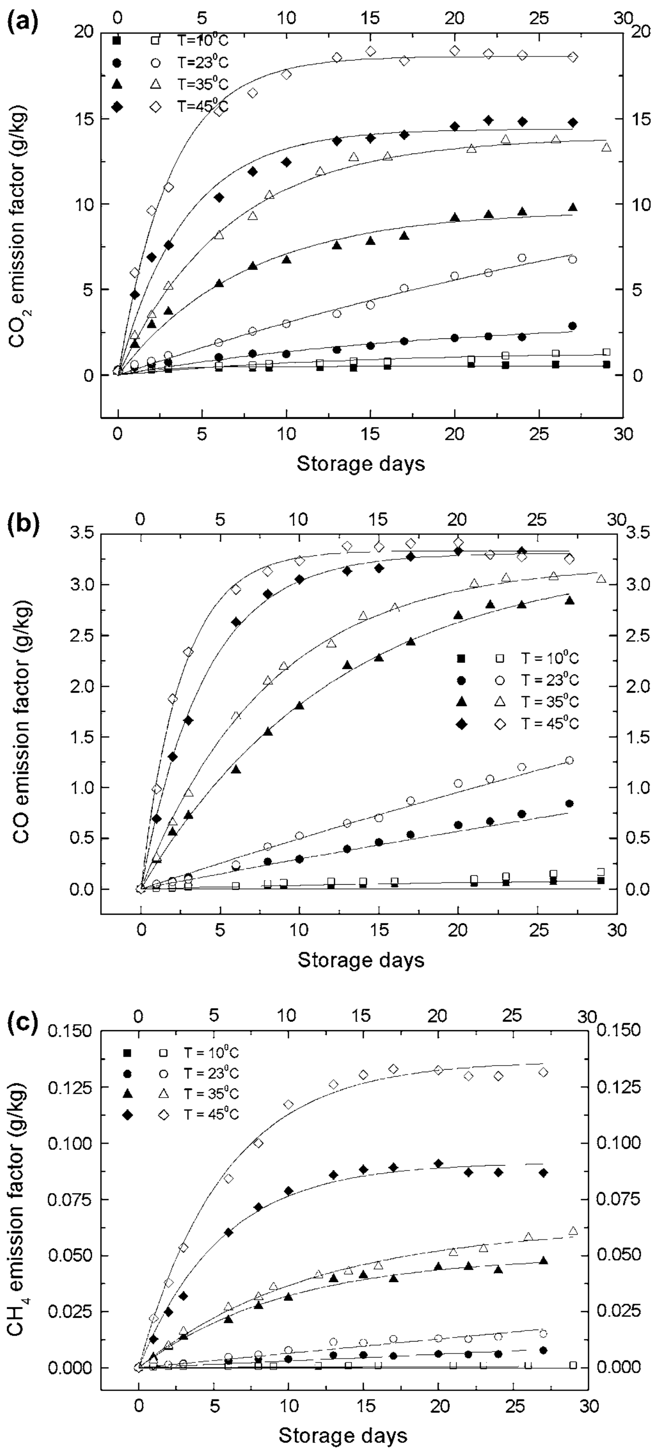

Fig. 4. Emission factors of CO_2, CO, and CH_4 over time at different temperatures and RH (closed symbols: no water present; open symbols: with water present at the bottom).

buildup of CO, CO_2, and CH_4 in sealed wood pellet containers. This can be explained by the decomposition mechanism of wood pellets. Biomass decomposes both chemically and biologically. If the thermal degradation is in dominance, the emission factor will increase with the increase in temperature. However, the biological process may peak at a certain temperature and decrease at higher temperatures at which bacteria and fungi would perish (Agrios, 2004). The results from the current study suggest that chemical

Table 2. Maximum emission factor (f_∞) and days to reach half peak emission factor ($\tau_{1/2}$) for CO_2, CO, and CH_4 at different temperatures (T) and moisture (RH)

Temperature (°C)	Maximum emission factor, f_∞ (g kg^{-1})						Half response time $\tau_{1/2}$ (days)					
	CO_2		CO		CH_4		CO_2		CO		CH_4	
	Low RH	High RH	Low RH	High RH	Low RH	High RH	Low RH	High RH	Low RH	High RH	Low RH	High RH
10	0.51	1.37	0.11	0.19	0.00	0.01	15.40	13.10	17.60	15.90	21.40	17.30
23	3.36	7.17	0.98	1.17	0.02	0.04	13.30	11.60	14.00	11.30	9.40	7.20
35	9.62	13.90	3.28	3.21	0.05	0.06	5.20	4.60	8.60	5.60	6.80	5.10
45	14.39	18.64	3.31	3.34	0.09	0.12	2.70	2.12	3.70	1.80	3.80	4.00

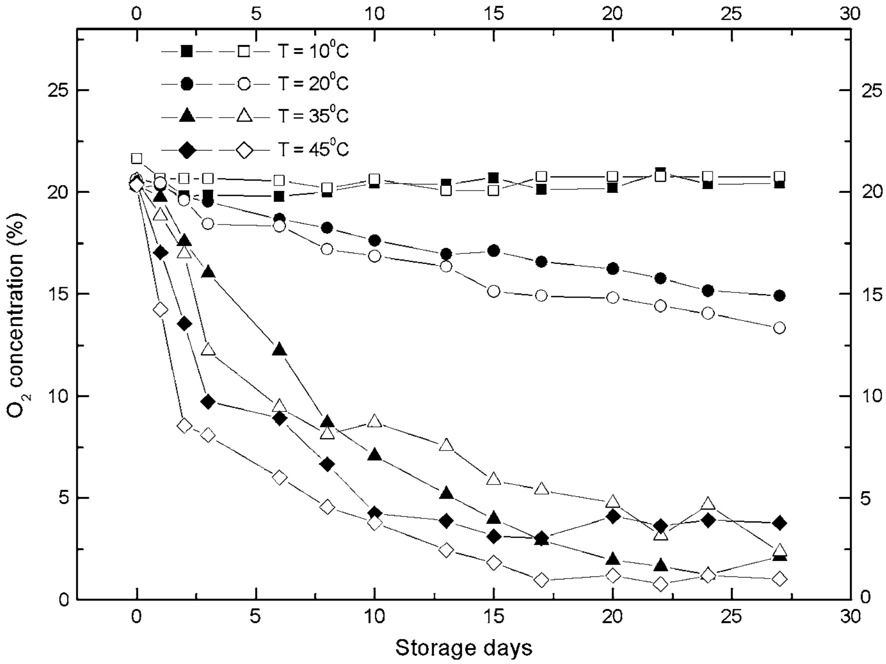

Fig. 5. Oxygen depletion at different temperature and moisture (closed symbols: no water present; open symbols: with water present at the bottom).

process via auto-oxidative degradation of fats and fatty acids (Svedberg *et al.*, 2004; Arshadi and Gref, 2005) may be the dominant mechanism for off-gassing because the emission rate increases monotonously with increasing temperature from 10 to 45°C, although biological process may also contribute to the emissions for moist biomass under a wet environment. Figure 4 shows that CO_2 emission factor is more sensitive to temperature than CO. This sensitivity is more pronounced at higher storage temperatures than at lower storage temperatures.

Moisture is another important factor influencing the off-gas emissions from wood pellets in storage. RH is investigated in this study, whereas the high moisture content of wood pellets (a high water activity in equilibrium with a high RH) could play an important role on the emissions from wood pellets during storage. It is suggested from the current study that high storage moisture could cause higher emissions of CO_2, CO, and CH_4. Therefore, the control methods such as restricting the storage temperature, RH, or choosing an appropriate headspace ratio in a contained storage space could be effective in reducing the off-gas emissions from wood pellets in order to protect the workers' health.

Further studies of the thermal and biological decomposition of wood pellets under controlled conditions are needed to elucidate to what extent the biological process contributes to the decomposition of woody materials.

CONCLUSIONS

1. Storage temperature is the key factor that affects the off-gassing from stored wood pellets. Higher

peak emission factors are always associated with higher temperatures.

2. Increased headspace increases off-gas emissions because of the availability of oxygen for pellet decomposition.
3. Increased humidity in the headspace in the container increases the emissions of CO_2, CO, and CH_4.

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Natural Sciences and Engineering Research Council of Canada (NSERC-CRDPJ342219-06); Wood Pellet Association of Canada (Grant 11R42500).

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ISSUE BRIEF

A BAD BIOMASS BET

WHY THE LEADING APPROACH TO BIOMASS ENERGY WITH CARBON CAPTURE AND STORAGE ISN'T CARBON NEGATIVE

With every passing year—with every record-setting temperature or unthinkably destructive flood—the dangers of climate change become more apparent. As policymakers around the world increasingly recognize the devastating impacts of climate change, there is growing interest in not just curtailing new emissions of heat-trapping greenhouse gases from smokestacks, tailpipes, and buildings, but also finding ways to remove significant quantities of these gases already in the atmosphere, particularly carbon dioxide. In fact, most pathways modeled by the Intergovernmental Panel on Climate Change (IPCC) to avoid the worst impacts of climate change rely on extensive efforts to remove carbon dioxide from the atmosphere.[1]

One approach championed by the biomass industry is burning plant matter—most notably, trees and other wood from forests—as fuel to create electricity and capturing the resulting emissions from the power plant smokestack.[2] The technical name for this is "bioenergy with carbon capture and storage" (BECCS), and it is virtually the only technological carbon dioxide (CO_2) removal option explicitly included the IPCC's 2018 models.[3] BECCS is a particularly hot topic in the United Kingdom where multiple committees and agencies of the government are studying it.[4] However, despite its prominence in the IPCC report, policymakers should not assume BECCS is carbon negative. Studies have

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already shown that the widespread use of this technology would tax global ecological limits, threaten public health, and cost a fortune.[5] Furthermore, the IPCC models largely looked at scenarios in which biofuels (transportation fuels made from biomass) are supplied primarily by dedicated specialty crops, while the U.K. government is most focused on biopower (electricity made from biomass) from forests and forest residues.[6] The analysis described in this issue brief shows that this forest/wood-based approach to BECCS, as it is likely to be implemented initially, will make the impacts of climate change worse, not better.

The biomass industry wants governments to adopt the idea that BECCS is inherently carbon negative (i.e., that it will result in a net removal of CO_2 from the atmosphere). This claim is based on the erroneous premise that bioenergy on its own is carbon neutral. Forests and other plants absorb carbon; thus, the argument goes, any carbon released while burning bioenergy can be absorbed by new plants as they grow. Artificially capturing and sequestering emitted CO_2, proponents say, would allow those same plants to absorb additional carbon, making the BECCS process carbon negative. However, scientists are clear that this simplistic picture of bioenergy and BECCS is flawed. Biopower from forests without carbon capture is rarely carbon neutral.[7] According to the IPCC, it is inaccurate to "automatically consider or assume biomass used for energy [is] 'carbon neutral,' even in cases where the biomass is thought to be produced sustainably."[8] Since bioenergy is not inherently carbon neutral, BECCS is not inherently carbon negative.

Moreover, adding carbon capture and storage (CCS) to a power plant requires additional energy for installation and operation, and ultimately no CCS technology captures *all* of the CO_2 at the smokestack.[9] Neither of these sources of carbon are currently accounted for by BECCS proponents.

Finally, BECCS proponents try to focus only on the carbon emissions resulting from combustion. However, NRDC commissioned a new analysis to examine the emissions from each step in the biomass supply chain, and our model revealed that more than one third of carbon emissions occurs off-site rather than at the power station and thus cannot be captured by the addition of CCS at the smokestack. This makes it difficult for BECCS to be carbon neutral, much less carbon negative.

This issue brief disaggregates and quantifies these *uncapturable* emissions in one specific and common scenario: pellets made of wood from pine plantations in the southeastern United States fueling a BECCS operation in the United Kingdom. Our analysis shows that this approach to BECCS not only is not carbon negative but drives substantially more carbon pollution than the current electrical grid averages in either the United States or the United Kingdom.

Given this information, it is clear that policymakers should not waste money on this approach to BECCS and should look carefully before betting on BECCS more generally.

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UNCAPTURABLE CARBON EMISSIONS ALONG THE BECCS SUPPLY CHAIN

The process of burning wood to generate electricity at large scale starts long before the smokestack. Producing the fuel requires cutting down trees, transporting the trees, drying the wood, turning the wood into pellets, and transporting the pellets. Only after all that can it be burned in a power plant. However, when talking about CCS, only the emissions from the power plant can potentially be captured; emissions from making and transporting the pellets are uncapturable. In addition, because old trees store more carbon than young growth, harvesting wood leads to "forgone sequestration," the carbon storage that would have occurred over time in the uncut forest but never materializes—a loss that occurs even when accounting for regrowth of the new forest (the difference between dark and light trees in Figure 1). This loss of sequestration also cannot be captured at the smokestack.

To estimate uncaptured BECCS emissions and better understand if and under what conditions BECCS helps fight climate change and when it makes things worse, NRDC commissioned a study to model carbon emissions in one particular supply chain: Wood sourced from loblolly pine plantations in the southeastern United States used to produce pellets, which are then burned as fuel in the United Kingdom.

This scenario is representative of the most common supply chain for biomass to electricity. The largest investments in biopower without carbon capture have been made by the U.K. power company Drax, which operates the single largest power station in the United Kingdom and fuels two-thirds of it with biomass.[10] Drax sources over 60 percent of its wood from the U.S. Southeast, sourcing biomass in the form of wood pellets from Enviva, the largest manufacturer of wood pellets in the world.[11] Drax also operates three company-owned pellet mills in Louisiana and Mississippi, which it uses to self-supply biomass.

Drax is pushing the U.K. government to subsidize BECCS heavily, and the U.K. government appears poised to rely heavily on BECCS in its plan for achieving net-zero emissions by 2050 under the Paris Agreement.[12] While our analysis used data from Drax and southeastern U.S. forests, the results presented below suggest we should be looking closely and skeptically at claims of carbon negative emissions from BECCS more generally.

Using the numbers generated from our model, we found that for every megawatt-hour (MWh) of electricity that a standalone biopower plant would deliver to the grid, the uncapturable emissions along the supply chain equal 558 kilograms of carbon dioxide equivalent (kg CO_2e). The total emissions rate from a bioenergy plant without CCS is 1,481 kg CO_2e/MWh. When you add in CCS—which

FIGURE 1: SOURCES OF EMISSIONS FOR STANDALONE BIOPOWER AND BECCS

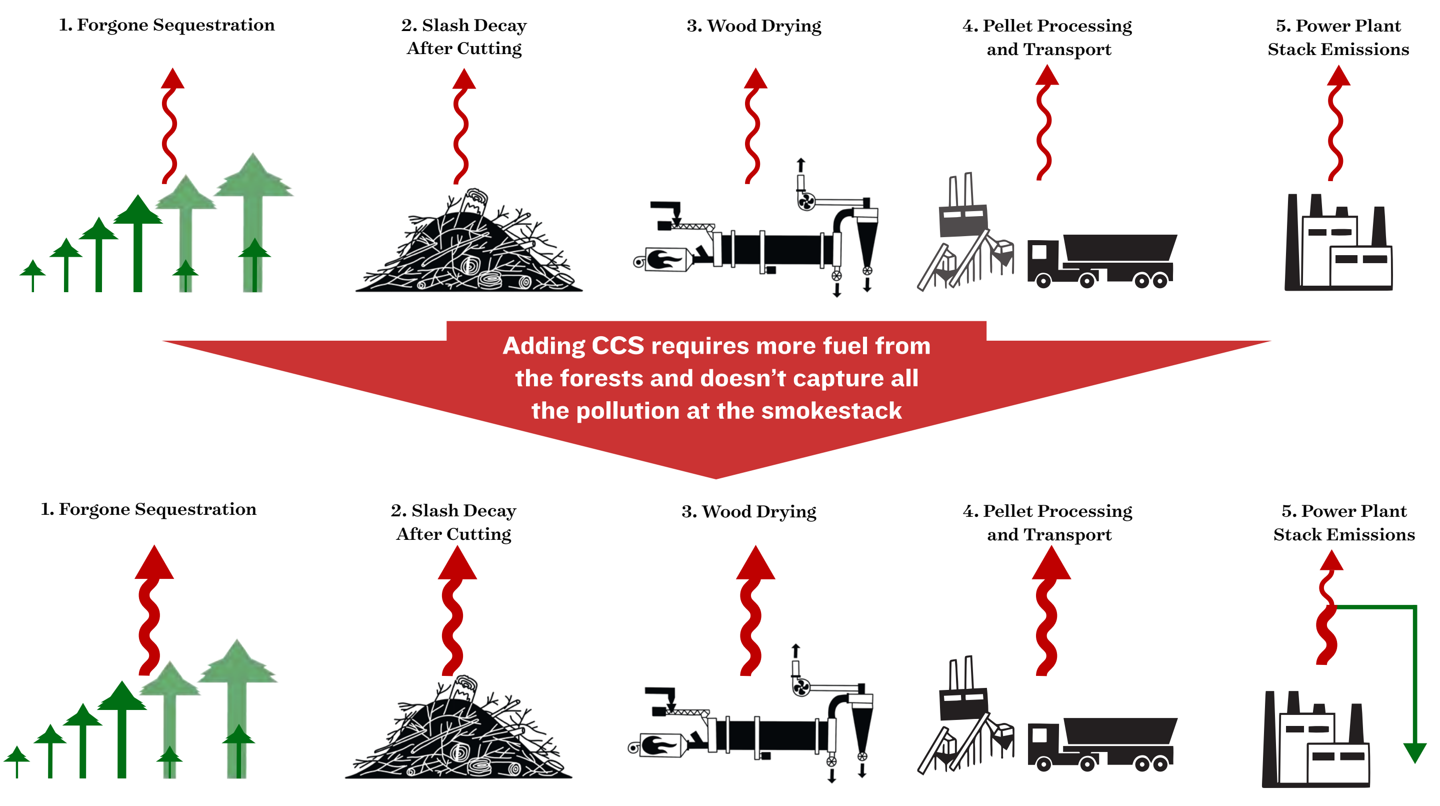
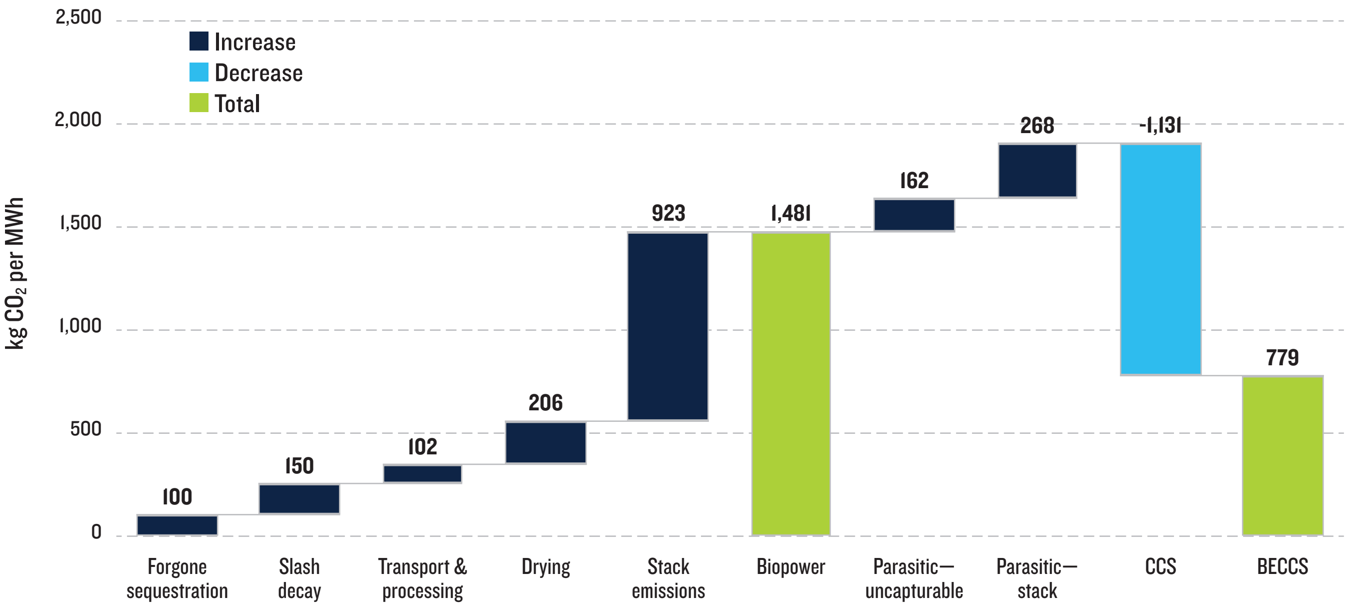


FIGURE 2: SUMMARY OF THE EMISSIONS FROM BIOPOWER AND BECCS



requires more fuel and does not have a 100 percent capture rate—the result is significant remaining emissions: 779 kg CO_2e/MWh, as shown in Figure 2 (for calculations, see the methodology section at the end of this report). This is equal to about 80 percent of what comes out of a coal plant's smokestack per megawatt-hour.

The uncaptured emissions from BECCS are equal to about 80 percent of what comes out of a coal plant's smokestack per megawatt-hour.

Bioenergy Reduces the Amount of Sequestered Carbon in a Forest—Increasing Carbon in the Atmosphere Instead

The common fallacy when talking about large-scale electricity generation from burning forest biomass is that because the trees absorbed their carbon from the atmosphere and can be replanted and grow back, over a long enough period of time cutting and burning forests won't change the balance of carbon stored on the land versus in the atmosphere.[13] Even if this were true, simply maintaining the current amount of sequestered carbon in the world's forests is not enough to avert the worst impacts of climate change. All pathways identified by the IPCC to address the climate crisis involve not just maintaining but enhancing forest carbon sinks.[14] Meanwhile, our model shows that bioenergy does not even maintain carbon sequestration levels; cutting and burning forests in the southeastern United States leads to a net shift of carbon from the land to the air that lasts for decades.

When a stand of mature trees (about 25 years old in a southeastern plantation) is cut down or thinned, new trees can regrow, but the younger stand absorbs less carbon than the mature trees for decades.[15] Forgone sequestration, as mentioned earlier, is the difference in carbon storage between newly planted saplings in a harvested forest and the older forest that would have remained uncut in the absence of bioenergy demand.[16] Forgone sequestration happens even under the best-case scenario in which trees are replanted and/or regrow immediately.

In the southeastern plantations that we modeled, this accumulation of non-sequestered carbon lasts for decades until the new stand has grown old enough to balance out the sequestration debt that the cutting has caused. This picture is a little better when forests are thinned, which is the process of removing some trees so that those remaining have less competition for sunlight and nutrients and therefore can grow faster.[17] In forest plantations, this is done to maximize the financial value of the overall harvest. Unfortunately, the result is still more than two decades of forgone sequestration in the forest.

Forgone sequestration is a significant source of emissions that carbon accounting regimes in the United Kingdom and elsewhere currently ignore.[18] It results in decades during which there is more heat-trapping carbon in the atmosphere than there would have been absent bioenergy production. The IPCC has made it clear that we must immediately, dramatically reduce our carbon emissions to avoid the worst effects of climate change. Deploying biopower plants at a global scale would do the opposite.[19]

Our model was able to quantify this forgone sequestration and found that for a southeastern loblolly pine plantation, harvesting the wood to generate 1 megawatt-hour at a standalone biopower plant leads to between 68 and 370 kg CO_2e of forgone sequestration. The lower end of the range reflects thinning practices, and the higher end represents the impact of clearcutting (where whole sections of forest are cut to the ground and then replanted). For comparison, a natural gas power plant emits about 360 kg CO_2e/MWh at its smokestack.[20]

Leftover Woody Materials Release Carbon as They Decay

After harvesting wood, there are treetops, limbs, and other woody materials left behind; these materials are known as "slash." As slash decays, it breaks down just like a compost pile. Slash returns important nutrients to the forest soils, but most of the carbon ends up back in the atmosphere. Our model found that the slash from harvesting wood to generate 1 megawatt-hour at a standalone biopower plant releases about 150 kg CO_2e.

Drying, Processing, and Transporting Pellets Takes Energy—and Emits CO_2

Wood must be dried before it can be processed into pellets. Just like drying your laundry, drying out this wood requires heat, and making that heat generates significant emissions. Even if the heat comes from burning some of the wood, these are emissions that can't be captured by CCS. Our model found that this step in the supply chain can generate about 206 kg CO_2e/MWh.

In addition to drying, wood needs to be transported to the processing site, ground and compressed into pellets, and then shipped, in our scenario across the Atlantic. All of these steps require the use of heavy machinery, trucks, and ships—all typically run on fossil fuels. These steps alone can generate about 102 kg CO_2e/MWh.

CCS Technology Takes Energy and Does Not Capture Everything at the Smokestack

While the focus of our model is on the uncapturable emissions associated with the bioenergy supply chain, it is important to note that carbon capture and storage technology both requires additional energy and does not have a 100 percent capture rate. Carbon capture technology is still fairly new. Current capture rates stand at around 90 percent, and the literature suggests that it will improve to only about 95 percent once the technology is mature.[21]

At the same time, capturing carbon from flue gas requires extra energy at the power plant.[22] This is especially true if capture technology is bolted on to an existing power plant (as is the case with most current plants) instead of integrated into the plant's design.[23] Our model assumes that adding CCS requires about 29 percent more energy, which is a midpoint between bolting on and integrating capture

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technology. This means burning more pellets and producing more of the uncapturable emissions discussed above. When considering the additional energy required for CCS technology, combined with the 95 percent capture rate, our study found that generating 1 megawatt-hour at a BECCS power plant leads to 779 kg CO_2e. As noted earlier, this is alarmingly close to the amount of pollution that a coal plant emits.

CONCLUSION

Our modeling shows that employing BECCS at a power station like the one operated by Drax, while relying on the biomass supply chains similar to what Drax predominantly relies on today, will make the climate crisis worse for decades to come. It is possible that burning other types of biomass would be less harmful, but this approach to BECCS isn't even close to carbon neutral, let alone carbon negative.

And there is no reason to think the situation is about to change. In fact, Drax is locking in its import supply chains. The company recently purchased Pinnacle Renewable Energy in Canada, the second-largest producer of industrial wood pellets in the world, and now has ownership interests in 17 other pellet plants and development projects across the United States and Canada.[24] This makes Drax not only the operator of the largest wood-burning power station in the world, but a top pellet manufacturer, with interests in expanding global markets for bioenergy.

What's more, this analysis doesn't take into account other challenges to BECCS. Assuming a carbon-negative approach to BECCS could be found, the amount of land that would need to be dedicated to biomass production would be enormous to meet the expansive visions some have for the technology. The integrated assessment models used by the IPCC for BECCS focus disproportionately on low-carbon energy crops and agricultural residues, they assume ambitious increases in available land and agricultural yields to furnish liquid biofuels, and many treat these feedstocks and end uses as carbon neutral.[25,26,27] Even with their underestimations, the IPCC models that include BECCS

in the pathway for limiting global warming to 1.5 degrees Celsius require up to 0.8 billion hectares of land.[28] That's equal to about 16 percent of the land currently used for agriculture worldwide; devoting that much land to biomass production risks major impacts on freshwater supplies, wildlife habitat, and food security.[29]

Furthermore, burning wood—just like burning fossil fuels—produces a host of local and regional air pollutants that cause an array of health harms, from asthma attacks to cancer to heart attacks, resulting in hospital visits and premature deaths.[30] These can be reduced through pollution controls but not eliminated.

Finally in addition to the terrifying land implications of deploying BECCS at scale and the public health threat from burning wood, there is the financial cost of BECCS. Drax is seeking tens of billions of pounds in subsidies from the U.K. government to try to make BECCS work. A recent estimate suggests that a proposed BECCS plant at the Drax power station will require a total £31.7 billion ($42.9 billion) in subsidies over 25 years.[31]

The bottom line is that policymakers around the world should not bet on BECCS. Any program to subsidize BECCS at Drax or elsewhere using supply chains similar to the one modeled here will be ineffective in drawing down emissions, risk significant harm to nature, and divert public resources that would be better invested elsewhere. Instead, policies and public dollars should be invested in proven options, such as energy efficiency, non-emitting renewables such as wind and solar, and protecting existing forests and growing more of them.

METHODOLOGY

Our analysis is intended to inform policy decisions, not to estimate emissions from specific power plants. To this end, the model we commissioned is heuristic and available to the public. While it has the capacity to look at a range of feedstocks, we have set the inputs to assess both the thinning and the clearcutting of southeastern loblolly pine plantations to generate the wood to produce pellets for electricity.

While the model looks just at the results for a BECCS power plant, we have broken out the results into those for a standalone biopower plant and then a BECCS plant.[32] This highlights the fact that uncapturable emissions are very much a concern for standalone biopower too. This methodology section lays out how we used the results from the model to calculate the emissions presented above.

Forest Emissions

To calculate forest-related emissions, we needed to decide what type of forests to model. Drax reports getting a majority of its pellets from the U.S. South; of that, roughly one-quarter comes from thinnings and 38 percent from "low-grade round wood." (Most of the remainder of the feedstocks are mill residues that don't result in any forgone sequestration.[33]) This categorization is unclear, as thinning is a harvest practice and low-grade round wood is a class of timber. The alternative to thinning in a plantation is clearcutting. To understand the policy implications of building BECCS around similar sourcing, we first assumed that both thinnings and low-grade round wood are coming from loblolly pine plantations and then looked at the two different harvest practices. For this type of southeastern forest, thinning would generate forgone sequestration equal to 68 kg CO_2e/MWh, and clearcutting would generate 370 kg CO_2e/MWh.[34] If we assume that the low-grade round wood comes from thinning, we get 63 percent of the feedstock causing thinning-level forgone sequestration, with no further forgone sequestration from the balance of feedstock. This sets a lower limit of 43 kg CO_2e/MWh of forgone sequestration. On the other hand, if we assume the low-grade round wood comes from clearcutting and weight the forgone sequestration accordingly, we get 157 kg CO_2e/MWh. We have used the midpoint, 100 kg CO_2e/MWh, as the nominal value.

The other source of forest emissions that must be accounted for is the decay of the slash—the tops and limbs left in the forest after thinning or clearcutting. These are important for a healthy, nutrient-rich soil, but some are taken to be burned to dry the wood that will be turned into pellets. Per our model, decay of the remaining slash results in 147–331 kg CO_2e/MWh for loblolly pine and is the same for thinning and for clearcutting.[35] Applying this to 63 percent of the feedstock to mirror Drax's mix, we have emissions of 93–208 kg CO_2e/MWh and a midpoint nominal value of 150 kg CO_2e/MWh.

Pellet Drying, Processing, and Transportation

To look at forest biomass fueling power plants in the United Kingdom, we need to add the emissions associated with pelletizing and transporting pellets to the outputs from our model. Estimates for transport and processing emissions range from 109 to 160 kg CO_2e/MWh.[36] Recent reporting from Drax for processing and transport estimates these emissions at 109 kg CO_2e/MWh, which includes 7 kg CO_2e/MWh of emissions resulting from energy used to dry the wood in advance of pellet production.[37] Because our model has generated a separate estimate for emissions from drying (below), we have adjusted Drax's reported value to 102 kgCO_2e/MWh to reflect transport/processing absent drying and to avoid double counting.[38]

Drying wood in advance of pellet production generates significant emissions. At harvest, a pine bole's mass can be over half water by weight.[39] This means that for every pound of oven-dry wood, green wood can hold more than a pound of water. Feedstock for a wood pellet plant, however, is limited to a moisture content of approximately 12 percent or less to manufacture finished wood pellets with a 7 percent moisture content.[40] For loblolly pine, our model, which is based on a review of the industry literature, generated estimates of pellet manufacturing drying emissions ranging from 190 to 222 kg CO_2e/MWh, and we use the midpoint, 206 kg CO_2e/MWh, as a nominal value.[41]

Carbon Capture and Storage

As explained earlier, capturing carbon from flue gas requires extra energy, known as parasitic load, and capture technology is does not capture all the CO_2.[42] Using capture technology bolted on to an existing power plant is generally assumed to require more energy than capture technology integrated into the power plant's design.[43] We use our assumptions around bolt-on CCS technology to set our high parasitic load value and estimates from the literature for integrated design to set our low value. Our consultant surveyed published literature to discover that estimates of parasitic load for both approaches ranged widely, increasing the power plant's fuel demand by 15 percent to 43 percent. Because assessing this aspect of CCS technology is not our focus here, we simply chose the midpoint of this range, 29 percent, as our nominal value. This extra energy consumption at the power plant means more forests clearcut or thinned; more forgone sequestration; more slash decay; and more pellet drying, processing, and transporting. Adding up the extra uncapturable emissions from the fuel needed to meet the parasitic load, we get 162 kg CO_2e/MWh. Furthermore, when this fuel is burned, there are more emissions at the stack—about 268 kg CO_2e/MWh.[44]

The efficiency of carbon capture technology is also a function of technological maturity. Current capture rates are around 90 percent, and the literature suggests that it will improve to about 95 percent once the technology is mature.[45] We use the more favorable assumption for CCS and use 95 percent as our nominal value for capture efficiency.

Adding Up the Emissions From BECCS

Once the forest is cut and the pellets are made and shipped across the ocean, they are burned in a power plant. The top 10 percent of coal power plants in the United States have an average efficiency of about 37.6 percent.[46] We use this efficiency to model a biopower plant without CCS. Meanwhile, all the carbon contained within the pellets is emitted from the stack. This results in a release of about 923 kg CO_2e/MWh into the atmosphere.[47] These are the stack emissions just for biopower without CCS.

If we add up the emissions for a simple biomass-fueled power plant, we have 559 kg CO_2e/MWh of uncapturable emissions plus 923 kg CO_2e/MWh at the stack for a total of 1,481 kg CO_2e/MWh. Again, these are just the emissions for biopower without CCS.

When we add emissions associated with meeting the parasitic load, we get 162 kg CO_2e/MWh extra uncapturable emissions and 268 kg CO_2e/MWh extra stack emissions. With a 95 percent capture efficiency, 1,131 kg CO_2e/MWh are stored. As is summarized in Figure 2, this leaves BECCS responsible for an increase in pollution of 779 kg CO_2e/MWh.

For reference, the stack emissions of a combined-cycle combustion turbine plant burning natural gas at 50 percent thermal efficiency are 360 kg CO_2e/MWh, and the U.S. national average grid emission rate is 430 kg CO_2e/MWh.[48] In Europe, U.K. grid emissions average 233 kg CO_2e/MWh and E.U. grid emissions average 255 kg CO_2e/MWh.[49]

ENDNOTES

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2 See for example: Drax Group, *Supporting the Deployment of Bioenergy Carbon Capture and Storage (BECCS) in the UK: Business Model Options,* April 2021, https://www.drax.com/carbon-capture/supporting-the-deployment-of-bioenergy-carbon-capture-and-storage-beccs-in-the-uk-business-model-options/.

3 The integrated assessment models used in the IPCC's most recent pathways report relied almost exclusively on afforestation, reforestation, and BECCS. (See Chapter 2.3.4.) Only 2 of the 21 IAMs also explicitly modeled direct air capture of C02. (See Table 2.SM.6.) The report notes that while other forms of carbon dioxide removal have been added to IAMs since the AR5, BECCS is still heavily favored by the models despite BECCS being deployed beyond the world's capacity and other options offering a range of co-benefits. Intergovernmental Panel on Climate Change, *Global Warming of 1.5 °C, Chapter 2*, October 2018, https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter2_Low_Res.pdf and https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter2_SM_High_Res.pdf.

4 See for example: U.K. Parliament Environmental Audit Committee, "Call for Evidence: Technological Innovations and Climate Change: Negative Emissions Technologies," accessed September 30, 2021, https://committees.parliament.uk/call-for-evidence/599/; and U.K. Parliament Business, Energy and Industrial Strategy Committee, "Net Zero Governance: Inquiry," accessed September 30, 2021, https://committees.parliament.uk/work/1343/net-zero-governance/.

5 Felix Creutzig et al., "Considering Sustainability Thresholds for BECCS in IPCC and Biodiversity Assessments," *GCB-Bioenergy* 13 (February 15, 2021): 510–515, https://doi.org/10.1111/gcbb.12798; Ziphin Ai et al, "Global Bioenergy with Carbon Capture and Storage Potential Is Largely Constrained by Sustainable Irrigation," *Nature Sustainability*, July 2021, DOI: http://dx.doi.org/10.1038/s41893-021-00740-4; American Lung Association et al., "Letter from Prominent Health Organizations to U.S. Congress about the Health Harms of Biomass," September 13, 2016, https://www.naccho.org/uploads/downloadable-resources/Policy-and-Advocacy/Health-organizational-letter-health-impacts-of-biomass.pdf; Phil MacDonald and Tomos Harrison, "Understanding the Cost of the Drax BECCS Plant to UK Consumers," Ember, May 25, 2021, https://ember-climate.org/project/cost-drax-beccs-plant/.

6 According to the IPCC, their integrated assessment models assume bioenergy is supplied mostly from second generation biomass feedstocks such as dedicated cellulosic crops (for example, miscanthus or poplar) as well as agricultural and forest residues, with forest residues a relatively very small component. IPCC, *Global Warming of 1.5 °C, Chapter 2*, 124, https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_Chapter2_Low_Res.pdf.

7 Michael T. Ter-Mikaeilian, Stephen J. Colombo, and Jiaxin Chen, "The Burning Question: Does Forest Bioenergy Reduce Carbon Emissions? A Review of Common Misconceptions About Forest Carbon Accounting," *Journal of Forestry* 11, no. 1 (January 2015): 57–68, http://www.ingentaconnect.com/content/saf/jof/2015/00000113/00000001/art00009; Sami Yassa, "Think Wood Pellets Are Green? Think Again," NRDC, May 2015, https://www.nrdc.org/sites/default/files/bioenergy-modelling-IB.pdf; Mary S. Booth, "Not Carbon Neutral: Assessing the Net Emissions Impact of Residues Burned for Bioenergy," *Environmental Research Letters* 13, no. 3 (February 21, 2018), https://iopscience.iop.org/article/10.1088/1748-9326/aaac88; Thomas Buchholz, John Gunn, and Brian Kittler, "The Carbon Impacts of UK Electricity Produced by Burning Wood Pellets from Drax's Three U.S. Mills," Spatial Informatics Group, May 27, 2019, https://www.southernenvironment.org/uploads/publications/2019-05-27_Drax_emissions_-_SIG_report_Phase_II.PDF.

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10 Drax Group, *Annual Report and Accounts 2020*, 54, accessed September 23, 2021, https://www.drax.com/wp-content/uploads/2021/03/Drax_AR2020.pdf.

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13 See for example this claim from the National Alliance of Forest Owners: "Because the energy is produced using organic, renewable, regenerating material that follows a natural carbon cycle, the use of wood biomass for energy production does not increase greenhouse gas (GHG) concentrations in the atmosphere over time if done sustainably." National Alliance of Forest Owners, "Issues: A Renewable Resource*,"* accessed September 28, 2021, https://nafoalliance.org/issues/a-renewable-resource/.

14 IPCC, *Global Warming of 1.5 °C: Summary for Policymakers*.

15 James E. Smith et al., *Methods for Calculating Forest Ecosystem and Harvested Carbon with Standard Estimates for Forest Types of the United States*, U.S. Department of Agriculture, General Technical Report, Forest Service, April 2006, http://www.actrees.org/files/Research/ne_gtr343.pdf.

16 It is tempting to argue that since plantations are grown for merchantable wood, they would be cut down anyway and thus there is no forgone sequestration. There are two reasons this is wrong. First, bioenergy adds marginal demand maintaining or increasing the land area managed, meaning foregone sequestration happens directly or indirectly. Second, in the context of evaluating a climate policy, the alternative should be the best use of the land, which means cutting down a forest comes with the cost of foregone sequestration.

17 This process is known as "release." Release is a forest stand's growth response to the removal of trees (in this case, thinning) that compete for nutrients and sunlight. Maryland Deptartment of Natural Resources, *Glossary of Forest Terms*, accessed September 23, 2021, https://dnr.maryland.gov/forests/Pages/gloss.aspx.

18 See for example: "Renewables Obligation Order 2015, Schedule 3 Land Criteria," accessed September 26, 2021, https://www.legislation.gov.uk/ukdsi/2015/9780111138359/schedule/3; and Ofgem, *Renewables Obligation: Sustainability Criteria*, April 24, 2018, https://www.ofgem.gov.uk/sites/default/files/docs/2018/04/ro_sustainability_criteria.pdf.

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32 Please see the supplemental materials for detailed calculations.

33 See, for example, Drax Group, *Annual Report and Accounts 2020*; Drax reports the proportion of feedstocks in its U.S. supply from "mill waste" (35 percent), "branches and tops" (2 percent), "thinnings" (25 percent) and "low grade roundwood" (38 percent).

34 Based on the tCO2e/mmBtu for 20-year foregone sequestration in Technical Appendix (Table 6) converted to an output basis assuming a heat rate of 9.08mmBtu/MWh for a stand-alone biopower plant with no CCS. See pp. 17–18 of the Technical Appendix and supplemental materials; note that this heat rate is aggressive for a solid fuel power plant.

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44 For both the extra uncapturable emissions and the extra stack emissions, we calculate 29 percent of the stand-alone biopower plant emissions in these categories. This means we are reporting emissions on a MWh output-to-the-grid basis.

45 Hammerschlag, *Uncaptured Biogenic Emissions*, 16.

46 On a higher heating value (HHV) basis. Hammerschlag, *Uncaptured Biogenic Emissions*, 17-18.

47 Per our model (see rows 'Tables C1-C4'!110:129), loblolly pine has an emissions rate of 0.1016 tCO2e/mmBtu. Converting this to an output-to-the-grid basis at 9.08mmBtu/MWh results in emissions of 923 kg CO2e/MWh.

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Guideline: Storage and Handling of Wood Pellets

Resultat Kontrakt (RK) Report

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1 INTRODUCTION

The use of solid biofuels i.e. wood pellets and briquettes has increased significantly during the last 15 years. Biomass briquettes are mainly used by small scale consumer's i.e. private households while biomass pellets are used both within the private sector and for commercial heat and power production in large scale, industrial plants. During the past 10 years wood pellets have become an important energy carrier to substitute coal in the Danish energy sector. Today most pellets used in Denmark are produced abroad and shipped to Denmark in large container vessels where they are used as fuel in combined heat and power plants (CHP-plants), for district heating and small scale pellet boilers. The pellet consumption in Denmark is expected to increase strongly within the next 10 years and it is therefore necessary to provide a guideline for secure handling of solid biofuels. Recently different guidelines have been published by the Association of German Engineers [1], German pellets institute [2] or the Nordic Innovation Centre [3] dealing with safe handling and storage of solid biofuels. Safety considerations of biomass handling have been picked up in several journal articles and books dealing with solid biofuels [4-11].
A number of serious incidents have been reported across Europe in connection with false handling of wood pellets. Some of them have resulted in injury or even death of the handling personnel and some resulted in great damage and financial loss for the companies handling the pellets. Table 1 provides examples of accidents in relation with handling and storage of solid biofuels during the last 10 years. Most people consider wood materials as harmless, natural products and underestimate the risk potential, especially when storing it in closed compartments i.e. silo, storage room or transport vessels.

Table 1: Examples of accidents related to the storage and transportation of solid biofuels [4]

Year	Place	Accident
2002	Rotterdam	A ship loader on board of the "Weaver Arrow" loaded with wood pellets went down in the storage compartment and suffocated
2005	Gruvön	A seaman suffocated on board of the wood freighter "Eken" when he went down the stairs to the cargo room that was filled with pulpwood.
2006	Helsingborg	A seaman on board of the "Saga Spray" suffocated when he went down the stairs to the storage compartment filled with wood pellets. A ship loader and a rescue team rushing for assistance got severely injured
2006	Skelleftehamn	A seaman on board of the "Noren" died when he entered a storage compartment filled with wood chips
2007	Timrå	The captain and one seamen of the wood freighter "Fembria" died when they walked in the storage compartment filled with timber wood.
2007	Finland	A person died when walking into a small (10 t) wood pellets silo.
2008	Finland	Another person died when walking into a small (10 t) wood pellets silo.
2009	Bornholm	Two seaman on board of the "Amirante" died when they entered the cargo room filled with wood pellets. The pellets were loaded one day before.
2010	Germany	A person suffocated in a pellet storage (150 t)
2010	Ireland	A person suffocated in a pellet storage (7 t)
2011	Switzerland	A person suffocated in a pellet storage (100 t)

2 SCOPE

The intention of this guideline is to provide recommendations for the handling of solid biofuels in a responsible and safe way, minimizing risks for health and safety. The guideline is addressing both large and small scale producers, transporters and end users of solid biofuels. Focus is set on wood pellets and wood chips since they are by far the most common type of solid biofuels in Denmark.

3 TERMINOLOGY AND DEFINITIONS

Terms and terminology of this guideline apply as given in EN 14588. Specifications of different types of solid biofuels are defined according to EN 14961-1

4 SOLID BIOFUELS

Solid biofuels cover a wide range of sizes and shapes from wood pellets to straw bales. Solid biofuels and their typical dimensions and preparation method are specified in the European standard EN 14961 as shown in Table 2.

Table 2. Major trade form of solid biofuels according to EN 14961-1 [1]

Name	Typical particle size	Preparation
Whole tree	> 500 mm	No preparation or delimbing
Wood chips	5 to 100 mm	Cutting with sharp tools
Hog fuel	undefined	Crushing with blunt tools
Log wood/firewood	100 to 1000 mm	Cutting with sharp tools
Bark	undefined	Debarking residues from trees, can be crushed, shredded or unshredded
Bundle	undefined	Lengthwise oriented & bound
Fuel powder	< 1 mm	Milling
Sawdust	1 to 5 mm	Cutting with sharp tools
Shavings	1 to 30 mm	Planning with sharp tools
Briquettes	Diameter > 25 mm	Mechanical compression
Pellets	Diameter < 25 mm	Mechanical compression
Small square bales	0.1 m^3	Compressed and bound to cubes
Big square bales	3.7 m^3	Compressed and bound to cubes
Round bales	2.1 m^3	Compressed and bound to cylinders
Chopped straw or energy grass	10 to 200 mm	Chopped during harvesting or before combustion
Grain or seed	undefined	No preparation or drying except for process operations necessary for storage
Shells and fruit stones	5 to 15 mm	No preparation or pressing and extraction by chemicals
Fiber cake	undefined	Prepared from fibrous waste by dewatering

5 GENERAL RISK EVALUATION OF BIOMASS HANDLING AND STORAGE

Major problems that can arise when handling large amounts of biomass are connected to dust formation, off gassing, self-heating and biological hazards. The quality of biomass is subject of large variation and depending on biomass origin, size, shape, composition and moisture content different problems can occur during handling and storage. The most common problems are summarized in the following section:

5.1 Self-heating and self-ignition

Self-heating of biomass can occur either by chemical oxidation reactions and/or microbiological decay. The more fresh the biomass and the higher the moisture content the greater is the risk for self-heating and potential self-ignition. Self-heating of biomass is a serious problem and has been cause of several incidents.
Oxidation reactions require oxygen and the oxidation rate of the biomass seems to depend on the age of the biomass and generally decreases with storage time. The reactions go along with oxygen depletion which is a potential risk for pellet handling personal. The mechanism behind the oxidation reactions are not completely understood but it is likely connected to the biomass extractives. Heat development due to microbiological decay is to large extent depending on the moisture content and the surface area [5].

There are some general recommendations to avoid self-heating and self-ignition of biomass. According to Obernberger and Thek they can be summarized as follows [5]:

- Avoid storage and transport of large volumes if the fuel's tendency for self-heating is unknown
- Be conscious of the risk of self-heating and spontaneous ignition in large storage volumes
- Avoid mixing of different types of biomass fuels in one storage
- Avoid mixing of biomass fuels with different moisture content
- Avoid large parts of fines in the fuel bulk
- Measure and monitor the distribution temperature and gas composition within the stored material
- Prepare (large) silos for gas injection at the bottom of the silo in case a fir should occur
- Pellet storage units must be equipped with size dependent, appropriate means of ventilation control to remove carbon monoxide and carbon dioxide

In case a fire occurs it has to be noted that fire fighting procedures are difficult since water cannot be used in many cases, especially when pellets are stored in a silo. Pellets absorb moisture quickly and swell to about 3 to 4 times of their size, forming a cake like structure that can become very hard and is difficult to remove from the silo. The pellet expansion can in worst case result in a burst and collapse of the pellet silo. Self-heating occurs usually deep inside the bulk and the fire source is therefore difficult to reach.
Gases such as nitrogen and carbon dioxide and foams are usually the methods of choice to extinguish fires in pellet silos. Fire fighting operations, especially in large silos can be very complex and expensive operations. The technical research institute of Sweden (SP Sveriges Tekniska Forskningsinstitut) has published methods for extinguishing fires in wood pellet silos [17,18].

5.2 Off-gas formation and oxygen depletion

Biomass releases CO and CO_2 and oxygen is consumed in chemical oxidation processes and microbiological processes. CO and CO_2 are odourless toxins and can be lethal at low concentrations. Low oxygen concentrations can lead to suffocation of the handling personal when entering closed biomass storage without proper ventilation. Several death cases have been reported in connection with wood pellet storages during the last years both in large silos and container vessels but also in relatively small pellet storage in private homes. A closed biomass storage i.e. pellet storage room should never be entered before it has been ventilated with fresh air. CO and CO_2 are heavier then air and will accumulate at higher concentrations at the bottom of the storage. Furthermore does biomass contains various different volatile organic compounds (VOCs) i.e. terpenes and terpenoids, esters, ethers and aldehydes. A lot of these VOCs can evaporate from the wood and in some cases they might accumulate in concentrations that may cause a health and safety hazard.

5.3 Dust formation

Handling of biomass can liberate significant amounts of dust. Especially dry biomass particles have often a low density and a high drag coefficient and can easily be dispersed in the air. Airborne dust particles pose a great risk to anyone coming into contact with them, mainly through inhalation. Dust can have different impacts on health, but the main effects of biomass dust are on the lungs and the respiratory system. The inhalation of an excessive amount of dust particles can result in irritation of the lungs, nasal and respiratory system. It can give raise to allergic reactions and severe illness such as cancer when exposed repeatedly over a longer period of time. Apart from that dust can irritate the eyes, causing sourness and conjunctivitis. There are clear limitations for dust exposure of working personal on national and international level. For Denmark the Danish Working Environment Authority (Arbejdstilsynet) can be contacted for further information.

The second great risk connected to biomass dust is the risk for dust explosion. Dust has a very large surface area compared to its mass. Ignition of biomass can only occur at the interphase between biomass and air and this causes dust to be much more flammable then bulk material. Depending on biomass type, size and shape of the particles, explosive suspensions can be formed at different mass to oxygen ratios. Those explosive mixtures can be ignited by electrostatic discharges, friction or hot surfaces and can result in fatal damage. There are strict regulations in place to prevent dust explosion accidents. In some cases it might be necessary to classify biomass handling processes according to the ATEX directive. For Denmark the Danish Technological Institute (Teknologisk Institut) can be contacted for further information and help regarding risk evaluation and safety procedures. Table 3 shows an example of the ignition/explosion properties of dust from wood pellets (white dust), bark pellets, coal and a fungi and the used testing standard [5]. The pellet handbook from Obernberger and Thek [5] should be consulted for further reading.

Table 3. Ignition and explosion properties of dust from wood pellets (white dust), bark pellets, coal and a fungi. Data taken from Obernberger and Thek [5].

Test mode	Test parameter (dust < 63 µm)	Unit	White dust	Bark dust	Coal dust	Lycopodium spores	Testing standards
Dust cloud	Auto-ignition Temp (T_C) (Godbert-Greenwald)	°C	450	450	585	430	ASTM E1491
	Min Ignition Energy (MIE)	mJ	17	17	110	17	ASTM E2019
	Max Explosion Pressure (P_{max})	bar	8.1	8.4	7.3	7.4	ASTM E1226
	Min Explosion Pressure Rate (dP/dt_{max})	bar/s	537	595	426	511	ASTM E1226
	Deflagration Index (K_{St})	bar.m/s	146	162	124	139	ASTM E1226
	Min Explosible Concentration (MEC)	g/m³	70	70	65	30	ASTM E1515
	Limiting Oxygen Concentration (LOC)	%	10.5	10.5	12.5	14.0	ASTM E1515 mod
Dust layer	Hot Surface Ignition Temp (5 mm) (T_s)	°C	300	310			ASTM E2021
	Hot Surface Ignition Temp (19 mm) (T_s)	°C	260	250			ASTM E2021
	Auto-ignition Temp (T_L)	°C	[illegible]	[illegible]			[illegible]
	Dust Class (> 0 to 200 bar.m/s)		St 1	St 1	St 1	St 1	[illegible]
	Dust Class (Explosion Severity (ES > 0.5))		Class II	Class II			OSHA CPL 03-00-06

5.4 Biological hazards

Biomass is a natural product and as such a potential feedstock for different types of microorganisms i.e. fungi and bacteria. The risk of microbiological decay of the biomass depends on the biomass properties i.e. size and composition, moisture content and temperature. The major source of decay is caused by fungal infections. Fungi can digest the biomass and form large colonies commonly known as mould. Fungi produce toxins when growing on biomass i.e. mycotoxines and they can be released as dust into the air. Airborne fungal spores and toxins can cause irritations and allergic reactions along the respiratory system. Inhalation and direct contact should be avoided.

6 HANDLING OF WOOD PELLETS

Large amounts of wood pellets are transported by land and sea way, and the intercontinental trade of wood pellets is likely to increase by factor 10 within the next decade. It is therefore important to look on the overall risks involved in handling wood pellets. Mechanical forces during transportation of pellets cause fractures and breakage of the pellets, resulting in fines and dust. Although there are high quality standards (i.e. EN 14961-1) ensuring that pellet producers produce pellets with a high strength and abrasion resistance this problem cannot be eliminated completely. Especially pellets used in large scale applications such as heat and power plants are usually not following those standards. In those cases the quality standards are often agreed directly between the pellet producer and the large scale consumer. The mechanical durability of wood pellets is usually determined in a tumbler, simulating the impact forces that pellets experience during transportation. A standardized method exists to measure pellet durability, and this can be consulted for further reading (EN 15210-1).

To prevent the formation of fines and dust, handling should be as gentle as possible. The more handling steps the more degradation of the pellet. Important factors for handling are the drop height, elasticity of the impact surface and the number of times the pellets are dropped. Pellet degradation is a function of number of impacts and impact force (i.e. drop height) and they should be limited to a minimum to prevent dust and fines formation. There are many different ways of transporting pellets. The most common ways to move pellets from/to storage and transportation vessels are conveying and vacuum pumping. Especially large scale bulk handling of pellets exposes high mechanical load onto the pellets. This can be the case when loading pellets into an ocean vessel or into a large pellet silo at the producer/consumer site. Drop height are usually high (up to 25 m and more). It also has to be considered that pellets drop on each other and that a high weight load is exposed to the pellets lying in the bottom of the vessel/silo.

Pellet abrasion and dust formation takes place along the whole supply chain of the wood pellets from the pellet mill to the customer. Fines and dust formation during handling can occur during all of the steps during the supply chain. The most prominent ones are listed below:

- Conveying the pellets from the pellet plant to storage
- Packing of pellets i.e. big bags
- Conveying to transport vehicle
- Filling transport vehicle
- Discharge transport vehicle
- Conveying to another transport vehicle or to storage
- Filling into storage

Pellets are usually conveyed or transported by pneumatic pumps. The latter one might do severe damage to the pellets when the pressure (velocity of the pellets) is too high and if there are sharp turns in the transport pipe or potential impact sites for the pellets.

Pellet transport can take place either in trucks, trains or ships depending on the transport distance. Trucks are usually used to bridge short distances while trains are used for longer distance. Ship are used to transport large amounts of pellets either directly to the end customer or to a harbor were the pellets are unloaded and distributed to smaller transport vessels. A lot of large scale users are located close to the water so they can receive pellets by ship.

6.1 Loading and transport (in closed vessel)

Large volumes of pellets from oversea are transported in ocean vessels. Especially on the trans-Atlantic route from Northern America to Europe bulk carriers are used. The size varies and is usually ranging from 1.500 to 50.000 deadweight tons (dwt) [5]. During shipping the pellets are kept dry under hatch covers with tight seals. To avoid the penetration of moisture into the storage compartment, ventilation is usually turned off. The storage of large amounts of pellets in a closed compartment on a ship is similar to the risk in a pellet silo and the same safety measures should be taken (see chapter 7).Trucks are a used to transport small amount of pellets (up to 40 tons) to small scale customers. Pellets are loaded either as bulk or in bags. Bulk trucks are sometimes equipped with vacuum pump systems that allow pumping of the pellets and thus a comfortable way to transfer the pellets to a storage compartment. Rail cars and containers are also used for transport if available

6.2 Unloading and internal handling

During receiving and internal operations, the risk of dust generation, ignition and explosion should be minimized. Special precautions should be taken to avoid increase of fines and wear during unloading and receiving pellets. The precautions generally should focus on avoiding over-heated or burning loads, spark detecting and fire extinction systems.

6.3 Conveying

Conveying shall be conducted with a minimum of wear and damage to the solid biofuel. Fuel pellets, in particular, are very sensitive to physical wear and shall be handled with care. Precautions shall be taken to avoid moisture uptake in pellets. Minimal length of belt conveyor line should be applied and many crossings and high drops should be avoided, which raise the content of fines in a batch of pellets.

7 STORAGE OF SOLID BIOFUELS

Due to seasonal fluctuations with periods of high demand (winter) and periods with moderate or low demand (summer months) pellet producers and intermediate traders need large storage space. Also consumers i.e. heat and power producers have a high demand for securing their energy supply and thus keep storage big enough to be able to deal with unforeseen bottlenecks and shortages of supply. Wood pellets are sensitive to moisture uptake and when exposed to rain they swell and lose their pellet structure. High moisture content also promotes microbiological decay and this can result in dangerous conditions such as self-heating and self-ignition. Wood pellets are therefore always stored indoors, either in flat storages i.e. frames, storage halls or in silos. Indoor storage of biomass is a challenge with respect to self-heating of the biomass, dust formation and off-gassing of the biomass. A range of safety measures have to be taken to grant safety. Recent accidents have shown that improper handling of biomass can result in severe damages and risk for life and health of handling personnel.

7.1 Storage types

7.1.1 Silo

Silo storage is the most common way of storing pellets at power plants, pellet producers and harbors. Silos are consuming less space as storage halls and can be filled and emptied easily using screw conveyors. The size of the silo depends on its function. Large silos with several thousand cubic meter volumes are common as intermediate storage at harbors or at large scale pellet consumers. From there pellets are distributed to transport vessels, or feeding bins.

Large scale silos can be different in size and shape depending on the function and construction year. Typically older silos that have previously been used for agricultural products are high and have a small diameter. Newer silos that have been designed and built from wood pellets storage usually have a larger diameter compared to their height. In general there are two different types of pellet silos, silos with a tapered bottom and silos with a flat bottom.
Vertical silos with a tapered bottom can be emptied by gravity using a discharge tunnel and a conveyor. These type of silos are widely used to store agricultural products i.e. grains and are to some extend also used for pellet storage. Agricultural silos usually range from 50 to 10.000 m^3. Dark colors and corrugated metal should be avoided since they increase heat absorption and lower heat transfer. Vertical silos with a flat bottom are emptied using a circulating auger for center feed to a discharge tunnel. They require less space due to their flat bottom and are therefore cheaper to build. However do they require more maintenance and take longer time to empty.

7.1.2 Flat storage

Flat storage building i.e. A-frames, are used for bulk storage of pellets and are used for large storage of pellets in a range from 15.000 to 100.000 m^3. They are used at the pellet producer's site, for intermediate storage at harbors and at the end users i.e. power plant site. Pellets are conveyed into the building and dropped down onto the floor forming a pile and/or moved by front loaders onto a pile. Emptying of this kind of storage is made by front loaders either into a feed system for a boiler (power plant site) or onto trucks, vessels or rail cars for further transportation. Especially moving pellets with a front loader bears the risk for fines and dust formation and as such a risk for health and dust explosion.

7.2 Self-heating and ignition risk

Fires in wood pellet silos due to self-heating are not uncommon and several incidents have been reported during the last years. Also dust explosion incidents have been reported from several plants and facilities handling wood pellets. Fires and explosions can occur along the whole supply chain of wood pellet production and delivery and can take place in the production plant, transport vessel, transfer facilities and at the consumer site. However fires and explosions are not known to be a problem in the bagged pellets marked [5].

The sources of ignition can either be externally from sparks generated by metal pieces or stones coming in contact with the biomass or by overheating of motors, conveyer belts, bearings due to high friction. An accumulation of dust and fines due to improper maintenance and cleaning can increase the risk of fires and dust explosions. Measure to reduce these risk are control measures to remove impurities i.e. stones and metal from the biomass, spark and heat detectors along the transport conveyors, extinguishing systems and fixed control schemes for checking the state of the conveyor belts and bearings to prevent overheating and removal of dust and other debris. The utilization of antistatic and fire resistant material as well as proper grounding of the transport conveyors can reduce the risk of external ignition too.

Pellets in a closed storage environment can heat up due to microbiological and/or chemical reactions. The bulk mass act as insulation and therefore heat is usually built up deep inside the bulk. Microbiological decay requires moisture and it is therefore usually a problem occurring when the moisture content of the biomass is too high or in case of water (rain) coming in contact with the biomass. Microbial decay results in a temperature increase in the stored fuel and peak temperatures of microbial self-heating can be up to 80 °C depending on the type of microorganism [19]. Chemical degradation usually starts to have influence at about 40 °C and at temperatures above 50 °C chemical degradation reactions will exceed the biological ones [19]. Due to poor heat transfer within the bulk mass and the insulating properties of biomass, heat is accumulated inside the bulks that can result in self ignition. The main factors affecting the temperature in a pellet silo are the ambient temperature, moisture content, moisture gradients, size of the bulk and density.

7.3 Monitoring of temperature, off-gasses and moisture

Temperature in a pellet silo should be monitored continuously by sensors embedded in the stored product. An alternative and/or addition to direct temperature measurement can be equipment sensing carbon monoxide, hydrocarbons, radiated heat and smoke as precursors for overheating [5]. Even at low temperatures low temperature oxidation of pellets will result I the formation of carbon dioxide, carbon monoxide, aldehydes and methane and these gasses will deplete the oxygen in the silo. One option to cool and ventilate a pellet silo at the same time is to ventilate a storage silo whenever the ambient outside temperature is lower than the temperature inside the storage. In case of too high temperatures (> 80 °C) emergency procedures should be in place. This could be emergency discharge of the pellets by relocating them into a different storage or outside and thus breaking up the hotspots and cool the pellet bulk. In general the temperature in a pellet silo should be kept below 45 °C.

7.4 Safety measures for handling personnel

Gasses formed in a close pellet silo are a threat for the life of handling personnel and therefore measures should be taken to avoid contact with handling personnel. This can be done by ventilation systems, gas monitoring, warning signs and strict working procedures when opening and entering a pellet silo.

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CLIMATE

Are wood pellets a green fuel?

A return to firewood is bad for forests and for the climate

By **William H. Schlesinger**

James Watt's steam engine vaulted coal to its major role as a fuel for the Industrial Revolution. Today, about 40% of the world's electricity is generated in coal-fired power plants, consuming more than 80% of the coal mined each year. Because combustion of coal produces carbon dioxide (CO_2) and other air pollutants, efforts to combat climate change have now turned to seeking alternatives to coal. Natural gas is cleaner and less expensive but, like coal, returns fossil carbon to the atmosphere. Recently, attention has focused on woody biomass—a return to firewood—to generate electricity. Trees remove CO_2 from the atmosphere, and burning wood returns it. But recent evidence shows that the use of wood as fuel is likely to result in net CO_2 emissions and may endanger forest biodiversity.

In recent years, ~7 million metric tons of wood pellets per year have been shipped from the United States to the European Union (EU), where biomass fuels have been declared carbon neutral and are thus considered to count toward fulfilling the commitments of the Paris Agreement. The EU aims to generate 20% of its electricity by 2020 using renewable sources, including burning woody biomass. In part to revive a languishing forest products industry, the U.S. Congress may also declare wood a carbon-neutral fuel. Despite its withdrawal from the Paris Agreement, the United States may see a few utilities switch from coal to wood, which costs roughly the same as natural gas. The switch could be further incentivized with a carbon tax on fossil carbon (*1*).

Cutting trees for fuel is antithetical to the important role that forests play as a sink for CO_2 that might otherwise accumulate in the atmosphere. Each year, an estimated 31% of the CO_2 emitted from human activities is stored in forests (*2*). However, managed forests store less carbon than their

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PHOTO: OFFICE OF THE DUKE FOREST/DUKE UNIVERSITY

Young loblolly pines are harvested in the southeastern United States.

native counterparts (*3*), and harvesting of native forests will therefore be a source of, not a sink for, atmospheric CO_2. Furthermore, wood contains less energy than coal, and wood burning thus generates higher CO_2 emissions per kilowatt of electricity. The CO_2 emissions from burning wood offset CO_2 that might otherwise be emitted from fossil-fuel combustion (*4*, *5*), but full carbon accounting must also consider how long it takes to restore the carbon pool of forested land that has been converted to atmospheric CO_2 (*6*).

The large-scale abandonment of agricultural activities during the Great Depression (1929 to 1939) led to a rapid expansion of mostly natural forests across the southeastern United States. Later, these natural stands were replaced by plantations of loblolly and slash pine, which were the favorites of the forest products industry because they grow well in the warm, wet climate of the Southeast (see the photo). Loblolly pine plantations achieve a maximum biomass of 125 metric tons per hectare in about 40 years (*7*). But because this species achieves its maximum rate of biomass accrual in about 20 years, rotations are usually kept short to maintain the fastest carbon uptake possible. Thirty-four operating and proposed wood-pellet plants dot the landscape of the Southeast, each anticipated to receive logs from the region within an 80-km radius. Maine and the Canadian Maritime provinces also eye the potential for wood pellets to revitalize their forest products industries; most of this wood would derive from natural forests and not plantations.

It is not only the burning of wood that adds CO_2 to the atmosphere. Making wood pellets and shipping them to Europe can account for about 25% of the total carbon emitted to the atmosphere from the use of wood pellets in European power plants (*8*). Carbon neutrality for wood is only achieved if the areas that are harvested are allowed to regrow such that they store more than their original biomass. Furthermore, the benefits of wood power must be discounted by the loss of the carbon sequestration that would have occurred in the original forests if they had not been harvested (*6*).

Although the carbon uptake by southeastern forests is greatest at about 20 years, regrowing stands continue to have lower biomass than unharvested stands for 40 to 100 years (*9*, *10*). Rotation lengths of less than 40 years seem certain to transfer carbon from biomass to CO_2 in the atmosphere. By contrast, nonwoody biomass fuels such as switchgrass or silvergrass (*Miscanthus*) regrow within a year, balancing the emissions from their combustion to their subsequent uptake of CO_2 through photosynthesis. With wood, there is the assumption—but no guarantee—that new trees will be planted and will persist long enough to pay back the carbon debt created by burning the previous stands. If that carbon stock is not restored, burning wood may actually emit more CO_2 to the atmosphere than burning coal (*10*).

Much of the argument about the carbon neutrality of wood power centers on the time frame of analysis. Because CO_2 persists for many decades in the atmosphere, some scientists argue that CO_2 emitted to the atmosphere does not contribute substantially to global warming in intervals less than a century (*11*). Others hold that all CO_2 molecules in the atmosphere exert the same effect and that plantation rotations of less than 20 years make a substantial net contribution to global warming. Ocko *et al.* (*12*) argue that the impacts on warming should always be reported for both 20- and 100-year periods, so that policy-makers can understand the net CO_2 emissions that are associated with the time horizon of different policy options. Full international participation is paramount; it makes no sense to have Europeans embracing wood pellets as carbon neutral, thereby overlooking the CO_2 emitted during shipment and the losses of carbon stock from forests harvested outside Europe. This is another example of exporting CO_2 emissions beyond the border (*13*).

Many environmental economists believe that the increased value of forests for wood-pellet production will ensure that more forests are planted (*14*); when trees have little or no value, the landscape is more likely to succumb to commercial or residential development. But in the southeastern United States, these forests are most likely to be pine plantations, which are of limited value for the preservation of its rich regional biodiversity. Furthermore, increased demand for wood pellets can raise the price of raw wood, diverting harvest to old-growth forests, which are important areas for biodiversity.

Biodiversity losses in the southeastern United States mostly result from land clearing (*15*), and agricultural clearing during the past two centuries likely already had great impacts on biodiversity. Following agricultural abandonment in the early 20th century, forests are now more widespread but are mostly pine plantations with low biomass and low diversity. Ultimately, the question is what kinds of forests are most desirable for the future. Unless forests are guaranteed to regrow to carbon parity, production of wood pellets for fuel is likely to result in more CO_2 in the atmosphere and fewer species than there are today. ■

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Carbon Monoxide (CO) HAZARDS from Wood Pellet Storage

Heating with wood can be an excellent way to keep your home or business warm. When heating with wood pellets, it is important that they be safely stored outside your home or business. If you use a woodstove, pellet stove, hydronic heater, boiler, or fireplace, the devices must be properly installed, vented, and serviced regularly to avoid potentially hazardous situations.

A chemical reaction that produces carbon monoxide (CO) gas can occur when wood pellets are stored. CO is a poisonous gas that can cause death and other harmful health effects if the pellets are not safely stored. It is invisible, tasteless, odorless, and non-irritating. The early symptoms of poisoning can be confused with a flu-like illness.

To minimize the risks of carbon monoxide poisoning, wood pellets should be safely stored in a separate structure outside your home or business. The outbuilding should have ventilation to the outside and any pellet delivery openings should not allow access to children. Signs should be posted at the storage area to warn everyone about potential carbon monoxide hazards.

Visit **www.health.ny.gov** for more information.

Wood pellets should be stored in an outbuilding with hazard signs.

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What is carbon monoxide?

Carbon monoxide (CO) is a poisonous gas that can cause death and other harmful health effects. It is invisible, tasteless, odorless, and non-irritating. It is usually produced from burning fuels such as wood, oil, natural gas, propane, gasoline, and kerosene. Stored bulk wood pellets are another source of carbon monoxide so it is important to safely store pellets outside your home or business.

Symptoms of CO poisoning

Symptoms can be flu-like: nausea, headache, dizziness, shortness of breath, sleepiness, weakness, chest tightness, and confusion. In large amounts, CO can cause rapid loss of consciousness, brain damage, or death.

If you suspect CO poisoning

Get outside into the fresh air, open all windows and doors as you leave, and call the fire department from outside of the building.

Call 911 if you or someone else is experiencing symptoms or take the ill person to the emergency room. Tell the physician that you suspect CO poisoning.

Install CO alarms in your home

In New York State, Amanda's Law requires that CO alarms be installed in all homes (single and multifamily) that have any fuel-burning appliance or system. Alarms must be installed on each story where a sleeping area or a CO source is located. Carefully follow manufacturers' instructions for installation, maintenance, and battery/unit replacement.

For more information

Contact the New York State Department of Health's Bureau of Toxic Substance Assessment at 518-402-7800 or toll-free at 1-800-458-1158, or **visit www.health.ny.gov** for more information about health concerns from carbon monoxide.

Visit **nyserda.ny.gov/renewableheatny** for more information on the benefits of high-efficiency, low-emission wood heating systems and participation details for NYSERDA's Renewable Heat NY programs.

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ENVIRONMENT CLIMATE CHANGE POLLUTION MISSISSIPPI

A ‘Green’ Energy Project Leaves A Mississippi Town Gasping For Air

European climate subsidies funnel billions to wood-burning power plants that harvest trees from the U.S. South. The industry is taking a toll locally and globally.

By Alexander C. Kaufman

Dec 18, 2021, 05:45 AM EST
Updated Dec 20, 2021

289 COMMENTS

Blackmon Hole, a neighborhood of trailers in Gloster, Mississippi, sits next to the Drax Biomass production facility in the town. Local residents are fighting the plant, which they say is making them sick with its pollution.

TIMOTHY IVY FOR HUFFPOST

GLOSTER, Miss. — Carmella Wren-Causey knew something was wrong as soon as she returned to her hometown last year, a place where she’d slept on her grandmother’s screened porch to smell the sweet, crisp fragrance of longleaf pines on summer evenings. Though it had been years since Wren-Causey, 60, had smoked her last cigarette, she was having a harder and harder time breathing.

Within months of moving into a small, prefabricated home on property her great-grandparents first bought nearly a century ago, even just tending her garden left her so dizzy she felt faint. Dragging the garbage the short walk up to the road required at least three breaks to catch her breath. Hoisting herself into her Nissan pickup became a process: one leg, a gargled inhale, a lean, then the other leg. She could barely sleep at night and recently started going to bed hooked up to an oxygen tank.

She had struggled with breathing problems before. But now her doctor had to increase her medication. She joked that her inhaler had become her best friend. When her two beloved spunky pugs Rayray and Tiny – her "babies" she took everywhere – died suddenly, just three weeks apart, it became a little too true. The dogs had also struggled to breathe, wheezing with anguish shortly before dying.

"The truth is, you got people around here that stay sick. You got people around here that has to use asthma pumps that didn't have respiratory problems before," Wren-Causey said, weeping.

"I go to bed, my lungs hurt," she said. "I wake up, my lungs hurt. It's horrible."

Wren-Causey lives less than a mile from the mill where the British utility giant Drax turns towering tree trunks into wood pellets the size of vitamin capsules, which are then shipped to the United Kingdom to be burned in power plants. When the company opened the mill here eight years ago, tiny Gloster, with its shrinking population of about 800, became part of the $52 billion global supply chain for wood-fired electricity. The industry is on pace to grow 6% or more per year this decade.

To some lifelong residents of Gloster, the Drax plant was a godsend, the first sign of life since 2002, when the lumber mill that was once the town's economic heart closed and left a once-thriving main street a ghost town.

To others, the facility was a curse. Feeding it meant reducing local forests that once teemed with deer and squirrels to plantations of wimpy saplings. And many in this mostly Black community, where median incomes barely hit $10,000 a year, say it has polluted the air with disease-causing gases called volatile organic compounds without delivering them promised new jobs.

Carmella Wren-Causey is one of many residents of Gloster, Mississippi, who says that pollution from the local Drax Biomass plant is making them sick.

TIMOTHY IVY FOR HUFFPOST

Perhaps counterintuitively, the push to build the Drax mill and feed it with Southern forests is the product of policies meant to stop global warming.

European Union and British regulators decided that emissions from wood-fired power plants would not count the same as pollution from fossil fuel generators, making companies like Drax eligible for billions in subsidies for green energy. The firm received nearly $1.1 billion in clean power subsidies last year alone.

Seeing how quickly the industry grew off government funding meant to cut emissions, scientists and activists mobilized to stop its expansion, complaining that the whole thing was built off faulty premises: Trees regrow, but it takes decades to centuries, and burning wood can release more planet-heating gases than coal because you need much more to generate the same amount of power. But it was too late: A multi-billion-dollar industry had already put down roots and cultivated powerful political allies.

In the U.S., federal incentives to build wood-burning power plants are much smaller, and their share of the country's electricity generation has declined over the past seven years. But states, particularly in the South, have lavished tax breaks on firms that harvest and process wood to send it across the ocean. And the industry has boosters inside the Biden administration such as Agriculture Secretary Tom Vilsack and a spurious but catchy new sales pitch promising that new technologies will render it capable of pulling more carbon from the atmosphere than it emits.

"When the industry claims it's carbon neutral, it's saying we recognize there's CO2 coming out of the smokestacks, but it was instantaneously offset by CO2 uptake somewhere else, and therefore it's not in the atmosphere," said Mary Booth, an ecologist and founder of the Partnership for Policy Integrity, an environmental research and advocacy nonprofit. "But that's not what's happening. If you burn a tree, it emits carbon right away. And if you grow a tree, it takes up carbon over a long time."

Drax Biomass, a multinational woodchip production company, operates a facility in Gloster that produces woodchips for the British heating market. Local residents are at odds with each other over the plant, which some say is making them sick, while others support the economic stability provided to local loggers who sell to the plant.

TIMOTHY IVY FOR HUFFPOST

Could Or Should Wood Be A Climate Solution?

Burning plant matter for energy predates even Homo sapiens, as studies show earlier species of hominids used it for fire. But the modern biomass industry, which burns plants or plant-based synthetic fuels to power generators and produce power, did not gain prominence until the 1970s, as the oil crisis spurred interest in alternatives to fossil fuels.

The wood-fired power sector really started booming in the second decade of the 21st century. The United Nations' Intergovernmental Panel on Climate Change had, for decades, advised countries to attribute carbon from chopping down trees to the land-use sector, not energy, to avoid double counting. That meant countries didn't have to report the emissions from wood-burning power plants as part of their overall carbon footprint.

There were various justifications for doing so that have shifted wildly over the years. But one of the more straightforward, if perhaps too ecologically simplistic, explanations was this: Scrap wood or dead trees left to rot would emit carbon anyway, so turning that biomass into fuel that could supplant fossil fuels would balance out the atmospheric pollution ledger.

In reality, it set the stage for creating an accounting convention that would allow some of the richest nations that contributed the most to the cumulative carbon mess in the atmosphere to boost their struggling timber industries and inflate their green bona fides.

The methodology reflected the long-standing view in Europe, where wood-burning furnaces and stoves are common, that wood was a renewable resource. So when the European Union adopted its 2009 Renewable Energy Directive — a plan to reach 20% renewable energy by 2020 to help the bloc adhere to the world's first climate treaty, the Kyoto Protocol — it followed a long tradition of giving wood-fired power plants the same emissions-free status as wind and solar. As a result, coal-dependent countries like Britain and Germany began heavily subsidizing wood burning.

> **"If you burn a tree, it emits carbon right away. And if you grow a tree, it takes up carbon over a long time."**
>
> - Mary Booth, ecologist and founder of the Partnership for Policy Integrity

This was despite the fact that burning freshly cut wood chips, which are wet and far less energy-dense than fossil fuels, can emit between 40% and 60% more carbon per megawatt-hour of electricity than coal. Wood pellets like those the Drax plant produces are dried and therefore more efficient, and generate fewer emissions when they're burned despite spewing more gases where they're produced.

"Sustainable biomass is renewable because of the closed carbon cycle created when trees grow and take CO2 from the atmosphere. Whether the wood is used for bioenergy or these trees naturally decompose, the same amount of CO2 is released into the atmosphere," said Ali Lewis, a Drax spokesperson, in a lengthy email. "The cycle remains in balance because the working forests which supply the low-grade wood used for biomass are replanted and these growing trees absorb more carbon."

The problem, the industry's critics say, is that cycle's timeframe. It takes at least 82 years for a biomass plant's regrown forests to lower that facility's carbon footprint to that of a coal plant. And that's the best-case scenario outlined by a peer-reviewed emissions calculator tool created by Natural Resources Canada, a government agency. Even after 100 years, wood-fired electricity could not close the emissions gap with a natural gas plant, the calculator data show.

Yet by the time this became clear enough to build some kind of political momentum, biomass had not only grown into an industrial heavyweight, it had split the traditional green voting bloc in the EU, attracting support from the usually climate-conscious Scandinavians who also have large timber industries.

The reporting metric also allowed Europe to credit its existing wood-burning operations as renewable energy, effectively juicing its green energy numbers to make the continent look much more ecologically balanced than it actually was.

Biomass had an extra appeal that has become a more prominent industry talking point in recent years. Unlike wind and solar, which can operate sporadically, wood-fired plants can run as long as there’s something to burn, providing the reliable baseload electricity we expect from fossil fuels.

The EU embraced wood at the same time the U.S. leaned into the Northeast’s hydraulic fracturing boom and replaced its coal plants with cheap and abundant natural gas. This presented an opportunity for states across the forested South to revive the timber industry, then on the decline, by welcoming companies that would feed Europe’s growing appetite for pellets.

Gloster’s Drax plant became one of the largest pellet mills in the U.S. when it opened eight years ago.

Blackmon Hole, a neighborhood of trailers, sits next to the Drax Biomass production facility.

TIMOTHY IVY FOR HUFFPOST

Air You Can Taste

In 2013, when wood pellet exports from the U.S. doubled from the previous year to 3.2 million tons, Drax chopped down the pines and oaks that once covered the hill behind Blackmon Hole, a small Black-owned trailer park five minutes from downtown Gloster.

“I used to go hunting up there,” said Pete, a Blackmon Hole resident who declined to give his last name as he sipped a Bud Lite and tinkered with a new transmission in an old gray Ford Crown Victoria. “Now ain’t nothing coming around with all that noise.”

On that late Wednesday afternoon in early December, the maze of towering metal chutes that make up the mill was clanking and humming, a cacophony occasionally joined by the roar of semi-trucks carrying flatbeds of pine logs. A grayish-white cloud billowed from a smokestack.

Air pollution from wood pellet plants comes from various sources. There's the exhaust from a steady convoy of trucks. And, perhaps worst of all, the kiln that dries chipped trees to turn them into wood pellets, spewing loads of volatile organic compounds, or VOCs, that contribute to smog and ozone pollution; aggravate asthma and other lung conditions; cause cancer; and trigger itchy eyes and skin. In between, too, there are additional VOCs sent into the air when the hammermills shred trees and the pellets are fully processed.

The wood pellet industry and regulators almost never account for that pollution in permitting, according to a landmark 2018 study by the Environmental Integrity Project, a watchdog group.

Left: Wood chips from the Drax Biomass production facility litter the roadside in Gloster, Mississippi. Right: Drax Biomass, a multinational woodchip production company operates a facility in Gloster that produces woodchips for the British heating market.

TIMOTHY IVY FOR HUFFPOST

In the middle of the gravel driveway that cuts through Blackmon Hole is a yellow sign that reads: "Slow: Children Playing." Once school let out, at least half a dozen kids chased each other around the lawn between the trailers.

Heading up the hill toward the chainlink fence between the homes and the Drax facility, the air takes on a sharp, peppery flavor. It stung the inside of my nostrils before the smell even registered. My eyes watered and I sneezed; later on, my lungs felt heavy, like an occasional smoker might feel after a rare cigarette.

Jasmine Jenkins lives at the edge of the park, with her daughters, 8 and 3, and her son, 5.

“They’ve had allergies ever since they were born,” Jenkins, 28, said while standing on the steps of her home one night after returning from work. “One of my kids breaks out in hives every two to three months.”

Several feet away stood her neighbor Shirley Bland, who, after 30 years living here, said she only started finding a daily layer of residue on her car once the plant opened.

“It must be what they put up in the air,” said the 57-year-old grandmother. “I keep feeling out of breath.”

The Environmental Integrity Project report found that Drax’s plant was emitting more than three times as many VOCs as the company was legally permitted to emit.

Last fall, the Mississippi Department of Environmental Quality fined Drax $2.5 million and demanded the company install new catalyzing technology to help disintegrate more of the pollution before it enters the atmosphere. An agency spokesperson sent a link to the fine but did not respond to HuffPost’s questions about whether Drax had fully fulfilled the regulators’ demands.

Drax declined my request to visit the plant but said it installed catalytic oxidizers in Gloster and two plants in Louisiana this past summer.

It was the highest fine any wood-pellet plant in the U.S. has incurred, according to the Dogwood Alliance, a North Carolina-based nonprofit that advocates against expanding the biomass industry. But such penalties are not widely publicized, particularly by the states promoting the industry, making it difficult to confirm. It took months for watchdog groups that track the industry, including Dogwood Alliance, to put out a press release about the fine.

Organizers from the Dogwood Alliance came to Gloster in June to hold a town-hall meeting with residents. Upward of 80 people showed up, many complaining about breathing and skin problems.

The gathering drew backlash from local officials. In a post on Facebook, Mayor Jerry Norwood warned that rabble-rousing could drive Drax out of town and take its purchasing power, which helped offset the cost of water, gas and electricity in Gloster, with it.

“If by some chance a big lawsuit should happen and Drax decides to close [its] gates please be prepared for your utility rates to triple,” Norwood wrote.

Erniko Brown, regional partnership engagement manager of the Dogwood Alliance in Asheville, North Carolina, is working with residents of Gloster against Drax.

TIMOTHY IVY FOR HUFFPOST

The warning seems to have resonated. When organizers Erniko Brown and the Rev. Michael Malcom returned months later, about four people came to their information session, expressing fear about their bills going up.

“It’s bullying,” said Malcom, a pastor and environmental justice advocate in Birmingham, Alabama. “I *hate* a bully. And that’s what this is.”

The turnout to the activists’ Dec. 3 town hall meeting was higher, with about a little over a dozen attendees. But at least six of them, including the mayor, came to express concerns that the campaign against Drax threatened Gloster’s economic future.

“I’ve been a Gloster resident all my life. I grew up here. And I don’t want my town to go to dirt,” said Cissy Fenn, 68, a former school teacher.

Brandy Hamilton, one of the Dogwood Alliance’s lead organizers, said her group had no intention of shutting down Drax and told Fenn to lower her voice, asking her to be “mindful that everyone has high emotions.”

“You’ve been in Gloster all your life,” she told Fenn, who is white. “I’ve been Black all my life.”

Fenn looked shocked by the implication that racism had anything to do with the Drax plant. Her husband, Reggie Fenn, 67, spoke up: “Look, we all bleed red.”

“We all have things that make us sensitive to things,” Hamilton said.

“It’s not a Black and white issue at all for me,” Cissy Fenn said. “It’s survival for us.”

“It’s survival for everybody,” Hamilton replied.

Doug Iverson, who once ran a mill that turned grain into feed pellets for livestock, asked Hamilton where she was from. She told him Charlotte, North Carolina. He questioned how the air here could be worse than in such a big city.

“You know, I grew up in this little town, and there was always dust around,” he said. “Once a week I had to dust every piece of furniture you could wipe your hand on.”

“I know you’re not dusting the houses over in Blackmon Hole,” Hamilton said.

Once Norwood, the mayor, joined in, the argument quickly devolved into shouting. Reggie Fenn walked out, then Iverson. Brown, pulling rank, asked her colleague Hamilton to leave and cool off.

Jerry White, 75, the president of the local chapter of the National Association for the Advancement of Colored People, said he doesn’t think “race was the main issue,” but hoped Drax would take additional steps to reduce pollution and help those living in Blackmon Hole.

“We can still find common ground,” he said, visibly drained after the meeting. “I’m trying to look forward to the future. I think about the children, especially in Blackmon Hole.”

Jerry White, president of the local NAACP in Gloster, is helping to organize residents who say they were harmed by Drax's pollution.

TIMOTHY IVY FOR HUFFPOST

On another evening this month in Blackmon Hole, Brown stopped Bland’s grandson — the only person that anyone in or near the trailer park seemed to know who had gotten a job with Drax, working as a janitor — as he drove his car away from his grandmother’s trailer. Brown confronted him about the air pollution.

"To me, it could be pollen," said Bland's grandson, who declined to give his name.

"This ain't pollen season," Brown said, gesturing to the silhouette of the plant in front of a pink dusk sky. "We know where it comes from."

Health vs. Wealth

Others in the community have sought employment at the plant, but say they were repeatedly rejected.

"They said people could get jobs there, but I keep putting in applications and I don't get no job," said Debra Blackmon-Butler, 61, who is related to the families living in Blackmon Hole but lives about a mile away. Instead she drives to Baton Rouge for work, more than an hour south.

In an interview after the heated debate at the town hall, Mayor Norwood said those complaining about the plant were probably unqualified to work there and accused them of trying to extort Drax for money.

"This is a very uneducated town," he said outside the meeting. "They were talking about the number of people from Gloster that work at Drax. But has anybody asked them how many of them can pass a drug test? You have to be drug-tested to get a job there."

Drax said one-fifth of its 63-person workforce at the facility lives in Gloster.

Drax, he said, has helped keep this tiny town afloat. The company paid "almost half a million dollars" to the school district this year, and paid nearly $83,000 for gas, providing the town a surplus that prevented it from raising utility rates when the price of natural gas spiked this fall, the mayor said. Drax did not confirm how much it pays in utilities but said its local taxes amount to about $1 million and listed a series of regional charities and schools to which it donates.

"Where do we get this environmental racism from, and why is that always the narrative? Why isn't it that these companies picked this poor town and tried to help?" said Norwood, who is Black. "That's all I've seen them do."

He said he has talked to another timber-related company about restarting another mill that first closed 19 years ago when Georgia-Pacific left town (the manufacturing giant briefly reopened the lumber plant in 2005 to help process wood debris from Hurricane Katrina, then shuttered for good in 2008).

If Gloster's reputation is as a place with "Black-white racial issues," Norwood said, "they're gonna say there's no way we're coming down with this foolishness going on."

Gloster, located just over 50 miles north of Baton Rouge, Louisiana, is, like many towns in Mississippi: economically depressed.

TIMOTHY IVY FOR HUFFPOST

Attracting companies to Gloster, a town in one of just two Mississippi counties without the four-lane highways trucks need to get products to market, does come at a price, Norwood admitted. Drax received a 10-year tax break from both the town and county. Such incentives are typical for municipalities trying to lure corporations, but they have yielded unfavorable outcomes once the credits end and the corporation relocates.

Drax declined to say whether it would consider leaving town after the tax deal expires, but noted it plans to dramatically increase its production in the coming years.

Norwood said that, even if Drax leaves after another few years, "they still would have helped the town."

Yet the company could end up causing an exodus, too. After years of taking her now-teenage daughter to a clinic for allergy shots every Thursday, Chiquita Cain, 33, moved last month to Baton Rouge, where she's closer to work and further from the environment she said has sickened her kids and left her with constantly irritated skin.

"It's just itchy all day, every day," Cain said. She said she wasn't alone: "My cousin has asthma real bad. My mom has bronchitis. My sister gets bad, bad headaches, so bad she needed to see a neurologist."

Robert Weatherspoon, 64, broke into tears describing how it takes him an hour and a half each morning to clear the mucus from his chest.

“You’re coughing, you’re coughing, you’re coughing, like something hanging up there,” he said. “I thought I’d get used to the pain. But every morning, honest to God, I don’t think I’m going to make it.”

Drax was recently fined $2.5 million by the state of Mississippi for releasing more pollution than allowed by law.

TIMOTHY IVY FOR HUFFPOST

Bullish Or Bullshit On ‘Negative Emissions’

While U.S. exports of wood pellets have roughly doubled since 2014, the amount of electricity Americans generated from wood has fallen steadily since peaking that year. Today, biomass makes up just over 1% of U.S. electricity.

The largest wood-burning power plant in the U.S. opened in Gainesville, Florida, in 2013, and almost immediately caused a public scandal over costs. The deal to buy power from the 103-megawatt Deerhaven Renewable Generating Station proved so controversial —

at roughly $70 million per year over three decades, electricity bills quickly rose – that the city spent $750 million to buy out the remainder of the contract.

In the U.K., by contrast, the 4,000-megawatt Drax Power Station — a massive coal- and wood-burning complex in northeastern England — supplies about 7% of the U.K.’s electricity with millions of tons of wood, much of which comes from forests in the American South.

This week, Drax unveiled plans to spend over $53 million to start work on new carbon capture machines that the company said will catch and store 8 million metric tons of CO_2 per year. Already, the company calls its plant the “largest decarbonization project in Europe” because it had swapped much of its coal-fired production for wood.

The investment news came just a few months after Drax announced a deal with the U.S. engineering firm Bechtel on projects that would equip wood-burning power plants across North America with carbon capture technology.

Will Gardiner, Drax’s chief executive, said the deals demonstrate “Drax’s commitment to deliver a vital technology which is urgently needed to address the climate crisis.”

“It’s no longer enough to reduce emissions,” he said in a statement. “The world has got to start removing carbon from the atmosphere if we are to avert this climate crisis.”

Aerial view of Drax Power Station, the third-most polluting power station in Europe, located close to Selby, North Yorkshire, England.

EDWARD CRAWFORD/SOPA IMAGES/LIGHTROCKET VIA GETTY IMAGES

Since trees suck up huge amounts of carbon naturally, Drax and others in the industry say that equipping their plants with technology to capture carbon dioxide from smokestacks and store it underground will make biomass power a potential source of negative emissions. As governments set net-zero targets — points at which the amount of carbon their countries absorb equals or exceeds the CO2 they emit — demand for quantifiable ways to pull carbon from the atmosphere is growing.

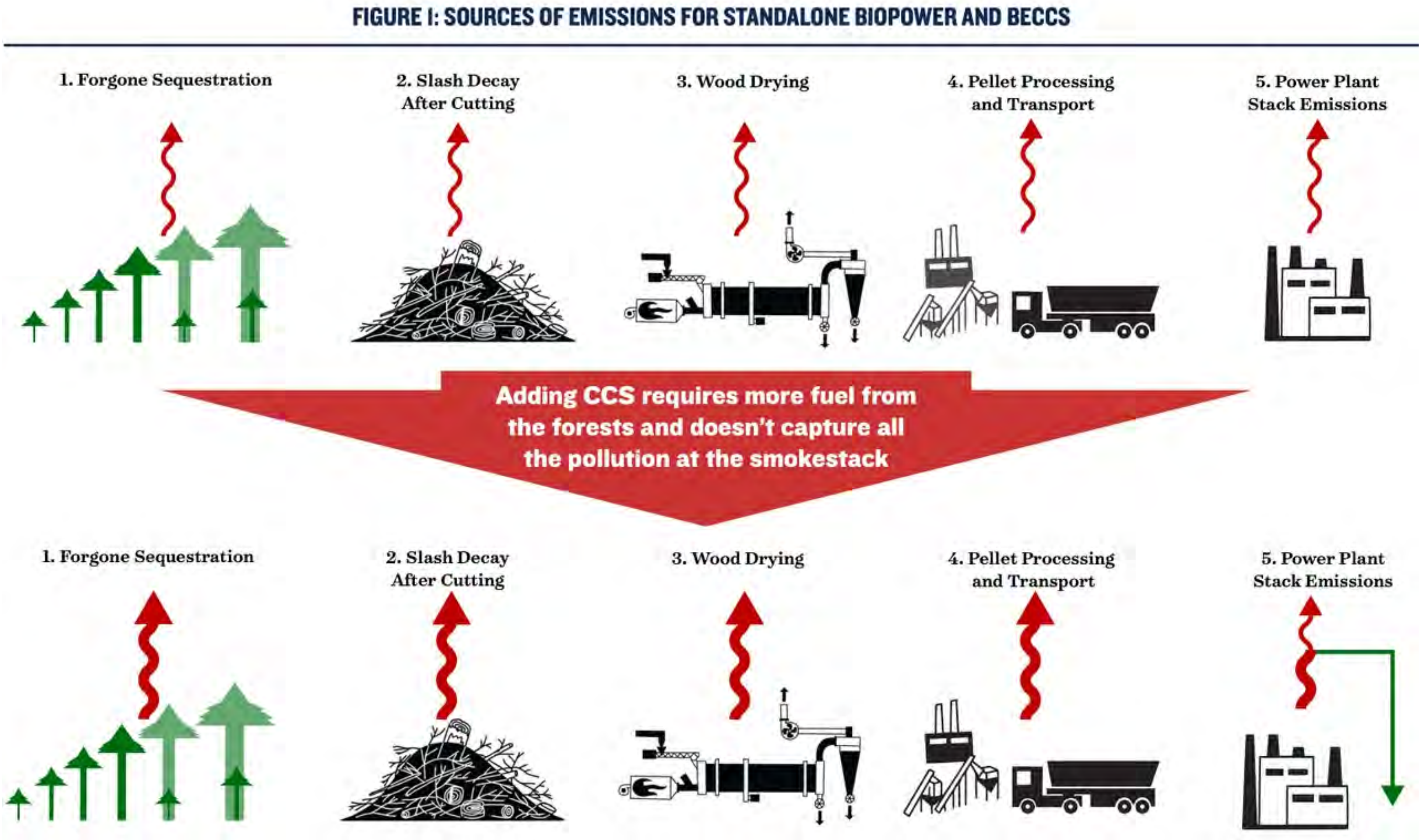
But the U.N.'s IPCC itself acknowledged in its most recent report that the concept of bioenergy with carbon capture "rests on the premise that bioenergy production is carbon neutral."

That, Booth said, renders Drax's claims "bogus."

"Burning trees and using CCS can no more deliver negative emissions than burning trees without CCS can deliver carbon-neutral emissions," she said. "It's the same problem. Trees don't grow back that quickly."

Drax's negative-emissions effort may instead be a play for more subsidies. In a recent blog post, the Forest Defenders Alliance, a European environmental group, noted that Drax's existing subsidies — totaling nearly $2.7 million per day — are set to phase out in five years. So the company, the post stated, is looking for a new "expensive scam" to get "more money out of the public."

A report Drax commissioned and published in March proposes that the U.K. government continue providing subsidies both for power generation and carbon capture after 2027.



A chart from a recent Natural Resources Defense Council report shows the various ways biomass power emits carbon, even with technology to catch pollution at generating stations

NRDC

There are other issues to relying on wood energy at scale. If the world were to supply just another 2% of its electricity demand with wood, it would require doubling the annual harvest of wood, according to Timothy Searchinger, a senior researcher at Princeton University. Providing 3.5% of America’s energy demand would require doubling the number of trees cut down.

Other ways to provide negative emissions, such as direct air capture technology or soil management techniques, wouldn’t require felling forests that are actively sucking carbon as it is. Searchinger compared the proposition to exercise.

“If you eat lots of sugar but work out, you could be reasonably healthy,” he said. “But if you don’t eat lots of sugar and work out, you’ll be healthier.”

If the cost of capturing carbon with technology comes down, he said, you’d be better off burning coal or gas at a power plant than wood, since then you’d get a lot more energy per unit anyway.

Investors seem to be doubting Drax’s claims, too. In October, the S&P dropped the company from its Global Clean Energy Index. This month, Citi downgraded its stock from “buy” to “hold.”

There are some potential places where limited biomass energy could be useful, such as in California, where dead trees in drought-stricken forests need to be cleared anyway to reduce the harmful effects of wildfires, said Holly Jean Buck, a researcher at the University at Buffalo who studies negative emissions and decarbonization.

“The best case for biomass is waste biomass,” Buck said. “We should think more about using waste biomass streams and less about for-purpose crops that could be used for other things, whether those be lumber to build houses or land that could be dedicated to other things.”

(Drax, for its part, said about 40% of its wood does come from sawmill waste, citing data in its own annual report, and insisted the rest of its wood comes from trees that are “not suitable for other uses.”)

Searchinger said the biomass industry’s tree plantations could only contribute to a negative emissions target if the world was actively reducing the amount of land used for agriculture. Instead, in most countries, old-growth woodlands such as the Amazon or Borneo’s rainforests are being felled to make way for cattle ranches and palm oil plantations.

“The only way biomass becomes a potentially [carbon] negative contribution is in a world where we are actively reducing agricultural land and you have a choice as to whether you reforest that land or plant fast-growing woody plantations,” he said. “It’s entirely speculative, but depending on the assumptions you make, you could arguably get more benefit from the fast-growing biomass plantations.”

He added: “There are these theoretical scenarios in which maybe this could be useful, but they’re sufficiently far in the future that they’re irrelevant right now.”

"You got people around here that stay sick. You got people around here that has to use asthma pumps that didn’t have respiratory problems before," Carmella Wren-Causey told HuffPost.

TIMOTHY IVY FOR HUFFPOST

The biomass industry is set to experience its fastest growth in East Asia during the second half of this decade. A report published last year found South Korea was so heavily subsidizing biomass plants that the industry was crowding wind and solar out of the power market. Japan, meanwhile, is pushing ahead with plans to burn residues from palm oil for electricity, threatening even further deforestation.

In a February 2021 letter addressed to Biden, European, British, Japanese and Korean leaders, more than 500 scientists urged them “not to undermine both climate goals and the world’s biodiversity by shifting from burning fossil fuels to burning trees” and to “end subsidies and other incentives that today exist for the burning of wood.”

“Trees are more valuable alive than dead both for climate and for biodiversity,” the letter read. “To meet future net zero emission goals, your governments should work to preserve and restore forests and not to burn them.”

Wren-Causey feels like she can relate.

“I want to live,” she said.

And she has much to live for. She has her husband and young nieces she adores. She cares for an abandoned pony. She’s hoping to start a charity to help local kids, and once a week, she takes elderly women who can’t drive to the post office and bank.

“But every night I’m in bed,” she said. “I’m praying and asking God to please let me wake up in the morning.”

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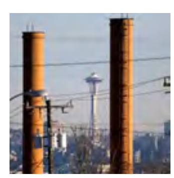

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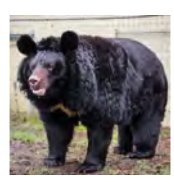

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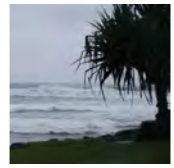

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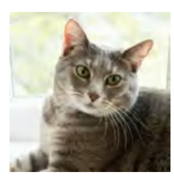

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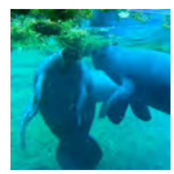

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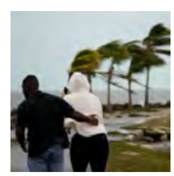

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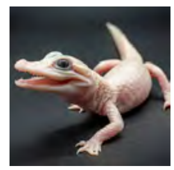

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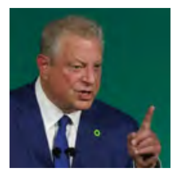

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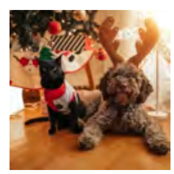

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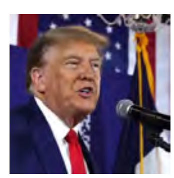

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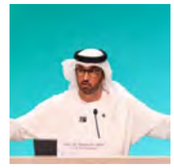

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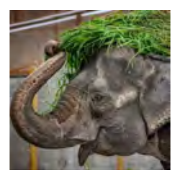

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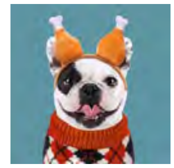

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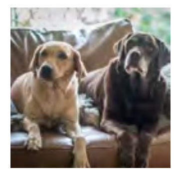

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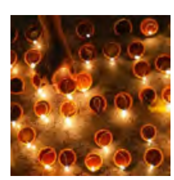

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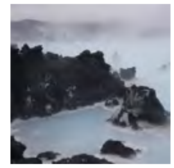

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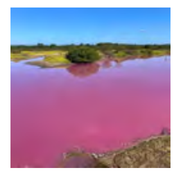

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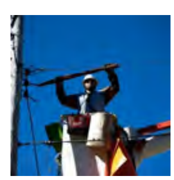

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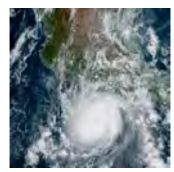

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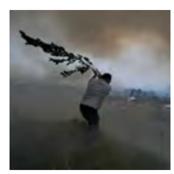

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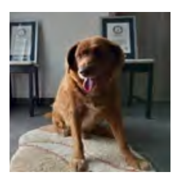

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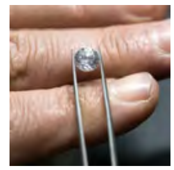

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January 8, 2024

Via Electronic Mail: lauren.whybrew@orcca.org
Lauren Whybrew
Olympic Region Clean Air Agency
2940 Limited Lane NW
Olympia, WA 98502

RE: Hazardous Air Pollutant (HAP) Deficiencies in Preliminary Determination for Pacific Northwest Renewable Energy, LLC (PNWRE)

Dear Ms. Whybrew:

In July 2023, Pacific Northwest Renewable Energy, LLC (PNWRE) submitted an air permit application for a 440,800 tpy wood pellet manufacturing facility to be located in Hoquiam, Washington. Although this industry has been operating in US South for more than a decade, this would be the first industrial-scale, export-based wood pellet plant in the US Pacific Northwest.

As attorneys with the Southern Environmental Law Center and Environmental Integrity Project, we have worked extensively on air quality issues at wood pellet plants since 2017, reviewing permits and applications for more than 35 pellet plants located in a dozen states. We have also compiled a database of more than 50 stack tests from these facilities and discovered thousands of tons of excess VOC and HAP emissions, resulting in more than $6 million in environmental penalties and the installation of new pollution control technology at numerous plants.[1]

We write now because PNWRE has **vastly underestimated HAP emissions.** The company claims the facility will emit only 1.3 tons of HAPs per year; this estimate is deeply flawed and based on incorrect or inappropriate emission factors—mostly AP-42 emission factors that are not specific to wood pellet plants. Recent stack tests and air permit applications that are specific to this industry show that a facility this size and with the controls proposed by PNWRE will emit 40 tons or more of total HAPs per year, including more than 20 tons of methanol and a significant amount of the particularly toxic HAP acrolein.

As just one example, the pellet manufacturer Drax, which operates 18 industrial-scale pellet plants, recently applied for an air permit for a 496,000 tpy facility in Longview, Washington. Drax estimates that its facility—which is comparable in scale, control technology, and feedstock to PNWRE—will emit 49 tons of HAPs.[2] This is well in line with numerous other recent

[1] *See, e.g.*, https://www.nola.com/news/environment/british-company-agrees-to-pay-3-2-million-for-air-pollution-at-louisiana-wood-pellet/article_c451e610-4352-11ed-8a54-43df54e33cd5.html.
[2] Letter from Trinity Consultants, on behalf of Drax, to Danny Phipps, Air Quality Engineer, Southwest Clean Air Agency, at Attachment 2: Updated Potential Emission Calculations and Stack Test Data, Table C-2b (Mar. 29, 2023) (Attachment A). Available via Sharefile link at: https://southernenvironment.sharefile.com/d-sa745e15d0ed64ba0bcb8a6fe2cc87102.

applications and stack tests at wood pellet plants,[3] and suggests PNWRE will have the potential to emit about 43 tons of HAPs per year.

Additionally, PNWRE intends to operate wet (aka green) hammermills that will not be vented to any VOC controls and has improperly listed these units as not emitting any VOCs and HAPs. Most comparable mills vent these units to the furnace or dryer RTO for VOC and HAP control, and stack tests on uncontrolled wet hammermills[4] show PNWRE's wet hammermills will emit up to 60 tons of VOCs and six tons of HAPs (in addition to the emission rates calculated above).

Given the foregoing, PNWRE's application is deficient and incomplete. Specifically, as a major source of HAPs, the company must submit a case-by-case Maximum Achievable Control Technology analysis. Additionally, the company's air toxics Ambient Impact Review is wholly irrelevant as it is based on inaccurate HAP emission rates. Finally, the company's BACT analysis for the wet hammermills is incomplete for failing to assess VOC controls.

These are only the most significant issues identified in PNWRE's application. We believe, however, that at minimum ORCAA must withdraw PNWRE's application from notice and comment until the company revises its application to address these issues. Finally, we are happy to share any of the resources that we have gathered concerning this industry.

Respectfully,

/s/ Patrick Anderson

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[3] *See, e.g.* Enviva Pellets Waycross, Application for Title V Permit Significant Modification Without Construction, at Appendix C (Oct. 2021) (Attachment B) (Showing that at a production capacity of 920,000 tpy, the facility emits 79 tons of HAPs. This ratio equates to 38 tons of HAPs at PNWRE. Enviva, which operates 10 pellet plants, has used these same emission factors in recent applications in Alabama and Mississippi as well); *see also* Drax Amite BioEnergy, Title V Air Permit Application, at Appendix B (Feb. 2022) (Attachment C) (Showing 40 tons of HAPs emitted by the facility). These applications and related stack tests are available on Sharefile at: https://southernenvironment.sharefile.com/d-sa745e15d0ed64ba0bcb8a6fe2cc87102.

[4] Enviva Pellets Wiggins, LLC, Air Emission Test Report (Oct. 31, 2013) (Attachment D); Enviva Pellets Amory, LLC, Air Emission Test Report (Oct. 31, 2013) (Attachment E). Available on Sharefile at: https://southernenvironment.sharefile.com/d-sa745e15d0ed64ba0bcb8a6fe2cc87102.

Forest Clearing Rates in the Sourcing Region for Enviva Pellet Mills in Virginia and North Carolina, U.S.A.

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1. Introduction

Since the early 2010s the southeastern U.S. has become a central hub for the sourcing and manufacturing of wood pellets exported to Europe and the U.K. for heating and power generation (*1, 2*). Production continues to rise, with the U.S. exporting approximately 7.26 million metric tons ("tonnes") of wood pellets in 2020, mostly produced in the southeastern U.S., and with the U.K. utility company Drax Power burning more than 4.6 million tonnes of those wood pellets in 2020 (*3, 4*). The Danish energy company Ørsted is another large consumer of wood pellets from the southeastern U.S., providing about one-third of Denmark's district heating and one-fourth of the country's total power generation with wood pellets and chips (see reporting and briefs).

Some of the earliest large-scale pellet manufacturing plants were established in northeastern North Carolina and southeastern Virginia. Enviva owns and operates three plants in that area, including one in Ahoskie, North Carolina, another in Northampton, North Carolina, and a third in Southampton, Virginia (Figure 1). These mills came online in 2011, early 2013, and late 2013, and had a production capacity of approximately 1.4 million tonnes of pellets per year until 2019 when the maximum capacity of the three mills increased to over 1.9 million tonnes per year (*5-8*). Enviva added a fourth mill in Sampson County, North Carolina becoming operational in 2016.

The wood used to produce these pellets is sourced from forests in the vicinity of pellet mills. This demand increases harvest extraction and may be expanding the area of forest that is harvested each year. The industry claims that their material is sourced only from the wood waste or wood 'residue' generated by clearcut harvesting, including tree tops, branches, and discarded trunks that are not of commercial value for sawtimber or other wood products, along with secondary feedstocks from sawmill and wood industry residues. However investigative reporting by watchdog journalists and environmental groups has documented whole trees of large diameter being extracted from mature hardwood forest, including swamplands, and trucked for direct delivery to wood pellet mill sites such as Enviva's Northampton, Southampton, and Ahoskie mills from 2013 through to 2019 (*9, 10*). This has raised an alarm about unsustainable and damaging logging practices used to source this industry, as well as the clearcutting of iconic, hardwood forests within the region. Also of concern is the climate warming impact of the bioenergy sector, which contributes to the clearing of growing forests that were sequestering atmospheric carbon, redirects harvested wood from storage within wood products toward the faster-release carbon emissions pathway associated with prompt combustion to produce energy, and does so with a fuel that is of low energy density and has high greenhouse gas emission per unit of energy produced (*11, 12*).

Pellet mill and biomass energy companies alike have come under pressure to source their material sustainably, leading to the establishment of institutions such as the Sustainable Biomass Program (see https://sbp-cert.org/) which seeks to evaluate the sustainability of biomass extraction operations and to certify them as sustainable where appropriate. The SBP reports for Enviva's mills approach sustainability with an emphasis on (a) biomass growth exceeding harvesting removals, (b) avoiding the use of threatened or endangered species for wood pellet production, (c) avoiding high conservation value areas, (d) use of best practices for forest management and regrowth, and (e) sourcing of pellet feedstocks principally from so-called residues and low value roundwood as described above (*5-7*). However, the large volume of material consumed by Enviva's mills within the region calls into question whether these constraints are truly being met. Moreover, meeting forest harvesting sustainability criteria, as outlined in the SBP program, provides no assurance that atmospheric carbon is not increased by forest bioenergy use (including its harvesting, processing, transport and combustion). Furthermore, the SBP program has been criticized for a lack of independence and other deficiencies in the program's ability to provide credible assurances that its sustainability standards are being met (*13*). Furthermore, Enviva argues that their practices are maintaining a sustainable extent and biomass stock of forestland within the region given the market pull of a new demand for biomass. However, this claim has not been demonstrated with large-scale quantitative measurement, nor has it been analyzed with respect to forest types. It remains unclear how the pattern and rate of forest clearings have responded to pellet mill operations – something that can be reliably quantified with satellite remote sensing of forest extent and annual forest loss conducted at a medium resolution (30 m x 30 m).

This study utilizes the best-available satellite data records to map the harvesting of forests in the source regions of mills over time, and to analyze time series to detect whether harvesting has increased as a result of mill operations. We examine the rates of clearing by forest type. Also, we diagnose whether there has been a conversion of forestlands from hardwoods to softwoods, and if there has been an expansion (or decline) of forest cover in the area surrounding mills.

2. Study Region

The study area encompasses areas within 100 km radii of the Enviva pellet mills at Northampton, Southampton, and Ahoskie (Figure 1) (the "3-mill area"). We define these areas as approximate "source regions" for each of the mills, and confirmed that this extent is consistent with Enviva's Track and Trace tool (https://www.envivabiomass.com/sustainability/responsible-sourcing/track-trace/). The latitude, longitude coordinates for each pellet mill are: Enviva Northampton: 36.504969, -77.611456; Enviva Southampton: 36.666902, -76.971844; Enviva Ahoskie: 36.269097, -76.965500. Also, we defined a reference region, or control, outside of the influence of the three mills to serve as a baseline against which we can measure the influence of pellet mill operations. Use of a control group or reference region is a common approach for measuring the effect of a factor such as a change in land ownership or land conservation status on forest clearing when in the presence of a potentially time-varying baseline state (*14, 15*). We use Enviva's Sampson pellet mill (35.120949 latitude, -78.183700 longitude) as the reference region in this study because it is located within the same general physiographic region as the other three mills, and has a similar forest type composition (Table 1) but experienced pellet mill operations only from 2016. This reference area is representative of the forest clearing trends in a region free of pellet mill activity prior to 2016 when the pellet mill operations began in Sampson.

The source region for these mills rests predominantly within the Atlantic coastal plain (Figure 1). Forest types are dominated by Loblolly/Shortleaf Pine softwood, Oak/Hickory hardwood, and Oak/Gum/Cypress hardwood forest types, with some mixed Oak/Pine stands (Tables 1, 2, Figure 2).

The region's forests are intensively harvested for a range of wood products manufactured at pulp mills and saw timber mills, but this utilization and extraction has been shifting over time. For example, a hardwood paper pulp mill in Franklin, Virginia was closed in 2010, coincident with the economic downturn. This closure reduced the demand for hardwood harvesting in the 3-mill area just before the pellet mill operations came online. Though International Paper Company re-purposed the mill as a fluff pulp mill opening in 2012, the fluff pulp supply relies on softwoods. Thus, a return of forest clearing at the rate prior to pellet mill operations would indicate the effect of pellet mills, particularly for deciduous hardwoods.

Figure 1. Map of the study region displaying the location of the Enviva wood pellet mills used in this study, the perimeter of Enviva's current map outlining its primary wood supply for these mills, and including this study's 3-mill source regions (blue circles) and its reference region (orange circle minus overlap with the blue circles). The base map displays the UDSA-NRCS Major Land Resource Areas our study region is located at, including Atlantic Coast Flatwoods, Tidewater, Coastal Plain, Sand Hills, and Piedmont.

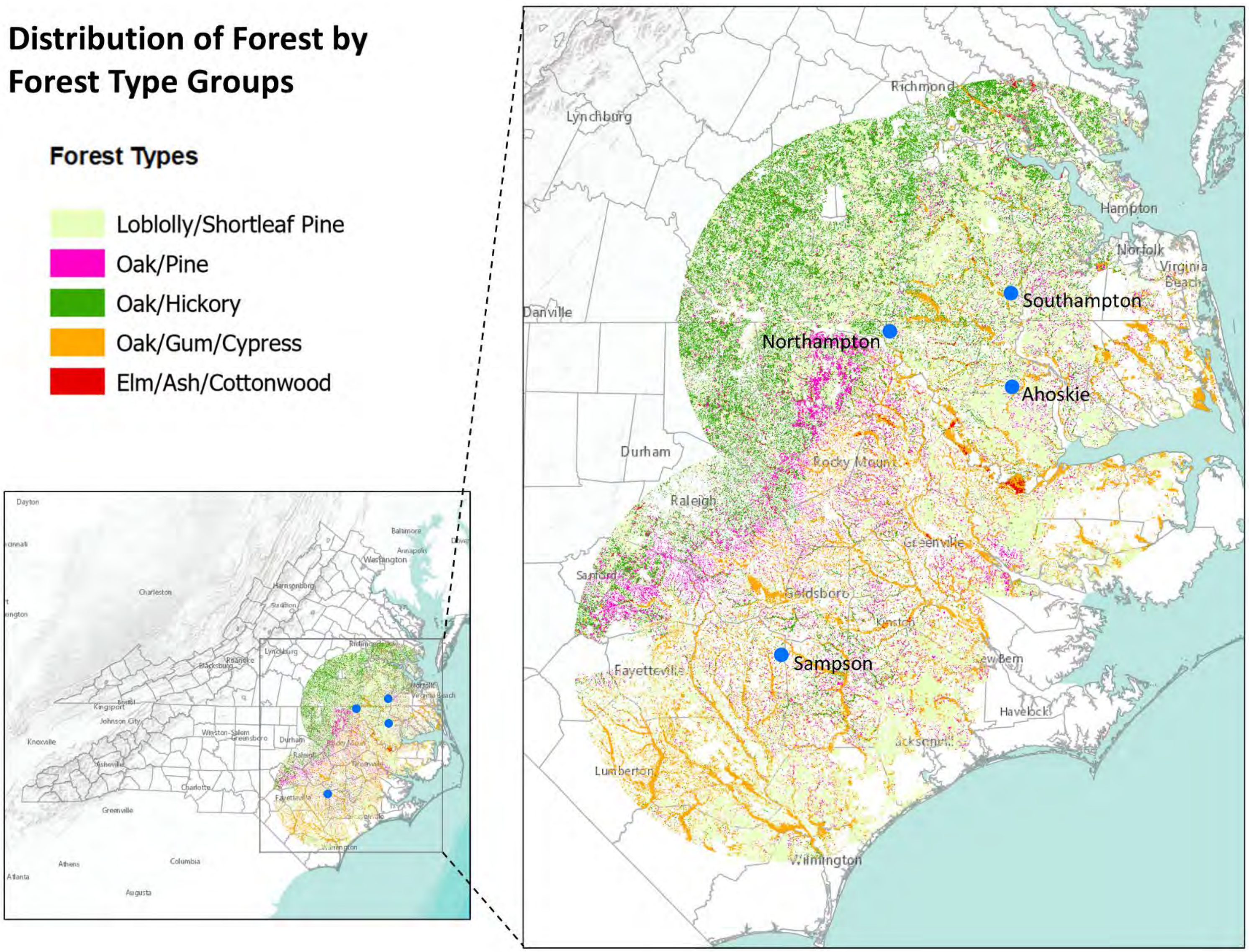

Figure 2. Distribution of forest within the study region according to forest type groups of the U.S. Forest Service.

Table 1. Forest Area in 2000 by Forest Type Group in the 3-Mill and Reference Areas.

	3-Mill		Reference	
Forest Area in 2000	[ha]	[% of total]	[ha]	[% of total]
Loblolly/Shortleaf Pine	1,106,527	51%	604,379	53%
Oak/Pine	187,947	9%	118,990	10%
Oak/Hickory	594,475	27%	118,297	10%
Oak/Gum/Cypress	261,445	12%	295,933	26%
Elm/Ash/Cottonwood	18,427	1%	2,946	0%
Deciduous	1,062,294	49%	536,166	47%
Coniferous	1,106,527	51%	604,379	53%
Total	2,168,822	100%	1,140,545	100%

Table 2. Area of forestland by forest type in each 100 km radius surrounding the pellet mill and the reference region, as well as for the 3-mill areas combined.

Forest Area in 2000 [ha]	Northampton	Southampton	Ahoskie	3-Mill	Reference
Loblolly/Shortleaf Pine	844,455	738,936	736,137	1,106,527	604,379
Oak/Pine	152,495	107,925	130,672	187,947	118,990
Oak/Hickory	497,240	327,793	188,556	594,475	118,297
Oak/Gum/Cypress	159,111	173,161	246,187	261,445	295,933
Elm/Ash/Cottonwood	14,960	13,138	9,765	18,427	2,946
Deciduous*	823,805	622,018	575,180	1,062,294	536,166
Coniferous*	844,455	738,936	736,137	1,106,527	604,379
Total	1,668,261	1,360,954	1,311,317	2,168,822	1,140,545

*For the purposes of this study we assign forest type groups as follows: Coniferous includes White/Red/Jack Pine, Longleaf/Slash Pine, and Loblolly/Shortleaf Pine, and Deciduous includes Oak/Pine, Oak/Hickory, Oak/Gum/Cypress, and Elm/Ash/Cottonwood.

3. Methods

We mapped locations of annual forest clearing from 2001 to 2019 with the ~30 meter Global Forest Watch (GFW) year 2000 tree cover and 2001 to 2019 tree cover loss datasets (*16*). To compute areas of forest and of forest loss, we transformed the GFW dataset from its original 0.00025 degree resolution, World Geodetic System 1984 (WGS84) geographical coordinate system to the North American Datum of 1983 (NAD83) coordinate system, and then projected the data to the Albers Conical Equal Area projection with a 30 m resolution. We identified the forest type of cleared areas by clipping the GFW tree cover map to the U.S. Forest Service forest type group map representative of 2000 (*17*) and defined at the 30 m resolution according to the National Forest Carbon Monitoring System (*18*). Forest type groups were also aggregated into softwood coniferous and hardwood deciduous groups to allow us to detect whether forest clearings of hardwood stands increased after the initiation of pellet mill activity. We sampled the maps of forested area and forest clearings for four different pellet mill regions, and for the 3-mill area combined. We then mapped the distribution of forest area, and forest clearings from 2001 to 2019, by forest type on the 30 m x 30 m grid. We confirmed that the tree cover percent of the pixels included as forest in our analysis contains a tree cover percentage representative of true forestland by analysing the GFW tree cover percent. Forest areas included in our study had a median tree cover percentage of 97%, a 20th percentile tree cover percentage of 85%, and a tree cover of less than 40% for fewer than 5% of the pixels classed as forest.

We excluded forest disturbance and forest clearing events that are not likely to be related to market-driven biomass supply for wood products (see Appendix 1 for figures displaying areas filtered out of the analysis). We excluded areas marked as developed in 2016, areas that experienced wildfires, and areas that have a protected or public game land or non-harvestable status. Developed areas were identified with the 2016 National Land Cover Dataset (NLCD, 2016) (*19-22*), including those 30 m pixels classified as developed open space or low, medium, or high intensity developed land. Protected lands were identified with the USGS, Gap Analysis Program (GAP), Protected Areas Database of the United States (PAD-US 2.0) (*23*), with GAP classes 1, 2, or 3, and public, non-harvestable lands such as those owned and managed by the U.S. Fish and Wildlife Service or the U.S. Department of Defense. Wildfires were identified as those areas of moderate to high burn severity from 1999 to 2017 according to the 30 m Monitoring Trends in Burn Severity (MTBS) (*24*) with its data release of August 29, 2018.

We measured the area of forest cleared each year by forest type and by deciduous or coniferous groupings by counting the number of pixels within a region that had loss and multiplying by pixel area (900 m^2 or 0.09 ha). We computed the percentage of forested pixels that were cleared each year by dividing the area cleared in a given year by the area of forest in 2000. We analyzed annual time series of the area of forest loss and the percentage of forest loss relative to forest cover in 2000 for individual forest types and for all forest types combined. We compared pre-mill forest clearing rates to those after the initiation of mill activity (referred to as "post-mill"). We expressed average annual forest clearing for three time periods: 2004-2008, 2013-2015, and 2016-2018, and quantified their ratios to assess the change in clearing after the initiation of mill operations. These time periods were selected to represent pre- and post-mill clearing rates during years of relatively favourable economic conditions as defined by Gross

Domestic Product. This removes variability associated with economic downturns, such as the recent recession in the late 2000s that is well-known to have significantly diminished the forest products industries of the southern U.S. (*25-27*). The years 2001 to 2003 and 2008 to 2010 were excluded because of anomalously low Gross Domestic Product in 2001, 2002, 2008, and 2009 (The World Bank, 2021) (*28*), along with 2003 and 2010 to account for the lag in the return of markets that influence harvesting practices. We identified pre-mill forest clearings as those during 2004 to 2007. With the three mills coming online from 2011 to 2013, we defined post-mill forest clearings in two time periods, 2013 to 2015, and 2016 to 2018.

The forest clearing time series mapped by GFW in its version 1.7 involves two distinct data processing and analysis periods, one for 2000 to 2010 and a second from 2011 to 2019, with the latter involving a more sensitive sensor from Landsat 8 OLI as well as improved validation data and an improved forest loss model (http://earthenginepartners.appspot.com/science-2013-global-forest/download_v1.7.html). To guard against the potential non-stationarity that may result from these methodological changes over time, we compared forest clearing rates within the 3-mill source region to the time series of forest clearings seen within the Sampson pellet mill reference region prior to 2016 when mill operations were initiated there as well. Trends in the GFW dataset from 2011 to 2019 are not subject to this risk of non-stationarity, given temporal consistency in the satellite data and algorithm used to identify forest clearings.

To assess whether mill operations have led to a general increase in forest cover in the 3-mill source region, we measured changes in forest cover over time with the 30 m NLCD land cover datasets for 2001, 2011, and 2016. We did not rely on the GFW forest gain data for this purpose for several reasons. Firstly, at present the GFW forest gain estimates are only available for the period of 2001 to 2012 and thus are only representative of the time period prior to the initiation of pellet mill operations. Secondly, studies evaluating the GFW and similar datasets indicate that estimates of forest gains have lower accuracy than estimates of forest losses (*16, 29-31*), partly because forest growth is a more gradual and complex ecological process (*32*) that is more difficult to detect (*30, 33*). We note the following general correspondences between the NLCD classes and those derived from the U.S. Forest Service forest type group map within this study's regions of interest: NLCD Coniferous corresponds to the Longleaf/Slash Pine and Loblolly/Shortleaf Pine forest type groups; NLCD Mixed corresponds to the Oak/Pine forest type group; NLCD Woody Wetlands corresponds partly to the Oak/Gum/Cypress forest type group but may also overlap with Elm/Ash Cottonwood and other forest types including the pine groups; NLCD Deciduous corresponds to a restricted subset of the Oak/Hickory forest type group. We computed changes in the area forested from the 2001 to 2011 and from 2011 to 2016 NLCD datasets, and quantified the annual average rate of change in forested area for all NLCD forest classes, with emphasis on the Deciduous, Mixed, and Woody Wetlands classes.

Finally, we estimate the total biomass yield associated with clearings in the combined 3-mill source region area, and compare it to the feedstock supply that is consumed by the three mills in recent years. We adopt a typical harvest yield of 93 green tons of biomass per acre (equal to 84 green tonnes of biomass per acre, or 208 green tonnes of biomass per hectare), and a pellet yield of 0.4464 dry tonnes of pellets per green tons of biomass furnished (equal to 0.4921 dry tonnes of pellets per green tonnes of biomass furnished) as reported by Spencer Phillips of Key-Log Economics (*34*). This harvest yield is consistent with the biomass density reported in our own work on southeastern U.S. forests, reporting an average biomass density of about 120 metric tonnes of dry biomass per hectare for harvestable forests (*35*), which equates to approximately 97 green tonnes of biomass per acre assuming a water content of 50%. We compute the potential pellet supply from:

Potential pellet supply [dry tonnes per year] = A x B x P

where A is the area cleared [hectares per year], B is green biomass yield per area cleared [green tonnes biomass furnished per hectare harvested], and P is dry pellet mass produced per unit green biomass furnished [dry tonnes pellets per green tonnes biomass]. Additionally, we compute the true total Enviva pellet supply estimated to be derived from deciduous harvesting from:

Enviva pellet supply from deciduous harvesting [dry tonnes pellets per year] = F x H x PS x P

where F is the pellet feedstock reported by Enviva [green tonnes of biomass feedstock per year], H is the percentage (=78%) from hardwoods as reported in Enviva's supply base reports (*5-7*), PS is the percentage (=87%) of pellets arriving from primary supply via direct harvesting in forests, and P is dry pellet mass produced per unit green biomass furnished [dry tonnes pellets per green tonnes biomass].

4. Results

4.1 Trends in Forest Clearing Rates

Deciduous forest clearing in the 3-mill region rose sharply after 2012 to a peak in 2017 (Figure 3). During the recession-free, pre-pellet-mill period of 2004 to 2008, the 3-mill area saw a gross forest clearing rate of 1.5% per year (16,425 hectares per year) (Table 3). Deciduous forest clearing dropped to 1.1% per year for 2009 to 2012 with the recession and coincident closure of the Franklin, VA hardwood paper and pulp mill. With the initiation of pellet mill operations in the region, deciduous forest clearing returned to the pre-recession level (1.5% per year) by 2013 to 2015, and then rose to 1.7% per year (18,480 ha per year) from 2016 to 2018. Oak/Hickory and Oak/Pine forests saw the largest increase in forest clearing from the mid-2000s to the mid- and late 2010s (Table 4).

Coniferous forest clearing had a similar pattern in the 3-mill region (Table 3, Figure 3). Gross coniferous forest clearing in this area was 2.6% per year from 2004 to 2008, decreased to 2.0% per year from 2009 to 2012, rose to 2.4% per year for 2013 to 2015 and 2.5% per year from 2016 to 2018. Time series of annual clearing rates for the dominant forest types are shown in Figures 4, 5, 6, and 7. A map of forest losses is displayed in Figure 8 for the entire region, and with a focus on specific cutout regions within the vicinity of the 3-mill cluster (Figures 9, 10).

Forests of the reference region experienced similar trends in clearing rates over time but with a smaller decline during the 2009 to 2012 period. Gross deciduous forest clearing in the reference region was fairly steady from 2004 to 2015, at around 1.3% per year. Thereafter, when the Sampson pellet mill began its operations in 2016, deciduous forest clearing rose to 1.9% per year from 2016 to 2018. Similarly, gross forest clearing of coniferous forests in the reference region was about 2.2% per year from 2004 to 2015 and rose to 2.9% per year by 2016 to 2018.

To summarize, we find that the rate of forest clearing increased markedly after the initiation of pellet mill operations at Northampton, Southampton, and Ahoskie. By 2013 to 2015, the 3-mill region saw deciduous forest clearing increase by 1.34 times that of 2009 to 2012, and by 2016 to 2018 it increased by 1.51 times, based on the rates reported in Table 4. By comparison, the reference region saw an increase of only 1.18 times for 2013 to 2015 relative 2009 to 2012. However, once pellet mill operations began at the Sampson mill, deciduous forest clearing rose to 1.54 times the rate during the recession period. Thus, it is very likely that the initiation of pellet mill operations contributed to elevated rates of deciduous forest clearing in the 3-mill region beginning in the early 2010s, and in the reference region beginning in 2016.

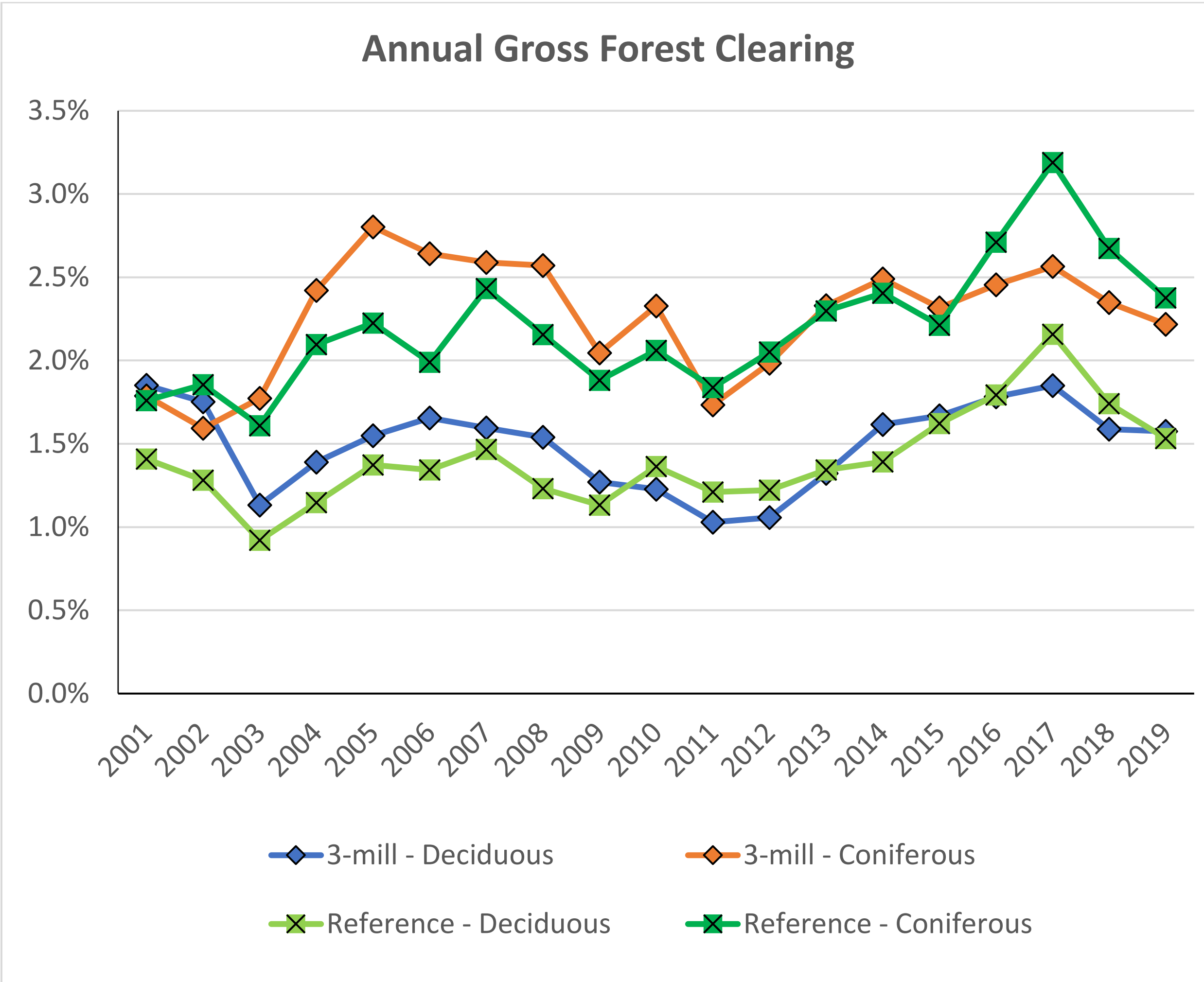

Figure 3. Time series of annual gross forest clearings as percent of year-2000 forestland for the 3-mill and reference regions and for both deciduous-dominated and coniferous-dominated forest types from 2001 to 2019.

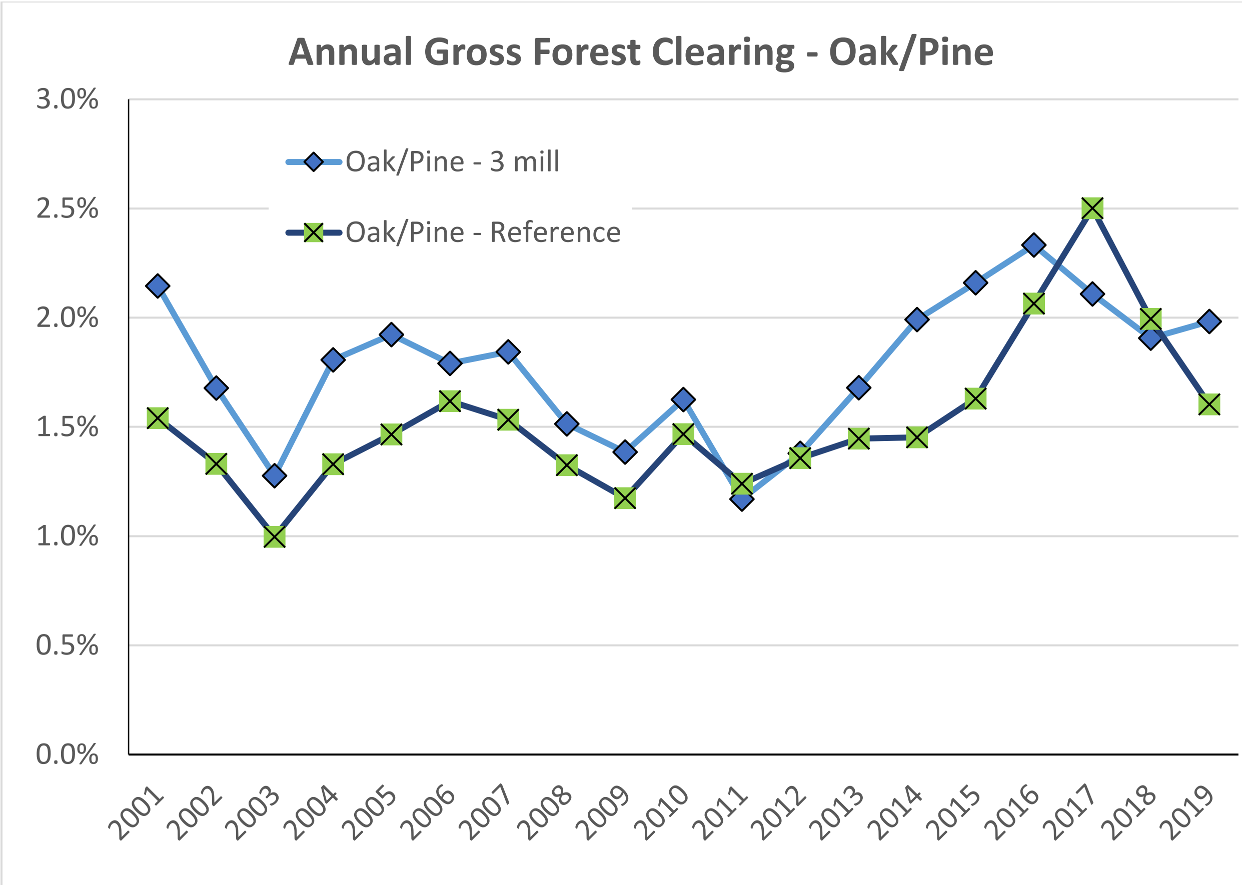

Figure 4. Time series of annual gross forest clearings for Oak/Pine forests within the 3-mill region and reference regions.

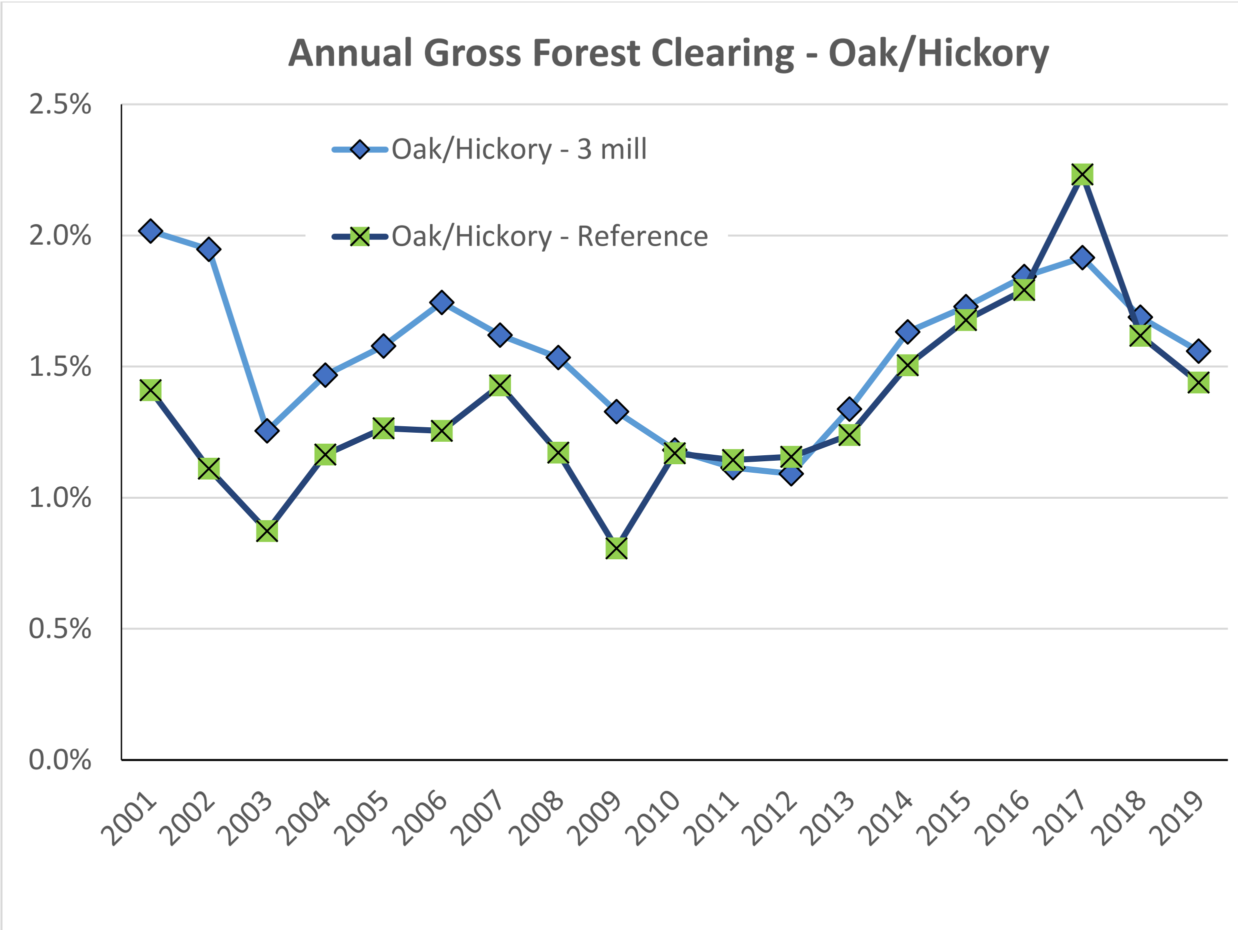

Figure 5. Time series of annual gross forest clearings for Oak/Hickory forests within the 3-mill region and reference regions.

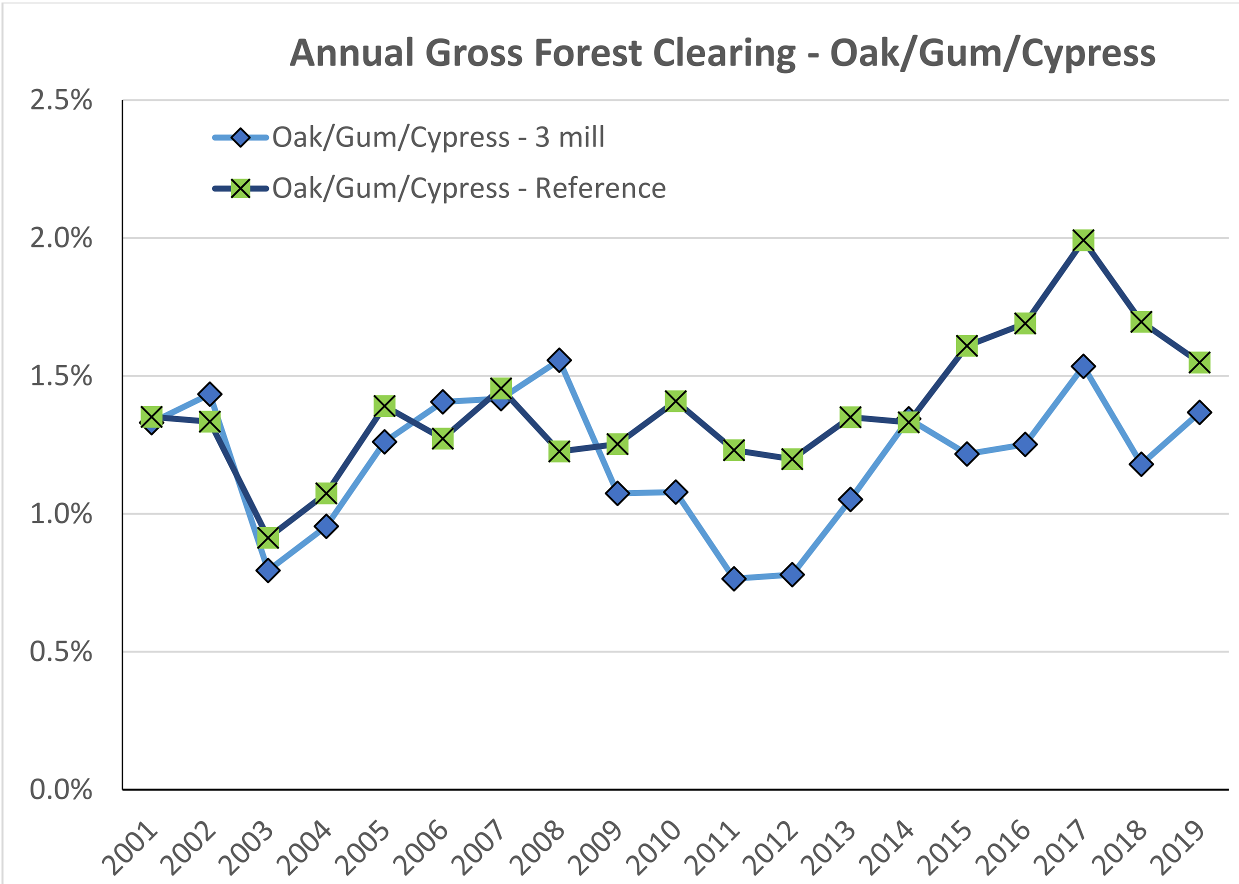

Figure 6. Time series of annual gross forest clearings for Oak/Gum/Cypress forests within the 3-mill and reference regions.

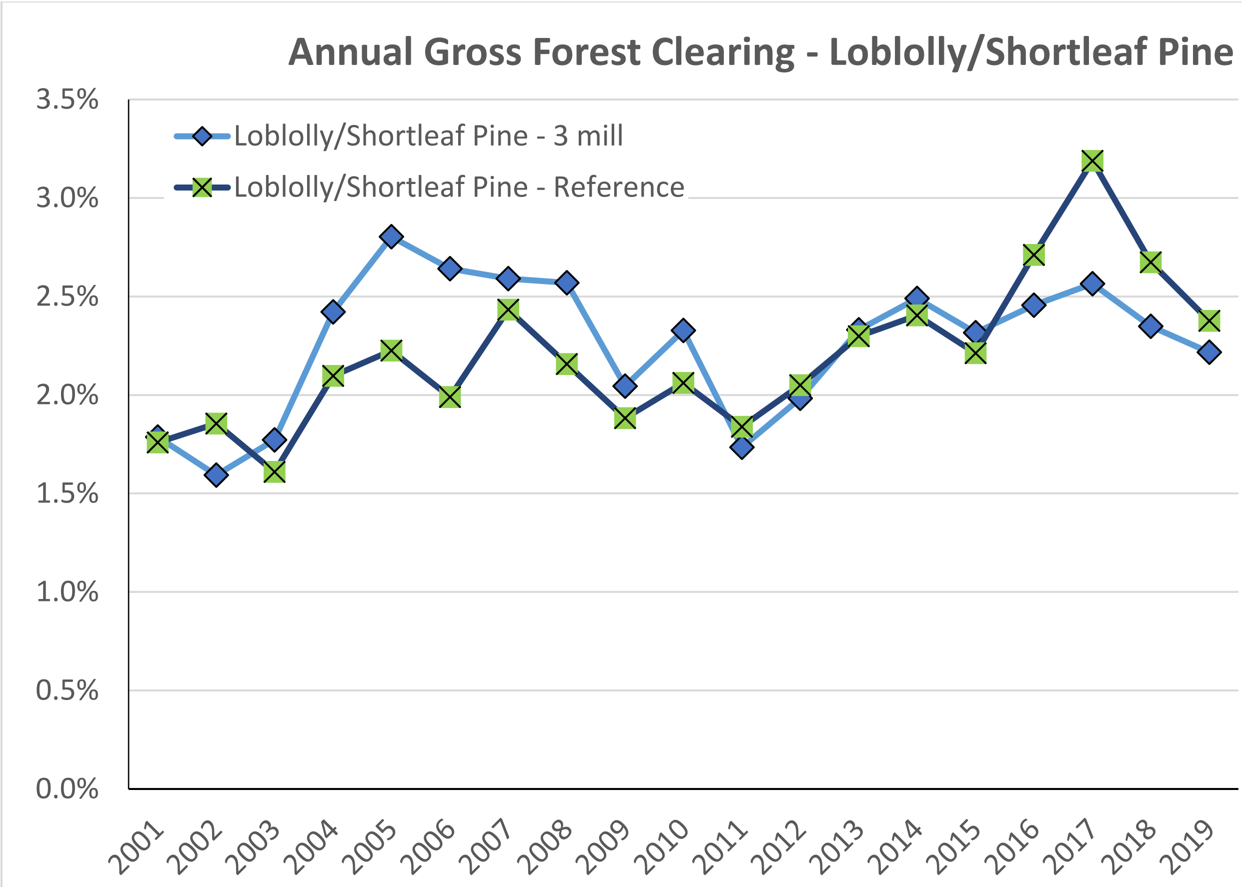

Figure 7. Time series of annual gross forest clearings for Loblolly/Shortleaf Pine forests within the 3-mill and reference regions.

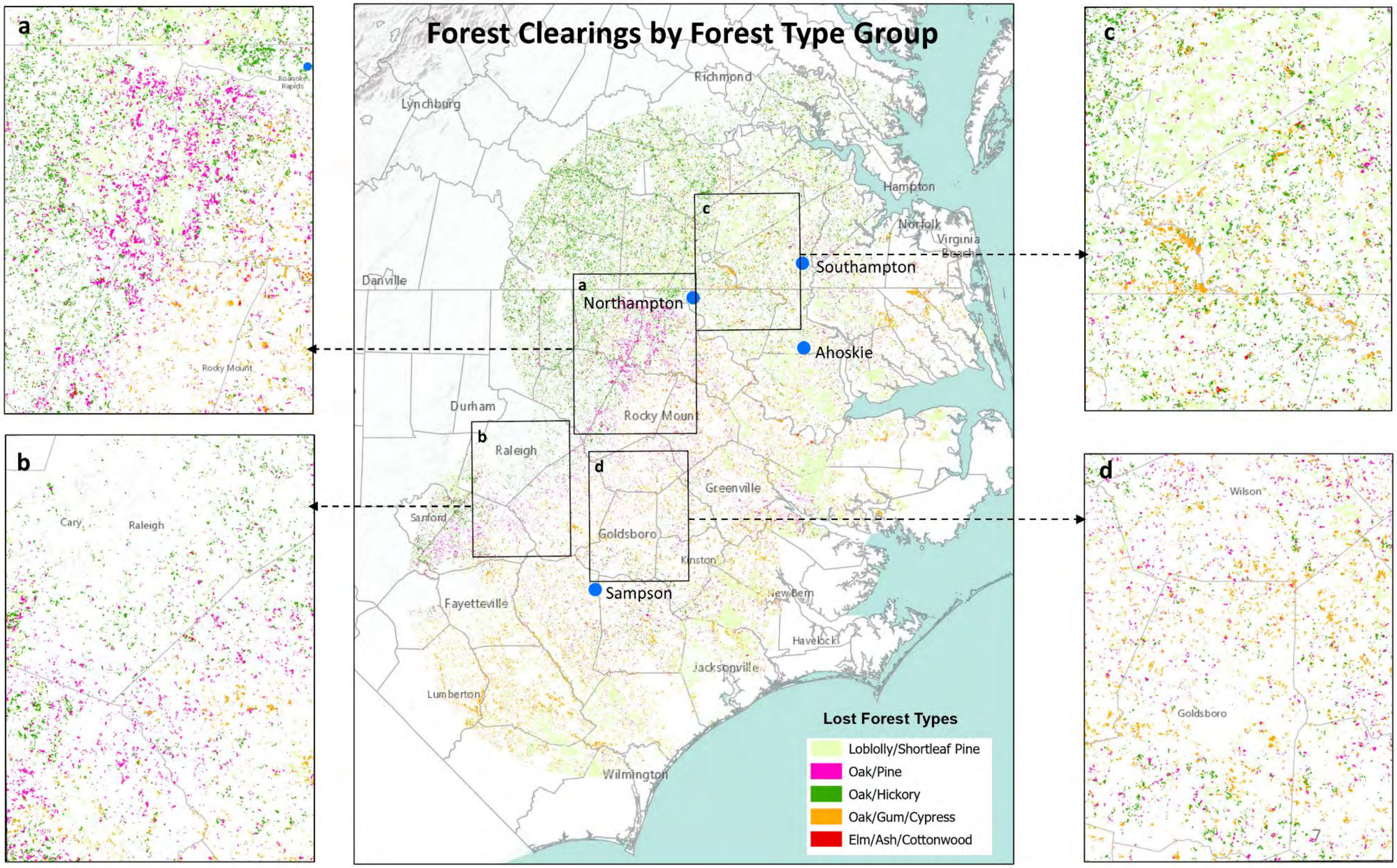

Figure 8. Forest clearings from 2001-2019 within the study region mapped by forest type group.

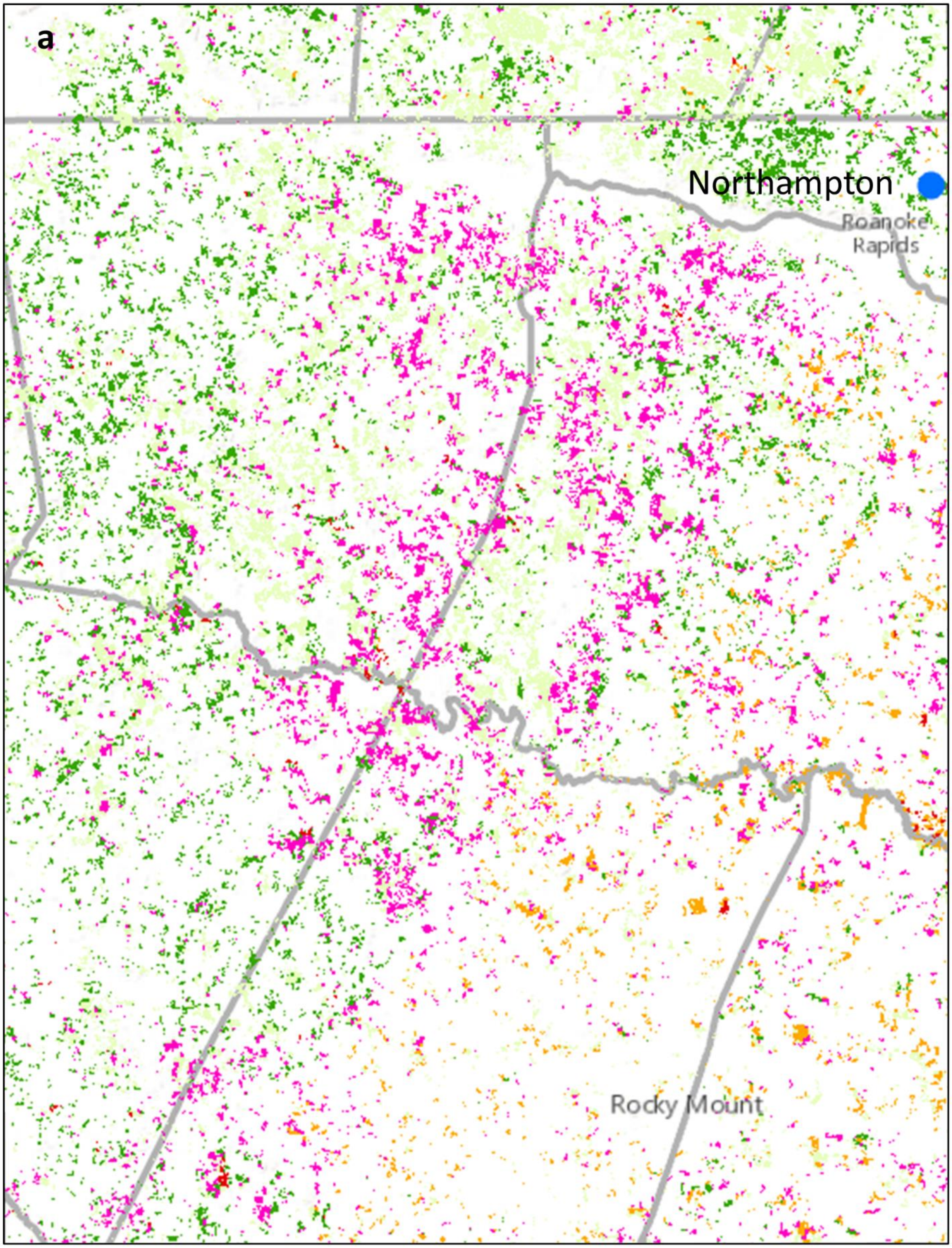

Figure 9. Forest clearings within the cutout region a.

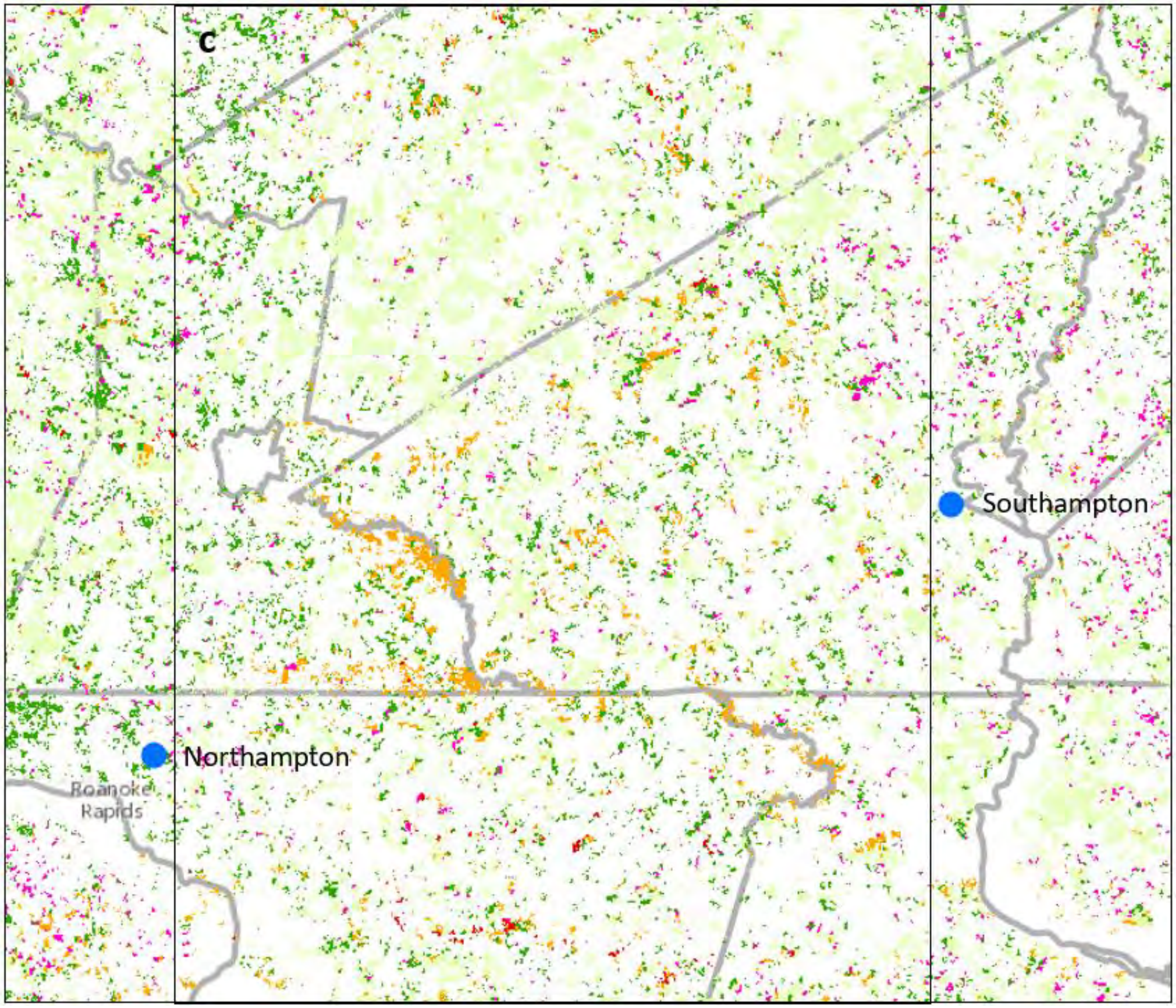

Figure 10. Forest clearings within the cutout region c (internal black box) shown within an extended landscape to show both Southampton and Northampton mills.

Table 3. Forest area in 2000 and the average annual rate of gross forest clearing in select time periods for the 3-mill and reference regions, reported for deciduous and coniferous forests separately.

	Forest Area in 2000	2004 - 2008		2009 - 2012		2013 - 2015		2016 - 2018	
	[ha]	[ha per yr]	[% per yr]	[ha per yr]	[% per yr]	[ha per yr]	[% per yr]	[ha per yr]	[% per yr]
3-mill									
Deciduous	1,062,294	16,425	1.5%	12,171	1.1%	16,317	1.5%	18,480	1.7%
Coniferous	1,106,527	28,830	2.6%	22,379	2.0%	26,323	2.4%	27,179	2.5%
Reference									
Deciduous	536,166	7,034	1.3%	6,603	1.2%	7,785	1.5%	10,171	1.9%
Coniferous	604,379	13,176	2.2%	11,833	2.0%	13,930	2.3%	17,268	2.9%

Table 4. Forest area in 2000 and the average annual rate of gross forest clearing in select time periods for the 3-mill and reference regions shown for individual forest types.

	Forest Area in 2000	2004 - 2008		2009 - 2012		2013 - 2015		2016 - 2018	
	[ha]	[ha / y]	[% / y]	[ha / y]	[% / y]	[ha / y]	[% / y]	[ha / y]	[% / y]
3-mill									
Oak/Pine	187,947	3,337	1.8%	2,612	1.4%	3,653	1.9%	3,976	2.1%
Oak/Hickory	594,475	9,448	1.6%	7,010	1.2%	9,311	1.6%	10,793	1.8%
Oak/Gum/Cypress	261,445	3,449	1.3%	2,418	0.9%	3,149	1.2%	3,457	1.3%
Elm/Ash/Cottonwood	18,427	191	1.0%	132	0.7%	203	1.1%	254	1.4%
Loblolly/Shortleaf Pine	1,106,527	28,830	2.6%	22,379	2.0%	26,323	2.4%	27,179	2.5%
Deciduous	1,062,294	16,425	1.5%	12,171	1.1%	16,317	1.5%	18,480	1.7%
Coniferous	1,106,527	28,830	2.6%	22,379	2.0%	26,323	2.4%	27,179	2.5%
Reference									
Oak/Pine	118,990	1,730	1.5%	1,559	1.3%	1,796	1.5%	2,602	2.2%
Oak/Hickory	118,297	1,487	1.3%	1,265	1.1%	1,744	1.5%	2,225	1.9%
Oak/Gum/Cypress	295,933	3,799	1.3%	3,766	1.3%	4,233	1.4%	5,304	1.8%
Elm/Ash/Cottonwood	2,946	18	0.6%	14	0.5%	13	0.4%	39	1.3%
Loblolly/Shortleaf Pine	604,379	13,176	2.2%	11,833	2.0%	13,930	2.3%	17,268	2.9%
Deciduous	536,166	7,034	1.3%	6,603	1.2%	7,785	1.5%	10,171	1.9%
Coniferous	604,379	13,176	2.2%	11,833	2.0%	13,930	2.3%	17,268	2.9%

4.2 Forest Area Changes, 2001 to 2016

First, we report the area of deciduous forest lost within the 3-mill area according to the NLCD, and focusing only on those areas that are labeled as deciduous forest according to the relatively restrictive classification of the NLCD. We find that the areal extent of NLCD-classified deciduous forest declined within the 3-mill region from 2001 to 2016 with an average annual rate of loss of about 3,861 hectares per year from an initial 320,523 ha in 2001 (Table 5). This is a net loss of NLCD-classified deciduous forest, whereas the prior section analyzed gross forest clearings with the GFW data. Over the 15-year period this translates to a total net loss of about 18.1% of the year-2001 deciduous forest in the 3-mill region, with the annual rate of loss being roughly the same for 2001 to 2011 as for 2011 to 2016. These deciduous forest losses are coincident with smaller gains of mixed forest and coniferous forest, which expanded by 1,387 hectares per year and 505 hectares per year, respectively.

Second, we use the NLCD as a point of comparison for the total forested area estimated with the GFW dataset. To make this comparison it is necessary to combine the NLCD Deciduous, Mixed, and Woody Wetland forest classes together because many of those areas are labeled as deciduous-dominant forest types in this study's forest type assignment to the GFW dataset. When doing so, we find good agreement regarding the area classified as deciduous forest between NLCD and this study's combination of the GFW data with the U.S. Forest Service forest type group map. For the three classes combined, the NLCD reports an average annual net loss of forest area of about 2,313 hectares per year, out of an initial 1.46 million hectares in 2001 across the 3-mill region (Table 5). Over the 15-year period this corresponds to a net loss of 2.4% of the year-2001 Deciduous, Mixed, and Woody Wetland forest areas combined, , with the annual rate of loss being comparable for 2001 to 2011 as for 2011 to 2016. By comparison, the reference region saw a 15-year loss of only 1.1% of its year-2001 Deciduous, Mixed, and Woody Wetland forest areas combined by 2016.

Table 5. Forest area and the change in forest area from the 2001, 2011, and 2016 NLCD datasets for the 3-mill and reference regions.

	3-Mill			Reference		
Forest Area [ha]	2001	2011	2016	2001	2011	2016
Deciduous (NLCD)	320,523	280,473	262,615	60,490	57,792	56,252
Mixed	456,690	472,577	477,497	125,173	125,699	126,071
Woody Wetlands	684,961	683,812	687,365	590,894	582,630	585,588
Deciduous + Mixed + W.W.	1,462,174	1,436,863	1,427,477	776,558	766,120	767,911
Coniferous	828,994	823,927	836,569	510,481	513,332	517,407
All Forest Types	2,291,168	2,260,790	2,264,046	1,287,039	1,279,452	1,285,318
Forest Area Change [ha per year]	2011 - 2001	2016 - 2011	2016 - 2001	2011 - 2001	2016 - 2011	2016 - 2001
Deciduous (NLCD)	-4,005	-3,572	-3,861	-270	-308	-283
Mixed	1,589	984	1,387	53	75	60
Woody Wetlands	-115	711	160	-826	592	-354
Deciduous + Mixed + W.W.	-2,531	-1,877	-2,313	-1,044	358	-576
Coniferous	-507	2,528	505	285	815	462
All Forest Types	-3,038	651	-1,808	-759	1,173	-115
Forest Area Change [% over total time interval]	2011 - 2001	2016 - 2011	2016 - 2001	2011 - 2001	2016 - 2011	2016 - 2001
Deciduous (NLCD)	-12.50%	-5.57%	-18.07%	-4.46%	-2.55%	-7.01%
Mixed	3.48%	1.08%	4.56%	0.42%	0.30%	0.72%
Woody Wetlands	-0.17%	0.52%	0.35%	-1.40%	0.50%	-0.90%
Deciduous + Mixed + W.W.	-1.73%	-0.64%	-2.37%	-1.34%	0.23%	-1.11%
Coniferous	-0.61%	1.52%	0.91%	0.56%	0.80%	1.36%
All Forest Types	-1.33%	0.14%	-1.18%	-0.59%	0.46%	-0.13%

4.3 Feedstock Supplied by the Harvested Area

We estimate that 1.9 million dry tonnes of pellets would be produced each year if all of the deciduous forest clearing within the 3-mill area (18,480 hectares per year) was used to produce wood pellets (Table 6). This is based on an assumed harvest yield of 84 green tonnes of biomass per acre (208 green tonnes of biomass per hectare), and an assumed pellet yield of 0.492 dry tonnes of pellets per green tonnes of biomass furnished (*34*).

By comparison, Enviva's supply base reports (*5-7*) indicate that each of the three pellet mills consume 700,000 to 980,000 tonnes of green biomass feedstock per year (Table 6). From 2016 to 2018, the three mills combined to consume 2.33 to 2.66 million green tonnes of biomass feedstock per year. Enviva reports that its pellet feedstock in the region is comprised of 22% pine and 78% hardwood, and with 87% coming from primary feedstock including roundwood and whole trees direct from forests with the remainder as secondary feedstock from residual material provided by sawmill and wood industry suppliers. With 78% of the feedstock being hardwood supply and 87% from primary supply, approximately 68% of the feedstock would be expected to arrive directly from recent hardwood harvests in the region. This equates to 0.78 to 0.89 million dry tonnes of pellets per year of Enviva's 3-mill cluster supply coming from hardwood deciduous and mixed forest harvests. This feedstock would consume 41% to 47% of the total biomass from deciduous forest clearings within the 3-mill area.

Table 6. Feedstock supplies for the 3-mill cluster in 2016, 2017, and 2018 from deciduous harvest as reported by Enviva in Supply Base Reports, and the percent of potential production from deciduous forest clearings detected in this study.[1]

	2016	2017	2018
Total Pellet Feedstock	[green tonnes of biomass per year]		
Ahoskie	706,675	706,675	652,083
Northampton	981,002	908,641	862,609
Southampton	970,670	862,567	814,632
Total of Three Mills	2,658,347	2,477,883	2,329,324
Pellets from Deciduous Harvesting	[dry tonnes of pellets per year]		
Ahoskie	235,988	235,988	217,757
Northampton	327,597	303,433	288,061
Southampton	324,147	288,047	272,039
Total of Three Mills	887,732	827,467	777,857
Potential Feedstock from Deciduous Clearing	1,895,914	1,895,914	1,895,914
% Potential from Deciduous Clearings	47%	44%	41%

[1] In 2019, Enviva's total pellet feedstock (including primary feedstock from forests) increased at each of the three mills from 2018 (*5-7*). As reported by Enviva, the 2019 total pellet feedstock (in green tonnes) were: Ahoskie 688,752; Northampton, 1,014,554; Southampton 915,568. For the Southampton and Northampton mills, this increase was above 2017 levels. The same is true for the Enviva Sampson mill, with total pellet feedstock increasing from 852,842 in 2017 and 879,826 in 2018 to 1,016,024 in 2019 (see Enviva Sampson SBP reports 36. Enviva, "Supply Base Report: Enviva Pellets Sampson, LLC, Fourth Surveillance Audit, available for download at https://sbp-cert.org/certificate-holders/#4619," (Sustainable Biomass Program, 2020).) .

5. Conclusions

With analysis of the GFW forest cover and forest loss data, we find that the rate of forest clearing increased markedly after the initiation of pellet mill operations at Northampton, Southampton, and Ahoskie. By 2013 to 2015, the 3-mill region saw deciduous forest clearing increase by 1.34 times over that in 2009 to 2012, and by 2016 to 2018 it increased to 1.51 times. (Table 4 and section 4.1) The reference region, prior to its pellet mill operations, saw a 2013 to 2015 increase of only 1.18 times over the 2009 to 2012 period. However, once pellet mill operations began within the reference region in 2016, deciduous forest clearing rose to 1.54 times the rate during the recession period. Together, these lines of evidence provide a clear indication that the initiation of pellet mill operations contributed to elevated rates of deciduous forest clearing beginning in the early 2010s for the 3-mill region, and in 2016 for the reference region.

With analysis of NLCD land cover data, we find a net loss of forested area within the 3-mill region, with an average annual loss of 2,313 hectares per year from 2001 to 2016. Over the 15-year period this corresponds to a loss of 2.4% of the year-2001 Deciduous, Mixed, and Woody Wetland forest areas combined. By comparison, the reference region saw a 15-year loss of only 1.1%. Despite some gains in coniferous forest types, the 3-mill region saw a combined net loss of forested area from 2001 to 2016, losing 1.5% of the year-2001 forestland. Forest loss rates were generally steady over the two time intervals of 2001 to 2011 and 2011 to 2016. Thus, pellet mill operations do not appear to have induced an increase in forestland area within the region, and in fact deciduous forestland saw a sizeable and steady decline.

Enviva's supply base reports indicate that from 2016 to 2018 the three mills consumed 2.33 to 2.66 million green tonnes of biomass feedstock per year, with 68% of the feedstock from recent hardwood harvests. This deciduous-only, direct-harvest portion of the total feedstock would support the production of 0.78 to 0.89 million dry tonnes of pellets per year from Enviva's 3-mill cluster supply. This corresponds to 41% to 47% of the total biomass extracted from deciduous forest clearings within the 3-mill area. Therefore, pellet mill operations consume a correspondingly large fraction of the total deciduous forest clearing within the region.

With declining deciduous forest cover in the 3-mill sourcing region and with Enviva consuming 41% to 47% of the total biomass extracted from deciduous forest clearings in the area, it is likely that Enviva sourcing is contributing to overall declining carbon stocks in deciduous forests in the 3-mill area. The fact that the wood pellets made from the feedstock sourced from the area's forests is burned for power generation overseas further worsens the carbon and climate profile of pellet mill operations as a whole.

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Appendix 1 Figures of Areas Excluded from Analysis

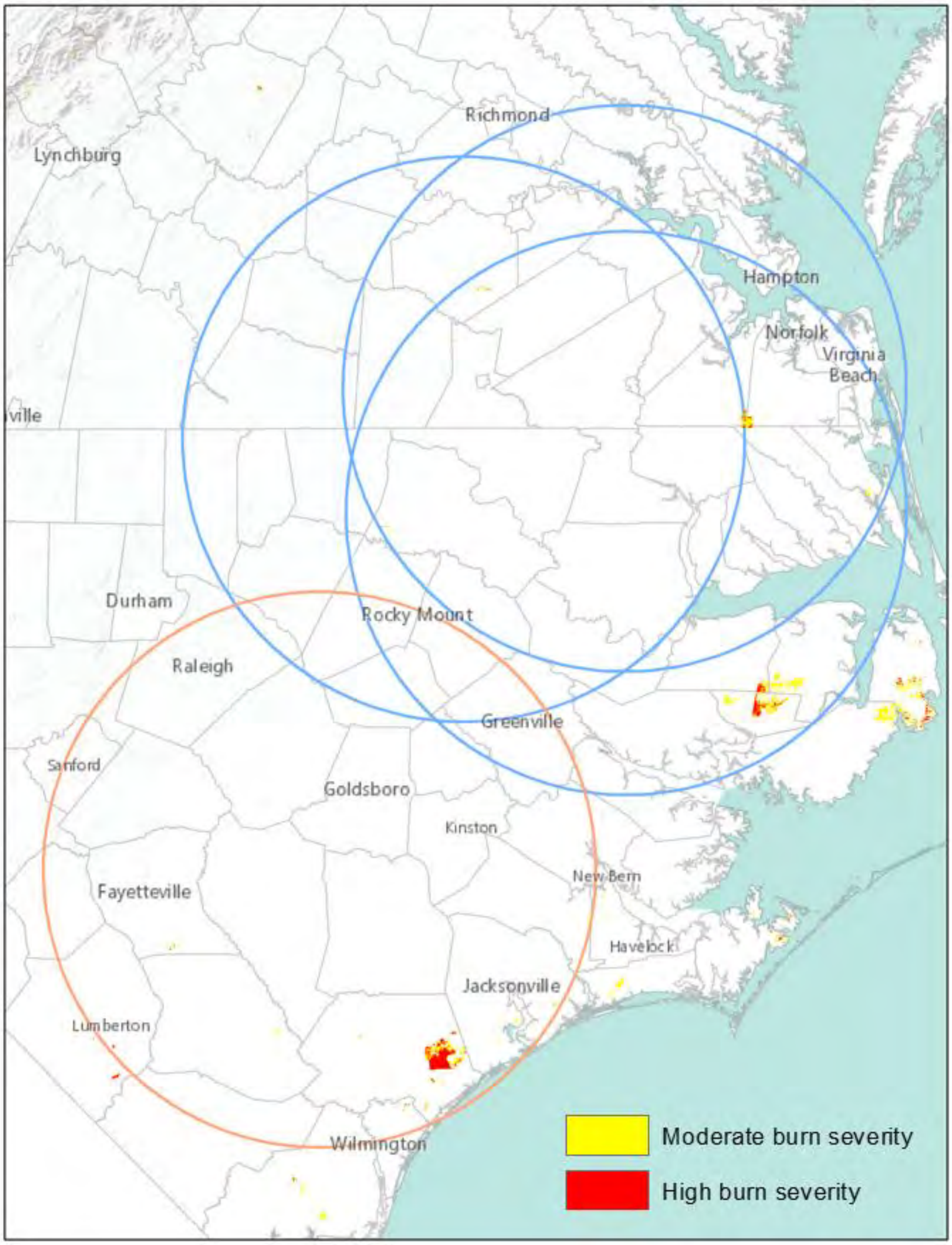

Figure A1. Burned areas of moderate and high severity fires excluded from the analysis based on the Monitoring Trends in Burn Severity dataset.

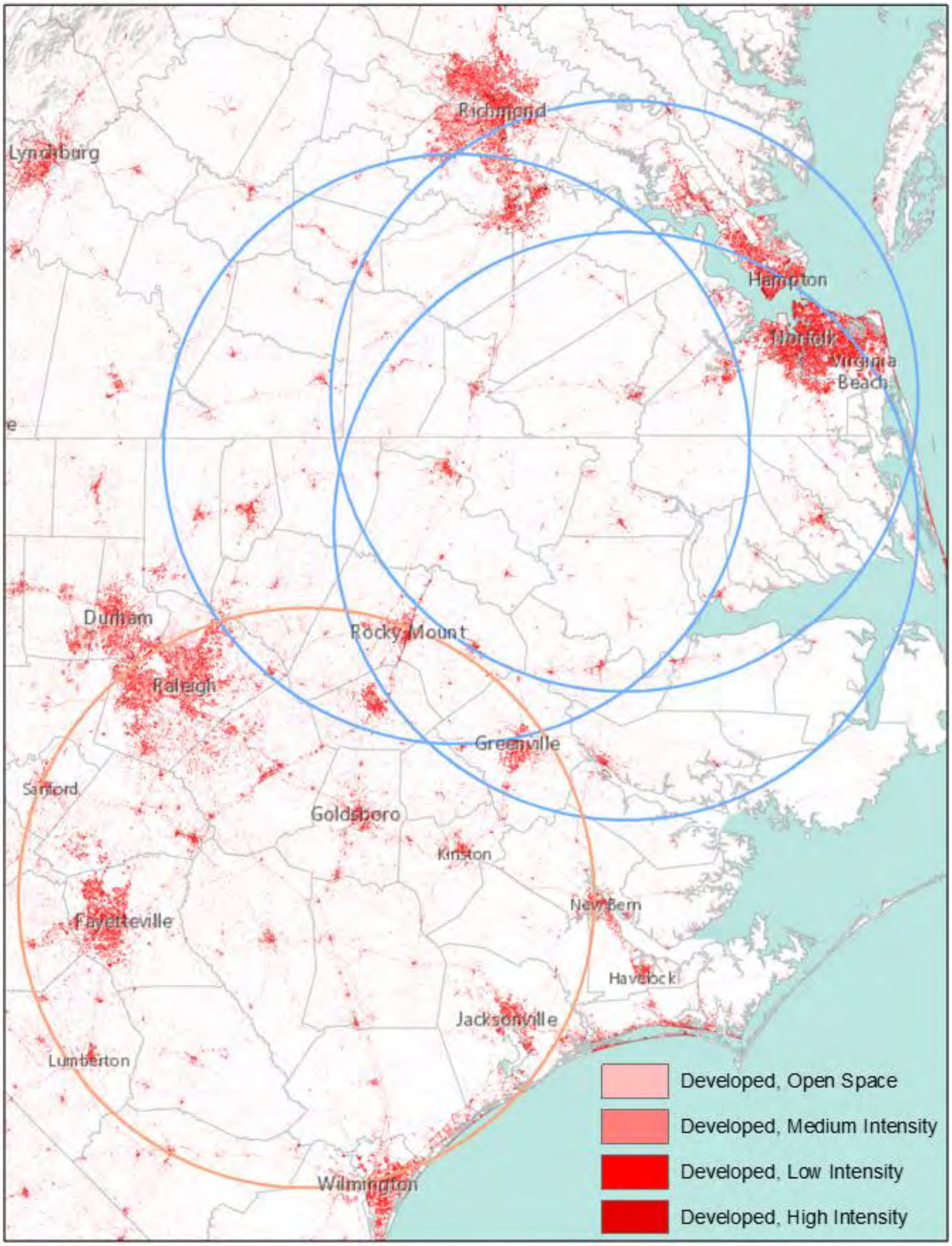

Figure A2. Developed lands in 2016 according to the National Land Cover Dataset.

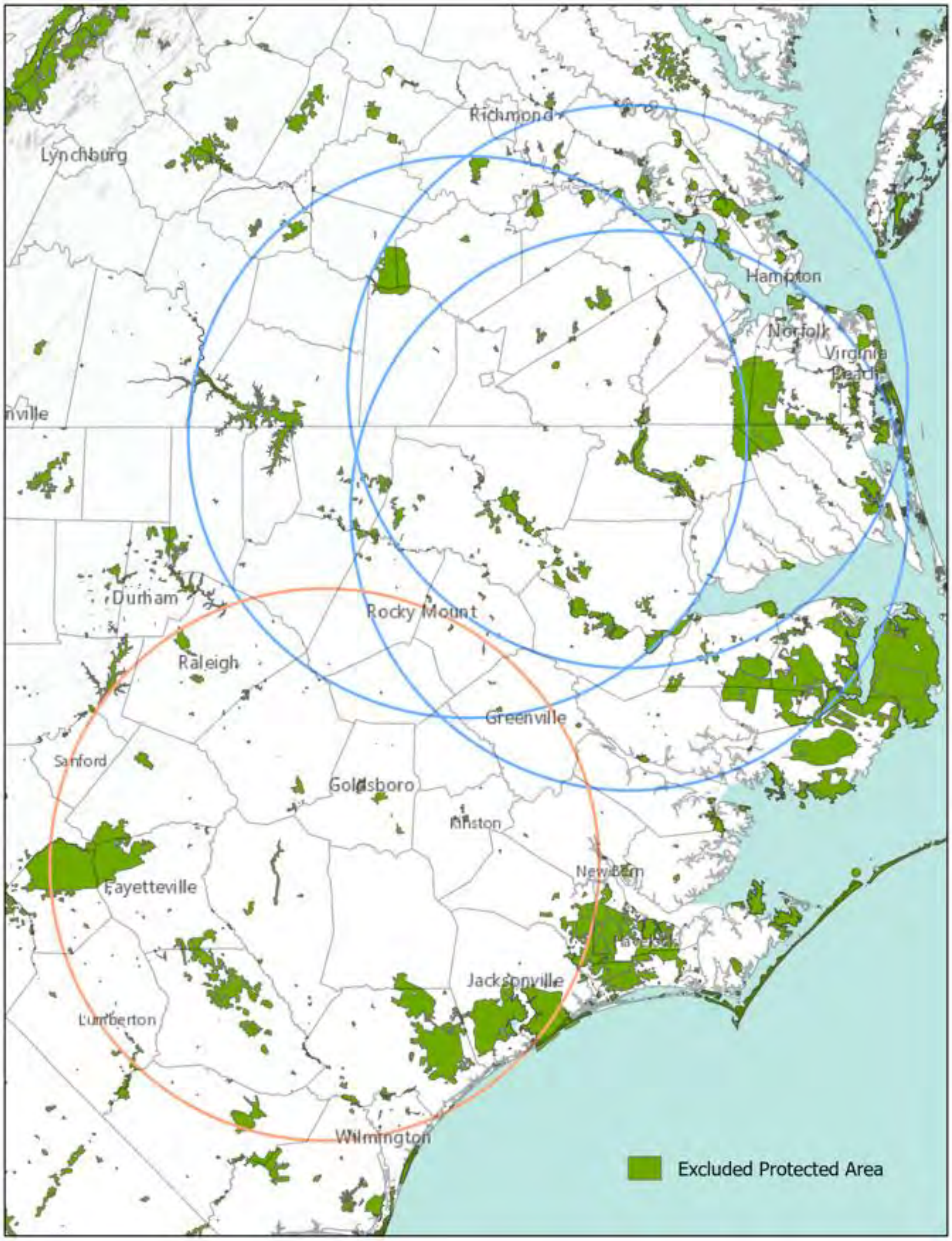

Figure A3. Protected areas from the USGS GAP PAD-US 2.0 dataset that are not prone to forest harvesting sourced for pellet mills.

Appendix 2 Datasets Provided with Report

1. Map data of forest area by forest type group in 2000.
2. Map data of forest clearing by forest type group for each year from 2001 to 2019.
3. Map data of NLCD analysis of forest area by forest type class for 2001, 2011 and 2016.
4. Map data of spatial filters applied for burned areas, developed lands, and protected areas.
5. Excel spreadsheet including:
    a. Tables and figures of the area of annual forest clearings and percentage cleared by forest type, deciduous forest types and coniferous forest types within 100 km radius of each selected pellet mill, the 3-mill region, the reference region, and the 4 cut-out regions.
    b. Tables of forest area by each forest type, deciduous, and coniferous types in 2000.
    c. Table and charts of NLCD forest area and percentage change per year from 2001 to 2011, for 2011 to 2016, and from 2001 to 2016.
    d. Table of feedstock analysis.
    e. Table of tree cover percent analysis.
    f. Tables formatted for inclusion in this final report.

Appendix 3 Area of Gross Forest Clearings

Annual Area of Gross Forest Clearing by Forest Type Group for Each Pellet Mill Source Region, the 3-Mill Combined Source Region, and the Reference Region

Area of Gross Forest Clearing [hectares]

Northampton Pellet Mill Source region

Year	Loblolly / Shortleaf Pine	Oak / Pine	Oak / Hickory	Oak / Gum / Cypress	Elm / Ash / Cottonwood	Deciduous	Coniferous
2001	14370	3370	10870	2257	159	16656	14370
2002	13678	2593	10408	2163	124	15287	13678
2003	14386	2028	6604	1085	77	9793	14386
2004	20408	2870	8003	1522	148	12542	20408
2005	22154	2968	8438	2035	130	13571	22154
2006	22722	2803	9549	2204	162	14719	22722
2007	21847	2887	8685	2209	139	13920	21847
2008	20467	2371	7959	2442	309	13082	20467
2009	18207	2167	7213	1951	162	11493	18207
2010	19378	2655	6327	1665	131	10777	19378
2011	14967	1862	6076	1448	87	9472	14967
2012	15973	2064	5791	1239	91	9185	15973
2013	20065	2746	7226	1874	170	12016	20065
2014	21442	3227	8871	2446	187	14731	21442
2015	20258	3441	9454	2305	211	15411	20258
2016	21662	3693	10140	2305	294	16432	21662
2017	23456	3400	10384	2971	261	17015	23456
2018	21186	3126	9170	2211	149	14657	21186
2019	19504	3181	8328	2520	152	14180	19504

Southampton Pellet Mill Source region

Year	Loblolly / Shortleaf Pine	Oak / Pine	Oak / Hickory	Oak / Gum / Cypress	Elm / Ash / Cottonwood	Deciduous	Coniferous
2001	12718	2531	6807	2416	106	11859	12718
2002	12176	2007	6874	2515	98	11494	12176
2003	12216	1434	3777	1331	53	6595	12216
2004	18571	2110	4326	1614	104	8154	18571
2005	20951	2136	5113	2245	130	9623	20951
2006	19006	2056	5147	2642	95	9940	19006
2007	19650	2244	4842	2510	104	9700	19650
2008	17324	1722	4835	2752	263	9572	17324
2009	15819	1562	4801	1922	131	8415	15819
2010	17123	1919	3982	1865	92	7858	17123
2011	12181	1222	3435	1163	68	5888	12181
2012	14552	1570	3608	1160	82	6420	14552
2013	17023	1768	4113	1795	168	7843	17023
2014	18429	2120	5541	2419	138	10218	18429
2015	17313	2199	5274	1965	143	9581	17313
2016	18045	2443	5299	2139	219	10101	18045
2017	19419	2207	5916	2815	224	11162	19419
2018	17007	1964	4824	1995	78	8861	17007
2019	16014	2095	4797	2466	109	9467	16014

Ahoskie Pellet Mill Source region

Year	Loblolly / Shortleaf Pine	Oak / Pine	Oak / Hickory	Oak / Gum / Cypress	Elm / Ash / Cottonwood	Deciduous	Coniferous
2001	15674	2835	4658	3370	101	10963	15674
2002	13784	2330	4757	3659	91	10838	13784
2003	14656	1828	2657	1996	56	6538	14656
2004	19878	2476	2993	2393	98	7960	19878
2005	23703	2650	3318	3179	107	9254	23703
2006	21239	2363	3696	3580	87	9726	21239
2007	21171	2514	3074	3596	103	9288	21171
2008	20313	2044	2977	3894	241	9156	20313
2009	16633	2030	3307	2705	114	8156	16633
2010	18949	2280	2885	2685	66	7917	18949
2011	12831	1583	2137	1871	60	5650	12831
2012	16662	1961	2396	1966	59	6382	16662
2013	18721	2131	2839	2676	119	7764	18721
2014	19615	2633	3761	3357	120	9872	19615
2015	18260	2953	3669	3017	123	9761	18260
2016	19199	3327	3941	3120	203	10591	19199
2017	19622	2879	4182	3843	208	11112	19622
2018	18111	2503	3585	2941	79	9109	18111
2019	17111	2759	3368	3449	95	9671	17111

Reference Region Sampson Pellet Mill Source region

Year	Loblolly / Shortleaf Pine	Oak / Pine	Oak / Hickory	Oak / Gum / Cypress	Elm / Ash / Cottonwood	Deciduous	Coniferous
2001	10636	1832	1669	4000	50	7550	10636
2002	11215	1584	1315	3947	22	6868	11215
2003	9725	1186	1033	2703	13	4935	9725
2004	12672	1581	1377	3179	10	6148	12672
2005	13445	1744	1496	4115	7	7362	13445
2006	12024	1925	1485	3767	20	7197	12024
2007	14707	1825	1689	4305	42	7861	14707
2008	13035	1576	1386	3627	13	6603	13035
2009	11375	1397	955	3707	9	6068	11375
2010	12455	1746	1383	4169	10	7307	12455
2011	11110	1476	1353	3641	16	6486	11110
2012	12392	1615	1368	3547	22	6552	12392
2013	13889	1720	1466	3995	17	7199	13889
2014	14534	1728	1781	3941	11	7460	14534
2015	13368	1939	1984	4762	10	8695	13368
2016	16382	2458	2120	5001	34	9612	16382
2017	19269	2976	2641	5893	58	11568	19269
2018	16154	2374	1913	5019	27	9332	16154
2019	14360	1907	1703	4583	18	8211	14360

3-Mill Combined Source region

Year	Loblolly / Shortleaf Pine	Oak / Pine	Oak / Hickory	Oak / Gum / Cypress	Elm / Ash / Cottonwood	Deciduous	Coniferous
2001	19776	4033	11989	3480	165	19666	19776
2002	17627	3155	11575	3748	139	18617	17627
2003	19607	2399	7464	2077	83	12022	19607
2004	26796	3395	8727	2496	155	14773	26796
2005	31017	3615	9387	3298	152	16452	31017
2006	29233	3365	10371	3677	176	17589	29233
2007	28662	3465	9633	3706	147	16951	28662
2008	28442	2844	9122	4071	325	16361	28442
2009	22626	2602	7898	2810	177	13486	22626
2010	25749	3055	7026	2821	143	13045	25749
2011	19190	2198	6629	2000	103	10930	19190
2012	21949	2591	6489	2040	104	11223	21949
2013	25789	3157	7952	2751	196	14057	25789
2014	27555	3744	9706	3514	199	17163	27555
2015	25624	4059	10276	3182	213	17730	25624
2016	27172	4384	10957	3273	317	18932	27172
2017	28382	3962	11388	4013	284	19647	28382
2018	25983	3582	10036	3086	159	16863	25983
2019	24533	3726	9265	3577	159	16728	24533

Cut-Out A region

Year	Loblolly / Shortleaf Pine	Oak / Pine	Oak / Hickory	Oak / Gum / Cypress	Elm / Ash / Cottonwood	Deciduous	Coniferous
2001	1488	885	1365	442	32	2725	1488
2002	1184	732	1303	335	38	2408	1184
2003	2378	1015	1281	171	12	2479	2378
2004	2320	983	1051	220	16	2269	2320
2005	2438	1265	1058	329	6	2657	2438
2006	2622	1131	1298	273	22	2724	2622
2007	2456	1191	1132	359	34	2716	2456
2008	2098	771	889	403	65	2128	2098
2009	1807	970	865	285	43	2162	1807
2010	2868	1153	1198	211	50	2613	2868
2011	1790	674	820	310	21	1824	1790
2012	1978	793	958	203	12	1966	1978
2013	2862	1145	1087	163	16	2410	2862
2014	2881	1506	1489	355	44	3393	2881
2015	2967	1612	1677	483	25	3797	2967
2016	3078	1908	1914	485	112	4419	3078
2017	2678	1294	1482	568	41	3384	2678
2018	2414	1135	1343	289	54	2820	2414
2019	2610	1402	1433	432	33	3300	2610

Cut-Out C region

Year	Loblolly / Shortleaf Pine	Oak / Pine	Oak / Hickory	Oak / Gum / Cypress	Elm / Ash / Cottonwood	Deciduous	Coniferous
2001	2607	324	1382	584	54	2345	2607
2002	1814	233	1285	414	30	1962	1814
2003	1994	96	544	218	14	872	1994
2004	2976	163	691	287	54	1195	2976
2005	3161	184	878	541	64	1668	3161
2006	3899	205	1307	573	40	2125	3899
2007	3669	223	996	627	33	1879	3669
2008	3582	150	881	689	33	1753	3582
2009	3291	116	871	397	25	1409	3291
2010	3269	164	840	529	20	1553	3269
2011	2242	131	650	329	21	1131	2242
2012	2409	138	564	244	9	955	2409
2013	3928	147	849	474	37	1507	3928
2014	3660	231	1129	480	56	1896	3660
2015	3009	132	983	318	69	1502	3009
2016	3248	213	815	336	63	1427	3248
2017	3156	245	1160	665	42	2112	3156
2018	3016	228	1051	428	9	1715	3016
2019	2918	176	846	656	18	1696	2918

[end of report]

AIR EMISSION TEST REPORT
Wiggins, Mississippi Wood Pellet Production Facility
Enviva Pellets Wiggins, LLC

Submitted to

Enviva Pellets Wiggins, LLC

Submitted by

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Report Submittal Date: October 31, 2013
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Definitions

Total Hydrocarbons	All organic compounds containing hydrogen and carbon that are detected by a flame ionization detector operated in accordance with U.S. EPA Method 25A.
Volatile Organic Compounds	All organic compounds that are emitted to the atmosphere in a gaseous or vapor form that can participate in photochemical reactions to produce ozone. All volatile organic compounds are considered VOCs unless specifically exempted in 40 CFR 51.100(s). Relevant excluded compounds include methane, ethane, and acetone.
VOC Emissions	Mass emissions of VOC measured on a pounds of carbon basis.

Acronyms

EPA	U.S. Environmental Protection Agency
FID	Flame Ionization Detector
FTIR	Fourier Transform Infrared Spectrometer
HAP	Hazardous Air Pollutant
MC	Moisture Content
MDEQ	Mississippi Department of Environmental Quality
ODT	Oven Dried Tons
THC	Total Hydrocarbons
VOC	Volatile Organic Compounds
C1	Carbon

Units of Measure

ppm	Parts per million (wet basis)
ppmvd	Parts per million (dry basis)
ppm C_3	Parts per million as propane
ppm C_1	Parts per million as carbon
mg	Milligram
kg	Kilogram
µg	Micrograms

Permit Designations/Titles

Dryer 1	AA-001, 30 MMBTU Wood-Fired Dryer (No. 1) with a Multiclone
Dryer 2	AA-002, 45 MMBTU Wood Fired Dryer (No. 2) with a Cyclone
Dry Hammermill 1	AA-006, No. 1 Secondary Hammermill w/High-Eff. Cyclone
Dry Hammermill 2	AA-007, No. 2 Secondary Hammermill w/High-Eff. Cyclone
Pellet Cooler 1	AA-004, Includes Line 1 Press Aspiration (AA-012)
Pellet Cooler 2	AA-014, Pellet Cooler 2 w/Hi-Efficiency Cyclone
Aspiration System	AA-013, Line 2 Pellet Mill Aspiration System
Green Hammermill	AA-016 (Hammermill Bin)

Air Emission Test Report
Wiggins, Mississippi Wood Pellet Production Facility

1. SUMMARY

Enviva Pellets, Wiggins, LLC (Enviva) has sponsored air emission testing to satisfy the requirements of Agreed Order 6366-13 dated June 16, 2013 (the "Order"). These test results are being submitted to the Mississippi Department of Environmental Quality (MDEQ) by October 31, 2013 in accordance with the Order.

The scope of the testing program included volatile organic compounds (VOCs) and six organic hazardous air pollutants (HAPs). Annual emissions of each analyte have been calculated and compared to applicable permit limits. The results of the testing program are summarized in Table 1-1 based on the present maximum permitted production limit of 185,550 ODT per year in the permit.

Table 1-1. Total Emissions at Plant Permit Limit of 185,550 ODT/Year

Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
Total VOC	66.3	57.6	11.1	21.1	15.7	7.8	46.4	7.4	233.5
Organic HAPs									
Methanol	1.85	7.26	0.08	0.27	0.16	0.24	0.34	0.05	10.3
Acetaldehyde	0.00	1.40	0.25	0.61	0.39	0.35	0.23	0.17	2.0
Acrolein	1.03	2.32	0.43	1.24	0.77	0.68	0.20	0.29	7.0
Formaldehyde	2.01	3.48	0.39	0.37	0.49	0.34	0.03	0.26	7.4
Phenol	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.4
Propionaldehyde	1.06	1.82	0.17	0.09	0.16	0.11	0.00	0.11	3.5
Total HAPS	5.96	14.87	1.32	2.59	2.35	1.72	0.80	0.88	31.89

At the current maximum permitted production limit, VOC emissions remain below the PSD threshold of 250 tons per year. However, HAP emissions exceed the 25 ton per year threshold for major source classification, and methanol exceeds the 10 ton per year single compound threshold for major source classification. Importantly, the plant has never operated at the maximum permitted production limit of 185,550 ODT per year.

Enviva plans to propose to MDEQ a new maximum permitted production limit of 140,000 ODT/year. VOC and HAP emissions based on this proposed maximum permitted production limit are summarized in Table 1-2. Like the current limit of 185,000 ODT/year, to date, the Wiggins plant has also never achieved 140,000 ODT/year.

VOC emissions at the newly proposed production rate limit would be well below the PSD threshold of 250 tons per year. Furthermore, combined HAPs emissions are less than 25 tons per year, and none of the HAPs are emitted at more than 10 tons per year. Because the plant has never achieved a production rate of 140,000 ODT/year, the plant has never exceeded the major source threshold for VOCs or HAPs.

Table 1-2. Total Emissions at Plant Permit Limit of 140,000 ODT/Year

Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
Total VOC	50.1	43.4	8.4	15.9	11.7	5.9	35.0	5.6	175.9
Organic HAPs									
Methanol	1.40	5.48	0.06	0.21	0.12	0.18	0.26	0.04	7.7
Acetaldehyde	0.00	1.06	0.19	0.46	0.29	0.26	0.17	0.12	2.6
Acrolein	0.78	1.75	0.33	0.93	0.58	0.51	0.15	0.22	5.3
Formaldehyde	1.52	2.62	0.30	0.28	0.37	0.26	0.03	0.20	5.6
Phenol	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.3
Propionaldehyde	0.80	1.37	0.13	0.07	0.12	0.08	0.00	0.08	2.7
Total HAPS	4.50	12.28	0.99	1.95	1.78	1.30	0.61	0.66	24.06

These tests were conducted in accordance with the emission test protocol[1] submitted to MDEQ on July 31, 2013. The scope of the emission test program was increased since submittal of the test program protocol in order to ensure that Enviva evaluated emissions from all possible sources of VOCs and HAPs.

The air emission tests were conducted by Air Control Techniques, P.C. using EPA Reference Methods 1, 2, 3, 4, 25A, and 320. The emission tests were conducted from Thursday, October 10 through Sunday, October 13, 2013. This report summarizes the emissions test data, quality assurance data, test method procedures, sampling equipment calibrations, process operating conditions, and test program participants.

2. EMISSION TEST PROGRAM DESCRIPTION

2.1 Wiggins, Mississippi Plant Description

Enviva operates a plant producing wood pellets. The plant consists of a wood receiving yard, log debarkers and chippers, two rotary dryers, two hammermills, two pellet presses and coolers, and an aspiration system. The plant processes wood composed of a range of hardwoods and softwoods.

2.2 Purpose and Scope of the Emission Test Program

Based on a voluntary self-evaluation, Enviva reported to the Mississippi Department of Environmental Quality (MDEQ) that it may have underreported emissions of volatile organic compounds (VOCs) in its permit application. Enviva's concern was based on a set of engineering-oriented tests [2] conducted in November 2012 that indicated that VOC emissions from a hammermill source and a press cooler aspiration vent may be higher than previously known. While emissions from specific wood pellet plants are highly dependent on the specific equipment employed and to a lesser degree the hardwood/softwood mix of raw material, Enviva's preliminary findings in the November 2012 engineering test are generally consistent with other recent findings in the Wood Pellet Industry, specifically the engineering-oriented tests[3] at a Georgia Biomass, Inc. plant in Waycross, Georgia and Green Circle Bio Energy in Cottondale, Florida.

This air emission testing program is intended to address Enviva's concern and fulfills the requirements of the Order. Specifically, Enviva agreed to generate VOC emissions data for the following sources.

- Dryer 1 multiclone stack
- Dryer 2 cyclone stack
- Secondary Hammermill 2 cyclone outlet
- Pellet Mill 2 Aspiration System

Since signing the Order, Enviva has determined that it would be beneficial to expand the scope of the emission testing program to include these three additional sources.

- Green Hammermill
- Pellet Cooler 1
- Pellet Cooler 2

The tests at Secondary Hammermill 2 cyclone outlet also represent emissions from Secondary Hammermill 1. Secondary Hammermill 2 is identical to Secondary Hammermill 1 except for the larger capacity of Secondary Hammermill 2.

2.3 Test Participants

The Enviva project manager for this project was Mr. Michael Doniger, Director of Plant Operations. He was assisted by Mr. Joe Harrell, Environmental Manager, Mr. Mike Jones, and Mr. Gary Williams, Wiggins Plant Manager.

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Legal counsel for Enviva is Mr. Alan McConnell. Mr. McConnell participated in this study to ensure that it addressed the requirements of the Order.

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Enviva retained Air Control Techniques, P.C. to conduct the air emission testing program at the Wiggins plant. The Air Control Techniques, P.C. project manager was John Richards, Ph.D., P.E, QSTI. He was assisted by David Goshaw, P.E., QSTI, Todd Brozell, P.E., QSTI, and Jonas Gilbert. Tom Holder, QSTI provided quality assurance services for the test program. Contact information for Air Control Techniques, P.C. includes the following.

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Enthalpy, Inc. provided the laboratory analyses of the samples. The Enthalpy project manager for this project was Mr. Bryan Tyler. He was assisted by Dr. Grant Plummer, Mr. Clint Thrasher, and Mr. Steve Eckert, President.

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3. TEST MATRIX AND TEST RESULTS

3.1 Test Matrix

Table 3-1 summarizes the test program analytes, sampling methods, and analytical methods used for the seven sources listed in Section 1.1

Table 3-1. Test Matrix, Air Emission Testing
Enviva Pellets, Wiggins, Mississippi

Analyte	Test Method	Number of Runs	Run Length	Analytical Method
Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, Propionaldehyde	EPA Method 320	3	60 min	FTIR
Gas Flow	EPA Method 2	3	60 min	Manometer
Gas Molecular Weight, Oxygen, Carbon Dioxide	EPA Method 3	3	60 min	Fyrite® Analyzer
Gas Moisture	EPA Method 4	3	60 min	Gravimetric
Total Hydrocarbons (THC)	EPA Method 25A	3	60 min	FID

The tests were conducted on Thursday, October 10 through Sunday October 13, 2013. During all of the tests, the plant operated with a 60% softwood/40% hardwood feed.

3.2 Test Results

The VOC and organic HAP test results and calculated annual emission rates are summarized in Tables 3-2 through 3-8. VOC and HAP emissions were measured simultaneously at each of the seven emission units tested.

The VOC emissions have been calculated based on the total hydrocarbon data provided by Method 25A. The Method 25A data have been converted from a wet to a dry basis to account for the moisture in the stack gas stream. Total hydrocarbon concentrations (THC) has been used as a surrogate for VOCs.

The VOC emission calculations do not include any corrections for methane, ethane, or acetone despite the fact that these compounds are detected by Method 25A but are not classified as VOCs. Accordingly, the reported VOC emissions are biased to higher-than-true levels to the extent that these three compounds affected the Method 25A results.

The Method 25A data reflect the combined THC concentrations consisting of (1) alpha and beta pinene, (2) numerous other terpenes such as limonene and 3-carene, and (3) the organic HAPs. The organic HAP emissions discussed later in this report are also classified as VOCs and represent a small fraction of the total VOC emissions reported.

Method 320 was used to measure six organic compounds. Several of the organic compounds were below the detection limits of Method 320 in this matrix of gaseous constituents. These non-detection concentrations are designated by shading in Tables 3-2 through 3-8.

Table 3-2. Green Hammermill[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/10/2013	10/10/2013	10/10/2013	N/A
Start	9:17	10:36	11:50	N/A
Stop	10:17	11:36	12:50	N/A
Throughput, tons/hour	36	36	36	36.0
Moisture Content Outlet, %wt.	47.15	47.15	47.15	47.2
Throughput, ODT/hour	19.026	19.026	19.026	19.0
ACFM	27,642	27,273	27,189	27,368.0
DSCFM	25,184	24,803	25,031	25,006
Stack Temperature, °F	70.8	70.6	70.9	70.8
O_2, %	20.9	20.9	20.9	20.9
% Moisture	3.41	3.62	2.37	3.1
VOC, ppmvd as Propane	31.9	33.4	27	30.8
VOC, ppmvd as C1	95.7	100.3	81.1	92.4
VOC, lbs/hour as C1	4.5	4.7	3.8	4.3
VOC, lbs/ODT	0.24	0.25	0.20	0.2
Methanol, ppmvd	0.53	0.48	0.39	0.46
Acetaldehyde, ppmvd	0.79	0.75	0.74	0.76
Acrolein, ppmvd	1.17	1.25	1.18	1.20
Formaldehyde, ppmvd	0.77	0.65	0.57	0.66
Phenol, ppmvd	0.91	0.91	0.90	0.91
Propionaldehyde, ppmvd	0.24	0.24	0.26	0.247
Methanol, lbs/hour	0.066	0.060	0.049	0.058
Acetaldehyde, lbs/hour	0.136	0.129	0.127	0.131
Acrolein, lbs/hour	0.257	0.274	0.259	0.263
Formaldehyde, lbs/hour	0.090	0.077	0.068	0.078
Phenol, lbs/hour	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/hour	0.000	0.000	0.058	0.019
Methanol, lbs/ODT	0.003	0.003	0.002	0.003
Acetaldehyde, lbs/ODT	0.007	0.007	0.006	0.007
Acrolein, lbs/ODT	0.013	0.014	0.013	0.013
Formaldehyde, lbs/ODT	0.005	0.004	0.003	0.004
Phenol, lbs/ODT	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.003	0.001

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-3. Dryer 1 Emissions[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/10/2013	10/11/2013	10/11/2013	N/A
Start	17:38	10:00	11:37	N/A
Stop	18:38	11:00	12:37	N/A
Throughput, tons/hour	8.5	8.45	9	8.7
Moisture Content Outlet, %wt.	15.5	14.36	18.9	16.3
Throughput, ODT/hour	7.18	7.24	7.30	7.2
ACFM	44,448	42,243	42,593	43,095
DSCFM	32,404	31,700	31,215	31,773
Stack Temperature, °F	146.3	150.1	147.3	147.9
O_2, %	19.0	17.0	17.0	17.7
% Moisture	16.07	12.79	15.23	14.7
VOC, ppmvd as Propane	79.5	71	67.4	72.6
VOC, ppmvd as C1	238.8	213.3	202.6	218.2
VOC, lbs/hour as C1	14.4	12.6	11.8	12.93
VOC, lbs/ODT	2.00	1.74	1.62	1.79
Methanol, ppmvd	3.00	1.95	1.88	2.28
Acetaldehyde, ppmvd	1.51	1.46	1.50	1.49
Acrolein, ppmvd	2.13	1.97	2.03	2.04
Formaldehyde, ppmvd	3.96	1.83	2.10	2.63
Phenol, ppmvd	2.43	2.34	2.41	2.39
Propionaldehyde, ppmvd	0.76	0.81	0.59	0.72
Methanol, lbs/hour	0.483	0.308	0.292	0.36
Acetaldehyde, lbs/hour	0.0	0.0	0.0	0.000
Acrolein, lbs/hour	0.598	0.0	0.0	0.199
Formaldehyde, lbs/hour	0.597	0.272	0.307	0.392
Phenol, lbs/hour	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/hour	0.222	0.233	0.167	0.207
Methanol, lbs/ODT	0.067	0.043	0.040	0.050
Acetaldehyde, lbs/ODT	0.0	0.0	0.0	0.000
Acrolein, lbs/ODT	0.083	0.0	0.0	0.028
Formaldehyde, lbs/ODT	0.083	0.038	0.042	0.054
Phenol, lbs/ODT	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/ODT	0.031	0.032	0.023	0.029

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-4. Pellet Cooler 1[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/12/2013	10/12/2013	10/12/2013	N/A
Start	8:58	10:22	11:41	N/A
Stop	9:58	11:22	12:41	N/A
Throughput, tons/hour	4	4	4	4.0
Moisture Content Outlet, %wt.	7.9	7.9	7.9	7.9
Throughput, ODT/hour	3.68	3.68	3.68	3.68
ACFM	16,168	16,246	16,134	16,182.7
DSCFM	15,189	14,870	14,825	14,961
Stack Temperature, °F	82.3	94.8	97.7	91.6
O_2, %	20.9	20.9	20.9	20.9
% Moisture	3.35	3.68	2.79	3.27
VOC, ppmvd as Propane	40.4	34.6	36.7	37.2
VOC, ppmvd as C1	121.2	103.8	110.1	111.7
VOC, lbs/hour as C1	3.44	2.88	3.05	3.12
VOC, lbs/ODT	0.93	0.78	0.83	0.85
Methanol, ppmvd	0.56	0.34	0.36	0.42
Acetaldehyde, ppmvd	0.71	0.73	0.78	0.74
Acrolein, ppmvd	1.01	1.06	1.39	1.15
Formaldehyde, ppmvd	1.49	1.30	1.30	1.36
Phenol, ppmvd	1.03	1.02	1.01	1.02
Propionaldehyde, ppmvd	0.39	0.30	0.25	0.31
Methanol, lbs/hour	0.042	0.026	0.027	0.032
Acetaldehyde, lbs/hour	0.074	0.076	0.081	0.077
Acrolein, lbs/hour	0.135	0.141	0.184	0.153
Formaldehyde, lbs/hour	0.105	0.092	0.092	0.096
Phenol, lbs/hour	0.2	0.0	0.0	0.077
Propionaldehyde, lbs/hour	0.054	0.041	0.000	0.032
Methanol, lbs/ODT	0.011	0.007	0.007	0.009
Acetaldehyde, lbs/ODT	0.020	0.021	0.022	0.021
Acrolein, lbs/ODT	0.037	0.038	0.050	0.042
Formaldehyde, lbs/ODT	0.029	0.025	0.025	0.026
Phenol, lbs/ODT	0.063	0.000	0.0	0.021
Propionaldehyde, lbs/ODT	0.015	0.011	0.000	0.009

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-5. Dryer 2[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	N/A
Date	10/13/2013	10/13/2013	10/13/2013	N/A
Start	9:21	11:14	12:31	N/A
Stop	10:21	12:52	13:47	N/A
Throughput, tons/hour	14.5	11.2	11.3	12.3
Moisture Content Outlet, %wt.	18.5	13.45	13.75	15.2
Throughput, ODT/hour	11.82	9.69	9.75	10.4
ACFM	24,998	25,318	25,278	25,198.0
DSCFM	14,745	15,224	14,842	14,937
Stack Temperature, °F	174.3	154.9	171.8	167.0
O_2, %	16.5	17	17	16.8
% Moisture	29.04	29.86	29.64	29.5
VOC, ppmvd as Propane	129.4	115.8	138.1	127.8
VOC, ppmvd as C1	388.2	347.4	414.3	383.3
VOC, lbs/hour as C1	10.70	9.88	11.49	10.69
VOC, lbs/ODT	0.91	1.02	1.18	1.03
Methanol, ppmvd	26.5	14.5	15.3	18.795
Acetaldehyde, ppmvd	1.4	4.7	1.4	2.498
Acrolein, ppmvd	2.7	3.7	3.5	3.303
Formaldehyde, ppmvd	9.0	9.4	9.6	9.336
Phenol, ppmvd	3.9	4.0	4.0	3.944
Propionaldehyde, ppmvd	3.3	2.0	2.4	2.575
Methanol, lbs/hour	1.949	1.070	1.129	1.383
Acetaldehyde, lbs/hour	0.138	0.473	0.147	0.253
Acrolein, lbs/hour	0.345	0.476	0.456	0.425
Formaldehyde, lbs/hour	0.622	0.647	0.662	0.644
Phenol, lbs/hour	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/hour	0.445	0.262	0.322	0.343
Methanol, lbs/ODT	0.165	0.110	0.116	0.130
Acetaldehyde, lbs/ODT	0.012	0.049	0.015	0.025
Acrolein, lbs/ODT	0.029	0.049	0.047	0.042
Formaldehyde, lbs/ODT	0.053	0.067	0.068	0.062
Phenol, lbs/ODT	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/ODT	0.038	0.027	0.033	0.033

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-6. Dry Hammermill 2[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/11/2013	10/11/2013	10/11/2013	N/A
Start	18:11	19:35	20:48	N/A
Stop	19:11	20:35	21:48	N/A
Throughput, tons/hour	11.18	11.22	11.12	11.2
Moisture Content Outlet, %wt.	10.2	10.3	10.2	10.2
Throughput, ODT/hour	10.04	10.06	9.99	10.0
ACFM	15,197	14,385	15,165	14,916
DSCFM	13,183	12,366	13,303	12,951
Stack Temperature, °F	122.4	128.4	116.4	122.4
O_2, %	20.9	20.9	20.9	20.9
% Moisture	4.25	4.18	4.18	4.20
VOC, ppmvd as Propane	26.3	31.0	25.5	27.6
VOC, ppmvd as C1	78.9	93	76.5	82.8
VOC, lbs/hour as C1	1.94	2.15	1.90	2.00
VOC, lbs/ODT	0.19	0.21	0.19	0.20
Methanol, ppmvd	0.20	0.22	0.21	0.21
Acetaldehyde, ppmvd	0.75	0.74	0.74	0.74
Acrolein, ppmvd	1.02	1.02	1.01	1.02
Formaldehyde, ppmvd	1.09	1.19	1.16	1.14
Phenol, ppmvd	1.13	1.13	1.13	1.13
Propionaldehyde, ppmvd	0.24	0.25	0.27	0.254
Methanol, lbs/hour	0.013	0.014	0.014	0.014
Acetaldehyde, lbs/hour	0.067	0.067	0.000	0.045
Acrolein, lbs/hour	0.118	0.118	0.000	0.078
Formaldehyde, lbs/hour	0.067	0.073	0.071	0.071
Phenol, lbs/hour	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/hour	0.029	0.030	0.032	0.030
Methanol, lbs/ODT	0.001	0.001	0.001	0.0014
Acetaldehyde, lbs/ODT	0.007	0.007	0.000	0.0045
Acrolein, lbs/ODT	0.012	0.012	0.000	0.0078
Formaldehyde, lbs/ODT	0.007	0.007	0.007	0.0070
Phenol, lbs/ODT	0.000	0.000	0.000	0.0000
Propionaldehyde, lbs/ODT	0.003	0.003	0.003	0.0030

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-7. Pellet Cooler 2[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/11/2013	10/11/2013	10/11/2013	N/A
Start	13:43	15:08	16:39	N/A
Stop	14:43	16:08	17:39	N/A
Throughput, tons/hour	15.0	15.0	15.0	15.0
Moisture Content Outlet, %wt.	7.12	7.36	7.17	7.2
Throughput, ODT/hour	13.93	13.90	13.92	13.9
ACFM	13,252	12,718	12,831	12,934
DSCFM	10,938	10,543	10,488	10,656
Stack Temperature, °F	148.9	143.2	152.3	148.1
O_2, %	20.9	20.9	20.9	20.9
% Moisture	4.86	4.64	4.54	4.68
VOC, ppmvd as Propane	25.0	22.3	26.0	24.4
VOC, ppmvd as C1	75	66.9	78	73.3
VOC, lbs/hour as C1	1.53	1.32	1.53	1.46
VOC, lbs/ODT	0.11	0.09	0.11	0.10
Methanol, ppmvd	0.84	0.71	0.88	0.81
Acetaldehyde, ppmvd	0.90	0.87	0.83	0.87
Acrolein, ppmvd	1.36	1.27	1.39	1.34
Formaldehyde, ppmvd	1.12	0.69	1.93	1.25
Phenol, ppmvd	1.14	1.13	1.13	1.13
Propionaldehyde, ppmvd	0.26	0.26	0.38	0.30
Methanol, lbs/hour	0.046	0.039	0.048	0.044
Acetaldehyde, lbs/hour	0.068	0.065	0.062	0.065
Acrolein, lbs/hour	0.130	0.121	0.133	0.128
Formaldehyde, lbs/hour	0.058	0.035	0.099	0.064
Phenol, lbs/hour	0	0	0	0.000
Propionaldehyde, lbs/hour	0.026	0.000	0.037	0.021
Methanol, lbs/ODT	0.003	0.003	0.003	0.003
Acetaldehyde, lbs/ODT	0.005	0.005	0.004	0.005
Acrolein, lbs/ODT	0.009	0.009	0.010	0.009
Formaldehyde, lbs/ODT	0.004	0.003	0.007	0.005
Phenol, lbs/ODT	0.0	0.0	0.0	0.000
Propionaldehyde, lbs/ODT	0.002	0.000	0.003	0.002

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-8. Aspiration System[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/12/2013	10/12/2013	10/12/2013	N/A
Start	15:09	16:36	18:00	N/A
Stop	16:09	17:36	19:00	N/A
Throughput, tons/hour	15	15	15	15.0
Moisture Content Outlet, %wt.	7.12	8.83	7.85	7.93
Throughput, ODT/hour	13.93	13.68	13.82	13.8
ACFM	1,756	1,692	1,624	1,691
DSCFM	1,079	1,016	985	1,027
Stack Temperature, °F	148.6	148.3	152.1	149.7
O_2, %	20.9	20.9	20.9	20.9
% Moisture	27.67	29.33	28.19	28.4
VOC, ppmvd as Propane	1485.8	1354.2	1671.1	1,503.7
VOC, ppmvd as C1	4457.4	4062.6	5013.3	4,511.1
VOC, lbs/hour as C1	8.99	7.71	9.23	8.64
VOC, lbs/ODT	0.65	0.56	0.67	0.63
Methanol, ppmvd	11.5	12.6	11.4	11.81
Acetaldehyde, ppmvd	6.4	5.5	5.2	5.73
Acrolein, ppmvd	4.4	4.4	3.1	3.97
Formaldehyde, ppmvd	1.5	2.2	1.5	1.72
Phenol, ppmvd	3.8	3.9	3.8	3.81
Propionaldehyde, ppmvd	4.1	4.2	4.2	4.19
Methanol, lbs/hour	0.062	0.068	0.061	0.064
Acetaldehyde, lbs/hour	0.048	0.041	0.039	0.042
Acrolein, lbs/hour	0.041	0.042	0.030	0.037
Formaldehyde, lbs/hour	0.000	0.011	0.007	0.006
Phenol, lbs/hour	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/hour	0.000	0.000	0.000	0.000
Methanol, lbs/ODT	0.004	0.005	0.004	0.005
Acetaldehyde, lbs/ODT	0.003	0.003	0.003	0.003
Acrolein, lbs/ODT	0.003	0.003	0.002	0.003
Formaldehyde, lbs/ODT	0.000	0.001	0.001	0.000
Phenol, lbs/ODT	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.000	0.000

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

3.3 Emissions Data Evaluation

Method 25A VOC Concentrations

The VOC emissions from the various process units ranged from 0.10 to 1.79 pounds per ODT. VOC emissions were highest from the two dryers.

Dryer 1 had an emission rate of 1.79 pounds per ODT, and Dryer 2 had an emission rate of 1.03 pounds per ODT. This is equivalent to a 79% difference despite the fact that the dryers were handling similar hardwood/softwood blends and were generating wood with similar outlet moisture levels. The dryer outlet temperatures were also similar. These data clearly demonstrate that VOC emissions from the dryers are due to two factors: (1) the performance of the wood waste burner supplying the heat to the dryer, and (2) volatilization of VOCs from the wood in the dryer. Of these two sources, contributions of the burner are most important.

Due to the dominance of the burner in establishing the VOC emission rates from the combined burner/dryer source, the importance of the hardwood/softwood ratio is less important than previously thought. Changes in the hardwood/softwood ratio do not necessarily affect the VOC emissions from the burner.

The emissions of organic HAP compounds are not sensitive to the hardwood/softwood ratio. The data summarized in the Phase I report indicate that emissions of organic HAPs decreased slightly as the softwood content increased from 10% to 100%.

The data summarized in Tables 3-2 through 3-8 indicate that the total VOC emissions from the Wiggins Plant exceed 100 tons per year calculated as carbon. These tests confirm that the plant is a major source for VOCs.

The accuracy of the VOC data is demonstrated by a Method 25A response factor of approximately 1 for the group of compounds present in the gas stream. The Method 25A response is expressed in terms of a response factor that is defined as the observed Method 25A concentration divided by the true concentration. The Method 25A FID has a response factor close to 1.0 for a large set of organic compounds. Some high molecular weight organics have a response factor larger than 1, and in some cases, approaching 1.5. For these compounds, Method 25A is biased to higher-than-true concentrations. Some low molecular weight highly oxygenated organic compounds such as methanol and formaldehyde have very low response factors in the range of 0.1 to 0.4. For these compounds, Method 25A is biased to lower-than-true concentrations.

As part of the laboratory tests reported to MDEQ in Enviva's Phase I emission study dated July 31, 2013[4] (the "Phase I Study"). Air Control Techniques, P.C. has taken the following two independent approaches in assessing the Method 25A response factors: (1) direct measurement of the Method 25A response factor using an alpha-pinene gas standard, the dominant organic compound measured during the laboratory tests and (2) a comparison of the Method 25A concentration data with the summed concentrations of all of the specific organics measured simultaneously using NCASI Method 98.01 and EPA Method 18. The results of these response factor analyses are presented in Tables 3-9 and 3-10.

Table 3-9. Alpha-Pinene Method 25A Response Factor[1]	
Alpha-Pinene Gas Standard, as $C_{10}H_{16}$	259 ppm
Alpha-Pinene Gas Standard, as C_3	863 ppm
FID Response, as C_3	888 ppm
Response Factor as C_3	1.03

1. Note: This table was included in the Phase I Study report to MDEQ.

Table 3-10. Calculated Method 25A Response Factors in Phase I Laboratory Tests[1]					
Run	Process Type	Softwood Content, %	Method 25A versus Combined NCASI 98.01 and Method 18	Dominant Compounds	Other Important Compounds
4	Dryer	10	0.72	α-and β-Pinene	Acetone, Methanol
5	Dryer	10	0.70	α-and β-Pinene	Acetone, Methanol
6	Dryer	10	0.75	α-and β-Pinene	Methanol, Formaldehyde
21	Dryer	10	1.23	α-and β-Pinene	Acetone, Methanol
22	Press	10	1.05	α-and β-Pinene	Acetone, Methanol
7	Dryer	70	0.85	α-and β-Pinene	Acetone
8	Dryer	70	0.90	α-and β-Pinene	Acetone
9	Dryer	70	1.02	α-and β-Pinene	Acetone
10	Dryer	70	0.91	α-and β-Pinene	Acetone
24	Press	70	1.51	α-and β-Pinene	Acetone, Methanol
11	Dryer	100	0.99	α-and β-Pinene	Acetone
12	Dryer	100	0.96	α-and β-Pinene	Acetone
13	Dryer	100	0.85	α-and β-Pinene	Acetone
14	Dryer	100	0.87	α-and β-Pinene	Acetone
16	Dryer	100	1.09	α-and β-Pinene	Methanol, Acetone
19	Dryer	100	1.21	α-and β-Pinene	Methanol, Acetone
20	Press	100	1.13	α-and β-Pinene	Methanol, Acetone
Test Program Average			0.98		

1. Note: This table was included in the Phase I Study report to MDEQ.

The excellent agreement between the Method 25A total concentration and the combined concentrations of all of the organics measured by NCASI 98.01 and EPA Method 18 demonstrate that Method 25A is an appropriate VOC measurement technique for wood pellet production facilities.

Method 320 HAP Concentrations

At the maximum permitted production limit of 185,550 ODT per year, five of the six organic HAP compounds measured by Method 320 were each emitted at a rate less than 10 tons per year. The methanol emission rate at this production level was 11.0 tons per year. The combined emission rate of all six organic HAPs was slightly over 31.1 tons per year at the maximum permitted production rate.

The list of HAPs specifically included in the test protocol included methanol, acetaldehyde, acrolein, formaldehyde, phenol, and propionaldehyde. This list was compiled based on (1) the organic compounds identified in laboratory analyses of pellet production facilities emissions, (2) previous emission tests conducted in the Pellet Manufacturing Industry, and (3) organic HAPs identified in studies of other wood products industries—specifically, MDF production.

The results of this test program indicate that this list of HAPs compounds needs to be amended. Phenol was detected at low concentration in only one of the tests of the seven process units. Furthermore, propionaldehyde was not detected in most of the tests.

The low to non-detectable phenol emissions data are consistent with the results of the Phase I Study. Phenol was not identified at detectable concentrations in any of the laboratory studies summarized in the Phase I Study report. The emission rates of phenol reported in the November 2012 Wiggins report [2] ranged from 0.0002 to 0.0018 pounds per hour—all insignificant emission rates. Phenol was also not listed in previous emission tests reviewed in preparation for this test program. Phenol was included in the test protocol primarily because other researchers such as Beauchemin and Tampier,[5] Milot, [6] and Milot and Mosher [7] listed phenol due to its inclusion in tests conducted at MDF and particleboard facilities. However, phenol emissions in MDF and particleboard production are due to the use of phenolic resins and similar binders. There is no reason to expect any appreciable phenol formation in pellet production considering (1) the lack of binders of any type in pellet production, (2) the higher moisture levels in pellet production as compared to MDF and particleboard processes, and (3) the lower material temperatures in pellet process equipment. Air Control Techniques, P.C. has assigned zero values to non-detected concentrations.

Acetaldehyde, propionaldehyde, and acrolein had very low concentrations in most of the emission tests summarized in this report. The IR absorption spectra of both water and the terpene compounds overlap the absorption spectra of acetaldehyde, propionaldehyde, and acrolein. Accordingly, the reported concentrations of these three compounds are biased to higher-than-true levels to the extent that this interference could not be avoided by Method 320 spectral absorption modeling. Zero values have been assigned when these concentrations were below detection limits of Method 320 due, in part, to the interference bias.

The use of zero values for non-detected compounds is an appropriate approach for any source, such as pellet production, where there are a few dominant compounds (i.e. methanol and formaldehyde) and a large number of possible compounds at extremely low levels such as phenol, acetaldehyde, and propionaldehyde. The use of non-detect or one-half non-detect concentrations in emission calculations for a large number of compounds potentially present at trace levels inherently makes any source “major” regardless of the actual emissions, size, or operations characteristics of the emission unit.

3.4 VOC and Organic HAP Emission Summary

Table 3-11 summaries annual emissions of VOC and organic HAP compounds. The annual emission rates are based on operation at the permit limited production rate of 185,550 ODT.

As discussed, the plant has never operated at the maximum permitted production limit of 185,550 ODT per year. The VOC and HAP emissions based on the newly proposed maximum production rate of 140,000 ODT/year are summarized in Table 3-12.

The VOC emissions at the lower production rate are well below the PSD threshold of 250 tons per year. The combined HAPs emissions are less than 25 tons per year, and none of the HAPs are emitted at more than 10 tons per year. Accordingly, at this production limit, the plant is not above the major source threshold for HAPs.

Table 3-11. Total Emissions at Plant Permit Limit of 185,550 ODT/Year									
Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
Total VOC	66.3	57.6	11.1	21.1	15.7	7.8	46.4	7.4	233.5
Organic HAPs									
Methanol	1.85	7.26	0.08	0.27	0.16	0.24	0.34	0.05	10.3
Acetaldehyde	0.00	1.40	0.25	0.61	0.39	0.35	0.23	0.17	2.0
Acrolein	1.03	2.32	0.43	1.24	0.77	0.68	0.20	0.29	7.0
Formaldehyde	2.01	3.48	0.39	0.37	0.49	0.34	0.03	0.26	7.4
Phenol	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.4
Propionaldehyde	1.06	1.82	0.17	0.09	0.16	0.11	0.00	0.11	3.5
Total HAPS	5.96	14.87	1.32	2.59	2.35	1.72	0.80	0.88	31.89

Table 3-12. Total Emissions at Plant Permit Limit of 140,000 ODT/Year									
Analyte	Dryer 1	Dryer 2	Dry Hammermill 2	Green Hammermill	Pellet Cooler 1	Pellet Cooler 2	Aspirator	Dry Hammermill 1	Total
VOC Total	50.1	43.4	8.4	15.9	11.7	5.9	35.0	5.6	175.9
Organic HAPs									
Methanol	1.40	5.48	0.06	0.21	0.12	0.18	0.26	0.04	7.7
Acetaldehyde	0.00	1.06	0.19	0.46	0.29	0.26	0.17	0.12	2.6
Acrolein	0.78	1.75	0.33	0.93	0.58	0.51	0.15	0.22	5.3
Formaldehyde	1.52	2.62	0.30	0.28	0.37	0.26	0.03	0.20	5.6
Phenol	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.3
Propionaldehyde	0.80	1.37	0.13	0.07	0.12	0.08	0.00	0.08	2.7
Total HAPS	4.50	12.28	0.99	1.95	1.78	1.30	0.61	0.66	24.06

4. SAMPLING LOCATIONS

4.1 Dryer # 1 Stack Sampling Location

The Dryer 1 sampling location meets EPA Method 1 location requirements as indicated in Figure 4-1. Twelve sampling points were used to measure the gas flow rate.

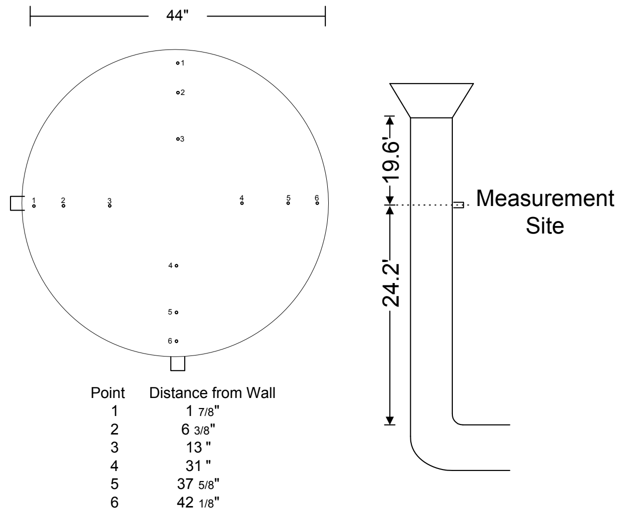


Figure 4-1 Dryer # 1 Stack Sampling Location

The downstream[1] flow disturbance is the stack discharge. The upstream flow disturbance is the duct from the fan entering the base of the stack.

During the sampling program, only the port facing south was used. The port facing east was blocked by the stack support equipment and the Dry Hammermill 1 ductwork. Test personnel reached all of the sampling ports by angling the probe inserted through the south port.

No cyclonic flow conditions were observed in the Dryer 1 stack. The point-by-point cyclonic flow checks indicated an average flow angle 3.1 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dryer 1 stack is shown in Figure 4-2.

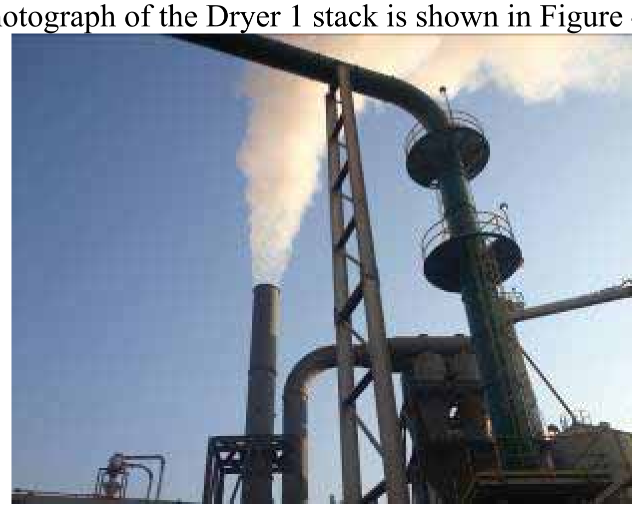
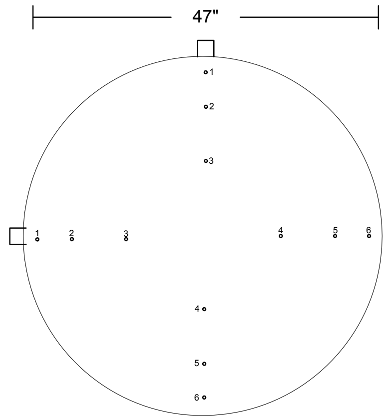


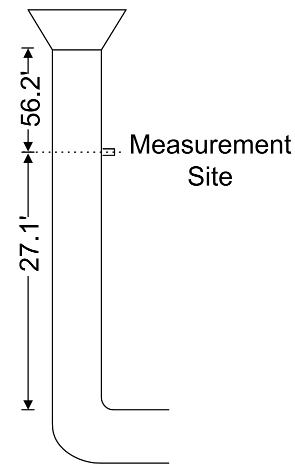
Figure 4-2. Photograph of the Dryer 1 Stack

[1] "Upstream" and "downstream" are defined based on the sampling location as the reference point.

4.2 Dryer 2 Stack Sampling Location

The Dryer 2 sampling location meets EPA Method 1 location requirements as indicated in Figure 4-2. Twelve sampling points were used to measure the gas flow rate.





Point	Distance from Wall
1	2 1/8 "
2	6 7/8 "
3	13 7/8 "
4	33 1/8 "
5	40 1/8 "
6	44 7/8 "

Figure 4-3. Dryer # 2 Stack Sampling Location

The downstream flow disturbance is the stack discharge. The upstream flow disturbance is the duct from the fan entering the base of the stack.

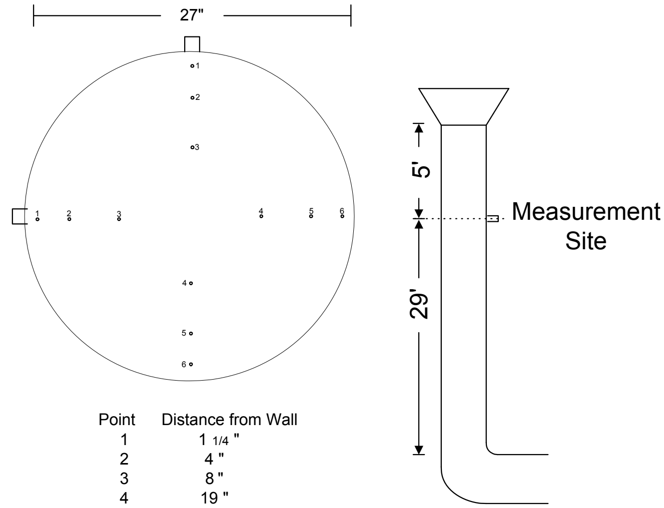
During the sampling program, only the port facing west was used in the test program. The port facing north could not be reached without potentially interrupting operation of the CEM sampling equipment. Test personnel reached all of the sampling ports by angling the probe inserted through the west port.

No cyclonic flow conditions were observed in the Dryer 2 stack. The point-by-point cyclonic flow checks indicated an average flow angle 2.4 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dryer 2 stack is shown in Figure 4-4.

Figure 4-4. Photograph of the Dryer 2 Stack

4.3 Dry Hammermill 2 Cyclone Outlet Sampling Location

The Dry Hammermill 2 sampling location meets EPA Method 1 location requirements as indicated in Figure 4-5. Twelve sampling points were used to measure the gas flow rate.



Point	Distance from Wall
1	1 1/4 "
2	4 "
3	8 "
4	19 "
5	23 "
6	25 3/4 "

Figure 4-5. Dry Hammermill 2 Sampling Location

The downstream flow disturbance is an elbow in the fan outlet duct. The upstream flow disturbance is the fan discharge. During the sampling program both ports were accessible.

No cyclonic flow conditions were observed in the Dry Hammermill 2 stack. The point-by-point cyclonic flow checks indicated an average flow angle of 0.6 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dry Hammermill 2 stack is shown in Figure 4-6.

Figure 4-6. Photograph of the Dry Hammermill 2 Sampling Location

4.4 Pellet Mill Aspiration System Sampling Location

The Pellet Mill Aspiration System has a six-inch diameter. Gas flow rate sampling was performed in general accordance with EPA Method 1A. The sampling port location met EPA Method 1 location requirements as indicated in Figure 4-7. A total of eight sampling points were used—four in a horizontal direction and four reached by an angled probe in the vertical direction. Due to the position of the duct and surrounding equipment, it was not possible to sample from any orientation except horizontal.

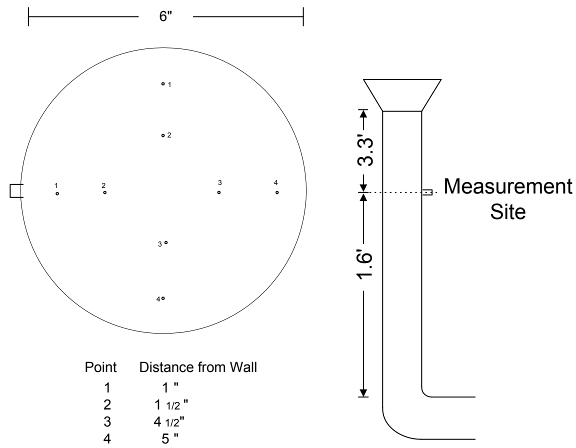


Figure 4-7. Pellet Mill Aspiration System Sampling Location

The upstream flow disturbance was an entry duct from Pellet Mill 6. The downstream flow disturbance was the fan inlet.

No cyclonic flow conditions were observed in the Pellet Mill Aspiration System outlet duct. The point-by-point cyclonic flow checks indicated an average flow angle of 0.75 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Pellet Mill Aspiration System sampling location is shown in Figure 4-8.

Figure 4-8. Photograph of the Pellet Mill Aspiration System Sampling Location

4.5 Pellet Mill 2 Cooler Stack Sampling Location

The Pellet Mill 2 Cooler stack sampling location meets the minimum requirements specified in Method 1, Section 11.1. As indicated in Figure 4-9, the downstream[2] disturbance (stack exit) is 0.6 stack diameters from the sampling location. The minimum allowed by Method 1 is 0.5 stack diameters. The upstream flow disturbance was the fan outlet duct. The distance to the upstream flow disturbance meets Method 1 requirements. Both sampling ports were used in the test program.

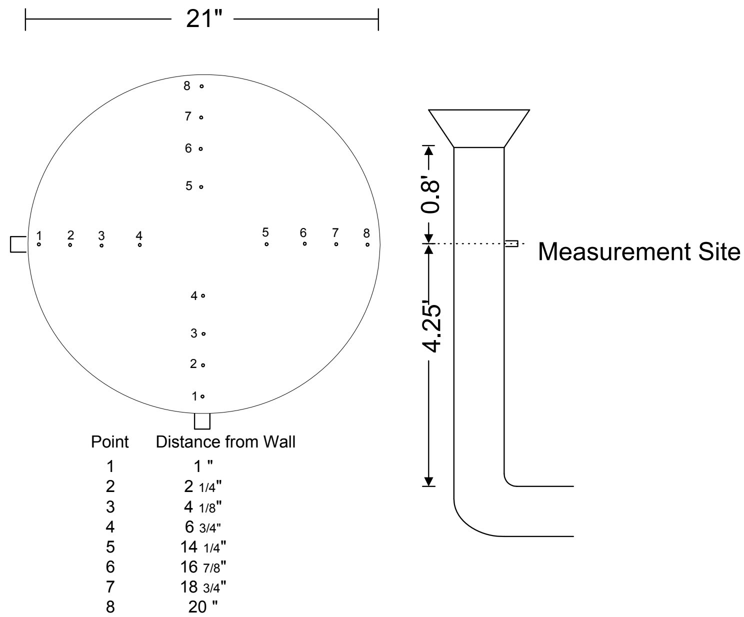


Figure 4-9. Pellet Mill 2 Cooler Stack Sampling Location

No cyclonic flow conditions were observed in the Pellet Mill 2 Cooler stack. The point-by-point cyclonic flow checks indicated an average flow angle of 1.5 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Pellet Cooler 2 stack is shown in Figure 4-10

Figure 4-10. Photograph of the Pellet Cooler 2 Stack

[2] The terms “upstream” and ‘downstream” are defined based on the test location as the reference point. A recent change in a figure in EPA Method 1 has these terms incorrectly stated.

4.6 Pellet Mill 1 Cooler Stack

The Pellet Mill 1 Cooler stack sampling location meets the minimum requirements specified in Method 1, Section 11.1. As indicated in Figure 4-11, the downstream disturbance (stack exit) is 0.6 stack diameters from the sampling location. The minimum allowed is 0.5 stack diameters. The upstream flow disturbance is the fan outlet duct. The distance to the upstream flow disturbance meets Method 1 requirements. Four of the six sampling ports were used in the test program. The plugs in two of the ports could not be removed.

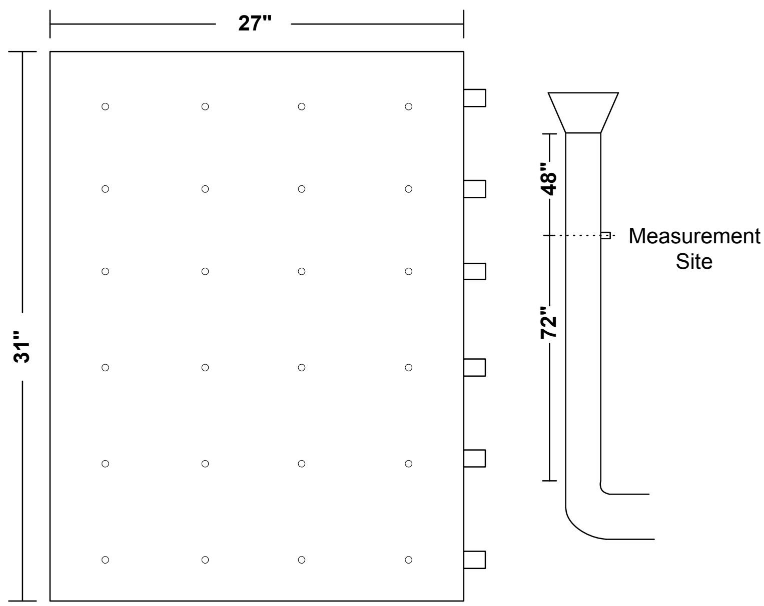


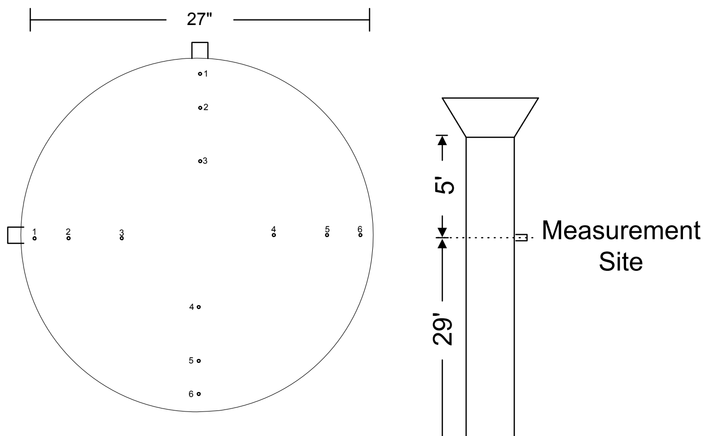
Figure 4-11. Pellet Mill 1 Cooler Stack Sampling Location

No cyclonic flow conditions were observed in the Pellet Mill 1 Cooler stack. The point-by-point cyclonic flow checks indicated an average flow angle of 2.0 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Pellet Mill 1 Cooler Stack is shown in Figure 4-12.

Figure 4-12. Photograph of the Pellet Mill 1 Cooler Stack

4.7 Green Hammermill Stack Sampling Location

The Green Hammermill stack sampling location shown in Figure 4-13 meets the minimum requirements for a downstream flow disturbance specified in Method 1, Section 11.1. The upstream flow disturbance is the fan outlet duct. The downstream flow disturbance is the stack discharge. The distance to the upstream flow disturbance meets Method 1 requirements. Only one sampling port could be reached safely. All of the sampling ports were reached by angling the Pitot tube inserted through the port facing south.



Point	Distance from Wall
1	1 1/4 "
2	4 "
3	8 "
4	19 "
5	23 "
6	25 3/4 "

Figure 4-13. Green Hammermill Stack Sampling Location

No cyclonic flow conditions were observed in the Green Hammermill stack. The point-by-point cyclonic flow checks indicated an average flow angle of 1.7 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Green Hammermill stack is shown in Figure 4-14.

Figure 4-14. Photograph of the Green Hammermill Fan Inlet

5. TESTING PROCEDURES

5.1 Flue Gas Velocity and Volumetric Flow Rate - EPA Method 2

The flue gas velocities and volumetric flow rates during all of the emission tests were determined according to the procedures outlined in U.S. EPA Reference Method 2. Velocity measurements were made using S-Type Pitot tubes conforming to the geometric specifications outlined in Method 2. Accordingly, each Pitot was assigned a coefficient of 0.84. Velocity pressures were measured with fluid manometers. Effluent gas temperatures were measured with chromel-alumel thermocouples attached to digital readouts.

5.2 Flue Gas Composition and Molecular Weight - EPA Method 3

Flue gas analyses and calculation of flue gas dry molecular weights were performed in accordance with EPA Method 3. A stainless steel probe was inserted into the gas stream to collect a representative sample of the flue gas during each test run. The samples were analyzed using a Fyrite gas analyzer. Moisture was removed from the sample gas by means of a knockout jar located prior to the sample pump.

5.3 Flue Gas Moisture Content - EPA Method 4

The flue gas moisture content was determined in conjunction with each test run according to the sampling and analytical procedures outlined in EPA Method 4. Wet impinger sampling trains were used to withdraw and analyze the stack gas. The impingers were connected in series and contained water in the first two impingers followed by an empty impinger and then a silica gel impinger. The impingers were contained in an ice bath to assure condensation of the flue gas stream moisture. Any moisture that was not condensed in the impingers was captured in the silica gel; therefore, all moisture was weighed and entered into moisture content calculations.

5.4 Total Hydrocarbons – EPA Method 25A

Continuous emissions monitoring was conducted for volatile organic compounds. The sampling and analytical procedures for VOCs were conducted in accordance with EPA 25A. The CEM system consisted of a sample acquisition system, the THC emission monitor, and a data acquisition system (DAS). A California Analytical Model 300 flame ionization detector was used for the Method 25A tests.

The sample acquisition system included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a heat-traced Teflon® sample line, a Teflon® heated-head pump, and a gas manifold board. All components of the sample acquisition system that contacted the sampled gas were constructed of Type 316 stainless steel or Teflon®. The sample gas was continuously extracted from a central point within the duct at a constant rate (±10%) for the duration of each test run. The wet, filtered gas was transported to a heated-head pump located at the CEM laboratory. The sample gas was sent directly to the VOC analyzer. Care was taken to ensure that the sample gas was greater than 250°F during transport from the stack to the VOC monitor. All pretest and posttest calibration procedures were performed as outlined in the EPA Reference Method 25A.

Total organic hydrocarbon concentrations were measured on a wet basis using a California Analytical 300 FID continuous emission monitor. The THC concentrations were monitored on a propane (C_3) basis using a flame ionization detector (FID). The FID was fueled by a gas mixture consisting of 40% helium and 60% hydrogen to reduce the effect of oxygen synergism. The

THC analyzer was calibrated with a set of at least four gas standards. Calibration tests were performed prior to and following each test run.

Outputs from the individual emission monitors were connected to a computerized data acquisition system. Outputs from the analyzer were sent to a portable computer via a National Instruments™ FieldPoint controller. The signals were downloaded to a STRATA© software program every two seconds. The two-second readings were averaged for the duration of the test run.

Total mass emissions of VOCs were determined based on the Method 25A total hydrocarbon concentration data. The mass emissions were expressed on a pounds mass of carbon per hour.

5.5 Organic HAP Compounds – EPA Method 320

Testing for wet-basis organic HAP concentrations was conducted by extractive Fourier transform infrared (FTIR) spectroscopy using EPA Method 320 (40CFR, Part 63, Appendix A). Sample gas was continuously passed through the sampling system, which included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a Teflon® heat-traced sample line, a MIDAC Fourier Transform Infrared (FTIR) spectrometer, a Teflon® heated-head pump, and a gas manifold board as shown in Figure 5-1. All components of the sample acquisition system that contacted the sampled gas were Type 316 stainless steel or Teflon®. All components of the sampling system and the FTIR cell were maintained at or above 120° C. Air Control Techniques, P.C. took great care to ensure that the sampling system contained no “cold spots” to prevent organic HAP loss. The sampling rate was maintained at approximately 10 liters per minute.

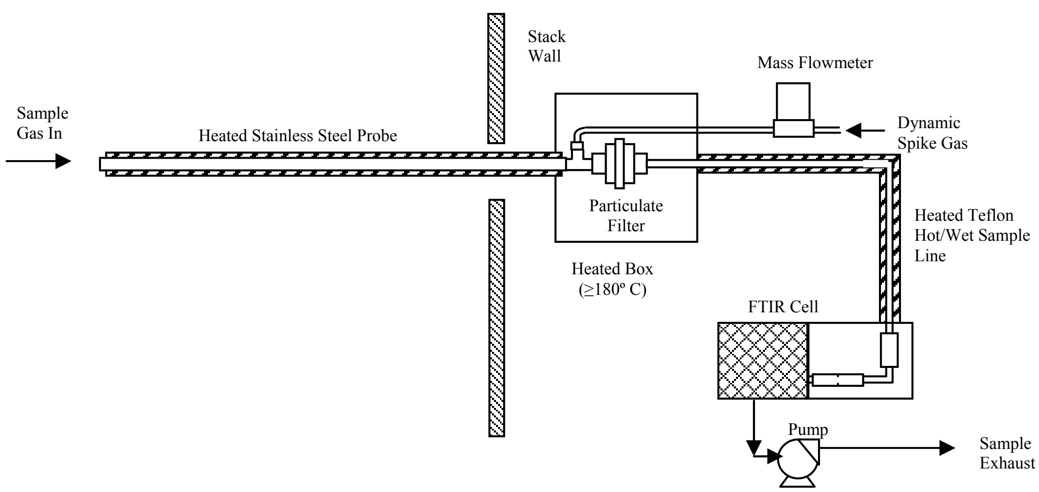


Figure 5-1. Method 320 Organic HAP Sampling System

The FTIR system included a MIDAC Corporation I-1301 spectrometer equipped with a heated, nominal 10-meter path absorption cell, a potassium bromide (KBr) beam splitter, zinc selenide (ZnSe) non-hygroscopic windows, and a liquid nitrogen-cooled Mercury Cadmium Telluride detector. Measurements were made using a MIDAC Model I-1301 high resolution Michelson interferometer with AutoQuant Pro software. Sample gas continuously passed through the sampling system, and sample spectra (based on 50 co-added interferograms) were recorded every minute. The system's nominal spectral resolution was 0.5 cm^{-1}. Samples and standards were analyzed at temperatures greater than 120°C and near ambient pressures.

The inside walls of the cells were polished stainless steel to minimize interaction of the sample with the cell walls, and the cell mirrors were of bare gold. The gas pressure in the FTIR sample cell was monitored with a pressure transducer connected directly to the sample cell. The heated sample cell was wrapped in an insulating thermal jacket, and the temperature was controlled with type J thermocouples. The absorption cell volume was approximately 2 liters.

The FTIR system was operated via a portable computer, and a data archive storage system (USB Mass Storage Drive) was used for data backup. All interferograms, single beams, absorbance spectra, and background single beams were stored and have been archived. The filename, time, pressure and temperature of the sample cell, scan rate, background identification and other pertinent information was recorded by hand during the test program.

Air Control Techniques used the program AutoquantPro™ Version 4.5.0.195, (©Midac Corporation, 2012) to collect and analyze all the infrared field data. The program allows the development and storage of analytical "methods" for analysis of spectral data (absorbance) files. The reference spectra used for these analyses were developed by MIDAC Corporation, EPA, and Enthalpy Analytical, Inc. One "model" was developed for determining the absorption path length and one additional "method" for determining the concentrations of the target compounds for each source.

The concentration uncertainty reported by AutoquantPro is called the Standard Error of the Estimated Concentration, or SEC; it is also known as the Marginal Standard Deviation. The uncertainties in the concentration are proportional to the square root of the sums of the squares of the residual. After the residual spectrum is obtained, which we will call R, the error variance for the case of a single reference spectrum is calculated as follows.

$$\sigma^2 = \frac{\sum_i R_i^2}{(n-1)}$$

Where n is the number of observations. The SEC is given by the following.

$$SEC = \frac{\sigma\, C}{\sqrt{\sum_i \mathrm{A}_i^2}}$$

Where **A** is the spectrum and **C** is the known concentration of the reference.

The 95% confidence interval is 1.96 times the SEC.

6. QUALITY ASSURANCE

6.1 Method 1 Quality Assurance

All S-type Pitot tubes used in this project conformed to EPA guidelines concerning construction and geometry. Pitot tubes were inspected prior to use. Information pertaining to S-type Pitot tubes is presented in detail in Section 3.1.1 of EPA Publication No. 600/4-77-027b. Only S-type Pitot tubes meeting the required EPA specifications were used in this project.

The thermocouples used in this project were calibrated using the procedures described in Section 3.4.2 of EPA Publication No. 600/4-77-027b. Each temperature sensor was calibrated at a minimum of three points over the anticipated range of use against NIST-traceable mercury in glass thermometer.

6.2 Method 4 Quality Assurance

Pretest and posttest leak checks were conducted on each Method 4 sampling train used. The observed leak rates for the sampling trains were below 0.02 actual cubic feet per minute as required by Method 4.

All dry gas meters were fully calibrated to determine the volume correction factor prior to field use. Post-tests calibration checks were performed as soon as possible after the equipment was returned to the laboratory. Pre-and post-test calibrations agreed within ±5 percent. The calibration procedure is documented in Section 3.3.2 of EPA Publication No. 600/4-77-237b.

The scales used at the test location to determine flue gas moisture content were calibrated using a standard set of weights.

6.3 Method 25A Quality Assurance

At the beginning of the test day, a linearity calibration test was performed on each analyzer. The continuous emission monitoring instrument response did not differ by more ±5 from the propane calibration standard. Linearity results for the test program are provided in Table 6-1 through 6-8.

Prior to and following each test run, a system calibration test was performed. The system test was performed to verify that the sampling system did not contain leaks (system bias) and to measure a change in analyzer response during the test program (system drift). The system bias was less than ±5% of full-scale, and system drift was less than ±3% of full scale. System calibration results for the test program are provided in Tables 6-1 through 6-8.

Table 6-1. Dryer 1 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.0		
Low, %	±5	0.4		
Mid, %	±5	2.2		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.8	0.1
Zero Bias (Post), %	±5	0.9	0.1	0.0
Up-scale Bias (Pre), %	±5	0.0	-0.2	-0.6
Up-scale Bias (Post), %	±5	0.1	-0.6	-1.0
Zero Drift, %	±3	0.9	-0.7	-0.2
Up-scale Drift, %	±3	0.1	-0.4	-0.4
Response Time, sec	N/A			

Table 6-2. Pellet Cooler 1 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	0.4		
Mid, %	±5	0.8		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.3	0.2
Zero Bias (Post), %	±5	0.3		0.3
Up-scale Bias (Pre), %	±5	0.1	-0.1	-0.1
Up-scale Bias (Post), %	±5	-0.1		0.3
Zero Drift, %	±3	0.3	-0.1	0.1
Up-scale Drift, %	±3	-0.1	0.0	-0.1
Response Time, sec	N/A			

Table 6-3. Dryer 2 Quality Assurance Results, Total Hydrocarbons, Method 25A, High Range				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	0.3		
Mid, %	±5	-0.1		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	-0.1
Zero Bias (Post), %	±5	0.1	-0.1	-0.1
Up-scale Bias (Pre), %	±5	0.0	-0.3	-0.4
Up-scale Bias (Post), %	±5	-0.3	-0.4	-0.3
Zero Drift, %	±3	0.1	-0.1	0.0
Up-scale Drift, %	±3	-0.3	-0.1	0.1
Response Time, sec	N/A	28		

Table 6-4. Dryer 2 Quality Assurance Results, Total Hydrocarbons, Method 25A, Low Range				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±8	1.0		
Low, %	±8	1.5		
Mid, %	±8	0.7		
High, %	±8	0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.6	-0.6
Zero Bias (Post), %	±5	0.6	-0.6	-0.7
Up-scale Bias (Pre), %	±5	0.0	0.3	0.1
Up-scale Bias (Post), %	±5	0.3	0.1	-0.1
Zero Drift, %	±3	0.6	-1.2	-0.1
Up-scale Drift, %	±3	0.3	-0.2	-0.2
Response Time, sec	N/A	28		

Table 6-5. Dry Hammermill 2 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.0		
Low, %	±5	0.4		
Mid, %	±5	2.2		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.2	0.0	0.2
Zero Bias (Post), %	±5	0.0	0.2	0.2
Up-scale Bias (Pre), %	±5	-1.3	-1.1	-1.3
Up-scale Bias (Post), %	±5	-1.1	-1.3	-1.2
Zero Drift, %	±3	-0.1	0.1	0.0
Up-scale Drift, %	±3	0.2	-0.1	0.0
Response Time, sec	N/A	28		

Table 6-6 Pellet Cooler 2 Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0		
Low, %	±5	0.4		
Mid, %	±5	2.2		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.3	0.1
Zero Bias (Post), %	±5	0.3	0.1	0.2
Up-scale Bias (Pre), %	±5	-1.0	-0.9	-1.0
Up-scale Bias (Post), %	±5	-0.9	-1.0	-1.3
Zero Drift, %	±3	0.3	-0.2	0.0
Up-scale Drift, %	±3	0.1	-0.1	-0.3
Response Time, sec	N/A	28		

Table 6-7. Aspiration Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	0.7		
Mid, %	±5	0.0		
High, %	±5	0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	0.0
Zero Bias (Post), %	±5	0.1	0.0	0.1
Up-scale Bias (Pre), %	±5	0.0	-0.1	-0.1
Up-scale Bias (Post), %	±5	-0.1	-0.1	-0.3
Zero Drift, %	±3	0.1	-0.1	0.1
Up-scale Drift, %	±3	-0.1	0.1	-0.3
Response Time, sec	N/A	28		

Table 6-8. Green Hammermill Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.0		
Low, %	±5	1.1		
Mid, %	±5	1.6		
High, %	±5	0.4		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	0.1
Zero Bias (Post), %	±5	0.1	0.1	0.1
Up-scale Bias (Pre), %	±5	0.0	-0.1	-0.7
Up-scale Bias (Post), %	±5	-0.1	-0.7	-1.0
Zero Drift, %	±3	0.1	-0.1	0.1
Up-scale Drift, %	±3	-0.1	-0.5	-0.3
Response Time, sec	N/A	28		

6.4 Method 320 Quality Assurance

Air Control Techniques, P.C. performed daily quality assurance checks. Background scans and calibration transfer standard (CTS) spectra tests were performed prior to and following each test series. An analyte spike was performed using methanol.

The flow rate at the outlet of the pump was measured while the probe was plugged to verify that the sampling system was leaks. The flow rate was less than 200 ml/min.

The FTIR cell was tested for leaks by closing the value while the cell was at minimum absolute pressure.

Background Spectra

Sample spectra were divided point-by-point by a 128-scan background recorded using N_2. The single beam spectrum was constantly monitored, and a new background was generated approximately following each test series or when residual and absorbance spectra indicated component build-up on the optical surfaces or alignment-related baseline shifts.

Calibration Transfer Standards and Absorption Path Lengths

A cylinder of 100 ppm ethylene in nitrogen served as the CTS. A CTS gas was introduced to the FTIR and allowed to reach steady state. The CTS was used to determine effective cell path length based on comparisons of the “field” CTS spectra to a laboratory CTS spectrum recorded by MIDAC. As shown in Table 6-9, the maximum path length deviation was less than 5% of the average.

Table 6-9. CTS Results Summary

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Press. (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
10-Oct	806	8.78	0.137	14.7	121	NA	-0.6%
	1927	8.68	0.120	14.89	121	1.1%	0.5%
11-Oct	1121	8.73	0.134	14.8	121	-0.6%	-0.1%
	1301	8.73	0.133	14.7	121	0.0%	-0.1%
	1755	8.75	0.133	14.6	121	-0.3%	-0.3%
	2204	8.72	0.133	14.8	121	0.4%	0.1%
12-Oct	0809	8.59	0.133	14.9	121	1.4%	1.5%
	1300	8.77	0.137	14.6	121	-2.1%	-0.5%
	1940	8.78	0.134	14.72	121	-0.1%	-0.6%
13-Oct	0810	8.71	0.134	14.82	121	0.7%	0.1%
	1435	8.73	0.135	14.85	121	-0.1%	0.0%
	Average	8.725	0.133				

Background Spectra

On-site test personnel performed matrix spiking using a certified calibration standard of methanol and SF_6. The methanol gas standard was introduced into the sampling system upstream of the particulate matter filter at an average dilution ratio of less than 10% of the total sample volume. Analyte spiking was performed to demonstrate the suitability of the sampling system. The dilution factor was calculated based on the ratio of the SF_6 tracer gas analyzed directly by the FTIR and the in-stack measured concentration.

$$\frac{SF_6 \text{ during spike}}{SF_6 \text{ direct}} = DF$$

The recovery was calculated using the mean concentration of the spiked analyte (S_m), the native concentration of the analyte in the stack (S_u), the dilution factor (DF), and the cylinder concentration (C_s).

$$\text{Recovery}(\%) = \frac{\text{Sm} - \text{Su}\ (1 - \text{DF})}{\text{DFxCs}}$$

As shown in Table 6-10, the percent recovery was 100±30% as required by Method 320.

Table 6-10. Spike Recovery Results Summary						
Direct Cylinder Spike, ppm		System Spiked Gas, ppm		Native Concentration, ppm		Recovery, %
methanol	SF_6	methanol	SF_6	methanol	SF_6	
101.26	2.84	9.867	0.272	0.496	-0.00789	94.6

Minimum Detectable Concentration

EPA Method 320 and the equivalent ASTM Standard D6348-03 specify a number of analytical uncertainty parameters that the analyst may calculate to characterize the FTIR system performance.

QA Review

Before the test program began, an analysis of possible analytical interferents (e.g., H_2O, CO_2, CO, pinenes) based on previous stack test data. Analytical wavelengths were determined to minimize analytical uncertainty and detection limits using reference spectra and the FTIR instrument that was used for the field testing.

At the conclusion of the testing a quality assurance review of the test data was performed. This review included examination of the sample spectra and the quantitative analytical results. It also included spot-checking the analysis results by hand. These examinations included visual comparisons of the sample and reference spectra.

7. PROCESS DOCUMENTATION

Enviva Pellets Wiggins, LLC personnel logged the following process data during each test run of each process unit.

- Throughput in tons per hour (all process units)
- Inlet temperature (dryer)
- Outlet temperature (dryer)
- Cyclone static pressure drop (dryer, hammermill, presses)
- Wood feed % softwood content

8. REFERENCES

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3. Air Compliance Testing, Inc. “Self-Evaluation Engineering Study Test Report, Determination of Hydroen Chloride Removal Efficiency and Total Gaseous Organic Emissions.” Report to Georgia Biomass, LLC, August 27, 2012.

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APPENDIX A

Moisture and Gas Flow Rate Data

Air Control Techniques, PC: Emissions Calculations
Job # 1911

Enviva	Wiggins	Green Hammermill	Green Hammermill	Green Hammermill	Dryer 1	Dryer 1	Dryer 1
PARAMETER	**NOMENCLATURE**	1	2	3	4	5	6
Sampling Location		Green Hammermill	Green Hammermill	Green Hammermill	Dryer 1	Dryer 1	Dryer 1
Date		10/10/2013	10/10/2013	10/10/2013	10/10/2013	10/11/2013	10/11/2013
Run Time	θ	60	60	60	60	60	60
Nozzle Diameter	inches	N/A	N/A	N/A	N/A	N/A	N/A
Stack Area	As - sq. ft.	3.98	3.98	3.98	10.56	10.56	10.56
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	0.9828	0.9828	0.9828	0.9828	0.9828	0.9828
Barometric Pressure, inches Hg	Bp - in Hg	29.90	29.90	29.90	29.90	29.80	29.80
Static Pressure	Pg - in. H_2O	-20.8	-20.8	-20.8	-0.75	-0.71	-0.71
Stack Pressure	Ps	28.37	28.37	28.37	29.84	29.75	29.75
Meter Box Pressure Differential	Δ H - in. H_2O	1.00	1.00	1.00	1.00	1.00	1.00
Average Velocity Head	Δ p - in. H_2O	3.961	3.854	3.847	1.283	1.172	1.185
Volume of Gas Sampled	Vm - cu. ft.	33.868	33.981	33.156	33.201	33.221	32.565
Dry Gas Meter Temperature	Tm - °F	66.0	70.8	75.5	81.250	76.5	87.0
Stack Temperature	Ts - °F	70.8	70.6	70.9	146.3	150.1	147.3
Liquid Collected	grams	25.1	26.5	16.6	129.5	99.8	117.5
Carbon Dioxide	% CO_2	0	0	0	2	4	4
Oxygen	% O_2	20.9	20.9	20.9	19	17	17
Carbon Monoxide	% CO	0	0	0	0	0	0
Nitrogen	% N_2	79.1	79.1	79.1	79	79	79
Volume of Gas Sampled, Dry	Vmstd - cu. ft.	33.472	33.283	32.187	31.888	32.082	30.845
Volume of Water Vapor	Vwstd - cu. ft.	1.183	1.249	0.783	6.106	4.706	5.540
Moisture Content	% H_20	3.41	3.62	2.37	16.07	12.79	15.23
Saturation Moisture	% H_20	2.7	2.7	2.7	23.1	25.4	23.7
Dry Mole Fraction	Mfd	0.966	0.964	0.976	0.839	0.872	0.848
Fuel Factor	Fo	#DIV/0!	#DIV/0!	#DIV/0!	0.950	0.975	0.975
Gas Molecular Weight, Dry	Md	28.84	28.84	28.84	29.08	29.32	29.32
Gas Molecular Weight, Wet	Ms	28.47	28.44	28.58	27.30	27.87	27.60
Gas Velocity	vs - ft./sec.	115.87	114.32	113.97	70.16	66.68	67.23
Volumetric Air Flow, Actual	Qaw - ACFM	27,642	27,273	27,189	44,448	42,243	42,593
Volumetric Air Flow, Standard	Qsd - DSCFM	25,184	24,803	25,031	32,404	31,700	31,215

Air Control Techniques, PC: Emissions Calculations
Job # 1911

Enviva	Wiggins	Dry Hammermill 2	Dry Hammermill 2	Dry Hammermill 2	Pellet Mill 2 Aspiration	Pellet Mill 2 Aspiration	Pellet Mill 2 Aspiration
PARAMETER	**NOMENCLATURE**	10	11	12	16	17	18
Sampling Location		Dry Hammermill 2	Dry Hammermill 2	Dry Hammermill 2	Pellet Mill 2 Aspiration	Pellet Mill 2 Aspiration	Pellet Mill 2 Aspiration
Date		10/11/2013	10/11/2001	10/11/2013	10/12/2013	10/12/2013	10/12/2013
Run Time	θ	60	60	60	60	60	60
Nozzle Diameter	inches	N/A	N/A	N/A	N/A	N/A	N/A
Stack Area	As - sq. ft.	2.64	2.64	2.64	0.20	0.20	0.20
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	0.9828	0.9828	0.9828	0.9828	0.9828	0.9828
Barometric Pressure, inches Hg	Bp - in Hg	29.80	29.80	29.80	29.85	29.85	29.85
Static Pressure	Pg - in. H_2O	1.4	1.4	1.4	-7.5	-7.5	-7.5
Stack Pressure	Ps	29.90	29.90	29.90	29.30	29.30	29.30
Meter Box Pressure Differential	Δ H - in. H_2O	1.00	1.00	1.00	1.00	1.00	1.00
Average Velocity Head	Δ p - in. H_2O	2.601	2.308	2.618	5.359	4.944	4.547
Volume of Gas Sampled	Vm - cu. ft.	33.419	33.679	33.876	33.241	32.149	34.408
Dry Gas Meter Temperature	Tm - °F	80.3	78.8	78.3	85.0	84.8	81.8
Stack Temperature	Ts - °F	122.4	128.2	116.4	148.6	148.3	152.1
Liquid Collected	grams	30.2	30	30.2	256.8	269.6	274.4
Carbon Dioxide	% CO_2	0	0	0	0	0	0
Oxygen	% O_2	20.9	20.9	20.9	20.9	20.9	20.9
Carbon Monoxide	% CO	0	0	0	0	0	0
Nitrogen	% N_2	79.1	79.1	79.1	79.1	79.1	79.1
Volume of Gas Sampled, Dry	Vmstd - cu. ft.	32.050	32.389	32.609	31.654	30.628	32.962
Volume of Water Vapor	Vwstd - cu. ft.	1.424	1.415	1.424	12.108	12.712	12.938
Moisture Content	% H_20	4.25	4.18	4.18	27.67	29.33	28.19
Saturation Moisture	% H_20	12.3	14.4	10.4	24.9	24.7	27.2
Dry Mole Fraction	Mfd	0.957	0.958	0.958	0.723	0.707	0.718
Fuel Factor	Fo	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
Gas Molecular Weight, Dry	Md	28.84	28.84	28.84	28.84	28.84	28.84
Gas Molecular Weight, Wet	Ms	28.38	28.38	28.38	25.84	25.66	25.78
Gas Velocity	vs - ft./sec.	95.95	90.82	95.74	149.06	143.63	137.85
Volumetric Air Flow, Actual	Qaw - ACFM	15,197	14,385	15,165	1,756	1,692	1,624
Volumetric Air Flow, Standard	Qsd - DSCFM	13,183	12,366	13,303	1,079	1,016	985

Air Control Techniques, PC: Emissions Calculations
Job # 1911

Enviva	Wiggins	Dryer 2	Dryer 2	Dryer 2
PARAMETER	**NOMENCLATURE**	19	20	21
Sampling Location		Dryer 2	Dryer 2	Dryer 2
Date		10/13/2013	10/13/2013	10/13/2013
Run Time	θ	60	60	60
Nozzle Diameter	inches	N/A	N/A	N/A
Stack Area	As - sq. ft.	12.05	12.05	12.05
Pitot Tube Coefficient	Cp	0.84	0.84	0.84
Meter Calibration Factor	Y	0.9828	0.9828	0.9828
Barometric Pressure, inches Hg	Bp - in Hg	29.90	29.90	29.90
Static Pressure	Pg - in. H_2O	-0.33	-0.33	-0.33
Stack Pressure	Ps	29.88	29.88	29.88
Meter Box Pressure Differential	Δ H - in. H_2O	1.00	1.00	1.00
Average Velocity Head	Δ p - in. H_2O	0.285	0.300	0.291
Volume of Gas Sampled	Vm - cu. ft.	31.888	33.650	30.796
Dry Gas Meter Temperature	Tm - °F	77.5	89.5	90.3
Stack Temperature	Ts - °F	174.3	154.9	171.8
Liquid Collected	grams	267.7	287.5	260
Carbon Dioxide	% CO_2	4.5	4	4
Oxygen	% O_2	16.5	17	17
Carbon Monoxide	% CO	0	0	0
Nitrogen	% N_2	79	79	79
Volume of Gas Sampled, Dry	Vmstd - cu. ft.	30.841	31.834	29.094
Volume of Water Vapor	Vwstd - cu. ft.	12.622	13.556	12.259
Moisture Content	% H_20	29.04	29.86	29.64
Saturation Moisture	% H_20	44.9	28.5	42.4
Dry Mole Fraction	Mfd	0.710	0.701	0.704
Fuel Factor	Fo	0.978	0.975	0.975
Gas Molecular Weight, Dry	Md	29.38	29.32	29.32
Gas Molecular Weight, Wet	Ms	26.08	25.94	25.96
Gas Velocity	vs - ft./sec.	34.58	35.02	34.97
Volumetric Air Flow, Actual	Qaw - ACFM	24,998	25,318	25,278
Volumetric Air Flow, Standard	Qsd - DSCFM	14,745	15,224	14,842

Method 1 - Air Control Techniques, P.C.

Date: 10/10/2013

Client	Enviva
Job #	1911
Plant Name	Wiggins
State	Mississippi
City	Wiggins
Sampling Location	Dryer 1

No. of Ports Available	2
No. of Ports Used	1
Port Inside Diameter, Inches	4
Distance From Far Wall To Outside Of Port, Inches	46
Nipple Length And/Or Wall Thickness, Inches	2
Depth Of Stack Or Duct, Inches	44
Stack Or Duct Width (if rectangular), Inches	
Equiv. Diameter = 2DW/(D+W), Inches	44
Stack/Duct Area, Square Feet (□ x R^2 or L x W)	10.6

	Upstream	Downstream
Distance to Flow Disturbances, Inches	290.4	235.2
Diameters	6.60	5.35

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

	Diameters		
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

2 diff nipples probe marked to inside of port

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	4.4	1 7/8	3 7/8
2	14.6	6 3/8	8 3/8
3	29.6	13	15
4	70.4	31	33
5	85.4	37 5/8	39 5/8
6	95.6	42 1/8	44 1/8
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0   0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8   0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4   0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8   0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	4	
Plant	Wiggins				Date	10/10/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dryer 1				Pitot ID	6Pext	
Averages	**1.283**	**146.3**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		**Angle**			
A-1	1.200	144		7	**Oxygen %**	**19**	
2	1.100	145		2			
3	1.050	145		4	**Carbon Dioxide %**	**2**	
4	1.400	146		-3			
B-1	1.400	147		0	**Moisture %**	**16.07**	
2	1.500	147		-4			
B-1	1.100	147		6	**Stack Area sq.in.**	**1520.530867**	
2	1.300	147		3			
3	1.200	147		2	**Pbar**	**29.90**	
4	1.300	147		0			
5	1.300	147		-4	**Static Pressure**	**-0.75**	
6	1.600	147		-3			
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1732**	
0							
0					**Stop Time**	**1738**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.84**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.83929**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.08**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**27.30**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**70.16**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**32404**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**44448**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**2316527**
0							
0					LKCH		
0					Pre	3-6	good
8					Post	5-4	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	5	
Plant	Wiggins				Date	10/11/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dryer 1				Pitot ID	6Pext	
Averages	**1.172**	**150.1**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	0.900	145			**Oxygen %**	**17**	
2	0.990	147					
3	1.000	148			**Carbon Dioxide %**	**4**	
4	1.400	150					
B-1	1.400	151			**Moisture %**	**12.79**	
2	0.820	150					
B-1	1.200	151			**Stack Area sq.in.**	**1520.530867**	
2	1.300	151					
3	1.300	152			**Pbar**	**29.80**	
4	1.300	152					
5	1.350	152			**Static Pressure**	**-0.71**	
6	1.200	152					
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**840**	
0							
0					**Stop Time**	**850**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.75**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.87209**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.32**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**27.87**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**66.68**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**31700**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**42243**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**2180938**
0							
0					LKCH		
0					Pre	3-4	good
8					Post	5-3	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	6	
Plant	Wiggins				Date	10/11/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dryer 1				Pitot ID	6Pext	
Averages	**1.185**	**147.3**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	1.050	148			**Oxygen %**	**17**	
2	1.050	147					
3	1.050	146			**Carbon Dioxide %**	**4**	
4	1.500	147					
B-1	1.500	147			**Moisture %**	**15.23**	
2	0.940	147					
B-1	1.100	147			**Stack Area sq.in.**	**1520.530867**	
2	1.200	147					
3	1.200	147			**Pbar**	**29.80**	
4	1.300	148					
5	1.300	148			**Static Pressure**	**-0.71**	
6	1.100	148					
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1112**	
0							
0					**Stop Time**	**1115**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.75**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.84774**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.32**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**27.60**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**67.23**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**31215**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**42593**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**2209261**
0							
0					LKCH		
0					Pre	3-4	good
8					Post	5-3	good
0							
0							

Method 1 - Air Control Techniques, P.C.

Date: 10/13/2013

Client	Enviva
Job #	1911
Plant Name	Wiggins
State	Mississippi
City	Wiggins
Sampling Location	Dryer 2

No. of Ports Available	2	
No. of Ports Used	1	
Port Inside Diameter, Inches	4	
Distance From Far Wall To Outside Of Port, Inches	55.5	
Nipple Length And/Or Wall Thickness, Inches	8.5	
Depth Of Stack Or Duct, Inches	47	
Stack Or Duct Width (if rectangular), Inches		
Equiv. Diameter = 2DW/(D+W), Inches	47	
Stack/Duct Area, Square Feet	12.05	
(□ x R^2 or L x W)		
	Upstream	Downstream
Distance to Flow Disturbances, Inches	325.2	674.4
Diameters	6.92	14.35

2 diff nipples probe marked to inside of port

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	4.4	2 1/8	10 5/8
2	14.6	6 7/8	15 3/8
3	29.6	13 7/8	22 3/8
4	70.4	33 1/8	41 5/8
5	85.4	40 1/8	48 5/8
6	95.6	44 7/8	53 3/8
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

Diameters

Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0   0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8   0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4   0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8   0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	19	
Plant	Wiggins				Date	10/13/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dryer 2				Pitot ID	6Pext	
Averages	**0.285**	**174.3**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		**Angle**			
A-1	0.200	168		5	**Oxygen %**	**16.5**	
2	0.280	173		2			
3	0.330	175		0	**Carbon Dioxide %**	**4.5**	
4	0.330	175		5			
5	0.300	174		0	**Moisture %**	**29.04**	
6	0.230	170		0			
B-1	0.210	174		6	**Stack Area sq.in.**	**1734.94**	
2	0.360	176		3			
3	0.350	177		0	**Pbar**	**29.90**	
4	0.330	177		0			
5	0.300	177		-4	**Static Pressure**	**-0.33**	
6	0.230	175		4			
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**843**	
0							
0					**Stop Time**	**859**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**29.88**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.70959**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.38**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**26.08**
2							
3				**Average Gas Velocity ft/sec**		**vs =**	**34.58**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**14745**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**24998**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**1246788**
5							
6					LKCH		
7					Pre	6-5	good
8					Post	5-3	good

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	20	
Plant	Wiggins				Date	10/13/13	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dryer 2				Pitot ID	6Pext	
Averages	**0.300**	**154.9**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	0.200	167			**Oxygen %**	**17**	
2	0.800	167					
3	0.310	167			**Carbon Dioxide %**	**4**	
4	0.330	168					
5	0.340	169			**Moisture %**	**29.86**	
6	0.200	167					
B-1	0.220	170			**Stack Area sq.in.**	**1734.94**	
2	0.310	170					
3	0.310	2			**Pbar**	**29.90**	
4	0.290	170					
5	0.260	171			**Static Pressure**	**-0.33**	
6	0.190	171					
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1047**	
0							
0					**Stop Time**	**1051**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**29.88**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.70135**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.32**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**25.94**
2							
2				**Average Gas Velocity ft/sec**		**vs =**	**35.02**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**15224**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**25318**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**1302430**
5							
6					LKCH		
7					Pre	6-5	good
8					Post	5-3	good

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	21	
Plant	Wiggins				Date	10/13/13	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dryer 2				Pitot ID	6Pext	
Averages	**0.291**	**171.8**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	0.220	169			**Oxygen %**	**17**	
2	0.250	172					
3	0.320	173			**Carbon Dioxide %**	**4**	
4	0.320	174					
5	0.330	174			**Moisture %**	**29.64**	
6	0.260	168					
B-1	0.240	168			**Stack Area sq.in.**	**1734.94**	
2	0.310	171					
3	0.340	172			**Pbar**	**29.90**	
4	0.330	172					
5	0.310	173			**Static Pressure**	**-0.33**	
6	0.280	175					
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1208**	
0							
0					**Stop Time**	**1215**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**29.88**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.70356**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.32**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**25.96**
2							
2				**Average Gas Velocity ft/sec**		**vs =**	**34.97**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**14842**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**25278**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**1265741**
5							
6					LKCH		
7					Pre	3-4	good
8					Post	5-3	good

Method 1 - Air Control Techniques, P.C.

Date: 10/10/2013

Client	Enviva
Job #	1911
Plant Name	Wiggins
State	Mississippi
City	Wiggins
Sampling Location	Green Hammermill

No. of Ports Available		2
No. of Ports Used		1
Port Inside Diameter, Inches		3
Distance From Far Wall To Outside Of Port, Inches		30
Nipple Length And/Or Wall Thickness, Inches		3
Depth Of Stack Or Duct, Inches		27
Stack Or Duct Width (if rectangular), Inches		
Equiv. Diameter = 2DW/(D+W), Inches		27
Stack/Duct Area, Square Feet (□ x R^2 or L x W)		3.9761
	Upstream	Downstream
Distance to Flow Disturbances, Inches	348	60
Diameters	12.89	2.22

2 diff nipples probe marked to inside of port

Note: If more than 8 and 2 diameters and if duct dia. is less than 24" use 8 or 9 points.

Diameters			
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	4.4	1 2/8	4 2/8
2	14.6	4	7
3	29.6	8	11
4	70.4	19	22
5	85.4	23	26
6	95.6	25 6/8	28 6/8
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0	0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8	0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4	0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8	0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2	

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	1	
Plant	Wiggins				Date	10/10/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Green Hammermill				Pitot ID	4Pext	
Averages	**3.961**	**70.8**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		**Angle**			
A-1	2.800	71		0	**Oxygen %**	**20.9**	
2	3.900	71		1			
3	4.400	71		1	**Carbon Dioxide %**	**0**	
4	3.800	71		2			
5	3.800	70		4	**Moisture %**	**3.41**	
6	3.000	70		3			
B-1	4.200	72		0	**Stack Area sq.in.**	**572.5552696**	
2	4.500	71		0			
3	4.600	71		0	**Pbar**	**29.90**	
4	4.600	70		2			
5	4.400	71		4	**Static Pressure**	**-20.8**	
6	3.800	70		3			
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**855**	
0							
0					**Stop Time**	**908**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**28.37**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.96585**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.47**
2							
3				**Average Gas Velocity ft/sec**		**vs =**	**115.87**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**25184**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**27642**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**1564487**
5							
6					LKCH		
7					Pre	3-4	good
8					Post	5-3	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	2	
Plant	Wiggins				Date	10/10/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Green Hammermill				Pitot ID	4Pext	
Averages	**3.854**	**70.6**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	2.700	71			**Oxygen %**	**20.9**	
2	3.800	71					
3	4.400	71			**Carbon Dioxide %**	**0**	
4	3.800	70					
5	3.300	70			**Moisture %**	**3.62**	
6	3.100	68					
B-1	3.900	72			**Stack Area sq.in.**	**572.5552696**	
2	4.200	70					
3	4.400	70			**Pbar**	**29.90**	
4	4.400	70					
5	4.300	71			**Static Pressure**	**-20.8**	
6	4.200	73					
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1026**	
0							
0					**Stop Time**	**1030**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**28.37**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.96382**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.44**
2							
3				**Average Gas Velocity ft/sec**		**vs =**	**114.32**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**24803**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**27273**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**1544072**
5							
6					LKCH		
7					Pre	3-4	good
8					Post	5-3	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	3	
Plant	Wiggins				Date	10/10/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Green Hammermill				Pitot ID	4Pext	
Averages	**3.847**	**70.9**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	2.700	71			**Oxygen %**	**20.9**	
2	3.600	71					
3	4.400	71			**Carbon Dioxide %**	**0**	
4	3.700	71					
5	3.200	71			**Moisture %**	**2.37**	
6	3.300	69					
B-1	4.000	72			**Stack Area sq.in.**	**572.5552696**	
2	4.300	71					
3	4.300	71			**Pbar**	**29.90**	
4	4.300	71					
5	4.300	71			**Static Pressure**	**-20.8**	
6	4.300	71					
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1141**	
0							
0					**Stop Time**	**1144**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**28.37**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.97626**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.58**
2							
3				**Average Gas Velocity ft/sec**		**vs =**	**113.97**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**25031**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**27189**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**1538379**
5							
6					LKCH		
7					Pre	3-4	good
8					Post	6-4	good
0							
0							

Method 1 - Air Control Techniques, P.C.

Date: 10/12/2013

Client	Enviva
Job #	1911
Plant Name	Wiggins
State	Mississippi
City	Wiggins
Sampling Location	Pellet Mill 2 Aspiration

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

	Diameters		
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

No. of Ports Available	1
No. of Ports Used	1
Port Inside Diameter, Inches	1
Distance From Far Wall To Outside Of Port, Inches	6
Nipple Length And/Or Wall Thickness, Inches	0
Depth Of Stack Or Duct, Inches	6
Stack Or Duct Width (if rectangular), Inches	
Equiv. Diameter = 2DW/(D+W), Inches	6
Stack/Duct Area, Square Feet	0.20

(□ x R^2 or L x W)

	Upstream	Downstream
Distance to Flow Disturbances, Inches	19	39
Diameters	3.17	6.50

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	6.7	3/8	1
2	25.0	1 4/8	1 4/8
3	75.0	4 4/8	4 4/8
4	93.3	5 5/8	5
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Used 8 points becaus
of diameter otherwise
first 3 points are
at 1" from wall

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0 0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8 0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4 0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8 0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	16	
Plant	Wiggins				Date	10/12/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Pellet Mill 2 Aspiration				Pitot ID	4Pext	
Averages	**5.359**	**148.6**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		**Angle**			
A-1	5.400	149		0	**Oxygen %**	**20.9**	
2	5.700	148		0			
3	5.100	149		2	**Carbon Dioxide %**	**0**	
4	5.000	149		1			
B-1	5.700	149		0	**Moisture %**	**27.67**	
2	5.600	148		1			
3	5.400	149		2	**Stack Area sq.in.**	**28.2743343**	
4	5.000	148		0			
0					**Pbar**	**29.85**	
0							
0					**Static Pressure**	**-7.5**	
0							
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1445**	
0							
0					**Stop Time**	**1448**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.30**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.72332**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**25.84**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**149.06**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**1079**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**1756**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**89506.7**
0							
0					LKCH		
0					Pre	4-3	good
8					Post	5-5	good

Air Control Techniques EPA Method 2 Data Sheet				ACT Job Number	1911	
Client	Enviva			ACT Run Number	17	
Plant	Wiggins			Date	10/12/13	
City/State	Wiggins, MS			Gauge ID	909033	
Location	Pellet Mill 2 Aspiration			Pitot ID	4Pext	
Averages	**4.944**	**148.3**		Thermocouple ID	TC25	
	Delta P	**Temp**				
Point No.	**In Water**	**Deg F**				
A-1	3.700	147		**Oxygen %**	**20.9**	
2	5.500	149				
3	5.400	148		**Carbon Dioxide %**	**0**	
4	5.200	148				
B-1	5.600	148		**Moisture %**	**29.33**	
2	4.800	148				
3	4.900	149		**Stack Area sq.in.**	**28.2743**	
4	4.600	149				
0				**Pbar**	**29.85**	
0						
0				**Static Pressure**	**-7.5**	
0						
0				**Pitot Coef.**	**0.84**	
0						
0				**Start Time**	**1611**	
0						
0				**Stop Time**	**1615**	
0						
0			**Absolute Gas Pressure inches water**		**Ps =**	**29.30**
0						
0			**Dry Mole Fraction of Gas**		**Mfd =**	**0.7067**
0						
0			**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0						
0			**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**25.66**
0						
0			**Average Gas Velocity ft/sec**		**vs =**	**143.63**
0						
0			**Dry Volumetric Gas Flow Rate**			
0			**at Standard Conditions SCFM**		**Qsd =**	**1016**
0						
0			**Wet Volumetric Flue Gas Flow Rate**			
0			**at Stack Conditions ACFM**		**Qaw =**	**1692**
0						
0			**Wet Volumetric Gas Flow Rate**			
0			**at Standard Conditions WSCFH**		**WSCFH =**	**86302.3**
0						
0				LKCH		
0				Pre	4-3	good
8				Post	5-5	good

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	18	
Plant	Wiggins				Date	10/12/13	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Pellet Mill 2 Aspiration				Pitot ID	4Pext	
Averages	**4.547**	**152.1**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	4.400	152			**Oxygen %**	**20.9**	
2	4.600	153					
3	4.600	152			**Carbon Dioxide %**	**0**	
4	4.300	152					
B-1	4.800	152			**Moisture %**	**28.19**	
2	5.000	152					
3	4.400	153			**Stack Area sq.in.**	**28.2743**	
4	4.300	151					
0					**Pbar**	**29.85**	
0							
0					**Static Pressure**	**-7.5**	
0							
0					**Pitot Coef.**	**0.84**	
0							
0					**Start Time**	**1739**	
0							
0					**Stop Time**	**1742**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.30**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.71813**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**25.78**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**137.85**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**985**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**1624**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**82302.1**
0							
0					LKCH		
0					Pre	4-3	good
8					Post	5-5	good

Method 1 - Air Control Techniques, P.C.

Date: 10/11/2013

Client	Enviva
Job #	1911
Plant Name	Wiggins
State	Mississippi
City	Wiggins
Sampling Location	Dry Hammermill 2

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

Diameters			
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

No. of Ports Available		2
No. of Ports Used		2
Port Inside Diameter, Inches		0
Distance From Far Wall To Outside Of Port, Inches		22
Nipple Length And/Or Wall Thickness, Inches		0
Depth Of Stack Or Duct, Inches		22
Stack Or Duct Width (if rectangular), Inches		
Equiv. Diameter = 2DW/(D+W), Inches		22
Stack/Duct Area, Square Feet		2.6
(□ x R^2 or L x W)		
	Upstream	Downstream
Distance to Flow Disturbances, inches	52	8
Diameters	2.36	0.36

2 diff nipples probe marked to inside of port

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port	
1	3.2	6/8	6/8	1
2	10.6	2 3/8	2 3/8	
3	19.4	4 2/8	4 2/8	
4	32.3	7 1/8	7 1/8	
5	67.7	14 7/8	14 7/8	
6	80.6	17 6/8	17 6/8	
7	89.5	19 6/8	19 6/8	
8	96.8	21 2/8	21 2/8	21
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0	0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8	0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4	0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8	0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2	

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	10	
Plant	Wiggins				Date	10/11/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dry Hammermill 2				Pitot ID	4Pext	
Averages	**2.601**	**122.4**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		**Angle**			
A-1	2.400	121		0	**Oxygen %**	**20.9**	
2	2.600	122		1			
3	2.550	122		0	**Carbon Dioxide %**	**0**	
4	2.400	123		0			
5	2.600	123		2	**Moisture %**	**4.25**	
6	3.000	122		0			
7	3.000	121		0	**Stack Area sq.in.**	**380.13272**	
8	3.300	120		0			
B-1	2.200	122		2	**Pbar**	**29.80**	
2	2.200	122		0			
3	2.300	123		1	**Static Pressure**	**1.4**	
4	2.300	123		0			
5	2.800	123		2	**Pitot Coef.**	**0.84**	
6	2.700	123		0			
7	2.800	125		1	**Start Time**	**1745**	
8	2.600	124		1			
0					**Stop Time**	**1758**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**29.90**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.95746**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.38**
2							
3				**Average Gas Velocity ft/sec**		**vs =**	**95.95**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**13183**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**15197**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**826137**
5							
6					LKCH		
7					Pre	4-3	good
8					Post	5-5	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	11	
Plant	Wiggins				Date	10/11/2001	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dry Hammermill 2				Pitot ID	4Pext	
Averages	**2.308**	**128.2**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	2.200	124			**Oxygen %**	**20.9**	
2	2.150	127					
3	2.000	129			**Carbon Dioxide %**	**0**	
4	2.100	129					
5	2.000	129			**Moisture %**	**4.18**	
6	2.600	130					
7	2.600	130			**Stack Area sq.in.**	**380.132717**	
8	2.600	129					
B-1	1.800	129			**Pbar**	**29.80**	
2	2.200	127					
3	2.200	128			**Static Pressure**	**1.4**	
4	2.300	128					
5	2.600	128			**Pitot Coef.**	**0.84**	
6	2.500	128					
7	2.600	128			**Start Time**	**1917**	
8	2.600	128					
0					**Stop Time**	**1923**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**29.90**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.95816**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.38**
2							
3				**Average Gas Velocity ft/sec**		**vs =**	**90.82**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**12366**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**14385**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**774351**
5							
6					LKCH		
7					Pre	4-3	good
8					Post	5-5	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	12	
Plant	Wiggins				Date	10/11/2013	
City/State	Wiggins, MS				Gauge ID	909033	
Location	Dry Hammermill 2				Pitot ID	4Pext	
Averages	**2.618**	**116.4**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	2.700	114			**Oxygen %**	**20.9**	
2	2.700	116					
3	2.700	116			**Carbon Dioxide %**	**0**	
4	2.500	117					
5	2.800	117			**Moisture %**	**4.18**	
6	2.800	118					
7	3.000	117			**Stack Area sq.in.**	**380.1327167**	
8	2.900	116					
B-1	3.000	117			**Pbar**	**29.80**	
2	2.900	116					
3	2.600	117			**Static Pressure**	**1.4**	
4	2.500	116					
5	2.300	116			**Pitot Coef.**	**0.84**	
6	2.300	116					
7	2.100	116			**Start Time**	**2038**	
8	2.200	117					
0					**Stop Time**	**2043**	
2							
3				**Absolute Gas Pressure inches water**		**Ps =**	**29.90**
4							
5				**Dry Mole Fraction of Gas**		**Mfd =**	**0.95816**
6							
7				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
8							
D-1				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.38**
2							
3				**Average Gas Velocity ft/sec**		**vs =**	**95.74**
4							
5				**Dry Volumetric Gas Flow Rate**			
6				**at Standard Conditions SCFM**		**Qsd =**	**13303**
7							
8				**Wet Volumetric Flue Gas Flow Rate**			
E-1				**at Stack Conditions ACFM**		**Qaw =**	**15165**
2							
3				**Wet Volumetric Gas Flow Rate**			
4				**at Standard Conditions WSCFH**		**WSCFH =**	**833051**
5							
6					LKCH		
7					Pre	4-3	good
8					Post	5-5	good
0							
0							

Air Control Techniques, PC: Emissions Calculations

Enviva, Wiggins, MS	Job 1911	Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Pellet Mill 1 Cooler	Pellet Mill 1 Cooler	Pellet Mill 1 Cooler
PARAMETER	**NOMENCLATURE**	7	8	9	13	14	15
Sampling Location		Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Pellet Mill 1 Cooler	Pellet Mill 1 Cooler	Pellet Mill 1 Cooler
Date		10/11/2013	10/11/2013	10/11/2013	10/12/2013	10/12/2013	10/12/2013
Run Time	θ	60	60	60	60	60	60
Nozzle Diameter	inches	N/A	N/A	N/A	N/A	N/A	N/A
Stack Area	As - sq. ft.	2.4	2.4	2.4	5.81	5.8	5.8
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	0.9828	0.9828	0.9828	0.9828	0.9828	0.9828
Barometric Pressure, inches Hg	Bp - in Hg	29.80	29.80	29.80	29.90	29.90	29.90
Static Pressure	Pg - in. H_2O	-1.2	-1.2	-1.2	-0.4	-0.4	-0.4
Stack Pressure	Ps	29.71	29.71	29.71	29.87	29.87	29.87
Meter Box Pressure Differential	Δ H - in. H_2O	1.00	1.00	1	1.00	1.00	1.00
Average Velocity Head	Δ p - in. H_2O	2.293	2.102	2.108	0.654	0.644	0.634
Volume of Gas Sampled	Vm - cu. ft.	34.310	34.423	33.681	33.818	35.845	34.567
Dry Gas Meter Temperature	Tm - °F	87.3	89.3	83.8	71.8	82.5	89.0
Stack Temperature	Ts - °F	148.9	143.2	152.3	82.3	94.8	97.7
Liquid Collected	Grams	35.2	33.5	32.4	24.3	27.8	19.9
Carbon Dioxide	% CO_2	0	0	0	0	0	0
Oxygen	% O_2	20.9	20.9	20.9	20.9	20.9	20.9
Carbon Monoxide	% CO	0	0	0	0	0	0
Nitrogen	% N_2	79.1	79.1	79.1	79.1	79.1	79.1
Volume of Gas Sampled, Dry	Vmstd - cu. ft.	32.483	32.472	32.093	33.061	34.348	32.731
Volume of Water Vapor	Vwstd - cu. ft.	1.660	1.580	1.528	1.146	1.311	0.938
Moisture Content	% H_20	4.86	4.64	4.54	3.35	3.68	2.79
Saturation Moisture	% H_20	24.8	21.4	26.9	3.7	5.5	6.0
Dry Mole Fraction	Mfd	0.951	0.954	0.955	0.967	0.963	0.972
Gas Molecular Weight, Dry	Md	28.84	28.84	28.84	28.84	28.84	28.84
Gas Molecular Weight, Wet	Ms	28.31	28.33	28.34	28.47	28.44	28.53
Gas Velocity	vs - ft./sec.	92.52	88.13	88.91	46.36	46.58	46.26
Volumetric Air Flow, Actual	Qaw - ACFM	13,352	12,718	12,831	16,168	16,246	16,134
Volumetric Air Flow, Standard	Qsd - DSCFM	10,938	10,543	10,488	15,189	14,870	14,825

Method 1 - Air Control Techniques, P.C.

Date: 10/12/2013

Client	Enviva
Job #	1911
Plant Name	Wiggins
State	Mississippi
City	Wiggins
Sampling Location	Pellet Mill 1 Cooler

Note: If more than 8 and 2 diameters and if duct dia. is less than 24" use 8 or 9 points.

Diameters			
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

No. of Ports Available	6
No. of Ports Used	4
Port Inside Diameter, Inches	3
Distance From Far Wall To Outside Of Port, Inches	30.5
Nipple Length And/Or Wall Thickness, Inches	3.5
Depth Of Stack Or Duct, Inches	27
Stack Or Duct Width (if rectangular), Inches	31
Equiv. Diameter = 2DW/(D+W), Inches	28.86207
Stack/Duct Area, Square Feet	5.8

(□ x R^2 or L x W)

	Upstream	Downstream
Distance to Flow Disturbances, Inches	72	48
Diameters	2.49	1.66

2 diff nipples probe marked to inside of port

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	12.5	3 3/8	6 7/8
2	37.5	10 1/8	13 5/8
3	62.5	16 7/8	20 3/8
4	87.5	23 5/8	27 1/8
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

2
2

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0   0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8   0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4   0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8   0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	13	
Plant	Wiggins				Date	10/12/2013	
City/State	Mississippi				Gauge ID	909033	
Location	Pellet Mill 1 Cooler				Pitot ID	4Pext	
Averages	**0.654**	**82.3**			Thermocouple ID	4Pext	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		**Angle**			
A-1	0.380	78		**0**	**Oxygen %**	**20.9**	
2	0.340	79		**0**			
3	0.330	79		**0**	**Carbon Dioxide %**	**0**	
4	0.340	77		**2**			
B-1	0.680	82		**8**	**Moisture %**	**3.35**	
2	0.650	81		**2**			
3	0.540	82		**-5**	**Stack Area sq.in.**	**837**	
4	0.570	82		**3**			
C-1	0.680	84		**-2**	**Pbar**	**29.90**	
2	0.700	84		**-3**			
3	0.690	84		**0**	**Static Pressure**	**-0.4**	
4	0.710	84		**3**			
D-1	1.050	85		**0**	**Pitot Coef.**	**0.84**	
2	1.050	85		**-2**			
3	1.050	85		**-1**	**Start Time**	**830**	
4	1.100	86		**2**			
0					**Stop Time**	**847**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.87**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.96651**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.47**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**46.36**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**15189**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**16168**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**942901**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
#REF!							
#REF!							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	14	
Plant	Wiggins				Date	10/12/2013	
City/State	Mississippi				Gauge ID	909033	
Location	Pellet Mill 1 Cooler				Pitot ID	4PEXT	
Averages	**0.644**	**94.8**			Thermocouple ID	4PEXT	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	0.380	92			**Oxygen %**	**20.9**	
2	0.400	93					
3	0.380	93			**Carbon Dioxide %**	**0**	
4	0.370	93					
B-1	0.530	94			**Moisture %**	**3.68**	
2	0.550	95					
3	0.480	95			**Stack Area sq.in.**	**837**	
4	0.500	95					
C-1	0.670	95			**Pbar**	**29.90**	
2	0.690	95					
3	0.660	96			**Static Pressure**	**-0.4**	
4	0.680	96					
D-1	1.300	96			**Pitot Coef.**	**0.84**	
2	1.050	96					
3	1.050	96			**Start Time**	**1009**	
4	1.050	96					
0					**Stop Time**	**1015**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.87**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.96324**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.44**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**46.58**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**14870**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**16246**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**926248**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
#REF!							
#REF!							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	15	
Plant	Wiggins				Date	10/12/2013	
City/State	Mississippi				Gauge ID	909033	
Location	Pellet Mill 1 Cooler				Pitot ID	4Pext	
Averages	**0.634**	**97.7**			Thermocouple ID	4Pext	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	0.340	94			**Oxygen %**	**20.9**	
2	0.290	96					
3	0.280	97			**Carbon Dioxide %**	**0**	
4	0.330	97					
B-1	0.530	98			**Moisture %**	**2.79**	
2	0.540	98					
3	0.500	98			**Stack Area sq.in.**	**837**	
4	0.480	98					
C-1	0.730	98			**Pbar**	**29.90**	
2	0.740	98					
3	0.670	98			**Static Pressure**	**-0.4**	
4	0.670	99					
D-1	1.400	98			**Pitot Coef.**	**0.84**	
2	1.050	99					
3	1.000	99			**Start Time**	**1125**	
4	1.200	98					
0					**Stop Time**	**'1134**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.87**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.97213**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.53**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**46.26**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**14825**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**16134**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**915021**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
#REF!							
#REF!							

Method 1 - Air Control Techniques, P.C.

Date: 10/11/2013

Client	Enviva
Job #	1911
Plant Name	Wiggins
State	Mississippi
City	Wiggins
Sampling Location	Pellet Mill 2 Cooler

No. of Ports Available	2
No. of Ports Used	2
Port Inside Diameter, Inches	3
Distance From Far Wall To Outside Of Port, Inches	21
Nipple Length And/Or Wall Thickness, Inches	0
Depth Of Stack Or Duct, Inches	21
Stack Or Duct Width (if rectangular), Inches	
Equiv. Diameter = 2DW/(D+W), Inches	21
Stack/Duct Area, Square Feet	2.4

(□ x R^2 or L x W)

	Upstream	Downstream
Distance to Flow Disturbances, inches	51	9.5
Diameters	2.43	0.45

2 diff nipples probe marked to inside of port

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

Diameters			
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	3.2	0.672	1
2	10.6	2.226	2 1/4
3	19.4	4.074	4 1/8
4	32.3	6.783	6 3/4
5	67.7	14.217	14 1/4
6	80.6	16.926	16 7/8
7	89.5	18.795	18 3/4
8	96.8	20.328	20
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0	0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8	0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4	0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8	0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2	

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	7	
Plant	Wiggins				Date	10/11/2013	
City/State	Mississippi				Gauge ID	909033	
Location	Pellet Mill 2 Cooler				Pitot ID	4PEXT	
Averages	**2.293**	**148.9**			Thermocouple ID	4PEXT	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		**Angle**			
A-1	1.800	150		-2	**Oxygen %**	**20.9**	
2	2.400	153		-5			
3	2.800	150		-8	**Carbon Dioxide %**	**0**	
4	2.900	150		-4			
5	2.800	150		6	**Moisture %**	**4.86**	
6	2.500	150		5			
7	2.300	149		-2	**Stack Area sq.in.**	**346.360595**	
8	1.900	144		-2			
B-1	2.300	142		8	**Pbar**	**29.80**	
2	2.300	147		6			
3	2.500	149		7	**Static Pressure**	**-1.2**	
4	2.500	149		6			
5	2.200	150		-5	**Pitot Coef.**	**0.84**	
6	2.100	150		-4			
7	1.900	150		-2	**Start Time**	**1315**	
8	1.700	150		-7			
#REF!					**Stop Time**	**1335**	
#REF!							
#REF!				**Absolute Gas Pressure inches water**		**Ps =**	**29.71**
#REF!							
#REF!				**Dry Mole Fraction of Gas**		**Mfd =**	**0.95139**
#REF!							
#REF!				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
#REF!							
#REF!				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.31**
#REF!							
#REF!				**Average Gas Velocity ft/sec**		**vs =**	**92.52**
#REF!							
#REF!				**Dry Volumetric Gas Flow Rate**			
#REF!				**at Standard Conditions SCFM**		**Qsd =**	**10938**
#REF!							
#REF!				**Wet Volumetric Flue Gas Flow Rate**			
#REF!				**at Stack Conditions ACFM**		**Qaw =**	**13352**
#REF!							
#REF!				**Wet Volumetric Gas Flow Rate**			
#REF!				**at Standard Conditions WSCFH**		**WSCFH =**	**689797**
#REF!							
#REF!					LKCH		
#REF!					Pre	3-4	good
#REF!					Post	5-3	good
#REF!							
#REF!							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	8	
Plant	Wiggins				Date	10/11/2013	
City/State	Mississippi				Gauge ID	909033	
Location	Pellet Mill 2 Cooler				Pitot ID	4PEXT	
Averages	**2.102**	**143.2**			Thermocouple ID	4PEXT	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	2.400	147			**Oxygen %**	**20.9**	
2	2.300	143					
3	2.200	144			**Carbon Dioxide %**	**0**	
4	2.000	144					
5	1.800	142			**Moisture %**	**4.64**	
6	1.800	139					
7	1.800	140			**Stack Area sq.in.**	**346.360595**	
8	1.700	140					
B-1	1.800	142			**Pbar**	**29.80**	
2	2.050	144					
3	2.250	143			**Static Pressure**	**-1.2**	
4	2.200	144					
5	2.300	144			**Pitot Coef.**	**0.84**	
6	2.350	145					
7	2.400	145			**Start Time**	**1450**	
8	2.400	145					
0					**Stop Time**	**1458**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.71**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.95361**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.33**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**88.13**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**10543**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**12718**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**663328**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
#REF!							
#REF!							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1911	
Client	Enviva				ACT Run Number	9	
Plant	Wiggins				Date	10/11/2013	
City/State	Mississippi				Gauge ID	909033	
Location	Pellet Mill 2 Cooler				Pitot ID	4PEXT	
Averages	**2.108**	**152.3**			Thermocouple ID	4PEXT	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	1.900	150			**Oxygen %**	**20.9**	
2	2.300	151					
3	2.300	154			**Carbon Dioxide %**	**0**	
4	2.200	152					
5	2.150	152			**Moisture %**	**4.54**	
6	2.200	152					
7	2.000	152			**Stack Area sq.in.**	**346.360595**	
8	2.100	146					
B-1	1.900	151			**Pbar**	**29.80**	
2	2.000	154					
3	2.050	154			**Static Pressure**	**-1.2**	
4	2.200	154					
5	2.100	154			**Pitot Coef.**	**0.84**	
6	2.200	154					
7	2.050	154			**Start Time**	**1614**	
8							
0					**Stop Time**	**1621**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.71**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.95456**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.34**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**88.91**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**10488**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**12831**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**659261**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
#REF!							
#REF!							

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date ~~8/19/13~~ 10/10/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	200
City, State	Wiggins, MS	Meterbox ID	909033
Test Location	Green Hammer mill	ΔH@	1.917
Personnel	TTB JBG	Gamma (γ)	0.9828

Run Identification: M4-1

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
917	0	470.600	65	1.0	N/A	N/A	55	5
932	15	479.71	66	1.0			55	5
947	30	487.5	66	1.0			56	5
10:02	45	496.2	67	1.0			60	6
10:17	60	504.468						

Run Identification: 2

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1036	0	504.700	68	1.0	N/A	N/A	60	5
1051	15	513.10	70				55	5
1106	30	521.4	72				55	5
1121	45	530.0	73				54	5
1136	60	538.681						

Run Identification: 3

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	11
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1150	0	538.900	74	1.0	N/A	N/A	59	5
1205	15	549.0	75				50	5
1220	30	557.8	76				51	5
1235	45	563.4	77				53	5
1250	60	572.056						

Method 4 - Air Control Techniques, P.C.

Date 10/12/13

Identification Information

Client	ENVIVA	Job	1911
Plant Name	Wiggins	Process	Green Hammer Mill
City	Wiggins	State	MS

Sampling Information

Run Number			
Sampling Date			
Recovery Date			
Personnel	TTB JBG		

Balance Number	1200
Balance Type	Electronic
Balance Level	EVI-1200
Recovery Area	✓

Location Moisture Data

Run Number	M4-1	M4-2	M4-3
Impinger 1			
Final Weight, grams/mls	809.3	743.0	822.7
Initial Weight, grams/mls	735.6	724.5	809.3
Condensed Water, grams	73.7	18.5	13.4
Impinger 2			
Final Weight, grams/mls	661.1	729.5	661.5
Initial Weight, grams/mls	719.0	728.8	661.1
Condensed Water, grams	-57.9	0.7	0.4
Impinger 3			
Final Weight, grams/mls	595.9	597.0	596.1
Initial Weight, grams/mls	594.4	595.6	595.9
Condensed Water, grams	1.5	1.4	0.2
Condensed Water, grams	17.3	20.6	
Silica Gel			
Final Weight, grams	815.3	797.7	817.9
Initial Weight, grams	807.5	791.1	815.3
Adsorbed Water, grams	7.8	5.9	2.6
Adsorbed Water, grams			
Total Water, grams	25.1	26.5	16.6

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date ~~8/9/13~~ 10/10/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	200
City, State	Wiggins, MS	Meterbox ID	909033
Test Location	DRYER #1	ΔH@	1.917
Personnel	TTB JBG	Gamma (γ)	0.9828

Run Identification: M4 4

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1738	0	572.300	80	1.0	N/A	N/A	58	3
1753	15	580.90	81	↓	↓	↓	54	3
1808	30	589.10	82				56	3
1823	45	597.2	82				57	3
1838	60	605.501						

10/11/13

Run Identification: 5

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1000	0	605.700	70	1.0	N/A	N/A	59	3
1015	15	614.00	74	↓	↓	↓	63	3
1030	30	622.24	79				66	3
1045	45	630.61	83				67	3
1100	60	638.921						

10/11/13

Run Identification: 6

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1137	0	639.100	86	1.0	N/A	N/A	56	3
1152	15	647.5	87	↓	↓	↓	58	3
1207	30	655.17	87				59	3
1222	45	663.24	88				61	3
1237	60	~~66~~ 671.665						

Method 4 - Air Control Techniques, P.C.

Date 10/10/2017

Identification Information

Client	Enviva	Job	1911
Plant Name	Wiggins	Process	DRYER #1
City	Wiggins	State	MS

Sampling Information

Run Number			
Sampling Date			
Recovery Date			
Personnel	TTB JBG		

Balance Number	V1200
Balance Type	Electronic
Balance Level	✓
Recovery Area	✓

Location Moisture Data

Run Number	4	5	6
Impinger 1			
Final Weight, grams/mls	858.1	943.8	826.7
Initial Weight, grams/mls	743.0	822.7	722.7
Condensed Water, grams	115.1	121.1	104.0
Impinger 2			
Final Weight, grams/mls	736.5	630.7	744.4
Initial Weight, grams/mls	729.5	661.5	736.5
Condensed Water, grams	7.0	-30.8	7.9
Impinger 3			
Final Weight, grams/mls	597.1	599.5	597.8
Initial Weight, grams/mls	597.0	596.1	597.1
Condensed Water, grams	0.1	3.4	0.7
Condensed Water, grams			
Silica Gel			
Final Weight, grams	805.0	824.0	809.9
Initial Weight, grams	797.7	817.9	805.0
Adsorbed Water, grams	7.3	6.1	4.9
Adsorbed Water, grams	129.5	99.8	———
Total Water, grams	↓	↓	117.5

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/11/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	200
City, State	Wiggins MS	Meterbox ID	909033
Test Location	Pellet Mill Coolers #2	ΔH@	1.917
Personnel	TTB JBB	Gamma (γ)	0.9828

Run Identification M4-7

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	8

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1343	0	672.000	85	1.0	N/A	N/A	57	3
1358	15	680.60	86				61	3
1413	30	689.23	89				61	3
1428	45	698.1	89				60	3
1443	60	706.310						

Run Identification M4-8

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1508	0	706.600	89	1.0	N/A	N/A	58	3
1523	15	715.19	89				59	3
1538	30	723.95	89				59	3
1553	45	732.97	90				61	3
1608	60	741.023						

Run Identification M4-9

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
0	1629	741.300	85	1.0	N/A	N/A	57	3
15	1644	749.90	84				60	3
30	1659	758.29	83				59	3
45	1714	766.605	83				60	3
60	1729	774.981						

Method 4 - Air Control Techniques, P.C.

Date

Identification Information

Client	ENVIVA	Job	1911
Plant Name	Wiggins, MS	Process	Pellet Mill #2 Coolers
City	Wiggins, MS	State	MS

Sampling Information

Run Number				Balance Number	1200
Sampling Date				Balance Type	Electronic
Recovery Date				Balance Level	✓
Personnel	TTB JBG			Recovery Area	✓

Location Moisture Data

Run Number	7	8	9
Impinger 1			
Final Weight, grams/mls	719.2	852.1	746.3
Initial Weight, grams/mls	695.2	826.7	719.2
Condensed Water, grams	24.0	25.4	27.1
Impinger 2			
Final Weight, grams/mls	715.4	747.4	717.5
Initial Weight, grams/mls	712.2	744.4	715.4
Condensed Water, grams	3.2	3.0	2.1
Impinger 3			
Final Weight, grams/mls	603.6	598.2	603.8
Initial Weight, grams/mls	599.5	597.8	603.6
Condensed Water, grams	4.1	0.4	0.2
Condensed Water, grams			
Silica Gel			
Final Weight, grams	827.9	814.6	830.9
Initial Weight, grams	824.0	809.9	827.9
Adsorbed Water, grams	3.9	4.7	3.0
Adsorbed Water, grams	—	—	—
Total Water, grams	35.2	33.5	32.4

Vm(std) = Volume of gas sampled at standard conditions (dscf)
Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)
Vwc(std) = volume of water vapor at standard conditions (scf)
Vwc(std) = (0.04707) * (volume of water collected (mls))
Bws = Mole fraction of water vapor
Bws = Vwc(std) / (Vm(std) + Vwc(std))
Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/11/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	200
City, State	WIGGINS, MS	Meterbox ID	909033
Test Location	DRY Hammermill #2	ΔH@	1.917
Personnel	TDB JBG	Gamma (γ)	0.9828

Run Identification M4-10

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1811	0	775.300	80	1.0	N/A	N/A	55	3
1826	15	784.200	80	↓	↓	↓	54	3
1841	30	~~786.77~~ 795,100	80				54	3
1856 ~~1846~~	45	800.71	81				55	3
1911 ~~1861~~	60	808.719						

Run Identification M4-11

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1935	0 0	809.400	79	1.0	N/A	N/A	57	3
1950	15 15	817.9	78	↓	↓	↓	55	3
2005	30 30	826.5	79				56	3
2020	45 45	835.3	79				56	3
2035	60 60	843.849						

Run Identification M4-12

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
2048	0	843.500	78	1.0	N/A	N/A	57	3
2103	15	852.17	78	↓	↓	↓	57	3
2118	30	860.25	79				57	3
2133	45	868.82	78				56	3
2148	60	877.176						

32.4
~~33.5~~

Method 4 - Air Control Techniques, P.C.

Date

Identification Information

Client	ENVIVA	Job	1911
Plant Name	Wiggins	Process	DRY Hammermill #2
City	Wiggins	State	MS

Sampling Information

Run Number				Balance Number	V1200
Sampling Date				Balance Type	Electronic
Recovery Date				Balance Level	✓
Personnel	TTB JBG			Recovery Area	✓

Location Moisture Data

Run Number	10	11	12
Impinger 1			
Final Weight, grams/mls	875.7	770.2	898.8
Initial Weight, grams/mls	852.1	746.3	875.7
Condensed Water, grams	23.6	23.9	23.1
Impinger 2			
Final Weight, grams/mls	749.9	720.5	752.8
Initial Weight, grams/mls	747.4	717.5	749.9
Condensed Water, grams	2.5	3.0	2.9
Impinger 3			
Final Weight, grams/mls	598.4	604.4	598.8
Initial Weight, grams/mls	598.2	603.8	598.4
Condensed Water, grams	0.2	0.6	0.4
Condensed Water, grams			
Silica Gel			
Final Weight, grams	818.5	833.4	822.3
Initial Weight, grams	814.6	830.9	818.5
Adsorbed Water, grams	3.9	2.5	3.8
Adsorbed Water, grams	—	—	—
Total Water, grams	30.2	30.0	30.2

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/12/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	200
City, State	Wiggins MS	Meterbox ID	909033
Test Location	Pellet Mill #1 Cooler	ΔH@	1.917
Personnel	TMB JBG	Gamma (γ)	0.9828

Run Identification M4-13

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	8

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
858	0	877.400	67	1.0	N/A	N/A	52	3
913	15	886.03	70				55	3
928	30	895.1	73				56	3
943	45	903.1	77				58	3
958	60	911.268						

Run Identification M4-14

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1022	0	911.500	74	1.0	N/A	N/A	59	3
1037	15	920.39	82				60	3
10:52	30	929.10	86				54	3
11:07	45	938.32	88				55	3
11:22	60	947.345						

Run Identification M4-15

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	11
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1141	0	947.600	89	1.0	N/A	N/A	56	3
1156	15	956.32	89				60	3
1211	30	964.92	89				60	3
1226	45	973.55	89				61	3
1241	60	982.167						

Method 4 - Air Control Techniques, P.C.

Date

Identification Information

Client	Enviva	Job	1911
Plant Name	Wiggins	Process	Pellet Cooler #1
City	Wiggins	State	MS

Sampling Information

Run Number				Balance Number	
Sampling Date				Balance Type	
Recovery Date				Balance Level	
Personnel	TTB JBG			Recovery Area	

Location Moisture Data

Run Number	13	14	15
Impinger 1			
Final Weight, grams/mls	748.2	787.3	765.0
Initial Weight, grams/mls	728.1	763.4	748.2
Condensed Water, grams	20.1	23.9	16.8
Impinger 2			
Final Weight, grams/mls	722.1	754.0	722.9
Initial Weight, grams/mls	720.5	752.8	722.1
Condensed Water, grams	1.6	1.2	0.8
Impinger 3			
Final Weight, grams/mls	604.4	598.6	604.9
Initial Weight, grams/mls	604.4	598.8	604.4
Condensed Water, grams	0.0	-0.2	0.5
Condensed Water, grams			
Silica Gel			
Final Weight, grams	836.0	825.2	837.9
Initial Weight, grams	833.4	822.3	836.0
Adsorbed Water, grams	2.6	2.9	1.9
Adsorbed Water, grams	—	—	—
Total Water, grams	24.3	27.8	19.9

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Method 4 - Air Control Techniques, P.C.

Date

Identification Information

Client	ENVIVA	Job	1911
Plant Name	Wiggins	Process	ASPIRATOR
City	Wiggins	State	MS

Sampling Information

Run Number				Balance Number	
Sampling Date				Balance Type	
Recovery Date				Balance Level	
Personnel	JTB JBG			Recovery Area	

Location Moisture Data

Run Number	16	17	18
Impinger 1			
Final Weight, grams/mls	914.9	958.8	946.7
Initial Weight, grams/mls	787.3	760.0	743.8
Condensed Water, grams	127.6	198.8	202.9
Impinger 2			
Final Weight, grams/mls	877.1	790.3	814.9
Initial Weight, grams/mls	754.0	722.9	746.0
Condensed Water, grams	123.1	67.4	68.9
Impinger 3			
Final Weight, grams/mls	599.7	605.0	600.3
Initial Weight, grams/mls	598.6	604.9	599.7
Condensed Water, grams	1.1	0.1	0.6
Condensed Water, grams			
Silica Gel			
Final Weight, grams	830.2	841.2	832.2
Initial Weight, grams	825.2	837.9	830.2
Adsorbed Water, grams	5.0	3.3	2.0
Adsorbed Water, grams	—	—	—
Total Water, grams	256.8	269.6	274.4

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

24.7

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Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/12/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	30
City, State	Wiggins, MS	Meterbox ID	99033
Test Location	Pellet Mill Aspirator	ΔH@	1.917
Personnel	TMB JBG	Gamma (γ)	0.9828

Run Identification M4-16

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1509	0	982.400	83	1.0	N/A	N/A	54	3
1524	15	989.81	85				60	3
1539	30	998.62	86				62	3
1554	45	1007.31	86				65	3
1609	60	1015.641						

Run Identification M4-17

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	11

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1636	0	16.000	85	1.0	N/A	N/A	56	3
1651	15	24.21	84				65	3
1706	30	32.27	85				57	3
1721	45	40.18	85				61	3
1736	60	48.149						

Run Identification M4-18

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	8

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1800	0	48.300	84	1.0	N/A	N/A	57	3
1815	15	57.41	82				51	3
1830	30	66.20	81				52	3
1845	45	74.55	80				52	3
1900	60	82.708						

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/13/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENIVA	Umbilical ID	200
City, State	Wiggins, MS	Meterbox ID	981033
Test Location	DRYER #2	ΔH@	1.917
Personnel	JJB JBG	Gamma (γ)	0.9828

Run Identification M4-19

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	15
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
921	0	82.900	72	1.0	N/A	N/A	56	3
936	15	90.93	76				58	3
951	30	99.15	79				59	3
1006	45	106.85	83				60	3
1021	60	114.788						

Run Identification M4-20

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	12

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1104	0	115.000	88	1.0	N/A	N/A	57	3
1119	15	123.65	89				61	3
1134	30	131.96	90				61	3
1149	45	140.32	91				56	3
1204	60	148.650						

Run Identification M4-21

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check		< 0.02 or 4%	

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1231	0	149.200	89	1.0	N/A	N/A	51	3
1301	15	157.72	90				58	4
1316	30	165.39	91				60	7
1346 1331	45	172.82	91				59	10
1346	60	179.996						

off 1238 upset condition
ON 1252

29.85
15224

Method 4 - Air Control Techniques, P.C.

Date 10/13/13

Identification Information

Client	ENVIVA	Job	1911
Plant Name	Wiggins	Process	DRYER #2
City	Wiggins	State	MS

Sampling Information

Run Number			
Sampling Date			
Recovery Date			
Personnel			

Balance Number	V1200
Balance Type	Electronic
Balance Level	✓
Recovery Area	✓

Location Moisture Data

Run Number	19	20	21
Impinger 1			
Final Weight, grams/mls	970.0	908.2	922.2
Initial Weight, grams/mls	749.2	748.2	681.2
Condensed Water, grams	220.8	160	241.0
Impinger 2			
Final Weight, grams/mls	829.0	800.3	687.8
Initial Weight, grams/mls	790.3	680.0	674.0
Condensed Water, grams	38.7	120.3	13.8
Impinger 3			
Final Weight, grams/mls	609.3	~~[illegible]~~ 603.1	612.5
Initial Weight, grams/mls	605.0	600.4	609.3
Condensed Water, grams	4.3	2.7	3.2
Condensed Water, grams			
Silica Gel			
Final Weight, grams	845.1	835.7	847.1
Initial Weight, grams	841.2	832.2	845.1
Adsorbed Water, grams	3.9	3.5	2.0
Adsorbed Water, grams			
Total Water, grams	267.7	286.5	260.0

Vm(std) = Volume of gas sampled at standard conditions (dscf)
Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)
Vwc(std) = volume of water vapor at standard conditions (scf)
Vwc(std) = (0.04707) * (volume of water collected (mls))
Bws = Mole fraction of water vapor
Bws = Vwc(std) / (Vm(std) + Vwc(std))
Percent Moisture = 100 * Bws

APPENDIX B

Method 25A Data

Test Run 1 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC ppm
Start Averaging		
10/10/2013	10:17:27	29.2
10/10/2013	10:18:26	29.1
10/10/2013	10:19:26	29.4
10/10/2013	10:20:26	28.5
10/10/2013	10:21:26	29.2
10/10/2013	10:22:27	29.8
10/10/2013	10:23:27	30.5
10/10/2013	10:24:27	31.5
10/10/2013	10:25:27	30.8
10/10/2013	10:26:26	29.3
10/10/2013	10:27:26	29.3
10/10/2013	10:28:26	28.9
10/10/2013	10:29:27	29.5
10/10/2013	10:30:27	31.4
10/10/2013	10:31:27	31.1
10/10/2013	10:32:26	31.3
10/10/2013	10:33:26	31.2
10/10/2013	10:34:26	30.4
10/10/2013	10:35:27	30.4
10/10/2013	10:36:27	30.1
10/10/2013	10:37:27	29.7
10/10/2013	10:38:27	30.2
10/10/2013	10:39:26	29.2
10/10/2013	10:40:26	30.1
10/10/2013	10:41:26	30.3
10/10/2013	10:42:26	29.1
10/10/2013	10:43:27	29.5
10/10/2013	10:44:27	30.6
10/10/2013	10:45:27	29.7
10/10/2013	10:46:25	31
10/10/2013	10:47:26	30.1
10/10/2013	10:48:26	30.7
10/10/2013	10:49:26	31.6
10/10/2013	10:50:27	31.6
10/10/2013	10:51:27	32.3
10/10/2013	10:52:27	31.4
10/10/2013	10:53:27	30.4
10/10/2013	10:54:26	31.9
10/10/2013	10:55:26	31.8
10/10/2013	10:56:26	33.1
10/10/2013	10:57:26	32.8
10/10/2013	10:58:27	31.8
10/10/2013	10:59:27	32.5
10/10/2013	11:00:27	32.8
10/10/2013	11:01:26	30.2

10/10/2013	11:02:26	31.2
10/10/2013	11:03:26	30.7
10/10/2013	11:04:26	31.2
10/10/2013	11:05:27	32.7
10/10/2013	11:06:27	31.6
10/10/2013	11:07:27	31.2
10/10/2013	11:08:25	32.5
10/10/2013	11:09:26	31
10/10/2013	11:10:26	30.8
10/10/2013	11:11:26	28.9
10/10/2013	11:12:26	30.9
10/10/2013	11:13:27	31.9
10/10/2013	11:14:27	32.1
10/10/2013	11:15:27	32.6
10/10/2013	11:16:26	34
Average	1807 samp	30.8
Test Run 1 End		

Test Run 2 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/10/2013	10:37:12	33.22
10/10/2013	10:38:13	32.73
10/10/2013	10:39:13	33.22
10/10/2013	10:40:13	33.21
10/10/2013	10:41:13	31.78
10/10/2013	10:42:14	29.83
10/10/2013	10:43:14	31.37
10/10/2013	10:44:12	31.5
10/10/2013	10:45:13	33.24
10/10/2013	10:46:13	32.96
10/10/2013	10:47:13	32.52
10/10/2013	10:48:13	32.17
10/10/2013	10:49:14	31.8
10/10/2013	10:50:14	30.68
10/10/2013	10:51:12	29.76
10/10/2013	10:52:12	31.03
10/10/2013	10:53:13	31.9
10/10/2013	10:54:13	32.57
10/10/2013	10:55:13	32.4
10/10/2013	10:56:14	32.68
10/10/2013	10:57:14	33.18
10/10/2013	10:58:12	33.26
10/10/2013	10:59:12	32.76
10/10/2013	11:00:13	31.1
10/10/2013	11:01:12	30.85
10/10/2013	11:02:14	30.84
10/10/2013	11:03:13	30.27
10/10/2013	11:04:12	30.6
10/10/2013	11:05:14	32.18
10/10/2013	11:06:13	30.96
10/10/2013	11:07:12	31.41
10/10/2013	11:08:12	30.82
10/10/2013	11:09:13	31.24
10/10/2013	11:10:13	31.94
10/10/2013	11:11:14	31.25
10/10/2013	11:12:13	30.81
10/10/2013	11:13:12	32.84
10/10/2013	11:14:12	32.11
10/10/2013	11:15:14	32.71
10/10/2013	11:16:13	32.57
10/10/2013	11:17:12	33.7
10/10/2013	11:18:14	33.87
10/10/2013	11:19:13	32.8
10/10/2013	11:20:13	31.93
10/10/2013	11:21:14	33.89

10/10/2013	11:22:13	33.12
10/10/2013	11:23:13	32.56
10/10/2013	11:24:14	32.31
10/10/2013	11:25:13	33.49
10/10/2013	11:26:12	34.83
10/10/2013	11:27:14	34.8
10/10/2013	11:28:13	33.96
10/10/2013	11:29:13	33.5
10/10/2013	11:30:14	34.21
10/10/2013	11:31:13	32.7
10/10/2013	11:32:13	31.67
10/10/2013	11:33:12	31.32
10/10/2013	11:34:13	31.95
10/10/2013	11:35:13	31.59
10/10/2013	11:36:14	31.24
10/10/2013	11:37:13	32.88

Test Run 3 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/10/2013	11:51:37	27.47
10/10/2013	11:52:37	25.81
10/10/2013	11:53:37	25.62
10/10/2013	11:54:38	26.13
10/10/2013	11:55:36	27.21
10/10/2013	11:56:36	27.54
10/10/2013	11:57:36	27.06
10/10/2013	11:58:37	27.89
10/10/2013	11:59:37	27.66
10/10/2013	12:00:37	26.76
10/10/2013	12:01:38	26.92
10/10/2013	12:02:38	26.42
10/10/2013	12:03:36	25.01
10/10/2013	12:04:36	25.47
10/10/2013	12:05:37	25.98
10/10/2013	12:06:37	26.95
10/10/2013	12:07:37	27.79
10/10/2013	12:08:37	26.71
10/10/2013	12:09:38	27.38
10/10/2013	12:10:38	27.84
10/10/2013	12:11:36	25.99
10/10/2013	12:12:36	25.7
10/10/2013	12:13:37	24.64
10/10/2013	12:14:37	25.2
10/10/2013	12:15:37	25.22
10/10/2013	12:16:37	24.65
10/10/2013	12:17:38	24.05
10/10/2013	12:18:36	23.8
10/10/2013	12:19:36	22.94
10/10/2013	12:20:36	23.17
10/10/2013	12:21:37	24.1
10/10/2013	12:22:37	25.63
10/10/2013	12:23:37	26.37
10/10/2013	12:24:37	26.85
10/10/2013	12:25:38	26.02
10/10/2013	12:26:36	25.65
10/10/2013	12:27:36	25.72
10/10/2013	12:28:37	27.03
10/10/2013	12:29:37	26.23
10/10/2013	12:30:37	25.87
10/10/2013	12:31:37	25.97
10/10/2013	12:32:38	25.53
10/10/2013	12:33:38	25.25
10/10/2013	12:34:36	26.76
10/10/2013	12:35:36	27.16

10/10/2013	12:36:37	27.29
10/10/2013	12:37:37	27.02
10/10/2013	12:38:37	27.31
10/10/2013	12:39:37	28.11
10/10/2013	12:40:38	28.86
10/10/2013	12:41:36	28.19
10/10/2013	12:42:36	27.22
10/10/2013	12:43:37	27.74
10/10/2013	12:44:37	28.08
10/10/2013	12:45:37	26.91
10/10/2013	12:46:38	26.97
10/10/2013	12:47:38	27.99
10/10/2013	12:48:36	27.63
10/10/2013	12:49:36	26.3
10/10/2013	12:50:37	25.95
Average	1802 samp	26.38
Test Run 3 End		

Test Run 4 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/10/2013	17:39:30	73.6
10/10/2013	17:40:31	73.7
10/10/2013	17:41:31	74.2
10/10/2013	17:42:31	74.3
10/10/2013	17:43:31	74.4
10/10/2013	17:44:32	74.6
10/10/2013	17:45:32	75.3
10/10/2013	17:46:32	75.7
10/10/2013	17:47:30	75.7
10/10/2013	17:48:31	75.6
10/10/2013	17:49:31	75
10/10/2013	17:50:31	74.2
10/10/2013	17:51:31	72.5
10/10/2013	17:52:32	71.5
10/10/2013	17:53:32	70.7
10/10/2013	17:54:30	70
10/10/2013	17:55:30	69.3
10/10/2013	17:56:31	68.6
10/10/2013	17:57:31	68
10/10/2013	17:58:31	67.7
10/10/2013	17:59:32	67.1
10/10/2013	18:00:32	66.8
10/10/2013	18:01:30	66.4
10/10/2013	18:02:30	66
10/10/2013	18:03:31	65
10/10/2013	18:04:31	64.5
10/10/2013	18:05:31	64.3
10/10/2013	18:06:31	64.1
10/10/2013	18:07:32	64.8
10/10/2013	18:08:32	65.5
10/10/2013	18:09:30	65.6
10/10/2013	18:10:31	65.7
10/10/2013	18:11:31	65.8
10/10/2013	18:12:31	65.8
10/10/2013	18:13:31	66.6
10/10/2013	18:14:32	66.7
10/10/2013	18:15:32	67
10/10/2013	18:16:30	67
10/10/2013	18:17:30	66.2
10/10/2013	18:18:31	65.5
10/10/2013	18:19:31	65
10/10/2013	18:20:31	64.5
10/10/2013	18:21:32	63.4
10/10/2013	18:22:32	62.8
10/10/2013	18:23:30	62.2

10/10/2013	18:24:30	62
10/10/2013	18:25:31	62.2
10/10/2013	18:26:31	62.2
10/10/2013	18:27:31	62.6
10/10/2013	18:28:31	62.4
10/10/2013	18:29:32	61.7
10/10/2013	18:30:32	61.8
10/10/2013	18:31:30	61.4
10/10/2013	18:32:30	61.5
10/10/2013	18:33:31	61.3
10/10/2013	18:34:31	61.3
10/10/2013	18:35:31	61.1
10/10/2013	18:36:31	61.3
10/10/2013	18:37:32	60.8
10/10/2013	18:38:30	60.2
10/10/2013	18:39:30	60.4
Average	1837 samp	66.7
Test Run 4 End		

Test Run 5 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/11/2013	10:00:39	59.48
10/11/2013	10:01:40	59.35
10/11/2013	10:02:40	59.64
10/11/2013	10:03:40	59.19
10/11/2013	10:04:40	59.7
10/11/2013	10:05:41	60.45
10/11/2013	10:06:41	60.54
10/11/2013	10:07:41	60.86
10/11/2013	10:08:40	61.28
10/11/2013	10:09:40	62.22
10/11/2013	10:10:40	62.62
10/11/2013	10:11:40	62.46
10/11/2013	10:12:40	62.22
10/11/2013	10:13:41	61.96
10/11/2013	10:14:41	61.71
10/11/2013	10:15:39	61.79
10/11/2013	10:16:40	61.65
10/11/2013	10:17:40	61.76
10/11/2013	10:18:40	61.82
10/11/2013	10:19:40	61.41
10/11/2013	10:20:41	60.91
10/11/2013	10:21:41	60.34
10/11/2013	10:22:41	60.35
10/11/2013	10:23:39	60.17
10/11/2013	10:24:40	60.48
10/11/2013	10:25:40	60.31
10/11/2013	10:26:40	60.03
10/11/2013	10:27:40	60.26
10/11/2013	10:28:41	60.17
10/11/2013	10:29:41	59.83
10/11/2013	10:30:41	59.58
10/11/2013	10:31:40	60.56
10/11/2013	10:32:40	60.96
10/11/2013	10:33:40	60.79
10/11/2013	10:34:40	61.26
10/11/2013	10:35:41	61.22
10/11/2013	10:36:41	61.09
10/11/2013	10:37:41	61.12
10/11/2013	10:38:39	61.86
10/11/2013	10:39:40	62.32
10/11/2013	10:40:40	62.49
10/11/2013	10:41:40	62.15
10/11/2013	10:42:41	62.22
10/11/2013	10:43:41	62.04
10/11/2013	10:44:41	61.73

10/11/2013	10:45:41	60.99
10/11/2013	10:46:40	61.3
10/11/2013	10:47:40	61.17
10/11/2013	10:48:40	62.35
10/11/2013	10:49:40	63.58
10/11/2013	10:50:41	63.57
10/11/2013	10:51:41	65.12
10/11/2013	10:52:41	67.32
10/11/2013	10:53:39	67.58
10/11/2013	10:54:40	67.4
10/11/2013	10:55:40	66.77
10/11/2013	10:56:40	66
10/11/2013	10:57:40	65.74
10/11/2013	10:58:41	64.85
10/11/2013	10:59:41	64.09
Average	1810 samp	61.92
Test Run 5 End		

Test Run 6 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC ppm
Start Averaging		
10/11/2013	11:37:39	62.85
10/11/2013	11:38:39	63.21
10/11/2013	11:39:40	63.49
10/11/2013	11:40:38	63.72
10/11/2013	11:41:38	64.5
10/11/2013	11:42:38	65.32
10/11/2013	11:43:39	66.16
10/11/2013	11:44:39	66.6
10/11/2013	11:45:39	66.81
10/11/2013	11:46:40	66.6
10/11/2013	11:47:38	64.85
10/11/2013	11:48:38	62.59
10/11/2013	11:49:38	60.21
10/11/2013	11:50:38	58.27
10/11/2013	11:51:39	56.95
10/11/2013	11:52:39	55.02
10/11/2013	11:53:39	53.86
10/11/2013	11:54:39	52.91
10/11/2013	11:55:40	52.4
10/11/2013	11:56:38	52.38
10/11/2013	11:57:38	52.86
10/11/2013	11:58:39	53.87
10/11/2013	11:59:39	54.56
10/11/2013	12:00:39	53.55
10/11/2013	12:01:39	52.72
10/11/2013	12:02:39	52.05
10/11/2013	12:03:40	51.53
10/11/2013	12:04:38	51.4
10/11/2013	12:05:38	52.07
10/11/2013	12:06:38	52.86
10/11/2013	12:07:39	53.12
10/11/2013	12:08:39	53.31
10/11/2013	12:09:39	52.77
10/11/2013	12:10:40	51.76
10/11/2013	12:11:40	51.02
10/11/2013	12:12:38	51.05
10/11/2013	12:13:38	52.13
10/11/2013	12:14:39	52.93
10/11/2013	12:15:39	53.34
10/11/2013	12:16:39	53.7
10/11/2013	12:17:39	53.91
10/11/2013	12:18:40	54.85
10/11/2013	12:19:38	55.39
10/11/2013	12:20:38	55.82
10/11/2013	12:21:38	55.66

10/11/2013	12:22:39	55.8
10/11/2013	12:23:39	56.58
10/11/2013	12:24:39	57.45
10/11/2013	12:25:40	58.57
10/11/2013	12:26:40	59.56
10/11/2013	12:27:38	60.26
10/11/2013	12:28:38	60.52
10/11/2013	12:29:39	60.23
10/11/2013	12:30:39	59.97
10/11/2013	12:31:39	59.98
10/11/2013	12:32:39	58.38
10/11/2013	12:33:40	57.52
10/11/2013	12:34:38	58.26
10/11/2013	12:35:38	59.53
10/11/2013	12:36:38	60.41
Average	1796 samp	57.17
Test Run 6 End		

Test Run 7 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC ppm
Start Averaging		
10/11/2013	13:43:41	29.28
10/11/2013	13:44:42	27.18
10/11/2013	13:45:42	25.85
10/11/2013	13:46:40	24.55
10/11/2013	13:47:40	23.31
10/11/2013	13:48:41	22.64
10/11/2013	13:49:41	22.37
10/11/2013	13:50:41	22.49
10/11/2013	13:51:42	22.37
10/11/2013	13:52:42	22.04
10/11/2013	13:53:40	22.25
10/11/2013	13:54:40	22.98
10/11/2013	13:55:41	22.9
10/11/2013	13:56:41	22.72
10/11/2013	13:57:41	23.05
10/11/2013	13:58:42	23.38
10/11/2013	13:59:42	23.44
10/11/2013	14:00:40	24.2
10/11/2013	14:01:40	24.19
10/11/2013	14:02:41	23.32
10/11/2013	14:03:41	22.78
10/11/2013	14:04:41	22.4
10/11/2013	14:05:41	22.24
10/11/2013	14:06:42	22.53
10/11/2013	14:07:40	22.54
10/11/2013	14:08:40	22
10/11/2013	14:09:40	21.36
10/11/2013	14:10:41	20.81
10/11/2013	14:11:41	20.6
10/11/2013	14:12:41	20.52
10/11/2013	14:13:41	20.67
10/11/2013	14:14:42	21.18
10/11/2013	14:15:40	22.48
10/11/2013	14:16:40	23.46
10/11/2013	14:17:41	23.6
10/11/2013	14:18:41	24.02
10/11/2013	14:19:41	24.31
10/11/2013	14:20:41	24.25
10/11/2013	14:21:42	24.44
10/11/2013	14:22:42	24.59
10/11/2013	14:23:40	24.59
10/11/2013	14:24:40	25.03
10/11/2013	14:25:40	25.21
10/11/2013	14:26:41	25.16
10/11/2013	14:27:41	25.61

10/11/2013	14:28:41	25.91
10/11/2013	14:29:42	24.74
10/11/2013	14:30:42	24.82
10/11/2013	14:31:40	24.18
10/11/2013	14:32:40	23.94
10/11/2013	14:33:41	24.63
10/11/2013	14:34:41	25.19
10/11/2013	14:35:41	25.92
10/11/2013	14:36:41	26.43
10/11/2013	14:37:42	25.26
10/11/2013	14:38:42	24.93
10/11/2013	14:39:40	25.61
10/11/2013	14:40:40	25.25
10/11/2013	14:41:41	24.92
10/11/2013	14:42:41	24.81
Average	1795 samp	23.8
Test Run 7 End		

Test Run 8 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/11/2013	15:08:58	20.89
10/11/2013	15:09:58	21.18
10/11/2013	15:10:56	21.36
10/11/2013	15:11:57	21.39
10/11/2013	15:12:57	21.49
10/11/2013	15:13:57	21.51
10/11/2013	15:14:58	21.66
10/11/2013	15:15:58	21.02
10/11/2013	15:16:58	20.12
10/11/2013	15:17:56	19.71
10/11/2013	15:18:57	19.67
10/11/2013	15:19:57	19.07
10/11/2013	15:20:57	19.24
10/11/2013	15:21:57	19.85
10/11/2013	15:22:58	20.21
10/11/2013	15:23:58	20.9
10/11/2013	15:24:56	21.72
10/11/2013	15:25:57	22.45
10/11/2013	15:26:57	23.3
10/11/2013	15:27:57	23.07
10/11/2013	15:28:57	22.47
10/11/2013	15:29:58	22.24
10/11/2013	15:30:58	22.14
10/11/2013	15:31:58	21.87
10/11/2013	15:32:56	22.09
10/11/2013	15:33:57	22.17
10/11/2013	15:34:57	22.55
10/11/2013	15:35:57	22.32
10/11/2013	15:36:57	21.72
10/11/2013	15:37:58	21.14
10/11/2013	15:38:58	21.1
10/11/2013	15:39:58	21.29
10/11/2013	15:40:56	21.44
10/11/2013	15:41:57	21.58
10/11/2013	15:42:57	22.64
10/11/2013	15:43:57	22.48
10/11/2013	15:44:57	22.65
10/11/2013	15:45:58	22.37
10/11/2013	15:46:58	22.73
10/11/2013	15:47:56	22.8
10/11/2013	15:48:57	22.34
10/11/2013	15:49:57	21.76
10/11/2013	15:50:57	21.83
10/11/2013	15:51:57	22.04
10/11/2013	15:52:58	22.15

10/11/2013	15:53:58	22.07
10/11/2013	15:54:58	22.66
10/11/2013	15:55:58	22.99
10/11/2013	15:56:57	22.84
10/11/2013	15:57:57	22.83
10/11/2013	15:58:57	22.2
10/11/2013	15:59:58	21.03
10/11/2013	16:00:58	19.77
10/11/2013	16:01:58	18.88
10/11/2013	16:02:56	18.32
10/11/2013	16:03:57	17.86
10/11/2013	16:04:57	18.62
10/11/2013	16:05:57	18.41
10/11/2013	16:06:57	18.6
10/11/2013	16:07:58	19.1
Average	1796 samp	21.29
Test Run 8 End		

Test Run 9 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/11/2013	16:29:59	22.84
10/11/2013	16:30:59	21.54
10/11/2013	16:31:59	21.11
10/11/2013	16:33:00	21.4
10/11/2013	16:34:00	21.21
10/11/2013	16:35:00	21.39
10/11/2013	16:36:00	21.79
10/11/2013	16:36:59	23.24
10/11/2013	16:37:59	23.79
10/11/2013	16:38:59	24.8
10/11/2013	16:39:59	25.11
10/11/2013	16:41:00	26.01
10/11/2013	16:42:00	28.05
10/11/2013	16:43:00	29.59
10/11/2013	16:44:00	29.65
10/11/2013	16:44:59	29.74
10/11/2013	16:45:59	29.86
10/11/2013	16:46:59	33.48
10/11/2013	16:48:00	32.59
10/11/2013	16:49:00	28.94
10/11/2013	16:49:59	26.37
10/11/2013	16:50:59	25.7
10/11/2013	16:51:59	24.69
10/11/2013	16:53:00	24.55
10/11/2013	16:54:00	24.78
10/11/2013	16:55:00	25.37
10/11/2013	16:55:59	26.6
10/11/2013	16:56:59	27.42
10/11/2013	16:57:59	26.35
10/11/2013	16:58:59	25.6
10/11/2013	17:00:00	25.52
10/11/2013	17:01:00	25.32
10/11/2013	17:02:00	24.67
10/11/2013	17:03:00	24.39
10/11/2013	17:04:01	24.2
10/11/2013	17:04:59	23.43
10/11/2013	17:05:59	22.29
10/11/2013	17:06:59	21.55
10/11/2013	17:08:00	21.18
10/11/2013	17:09:00	21.33
10/11/2013	17:10:00	21.67
10/11/2013	17:10:59	21.91
10/11/2013	17:11:59	22.59
10/11/2013	17:12:59	22.87
10/11/2013	17:14:00	23.27

10/11/2013	17:15:00	23.85
10/11/2013	17:16:00	23.83
10/11/2013	17:17:00	23.05
10/11/2013	17:17:59	23.11
10/11/2013	17:18:59	23.12
10/11/2013	17:19:59	24.45
10/11/2013	17:21:00	24.59
10/11/2013	17:22:00	24.41
10/11/2013	17:23:00	24.36
10/11/2013	17:24:00	25.25
10/11/2013	17:24:59	25.58
10/11/2013	17:25:59	26.03
10/11/2013	17:26:59	26.29
10/11/2013	17:27:59	26.55
10/11/2013	17:29:00	26.07
10/11/2013	17:30:00	25.36
10/11/2013	17:31:00	24.68
10/11/2013	17:32:00	24.5
10/11/2013	17:32:59	24.26
10/11/2013	17:33:59	24.15
Average	1951 samp	24.82

Test Run 9 End

Test Run 10 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/11/2013	18:11:17	29.88
10/11/2013	18:12:18	33.18
10/11/2013	18:13:18	31
10/11/2013	18:14:18	22.29
10/11/2013	18:15:18	19.06
10/11/2013	18:16:19	19
10/11/2013	18:17:19	21.06
10/11/2013	18:18:19	23.21
10/11/2013	18:19:17	22.71
10/11/2013	18:20:18	23.92
10/11/2013	18:21:18	23.38
10/11/2013	18:22:18	22.46
10/11/2013	18:23:19	23.73
10/11/2013	18:24:19	27.16
10/11/2013	18:25:19	28.89
10/11/2013	18:26:17	27.17
10/11/2013	18:27:18	22.65
10/11/2013	18:28:18	22.36
10/11/2013	18:29:18	23.07
10/11/2013	18:30:18	23.39
10/11/2013	18:31:19	21.74
10/11/2013	18:32:19	21
10/11/2013	18:33:19	21.29
10/11/2013	18:34:17	20.98
10/11/2013	18:35:18	18.39
10/11/2013	18:36:18	18.16
10/11/2013	18:37:18	18.91
10/11/2013	18:38:19	19.32
10/11/2013	18:39:19	21.57
10/11/2013	18:40:19	25.3
10/11/2013	18:41:17	31.9
10/11/2013	18:42:18	38.29
10/11/2013	18:43:18	33.17
10/11/2013	18:44:18	31.99
10/11/2013	18:45:19	25.13
10/11/2013	18:46:19	21.93
10/11/2013	18:47:19	19.45
10/11/2013	18:48:19	19.52
10/11/2013	18:49:18	18.88
10/11/2013	18:50:18	20.12
10/11/2013	18:51:18	20.89
10/11/2013	18:52:18	21.09
10/11/2013	18:53:19	21.01
10/11/2013	18:54:19	19.4
10/11/2013	18:55:17	19.85

10/11/2013	18:56:18	24.65
10/11/2013	18:57:18	24.98
10/11/2013	18:58:18	22.99
10/11/2013	18:59:18	23.31
10/11/2013	19:00:19	25.22
10/11/2013	19:01:19	25.84
10/11/2013	19:02:19	27.93
10/11/2013	19:03:17	30.86
10/11/2013	19:04:18	37.73
10/11/2013	19:05:18	41.49
10/11/2013	19:06:18	33.42
10/11/2013	19:07:19	28.12
10/11/2013	19:08:19	24.42
10/11/2013	19:09:19	28.47
10/11/2013	19:10:17	32.11
10/11/2013	19:11:18	35.91
10/11/2013	19:12:18	31.9
Average	1881 samp	25.19
Test Run 10 End		

Test Run 11 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/11/2013	19:35:45	16.3
10/11/2013	19:36:45	16.9
10/11/2013	19:37:45	19.2
10/11/2013	19:38:46	19.43
10/11/2013	19:39:46	20.92
10/11/2013	19:40:46	21.44
10/11/2013	19:41:45	23.07
10/11/2013	19:42:45	23.32
10/11/2013	19:43:45	24.41
10/11/2013	19:44:46	25.71
10/11/2013	19:45:46	30.06
10/11/2013	19:46:46	36.61
10/11/2013	19:47:46	35.99
10/11/2013	19:48:46	29.55
10/11/2013	19:49:45	23.62
10/11/2013	19:50:45	23.25
10/11/2013	19:51:45	22.61
10/11/2013	19:52:45	23.8
10/11/2013	19:53:46	21.47
10/11/2013	19:54:46	20.75
10/11/2013	19:55:46	21.14
10/11/2013	19:56:46	22.12
10/11/2013	19:57:45	23.08
10/11/2013	19:58:45	22.57
10/11/2013	19:59:46	25.43
10/11/2013	20:00:46	26.18
10/11/2013	20:01:46	27.36
10/11/2013	20:02:46	26.43
10/11/2013	20:03:45	32.28
10/11/2013	20:04:45	29.23
10/11/2013	20:05:45	34.45
10/11/2013	20:06:45	34.13
10/11/2013	20:07:46	30.96
10/11/2013	20:08:46	30.2
10/11/2013	20:09:46	32.75
10/11/2013	20:10:47	36.19
10/11/2013	20:11:45	38.78
10/11/2013	20:12:45	37.58
10/11/2013	20:13:45	34.83
10/11/2013	20:14:46	30.77
10/11/2013	20:15:46	30.88
10/11/2013	20:16:46	31.74
10/11/2013	20:17:46	34.53
10/11/2013	20:18:45	42.51
10/11/2013	20:19:45	44.65

10/11/2013	20:20:45	35.45
10/11/2013	20:21:46	25.21
10/11/2013	20:22:46	23.77
10/11/2013	20:23:46	28.87
10/11/2013	20:24:46	36.75
10/11/2013	20:25:45	45.05
10/11/2013	20:26:45	45.64
10/11/2013	20:27:45	41.52
10/11/2013	20:28:45	35.53
10/11/2013	20:29:46	33.91
10/11/2013	20:30:46	34.59
10/11/2013	20:31:46	29.84
10/11/2013	20:32:46	31.48
10/11/2013	20:33:45	39.63
10/11/2013	20:34:45	36.38
Average	1794 samp	29.72
Test Run 11 End		

Test Run 12 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/11/2013	20:49:06	22.17
10/11/2013	20:50:04	21.67
10/11/2013	20:51:04	23.4
10/11/2013	20:52:05	24.29
10/11/2013	20:53:05	25.04
10/11/2013	20:54:05	26.33
10/11/2013	20:55:05	26.92
10/11/2013	20:56:06	25.87
10/11/2013	20:57:06	25.72
10/11/2013	20:58:04	25.14
10/11/2013	20:59:04	25.52
10/11/2013	21:00:05	25.37
10/11/2013	21:01:05	25.64
10/11/2013	21:02:05	26.15
10/11/2013	21:03:05	26.08
10/11/2013	21:04:06	24.52
10/11/2013	21:05:04	25.79
10/11/2013	21:06:04	26.55
10/11/2013	21:07:04	27.79
10/11/2013	21:08:05	28.72
10/11/2013	21:09:05	27.24
10/11/2013	21:10:05	30.06
10/11/2013	21:11:05	33.03
10/11/2013	21:12:06	28.99
10/11/2013	21:13:04	20.95
10/11/2013	21:14:04	19.34
10/11/2013	21:15:05	19.67
10/11/2013	21:16:05	21.55
10/11/2013	21:17:05	26.17
10/11/2013	21:18:05	34.11
10/11/2013	21:19:06	29.02
10/11/2013	21:20:06	23.47
10/11/2013	21:21:04	18.29
10/11/2013	21:22:04	20.47
10/11/2013	21:23:05	20.63
10/11/2013	21:24:05	18.82
10/11/2013	21:25:05	18.74
10/11/2013	21:26:06	17.07
10/11/2013	21:27:04	17.1
10/11/2013	21:28:04	18.57
10/11/2013	21:29:05	22.44
10/11/2013	21:30:05	23.51
10/11/2013	21:31:05	23.1
10/11/2013	21:32:05	23.66
10/11/2013	21:33:05	26.36

10/11/2013	21:34:06	29.16
10/11/2013	21:35:04	30.42
10/11/2013	21:36:04	24.58
10/11/2013	21:37:05	22.02
10/11/2013	21:38:05	21.27
10/11/2013	21:39:05	22.01
10/11/2013	21:40:05	21.7
10/11/2013	21:41:06	25.89
10/11/2013	21:42:06	27.16
10/11/2013	21:43:04	26.97
10/11/2013	21:44:04	27.62
10/11/2013	21:45:04	25.38
10/11/2013	21:46:05	22.73
10/11/2013	21:47:05	22.71
10/11/2013	21:48:05	24.06
Average	1802 samp	24.43

Test Run 12 End

Test Run 13 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/12/2013	8:58:20	33.01
10/12/2013	8:59:20	33.09
10/12/2013	9:00:21	33.69
10/12/2013	9:01:21	33.38
10/12/2013	9:02:19	34.58
10/12/2013	9:03:19	34.24
10/12/2013	9:04:20	32.82
10/12/2013	9:05:20	31.76
10/12/2013	9:06:20	31.56
10/12/2013	9:07:20	32.43
10/12/2013	9:08:21	32.07
10/12/2013	9:09:21	33.62
10/12/2013	9:10:21	35.22
10/12/2013	9:11:19	35.73
10/12/2013	9:12:20	36.7
10/12/2013	9:13:20	38.36
10/12/2013	9:14:20	39.65
10/12/2013	9:15:20	36.74
10/12/2013	9:16:21	34.73
10/12/2013	9:17:21	37.06
10/12/2013	9:18:19	39.31
10/12/2013	9:19:19	40.7
10/12/2013	9:20:20	41.32
10/12/2013	9:21:20	42.72
10/12/2013	9:22:20	44.45
10/12/2013	9:23:21	41.77
10/12/2013	9:24:21	41.75
10/12/2013	9:25:19	40.84
10/12/2013	9:26:19	40.01
10/12/2013	9:27:20	39.81
10/12/2013	9:28:20	38.16
10/12/2013	9:29:20	36.14
10/12/2013	9:30:20	33.8
10/12/2013	9:31:21	42.88
10/12/2013	9:32:21	44.68
10/12/2013	9:33:19	48.06
10/12/2013	9:34:19	48.98
10/12/2013	9:35:20	49.89
10/12/2013	9:36:20	50.59
10/12/2013	9:37:20	48.17
10/12/2013	9:38:20	42.62
10/12/2013	9:39:21	41.05
10/12/2013	9:40:21	40.93
10/12/2013	9:41:19	38.08
10/12/2013	9:42:19	36.88

10/12/2013	9:43:20	38.28
10/12/2013	9:44:20	37.83
10/12/2013	9:45:20	38.96
10/12/2013	9:46:20	39.74
10/12/2013	9:47:21	39.65
10/12/2013	9:48:21	38.16
10/12/2013	9:49:19	36.49
10/12/2013	9:50:19	37.79
10/12/2013	9:51:20	38.86
10/12/2013	9:52:20	38.2
10/12/2013	9:53:20	39.36
10/12/2013	9:54:21	42.28
10/12/2013	9:55:21	42.37
10/12/2013	9:56:19	42.48
10/12/2013	9:57:19	42.15
10/12/2013	9:58:20	42.58
Average	1843 samı	39.05
Test Run 13 End		

Test Run 14 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC ppm
Start Averaging		
10/12/2013	10:23:19	38.78
10/12/2013	10:24:19	38.95
10/12/2013	10:25:20	37.38
10/12/2013	10:26:20	35.26
10/12/2013	10:27:20	33.47
10/12/2013	10:28:21	33.54
10/12/2013	10:29:21	35.1
10/12/2013	10:30:19	36.39
10/12/2013	10:31:19	38.16
10/12/2013	10:32:20	37.83
10/12/2013	10:33:20	38.5
10/12/2013	10:34:20	39.8
10/12/2013	10:35:20	41.11
10/12/2013	10:36:20	43.31
10/12/2013	10:37:21	43.12
10/12/2013	10:38:19	41.6
10/12/2013	10:39:19	40.09
10/12/2013	10:40:20	41.76
10/12/2013	10:41:20	37.42
10/12/2013	10:42:20	35.32
10/12/2013	10:43:20	36.85
10/12/2013	10:44:21	37.03
10/12/2013	10:45:21	37.63
10/12/2013	10:46:19	37.23
10/12/2013	10:47:19	36.6
10/12/2013	10:48:20	36.58
10/12/2013	10:49:20	34.3
10/12/2013	10:50:20	32.95
10/12/2013	10:51:20	35.86
10/12/2013	10:52:21	40.36
10/12/2013	10:53:21	41.13
10/12/2013	10:54:19	40.92
10/12/2013	10:55:19	38.94
10/12/2013	10:56:20	35.9
10/12/2013	10:57:20	34.71
10/12/2013	10:58:20	35.12
10/12/2013	10:59:20	38.4
10/12/2013	11:00:21	38.46
10/12/2013	11:01:19	38.96
10/12/2013	11:02:19	39.11
10/12/2013	11:03:20	39.66
10/12/2013	11:04:20	37.43
10/12/2013	11:05:20	32.13
10/12/2013	11:06:20	25.88
10/12/2013	11:07:21	22.76

10/12/2013	11:08:19	20.44
10/12/2013	11:09:19	21.39
10/12/2013	11:10:20	19.1
10/12/2013	11:11:20	20.05
10/12/2013	11:12:20	19.67
10/12/2013	11:13:20	20.48
10/12/2013	11:14:21	23.27
10/12/2013	11:15:21	23.34
10/12/2013	11:16:19	22.56
10/12/2013	11:17:19	20.89
10/12/2013	11:18:20	21.23
10/12/2013	11:19:20	22.61
10/12/2013	11:20:20	24.32
10/12/2013	11:21:20	25.83
10/12/2013	11:22:21	25.38
Average	1802 samp	33.29
Test Run 14 End		

Test Run 15 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/12/2013	11:41:41	42.04
10/12/2013	11:42:42	38.71
10/12/2013	11:43:42	37.78
10/12/2013	11:44:42	33.87
10/12/2013	11:45:42	33.86
10/12/2013	11:46:43	38.57
10/12/2013	11:47:43	38.29
10/12/2013	11:48:41	37.43
10/12/2013	11:49:41	35.42
10/12/2013	11:50:42	35.35
10/12/2013	11:51:42	36.29
10/12/2013	11:52:42	36.18
10/12/2013	11:53:42	39.17
10/12/2013	11:54:43	41.21
10/12/2013	11:55:43	45.09
10/12/2013	11:56:41	44.99
10/12/2013	11:57:42	42.66
10/12/2013	11:58:42	41.22
10/12/2013	11:59:42	40.64
10/12/2013	12:00:42	41.76
10/12/2013	12:01:43	41.25
10/12/2013	12:02:43	40.48
10/12/2013	12:03:41	40.5
10/12/2013	12:04:41	35.92
10/12/2013	12:05:42	39.32
10/12/2013	12:06:42	39.55
10/12/2013	12:07:42	37.98
10/12/2013	12:08:42	37.41
10/12/2013	12:09:43	34.56
10/12/2013	12:10:43	32.14
10/12/2013	12:11:41	30.17
10/12/2013	12:12:42	29.4
10/12/2013	12:13:42	31.84
10/12/2013	12:14:42	31.63
10/12/2013	12:15:42	30.68
10/12/2013	12:16:43	30.88
10/12/2013	12:17:43	31.21
10/12/2013	12:18:41	33.29
10/12/2013	12:19:41	35.08
10/12/2013	12:20:42	36.57
10/12/2013	12:21:42	34.06
10/12/2013	12:22:42	32.44
10/12/2013	12:23:43	31.77
10/12/2013	12:24:43	31.01
10/12/2013	12:25:41	31.56

10/12/2013	12:26:41	32.83
10/12/2013	12:27:42	31.92
10/12/2013	12:28:42	33.46
10/12/2013	12:29:42	33.76
10/12/2013	12:30:43	33.98
10/12/2013	12:31:43	33.51
10/12/2013	12:32:41	33.07
10/12/2013	12:33:41	32.11
10/12/2013	12:34:41	34.32
10/12/2013	12:35:42	32.87
10/12/2013	12:36:42	33.76
10/12/2013	12:37:42	35.71
10/12/2013	12:38:42	32.83
10/12/2013	12:39:43	31.48
10/12/2013	12:40:43	32.15
Average	1794 samp	35.65
Test Run 15 End		

Test Run 1 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/12/2013	15:09:26	1001.1
10/12/2013	15:10:26	1022.4
10/12/2013	15:11:26	1009.4
10/12/2013	15:12:26	1027.4
10/12/2013	15:13:27	1045.1
10/12/2013	15:14:27	1073.3
10/12/2013	15:15:26	1039.6
10/12/2013	15:16:26	1038.3
10/12/2013	15:17:26	1049.6
10/12/2013	15:18:26	1074.6
10/12/2013	15:19:27	1072.1
10/12/2013	15:20:27	1010.8
10/12/2013	15:21:27	962.7
10/12/2013	15:22:25	922.6
10/12/2013	15:23:26	912.5
10/12/2013	15:24:26	885.5
10/12/2013	15:25:26	971
10/12/2013	15:26:27	1016
10/12/2013	15:27:27	1059.8
10/12/2013	15:28:27	1099.5
10/12/2013	15:29:25	1128.8
10/12/2013	15:30:26	1126.8
10/12/2013	15:31:26	1103.4
10/12/2013	15:32:26	1069.6
10/12/2013	15:33:27	1011.3
10/12/2013	15:34:27	1040.7
10/12/2013	15:35:27	1079.2
10/12/2013	15:36:25	1094
10/12/2013	15:37:26	1082.4
10/12/2013	15:38:26	1112.7
10/12/2013	15:39:26	1120.2
10/12/2013	15:40:26	1154.1
10/12/2013	15:41:27	1168.4
10/12/2013	15:42:27	1163.2
10/12/2013	15:43:27	1133.2
10/12/2013	15:44:26	1049.9
10/12/2013	15:45:26	1053.5
10/12/2013	15:46:26	1027
10/12/2013	15:47:26	1020.1
10/12/2013	15:48:27	1022.4
10/12/2013	15:49:27	1050
10/12/2013	15:50:27	1065.4
10/12/2013	15:51:25	1040.1
10/12/2013	15:52:26	1079.5
10/12/2013	15:53:26	1113.1

10/12/2013	15:54:26	1144
10/12/2013	15:55:26	1128.2
10/12/2013	15:56:27	1054
10/12/2013	15:57:27	993.8
10/12/2013	15:58:27	1039.7
10/12/2013	15:59:25	1073
10/12/2013	16:00:26	1061.5
10/12/2013	16:01:26	1101.2
10/12/2013	16:02:26	1085.7
10/12/2013	16:03:26	1125.9
10/12/2013	16:04:27	1169.1
10/12/2013	16:05:27	1190.6
10/12/2013	16:06:27	1218.4
10/12/2013	16:07:26	1252.7
10/12/2013	16:08:26	1293.9
Average	1811 samp	1074.7
Test Run 1 End		

Test Run 2 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/12/2013	16:36:23	989.3
10/12/2013	16:37:21	1058.5
10/12/2013	16:38:22	1059.2
10/12/2013	16:39:22	1090.3
10/12/2013	16:40:22	1113.4
10/12/2013	16:41:23	1157.2
10/12/2013	16:42:23	1148.6
10/12/2013	16:43:23	1105.5
10/12/2013	16:44:21	1046.7
10/12/2013	16:45:22	1012.7
10/12/2013	16:46:22	968.8
10/12/2013	16:47:22	963.1
10/12/2013	16:48:22	949.2
10/12/2013	16:49:23	960.6
10/12/2013	16:50:23	959
10/12/2013	16:51:21	942.5
10/12/2013	16:52:22	962.3
10/12/2013	16:53:22	925.5
10/12/2013	16:54:22	960.7
10/12/2013	16:55:23	971.3
10/12/2013	16:56:23	990.3
10/12/2013	16:57:23	949.2
10/12/2013	16:58:21	891.5
10/12/2013	16:59:22	905.3
10/12/2013	17:00:22	914.1
10/12/2013	17:01:22	914.2
10/12/2013	17:02:23	926.1
10/12/2013	17:03:23	930.9
10/12/2013	17:04:23	895.7
10/12/2013	17:05:21	943.1
10/12/2013	17:06:22	943.9
10/12/2013	17:07:22	978.3
10/12/2013	17:08:22	940.6
10/12/2013	17:09:23	993.2
10/12/2013	17:10:23	996.5
10/12/2013	17:11:23	986.9
10/12/2013	17:12:21	952
10/12/2013	17:13:22	875.5
10/12/2013	17:14:22	916.5
10/12/2013	17:15:22	939.4
10/12/2013	17:16:23	930.8
10/12/2013	17:17:23	919.8
10/12/2013	17:18:23	938.6
10/12/2013	17:19:21	999.3
10/12/2013	17:20:22	986.2

10/12/2013	17:21:22	963
10/12/2013	17:22:22	910.9
10/12/2013	17:23:23	886.5
10/12/2013	17:24:23	873.2
10/12/2013	17:25:21	870.2
10/12/2013	17:26:21	876.3
10/12/2013	17:27:22	925.8
10/12/2013	17:28:22	911.6
10/12/2013	17:29:22	865.7
10/12/2013	17:30:22	850
10/12/2013	17:31:23	893.9
10/12/2013	17:32:23	913.1
10/12/2013	17:33:21	915.1
10/12/2013	17:34:21	918.1
10/12/2013	17:35:22	960.6
10/12/2013	17:36:22	942.2
Average	1824 samp	957
Test Run 2 End		

Test Run 3 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/12/2013	18:00:49	1126.2
10/12/2013	18:01:49	1091.3
10/12/2013	18:02:49	1034.6
10/12/2013	18:03:49	996.3
10/12/2013	18:04:50	1063.4
10/12/2013	18:05:50	1027.2
10/12/2013	18:06:50	995.6
10/12/2013	18:07:48	1085.5
10/12/2013	18:08:49	1133.7
10/12/2013	18:09:49	1177.7
10/12/2013	18:10:49	1174.3
10/12/2013	18:11:50	1169.6
10/12/2013	18:12:50	1112.9
10/12/2013	18:13:50	1135.7
10/12/2013	18:14:50	1102.2
10/12/2013	18:15:49	1176.6
10/12/2013	18:16:49	1201.9
10/12/2013	18:17:49	1217
10/12/2013	18:18:49	1248
10/12/2013	18:19:50	1297.6
10/12/2013	18:20:50	1351.7
10/12/2013	18:21:50	1412.8
10/12/2013	18:22:49	1417.9
10/12/2013	18:23:49	1368.5
10/12/2013	18:24:49	1287.4
10/12/2013	18:25:49	1173.7
10/12/2013	18:26:50	1198.4
10/12/2013	18:27:50	1205.2
10/12/2013	18:28:50	1198.8
10/12/2013	18:29:50	1194.9
10/12/2013	18:30:49	1174.8
10/12/2013	18:31:49	1184.2
10/12/2013	18:32:49	1161.6
10/12/2013	18:33:50	1200.8
10/12/2013	18:34:50	1239.5
10/12/2013	18:35:50	1260.8
10/12/2013	18:36:50	1242.4
10/12/2013	18:37:49	1230.9
10/12/2013	18:38:49	1200.6
10/12/2013	18:39:49	1159
10/12/2013	18:40:49	1156.6
10/12/2013	18:41:50	1183.6
10/12/2013	18:42:50	1112.7
10/12/2013	18:43:50	1146.3
10/12/2013	18:44:48	1178.5

10/12/2013	18:45:49	1184.8
10/12/2013	18:46:49	1190.2
10/12/2013	18:47:49	1236.3
10/12/2013	18:48:50	1229.3
10/12/2013	18:49:50	1299.9
10/12/2013	18:50:50	1314.9
10/12/2013	18:51:48	1303.2
10/12/2013	18:52:49	1305.8
10/12/2013	18:53:49	1308.6
10/12/2013	18:54:49	1314
10/12/2013	18:55:50	1277
10/12/2013	18:56:50	1203.3
10/12/2013	18:57:50	1144.9
10/12/2013	18:58:48	1242.6
10/12/2013	18:59:49	1242.4
Average	1796 samp	1200
Test Run 3 End		

Test Run 9 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC ppm
Start Averaging		
10/13/2013	9:22:03	71.7
10/13/2013	9:23:03	73.9
10/13/2013	9:24:04	76.1
10/13/2013	9:25:04	78.7
10/13/2013	9:26:04	80.4
10/13/2013	9:27:04	82.1
10/13/2013	9:28:05	83.8
10/13/2013	9:29:03	85.1
10/13/2013	9:30:03	85.8
10/13/2013	9:31:03	86.3
10/13/2013	9:32:04	86.9
10/13/2013	9:33:04	87.8
10/13/2013	9:34:04	88
10/13/2013	9:35:05	89.5
10/13/2013	9:36:03	87.7
10/13/2013	9:37:03	87
10/13/2013	9:38:03	86.1
10/13/2013	9:39:04	85.2
10/13/2013	9:40:04	84.8
10/13/2013	9:41:04	85.1
10/13/2013	9:42:04	85.9
10/13/2013	9:43:05	87.4
10/13/2013	9:44:03	88.9
10/13/2013	9:45:03	89.8
10/13/2013	9:46:03	90.7
10/13/2013	9:47:04	90.6
10/13/2013	9:48:04	90.8
10/13/2013	9:49:04	92.2
10/13/2013	9:50:05	93.7
10/13/2013	9:51:03	93.8
10/13/2013	9:52:03	94.6
10/13/2013	9:53:03	95.6
10/13/2013	9:54:04	96
10/13/2013	9:55:04	96.3
10/13/2013	9:56:04	97
10/13/2013	9:57:04	97.5
10/13/2013	9:58:05	98
10/13/2013	9:59:03	98.3
10/13/2013	10:00:03	99.7
10/13/2013	10:01:03	100.8
10/13/2013	10:02:04	101.7
10/13/2013	10:03:04	102.4
10/13/2013	10:04:04	103
10/13/2013	10:05:05	102.3
10/13/2013	10:06:03	101.1

10/13/2013	10:07:03	100
10/13/2013	10:08:03	98.6
10/13/2013	10:09:04	98.2
10/13/2013	10:10:04	98.4
10/13/2013	10:11:04	98.1
10/13/2013	10:12:04	97.6
10/13/2013	10:13:05	96.8
10/13/2013	10:14:03	95.4
10/13/2013	10:15:03	92.2
10/13/2013	10:16:03	91.5
10/13/2013	10:17:04	93.1
10/13/2013	10:18:04	94.6
10/13/2013	10:19:04	97.1
10/13/2013	10:20:04	97.7
10/13/2013	10:21:05	97.5
Average	1797 samp	91.8
Test Run 9 End		

Test Run 10 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC
		ppm
Start Averaging		
10/13/2013	11:04:49	77.08
10/13/2013	11:05:50	78.11
10/13/2013	11:06:50	78.19
10/13/2013	11:07:50	77.63
10/13/2013	11:08:50	77.56
10/13/2013	11:09:51	77.71
10/13/2013	11:10:51	77.97
10/13/2013	11:11:49	77.89
10/13/2013	11:12:49	78.97
10/13/2013	11:13:50	79.14
10/13/2013	11:14:50	77.97
10/13/2013	11:15:51	76.86
10/13/2013	11:16:49	76.19
10/13/2013	11:17:49	76.58
10/13/2013	11:18:50	76.82
10/13/2013	11:19:50	77.53
10/13/2013	11:20:50	78.27
10/13/2013	11:21:50	79.01
10/13/2013	11:22:51	79.04
10/13/2013	11:23:51	78.95
10/13/2013	11:24:49	78.85
10/13/2013	11:25:50	78.45
10/13/2013	11:26:50	78.1
10/13/2013	11:27:50	78.55
10/13/2013	11:28:50	78.58
10/13/2013	11:29:51	78.39
10/13/2013	11:30:51	78.37
10/13/2013	11:31:49	79.42
10/13/2013	11:32:49	81.98
10/13/2013	11:33:50	84.04
10/13/2013	11:34:50	83.84
10/13/2013	11:35:50	83.55
10/13/2013	11:36:50	83.19
10/13/2013	11:37:51	82.62
10/13/2013	11:38:51	82.45
10/13/2013	11:39:49	82.09
10/13/2013	11:40:49	81.91
10/13/2013	11:41:50	81.54
10/13/2013	11:42:50	81.56
10/13/2013	11:43:50	82.21
10/13/2013	11:44:51	82.55
10/13/2013	11:45:51	82.6
10/13/2013	11:46:49	82.99
10/13/2013	11:47:49	83.33
10/13/2013	11:48:50	83.22

10/13/2013	11:49:50	83.17
10/13/2013	11:50:50	84.26
10/13/2013	11:51:50	86.33
10/13/2013	11:52:51	87.37
10/13/2013	11:53:51	85.99
10/13/2013	11:54:49	85.29
10/13/2013	11:55:49	85.22
10/13/2013	11:56:50	86.39
10/13/2013	11:57:50	86.43
10/13/2013	11:58:50	85.81
10/13/2013	11:59:50	86.1
10/13/2013	12:00:51	86.23
10/13/2013	12:01:51	84.93
10/13/2013	12:02:49	82.97
10/13/2013	12:03:50	82.23
10/13/2013	12:04:50	84.21
Average	1825 samp	81.24
Test Run 10	End	

Test Run 11 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Wiggins

		THC ppm
Start Averaging		
10/13/2013	12:31:14	107.99
10/13/2013	12:32:14	108.6
10/13/2013	12:33:15	109.57
10/13/2013	12:34:15	112.47
10/13/2013	12:35:15	115.91
Pause		
10/13/2013	12:36:15	115.09
10/13/2013	12:37:14	112.39
10/13/2013	12:38:14	111.26
10/13/2013	12:39:14	112.42
10/13/2013	12:40:14	113.56
10/13/2013	12:41:15	114.42
10/13/2013	12:42:15	113.98
10/13/2013	12:43:15	112.12
10/13/2013	12:44:15	110.5
10/13/2013	12:45:14	109.3
10/13/2013	12:46:14	108.63
10/13/2013	12:47:14	110.13
10/13/2013	12:48:14	112.11
10/13/2013	12:49:15	112.2
10/13/2013	12:50:15	111.62
10/13/2013	12:51:15	111.91
End Pause		
10/13/2013	12:52:15	111.76
10/13/2013	12:53:14	110.85
10/13/2013	12:54:14	109.25
10/13/2013	12:55:14	107.32
10/13/2013	12:56:15	105.6
10/13/2013	12:57:15	105.51
10/13/2013	12:58:15	105.13
10/13/2013	12:59:15	103.83
10/13/2013	13:00:15	101.32
10/13/2013	13:01:14	100.13
10/13/2013	13:02:14	99.2
10/13/2013	13:03:14	99
10/13/2013	13:04:14	99.6
10/13/2013	13:05:15	100.72
10/13/2013	13:06:15	100.21
10/13/2013	13:07:15	99.39
10/13/2013	13:08:15	99
10/13/2013	13:09:14	98.91
10/13/2013	13:10:14	98.55
10/13/2013	13:11:14	99.06
10/13/2013	13:12:15	99.18
10/13/2013	13:13:15	99.24

10/13/2013	13:14:15	100.67
10/13/2013	13:15:15	101.29
10/13/2013	13:16:14	100.86
10/13/2013	13:17:14	100.04
10/13/2013	13:18:14	99.03
10/13/2013	13:19:14	99.26
10/13/2013	13:20:15	100.68
10/13/2013	13:21:15	100.36
10/13/2013	13:22:15	99.65
10/13/2013	13:23:15	98.28
10/13/2013	13:24:14	96.42
10/13/2013	13:25:14	96.23
10/13/2013	13:26:14	96.14
10/13/2013	13:27:14	94.87
10/13/2013	13:28:15	95.34
10/13/2013	13:29:15	94.94
10/13/2013	13:30:15	94.01
10/13/2013	13:31:14	92.64
10/13/2013	13:32:14	91.56
10/13/2013	13:33:14	89.78
10/13/2013	13:34:14	87.93
10/13/2013	13:35:15	86.12
10/13/2013	13:36:15	85.57
10/13/2013	13:37:15	85.8
10/13/2013	13:38:14	85.88
10/13/2013	13:39:14	85.76
10/13/2013	13:40:14	85.56
10/13/2013	13:41:14	85.49
10/13/2013	13:42:15	84.8
10/13/2013	13:43:15	84.44
10/13/2013	13:44:15	83.05
10/13/2013	13:45:15	81.96
10/13/2013	13:46:14	81
10/13/2013	13:47:14	81.22
Average	1833 samp	97.19

Test Run 11 End

Enviva - Wiggins
Run 1

Date: 10-Oct
Run Time: 0917-1017
(CEM Run Time Eastern)

Parameter	Symbol	Green Hammermill THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	27.99
Mid-Level Gas	$C_{v,\ mid}$	50
High-Level Gas	$C_{v,\ high}$	86.13
Calibration Span	CS	100
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.3
Mid-Level Gas	$C_{Dir,\ mid}$	50.8
High-Level Gas	$C_{Dir,\ high}$	86.5
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	1.1
Mid-Level Gas	ACE_{mid}	1.6
High-Level Gas	ACE_{high}	0.4
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0
Final Zero	$C_{s,\ zero\ (post)}$	0.11
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.8
Final Upscale	$C_{v,\ up\ (post)}$	50.65
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	0.0
Upscale (post)	$SB_{final\ (upscale)}$	-0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	-0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	30.8
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**30.8**

0900

Enviva - Wiggins — Date: 10-Oct

Run 2 — Run Time: 1036-1136

Parameter	Symbol	Green Hammermill THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.3
Mid-Level Gas	$C_{Dir,\ mid}$	50.8
High-Level Gas	$C_{Dir,\ high}$	86.5
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	1.1
Mid-Level Gas	ACE_{mid}	1.6
High-Level Gas	ACE_{high}	0.4
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.11
Final Zero	$C_{s,\ zero\ (post)}$	0.05
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.65
Final Upscale	$C_{v,\ up\ (post)}$	50.1
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.1
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	-0.1
Upscale (post)	$SB_{final\ (upscale)}$	-0.7
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.1
Upscale	$D_{upscale}$	-0.5
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	32.23
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**32.2**

Enviva - Wiggins | Date: 10-Oct
Run 3 | Run Time: 1150-1250

Parameter	Symbol	Green Hammermill THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.3
Mid-Level Gas	$C_{Dir,\ mid}$	50.8
High-Level Gas	$C_{Dir,\ high}$	86.5
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	1.1
Mid-Level Gas	ACE_{mid}	1.6
High-Level Gas	ACE_{high}	0.4
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.05
Final Zero	$C_{s,\ zero\ (post)}$	0.1
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.1
Final Upscale	$C_{v,\ up\ (post)}$	49.8
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.1
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	-0.7
Upscale (post)	$SB_{final\ (upscale)}$	-1.0
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	-0.3
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	26.38
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**26.4**

Enviva - Wiggins
Run #7

Date: 11-Oct
Run Time: 1343-1443

Parameter	Symbol	Pellet Cooler 2 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	27.99
Mid-Level Gas	$C_{v,\ mid}$	50
High-Level Gas	$C_{v,\ high}$	86.13
Calibration Span	CS	100
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.15
Analyzer Calibration Error - Results (Percent of Span		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.04
Final Zero	$C_{s,\ zero\ (post)}$	0.35
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.14
Final Upscale	$C_{v,\ up\ (post)}$	50.2
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.3
Upscale (pre)	$SB_{i\ (upscale)}$	-1.0
Upscale (post)	$SB_{final\ (upscale)}$	-0.9
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.3
Upscale	$D_{upscale}$	0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	23.80
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**23.8**

Enviva - Wiggins | Date: 11-Oct
Run #8 | Run Time: 1508-1608

Parameter	Symbol	Pellet Cooler 2 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.35
Final Zero	$C_{s,\ zero\ (post)}$	0.18
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.2
Final Upscale	$C_{v,\ up\ (post)}$	50.1
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.3
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	-0.9
Upscale (post)	$SB_{final\ (upscale)}$	-1.0
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.2
Upscale	$D_{upscale}$	-0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	21.29
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**21.3**

Enviva - Wiggins		Date: 11-Oct
Run #9		Run Time: 29-1729

Parameter	Symbol	Pellet Cooler 2 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.18
Final Zero	$C_{s,\ zero\ (post)}$	0.2
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.1
Final Upscale	$C_{v,\ up\ (post)}$	49.8
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.1
Zero (post)	$SB_{final\ (zero)}$	0.2
Upscale (pre)	$SB_{i\ (upscale)}$	-1.0
Upscale (post)	$SB_{final\ (upscale)}$	-1.3
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.0
Upscale	$D_{upscale}$	-0.3
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	24.84
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**24.8**

Enviva - Wiggins | Date: 10-Oct
Run #4 | Run Time: 1738-1838

Parameter	Symbol	Dryer 1 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	27.99
Mid-Level Gas	$C_{v,\ mid}$	50
High-Level Gas	$C_{v,\ high}$	86.13
Calibration Span	CS	100
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.3
Mid-Level Gas	$C_{Dir,\ mid}$	50.8
High-Level Gas	$C_{Dir,\ high}$	86.5
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	1.1
Mid-Level Gas	ACE_{mid}	1.6
High-Level Gas	ACE_{high}	0.4
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0
Final Zero	$C_{s,\ zero\ (post)}$	0.85
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.8
Final Upscale	$C_{v,\ up\ (post)}$	50.9
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.9
Upscale (pre)	$SB_{i\ (upscale)}$	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.9
Upscale	$D_{upscale}$	0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	66.70
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**66.7**

Enviva - Wiggins | Date: 11-Oct
Run #5 | Run Time: 1000-1100

Parameter	Symbol	Dryer 1 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	28.0
Mid-Level Gas	$C_{v,\ mid}$	50.0
High-Level Gas	$C_{v,\ high}$	86.1
Calibration Span	CS	100.0
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.85
Final Zero	$C_{s,\ zero\ (post)}$	0.15
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.9
Final Upscale	$C_{v,\ up\ (post)}$	50.5
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.8
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	-0.2
Upscale (post)	$SB_{final\ (upscale)}$	-0.6
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.7
Upscale	$D_{upscale}$	-0.4
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	61.92
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**61.9**

Enviva - Wiggins | Date: 11-Oct
Run #6 | Run Time: 1137-1237

Parameter	Symbol	Dryer 1 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.15
Final Zero	$C_{s,\ zero\ (post)}$	0.1
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.5
Final Upscale	$C_{v,\ up\ (post)}$	50.14
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.1
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	-0.6
Upscale (post)	$SB_{final\ (upscale)}$	-1.0
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.1
Upscale	$D_{upscale}$	-0.4
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	57.17
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**57.2**

Enviva - Wiggins
Run 10

Date: 11-Oct
Run Time: 1811-1911

Parameter	Symbol	Hammermill 2 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	27.99
Mid-Level Gas	$C_{v,\ mid}$	50
High-Level Gas	$C_{v,\ high}$	86.13
Calibration Span	CS	100
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.15
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.2
Final Zero	$C_{s,\ zero\ (post)}$	0.08
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	49.8
Final Upscale	$C_{v,\ up\ (post)}$	50
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.2
Zero (post)	$SB_{final\ (zero)}$	0.0
Upscale (pre)	$SB_{i\ (upscale)}$	-1.3
Upscale (post)	$SB_{final\ (upscale)}$	-1.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.1
Upscale	$D_{upscale}$	0.2
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	25.19
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**25.2**

Enviva - Wiggins | Date: 11-Oct
Run 11 | Run Time: 1935-2035

Parameter	Symbol	Hammermill 2 THC (as C_3H_8) ppm$_w$
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.08
Final Zero	$C_{s,\ zero\ (post)}$	0.21
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50
Final Upscale	$C_{v,\ up\ (post)}$	49.85
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.2
Upscale (pre)	$SB_{i\ (upscale)}$	-1.1
Upscale (post)	$SB_{final\ (upscale)}$	-1.3
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	-0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	29.72
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**29.7**

Enviva - Wiggins | Date: 10/11/2013
Run 12 | Run Time: 2048-2148

Parameter	Symbol	Hammermill 2 THC (as C_3H_8) ppm$_w$
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.0
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	51.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	2.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.21
Final Zero	$C_{s,\ zero\ (post)}$	0.23
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	49.85
Final Upscale	$C_{v,\ up\ (post)}$	49.9
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.2
Zero (post)	$SB_{final\ (zero)}$	0.2
Upscale (pre)	$SB_{i\ (upscale)}$	-1.3
Upscale (post)	$SB_{final\ (upscale)}$	-1.2
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.0
Upscale	$D_{upscale}$	0.0
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	24.43
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**24.4**

Enviva - Wiggins | Date: 12-Oct
Run 13 | Run Time: 0858-0958

Parameter	Symbol	Pellet Cooler 1 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v, zero}$	0.0
Low-Level Gas	$C_{v, low}$	27.99
Mid-Level Gas	$C_{v, mid}$	50
High-Level Gas	$C_{v, high}$	86.13
Calibration Span	CS	100
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir, zero}$	0.1
Low-Level Gas	$C_{Dir, low}$	28.1
Mid-Level Gas	$C_{Dir, mid}$	50.4
High-Level Gas	$C_{Dir, high}$	86.15
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	0.8
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s, zero (pre)}$	0.1
Final Zero	$C_{s, zero (post)}$	0.35
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v, up (pre)}$	50.4
Final Upscale	$C_{v, up (post)}$	50.3
System Bias - Results (Percent)		
Zero (pre)	$SB_{i (zero)}$	0.0
Zero (post)	$SB_{final (zero)}$	0.3
Upscale (pre)	$SB_{i (upscale)}$	0.0
Upscale (post)	$SB_{final (upscale)}$	-0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.3
Upscale	$D_{upscale}$	-0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	39.05
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**39.1**

Enviva - Wiggins — Date: 12-Oct
Run 14 — Run Time: 1022-1122

Parameter	Symbol	Pellet Cooler 1 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	50.4
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	0.8
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.35
Final Zero	$C_{s,\ zero\ (post)}$	0.24
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.3
Final Upscale	$C_{v,\ up\ (post)}$	50.25
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.3
Zero (post)	$SB_{final\ (zero)}$	
Upscale (pre)	$SB_{i\ (upscale)}$	-0.1
Upscale (post)	$SB_{final\ (upscale)}$	
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.1
Upscale	$D_{upscale}$	0.0
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	33.29
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**33.3**

Enviva - Wiggins | Date: 12-Oct
Run 15 | Run Time: 1141-124

Parameter	Symbol	Pellet Cooler 1 THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.1
Mid-Level Gas	$C_{Dir,\ mid}$	50.4
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	0.4
Mid-Level Gas	ACE_{mid}	0.8
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.24
Final Zero	$C_{s,\ zero\ (post)}$	0.33
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.25
Final Upscale	$C_{v,\ up\ (post)}$	50.1
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.2
Zero (post)	$SB_{final\ (zero)}$	0.3
Upscale (pre)	$SB_{i\ (upscale)}$	-0.1
Upscale (post)	$SB_{final\ (upscale)}$	-0.3
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	-0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	35.65
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**35.7**

Enviva - Wiggins
Run 16

Date: 12-Oct
Run Time: 1509-1609

Parameter	Symbol	Aspirator THC (as C_3H_8) ppm$_w$
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	258.1
Mid-Level Gas	$C_{v,\ mid}$	507.1
High-Level Gas	$C_{v,\ high}$	836.9
Calibration Span	CS	1000
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	1.1
Low-Level Gas	$C_{Dir,\ low}$	260
Mid-Level Gas	$C_{Dir,\ mid}$	507
High-Level Gas	$C_{Dir,\ high}$	838.3
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	0.7
Mid-Level Gas	ACE_{mid}	0.0
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	1.1
Final Zero	$C_{s,\ zero\ (post)}$	2.4
Upscale Gas Standard	C_{MA}	836.9
Initial Upscale	$C_{v,\ up\ (pre)}$	838.3
Final Upscale	$C_{v,\ up\ (post)}$	837
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	0.0
Upscale (post)	$SB_{final\ (upscale)}$	-0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	-0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	1074.70
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**1074.7**

Enviva - Wiggins | Date: 12-Oct
Run 17 | Run Time: 1636-1736

Parameter	Symbol	Aspirator THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v, zero}$	0.0
Low-Level Gas	$C_{v, low}$	258.1
Mid-Level Gas	$C_{v, mid}$	507.1
High-Level Gas	$C_{v, high}$	836.9
Calibration Span	CS	1000.0
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir, zero}$	1.1
Low-Level Gas	$C_{Dir, low}$	260.0
Mid-Level Gas	$C_{Dir, mid}$	507.0
High-Level Gas	$C_{Dir, high}$	838.3
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	0.7
Mid-Level Gas	ACE_{mid}	0.0
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s, zero (pre)}$	2.40
Final Zero	$C_{s, zero (post)}$	1.4
Upscale Gas Standard	C_{MA}	836.9
Initial Upscale	$C_{v, up (pre)}$	837
Final Upscale	$C_{v, up (post)}$	837.5
System Bias - Results (Percent)		
Zero (pre)	$SB_{i (zero)}$	0.1
Zero (post)	$SB_{final (zero)}$	0.0
Upscale (pre)	$SB_{i (upscale)}$	-0.1
Upscale (post)	$SB_{final (upscale)}$	-0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.1
Upscale	$D_{upscale}$	0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	957.00
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**957.0**

Enviva - Wiggins | Date: 12-Oct
Run 18 | Run Time: 1800-190(

Parameter	Symbol	Aspirator THC (as C_3H_8) ppm$_w$
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	1.1
Low-Level Gas	$C_{Dir,\ low}$	260.0
Mid-Level Gas	$C_{Dir,\ mid}$	507.0
High-Level Gas	$C_{Dir,\ high}$	838.3
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	0.7
Mid-Level Gas	ACE_{mid}	0.0
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	1.40
Final Zero	$C_{s,\ zero\ (post)}$	2
Upscale Gas Standard	C_{MA}	836.9
Initial Upscale	$C_{v,\ up\ (pre)}$	837.5
Final Upscale	$C_{v,\ up\ (post)}$	835
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	-0.1
Upscale (post)	$SB_{final\ (upscale)}$	-0.3
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	-0.3
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		28
Calibration Correction		
Raw Average	C_{ave}	1200.00
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**1200.0**

Enviva - Wiggins
Run 19

Date: 13-Oct
Run Time: 0921-102´

Parameter	Symbol	Dryer 2 THC (as C_3H_8) ppm$_w$	
Analyzer Calibration Error - Calibration Standards			
Zero Gas	$C_{v,\ zero}$	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	258.1	27.99
Mid-Level Gas	$C_{v,\ mid}$	507.1	50
High-Level Gas	$C_{v,\ high}$	836.9	86.13
Calibration Span	CS	1000	100
Analyzer Calibration Error - Instrument Response			
Zero Gas	$C_{Dir,\ zero}$	1.0	1.0
Low-Level Gas	$C_{Dir,\ low}$	259	28.4
Mid-Level Gas	$C_{Dir,\ mid}$	506.8	50.34
High-Level Gas	$C_{Dir,\ high}$	837.3	86.24
Analyzer Calibration Error - Results (Percent of Span)			
Zero Gas	ACE_{zero}	0.1	1.0
Low-Level Gas	ACE_{low}	0.3	1.5
Mid-Level Gas	ACE_{mid}	-0.1	0.7
High-Level Gas	ACE_{high}	0.0	0.1
Specification	ACE_{spec}	±5	±8
System Calibrations - Instrument Response			
Initial Zero	$C_{s,\ zero\ (pre)}$	1.0	1.0
Final Zero	$C_{s,\ zero\ (post)}$	1.6	1.6
Upscale Gas Standard	C_{MA}	507.1	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	506.8	50.34
Final Upscale	$C_{v,\ up\ (post)}$	504	50.6
System Bias - Results (Percent)			
Zero (pre)	$SB_{i\ (zero)}$	0.0	0.0
Zero (post)	$SB_{final\ (zero)}$	0.1	0.6
Upscale (pre)	$SB_{i\ (upscale)}$	0.0	0.0
Upscale (post)	$SB_{final\ (upscale)}$	-0.3	0.3
Specification	SB_{spec}	NA	NA
System Drift - Results (Percent)			
Zero	D_{zero}	0.1	0.6
Upscale	$D_{upscale}$	-0.3	0.3
Specification	D_{spec}	±3	±6
Response Test - Results (seconds)			
Upscale Test		NA	NA
Zero Test		NA	NA
Response Time		28	28
Calibration Correction			
Raw Average	C_{ave}	91.8	91.8
Bias Average - Zero	C_0	N/A	N/A
Bias Average - Upscale	C_M	N/A	N/A
Corrected Run Average	C_{Gas}	**91.8**	**91.8**

Enviva - Wiggins
Run 20

Date: 13-Oct
Run Time: 1104-1204

Parameter	Symbol	Dryer 2 THC (as C_3H_8)	
		ppm$_w$	
Analyzer Calibration Error - Calibration Standards			
Zero Gas	$C_{v,\ zero}$	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	258.1	28.0
Mid-Level Gas	$C_{v,\ mid}$	507.1	50.0
High-Level Gas	$C_{v,\ high}$	836.9	86.1
Calibration Span	CS	1000.0	100.0
Analyzer Calibration Error - Instrument Response			
Zero Gas	$C_{Dir,\ zero}$	1.0	1.0
Low-Level Gas	$C_{Dir,\ low}$	259.0	28.4
Mid-Level Gas	$C_{Dir,\ mid}$	506.8	50.3
High-Level Gas	$C_{Dir,\ high}$	837.3	86.2
Analyzer Calibration Error - Results (Percent of Span)			
Zero Gas	ACE_{zero}	0.1	1.0
Low-Level Gas	ACE_{low}	0.3	1.5
Mid-Level Gas	ACE_{mid}	-0.1	0.7
High-Level Gas	ACE_{high}	0.0	0.1
Specification	ACE_{spec}	±5	±8
System Calibrations - Instrument Response			
Initial Zero	$C_{s,\ zero\ (pre)}$	1.60	1.60
Final Zero	$C_{s,\ zero\ (post)}$	0.42	0.42
Upscale Gas Standard	C_{MA}	507.1	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	504	50.6
Final Upscale	$C_{v,\ up\ (post)}$	503	50.4
System Bias - Results (Percent)			
Zero (pre)	$SB_{i\ (zero)}$	0.1	0.6
Zero (post)	$SB_{final\ (zero)}$	-0.1	-0.6
Upscale (pre)	$SB_{i\ (upscale)}$	-0.3	0.3
Upscale (post)	$SB_{final\ (upscale)}$	-0.4	0.1
Specification	SB_{spec}	NA	NA
System Drift - Results (Percent)			
Zero	D_{zero}	-0.1	-1.2
Upscale	$D_{upscale}$	-0.1	-0.2
Specification	D_{spec}	±3	±3
Response Test - Results (seconds)			
Upscale Test		NA	NA
Zero Test		NA	NA
Response Time		28	28
Calibration Correction			
Raw Average	C_{ave}	81.2	81.2
Bias Average - Zero	C_0	N/A	N/A
Bias Average - Upscale	C_M	N/A	N/A
Corrected Run Average	C_{Gas}	**81.2**	**81.2**

Enviva - Wiggins
Run 21

Date: 13-Oct
Run Time: 1231-1347
Paused (1236-1252)

Parameter	Symbol	Dryer 2 THC (as C_3H_8) ppm$_w$	
Analyzer Calibration Error - Instrument Response			
Zero Gas	$C_{Dir,\ zero}$	1.0	1.00
Low-Level Gas	$C_{Dir,\ low}$	259.0	28.40
Mid-Level Gas	$C_{Dir,\ mid}$	506.8	50.34
High-Level Gas	$C_{Dir,\ high}$	837.3	86.24
Analyzer Calibration Error - Results (Percent of Span)			
Zero Gas	ACE_{zero}	0.1	1.0
Low-Level Gas	ACE_{low}	0.3	1.5
Mid-Level Gas	ACE_{mid}	-0.1	0.7
High-Level Gas	ACE_{high}	0.0	0.1
Specification	ACE_{spec}	±5	±8
System Calibrations - Instrument Response			
Initial Zero	$C_{s,\ zero\ (pre)}$	0.42	0.42
Final Zero	$C_{s,\ zero\ (post)}$	0.3	0.3
Upscale Gas Standard	C_{MA}	507.1	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	503	50.4
Final Upscale	$C_{v,\ up\ (post)}$	503.5	50.2
System Bias - Results (Percent)			
Zero (pre)	$SB_{i\ (zero)}$	-0.1	-0.6
Zero (post)	$SB_{final\ (zero)}$	-0.1	-0.7
Upscale (pre)	$SB_{i\ (upscale)}$	-0.4	0.1
Upscale (post)	$SB_{final\ (upscale)}$	-0.3	-0.1
Specification	SB_{spec}	NA	NA
System Drift - Results (Percent)			
Zero	D_{zero}	0.0	-0.1
Upscale	$D_{upscale}$	0.1	-0.2
Specification	D_{spec}	±3	±6
Response Test - Results (seconds)			
Upscale Test		NA	NA
Zero Test		NA	NA
Response Time		28	31
Calibration Correction			
Raw Average	C_{ave}	97.2	97.2
Bias Average - Zero	C_0	N/A	N/A
Bias Average - Upscale	C_M	N/A	N/A
Corrected Run Average	C_{Gas}	**97.2**	**97.2**

APPENDIX C

Method 320 Data

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Compound — Sample ID / Concentration (ppmv wet)

Data Runs

Compound	GMH Run 1	GMH Run 2	GMH Run 3	Dryer 1 Run 1	Dryer 1 Run 2	Dryer 1 Run 3
Acrolein	1.13 J	1.20 J	1.15 J	1.79 J	1.72 ND	1.72 ND
Formaldehyde	0.742	0.629	0.561	3.32	1.60	1.78
Methanol	0.508	0.460	0.376	2.52	1.70	1.59
Phenol	0.88 ND	0.88 ND	0.88 ND	2.04 ND	2.04 ND	2.04 ND
Propionaldehyde	0.234 ND	0.234 ND	0.251 J	0.644 J	0.714 J	0.505 J
acetaldehyde	0.756 J	0.721 J	0.723 J	1.27 ND	1.27 ND	1.27 ND

Data Runs

Compound	Pellet Cooler 2 Run 1	Pellet Cooler 2 Run 2	Pellet Cooler 2 Run 3	Hammermill 2 Run 1	Hammermill 2 Run 2	Hammermill 2 Run 3
Acrolein	1.29 J	1.21 J	1.33 J	0.980 J	0.975 J	0.965 ND
Formaldehyde	1.07	0.663	1.84	1.04	1.14	1.11
Methanol	0.797	0.680 J	0.844	0.189 J	0.211 J	0.204 J
Phenol	1.08 ND	1.08 ND	1.08 ND	1.08 ND	1.08 ND	1.08 ND
Propionaldehyde	0.246 J	0.246 ND	0.359 J	0.233 J	0.243 J	0.263 J
acetaldehyde	0.864 J	0.825 J	0.786 J	0.715 J	0.710 J	0.707 ND

Data Runs

Compound	Pellet Cooler 1 Run 1	Pellet Cooler 1 Run 2	Pellet Cooler 1 Run 3	Aspirator Run 1	Aspirator Run 2	Aspirator Run 3
Acrolein	0.976 J	1.02 J	1.35 J	3.16	3.12	2.25 J
Formaldehyde	1.44	1.25	1.26	1.05 ND	1.58 J	1.06 J
Methanol	0.537	0.327	0.351	8.30	8.90	8.16
Phenol	1.00 J	0.98 ND	0.98 ND	2.73 ND	2.73 ND	2.73 ND
Propionaldehyde	0.381 J	0.290 J	0.236 ND	3.00 ND	3.00 ND	3.00 ND
acetaldehyde	0.691 J	0.695 J	0.759 J	4.65	3.92 J	3.75

Data Runs

Compound	Dryer 2 Run 1	Dryer 2 Run 2	Dryer 2 Run 3
Acrolein	1.90 J	2.59	2.49
Formaldehyde	6.40	6.58	6.76
Methanol	18.8	10.2	10.8
Phenol	2.78 ND	2.78 ND	2.78 ND
Propionaldehyde	2.37	1.38	1.70
acetaldehyde	0.967 J	3.28	1.02 J

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Minimum Detectable Concentration - Default

	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
GMH												
Run 1	1.13	0.502	0.742	0.0719	0.51	0.0912	0.88	0.44	0.234	0.120	0.756	0.371
Run 2	1.20	0.474	0.629	0.0684	0.46	0.0935	0.88	0.44	0.234	0.118	0.721	0.351
Run 3	1.15	0.480	0.561	0.0677	0.38	0.0913	0.88	0.45	0.251	0.113	0.723	0.355
Average SEC(ppm):	0.485		0.0693		0.0920		0.44		0.117		0.359	
MDC(ppm):	**0.971**		**0.139**		**0.184**		**0.88**		**0.234**		**0.718**	
Dryer 1												
Run 1	1.79	0.917	3.32	0.131	2.52	0.296	2.04	1.00	0.644	0.239	1.270	0.679
Run 2	1.72	0.850	1.60	0.126	1.70	0.293	2.04	1.07	0.714	0.227	1.270	0.628
Run 3	1.72	0.812	1.78	0.120	1.59	0.287	2.04	0.99	0.505	0.213	1.270	0.598
Average SEC(ppm):	0.859		0.126		0.292		1.02		0.226		0.635	
MDC(ppm):	**1.72**		**0.252**		**0.584**		**2.04**		**0.452**		**1.27**	
Pellet Cooler 2												
Run 1	1.29	0.496	1.07	0.0711	0.80	0.0813	1.08	0.54	0.246	0.125	0.864	0.370
Run 2	1.21	0.497	0.663	0.0704	0.68	0.0823	1.08	0.54	0.246	0.120	0.825	0.370
Run 3	1.33	0.507	1.84	0.0732	0.84	0.0844	1.09	0.55	0.359	0.124	0.786	0.378
Average SEC(ppm):	0.500		0.0716		0.0826		0.54		0.123		0.373	
MDC(ppm):	**1.00**		**0.143**		**0.165**		**1.08**		**0.246**		**0.745**	
Hammermill 2												
Run 1	0.98	0.480	1.04	0.0677	0.19	0.0809	1.08	0.54	0.233	0.113	0.715	0.353
Run 2	0.97	0.480	1.14	0.0682	0.21	0.0832	1.08	0.54	0.243	0.122	0.710	0.352
Run 3	0.97	0.488	1.11	0.0675	0.20	0.0839	1.08	0.55	0.263	0.113	0.707	0.356
Average SEC(ppm):	0.483		0.0678		0.0826		0.54		0.116		0.354	
MDC(ppm):	**0.965**		**0.136**		**0.165**		**1.08**		**0.232**		**0.707**	
Pellet Cooler 1												
Run 1	0.98	0.467	1.44	0.0646	0.54	0.0738	1.00	0.50	0.381	0.118	0.691	0.344
Run 2	1.02	0.463	1.25	0.0635	0.33	0.0723	0.98	0.50	0.290	0.119	0.695	0.341
Run 3	1.35	0.467	1.26	0.0647	0.35	0.0690	0.98	0.48	0.236	0.118	0.759	0.345
Average SEC(ppm):	0.466		0.0642		0.0717		0.49		0.118		0.343	
MDC(ppm):	**0.931**		**0.128**		**0.143**		**0.98**		**0.236**		**0.686**	
Aspirator												
Run 1	3.16	0.827	1.055	0.535	8.30	0.244	2.73	1.15	3.00	1.53	4.65	0.616
Run 2	3.12	0.808	1.58	0.467	8.90	0.256	2.73	1.60	3.00	1.35	3.92	0.602
Run 3	2.25	0.916	1.063	0.580	8.16	0.265	2.73	1.34	3.00	1.62	3.75	0.681
Average SEC(ppm):	0.850		0.527		0.255		1.36		1.50		0.633	
MDC(ppm):	**1.70**		**1.05**		**0.510**		**2.73**		**3.00**		**1.27**	
Dryer 2												
Run 1	1.90	0.631	6.40	0.108	18.8	0.539	2.78	1.29	2.37	0.222	0.967	0.472
Run 2	2.59	0.617	6.58	0.105	10.2	0.549	2.78	1.55	1.38	0.260	3.28	0.457
Run 3	2.49	0.633	6.76	0.112	10.8	0.531	2.78	1.33	1.70	0.263	1.02	0.473
Average SEC(ppm):	0.627		0.108		0.540		1.39		0.248		0.467	
MDC(ppm):	**1.25**		**0.217**		**1.08**		**2.78**		**0.497**		**0.934**	

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
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GMH Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/10/2013 9:17	0913-111_A	13_10_10_0917_37_936	1	1.58	0.517	0.846	0.0700	0.434	0.0900	0.88	0.43	0.234	0.114	0.718	0.383
10/10/2013 9:18	0913-111_A	13_10_10_0918_38_786	1	0.971	0.472	0.708	0.0680	0.457	0.0890	0.88	0.43	0.234	0.112	0.718	0.346
10/10/2013 9:19	0913-111_A	13_10_10_0919_39_506	1	0.971	0.504	0.778	0.0720	0.443	0.0920	0.88	0.43	0.234	0.115	0.718	0.373
10/10/2013 9:20	0913-111_A	13_10_10_0920_40_336	1	0.971	0.464	0.696	0.0690	0.467	0.0860	0.88	0.44	0.234	0.111	0.718	0.345
10/10/2013 9:21	0913-111_A	13_10_10_0921_41_006	1	1.59	0.483	0.633	0.0700	0.454	0.0920	0.88	0.43	0.234	0.114	0.993	0.365
10/10/2013 9:22	0913-111_A	13_10_10_0922_41_806	1	0.971	0.493	0.708	0.0680	0.457	0.0880	0.88	0.44	0.234	0.114	0.718	0.360
10/10/2013 9:23	0913-111_A	13_10_10_0923_42_538	1	0.971	0.464	0.814	0.0660	0.469	0.0880	0.88	0.44	0.234	0.111	0.718	0.341
10/10/2013 9:24	0913-111_A	13_10_10_0924_43_348	1	1.15	0.462	0.696	0.0630	0.481	0.0900	0.88	0.44	0.234	0.111	0.718	0.336
10/10/2013 9:25	0913-111_A	13_10_10_0925_44_128	1	0.971	0.465	0.696	0.0680	0.477	0.0900	0.88	0.43	0.234	0.110	0.718	0.347
10/10/2013 9:26	0913-111_A	13_10_10_0926_44_818	1	0.971	0.498	0.782	0.0660	0.407	0.0870	0.88	0.44	0.234	0.115	0.750	0.375
10/10/2013 9:27	0913-111_A	13_10_10_0927_45_618	1	0.971	0.459	0.759	0.0660	0.491	0.0870	0.88	0.44	0.234	0.108	0.718	0.335
10/10/2013 9:28	0913-111_A	13_10_10_0928_46_429	1	1.16	0.499	0.820	0.0690	0.383	0.0890	0.88	0.44	0.234	0.116	0.718	0.370
10/10/2013 9:29	0913-111_A	13_10_10_0929_47_159	1	1.61	0.471	0.784	0.0680	0.445	0.0870	0.88	0.43	0.234	0.113	0.718	0.348
10/10/2013 9:30	0913-111_A	13_10_10_0930_47_959	1	0.971	0.454	0.803	0.0660	0.537	0.0880	0.88	0.44	0.234	0.111	0.718	0.332
10/10/2013 9:31	0913-111_A	13_10_10_0931_48_709	1	0.971	0.477	0.775	0.0700	0.442	0.0910	0.88	0.44	0.234	0.118	0.718	0.353
10/10/2013 9:32	0913-111_A	13_10_10_0932_49_519	1	0.971	0.460	0.746	0.0660	0.477	0.0910	0.88	0.44	0.234	0.113	0.718	0.348
10/10/2013 9:33	0913-111_A	13_10_10_0933_50_289	1	0.971	0.491	0.723	0.0730	0.473	0.0890	0.88	0.44	0.234	0.118	0.718	0.357
10/10/2013 9:34	0913-111_A	13_10_10_0934_50_859	1	0.971	0.491	0.731	0.0680	0.456	0.0910	0.88	0.44	0.234	0.117	0.718	0.360
10/10/2013 9:35	0913-111_A	13_10_10_0935_51_689	1	0.971	0.469	0.739	0.0680	0.477	0.0870	0.88	0.44	0.234	0.112	0.718	0.349
10/10/2013 9:36	0913-111_A	13_10_10_0936_52_439	1	0.971	0.483	0.650	0.0710	0.446	0.0890	0.88	0.44	0.234	0.117	0.718	0.359
10/10/2013 9:37	0913-111_A	13_10_10_0937_53_149	1	1.32	0.497	0.751	0.0700	0.448	0.0910	0.88	0.44	0.234	0.116	0.718	0.373
10/10/2013 9:38	0913-111_A	13_10_10_0938_53_929	1	0.971	0.467	0.668	0.0680	0.467	0.0890	0.88	0.44	0.234	0.115	0.718	0.345
10/10/2013 9:39	0913-111_A	13_10_10_0939_54_720	1	0.971	0.483	0.800	0.0720	0.416	0.0930	0.88	0.44	0.234	0.118	0.718	0.354
10/10/2013 9:40	0913-111_A	13_10_10_0940_55_430	1	0.971	0.487	0.703	0.0680	0.393	0.0910	0.88	0.44	0.234	0.117	0.718	0.357
10/10/2013 9:41	0913-111_A	13_10_10_0941_56_230	1	0.971	0.504	0.745	0.0710	0.435	0.0870	0.88	0.44	0.234	0.118	0.718	0.370
10/10/2013 9:42	0913-111_A	13_10_10_0942_57_010	1	1.10	0.501	0.613	0.0700	0.470	0.0910	0.88	0.44	0.234	0.117	0.718	0.367
10/10/2013 9:43	0913-111_A	13_10_10_0943_57_650	1	0.971	0.471	0.697	0.0690	0.415	0.0910	0.88	0.44	0.234	0.112	0.718	0.347
10/10/2013 9:44	0913-111_A	13_10_10_0944_58_440	1	0.971	0.477	0.736	0.0670	0.393	0.0910	0.88	0.44	0.234	0.113	0.718	0.349
10/10/2013 9:45	0913-111_A	13_10_10_0945_59_220	1	0.971	0.482	0.634	0.0670	0.388	0.0910	0.88	0.44	0.234	0.109	0.718	0.355
10/10/2013 9:47	0913-111_A	13_10_10_0947_00_000	1	1.48	0.477	0.644	0.0690	0.459	0.0890	0.88	0.44	0.234	0.116	0.742	0.355
10/10/2013 9:48	0913-111_A	13_10_10_0948_00_730	1	0.971	0.461	0.774	0.0660	0.420	0.0880	0.88	0.44	0.234	0.112	0.718	0.337
10/10/2013 9:49	0913-111_A	13_10_10_0949_01_480	1	1.29	0.487	0.773	0.0640	0.501	0.0910	0.88	0.44	0.234	0.112	0.718	0.359
10/10/2013 9:50	0913-111_A	13_10_10_0950_02_280	1	0.971	0.483	0.721	0.0680	0.464	0.0910	0.88	0.44	0.234	0.115	0.718	0.353
10/10/2013 9:51	0913-111_A	13_10_10_0951_03_020	1	0.971	0.476	0.710	0.0700	0.437	0.0870	0.88	0.44	0.234	0.117	0.718	0.353
10/10/2013 9:52	0913-111_A	13_10_10_0952_03_761	1	0.971	0.489	0.663	0.0700	0.523	0.0880	0.88	0.44	0.234	0.119	0.735	0.364
10/10/2013 9:53	0913-111_A	13_10_10_0953_04_581	1	0.971	0.500	0.789	0.0690	0.523	0.0880	0.88	0.44	0.234	0.118	0.718	0.368
10/10/2013 9:54	0913-111_A	13_10_10_0954_05_281	1	0.971	0.455	0.737	0.0660	0.667	0.0900	0.88	0.44	0.234	0.114	0.740	0.339
10/10/2013 9:55	0913-111_A	13_10_10_0955_06_091	1	1.41	0.469	0.869	0.0710	0.647	0.0950	0.88	0.44	0.234	0.118	0.718	0.351
10/10/2013 9:56	0913-111_A	13_10_10_0956_06_811	1	0.971	0.513	0.980	0.0740	0.645	0.0910	0.88	0.44	0.234	0.124	0.718	0.382
10/10/2013 9:57	0913-111_A	13_10_10_0957_07_611	1	1.30	0.482	0.870	0.0720	0.667	0.0960	0.88	0.44	0.234	0.122	0.990	0.356
10/10/2013 9:58	0913-111_A	13_10_10_0958_08_331	1	0.971	0.488	0.920	0.0700	0.688	0.0950	0.88	0.44	0.234	0.117	0.947	0.366
10/10/2013 9:59	0913-111_A	13_10_10_0959_09_071	1	1.42	0.496	0.677	0.0700	0.649	0.0930	0.88	0.44	0.234	0.119	0.872	0.364
10/10/2013 10:00	0913-111_A	13_10_10_1000_09_811	1	0.971	0.492	0.821	0.0700	0.564	0.0920	0.88	0.44	0.234	0.117	0.747	0.360
10/10/2013 10:01	0913-111_A	13_10_10_1001_10_611	1	1.62	0.494	0.864	0.0720	0.597	0.0930	0.88	0.44	0.234	0.123	0.718	0.376
10/10/2013 10:02	0913-111_A	13_10_10_1002_11_391	1	0.971	0.487	0.650	0.0680	0.580	0.0920	0.88	0.44	0.234	0.114	0.866	0.363
10/10/2013 10:03	0913-111_A	13_10_10_1003_12_111	1	1.80	0.503	0.846	0.0710	0.577	0.0930	0.88	0.44	0.234	0.118	0.718	0.368
10/10/2013 10:04	0913-111_A	13_10_10_1004_12_832	1	0.978	0.474	0.794	0.0690	0.664	0.0920	0.88	0.44	0.234	0.118	0.718	0.356
10/10/2013 10:05	0913-111_A	13_10_10_1005_13_642	1	1.21	0.489	0.819	0.0760	0.593	0.0890	0.88	0.44	0.234	0.124	0.718	0.364
10/10/2013 10:06	0913-111_A	13_10_10_1006_14_372	1	0.971	0.476	0.718	0.0710	0.644	0.0930	0.88	0.44	0.234	0.118	0.718	0.353
10/10/2013 10:07	0913-111_A	13_10_10_1007_15_182	1	1.07	0.497	0.769	0.0720	0.727	0.0910	0.88	0.44	0.234	0.125	0.718	0.367
10/10/2013 10:08	0913-111_A	13_10_10_1008_15_892	1	1.28	0.512	0.804	0.0750	0.660	0.0950	0.88	0.44	0.234	0.124	0.718	0.383
10/10/2013 10:09	0913-111_A	13_10_10_1009_16_712	1	1.61	0.551	0.828	0.0820	0.582	0.0910	0.88	0.44	0.234	0.133	0.718	0.406
10/10/2013 10:10	0913-111_A	13_10_10_1010_17_422	1	0.986	0.559	0.706	0.0790	0.620	0.0940	0.88	0.44	0.234	0.133	0.718	0.417
10/10/2013 10:11	0913-111_A	13_10_10_1011_18_172	1	1.39	0.537	0.667	0.0780	0.631	0.0920	0.88	0.44	0.234	0.134	0.900	0.395
10/10/2013 10:12	0913-111_A	13_10_10_1012_18_922	1	0.971	0.535	0.703	0.0770	0.435	0.0950	0.88	0.43	0.234	0.130	1.28	0.393
10/10/2013 10:13	0913-111_A	13_10_10_1013_19_722	1	1.48	0.582	0.825	0.0840	0.497	0.0970	0.88	0.43	0.234	0.139	1.05	0.429
10/10/2013 10:14	0913-111_A	13_10_10_1014_20_442	1	0.999	0.682	0.594	0.0930	0.537	0.0950	0.88	0.43	0.234	0.155	0.718	0.495
10/10/2013 10:15	0913-111_A	13_10_10_1015_21_272	1	1.71	0.651	0.563	0.0920	0.501	0.0970	0.88	0.43	0.234	0.150	0.718	0.477
10/10/2013 10:16	0913-111_A	13_10_10_1016_21_893	1	0.971	0.705	0.431	0.0960	0.400	0.102	0.88	0.43	0.234	0.158	0.718	0.515
10/10/2013 10:17	0913-111_A	13_10_10_1017_22_633	1	1.15	0.698	0.729	0.100	0.361	0.100	0.88	0.44	0.234	0.162	0.718	0.514
		Average Conc. (ppm):	**1**	**1.13**	**0.502**	**0.742**	**0.0719**	**0.508**	**0.0912**	**0.88**	**0.44**	**0.234**	**0.120**	**0.756**	**0.371**

GMH Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/10/2013 10:36	0913-111_A	13_10_10_1036_37_174	1	1.30	0.438	0.768	0.0660	0.421	0.0890	0.88	0.43	0.234	0.115	0.718	0.324
10/10/2013 10:37	0913-111_A	13_10_10_1037_37_934	1	1.05	0.483	0.596	0.0660	0.415	0.0900	0.88	0.43	0.234	0.121	0.718	0.353
10/10/2013 10:38	0913-111_A	13_10_10_1038_38_624	1	1.89	0.468	0.609	0.0690	0.442	0.0910	0.88	0.43	0.234	0.119	0.718	0.346
10/10/2013 10:39	0913-111_A	13_10_10_1039_39_435	1	0.971	0.474	0.653	0.0670	0.423	0.0920	0.88	0.43	0.234	0.118	0.718	0.344
10/10/2013 10:40	0913-111_A	13_10_10_1040_40_195	1	0.971	0.480	0.745	0.0690	0.402	0.0890	0.88	0.43	0.234	0.116	0.718	0.355
10/10/2013 10:41	0913-111_A	13_10_10_1041_41_005	1	0.971	0.462	0.729	0.0690	0.409	0.0900	0.88	0.44	0.234	0.117	0.718	0.341
10/10/2013 10:42	0913-111_A	13_10_10_1042_41_815	1	1.32	0.491	0.653	0.0740	0.403	0.0920	0.88	0.44	0.234	0.121	0.718	0.363
10/10/2013 10:43	0913-111_A	13_10_10_1043_42_555	1	1.41	0.475	0.688	0.0700	0.421	0.0930	0.88	0.44	0.234	0.121	0.718	0.353
10/10/2013 10:44	0913-111_A	13_10_10_1044_43_305	1	0.982	0.450	0.665	0.0700	0.465	0.0930	0.88	0.44	0.234	0.117	0.718	0.330
10/10/2013 10:45	0913-111_A	13_10_10_1045_44_015	1	1.05	0.464	0.705	0.0710	0.439	0.0920	0.88	0.44	0.234	0.119	0.718	0.344
10/10/2013 10:46	0913-111_A	13_10_10_1046_44_775	1	0.971	0.441	0.685	0.0690	0.408	0.0950	0.88	0.44	0.234	0.118	0.718	0.335
10/10/2013 10:47	0913-111_A	13_10_10_1047_45_585	1	1.46	0.503	0.602	0.0700	0.427	0.0950	0.88	0.44	0.234	0.121	0.718	0.367
10/10/2013 10:48	0913-111_A	13_10_10_1048_46_355	1	1.06	0.461	0.746	0.0690	0.387	0.0920	0.88	0.44	0.234	0.116	0.718	0.339
10/10/2013 10:49	0913-111_A	13_10_10_1049_47_115	1	0.971	0.475	0.640	0.0660	0.410	0.0920	0.88	0.44	0.234	0.116	0.718	0.351
10/10/2013 10:50	0913-111_A	13_10_10_1050_47_935	1	0.971	0.470	0.668	0.0680	0.482	0.0940	0.88	0.43	0.234	0.118	0.718	0.350
10/10/2013 10:51	0913-111_A	13_10_10_1051_48_646	1	1.13	0.477	0.622	0.0640	0.490	0.0950	0.88	0.43	0.234	0.116	0.718	0.348
10/10/2013 10:52	0913-111_A	13_10_10_1052_49_456	1	2.24	0.475	0.487	0.0680	0.390	0.0950	0.88	0.44	0.234	0.118	0.718	0.354
10/10/2013 10:53	0913-111_A	13_10_10_1053_50_266	1	1.20	0.487	0.608	0.0700	0.453	0.0930	0.88	0.44	0.234	0.122	0.718	0.361
10/10/2013 10:54	0913-111_A	13_10_10_1054_50_976	1	1.59	0.487	0.684	0.0670	0.427	0.0940	0.88	0.44	0.234	0.118	0.760	0.361
10/10/2013 10:55	0913-111_A	13_10_10_1055_51_786	1	0.971	0.474	0.616	0.0670	0.498	0.0930	0.88	0.44	0.234	0.116	0.718	0.351
10/10/2013 10:56	0913-111_A	13_10_10_1056_52_486	1	1.55	0.439	0.589	0.0670	0.459	0.0950	0.88	0.44	0.234	0.120	0.718	0.330
10/10/2013 10:57	0913-111_A	13_10_10_1057_53_186	1	0.971	0.438	0.650	0.0640	0.431	0.0940	0.88	0.43	0.234	0.114	0.718	0.330
10/10/2013 10:58	0913-111_A	13_10_10_1058_53_966	1	0.971	0.502	0.663	0.0700	0.438	0.0930	0.88	0.43	0.234	0.120	0.718	0.370
10/10/2013 10:59	0913-111_A	13_10_10_1059_54_676	1	0.982	0.476	0.570	0.0670	0.520	0.0940	0.88	0.44	0.234	0.117	0.718	0.353
10/10/2013 11:00	0913-111_A	13_10_10_1100_55_506	1	0.991	0.468	0.713	0.0690	0.420	0.0940	0.88	0.43	0.234	0.117	0.718	0.343
10/10/2013 11:01	0913-111_A	13_10_10_1101_56_246	1	0.971	0.483	0.589	0.0670	0.428	0.0930	0.88	0.43	0.234	0.114	0.718	0.353
10/10/2013 11:02	0913-111_A	13_10_10_1102_56_996	1	1.16	0.489	0.681	0.0700	0.402	0.0940	0.88	0.43	0.234	0.121	0.718	0.359
10/10/2013 11:03	0913-111_A	13_10_10_1103_57_807	1	2.29	0.482	0.659	0.0690	0.524	0.0930	0.88	0.43	0.234	0.122	0.718	0.357
10/10/2013 11:04	0913-111_A	13_10_10_1104_58_527	1	1.13	0.465	0.692	0.0650	0.415	0.0960	0.88	0.43	0.234	0.117	0.718	0.347
10/10/2013 11:05	0913-111_A	13_10_10_1105_59_347	1	0.971	0.476	0.615	0.0700	0.457	0.0960	0.88	0.43	0.234	0.118	0.718	0.361
10/10/2013 11:07	0913-111_A	13_10_10_1107_00_087	1	1.32	0.474	0.596	0.0690	0.499	0.0950	0.88	0.43	0.234	0.116	0.718	0.348
10/10/2013 11:08	0913-111_A	13_10_10_1108_00_897	1	1.25	0.482	0.602	0.0710	0.468	0.0950	0.88	0.43	0.234	0.122	0.718	0.357
10/10/2013 11:09	0913-111_A	13_10_10_1109_01_657	1	1.13	0.465	0.638	0.0660	0.508	0.0960	0.88	0.43	0.234	0.117	0.718	0.354
10/10/2013 11:10	0913-111_A	13_10_10_1110_02_367	1	1.38	0.465	0.607	0.0660	0.400	0.0930	0.88	0.43	0.234	0.116	0.718	0.342
10/10/2013 11:11	0913-111_A	13_10_10_1111_03_147	1	0.971	0.448	0.509	0.0690	0.436	0.0950	0.88	0.43	0.234	0.116	0.718	0.333
10/10/2013 11:12	0913-111_A	13_10_10_1112_03_917	1	1.10	0.466	0.657	0.0660	0.441	0.0950	0.88	0.44	0.234	0.116	0.718	0.344
10/10/2013 11:13	0913-111_A	13_10_10_1113_04_727	1	0.971	0.454	0.581	0.0670	0.470	0.0960	0.88	0.44	0.234	0.113	0.718	0.343
10/10/2013 11:14	0913-111_A	13_10_10_1114_05_517	1	0.971	0.500	0.594	0.0700	0.439	0.0940	0.88	0.44	0.234	0.125	0.718	0.377
10/10/2013 11:15	0913-111_A	13_10_10_1115_06_218	1	1.14	0.483	0.565	0.0670	0.543	0.0940	0.88	0.44	0.234	0.118	0.718	0.354
10/10/2013 11:16	0913-111_A	13_10_10_1116_07_048	1	1.54	0.487	0.669	0.0690	0.489	0.0950	0.88	0.44	0.234	0.123	0.718	0.361
10/10/2013 11:17	0913-111_A	13_10_10_1117_07_798	1	1.47	0.439	0.564	0.0680	0.495	0.0970	0.88	0.44	0.234	0.115	0.718	0.327
10/10/2013 11:18	0913-111_A	13_10_10_1118_08_548	1	0.971	0.441	0.586	0.0670	0.489	0.0920	0.88	0.44	0.234	0.111	0.718	0.327
10/10/2013 11:19	0913-111_A	13_10_10_1119_09_278	1	0.971	0.458	0.455	0.0680	0.470	0.0960	0.88	0.44	0.234	0.116	0.718	0.340
10/10/2013 11:20	0913-111_A	13_10_10_1120_10_068	1	0.972	0.491	0.725	0.0680	0.469	0.0950	0.88	0.44	0.234	0.120	0.718	0.357
10/10/2013 11:21	0913-111_A	13_10_10_1121_10_908	1	0.971	0.491	0.603	0.0710	0.480	0.0950	0.88	0.44	0.234	0.122	0.718	0.358
10/10/2013 11:22	0913-111_A	13_10_10_1122_11_598	1	1.11	0.463	0.554	0.0680	0.485	0.0950	0.88	0.44	0.234	0.118	0.718	0.341
10/10/2013 11:23	0913-111_A	13_10_10_1123_12_398	1	1.10	0.495	0.562	0.0720	0.425	0.0930	0.88	0.44	0.234	0.120	0.718	0.359
10/10/2013 11:24	0913-111_A	13_10_10_1124_13_208	1	1.14	0.470	0.631	0.0720	0.508	0.0960	0.88	0.44	0.234	0.123	0.718	0.356
10/10/2013 11:25	0913-111_A	13_10_10_1125_13_918	1	0.971	0.461	0.681	0.0680	0.501	0.0940	0.88	0.44	0.234	0.120	0.718	0.345
10/10/2013 11:26	0913-111_A	13_10_10_1126_14_788	1	1.42	0.474	0.642	0.0700	0.503	0.0940	0.88	0.44	0.234	0.119	0.718	0.349
10/10/2013 11:27	0913-111_A	13_10_10_1127_15_509	1	1.34	0.483	0.715	0.0680	0.566	0.0910	0.88	0.44	0.234	0.118	0.718	0.360
10/10/2013 11:28	0913-111_A	13_10_10_1128_16_309	1	1.76	0.511	0.549	0.0710	0.489	0.0910	0.88	0.44	0.234	0.126	0.718	0.383
10/10/2013 11:29	0913-111_A	13_10_10_1129_17_059	1	1.14	0.479	0.682	0.0660	0.429	0.0910	0.88	0.44	0.234	0.117	0.718	0.351
10/10/2013 11:30	0913-111_A	13_10_10_1130_17_759	1	0.971	0.495	0.737	0.0690	0.526	0.0960	0.88	0.44	0.234	0.119	0.718	0.369
10/10/2013 11:31	0913-111_A	13_10_10_1131_18_579	1	1.28	0.484	0.594	0.0670	0.461	0.0930	0.88	0.44	0.234	0.115	0.798	0.352
10/10/2013 11:32	0913-111_A	13_10_10_1132_19_389	1	2.07	0.459	0.582	0.0650	0.465	0.0930	0.88	0.44	0.234	0.114	0.718	0.339
10/10/2013 11:33	0913-111_A	13_10_10_1133_20_149	1	0.971	0.497	0.530	0.0710	0.460	0.0910	0.88	0.44	0.234	0.116	0.718	0.362
10/10/2013 11:34	0913-111_A	13_10_10_1134_20_899	1	0.971	0.463	0.634	0.0680	0.521	0.0920	0.88	0.44	0.234	0.114	0.718	0.338
10/10/2013 11:35	0913-111_A	13_10_10_1135_21_699	1	0.971	0.500	0.641	0.0710	0.497	0.0950	0.88	0.44	0.234	0.119	0.746	0.366
10/10/2013 11:36	0913-111_A	13_10_10_1136_22_399	1	1.18	0.505	0.445	0.0710	0.534	0.0930	0.88	0.45	0.234	0.120	0.718	0.366
		Average Conc. (ppm):	**1**	**1.20**	**0.474**	**0.629**	**0.0684**	**0.460**	**0.0935**	**0.88**	**0.44**	**0.234**	**0.118**	**0.721**	**0.351**

Company	ACT	Client #	1911
Analyst Initials	CJT	Job #	0913-111
Parameters	EPA Method 320	PO #	3134 1911
# Samples	21 Runs	Report Date	V0.62 13.10.18.12.58

GMH Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/10/2013 11:50	0913-111_A	13_10_10_1150_33_060	1	0.971	0.466	0.541	0.0650	0.432	0.0970	0.88	0.44	0.234	0.109	0.718	0.348
10/10/2013 11:51	0913-111_A	13_10_10_1151_33_861	1	0.987	0.510	0.328	0.0700	0.457	0.0930	0.88	0.44	0.234	0.113	0.904	0.373
10/10/2013 11:52	0913-111_A	13_10_10_1152_34_581	1	0.971	0.513	0.468	0.0710	0.466	0.0940	0.88	0.44	0.234	0.116	0.718	0.374
10/10/2013 11:53	0913-111_A	13_10_10_1153_35_331	1	0.971	0.499	0.475	0.0650	0.418	0.0970	0.88	0.44	0.234	0.110	0.718	0.368
10/10/2013 11:54	0913-111_A	13_10_10_1154_36_151	1	1.30	0.467	0.511	0.0670	0.387	0.0950	0.88	0.45	0.234	0.112	0.718	0.348
10/10/2013 11:55	0913-111_A	13_10_10_1155_36_951	1	1.20	0.499	0.554	0.0710	0.435	0.0940	0.88	0.45	0.234	0.117	0.718	0.365
10/10/2013 11:56	0913-111_A	13_10_10_1156_37_691	1	0.971	0.481	0.425	0.0680	0.378	0.0910	0.88	0.45	0.234	0.112	0.718	0.355
10/10/2013 11:57	0913-111_A	13_10_10_1157_38_401	1	1.41	0.466	0.527	0.0690	0.498	0.0940	0.88	0.45	0.234	0.114	0.718	0.346
10/10/2013 11:58	0913-111_A	13_10_10_1158_39_211	1	1.13	0.468	0.472	0.0710	0.432	0.0940	0.88	0.45	0.234	0.113	0.718	0.351
10/10/2013 11:59	0913-111_A	13_10_10_1159_40_021	1	1.58	0.479	0.524	0.0680	0.324	0.0900	0.88	0.44	0.234	0.113	0.718	0.357
10/10/2013 12:00	0913-111_A	13_10_10_1200_40_731	1	0.971	0.485	0.472	0.0670	0.389	0.0950	0.88	0.45	0.234	0.112	0.718	0.359
10/10/2013 12:01	0913-111_A	13_10_10_1201_41_561	1	1.28	0.472	0.636	0.0700	0.357	0.0910	0.88	0.44	0.234	0.113	0.718	0.355
10/10/2013 12:02	0913-111_A	13_10_10_1202_42_302	1	0.971	0.473	0.612	0.0670	0.404	0.0910	0.88	0.44	0.234	0.114	0.718	0.349
10/10/2013 12:03	0913-111_A	13_10_10_1203_43_022	1	0.971	0.449	0.609	0.0630	0.398	0.0900	0.88	0.44	0.234	0.105	0.718	0.328
10/10/2013 12:04	0913-111_A	13_10_10_1204_43_872	1	1.01	0.489	0.509	0.0700	0.361	0.0930	0.88	0.45	0.234	0.116	0.718	0.364
10/10/2013 12:05	0913-111_A	13_10_10_1205_44_582	1	0.971	0.505	0.520	0.0700	0.401	0.0910	0.88	0.45	0.234	0.116	0.718	0.376
10/10/2013 12:06	0913-111_A	13_10_10_1206_45_332	1	1.66	0.479	0.582	0.0680	0.354	0.0930	0.88	0.44	0.234	0.112	0.718	0.358
10/10/2013 12:07	0913-111_A	13_10_10_1207_46_182	1	0.971	0.478	0.498	0.0640	0.379	0.0910	0.88	0.45	0.234	0.112	0.718	0.358
10/10/2013 12:08	0913-111_A	13_10_10_1208_46_912	1	1.00	0.500	0.622	0.0670	0.438	0.0910	0.88	0.45	0.234	0.114	0.718	0.373
10/10/2013 12:09	0913-111_A	13_10_10_1209_47_682	1	1.35	0.456	0.588	0.0670	0.406	0.0910	0.88	0.45	0.234	0.112	0.718	0.346
10/10/2013 12:10	0913-111_A	13_10_10_1210_48_492	1	0.971	0.533	0.475	0.0710	0.361	0.0910	0.88	0.44	0.234	0.117	0.718	0.391
10/10/2013 12:11	0913-111_A	13_10_10_1211_49_202	1	0.971	0.444	0.555	0.0650	0.338	0.0930	0.88	0.44	0.234	0.109	0.718	0.336
10/10/2013 12:12	0913-111_A	13_10_10_1212_50_012	1	0.971	0.500	0.555	0.0700	0.363	0.0910	0.88	0.44	0.234	0.114	0.718	0.372
10/10/2013 12:13	0913-111_A	13_10_10_1213_50_712	1	0.971	0.466	0.624	0.0650	0.410	0.0940	0.88	0.44	0.234	0.109	0.718	0.347
10/10/2013 12:14	0913-111_A	13_10_10_1214_51_513	1	1.36	0.450	0.604	0.0660	0.355	0.0920	0.88	0.45	0.234	0.108	0.718	0.334
10/10/2013 12:15	0913-111_A	13_10_10_1215_52_273	1	0.971	0.496	0.543	0.0720	0.420	0.0890	0.88	0.44	0.234	0.116	0.718	0.364
10/10/2013 12:16	0913-111_A	13_10_10_1216_53_003	1	1.00	0.465	0.562	0.0660	0.302	0.0900	0.88	0.44	0.234	0.110	0.838	0.341
10/10/2013 12:17	0913-111_A	13_10_10_1217_53_803	1	1.42	0.480	0.562	0.0670	0.311	0.0910	0.88	0.44	0.234	0.113	0.718	0.352
10/10/2013 12:18	0913-111_A	13_10_10_1218_54_503	1	0.980	0.474	0.507	0.0690	0.363	0.0890	0.88	0.44	0.234	0.113	0.718	0.356
10/10/2013 12:19	0913-111_A	13_10_10_1219_55_313	1	1.41	0.480	0.565	0.0650	0.409	0.0910	0.88	0.45	0.234	0.110	0.718	0.359
10/10/2013 12:20	0913-111_A	13_10_10_1220_55_913	1	0.971	0.469	0.563	0.0690	0.363	0.0910	0.88	0.44	0.234	0.110	0.718	0.343
10/10/2013 12:21	0913-111_A	13_10_10_1221_56_773	1	1.09	0.439	0.556	0.0650	0.413	0.0920	0.88	0.45	0.234	0.109	0.718	0.319
10/10/2013 12:22	0913-111_A	13_10_10_1222_57_533	1	1.29	0.501	0.511	0.0680	0.345	0.0930	0.88	0.45	0.234	0.117	0.718	0.368
10/10/2013 12:23	0913-111_A	13_10_10_1223_58_253	1	1.89	0.488	0.614	0.0690	0.276	0.0900	0.88	0.45	0.234	0.115	0.718	0.365
10/10/2013 12:24	0913-111_A	13_10_10_1224_59_013	1	0.971	0.467	0.561	0.0670	0.371	0.0900	0.88	0.45	0.234	0.109	0.718	0.345
10/10/2013 12:25	0913-111_A	13_10_10_1225_59_763	1	0.971	0.465	0.501	0.0670	0.404	0.0910	0.88	0.45	0.262	0.111	0.718	0.345
10/10/2013 12:27	0913-111_A	13_10_10_1227_00_544	1	0.971	0.493	0.590	0.0700	0.331	0.0920	0.88	0.45	0.234	0.114	0.718	0.359
10/10/2013 12:28	0913-111_A	13_10_10_1228_01_284	1	0.971	0.488	0.598	0.0680	0.349	0.0910	0.88	0.45	0.235	0.114	0.718	0.357
10/10/2013 12:29	0913-111_A	13_10_10_1229_02_134	1	1.27	0.485	0.520	0.0650	0.346	0.0890	0.88	0.45	0.234	0.112	0.718	0.359
10/10/2013 12:30	0913-111_A	13_10_10_1230_02_884	1	1.57	0.483	0.477	0.0670	0.323	0.0910	0.88	0.45	0.234	0.113	0.718	0.356
10/10/2013 12:31	0913-111_A	13_10_10_1231_03_584	1	0.971	0.457	0.589	0.0630	0.393	0.0920	0.88	0.45	0.234	0.107	0.718	0.336
10/10/2013 12:32	0913-111_A	13_10_10_1232_04_304	1	0.971	0.485	0.687	0.0690	0.350	0.0890	0.88	0.45	0.234	0.113	0.718	0.359
10/10/2013 12:33	0913-111_A	13_10_10_1233_05_164	1	1.56	0.491	0.551	0.0680	0.337	0.0900	0.88	0.45	0.348	0.119	0.718	0.368
10/10/2013 12:34	0913-111_A	13_10_10_1234_05_914	1	1.02	0.480	0.648	0.0680	0.334	0.0910	0.88	0.45	0.234	0.116	0.718	0.355
10/10/2013 12:35	0913-111_A	13_10_10_1235_06_674	1	0.971	0.462	0.608	0.0660	0.357	0.0900	0.88	0.45	0.234	0.111	0.718	0.343
10/10/2013 12:36	0913-111_A	13_10_10_1236_07_474	1	0.971	0.467	0.567	0.0660	0.366	0.0900	0.88	0.45	0.263	0.113	0.718	0.345
10/10/2013 12:37	0913-111_A	13_10_10_1237_08_174	1	0.971	0.473	0.642	0.0650	0.403	0.0910	0.88	0.45	0.234	0.112	0.718	0.345
10/10/2013 12:38	0913-111_A	13_10_10_1238_09_024	1	0.971	0.483	0.701	0.0690	0.414	0.0900	0.88	0.45	0.234	0.117	0.718	0.355
10/10/2013 12:40	0913-111_A	13_10_10_1240_22_660	1	1.54	0.467	0.615	0.0670	0.370	0.0890	0.88	0.45	0.349	0.116	0.718	0.346
10/10/2013 12:41	0913-111_A	13_10_10_1241_23_370	1	1.50	0.503	0.599	0.0700	0.393	0.0920	0.88	0.45	0.347	0.117	0.718	0.374
10/10/2013 12:42	0913-111_A	13_10_10_1242_24_140	1	1.83	0.489	0.510	0.0690	0.329	0.0890	0.88	0.44	0.279	0.120	0.718	0.364
10/10/2013 12:43	0913-111_A	13_10_10_1243_24_950	1	1.61	0.487	0.520	0.0690	0.338	0.0910	0.88	0.44	0.354	0.119	0.718	0.358
10/10/2013 12:44	0913-111_A	13_10_10_1244_25_670	1	1.08	0.461	0.560	0.0680	0.372	0.0910	0.88	0.45	0.358	0.113	0.718	0.339
10/10/2013 12:45	0913-111_A	13_10_10_1245_26_440	1	1.33	0.461	0.596	0.0680	0.332	0.0880	0.88	0.45	0.349	0.117	0.718	0.343
10/10/2013 12:46	0913-111_A	13_10_10_1246_27_150	1	0.971	0.479	0.592	0.0670	0.330	0.0900	0.88	0.44	0.234	0.113	0.718	0.354
10/10/2013 12:47	0913-111_A	13_10_10_1247_27_970	1	1.06	0.483	0.718	0.0640	0.390	0.0880	0.88	0.45	0.291	0.111	0.718	0.354
10/10/2013 12:48	0913-111_A	13_10_10_1248_28_700	1	0.971	0.489	0.559	0.0700	0.385	0.0920	0.88	0.45	0.234	0.119	0.718	0.368
10/10/2013 12:49	0913-111_A	13_10_10_1249_29_530	1	0.971	0.522	0.687	0.0710	0.345	0.0900	0.88	0.44	0.368	0.121	0.718	0.388
10/10/2013 12:50	0913-111_A	13_10_10_1250_30_250	1	1.09	0.475	0.612	0.0670	0.353	0.0880	0.88	0.45	0.234	0.114	0.718	0.360
		Average Conc. (ppm):	**1**	**1.15**	**0.480**	**0.561**	**0.0677**	**0.376**	**0.0913**	**0.88**	**0.45**	**0.251**	**0.113**	**0.723**	**0.355**

Dryer 1 Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/10/2013 17:38	0913-111_A	13_10_10_1738_19_855	1	1.87	0.969	5.41	0.145	3.36	0.311	2.04	0.94	1.36	0.253	1.27	0.711
10/10/2013 17:39	0913-111_A	13_10_10_1739_20_675	1	2.01	0.979	5.39	0.142	3.31	0.309	2.04	0.92	1.36	0.258	1.27	0.725
10/10/2013 17:41	0913-111_A	13_10_10_1741_33_410	1	1.72	0.949	5.44	0.146	3.31	0.314	2.04	0.89	1.18	0.258	1.27	0.703
10/10/2013 17:42	0913-111_A	13_10_10_1742_34_100	1	2.10	0.963	5.60	0.146	3.32	0.318	2.04	0.88	1.13	0.259	1.27	0.712
10/10/2013 17:43	0913-111_A	13_10_10_1743_34_860	1	2.27	0.976	5.77	0.148	3.46	0.323	2.04	0.88	1.02	0.267	1.27	0.719
10/10/2013 17:44	0913-111_A	13_10_10_1744_35_610	1	1.72	0.988	6.15	0.148	3.65	0.326	2.04	0.85	1.24	0.264	1.27	0.725
10/10/2013 17:45	0913-111_A	13_10_10_1745_36_400	1	1.79	0.992	6.69	0.147	3.80	0.332	2.04	0.85	1.25	0.266	1.27	0.726
10/10/2013 17:46	0913-111_A	13_10_10_1746_37_220	1	1.95	1.01	6.74	0.151	3.88	0.330	2.04	0.85	1.16	0.269	1.27	0.735
10/10/2013 17:47	0913-111_A	13_10_10_1747_37_980	1	2.68	0.984	6.60	0.147	3.84	0.323	2.04	0.87	1.21	0.267	1.27	0.728
10/10/2013 17:48	0913-111_A	13_10_10_1748_38_700	1	1.78	0.985	6.70	0.152	3.85	0.319	2.04	0.88	1.22	0.268	1.27	0.724
10/10/2013 17:49	0913-111_A	13_10_10_1749_39_450	1	2.02	1.00	6.10	0.146	3.67	0.317	2.04	0.88	1.01	0.263	1.27	0.739
10/10/2013 17:50	0913-111_A	13_10_10_1750_40_260	1	2.05	0.960	5.27	0.139	3.31	0.307	2.04	0.90	0.847	0.252	1.27	0.707
10/10/2013 17:51	0913-111_A	13_10_10_1751_41_070	1	1.72	0.956	4.78	0.135	3.07	0.307	2.04	0.91	0.728	0.251	1.27	0.702
10/10/2013 17:52	0913-111_A	13_10_10_1752_41_790	1	1.72	0.967	4.48	0.137	2.94	0.306	2.04	0.93	0.560	0.250	1.27	0.709
10/10/2013 17:53	0913-111_A	13_10_10_1753_42_531	1	1.90	0.951	3.97	0.137	2.81	0.301	2.04	0.94	0.514	0.253	1.27	0.704
10/10/2013 17:54	0913-111_A	13_10_10_1754_43_251	1	1.72	0.943	3.70	0.135	2.69	0.297	2.04	0.96	0.452	0.251	1.27	0.696
10/10/2013 17:55	0913-111_A	13_10_10_1755_44_091	1	1.79	0.903	3.57	0.135	2.58	0.294	2.04	0.96	0.452	0.246	1.27	0.665
10/10/2013 17:56	0913-111_A	13_10_10_1756_44_841	1	1.72	0.961	3.29	0.135	2.45	0.293	2.04	0.98	0.452	0.247	1.27	0.712
10/10/2013 17:57	0913-111_A	13_10_10_1757_45_591	1	2.09	0.906	3.03	0.129	2.46	0.290	2.04	0.99	0.452	0.237	1.27	0.670
10/10/2013 17:58	0913-111_A	13_10_10_1758_46_391	1	1.72	0.909	2.91	0.132	2.41	0.289	2.04	1.01	0.452	0.243	1.27	0.680
10/10/2013 17:59	0913-111_A	13_10_10_1759_47_171	1	1.72	0.908	2.72	0.131	2.21	0.286	2.04	1.01	0.452	0.239	1.27	0.670
10/10/2013 18:00	0913-111_A	13_10_10_1800_47_881	1	1.72	0.931	2.52	0.129	2.28	0.281	2.04	1.04	0.452	0.241	1.27	0.698
10/10/2013 18:01	0913-111_A	13_10_10_1801_49_661	1	1.72	0.903	2.45	0.129	2.24	0.277	2.04	1.04	0.452	0.240	1.27	0.672
10/10/2013 18:02	0913-111_A	13_10_10_1802_49_451	1	1.72	0.919	2.17	0.129	2.05	0.272	2.04	1.06	0.452	0.236	1.27	0.688
10/10/2013 18:03	0913-111_A	13_10_10_1803_50_191	1	1.72	0.862	2.18	0.123	1.96	0.277	2.04	1.07	0.452	0.228	1.27	0.644
10/10/2013 18:04	0913-111_A	13_10_10_1804_51_001	1	1.72	0.856	2.04	0.120	2.08	0.282	2.04	1.07	0.452	0.224	1.27	0.638
10/10/2013 18:05	0913-111_A	13_10_10_1805_51_742	1	1.72	0.905	2.12	0.126	2.06	0.291	2.04	1.06	0.452	0.232	1.27	0.664
10/10/2013 18:06	0913-111_A	13_10_10_1806_52_442	1	1.72	0.910	2.33	0.127	2.13	0.295	2.04	1.04	0.452	0.232	1.27	0.671
10/10/2013 18:07	0913-111_A	13_10_10_1807_53_232	1	1.72	0.901	2.55	0.127	2.22	0.297	2.04	1.02	0.452	0.239	1.27	0.666
10/10/2013 18:08	0913-111_A	13_10_10_1808_53_952	1	1.72	0.938	2.54	0.128	2.23	0.298	2.04	1.02	0.452	0.242	1.27	0.691
10/10/2013 18:09	0913-111_A	13_10_10_1809_54_762	1	1.72	0.943	2.46	0.125	2.29	0.297	2.04	1.02	0.452	0.238	1.27	0.706
10/10/2013 18:10	0913-111_A	13_10_10_1810_55_572	1	1.72	0.908	2.54	0.127	2.30	0.298	2.04	1.00	0.452	0.233	1.27	0.672
10/10/2013 18:11	0913-111_A	13_10_10_1811_56_282	1	1.72	0.879	2.86	0.124	2.40	0.306	2.04	1.00	0.452	0.228	1.27	0.654
10/10/2013 18:12	0913-111_A	13_10_10_1812_57_092	1	1.72	0.930	3.03	0.129	2.62	0.310	2.04	0.99	0.452	0.238	1.27	0.690
10/10/2013 18:13	0913-111_A	13_10_10_1813_57_812	1	1.72	0.947	3.21	0.130	2.56	0.307	2.04	0.98	0.452	0.240	1.27	0.703
10/10/2013 18:14	0913-111_A	13_10_10_1814_58_622	1	1.72	0.922	3.36	0.133	2.59	0.306	2.04	0.97	0.452	0.238	1.27	0.684
10/10/2013 18:15	0913-111_A	13_10_10_1815_59_382	1	1.72	0.927	3.14	0.129	2.69	0.302	2.04	0.97	0.452	0.237	1.27	0.685
10/10/2013 18:17	0913-111_A	13_10_10_1817_00_093	1	1.86	0.926	2.95	0.129	2.59	0.296	2.04	0.96	0.452	0.238	1.27	0.697
10/10/2013 18:18	0913-111_A	13_10_10_1818_00_713	1	1.72	0.924	3.03	0.129	2.49	0.293	2.04	0.99	0.452	0.235	1.27	0.684
10/10/2013 18:19	0913-111_A	13_10_10_1819_01_513	1	1.72	0.895	2.77	0.132	2.34	0.291	2.04	1.00	0.452	0.236	1.27	0.660
10/10/2013 18:20	0913-111_A	13_10_10_1820_02_313	1	1.72	0.906	2.49	0.128	2.20	0.284	2.04	1.02	0.452	0.229	1.27	0.671
10/10/2013 18:21	0913-111_A	13_10_10_1821_03_043	1	1.72	0.903	2.25	0.127	2.16	0.283	2.04	1.05	0.452	0.231	1.27	0.667
10/10/2013 18:22	0913-111_A	13_10_10_1822_03_843	1	1.72	0.878	2.31	0.123	2.06	0.284	2.04	1.07	0.452	0.225	1.27	0.653
10/10/2013 18:23	0913-111_A	13_10_10_1823_04_563	1	1.77	0.885	2.38	0.125	2.12	0.286	2.04	1.08	0.452	0.226	1.27	0.654
10/10/2013 18:24	0913-111_A	13_10_10_1824_05_383	1	1.72	0.873	2.37	0.122	2.15	0.291	2.04	1.10	0.452	0.225	1.27	0.642
10/10/2013 18:25	0913-111_A	13_10_10_1825_06_133	1	1.72	0.877	2.31	0.125	2.13	0.292	2.04	1.10	0.452	0.224	1.27	0.652
10/10/2013 18:26	0913-111_A	13_10_10_1826_06_873	1	1.72	0.916	2.29	0.127	2.12	0.288	2.04	1.10	0.452	0.230	1.27	0.683
10/10/2013 18:27	0913-111_A	13_10_10_1827_07_663	1	1.72	0.857	2.38	0.123	2.24	0.294	2.04	1.07	0.452	0.226	1.27	0.637
10/10/2013 18:28	0913-111_A	13_10_10_1828_08_403	1	1.72	0.869	2.36	0.123	2.11	0.288	2.04	1.06	0.462	0.224	1.27	0.642
10/10/2013 18:29	0913-111_A	13_10_10_1829_09_244	1	1.72	0.846	2.51	0.125	2.24	0.288	2.04	1.06	0.489	0.223	1.27	0.627
10/10/2013 18:30	0913-111_A	13_10_10_1830_09_954	1	1.72	0.883	2.29	0.126	2.12	0.280	2.04	1.01	0.575	0.227	1.27	0.657
10/10/2013 18:31	0913-111_A	13_10_10_1831_10_774	1	1.72	0.860	2.07	0.123	1.92	0.277	2.04	1.08	0.500	0.223	1.27	0.641
10/10/2013 18:32	0913-111_A	13_10_10_1832_11_484	1	1.72	0.855	2.07	0.120	1.92	0.281	2.04	1.10	0.719	0.221	1.27	0.635
10/10/2013 18:33	0913-111_A	13_10_10_1833_12_274	1	1.72	0.872	2.11	0.122	1.96	0.284	2.04	1.11	0.732	0.222	1.27	0.639
10/10/2013 18:34	0913-111_A	13_10_10_1834_13_034	1	1.72	0.874	2.08	0.120	1.86	0.283	2.04	1.13	0.748	0.220	1.27	0.642
10/10/2013 18:35	0913-111_A	13_10_10_1835_13_864	1	1.72	0.878	1.93	0.124	1.82	0.285	2.04	1.09	0.786	0.227	1.27	0.654
10/10/2013 18:36	0913-111_A	13_10_10_1836_14_564	1	1.72	0.875	1.73	0.128	1.74	0.280	2.04	1.10	0.717	0.230	1.27	0.657
10/10/2013 18:37	0913-111_A	13_10_10_1837_15_364	1	1.72	0.852	1.71	0.124	1.63	0.275	2.04	1.11	0.735	0.221	1.27	0.630
10/10/2013 18:38	0913-111_A	13_10_10_1838_16_164	1	1.72	0.839	1.76	0.118	1.67	0.280	2.04	1.13	0.806	0.216	1.27	0.622
		Average Conc. (ppm):	**1**	**1.79**	**0.917**	**3.32**	**0.131**	**2.52**	**0.296**	**2.04**	**1.00**	**0.644**	**0.239**	**1.27**	**0.679**

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Dryer 1 Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 10:00	0913-111_A	13_10_11_1000_40_402	1	1.72	0.860	1.57	0.121	1.50	0.297	2.04	1.20	0.672	0.219	1.27	0.636
10/11/2013 10:01	0913-111_A	13_10_11_1001_41_122	1	1.72	0.811	1.50	0.116	1.53	0.301	2.04	1.18	0.500	0.215	1.27	0.595
10/11/2013 10:02	0913-111_A	13_10_11_1002_41_912	1	1.72	0.841	1.40	0.126	1.50	0.297	2.04	1.16	0.684	0.224	1.27	0.624
10/11/2013 10:03	0913-111_A	13_10_11_1003_42_642	1	1.72	0.846	1.51	0.128	1.64	0.306	2.04	1.13	0.624	0.224	1.27	0.623
10/11/2013 10:04	0913-111_A	13_10_11_1004_43_352	1	1.72	0.853	1.56	0.129	1.59	0.301	2.04	1.12	0.550	0.227	1.27	0.633
10/11/2013 10:05	0913-111_A	13_10_11_1005_44_132	1	1.72	0.825	1.53	0.122	1.52	0.297	2.04	1.10	0.513	0.219	1.27	0.603
10/11/2013 10:06	0913-111_A	13_10_11_1006_44_842	1	1.72	0.870	1.47	0.127	1.59	0.298	2.04	1.10	0.547	0.226	1.27	0.640
10/11/2013 10:07	0913-111_A	13_10_11_1007_45_652	1	1.72	0.847	1.43	0.123	1.58	0.300	2.04	1.10	0.452	0.223	1.27	0.624
10/11/2013 10:08	0913-111_A	13_10_11_1008_46_362	1	1.72	0.863	1.51	0.125	1.63	0.299	2.04	1.09	0.698	0.225	1.27	0.635
10/11/2013 10:09	0913-111_A	13_10_11_1009_47_132	1	1.72	0.883	1.42	0.127	1.63	0.292	2.04	1.08	0.688	0.225	1.27	0.646
10/11/2013 10:10	0913-111_A	13_10_11_1010_47_862	1	1.72	0.846	1.33	0.128	1.58	0.291	2.04	1.08	0.609	0.227	1.27	0.623
10/11/2013 10:11	0913-111_A	13_10_11_1011_48_603	1	1.72	0.850	1.50	0.124	1.66	0.290	2.04	1.06	0.644	0.224	1.27	0.631
10/11/2013 10:12	0913-111_A	13_10_11_1012_49_403	1	1.72	0.856	1.43	0.125	1.59	0.283	2.04	1.08	0.489	0.222	1.27	0.629
10/11/2013 10:13	0913-111_A	13_10_11_1013_50_133	1	1.72	0.854	1.48	0.128	1.61	0.291	2.04	1.09	0.613	0.226	1.27	0.632
10/11/2013 10:14	0913-111_A	13_10_11_1014_50_843	1	1.72	0.860	1.46	0.122	1.60	0.290	2.04	1.09	0.548	0.221	1.27	0.643
10/11/2013 10:15	0913-111_A	13_10_11_1015_51_633	1	1.72	0.869	1.44	0.126	1.61	0.285	2.04	1.09	0.576	0.228	1.27	0.642
10/11/2013 10:16	0913-111_A	13_10_11_1016_52_393	1	1.72	0.847	1.46	0.123	1.70	0.286	2.04	1.08	0.639	0.222	1.27	0.629
10/11/2013 10:17	0913-111_A	13_10_11_1017_53_133	1	1.72	0.852	1.52	0.127	1.64	0.282	2.04	1.08	0.710	0.226	1.27	0.631
10/11/2013 10:18	0913-111_A	13_10_11_1018_53_883	1	1.72	0.862	1.24	0.129	1.62	0.282	2.04	1.09	0.649	0.227	1.27	0.639
10/11/2013 10:19	0913-111_A	13_10_11_1019_54_693	1	1.72	0.814	1.44	0.125	1.61	0.280	2.04	1.07	0.667	0.222	1.27	0.606
10/11/2013 10:20	0913-111_A	13_10_11_1020_55_363	1	1.72	0.861	1.26	0.123	1.58	0.281	2.04	1.07	0.452	0.222	1.27	0.636
10/11/2013 10:21	0913-111_A	13_10_11_1021_56_083	1	1.72	0.843	1.35	0.128	1.56	0.281	2.04	1.07	0.537	0.227	1.27	0.627
10/11/2013 10:22	0913-111_A	13_10_11_1022_56_793	1	1.72	0.826	1.47	0.123	1.54	0.282	2.04	1.07	0.517	0.218	1.27	0.606
10/11/2013 10:23	0913-111_A	13_10_11_1023_57_534	1	1.72	0.867	1.48	0.126	1.57	0.293	2.04	1.08	0.561	0.223	1.27	0.640
10/11/2013 10:24	0913-111_A	13_10_11_1024_58_264	1	1.72	0.851	1.40	0.128	1.59	0.287	2.04	1.07	0.623	0.222	1.27	0.636
10/11/2013 10:25	0913-111_A	13_10_11_1025_58_974	1	1.72	0.867	1.50	0.122	1.61	0.286	2.04	1.05	0.599	0.226	1.27	0.635
10/11/2013 10:26	0913-111_A	13_10_11_1026_59_734	1	1.72	0.829	1.63	0.122	1.56	0.292	2.04	1.06	0.692	0.219	1.27	0.601
10/11/2013 10:28	0913-111_A	13_10_11_1028_00_474	1	1.72	0.844	1.58	0.129	1.69	0.289	2.04	1.05	0.636	0.222	1.27	0.631
10/11/2013 10:29	0913-111_A	13_10_11_1029_01_274	1	1.72	0.862	1.68	0.127	1.71	0.295	2.04	1.07	0.704	0.226	1.27	0.633
10/11/2013 10:30	0913-111_A	13_10_11_1030_01_984	1	1.72	0.829	1.44	0.123	1.64	0.288	2.04	1.07	0.523	0.220	1.27	0.610
10/11/2013 10:31	0913-111_A	13_10_11_1031_02_734	1	1.72	0.822	1.46	0.124	1.51	0.282	2.04	1.08	0.749	0.219	1.27	0.611
10/11/2013 10:32	0913-111_A	13_10_11_1032_03_544	1	1.72	0.860	1.47	0.125	1.58	0.284	2.04	1.08	0.701	0.225	1.27	0.638
10/11/2013 10:33	0913-111_A	13_10_11_1033_04_204	1	1.72	0.853	1.42	0.126	1.61	0.286	2.04	1.06	0.721	0.224	1.27	0.628
10/11/2013 10:34	0913-111_A	13_10_11_1034_05_004	1	1.72	0.848	1.48	0.125	1.58	0.288	2.04	1.07	0.542	0.223	1.27	0.631
10/11/2013 10:35	0913-111_A	13_10_11_1035_05_724	1	1.72	0.859	1.62	0.130	1.69	0.289	2.04	1.06	0.719	0.231	1.27	0.633
10/11/2013 10:36	0913-111_A	13_10_11_1036_06_535	1	1.72	0.865	1.55	0.128	1.68	0.290	2.04	1.06	0.686	0.230	1.27	0.637
10/11/2013 10:37	0913-111_A	13_10_11_1037_07_285	1	1.72	0.851	1.47	0.127	1.57	0.295	2.04	1.06	0.740	0.227	1.27	0.631
10/11/2013 10:38	0913-111_A	13_10_11_1038_07_965	1	1.72	0.833	1.59	0.127	1.72	0.293	2.04	1.05	0.693	0.229	1.27	0.613
10/11/2013 10:39	0913-111_A	13_10_11_1039_08_675	1	1.72	0.842	1.59	0.127	1.67	0.294	2.04	1.05	0.712	0.226	1.27	0.624
10/11/2013 10:40	0913-111_A	13_10_11_1040_09_475	1	1.72	0.836	1.56	0.129	1.75	0.292	2.04	1.06	0.752	0.231	1.27	0.620
10/11/2013 10:41	0913-111_A	13_10_11_1041_10_245	1	1.72	0.861	1.58	0.129	1.70	0.294	2.04	1.05	0.773	0.225	1.27	0.631
10/11/2013 10:42	0913-111_A	13_10_11_1042_11_005	1	1.72	0.846	1.59	0.125	1.74	0.293	2.04	1.05	0.693	0.227	1.27	0.630
10/11/2013 10:43	0913-111_A	13_10_11_1043_11_705	1	1.72	0.870	1.69	0.127	1.74	0.295	2.04	1.06	0.766	0.228	1.27	0.637
10/11/2013 10:44	0913-111_A	13_10_11_1044_12_415	1	1.72	0.843	1.52	0.123	1.63	0.287	2.04	1.08	0.744	0.225	1.27	0.617
10/11/2013 10:45	0913-111_A	13_10_11_1045_13_215	1	1.72	0.831	1.49	0.127	1.65	0.288	2.04	1.07	0.754	0.224	1.27	0.614
10/11/2013 10:46	0913-111_A	13_10_11_1046_13_925	1	1.72	0.838	1.57	0.126	1.69	0.291	2.04	1.05	0.694	0.223	1.27	0.627
10/11/2013 10:47	0913-111_A	13_10_11_1047_14_755	1	1.72	0.849	1.54	0.127	1.70	0.295	2.04	1.04	0.706	0.231	1.27	0.624
10/11/2013 10:48	0913-111_A	13_10_11_1048_15_466	1	1.72	0.838	1.62	0.124	1.88	0.298	2.04	1.03	0.851	0.231	1.27	0.621
10/11/2013 10:49	0913-111_A	13_10_11_1049_16_246	1	1.72	0.878	1.69	0.128	1.78	0.301	2.04	1.01	0.949	0.237	1.27	0.650
10/11/2013 10:50	0913-111_A	13_10_11_1050_16_906	1	1.72	0.890	2.24	0.131	2.08	0.319	2.04	0.98	0.875	0.238	1.27	0.658
10/11/2013 10:51	0913-111_A	13_10_11_1051_17_706	1	1.72	0.900	2.70	0.131	2.33	0.320	2.04	0.97	1.12	0.241	1.27	0.666
10/11/2013 10:52	0913-111_A	13_10_11_1052_18_496	1	1.72	0.861	2.71	0.133	2.31	0.318	2.04	0.97	1.25	0.245	1.27	0.642
10/11/2013 10:53	0913-111_A	13_10_11_1053_19_216	1	1.72	0.863	2.31	0.132	2.16	0.310	2.04	0.99	1.13	0.241	1.27	0.637
10/11/2013 10:54	0913-111_A	13_10_11_1054_19_966	1	1.72	0.855	2.12	0.129	2.11	0.303	2.04	1.01	1.17	0.237	1.27	0.634
10/11/2013 10:55	0913-111_A	13_10_11_1055_20_716	1	1.72	0.871	1.93	0.127	2.00	0.299	2.04	1.03	1.10	0.235	1.27	0.641
10/11/2013 10:56	0913-111_A	13_10_11_1056_21_456	1	1.72	0.856	1.83	0.126	1.86	0.298	2.04	1.02	1.00	0.232	1.27	0.637
10/11/2013 10:57	0913-111_A	13_10_11_1057_22_216	1	1.72	0.846	1.81	0.131	1.87	0.299	2.04	1.03	0.795	0.238	1.27	0.624
10/11/2013 10:58	0913-111_A	13_10_11_1058_22_936	1	1.72	0.846	1.87	0.128	1.87	0.304	2.04	1.04	0.971	0.228	1.27	0.623
10/11/2013 10:59	0913-111_A	13_10_11_1059_23_757	1	1.72	0.840	1.71	0.124	1.85	0.294	2.04	1.04	1.01	0.228	1.27	0.616
10/11/2013 11:00	0913-111_A	13_10_11_1100_24_457	1	1.72	0.739	1.36	0.113	1.64	0.240	2.04	1.23	0.562	0.230	1.27	0.551
		Average Conc. (ppm):	**1**	**1.72**	**0.850**	**1.60**	**0.126**	**1.70**	**0.293**	**2.04**	**1.07**	**0.714**	**0.227**	**1.27**	**0.628**

Dryer 1 Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 11:37	0913-111_A	13_10_11_1137_48_670	1	1.72	0.785	1.48	0.117	1.23	0.285	2.04	1.07	0.452	0.217	1.27	0.580
10/11/2013 11:38	0913-111_A	13_10_11_1138_49_370	1	1.72	0.778	1.61	0.119	1.23	0.285	2.04	1.06	0.452	0.211	1.27	0.572
10/11/2013 11:39	0913-111_A	13_10_11_1139_50_160	1	1.72	0.799	1.54	0.121	1.32	0.284	2.04	1.05	0.452	0.217	1.27	0.577
10/11/2013 11:40	0913-111_A	13_10_11_1140_50_930	1	1.72	0.811	1.65	0.123	1.36	0.282	2.04	1.05	0.452	0.221	1.27	0.600
10/11/2013 11:41	0913-111_A	13_10_11_1141_51_650	1	1.72	0.804	1.67	0.119	1.30	0.277	2.04	1.04	0.452	0.216	1.27	0.591
10/11/2013 11:42	0913-111_A	13_10_11_1142_52_480	1	1.72	0.814	1.55	0.122	1.30	0.276	2.04	1.04	0.452	0.218	1.27	0.601
10/11/2013 11:43	0913-111_A	13_10_11_1143_53_130	1	1.72	0.821	1.37	0.121	1.26	0.277	2.04	1.03	0.452	0.221	1.27	0.606
10/11/2013 11:44	0913-111_A	13_10_11_1144_53_970	1	1.72	0.798	1.47	0.121	1.27	0.278	2.04	1.02	0.452	0.217	1.27	0.585
10/11/2013 11:45	0913-111_A	13_10_11_1145_54_690	1	1.72	0.825	1.60	0.120	1.30	0.277	2.04	1.03	0.452	0.218	1.27	0.605
10/11/2013 11:46	0913-111_A	13_10_11_1146_55_471	1	1.72	0.782	1.71	0.118	1.39	0.278	2.04	1.05	0.452	0.210	1.27	0.580
10/11/2013 11:47	0913-111_A	13_10_11_1147_56_221	1	1.72	0.807	1.58	0.120	1.35	0.278	2.04	1.04	0.452	0.212	1.27	0.589
10/11/2013 11:48	0913-111_A	13_10_11_1148_57_041	1	1.72	0.839	1.57	0.120	1.44	0.280	2.04	1.03	0.452	0.214	1.27	0.616
10/11/2013 11:49	0913-111_A	13_10_11_1149_57_761	1	1.72	0.782	1.69	0.116	1.55	0.279	2.04	1.02	0.464	0.203	1.27	0.581
10/11/2013 11:50	0913-111_A	13_10_11_1150_58_531	1	1.72	0.803	1.55	0.119	1.52	0.276	2.04	1.02	0.452	0.206	1.27	0.595
10/11/2013 11:51	0913-111_A	13_10_11_1151_59_131	1	1.72	0.808	1.60	0.119	1.55	0.277	2.04	1.03	0.452	0.208	1.27	0.595
10/11/2013 11:52	0913-111_A	13_10_11_1152_59_901	1	1.72	0.806	1.61	0.119	1.54	0.280	2.04	1.00	0.452	0.206	1.27	0.591
10/11/2013 11:54	0913-111_A	13_10_11_1154_00_611	1	1.72	0.781	1.61	0.120	1.58	0.288	2.04	0.99	0.452	0.204	1.27	0.574
10/11/2013 11:55	0913-111_A	13_10_11_1155_01_421	1	1.72	0.864	1.72	0.120	1.63	0.290	2.04	0.98	0.452	0.209	1.27	0.635
10/11/2013 11:56	0913-111_A	13_10_11_1156_02_111	1	1.72	0.812	1.74	0.123	1.65	0.286	2.04	0.97	0.452	0.209	1.27	0.602
10/11/2013 11:57	0913-111_A	13_10_11_1157_02_921	1	1.72	0.808	1.72	0.120	1.69	0.285	2.04	0.97	0.483	0.205	1.27	0.589
10/11/2013 11:58	0913-111_A	13_10_11_1158_03_661	1	1.72	0.776	1.56	0.116	1.67	0.282	2.04	0.99	0.562	0.201	1.27	0.574
10/11/2013 11:59	0913-111_A	13_10_11_1159_04_382	1	1.72	0.805	1.70	0.126	1.60	0.281	2.04	0.99	0.576	0.213	1.27	0.603
10/11/2013 12:00	0913-111_A	13_10_11_1200_05_122	1	1.72	0.838	1.68	0.123	1.62	0.287	2.04	0.99	0.452	0.212	1.27	0.616
10/11/2013 12:01	0913-111_A	13_10_11_1201_05_832	1	1.72	0.775	1.72	0.116	1.67	0.286	2.04	1.01	0.452	0.201	1.27	0.572
10/11/2013 12:02	0913-111_A	13_10_11_1202_06_592	1	1.72	0.812	1.59	0.119	1.57	0.277	2.04	1.00	0.452	0.208	1.27	0.599
10/11/2013 12:03	0913-111_A	13_10_11_1203_07_332	1	1.72	0.799	1.64	0.122	1.61	0.284	2.04	1.01	0.452	0.206	1.27	0.594
10/11/2013 12:04	0913-111_A	13_10_11_1204_08_092	1	1.72	0.823	1.64	0.120	1.59	0.286	2.04	1.01	0.625	0.208	1.27	0.605
10/11/2013 12:05	0913-111_A	13_10_11_1205_08_912	1	1.72	0.835	1.78	0.116	1.63	0.284	2.04	0.99	0.533	0.208	1.27	0.615
10/11/2013 12:06	0913-111_A	13_10_11_1206_09_582	1	1.72	0.814	1.75	0.119	1.59	0.289	2.04	0.98	0.452	0.206	1.27	0.597
10/11/2013 12:07	0913-111_A	13_10_11_1207_10_432	1	1.72	0.827	1.81	0.123	1.67	0.290	2.04	0.97	0.491	0.215	1.27	0.610
10/11/2013 12:08	0913-111_A	13_10_11_1208_11_142	1	1.72	0.789	1.70	0.116	1.62	0.282	2.04	0.98	0.452	0.204	1.27	0.581
10/11/2013 12:09	0913-111_A	13_10_11_1209_11_902	1	1.72	0.817	1.76	0.115	1.62	0.285	2.04	0.99	0.508	0.200	1.27	0.598
10/11/2013 12:10	0913-111_A	13_10_11_1210_12_712	1	1.72	0.809	1.72	0.121	1.60	0.282	2.04	1.00	0.518	0.207	1.27	0.599
10/11/2013 12:11	0913-111_A	13_10_11_1211_13_423	1	1.72	0.806	1.71	0.118	1.60	0.285	2.04	0.99	0.452	0.206	1.27	0.595
10/11/2013 12:12	0913-111_A	13_10_11_1212_14_173	1	1.72	0.782	1.74	0.121	1.63	0.286	2.04	1.00	0.452	0.209	1.27	0.577
10/11/2013 12:13	0913-111_A	13_10_11_1213_14_893	1	1.72	0.806	1.53	0.118	1.67	0.284	2.04	1.00	0.452	0.206	1.27	0.595
10/11/2013 12:14	0913-111_A	13_10_11_1214_15_703	1	1.72	0.828	1.82	0.119	1.64	0.288	2.04	0.99	0.452	0.215	1.27	0.614
10/11/2013 12:15	0913-111_A	13_10_11_1215_16_453	1	1.72	0.801	1.73	0.118	1.59	0.288	2.04	0.99	0.474	0.207	1.27	0.591
10/11/2013 12:16	0913-111_A	13_10_11_1216_17_183	1	1.72	0.830	1.78	0.122	1.62	0.287	2.04	0.98	0.474	0.215	1.27	0.607
10/11/2013 12:17	0913-111_A	13_10_11_1217_18_003	1	1.72	0.803	1.84	0.119	1.61	0.292	2.04	0.97	0.452	0.209	1.27	0.590
10/11/2013 12:18	0913-111_A	13_10_11_1218_18_713	1	1.72	0.769	1.85	0.119	1.68	0.287	2.04	0.97	0.555	0.208	1.27	0.567
10/11/2013 12:19	0913-111_A	13_10_11_1219_19_493	1	1.72	0.801	1.82	0.123	1.62	0.287	2.04	0.98	0.465	0.216	1.27	0.592
10/11/2013 12:20	0913-111_A	13_10_11_1220_20_233	1	1.72	0.801	1.88	0.121	1.64	0.287	2.04	0.98	0.452	0.213	1.27	0.588
10/11/2013 12:21	0913-111_A	13_10_11_1221_20_953	1	1.72	0.816	1.74	0.119	1.59	0.286	2.04	0.98	0.532	0.217	1.27	0.604
10/11/2013 12:22	0913-111_A	13_10_11_1222_21_693	1	1.72	0.801	2.02	0.119	1.68	0.291	2.04	0.98	0.509	0.212	1.27	0.592
10/11/2013 12:23	0913-111_A	13_10_11_1223_22_454	1	1.72	0.838	1.95	0.125	1.68	0.293	2.04	0.97	0.490	0.221	1.27	0.614
10/11/2013 12:24	0913-111_A	13_10_11_1224_23_174	1	1.72	0.825	1.88	0.122	1.72	0.296	2.04	0.96	0.633	0.217	1.27	0.611
10/11/2013 12:25	0913-111_A	13_10_11_1225_23_994	1	1.72	0.845	1.97	0.121	1.77	0.297	2.04	0.97	0.614	0.220	1.27	0.627
10/11/2013 12:26	0913-111_A	13_10_11_1226_24_704	1	1.72	0.826	2.00	0.121	1.71	0.303	2.04	0.96	0.544	0.221	1.27	0.611
10/11/2013 12:27	0913-111_A	13_10_11_1227_25_514	1	1.72	0.836	1.98	0.121	1.77	0.304	2.04	0.94	0.648	0.219	1.27	0.610
10/11/2013 12:28	0913-111_A	13_10_11_1228_26_224	1	1.72	0.833	2.21	0.123	1.84	0.305	2.04	0.92	0.566	0.219	1.27	0.615
10/11/2013 12:29	0913-111_A	13_10_11_1229_27_034	1	1.72	0.830	2.20	0.125	1.91	0.301	2.04	0.94	0.796	0.225	1.27	0.615
10/11/2013 12:31	0913-111_A	13_10_11_1231_37_650	1	1.72	0.828	2.19	0.123	1.86	0.294	2.04	0.95	0.577	0.219	1.27	0.607
10/11/2013 12:32	0913-111_A	13_10_11_1232_38_340	1	1.72	0.820	1.94	0.123	1.73	0.286	2.04	0.95	0.654	0.220	1.27	0.605
10/11/2013 12:33	0913-111_A	13_10_11_1233_39_140	1	1.72	0.819	2.02	0.123	1.71	0.290	2.04	0.94	0.516	0.217	1.27	0.602
10/11/2013 12:34	0913-111_A	13_10_11_1234_39_730	1	1.72	0.839	2.14	0.123	1.84	0.300	2.04	0.94	0.607	0.224	1.27	0.617
10/11/2013 12:35	0913-111_A	13_10_11_1235_40_510	1	1.72	0.851	2.37	0.122	1.82	0.305	2.04	0.93	0.635	0.223	1.27	0.627
10/11/2013 12:36	0913-111_A	13_10_11_1236_41_230	1	1.72	0.826	2.68	0.124	2.06	0.312	2.04	0.92	0.648	0.226	1.27	0.606
		Average Conc. (ppm):	**1**	**1.72**	**0.812**	**1.78**	**0.120**	**1.59**	**0.287**	**2.04**	**0.99**	**0.505**	**0.213**	**1.27**	**0.598**

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Pellet Cooler 2 Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 13:44	0913-111_A	13_10_11_1344_00_484	1	1.00	0.514	1.46	0.0740	0.972	0.0810	1.08	0.54	0.246	0.127	1.07	0.386
10/11/2013 13:45	0913-111_A	13_10_11_1345_01_204	1	1.21	0.477	1.41	0.0700	0.939	0.0810	1.08	0.53	0.246	0.126	1.10	0.362
10/11/2013 13:46	0913-111_A	13_10_11_1346_02_004	1	1.38	0.509	1.09	0.0710	0.876	0.0810	1.08	0.53	0.246	0.124	1.10	0.384
10/11/2013 13:47	0913-111_A	13_10_11_1347_02_754	1	1.00	0.492	1.15	0.0710	0.801	0.0790	1.08	0.53	0.246	0.122	0.812	0.367
10/11/2013 13:48	0913-111_A	13_10_11_1348_03_454	1	1.39	0.518	1.03	0.0690	0.829	0.0820	1.08	0.53	0.246	0.123	0.745	0.381
10/11/2013 13:49	0913-111_A	13_10_11_1349_04_244	1	1.06	0.453	1.02	0.0690	0.798	0.0790	1.08	0.54	0.246	0.117	0.878	0.338
10/11/2013 13:50	0913-111_A	13_10_11_1350_05_064	1	1.47	0.480	1.00	0.0700	0.818	0.0820	1.08	0.54	0.246	0.119	0.745	0.355
10/11/2013 13:51	0913-111_A	13_10_11_1351_05_795	1	1.69	0.503	1.05	0.0750	0.826	0.0830	1.08	0.54	0.246	0.126	0.745	0.381
10/11/2013 13:52	0913-111_A	13_10_11_1352_06_545	1	2.23	0.464	0.964	0.0750	0.730	0.0800	1.08	0.53	0.246	0.124	1.12	0.353
10/11/2013 13:53	0913-111_A	13_10_11_1353_07_335	1	1.00	0.521	1.10	0.0740	0.859	0.0800	1.08	0.53	0.246	0.128	0.819	0.386
10/11/2013 13:54	0913-111_A	13_10_11_1354_08_045	1	1.00	0.498	1.02	0.0680	0.823	0.0830	1.08	0.54	0.246	0.121	0.884	0.368
10/11/2013 13:55	0913-111_A	13_10_11_1355_08_815	1	2.04	0.513	1.06	0.0750	0.829	0.0800	1.08	0.54	0.246	0.128	0.937	0.392
10/11/2013 13:56	0913-111_A	13_10_11_1356_09_515	1	1.85	0.514	1.06	0.0750	0.861	0.0800	1.08	0.53	0.246	0.127	0.874	0.384
10/11/2013 13:57	0913-111_A	13_10_11_1357_10_335	1	1.12	0.488	1.15	0.0660	0.904	0.0840	1.08	0.54	0.246	0.116	0.784	0.360
10/11/2013 13:58	0913-111_A	13_10_11_1358_11_105	1	1.00	0.487	1.12	0.0700	0.817	0.0820	1.08	0.54	0.246	0.122	1.02	0.360
10/11/2013 13:59	0913-111_A	13_10_11_1359_11_825	1	1.00	0.480	1.11	0.0730	0.851	0.0830	1.08	0.53	0.246	0.124	1.23	0.358
10/11/2013 14:00	0913-111_A	13_10_11_1400_12_475	1	1.18	0.488	1.01	0.0700	0.854	0.0830	1.08	0.54	0.246	0.124	1.19	0.363
10/11/2013 14:01	0913-111_A	13_10_11_1401_13_185	1	1.00	0.514	1.08	0.0720	0.822	0.0770	1.08	0.53	0.246	0.124	0.745	0.381
10/11/2013 14:02	0913-111_A	13_10_11_1402_13_945	1	1.42	0.493	1.05	0.0730	0.833	0.0800	1.08	0.53	0.246	0.122	0.862	0.368
10/11/2013 14:03	0913-111_A	13_10_11_1403_14_706	1	1.36	0.505	1.03	0.0690	0.804	0.0790	1.08	0.53	0.246	0.122	0.745	0.377
10/11/2013 14:04	0913-111_A	13_10_11_1404_15_456	1	1.18	0.484	1.18	0.0690	0.787	0.0810	1.08	0.54	0.246	0.124	0.869	0.366
10/11/2013 14:05	0913-111_A	13_10_11_1405_16_186	1	1.00	0.489	1.11	0.0680	0.832	0.0810	1.08	0.54	0.246	0.121	0.745	0.368
10/11/2013 14:06	0913-111_A	13_10_11_1406_16_946	1	1.11	0.527	1.01	0.0670	0.828	0.0800	1.08	0.54	0.246	0.124	0.765	0.390
10/11/2013 14:07	0913-111_A	13_10_11_1407_17_746	1	1.00	0.486	1.11	0.0690	0.796	0.0810	1.08	0.53	0.246	0.121	0.917	0.367
10/11/2013 14:08	0913-111_A	13_10_11_1408_18_506	1	1.28	0.491	1.10	0.0700	0.797	0.0790	1.08	0.53	0.246	0.122	0.875	0.365
10/11/2013 14:09	0913-111_A	13_10_11_1409_19_206	1	1.00	0.486	1.06	0.0710	0.804	0.0790	1.08	0.53	0.246	0.123	0.745	0.368
10/11/2013 14:10	0913-111_A	13_10_11_1410_20_016	1	1.06	0.496	1.05	0.0680	0.853	0.0790	1.08	0.53	0.246	0.122	1.05	0.377
10/11/2013 14:11	0913-111_A	13_10_11_1411_20_696	1	1.24	0.504	1.04	0.0710	0.818	0.0790	1.08	0.53	0.246	0.125	1.25	0.376
10/11/2013 14:12	0913-111_A	13_10_11_1412_21_506	1	1.11	0.489	1.10	0.0680	0.905	0.0770	1.08	0.53	0.246	0.123	1.06	0.363
10/11/2013 14:13	0913-111_A	13_10_11_1413_22_276	1	1.23	0.489	1.06	0.0720	0.778	0.0790	1.08	0.53	0.246	0.121	0.958	0.367
10/11/2013 14:14	0913-111_A	13_10_11_1414_22_977	1	1.14	0.476	1.17	0.0730	0.810	0.0810	1.08	0.54	0.246	0.123	0.745	0.361
10/11/2013 14:15	0913-111_A	13_10_11_1415_23_697	1	1.13	0.488	0.926	0.0730	0.808	0.0800	1.08	0.54	0.246	0.125	0.745	0.367
10/11/2013 14:16	0913-111_A	13_10_11_1416_24_517	1	1.50	0.503	1.06	0.0710	0.831	0.0830	1.08	0.54	0.246	0.127	0.947	0.370
10/11/2013 14:17	0913-111_A	13_10_11_1417_25_267	1	1.00	0.504	1.14	0.0700	0.791	0.0790	1.08	0.54	0.246	0.122	0.887	0.371
10/11/2013 14:18	0913-111_A	13_10_11_1418_25_987	1	1.27	0.515	1.15	0.0710	0.820	0.0810	1.08	0.54	0.246	0.126	0.745	0.380
10/11/2013 14:19	0913-111_A	13_10_11_1419_26_687	1	1.72	0.503	1.07	0.0700	0.766	0.0810	1.08	0.54	0.246	0.125	0.745	0.371
10/11/2013 14:20	0913-111_A	13_10_11_1420_27_457	1	1.45	0.468	1.11	0.0720	0.824	0.0820	1.08	0.54	0.246	0.125	1.13	0.350
10/11/2013 14:21	0913-111_A	13_10_11_1421_28_207	1	1.09	0.495	1.04	0.0710	0.744	0.0800	1.08	0.54	0.246	0.124	0.745	0.363
10/11/2013 14:22	0913-111_A	13_10_11_1422_28_957	1	1.40	0.499	1.09	0.0710	0.679	0.0840	1.08	0.54	0.252	0.128	0.745	0.369
10/11/2013 14:23	0913-111_A	13_10_11_1423_29_697	1	1.80	0.513	1.12	0.0710	0.798	0.0820	1.08	0.54	0.246	0.125	0.905	0.382
10/11/2013 14:24	0913-111_A	13_10_11_1424_30_467	1	1.46	0.492	1.11	0.0700	0.785	0.0820	1.08	0.54	0.246	0.124	0.928	0.369
10/11/2013 14:25	0913-111_A	13_10_11_1425_31_177	1	1.00	0.488	1.09	0.0680	0.824	0.0830	1.08	0.54	0.246	0.124	0.901	0.361
10/11/2013 14:26	0913-111_A	13_10_11_1426_31_988	1	1.62	0.517	1.12	0.0740	0.781	0.0820	1.08	0.54	0.246	0.129	0.946	0.380
10/11/2013 14:27	0913-111_A	13_10_11_1427_32_718	1	1.00	0.462	1.07	0.0700	0.751	0.0820	1.08	0.54	0.246	0.122	0.745	0.349
10/11/2013 14:28	0913-111_A	13_10_11_1428_33_468	1	1.94	0.493	1.07	0.0700	0.752	0.0810	1.08	0.54	0.246	0.128	0.745	0.366
10/11/2013 14:29	0913-111_A	13_10_11_1429_34_178	1	1.00	0.513	1.02	0.0720	0.778	0.0840	1.08	0.54	0.246	0.127	0.745	0.380
10/11/2013 14:30	0913-111_A	13_10_11_1430_35_028	1	1.00	0.518	0.998	0.0750	0.794	0.0830	1.08	0.54	0.246	0.129	0.996	0.380
10/11/2013 14:31	0913-111_A	13_10_11_1431_36_798	1	1.50	0.499	1.04	0.0740	0.788	0.0830	1.08	0.54	0.246	0.126	0.762	0.376
10/11/2013 14:32	0913-111_A	13_10_11_1432_36_498	1	1.19	0.506	1.04	0.0730	0.760	0.0820	1.08	0.54	0.246	0.128	0.745	0.379
10/11/2013 14:33	0913-111_A	13_10_11_1433_37_208	1	1.00	0.487	1.06	0.0730	0.774	0.0830	1.08	0.54	0.246	0.127	0.760	0.368
10/11/2013 14:34	0913-111_A	13_10_11_1434_37_918	1	1.06	0.496	1.14	0.0700	0.750	0.0830	1.08	0.54	0.246	0.126	0.788	0.374
10/11/2013 14:35	0913-111_A	13_10_11_1435_38_748	1	1.00	0.467	1.06	0.0670	0.796	0.0840	1.08	0.55	0.246	0.122	0.745	0.349
10/11/2013 14:36	0913-111_A	13_10_11_1436_39_408	1	2.12	0.483	1.08	0.0690	0.736	0.0840	1.08	0.55	0.246	0.124	0.780	0.360
10/11/2013 14:37	0913-111_A	13_10_11_1437_40_168	1	1.85	0.508	1.00	0.0730	0.722	0.0850	1.08	0.55	0.246	0.128	0.745	0.374
10/11/2013 14:38	0913-111_A	13_10_11_1438_40_969	1	1.55	0.494	0.950	0.0740	0.789	0.0840	1.08	0.55	0.246	0.128	0.784	0.372
10/11/2013 14:39	0913-111_A	13_10_11_1439_41_669	1	1.00	0.513	1.05	0.0750	0.750	0.0860	1.08	0.55	0.246	0.131	0.745	0.379
10/11/2013 14:40	0913-111_A	13_10_11_1440_42_449	1	1.56	0.487	1.12	0.0720	0.710	0.0880	1.08	0.56	0.246	0.126	0.745	0.362
10/11/2013 14:41	0913-111_A	13_10_11_1441_43_159	1	1.17	0.522	1.12	0.0730	0.768	0.0860	1.08	0.55	0.246	0.132	0.745	0.386
10/11/2013 14:42	0913-111_A	13_10_11_1442_43_779	1	1.00	0.517	0.993	0.0710	0.760	0.0860	1.08	0.55	0.246	0.127	0.745	0.381
10/11/2013 14:43	0913-111_A	13_10_11_1443_44_609	1	1.44	0.475	0.493	0.0680	0.333	0.0580	1.08	0.39	0.246	0.153	0.745	0.359
		Average Conc. (ppm):	**1**	**1.29**	**0.496**	**1.07**	**0.0711**	**0.797**	**0.0813**	**1.08**	**0.54**	**0.246**	**0.125**	**0.864**	**0.370**

Pellet Cooler 2 Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 15:08	0913-111_A	13_10_11_1508_02_515	1	1.00	0.480	0.460	0.0650	0.602	0.0840	1.08	0.55	0.246	0.115	1.06	0.354
10/11/2013 15:09	0913-111_A	13_10_11_1509_03_295	1	1.00	0.504	0.613	0.0690	0.664	0.0820	1.08	0.55	0.246	0.120	0.745	0.366
10/11/2013 15:10	0913-111_A	13_10_11_1510_03_995	1	1.90	0.488	0.548	0.0710	0.724	0.0840	1.08	0.55	0.246	0.120	0.745	0.372
10/11/2013 15:11	0913-111_A	13_10_11_1511_04_765	1	1.77	0.485	0.590	0.0750	0.714	0.0820	1.08	0.55	0.246	0.123	0.745	0.372
10/11/2013 15:12	0913-111_A	13_10_11_1512_05_525	1	1.22	0.502	0.600	0.0730	0.686	0.0820	1.08	0.55	0.246	0.122	0.745	0.374
10/11/2013 15:13	0913-111_A	13_10_11_1513_06_245	1	1.90	0.485	0.676	0.0710	0.664	0.0850	1.08	0.55	0.246	0.125	0.892	0.365
10/11/2013 15:14	0913-111_A	13_10_11_1514_07_006	1	1.00	0.491	0.632	0.0690	0.673	0.0830	1.08	0.55	0.246	0.119	0.745	0.364
10/11/2013 15:15	0913-111_A	13_10_11_1515_07_716	1	1.19	0.462	0.642	0.0670	0.638	0.0850	1.08	0.55	0.246	0.115	0.745	0.346
10/11/2013 15:16	0913-111_A	13_10_11_1516_08_536	1	1.01	0.496	0.553	0.0690	0.603	0.0820	1.08	0.55	0.246	0.117	0.745	0.374
10/11/2013 15:17	0913-111_A	13_10_11_1517_09_276	1	1.00	0.477	0.655	0.0670	0.694	0.0810	1.08	0.55	0.246	0.114	1.07	0.351
10/11/2013 15:18	0913-111_A	13_10_11_1518_09_996	1	1.00	0.487	0.410	0.0710	0.610	0.0840	1.08	0.54	0.246	0.117	1.18	0.361
10/11/2013 15:19	0913-111_A	13_10_11_1519_10_776	1	1.09	0.483	0.607	0.0690	0.628	0.0830	1.08	0.54	0.246	0.119	0.745	0.353
10/11/2013 15:20	0913-111_A	13_10_11_1520_11_496	1	1.00	0.478	0.536	0.0720	0.682	0.0810	1.08	0.55	0.246	0.118	0.792	0.352
10/11/2013 15:21	0913-111_A	13_10_11_1521_12_216	1	1.46	0.483	0.666	0.0700	0.599	0.0810	1.08	0.54	0.246	0.119	1.29	0.361
10/11/2013 15:22	0913-111_A	13_10_11_1522_13_016	1	1.05	0.487	0.599	0.0720	0.714	0.0830	1.08	0.55	0.246	0.122	0.745	0.367
10/11/2013 15:23	0913-111_A	13_10_11_1523_13_686	1	1.00	0.528	0.660	0.0740	0.648	0.0870	1.08	0.55	0.246	0.123	0.745	0.394
10/11/2013 15:24	0913-111_A	13_10_11_1524_14_526	1	1.77	0.502	0.620	0.0720	0.656	0.0820	1.08	0.55	0.246	0.121	0.745	0.373
10/11/2013 15:25	0913-111_A	13_10_11_1525_15_076	1	1.62	0.484	0.608	0.0710	0.648	0.0840	1.08	0.55	0.246	0.121	0.870	0.366
10/11/2013 15:26	0913-111_A	13_10_11_1526_15_847	1	1.00	0.504	0.687	0.0680	0.608	0.0820	1.08	0.55	0.246	0.120	1.06	0.372
10/11/2013 15:27	0913-111_A	13_10_11_1527_16_607	1	1.00	0.502	0.742	0.0740	0.644	0.0860	1.08	0.55	0.246	0.123	0.745	0.372
10/11/2013 15:28	0913-111_A	13_10_11_1528_17_427	1	1.00	0.500	0.707	0.0710	0.759	0.0860	1.08	0.54	0.246	0.122	0.745	0.369
10/11/2013 15:29	0913-111_A	13_10_11_1529_18_077	1	1.99	0.539	0.660	0.0730	0.661	0.0810	1.08	0.55	0.246	0.124	1.19	0.392
10/11/2013 15:30	0913-111_A	13_10_11_1530_18_867	1	1.16	0.495	0.714	0.0700	0.659	0.0830	1.08	0.55	0.246	0.119	0.745	0.366
10/11/2013 15:31	0913-111_A	13_10_11_1531_19_617	1	1.00	0.495	0.602	0.0730	0.619	0.0830	1.08	0.55	0.246	0.120	0.745	0.375
10/11/2013 15:32	0913-111_A	13_10_11_1532_20_327	1	1.92	0.461	0.677	0.0680	0.704	0.0840	1.08	0.54	0.246	0.118	0.985	0.350
10/11/2013 15:33	0913-111_A	13_10_11_1533_21_047	1	1.32	0.489	0.665	0.0720	0.834	0.0830	1.08	0.55	0.246	0.124	0.782	0.365
10/11/2013 15:34	0913-111_A	13_10_11_1534_21_857	1	1.64	0.492	0.735	0.0690	0.738	0.0840	1.08	0.54	0.246	0.120	0.745	0.359
10/11/2013 15:35	0913-111_A	13_10_11_1535_22_627	1	1.00	0.499	0.783	0.0710	0.660	0.0830	1.08	0.55	0.246	0.125	0.946	0.369
10/11/2013 15:36	0913-111_A	13_10_11_1536_23_337	1	1.00	0.529	0.649	0.0710	0.672	0.0800	1.08	0.54	0.246	0.122	0.745	0.398
10/11/2013 15:37	0913-111_A	13_10_11_1537_24_107	1	1.00	0.480	0.678	0.0710	0.660	0.0800	1.08	0.54	0.246	0.120	0.825	0.365
10/11/2013 15:38	0913-111_A	13_10_11_1538_24_808	1	1.17	0.496	0.661	0.0670	0.700	0.0810	1.08	0.54	0.246	0.118	0.993	0.364
10/11/2013 15:39	0913-111_A	13_10_11_1539_25_628	1	1.00	0.507	0.598	0.0730	0.708	0.0810	1.08	0.54	0.246	0.121	0.771	0.384
10/11/2013 15:40	0913-111_A	13_10_11_1540_26_368	1	1.00	0.494	0.674	0.0680	0.711	0.0820	1.08	0.54	0.246	0.118	0.745	0.361
10/11/2013 15:41	0913-111_A	13_10_11_1541_27_078	1	1.00	0.497	0.748	0.0700	0.769	0.0830	1.08	0.54	0.246	0.120	0.745	0.365
10/11/2013 15:42	0913-111_A	13_10_11_1542_27_858	1	1.13	0.473	0.865	0.0680	0.707	0.0830	1.08	0.54	0.246	0.115	0.745	0.355
10/11/2013 15:43	0913-111_A	13_10_11_1543_28_578	1	1.00	0.527	0.700	0.0720	0.769	0.0840	1.08	0.54	0.246	0.121	0.922	0.390
10/11/2013 15:44	0913-111_A	13_10_11_1544_29_308	1	1.06	0.512	0.703	0.0730	0.728	0.0840	1.08	0.55	0.246	0.125	0.745	0.376
10/11/2013 15:45	0913-111_A	13_10_11_1545_30_128	1	2.10	0.502	0.776	0.0730	0.763	0.0830	1.08	0.54	0.246	0.122	0.745	0.379
10/11/2013 15:46	0913-111_A	13_10_11_1546_30_828	1	1.36	0.496	0.759	0.0770	0.747	0.0860	1.08	0.55	0.246	0.125	0.745	0.375
10/11/2013 15:47	0913-111_A	13_10_11_1547_31_558	1	1.30	0.525	0.716	0.0740	0.729	0.0830	1.08	0.55	0.246	0.126	1.18	0.392
10/11/2013 15:48	0913-111_A	13_10_11_1548_32_338	1	1.00	0.508	0.569	0.0700	0.695	0.0840	1.08	0.55	0.246	0.120	0.823	0.372
10/11/2013 15:49	0913-111_A	13_10_11_1549_33_079	1	1.00	0.497	0.733	0.0710	0.708	0.0870	1.08	0.54	0.246	0.121	0.745	0.369
10/11/2013 15:50	0913-111_A	13_10_11_1550_33_889	1	1.73	0.500	0.696	0.0710	0.754	0.0840	1.08	0.55	0.246	0.124	0.745	0.369
10/11/2013 15:51	0913-111_A	13_10_11_1551_34_639	1	1.00	0.513	0.692	0.0690	0.645	0.0830	1.08	0.55	0.246	0.119	0.745	0.373
10/11/2013 15:52	0913-111_A	13_10_11_1552_35_349	1	1.09	0.531	0.823	0.0720	0.697	0.0830	1.08	0.55	0.246	0.124	0.745	0.400
10/11/2013 15:53	0913-111_A	13_10_11_1553_36_139	1	1.19	0.474	0.790	0.0690	0.668	0.0850	1.08	0.55	0.246	0.116	0.745	0.353
10/11/2013 15:54	0913-111_A	13_10_11_1554_36_819	1	1.00	0.516	0.721	0.0720	0.729	0.0850	1.08	0.55	0.246	0.122	1.11	0.382
10/11/2013 15:55	0913-111_A	13_10_11_1555_37_609	1	1.09	0.528	0.747	0.0740	0.718	0.0850	1.08	0.55	0.246	0.125	0.745	0.394
10/11/2013 15:56	0913-111_A	13_10_11_1556_38_329	1	1.00	0.507	0.785	0.0720	0.736	0.0840	1.08	0.55	0.246	0.126	0.745	0.379
10/11/2013 15:57	0913-111_A	13_10_11_1557_39_079	1	1.00	0.498	0.652	0.0690	0.677	0.0820	1.08	0.55	0.246	0.121	0.745	0.368
10/11/2013 15:58	0913-111_A	13_10_11_1558_39_819	1	1.25	0.502	0.812	0.0700	0.663	0.0850	1.08	0.55	0.246	0.121	0.745	0.371
10/11/2013 15:59	0913-111_A	13_10_11_1559_40_609	1	1.37	0.499	0.662	0.0680	0.714	0.0830	1.08	0.55	0.246	0.118	0.865	0.374
10/11/2013 16:00	0913-111_A	13_10_11_1600_41_319	1	1.05	0.508	0.723	0.0690	0.718	0.0820	1.08	0.54	0.246	0.122	0.745	0.376
10/11/2013 16:01	0913-111_A	13_10_11_1601_42_060	1	1.47	0.513	0.714	0.0710	0.722	0.0820	1.08	0.54	0.246	0.120	0.745	0.384
10/11/2013 16:02	0913-111_A	13_10_11_1602_42_810	1	1.00	0.482	0.708	0.0700	0.678	0.0810	1.08	0.54	0.246	0.117	0.745	0.364
10/11/2013 16:03	0913-111_A	13_10_11_1603_43_570	1	1.00	0.501	0.588	0.0720	0.719	0.0810	1.08	0.54	0.246	0.117	0.775	0.375
10/11/2013 16:04	0913-111_A	13_10_11_1604_44_320	1	1.30	0.507	0.699	0.0700	0.655	0.0830	1.08	0.54	0.246	0.118	0.745	0.378
10/11/2013 16:05	0913-111_A	13_10_11_1605_45_020	1	1.13	0.509	0.683	0.0690	0.719	0.0800	1.08	0.54	0.246	0.116	0.745	0.380
10/11/2013 16:06	0913-111_A	13_10_11_1606_45_820	1	1.18	0.491	0.625	0.0710	0.661	0.0830	1.08	0.54	0.246	0.117	0.918	0.367
10/11/2013 16:07	0913-111_A	13_10_11_1607_46_470	1	1.11	0.501	0.676	0.0690	0.634	0.0800	1.08	0.54	0.246	0.118	0.745	0.373
10/11/2013 16:08	0913-111_A	13_10_11_1608_47_210	1	1.00	0.397	0.143	0.0550	0.165	0.0360	1.08	0.218	0.246	0.0910	0.745	0.295
		Average Conc. (ppm):	**1**	**1.21**	**0.497**	**0.663**	**0.0704**	**0.680**	**0.0823**	**1.08**	**0.54**	**0.246**	**0.120**	**0.825**	**0.370**

Company	ACT	Client #	1911
Analyst Initials	CJT	Job #	0913-111
Parameters	EPA Method 320	PO #	3134 1911
# Samples	21 Runs	Report Date	V0.62 13.10.18.12.58

Pellet Cooler 2 Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 16:29	0913-111_A	13_10_11_1629_02_222	1	1.41	0.500	1.27	0.0750	0.793	0.0840	1.08	0.55	0.246	0.125	0.989	0.379
10/11/2013 16:30	0913-111_A	13_10_11_1630_02_972	1	1.08	0.520	1.12	0.0740	0.741	0.0840	1.08	0.55	0.246	0.125	0.787	0.385
10/11/2013 16:31	0913-111_A	13_10_11_1631_03_632	1	1.13	0.505	0.925	0.0710	0.715	0.0850	1.08	0.55	0.246	0.119	1.25	0.372
10/11/2013 16:32	0913-111_A	13_10_11_1632_04_442	1	1.00	0.521	1.10	0.0720	0.688	0.0820	1.08	0.55	0.246	0.123	1.18	0.385
10/11/2013 16:33	0913-111_A	13_10_11_1633_05_202	1	1.11	0.507	1.07	0.0730	0.780	0.0840	1.08	0.55	0.246	0.118	0.745	0.384
10/11/2013 16:34	0913-111_A	13_10_11_1634_05_962	1	1.25	0.512	1.11	0.0690	0.837	0.0870	1.08	0.55	0.246	0.117	1.02	0.379
10/11/2013 16:35	0913-111_A	13_10_11_1635_06_772	1	1.27	0.525	1.12	0.0730	0.837	0.0860	1.08	0.55	0.246	0.125	0.991	0.388
10/11/2013 16:36	0913-111_A	13_10_11_1636_07_512	1	1.00	0.524	1.20	0.0760	0.931	0.0840	1.08	0.55	0.246	0.124	0.745	0.395
10/11/2013 16:37	0913-111_A	13_10_11_1637_08_223	1	1.00	0.528	1.19	0.0760	0.867	0.0880	1.08	0.56	0.246	0.127	0.745	0.393
10/11/2013 16:38	0913-111_A	13_10_11_1638_08_953	1	1.67	0.504	1.20	0.0780	0.906	0.0860	1.08	0.56	0.246	0.129	1.16	0.377
10/11/2013 16:39	0913-111_A	13_10_11_1639_09_743	1	1.00	0.532	1.28	0.0740	0.932	0.0870	1.08	0.56	0.246	0.125	0.745	0.390
10/11/2013 16:40	0913-111_A	13_10_11_1640_10_493	1	1.00	0.536	1.34	0.0770	0.956	0.0870	1.08	0.56	0.246	0.129	0.745	0.394
10/11/2013 16:41	0913-111_A	13_10_11_1641_11_243	1	1.10	0.505	1.31	0.0720	0.940	0.0880	1.08	0.56	0.246	0.122	0.745	0.372
10/11/2013 16:42	0913-111_A	13_10_11_1642_12_003	1	1.05	0.482	1.31	0.0690	0.921	0.0880	1.08	0.56	0.246	0.121	0.922	0.362
10/11/2013 16:43	0913-111_A	13_10_11_1643_12_743	1	1.49	0.519	1.42	0.0730	0.948	0.0870	1.08	0.56	0.246	0.129	0.746	0.387
10/11/2013 16:44	0913-111_A	13_10_11_1644_13_493	1	1.52	0.519	1.30	0.0740	0.951	0.0850	1.08	0.56	0.246	0.129	0.745	0.388
10/11/2013 16:45	0913-111_A	13_10_11_1645_14_293	1	2.25	0.539	3.47	0.0800	1.675	0.0870	1.49	0.57	1.49	0.143	0.745	0.403
10/11/2013 16:46	0913-111_A	13_10_11_1646_15_003	1	2.60	0.502	3.49	0.0810	1.271	0.0870	1.14	0.56	1.16	0.139	0.745	0.372
10/11/2013 16:47	0913-111_A	13_10_11_1647_15_783	1	2.07	0.525	2.98	0.0800	1.030	0.0880	1.08	0.56	0.670	0.136	0.745	0.390
10/11/2013 16:48	0913-111_A	13_10_11_1648_16_503	1	1.17	0.504	2.40	0.0760	0.875	0.0860	1.08	0.56	0.621	0.131	0.745	0.371
10/11/2013 16:49	0913-111_A	13_10_11_1649_17_154	1	1.44	0.509	2.21	0.0760	0.739	0.0830	1.08	0.55	0.485	0.129	0.745	0.378
10/11/2013 16:50	0913-111_A	13_10_11_1650_17_954	1	1.22	0.521	2.09	0.0720	0.746	0.0850	1.08	0.56	0.404	0.124	0.745	0.384
10/11/2013 16:51	0913-111_A	13_10_11_1651_18_704	1	1.05	0.503	2.16	0.0770	0.833	0.0860	1.08	0.56	0.347	0.125	0.745	0.379
10/11/2013 16:52	0913-111_A	13_10_11_1652_19_514	1	1.67	0.515	2.13	0.0750	0.842	0.0880	1.08	0.56	0.424	0.125	0.745	0.389
10/11/2013 16:53	0913-111_A	13_10_11_1653_20_254	1	1.18	0.528	2.14	0.0770	0.888	0.0860	1.08	0.56	0.259	0.129	0.745	0.385
10/11/2013 16:54	0913-111_A	13_10_11_1654_20_974	1	1.00	0.496	2.22	0.0780	0.804	0.0840	1.08	0.56	0.309	0.130	0.745	0.380
10/11/2013 16:55	0913-111_A	13_10_11_1655_21_734	1	1.00	0.521	2.23	0.0750	0.784	0.0880	1.08	0.56	0.338	0.127	0.745	0.390
10/11/2013 16:56	0913-111_A	13_10_11_1656_22_484	1	1.79	0.517	2.23	0.0730	0.820	0.0840	1.08	0.55	0.618	0.128	0.745	0.385
10/11/2013 16:57	0913-111_A	13_10_11_1657_23_244	1	1.00	0.521	2.01	0.0750	0.867	0.0830	1.08	0.55	0.447	0.127	0.745	0.382
10/11/2013 16:58	0913-111_A	13_10_11_1658_24_014	1	1.43	0.494	2.09	0.0720	0.753	0.0870	1.08	0.56	0.384	0.125	0.745	0.370
10/11/2013 16:59	0913-111_A	13_10_11_1659_24_714	1	1.44	0.527	2.01	0.0720	0.783	0.0840	1.08	0.55	0.434	0.127	0.745	0.388
10/11/2013 17:00	0913-111_A	13_10_11_1700_25_504	1	1.00	0.521	2.05	0.0760	0.806	0.0840	1.08	0.55	0.460	0.128	0.745	0.393
10/11/2013 17:01	0913-111_A	13_10_11_1701_26_275	1	1.46	0.530	1.98	0.0740	0.722	0.0830	1.08	0.55	0.463	0.125	0.745	0.392
10/11/2013 17:02	0913-111_A	13_10_11_1702_27_015	1	1.52	0.496	1.94	0.0690	0.790	0.0840	1.08	0.55	0.344	0.120	0.745	0.371
10/11/2013 17:03	0913-111_A	13_10_11_1703_27_725	1	1.80	0.504	1.90	0.0750	0.764	0.0850	1.08	0.55	0.268	0.126	0.745	0.375
10/11/2013 17:04	0913-111_A	13_10_11_1704_28_495	1	1.37	0.488	1.78	0.0730	0.737	0.0850	1.08	0.55	0.380	0.122	0.745	0.364
10/11/2013 17:05	0913-111_A	13_10_11_1705_29_235	1	1.64	0.497	1.88	0.0720	0.809	0.0820	1.08	0.55	0.246	0.121	0.745	0.364
10/11/2013 17:06	0913-111_A	13_10_11_1706_30_015	1	1.24	0.491	1.92	0.0710	0.776	0.0820	1.08	0.55	0.313	0.119	0.761	0.370
10/11/2013 17:07	0913-111_A	13_10_11_1707_30_725	1	1.00	0.524	1.92	0.0730	0.801	0.0840	1.08	0.55	0.323	0.123	0.745	0.390
10/11/2013 17:08	0913-111_A	13_10_11_1708_31_445	1	1.00	0.502	1.92	0.0710	0.728	0.0830	1.08	0.55	0.391	0.116	0.745	0.376
10/11/2013 17:09	0913-111_A	13_10_11_1709_32_195	1	2.23	0.512	1.90	0.0720	0.804	0.0800	1.08	0.55	0.386	0.122	0.745	0.381
10/11/2013 17:10	0913-111_A	13_10_11_1710_33_005	1	1.31	0.486	1.97	0.0720	0.773	0.0840	1.08	0.54	0.413	0.120	0.745	0.367
10/11/2013 17:11	0913-111_A	13_10_11_1711_33_755	1	1.00	0.506	1.88	0.0710	0.831	0.0820	1.08	0.55	0.424	0.119	0.745	0.376
10/11/2013 17:12	0913-111_A	13_10_11_1712_34_465	1	1.00	0.505	1.96	0.0780	0.738	0.0840	1.08	0.55	0.330	0.127	0.862	0.386
10/11/2013 17:13	0913-111_A	13_10_11_1713_35_276	1	1.00	0.500	2.00	0.0710	0.907	0.0810	1.08	0.55	0.293	0.123	0.745	0.379
10/11/2013 17:14	0913-111_A	13_10_11_1714_35_986	1	1.38	0.473	1.83	0.0720	0.748	0.0850	1.08	0.55	0.246	0.121	0.745	0.353
10/11/2013 17:15	0913-111_A	13_10_11_1715_36_786	1	1.31	0.511	1.91	0.0710	0.731	0.0840	1.08	0.55	0.343	0.121	0.745	0.374
10/11/2013 17:16	0913-111_A	13_10_11_1716_37_496	1	1.54	0.489	1.88	0.0680	0.776	0.0800	1.08	0.55	0.246	0.122	0.745	0.359
10/11/2013 17:17	0913-111_A	13_10_11_1717_38_286	1	1.29	0.469	1.87	0.0680	0.840	0.0850	1.08	0.55	0.323	0.121	0.745	0.349
10/11/2013 17:18	0913-111_A	13_10_11_1718_38_976	1	1.51	0.474	1.78	0.0710	0.830	0.0820	1.08	0.55	0.246	0.123	0.745	0.351
10/11/2013 17:19	0913-111_A	13_10_11_1719_39_786	1	1.22	0.511	1.79	0.0700	0.870	0.0840	1.08	0.55	0.285	0.120	0.745	0.378
10/11/2013 17:20	0913-111_A	13_10_11_1720_40_566	1	1.17	0.497	1.92	0.0710	0.727	0.0820	1.08	0.55	0.291	0.120	0.745	0.369
10/11/2013 17:21	0913-111_A	13_10_11_1721_41_276	1	1.00	0.507	1.97	0.0690	0.785	0.0820	1.08	0.55	0.257	0.119	0.745	0.379
10/11/2013 17:22	0913-111_A	13_10_11_1722_41_986	1	1.00	0.519	1.95	0.0720	0.778	0.0810	1.08	0.54	0.246	0.127	0.745	0.381
10/11/2013 17:23	0913-111_A	13_10_11_1723_42_806	1	1.00	0.487	1.85	0.0710	0.879	0.0840	1.08	0.54	0.326	0.122	0.745	0.367
10/11/2013 17:24	0913-111_A	13_10_11_1724_43_527	1	1.00	0.492	1.96	0.0720	0.858	0.0840	1.08	0.55	0.246	0.123	0.745	0.367
10/11/2013 17:25	0913-111_A	13_10_11_1725_44_267	1	1.00	0.500	1.93	0.0690	0.854	0.0840	1.08	0.55	0.403	0.121	0.756	0.373
10/11/2013 17:26	0913-111_A	13_10_11_1726_44_997	1	2.21	0.497	2.04	0.0710	0.849	0.0830	1.08	0.55	0.283	0.124	0.745	0.375
10/11/2013 17:27	0913-111_A	13_10_11_1727_45_747	1	1.92	0.492	1.89	0.0720	0.869	0.0830	1.08	0.55	0.246	0.121	0.745	0.367
10/11/2013 17:28	0913-111_A	13_10_11_1728_46_477	1	1.20	0.490	1.80	0.0750	0.814	0.0820	1.08	0.55	0.246	0.122	0.787	0.367
10/11/2013 17:29	0913-111_A	13_10_11_1729_47_307	1	1.25	0.504	1.95	0.0720	0.843	0.0820	1.08	0.55	0.302	0.124	0.745	0.380
		Average Conc. (ppm):	**1**	**1.33**	**0.507**	**1.84**	**0.0732**	**0.844**	**0.0844**	**1.09**	**0.55**	**0.359**	**0.124**	**0.786**	**0.378**

Hammermill 2 Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 18:10	0913-111_A	13_10_11_1810_59_463	1	0.965	0.482	1.19	0.0720	0.249	0.0830	1.08	0.54	0.232	0.115	0.707	0.360
10/11/2013 18:12	0913-111_A	13_10_11_1812_00_213	1	0.965	0.468	1.42	0.0680	0.186	0.0820	1.08	0.54	0.232	0.118	0.707	0.345
10/11/2013 18:13	0913-111_A	13_10_11_1813_00_923	1	0.965	0.473	1.20	0.0700	0.212	0.0780	1.08	0.52	0.232	0.112	0.707	0.352
10/11/2013 18:14	0913-111_A	13_10_11_1814_01_633	1	0.965	0.449	0.735	0.0620	0.165	0.0750	1.08	0.51	0.232	0.103	0.713	0.329
10/11/2013 18:15	0913-111_A	13_10_11_1815_02_453	1	0.965	0.486	0.807	0.0630	0.188	0.0730	1.08	0.50	0.232	0.108	0.707	0.354
10/11/2013 18:16	0913-111_A	13_10_11_1816_03_143	1	0.965	0.503	0.816	0.0680	0.165	0.0730	1.08	0.50	0.232	0.110	0.707	0.367
10/11/2013 18:17	0913-111_A	13_10_11_1817_03_783	1	0.965	0.460	0.851	0.0650	0.165	0.0750	1.08	0.51	0.232	0.104	0.707	0.341
10/11/2013 18:18	0913-111_A	13_10_11_1818_04_593	1	0.965	0.459	1.07	0.0650	0.165	0.0740	1.08	0.51	0.232	0.104	0.707	0.339
10/11/2013 18:19	0913-111_A	13_10_11_1819_05_353	1	0.965	0.474	0.921	0.0680	0.165	0.0740	1.08	0.51	0.232	0.111	0.707	0.348
10/11/2013 18:20	0913-111_A	13_10_11_1820_06_113	1	0.965	0.477	0.901	0.0640	0.165	0.0740	1.08	0.51	0.232	0.109	0.707	0.354
10/11/2013 18:21	0913-111_A	13_10_11_1821_06_804	1	0.965	0.471	0.964	0.0650	0.165	0.0740	1.08	0.51	0.232	0.110	0.707	0.349
10/11/2013 18:22	0913-111_A	13_10_11_1822_07_644	1	0.965	0.483	0.764	0.0620	0.165	0.0740	1.08	0.51	0.232	0.107	0.707	0.350
10/11/2013 18:23	0913-111_A	13_10_11_1823_08_354	1	0.965	0.468	0.964	0.0660	0.165	0.0750	1.08	0.51	0.232	0.110	0.707	0.341
10/11/2013 18:24	0913-111_A	13_10_11_1824_09_134	1	0.965	0.488	1.11	0.0680	0.172	0.0800	1.08	0.52	0.232	0.114	0.707	0.358
10/11/2013 18:25	0913-111_A	13_10_11_1825_09_894	1	0.965	0.473	1.06	0.0680	0.165	0.0750	1.08	0.52	0.232	0.115	0.707	0.353
10/11/2013 18:26	0913-111_A	13_10_11_1826_10_654	1	0.965	0.457	0.814	0.0650	0.165	0.0750	1.08	0.51	0.232	0.110	0.707	0.335
10/11/2013 18:27	0913-111_A	13_10_11_1827_11_364	1	0.965	0.458	0.922	0.0640	0.165	0.0740	1.08	0.51	0.232	0.107	0.707	0.336
10/11/2013 18:28	0913-111_A	13_10_11_1828_12_104	1	0.965	0.439	0.837	0.0650	0.165	0.0750	1.08	0.51	0.232	0.106	0.707	0.328
10/11/2013 18:29	0913-111_A	13_10_11_1829_12_904	1	0.965	0.444	0.806	0.0680	0.165	0.0760	1.08	0.52	0.232	0.111	0.707	0.330
10/11/2013 18:30	0913-111_A	13_10_11_1830_13_594	1	0.965	0.470	0.857	0.0670	0.165	0.0750	1.08	0.52	0.232	0.109	0.707	0.341
10/11/2013 18:31	0913-111_A	13_10_11_1831_14_434	1	0.965	0.473	0.688	0.0660	0.223	0.0780	1.08	0.52	0.232	0.109	0.707	0.348
10/11/2013 18:32	0913-111_A	13_10_11_1832_15_199	1	0.965	0.475	0.616	0.0680	0.165	0.0780	1.08	0.52	0.232	0.109	0.707	0.357
10/11/2013 18:33	0913-111_A	13_10_11_1833_15_889	1	0.965	0.484	0.687	0.0670	0.165	0.0780	1.08	0.52	0.232	0.109	0.707	0.357
10/11/2013 18:34	0913-111_A	13_10_11_1834_16_699	1	0.965	0.473	0.630	0.0660	0.165	0.0780	1.08	0.52	0.232	0.105	0.707	0.347
10/11/2013 18:35	0913-111_A	13_10_11_1835_17_419	1	0.965	0.458	0.627	0.0670	0.165	0.0780	1.08	0.53	0.232	0.104	0.707	0.336
10/11/2013 18:36	0913-111_A	13_10_11_1836_18_119	1	0.965	0.477	0.696	0.0650	0.165	0.0790	1.08	0.53	0.232	0.108	0.707	0.347
10/11/2013 18:37	0913-111_A	13_10_11_1837_18_879	1	0.965	0.482	0.581	0.0650	0.165	0.0820	1.08	0.54	0.232	0.109	0.707	0.353
10/11/2013 18:38	0913-111_A	13_10_11_1838_19_609	1	0.965	0.467	0.828	0.0710	0.175	0.0820	1.08	0.54	0.232	0.112	0.707	0.339
10/11/2013 18:39	0913-111_A	13_10_11_1839_20_429	1	0.965	0.485	0.791	0.0680	0.165	0.0830	1.08	0.55	0.232	0.113	0.707	0.354
10/11/2013 18:40	0913-111_A	13_10_11_1840_21_149	1	0.965	0.480	1.12	0.0700	0.195	0.0880	1.08	0.56	0.232	0.119	0.707	0.352
10/11/2013 18:41	0913-111_A	13_10_11_1841_21_879	1	0.965	0.512	1.43	0.0690	0.165	0.0900	1.08	0.57	0.232	0.123	0.707	0.374
10/11/2013 18:42	0913-111_A	13_10_11_1842_22_679	1	0.965	0.499	1.33	0.0720	0.170	0.0850	1.08	0.55	0.232	0.126	0.707	0.366
10/11/2013 18:43	0913-111_A	13_10_11_1843_23_399	1	0.965	0.498	1.18	0.0720	0.184	0.0870	1.08	0.55	0.232	0.118	0.707	0.361
10/11/2013 18:44	0913-111_A	13_10_11_1844_24_210	1	0.965	0.498	1.04	0.0700	0.165	0.0850	1.08	0.55	0.232	0.115	0.707	0.363
10/11/2013 18:45	0913-111_A	13_10_11_1845_24_920	1	0.965	0.512	1.07	0.0720	0.177	0.0850	1.08	0.55	0.232	0.116	0.707	0.375
10/11/2013 18:46	0913-111_A	13_10_11_1846_25_720	1	0.965	0.496	1.06	0.0680	0.165	0.0810	1.08	0.54	0.232	0.113	0.707	0.364
10/11/2013 18:47	0913-111_A	13_10_11_1847_26_450	1	0.965	0.477	1.05	0.0680	0.165	0.0830	1.08	0.55	0.232	0.112	0.707	0.351
10/11/2013 18:48	0913-111_A	13_10_11_1848_27_220	1	0.965	0.495	1.03	0.0670	0.189	0.0800	1.08	0.54	0.232	0.114	0.707	0.360
10/11/2013 18:49	0913-111_A	13_10_11_1849_27_940	1	0.965	0.483	1.01	0.0650	0.181	0.0820	1.08	0.54	0.232	0.108	0.707	0.351
10/11/2013 18:50	0913-111_A	13_10_11_1850_28_750	1	0.965	0.458	0.807	0.0680	0.213	0.0850	1.08	0.55	0.232	0.111	0.707	0.338
10/11/2013 18:51	0913-111_A	13_10_11_1851_29_430	1	1.52	0.467	0.875	0.0690	0.180	0.0860	1.08	0.55	0.232	0.113	0.707	0.343
10/11/2013 18:52	0913-111_A	13_10_11_1852_30_250	1	0.965	0.466	0.864	0.0680	0.165	0.0840	1.08	0.55	0.232	0.111	0.707	0.347
10/11/2013 18:53	0913-111_A	13_10_11_1853_30_960	1	0.965	0.472	0.858	0.0650	0.286	0.0830	1.08	0.55	0.232	0.109	0.707	0.350
10/11/2013 18:54	0913-111_A	13_10_11_1854_31_790	1	0.965	0.503	1.13	0.0680	0.205	0.0820	1.08	0.54	0.232	0.112	0.707	0.367
10/11/2013 18:55	0913-111_A	13_10_11_1855_32_530	1	0.965	0.470	1.28	0.0670	0.268	0.0870	1.08	0.56	0.232	0.113	0.707	0.350
10/11/2013 18:56	0913-111_A	13_10_11_1856_33_251	1	0.965	0.500	1.13	0.0710	0.216	0.0850	1.08	0.56	0.232	0.117	0.707	0.366
10/11/2013 18:57	0913-111_A	13_10_11_1857_34_061	1	0.965	0.479	0.990	0.0650	0.165	0.0850	1.08	0.55	0.232	0.108	0.707	0.348
10/11/2013 18:58	0913-111_A	13_10_11_1858_34_711	1	0.965	0.479	1.07	0.0700	0.271	0.0830	1.08	0.55	0.232	0.115	0.707	0.349
10/11/2013 18:59	0913-111_A	13_10_11_1859_35_411	1	0.965	0.483	1.15	0.0650	0.242	0.0860	1.08	0.56	0.232	0.112	0.707	0.357
10/11/2013 19:00	0913-111_A	13_10_11_1900_36_211	1	0.965	0.487	1.23	0.0690	0.165	0.0840	1.08	0.55	0.232	0.118	0.707	0.358
10/11/2013 19:01	0913-111_A	13_10_11_1901_36_921	1	0.965	0.492	1.48	0.0700	0.239	0.0860	1.08	0.56	0.232	0.119	0.707	0.358
10/11/2013 19:02	0913-111_A	13_10_11_1902_37_721	1	0.965	0.498	1.47	0.0710	0.185	0.0840	1.08	0.56	0.249	0.121	0.707	0.369
10/11/2013 19:03	0913-111_A	13_10_11_1903_38_431	1	0.965	0.532	1.69	0.0740	0.166	0.0890	1.08	0.56	0.232	0.130	0.707	0.386
10/11/2013 19:04	0913-111_A	13_10_11_1904_39_141	1	0.965	0.515	1.76	0.0720	0.228	0.0870	1.08	0.56	0.232	0.128	0.835	0.374
10/11/2013 19:05	0913-111_A	13_10_11_1905_39_951	1	0.965	0.488	1.51	0.0700	0.228	0.0850	1.08	0.55	0.232	0.118	0.707	0.356
10/11/2013 19:06	0913-111_A	13_10_11_1906_40_701	1	0.965	0.487	1.26	0.0680	0.248	0.0820	1.08	0.54	0.232	0.113	0.707	0.353
10/11/2013 19:07	0913-111_A	13_10_11_1907_41_401	1	0.965	0.484	1.58	0.0650	0.265	0.0810	1.08	0.54	0.297	0.111	0.707	0.363
10/11/2013 19:08	0913-111_A	13_10_11_1908_42_132	1	0.965	0.487	1.28	0.0680	0.165	0.0830	1.08	0.55	0.232	0.117	0.707	0.360
10/11/2013 19:09	0913-111_A	13_10_11_1909_42_892	1	1.32	0.491	1.22	0.0720	0.171	0.0830	1.08	0.55	0.232	0.122	0.707	0.367
10/11/2013 19:10	0913-111_A	13_10_11_1910_43_642	1	0.965	0.480	1.35	0.0680	0.214	0.0840	1.08	0.55	0.232	0.119	1.02	0.351
10/11/2013 19:11	0913-111_A	13_10_11_1911_44_452	1	0.965	0.463	1.20	0.0650	0.227	0.0820	1.08	0.54	0.232	0.114	0.707	0.340
		Average Conc. (ppm):	**1**	**0.980**	**0.480**	**1.04**	**0.0677**	**0.189**	**0.0809**	**1.08**	**0.54**	**0.233**	**0.113**	**0.715**	**0.353**

Company	ACT	Client #	1911
Analyst Initials	CJT	Job #	0913-111
Parameters	EPA Method 320	PO #	3134 1911
# Samples	21 Runs	Report Date	V0.62 13.10.18.12.58

Hammermill 2 Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 19:35	0913-111_A	13_10_11_1935_01_714	1	1.03	0.455	0.387	0.0660	0.165	0.0760	1.08	0.52	0.232	0.107	0.707	0.335
10/11/2013 19:36	0913-111_A	13_10_11_1936_02_534	1	0.965	0.465	0.476	0.0620	0.184	0.0770	1.08	0.52	0.232	0.104	0.707	0.343
10/11/2013 19:37	0913-111_A	13_10_11_1937_03_234	1	0.965	0.466	0.584	0.0660	0.165	0.0770	1.08	0.52	0.232	0.107	0.707	0.343
10/11/2013 19:38	0913-111_A	13_10_11_1938_03_964	1	0.965	0.470	0.688	0.0660	0.165	0.0800	1.08	0.53	0.232	0.110	0.707	0.348
10/11/2013 19:39	0913-111_A	13_10_11_1939_04_744	1	0.965	0.468	0.608	0.0660	0.165	0.0810	1.08	0.53	0.232	0.108	0.731	0.346
10/11/2013 19:40	0913-111_A	13_10_11_1940_05_514	1	0.965	0.483	0.569	0.0660	0.203	0.0800	1.08	0.54	0.232	0.109	0.707	0.360
10/11/2013 19:41	0913-111_A	13_10_11_1941_06_114	1	0.965	0.470	0.705	0.0620	0.168	0.0850	1.08	0.55	0.232	0.105	0.707	0.343
10/11/2013 19:42	0913-111_A	13_10_11_1942_06_924	1	0.965	0.504	0.659	0.0670	0.169	0.0830	1.08	0.55	0.232	0.114	0.707	0.369
10/11/2013 19:43	0913-111_A	13_10_11_1943_07_674	1	0.965	0.502	0.739	0.0700	0.180	0.0860	1.08	0.55	0.232	0.117	0.707	0.369
10/11/2013 19:44	0913-111_A	13_10_11_1944_08_385	1	0.965	0.467	0.816	0.0680	0.184	0.0850	1.08	0.55	0.232	0.114	0.707	0.355
10/11/2013 19:45	0913-111_A	13_10_11_1945_09_195	1	0.965	0.496	0.955	0.0730	0.189	0.0880	1.08	0.56	0.232	0.123	0.707	0.366
10/11/2013 19:46	0913-111_A	13_10_11_1946_09_915	1	0.965	0.512	1.22	0.0740	0.178	0.0880	1.08	0.57	0.233	0.127	0.707	0.375
10/11/2013 19:47	0913-111_A	13_10_11_1947_10_665	1	0.965	0.505	1.29	0.0720	0.175	0.0860	1.08	0.56	0.232	0.122	0.707	0.372
10/11/2013 19:48	0913-111_A	13_10_11_1948_11_485	1	0.965	0.487	1.11	0.0670	0.165	0.0830	1.08	0.55	0.232	0.113	0.707	0.357
10/11/2013 19:49	0913-111_A	13_10_11_1949_12_195	1	0.965	0.492	1.06	0.0700	0.165	0.0840	1.08	0.55	0.292	0.114	0.707	0.359
10/11/2013 19:50	0913-111_A	13_10_11_1950_12_945	1	0.965	0.460	1.14	0.0660	0.165	0.0840	1.08	0.55	0.232	0.107	0.707	0.337
10/11/2013 19:51	0913-111_A	13_10_11_1951_13_755	1	0.965	0.462	1.17	0.0650	0.165	0.0830	1.08	0.55	0.271	0.106	0.707	0.339
10/11/2013 19:52	0913-111_A	13_10_11_1952_14_475	1	0.965	0.501	1.09	0.0680	0.165	0.0840	1.08	0.55	0.232	0.114	0.707	0.363
10/11/2013 19:53	0913-111_A	13_10_11_1953_15_195	1	0.965	0.453	0.918	0.0660	0.165	0.0820	1.08	0.55	0.238	0.109	0.707	0.338
10/11/2013 19:54	0913-111_A	13_10_11_1954_16_015	1	1.16	0.466	0.745	0.0620	0.165	0.0840	1.08	0.55	0.236	0.110	0.707	0.342
10/11/2013 19:55	0913-111_A	13_10_11_1955_16_735	1	0.965	0.484	0.645	0.0670	0.186	0.0830	1.08	0.55	0.274	0.109	0.707	0.364
10/11/2013 19:56	0913-111_A	13_10_11_1956_17_546	1	0.965	0.477	0.739	0.0700	0.167	0.0870	1.08	0.55	0.232	0.114	0.707	0.351
10/11/2013 19:57	0913-111_A	13_10_11_1957_18_266	1	0.965	0.484	0.834	0.0700	0.165	0.0830	1.08	0.55	0.232	0.114	0.707	0.355
10/11/2013 19:58	0913-111_A	13_10_11_1958_18_986	1	0.965	0.497	0.781	0.0660	0.197	0.0890	1.08	0.56	0.303	0.114	0.707	0.361
10/11/2013 19:59	0913-111_A	13_10_11_1959_19_796	1	0.965	0.495	0.968	0.0700	0.165	0.0870	1.08	0.56	0.232	0.116	0.707	0.364
10/11/2013 20:00	0913-111_A	13_10_11_2000_20_526	1	0.965	0.485	1.18	0.0670	0.235	0.0840	1.08	0.55	0.232	0.115	0.707	0.358
10/11/2013 20:01	0913-111_A	13_10_11_2001_21_306	1	0.965	0.486	0.996	0.0660	0.282	0.0820	1.08	0.55	0.232	0.114	0.707	0.365
10/11/2013 20:02	0913-111_A	13_10_11_2002_22_056	1	0.965	0.470	1.20	0.0710	0.297	0.0870	1.08	0.56	0.232	0.117	0.707	0.346
10/11/2013 20:03	0913-111_A	13_10_11_2003_22_766	1	0.965	0.503	1.15	0.0730	0.266	0.0870	1.08	0.56	0.232	0.120	0.707	0.362
10/11/2013 20:04	0913-111_A	13_10_11_2004_23_566	1	0.965	0.490	1.52	0.0720	0.287	0.0890	1.08	0.56	0.232	0.120	0.707	0.362
10/11/2013 20:05	0913-111_A	13_10_11_2005_24_316	1	0.965	0.499	1.31	0.0720	0.247	0.0900	1.08	0.56	0.232	0.121	0.707	0.366
10/11/2013 20:06	0913-111_A	13_10_11_2006_25_026	1	0.965	0.479	1.24	0.0670	0.289	0.0850	1.08	0.55	0.232	0.116	0.707	0.351
10/11/2013 20:07	0913-111_A	13_10_11_2007_25_847	1	0.965	0.471	1.50	0.0680	0.281	0.0840	1.08	0.55	0.290	0.113	0.707	0.340
10/11/2013 20:08	0913-111_A	13_10_11_2008_26_547	1	1.29	0.496	1.77	0.0710	0.381	0.0840	1.08	0.55	0.232	0.121	0.707	0.363
10/11/2013 20:09	0913-111_A	13_10_11_2009_27_317	1	0.965	0.479	1.88	0.0690	0.323	0.0850	1.08	0.56	0.232	0.117	0.707	0.348
10/11/2013 20:10	0913-111_A	13_10_11_2010_28_067	1	0.965	0.515	2.01	0.0720	0.308	0.0860	1.08	0.56	0.232	0.127	0.846	0.373
10/11/2013 20:11	0913-111_A	13_10_11_2011_28_787	1	0.965	0.467	2.07	0.0680	0.318	0.0880	1.08	0.55	0.383	0.118	0.707	0.342
10/11/2013 20:12	0913-111_A	13_10_11_2012_29_547	1	0.965	0.517	1.95	0.0710	0.254	0.0860	1.08	0.55	0.371	0.121	0.707	0.378
10/11/2013 20:13	0913-111_A	13_10_11_2013_30_317	1	0.965	0.479	1.47	0.0700	0.284	0.0860	1.08	0.55	0.232	0.119	0.707	0.352
10/11/2013 20:14	0913-111_A	13_10_11_2014_31_027	1	0.965	0.486	1.48	0.0700	0.165	0.0830	1.08	0.55	0.341	0.117	0.707	0.352
10/11/2013 20:15	0913-111_A	13_10_11_2015_31_827	1	0.965	0.502	1.42	0.0710	0.200	0.0840	1.08	0.55	0.232	0.117	0.707	0.366
10/11/2013 20:16	0913-111_A	13_10_11_2016_32_537	1	0.965	0.474	1.60	0.0660	0.218	0.0860	1.08	0.55	0.232	0.115	0.707	0.349
10/11/2013 20:17	0913-111_A	13_10_11_2017_33_357	1	0.965	0.473	1.84	0.0690	0.244	0.0860	1.08	0.56	0.232	0.120	0.707	0.345
10/11/2013 20:18	0913-111_A	13_10_11_2018_34_067	1	0.965	0.483	1.79	0.0720	0.207	0.0840	1.08	0.55	0.232	0.118	0.707	0.353
10/11/2013 20:19	0913-111_A	13_10_11_2019_34_828	1	0.965	0.441	1.32	0.0570	0.231	0.0810	1.08	0.54	0.232	0.103	0.707	0.319
10/11/2013 20:20	0913-111_A	13_10_11_2020_35_678	1	0.965	0.409	0.893	0.0620	0.237	0.0790	1.08	0.53	0.232	0.100	0.707	0.303
10/11/2013 20:21	0913-111_A	13_10_11_2021_36_418	1	0.965	0.433	0.987	0.0620	0.202	0.0750	1.08	0.53	0.232	0.103	0.707	0.318
10/11/2013 20:22	0913-111_A	13_10_11_2022_37_128	1	0.965	0.461	1.19	0.0620	0.237	0.0830	1.08	0.54	0.232	0.107	0.707	0.338
10/11/2013 20:23	0913-111_A	13_10_11_2023_37_728	1	0.965	0.479	1.36	0.0660	0.198	0.0870	1.08	0.56	0.232	0.119	0.707	0.351
10/11/2013 20:24	0913-111_A	13_10_11_2024_38_578	1	0.965	0.483	1.45	0.0680	0.184	0.0860	1.08	0.56	0.232	0.124	0.707	0.352
10/11/2013 20:25	0913-111_A	13_10_11_2025_39_308	1	0.965	0.491	1.36	0.0700	0.239	0.0850	1.08	0.56	0.232	0.121	0.707	0.360
10/11/2013 20:26	0913-111_A	13_10_11_2026_40_038	1	0.965	0.466	1.27	0.0680	0.182	0.0850	1.08	0.56	0.232	0.116	0.707	0.341
10/11/2013 20:27	0913-111_A	13_10_11_2027_40_768	1	0.965	0.484	1.15	0.0670	0.191	0.0860	1.08	0.55	0.232	0.115	0.707	0.356
10/11/2013 20:28	0913-111_A	13_10_11_2028_41_548	1	0.965	0.493	1.23	0.0660	0.243	0.0850	1.08	0.55	0.232	0.114	0.707	0.359
10/11/2013 20:29	0913-111_A	13_10_11_2029_42_348	1	0.965	0.477	0.973	0.0670	0.171	0.0860	1.08	0.55	0.232	0.113	0.707	0.350
10/11/2013 20:30	0913-111_A	13_10_11_2030_43_068	1	0.965	0.474	0.997	0.0660	0.165	0.0850	1.08	0.55	0.232	0.111	0.707	0.344
10/11/2013 20:31	0913-111_A	13_10_11_2031_43_869	1	0.965	0.483	1.65	0.0660	0.201	0.0840	1.08	0.55	0.232	0.114	0.707	0.355
10/11/2013 20:32	0913-111_A	13_10_11_2032_44_619	1	0.965	0.493	1.57	0.0710	0.253	0.0850	1.08	0.56	0.232	0.122	0.707	0.360
10/11/2013 20:33	0913-111_A	13_10_11_2033_45_359	1	0.965	0.463	1.44	0.0670	0.165	0.0840	1.08	0.55	0.232	0.111	0.707	0.342
10/11/2013 20:34	0913-111_A	13_10_11_2034_46_079	1	0.965	0.450	0.598	0.0670	0.165	0.0680	1.08	0.46	0.232	0.172	0.707	0.331
10/11/2013 20:35	0913-111_A	13_10_11_2035_46_799	1	0.965	0.515	0.136	0.100	0.165	0.0420	1.08	0.128	0.232	0.504	0.707	0.391
		Average Conc. (ppm):	**1**	**0.975**	**0.480**	**1.14**	**0.0682**	**0.211**	**0.0832**	**1.08**	**0.54**	**0.243**	**0.122**	**0.710**	**0.352**

Hammermill 2 Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/11/2013 20:48	0913-111_A	13_10_11_2048_56_780	1	0.965	0.501	0.733	0.0690	0.224	0.0890	1.08	0.57	0.292	0.115	0.707	0.366
10/11/2013 20:49	0913-111_A	13_10_11_2049_57_460	1	0.965	0.487	0.771	0.0690	0.200	0.0900	1.08	0.57	0.232	0.116	0.707	0.362
10/11/2013 20:50	0913-111_A	13_10_11_2050_58_210	1	0.965	0.514	0.779	0.0740	0.165	0.0910	1.08	0.57	0.326	0.118	0.707	0.374
10/11/2013 20:51	0913-111_A	13_10_11_2051_58_930	1	0.965	0.481	0.837	0.0670	0.197	0.0880	1.08	0.57	0.232	0.111	0.707	0.356
10/11/2013 20:52	0913-111_A	13_10_11_2052_59_690	1	0.965	0.543	1.01	0.0710	0.165	0.0920	1.08	0.57	0.232	0.124	0.707	0.394
10/11/2013 20:54	0913-111_A	13_10_11_2054_00_490	1	0.965	0.496	1.02	0.0690	0.200	0.0880	1.08	0.57	0.232	0.117	0.707	0.360
10/11/2013 20:55	0913-111_A	13_10_11_2055_01_210	1	0.965	0.489	1.16	0.0660	0.188	0.0880	1.08	0.57	0.232	0.113	0.707	0.355
10/11/2013 20:56	0913-111_A	13_10_11_2056_01_991	1	0.965	0.513	1.14	0.0680	0.180	0.0890	1.08	0.57	0.232	0.118	0.707	0.372
10/11/2013 20:57	0913-111_A	13_10_11_2057_02_811	1	0.965	0.510	0.977	0.0710	0.168	0.0880	1.08	0.57	0.232	0.118	0.707	0.371
10/11/2013 20:58	0913-111_A	13_10_11_2058_03_541	1	0.965	0.536	0.850	0.0710	0.223	0.0870	1.08	0.57	0.232	0.122	0.707	0.390
10/11/2013 20:59	0913-111_A	13_10_11_2059_04_241	1	0.965	0.490	0.987	0.0680	0.182	0.0900	1.08	0.57	0.232	0.114	0.707	0.357
10/11/2013 21:00	0913-111_A	13_10_11_2100_05_061	1	0.965	0.482	0.978	0.0700	0.172	0.0890	1.08	0.57	0.232	0.116	0.707	0.355
10/11/2013 21:01	0913-111_A	13_10_11_2101_05_801	1	0.965	0.513	1.05	0.0690	0.165	0.0880	1.08	0.56	0.232	0.119	0.707	0.373
10/11/2013 21:02	0913-111_A	13_10_11_2102_06_551	1	0.965	0.499	1.17	0.0690	0.184	0.0850	1.08	0.56	0.429	0.111	0.707	0.364
10/11/2013 21:03	0913-111_A	13_10_11_2103_07_271	1	0.965	0.472	1.09	0.0690	0.231	0.0860	1.08	0.56	0.232	0.112	0.707	0.353
10/11/2013 21:04	0913-111_A	13_10_11_2104_08_001	1	0.965	0.487	1.23	0.0700	0.229	0.0880	1.08	0.56	0.348	0.116	0.707	0.359
10/11/2013 21:05	0913-111_A	13_10_11_2105_08_691	1	0.965	0.510	1.31	0.0670	0.251	0.0850	1.08	0.56	0.232	0.118	0.707	0.368
10/11/2013 21:06	0913-111_A	13_10_11_2106_09_461	1	0.965	0.501	1.49	0.0670	0.304	0.0840	1.08	0.56	0.243	0.115	0.707	0.362
10/11/2013 21:07	0913-111_A	13_10_11_2107_10_192	1	0.965	0.500	1.68	0.0700	0.193	0.0890	1.08	0.56	0.232	0.116	0.707	0.369
10/11/2013 21:08	0913-111_A	13_10_11_2108_10_932	1	0.965	0.495	1.51	0.0700	0.263	0.0860	1.08	0.56	0.232	0.116	0.707	0.357
10/11/2013 21:09	0913-111_A	13_10_11_2109_11_712	1	0.965	0.498	1.67	0.0690	0.232	0.0860	1.08	0.56	0.232	0.120	0.707	0.364
10/11/2013 21:10	0913-111_A	13_10_11_2110_12_422	1	0.965	0.512	1.80	0.0690	0.320	0.0900	1.08	0.56	0.232	0.120	0.707	0.373
10/11/2013 21:11	0913-111_A	13_10_11_2111_13_262	1	0.965	0.469	1.42	0.0660	0.228	0.0820	1.08	0.54	0.386	0.110	0.707	0.347
10/11/2013 21:12	0913-111_A	13_10_11_2112_13_952	1	0.965	0.463	1.43	0.0630	0.212	0.0800	1.08	0.53	0.376	0.105	0.707	0.337
10/11/2013 21:13	0913-111_A	13_10_11_2113_14_782	1	0.965	0.483	1.23	0.0710	0.235	0.0800	1.08	0.53	0.296	0.113	0.707	0.350
10/11/2013 21:14	0913-111_A	13_10_11_2114_15_492	1	0.965	0.502	0.938	0.0660	0.174	0.0800	1.08	0.54	0.232	0.112	0.707	0.364
10/11/2013 21:15	0913-111_A	13_10_11_2115_16_232	1	0.965	0.478	1.04	0.0670	0.214	0.0870	1.08	0.55	0.232	0.110	0.707	0.348
10/11/2013 21:16	0913-111_A	13_10_11_2116_16_982	1	0.965	0.503	1.26	0.0700	0.279	0.0850	1.08	0.56	0.232	0.118	0.707	0.364
10/11/2013 21:17	0913-111_A	13_10_11_2117_17_712	1	0.965	0.494	1.29	0.0690	0.244	0.0870	1.08	0.56	0.232	0.118	0.707	0.363
10/11/2013 21:18	0913-111_A	13_10_11_2118_18_552	1	0.965	0.479	1.19	0.0680	0.191	0.0810	1.08	0.54	0.246	0.111	0.707	0.349
10/11/2013 21:19	0913-111_A	13_10_11_2119_19_303	1	0.965	0.468	0.972	0.0650	0.165	0.0790	1.08	0.53	0.251	0.105	0.707	0.344
10/11/2013 21:20	0913-111_A	13_10_11_2120_19_973	1	0.965	0.480	0.781	0.0670	0.206	0.0780	1.08	0.53	0.232	0.109	0.707	0.351
10/11/2013 21:21	0913-111_A	13_10_11_2121_20_793	1	0.965	0.478	1.09	0.0650	0.165	0.0790	1.08	0.54	0.365	0.108	0.707	0.350
10/11/2013 21:22	0913-111_A	13_10_11_2122_21_503	1	0.965	0.450	0.961	0.0650	0.165	0.0790	1.08	0.53	0.232	0.107	0.707	0.328
10/11/2013 21:23	0913-111_A	13_10_11_2123_22_333	1	0.965	0.489	0.850	0.0660	0.165	0.0790	1.08	0.53	0.342	0.111	0.707	0.355
10/11/2013 21:24	0913-111_A	13_10_11_2124_23_063	1	0.965	0.429	0.798	0.0600	0.165	0.0790	1.08	0.53	0.232	0.100	0.707	0.313
10/11/2013 21:25	0913-111_A	13_10_11_2125_23_823	1	0.965	0.467	0.778	0.0670	0.165	0.0770	1.08	0.52	0.306	0.108	0.707	0.342
10/11/2013 21:26	0913-111_A	13_10_11_2126_24_523	1	0.965	0.496	0.849	0.0650	0.180	0.0790	1.08	0.53	0.232	0.111	0.707	0.358
10/11/2013 21:27	0913-111_A	13_10_11_2127_25_333	1	0.965	0.494	0.874	0.0630	0.200	0.0810	1.08	0.54	0.232	0.110	0.707	0.362
10/11/2013 21:28	0913-111_A	13_10_11_2128_26_043	1	0.965	0.499	1.12	0.0670	0.174	0.0830	1.08	0.54	0.232	0.112	0.707	0.368
10/11/2013 21:29	0913-111_A	13_10_11_2129_26_823	1	0.965	0.479	1.07	0.0680	0.191	0.0830	1.08	0.54	0.356	0.112	0.707	0.352
10/11/2013 21:30	0913-111_A	13_10_11_2130_27_533	1	0.965	0.492	1.36	0.0670	0.192	0.0820	1.08	0.54	0.252	0.111	0.707	0.359
10/11/2013 21:31	0913-111_A	13_10_11_2131_28_364	1	0.965	0.488	1.26	0.0680	0.174	0.0810	1.08	0.55	0.232	0.113	0.707	0.356
10/11/2013 21:32	0913-111_A	13_10_11_2132_29_074	1	0.965	0.507	1.34	0.0710	0.165	0.0860	1.08	0.56	0.232	0.119	0.707	0.369
10/11/2013 21:33	0913-111_A	13_10_11_2133_29_804	1	0.965	0.512	1.39	0.0680	0.182	0.0860	1.08	0.55	0.232	0.118	0.707	0.371
10/11/2013 21:34	0913-111_A	13_10_11_2134_30_584	1	0.965	0.467	1.13	0.0640	0.203	0.0830	1.08	0.54	0.232	0.107	0.707	0.338
10/11/2013 21:35	0913-111_A	13_10_11_2135_31_294	1	0.965	0.494	1.18	0.0680	0.222	0.0820	1.08	0.54	0.370	0.113	0.707	0.360
10/11/2013 21:36	0913-111_A	13_10_11_2136_32_064	1	0.965	0.495	1.11	0.0630	0.187	0.0790	1.08	0.54	0.232	0.111	0.707	0.357
10/11/2013 21:37	0913-111_A	13_10_11_2137_32_904	1	0.965	0.484	0.901	0.0680	0.165	0.0840	1.08	0.54	0.232	0.110	0.707	0.354
10/11/2013 21:38	0913-111_A	13_10_11_2138_33_604	1	0.965	0.476	0.917	0.0640	0.165	0.0820	1.08	0.55	0.232	0.109	0.707	0.345
10/11/2013 21:39	0913-111_A	13_10_11_2139_34_404	1	0.965	0.461	1.03	0.0670	0.192	0.0850	1.08	0.55	0.269	0.116	0.707	0.336
10/11/2013 21:40	0913-111_A	13_10_11_2140_35_104	1	0.965	0.495	1.12	0.0670	0.239	0.0860	1.08	0.56	0.270	0.115	0.707	0.359
10/11/2013 21:41	0913-111_A	13_10_11_2141_35_912	1	0.965	0.503	1.10	0.0670	0.272	0.0840	1.08	0.55	0.248	0.113	0.707	0.366
10/11/2013 21:42	0913-111_A	13_10_11_2142_36_712	1	0.965	0.468	1.14	0.0720	0.178	0.0850	1.08	0.55	0.333	0.118	0.707	0.350
10/11/2013 21:43	0913-111_A	13_10_11_2143_37_433	1	0.965	0.460	0.995	0.0660	0.238	0.0840	1.08	0.55	0.277	0.110	0.707	0.335
10/11/2013 21:44	0913-111_A	13_10_11_2144_38_243	1	0.965	0.471	1.03	0.0650	0.250	0.0820	1.08	0.55	0.250	0.110	0.707	0.346
10/11/2013 21:45	0913-111_A	13_10_11_2145_38_963	1	0.965	0.466	0.978	0.0690	0.217	0.0820	1.08	0.55	0.232	0.112	0.707	0.338
10/11/2013 21:46	0913-111_A	13_10_11_2146_39_663	1	0.965	0.482	1.10	0.0690	0.240	0.0830	1.08	0.55	0.255	0.113	0.707	0.349
10/11/2013 21:47	0913-111_A	13_10_11_2147_40_373	1	0.965	0.502	1.45	0.0660	0.243	0.0830	1.08	0.56	0.235	0.112	0.707	0.363
10/11/2013 21:48	0913-111_A	13_10_11_2148_41_123	1	0.965	0.431	0.693	0.0610	0.165	0.0590	1.08	0.40	0.351	0.0990	0.707	0.317
		Average Conc. (ppm):	**1**	**0.965**	**0.488**	**1.11**	**0.0675**	**0.204**	**0.0839**	**1.08**	**0.55**	**0.263**	**0.113**	**0.707**	**0.356**

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Pellet Cooler 1 Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/12/2013 8:58	0913-111_A	13_10_12_0858_54_250	1	0.931	0.473	1.38	0.0630	0.373	0.0710	0.98	0.49	0.236	0.114	0.686	0.343
10/12/2013 8:59	0913-111_A	13_10_12_0859_55_060	1	0.931	0.451	1.43	0.0630	0.416	0.0730	0.98	0.49	0.297	0.113	0.686	0.332
10/12/2013 9:00	0913-111_A	13_10_12_0900_55_760	1	0.931	0.473	1.46	0.0650	0.440	0.0700	0.98	0.49	0.291	0.120	0.686	0.353
10/12/2013 9:01	0913-111_A	13_10_12_0901_56_540	1	0.931	0.443	1.56	0.0630	0.413	0.0710	0.98	0.49	0.337	0.114	0.686	0.327
10/12/2013 9:02	0913-111_A	13_10_12_0902_57_240	1	1.05	0.458	1.42	0.0670	0.487	0.0710	0.98	0.49	0.293	0.115	0.686	0.344
10/12/2013 9:03	0913-111_A	13_10_12_0903_58_000	1	0.931	0.447	1.38	0.0610	0.431	0.0700	0.98	0.49	0.236	0.109	0.686	0.328
10/12/2013 9:04	0913-111_A	13_10_12_0904_58_810	1	0.931	0.487	1.32	0.0660	0.495	0.0740	0.98	0.49	0.337	0.116	0.686	0.352
10/12/2013 9:05	0913-111_A	13_10_12_0905_59_520	1	1.20	0.480	1.26	0.0650	0.496	0.0700	0.98	0.49	0.236	0.116	0.686	0.351
10/12/2013 9:07	0913-111_A	13_10_12_0907_00_280	1	0.931	0.462	1.41	0.0670	0.543	0.0710	0.98	0.49	0.236	0.119	0.686	0.339
10/12/2013 9:08	0913-111_A	13_10_12_0908_01_061	1	0.931	0.477	1.50	0.0680	0.496	0.0700	0.98	0.50	0.340	0.116	0.686	0.352
10/12/2013 9:09	0913-111_A	13_10_12_0909_01_771	1	0.931	0.449	1.53	0.0590	0.483	0.0700	0.98	0.50	0.373	0.112	0.686	0.330
10/12/2013 9:10	0913-111_A	13_10_12_0910_02_601	1	0.931	0.449	1.50	0.0610	0.450	0.0720	0.98	0.50	0.236	0.114	0.686	0.330
10/12/2013 9:11	0913-111_A	13_10_12_0911_03_351	1	0.931	0.460	1.49	0.0630	0.502	0.0740	0.98	0.50	0.236	0.111	0.686	0.335
10/12/2013 9:12	0913-111_A	13_10_12_0912_04_061	1	0.931	0.461	1.45	0.0640	0.553	0.0740	0.98	0.50	0.236	0.115	0.686	0.337
10/12/2013 9:13	0913-111_A	13_10_12_0913_04_821	1	0.931	0.456	1.51	0.0650	0.543	0.0740	0.98	0.50	0.344	0.115	0.686	0.338
10/12/2013 9:14	0913-111_A	13_10_12_0914_05_631	1	1.19	0.466	1.48	0.0630	0.513	0.0750	0.98	0.50	0.306	0.115	0.686	0.344
10/12/2013 9:15	0913-111_A	13_10_12_0915_06_381	1	0.931	0.477	1.43	0.0640	0.522	0.0720	0.98	0.50	0.442	0.115	0.686	0.353
10/12/2013 9:16	0913-111_A	13_10_12_0916_06_991	1	0.931	0.459	1.47	0.0640	0.464	0.0710	0.98	0.50	0.425	0.114	0.686	0.337
10/12/2013 9:17	0913-111_A	13_10_12_0917_07_721	1	0.931	0.443	1.52	0.0700	0.624	0.0720	0.98	0.50	0.242	0.122	0.686	0.322
10/12/2013 9:18	0913-111_A	13_10_12_0918_08_531	1	0.931	0.470	1.47	0.0660	0.615	0.0720	0.98	0.51	0.257	0.117	0.686	0.345
10/12/2013 9:19	0913-111_A	13_10_12_0919_09_252	1	0.931	0.485	1.69	0.0640	0.591	0.0740	0.98	0.51	0.527	0.119	0.686	0.352
10/12/2013 9:20	0913-111_A	13_10_12_0920_09_962	1	0.931	0.473	1.50	0.0650	0.545	0.0740	0.98	0.51	0.342	0.122	0.686	0.343
10/12/2013 9:21	0913-111_A	13_10_12_0921_10_712	1	0.931	0.490	1.63	0.0620	0.634	0.0770	0.98	0.51	0.497	0.117	0.686	0.354
10/12/2013 9:22	0913-111_A	13_10_12_0922_11_562	1	0.931	0.487	1.54	0.0700	0.574	0.0750	0.98	0.51	0.356	0.123	0.686	0.368
10/12/2013 9:23	0913-111_A	13_10_12_0923_12_282	1	0.931	0.461	1.52	0.0610	0.620	0.0750	0.98	0.51	0.525	0.114	0.686	0.340
10/12/2013 9:24	0913-111_A	13_10_12_0924_12_982	1	1.31	0.472	1.51	0.0640	0.608	0.0730	0.98	0.51	0.505	0.120	0.686	0.344
10/12/2013 9:25	0913-111_A	13_10_12_0925_13_802	1	0.931	0.471	1.50	0.0670	0.601	0.0760	0.98	0.51	0.292	0.118	0.938	0.348
10/12/2013 9:26	0913-111_A	13_10_12_0926_14_512	1	1.14	0.468	1.44	0.0680	0.691	0.0760	0.98	0.51	0.291	0.121	0.686	0.340
10/12/2013 9:27	0913-111_A	13_10_12_0927_15_282	1	0.931	0.471	1.41	0.0640	0.516	0.0740	0.98	0.51	0.320	0.113	0.686	0.345
10/12/2013 9:28	0913-111_A	13_10_12_0928_15_992	1	0.931	0.457	1.51	0.0630	0.548	0.0750	0.98	0.51	0.326	0.117	0.686	0.333
10/12/2013 9:29	0913-111_A	13_10_12_0929_16_802	1	0.931	0.486	1.43	0.0660	0.505	0.0760	0.98	0.51	0.391	0.117	0.686	0.353
10/12/2013 9:30	0913-111_A	13_10_12_0930_17_552	1	0.931	0.475	1.50	0.0670	0.570	0.0750	0.98	0.51	0.236	0.122	0.686	0.355
10/12/2013 9:31	0913-111_A	13_10_12_0931_18_263	1	0.931	0.487	1.54	0.0660	0.600	0.0740	0.98	0.51	0.412	0.124	0.686	0.358
10/12/2013 9:32	0913-111_A	13_10_12_0932_19_013	1	0.931	0.471	1.39	0.0660	0.511	0.0750	0.98	0.51	0.348	0.124	0.686	0.351
10/12/2013 9:33	0913-111_A	13_10_12_0933_19_773	1	0.931	0.483	1.61	0.0650	0.626	0.0760	0.98	0.51	0.520	0.124	0.686	0.361
10/12/2013 9:34	0913-111_A	13_10_12_0934_20_553	1	0.931	0.465	1.51	0.0660	0.585	0.0770	0.98	0.52	0.476	0.123	0.686	0.340
10/12/2013 9:35	0913-111_A	13_10_12_0935_21_313	1	1.44	0.491	1.53	0.0690	0.690	0.0760	0.98	0.51	0.475	0.131	0.686	0.358
10/12/2013 9:36	0913-111_A	13_10_12_0936_22_033	1	1.06	0.466	1.49	0.0620	0.596	0.0800	0.98	0.51	0.642	0.122	0.686	0.342
10/12/2013 9:37	0913-111_A	13_10_12_0937_22_823	1	0.931	0.481	1.42	0.0670	0.565	0.0760	1.01	0.51	0.370	0.121	0.686	0.352
10/12/2013 9:38	0913-111_A	13_10_12_0938_23_533	1	0.931	0.478	1.39	0.0630	0.543	0.0780	0.99	0.51	0.519	0.118	0.686	0.346
10/12/2013 9:39	0913-111_A	13_10_12_0939_24_263	1	0.931	0.469	1.38	0.0640	0.609	0.0770	1.02	0.51	0.450	0.115	0.686	0.348
10/12/2013 9:40	0913-111_A	13_10_12_0940_25_023	1	1.13	0.476	1.39	0.0620	0.507	0.0740	1.03	0.51	0.558	0.118	0.686	0.346
10/12/2013 9:41	0913-111_A	13_10_12_0941_25_743	1	0.931	0.468	1.27	0.0630	0.612	0.0720	0.98	0.51	0.236	0.114	0.686	0.344
10/12/2013 9:42	0913-111_A	13_10_12_0942_26_543	1	0.931	0.475	1.36	0.0640	0.510	0.0760	0.99	0.51	0.480	0.118	0.686	0.351
10/12/2013 9:43	0913-111_A	13_10_12_0943_27_234	1	0.931	0.448	1.37	0.0660	0.502	0.0720	1.00	0.50	0.439	0.114	0.686	0.328
10/12/2013 9:44	0913-111_A	13_10_12_0944_27_984	1	0.931	0.464	1.48	0.0660	0.512	0.0710	0.98	0.51	0.486	0.118	0.686	0.343
10/12/2013 9:45	0913-111_A	13_10_12_0945_28_774	1	0.931	0.428	1.37	0.0610	0.502	0.0740	0.99	0.50	0.423	0.110	0.686	0.324
10/12/2013 9:46	0913-111_A	13_10_12_0946_29_534	1	0.931	0.487	1.30	0.0680	0.516	0.0730	1.05	0.51	0.352	0.121	0.686	0.358
10/12/2013 9:47	0913-111_A	13_10_12_0947_30_304	1	0.931	0.472	1.32	0.0640	0.497	0.0750	1.05	0.51	0.241	0.116	0.686	0.344
10/12/2013 9:48	0913-111_A	13_10_12_0948_30_974	1	1.12	0.487	1.27	0.0640	0.502	0.0750	1.03	0.51	0.405	0.117	0.686	0.359
10/12/2013 9:49	0913-111_A	13_10_12_0949_31_774	1	1.09	0.461	1.47	0.0600	0.528	0.0730	1.08	0.51	0.525	0.113	0.686	0.335
10/12/2013 9:50	0913-111_A	13_10_12_0950_32_484	1	0.931	0.453	1.26	0.0650	0.505	0.0750	1.06	0.51	0.348	0.117	0.686	0.329
10/12/2013 9:51	0913-111_A	13_10_12_0951_33_294	1	0.931	0.471	1.34	0.0680	0.571	0.0720	1.09	0.51	0.369	0.117	0.704	0.351
10/12/2013 9:52	0913-111_A	13_10_12_0952_34_074	1	1.20	0.470	1.30	0.0610	0.563	0.0730	1.09	0.51	0.402	0.120	0.686	0.346
10/12/2013 9:53	0913-111_A	13_10_12_0953_34_794	1	0.931	0.463	1.37	0.0630	0.527	0.0740	1.02	0.51	0.565	0.118	0.686	0.343
10/12/2013 9:54	0913-111_A	13_10_12_0954_35_514	1	0.931	0.477	1.37	0.0690	0.563	0.0720	1.03	0.51	0.236	0.123	0.686	0.352
10/12/2013 9:55	0913-111_A	13_10_12_0955_36_235	1	0.931	0.459	1.41	0.0630	0.538	0.0730	1.07	0.51	0.485	0.116	0.686	0.337
10/12/2013 9:56	0913-111_A	13_10_12_0956_36_955	1	0.931	0.446	1.33	0.0620	0.538	0.0760	1.09	0.51	0.573	0.115	0.686	0.328
10/12/2013 9:57	0913-111_A	13_10_12_0957_37_745	1	0.931	0.464	1.46	0.0640	0.523	0.0750	1.08	0.51	0.516	0.119	0.686	0.345
10/12/2013 9:58	0913-111_A	13_10_12_0958_38_355	1	0.931	0.450	1.36	0.0650	0.534	0.0750	1.10	0.51	0.448	0.121	0.686	0.330
		Average Conc. (ppm):	**1**	**0.976**	**0.467**	**1.44**	**0.0646**	**0.537**	**0.0738**	**1.00**	**0.50**	**0.381**	**0.118**	**0.691**	**0.344**

Pellet Cooler 1 Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/12/2013 10:22	0913-111_A	13_10_12_1022_56_297	1	0.931	0.480	1.36	0.0680	0.307	0.0760	0.98	0.51	0.236	0.126	0.686	0.354
10/12/2013 10:23	0913-111_A	13_10_12_1023_57_017	1	0.931	0.496	1.32	0.0660	0.317	0.0730	0.98	0.51	0.236	0.123	0.686	0.362
10/12/2013 10:24	0913-111_A	13_10_12_1024_57_717	1	0.931	0.459	1.40	0.0630	0.353	0.0770	0.98	0.51	0.413	0.118	0.686	0.335
10/12/2013 10:25	0913-111_A	13_10_12_1025_58_487	1	0.931	0.474	1.31	0.0650	0.332	0.0750	0.98	0.51	0.353	0.123	0.686	0.348
10/12/2013 10:26	0913-111_A	13_10_12_1026_59_227	1	0.931	0.454	1.30	0.0630	0.284	0.0730	0.98	0.51	0.283	0.116	0.686	0.335
10/12/2013 10:27	0913-111_A	13_10_12_1027_59_937	1	0.931	0.479	1.28	0.0640	0.370	0.0750	0.98	0.51	0.285	0.118	0.686	0.349
10/12/2013 10:29	0913-111_A	13_10_12_1029_00_757	1	0.931	0.477	1.28	0.0650	0.345	0.0740	0.98	0.51	0.236	0.120	0.686	0.347
10/12/2013 10:30	0913-111_A	13_10_12_1030_01_457	1	0.931	0.467	1.44	0.0660	0.372	0.0740	0.98	0.51	0.245	0.124	0.686	0.340
10/12/2013 10:31	0913-111_A	13_10_12_1031_02_208	1	0.931	0.484	1.28	0.0640	0.316	0.0730	0.98	0.51	0.236	0.124	0.686	0.356
10/12/2013 10:32	0913-111_A	13_10_12_1032_03_028	1	0.931	0.486	1.26	0.0640	0.306	0.0730	0.98	0.51	0.236	0.125	0.686	0.355
10/12/2013 10:33	0913-111_A	13_10_12_1033_03_728	1	0.931	0.480	1.50	0.0650	0.342	0.0740	0.98	0.51	0.236	0.125	0.686	0.350
10/12/2013 10:34	0913-111_A	13_10_12_1034_04_508	1	0.931	0.455	1.49	0.0620	0.313	0.0770	0.98	0.51	0.241	0.123	0.686	0.329
10/12/2013 10:35	0913-111_A	13_10_12_1035_05_268	1	1.05	0.475	1.41	0.0650	0.378	0.0740	0.98	0.51	0.236	0.125	0.686	0.350
10/12/2013 10:36	0913-111_A	13_10_12_1036_05_918	1	0.931	0.456	1.56	0.0590	0.326	0.0730	0.98	0.51	0.304	0.121	0.686	0.332
10/12/2013 10:37	0913-111_A	13_10_12_1037_06_678	1	0.931	0.436	1.44	0.0620	0.330	0.0750	0.98	0.51	0.311	0.122	0.686	0.326
10/12/2013 10:38	0913-111_A	13_10_12_1038_07_438	1	0.931	0.446	1.50	0.0630	0.347	0.0750	0.98	0.51	0.295	0.120	0.686	0.330
10/12/2013 10:39	0913-111_A	13_10_12_1039_08_248	1	1.03	0.486	1.46	0.0670	0.344	0.0760	0.98	0.51	0.247	0.127	0.686	0.360
10/12/2013 10:40	0913-111_A	13_10_12_1040_08_958	1	1.41	0.456	1.33	0.0620	0.369	0.0750	0.98	0.51	0.236	0.126	0.686	0.340
10/12/2013 10:41	0913-111_A	13_10_12_1041_09_588	1	0.931	0.483	1.24	0.0660	0.382	0.0740	0.98	0.50	0.367	0.120	0.686	0.356
10/12/2013 10:42	0913-111_A	13_10_12_1042_10_318	1	1.03	0.450	1.37	0.0630	0.395	0.0730	0.98	0.51	0.361	0.121	0.686	0.330
10/12/2013 10:43	0913-111_A	13_10_12_1043_11_009	1	0.958	0.474	1.44	0.0680	0.459	0.0740	0.98	0.51	0.236	0.124	0.686	0.348
10/12/2013 10:44	0913-111_A	13_10_12_1044_11_729	1	0.931	0.449	1.44	0.0630	0.374	0.0710	0.98	0.51	0.236	0.119	0.686	0.332
10/12/2013 10:45	0913-111_A	13_10_12_1045_12_469	1	0.931	0.451	1.37	0.0650	0.322	0.0740	0.98	0.50	0.341	0.118	0.686	0.331
10/12/2013 10:46	0913-111_A	13_10_12_1046_13_279	1	0.931	0.442	1.29	0.0610	0.287	0.0730	0.98	0.50	0.285	0.119	0.686	0.323
10/12/2013 10:47	0913-111_A	13_10_12_1047_13_999	1	0.931	0.474	1.23	0.0620	0.311	0.0750	0.98	0.50	0.236	0.119	0.686	0.350
10/12/2013 10:48	0913-111_A	13_10_12_1048_14_739	1	0.931	0.466	1.28	0.0660	0.388	0.0750	0.98	0.50	0.382	0.123	0.686	0.345
10/12/2013 10:49	0913-111_A	13_10_12_1049_15_489	1	1.27	0.487	1.25	0.0700	0.326	0.0760	0.98	0.50	0.324	0.124	0.686	0.359
10/12/2013 10:50	0913-111_A	13_10_12_1050_16_309	1	1.08	0.456	1.35	0.0630	0.298	0.0750	0.98	0.50	0.308	0.122	0.686	0.339
10/12/2013 10:51	0913-111_A	13_10_12_1051_17_029	1	1.21	0.455	1.45	0.0620	0.295	0.0740	0.98	0.50	0.236	0.122	0.686	0.330
10/12/2013 10:52	0913-111_A	13_10_12_1052_17_749	1	1.08	0.477	1.40	0.0650	0.392	0.0740	0.98	0.50	0.236	0.124	0.686	0.350
10/12/2013 10:53	0913-111_A	13_10_12_1053_18_449	1	0.931	0.459	1.43	0.0630	0.344	0.0720	0.98	0.50	0.401	0.120	0.686	0.344
10/12/2013 10:54	0913-111_A	13_10_12_1054_19_270	1	0.931	0.483	1.28	0.0660	0.354	0.0730	0.98	0.50	0.293	0.124	0.686	0.356
10/12/2013 10:55	0913-111_A	13_10_12_1055_19_980	1	0.931	0.477	1.33	0.0650	0.352	0.0750	0.98	0.49	0.376	0.124	0.686	0.352
10/12/2013 10:56	0913-111_A	13_10_12_1056_20_750	1	1.15	0.490	1.29	0.0640	0.361	0.0700	0.98	0.50	0.336	0.121	0.686	0.356
10/12/2013 10:57	0913-111_A	13_10_12_1057_21_510	1	0.931	0.437	1.34	0.0600	0.339	0.0690	0.98	0.50	0.236	0.116	0.686	0.319
10/12/2013 10:58	0913-111_A	13_10_12_1058_22_230	1	0.931	0.441	1.40	0.0650	0.295	0.0730	0.98	0.50	0.425	0.121	0.686	0.324
10/12/2013 10:59	0913-111_A	13_10_12_1059_23_000	1	0.931	0.453	1.29	0.0610	0.337	0.0740	0.98	0.49	0.352	0.116	0.686	0.332
10/12/2013 11:00	0913-111_A	13_10_12_1100_23_720	1	0.931	0.485	1.32	0.0640	0.330	0.0710	0.98	0.49	0.236	0.121	0.686	0.356
10/12/2013 11:01	0913-111_A	13_10_12_1101_24_530	1	0.931	0.459	1.27	0.0650	0.244	0.0700	0.98	0.50	0.236	0.118	0.753	0.338
10/12/2013 11:02	0913-111_A	13_10_12_1102_25_240	1	0.931	0.455	1.29	0.0630	0.331	0.0720	0.98	0.50	0.311	0.118	0.797	0.334
10/12/2013 11:03	0913-111_A	13_10_12_1103_26_030	1	1.30	0.463	1.30	0.0660	0.344	0.0710	0.98	0.50	0.366	0.122	0.686	0.342
10/12/2013 11:04	0913-111_A	13_10_12_1104_26_770	1	0.931	0.446	1.22	0.0620	0.294	0.0700	0.98	0.50	0.379	0.108	0.686	0.325
10/12/2013 11:05	0913-111_A	13_10_12_1105_27_570	1	0.931	0.465	1.12	0.0620	0.389	0.0720	0.98	0.49	0.236	0.106	0.686	0.339
10/12/2013 11:06	0913-111_A	13_10_12_1106_28_341	1	0.931	0.446	1.22	0.0590	0.462	0.0700	0.98	0.48	0.450	0.103	0.686	0.330
10/12/2013 11:07	0913-111_A	13_10_12_1107_29_041	1	0.931	0.472	1.12	0.0620	0.392	0.0680	0.98	0.48	0.303	0.105	0.686	0.346
10/12/2013 11:08	0913-111_A	13_10_12_1108_29_801	1	0.931	0.448	0.898	0.0620	0.301	0.0710	0.98	0.48	0.358	0.104	0.686	0.336
10/12/2013 11:09	0913-111_A	13_10_12_1109_30_621	1	0.931	0.471	0.967	0.0600	0.308	0.0700	0.98	0.47	0.312	0.104	0.686	0.347
10/12/2013 11:10	0913-111_A	13_10_12_1110_31_341	1	0.931	0.459	0.932	0.0630	0.244	0.0680	0.98	0.47	0.279	0.107	0.686	0.340
10/12/2013 11:11	0913-111_A	13_10_12_1111_32_141	1	0.931	0.435	0.898	0.0610	0.221	0.0690	0.98	0.48	0.432	0.100	0.686	0.322
10/12/2013 11:12	0913-111_A	13_10_12_1112_32_861	1	0.931	0.474	0.983	0.0630	0.233	0.0660	0.98	0.48	0.236	0.109	1.05	0.356
10/12/2013 11:13	0913-111_A	13_10_12_1113_33_621	1	1.02	0.449	0.936	0.0620	0.216	0.0700	0.98	0.49	0.236	0.104	0.686	0.335
10/12/2013 11:14	0913-111_A	13_10_12_1114_34_331	1	1.04	0.453	0.896	0.0600	0.296	0.0700	0.98	0.49	0.236	0.102	0.686	0.334
10/12/2013 11:15	0913-111_A	13_10_12_1115_35_091	1	1.85	0.471	0.977	0.0600	0.294	0.0690	0.98	0.48	0.236	0.107	0.686	0.350
10/12/2013 11:16	0913-111_A	13_10_12_1116_35_911	1	0.931	0.438	0.959	0.0580	0.228	0.0680	0.98	0.48	0.285	0.100	0.686	0.323
10/12/2013 11:17	0913-111_A	13_10_12_1117_36_621	1	1.45	0.441	1.02	0.0580	0.294	0.0690	0.98	0.48	0.236	0.102	0.686	0.324
10/12/2013 11:18	0913-111_A	13_10_12_1118_37_302	1	0.931	0.445	1.05	0.0620	0.267	0.0690	0.98	0.48	0.236	0.104	0.686	0.326
10/12/2013 11:19	0913-111_A	13_10_12_1119_38_102	1	1.11	0.435	1.02	0.0580	0.274	0.0700	0.98	0.48	0.236	0.103	0.686	0.326
10/12/2013 11:20	0913-111_A	13_10_12_1120_38_812	1	0.931	0.445	1.01	0.0630	0.352	0.0690	0.98	0.49	0.236	0.107	0.686	0.335
10/12/2013 11:21	0913-111_A	13_10_12_1121_39_572	1	0.931	0.464	1.19	0.0630	0.284	0.0710	0.98	0.49	0.272	0.105	0.686	0.339
10/12/2013 11:22	0913-111_A	13_10_12_1122_40_222	1	2.05	0.500	0.754	0.0840	0.334	0.0670	0.98	0.45	0.236	0.294	0.686	0.367
		Average Conc. (ppm):	**1**	**1.02**	**0.463**	**1.25**	**0.0635**	**0.327**	**0.0723**	**0.98**	**0.50**	**0.290**	**0.119**	**0.695**	**0.341**

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Pellet Cooler 1 Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/12/2013 11:41	0913-111_A	13_10_12_1141_54_484	1	0.967	0.465	1.43	0.0640	0.316	0.0690	0.98	0.48	0.236	0.118	0.686	0.340
10/12/2013 11:42	0913-111_A	13_10_12_1142_55_194	1	0.931	0.471	1.18	0.0630	0.282	0.0710	0.98	0.48	0.236	0.114	0.905	0.345
10/12/2013 11:43	0913-111_A	13_10_12_1143_55_874	1	1.57	0.480	1.15	0.0600	0.327	0.0680	0.98	0.47	0.236	0.119	0.844	0.352
10/12/2013 11:44	0913-111_A	13_10_12_1144_56_674	1	1.69	0.446	1.19	0.0670	0.311	0.0700	0.98	0.48	0.236	0.120	0.686	0.329
10/12/2013 11:45	0913-111_A	13_10_12_1145_57_474	1	1.18	0.455	1.29	0.0630	0.402	0.0710	0.98	0.48	0.236	0.117	0.686	0.337
10/12/2013 11:46	0913-111_A	13_10_12_1146_58_174	1	1.31	0.467	1.15	0.0650	0.472	0.0720	0.98	0.48	0.236	0.119	0.686	0.348
10/12/2013 11:47	0913-111_A	13_10_12_1147_58_954	1	1.52	0.453	1.23	0.0630	0.368	0.0690	0.98	0.48	0.236	0.119	0.686	0.336
10/12/2013 11:48	0913-111_A	13_10_12_1148_59_814	1	1.10	0.447	1.38	0.0650	0.333	0.0710	0.98	0.48	0.236	0.118	0.686	0.333
10/12/2013 11:50	0913-111_A	13_10_12_1150_00_524	1	1.41	0.478	1.43	0.0620	0.400	0.0690	0.98	0.48	0.236	0.121	1.13	0.351
10/12/2013 11:51	0913-111_A	13_10_12_1151_01_374	1	1.64	0.467	1.33	0.0670	0.385	0.0670	0.98	0.48	0.236	0.118	0.686	0.347
10/12/2013 11:52	0913-111_A	13_10_12_1152_02_144	1	1.21	0.466	1.35	0.0650	0.361	0.0680	0.98	0.48	0.236	0.119	0.686	0.344
10/12/2013 11:53	0913-111_A	13_10_12_1153_02_904	1	1.13	0.475	1.40	0.0680	0.294	0.0700	0.98	0.48	0.236	0.127	0.686	0.353
10/12/2013 11:54	0913-111_A	13_10_12_1154_03_615	1	1.22	0.476	1.53	0.0680	0.449	0.0710	0.98	0.49	0.236	0.129	0.978	0.348
10/12/2013 11:55	0913-111_A	13_10_12_1155_04_415	1	1.43	0.472	1.51	0.0690	0.366	0.0730	0.98	0.48	0.236	0.126	0.686	0.341
10/12/2013 11:56	0913-111_A	13_10_12_1156_05_115	1	1.14	0.462	1.36	0.0670	0.419	0.0700	0.98	0.48	0.236	0.122	0.686	0.345
10/12/2013 11:57	0913-111_A	13_10_12_1157_05_925	1	0.932	0.444	1.41	0.0650	0.344	0.0700	0.98	0.48	0.236	0.119	0.686	0.330
10/12/2013 11:58	0913-111_A	13_10_12_1158_06_635	1	1.06	0.481	1.36	0.0620	0.274	0.0680	0.98	0.48	0.236	0.123	0.898	0.351
10/12/2013 11:59	0913-111_A	13_10_12_1159_07_345	1	0.931	0.461	1.32	0.0650	0.336	0.0690	0.98	0.48	0.236	0.126	0.857	0.343
10/12/2013 12:00	0913-111_A	13_10_12_1200_08_135	1	2.15	0.484	1.38	0.0680	0.316	0.0680	0.98	0.48	0.236	0.124	0.686	0.358
10/12/2013 12:01	0913-111_A	13_10_12_1201_08_905	1	1.29	0.452	1.45	0.0640	0.327	0.0730	0.98	0.48	0.236	0.118	0.686	0.335
10/12/2013 12:02	0913-111_A	13_10_12_1202_09_625	1	1.70	0.444	1.33	0.0660	0.304	0.0690	0.98	0.48	0.236	0.117	0.686	0.327
10/12/2013 12:03	0913-111_A	13_10_12_1203_10_385	1	1.24	0.434	1.22	0.0600	0.353	0.0680	0.98	0.48	0.236	0.114	0.686	0.323
10/12/2013 12:04	0913-111_A	13_10_12_1204_11_135	1	0.931	0.458	1.37	0.0650	0.304	0.0700	0.98	0.48	0.236	0.117	0.709	0.335
10/12/2013 12:05	0913-111_A	13_10_12_1205_11_785	1	2.02	0.471	1.33	0.0650	0.375	0.0710	0.98	0.48	0.236	0.123	1.10	0.345
10/12/2013 12:06	0913-111_A	13_10_12_1206_12_506	1	1.21	0.436	1.30	0.0620	0.389	0.0690	0.98	0.48	0.236	0.114	0.686	0.321
10/12/2013 12:07	0913-111_A	13_10_12_1207_13_246	1	0.931	0.485	1.44	0.0650	0.369	0.0680	0.98	0.48	0.236	0.118	0.686	0.354
10/12/2013 12:08	0913-111_A	13_10_12_1208_13_996	1	0.969	0.470	1.26	0.0680	0.316	0.0680	0.98	0.48	0.236	0.118	0.686	0.343
10/12/2013 12:09	0913-111_A	13_10_12_1209_14_766	1	1.21	0.447	1.21	0.0570	0.308	0.0680	0.98	0.48	0.236	0.114	0.780	0.331
10/12/2013 12:10	0913-111_A	13_10_12_1210_15_476	1	2.17	0.465	1.12	0.0630	0.315	0.0690	0.98	0.47	0.236	0.116	0.686	0.353
10/12/2013 12:11	0913-111_A	13_10_12_1211_16_216	1	1.08	0.471	1.15	0.0660	0.340	0.0670	0.98	0.47	0.236	0.115	0.686	0.350
10/12/2013 12:12	0913-111_A	13_10_12_1212_16_976	1	0.931	0.437	1.05	0.0620	0.356	0.0700	0.98	0.47	0.236	0.110	0.882	0.317
10/12/2013 12:13	0913-111_A	13_10_12_1213_17_736	1	0.931	0.447	1.12	0.0680	0.289	0.0670	0.98	0.47	0.236	0.116	0.874	0.331
10/12/2013 12:14	0913-111_A	13_10_12_1214_18_466	1	2.48	0.475	1.17	0.0660	0.253	0.0690	0.98	0.47	0.236	0.117	0.686	0.357
10/12/2013 12:15	0913-111_A	13_10_12_1215_19_276	1	1.74	0.455	1.13	0.0650	0.351	0.0670	0.98	0.47	0.236	0.116	0.686	0.334
10/12/2013 12:16	0913-111_A	13_10_12_1216_19_986	1	1.72	0.479	1.21	0.0700	0.294	0.0670	0.98	0.47	0.236	0.119	0.686	0.354
10/12/2013 12:17	0913-111_A	13_10_12_1217_20_746	1	1.29	0.468	1.19	0.0650	0.286	0.0700	0.98	0.47	0.236	0.118	1.06	0.349
10/12/2013 12:18	0913-111_A	13_10_12_1218_21_457	1	0.931	0.483	1.29	0.0630	0.375	0.0700	0.98	0.48	0.236	0.117	1.01	0.351
10/12/2013 12:19	0913-111_A	13_10_12_1219_22_227	1	1.31	0.491	1.24	0.0630	0.368	0.0670	0.98	0.47	0.236	0.116	0.686	0.363
10/12/2013 12:20	0913-111_A	13_10_12_1220_23_037	1	1.56	0.461	1.21	0.0650	0.408	0.0690	0.98	0.47	0.236	0.116	0.753	0.342
10/12/2013 12:21	0913-111_A	13_10_12_1221_23_767	1	0.931	0.478	1.32	0.0620	0.342	0.0670	0.98	0.47	0.236	0.114	0.775	0.350
10/12/2013 12:22	0913-111_A	13_10_12_1222_24_527	1	1.59	0.481	1.24	0.0680	0.333	0.0690	0.98	0.47	0.236	0.120	0.686	0.366
10/12/2013 12:23	0913-111_A	13_10_12_1223_25_227	1	0.931	0.477	1.07	0.0650	0.349	0.0650	0.98	0.47	0.236	0.119	0.743	0.346
10/12/2013 12:24	0913-111_A	13_10_12_1224_25_967	1	1.50	0.487	1.21	0.0630	0.453	0.0670	0.98	0.47	0.236	0.117	0.734	0.355
10/12/2013 12:25	0913-111_A	13_10_12_1225_26_797	1	1.09	0.456	1.35	0.0630	0.363	0.0690	0.98	0.47	0.236	0.116	0.686	0.341
10/12/2013 12:26	0913-111_A	13_10_12_1226_27_507	1	1.14	0.478	1.23	0.0680	0.390	0.0690	0.98	0.47	0.236	0.119	0.686	0.355
10/12/2013 12:27	0913-111_A	13_10_12_1227_28_287	1	1.80	0.477	1.11	0.0640	0.418	0.0680	0.98	0.47	0.236	0.116	0.759	0.350
10/12/2013 12:28	0913-111_A	13_10_12_1228_29_047	1	1.83	0.475	1.18	0.0650	0.456	0.0680	0.98	0.47	0.236	0.118	0.686	0.348
10/12/2013 12:29	0913-111_A	13_10_12_1229_29_767	1	1.30	0.474	1.30	0.0660	0.411	0.0690	0.98	0.47	0.236	0.115	0.790	0.350
10/12/2013 12:30	0913-111_A	13_10_12_1230_30_478	1	1.42	0.468	1.22	0.0640	0.308	0.0700	0.98	0.47	0.236	0.113	0.686	0.344
10/12/2013 12:31	0913-111_A	13_10_12_1231_31_268	1	1.20	0.471	1.20	0.0690	0.362	0.0680	0.98	0.47	0.236	0.119	0.765	0.355
10/12/2013 12:32	0913-111_A	13_10_12_1232_31_988	1	1.31	0.464	1.17	0.0620	0.328	0.0680	0.98	0.47	0.236	0.115	0.718	0.348
10/12/2013 12:33	0913-111_A	13_10_12_1233_32_748	1	1.21	0.464	1.26	0.0600	0.339	0.0680	0.98	0.47	0.236	0.113	0.686	0.338
10/12/2013 12:34	0913-111_A	13_10_12_1234_33_488	1	1.11	0.468	1.22	0.0670	0.327	0.0670	0.98	0.47	0.236	0.118	0.686	0.344
10/12/2013 12:35	0913-111_A	13_10_12_1235_34_248	1	1.26	0.462	1.22	0.0630	0.414	0.0700	0.98	0.47	0.236	0.117	1.07	0.344
10/12/2013 12:36	0913-111_A	13_10_12_1236_35_008	1	1.59	0.482	1.26	0.0650	0.370	0.0700	0.98	0.47	0.236	0.116	0.777	0.351
10/12/2013 12:38	0913-111_A	13_10_12_1238_49_630	1	2.01	0.489	1.29	0.0650	0.306	0.0660	0.98	0.47	0.236	0.118	0.686	0.366
10/12/2013 12:39	0913-111_A	13_10_12_1239_50_430	1	2.18	0.465	1.10	0.0620	0.347	0.0700	0.98	0.47	0.236	0.111	0.686	0.346
10/12/2013 12:40	0913-111_A	13_10_12_1240_51_220	1	0.931	0.461	1.18	0.0630	0.289	0.0680	0.98	0.47	0.236	0.116	0.686	0.345
10/12/2013 12:41	0913-111_A	13_10_12_1241_51_930	1	1.45	0.482	1.03	0.0670	0.350	0.0740	0.98	0.47	0.236	0.118	0.832	0.351
		Average Conc. (ppm):	**1**	**1.35**	**0.467**	**1.26**	**0.0647**	**0.351**	**0.0690**	**0.98**	**0.48**	**0.236**	**0.118**	**0.759**	**0.345**

Aspirator Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/12/2013 15:09	0913-111_A	13_10_12_1509_17_838	1	1.75	0.783	1.05	0.504	8.72	0.236	2.73	0.98	3.00	1.44	4.85	0.583
10/12/2013 15:10	0913-111_A	13_10_12_1510_18_588	1	3.53	0.815	1.05	0.498	8.61	0.233	2.73	1.02	3.00	1.43	4.37	0.609
10/12/2013 15:11	0913-111_A	13_10_12_1511_19_288	1	3.17	0.777	1.05	0.507	8.83	0.235	2.73	1.02	3.00	1.47	4.74	0.581
10/12/2013 15:12	0913-111_A	13_10_12_1512_20_018	1	2.85	0.824	1.05	0.519	8.98	0.241	2.73	0.92	3.00	1.48	4.79	0.609
10/12/2013 15:13	0913-111_A	13_10_12_1513_20_769	1	3.73	0.811	1.05	0.562	9.42	0.240	2.73	0.97	3.00	1.52	4.84	0.609
10/12/2013 15:14	0913-111_A	13_10_12_1514_21_519	1	2.74	0.788	1.05	0.506	8.85	0.233	2.73	1.40	3.00	1.44	4.72	0.586
10/12/2013 15:15	0913-111_A	13_10_12_1515_22_329	1	2.86	0.817	1.05	0.508	9.17	0.281	2.73	1.55	3.00	1.45	4.22	0.606
10/12/2013 15:16	0913-111_A	13_10_12_1516_23_039	1	2.62	0.798	1.05	0.521	8.77	0.240	2.73	1.27	3.00	1.50	5.55	0.591
10/12/2013 15:17	0913-111_A	13_10_12_1517_23_749	1	3.69	0.802	1.05	0.536	9.19	0.242	2.73	1.04	3.00	1.53	4.67	0.596
10/12/2013 15:18	0913-111_A	13_10_12_1518_24_559	1	2.90	0.786	1.05	0.522	9.23	0.238	2.73	1.05	3.00	1.49	4.49	0.581
10/12/2013 15:19	0913-111_A	13_10_12_1519_25_319	1	3.66	0.789	1.05	0.488	9.06	0.227	2.73	1.10	3.00	1.41	4.58	0.595
10/12/2013 15:20	0913-111_A	13_10_12_1520_26_049	1	3.21	0.773	1.05	0.463	8.93	0.222	2.73	1.09	3.00	1.35	4.70	0.585
10/12/2013 15:21	0913-111_A	13_10_12_1521_26_789	1	3.36	0.745	1.05	0.449	8.75	0.217	2.73	1.28	3.00	1.30	4.12	0.557
10/12/2013 15:22	0913-111_A	13_10_12_1522_27_509	1	3.72	0.762	1.05	0.452	9.10	0.269	2.73	1.46	3.00	1.29	4.22	0.562
10/12/2013 15:23	0913-111_A	13_10_12_1523_28_219	1	3.12	0.756	1.05	0.462	8.67	0.221	2.73	1.18	3.00	1.35	4.69	0.567
10/12/2013 15:24	0913-111_A	13_10_12_1524_29_019	1	2.45	0.757	1.05	0.496	8.84	0.230	2.73	0.99	3.00	1.43	4.48	0.566
10/12/2013 15:25	0913-111_A	13_10_12_1525_29_730	1	2.45	0.789	1.05	0.549	8.75	0.232	2.73	0.98	3.00	1.48	4.66	0.601
10/12/2013 15:26	0913-111_A	13_10_12_1526_30_540	1	3.63	0.795	1.05	0.530	8.61	0.239	2.73	1.04	3.00	1.51	4.31	0.595
10/12/2013 15:27	0913-111_A	13_10_12_1527_31_190	1	2.84	0.844	1.05	0.585	8.51	0.245	2.73	1.22	3.00	1.57	4.56	0.630
10/12/2013 15:28	0913-111_A	13_10_12_1528_31_790	1	2.54	0.833	1.05	0.547	8.83	0.299	2.73	1.45	3.00	1.55	5.10	0.620
10/12/2013 15:29	0913-111_A	13_10_12_1529_32_530	1	2.83	0.832	1.05	0.538	8.28	0.249	2.73	1.43	3.00	1.54	5.32	0.624
10/12/2013 15:30	0913-111_A	13_10_12_1530_33_320	1	2.84	0.799	1.05	0.532	8.31	0.245	2.73	1.29	3.00	1.51	4.02	0.597
10/12/2013 15:31	0913-111_A	13_10_12_1531_34_020	1	2.83	0.820	1.05	0.529	8.39	0.240	2.73	1.07	3.00	1.52	5.37	0.609
10/12/2013 15:32	0913-111_A	13_10_12_1532_34_800	1	3.74	0.757	1.05	0.498	8.69	0.283	2.73	1.72	3.00	1.44	3.51	0.568
10/12/2013 15:33	0913-111_A	13_10_12_1533_35_520	1	2.49	0.813	1.05	0.527	8.41	0.239	2.73	1.28	3.00	1.50	4.23	0.600
10/12/2013 15:34	0913-111_A	13_10_12_1534_36_260	1	3.14	0.823	1.05	0.536	8.41	0.246	2.73	1.15	3.00	1.52	3.93	0.617
10/12/2013 15:35	0913-111_A	13_10_12_1535_37_060	1	2.67	0.843	1.05	0.531	8.11	0.258	2.73	1.07	3.00	1.52	5.27	0.625
10/12/2013 15:36	0913-111_A	13_10_12_1536_37_770	1	2.73	0.781	1.05	0.544	8.04	0.245	2.73	0.99	3.00	1.55	4.90	0.586
10/12/2013 15:37	0913-111_A	13_10_12_1537_38_531	1	2.93	0.849	1.05	0.553	7.99	0.243	2.73	1.03	3.00	1.56	4.90	0.625
10/12/2013 15:38	0913-111_A	13_10_12_1538_39_241	1	2.77	0.856	1.05	0.555	7.67	0.241	2.73	1.08	3.00	1.58	5.25	0.638
10/12/2013 15:39	0913-111_A	13_10_12_1539_40_051	1	3.46	0.820	1.05	0.566	7.51	0.249	2.73	1.15	3.00	1.61	4.11	0.612
10/12/2013 15:40	0913-111_A	13_10_12_1540_40_771	1	3.22	0.862	1.05	0.577	7.47	0.249	2.73	1.11	3.00	1.61	4.01	0.636
10/12/2013 15:41	0913-111_A	13_10_12_1541_41_511	1	3.40	0.843	1.05	0.563	7.44	0.247	2.73	1.10	3.00	1.59	4.84	0.626
10/12/2013 15:42	0913-111_A	13_10_12_1542_42_221	1	2.86	0.814	1.05	0.546	7.39	0.240	2.73	1.09	3.00	1.53	4.43	0.601
10/12/2013 15:43	0913-111_A	13_10_12_1543_42_981	1	3.85	0.806	1.05	0.528	7.64	0.234	2.73	1.09	3.00	1.49	4.65	0.597
10/12/2013 15:44	0913-111_A	13_10_12_1544_43_741	1	3.44	0.795	1.05	0.503	7.73	0.229	2.73	1.05	3.00	1.45	4.43	0.592
10/12/2013 15:45	0913-111_A	13_10_12_1545_44_461	1	3.00	0.785	1.05	0.498	7.69	0.225	2.73	1.04	3.00	1.41	4.45	0.587
10/12/2013 15:46	0913-111_A	13_10_12_1546_45_221	1	3.09	0.794	1.05	0.497	7.68	0.227	2.73	1.11	3.00	1.42	4.72	0.589
10/12/2013 15:47	0913-111_A	13_10_12_1547_46_021	1	3.81	0.781	1.05	0.514	7.86	0.233	2.73	1.08	3.00	1.45	4.87	0.582
10/12/2013 15:48	0913-111_A	13_10_12_1548_46_832	1	3.12	0.792	1.05	0.525	8.12	0.233	2.73	1.14	3.00	1.48	5.26	0.589
10/12/2013 15:49	0913-111_A	13_10_12_1549_47_532	1	3.19	0.768	1.05	0.518	8.04	0.235	2.73	1.18	3.00	1.49	4.94	0.573
10/12/2013 15:50	0913-111_A	13_10_12_1550_48_302	1	2.79	0.831	1.05	0.536	8.19	0.237	2.73	1.10	3.00	1.51	4.33	0.619
10/12/2013 15:51	0913-111_A	13_10_12_1551_49_122	1	4.22	0.826	1.05	0.551	8.24	0.242	2.73	1.01	3.00	1.54	4.28	0.615
10/12/2013 15:52	0913-111_A	13_10_12_1552_49_832	1	3.23	0.827	1.05	0.564	8.36	0.246	2.73	1.06	3.00	1.59	4.73	0.617
10/12/2013 15:53	0913-111_A	13_10_12_1553_50_542	1	4.27	0.854	1.05	0.547	8.44	0.244	2.73	1.04	3.00	1.56	5.21	0.632
10/12/2013 15:54	0913-111_A	13_10_12_1554_51_302	1	2.66	0.800	1.05	0.502	8.64	0.273	2.73	1.85	3.00	1.41	3.86	0.598
10/12/2013 15:55	0913-111_A	13_10_12_1555_52_112	1	3.21	0.783	1.05	0.500	8.03	0.228	2.73	1.26	3.00	1.44	5.38	0.585
10/12/2013 15:56	0913-111_A	13_10_12_1556_52_822	1	3.17	0.763	1.05	0.509	8.56	0.283	2.73	1.07	3.00	1.46	4.75	0.570
10/12/2013 15:57	0913-111_A	13_10_12_1557_53_582	1	4.21	0.810	1.05	0.523	8.86	0.280	2.73	0.96	3.00	1.50	4.97	0.601
10/12/2013 15:58	0913-111_A	13_10_12_1558_54_322	1	2.85	0.815	1.05	0.521	8.33	0.226	2.73	0.96	3.00	1.49	4.55	0.608
10/12/2013 15:59	0913-111_A	13_10_12_1559_55_122	1	3.55	0.834	1.05	0.535	8.35	0.236	2.73	1.06	3.00	1.53	4.39	0.615
10/12/2013 16:00	0913-111_A	13_10_12_1600_55_823	1	3.58	0.805	1.05	0.543	8.32	0.237	2.73	1.12	3.00	1.55	5.15	0.598
10/12/2013 16:01	0913-111_A	13_10_12_1601_56_563	1	3.70	0.877	1.05	0.561	8.16	0.245	2.73	1.15	3.00	1.61	4.71	0.652
10/12/2013 16:02	0913-111_A	13_10_12_1602_57_263	1	2.63	0.862	1.05	0.574	8.06	0.246	2.73	1.15	3.00	1.61	5.23	0.635
10/12/2013 16:03	0913-111_A	13_10_12_1603_58_063	1	3.08	0.847	1.05	0.580	7.91	0.251	2.73	1.19	3.00	1.63	5.25	0.624
10/12/2013 16:04	0913-111_A	13_10_12_1604_58_833	1	3.42	0.859	1.05	0.589	7.82	0.254	2.73	1.16	3.00	1.68	5.48	0.632
10/12/2013 16:05	0913-111_A	13_10_12_1605_59_533	1	2.99	0.893	1.05	0.612	7.84	0.261	2.73	1.19	3.00	1.72	4.70	0.664
10/12/2013 16:07	0913-111_A	13_10_12_1607_00_283	1	2.81	0.931	1.05	0.622	7.78	0.267	2.73	1.20	3.00	1.76	5.40	0.690
10/12/2013 16:08	0913-111_A	13_10_12_1608_01_083	1	3.12	0.917	1.05	0.638	7.83	0.271	2.73	1.23	3.00	1.77	5.31	0.683
10/12/2013 16:09	0913-111_A	13_10_12_1609_01_833	1	3.76	1.60	1.05	0.683	5.49	0.209	2.73	0.97	3.00	2.55	1.27	1.23
		Average Conc. (ppm):	**1**	**3.16**	**0.827**	**1.05**	**0.535**	**8.30**	**0.244**	**2.73**	**1.15**	**3.00**	**1.53**	**4.65**	**0.616**

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Aspirator Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/12/2013 16:36	0913-111_A	13_10_12_1636_22_016	1	2.99	0.831	1.26	0.505	8.21	0.237	2.73	1.31	3.00	1.47	4.99	0.621
10/12/2013 16:37	0913-111_A	13_10_12_1637_22_786	1	3.74	0.820	1.54	0.511	8.34	0.282	2.73	1.64	3.00	1.45	4.01	0.614
10/12/2013 16:38	0913-111_A	13_10_12_1638_23_596	1	2.83	0.843	1.44	0.553	8.87	0.299	2.73	1.43	3.00	1.56	4.72	0.630
10/12/2013 16:39	0913-111_A	13_10_12_1639_24_356	1	3.46	0.860	1.49	0.557	8.84	0.303	2.73	1.50	3.00	1.57	4.59	0.635
10/12/2013 16:40	0913-111_A	13_10_12_1640_25_056	1	3.59	0.838	1.41	0.559	8.50	0.256	2.73	1.31	3.00	1.60	5.02	0.617
10/12/2013 16:41	0913-111_A	13_10_12_1641_25_866	1	3.44	0.843	1.29	0.538	8.45	0.250	2.73	1.31	3.00	1.55	5.06	0.632
10/12/2013 16:42	0913-111_A	13_10_12_1642_26_526	1	2.96	0.785	1.36	0.502	8.81	0.287	2.73	1.38	3.00	1.44	4.99	0.587
10/12/2013 16:43	0913-111_A	13_10_12_1643_27_336	1	2.73	0.797	1.45	0.494	8.65	0.270	2.73	1.81	3.00	1.38	4.46	0.597
10/12/2013 16:44	0913-111_A	13_10_12_1644_28_086	1	3.31	0.817	1.50	0.478	8.56	0.271	2.73	1.78	3.00	1.36	3.99	0.612
10/12/2013 16:45	0913-111_A	13_10_12_1645_28_826	1	2.82	0.785	1.69	0.469	8.67	0.272	2.73	1.69	3.00	1.35	4.60	0.582
10/12/2013 16:46	0913-111_A	13_10_12_1646_29_536	1	2.91	0.795	1.55	0.479	8.99	0.292	2.73	1.60	3.00	1.37	4.65	0.587
10/12/2013 16:47	0913-111_A	13_10_12_1647_30_356	1	3.94	0.795	1.64	0.471	8.91	0.265	2.73	1.54	3.00	1.34	4.90	0.595
10/12/2013 16:48	0913-111_A	13_10_12_1648_31_017	1	4.04	0.764	1.47	0.467	8.86	0.267	2.73	1.46	3.00	1.33	4.72	0.569
10/12/2013 16:49	0913-111_A	13_10_12_1649_31_837	1	2.86	0.770	1.43	0.465	8.94	0.262	2.73	1.47	3.00	1.30	3.44	0.567
10/12/2013 16:50	0913-111_A	13_10_12_1650_32_607	1	3.01	0.803	1.46	0.466	9.04	0.262	2.73	1.55	3.00	1.33	3.86	0.594
10/12/2013 16:51	0913-111_A	13_10_12_1651_33_377	1	2.63	0.792	1.61	0.458	8.96	0.250	2.73	2.12	3.00	1.31	3.90	0.591
10/12/2013 16:52	0913-111_A	13_10_12_1652_33_977	1	3.25	0.810	1.63	0.462	9.03	0.254	2.73	1.93	3.00	1.33	3.87	0.598
10/12/2013 16:53	0913-111_A	13_10_12_1653_34_767	1	3.79	0.798	1.59	0.468	9.20	0.266	2.73	1.83	3.00	1.33	4.16	0.591
10/12/2013 16:54	0913-111_A	13_10_12_1654_35_477	1	3.78	0.797	1.52	0.481	9.20	0.263	2.73	1.92	3.00	1.35	3.91	0.594
10/12/2013 16:55	0913-111_A	13_10_12_1655_36_207	1	3.31	0.775	1.67	0.458	8.96	0.254	2.73	1.82	3.00	1.30	3.30	0.577
10/12/2013 16:56	0913-111_A	13_10_12_1656_36_947	1	3.44	0.780	1.50	0.458	9.07	0.256	2.73	1.64	3.00	1.28	3.96	0.582
10/12/2013 16:57	0913-111_A	13_10_12_1657_37_757	1	3.00	0.766	1.39	0.447	9.14	0.261	2.73	1.42	3.00	1.28	4.10	0.571
10/12/2013 16:58	0913-111_A	13_10_12_1658_38_477	1	4.04	0.786	1.32	0.450	9.13	0.261	2.73	1.35	3.00	1.28	3.88	0.585
10/12/2013 16:59	0913-111_A	13_10_12_1659_39_217	1	3.22	0.792	1.32	0.441	9.08	0.270	2.73	1.28	3.00	1.28	4.55	0.595
10/12/2013 17:00	0913-111_A	13_10_12_1700_40_018	1	2.87	0.787	1.37	0.448	8.89	0.215	2.73	1.27	3.00	1.32	4.41	0.579
10/12/2013 17:01	0913-111_A	13_10_12_1701_40_728	1	3.25	0.831	1.47	0.451	9.34	0.259	2.73	1.49	3.00	1.29	4.13	0.614
10/12/2013 17:02	0913-111_A	13_10_12_1702_41_438	1	3.27	0.779	1.65	0.451	9.18	0.252	2.73	1.67	3.00	1.28	3.90	0.578
10/12/2013 17:03	0913-111_A	13_10_12_1703_42_208	1	3.09	0.814	1.71	0.459	9.05	0.257	2.73	1.69	3.00	1.31	3.50	0.602
10/12/2013 17:04	0913-111_A	13_10_12_1704_42_928	1	3.58	0.811	1.46	0.464	8.45	0.221	2.73	1.33	3.00	1.36	4.19	0.607
10/12/2013 17:05	0913-111_A	13_10_12_1705_43_758	1	2.79	0.817	1.54	0.471	9.13	0.268	2.73	1.37	3.00	1.35	3.67	0.606
10/12/2013 17:06	0913-111_A	13_10_12_1706_44_458	1	3.01	0.782	1.63	0.477	9.01	0.269	2.73	1.41	3.00	1.36	4.20	0.589
10/12/2013 17:07	0913-111_A	13_10_12_1707_45_208	1	3.91	0.800	1.57	0.489	8.57	0.230	2.73	1.46	3.00	1.40	4.28	0.595
10/12/2013 17:08	0913-111_A	13_10_12_1708_46_018	1	3.00	0.803	1.52	0.481	8.99	0.265	2.73	1.48	3.00	1.36	4.01	0.604
10/12/2013 17:09	0913-111_A	13_10_12_1709_46_738	1	2.61	0.787	1.66	0.461	9.09	0.257	2.73	1.73	3.00	1.33	4.40	0.586
10/12/2013 17:10	0913-111_A	13_10_12_1710_47_548	1	2.65	0.813	1.97	0.442	8.88	0.247	2.73	1.99	3.00	1.26	3.63	0.599
10/12/2013 17:11	0913-111_A	13_10_12_1711_48_248	1	3.22	0.776	1.67	0.441	9.04	0.255	2.73	1.67	3.00	1.27	3.31	0.580
10/12/2013 17:12	0913-111_A	13_10_12_1712_48_989	1	3.03	0.828	1.75	0.447	9.29	0.263	2.73	1.58	3.00	1.29	3.28	0.612
10/12/2013 17:13	0913-111_A	13_10_12_1713_49_799	1	3.28	0.802	1.76	0.455	9.21	0.259	2.73	1.50	3.00	1.30	3.77	0.597
10/12/2013 17:14	0913-111_A	13_10_12_1714_50_539	1	3.39	0.772	1.72	0.450	8.84	0.262	2.73	1.46	3.00	1.31	3.64	0.576
10/12/2013 17:15	0913-111_A	13_10_12_1715_51_279	1	2.99	0.794	1.68	0.464	8.99	0.265	2.73	1.47	3.00	1.33	4.39	0.587
10/12/2013 17:16	0913-111_A	13_10_12_1716_51_999	1	3.88	0.820	1.52	0.472	8.83	0.267	2.73	1.44	3.00	1.34	4.59	0.605
10/12/2013 17:17	0913-111_A	13_10_12_1717_52_749	1	2.71	0.839	1.78	0.490	8.84	0.270	2.73	1.59	3.00	1.38	3.46	0.621
10/12/2013 17:18	0913-111_A	13_10_12_1718_53_549	1	3.25	0.828	1.78	0.481	8.89	0.247	2.73	2.10	3.00	1.37	3.25	0.617
10/12/2013 17:19	0913-111_A	13_10_12_1719_54_259	1	2.16	0.804	2.06	0.455	8.72	0.240	2.73	2.41	3.00	1.28	3.28	0.604
10/12/2013 17:20	0913-111_A	13_10_12_1720_55_079	1	2.67	0.829	2.03	0.454	9.09	0.255	2.73	1.99	3.00	1.29	3.07	0.620
10/12/2013 17:21	0913-111_A	13_10_12_1721_55_909	1	2.49	0.800	1.80	0.427	9.19	0.257	2.73	1.60	3.00	1.23	3.85	0.594
10/12/2013 17:22	0913-111_A	13_10_12_1722_56_659	1	2.88	0.787	1.57	0.433	9.28	0.258	2.73	1.45	3.00	1.26	3.74	0.582
10/12/2013 17:23	0913-111_A	13_10_12_1723_57_480	1	2.15	0.763	1.68	0.417	9.16	0.251	2.73	1.38	3.00	1.21	3.44	0.567
10/12/2013 17:24	0913-111_A	13_10_12_1724_58_220	1	3.23	0.784	1.53	0.445	9.46	0.257	2.73	1.41	3.00	1.27	3.15	0.583
10/12/2013 17:25	0913-111_A	13_10_12_1725_58_940	1	2.76	0.795	1.71	0.444	9.36	0.251	2.73	1.54	3.00	1.27	3.72	0.587
10/12/2013 17:26	0913-111_A	13_10_12_1726_59_780	1	3.25	0.778	1.79	0.428	8.94	0.236	2.73	1.92	3.00	1.24	3.22	0.578
10/12/2013 17:28	0913-111_A	13_10_12_1728_00_500	1	2.96	0.759	2.03	0.414	8.98	0.225	2.73	2.41	3.00	1.18	2.94	0.570
10/12/2013 17:29	0913-111_A	13_10_12_1729_01_300	1	3.24	0.822	1.64	0.434	9.08	0.244	2.73	1.61	3.00	1.24	3.30	0.612
10/12/2013 17:30	0913-111_A	13_10_12_1730_02_020	1	1.92	0.796	1.45	0.447	9.16	0.257	2.73	1.30	3.00	1.30	3.78	0.592
10/12/2013 17:31	0913-111_A	13_10_12_1731_02_780	1	2.36	0.812	1.29	0.455	8.71	0.213	2.73	1.29	3.00	1.33	4.28	0.597
10/12/2013 17:32	0913-111_A	13_10_12_1732_03_490	1	3.07	0.798	1.43	0.462	9.13	0.259	2.73	1.44	3.00	1.32	3.79	0.599
10/12/2013 17:33	0913-111_A	13_10_12_1733_04_310	1	3.74	0.798	1.49	0.459	8.96	0.256	2.73	1.42	3.00	1.32	3.98	0.590
10/12/2013 17:34	0913-111_A	13_10_12_1734_04_920	1	3.29	0.835	1.53	0.457	8.92	0.254	2.73	1.62	3.00	1.31	3.72	0.615
10/12/2013 17:35	0913-111_A	13_10_12_1735_05_660	1	2.95	0.815	1.88	0.448	8.75	0.232	2.73	2.24	3.00	1.25	2.83	0.606
10/12/2013 17:36	0913-111_A	13_10_12_1736_06_381	1	3.24	1.19	1.05	0.523	6.25	0.181	2.73	1.31	3.00	2.17	1.27	0.919
		Average Conc. (ppm):	**1**	**3.12**	**0.808**	**1.58**	**0.467**	**8.90**	**0.256**	**2.73**	**1.60**	**3.00**	**1.35**	**3.92**	**0.602**

Aspirator Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/12/2013 18:00	0913-111_A	13_10_12_1800_36_741	1	2.53	0.845	1.05	0.520	7.94	0.225	2.73	1.17	3.00	1.48	3.73	0.627
10/12/2013 18:01	0913-111_A	13_10_12_1801_37_551	1	2.85	0.859	1.05	0.504	8.15	0.224	2.73	1.03	3.00	1.45	3.52	0.631
10/12/2013 18:02	0913-111_A	13_10_12_1802_38_261	1	2.74	0.806	1.05	0.500	8.25	0.222	2.73	1.04	3.00	1.43	3.76	0.598
10/12/2013 18:03	0913-111_A	13_10_12_1803_39_032	1	2.31	0.839	1.05	0.516	8.47	0.221	2.73	1.11	3.00	1.46	3.64	0.618
10/12/2013 18:04	0913-111_A	13_10_12_1804_39_742	1	2.64	0.821	1.05	0.499	8.78	0.262	2.73	1.57	3.00	1.40	3.74	0.610
10/12/2013 18:05	0913-111_A	13_10_12_1805_40_552	1	2.05	0.846	1.21	0.471	8.30	0.236	2.73	2.36	3.00	1.34	2.88	0.629
10/12/2013 18:06	0913-111_A	13_10_12_1806_41_282	1	2.63	0.847	1.05	0.536	8.46	0.232	2.73	1.01	3.00	1.51	3.55	0.626
10/12/2013 18:07	0913-111_A	13_10_12_1807_42_072	1	3.16	0.853	1.05	0.552	8.43	0.238	2.73	0.90	3.00	1.55	4.14	0.630
10/12/2013 18:08	0913-111_A	13_10_12_1808_42_792	1	2.65	0.877	1.05	0.577	8.27	0.240	2.73	0.95	3.00	1.60	3.68	0.647
10/12/2013 18:09	0913-111_A	13_10_12_1809_43_542	1	2.55	0.909	1.05	0.546	8.16	0.273	2.73	1.65	3.00	1.54	3.27	0.675
10/12/2013 18:10	0913-111_A	13_10_12_1810_44_282	1	2.46	0.890	1.05	0.566	7.87	0.242	2.73	1.34	3.00	1.59	3.72	0.666
10/12/2013 18:11	0913-111_A	13_10_12_1811_45_102	1	1.70	0.903	1.05	0.549	8.25	0.281	2.73	1.42	3.00	1.53	3.76	0.668
10/12/2013 18:12	0913-111_A	13_10_12_1812_45_862	1	2.76	0.873	1.05	0.547	7.68	0.232	2.73	1.36	3.00	1.52	3.90	0.652
10/12/2013 18:13	0913-111_A	13_10_12_1813_46_572	1	2.04	0.862	1.05	0.553	7.83	0.236	2.73	1.26	3.00	1.55	3.27	0.644
10/12/2013 18:14	0913-111_A	13_10_12_1814_47_372	1	2.76	0.910	1.05	0.553	8.24	0.282	2.73	1.52	3.00	1.55	2.82	0.677
10/12/2013 18:15	0913-111_A	13_10_12_1815_48_083	1	1.70	0.868	1.44	0.552	7.88	0.255	2.73	2.54	3.00	1.54	3.04	0.649
10/12/2013 18:16	0913-111_A	13_10_12_1816_48_803	1	2.64	0.918	1.05	0.588	8.24	0.296	2.73	1.41	3.00	1.62	4.29	0.681
10/12/2013 18:17	0913-111_A	13_10_12_1817_49_463	1	1.70	0.944	1.05	0.620	7.87	0.258	2.73	1.13	3.00	1.74	4.18	0.696
10/12/2013 18:18	0913-111_A	13_10_12_1818_50_243	1	2.71	0.916	1.05	0.674	7.79	0.259	2.73	1.09	3.00	1.80	4.82	0.678
10/12/2013 18:19	0913-111_A	13_10_12_1819_51_043	1	1.85	0.962	1.05	0.693	7.90	0.272	2.73	1.05	3.00	1.85	4.30	0.712
10/12/2013 18:20	0913-111_A	13_10_12_1820_51_803	1	3.36	0.965	1.05	0.714	8.11	0.274	2.73	1.04	3.00	1.91	4.45	0.719
10/12/2013 18:21	0913-111_A	13_10_12_1821_52_513	1	2.27	1.00	1.05	0.711	8.07	0.273	2.73	1.12	3.00	1.89	3.76	0.743
10/12/2013 18:22	0913-111_A	13_10_12_1822_53_283	1	2.04	1.01	1.05	0.645	8.00	0.265	2.73	1.29	3.00	1.82	4.52	0.744
10/12/2013 18:23	0913-111_A	13_10_12_1823_54_043	1	2.09	0.916	1.05	0.608	7.83	0.256	2.73	1.27	3.00	1.72	4.06	0.688
10/12/2013 18:24	0913-111_A	13_10_12_1824_54_743	1	2.62	0.898	1.05	0.579	7.90	0.245	2.73	1.33	3.00	1.65	4.14	0.673
10/12/2013 18:25	0913-111_A	13_10_12_1825_55_553	1	2.00	0.926	1.05	0.578	7.79	0.243	2.73	1.31	3.00	1.62	4.33	0.691
10/12/2013 18:26	0913-111_A	13_10_12_1826_56_303	1	1.71	0.922	1.05	0.576	7.83	0.245	2.73	1.25	3.00	1.63	3.72	0.688
10/12/2013 18:27	0913-111_A	13_10_12_1827_57_024	1	1.83	0.913	1.05	0.573	7.82	0.243	2.73	1.26	3.00	1.60	3.01	0.677
10/12/2013 18:28	0913-111_A	13_10_12_1828_57_854	1	3.23	0.912	1.05	0.570	7.78	0.243	2.73	1.30	3.00	1.61	3.48	0.679
10/12/2013 18:29	0913-111_A	13_10_12_1829_58_594	1	1.70	0.919	1.05	0.570	7.77	0.246	2.73	1.25	3.00	1.61	3.76	0.681
10/12/2013 18:30	0913-111_A	13_10_12_1830_59_364	1	1.92	0.905	1.05	0.573	7.88	0.243	2.73	1.32	3.00	1.60	3.62	0.673
10/12/2013 18:32	0913-111_A	13_10_12_1832_00_094	1	2.07	0.945	1.05	0.583	8.01	0.251	2.73	1.32	3.00	1.63	3.59	0.694
10/12/2013 18:33	0913-111_A	13_10_12_1833_00_814	1	3.01	0.930	1.05	0.578	7.86	0.249	2.73	1.41	3.00	1.63	3.82	0.699
10/12/2013 18:34	0913-111_A	13_10_12_1834_01_604	1	2.05	0.953	1.05	0.597	7.89	0.255	2.73	1.39	3.00	1.66	3.22	0.708
10/12/2013 18:35	0913-111_A	13_10_12_1835_02_364	1	2.65	0.950	1.05	0.600	8.30	0.302	2.73	1.38	3.00	1.67	3.73	0.702
10/12/2013 18:36	0913-111_A	13_10_12_1836_03_104	1	1.70	0.956	1.05	0.601	8.38	0.301	2.73	1.45	3.00	1.68	4.20	0.710
10/12/2013 18:37	0913-111_A	13_10_12_1837_03_864	1	2.73	0.935	1.05	0.600	8.50	0.300	2.73	1.37	3.00	1.67	3.97	0.697
10/12/2013 18:38	0913-111_A	13_10_12_1838_04_584	1	2.71	0.921	1.05	0.569	8.55	0.292	2.73	1.35	3.00	1.59	3.54	0.687
10/12/2013 18:39	0913-111_A	13_10_12_1839_05_385	1	1.80	0.918	1.05	0.551	8.72	0.286	2.73	1.33	3.00	1.54	3.24	0.688
10/12/2013 18:40	0913-111_A	13_10_12_1840_06_145	1	2.24	0.887	1.05	0.554	8.13	0.250	2.73	1.37	3.00	1.58	3.52	0.666
10/12/2013 18:41	0913-111_A	13_10_12_1841_06_875	1	1.90	0.927	1.05	0.567	8.01	0.251	2.73	1.35	3.00	1.59	3.09	0.689
10/12/2013 18:42	0913-111_A	13_10_12_1842_07_605	1	2.22	0.909	1.05	0.550	8.29	0.286	2.73	1.37	3.00	1.53	3.87	0.674
10/12/2013 18:43	0913-111_A	13_10_12_1843_08_395	1	2.19	0.902	1.05	0.559	7.89	0.250	2.73	1.33	3.00	1.59	3.13	0.672
10/12/2013 18:44	0913-111_A	13_10_12_1844_09_185	1	1.77	0.920	1.05	0.557	7.75	0.250	2.73	1.36	3.00	1.58	3.91	0.683
10/12/2013 18:45	0913-111_A	13_10_12_1845_09_885	1	2.01	0.897	1.05	0.573	8.09	0.297	2.73	1.34	3.00	1.58	3.49	0.670
10/12/2013 18:46	0913-111_A	13_10_12_1846_10_665	1	1.70	0.942	1.05	0.584	7.95	0.299	2.73	1.36	3.00	1.60	3.33	0.695
10/12/2013 18:47	0913-111_A	13_10_12_1847_11_395	1	2.64	0.940	1.05	0.601	7.76	0.260	2.73	1.39	3.00	1.70	4.17	0.700
10/12/2013 18:48	0913-111_A	13_10_12_1848_12_195	1	2.89	0.949	1.05	0.611	8.32	0.314	2.73	1.40	3.00	1.73	3.15	0.707
10/12/2013 18:49	0913-111_A	13_10_12_1849_12_955	1	2.48	0.966	1.05	0.629	8.53	0.319	2.73	1.39	3.00	1.74	3.57	0.725
10/12/2013 18:50	0913-111_A	13_10_12_1850_13_715	1	2.23	1.01	1.05	0.626	8.78	0.317	2.73	1.52	3.00	1.75	4.47	0.742
10/12/2013 18:51	0913-111_A	13_10_12_1851_14_456	1	1.70	0.951	1.05	0.616	8.50	0.315	2.73	1.50	3.00	1.73	3.98	0.707
10/12/2013 18:52	0913-111_A	13_10_12_1852_15_206	1	2.31	0.977	1.05	0.623	8.60	0.317	2.73	1.52	3.00	1.76	3.89	0.729
10/12/2013 18:53	0913-111_A	13_10_12_1853_15_926	1	1.76	0.971	1.05	0.621	8.65	0.321	2.73	1.46	3.00	1.73	3.82	0.726
10/12/2013 18:54	0913-111_A	13_10_12_1854_16_746	1	2.71	0.993	1.05	0.618	8.11	0.273	2.73	1.37	3.00	1.75	3.74	0.736
10/12/2013 18:55	0913-111_A	13_10_12_1855_17_456	1	1.83	0.925	1.05	0.585	7.89	0.264	2.73	1.34	3.00	1.67	3.95	0.687
10/12/2013 18:56	0913-111_A	13_10_12_1856_18_246	1	1.70	0.915	1.05	0.558	7.68	0.250	2.73	1.32	3.00	1.56	3.37	0.688
10/12/2013 18:57	0913-111_A	13_10_12_1857_18_986	1	1.71	0.924	1.05	0.577	8.80	0.306	2.73	1.42	3.00	1.60	4.13	0.692
10/12/2013 18:58	0913-111_A	13_10_12_1858_19_736	1	1.73	0.941	1.05	0.599	8.83	0.263	2.73	1.25	3.00	1.69	4.85	0.697
10/12/2013 18:59	0913-111_A	13_10_12_1859_20_336	1	1.70	0.920	1.05	0.567	9.14	0.251	2.73	1.28	3.00	1.62	4.06	0.684
10/12/2013 19:00	0913-111_A	13_10_12_1900_21_086	1	1.70	0.864	1.05	0.537	8.41	0.240	2.73	1.32	3.00	1.53	3.51	0.649
		Average Conc. (ppm):	**1**	**2.25**	**0.916**	**1.06**	**0.580**	**8.16**	**0.265**	**2.73**	**1.34**	**3.00**	**1.62**	**3.75**	**0.681**

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Dryer 2 Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/13/2013 9:21	0913-111_A	13_10_13_0921_40_932	1	2.53	0.630	5.62	0.101	17.3	0.524	2.78	0.07	1.37	0.203	1.48	0.474
10/13/2013 9:22	0913-111_A	13_10_13_0922_41_672	1	1.61	0.616	6.08	0.103	18.4	0.551	2.78	0.08	1.70	0.199	0.985	0.455
10/13/2013 9:23	0913-111_A	13_10_13_0923_41_382	1	2.02	0.641	6.63	0.108	18.8	0.561	2.78	0.08	1.69	0.207	1.39	0.480
10/13/2013 9:24	0913-111_A	13_10_13_0924_42_103	1	1.25	0.634	6.81	0.106	18.9	0.556	2.78	0.07	1.88	0.213	1.17	0.472
10/13/2013 9:25	0913-111_A	13_10_13_0925_42_893	1	1.84	0.630	7.02	0.104	19.1	0.559	2.78	0.08	1.97	0.210	0.934	0.466
10/13/2013 9:26	0913-111_A	13_10_13_0926_43_653	1	2.09	0.648	7.27	0.109	19.3	0.565	2.78	0.07	2.02	0.216	1.24	0.486
10/13/2013 9:27	0913-111_A	13_10_13_0927_44_353	1	1.59	0.652	7.16	0.111	19.5	0.556	2.78	0.08	2.34	0.216	0.934	0.484
10/13/2013 9:28	0913-111_A	13_10_13_0928_45_093	1	1.92	0.648	7.07	0.108	19.8	0.550	2.78	0.08	2.23	0.214	0.934	0.485
10/13/2013 9:29	0913-111_A	13_10_13_0929_45_913	1	2.06	0.610	6.71	0.104	19.9	0.545	2.78	0.07	2.22	0.208	1.13	0.453
10/13/2013 9:30	0913-111_A	13_10_13_0930_46_663	1	1.25	0.620	6.81	0.108	20.0	0.544	2.78	0.08	2.28	0.210	0.934	0.461
10/13/2013 9:31	0913-111_A	13_10_13_0931_47_433	1	1.25	0.652	6.61	0.107	20.2	0.542	2.78	0.08	2.27	0.213	0.934	0.486
10/13/2013 9:32	0913-111_A	13_10_13_0932_48_143	1	1.54	0.631	6.32	0.105	20.2	0.544	2.78	1.97	1.92	0.211	0.945	0.472
10/13/2013 9:33	0913-111_A	13_10_13_0933_48_863	1	1.93	0.639	6.25	0.106	20.2	0.539	2.78	1.93	2.33	0.212	0.934	0.478
10/13/2013 9:34	0913-111_A	13_10_13_0934_49_573	1	1.25	0.625	5.96	0.109	20.5	0.547	2.78	1.81	2.36	0.215	0.934	0.465
10/13/2013 9:35	0913-111_A	13_10_13_0935_50_263	1	1.95	0.617	5.68	0.104	20.3	0.529	2.78	1.72	2.12	0.207	0.934	0.457
10/13/2013 9:36	0913-111_A	13_10_13_0936_51_104	1	2.84	0.624	5.68	0.107	19.9	0.523	2.78	1.71	2.23	0.211	0.934	0.467
10/13/2013 9:37	0913-111_A	13_10_13_0937_51_824	1	1.88	0.617	5.55	0.101	19.3	0.509	2.78	1.60	2.16	0.207	0.934	0.460
10/13/2013 9:38	0913-111_A	13_10_13_0938_52_634	1	1.86	0.614	5.38	0.104	18.8	0.513	2.78	1.62	2.11	0.206	0.934	0.457
10/13/2013 9:39	0913-111_A	13_10_13_0939_53_384	1	1.45	0.624	5.46	0.101	19.1	0.516	2.78	1.59	2.26	0.209	0.934	0.462
10/13/2013 9:40	0913-111_A	13_10_13_0940_54_084	1	1.63	0.644	5.40	0.104	19.9	0.517	2.78	1.49	2.30	0.216	0.934	0.479
10/13/2013 9:41	0913-111_A	13_10_13_0941_54_884	1	2.02	0.611	5.47	0.108	20.4	0.517	2.78	1.58	2.20	0.216	0.934	0.455
10/13/2013 9:42	0913-111_A	13_10_13_0942_55_604	1	1.97	0.624	5.40	0.107	20.9	0.511	2.78	1.61	2.26	0.213	0.934	0.465
10/13/2013 9:43	0913-111_A	13_10_13_0943_56_414	1	2.27	0.601	5.23	0.104	21.1	0.513	2.78	1.57	2.09	0.213	0.934	0.449
10/13/2013 9:44	0913-111_A	13_10_13_0944_57_124	1	1.69	0.614	5.28	0.111	21.2	0.507	2.78	1.55	2.02	0.219	0.934	0.464
10/13/2013 9:45	0913-111_A	13_10_13_0945_57_864	1	1.67	0.627	5.10	0.105	21.1	0.509	2.78	1.53	2.13	0.213	0.934	0.466
10/13/2013 9:46	0913-111_A	13_10_13_0946_58_664	1	1.91	0.621	5.13	0.106	21.4	0.514	2.78	1.46	2.32	0.215	0.934	0.462
10/13/2013 9:47	0913-111_A	13_10_13_0947_59_355	1	1.42	0.595	5.45	0.108	21.7	0.521	2.78	1.53	2.19	0.216	0.934	0.448
10/13/2013 9:49	0913-111_A	13_10_13_0949_00_105	1	1.86	0.641	5.46	0.110	21.5	0.510	2.78	1.51	2.23	0.220	0.934	0.479
10/13/2013 9:50	0913-111_A	13_10_13_0950_00_875	1	1.25	0.630	5.56	0.107	21.4	0.517	2.78	1.54	2.22	0.218	0.934	0.465
10/13/2013 9:51	0913-111_A	13_10_13_0951_01_625	1	1.89	0.645	5.83	0.116	21.4	0.536	2.78	1.39	2.25	0.224	0.934	0.485
10/13/2013 9:52	0913-111_A	13_10_13_0952_02_335	1	1.62	0.635	6.10	0.109	21.9	0.541	2.78	1.51	2.48	0.225	0.934	0.472
10/13/2013 9:53	0913-111_A	13_10_13_0953_03_175	1	1.66	0.625	5.99	0.109	21.6	0.539	2.78	1.51	2.37	0.220	0.934	0.466
10/13/2013 9:54	0913-111_A	13_10_13_0954_03_855	1	1.93	0.623	5.89	0.110	21.9	0.541	2.78	1.54	2.49	0.224	0.934	0.464
10/13/2013 9:55	0913-111_A	13_10_13_0955_04_565	1	2.47	0.633	6.09	0.110	21.8	0.540	2.78	1.64	2.52	0.222	0.934	0.474
10/13/2013 9:56	0913-111_A	13_10_13_0956_05_405	1	2.13	0.622	6.19	0.111	21.9	0.539	2.78	1.59	2.68	0.221	0.934	0.467
10/13/2013 9:57	0913-111_A	13_10_13_0957_06_075	1	1.81	0.614	6.23	0.112	21.9	0.543	2.78	1.58	2.57	0.226	0.934	0.460
10/13/2013 9:58	0913-111_A	13_10_13_0958_06_845	1	1.40	0.650	6.62	0.113	22.1	0.556	2.78	1.64	2.70	0.229	0.934	0.483
10/13/2013 9:59	0913-111_A	13_10_13_0959_07_685	1	1.79	0.616	6.83	0.113	22.1	0.565	2.78	1.65	2.62	0.230	0.934	0.467
10/13/2013 10:00	0913-111_A	13_10_13_1000_08_486	1	1.25	0.640	6.83	0.109	22.1	0.561	2.78	1.64	2.62	0.224	0.934	0.482
10/13/2013 10:01	0913-111_A	13_10_13_1001_09_226	1	1.28	0.649	7.05	0.110	21.8	0.555	2.78	1.67	2.78	0.234	0.934	0.481
10/13/2013 10:02	0913-111_A	13_10_13_1002_09_906	1	2.18	0.629	6.90	0.114	21.5	0.548	2.78	1.63	2.82	0.232	0.934	0.473
10/13/2013 10:03	0913-111_A	13_10_13_1003_10_696	1	2.08	0.678	6.91	0.118	21.2	0.543	2.78	1.54	2.87	0.239	0.934	0.507
10/13/2013 10:04	0913-111_A	13_10_13_1004_11_436	1	2.56	0.639	6.24	0.114	20.9	0.528	2.78	1.49	2.62	0.231	0.934	0.482
10/13/2013 10:05	0913-111_A	13_10_13_1005_12_196	1	1.61	0.623	5.90	0.107	20.5	0.525	2.78	1.52	2.66	0.226	0.934	0.464
10/13/2013 10:06	0913-111_A	13_10_13_1006_12_966	1	2.39	0.625	6.04	0.109	19.6	0.533	2.78	1.54	2.66	0.233	0.934	0.468
10/13/2013 10:07	0913-111_A	13_10_13_1007_13_776	1	1.78	0.625	6.36	0.111	18.8	0.542	2.78	1.62	2.53	0.228	0.934	0.472
10/13/2013 10:08	0913-111_A	13_10_13_1008_14_516	1	2.53	0.642	6.82	0.106	17.6	0.550	2.78	1.55	2.58	0.229	0.934	0.480
10/13/2013 10:09	0913-111_A	13_10_13_1009_15_276	1	2.29	0.634	7.03	0.111	16.5	0.550	2.78	1.51	2.55	0.231	0.934	0.479
10/13/2013 10:10	0913-111_A	13_10_13_1010_15_986	1	1.44	0.650	7.05	0.111	15.3	0.549	2.78	1.57	2.40	0.228	0.934	0.494
10/13/2013 10:11	0913-111_A	13_10_13_1011_16_786	1	2.51	0.631	7.36	0.109	14.0	0.549	2.78	1.55	2.54	0.228	0.934	0.476
10/13/2013 10:12	0913-111_A	13_10_13_1012_17_487	1	1.46	0.650	7.48	0.107	12.8	0.543	2.78	1.51	2.63	0.225	0.934	0.483
10/13/2013 10:13	0913-111_A	13_10_13_1013_18_297	1	2.24	0.660	7.75	0.108	11.6	0.536	2.78	1.49	2.72	0.225	0.934	0.490
10/13/2013 10:14	0913-111_A	13_10_13_1014_19_017	1	2.42	0.677	8.54	0.110	11.0	0.555	2.78	1.38	2.71	0.227	0.934	0.512
10/13/2013 10:15	0913-111_A	13_10_13_1015_19_817	1	2.16	0.619	7.71	0.106	11.0	0.543	2.78	1.24	2.71	0.225	0.934	0.470
10/13/2013 10:16	0913-111_A	13_10_13_1016_20_417	1	2.13	0.618	7.44	0.109	11.7	0.549	2.78	1.34	2.42	0.233	0.934	0.466
10/13/2013 10:17	0913-111_A	13_10_13_1017_21_227	1	1.37	0.621	7.70	0.113	12.8	0.556	2.78	1.46	2.61	0.242	0.939	0.470
10/13/2013 10:18	0913-111_A	13_10_13_1018_21_987	1	2.79	0.636	7.44	0.110	13.2	0.560	2.78	1.49	2.75	0.255	1.03	0.479
10/13/2013 10:19	0913-111_A	13_10_13_1019_22_707	1	1.95	0.634	6.71	0.107	12.9	0.550	2.78	1.53	2.64	0.256	0.934	0.471
10/13/2013 10:20	0913-111_A	13_10_13_1020_23_387	1	2.11	0.594	6.66	0.110	12.8	0.547	2.78	1.51	2.54	0.258	0.934	0.447
10/13/2013 10:21	0913-111_A	13_10_13_1021_23_197	1	3.00	0.628	6.73	0.113	12.7	0.558	2.78	1.51	2.53	0.273	0.988	0.468
		Average Conc. (ppm):	**1**	**1.90**	**0.631**	**6.40**	**0.108**	**18.8**	**0.539**	**2.78**	**1.29**	**2.37**	**0.222**	**0.967**	**0.472**

Dryer 2 Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/13/2013 11:04	0913-111_A	13_10_13_1104_56_401	1	2.45	0.615	6.06	0.106	10.4	0.532	2.78	1.31	1.47	0.260	3.09	0.457
10/13/2013 11:05	0913-111_A	13_10_13_1105_57_191	1	2.20	0.620	6.50	0.108	10.0	0.535	2.78	1.31	1.39	0.260	3.57	0.457
10/13/2013 11:06	0913-111_A	13_10_13_1106_57_991	1	2.54	0.621	7.03	0.104	9.92	0.542	2.78	1.31	1.54	0.254	3.34	0.458
10/13/2013 11:07	0913-111_A	13_10_13_1107_58_651	1	4.10	0.692	7.38	0.103	10.1	0.564	2.78	1.30	1.04	0.252	4.46	0.510
10/13/2013 11:08	0913-111_A	13_10_13_1108_59_481	1	2.72	0.633	7.22	0.109	10.2	0.560	2.78	1.29	1.71	0.257	3.00	0.473
10/13/2013 11:10	0913-111_A	13_10_13_1110_00_191	1	2.32	0.634	6.92	0.103	10.3	0.553	2.78	1.28	1.40	0.254	3.20	0.466
10/13/2013 11:11	0913-111_A	13_10_13_1111_01_001	1	2.71	0.646	7.81	0.112	10.7	0.582	2.78	1.28	1.67	0.262	3.57	0.485
10/13/2013 11:12	0913-111_A	13_10_13_1112_01_812	1	2.87	0.626	7.96	0.112	11.0	0.578	2.78	1.32	1.69	0.259	3.63	0.463
10/13/2013 11:13	0913-111_A	13_10_13_1113_02_502	1	3.29	0.629	6.97	0.107	10.7	0.541	2.78	2.74	1.35	0.248	3.29	0.465
10/13/2013 11:14	0913-111_A	13_10_13_1114_03_312	1	2.51	0.629	6.60	0.106	10.5	0.530	2.78	2.55	1.30	0.241	2.61	0.465
10/13/2013 11:15	0913-111_A	13_10_13_1115_04_132	1	2.24	0.610	6.53	0.102	10.4	0.538	2.78	2.10	1.56	0.248	2.57	0.448
10/13/2013 11:16	0913-111_A	13_10_13_1116_04_842	1	2.72	0.588	6.51	0.101	10.3	0.542	2.78	1.79	1.33	0.249	3.38	0.437
10/13/2013 11:17	0913-111_A	13_10_13_1117_05_582	1	1.35	0.592	6.24	0.0980	10.3	0.533	2.78	1.58	1.38	0.244	2.91	0.439
10/13/2013 11:18	0913-111_A	13_10_13_1118_06_412	1	2.07	0.621	6.11	0.103	10.3	0.527	2.78	1.47	1.40	0.258	2.98	0.457
10/13/2013 11:19	0913-111_A	13_10_13_1119_07_122	1	2.81	0.620	6.49	0.106	10.3	0.539	2.78	1.61	1.44	0.266	3.07	0.461
10/13/2013 11:20	0913-111_A	13_10_13_1120_07_922	1	2.54	0.625	6.27	0.100	10.3	0.539	2.78	1.50	1.11	0.266	3.66	0.460
10/13/2013 11:21	0913-111_A	13_10_13_1121_08_632	1	1.62	0.613	6.35	0.104	10.3	0.548	2.78	1.61	1.35	0.267	3.59	0.450
10/13/2013 11:22	0913-111_A	13_10_13_1122_09_442	1	2.45	0.627	6.14	0.108	9.82	0.565	2.78	1.45	1.36	0.275	3.62	0.460
10/13/2013 11:23	0913-111_A	13_10_13_1123_10_163	1	2.41	0.614	5.90	0.104	9.53	0.550	2.78	1.48	1.22	0.276	4.03	0.451
10/13/2013 11:24	0913-111_A	13_10_13_1124_10_923	1	2.79	0.603	6.11	0.108	9.42	0.549	2.78	1.39	1.16	0.273	3.62	0.449
10/13/2013 11:25	0913-111_A	13_10_13_1125_11_723	1	3.11	0.618	7.04	0.106	9.79	0.571	2.78	1.40	1.33	0.270	4.39	0.464
10/13/2013 11:26	0913-111_A	13_10_13_1126_12_453	1	2.80	0.623	7.04	0.105	9.81	0.551	2.78	1.39	1.45	0.268	3.32	0.458
10/13/2013 11:27	0913-111_A	13_10_13_1127_13_263	1	3.37	0.574	6.09	0.102	9.90	0.536	2.78	1.39	1.42	0.259	2.58	0.425
10/13/2013 11:28	0913-111_A	13_10_13_1128_13_963	1	2.85	0.579	5.99	0.103	10.0	0.540	2.78	1.51	1.28	0.258	2.69	0.425
10/13/2013 11:29	0913-111_A	13_10_13_1129_14_773	1	2.27	0.594	5.66	0.103	10.2	0.548	2.78	1.49	1.06	0.261	2.53	0.436
10/13/2013 11:30	0913-111_A	13_10_13_1130_15_463	1	2.34	0.605	6.18	0.105	10.7	0.572	2.78	1.43	1.35	0.271	2.57	0.450
		Average Conc. (ppm):	**1**	**2.59**	**0.617**	**6.58**	**0.105**	**10.2**	**0.549**	**2.78**	**1.55**	**1.38**	**0.260**	**3.28**	**0.457**

Company	ACT		Client #	1911
Analyst Initials	CJT		Job #	0913-111
Parameters	EPA Method 320		PO #	3134 1911
# Samples	21 Runs		Report Date	V0.62 13.10.18.12.58

Path Length - Path

Date	Method	FileName	ethylene (ppm)	SEC (ppm)
10/10/2013 8:12	0913-111_CTS	13_10_10_0812_04_850	8.79	0.137
10/10/2013 8:12	0913-111_CTS	13_10_10_0812_23_390	8.77	0.136
10/10/2013 8:12	0913-111_CTS	13_10_10_0812_42_040	8.78	0.137
10/10/2013 8:13	0913-111_CTS	13_10_10_0813_00_420	8.80	0.136
10/10/2013 8:13	0913-111_CTS	13_10_10_0813_18_930	8.82	0.137
10/10/2013 8:13	0913-111_CTS	13_10_10_0813_37_540	8.81	0.138
10/10/2013 8:13	0913-111_CTS	13_10_10_0813_56_040	8.82	0.137
10/10/2013 8:14	0913-111_CTS	13_10_10_0814_14_670	8.80	0.138
		Average (m)	**8.80**	**0.137**
10/10/2013 19:33	0913-111_CTS	13_10_10_1933_09_783	8.67	0.137
10/10/2013 19:33	0913-111_CTS	13_10_10_1933_28_313	8.69	0.137
10/10/2013 19:33	0913-111_CTS	13_10_10_1933_46_843	8.69	0.138
10/10/2013 19:34	0913-111_CTS	13_10_10_1934_05_353	8.71	0.137
10/10/2013 19:34	0913-111_CTS	13_10_10_1934_23_963	8.70	0.137
10/10/2013 19:34	0913-111_CTS	13_10_10_1934_42_473	8.71	0.138
10/10/2013 19:35	0913-111_CTS	13_10_10_1935_01_103	8.66	0.137
10/10/2013 19:35	0913-111_CTS	13_10_10_1935_19_513	8.67	0.139
		Average (m)	**8.69**	**0.138**
		Average Pathlength (m)	**8.74**	**0.137**
		Max (m)	8.80	
		Min (m)	8.69	
		Max % Deviation	0.62%	

Company	ACT		Client #	1911
Analyst Initials	CJT		Job #	0913-111
Parameters	EPA Method 320		PO #	3134 1911
# Samples	21 Runs		Report Date	V0.62 13.10.18.12.58

Path Length - Path

Date	Method	FileName	ethylene (ppm)	SEC (ppm)
10/11/2013 9:38	0913-111_CTS	13_10_11_0938_33_970	8.13	0.130
10/11/2013 9:38	0913-111_CTS	13_10_11_0938_52_580	8.16	0.129
10/11/2013 9:39	0913-111_CTS	13_10_11_0939_11_060	8.17	0.129
10/11/2013 9:39	0913-111_CTS	13_10_11_0939_29_540	8.18	0.129
10/11/2013 9:39	0913-111_CTS	13_10_11_0939_48_180	8.19	0.130
10/11/2013 9:40	0913-111_CTS	13_10_11_0940_06_710	8.18	0.129
10/11/2013 9:40	0913-111_CTS	13_10_11_0940_25_190	8.20	0.129
10/11/2013 9:40	0913-111_CTS	13_10_11_0940_43_760	8.18	0.130
		Average (m)	**8.17**	**0.129**
10/11/2013 11:22	0913-111_CTS	13_10_11_1122_55_958	8.63	0.133
10/11/2013 11:23	0913-111_CTS	13_10_11_1123_14_479	8.66	0.133
10/11/2013 11:23	0913-111_CTS	13_10_11_1123_32_989	8.68	0.133
10/11/2013 11:23	0913-111_CTS	13_10_11_1123_51_519	8.71	0.133
10/11/2013 11:24	0913-111_CTS	13_10_11_1124_10_019	8.70	0.134
10/11/2013 11:24	0913-111_CTS	13_10_11_1124_28_559	8.73	0.134
10/11/2013 11:24	0913-111_CTS	13_10_11_1124_47_159	8.74	0.134
10/11/2013 11:25	0913-111_CTS	13_10_11_1125_05_659	8.74	0.134
		Average (m)	**8.70**	**0.134**
		Average Pathlength (m)	**8.44**	**0.131**
		Max (m)	8.70	
		Min (m)	8.17	
		Max % Deviation	3.10%	

Company	ACT
Analyst Initials	CJT
Parameters	EPA Method 320
# Samples	21 Runs

Client #	1911
Job #	0913-111
PO #	3134 1911
Report Date	V0.62 13.10.18.12.58

Path Length - Path

Date	Method	FileName	ethylene (ppm)	SEC (ppm)
10/11/2013 11:22	0913-111_CTS	13_10_11_1122_55_958	8.63	0.133
10/11/2013 11:23	0913-111_CTS	13_10_11_1123_14_479	8.66	0.133
10/11/2013 11:23	0913-111_CTS	13_10_11_1123_32_989	8.68	0.133
10/11/2013 11:23	0913-111_CTS	13_10_11_1123_51_519	8.71	0.133
10/11/2013 11:24	0913-111_CTS	13_10_11_1124_10_019	8.70	0.134
10/11/2013 11:24	0913-111_CTS	13_10_11_1124_28_559	8.73	0.134
10/11/2013 11:24	0913-111_CTS	13_10_11_1124_47_159	8.74	0.134
10/11/2013 11:25	0913-111_CTS	13_10_11_1125_05_659	8.74	0.134
		Average (m)	**8.70**	**0.134**
10/11/2013 13:02	0913-111_CTS	13_10_11_1302_32_762	8.73	0.133
10/11/2013 13:02	0913-111_CTS	13_10_11_1302_51_282	8.77	0.134
10/11/2013 13:03	0913-111_CTS	13_10_11_1303_09_882	8.73	0.133
10/11/2013 13:03	0913-111_CTS	13_10_11_1303_28_382	8.71	0.133
10/11/2013 13:03	0913-111_CTS	13_10_11_1303_46_792	8.74	0.133
10/11/2013 13:04	0913-111_CTS	13_10_11_1304_05_402	8.75	0.133
10/11/2013 13:04	0913-111_CTS	13_10_11_1304_23_922	8.74	0.133
10/11/2013 13:04	0913-111_CTS	13_10_11_1304_42_382	8.73	0.133
		Average (m)	**8.74**	**0.133**
10/11/2013 17:56	0913-111_CTS	13_10_11_1756_33_272	8.44	0.129
10/11/2013 17:56	0913-111_CTS	13_10_11_1756_51_882	8.57	0.130
10/11/2013 17:57	0913-111_CTS	13_10_11_1757_10_412	8.67	0.132
10/11/2013 17:57	0913-111_CTS	13_10_11_1757_29_032	8.71	0.132
10/11/2013 17:57	0913-111_CTS	13_10_11_1757_47_542	8.75	0.132
10/11/2013 17:58	0913-111_CTS	13_10_11_1758_06_042	8.76	0.132
10/11/2013 17:58	0913-111_CTS	13_10_11_1758_24_642	8.79	0.133
10/11/2013 17:58	0913-111_CTS	13_10_11_1758_43_102	8.75	0.133
		Average (m)	**8.68**	**0.132**
10/12/2013 7:59	0913-111_CTS	13_10_12_0759_05_353	8.70	0.139
10/12/2013 7:59	0913-111_CTS	13_10_12_0759_23_963	8.74	0.139
10/12/2013 7:59	0913-111_CTS	13_10_12_0759_42_473	8.71	0.137
10/12/2013 8:00	0913-111_CTS	13_10_12_0800_01_103	8.70	0.136
10/12/2013 8:00	0913-111_CTS	13_10_12_0800_19_593	8.69	0.137
10/12/2013 8:00	0913-111_CTS	13_10_12_0800_38_103	8.75	0.136
10/12/2013 8:00	0913-111_CTS	13_10_12_0800_56_713	8.68	0.136
10/12/2013 8:01	0913-111_CTS	13_10_12_0801_15_143	8.68	0.136

Company	ACT		Client #	1911
Analyst Initials	CJT		Job #	0913-111
Parameters	EPA Method 320		PO #	3134 1911
# Samples	21 Runs		Report Date	V0.62 13.10.18.12.58

Path Length - Path

Date	Method	FileName	ethylene (ppm)	SEC (ppm)
		Average (m)	**8.71**	**0.137**
10/12/2013 8:15	0913-111_CTS	13_10_12_0815_33_684	8.60	0.134
10/12/2013 8:15	0913-111_CTS	13_10_12_0815_52_184	8.59	0.134
10/12/2013 8:16	0913-111_CTS	13_10_12_0816_10_704	8.58	0.134
10/12/2013 8:16	0913-111_CTS	13_10_12_0816_29_314	8.60	0.133
10/12/2013 8:16	0913-111_CTS	13_10_12_0816_47_804	8.60	0.133
10/12/2013 8:17	0913-111_CTS	13_10_12_0817_06_244	8.61	0.134
10/12/2013 8:17	0913-111_CTS	13_10_12_0817_24_834	8.62	0.133
10/12/2013 8:17	0913-111_CTS	13_10_12_0817_43_344	8.59	0.134
		Average (m)	**8.60**	**0.134**
10/12/2013 13:02	0913-111_CTS	13_10_12_1302_33_472	8.74	0.137
10/12/2013 13:02	0913-111_CTS	13_10_12_1302_52_082	8.76	0.137
10/12/2013 13:03	0913-111_CTS	13_10_12_1303_10_582	8.79	0.137
10/12/2013 13:03	0913-111_CTS	13_10_12_1303_29_082	8.79	0.138
10/12/2013 13:03	0913-111_CTS	13_10_12_1303_47_602	8.78	0.137
10/12/2013 13:04	0913-111_CTS	13_10_12_1304_06_112	8.77	0.137
10/12/2013 13:04	0913-111_CTS	13_10_12_1304_24_752	8.78	0.137
10/12/2013 13:04	0913-111_CTS	13_10_12_1304_43_242	8.78	0.138
		Average (m)	**8.78**	**0.137**
10/12/2013 19:42	0913-111_CTS	13_10_12_1942_21_772	8.68	0.133
10/12/2013 19:42	0913-111_CTS	13_10_12_1942_40_362	8.71	0.132
10/12/2013 19:42	0913-111_CTS	13_10_12_1942_58_862	8.77	0.134
10/12/2013 19:43	0913-111_CTS	13_10_12_1943_17_462	8.77	0.134
10/12/2013 19:43	0913-111_CTS	13_10_12_1943_35_992	8.80	0.134
10/12/2013 19:43	0913-111_CTS	13_10_12_1943_54_432	8.79	0.133
10/12/2013 19:44	0913-111_CTS	13_10_12_1944_13_082	8.82	0.135
10/12/2013 19:44	0913-111_CTS	13_10_12_1944_31_502	8.78	0.134
		Average (m)	**8.76**	**0.134**
10/13/2013 7:58	0913-111_CTS	13_10_13_0758_40_845	8.55	0.130
10/13/2013 7:58	0913-111_CTS	13_10_13_0758_59_345	8.50	0.129
10/13/2013 7:59	0913-111_CTS	13_10_13_0759_17_835	8.49	0.129
10/13/2013 7:59	0913-111_CTS	13_10_13_0759_36_445	8.50	0.129
10/13/2013 7:59	0913-111_CTS	13_10_13_0759_54_925	8.49	0.129
10/13/2013 8:00	0913-111_CTS	13_10_13_0800_13_565	8.51	0.130
10/13/2013 8:00	0913-111_CTS	13_10_13_0800_31_995	8.47	0.130

Company	ACT		Client #	1911
Analyst Initials	CJT		Job #	0913-111
Parameters	EPA Method 320		PO #	3134 1911
# Samples	21 Runs		Report Date	V0.62 13.10.18.12.58

Path Length - Path

Date	Method	FileName	ethylene (ppm)	SEC (ppm)
10/13/2013 8:00	0913-111_CTS	13_10_13_0800_50_506	8.52	0.130
		Average (m)	**8.50**	**0.130**
10/13/2013 8:16	0913-111_CTS	13_10_13_0816_09_687	8.73	0.133
10/13/2013 8:16	0913-111_CTS	13_10_13_0816_28_197	8.69	0.133
10/13/2013 8:16	0913-111_CTS	13_10_13_0816_46_707	8.71	0.134
10/13/2013 8:17	0913-111_CTS	13_10_13_0817_05_247	8.72	0.133
10/13/2013 8:17	0913-111_CTS	13_10_13_0817_23_757	8.73	0.134
10/13/2013 8:17	0913-111_CTS	13_10_13_0817_42_347	8.77	0.134
10/13/2013 8:18	0913-111_CTS	13_10_13_0818_00_857	8.70	0.133
10/13/2013 8:18	0913-111_CTS	13_10_13_0818_19_377	8.74	0.134
		Average (m)	**8.72**	**0.134**
10/13/2013 14:34	0913-111_CTS	13_10_13_1434_10_233	8.70	0.135
10/13/2013 14:34	0913-111_CTS	13_10_13_1434_28_743	8.73	0.135
10/13/2013 14:34	0913-111_CTS	13_10_13_1434_47_263	8.76	0.136
10/13/2013 14:35	0913-111_CTS	13_10_13_1435_05_884	8.75	0.135
10/13/2013 14:35	0913-111_CTS	13_10_13_1435_24_394	8.72	0.133
10/13/2013 14:35	0913-111_CTS	13_10_13_1435_42_804	8.74	0.135
10/13/2013 14:36	0913-111_CTS	13_10_13_1436_01_424	8.74	0.134
10/13/2013 14:36	0913-111_CTS	13_10_13_1436_19_934	8.72	0.134
		Average (m)	**8.73**	**0.135**
		Average Pathlength (m)	**8.69**	**0.134**
		Max (m)	8.78	
		Min (m)	8.50	
		Max % Deviation	2.17%	

APPENDIX D

Method 320 Log Sheet

FTIR Log - Enviva Wiggins

Date	Time	Filename	Method	Pressure	Notes	Run ID	
10-Oct	754	13.10.10.0753.42.969	CTS	14.7	Background		
	806	13.10.10.0806.08.036	CTS	14.7	CTS (pathlength = 8.78 m)		
	855	13.10.10.0855.00.744	0913-177A	14.6	Background		
	914	13.10.10.0914.12.674	0913-177A	13.5	Sampling GHM - Run 1 (0917-1017)	1	
	1036	13.10.10.0914.12.674	0913-177A	13.3	Sampling GHM - Run 2 (1036-1136)	2	
	1150	13.10.10.0914.12.674	0913-177A	13.5	Sampling GHM - Run 3 (1150-1250)	3	
	1738	13.10.10.1429.45.242	0913-177A	13.9	Sampling Dryer 1 - Run 1 (1738-1838)	4	
	1915	13.10.10.1915.03.541	0913-177A	14.6	Background		
	1923	13.10.10.1923.11.342	CTS	14.6	Background		
	1926	13.10.10.1926.54.274	CTS	14.7	CTS (pathlength = 8.78 m)		
	2005	13.10.10.2004.59.706	0913-177A	14.6	Water Spectra (Dryer 1 - Run 1)		
	2035	13.10.10.2034.59.394	0913-177A	14.6	Water Spectra (GHM)		
11-Oct	933	13.10.11.0932.48.189	CTS	14.8	Background		Background interference
	936	13.10.11.0936.57.524	CTS	14.8	CTS (pathlength = 8.18 m)		
	948	13.10.11.0948.41.630	0913-177A	14.8	Background		
	955	13.10.11.0954.19.486	0913-177A	14.4	Sampling Dryer 1 - Run 2 (1000-1100)	5	
	1117	13.10.11.1117.32.588	CTS	14.8	Background		
	1121	13.10.11.1121.00.310	CTS	14.8	CTS (pathlength = 8.73 m)		
	1127	13.10.11.1127.34.199	0913-177A	14.7	Background		
	1137	13.10.11.1134.41.951	0913-177A	14.2	Sampling Dryer 1 - Run 3 (1137-1237)	6	
	1257	13.10.11.1257.46.512	CTS	14.7	Background		
	1301	13.10.11.1301.14.338	CTS	14.7	CTS (pathlength = 8.73 m)		
	1308	13.10.11.1308.39.947	0913-177A	14.7	Background		
	1342	13.10.11.1342.51.774	0913-177A	14.2	Sampling Pellet Cooler 2 - Run 1 (1343-1443)	7	
	1508	13.10.11.1342.51.774	0913-177A	14.1	Sampling Pellet Cooler 2 - Run 2 (1508-1608)	8	
	1650	13.10.11.1342.51.774	0913-177A	14.1	Sampling Pellet Cooler 2 - Run 3 (1629-1729)	9	
	1752	13.10.11.1752.08.661	CTS	14.6	Background		
	1755	13.10.11.1755.37.781	CTS	14.6	CTS (pathlength = 8.7165 m)		
	1802	13.10.11.1802.37.522	0913-177A	14.6	Background		
	1342	13.10.11.1809.44.552	0913-177A	14.3	Sampling Hammermill 2 - Run 1 (1811-1911)	10	
	1935	13.10.11.1809.44.552	0913-177A	14.4	Sampling Hammermill 2 - Run 2 (1935-2035)	11	
	2048	13.10.11.1809.44.552	0913-177A	14.5	Sampling Hammermill 2 - Run 3 (2048-2148)	12	
	2200	13.10.11.2200.54.734	CTS	14.7	Background		
	2204	13.10.11.2204.32.940	CTS	14.8	CTS (pathlength = 8.75475 m)		
	2213	13.10.11.2213.44.875	0913-177A	14.8	Background		
	2224	13.10.11.2224.53.772	0913-177A	14.7	Water Spectra (Dryer 1 - Run 2, 3)		
	2240	13.10.11.2240.27.896	0913-177A	14.7	Water Spectra (Pellet Cooler 2, Hammermill 2)		
12-Oct	0805	13.10.12.0805.29.253	CTS	14.9	Background		
	0809	13.10.12.0809.22.964	CTS	14.9	CTS (pathlength = 8.59 m)		
	0822	13.10.12.08.22.17.097	0913-177A	14.8	Background		
	858	13.10.12.0857.28.740	0913-177A	14.4	Sampling Pellet Cooler 1- Run 1 (0858-0958)	13	
	1022	13.10.12.0857.28.740	0913-177A	14.3	Sampling Pellet Cooler 1- Run 2 (1022-1122)	14	
	1141	13.10.12.0857.28.740	0913-177A	14.2	Sampling Pellet Cooler 1- Run 1 (1141-1241)	15	
	1257	13.10.12.1257.12.281	CTS	14.6	Background		
	1301	13.10.12.1300.55.794	CTS	14.6	CTS (pathlength = 8.77 m)		
	1308	13.10.12.1309.21.752	0913-177A	14.6	Background		
	1509	13.10.12.1347.50.707	0913-177A	13.8	Sampling Aspirator- Run 1 (1509-1609)	16	
	1636	13.10.12.1347.50.707	0913-177A	13.8	Sampling Aspirator- Run 2 (1636-1736)	17	
	1800	13.10.12.1347.50.707	0913-177A	13.9	Sampling Aspirator- Run 3 (1800-1900)	18	
	1936	13.10.12.1936.27.563	CTS	14.91	Background		
	1940	13.10.12.1940.26.868	CTS	14.72	CTS (pathlength = 8.78 m)		
	1951	13.10.12.1951.39.443	0913-177A	14.75	Background		
	2003	13.10.12.2003.07.633	0913-177A	14.59	Water Spectra (Aspirator)		
	2023	13.10.12.2023.12.427	0913-177A	14.55	Water Spectra (Pellet Cooler 1)		
13-Oct	807	13.10.13.0807.16.306	0913-177A	14.77	Background		
	0810	13.10.13.0810.33.996	CTS	14.78	Background		
	0810	13.10.13.0813.37.211	CTS	14.85	CTS (pathlength = 8.71 m)		
	0921	13.10.13.0919.17.032	0913-177A	14.24	Sampling Dryer 2 - Run 1 (0921-1021)	19	
	1104	13.10.13.0919.17.032	0913-177A	14.17	Sampling Dryer 2 - Run 2 (1104-1204)	20	1130-1200 water condensation in
	1231	13.10.13.0919.17.032	0913-177A	14.17	Sampling Dryer 2 - Run 3 (1231-1347); paused 1236-1252	21	
	1420	13.10.13.1419.54.342	CTS	14.91	Background		
	1430	13.10.13.1425.31.173	CTS	14.85	CTS (pathlength = 8.73 m)		
	1447	13.10.13.1447.35.695	0913-177A	14.8	Background		
	1506	13.10.13.1506.31.082	0913-177A	14.71	Water Spectra (Dryer 2)		

APPENDIX E

Example Calculations

EXAMPLE CALCULATIONS

Run Number: Dryer 1 – Run 1

Stack Gas Temperature, °R

T_s = 460 + ts

T_s = 460 + 146.3 = 606.3 °R

Volume of Dry Gas Sampled at Standard Conditions, Dry Standard Cubic Feet

$$V_{mstd} = [17.64][\gamma][V_m]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m + 460}\right]$$

$$V_{mstd} = [17.64][0.9728][33.201]\left[\frac{\left(29.90 + \frac{1.00}{13.6}\right)}{541.3}\right]$$

$V_{mstd} = 31.564\ ft^3$

Volume of Water Sampled, SCF

V_{wstd} = 0.04715 [Weight of Condensed Moisture]

V_{wstd} = 0.04715 [129.5]

$V_{wstd} = 6.106\ ft^3$

Fraction of Water Vapor in Sample Gas Stream

$$\%H_2O = \left[\frac{V_{wstd}}{V_{mstd} + V_{wstd}}\right] \times 100$$

$$\%H_2O = \left[\frac{6.106}{31.564 + 6.106}\right] \times 100$$

$\%H_2O = 16.21$

Dry Mole Fraction of Flue Gas

M_{fd} = 1-%H2O/100

M_{fd} = 1-[16.21/100]

M_{fd} = 0.838

Molecular Weight of Sample Gas, Dry

$M_d = 0.44[\%CO_2]+0.32[\%O_2]+0.28[100-\%O_2-\%CO_2]$

$M_d = 0.44[2.0]+0.32[19.0]+0.28[100-19.0-2.0]$

M_d = 29.08 pounds/pound-mole

Molecular Weight of Sample Gas, Actual Conditions

$M_s = [M_d \text{ x } M_{fd}]+[0.18 \text{ x } \%H_2O]$

M_s = [29.08 x 0.838]+[0.18 x 16.21]

M_s = 27.28 pounds/pound-mole

Average Stack Gas Velocity, Feet/second

$$vs = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg} \left[\sqrt{\frac{T_s + 460}{P_s M_s}}\right]$$

$$vs = (85.49)(0.84)\left(\sqrt{(0.1.283)}\right)\left[\sqrt{\frac{606.3}{(29.84)(27.28)}}\right]$$

vs = 70.18 feet/second

Wet Volumetric Flue Gas Flow Rate at Stack Conditions, Cubic Feet per Minute

Q_{aw} = 60 x vs x A

Q_{aw} = 60 x 70.18 x 10.56

Q_{aw} = 44,461 Actual Cubic Feet per Minute

Dry Volumetric Flue Gas Flow Rate at Standard Conditions, Cubic Feet per Minute

$$Q_{sd} = 60 \times Mfd \times vs \times A \times \left[\frac{528}{ts + 460}\right]\left[\frac{Ps}{29.92}\right]$$

$$Q_{sd} = 60 \times 0.838 \times 70.18 \times 10.56\left[\frac{528}{606.3}\right]\left[\frac{29.84}{29.92}\right]$$

Q_{sd} = 32,360 Dry Standard Cubic Feet per Minute

Average THC Dry Basis Concentration as Propane

$C_{THCD} = (C_{THCW})/(M_{fd})$

Where: C_{THCd} = dry basis concentration of THC in ppm
M_{fd} = dry mole fraction from Method 4 concurrent run

$C_{THCD} = 66.7 / 0.838 = 79.6$ ppm THC as propane

Average THC Dry Basis Concentration as Carbon

$C_{THCD} = (C_{THCW})$ x $(3) / (M_{fd})$

Where: C_{THCd} = dry basis concentration of THC in ppm
M_{fd} = dry mole fraction from Method 4 concurrent run

C_{THCD} = (66.7) x (3) / 0.838 = 238.8 ppm THC as Carbon

VOC Emission Rate in Pounds Per Hour

$E_{VOC} = (C_{VOC})(Q_{SD})$ (60 min/hr) (C_F)

Where: Q_{SD} = measured flow rate in stack in dscfm
C_F = Conversion factor in lb/scf – ppm
C_F = 3.117×10^{-8} for Carbon

E_{VOC} = (238.8) (32,360) (60 min/hr) (3.117×10^{-8}) = 14.5 lb/hr as Carbon

APPENDIX F

Gas Cylinder Certification Sheets

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
919-544-3773 Fax: 919-544-3774
www.airgas.com

Part Number:	E02AI99E15A00A6	Reference Number:	122-124323950-1
Cylinder Number:	CC410934	Cylinder Volume:	146 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22012	Valve Outlet:	590
Gas Code:	APPVD	Analysis Date:	Jul 02, 2012

Expiration Date: Jul 02, 2015

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
PROPANE	28.00 PPM	27.99 PPM	G1	+/- 1% NIST Traceable
Air	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	080610	CC263046	49.62PPM PROPANE/AIR	May 14, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Jun 19, 2012

Triad Data Available Upon Request

Notes:ANW PN: 781077

C.A

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Tel: (610) 317-1608 Fax:(610) 758 8382
~~PGVP ID:~~

DocNumber: 000003740

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC *
901 BRIDGE ST
FUQUAY VARINA NC 275260

Praxair Order Number: 13003732
Customer P. O. Number: 10429
Customer Reference Number:

Fill Date: 4/7/2010
Part Number: EV AIPR50ME-AS
Lot Number: 917009747
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	4/12/2018	NIST Traceable
Cylinder Number:	CC283143	Analytical Uncertainty:
50.0 ppm	PROPANE	± 1 %
Balance	AIR	

Certifcation Information: Certification Date: 4/12/2010 Term: 96 Months Expiration Date: 4/12/2018

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1. Do Not Use this Standard if Pressure is less than 150 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: PROPANE

Requested Concentration: 50 ppm
Certified Concentration: 50.0 ppm
Instrument Used: VARIAN 3300 INST 023 (PROPANE)
Analytical Method: FID
Last Multipoint Calibration: 3/16/2010

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC182336
Ref. Std. Conc: 50.3 PPM
Ref. Std. Traceable to SRM #: 1668b
SRM Sample #: 82-J-49
SRM Cylinder #: XF003734B

First Analysis Data:						Date:	4/12/2010
Z:	0	R:	50.39	C:	49.84	Conc:	49.777
R:	50.36	Z:	0	C:	50.21	Conc:	50.147
Z:	0	C:	50.2	R:	50.34	Conc:	50.137
UOM:	PPM			Mean Test Assay:			50.02 PPM

Second Analysis Data:						Date:	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM			Mean Test Assay:			0 PPM

Analyzed by: Megha Patel for
John Pribish

Certified by: for
Robin Morgan

Airgas

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
(919)544-3773 Fax: (919)544-3774
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02AI99E15A3227	Reference Number:	122-124370084-1
Cylinder Number:	SG9164792BAL	Cylinder Volume:	146.2 CF
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22013	Valve Outlet:	590
Gas Code:	PPN	Certification Date:	Apr 17, 2013

Expiration Date: Apr 17, 2021

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	86.00 PPM	86.13 PPM	G1	+/- 1% NIST Traceable	04/17/2013
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	09061735	CC304058	97.82 PPM PROPANE/AIR	+/- 0.5%	Oct 02, 2013

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Mar 20, 2013

Triad Data Available Upon Request

Notes:

Amlen Clans

Approved for Release

Page 1 of 122-124370084-1

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Telephone: (610) 317-1608
Facsimile: (610) 758-8382

DocNumber: 000007981

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC *
901 BRIDGE ST
FUQUAY VARINA NC 275260

Praxair Order Number: 15303079
Customer P. O. Number: 11036
Customer Reference Number:

Fill Date: 12/8/2010
Part Number: AI PR260ZE-AS
Lot Number: 917034266
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	12/13/2013		NIST Traceable
Cylinder Number:	CC109519		Analytical Uncertainty:
258.1	ppm	PROPANE	± 1 %
	Balance	AIR	

Certifcation Information: *Certification Date:* 12/13/2010 *Term:* 36 Months *Expiration Date:* 12/13/2013

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1

Do Not Use this Standard if Pressure is less than 150 PSIG

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: PROPANE

Requested Concentration:	260 ppm
Certified Concentration:	258.1 ppm
Instrument Used:	VARIAN 3300 INST 023 (PROPANE)
Analytical Method:	FID
Last Multipoint Calibration:	11/19/2010

Reference Standard Type:	GMIS
Ref. Std. Cylinder # :	CC138736
Ref. Std. Conc:	499.9 PPM
Ref. Std. Traceable to SRM # :	1669b
SRM Sample # :	81-H-14
SRM Cylinder # :	XF004157b

First Analysis Data: Date: 12/13/2010

Z:	0	R:	501.2	C:	258.6	Conc:	258.07
R:	501.4	Z:	0	C:	258.5	Conc:	257.97
Z:	0	C:	258.7	R:	500.2	Conc:	258.17

UOM: PPM Mean Test Assay: 258.07 PPM

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM Mean Test Assay: 0 PPM

Analyzed by: John Pribish 12/28/10

Certified by: Ashley Davila

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Telephone: (610) 317-1608
Facsimile: (610) 758-8382

DocNumber: 000009995

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC *
901 BRIDGE ST
FUQUAY VARINA NC 275260

Praxair Order Number: 16230993
Customer P. O. Number: 11207
Customer Reference Number:

Fill Date: 3/17/2011
Part Number: EV AIPR500ME-AS
Lot Number: 917117666
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**3/21/2014**	NIST Traceable
Cylinder Number:	**SA20675**	Analytical Uncertainty:
507.1 ppm	**PROPANE**	**± 1 %**
Balance	**AIR**	

Certifcation Information: *Certification Date:* 3/21/2011 *Term:* 36 Months *Expiration Date:* 3/21/2014

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1

Do Not Use this Standard if Pressure is less than 150 PSIG

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1 . **Component:** **PROPANE**

Requested Concentration:	500 ppm
Certified Concentration:	507.1 ppm
Instrument Used:	VARIAN 3300 INST 023 (PROPANE)
Analytical Method:	FID
Last Multipoint Calibration:	3/16/2011

Reference Standard Type:	GMIS
Ref. Std. Cylinder #:	CC103865
Ref. Std. Conc:	749.3 PPM
Ref. Std. Traceable to SRM #:	2646a
SRM Sample #:	103-C-23
SRM Cylinder #:	XF000820B

First Analysis Data: **Date:** 3/21/2011

Z:	0	R:	749.9	C:	508.2	Conc:	507.86	
R:	749.1	Z:	0	C:	507.2	Conc:	506.86	
Z:	0	C:	506.8	R:	750.4	Conc:	506.46	
UOM:	PPM					Mean Test Assay:	507.06 PPM	

Second Analysis Data: **Date:**

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	PPM					Mean Test Assay:	0 PPM

Analyzed by: 04/01/11
John Pribish

Certified by: MK 4/1/11
Michelle Kostik

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
919-544-3773 Fax: 919-544-3774
www.airgas.com

Part Number:	E02AI99E15A0333	Reference Number:	122-124344171-1
Cylinder Number:	CC148274	Cylinder Volume:	146 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22012	Valve Outlet:	590
Gas Code:	APPVD	Analysis Date:	Nov 05, 2012

Expiration Date: Nov 05, 2020

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
PROPANE	850.0 PPM	836.9 PPM	G1	+/- 1% NIST Traceable
Air	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	110609	CC343416	1000.3PPM PROPANE/NITROGEN	Mar 04, 2017

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Oct 11, 2012

Triad Data Available Upon Request

Notes:ANW PN: 781018

C.A

Approved for Release

AIR L DE Air Liquide America Specialty Gases LLC Scott™

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310 Phone: 800-331-4953 Fax: 215-766-7226

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Document # : 46628943-001
Item No.: MM301080-T-30AL
P.O. No.: 06081203

Cylinder Number: ALM018055
Cylinder Size: 30AL
Certification Date: 21Jun2012
Expiration Date: 21Jun2014
Lot Number: PLU0109851

Customer

ENTHALPY ANAYTICAL, INC.
06081203
800-1 CAPITOLA DRIVE
DURHAM, NC 27703
US

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
METHANOL	105.	PPM	5
SULFUR HEXAFLUORIDE	3.0	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: D Ashnoff
DAVID ASHNOFF

DATE: 6-21-2012

Airgas

Airgas Specialty Gases
1075 Cinclare Drive
Port Allen, LA 70767
225.388.0900
FAX: 225.388.0959
www.airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X03NI99C15A1FX5	Reference Number:	83-124390037-1A
Cylinder Number:	CC90659	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Port Allen - LA	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 30, 2013	Valve Outlet:	350S
Lot Number:	83-124390037-1A		

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration (Mole %)	Analytical Uncertainty
SULFUR HEXAFLUORIDE	3.000 PPM	3.127 PPM	+/- 5%
METHANOL	100.0 PPM	91.71 PPM	+/- 2%
NITROGEN	Balance		

Notes:

Bridget Demarese

Approved for Release

Airgas

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
(919)544-3773 Fax: (919)544-3774
www.airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X02NI99C15A1268	Reference Number:	122-124373993-1
Cylinder Number:	CC432538	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
Analysis Date:	May 08, 2013	Valve Outlet:	350
Lot Number:	122-124373993-1		

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration (Mole %)	Analytical Uncertainty
ETHYLENE	100.0 PPM	99.88 PPM	+/- 2%
NITROGEN	Balance		

Notes:

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APPENDIX F

Equipment Calibration Sheets

APEX INSTRUMENTS METHOD 5 POST-TEST CONSOLE CALIBRATION
USING CALIBRATED CRITICAL ORIFICES
3-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522
Console Serial Number	909033
DGM Model Number	RW 110
DGM Serial Number	961167

Calibration Conditions			
Date	**Time**	10/23/13	1030
Barometric Pressure		29.46	in Hg
Theoretical Critical Vacuum[1]		13.91	in Hg
Calibration Technician		TTB	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]**For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.**

[2]**The Critical Orifice Coefficient, K', must be entered in English units, (ft^3*°$R^{1/2}$)/(in.Hg*min).**

Calibration Data										
Run Time	**Metering Console**					**Critical Orifice**				
Elapsed	**DGM Orifice ΔH**	**Volume Initial**	**Volume Final**	**Outlet Temp Initial**	**Outlet Temp Final**	**Serial Number**	**Coefficient**	**Amb Temp Initial**	**Amb Temp Final**	**Actual Vacuum**
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})	FO55	K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	°F	°F	FO55	see above2	°F	°F	in Hg
16.0	1.20	637.000	646.659	62	63	FO55	0.4594	63	65	19.00
13.0	1.20	647.000	654.859	64	64	FO55	0.4594	65	65	19.00
13.0	1.20	655.100	662.965	64	65	FO55	0.4594	65	66	19.00

Results								
Standardized Data				**Dry Gas Meter**				
				Calibration Factor		**Flowrate**	**ΔH @**	
Dry Gas Meter		**Critical Orifice**		**Value**	**Variation**	**Std & Corr**	**0.75 SCFM**	**Variation**
($V_{m(std)}$)	($Q_{m(std)}$)	($Vcr_{(std)}$)	($Q_{cr(std)}$)	(Y)	(ΔY)	($Q_{m(std)(corr)}$)	(ΔH@)	(ΔΔH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
9.639	0.602	9.460	0.591	0.981	0.000	0.591	1.934	0.001
7.821	0.602	7.679	0.591	0.982	0.000	0.591	1.933	-0.001
7.819	0.601	7.675	0.590	0.982	0.000	0.590	1.933	-0.001
Pretest Gamma	0.9828	**% Deviation**	0.1	0.982	Y Average		1.933	ΔH@ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature _______ Todd Brozell Date _________ 10/23/2013

Air Control Techniques, P.C.

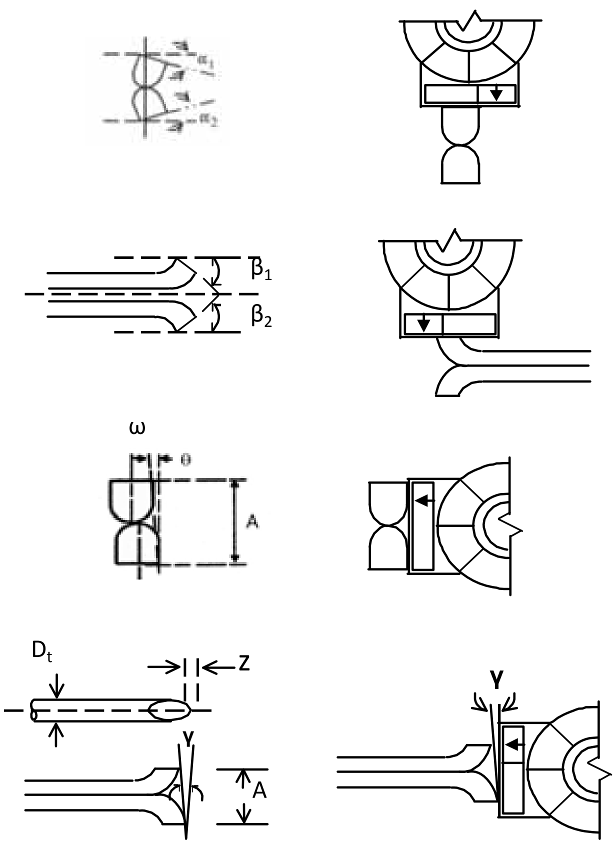
Type S Pitot Tube Inspection and Stack Thermocouple Calibration

GENERAL INFORMATION

Probe ID	4H	Personnel	DLS
Date	9/21/2011	Coefficient Value	0.84

PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no



α_1	1.4	$\leq \pm 10°$
α_2	0.4	$\leq \pm 10°$
β_1	1.9	$\leq \pm 5°$
β_2	1.2	$\leq \pm 5°$
γ	2.9	
θ	0.2	
$z = A \tan(\gamma)$	0.049	$\leq \pm 1/8$"
$\omega = A \tan(\theta)$	0.003	$\leq \pm 1/32$"
D_t	0.375	

(3/16" < D_t < 3/8" Recommended)

A	0.9375
P_A / P_B	1.29

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type: Hg Thermometer   Ref. ID: Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	43	45	2
Ambient	75	75	0
Hot water	193	194	1
		Maximum Temp. Difference, °F	2

Air Control Techniques, P.C.

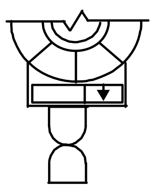
Type S Pitot Tube Inspection and Stack Thermocouple Calibration

GENERAL INFORMATION

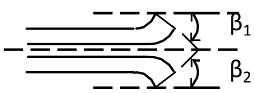
Probe ID	6H	Personnel	DLS
Date	9/21/2011	Coefficient Value	0.84

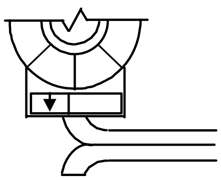
PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no

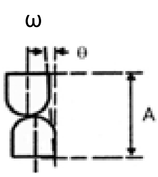


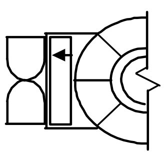
α_1	1.4	≤ ±10°
α_2	0.4	≤ ±10°





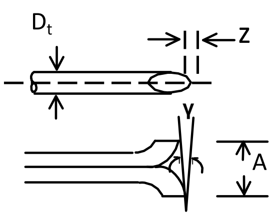
β_1	1.9	≤ ±5°
β_2	1.2	≤ ±5°

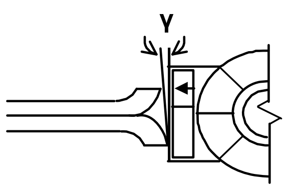




γ	2.9	
θ	0.2	
$z = A \tan(\gamma)$	0.049	≤ ±⅛"
$\omega = A \tan(\theta)$	0.003	≤ ±1/32"
D_t	0.375	

(3/16" < D_t < ⅜" Recommended)





A	0.9375
P_A P_B	1.29

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type: Hg Thermometer   Ref. ID: Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	43	45	2
Ambient	75	75	0
Hot water	193	192	1
		Maximum Temp. Difference, °F	2

Satellite images show link between wood pellet demand and increased hardwood forest harvesting.

SOUTHERN ENVIRONMENTAL LAW CENTER

A new satellite image analysis, conducted by researchers at Clark University, shows a strong link between wood pellet demand from Enviva's mills in North Carolina and Virginia and hardwood forest harvesting in the area. Specifically, the analysis concludes that the area's ecologically valuable hardwood forests have been harvested at a higher rate since Enviva's pellet mills started operating and consuming primarily hardwoods and that nearly half of this wood is going to Enviva's Ahoskie, Northampton, and Southampton mills, likely contributing to overall declines in carbon stocks in the area's hardwood forests. Additionally, this analysis found—in direct contradiction to repeated industry claims—that from 2001-2016 forest harvesting in Enviva's sourcing area exceeds growth, resulting in a net loss of forested area. Moreover, in the time period after Enviva's three mills started operating (2011-2016), the area's hardwood forests experienced a net loss. Taken together, this analysis (as well as years of photographic evidence) contradicts or otherwise highlights the misleading nature of many of the industry's main arguments. Instead of enhancing forest carbon and decreasing emissions, policies that subsidize large-scale burning of forest biomass undermine global efforts at addressing climate change. Now, at a time when urgent climate action is needed, governments must move away from forest biomass and invest instead in genuine climate solutions.

Introduction

We are in the midst of a global climate and biodiversity crisis, with scientists warning that we must take critical action now if we hope to minimize some of the worst impacts, such as extreme heat, drought, catastrophic flood, and unprecedented species extinction.[1] Protecting intact forests is of utmost importance to addressing this dual threat, and yet the biomass industry is using trees harvested from the Southeast's natural forests to manufacture wood pellets for use as fuel in power stations. These pellets are overwhelmingly shipped overseas to be burned for electricity as an alternative to coal. However, just like burning fossil fuels, burning forest biomass increases carbon dioxide pollution in the atmosphere, and this increase can persist for several decades or more—far outside of relevant timeframes for climate action.

Wood pellets are made mostly from living trees,[2] which are taken to pellet mills, ground into chips, dried, and formed into pellets. Enviva, the world's largest wood pellet manufacturer, currently operates nine pellet mills throughout the southeast—three of which source wood from forests primarily within the coastal plain area of northeast North Carolina ("NC") and southeast Virginia ("VA").

A new report by researchers at Clark University,[i] commissioned by the Southern Environmental Law Center ("SELC"), takes a closer look at the impacts of wood pellet harvesting on the forests around three of Enviva's wood pellet mills—which are located in Ahoskie, NC; Northampton, NC; and Southampton, VA (the "three-mill area"). Researchers analyzed satellite images of forests in the sourcing areas of these mills to evaluate forest loss (i.e., harvesting or clearing) over time and by forest type.

The report concludes that:

- **Hardwood forest harvesting increased in the three-mill area after Enviva's pellet mills started operating, returning to and then exceeding pre-2008-2010 recession harvest levels.**
- **From 2011-2016, hardwood forest harvests exceeded growth, resulting in a net loss of hardwood forest cover in the area around Enviva's pellet mills.**
- **From 2016-2018, Enviva's three mills consumed nearly half of all wood from hardwood forest clearings in the three-mill sourcing area.**
- **Sourcing for Enviva's mills is likely contributing to overall declines in carbon stocks in hardwood forests in the three-mill area.**

When discussing impacts to forests, the industry typically prefers to focus on national or regional trends in forest growth, rather than localized impacts in the sourcing area associated with specific pellet mills. This analysis exposes how such an approach skews conclusions about the industry's impacts on forests and therefore masks its footprint. While Enviva tries to downplay the impact of the pellet industry by stating that wood pellets account for less than 3% of total wood harvesting in the southeast,[3] this analysis shows that when evaluating the actual forests being harvested for biomass, the impact is much larger: Enviva consumed close to half of all wood from hardwood harvesting in the sourcing area around its three pellet mills. Moreover, Enviva often proclaims the climate benefits of its practices by relying in part on the fact that forest growth in the southeast exceeds harvests.[4] Once again this analysis shows this to be misleading—in fact, harvests exceed growth in the actual sourcing area of Enviva's pellet mills.

At a time when we must urgently act to stabilize our climate and protect nature, we must invest in genuinely low-carbon energy sources and protect our natural forests as vital carbon sinks. The results of this analysis add to a large body of research showing that the forest biomass industry is not a climate solution and threatens both goals by driving additional harvesting of natural forests. This further calls into question policies in the European Union and United Kingdom that continue to support and heavily subsidize burning of forest biomass in power stations. It should also give pause to any country, including the United States, that is considering including largescale burning of forest biomass in its energy plans.

Background

Over the last decade, wood pellet manufacturing in the southeast U.S. has exploded—increasing fivefold from 2012 levels. Most of these pellets are being produced for export overseas, primarily to Europe, where they are burned for energy production under the guise of being clean and climate beneficial. In reality, an established body of scientific research shows that burning forest biomass for electricity increases carbon pollution in the atmosphere for decades or more, exacerbating climate change.[5] In particular, the use of whole hardwood trees taken from clearcut forests has been shown to be the most carbon-intensive form of biomass, increasing

[i] The full report is available at https://selc.link/3Bm7bKf.

carbon pollution for nearly a century.[6] Biomass sourced in this way routinely enters energy supply chains in the U.K. and other top biomass-importing countries in Europe.[7]

Despite the detrimental effects of the industry on the climate, the woody biomass industry is supported by billions of dollars annually in E.U. and U.K. subsidies that are aimed at addressing climate change. Biomass energy producers are able to receive these subsidies if they can demonstrate on paper that the wood pellets they are burning meet specified "sustainability criteria." However, these criteria do not address lifecycle carbon emissions and most importantly fail to account for the CO_2 emissions from burning the pellets.[8] As a result, the industry receives massive subsidies despite increasing carbon in the atmosphere.[9]

Enviva Pellets

Enviva, a primary supplier to Drax's U.K. power plant,[10] has been operating pellet mills in the Southeast U.S. for over ten years. Its flagship facility in Ahoskie, NC began manufacturing wood pellets in 2011, and was followed shortly thereafter by Enviva's Northampton, NC (early 2013) and Southampton, VA (late 2013) mills. As originally constructed, these three pellet mills had a combined production capacity of 1.4 million metric tons per year, but now have an annual production capacity of over 1.9 million metric tons after receiving permits authorizing expansions at two mills. In 2016, Enviva started operating its Sampson, NC mill and then a mill in Hamlet, NC in 2019.

Since 2013, multiple independent, on-the-ground investigations have uncovered destructive sourcing practices used to supply wood to Enviva's NC and VA mills.[11] These investigations found that Enviva's mills routinely source whole trees and other large-diameter wood (rather than claimed "residues" or "wastes"), and that many of these trees are taken from clearcuts of ecologically valuable and highly biodiverse natural upland and lowland hardwood forests, including bottomland hardwood and other wetland forests. These forests, located in the North American Coastal Plain global biodiversity hotspot, are some of North America's most valuable ecosystems; they provide key habitat to many at-risk species, including migratory songbirds, purify the air and improve water quality, and store large amounts of carbon.

Despite this and other evidence, Enviva continues to argue that its practices are not harmful to forests or the climate. The company even suggests that demand for wood pellets is actually benefiting forests by providing a market to keep and grow forests. Specifically, Enviva has repeatedly argued that it is not "driving harvests"[12] and that "forest inventories have increased" since Enviva began operating.[13] However, evidence on the ground suggests that these claims may be untrue in certain sourcing areas. To date, however, there has not been a large-scale quantitative measurement of the impacts of wood pellet demand on the pattern and rate of forest clearings by forest type and whether forest harvesting has increased in pellet mill sourcing areas. Researchers at Clark University undertook to answer these questions through an analysis of satellite images, the results of which were compiled into a final report: *Forest Clearing Rates in the Sourcing Region for Enviva Pellet Mills in Virginia and North Carolina, U.S.A.*

Satellite Image Analysis

Methodology: The report utilized best-available satellite data to map the harvesting of forests in the sourcing region for Enviva's three pellet mills in northeastern NC and southeastern VA. First, Clark University researchers analyzed harvesting over key time periods to detect whether harvesting has increased concurrent with mill operations.[ii] Given that these three mills heavily rely on hardwood tree species,[iii] this analysis looked at harvesting rates by forest types to see if impacts of the pellet mills' operations are more strongly associated with certain types of forests in the area. To test the relationship between its findings and pellet mill *(continue on page 5)*

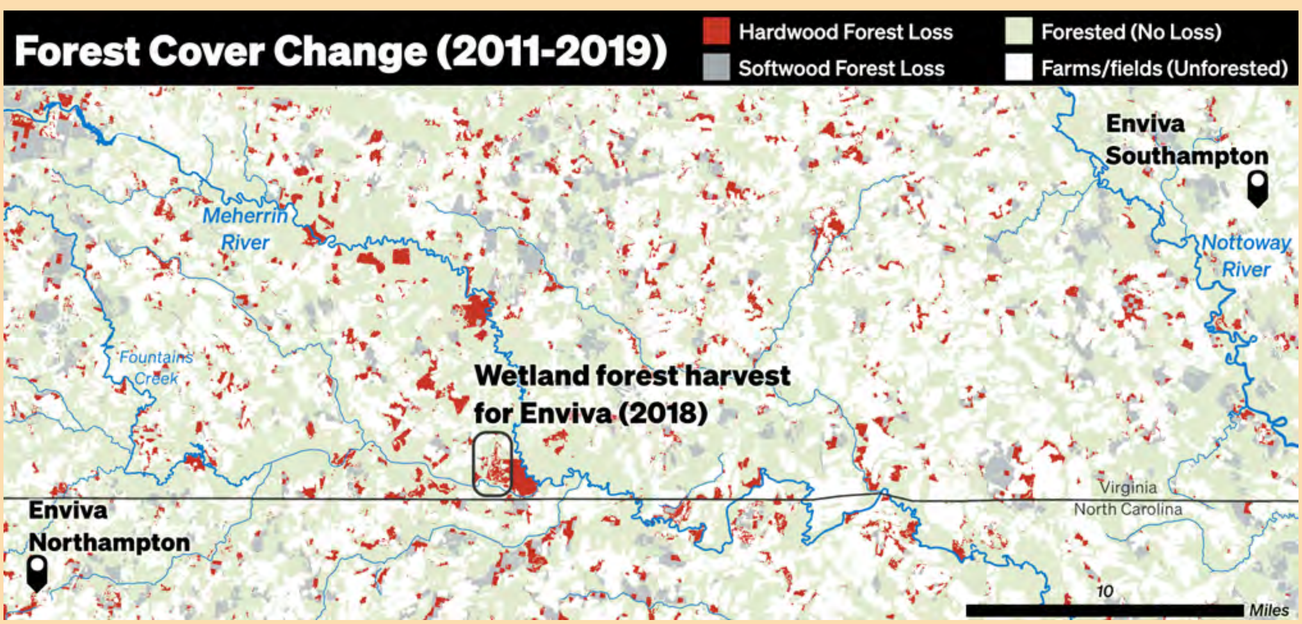
[ii] Clark University researchers used satellite data from Global Forest Watch and the National Land Cover Dataset. The analysis excluded forest disturbance and forest clearing events that are not likely to be related to market-driven biomass supply for wood products (e.g., developed areas, wildfires, and protected/non-harvestable land). For more information about the methodology, please see the full report.

[iii] The most recent Enviva-reported data shows the following hardwood percentages at these mills: Southampton (91%), Northampton (72%), and Ahoskie (63%). This information comes from Enviva's Supply Base Reports submitted to the Sustainable Biomass Program in 2020.

Satellite Images Confirm Investigation into Enviva's Use of Valuable Wetland Forests

In 2018, the U.K.'s Channel 4 "Dispatches" program conducted an independent investigation into Enviva's sourcing practices in NC and VA. This investigation identified an active clearcut of a mature wetland forest located less than half a mile from the Meherrin River in VA. Logging trucks carrying whole hardwood trees and other large-diameter wood were traced from this clearcut and documented entering Enviva's Southampton, VA pellet mill.*

Data from the satellite analysis confirmed that prior to the 2018 harvest this area was a forested wetland, comprised primarily of oak/gum/cypress tree species. Moreover, as shown below, this harvest site is located in an area along the NC and VA border that has experienced significant loss of hardwood forest cover from 2011-2019, according to the satellite image analysis.



* Anthony Barnett, *Dispatches: The True Cost of Green Energy*, Channel 4 (aired Apr. 16, 2018), https://ecostorm.tv/2018/04/16/the-real-cost-of-green-energy-dispatches/; *see also* note 7.

demand, the researchers utilized a time-series analysis—looking at both a pre-pellet mill and pre-recession time period (2004-2008) and a post-pellet mill period (2013-2018).[iv] Second, as part of a separate analysis, the researchers analyzed annual harvesting and growth rates from 2001 to 2016 in order to assess the potential net forest loss in the area over time. Finally, as part of both of these analyses, the researchers also looked at forest cover data around Enviva's Sampson, NC mill (the "Sampson area"), which commenced operations in the southeastern portion of the state in 2016.

Hardwood Harvesting & Pellet Demand: The analysis found an increase in forest harvesting in both the three-mill sourcing area and the Sampson area after Enviva's respective pellet mills started operating, showing a clear connection between demand for wood for the pellet mills and forest harvesting.

The rate of harvesting[v] of the area's hardwood (i.e., deciduous) forests were the most telling results of this analysis. Enviva's own self reporting demonstrates that its Ahoskie, Northampton, and Southampton mills rely predominately on hardwoods, and the satellite imagery analysis confirmed that the rate of hardwood forest harvesting increased in the area around these mills after Enviva's pellet mills started operating.

As shown in the table below, although hardwood harvesting in the area was relatively high around 2004-2008, harvesting dropped during the recession and subsequent closure of the Franklin, VA hardwood pulp mill. This analysis shows that with Enviva's demand for wood, not only did the hardwood forest harvesting rate in the area return to pre-recession levels but it ultimately exceeded those levels by 2016 and through 2018. The report's authors thus concluded that, "[I]t is very likely that the initiation of the pellet mill operations contributed to elevated rates of deciduous forest clearing in the [three]-mill region beginning in the 2010s, and in the [Sampson] region beginning in 2016."[14]

Annual Hardwood Forest Harvesting Rates Over Time

	Forest Area in 2000	2004-2008 (Pre-Recession & Pre-Pellet)		2009-2012 (Recession)		2013-2018 (Post-Pellet)	
	[ac]	[ac/yr]	[%/yr]	[ac/yr]	[%/yr]	[ac/yr]	[%/yr]
Three-Mill	2,624,986	40,587	1.5%	30,075	1.1%	42,994	1.6%
Sampson	1,324,895	17,381	1.3%	16,316	1.2%	22,185	1.7%

Forest area in 2000 and the average annual rate of gross hardwood forest harvesting in select time periods for the three-mill and Sampson regions.

This same pattern held true in the Sampson sourcing area, reflecting the impacts on hardwood forests from Enviva's Sampson mill coming online in 2016. From 2004 to 2015, hardwood harvesting in this region ranged from 1.2% to 1.5% per year, but harvesting increased to 1.9% per year from 2016 to 2018 after Sampson started operating.

These findings, and the direct relationship between the increased harvesting levels and demand from Enviva's pellet mills, are further supported by the U.S. Forest Service's Timber Products Output ("TPO") data.[15] As shown in Figure 1, harvesting for bioenergy/fuelwood in the three-mill area increased from just over 500,000 green tons in 2011 to 4.8 million green tons in 2019.[16] Similarly, harvesting for bioenergy/fuelwood in the Sampson region increased from 155,000 green tons in 2011 to 1.8 million green tons in 2019, with a marked increase after the Sampson mill started operating.[vi]

[iv] Although this first analysis was focused on forest loss in the three-mill area, as noted, researchers at Clark University wanted to be able to also assess the impact of the Sampson mill's more recent activity. To do so, they separated the post-pellet time period into two ranges, with 2013-2015 representing the time immediately after the three mills started operating and 2016-2018 representing the time after all of the mills, including Sampson, were online.
[v] The forest harvesting rate is calculated by dividing the area of forest cleared in a given year by the area of forest in 2000, the baseline for the analysis.
[vi] Review of the TPO data was separate from the analysis conducted by Clark University researchers.

U.S. Forest Service Data Reveals Enviva's Reliance on Sawtimber Trees—Not Low Value or Waste Materials

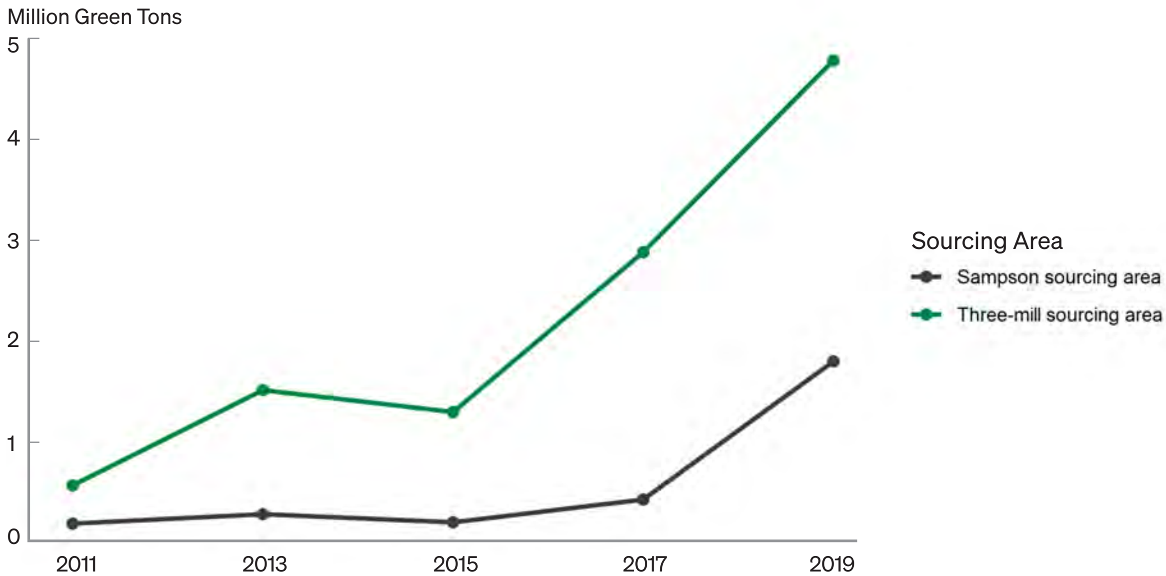
As part of the U.S. Forest Service's Forest Inventory and Analysis ("FIA") program, the Service compiles the TPO dataset. SELC's geospatial analysts reviewed the TPO data from 2001 to 2019 for the counties in NC and VA that fall within the three-mill and Sampson sourcing areas identified by researchers at Clark University. To assess the impact of Enviva's pellet mills, this analysis focused on the TPO removal or harvest category called "bioenergy/fuelwood," which includes all harvesting to manufacture wood pellets as well as other fuelwood uses such as industrial boiler fuels at mills. Based on Enviva's self-reported data regarding its feedstock use at the relevant pellet mills, wood pellet production appears to be the single largest use of wood harvested as "bioenergy/fuelwood."

Review of this TPO data reinforces the findings of the satellite image analysis and further underscores what on-the-ground investigations have shown for years—Enviva's pellet mills in northeastern NC and southeastern VA rely heavily on larger-diameter hardwood trees—and directly contradicts Enviva's repeated claims that its pellet mills use wastes, residues, and low-value roundwood.

FIGURE 1

Forest Harvesting for Bioenergy/Fuelwood

Wood pellet sourcing areas, 2011-2019



Moreover, a closer look at hardwood harvesting for bioenergy/fuelwood in the three-mill sourcing area shows that the overwhelming majority (approx. 84%) of hardwood material comes from larger diameter whole trees that could otherwise be used for sawtimber.* Given the share of this material going to Enviva's Ahoskie, Northampton, and Southampton mills, this data slams the door firmly shut on Enviva's claims that its pellet mills rely predominately on wastes, residues, and low-value roundwood that has no other use.

The U.S. Forest Service categorizes the hardwood material harvested as either "non-growing stock," which includes tops, limbs, stumps, and crooked or rotten "cull" trees (what Enviva refers to as "low value") or "growing stock," which is the main bole of the tree. The growing stock is then divided into two categories depending on the size of the tree, with the larger diameter trees categorized as "sawtimber growing stock" and the smaller diameter trees categorized as "poletimber growing stock." As shown in Figure 2, only a small fraction

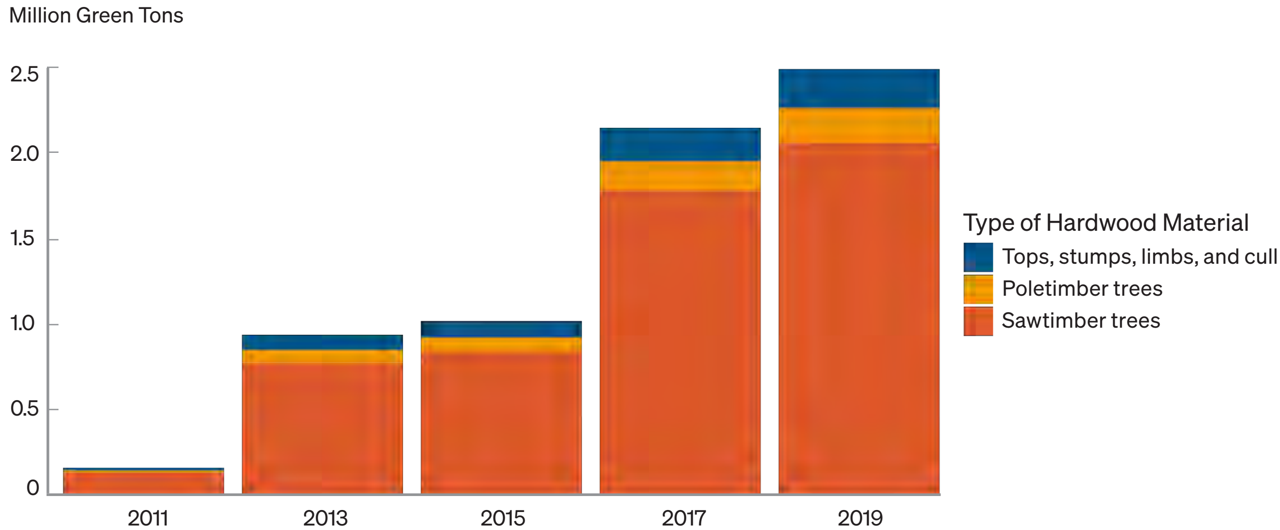
* The Service defines sawtimber trees as live trees with a diameter outside bark (d.o.b.) of at least 11 inches for hardwood and 9 inches diameter at breast height (d.b.h.) for softwood. These are larger than poletimber trees. U.S. Forest Service, *Forest Inventory & Analysis Glossary*, https://www.nrs.fs.fed.us/fia/data-tools/state-reports/glossary/.

of the hardwood material harvested for bioenergy/fuelwood comes from the non-growing stock category. Instead, this material is almost exclusively from trees classified as sawtimber.

FIGURE 2

Type of Hardwood Material Harvested for Bioenergy/Fuelwood

Three-mill sourcing area, 2011-2019



Net Forest Loss

The first part of the satellite analysis, discussed above, looked at the gross rates of forest clearings to assess whether and to what extent demand for wood for Enviva's pellet mills has impacted forest harvesting rates in the region. Separately, the Clark University researchers also assessed the average net value of forested area within the three-mill region through 2016.[vii] This distinct analysis compared annual rates of forest harvesting with gains to determine whether the area's forests have experienced a net loss over time.

The analysis found that from 2001-2016, the amount of forests being harvested exceeded any new growth in the three-mill region, resulting in a net loss of forested area. Specifically, the forested area decreased annually by 4,467 acres during this time period (for a loss of 1.18%), with losses concentrated in the area's deciduous, mixed, and woody wetland forests. Similarly, a net loss of forested area was also shown in the Sampson sourcing area over this same time period. Moreover, in the years following Enviva's operation of the Ahoskie, Northampton, and Southampton mills (from 2011-2016), hardwood forests in the area around the mills also experienced a net loss. In that six-year period, the area's deciduous, mixed, and woody wetland forests decreased by almost 28,000 acres (4,638 acres/year).[viii] Loss to the area's natural hardwood forests is particularly concerning—biodiversity at the landscape scale, in form of diverse forest types, provides important ecosystem services, including habitat for a rich variety of wildlife, resistance against pests and climate stressors, water and nutrient cycling, and beyond.

Based on these findings, and in direct contrast to Enviva's repeated assertions, the report's authors conclude that, "pellet mill operations do not appear to have induced an increase in forestland area within the [three-mill] region, and in fact deciduous forestland saw a sizeable and steady decline."[17]

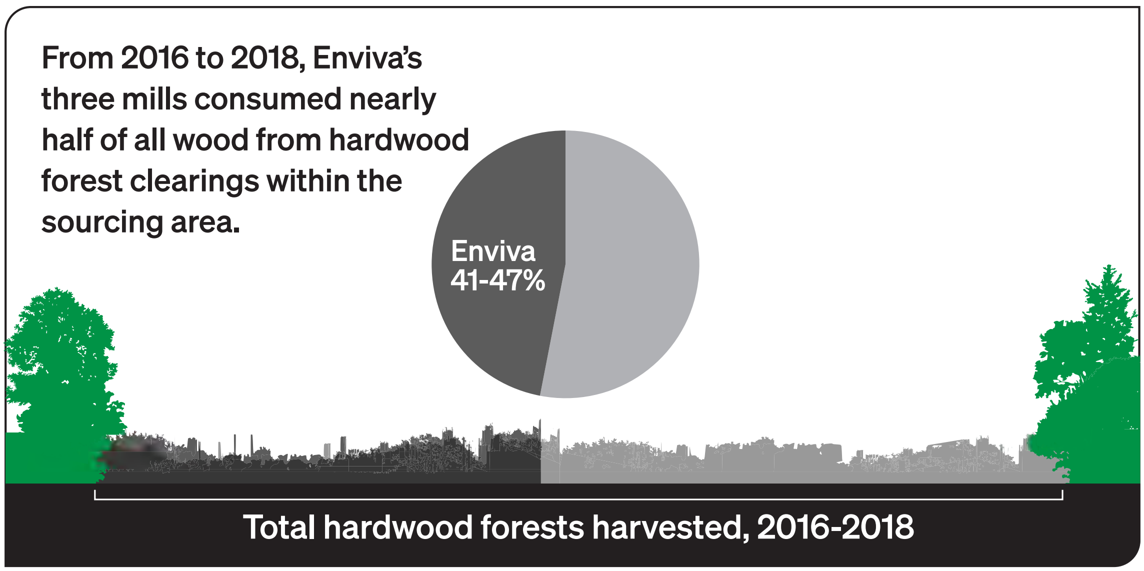
[vii] Satellite images related to forest gains were only available through 2016.

[viii] A small net gain in the area's softwood forests during this time resulted in a minimal overall increase in forested area in the area from 2011-2016 (approx. 0.14%), although as noted above the area's hardwood forests experienced a net loss.

Enviva's Consumption

In addition to analyzing the amount of hardwood forest harvesting occurring in the three-mill region, the report was also able to conclude that from 2016 to 2018 Enviva's Ahoskie, Northampton, and Southampton mills consumed between 41% and 47% of all woody materials from hardwood forest harvesting within the three-mill area.

This conclusion is based on Enviva's own self-reported data regarding the sourcing practices of these three mills, including the amount of materials consumed by these mills during the relevant time period (between 2.33 and 2.66 million green tonnes per year), the percentage of this material that came directly from the forests (87%), and the percentage of this material that came from hardwood species (78%).[18] Using all of this data, the report's authors estimate that approximately 68% of Enviva's feedstock would have come to the mills directly from recent hardwood harvests in the area. Comparing that to the results of the satellite analysis, they conclude that, "pellet mill operations consume a correspondingly large fraction of the total deciduous forest clearing within the [three-mill] region."[19]



Forest Carbon Stocks

Finally, although a detailed assessment of forest carbon stocks was not a part of this analysis, with the information obtained during the study regarding forest harvesting rates, declining hardwood forest cover, and the percentage of hardwood harvesting going to Enviva, the report's authors were able to conclude that, "it is likely that Enviva sourcing is contributing to overall declining carbon stocks in deciduous forests in the [three]-mill area."[20] This conclusion is further supported by recent research by the Woodwell Climate Research Center and Chatham House, which countered industry claims that biomass demand incentivizes landowners to keep or even expand their forests, stating:

"These claims are based on economic theory and are not consistent with the empirical evidence, which suggests the opposite. Demand for wood for energy leads to a reduction in the forest carbon stored because the total area and volume harvested increases to meet this demand."[21]

Enviva itself has acknowledged that in situations such as these, the use of wood pellet biomass is not beneficial to the climate: "If growth and sequestration are not keeping up with harvest, then we agree that the emissions from biomass combustion should not be treated as climate friendly."[22]

Conclusion

While Enviva and others in the industry like to point out that wood pellet harvesting only accounts for a small percentage of overall harvesting in the Southeast, such a region-wide approach masks the impacts this industry is having on our natural forests. When researchers zoomed in to examine the forests directly harvested for these pellet mills, as in the satellite image analysis, the results show a strong link between the operation of Enviva's Northampton, Ahoskie, and Southampton mills and increased rates of hardwood forest harvesting in the area. The analysis also found that "a correspondingly large fraction" (41-47%) of all hardwood material being cleared in the area was being consumed by Enviva for use in pellet manufacturing and that over time the area's forests, including its ecologically valuable hardwood forests, have experienced a net loss in forest cover.

Urgent climate action is needed now. This must include a drastic reduction in emissions, as well as significant increases in forest carbon sinks. Indeed, all the pathways identified by the IPCC to address the climate crisis in its 2018 special report on keeping global warming below 1.5°C involve both. The forest biomass industry sets back efforts on both sides of this equation, increasing carbon dioxide in the atmosphere as pellets are burned in power stations to produce electricity and contributing to overall declining carbon stocks in the forests supplying trees for the production of wood pellets. To address the climate emergency, subsidies for the large-scale use of forest-biomass for energy must be ended and countries like the U.S. must avoid putting in place similar policies or incentives for this false solution, favoring instead genuine solutions like wind, solar, and battery storage.

Endnotes

[1] Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2021: The Physical Science Basis Summary for Policymakers* (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf; IPCC & Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), *Biodiversity and Climate Change Workshop Report* (2021), https://ipbes.net/sites/default/files/2021-06/20210609_workshop_report_embargo_3pm_CEST_10_june_0.pdf.

[2] *See* Enviva, *Track & Trace*, https://www.envivabiomass.com/sustainability/responsible-sourcing/track-trace/ (last visited Feb. 18, 2022) (reporting approximately 75% of material coming directly from forests); Drax, *Annual Report and Accounts 2020* at 54 (2021), https://www.drax.com/wp-content/uploads/2021/03/Drax_AR2020.pdf (reporting over 60% US-derived pellets from whole trees).

[3] Enviva Partners, LP, *Business Overview Presentation* at Slide 19 (June 14, 2021), https://s28.q4cdn.com/898203682/files/doc_presentation/2021/06/EVA-Investor-Presentation-June-14-2021-FINAL.pdf.

[4] *See, e.g.*, Holly Taylor, *Enviva Official Addresses Concerns from CNN Article*, Roanoke-Chowan News Herald (Aug. 17, 2021), https://www.roanoke-chowannewsherald.com/2021/08/17/enviva-official-addresses-concerns-from-cnn-article/ ("During the last 20 years, even after accounting for all the forest uses by the forest products industry, forest growth has exceeded removals by nearly 50 percent.").

[5] *See, e.g.*, Thomas Buchholz et al., *When Biomass Electricity Demand Prompts Thinnings in Southern US Pine Plantations: A Forest Sector Greenhouse Gas Emissions Case Study*, Front. For. Glob. Change (2021), https://doi.org/10.3389/ffgc.2021.642569; John D. Sterman et al., *Does Replacing Coal with Wood Lower CO2 Emissions? Dynamic Lifecycle Analysis of Wood Bioenergy*, 13 Envtl. Res. Letters (2018), http://iopscience.iop.org/article/10.1088/1748-9326/aaa512/meta; Duncan Brack, *Woody Biomass for Power and Heat: Impacts on the Global Climate* (2017), https://www.chathamhouse.org/publication/woody-biomass-power-and-heat-impacts-global-climate.

[6] Spatial Informatics Group, *Carbon Emission Estimates for Drax Biomass Powerplants in the UK Sourcing from Enviva Pellet Mills in U.S. Southeast Hardwoods using the BEAC Model* (2015), https://www.southernenvironment.org/wp-content/uploads/legacy/news-feed/SIG_BEAC_calculations_SE_hardwoods_2015-05-27.pdf?cachebuster:11.

[7] *See, e.g.*, Alex Thomson, *Fears Biomass Green Revolution Could be Fuelling Habitat Loss*, Channel 4 (July 5, 2021), https://www.channel4.com/news/fears-biomass-green-revolution-could-be-fuelling-habitat-loss; Dogwood Alliance, NRDC, Southern Environmental Law Center, *Global Markets for Biomass Energy are Devasting U.S Forests* (2019), https://www.southernenvironment.org/wp-content/uploads/2021/11/2019-Updated-Investigation-Booklet_Wood-Pellets-in-SE-US.pdf (hereinafter, "Biomass Investigation Booklet").

[8] Duncan Brack, Richard Birdsey, & Wayne Walker, *Greenhouse Gas Emissions from Burning US-Sourced Woody Biomass in the EU and UK* (Oct. 2021), https://www.chathamhouse.org/2021/10/greenhouse-gas-emissions-burning-us-sourced-woody-biomass-eu-and-uk.

[9] *Id.*

[10] *See* Enviva Business Overview, *supra* note 3, at Slide 23.

[11] *See, e.g.,* Biomass Investigation Booklet, *supra* note 7.

[12] *See, e.g.,* Johanna F. Still, *Environmentalists Condemn Wilmington Wood Pellet Exporter Whose Mission is to Reduce CO2 Emissions*, Port City Daily (Oct. 20, 2021), https://portcitydaily.com/deep-dives/2021/10/20/environmentalists-condemn-wilmington-wood-pellet-exporter-whose-mission-is-to-reduce-co2-emissions/ (Enviva's Director of Sustainability: "We don't drive the harvest."); Enviva, *White Paper – Seeing the Forest: Sustainable Wood Bioenergy in the Southeast United States* at 21 (May 2020), https://www.envivabiomass.com/wp-content/uploads/white-paper-seeing-the-forest.pdf.

[13] Enviva, *Sustainable Forestry*, https://www.envivabiomass.com/sustainability/forests/ (last visited Feb. 18, 2022) ("In areas where we operate, we can show that forest inventory has increased after we arrive.").

[14] Christopher A. Williams, *Forest Clearing Rates in the Sourcing Region for Enviva Pellet Mills in Virginia and North Carolina, U.S.A.* at 10 (Dec. 2021), https://selc.link/3Bm7bKf.

[15] U.S. Forest Service, *Timber Products Output* (2001-2019), data downloaded from https://usfs-public.app.box.com/s/y4ziirdb9v7zardus0cuajh7ziy9b2id.

[16] *See* N.C. Dep't of Envtl. Quality, *North Carolina GHG Inventory* at 72 (2022), https://deq.nc.gov/media/27070/download?attachment (noting that from 2011 to 2018, "although total roundwood production has increased by about a third during during this period, roundwood production for bioenergy/fuelwood has increased by more than a factor of five").

[17] Williams, *supra* note 14, at 25.

[18] Sustainable Biomass Program, *Supply Base Report: Enviva Pellets Southampton, LLC, Fourth Surveillance Audit* (2019), available at https://sbp-cert.org/certificate-holders/#4435; Sustainable Biomass Program, *Supply Base Report: Enviva Pellets Northampton, LLC, Fourth Surveillance Audit* (2019), available at https://sbp-cert.org/certificate-holders/#4310; Sustainable Biomass Program, *Supply Base Report: Enviva Pellets Ahoskie, LLC, Fourth Surveillance Audit* (2019), available at https://sbp-cert.org/certificate-holders/#4347.

[19] Williams, *supra* note 14, at 25.

[20] *Id.*

[21] Brack et al., *supra* note 8, at 16.

[22] Enviva White Paper, *supra* note 12, at 15.

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AIR EMISSION TEST REPORT

Amory, Mississippi Wood Pellet Production Facility
Enviva Pellets Amory, LLC

Submitted to

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Submitted by

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Air
Control Techniques, P.C.

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Definitions

Total Hydrocarbons	All organic compounds containing hydrogen and carbon that are detected by a flame ionization detector operated in accordance with U.S. EPA Method 25A.
Volatile Organic Compounds	All organic compounds that are emitted to the atmosphere in a gaseous or vapor form that can participate in photochemical reactions to produce ozone. All volatile organic compounds are considered VOCs unless specifically exempted in 40 CFR 51.100(s). Relevant excluded compounds include methane, ethane, and acetone.
VOC Emissions	Mass emissions of VOC measured on a pounds of carbon basis.

Acronyms

DHM	Dry Hammermill
EPA	U.S. Environmental Protection Agency
FID	Flame Ionization Detector
FTIR	Fourier Transform Infrared Spectrometer
GHM	Green Hammermill
HAP	Hazardous Air Pollutant
MC	Moisture Content
MDEQ	Mississippi Department of Environmental Quality
ODT	Oven Dried Tons
THC	Total Hydrocarbons
VOC	Volatile Organic Compounds
C1	Carbon

Units of Measure

ppm	Parts per million (wet basis)
ppmvd	Parts per million (dry basis)
ppm C_3	Parts per million as propane
ppm C_1	Parts per million as carbon
mg	Milligram
kg	Kilogram
µg	Micrograms

Permit Designations/Titles

Green Hammermill	AA-001, Wet Wood Hammermill
Dryer	AA-002, Wood-Fired Rotary Dryer
Dry Hammermill	AA-003, Dry Wood Hammermill
Aspiration System	AA-004, Pellet Cooler Process and AA-005 Pellet Mill Aspiration System

Air Emission Test Report
Amory, Mississippi Wood Pellet Production Facility

1. SUMMARY

Enviva Pellets, Amory, LLC (Enviva) has sponsored air emission testing to satisfy the requirements of Agreed Order 6267-13 dated June 16, 2013 (the "Order"). These test results are being submitted to the Mississippi Department of Environmental Quality (MDEQ) by October 31, 2013 in accordance with the Order.

The scope of the testing program included volatile organic compounds (VOCs) and six organic hazardous air pollutants (HAPs). Annual emissions of each analyte have been calculated and compared to applicable permit limits. The results of the testing program are summarized in Table 1-1 based on the present maximum permitted production limit of 99,000 output tons per year in the permit.

Table 1-1. Total Emissions at Plant Permit Limit 0f 99,000 Tons/Year (dryer outlet) for the Dryer and Green Hammermill and 8,760 hours for the Dry Hammermill and Aspirator

Analyte	Dryer	Dry Hammermill	Green Hammermill	Aspirator	Total
Total VOC	29.9	41.72	12.71	100.89	185.3
Methanol	2.50	0.34	1.37	0.73	4.94
Acetaldehyde	0.00	0.00	0.00	0.00	0.00
Acrolein	0.00	0.00	0.00	0.00	0.00
Formaldehyde	0.64	0.00	0.00	0.00	0.64
Phenol	0.00	0.00	0.00	0.00	0.00
Propionaldehyde	0.00	0.00	0.00	0.00	0.00
Total HAPS	3.14	0.34	1.37	0.73	5.58

At the current maximum permitted production limit, VOC emissions are above the facility wide limit of 99.0 tons per year but are below the PSD threshold of 250 tons per year. The total HAP emissions are under 25 tons per year, and each of the HAPs has an emission rate less than 10 tons per year.

The air emission tests were conducted by Air Control Techniques, P.C. using EPA Reference Methods 1, 2, 3, 4, 25A, and 320 in accordance with the test protocol submitted to MDEQ on July 31, 2013[1]. The emission tests were conducted from Monday, October 14 through Wednesday, October 16, 2013. This report summarizes the emissions test data, quality assurance data, test method procedures, sampling equipment calibrations, process operating conditions, and test program participants.

2. EMISSION TEST PROGRAM DESCRIPTION

2.1 Amory, Mississippi Plant Description

Enviva operates a plant producing wood pellets. The plant consists of a wood receiving yard, log debarkers and chippers, a rotary dryer, a hammermill, and an aspiration system serving the pellet presses and coolers. The plant processes wood composed of a range of hardwoods and softwoods.

2.2 Purpose and Scope of the Emission Test Program

Based on a voluntary self-evaluation, Enviva reported to the Mississippi Department of Environmental Quality (MDEQ) that it may have underreported emissions of volatile organic compounds (VOCs) in its permit application. Enviva's concern was based on a set of engineering-oriented tests [2] conducted in November 2012 that indicated that VOC emissions from a hammermill source and a press cooler aspiration vent may be higher than previously known. While emissions from specific wood pellet plants are highly dependent on the specific equipment employed and, to a lesser degree, the hardwood/softwood mix of raw material, Enviva's preliminary findings in the November 2012 engineering test are generally consistent with other recent findings in the Wood Pellet Industry, specifically the engineering-oriented tests[3] at a Georgia Biomass, Inc. plant in Waycross, Georgia and Green Circle Bio Energy in Cottondale, Florida.

This air emission testing program is intended to address Enviva's concern and fulfills the requirements of the Order. Specifically, Enviva agreed to generate VOC emissions data for the following sources.

- Dryer stack
- Dry Hammermill stack
- Green Hammermill stack
- Pellet Mill and Cooler Aspiration System

2.3 Test Participants

The Enviva project manager for this project was Mr. Michael Doniger, Director of Plant Operations. He was assisted by Mr. Joe Harrell, Environmental Manager, Mr. Mike Jones, and Mr. John Burns, Amory Plant Manager.

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Mr. John Burns, Plant Manager
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Legal counsel for Enviva is Mr. Alan McConnell. Mr. McConnell participated in this study to ensure that it addressed the requirements of the Order.

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Enviva retained Air Control Techniques, P.C. to conduct the air emission testing program at the Amory plant. The Air Control Techniques, P.C. project manager was John Richards, Ph.D., P.E, QSTI. He was assisted by David Goshaw, P.E., QSTI, Todd Brozell, P.E., QSTI, and Jonas Gilbert. Tom Holder, QSTI provided quality assurance services for the test program. Contact information for Air Control Techniques, P.C. includes the following.

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Jonas Gilbert (jonas.gilbert@aircontroltechniques.com)
Tom Holder (tom.holder@aircontroltechniques.com)

Enthalpy, Inc. provided Method 320 consulting support. The Enthalpy project manager for this project was Mr. Bryan Tyler. He was assisted by Dr. Grant Plummer, Mr. Clint Thrasher, and Mr. Steve Eckert, President.

Enthalpy Analytical, Inc.
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3. TEST MATRIX AND TEST RESULTS

3.1 Test Matrix

Table 3-1 summarizes the test program analytes, sampling methods, and analytical methods used for the four sources listed in Section 1.1.

Table 3-1. Test Matrix, Air Emission Testing
Enviva Pellets, Amory, Mississippi

Analyte	Test Method	Number of Runs	Run Length	Analytical Method
Acetaldehyde, Acrolein, Formaldehyde, Methanol, Phenol, Propionaldehyde	EPA Method 320	3	60 min	FTIR
Gas Flow	EPA Method 2	3	60 min	Manometer
Gas Molecular Weight, Oxygen, Carbon Dioxide	EPA Method 3	3	60 min	Fyrite® Analyzer
Gas Moisture	EPA Method 4	3	60 min	Gravimetric
Total Hydrocarbons (THC)	EPA Method 25A	3	60 min	FID

The tests were conducted on Monday, October 14 through Wednesday October 16, 2013.

3.2 Test Results

The VOC and organic HAP test results and calculated annual emission rates are summarized in Tables 3-2 through 3-5. VOC and HAP emissions were measured simultaneously at each of the four emission units tested.

The VOC emissions have been calculated based on the total hydrocarbon data provided by Method 25A. The Method 25A data have been converted from a wet to a dry basis to account for the moisture in the stack gas stream. Total hydrocarbon concentrations (THC) have been used as a surrogate for VOCs.

The VOC emission calculations do not include any corrections for methane, ethane, or acetone despite the fact that these compounds are detected by Method 25A but are not classified as VOCs. Accordingly, the reported VOC emissions are biased to higher-than-true levels to the extent that these three compounds affected the Method 25A results.

The Method 25A data reflect the combined THC concentrations consisting of (1) alpha and beta pinene, (2) numerous other terpenes such as limonene and 3-carene, and (3) the organic HAPs. The organic HAP emissions discussed later in this report are also classified as VOCs and represent a small fraction of the total VOC emissions reported.

Method 320 was used to measure six organic compounds. Several of the organic compounds were below the detection limits of Method 320 in this matrix of gaseous constituents. These non-detection concentrations are designated by shading in Tables 3-2 through 3-5.

Table 3-2. Dryer[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/14/2013	10/14/2013	10/14/2013	N/A
Start	15:15	16:49	17:58	N/A
Stop	16:15	17:49	19:02	N/A
Throughput, tons/hour	12.8	12.8	12.8	12.8
Moisture Content Outlet, %wt.	8.5	11.6	13.2	11.1
Throughput, ODT/hour	11.71	11.32	11.11	11.4
ACFM	70,382	69,968	68,852	69,734
DSCFM	49,036	49,728	48,642	49,135
Stack Temperature, °F	199.6	189.6	187.8	192.3
O_2, %	19	19.5	19	19.2
% Moisture	12.05	11.64	12.06	11.9
VOC, ppmvd as Propane	33.6	24.8	25.2	27.9
VOC, ppmvd as C1	100.8	74.4	75.6	83.6
VOC, lbs/hour as C1	9.2	6.9	6.9	7.7
VOC, lbs/ODT	0.79	0.61	0.62	0.7
Methanol, ppmvd	3.61	1.83	2.43	2.62
Acetaldehyde, ppmvd	0.99	0.98	0.99	0.98
Acrolein, ppmvd	3.05	3.03	3.05	3.04
Formaldehyde, ppmvd	0.82	0.57	0.74	0.71
Phenol, ppmvd	4.15	4.13	4.15	4.14
Propionaldehyde, ppmvd	0.63	0.63	0.63	0.63
Methanol, lbs/hour	0.88	0.45	0.59	0.64
Acetaldehyde, lbs/hour	0.00	0.00	0.00	0.00
Acrolein, lbs/hour	0.00	0.00	0.00	0.00
Formaldehyde, lbs/hour	0.19	0.13	0.17	0.16
Phenol, lbs/hour	0.00	0.00	0.00	0.00
Propionaldehyde, lbs/hour	0.00	0.00	0.00	0.00
Methanol, lbs/ODT	0.075	0.040	0.053	0.056
Acetaldehyde, lbs/ODT	0.000	0.000	0.000	0.000
Acrolein, lbs/ODT	0.000	0.000	0.000	0.000
Formaldehyde, lbs/ODT	0.016	0.012	0.015	0.014
Phenol, lbs/ODT	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.000	0.000

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-3. Green Hammermill[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/15/2013	10/15/2013	10/15/2013	N/A
Start	9:11	10:22	11:40	N/A
Stop	10:11	11:22	12:40	N/A
Throughput, tons/hour	9.9	9.9	9.9	9.9
Moisture Content Outlet, %wt.	48	48	48	48.0
Throughput, ODT/hour	5.148	5.148	5.148	5.1
ACFM	12,277	12,367	12,326	12,323
DSCFM	11,630	11,634	11,490	11,585
Stack Temperature, °F	87.4	87.5	88.4	87.8
O_2, %	20.9	20.9	20.9	20.9
% Moisture	2.25	2.92	3.64	2.94
VOC, ppmvd as Propane	17.9	21.8	28.2	22.6
VOC, ppmvd as C1	53.6	65.5	84.7	67.9
VOC, lbs/hour as C1	1.16	1.42	1.82	1.47
VOC, lbs/ODT	0.23	0.28	0.35	0.29
Methanol, ppmvd	2.68	2.77	2.79	2.74
Acetaldehyde, ppmvd	0.89	0.89	0.90	0.00
Acrolein, ppmvd	2.74	2.76	2.78	0.00
Formaldehyde, ppmvd	0.21	0.21	0.21	0.00
Phenol, ppmvd	3.73	3.76	3.79	0.00
Propionaldehyde, ppmvd	0.57	0.57	0.58	0.00
Methanol, lbs/hour	0.16	0.16	0.16	0.159
Acetaldehyde, lbs/hour	0.00	0.00	0.00	0.00
Acrolein, lbs/hour	0.00	0.00	0.00	0.00
Formaldehyde, lbs/hour	0.00	0.00	0.00	0.00
Phenol, lbs/hour	0.00	0.00	0.00	0.00
Propionaldehyde, lbs/hour	0.00	0.00	0.00	0.00
Methanol, lbs/ODT	0.030	0.031	0.031	0.031
Acetaldehyde, lbs/ODT	0.000	0.000	0.000	0.000
Acrolein, lbs/ODT	0.000	0.000	0.000	0.000
Formaldehyde, lbs/ODT	0.000	0.000	0.000	0.000
Phenol, lbs/ODT	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.000	0.000

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Table 3-4. Aspiration System[1] Emission Test Results				
Parameter	Run 1	Run 2	Run 3	Average
Date	10/15/2013	10/15/2013	10/15/2013	N/A
Start	17:36	18:49	20:00	N/A
Stop	18:36	19:49	21:00	N/A
Throughput, tons/hour	16	16	16	16.0
Moisture Content Outlet, %wt.	9.1	9.1	9.1	9.1
Throughput, ODT/hour	14.54	14.54	14.54	14.5
ACFM	14,422	14,387	14,397	14,402.0
DSCFM	11,294	11,235	11,210	11,246
Stack Temperature, °F	138.9	138.3	138.6	138.6
O_2, %	20.9	20.9	20.9	20.9
% Moisture	7.73	8.08	8.32	8.0
VOC, ppmvd as Propane	376.9	413.8	303.6	364.8
VOC, ppmvd as C1	1130.7	1241.4	910.8	1,094.3
VOC, lbs/hour as C1	23.9	26.1	19.1	23.0
VOC, lbs/ODT	1.64	1.79	1.31	1.6
Methanol, ppmvd	2.83	3.11	2.94	2.96
Acetaldehyde, ppmvd	0.94	0.94	0.95	0.94
Acrolein, ppmvd	2.90	2.91	2.92	2.91
Formaldehyde, ppmvd	0.91	0.89	0.87	0.89
Phenol, ppmvd	3.95	3.97	3.98	3.97
Propionaldehyde, ppmvd	0.60	0.61	0.61	0.61
Methanol, lbs/hour	0.16	0.17	0.16	0.17
Acetaldehyde, lbs/hour	0.00	0.00	0.00	0.00
Acrolein, lbs/hour	0.00	0.00	0.00	0.00
Formaldehyde, lbs/hour	0.05	0.05	0.05	0.05
Phenol, lbs/hour	0.00	0.00	0.00	0.00
Propionaldehyde, lbs/hour	0.00	0.00	0.00	0.00
Methanol, lbs/ODT	0.011	0.012	0.011	0.011
Acetaldehyde, lbs/ODT	0.000	0.000	0.000	0.000
Acrolein, lbs/ODT	0.000	0.000	0.000	0.000
Formaldehyde, lbs/ODT	0.003	0.003	0.003	0.003
Phenol, lbs/ODT	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.000	0.000

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

Four test runs were conducted on the dry hammermill. During the first run conducted on October 15, 2013, problems relating to either stones entering the hammermill or problems with the hammers were causing the system to malfunction. The unit was inspected overnight and found in good condition. Three additional runs were conducted on October 16, 2013. All four runs were included in the test averages.

Table 3-5. Dry Hammermill[1] Emission Test Results

Parameter	Run 1	Run 2	Run 3	Run 4	Average
Date	10/15/2013	10/16/2013	10/16/2013	10/16/2013	N/A
Start	13:48	10:54	12:07	13:21	N/A
Stop	14:48	11:54	13:07	14:21	N/A
Throughput, tons/hour	17.6	16.1	16.1	16.1	16.5
Moisture Content Outlet, %wt.	10	10	10	10	10.0
Throughput, ODT/hour	15.84	14.49	14.49	14.49	14.8
ACFM	19,757	18,980	19,427	19,321	19,371.3
DSCFM	17,849	17,591	17,745	17,421	17,652
Stack Temperature, °F	100.8	88.6	93.8	96.1	94.8
O_2, %	20.9	20.9	20.9	20.9	20.9
% Moisture	3.57	2.89	3.4	4.25	3.5
VOC, ppmvd as Propane	122.3	82.7	88.6	91.5	96.3
VOC, ppmvd as C1	366.9	248.1	265.8	274.5	288.8
VOC, lbs/hour as C1	12.2	8.2	8.8	8.9	9.5
VOC, lbs/ODT	0.77	0.57	0.61	0.61	0.6
Methanol, ppmvd	1.04	0.71	0.83	0.9	0.87
Acetaldehyde, ppmvd	0.90	0.89	0.90	0.75	0.86
Acrolein, ppmvd	2.83	2.76	2.77	2.80	2.80
Formaldehyde, ppmvd	0.21	0.21	0.21	0.14	0.19
Phenol, ppmvd	3.78	3.76	3.78	0.42	2.93
Propionaldehyde, ppmvd	0.58	0.57	0.58	0.24	0.49
Methanol, lbs/hour	0.06	0.04	0.05	0.06	0.05
Acetaldehyde, lbs/hour	0	0	0	0	0.00
Acrolein, lbs/hour	0	0	0	0	0
Formaldehyde, lbs/hour	0	0	0	0	0.00
Phenol, lbs/hour	0	0	0	0	0.00
Propionaldehyde, lbs/hour	0	0	0	0	0.00
Methanol, lbs/ODT	0.004	0.003	0.003	0.004	0.004
Acetaldehyde, lbs/ODT	0.000	0.000	0.000	0.000	0.000
Acrolein, lbs/ODT	0.004	0.004	0.004	0.004	0.004
Formaldehyde, lbs/ODT	0.000	0.000	0.000	0.000	0.000
Phenol, lbs/ODT	0.000	0.000	0.000	0.000	0.000
Propionaldehyde, lbs/ODT	0.000	0.000	0.000	0.000	0.000

1. Note: Shaded area indicates a calculated minimum detection limit. Emissions were calculated based on zero for non-detect values.

3.3 Emissions Data Evaluation

Method 25A VOC Concentrations

The VOC emissions from the various process units ranged from 0.03 to 1.6 pounds per ODT. VOC emissions expressed on a pounds per ODT basis were highest from the aspiration system.

The data summarized in Tables 3-2 through 3-5 indicate that the total VOC emissions from the Amory Plant exceed 100 tons per year calculated as carbon. These tests confirm that the plant is a Title V major source for VOCs.

The accuracy of the VOC data is demonstrated by a Method 25A response factor of approximately 1 for the group of compounds present in the gas stream. The Method 25A response is expressed in terms of a response factor that is defined as the observed Method 25A concentration divided by the true concentration. The Method 25A FID has a response factor close to 1.0 for a large set of organic compounds. Some high molecular weight organics have a response factor larger than 1, and in some cases, approaching 1.5. For these compounds, Method 25A is biased to higher-than-true concentrations. Some low molecular weight-highly oxygenated organic compounds such as methanol and formaldehyde have very low response factors in the range of 0.1 to 0.4. For these compounds, Method 25A is biased to lower-than-true concentrations.

As part of the laboratory tests reported to MDEQ in Enviva's Phase I emission study dated July 31, 2013[4] (the "Phase I Study"), Air Control Techniques, P.C. has taken the following two independent approaches in assessing the Method 25A response factors: (1) direct measurement of the Method 25A response factor using an alpha-pinene gas standard, the dominant organic compound measured during the laboratory tests and (2) a comparison of the Method 25A concentration data with the summed concentrations of all of the specific organics measured simultaneously using NCASI Method 98.01 and EPA Method 18. The results of these response factor analyses are presented in Tables 3-6 and 3-7.

Table 3-6. Alpha-Pinene Method 25A Response Factor[1]	
Alpha-Pinene Gas Standard, as $C_{10}H_{16}$	259 ppm
Alpha-Pinene Gas Standard, as C_3	863 ppm
FID Response, as C_3	888 ppm
Response Factor as C_3	1.03

1. Note: This table was included in the Phase I Study report to MDEQ.

Table 3-7. Calculated Method 25A Response Factors in Phase I Laboratory Tests[1]					
Run	Process Type	Softwood Content, %	Method 25A versus Combined NCASI 98.01 and Method 18	Dominant Compounds	Other Important Compounds
4	Dryer	10	0.72	α-and β-Pinene	Acetone, Methanol
5	Dryer	10	0.70	α-and β-Pinene	Acetone, Methanol
6	Dryer	10	0.75	α-and β-Pinene	Methanol, Formaldehyde
21	Dryer	10	1.23	α-and β-Pinene	Acetone, Methanol
22	Press	10	1.05	α-and β-Pinene	Acetone, Methanol
7	Dryer	70	0.85	α-and β-Pinene	Acetone
8	Dryer	70	0.90	α-and β-Pinene	Acetone
9	Dryer	70	1.02	α-and β-Pinene	Acetone
10	Dryer	70	0.91	α-and β-Pinene	Acetone
24	Press	70	1.51	α-and β-Pinene	Acetone, Methanol
11	Dryer	100	0.99	α-and β-Pinene	Acetone
12	Dryer	100	0.96	α-and β-Pinene	Acetone
13	Dryer	100	0.85	α-and β-Pinene	Acetone
14	Dryer	100	0.87	α-and β-Pinene	Acetone
16	Dryer	100	1.09	α-and β-Pinene	Methanol, Acetone
19	Dryer	100	1.21	α-and β-Pinene	Methanol, Acetone
20	Press	100	1.13	α-and β-Pinene	Methanol, Acetone
Test Program Average			0.98		

1. Note: This table was included in the Phase I Study report to MDEQ.

The excellent agreement between the Method 25A total concentration and the combined concentrations of all of the organics measured by NCASI 98.01 and EPA Method 18 demonstrate that Method 25A is an appropriate VOC measurement technique for wood pellet production facilities.

Method 320 HAP Concentrations

At the maximum permitted production limit of 99,000 ODT per year for the dryer/GHM, and maximum potential operations of 8,760 hours for the DHM/aspiration sources, all six of the organic HAPs are each emitted at less than 10 tons per year. The total HAP emissions for the plant are less than 25 tons per year.

The list of HAPs specifically included in the test protocol included methanol, acetaldehyde, acrolein, formaldehyde, phenol, and propionaldehyde. This list was compiled based on (1) the organic compounds identified in laboratory analyses of pellet production facilities emissions, (2) previous emission tests conducted in the Pellet Manufacturing Industry, and (3) organic HAPs identified in studies of other wood products industries—specifically, MDF production.

The results of this test program indicate that this list of HAPs compounds needs to be amended. Phenol was not detected in any of the tests of the four process units. Propionaldehyde was also not detected in any of the tests.

The non-detectable phenol emissions data are consistent with the results of the Phase I Study. Phenol was not identified at detectable concentrations in any of the laboratory studies summarized in the Phase I Study report. The emission rates of phenol reported in a November 2012 Wiggins report [2] ranged from 0.0002 to 0.0018 pounds per hour—all insignificant emission rates. Phenol was also not listed in previous emission tests reviewed in preparation for this test program. Phenol was included in the test protocol primarily because other researchers such as Beauchemin and Tampier,[5] Milot, [6] and Milot and Mosher [7] listed phenol due to its inclusion in tests conducted at MDF and particleboard facilities. However, phenol emissions in MDF and particleboard production are due to the use of phenolic resins and similar binders. There is no reason to expect any appreciable phenol formation in pellet production considering (1) the lack of binders of any type in pellet production, (2) the higher moisture levels in pellet production as compared to MDF and particleboard processes, and (3) the lower material temperatures in pellet process equipment. Air Control Techniques, P.C. has assigned zero values to non-detected concentrations.

Acetaldehyde, propionaldehyde, and acrolein had very low concentrations in most of the emission tests summarized in this report. The IR absorption spectra of both water and the terpene compounds overlap the absorption spectra of acetaldehyde, propionaldehyde, and acrolein. Accordingly, the reported concentrations of these three compounds are biased to higher-than-true levels to the extent that this interference could not be avoided by Method 320 spectral absorption modeling. Zero values have been assigned when these concentrations were below detection limits of Method 320 due, in part, to the interference bias.

The use of zero values for non-detected compounds is an appropriate approach for any source, such as pellet production, where there are a few dominant compounds (i.e. methanol and formaldehyde) and a large number of possible compounds at extremely low levels such as phenol, acetaldehyde, and propionaldehyde. The use of non-detect or one-half non-detect concentrations in emission calculations for a large number of compounds potentially present at trace levels inherently makes any source “major” regardless of the actual emissions, size, or operations characteristics of the emission unit.

3.4 VOC and Organic HAP Emission Summary

Table 3-8 summaries annual emissions of VOC and organic HAP compounds. The annual emission rates are based on operation at the permit limited production rate of 99,000 ODT for the dryer/GHM, and maximum operations of 8,760 hours per year for the DHM/aspiration sources.

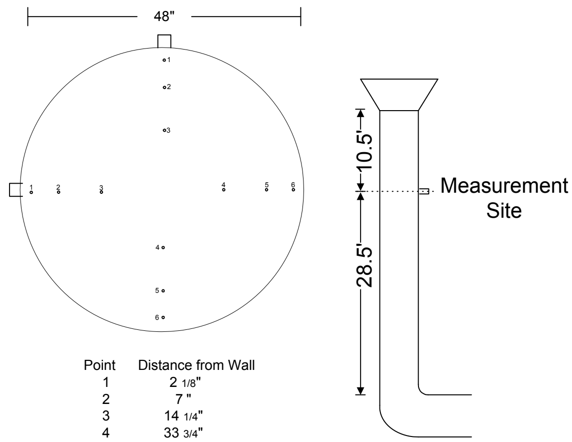
Table 3-8. Total Emissions at Plant Permit Limit 0f 99,000 Tons/Year for the Dryer and Green Hammermill and 8,760 hours for the Dry Hammermill and Aspirator

Analyte	Dryer	Dry Hammermill	Green Hammermill	Aspirator	Total
Total VOC	29.9	41.72	12.71	100.89	185.3
Methanol	2.50	0.34	1.37	0.73	4.94
Acetaldehyde	0.00	0.00	0.00	0.00	0.00
Acrolein	0.00	0.00	0.00	0.00	0.00
Formaldehyde	0.64	0.00	0.00	0.00	0.64
Phenol	0.00	0.00	0.00	0.00	0.00
Propionaldehyde	0.00	0.00	0.00	0.00	0.00
Total HAPS	3.14	0.34	1.37	0.73	5.58

4. SAMPLING LOCATIONS

4.1 Dryer Stack Sampling Location

The dryer sampling location meets EPA Method 1 location requirements as indicated in Figure 4-1. Twelve sampling points were used to measure the gas flow rate.



Point	Distance from Wall
1	2 1/8"
2	7 "
3	14 1/4"
4	33 3/4"
5	41 "
6	45 7/8"

Figure 4-1 Dryer # 1 Stack Sampling Location

The downstream[1] flow disturbance is the stack discharge. The upstream flow disturbance is the duct from the fan entering the base of the stack.

During the sampling program, only the port facing south was used. The port facing east was blocked by the stack support cable.

No cyclonic flow conditions were observed in the Dryer stack. The point-by-point cyclonic flow checks indicated an average flow angle 1.9 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dryer stack is shown in Figure 4-2.

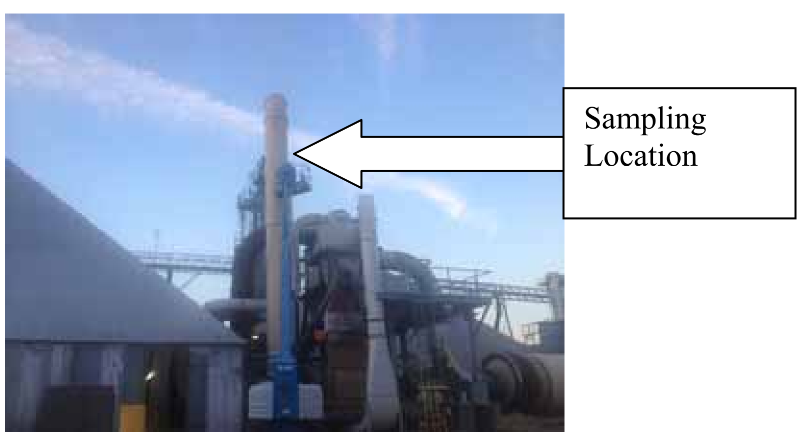
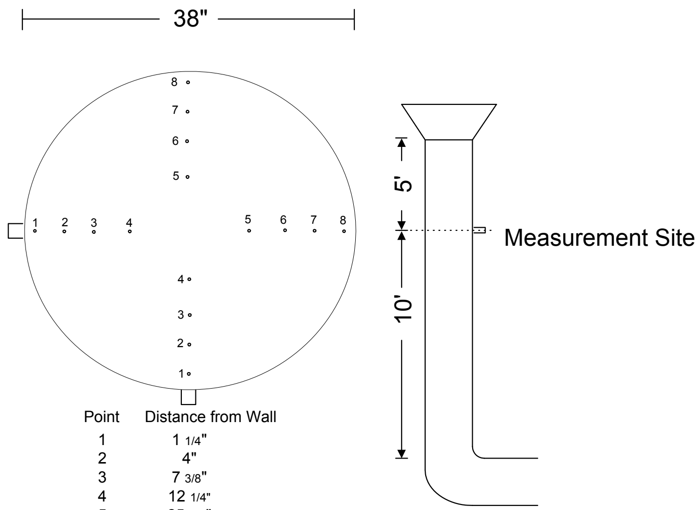


Figure 4-2. Photograph of the Dryer Stack

[1] "Upstream" and "downstream" are defined based on the sampling location as the reference point.

4.2 Dry Hammermill Stack Sampling Location

The Dry Hammermill sampling location meets EPA Method 1 location requirements as indicated in Figure 4-3. Twelve sampling points were used to measure the gas flow rate.



Point	Distance from Wall
1	1 1/4"
2	4"
3	7 3/8"
4	12 1/4"
5	25 3/4"
6	30 5/8"
7	34"
8	36 3/4"

Figure 4-3. Dry Hammermill Sampling Location

The downstream flow disturbance is the stack discharge. The upstream flow disturbance is the fan discharge duct. During the sampling program, both ports were accessible.

No cyclonic flow conditions were observed in the Dry Hammermill stack. The point-by-point cyclonic flow checks indicated an average flow angle of 1.9 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Dry Hammermill stack is shown in Figure 4-4.

Figure 4-4. Photograph of the Dry Hammermill Sampling Location

4.3 Pellet Mill Aspiration System Sampling Location

The Aspiration System sampling location meets EPA Method 1 location requirements as indicated in Figure 4-5. Twelve sampling points were used to measure the gas flow rate.

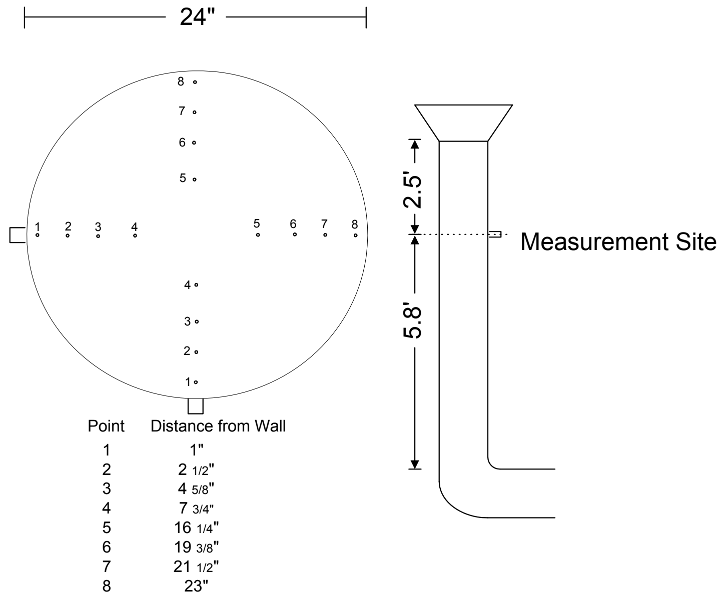


Figure 4-5. Pellet Mill Aspiration System Sampling Location

The upstream flow disturbance was an entry duct to the fan inlet. The downstream flow disturbance was an elbow from the multicyclone collector.

No cyclonic flow conditions were observed in the Aspiration System outlet duct. The point-by-point cyclonic flow checks indicated an average flow angle of 3.1degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Aspiration System sampling location is shown in Figure 4-6.

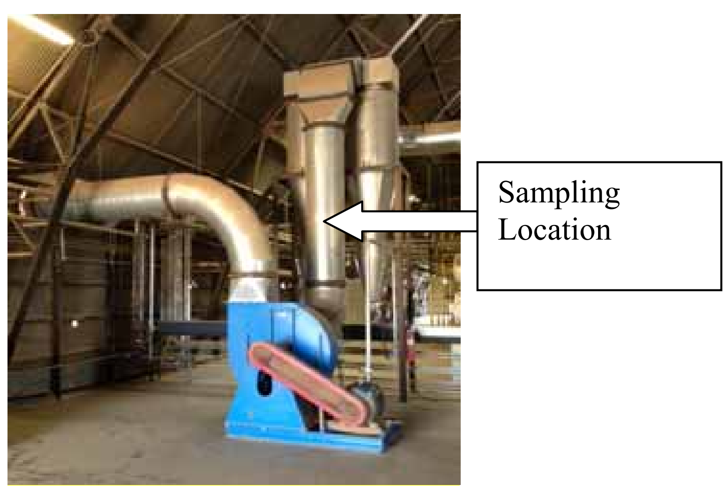
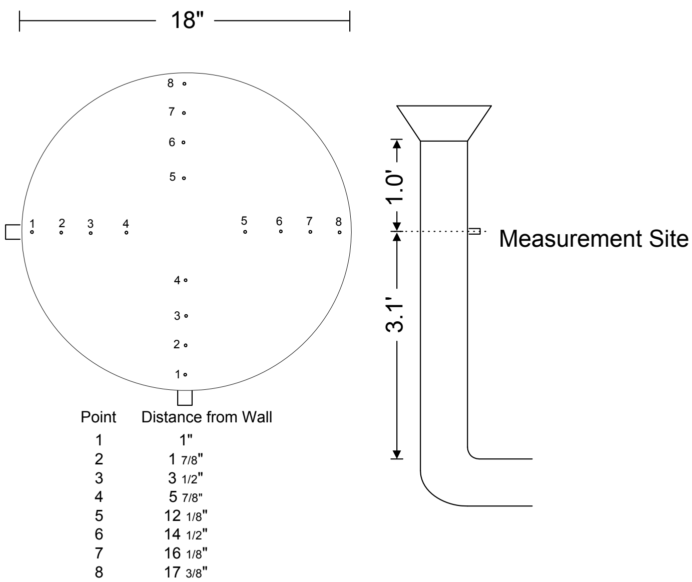


Figure 4-6. Photograph of the Pellet Mill Aspiration System Sampling Location

4.4 Green Hammermill Stack Sampling Location

The Green Hammermill stack sampling location shown in Figure 4-7 meets the minimum requirements for a downstream flow disturbance specified in Method 1, Section 11.1. The downstream flow disturbance is the fan discharge duct. The upstream flow disturbance is the stack discharge. Both ports were accessible for sampling.



Point	Distance from Wall
1	1"
2	1 7/8"
3	3 1/2"
4	5 7/8"
5	12 1/8"
6	14 1/2"
7	16 1/8"
8	17 3/8"

Figure 4-7. Green Hammermill Stack Sampling Location

No cyclonic flow conditions were observed in the Green Hammermill stack. The point-by-point cyclonic flow checks indicated an average flow angle of 2.6 degrees. This meets the requirements of Section 11.4 of Method 1. A photograph of the Green Hammermill stack is shown in Figure 4-8.

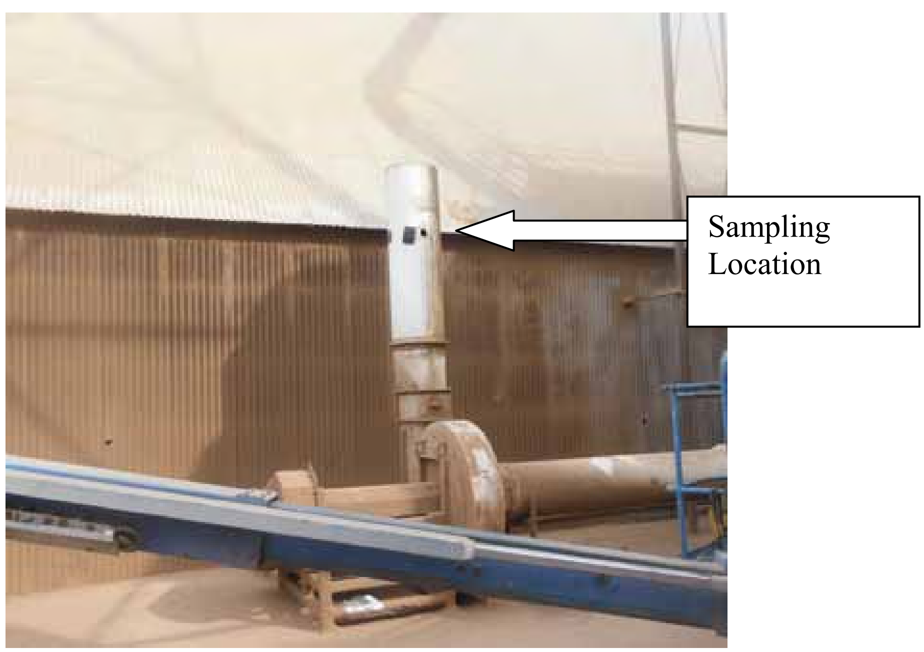


Figure 4-8. Green Hammermill Stack

5. TESTING PROCEDURES

5.1 Flue Gas Velocity and Volumetric Flow Rate - EPA Method 2

The flue gas velocities and volumetric flow rates during all of the emission tests were determined according to the procedures outlined in U.S. EPA Reference Method 2. Velocity measurements were made using S-Type Pitot tubes conforming to the geometric specifications outlined in Method 2. Accordingly, each Pitot was assigned a coefficient of 0.84. Velocity pressures were measured with fluid manometers. Effluent gas temperatures were measured with chromel-alumel thermocouples attached to digital readouts.

5.2 Flue Gas Composition and Molecular Weight - EPA Method 3

Flue gas analyses and calculation of flue gas dry molecular weights were performed in accordance with EPA Method 3. A stainless steel probe was inserted into the gas stream to collect a representative sample of the flue gas during each test run. The samples were analyzed using a Fyrite gas analyzer. Moisture was removed from the sample gas by means of a knockout jar located prior to the sample pump.

5.3 Flue Gas Moisture Content - EPA Method 4

The flue gas moisture content was determined in conjunction with each test run according to the sampling and analytical procedures outlined in EPA Method 4. Wet impinger sampling trains were used to withdraw and analyze the stack gas. The impingers were connected in series and contained water in the first two impingers followed by an empty impinger and then a silica gel impinger. The impingers were contained in an ice bath to assure condensation of the flue gas stream moisture. Any moisture that was not condensed in the impingers was captured in the silica gel; therefore, all moisture was weighed and entered into moisture content calculations.

5.4 Total Hydrocarbons – EPA Method 25A

Continuous emissions monitoring was conducted for volatile organic compounds. The sampling and analytical procedures for VOCs were conducted in accordance with EPA 25A. The CEM system consisted of a sample acquisition system, the THC emission monitor, and a data acquisition system (DAS). A California Analytical Model 300 flame ionization detector was used for the Method 25A tests.

The sample acquisition system included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a heat-traced Teflon® sample line, a Teflon® heated-head pump, a moisture removal system, and a gas manifold board. All components of the sample acquisition system that contacted the sampled gas were constructed of Type 316 stainless steel or Teflon®. The sample gas was continuously extracted from a central point within the duct at a constant rate (±10%) for the duration of each test run. The wet, filtered gas was transported to a heated-head pump located at the CEM laboratory. The sample gas was sent directly to the VOC analyzer. Care was taken to ensure that the sample gas was greater than 220°F during transport from the stack to the VOC monitor. All pretest and posttest calibration procedures were performed as outlined in the applicable EPA Reference Methods.

Total organic hydrocarbon concentrations were measured on a wet basis using a California Analytical 300 FID continuous emission monitor. The THC concentrations were monitored on a propane (C_3) basis using a flame ionization detector (FID). The FID was fueled by a gas mixture consisting of 40% helium and 60% hydrogen to reduce the effect of oxygen synergism. The THC analyzer was calibrated with a set of four gas standards. Calibration tests were performed prior to and following each test run.

Outputs from the individual emission monitors were connected to a computerized data acquisition system. Outputs from the analyzer were sent to a portable computer via a National Instruments™ FieldPoint controller. The signals were downloaded to a STRATA© software program every two seconds. The two-second readings were averaged for the duration of the test run.

Total mass emissions of VOCs were determined based on the Method 25A total hydrocarbon concentration data. The mass emissions were expressed on a pounds mass of carbon per hour.

5.5 Organic HAP Compounds – EPA Method 320

Testing for wet-basis organic HAP concentrations was conducted by extractive Fourier transform infrared (FTIR) spectroscopy using EPA Method 320 (40CFR, Part 63, Appendix A). Sample gas was continuously passed through the sampling system, which included an in-stack probe, a heated out-of-stack glass mat filter for particulate matter removal, a Teflon® heat-traced sample line, a MIDAC Fourier Transform Infrared (FTIR) spectrometer, a Teflon® heated-head pump, and a gas manifold board as shown in Figure 5-1. All components of the sample acquisition system that contacted the sampled gas were Type 316 stainless steel or Teflon®. All components of the sampling system and the FTIR cell were maintained at or above 120° C. Air Control Techniques, P.C. took great care to ensure that the sampling system contained no “cold spots” to prevent organic HAP loss. The sampling rate was maintained at greater than 10 liters per minute.

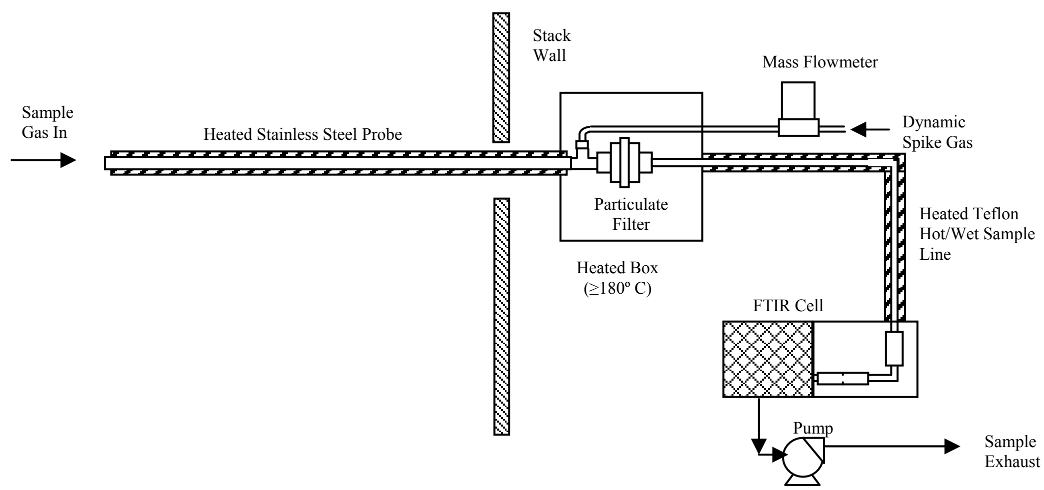


Figure 5-1. Method 320 Organic HAP Sampling System

The FTIR system included a MIDAC Corporation I-1301 spectrometer equipped with a heated, nominal 10-meter path absorption cell, a potassium bromide (KBr) beam splitter, zinc selenide (ZnSe) non-hygroscopic windows, and a liquid nitrogen-cooled Mercury Cadmium Telluride detector. Measurements were made using a MIDAC Model I-1301 high resolution Michelson interferometer with AutoQuant Pro software. Sample gas continuously passed through the sampling system, and sample spectra (based on 50 co-added interferograms) were recorded every minute. The system's nominal spectral resolution was 0.5 cm^{-1}. Samples and standards were analyzed at temperatures greater than 120°C and near ambient pressures.

The inside walls of the cells were polished stainless steel to minimize interaction of the sample with the cell walls, and the cell mirrors were of bare gold. The gas pressure in the FTIR sample cell was monitored with a pressure transducer connected directly to the sample cell. The heated sample cell was wrapped in an insulating thermal jacket, and the temperature was controlled with type J thermocouples. The absorption cell volume was approximately 2 liters.

The FTIR system was operated via a portable computer, and a data archive storage system (USB Mass Storage Drive) was used for data backup. All interferograms, single beams, absorbance spectra, and background single beams were stored and have been archived. The filename, time, pressure and temperature of the sample cell, scan rate, background identification and other pertinent information was recorded by hand during the test program.

Air Control Techniques used the program AutoquantPro™ Version 4.5.0.195, (©Midac Corporation, 2012) to collect and analyze all the infrared field data. The program allows the development and storage of analytical "methods" for analysis of spectral data (absorbance) files. The reference spectra used for these analyses were developed by MIDAC Corporation, EPA, and Enthalpy Analytical, Inc. One "model" was developed for determining the absorption path length and one additional "method" for determining the concentrations of the target compounds for each source.

The concentration uncertainty reported by AutoquantPro is called the Standard Error of the Estimated Concentration, or SEC; it is also known as the Marginal Standard Deviation. The uncertainties in the concentration are proportional to the square root of the sums of the squares of the residual. After the residual spectrum is obtained, which we will call R, the error variance for the case of a single reference spectrum is calculated as follows.

$$\sigma^2 = \frac{\sum_i R_i^2}{(n-1)}$$

Where n is the number of observations. The SEC is given by the following.

$$SEC = \frac{\sigma\, C}{\sqrt{\sum_i \mathrm{A}_i^2}}$$

Where **A** is the spectrum and **C** is the known concentration of the reference.

The 95% confidence interval is 1.96 times the SEC.

6. QUALITY ASSURANCE

6.1 Method 1 Quality Assurance

All S-type Pitot tubes used in this project conformed to EPA guidelines concerning construction and geometry. Pitot tubes were inspected prior to use. Information pertaining to S-type Pitot tubes is presented in detail in Section 3.1.1 of EPA Publication No. 600/4-77-027b. Only S-type Pitot tubes meeting the required EPA specifications were used in this project.

The thermocouples used in this project were calibrated using the procedures described in Section 3.4.2 of EPA Publication No. 600/4-77-027b. Each temperature sensor was calibrated at a minimum of three points over the anticipated range of use against NIST-traceable mercury in glass thermometer.

6.2 Method 4 Quality Assurance

Pretest and posttest leak checks were conducted on each Method 4 sampling train used. The observed leak rates for the sampling trains were below 0.02 actual cubic feet per minute as required by Method 4.

All dry gas meters were fully calibrated to determine the volume correction factor prior to field use. Post-tests calibration checks were performed as soon as possible after the equipment was returned to the laboratory. Pre-and post-test calibrations agreed within ±5 percent. The calibration procedure is documented in Section 3.3.2 of EPA Publication No. 600/4-77-237b.

The scales used at the test location to determine flue gas moisture content were calibrated using a standard set of weights.

6.3 Method 25A Quality Assurance

At the beginning of the test day, a linearity calibration test was performed on each analyzer. The continuous emission monitoring instrument response did not differ by more ±5 from the propane calibration standard. Linearity results for the test program are provided in Table 6-1 through 6-8.

Prior to and following each test run, a system calibration test was performed. The system test was performed to verify that the sampling system did not contain leaks (system bias) and to measure a change in analyzer response during the test program (system drift). The system bias was less than ±5% of full-scale, and system drift was less than ±3% of full scale. System calibration results for the test program are provided in Tables 6-1 through 6-8.

Table 6-1. Dryer Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.1		
Low, %	±5	1.1		
Mid, %	±5	0.2		
High, %	±5	0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	0.2
Zero Bias (Post), %	±5	0.1	0.2	0.2
Up-scale Bias (Pre), %	±5	0.0	0.0	0.1
Up-scale Bias (Post), %	±5	0.0	0.1	0.1
Zero Drift, %	±3	0.1	0.1	0.0
Up-scale Drift, %	±3	0.1	0.1	0.0
Response Time, sec	N/A	30		

Table 6-2. Dry Hammermill Quality Assurance Results, Total Hydrocarbons, Method 25A, Low Range					
Linearity Tests					
Parameter	Allowable	Test Series			
Zero, %	±5	0.1	0.1		
Low, %	±5	0.4	1.1		
Mid, %	±5	0.5	1.0		
High, %	±5	0.3	0.5		
System Tests					
Parameter	Allowable	Run 1	Run 2	Run 3	Run 4
Zero Bias (Pre), %	±5	0	0	-0.2	0.0
Zero Bias (Post), %	±5	0.1	-0.2	0.0	0.0
Up-scale Bias (Pre), %	±5	0.0	0.0	0.3	0.2
Up-scale Bias (Post), %	±5	0.3	0.3	0.2	0.1
Zero Drift, %	±3	0.1	-0.2	0.2	0.0
Up-scale Drift, %	±3	0.3	0.3	-0.1	0.0
Response Time, sec	N/A	30			

Table 6-3. Dry Hammermill Quality Assurance Results, Total Hydrocarbons, Method 25A, High Range					
Linearity Tests					
Parameter	Allowable	Test Series			
Zero, %	±5	0.0	0.0		
Low, %	±5	0.2	0.3		
Mid, %	±5	0.1	0.2		
High, %	±5	0.0	0.0		
System Tests					
Parameter	Allowable	Run 1	Run 2	Run 3	Run 4
Zero Bias (Pre), %	±5	0.0	0.0	0.0	0.0
Zero Bias (Post), %	±5	0.0	0.0	0.0	0.0
Up-scale Bias (Pre), %	±5	0.0	0.0	0.1	0.0
Up-scale Bias (Post), %	±5	0.0	0.1	0.0	0.0
Zero Drift, %	±3	0.0	0.0	0.0	0.0
Up-scale Drift, %	±3	0.0	0.1	-0.1	0.0
Response Time, sec	N/A	30			

Table 6-4. Aspiration System Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±5	0.0		
Low, %	±5	0.3		
Mid, %	±5	-0.2		
High, %	±5	0.0		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.1	0.1
Zero Bias (Post), %	±5	0.1	0.1	0.1
Up-scale Bias (Pre), %	±5	0.0	0.1	0.2
Up-scale Bias (Post), %	±5	0.1	0.2	0.2
Zero Drift, %	±3	0.1	0.0	0.0
Up-scale Drift, %	±3	0.1	0.0	0.0
Response Time, sec	N/A	30		

Table 6-5. Green Hammermill Quality Assurance Results, Total Hydrocarbons, Method 25A				
Linearity Tests				
Parameter	Allowable	Test Series		
Zero, %	±8	0.1		
Low, %	±8	-1.2		
Mid, %	±8	0.0		
High, %	±8	0.1		
System Tests				
Parameter	Allowable	Run 1	Run 2	Run 3
Zero Bias (Pre), %	±5	0.0	0.0	-0.2
Zero Bias (Post), %	±5	0.0	-0.2	-0.1
Up-scale Bias (Pre), %	±5	0.0	0.1	0.5
Up-scale Bias (Post), %	±5	0.1	0.5	0.3
Zero Drift, %	±3	0.0	-0.2	0.1
Up-scale Drift, %	±3	0.1	0.5	-0.3
Response Time, sec	N/A	30		

6.4 Method 320 Quality Assurance

Air Control Techniques, P.C. performed daily quality assurance checks. Background scans and calibration transfer standard (CTS) spectra tests were performed prior to and following each test series. An analyte spike was performed using methanol.

The flow rate at the outlet of the pump was measured while the probe was plugged to verify that the sampling system was leak free. The flow rate was less than 200 ml/min.

The FTIR cell was tested for leaks by closing the value while the cell was at minimum absolute pressure.

<u>Background Spectra</u>
Sample spectra were divided point-by-point by a 128-scan background recorded using N_2.
The single beam spectrum was constantly monitored, and a new background was generated following each test series or when residual and absorbance spectra indicated component build-up on the optical surfaces or alignment-related baseline shifts.

<u>Calibration Transfer Standards and Absorption Path Lengths</u>
A cylinder of 100 ppm ethylene in nitrogen served as the CTS. A CTS gas was introduced to the FTIR and allowed to reach steady state. The CTS was used to determine effective cell path length based on comparisons of the "field" CTS spectra to a laboratory CTS spectrum recorded by MIDAC. As shown in Table 6-6, the maximum path length deviation was less than 5% of the average.

Table 6-6. CTS Results Summary							
Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Press. (psi)	Cell Temp (°C)	Deviation from Previous	Deviation from Average
14-Oct	1215	8.693	0.133	14.75	121	-0.2%	-0.2%
	1923	8.685	0.133	14.77	121	-0.1%	-0.1%
15-Oct	750	8.659	0.132	14.19	121	0.2%	0.2%
	1311	8.705	0.134	14.62	121	-0.4%	-0.4%
	1627	8.739	0.133	14.6	121	-0.7%	-0.7%
	2115	8.673	0.132	14.6	121	0.0%	0.0%
16-Oct	0830	8.614	0.134	14.81	121	0.7%	0.7%
	1510	8.624	0.132	14.77	121	0.6%	0.6%
	Average	8.674	0.133			Maximum	-0.7%

<u>Background Spectra</u>

On-site test personnel performed matrix spiking using a certified calibration standard of methanol and SF_6. The methanol gas standard was introduced into the sampling system upstream of the particulate matter filter at an average dilution ratio of less than 10% of the total sample volume. Analyte spiking was performed to demonstrate the suitability of the sampling system. The dilution factor was calculated based on the ratio of the SF_6 tracer gas analyzed directly by the FTIR and the in-stack measured concentration.

$$\frac{SF_6 \text{ during spike}}{SF_6 \text{ direct}} = DF$$

The recovery was calculated using the mean concentration of the spiked analyte (S_m), the native concentration of the analyte in the stack (S_u), the dilution factor (DF), and the cylinder concentration (C_s).

$$\text{Recovery}(\%) = \frac{\text{Sm} - \text{Su}\ (1 - \text{DF})}{\text{DFxCs}}$$

As shown in Table 6-7, the percent recovery was 100±30% as required by Method 320.

Table 6-7. Spike Recovery Results Summary						
Direct Cylinder Spike, ppm		System Spiked Gas, ppm		Native Concentration, ppm		Recovery, %
methanol	SF_6	methanol	SF_6	methanol	SF_6	
102.30	2.86	9.000	0.224	2.017	0.012769	94.5

Minimum Detectable Concentration
EPA Method 320 and the equivalent ASTM Standard D6348-03 specify a number of analytical uncertainty parameters that the analyst may calculate to characterize the FTIR system performance.

QA Review
Before the test program began, an analysis of possible analytical interferents (e.g., H_2O, CO_2, CO, pinenes) was conducted. Analytical wavelengths were determined to minimize analytical uncertainty and detection limits using reference spectra and the FTIR instrument that was used for the field testing.

At the conclusion of the testing, a quality assurance review of the test data was performed. This review included examination of the sample spectra and the quantitative analytical results. It also included spot-checking the analysis results by hand. These examinations included visual comparisons of the sample and reference spectra.

7. PROCESS DOCUMENTATION

Enviva Pellets Amory, LLC personnel logged the following process data during each test run of each process unit.

- Throughput in tons per hour (all process units)
- Inlet temperature (dryer)
- Outlet temperature (dryer)
- Cyclone static pressure drop (dryer, hammermill, presses)
- Wood feed % softwood content

8. REFERENCES

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4. Richards, J., D. Goshaw, and T. Holder. "Laboratory Evaluation of VOC Emissions from Wood Pellet Processes." Report to Enviva, LP. July 31, 2013.

5. Beauchemin, P. and M. Tampier. "Emissions and Air Pollution Control for the Biomass Pellet Manufacturing Industry." Report submitted to the British Columbia Ministry of the Environment. May 12, 2010.

6. Milota, M.R. "Emissions from Wood Drying" Forest Projects Journal, Volume 50, Number 6, Pages 10-19, June 2000.

7. Milota, M. and P. Mosher. "Emissions of Hazardous Air Pollutants from Lumber Drying." Forest Products Journal, Volume 58, No. 7/8, Pages 50-55, July/August 2008.

APPENDIX A

Moisture and Gas Flow Rate Data

Air Control Techniques, PC: Emissions Calculations
Job # 1909

Enviva	Amory	Dryer	Dryer	Dryer	Green Hammermill	Green Hammermill	Green Hammermill
PARAMETER	**NOMENCLATURE**	1	2	3	4	5	6
Sampling Location		Dryer	Dryer	Dryer	Green Hammermill	Green Hammermill	Green Hammermill
Date		10/14/2013	10/14/2013	10/14/2013	10/15/2013	10/15/2013	10/15/2013
Run Time	θ	60	60	60	60	60	60
Nozzle Diameter	inches	N/A	N/A	N/A	N/A	N/A	N/A
Stack Area	As - sq. ft.	12.6	12.6	12.6	1.767	1.767	1.767
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	0.9828	0.9828	0.9828	0.9828	0.9828	0.9828
Barometric Pressure, inches Hg	Bp - in Hg	29.80	29.80	29.80	29.80	29.80	29.80
Static Pressure	Pg - in. H_2O	-2.6	-2.6	-2.6	3.6	3.6	3.6
Stack Pressure	Ps	29.61	29.61	29.61	30.06	30.06	30.06
Meter Box Pressure Differential	Δ H - in. H_2O	1.00	1.00	1.00	1.00	1.00	1.00
Average Velocity Head	Δ p - in. H_2O	2.104	2.111	2.034	4.082	4.132	4.086
Volume of Gas Sampled	Vm - cu. ft.	30.692	35.129	31.084	32.963	34.696	33.800
Dry Gas Meter Temperature	Tm - °F	91.5	93.5	88.0	68.8	76.0	79.8
Stack Temperature	Ts - °F	199.6	189.6	187.8	87.4	87.5	88.4
Liquid Collected	grams	83.8	91.9	85.5	15.8	21.4	26
Carbon Dioxide	% CO_2	2	1.5	2	0	0	0
Oxygen	% O_2	19	19.5	19	20.9	20.9	20.9
Carbon Monoxide	% CO	0	0	0	0	0	0
Nitrogen	% N_2	79	79	79	79.1	79.1	79.1
Volume of Gas Sampled, Dry	Vmstd - cu. ft.	28.834	32.883	29.389	32.300	33.538	32.445
Volume of Water Vapor	Vwstd - cu. ft.	3.951	4.333	4.031	0.745	1.009	1.226
Moisture Content	% H_20	12.05	11.64	12.06	2.25	2.92	3.64
Saturation Moisture	% H_20	78.5	63.5	61.2	4.4	4.4	4.5
Dry Mole Fraction	Mfd	0.879	0.884	0.879	0.977	0.971	0.964
Gas Molecular Weight, Dry	Md	29.08	29.02	29.08	28.84	28.84	28.84
Gas Molecular Weight, Wet	Ms	27.74	27.74	27.74	28.59	28.52	28.44
Gas Velocity	vs - ft./sec.	93.35	92.80	90.96	115.79	116.64	116.25
Volumetric Air Flow, Actual	Qaw - ACFM	70,382	69,968	68,582	12,277	12,367	12,326
Volumetric Air Flow, Standard	Qsd - DSCFM	49,036	49,728	48,642	11,630	11,634	11,490

Air Control Techniques, PC: Emissions Calculations
Job # 1909

Enviva	Amory	Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Dry Hammermill Baghouse	Dry Hammermill Baghouse	Dry Hammermill Baghouse	Dry Hammermill Baghouse
PARAMETER	**NOMENCLATURE**	8	9	10	7	11	12	13
Sampling Location		Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Pellet Mill 2 Cooler	Dry Hammermill Baghouse	Dry Hammermill Baghouse	Dry Hammermill Baghouse	Dry Hammermill Baghouse
Date		10/15/2013	10/15/2013	10/15/2013	10/15/2013	10/16/2013	10/16/2013	10/16/2013
Run Time	θ	60	60	60	60	60	60	61
Nozzle Diameter	inches	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stack Area	As - sq. ft.	3.1	3.1	3.1	7.9	7.9	7.9	7.9
Pitot Tube Coefficient	Cp	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Meter Calibration Factor	Y	0.9828	0.9828	0.9828	0.9828	0.9828	0.9828	0.9828
Barometric Pressure, inches Hg	Bp - in Hg	29.80	29.80	29.80	29.80	29.70	29.70	29.70
Static Pressure	Pg - in. H_2O	-13.5	-13.5	-13.5	-0.38	-0.4	-0.4	-0.4
Stack Pressure	Ps	28.81	28.81	28.81	29.77	29.67	29.67	29.67
Meter Box Pressure Differential	Δ H - in. H_2O	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Average Velocity Head	Δ p - in. H_2O	1.529	1.521	1.521	0.512	0.483	0.500	0.491
Volume of Gas Sampled	Vm - cu. ft.	33.483	34.393	33.824	34.918	33.393	37.275	33.409
Dry Gas Meter Temperature	Tm - °F	81.000	81.3	80.8	80.0	68.0	74.0	75.5
Stack Temperature	Ts - °F	138.9	138.3	138.6	100.8	88.6	93.8	96.1
Liquid Collected	grams	57	61.4	62.4	26.3	20.6	26.9	30.3
Carbon Dioxide	% CO_2	0	0	0	0	0	0	0
Oxygen	% O_2	20.9	20.9	20.9	20.9	20.9	20.9	20.9
Carbon Monoxide	% CO	0	0	0	0	0	0	0
Nitrogen	% N_2	79.1	79.1	79.1	79.1	79.1	79.1	79.1
Volume of Gas Sampled, Dry	Vmstd - cu. ft.	32.066	32.923	32.408	33.503	32.658	36.045	32.216
Volume of Water Vapor	Vwstd - cu. ft.	2.688	2.895	2.942	1.240	0.971	1.268	1.429
Moisture Content	% H_20	7.73	8.08	8.32	3.57	2.89	3.40	4.25
Saturation Moisture	% H_20	19.8	19.5	19.6	6.6	4.6	5.4	5.8
Dry Mole Fraction	Mfd	0.923	0.919	0.917	0.964	0.971	0.966	0.958
Gas Molecular Weight, Dry	Md	28.84	28.84	28.84	28.84	28.84	28.84	28.84
Gas Molecular Weight, Wet	Ms	28.00	27.96	27.93	28.45	28.52	28.47	28.38
Gas Velocity	vs - ft./sec.	76.51	76.33	76.38	41.81	40.17	41.11	40.89
Volumetric Air Flow, Actual	Qaw - ACFM	14,422	14,387	14,397	19,757	18,980	19,427	19,321
Volumetric Air Flow, Standard	Qsd - DSCFM	11,294	11,236	11,210	17,849	17,591	17,745	17,421

Method 1 - Air Control Techniques, P.C.

Date: 10/14/2013

Client	Enviva
Job #	1909
Plant Name	Amory
State	Mississippi
City	Amory
Sampling Location	Dryer

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

Diameters			
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

No. of Ports Available		2
No. of Ports Used		2
Port Inside Diameter, Inches		1.5
Distance From Far Wall To Outside Of Port, Inches		50
Nipple Length And/Or Wall Thickness, Inches		2
Depth Of Stack Or Duct, Inches		48
Stack Or Duct Width (if rectangular), Inches		
Equiv. Diameter = 2DW/(D+W), Inches		48
Stack/Duct Area, Square Feet		12.57
(□ x R^2 or L x W)		
	Upstream	Downstream
Distance to Flow Disturbances, Inches	342	126
Diameters	7.13	2.63

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	4.4	2 1/8	4 1/8
2	14.6	7	9
3	29.6	14 2/8	16 2/8
4	70.4	33 6/8	35 6/8
5	85.4	41	43
6	95.6	45 7/8	47 7/8
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	8	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	43.8	28.9	35.0	31.8	29.2
5				90.0	75	64.3	56.3	50	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0   0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8 0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4 0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8 0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2

Air Control Techniques EPA Method 2 Data Sheet				ACT Job Number	1909
Client	Enviva			ACT Run Number	1
Plant	Amory			Date	10/14/2013
City/State	Amory, MS			Gauge ID	909033
Location	Dryer			Pitot ID	4Pext
Averages	**2.104**	**199.6**		Thermocouple ID	TC25

Point No.	Delta P In Water	Temp Deg F	Angle
A-1	2.700	195	-3
2	2.900	200	-2
3	2.800	202	0
4	2.800	201	-3
5	1.300	200	0
6	0.980	198	0
B-1	1.300	201	-4
2	1.100	198	-2
3	1.900	200	3
4	3.000	200	0
5	2.800	200	4
6	2.600	200	2

Oxygen %	**19**
Carbon Dioxide %	**2**
Moisture %	**12.05172839**
Stack Area sq.in.	**1809.557395**
Pbar	**29.80**
Static Pressure	**-2.6**
Pitot Coef.	**0.84**
Start Time	**1428**
Stop Time	**1434**

Absolute Gas Pressure inches water	**Ps =**	**29.61**
Dry Mole Fraction of Gas	**Mfd =**	**0.87948**
Dry Molecular Weight of Gas lb/lb Mole	**Md =**	**29.08**
Wet Molecular Weight of Gas lb/lb Mole	**Ms =**	**27.74**
Average Gas Velocity ft/sec	**vs =**	**93.35**
Dry Volumetric Gas Flow Rate at Standard Conditions SCFM	**Qsd =**	**49036**
Wet Volumetric Flue Gas Flow Rate at Stack Conditions ACFM	**Qaw =**	**70382**
Wet Volumetric Gas Flow Rate at Standard Conditions WSCFH	**WSCFH =**	**3345299**

LKCH		
Pre	3-4	good
Post	5-3	good

Air Control Techniques EPA Method 2 Data Sheet				ACT Job Number	1909	
Client	Enviva			ACT Run Number	2	
Plant	Amory			Date	10/14/13	
City/State	Amory, MS			Gauge ID	909033	
Location	Dryer			Pitot ID	4Pext	
Averages	**2.111**	**189.6**		Thermocouple ID	TC25	
	Delta P	**Temp**				
Point No.	**In Water**	**Deg F**				
A-1	2.700	189		**Oxygen %**	**19.5**	
2	3.200	188				
3	3.000	188		**Carbon Dioxide %**	**1.5**	
4	1.800	188				
5	1.600	190		**Moisture %**	**11.64**	
6	1.200	189				
B-1	1.300	189		**Stack Area sq.in.**	**1809.557395**	
2	1.700	190				
3	2.100	190		**Pbar**	**29.80**	
4	2.500	192				
5	2.600	192		**Static Pressure**	**-2.6**	
6	2.200	190				
0				**Pitot Coef.**	**0.84**	
0						
0				**Start Time**	**1621**	
0						
0				**Stop Time**	**1624**	
0						
0			**Absolute Gas Pressure inches water**		**Ps =**	**29.61**
0						
0			**Dry Mole Fraction of Gas**		**Mfd =**	**0.88357**
0						
0			**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.02**
0						
0			**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**27.74**
0						
0			**Average Gas Velocity ft/sec**		**vs =**	**92.80**
0						
0			**Dry Volumetric Gas Flow Rate**			
0			**at Standard Conditions SCFM**		**Qsd =**	**49728**
0						
0			**Wet Volumetric Flue Gas Flow Rate**			
0			**at Stack Conditions ACFM**		**Qaw =**	**69968**
0						
0			**Wet Volumetric Gas Flow Rate**			
0			**at Standard Conditions WSCFH**		**WSCFH =**	**3376837**
0						
0				LKCH		
0				Pre	3-4	good
0				Post	5-3	good

Air Control Techniques EPA Method 2 Data Sheet				ACT Job Number	1909	
Client	Enviva			ACT Run Number	3	
Plant	Amory			Date	10/14/13	
City/State	Amory, MS			Gauge ID	909033	
Location	Dryer			Pitot ID	4Pext	
Averages	**2.034**	**187.8**		Thermocouple ID	TC25	
	Delta P	**Temp**				
Point No.	**In Water**	**Deg F**				
A-1	2.600	185		**Oxygen %**	**19**	
2	3.000	187				
3	3.000	188		**Carbon Dioxide %**	**2**	
4	1.700	188				
5	1.300	187		**Moisture %**	**11.64**	
6	1.050	185				
B-1	1.200	187		**Stack Area sq.in.**	**1809.557395**	
2	1.600	190				
3	2.000	189		**Pbar**	**29.80**	
4	2.800	190				
5	2.800	189		**Static Pressure**	**-2.6**	
6	2.100	189				
0				**Pitot Coef.**	**0.84**	
0						
0				**Start Time**	**1746**	
0						
0				**Stop Time**	**1751**	
0						
0			**Absolute Gas Pressure inches water**		**Ps =**	**29.61**
0						
0			**Dry Mole Fraction of Gas**		**Mfd =**	**0.88357**
0						
0			**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**29.08**
0						
0			**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**27.79**
0						
0			**Average Gas Velocity ft/sec**		**vs =**	**90.88**
0						
0			**Dry Volumetric Gas Flow Rate**			
0			**at Standard Conditions SCFM**		**Qsd =**	**48833**
0						
0			**Wet Volumetric Flue Gas Flow Rate**			
0			**at Stack Conditions ACFM**		**Qaw =**	**68524**
0						
0			**Wet Volumetric Gas Flow Rate**			
0			**at Standard Conditions WSCFH**		**WSCFH =**	**3316084**
0						
0				LKCH		
0				Pre	3-4	good
0				Post	5-3	good

Method 1 - Air Control Techniques, P.C.

Date: 10/14/2013

Client	Enviva
Job #	1909
Plant Name	Amory
State	Mississippi
City	Amory
Sampling Location	Dry Hammermill Baghouse

No. of Ports Available	2
No. of Ports Used	2
Port Inside Diameter, Inches	2
Distance From Far Wall To Outside Of Port, Inches	38
Nipple Length And/Or Wall Thickness, Inches	0
Depth Of Stack Or Duct, Inches	38
Stack Or Duct Width (if rectangular), Inches	
Equiv. Diameter = 2DW/(D+W), Inches	38
Stack/Duct Area, Square Feet	7.9
(□ x R^2 or L x W)	

	Upstream	Downstream
Distance to Flow Disturbances, Inches	120	60
Diameters	3.16	1.58

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

Diameters			
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port
1	3.2	1 2/8	1 2/8
2	10.6	4	4
3	19.4	7 3/8	7 3/8
4	32.3	12 2/8	12 2/8
5	67.7	25 6/8	25 6/8
6	80.6	30 5/8	30 5/8
7	89.5	34	34
8	96.8	36 6/8	36 6/8
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0   0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8   0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4   0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8   0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1909	
Client	Enviva				ACT Run Number	7	
Plant	Amory				Date	10/15/2013	
City/State	Amory, MS				Gauge ID	909033	
Location	Dry Hammermill Baghouse				Pitot ID	4Pext	
Averages	**0.512**	**100.8**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		Angle			
A-1	0.440	99		0	**Oxygen %**	**20.9**	
2	0.460	100		0			
3	0.520	100		3	**Carbon Dioxide %**	**0**	
4	0.530	101		4			
5	0.520	101		3	**Moisture %**	**3.57**	
6	0.520	101		0			
7	0.430	101		0	**Stack Area sq.in.**	**1134.114965**	
8	0.350	99		-5			
B-1	0.230	99		4	**Pbar**	**29.80**	
2	0.270	101		0			
3	0.320	101		2	**Static Pressure**	**-0.38**	
4	0.520	102		3			
5	0.750	102		4	**Pitot Coef.**	**0.84**	
6	0.940	102		3			
7	0.950	102		0	**Start Time**	1316	
8	0.760	102		0			
0					**Stop Time**	1322	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.77**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.96431**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.45**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**41.81**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**17849**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**19757**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**1110565**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet			ACT Job Number	1909	
Client	Enviva		ACT Run Number	11	
Plant	Amory		Date	10/16/2013	
City/State	Amory, MS		Gauge ID	909033	
Location	Dry Hammermill Baghouse		Pitot ID	4Pext	
Averages	**0.483**	**88.6**	Thermocouple ID	TC25	
	Delta P	**Temp**			
Point No.	**In Water**	**Deg F**			
A-1	0.450	87	**Oxygen %**	**20.9**	
2	0.470	88			
3	0.510	88	**Carbon Dioxide %**	**0**	
4	0.530	88			
5	0.520	88	**Moisture %**	**2.89**	
6	0.520	88			
7	0.480	88	**Stack Area sq.in.**	**1134.114965**	
8	0.450	87			
B-1	0.230	87	**Pbar**	**29.70**	
2	0.270	89			
3	0.320	91	**Static Pressure**	**-0.4**	
4	0.520	91			
5	0.610	90	**Pitot Coef.**	**0.84**	
6	0.650	90			
7	0.680	89	**Start Time**	**1045**	
8	0.660	89			
0			**Stop Time**	**1052**	
0					
0			**Absolute Gas Pressure inches water**	**Ps =**	**29.67**
0					
0			**Dry Mole Fraction of Gas**	**Mfd =**	**0.97112**
0					
0			**Dry Molecular Weight of Gas lb/lb Mole**	**Md =**	**28.84**
0					
0			**Wet Molecular Weight of Gas lb/lb Mole**	**Ms =**	**28.52**
0					
0			**Average Gas Velocity ft/sec**	**vs =**	**40.17**
0					
0			**Dry Volumetric Gas Flow Rate**		
0			**at Standard Conditions SCFM**	**Qsd =**	**17591**
0					
0			**Wet Volumetric Flue Gas Flow Rate**		
0			**at Stack Conditions ACFM**	**Qaw =**	**18980**
0					
0			**Wet Volumetric Gas Flow Rate**		
0			**at Standard Conditions WSCFH**	**WSCFH =**	**1086846**
0					
0			LKCH		
0			Pre	3-4	good
0			Post	5-3	good
0					
0					

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1909	
Client	Enviva				ACT Run Number	12	
Plant	Amory				Date	10/16/2013	
City/State	Amory, MS				Gauge ID	909033	
Location	Dry Hammermill Baghouse				Pitot ID	4Pext	
Averages	**0.500**	**93.8**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	0.560	91			**Oxygen %**	**20.9**	
2	0.600	93					
3	0.600	94			**Carbon Dioxide %**	**0**	
4	0.610	95					
5	0.550	95			**Moisture %**	**3.40**	
6	0.480	95					
7	0.410	94			**Stack Area sq.in.**	**0**	
8	0.320	87					
B-1	0.280	91			**Pbar**	**29.70**	
2	0.310	94					
3	0.330	95			**Static Pressure**	**-0.4**	
4	0.430	95					
5	0.520	95			**Pitot Coef.**	**0.84**	
6	0.680	95					
7	0.740	95			**Start Time**	**1155**	
8	0.760	96					
0					**Stop Time**	**1204**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.67**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.96601**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.47**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**41.11**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**0**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**0**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**0**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1909	
Client	Enviva				ACT Run Number	13	
Plant	Amory				Date	10/16/2013	
City/State	Amory, MS				Gauge ID	909033	
Location	Dry Hammermill Baghouse				Pitot ID	4Pext	
Averages	**0.491**	**96.1**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	0.520	95			**Oxygen %**	**20.9**	
2	0.490	96					
3	0.480	96			**Carbon Dioxide %**	**0**	
4	0.440	97					
5	0.480	97			**Moisture %**	**4.25**	
6	0.440	97					
7	0.380	94			**Stack Area sq.in.**	**1134.114965**	
8	0.633	91					
B-1	0.340	93			**Pbar**	**29.70**	
2	0.380	95					
3	0.390	97			**Static Pressure**	**-0.4**	
4	0.420	97					
5	0.570	98			**Pitot Coef.**	**0.84**	
6	0.660	98					
7	0.680	98			**Start Time**	**1310**	
8	0.640	98					
0					**Stop Time**		
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**29.67**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.95754**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.38**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**40.89**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**17421**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**19321**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**1091591**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
0							
0							

Method 1 - Air Control Techniques, P.C.

Date: 10/14/2013

Client	Enviva
Job #	1909
Plant Name	Amory
State	Mississippi
City	Amory
Sampling Location	Pellet Mill 2 Cooler

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

	Diameters		
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

No. of Ports Available		2
No. of Ports Used		2
Port Inside Diameter, Inches		2
Distance From Far Wall To Outside Of Port, Inches		24
Nipple Length And/Or Wall Thickness, Inches		0
Depth Of Stack Or Duct, Inches		24
Stack Or Duct Width (if rectangular), Inches		
Equiv. Diameter = 2DW/(D+W), Inches		24
Stack/Duct Area, Square Feet		3.1
(□ x R^2 or L x W)		
	Upstream	Downstream
Distance to Flow Disturbances, Inches	70	30
Diameters	2.92	1.25

2 diff nipples probe marked to inside of port

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port	Too Close
1	3.2	6/8	6/8	1
2	10.6	2 4/8	2 4/8	
3	19.4	4 5/8	4 5/8	
4	32.3	7 6/8	7 6/8	
5	67.7	16 2/8	16 2/8	
6	80.6	19 3/8	19 3/8	
7	89.5	21 4/8	21 4/8	
8	96.8	23 2/8	23 2/8	23
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0   0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8   0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4   0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8   0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1909	
Client	Enviva				ACT Run Number	8	
Plant	Amory				Date	10/15/2013	
City/State	Amory, MS				Gauge ID	909033	
Location	Pellet Mill 2 Cooler				Pitot ID	4Pext	
Averages	**1.529**	**138.9**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**		Angle			
A-1	1.600	139		-5	**Oxygen %**	**20.9**	
2	1.600	139		0			
3	1.500	139		0	**Carbon Dioxide %**	**0**	
4	1.300	139		0			
5	1.300	140		-10	**Moisture %**	**7.73**	
6	1.600	139		-2			
7	1.500	135		-5	**Stack Area sq.in.**	**452.3893488**	
8	1.600	135		0			
B-1	1.500	137		0	**Pbar**	**29.80**	
2	1.500	138		-5			
3	1.400	139		-3	**Static Pressure**	**-13.5**	
4	1.400	140		4			
5	1.700	140		2	**Pitot Coef.**	**0.84**	
6	1.700	141		3			
7	1.700	141		6	**Start Time**	**1650**	
8	1.600	142		5			
0					**Stop Time**	**1702**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**28.81**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.92267**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.00**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**76.51**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**11294**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**14422**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**734451**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1909	
Client	Enviva				ACT Run Number	9	
Plant	Amory				Date	10/15/2013	
City/State	Amory, MS				Gauge ID	909033	
Location	Pellet Mill 2 Cooler				Pitot ID	4Pext	
Averages	**1.521**	**138.3**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	1.600	137			**Oxygen %**	**20.9**	
2	1.700	138					
3	1.500	139			**Carbon Dioxide %**	**0**	
4	1.400	139					
5	1.400	138			**Moisture %**	**8.08**	
6	1.700	136					
7	1.700	137			**Stack Area sq.in.**	**452.3893488**	
8	1.600	138					
B-1	1.700	137			**Pbar**	**29.80**	
2	1.800	138					
3	1.500	139			**Static Pressure**	**-13.5**	
4	1.300	138					
5	1.300	139			**Pitot Coef.**	**0.84**	
6	1.500	140					
7	1.400	140			**Start Time**	**1839**	
8	1.300	140					
0					**Stop Time**	**1843**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**28.81**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.91917**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**27.96**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**76.33**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**11236**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**14387**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**733451**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
0							
0							

Air Control Techniques EPA Method 2 Data Sheet				ACT Job Number	1909	
Client	Enviva			ACT Run Number	10	
Plant	Amory			Date	10/15/2013	
City/State	Amory, MS			Gauge ID	909033	
Location	Pellet Mill 2 Cooler			Pitot ID	4Pext	
Averages	**1.539**	**138.6**		Thermocouple ID	TC25	
	Delta P	**Temp**				
Point No.	**In Water**	**Deg F**				
A-1	1.700	137		**Oxygen %**	**20.9**	
2	1.700	138				
3	1.600	139		**Carbon Dioxide %**	**0**	
4	1.400	140				
5	1.400	138		**Moisture %**	**8.08**	
6	1.600	137				
7	2.100	136		**Stack Area sq.in.**	**452.3893488**	
8	1.800	135				
B-1	1.800	137		**Pbar**	**29.80**	
2	1.900	138				
3	1.400	139		**Static Pressure**	**-13.5**	
4	1.100	140				
5	1.300	140		**Pitot Coef.**	**0.84**	
6	1.400	141				
7	1.300	141		**Start Time**	**1952**	
8	1.300	141				
0				**Stop Time**	**1956**	
0						
0			**Absolute Gas Pressure inches water**		**Ps =**	**28.81**
0						
0			**Dry Mole Fraction of Gas**		**Mfd =**	**0.91917**
0						
0			**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0						
0			**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**27.96**
0						
0			**Average Gas Velocity ft/sec**		**vs =**	**76.80**
0						
0			**Dry Volumetric Gas Flow Rate**			
0			**at Standard Conditions SCFM**		**Qsd =**	**11302**
0						
0			**Wet Volumetric Flue Gas Flow Rate**			
0			**at Stack Conditions ACFM**		**Qaw =**	**14477**
0						
0			**Wet Volumetric Gas Flow Rate**			
0			**at Standard Conditions WSCFH**		**WSCFH =**	**737732**
0						
0				LKCH		
0				Pre	3-4	good
0				Post	5-3	good
0						
0						

Method 1 - Air Control Techniques, P.C.

Date: 10/14/2013

Client	Enviva
Job #	1909
Plant Name	Amory
State	Mississippi
City	Amory
Sampling Location	Green Hammermill

Note: If more than 8 and 2 diamteters and if duct dia. is less than 24" use 8 or 9 points.

	Diameters		
Velocity	UP	Down	Particulate
12	8	2	12
12	7	1.75	12
12	6	1.5	16
16	5	1.25	20
16	2	0.5	24 or 25

No. of Ports Available	2	
No. of Ports Used	2	
Port Inside Diameter, Inches	2	
Distance From Far Wall To Outside Of Port, Inches	18	
Nipple Length And/Or Wall Thickness, Inches	0	
Depth Of Stack Or Duct, Inches	18	
Stack Or Duct Width (if rectangular), Inches		
Equiv. Diameter = 2DW/(D+W), Inches	18	
Stack/Duct Area, Square feet	1.8	
(□ x R^2 or L x W)		
	Upstream	Downstream
Distance to Flow Disturbances, inches	37.5	11.5
Diameters	2.08	0.64

Point Location Data

Point	% of Duct Depth	Distance From Inside Wall	Distance From Outside of Port	Too Close
1	3.2	5/8	5/8	1
2	10.6	1 7/8	1 7/8	
3	19.4	3 4/8	3 4/8	
4	32.3	5 7/8	5 7/8	
5	67.7	12 1/8	12 1/8	
6	80.6	14 4/8	14 4/8	
7	89.5	16 1/8	16 1/8	
8	96.8	17 3/8	17 3/8	17
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Location of Points in Circular Stacks or Ducts

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.6	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.6	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

Location of Points in Rectangular Stacks or Ducts

	2	3	4	5	6	7	**8**	9	10	11	12
1	25	16.7	12.5	10.0	8.3	7.1	**6.3**	5.6	5.0	4.5	4.2
2	75	50	37.5	30.0	25	21.4	**18.8**	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	**31.3**	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50	**43.8**	28.9	35.0	31.8	29.2
5				90.0	75	64.3	**56.3**	50	45.0	40.9	37.5
6					91.7	78.6	**68.8**	61.1	55.0	50	45.8
7						92.9	**81.3**	72.2	65.0	59.1	54.2
8							**93.8**	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

0.0000 - 0.0625 - 0	0.5625 - 0.6875 - 5/8
0.0625 - 0.1875 - 1/8	0.6875 - 0.8125 - 3/4
0.1875 - 0.3125 - 1/4	0.8125 - 0.9375 - 7/8
0.3125 - 0.4375 - 3/8	0.9375 - 1.0000 - 1
0.4375 - 0.5625 - 1/2	

Air Control Techniques EPA Method 2 Data Sheet				ACT Job Number	1909	
Client	Enviva			ACT Run Number	4	
Plant	Amory			Date	10/15/2013	
City/State	Amory, MS			Gauge ID	909033	
Location	Green Hammermill			Pitot ID	4Pext	
Averages	**4.082**	**87.4**		Thermocouple ID	TC25	
	Delta P	**Temp**				
Point No.	**In Water**	**Deg F**	Angle			
A-1	3.700	86	2	**Oxygen %**	**20.9**	
2	4.300	88	5			
3	5.300	88	-3	**Carbon Dioxide %**	**0**	
4	5.500	89	-3			
5	2.700	88	0	**Moisture %**	**2.25**	
6	2.500	87	0			
7	2.600	86	3	**Stack Area sq.in.**	**254.4690087**	
8	2.200	84	5			
B-1	2.100	86	2	**Pbar**	**29.80**	
2	2.200	88	4			
3	2.500	88	5	**Static Pressure**	**3.6**	
4	6.500	88	-3			
5	6.500	89	-3	**Pitot Coef.**	**0.84**	
6	6.300	88	0			
7	5.900	88	1	**Start Time**	**855**	
8	7.900	88	2			
0				**Stop Time**	**902**	
0						
0			**Absolute Gas Pressure inches water**		**Ps =**	**30.06**
0						
0			**Dry Mole Fraction of Gas**		**Mfd =**	**0.97746**
0						
0			**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0						
0			**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.59**
0						
0			**Average Gas Velocity ft/sec**		**vs =**	**115.79**
0						
0			**Dry Volumetric Gas Flow Rate**			
0			**at Standard Conditions SCFM**		**Qsd =**	**11630**
0						
0			**Wet Volumetric Flue Gas Flow Rate**			
0			**at Stack Conditions ACFM**		**Qaw =**	**12277**
0						
0			**Wet Volumetric Gas Flow Rate**			
0			**at Standard Conditions WSCFH**		**WSCFH =**	**713880**
0						
0				LKCH		
0				Pre	3-4	good
0				Post	5-3	good
0						
0						

Air Control Techniques EPA Method 2 Data Sheet				ACT Job Number	1909	
Client	Enviva			ACT Run Number	5	
Plant	Amory			Date	10/15/2013	
City/State	Amory, MS			Gauge ID	909033	
Location	Green Hammermill			Pitot ID	4Pext	
Averages	**4.132**	**87.5**		Thermocouple ID	TC25	
	Delta P	**Temp**				
Point No.	**In Water**	**Deg F**				
A-1	4.300	88		**Oxygen %**	**20.9**	
2	5.000	88				
3	5.900	88		**Carbon Dioxide %**	**0**	
4	3.100	88				
5	2.600	87		**Moisture %**	**2.92**	
6	2.600	87				
7	2.600	87		**Stack Area sq.in.**	**254.4690087**	
8	2.500	85				
B-1	2.200	86		**Pbar**	**29.80**	
2	2.300	87				
3	4.100	88		**Static Pressure**	**3.6**	
4	5.300	89				
5	5.700	88		**Pitot Coef.**	**0.84**	
6	6.400	88				
7	6.500	88		**Start Time**	**1013**	
8	7.900	88				
0				**Stop Time**	**1017**	
0						
0			**Absolute Gas Pressure inches water**		**Ps =**	**30.06**
0						
0			**Dry Mole Fraction of Gas**		**Mfd =**	**0.97079**
0						
0			**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0						
0			**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.52**
0						
0			**Average Gas Velocity ft/sec**		**vs =**	**116.64**
0						
0			**Dry Volumetric Gas Flow Rate**			
0			**at Standard Conditions SCFM**		**Qsd =**	**11634**
0						
0			**Wet Volumetric Flue Gas Flow Rate**			
0			**at Stack Conditions ACFM**		**Qaw =**	**12367**
0						
0			**Wet Volumetric Gas Flow Rate**			
0			**at Standard Conditions WSCFH**		**WSCFH =**	**719063**
0						
0				LKCH		
0				Pre	3-4	good
0				Post	5-3	good
0						
0						

Air Control Techniques EPA Method 2 Data Sheet					ACT Job Number	1909	
Client	Enviva				ACT Run Number	6	
Plant	Amory				Date	10/15/2013	
City/State	Amory, MS				Gauge ID	909033	
Location	Green Hammermill				Pitot ID	4Pext	
Averages	**4.086**	**88.4**			Thermocouple ID	TC25	
	Delta P	**Temp**					
Point No.	**In Water**	**Deg F**					
A-1	4.000	87			**Oxygen %**	**20.9**	
2	4.200	89					
3	4.800	89			**Carbon Dioxide %**	**0**	
4	6.400	89					
5	3.300	89			**Moisture %**	**2.92**	
6	2.700	89					
7	2.600	87			**Stack Area sq.in.**	**254.4690087**	
8	2.400	85					
B-1	1.600	87			**Pbar**	**29.80**	
2	2.300	89					
3	4.000	89			**Static Pressure**	**3.6**	
4	5.300	89					
5	5.400	89			**Pitot Coef.**	**0.84**	
6	6.000	89					
7	7.100	89			**Start Time**	**1124**	
8	5.900	90					
0					**Stop Time**	**1130**	
0							
0				**Absolute Gas Pressure inches water**		**Ps =**	**30.06**
0							
0				**Dry Mole Fraction of Gas**		**Mfd =**	**0.97079**
0							
0				**Dry Molecular Weight of Gas lb/lb Mole**		**Md =**	**28.84**
0							
0				**Wet Molecular Weight of Gas lb/lb Mole**		**Ms =**	**28.52**
0							
0				**Average Gas Velocity ft/sec**		**vs =**	**116.09**
0							
0				**Dry Volumetric Gas Flow Rate**			
0				**at Standard Conditions SCFM**		**Qsd =**	**11560**
0							
0				**Wet Volumetric Flue Gas Flow Rate**			
0				**at Stack Conditions ACFM**		**Qaw =**	**12309**
0							
0				**Wet Volumetric Gas Flow Rate**			
0				**at Standard Conditions WSCFH**		**WSCFH =**	**714468**
0							
0					LKCH		
0					Pre	3-4	good
0					Post	5-3	good
0							
0							

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/14/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	9D
City, State	Amory, MS	Meterbox ID	909033
Test Location		ΔH@	1.917
Personnel	TTB JBG	Gamma (γ)	0.9828

Run Identification M4-1

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	16
Post Leak Check	0.000	< 0.02 or 4%	16

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1515	180.200	0	85	1.0	N/A	N/A	59	3
1530	188.51	15	92				53	3
1545	197.20	30	94				54	3
1600	204.42	45	95				56	3
1615	210.892	60						

Run Identification M4-2

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	13
Post Leak Check	0.004	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1640	0	211.600	95	1.0	N/A	N/A	55	3
1655	15	221.71	94				51	3
1710	30	229.56	93				53	3
1725	45	237.91	92				54	3
1740	60	246.729						

Run Identification M4-3

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	10
Post Leak Check	0.000	< 0.02 or 4%	4

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1758	0	247.000	89	1.0	N/A	N/A	54	3
1813	15	255.44	88				53	3
1828	30	263.25	88				52	3
1843	45	269.37	87				56	3
1858	60	278.084						

Method 4 - Air Control Techniques, P.C.

Date

Identification Information

Client	ENVIVA	Job	1909
Plant Name	AMORY	Process	DRYER
City	AMORY	State	MS

Sampling Information

Run Number				Balance Number	V1200
Sampling Date				Balance Type	Electronic
Recovery Date				Balance Level	✓
Personnel	TTB JBG			Recovery Area	✓

Location Moisture Data

Run Number	M4-1	2	3
Impinger 1			
Final Weight, grams/mls	780.4	796.5	854.4
Initial Weight, grams/mls	709.5	717.2	780.4
Condensed Water, grams	70.9	79.3	74.0
Impinger 2			
Final Weight, grams/mls	679.3	724.1	683.8
Initial Weight, grams/mls	673.6	718.9	679.3
Condensed Water, grams	5.7	5.2	4.5
Impinger 3			
Final Weight, grams/mls	604.5	613.3	605.5
Initial Weight, grams/mls	603.1	612.5	604.5
Condensed Water, grams	1.4	0.8	1.0
Condensed Water, grams			
Silica Gel			
Final Weight, grams	802.5	823.0	808.5
Initial Weight, grams	796.7	816.4	802.5
Adsorbed Water, grams	5.8	6.6	6.0
Adsorbed Water, grams			
Total Water, grams	83.8	91.9	

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/18/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	90
City, State	AMORY, MS	Meterbox ID	909033
Test Location	Green Hammermill	$\Delta H_@$	1.917
Personnel	TTB, JBG	Gamma (γ)	0.9828

Run Identification M-4

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	15
Post Leak Check	0.000	< 0.02 or 4%	12

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
911	0	278.300	66	1.0	N/A	N/A	52	3
926	15	286.65	67	↓	↓	↓	60	3
	30	294.87	70				64	3
	45	303.11	72				65	3
	60	311.263						

Run Identification 5

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	16
Post Leak Check	0.000	< 0.02 or 4%	9

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1022	0	311.600	73	1.0	N/A	N/A	59	3
1037	15	320.11	76	↓	↓	↓	60	3
1052	30	329.01	77				60	3
1107	45	337.70	78				61	3
1122	60	346.296						

Run Identification 6

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	14
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft³)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1140	0	346.500	78	1.0	N/A	N/A	61	3
1155	15	355.02	80	↓	↓	↓	60	3
1210	30	363.61	80				62	3
1225	45	372.43	81				64	3
1240	60	380.300						

Method 4 - Air Control Techniques, P.C.

Date

Identification Information

Client	ENVIVA	Job	1909
Plant Name	Amory	Process	Green Hammer Mill
City	Amory	State	MS

Sampling Information

Run Number			
Sampling Date			
Recovery Date			
Personnel	TTB JBG		

Balance Number	V1200
Balance Type	Electronic
Balance Level	✓
Recovery Area	✓

Location Moisture Data

Run Number	M4-4	5	6
Impinger 1			
Final Weight, grams/mls	809.0	868.8	823.5
Initial Weight, grams/mls	796.5	854.4	809.0
Condensed Water, grams	12.5	14.4	14.5
Impinger 2			
Final Weight, grams/mls	724.2	685.4	727.2
Initial Weight, grams/mls	724.1	683.8	724.2
Condensed Water, grams	~~ACKR~~ 0.1	1.6	3.0
Impinger 3			
Final Weight, grams/mls	612.5	605.2	614.0
Initial Weight, grams/mls	613.3	605.5	612.5
Condensed Water, grams	-0.8	-0.3	1.5
Condensed Water, grams			
Silica Gel			
Final Weight, grams	827.0	814.2	834.0
Initial Weight, grams	823.0	808.5	827.0
Adsorbed Water, grams	4.0	5.7	7.0
Adsorbed Water, grams	—	—	—
Total Water, grams	15.8	21.4	26.0

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/15/13

SOURCE IDENTIFICATION		**EQUIPMENT IDENTIFICATION**	
Facility	ENVIVA	Umbilical ID	90
City, State	AmoRY, MS	Meterbox ID	909033
Test Location	DRY Hammermill	ΔH@	1.917
Personnel	TTB JBG	Gamma (γ)	0.9828

Run Identification MH-7

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	10

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1348	0	380.500	78	10	N/A	N/A	60	3
1403	15	388.92	77	↓	↓	↓	56	3
1418	30	398.03	82				55	3
1433	45	406.56	83				56	3
1448	60	415.418						

Run Identification ~~8~~

	Actual	Req'd	Vac
Pre Leak Check		< 0.02 or 4%	
Post Leak Check		< 0.02 or 4%	

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
	0			1.0	N/A	N/A		
	15			↓	↓	↓		
	30							
	45							
	60							

Run Identification ~~9~~

	Actual	Req'd	Vac
Pre Leak Check		< 0.02 or 4%	
Post Leak Check		< 0.02 or 4%	

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
	0			1.0	N/A	N/A		
	15			↓	↓	↓		
	30							
	45							
	60							

Method 4 - Air Control Techniques, P.C.

Date 10/15/13

Identification Information

Client	ENVIVA	Job	1909
Plant Name	AMORY	Process	Dry Hammer Mill
City	AMORY	State	MS

Sampling Information

Run Number			
Sampling Date			
Recovery Date			
Personnel	TTB JBG		

Balance Number	V1200
Balance Type	Electronic
Balance Level	✓
Recovery Area	✓

Location Moisture Data

Run Number	7	8	9
Impinger 1			
Final Weight, grams/mls	887.0		
Initial Weight, grams/mls	868.8	823.5	887.0
Condensed Water, grams	18.2		
Impinger 2			
Final Weight, grams/mls	687.2		
Initial Weight, grams/mls	685.4	727.2	687.2
Condensed Water, grams	1.8		
Impinger 3			
Final Weight, grams/mls	605.8		
Initial Weight, grams/mls	605.2	614.0	605.8
Condensed Water, grams	0.6		
Condensed Water, grams			
Silica Gel			
Final Weight, grams	819.9		
Initial Weight, grams	814.2	834.0	819.9
Adsorbed Water, grams	5.7		
Adsorbed Water, grams	—	—	—
Total Water, grams	26.3		

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/15/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	ENVIVA	Umbilical ID	90
City, State	AMORY MS	Meterbox ID	909033
Test Location	Pellet Mill Cooler Aspirator	ΔH@	1.917
Personnel	TIB JBG	Gamma (γ)	0.9828

Run Identification m4-8

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	15
Post Leak Check	0.000	< 0.02 or 4%	7

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1736	0	416.000	77	1.0	N/A	N/A	64	3
1751	15	424.31	86				50	3
1806	30	432.72	80				51	3
1821	45	441.21	81				52	3
1836	60	449.483						

Run Identification 9

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	9
Post Leak Check	0.000	< 0.02 or 4%	12

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1849	0	449.600	80	1.0	N/A	N/A	53	3
1904	15	456.600	81				62	3
1919	30	466.662	82				61	3
1934	45	475.25	82				61	3
1949	60	483.993						

Run Identification 10

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	11
Post Leak Check	0.000	< 0.02 or 4%	7

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
2000	0	484.100	80	1.0	N/A	N/A	51	3
2015	15	492.71	81				66	3
2030	30	501.11	81				64	3
2045	45	509.43	81				64	3
2100	60	517.924						

Method 4 - Air Control Techniques, P.C.

Date 10/15/13

Identification Information

Client	ENVIVA	Job	1909
Plant Name	AMORY	Process	ASPIRATOR
City	AMORY	State	MS

Sampling Information

Run Number				Balance Number	V1200
Sampling Date				Balance Type	Electronic
Recovery Date				Balance Level	✓
Personnel	TTB JBG			Recovery Area	✓

Location Moisture Data

Run Number	8	9	10
Impinger 1			
Final Weight, grams/mls	874.7	937.5	926.5
Initial Weight, grams/mls	823.5	887.0	874.7
Condensed Water, grams	~~8~~ 51.2	50.2	~~874.7~~ 51.8
Impinger 2			
Final Weight, grams/mls	729.3	692.2	734.1
Initial Weight, grams/mls	727.2	687.2	729.3
Condensed Water, grams	2.1	5.0	4.8
Impinger 3			
Final Weight, grams/mls	614.2	606.3	615.2
Initial Weight, grams/mls	614.0	605.8	614.2
Condensed Water, grams	0.2	0.5	1.0
Condensed Water, grams	53.5		
Silica Gel			
Final Weight, grams	838.3	825.6	843.1
Initial Weight, grams	834.0	819.9	838.3
Adsorbed Water, grams	4.3	5.7	4.8
Adsorbed Water, grams	—	—	—
Total Water, grams	57.8	61.4	62.4

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

Air Control Techniques, P.C.
Moisture Sampling Train Field Data Sheet

Date 10/16/13

SOURCE IDENTIFICATION		EQUIPMENT IDENTIFICATION	
Facility	AMORY ENVIVA	Umbilical ID	90
City, State	AMORY MS	Meterbox ID	909033
Test Location	DRY Hammer Mill	ΔH@	1.917
Personnel	TTB JBG	Gamma (γ)	0.9828

Run Identification 11

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	16
Post Leak Check	0.000	< 0.02 or 4%	19

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1054	0	518.300	64	1.0	N/A	N/A	61	3
1109	15	526.70	67				60	3
1124	30	535.13	70				61	3
1139	45	543.05	71				61	3
1154	60	551.693						

Run Identification 12

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	12
Post Leak Check	0.000	< 0.02 or 4%	7

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1207	0	551.900	72	1.0	N/A	N/A	62	3
1222	15	561.92	75				59	4
1237	30	571.82	74				62	3
1252	45	580.41	75				61	3
1307	60	587.175						

Run Identification 13

	Actual	Req'd	Vac
Pre Leak Check	0.000	< 0.02 or 4%	9
Post Leak Check	0.000	< 0.02 or 4%	8

Clock Time	Elapsed Time (min)	Volume Metered (ft^3)	Meter Temp. (°F)	ΔH (in. W.C.)	Probe Temp. (°F)	Filter Temp. (°F)	Impinger Temp. (°F)	Vacuum (in. Hg)
1321	0	587.400	74	1.0	N/A	N/A	57	3
1336	15	597.865	75				60	3
1351	30	606.43	76				59	3
1406	45	614.61	77				60	3
1421	60	622.809						

Method 4 - Air Control Techniques, P.C.

Date

Identification Information

Client	ENVIVA	Job	1909
Plant Name	AMORY	Process	DRY Hammer Mill
City	AMORY	State	MS

Sampling Information

Run Number				Balance Number	V1200
Sampling Date				Balance Type	Electonic
Recovery Date				Balance Level	L
Personnel				Recovery Area	L

Location Moisture Data

Run Number	11	12	13
Impinger 1			
Final Weight, grams/mls	763.5	934.0	786.3
Initial Weight, grams/mls	746.5	926.5	763.5
Condensed Water, grams	17.0	7.5	22.8
Impinger 2			
Final Weight, grams/mls	693.1	748.7	694.4
Initial Weight, grams/mls	692.2	734.1	693.1
Condensed Water, grams	0.9	14.6	1.3
Impinger 3			
Final Weight, grams/mls	605.6	616.1	607.2
Initial Weight, grams/mls	~~614.2~~ 606.3	615.2	605.6
Condensed Water, grams	~~-0.7~~	0.9	1.6
Condensed Water, grams			
Silica Gel			
Final Weight, grams	829.0	847.0	832.6
Initial Weight, grams	825.6	843.1	829.0
Adsorbed Water, grams	3.4	3.9	3.6
Adsorbed Water, grams	—	—	—
Total Water, grams	~~19.6~~ 20.6	26.9	30.3

Vm(std) = Volume of gas sampled at standard conditions (dscf)

Vm(std) = ((Gamma * 17.64 * Vm * (Pbar + (Δ H / 13.6))) / (Tm + 460)

Vwc(std) = volume of water vapor at standard conditions (scf)

Vwc(std) = (0.04707) * (volume of water collected (mls))

Bws = Mole fraction of water vapor

Bws = Vwc(std) / (Vm(std) + Vwc(std))

Percent Moisture = 100 * Bws

APPENDIX B

Method 25A Data

Test Run 1 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: Dryer Run 1

		THC
		ppm
Start Averaging		
10/14/2013	15:16:06	29.84
10/14/2013	15:17:06	29.38
10/14/2013	15:18:07	29.23
10/14/2013	15:19:08	29.5
10/14/2013	15:20:06	29.43
10/14/2013	15:21:06	29.07
10/14/2013	15:22:06	28.69
10/14/2013	15:23:07	28.19
10/14/2013	15:24:07	28.8
10/14/2013	15:25:07	29.25
10/14/2013	15:26:08	29.42
10/14/2013	15:27:06	29.42
10/14/2013	15:28:06	29.37
10/14/2013	15:29:06	29.27
10/14/2013	15:30:07	28.87
10/14/2013	15:31:07	28.67
10/14/2013	15:32:07	29.34
10/14/2013	15:33:07	29.91
10/14/2013	15:34:06	29.97
10/14/2013	15:35:06	29.72
10/14/2013	15:36:06	29.81
10/14/2013	15:37:07	30.15
10/14/2013	15:38:07	30.47
10/14/2013	15:39:07	30.79
10/14/2013	15:40:07	30.98
10/14/2013	15:41:08	31.24
10/14/2013	15:42:06	30.95
10/14/2013	15:43:06	30.53
10/14/2013	15:44:06	29.96
10/14/2013	15:45:07	29.76
10/14/2013	15:46:07	30.29
10/14/2013	15:47:07	30.72
10/14/2013	15:48:07	31.05
10/14/2013	15:49:06	31.74
10/14/2013	15:50:06	31.76
10/14/2013	15:51:06	31.92
10/14/2013	15:52:06	31.8
10/14/2013	15:53:07	30.91
10/14/2013	15:54:07	30.34
10/14/2013	15:55:07	30.66
10/14/2013	15:56:08	31.37
10/14/2013	15:57:06	31.66
10/14/2013	15:58:06	31.75
10/14/2013	15:59:06	31.88

10/14/2013	16:00:07	32.01
10/14/2013	16:01:07	32.08
10/14/2013	16:02:07	31.95
10/14/2013	16:03:07	31
10/14/2013	16:04:06	29.66
10/14/2013	16:05:06	28.44
10/14/2013	16:06:06	27.74
10/14/2013	16:07:06	27.01
10/14/2013	16:08:07	26.17
10/14/2013	16:09:07	25.71
10/14/2013	16:10:07	25.36
10/14/2013	16:11:08	25.84
10/14/2013	16:12:06	26.07
10/14/2013	16:13:06	25.76
10/14/2013	16:14:06	25.89
10/14/2013	16:15:06	26.02
Average	1803 samp	29.55
Test Run 1 End		

Test Run 2 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: Dryer Run 2

		THC
		ppm
Start Averaging		
10/14/2013	16:41:35	18.65
10/14/2013	16:42:35	17.55
10/14/2013	16:43:35	17.23
10/14/2013	16:44:36	17.41
10/14/2013	16:45:36	17.14
10/14/2013	16:46:36	17.01
10/14/2013	16:47:36	17.98
10/14/2013	16:48:35	19.26
10/14/2013	16:49:35	20.5
10/14/2013	16:50:36	20.97
10/14/2013	16:51:36	21.28
10/14/2013	16:52:36	22.13
10/14/2013	16:53:36	22.77
10/14/2013	16:54:37	22.83
10/14/2013	16:55:35	21.93
10/14/2013	16:56:35	21.3
10/14/2013	16:57:35	21.57
10/14/2013	16:58:36	21.17
10/14/2013	16:59:36	20.54
10/14/2013	17:00:36	21.27
10/14/2013	17:01:36	22.16
10/14/2013	17:02:35	22.73
10/14/2013	17:03:35	22.84
10/14/2013	17:04:35	23.05
10/14/2013	17:05:35	22.88
10/14/2013	17:06:36	22.19
10/14/2013	17:07:36	21.93
10/14/2013	17:08:36	22.4
10/14/2013	17:09:37	22.75
10/14/2013	17:10:35	22.57
10/14/2013	17:11:35	22.65
10/14/2013	17:12:35	22.63
10/14/2013	17:13:36	22.69
10/14/2013	17:14:36	22.76
10/14/2013	17:15:36	22.66
10/14/2013	17:16:36	22.62
10/14/2013	17:17:35	22.57
10/14/2013	17:18:35	22.52
10/14/2013	17:19:35	22.7
10/14/2013	17:20:36	23.2

10/14/2013	17:21:36	23.48
10/14/2013	17:22:36	23.29
10/14/2013	17:23:36	23.28
10/14/2013	17:24:37	23.34
10/14/2013	17:25:35	23.06
10/14/2013	17:26:35	22.67
10/14/2013	17:27:35	21.3
10/14/2013	17:28:36	20.48
10/14/2013	17:29:36	20.59
10/14/2013	17:30:36	21.05
10/14/2013	17:31:36	21.38
10/14/2013	17:32:35	21.75
10/14/2013	17:33:35	22.32
10/14/2013	17:34:35	23.55
10/14/2013	17:35:36	24.22
10/14/2013	17:36:36	24.7
10/14/2013	17:37:36	24.87
10/14/2013	17:38:36	24.87
10/14/2013	17:39:35	24.85
10/14/2013	17:40:35	24.86
Average	1795 samp	21.88

Test Run 2 End

Test Run 3 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: Dryer Run 3

		THC
		ppm
Start Averaging		
10/14/2013	17:59:03	23.65
10/14/2013	18:00:03	23.59
10/14/2013	18:01:01	23.24
10/14/2013	18:02:01	23.09
10/14/2013	18:03:02	23.36
10/14/2013	18:04:02	23.94
10/14/2013	18:05:02	24.25
10/14/2013	18:06:03	24.43
10/14/2013	18:07:03	23.91
10/14/2013	18:08:01	20.3
10/14/2013	18:09:01	14.03
10/14/2013	18:10:02	21.86
10/14/2013	18:11:02	21.83
10/14/2013	18:12:02	22.05
10/14/2013	18:13:02	22.48
10/14/2013	18:14:03	22.72
10/14/2013	18:15:01	22.91
10/14/2013	18:16:01	23.55
10/14/2013	18:17:01	24
10/14/2013	18:18:02	23.83
10/14/2013	18:19:02	23.35
10/14/2013	18:20:02	22.91
10/14/2013	18:21:03	22.53
10/14/2013	18:22:03	22.03
10/14/2013	18:23:01	21.72
10/14/2013	18:24:01	21.54
10/14/2013	18:25:02	21.53
10/14/2013	18:26:02	21.59
10/14/2013	18:27:02	21.11
10/14/2013	18:28:02	20.57
10/14/2013	18:29:03	20.16
10/14/2013	18:30:03	19.45
10/14/2013	18:31:01	18.75
10/14/2013	18:32:02	18.57
10/14/2013	18:33:02	19.09
10/14/2013	18:34:02	20.04
10/14/2013	18:35:02	20.84
10/14/2013	18:36:03	21.29
10/14/2013	18:37:01	22.01
10/14/2013	18:38:01	22.75

10/14/2013	18:39:02	23.32
10/14/2013	18:40:02	23.31
10/14/2013	18:41:02	23.03
10/14/2013	18:42:02	22.55
10/14/2013	18:43:03	22.03
10/14/2013	18:44:03	21.77
10/14/2013	18:45:01	21.28
10/14/2013	18:46:01	20.78
10/14/2013	18:47:02	21.1
10/14/2013	18:48:02	21.25
10/14/2013	18:49:02	21.74
10/14/2013	18:50:03	22.33
10/14/2013	18:51:03	22.64
10/14/2013	18:52:01	22.32
10/14/2013	18:53:01	22.09
10/14/2013	18:54:02	21.95
10/14/2013	18:55:02	21.78
10/14/2013	18:56:02	22
10/14/2013	18:57:02	22.84
10/14/2013	18:58:03	23.45
10/14/2013	18:59:01	23.63
10/14/2013	19:00:01	23.84
Average	1862 samp	22.2
Test Run 3 End		

Test Run 4 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: GHM Run 1

		THC
		ppm
Start Averaging		
10/15/2013	9:11:26	15.95
10/15/2013	9:12:26	17.8
10/15/2013	9:13:26	21.03
10/15/2013	9:14:25	18.51
10/15/2013	9:15:25	18.26
10/15/2013	9:16:25	16.45
10/15/2013	9:17:25	16.65
10/15/2013	9:18:26	18.64
10/15/2013	9:19:26	18.53
10/15/2013	9:20:26	19.32
10/15/2013	9:21:25	19.84
10/15/2013	9:22:25	18.28
10/15/2013	9:23:25	17.88
10/15/2013	9:24:25	20.19
10/15/2013	9:25:25	20.74
10/15/2013	9:26:26	17.95
10/15/2013	9:27:26	17.47
10/15/2013	9:28:26	17.23
10/15/2013	9:29:25	17.82
10/15/2013	9:30:25	17.99
10/15/2013	9:31:25	16.51
10/15/2013	9:32:25	16
10/15/2013	9:33:26	17.44
10/15/2013	9:34:26	18.18
10/15/2013	9:35:26	17.55
10/15/2013	9:36:25	17.15
10/15/2013	9:37:25	15.8
10/15/2013	9:38:25	14.6
10/15/2013	9:39:25	14.94
10/15/2013	9:40:26	15.11
10/15/2013	9:41:26	16.85
10/15/2013	9:42:26	16.16
10/15/2013	9:43:26	16.03
10/15/2013	9:44:25	15.09
10/15/2013	9:45:25	15.75
10/15/2013	9:46:25	15.88
10/15/2013	9:47:25	15.06
10/15/2013	9:48:26	14.84
10/15/2013	9:49:26	16.07
10/15/2013	9:50:26	17

10/15/2013	9:51:26	17.1
10/15/2013	9:52:25	17.27
10/15/2013	9:53:25	17.34
10/15/2013	9:54:25	19.1
10/15/2013	9:55:25	20.4
10/15/2013	9:56:26	17.18
10/15/2013	9:57:26	17.29
10/15/2013	9:58:26	16.76
10/15/2013	9:59:26	17.77
10/15/2013	10:00:25	18.76
10/15/2013	10:01:25	19.29
10/15/2013	10:02:25	19.76
10/15/2013	10:03:26	18.99
10/15/2013	10:04:26	18.63
10/15/2013	10:05:26	18.15
10/15/2013	10:06:26	18.46
10/15/2013	10:07:25	17.84
10/15/2013	10:08:25	16.74
10/15/2013	10:09:25	15.89
10/15/2013	10:10:25	17.2
Average	1794 samp	17.47
Test Run 4 End		

Test Run 5 Begin. STRATA Version 3.2

Operator: DGG

Plant Name: Enviva Amory

Location: GHM Run 2

		THC
		ppm
Start Averaging		
10/15/2013	10:23:15	21.64
10/15/2013	10:24:16	22.79
10/15/2013	10:25:16	21.11
10/15/2013	10:26:16	20.44
10/15/2013	10:27:17	20.36
10/15/2013	10:28:15	19
10/15/2013	10:29:15	17.55
10/15/2013	10:30:15	18.13
10/15/2013	10:31:15	18.99
10/15/2013	10:32:16	19.11
10/15/2013	10:33:16	20.15
10/15/2013	10:34:16	20.97
10/15/2013	10:35:16	20.98
10/15/2013	10:36:15	22.77
10/15/2013	10:37:15	24.15
10/15/2013	10:38:15	22.1
10/15/2013	10:39:16	22.37
10/15/2013	10:40:16	21.25
10/15/2013	10:41:16	21.46
10/15/2013	10:42:16	22.62
10/15/2013	10:43:15	22.74
10/15/2013	10:44:15	19.79
10/15/2013	10:45:15	19.21
10/15/2013	10:46:15	18.83
10/15/2013	10:47:16	16.99
10/15/2013	10:48:16	18.07
10/15/2013	10:49:16	17.81
10/15/2013	10:50:16	16.86
10/15/2013	10:51:15	17.4
10/15/2013	10:52:15	18.8
10/15/2013	10:53:15	19.99
10/15/2013	10:54:16	20.83
10/15/2013	10:55:16	20.93
10/15/2013	10:56:16	22.63
10/15/2013	10:57:16	25.91
10/15/2013	10:58:17	28.69
10/15/2013	10:59:15	27.11
10/15/2013	11:00:15	28.57
10/15/2013	11:01:15	29.23
10/15/2013	11:02:16	28.67

10/15/2013	11:03:16	28.01
10/15/2013	11:04:16	27.22
10/15/2013	11:05:17	23.74
10/15/2013	11:06:15	25.25
10/15/2013	11:07:15	25.76
10/15/2013	11:08:15	23.95
10/15/2013	11:09:15	20.65
10/15/2013	11:10:16	18.9
10/15/2013	11:11:16	17.21
10/15/2013	11:12:16	16.78
10/15/2013	11:13:16	18.22
10/15/2013	11:14:15	18.64
10/15/2013	11:15:15	18.69
10/15/2013	11:16:15	17.69
10/15/2013	11:17:15	16.78
10/15/2013	11:18:16	18.28
10/15/2013	11:19:16	20.17
10/15/2013	11:20:16	20.31
10/15/2013	11:21:17	19.73
10/15/2013	11:22:15	18.97
Average	1795 samp	21.19
Test Run 5 End		

Test Run 6 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: GHM Run 3

		THC ppm
Start Averaging		
10/15/2013	11:41:04	17.41
10/15/2013	11:42:04	17.84
10/15/2013	11:43:04	19.12
10/15/2013	11:44:04	18.76
10/15/2013	11:45:03	19.51
10/15/2013	11:46:03	20.52
10/15/2013	11:47:03	19.63
10/15/2013	11:48:03	21.38
10/15/2013	11:49:04	24.22
10/15/2013	11:50:04	23.15
10/15/2013	11:51:04	25.62
10/15/2013	11:52:04	24.73
10/15/2013	11:53:03	23.15
10/15/2013	11:54:03	25.71
10/15/2013	11:55:03	26.11
10/15/2013	11:56:03	25.65
10/15/2013	11:57:04	26.27
10/15/2013	11:58:04	28
10/15/2013	11:59:04	27.79
10/15/2013	12:00:04	29.58
10/15/2013	12:01:03	32.75
10/15/2013	12:02:03	33.15
10/15/2013	12:03:03	28.65
10/15/2013	12:04:04	27.44
10/15/2013	12:05:04	27.12
10/15/2013	12:06:04	28.95
10/15/2013	12:07:04	27.85
10/15/2013	12:08:03	24.16
10/15/2013	12:09:03	23.8
10/15/2013	12:10:03	24.68
10/15/2013	12:11:03	24.73
10/15/2013	12:12:04	24.19
10/15/2013	12:13:04	22.35
10/15/2013	12:14:04	22.07
10/15/2013	12:15:05	23.04
10/15/2013	12:16:03	23.37
10/15/2013	12:17:03	23.16
10/15/2013	12:18:03	23.44
10/15/2013	12:19:03	24.88
10/15/2013	12:20:04	25.97

10/15/2013	12:21:04	26.79
10/15/2013	12:22:04	29.86
10/15/2013	12:23:04	29.65
10/15/2013	12:24:03	28.11
10/15/2013	12:25:03	28.32
10/15/2013	12:26:03	28.34
10/15/2013	12:27:04	30.11
10/15/2013	12:28:04	33.06
10/15/2013	12:29:04	31.12
10/15/2013	12:30:04	31.31
10/15/2013	12:31:03	33.58
10/15/2013	12:32:03	33.89
10/15/2013	12:33:03	31.81
10/15/2013	12:34:03	34
10/15/2013	12:35:04	35.41
10/15/2013	12:36:04	34.64
10/15/2013	12:37:04	37.89
10/15/2013	12:38:04	37.35
10/15/2013	12:39:03	37.29
10/15/2013	12:40:03	37.09
Average	1805 samp	27.22
Test Run 6 End		

Test Run 7 Begin. STRATA Version 3.2

Operator: DGG

Plant Name: Enviva Amory

Location: DHM Run 1

		THC
		ppm
Start Averaging		
10/15/2013	13:48:31	107.89
10/15/2013	13:49:32	110.03
10/15/2013	13:50:32	116.38
10/15/2013	13:51:32	120.33
10/15/2013	13:52:32	113.69
10/15/2013	13:53:33	113.15
10/15/2013	13:54:33	116.63
10/15/2013	13:55:31	119.67
10/15/2013	13:56:31	117.6
10/15/2013	13:57:32	111.59
10/15/2013	13:58:32	109.24
10/15/2013	13:59:32	105.16
10/15/2013	14:00:32	102.32
10/15/2013	14:01:33	101.17
10/15/2013	14:02:33	101.12
10/15/2013	14:03:31	103.02
10/15/2013	14:04:32	105.51
10/15/2013	14:05:32	105.07
10/15/2013	14:06:32	105.27
10/15/2013	14:07:32	104.71
10/15/2013	14:08:33	101.88
10/15/2013	14:09:33	104.45
10/15/2013	14:10:31	98.55
10/15/2013	14:11:32	93.63
10/15/2013	14:12:32	103.55
10/15/2013	14:13:32	111.82
10/15/2013	14:14:32	111.66
10/15/2013	14:15:33	114.77
10/15/2013	14:16:33	119.41
10/15/2013	14:17:31	112.88
10/15/2013	14:18:31	100.76
10/15/2013	14:19:32	110.26
10/15/2013	14:20:32	115.88
10/15/2013	14:21:32	121.53
10/15/2013	14:22:32	133.41
10/15/2013	14:23:33	138.3
10/15/2013	14:24:33	135.21
10/15/2013	14:25:31	136.51
10/15/2013	14:26:31	136.73
10/15/2013	14:27:32	132.16

10/15/2013	14:28:32	132.89
10/15/2013	14:29:32	124.24
10/15/2013	14:30:32	121.97
10/15/2013	14:31:33	127.27
10/15/2013	14:32:33	125.19
10/15/2013	14:33:31	122.01
10/15/2013	14:34:32	130.07
10/15/2013	14:35:32	131.88
10/15/2013	14:36:32	131.23
10/15/2013	14:37:32	132.47
10/15/2013	14:38:33	127.67
10/15/2013	14:39:33	124.08
10/15/2013	14:40:31	129.18
10/15/2013	14:41:31	148.63
10/15/2013	14:42:32	142.77
10/15/2013	14:43:32	113.23
10/15/2013	14:44:32	115.39
10/15/2013	14:45:33	127.23
10/15/2013	14:46:33	121.07
10/15/2013	14:47:33	120.79
Average	1794 samp	117.88
Test Run 7 End		

Test Run 8 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: Aspirator Run 1

		THC
		ppm
Start Averaging		
10/15/2013	17:36:54	337.1
10/15/2013	17:37:55	338.4
10/15/2013	17:38:55	336.2
10/15/2013	17:39:55	341.3
10/15/2013	17:40:56	351.7
10/15/2013	17:41:56	352.1
10/15/2013	17:42:56	351.1
10/15/2013	17:43:54	349.9
10/15/2013	17:44:55	350.1
10/15/2013	17:45:55	351
10/15/2013	17:46:55	353.4
10/15/2013	17:47:55	355.3
10/15/2013	17:48:56	358
10/15/2013	17:49:56	359.9
10/15/2013	17:50:56	360.4
10/15/2013	17:51:54	361.5
10/15/2013	17:52:55	364.1
10/15/2013	17:53:55	365.9
10/15/2013	17:54:55	366.6
10/15/2013	17:55:56	364
10/15/2013	17:56:56	365.4
10/15/2013	17:57:56	366.7
10/15/2013	17:58:54	366.1
10/15/2013	17:59:54	367.5
10/15/2013	18:00:55	370.4
10/15/2013	18:01:55	370.8
10/15/2013	18:02:55	373.5
10/15/2013	18:03:55	374.6
10/15/2013	18:04:56	375.5
10/15/2013	18:05:56	375
10/15/2013	18:06:54	375.7
10/15/2013	18:07:54	372.6
10/15/2013	18:08:55	364.6
10/15/2013	18:09:55	346.5
10/15/2013	18:10:55	321.4
10/15/2013	18:11:56	295.2
10/15/2013	18:12:56	268.5
10/15/2013	18:13:56	260.9
10/15/2013	18:14:54	267.1
10/15/2013	18:15:55	277.6

10/15/2013	18:16:55	293.7
10/15/2013	18:17:55	305
10/15/2013	18:18:55	313.7
10/15/2013	18:19:56	321.6
10/15/2013	18:20:56	325.9
10/15/2013	18:21:56	329.8
10/15/2013	18:22:54	333.8
10/15/2013	18:23:55	337.9
10/15/2013	18:24:55	343.3
10/15/2013	18:25:55	349.5
10/15/2013	18:26:55	354.7
10/15/2013	18:27:56	358.5
10/15/2013	18:28:56	362.4
10/15/2013	18:29:54	365.4
10/15/2013	18:30:54	367.6
10/15/2013	18:31:55	371.2
10/15/2013	18:32:55	373.7
10/15/2013	18:33:55	374
10/15/2013	18:34:55	375.1
10/15/2013	18:35:56	374.5
Average	1805 samp	347.8
Test Run 8 End		

Test Run 9 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: Aspirator Run 2

		THC
		ppm
Start Averaging		
10/15/2013	18:50:01	362.1
10/15/2013	18:51:01	364.8
10/15/2013	18:52:02	367.6
10/15/2013	18:53:02	370.4
10/15/2013	18:54:02	373.2
10/15/2013	18:55:03	379.6
10/15/2013	18:56:01	389.5
10/15/2013	18:57:01	397.9
10/15/2013	18:58:01	407.9
10/15/2013	18:59:02	416.4
10/15/2013	19:00:02	417.6
10/15/2013	19:01:02	417.3
10/15/2013	19:02:02	416.8
10/15/2013	19:03:03	418.1
10/15/2013	19:04:01	419.9
10/15/2013	19:05:01	423.1
10/15/2013	19:06:01	424.7
10/15/2013	19:07:02	424.2
10/15/2013	19:08:02	419.1
10/15/2013	19:09:02	415.2
10/15/2013	19:10:02	406.7
10/15/2013	19:11:03	400.6
10/15/2013	19:12:01	392.2
10/15/2013	19:13:01	387.1
10/15/2013	19:14:01	384.1
10/15/2013	19:15:02	382.8
10/15/2013	19:16:02	386.5
10/15/2013	19:17:02	385.7
10/15/2013	19:18:02	383.6
10/15/2013	19:19:03	381
10/15/2013	19:20:01	377.4
10/15/2013	19:21:01	371
10/15/2013	19:22:01	365.9
10/15/2013	19:23:02	365.8
10/15/2013	19:24:02	366.4
10/15/2013	19:25:02	368.3
10/15/2013	19:26:02	370.1
10/15/2013	19:27:02	370.4
10/15/2013	19:28:01	369.9
10/15/2013	19:29:01	369.8

10/15/2013	19:30:01	370.6
10/15/2013	19:31:02	373.7
10/15/2013	19:32:02	376.2
10/15/2013	19:33:02	381.4
10/15/2013	19:34:02	384.9
10/15/2013	19:35:03	387.6
10/15/2013	19:36:01	387.4
10/15/2013	19:37:01	383.3
10/15/2013	19:38:01	377.1
10/15/2013	19:39:02	368.2
10/15/2013	19:40:02	362.2
10/15/2013	19:41:02	357
10/15/2013	19:42:02	349.9
10/15/2013	19:43:01	345.2
10/15/2013	19:44:01	341.2
10/15/2013	19:45:01	337.9
10/15/2013	19:46:01	338.9
10/15/2013	19:47:02	336.4
10/15/2013	19:48:02	332.1
10/15/2013	19:49:02	330.8
Average	1797 samp	380.4
Test Run 9 End		

Test Run 10 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: Aspirator Run 3

		THC
		ppm
Start Averaging		
10/15/2013	20:01:06	305.7
10/15/2013	20:02:06	309.3
10/15/2013	20:03:07	306.7
10/15/2013	20:04:07	303.9
10/15/2013	20:05:07	301.2
10/15/2013	20:06:07	296.7
10/15/2013	20:07:08	294.1
10/15/2013	20:08:08	295.9
10/15/2013	20:09:06	300.7
10/15/2013	20:10:07	306.1
10/15/2013	20:11:07	310
10/15/2013	20:12:07	311
10/15/2013	20:13:07	308.6
10/15/2013	20:14:07	302
10/15/2013	20:15:08	296.2
10/15/2013	20:16:08	292.6
10/15/2013	20:17:06	288
10/15/2013	20:18:06	282.5
10/15/2013	20:19:07	283.6
10/15/2013	20:20:07	291.5
10/15/2013	20:21:07	299.6
10/15/2013	20:22:07	308.1
10/15/2013	20:23:08	309.4
10/15/2013	20:24:06	307.6
10/15/2013	20:25:06	307.1
10/15/2013	20:26:07	304.6
10/15/2013	20:27:07	304.7
10/15/2013	20:28:07	301.7
10/15/2013	20:29:07	297
10/15/2013	20:30:08	293.4
10/15/2013	20:31:08	289.3
10/15/2013	20:32:06	284.5
10/15/2013	20:33:07	280.3
10/15/2013	20:34:07	276
10/15/2013	20:35:07	272
10/15/2013	20:36:07	268.9
10/15/2013	20:37:08	266.9
10/15/2013	20:38:08	266.7
10/15/2013	20:39:06	267
10/15/2013	20:40:06	268.3

10/15/2013	20:41:07	267.8
10/15/2013	20:42:07	266.1
10/15/2013	20:43:07	260.8
10/15/2013	20:44:07	256.5
10/15/2013	20:45:08	253.7
10/15/2013	20:46:08	250.8
10/15/2013	20:47:06	249.6
10/15/2013	20:48:06	250.4
10/15/2013	20:49:07	249.6
10/15/2013	20:50:07	250.2
10/15/2013	20:51:07	250.4
10/15/2013	20:52:07	247.3
10/15/2013	20:53:08	245.7
10/15/2013	20:54:08	243.1
10/15/2013	20:55:06	242
10/15/2013	20:56:07	239.9
10/15/2013	20:57:07	236.5
10/15/2013	20:58:07	231.5
10/15/2013	20:59:07	228
10/15/2013	21:00:07	227.4
Average	1799 samp	278.3

Test Run 10 End

Test Run 11 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: DHM Run 2

		THC
		ppm
Start Averaging		
10/16/2013	10:55:03	49.7
10/16/2013	10:56:04	43.5
10/16/2013	10:57:04	57.5
10/16/2013	10:58:04	66.6
10/16/2013	10:59:05	68.8
10/16/2013	11:00:05	73.6
10/16/2013	11:01:03	69.8
10/16/2013	11:02:03	65.2
10/16/2013	11:03:04	69.8
10/16/2013	11:04:04	74.2
10/16/2013	11:05:04	74
10/16/2013	11:06:04	70.3
10/16/2013	11:07:05	72.8
10/16/2013	11:08:05	76.2
10/16/2013	11:09:03	76.3
10/16/2013	11:10:03	68.9
10/16/2013	11:11:04	65.8
10/16/2013	11:12:04	68.1
10/16/2013	11:13:04	69
10/16/2013	11:14:05	69.9
10/16/2013	11:15:05	73.9
10/16/2013	11:16:05	73.1
10/16/2013	11:17:03	74.8
10/16/2013	11:18:04	75.9
10/16/2013	11:19:04	68.4
10/16/2013	11:20:04	66.9
10/16/2013	11:21:04	70.6
10/16/2013	11:22:05	77.4
10/16/2013	11:23:05	75.8
10/16/2013	11:24:05	79.2
10/16/2013	11:25:03	78.8
10/16/2013	11:26:04	72.8
10/16/2013	11:27:04	65.8
10/16/2013	11:28:04	75
10/16/2013	11:29:04	89.4
10/16/2013	11:30:05	103.9
10/16/2013	11:31:05	110.1
10/16/2013	11:32:03	116.7
10/16/2013	11:33:03	116.5
10/16/2013	11:34:04	116.1

10/16/2013	11:35:04	113.4
10/16/2013	11:36:04	95.8
10/16/2013	11:37:05	88.7
10/16/2013	11:38:05	93.6
10/16/2013	11:39:05	93.4
10/16/2013	11:40:03	94.6
10/16/2013	11:41:03	93.6
10/16/2013	11:42:04	91.5
10/16/2013	11:43:04	88.6
10/16/2013	11:44:04	82.2
10/16/2013	11:45:04	72.4
10/16/2013	11:46:05	85.6
10/16/2013	11:47:05	92.9
10/16/2013	11:48:05	87.5
10/16/2013	11:49:03	83.9
10/16/2013	11:50:04	84.4
10/16/2013	11:51:04	83.4
10/16/2013	11:52:04	86.2
10/16/2013	11:53:04	88.5
10/16/2013	11:54:05	85.5
Average	1802 samp	80.3
Test Run 11 End		

Test Run 12 Begin. STRATA Version 3.2
Operator: DGG
Plant Name: Enviva Amory
Location: DHM Run 3

		THC
		ppm
Start Averaging		
10/16/2013	12:07:40	92.8
10/16/2013	12:08:40	94
10/16/2013	12:09:41	95.8
10/16/2013	12:10:41	91.5
10/16/2013	12:11:41	88.4
10/16/2013	12:12:41	78.2
10/16/2013	12:13:42	77.6
10/16/2013	12:14:40	75.3
10/16/2013	12:15:40	75.5
10/16/2013	12:16:40	75.9
10/16/2013	12:17:41	78.5
10/16/2013	12:18:41	78
10/16/2013	12:19:41	82.9
10/16/2013	12:20:41	88.1
10/16/2013	12:21:42	93.7
10/16/2013	12:22:40	93
10/16/2013	12:23:40	91.7
10/16/2013	12:24:40	92.8
10/16/2013	12:25:41	92.5
10/16/2013	12:26:41	87.6
10/16/2013	12:27:41	87.2
10/16/2013	12:28:41	85.2
10/16/2013	12:29:40	84.7
10/16/2013	12:30:40	88.1
10/16/2013	12:31:40	87.7
10/16/2013	12:32:41	84.8
10/16/2013	12:33:41	79.7
10/16/2013	12:34:41	82.4
10/16/2013	12:35:41	85.7
10/16/2013	12:36:40	87.6
10/16/2013	12:37:40	84.7
10/16/2013	12:38:40	60.6
10/16/2013	12:39:41	59.6
10/16/2013	12:40:41	73.9
10/16/2013	12:41:41	76.5
10/16/2013	12:42:41	79.2
10/16/2013	12:43:42	80.6
10/16/2013	12:44:40	80
10/16/2013	12:45:40	73.8
10/16/2013	12:46:41	68.4

	10/16/2013	12:47:41	70.9
	10/16/2013	12:48:41	74.7
	10/16/2013	12:49:41	75.5
	10/16/2013	12:50:41	76.4
	10/16/2013	12:51:40	78.9
	10/16/2013	12:52:40	85
	10/16/2013	12:53:40	89.5
	10/16/2013	12:54:41	85.3
	10/16/2013	12:55:41	84.6
	10/16/2013	12:56:41	87.9
	10/16/2013	12:57:41	96.6
	10/16/2013	12:58:42	100.4
	10/16/2013	12:59:40	100
	10/16/2013	13:00:40	95.4
	10/16/2013	13:01:40	97
	10/16/2013	13:02:41	104.2
	10/16/2013	13:03:41	106.8
	10/16/2013	13:04:41	108
	10/16/2013	13:05:42	100
	10/16/2013	13:06:40	94.7
Average		1820 samp	85.6
Test Run 12 End			

Test Run 13 Begin. STRATA Version 3.2

Operator: DGG

Plant Name: Enviva Amory

Location: DHM Run 4

		THC
		ppm
Start Averaging		
10/16/2013	13:21:35	81.3
10/16/2013	13:22:35	90.1
10/16/2013	13:23:36	82.9
10/16/2013	13:24:36	76.5
10/16/2013	13:25:36	93.5
10/16/2013	13:26:36	109.2
10/16/2013	13:27:35	116
10/16/2013	13:28:35	111.4
10/16/2013	13:29:35	111.3
10/16/2013	13:30:35	103.7
10/16/2013	13:31:36	107.3
10/16/2013	13:32:36	107.4
10/16/2013	13:33:36	111.1
10/16/2013	13:34:36	113.2
10/16/2013	13:35:35	117.8
10/16/2013	13:36:35	118.7
10/16/2013	13:37:35	118.1
10/16/2013	13:38:35	117.6
10/16/2013	13:39:36	122.1
10/16/2013	13:40:36	118
10/16/2013	13:41:36	105.1
10/16/2013	13:42:36	100.8
10/16/2013	13:43:35	93.8
10/16/2013	13:44:35	87.8
10/16/2013	13:45:35	79.1
10/16/2013	13:46:35	73.2
10/16/2013	13:47:36	67.9
10/16/2013	13:48:36	66.4
10/16/2013	13:49:36	67.9
10/16/2013	13:50:34	71.2
10/16/2013	13:51:35	72.9
10/16/2013	13:52:35	77.4
10/16/2013	13:53:35	76.7
10/16/2013	13:54:36	71.8
10/16/2013	13:55:36	68.2
10/16/2013	13:56:36	66.4
10/16/2013	13:57:36	66.5
10/16/2013	13:58:35	69.6
10/16/2013	13:59:35	71.7
10/16/2013	14:00:35	71.6

10/16/2013	14:01:35	67.6
10/16/2013	14:02:36	63
10/16/2013	14:03:36	70.8
10/16/2013	14:04:36	75.9
10/16/2013	14:05:34	79
10/16/2013	14:06:35	82.1
10/16/2013	14:07:35	82.3
10/16/2013	14:08:35	83.2
10/16/2013	14:09:36	83.4
10/16/2013	14:10:36	81.3
10/16/2013	14:11:36	76.7
10/16/2013	14:12:36	76.3
10/16/2013	14:13:35	80.1
10/16/2013	14:14:35	84
10/16/2013	14:15:35	87.6
10/16/2013	14:16:35	86.6
10/16/2013	14:17:36	87.3
10/16/2013	14:18:36	85.2
10/16/2013	14:19:36	82.5
10/16/2013	14:20:34	85.2
Average	1804 samp	87.6
Test Run 13 End		

Enviva - Amory
Run 1

Date: 14-Oct
Run Time: 1515-1615

Parameter	Symbol	Dryer Stack THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	27.99
Mid-Level Gas	$C_{v,\ mid}$	50
High-Level Gas	$C_{v,\ high}$	86.13
Calibration Span	*CS*	100
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.3
Mid-Level Gas	$C_{Dir,\ mid}$	50.12
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	1.1
Mid-Level Gas	ACE_{mid}	0.2
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.1
Final Zero	$C_{s,\ zero\ (post)}$	0.24
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.12
Final Upscale	$C_{v,\ up\ (post)}$	50.1
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.0
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	0.0
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	29.6
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**29.6**

1415

Enviva - Amory — Date: 14-Oct

Run 2 — Run Time: 1649-1749

Parameter	Symbol	Dryer Stack THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.3
Mid-Level Gas	$C_{Dir,\ mid}$	50.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	1.1
Mid-Level Gas	ACE_{mid}	0.2
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.24
Final Zero	$C_{s,\ zero\ (post)}$	0.3
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.1
Final Upscale	$C_{v,\ up\ (post)}$	50.2
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.1
Zero (post)	$SB_{final\ (zero)}$	0.2
Upscale (pre)	$SB_{i\ (upscale)}$	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	21.88
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**21.9**

Enviva - Amory
Run 3

Date: 14-Oct
Run Time: 1758-1900
paused for two minutes

Parameter	Symbol	Dryer Stack THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.3
Mid-Level Gas	$C_{Dir,\ mid}$	50.1
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	1.1
Mid-Level Gas	ACE_{mid}	0.2
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.30
Final Zero	$C_{s,\ zero\ (post)}$	0.34
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.2
Final Upscale	$C_{v,\ up\ (post)}$	50.18
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.2
Zero (post)	$SB_{final\ (zero)}$	0.2
Upscale (pre)	$SB_{i\ (upscale)}$	0.1
Upscale (post)	$SB_{final\ (upscale)}$	0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.0
Upscale	$D_{upscale}$	0.0
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	22.20
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**22.2**

Enviva - Amory
Run 4

Date: 15-Oct
Run Time: 0911-1011

Parameter	Symbol	GHM THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	27.99
Mid-Level Gas	$C_{v,\ mid}$	50
High-Level Gas	$C_{v,\ high}$	86.13
Calibration Span	CS	100
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	27.65
Mid-Level Gas	$C_{Dir,\ mid}$	50
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	-1.2
Mid-Level Gas	ACE_{mid}	0.0
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.1
Final Zero	$C_{s,\ zero\ (post)}$	0.1
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50
Final Upscale	$C_{v,\ up\ (post)}$	50.08
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.0
Upscale (pre)	$SB_{i\ (upscale)}$	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.0
Upscale	$D_{upscale}$	0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	17.5
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**17.5**

Enviva - Amory
Run 5

Date: 15-Oct
Run Time: 1022-1122

Parameter	Symbol	GHM THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	27.7
Mid-Level Gas	$C_{Dir,\ mid}$	50.0
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	-1.2
Mid-Level Gas	ACE_{mid}	0.0
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.10
Final Zero	$C_{s,\ zero\ (post)}$	-0.05
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.08
Final Upscale	$C_{v,\ up\ (post)}$	50.54
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	-0.2
Upscale (pre)	$SB_{i\ (upscale)}$	0.1
Upscale (post)	$SB_{final\ (upscale)}$	0.5
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	-0.2
Upscale	$D_{upscale}$	0.5
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	21.19
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**21.2**

Enviva - Amory | Date: 15-Oct
Run 6 | Run Time: 1140-1240

Parameter	Symbol	GHM THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.1
Low-Level Gas	$C_{Dir,\ low}$	27.65
Mid-Level Gas	$C_{Dir,\ mid}$	50.0
High-Level Gas	$C_{Dir,\ high}$	86.2
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.1
Low-Level Gas	ACE_{low}	-1.2
Mid-Level Gas	ACE_{mid}	0.0
High-Level Gas	ACE_{high}	0.1
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	-0.05
Final Zero	$C_{s,\ zero\ (post)}$	0.05
Upscale Gas Standard	C_{MA}	50.0
Initial Upscale	$C_{v,\ up\ (pre)}$	50.54
Final Upscale	$C_{v,\ up\ (post)}$	50.25
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	-0.2
Zero (post)	$SB_{final\ (zero)}$	-0.1
Upscale (pre)	$SB_{i\ (upscale)}$	0.5
Upscale (post)	$SB_{final\ (upscale)}$	0.3
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	-0.3
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	27.22
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**27.2**

Enviva - Amory
Run 8

Date: 15-Oct
Run Time: 1736-1836

Parameter	Symbol	Aspirator THC (as C_3H_8) ppm$_w$
Analyzer Calibration Error - Calibration Standards		
Zero Gas	$C_{v,\ zero}$	0.0
Low-Level Gas	$C_{v,\ low}$	258.1
Mid-Level Gas	$C_{v,\ mid}$	507.1
High-Level Gas	$C_{v,\ high}$	836.9
Calibration Span	CS	1000
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.4
Low-Level Gas	$C_{Dir,\ low}$	259
Mid-Level Gas	$C_{Dir,\ mid}$	506.1
High-Level Gas	$C_{Dir,\ high}$	837
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.3
Mid-Level Gas	ACE_{mid}	-0.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	0.4
Final Zero	$C_{s,\ zero\ (post)}$	1.2
Upscale Gas Standard	C_{MA}	507.1
Initial Upscale	$C_{v,\ up\ (pre)}$	506.1
Final Upscale	$C_{v,\ up\ (post)}$	507.5
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.0
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.1
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.1
Upscale	$D_{upscale}$	0.1
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	347.8
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**347.8**

1650

Enviva - Amory | Date: 15-Oct
Run 9 | Run Time: 1849-1949

Parameter	Symbol	Aspirator THC (as C_3H_8) ppm$_w$
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.4
Low-Level Gas	$C_{Dir,\ low}$	259.0
Mid-Level Gas	$C_{Dir,\ mid}$	506.1
High-Level Gas	$C_{Dir,\ high}$	837.0
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.3
Mid-Level Gas	ACE_{mid}	-0.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	1.20
Final Zero	$C_{s,\ zero\ (post)}$	1.35
Upscale Gas Standard	C_{MA}	507.1
Initial Upscale	$C_{v,\ up\ (pre)}$	507.5
Final Upscale	$C_{v,\ up\ (post)}$	507.9
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.1
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	0.1
Upscale (post)	$SB_{final\ (upscale)}$	0.2
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.0
Upscale	$D_{upscale}$	0.0
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	380.40
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**380.4**

Enviva - Amory | Date: 15-Oct
Run 10 | Run Time: 2000-2100

Parameter	Symbol	Aspirator THC (as C_3H_8) ppm_w
Analyzer Calibration Error - Instrument Response		
Zero Gas	$C_{Dir,\ zero}$	0.4
Low-Level Gas	$C_{Dir,\ low}$	259.0
Mid-Level Gas	$C_{Dir,\ mid}$	506.1
High-Level Gas	$C_{Dir,\ high}$	837.0
Analyzer Calibration Error - Results (Percent of Span)		
Zero Gas	ACE_{zero}	0.0
Low-Level Gas	ACE_{low}	0.3
Mid-Level Gas	ACE_{mid}	-0.2
High-Level Gas	ACE_{high}	0.0
Specification	ACE_{spec}	±5
System Calibrations - Instrument Response		
Initial Zero	$C_{s,\ zero\ (pre)}$	1.35
Final Zero	$C_{s,\ zero\ (post)}$	1
Upscale Gas Standard	C_{MA}	507.1
Initial Upscale	$C_{v,\ up\ (pre)}$	507.9
Final Upscale	$C_{v,\ up\ (post)}$	508.2
System Bias - Results (Percent)		
Zero (pre)	$SB_{i\ (zero)}$	0.1
Zero (post)	$SB_{final\ (zero)}$	0.1
Upscale (pre)	$SB_{i\ (upscale)}$	0.2
Upscale (post)	$SB_{final\ (upscale)}$	0.2
Specification	SB_{spec}	NA
System Drift - Results (Percent)		
Zero	D_{zero}	0.0
Upscale	$D_{upscale}$	0.0
Specification	D_{spec}	±3
Response Test - Results (seconds)		
Upscale Test		NA
Zero Test		NA
Response Time		30
Calibration Correction		
Raw Average	C_{ave}	278.30
Bias Average - Zero	C_0	N/A
Bias Average - Upscale	C_M	N/A
Corrected Run Average	C_{Gas}	**278.3**

Enviva - Amory
Run 7

Date: 15-Oct
Run Time: 1348-1448

Parameter	Symbol	Dry Hammermill THC (as C_3H_8) ppm$_w$	
Analyzer Calibration Error - Calibration Standards			
Zero Gas	$C_{v,\ zero}$	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	27.99	258.1
Mid-Level Gas	$C_{v,\ mid}$	50	507.1
High-Level Gas	$C_{v,\ high}$	86.13	836.9
Calibration Span	CS	100	1000
Analyzer Calibration Error - Instrument Response			
Zero Gas	$C_{Dir,\ zero}$	0.1	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.1	258.6
Mid-Level Gas	$C_{Dir,\ mid}$	50.24	507.78
High-Level Gas	$C_{Dir,\ high}$	86.45	836.8
Analyzer Calibration Error - Results (Percent of Span)			
Zero Gas	ACE_{zero}	0.1	0.0
Low-Level Gas	ACE_{low}	0.4	0.2
Mid-Level Gas	ACE_{mid}	0.5	0.1
High-Level Gas	ACE_{high}	0.3	0.0
Specification	ACE_{spec}	±5	±5
System Calibrations - Instrument Response			
Initial Zero	$C_{s,\ zero\ (pre)}$	0.1	0.1
Final Zero	$C_{s,\ zero\ (post)}$	0.15	0.15
Upscale Gas Standard	C_{MA}	50.0	507.1
Initial Upscale	$C_{v,\ up\ (pre)}$	50.24	507.78
Final Upscale	$C_{v,\ up\ (post)}$	50.55	508
System Bias - Results (Percent)			
Zero (pre)	$SB_{i\ (zero)}$	0.0	0.0
Zero (post)	$SB_{final\ (zero)}$	0.1	0.0
Upscale (pre)	$SB_{i\ (upscale)}$	0.0	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.3	0.0
Specification	SB_{spec}	NA	NA
System Drift - Results (Percent)			
Zero	D_{zero}	0.1	0.0
Upscale	$D_{upscale}$	0.3	0.0
Specification	D_{spec}	±3	±3
Response Test - Results (seconds)			
Upscale Test		NA	
Zero Test		NA	
Response Time		30	
Calibration Correction			
Raw Average	C_{ave}	117.9	
Bias Average - Zero	C_0	N/A	
Bias Average - Upscale	C_M	N/A	
Corrected Run Average	C_{Gas}	**117.9**	

Enviva - Amory
Run 11

Date: 16-Oct
Run Time: 1054-1154

Parameter	Symbol	Dry Hammermill THC (as C_3H_8) ppm$_w$	
Analyzer Calibration Error - Calibration Standards			
Zero Gas	$C_{v,\ zero}$	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	28.0	258.1
Mid-Level Gas	$C_{v,\ mid}$	50.0	507.1
High-Level Gas	$C_{v,\ high}$	86.1	836.9
Calibration Span	CS	100.0	1000.0
Analyzer Calibration Error - Instrument Response			
Zero Gas	$C_{Dir,\ zero}$	0.1	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.3	259.0
Mid-Level Gas	$C_{Dir,\ mid}$	50.5	508.0
High-Level Gas	$C_{Dir,\ high}$	86.6	837.0
Analyzer Calibration Error - Results (Percent of Span)			
Zero Gas	ACE_{zero}	0.1	0.0
Low-Level Gas	ACE_{low}	1.1	0.3
Mid-Level Gas	ACE_{mid}	1.0	0.2
High-Level Gas	ACE_{high}	0.5	0.0
Specification	ACE_{spec}	±5	±5
System Calibrations - Instrument Response			
Initial Zero	$C_{s,\ zero\ (pre)}$	0.10	0.10
Final Zero	$C_{s,\ zero\ (post)}$	-0.1	-0.1
Upscale Gas Standard	C_{MA}	50.0	507.1
Initial Upscale	$C_{v,\ up\ (pre)}$	50.5	508
Final Upscale	$C_{v,\ up\ (post)}$	50.78	508.5
System Bias - Results (Percent)			
Zero (pre)	$SB_{i\ (zero)}$	0.0	0.0
Zero (post)	$SB_{final\ (zero)}$	-0.2	0.0
Upscale (pre)	$SB_{i\ (upscale)}$	0.0	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.3	0.1
Specification	SB_{spec}	NA	NA
System Drift - Results (Percent)			
Zero	D_{zero}	-0.2	0.0
Upscale	$D_{upscale}$	0.3	0.1
Specification	D_{spec}	±3	±3
Response Test - Results (seconds)			
Upscale Test		NA	
Zero Test		NA	
Response Time		30	
Calibration Correction			
Raw Average	C_{ave}	80.30	
Bias Average - Zero	C_0	N/A	
Bias Average - Upscale	C_M	N/A	
Corrected Run Average	C_{Gas}	**80.3**	

Enviva - Amory | Date: 16-Oct
Run 12 | Run Time: 1207-1307

Parameter	Symbol	Dry Hammermill THC (as C_3H_8) ppm$_w$	
Analyzer Calibration Error - Calibration Standards			
Zero Gas	$C_{v,\ zero}$	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	28.0	258.1
Mid-Level Gas	$C_{v,\ mid}$	50.0	507.1
High-Level Gas	$C_{v,\ high}$	86.1	836.9
Calibration Span	CS	100.0	1000.0
Analyzer Calibration Error - Instrument Response			
Zero Gas	$C_{Dir,\ zero}$	0.1	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.3	259.0
Mid-Level Gas	$C_{Dir,\ mid}$	50.5	508.0
High-Level Gas	$C_{Dir,\ high}$	86.6	837.0
Analyzer Calibration Error - Results (Percent of Span)			
Zero Gas	ACE_{zero}	0.1	0.0
Low-Level Gas	ACE_{low}	1.1	0.3
Mid-Level Gas	ACE_{mid}	1.0	0.2
High-Level Gas	ACE_{high}	0.5	0.0
Specification	ACE_{spec}	±5	±5
System Calibrations - Instrument Response			
Initial Zero	$C_{s,\ zero\ (pre)}$	-0.10	-0.10
Final Zero	$C_{s,\ zero\ (post)}$	0.1	0.1
Upscale Gas Standard	C_{MA}	50.0	507.1
Initial Upscale	$C_{v,\ up\ (pre)}$	50.78	508.5
Final Upscale	$C_{v,\ up\ (post)}$	50.7	508
System Bias - Results (Percent)			
Zero (pre)	$SB_{i\ (zero)}$	-0.2	0.0
Zero (post)	$SB_{final\ (zero)}$	0.0	0.0
Upscale (pre)	$SB_{i\ (upscale)}$	0.3	0.1
Upscale (post)	$SB_{final\ (upscale)}$	0.2	0.0
Specification	SB_{spec}	NA	NA
System Drift - Results (Percent)			
Zero	D_{zero}	0.2	0.0
Upscale	$D_{upscale}$	-0.1	-0.1
Specification	D_{spec}	±3	±3
Response Test - Results (seconds)			
Upscale Test		NA	
Zero Test		NA	
Response Time		30	
Calibration Correction			
Raw Average	C_{ave}	85.60	
Bias Average - Zero	C_0	N/A	
Bias Average - Upscale	C_M	N/A	
Corrected Run Average	C_{Gas}	**85.6**	

Enviva - Amory
Run 13

Date: 16-Oct
Run Time: 1321-1421

Parameter	Symbol	Dry Hammermill THC (as C_3H_8) ppm_w	
Analyzer Calibration Error - Calibration Standards			
Zero Gas	$C_{v,\ zero}$	0.0	0.0
Low-Level Gas	$C_{v,\ low}$	28.0	258.1
Mid-Level Gas	$C_{v,\ mid}$	50.0	507.1
High-Level Gas	$C_{v,\ high}$	86.1	836.9
Calibration Span	CS	100.0	1000.0
Analyzer Calibration Error - Instrument Response			
Zero Gas	$C_{Dir,\ zero}$	0.1	0.1
Low-Level Gas	$C_{Dir,\ low}$	28.3	259.0
Mid-Level Gas	$C_{Dir,\ mid}$	50.5	508.0
High-Level Gas	$C_{Dir,\ high}$	86.6	837.0
Analyzer Calibration Error - Results (Percent of Span)			
Zero Gas	ACE_{zero}	0.1	0.0
Low-Level Gas	ACE_{low}	1.1	0.3
Mid-Level Gas	ACE_{mid}	1.0	0.2
High-Level Gas	ACE_{high}	0.5	0.0
Specification	ACE_{spec}	±5	±5
System Calibrations - Instrument Response			
Initial Zero	$C_{s,\ zero\ (pre)}$	0.10	0.10
Final Zero	$C_{s,\ zero\ (post)}$	0.1	0.1
Upscale Gas Standard	C_{MA}	0.0	507.1
Initial Upscale	$C_{v,\ up\ (pre)}$	50.70	508.00
Final Upscale	$C_{v,\ up\ (post)}$	50.6	508
System Bias - Results (Percent)			
Zero (pre)	$SB_{i\ (zero)}$	0.0	0.0
Zero (post)	$SB_{final\ (zero)}$	0.0	0.0
Upscale (pre)	$SB_{i\ (upscale)}$	0.2	0.0
Upscale (post)	$SB_{final\ (upscale)}$	0.1	0.0
Specification	SB_{spec}	NA	NA
System Drift - Results (Percent)			
Zero	D_{zero}	0.0	0.0
Upscale	$D_{upscale}$	-0.1	0.0
Specification	D_{spec}	±3	±3
Response Test - Results (seconds)			
Upscale Test		0	NA
Zero Test		0	NA
Response Time		30	30
Calibration Correction			
Raw Average	C_{ave}	87.60	
Bias Average - Zero	C_0	N/A	
Bias Average - Upscale	C_M	N/A	
Corrected Run Average	C_{Gas}	**87.6**	

APPENDIX C

Method 320 Data

Company	ACT
Analyst Initials	STG
Parameters	EPA Method 320

Client #	Amory
Job #	0913-173
sample #	4

Compound — Sample ID / Concentration (ppmv wet)

Data Runs

	Dryer Stack Run 1		**Dryer Stack Run 2**		**Dryer Stack Run 3**		**GHM Run 1**		**GHM Run 2**		**GHM Run 3**	
Acrolein	2.679	ND	2.679	ND	2.679	ND	2.679	ND	2.679	ND	2.679	ND
Formaldehyde	0.725		0.507		0.647		0.205	ND	0.205	ND	0.205	ND
Methanol	3.172		1.615		2.141		2.622		2.686		2.909	
Phenol	3.648	ND	3.648	ND	3.648	ND	3.648	ND	3.648	ND	3.648	ND
Propionaldehyde	0.558	ND	0.558	ND	0.558	ND	0.558	ND	0.558	ND	0.558	ND
acetaldehyde	0.867	ND	0.867	ND	0.867	ND	0.867	ND	0.867	ND	0.867	ND

Data Runs

	DHM Run 1		**Aspirator Run 1**		**Aspirator Run 2**		**Aspirator Run 3**		**DHM Run 2**		**DHM Run 3**	
Acrolein	2.725	J	2.679	ND	2.679	ND	2.679	ND	2.679	J	2.679	J
Formaldehyde	0.205	ND	0.838		0.821		0.794		0.205	ND	0.205	ND
Methanol	0.999		2.611		2.861		2.696		0.693		0.803	
Phenol	3.648	ND	3.648	ND	3.648	ND	3.648	ND	3.648	ND	3.648	ND
Propionaldehyde	0.558	ND	0.558	ND	0.558	ND	0.558	ND	0.558	ND	0.558	ND
acetaldehyde	0.867	ND	0.867	ND	0.867	ND	0.867	ND	0.867	ND	0.867	ND

Data Runs

	DHM Run 4	
Acrolein	2.679	J
Formaldehyde	0.205	ND
Methanol	0.858	
Phenol	3.648	ND

Company	ACT
Analyst Initials	STG
Parameters	EPA Method 320

Client #	Amory
Job #	0913-173
sample #	4

Compound	Sample ID / Concentration (ppmv wet)	
Propionaldehyde	0.558	ND
acetaldehyde	0.867	ND

Company	ACT
Analyst Initials	STG
Parameters	EPA Method 320

Client #	Amory
Job #	0913-173
sample #	4

Minimum Detectable Concentrations

Run	Average SEC	Acrolein (ppm)	Formaldehyde (ppm)	Methanol (ppm)	Phenol (ppm)	Propionaldehyde (ppm)	acetaldehyde (ppm)
Dryer Stack Run 1		1.788	0.097	0.283	2.150	0.164	0.525
Dryer Stack Run 2		1.686	0.094	0.251	1.936	0.157	0.501
Dryer Stack Run 3		1.795	0.099	0.281	2.206	0.164	0.531
GHM Run 1		1.133	0.067	0.083	1.663	0.114	0.350
GHM Run 2		1.130	0.067	0.085	1.708	0.115	0.348
GHM Run 3		1.114	0.067	0.085	1.736	0.121	0.345
DHM Run 1		1.074	0.083	0.079	1.544	0.246	0.339
Aspirator Run 1		1.476	0.182	0.139	2.029	0.674	0.579
Aspirator Run 2		1.465	0.201	0.152	1.986	0.752	0.590
Aspirator Run 3		1.446	0.158	0.129	1.982	0.552	0.525
DHM Run 2		1.083	0.072	0.072	1.538	0.186	0.330
DHM Run 3		1.090	0.073	0.075	1.580	0.190	0.333
DHM Run 4		1.131	0.074	0.080	1.651	0.194	0.339
	Average SEC over Runs (ppm):	**1.339**	**0.103**	**0.138**	**1.824**	**0.279**	**0.433**
	MDC(ppm):	**2.679**	**0.205**	**0.276**	**3.648**	**0.558**	**0.867**

Company	ACT
Analyst Initials	STG
Parameters	EPA Method 320

Client #	Amory
Job #	0913-173
sample #	4

Data

Sm --Spiked Data

Date	Method	FileName	Methanol (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)
10/14/2013 13:54	0917-173_Non-Phenol_D	13_10_14_1354_43_956	8.83	0.281	0.222	0.01400
10/14/2013 13:55	0917-173_Non-Phenol_D	13_10_14_1355_44_666	8.64	0.281	0.228	0.01400
10/14/2013 13:56	0917-173_Non-Phenol_D	13_10_14_1356_45_486	8.38	0.271	0.223	0.01300
10/14/2013 13:57	0917-173_Non-Phenol_D	13_10_14_1357_46_206	8.43	0.264	0.223	0.01200
10/14/2013 13:58	0917-173_Non-Phenol_D	13_10_14_1358_47_056	8.42	0.274	0.222	0.01300
10/14/2013 13:59	0917-173_Non-Phenol_D	13_10_14_1359_47_806	8.26	0.286	0.222	0.01400
10/14/2013 14:00	0917-173_Non-Phenol_D	13_10_14_1400_48_546	2.81	0.301	0.0340	0.0150
		Avg. Conc. (ppm)	**7.68**		**0.196**	

Su -- Native Conc. Of analyte

Date	Method	FileName	Methanol (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)
10/14/2013 14:06	0917-173_Non-Phenol_D	13_10_14_1406_53_137	1.51	0.310	0.0070	0.0160
10/14/2013 14:07	0917-173_Non-Phenol_D	13_10_14_1407_53_877	1.36	0.306	0.0030	0.0160
10/14/2013 14:08	0917-173_Non-Phenol_D	13_10_14_1408_54_687	1.39	0.305	0.0050	0.0160
10/14/2013 14:09	0917-173_Non-Phenol_D	13_10_14_1409_55_387	1.32	0.296	0.0080	0.0150
10/14/2013 14:10	0917-173_Non-Phenol_D	13_10_14_1410_56_217	1.34	0.286	0.0090	0.0150
10/14/2013 14:11	0917-173_Non-Phenol_D	13_10_14_1411_56_937	1.40	0.287	0.0030	0.01400
10/14/2013 14:12	0917-173_Non-Phenol_D	13_10_14_1412_57_727	1.41	0.294	0.00200	0.0150
		Avg. Conc. (ppm)	**1.39**		**0.0053**	

$$\text{Recovery (\%)} = \frac{Sm - Su(1-DF)}{DF \times Cs}$$

$$Ce = DF \times Cs + Su(1-DF)$$

Sm	7.68	ppm	Mean concentration of spiked analyte
Su	1.39	ppm	Native concentration of analyte
DF	0.0656	%	Dilution Factor (Target < 10%)
CS	99	ppm	Cylinder of spiked gas
	2.91	ppm	Cylinder of tracer gas (SF6)
Ce	7.82	ppm	Expected concentration of analyte

Recovery (%) **97.9%** 70 - 130%

Direct Spike Cylinder

Date	Method	FileName	Methanol (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)
10/14/2013 12:51	0917-173_Non-Phenol_D	13_10_14_1251_51_320	99	0.823	2.91	0.0190
10/14/2013 12:52	0917-173_Non-Phenol_D	13_10_14_1252_52_020	99	0.822	2.91	0.0210
10/14/2013 12:53	0917-173_Non-Phenol_D	13_10_14_1253_52_871	99	0.824	2.91	0.0180
10/14/2013 12:54	0917-173_Non-Phenol_D	13_10_14_1254_53_581	100	0.816	2.91	0.0200
10/14/2013 12:55	0917-173_Non-Phenol_D	13_10_14_1255_54_371	100	0.825	2.92	0.0200
10/14/2013 12:56	0917-173_Non-Phenol_D	13_10_14_1256_55_131	100	0.827	2.91	0.0200
10/14/2013 12:57	0917-173_Non-Phenol_D	13_10_14_1257_55_951	100	0.836	2.91	0.0210
		Avg. Conc. (ppm)	**99**		**2.91**	

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

Dryer Stack Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/14/2013 15:15	173_Non-Phe	13_10_14_1515_15_632	1	2.679	1.731	0.660	0.100	3.335	0.279	3.648	2.146	0.558	0.166	0.867	0.514
10/14/2013 15:16	173_Non-Phe	13_10_14_1516_16_443	1	2.679	1.823	0.624	0.096	3.303	0.277	3.648	2.142	0.558	0.163	0.867	0.521
10/14/2013 15:17	173_Non-Phe	13_10_14_1517_17_163	1	2.679	1.757	0.576	0.099	3.266	0.283	3.648	2.149	0.558	0.164	0.867	0.516
10/14/2013 15:18	173_Non-Phe	13_10_14_1518_17_873	1	2.679	1.769	0.542	0.102	3.199	0.281	3.648	2.147	0.558	0.168	0.867	0.524
10/14/2013 15:19	173_Non-Phe	13_10_14_1519_18_713	1	2.679	1.740	0.650	0.093	3.014	0.268	3.648	2.160	0.558	0.158	0.867	0.513
10/14/2013 15:20	173_Non-Phe	13_10_14_1520_19_373	1	2.679	1.666	0.817	0.095	2.994	0.265	3.648	2.175	0.558	0.158	0.867	0.493
10/14/2013 15:21	173_Non-Phe	13_10_14_1521_20_233	1	2.679	1.694	0.820	0.093	3.094	0.264	3.648	2.166	0.558	0.155	0.867	0.498
10/14/2013 15:22	173_Non-Phe	13_10_14_1522_20_953	1	2.679	1.698	0.970	0.099	3.301	0.273	3.648	2.165	0.558	0.163	0.867	0.520
10/14/2013 15:23	173_Non-Phe	13_10_14_1523_21_683	1	2.679	1.781	0.863	0.095	3.248	0.276	3.648	2.167	0.558	0.161	0.867	0.522
10/14/2013 15:24	173_Non-Phe	13_10_14_1524_22_413	1	2.679	1.781	0.909	0.097	3.191	0.280	3.648	2.161	0.558	0.164	0.867	0.519
10/14/2013 15:25	173_Non-Phe	13_10_14_1525_23_153	1	2.679	1.799	0.762	0.102	3.213	0.292	3.648	2.136	0.558	0.169	0.867	0.531
10/14/2013 15:26	173_Non-Phe	13_10_14_1526_23_953	1	2.679	1.765	0.765	0.100	3.171	0.291	3.648	2.152	0.558	0.164	0.867	0.516
10/14/2013 15:27	173_Non-Phe	13_10_14_1527_24_733	1	2.679	1.847	0.853	0.096	3.202	0.277	3.648	2.145	0.558	0.163	0.867	0.530
10/14/2013 15:28	173_Non-Phe	13_10_14_1528_25_404	1	2.679	1.683	0.822	0.095	3.032	0.275	3.648	2.160	0.558	0.157	0.867	0.492
10/14/2013 15:29	173_Non-Phe	13_10_14_1529_26_234	1	2.679	1.708	0.860	0.100	3.212	0.278	3.648	2.144	0.558	0.162	0.867	0.514
10/14/2013 15:30	173_Non-Phe	13_10_14_1530_26_944	1	2.679	1.781	0.831	0.096	3.395	0.298	3.648	2.131	0.558	0.163	0.867	0.516
10/14/2013 15:31	173_Non-Phe	13_10_14_1531_27_714	1	2.679	1.841	0.669	0.103	3.295	0.311	3.648	2.101	0.558	0.171	0.867	0.546
10/14/2013 15:32	173_Non-Phe	13_10_14_1532_28_464	1	2.679	1.838	0.610	0.096	3.278	0.300	3.648	2.138	0.558	0.165	0.867	0.537
10/14/2013 15:33	173_Non-Phe	13_10_14_1533_29_184	1	2.679	1.821	0.664	0.098	3.261	0.289	3.648	2.139	0.558	0.166	0.867	0.536
10/14/2013 15:34	173_Non-Phe	13_10_14_1534_29_994	1	2.679	1.874	0.700	0.096	3.311	0.280	3.648	2.138	0.558	0.167	0.867	0.540
10/14/2013 15:35	173_Non-Phe	13_10_14_1535_30_714	1	2.679	1.765	0.720	0.095	3.278	0.285	3.648	2.126	0.558	0.162	0.867	0.516
10/14/2013 15:36	173_Non-Phe	13_10_14_1536_31_454	1	2.679	1.814	0.814	0.100	3.476	0.299	3.648	2.134	0.558	0.168	0.867	0.532
10/14/2013 15:37	173_Non-Phe	13_10_14_1537_32_154	1	2.679	1.791	0.736	0.100	3.350	0.300	3.648	2.128	0.558	0.167	0.867	0.527
10/14/2013 15:38	173_Non-Phe	13_10_14_1538_32_914	1	2.679	1.835	0.613	0.096	3.512	0.313	3.648	2.128	0.558	0.164	0.867	0.532
10/14/2013 15:39	173_Non-Phe	13_10_14_1539_33_524	1	2.679	1.832	0.618	0.102	3.577	0.318	3.648	2.122	0.558	0.171	0.867	0.538
10/14/2013 15:40	173_Non-Phe	13_10_14_1540_34_355	1	2.679	1.776	0.668	0.099	3.366	0.309	3.648	2.135	0.558	0.167	0.867	0.533
10/14/2013 15:41	173_Non-Phe	13_10_14_1541_35_025	1	2.679	1.837	0.669	0.097	3.278	0.304	3.648	2.140	0.558	0.166	0.867	0.536
10/14/2013 15:42	173_Non-Phe	13_10_14_1542_35_845	1	2.679	1.814	0.676	0.095	3.248	0.285	3.648	2.163	0.558	0.162	0.867	0.524
10/14/2013 15:43	173_Non-Phe	13_10_14_1543_36_595	1	2.679	1.748	0.722	0.096	3.387	0.274	3.648	2.172	0.558	0.160	0.867	0.510
10/14/2013 15:44	173_Non-Phe	13_10_14_1544_37_325	1	2.679	1.802	0.825	0.097	3.518	0.273	3.648	2.144	0.558	0.163	0.867	0.521
10/14/2013 15:45	173_Non-Phe	13_10_14_1545_38_135	1	2.679	1.851	0.700	0.094	3.389	0.279	3.648	2.148	0.558	0.162	0.867	0.528
10/14/2013 15:46	173_Non-Phe	13_10_14_1546_38_875	1	2.679	1.879	0.758	0.100	3.421	0.287	3.648	2.125	0.558	0.171	0.867	0.536
10/14/2013 15:47	173_Non-Phe	13_10_14_1547_39_575	1	2.679	1.837	0.694	0.100	3.567	0.295	3.648	2.142	0.558	0.170	0.867	0.530
10/14/2013 15:48	173_Non-Phe	13_10_14_1548_40_315	1	2.679	1.872	0.682	0.100	3.476	0.304	3.648	2.110	0.558	0.171	0.867	0.553
10/14/2013 15:49	173_Non-Phe	13_10_14_1549_41_135	1	2.679	1.865	0.584	0.101	3.412	0.309	3.648	2.104	0.558	0.171	0.867	0.532
10/14/2013 15:50	173_Non-Phe	13_10_14_1550_41_845	1	2.679	1.821	0.730	0.100	3.078	0.298	3.648	2.147	0.558	0.169	0.867	0.537
10/14/2013 15:51	173_Non-Phe	13_10_14_1551_42_616	1	2.679	1.811	0.696	0.097	3.096	0.283	3.648	2.152	0.558	0.166	0.867	0.534
10/14/2013 15:52	173_Non-Phe	13_10_14_1552_43_326	1	2.679	1.802	0.752	0.096	3.208	0.280	3.648	2.152	0.558	0.162	0.867	0.533
10/14/2013 15:53	173_Non-Phe	13_10_14_1553_44_066	1	2.679	1.776	0.685	0.099	3.295	0.283	3.648	2.157	0.558	0.166	0.867	0.539
10/14/2013 15:54	173_Non-Phe	13_10_14_1554_44_886	1	2.679	1.814	0.786	0.100	3.249	0.299	3.648	2.109	0.558	0.170	0.867	0.542
10/14/2013 15:55	173_Non-Phe	13_10_14_1555_45_656	1	2.679	1.849	0.920	0.098	3.289	0.307	3.648	2.115	0.558	0.168	0.867	0.539
10/14/2013 15:56	173_Non-Phe	13_10_14_1556_46_316	1	2.679	1.900	0.717	0.102	3.358	0.301	3.648	2.125	0.558	0.173	0.867	0.549
10/14/2013 15:57	173_Non-Phe	13_10_14_1557_47_126	1	2.679	1.779	0.629	0.102	3.299	0.294	3.648	2.121	0.558	0.170	0.867	0.530
10/14/2013 15:58	173_Non-Phe	13_10_14_1558_47_826	1	2.679	1.819	0.604	0.100	3.304	0.298	3.648	2.126	0.558	0.168	0.867	0.536
10/14/2013 15:59	173_Non-Phe	13_10_14_1559_48_586	1	2.679	1.869	0.662	0.104	3.315	0.313	3.648	2.120	0.558	0.172	0.867	0.551
10/14/2013 16:00	173_Non-Phe	13_10_14_1600_49_366	1	2.679	1.825	0.510	0.102	3.002	0.300	3.648	2.111	0.558	0.171	0.867	0.536
10/14/2013 16:01	173_Non-Phe	13_10_14_1601_50_106	1	2.679	1.875	0.515	0.098	2.836	0.279	3.648	2.143	0.558	0.168	0.867	0.540
10/14/2013 16:02	173_Non-Phe	13_10_14_1602_50_926	1	2.679	1.631	0.465	0.095	2.752	0.257	3.648	2.179	0.558	0.159	0.867	0.495
10/14/2013 16:03	173_Non-Phe	13_10_14_1603_51_667	1	2.679	1.759	0.642	0.098	2.804	0.259	3.648	2.166	0.558	0.162	0.867	0.526
10/14/2013 16:04	173_Non-Phe	13_10_14_1604_52_377	1	2.679	1.809	0.711	0.096	2.729	0.248	3.648	2.181	0.558	0.164	0.867	0.535
10/14/2013 16:05	173_Non-Phe	13_10_14_1605_53_187	1	2.679	1.700	0.580	0.093	2.727	0.235	3.648	2.198	0.558	0.157	0.867	0.504
10/14/2013 16:06	173_Non-Phe	13_10_14_1606_53_907	1	2.679	1.760	0.661	0.090	2.664	0.237	3.648	2.180	0.558	0.155	0.867	0.502
10/14/2013 16:07	173_Non-Phe	13_10_14_1607_54_617	1	2.679	1.722	0.567	0.093	2.911	0.238	3.648	2.200	0.558	0.156	0.867	0.516
10/14/2013 16:08	173_Non-Phe	13_10_14_1608_55_427	1	2.679	1.739	0.671	0.098	3.001	0.251	3.648	2.184	0.558	0.161	0.867	0.516
10/14/2013 16:09	173_Non-Phe	13_10_14_1609_56_147	1	2.679	1.622	0.868	0.092	2.846	0.265	3.648	2.176	0.558	0.153	0.867	0.485
10/14/2013 16:10	173_Non-Phe	13_10_14_1610_56_957	1	2.679	1.759	1.038	0.094	2.653	0.264	3.648	2.204	0.558	0.157	0.867	0.507
10/14/2013 16:11	173_Non-Phe	13_10_14_1611_57_677	1	2.679	1.773	1.094	0.093	2.518	0.275	3.648	2.193	0.558	0.157	0.867	0.507
10/14/2013 16:12	173_Non-Phe	13_10_14_1612_58_447	1	2.679	1.747	0.934	0.091	2.635	0.282	3.648	2.188	0.558	0.156	0.867	0.506
10/14/2013 16:13	173_Non-Phe	13_10_14_1613_59_217	1	2.679	1.777	0.857	0.098	2.561	0.293	3.648	2.175	0.558	0.165	0.867	0.524
10/14/2013 16:14	173_Non-Phe	13_10_14_1614_59_927	1	2.679	1.873	0.784	0.100	2.667	0.294	3.648	2.198	0.558	0.170	0.867	0.564
10/14/2013 16:16	173_Non-Phe	13_10_14_1616_00_738	1	2.679	1.747	0.728	0.093	4.095	0.284	3.648	2.183	0.558	0.159	0.867	0.504
		Average Conc. (ppm):	**1**	**2.679**	**1.788**	**0.725**	**0.097**	**3.172**	**0.283**	**3.648**	**2.150**	**0.558**	**0.164**	**0.867**	**0.525**

Dryer Stack Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/14/2013 16:49	173_Non-Phe	13_10_14_1649_26_670	1	2.679	1.819	0.552	0.101	1.959	0.318	3.648	2.155	0.558	0.166	0.867	0.536
10/14/2013 16:50	173_Non-Phe	13_10_14_1650_27_360	1	2.679	1.859	0.594	0.103	1.945	0.330	3.648	2.144	0.558	0.171	0.867	0.549
10/14/2013 16:51	173_Non-Phe	13_10_14_1651_28_211	1	2.679	1.940	0.923	0.104	1.935	0.334	3.648	2.147	0.558	0.175	0.867	0.571
10/14/2013 16:52	173_Non-Phe	13_10_14_1652_28_891	1	2.679	1.802	0.562	0.097	1.806	0.317	3.648	2.145	0.558	0.164	0.867	0.532
10/14/2013 16:53	173_Non-Phe	13_10_14_1653_29_651	1	2.679	1.745	0.472	0.098	1.699	0.283	3.648	2.201	0.558	0.163	0.867	0.530
10/14/2013 16:54	173_Non-Phe	13_10_14_1654_30_471	1	2.679	1.826	0.332	0.098	1.639	0.273	3.648	2.208	0.558	0.164	0.867	0.531
10/14/2013 16:55	173_Non-Phe	13_10_14_1655_31_191	1	2.679	1.769	0.590	0.098	1.708	0.274	3.648	2.216	0.558	0.163	0.867	0.521
10/14/2013 16:56	173_Non-Phe	13_10_14_1656_31_901	1	2.679	1.610	0.411	0.096	1.664	0.252	3.648	2.225	0.558	0.154	0.867	0.476
10/14/2013 16:57	173_Non-Phe	13_10_14_1657_32_741	1	2.679	1.798	0.470	0.090	1.798	0.244	3.648	2.224	0.558	0.155	0.867	0.506
10/14/2013 16:58	173_Non-Phe	13_10_14_1658_33_491	1	2.679	1.825	0.441	0.097	1.850	0.267	3.648	2.192	0.558	0.162	0.867	0.537
10/14/2013 16:59	173_Non-Phe	13_10_14_1659_34_201	1	2.679	1.855	0.607	0.100	1.947	0.294	3.648	2.180	0.558	0.167	0.867	0.538
10/14/2013 17:00	173_Non-Phe	13_10_14_1700_34_961	1	2.679	1.766	0.503	0.101	1.835	0.302	3.648	2.189	0.558	0.166	0.867	0.525
10/14/2013 17:01	173_Non-Phe	13_10_14_1701_35_681	1	2.679	1.826	0.441	0.098	1.855	0.304	3.648	2.174	0.558	0.165	0.867	0.543
10/14/2013 17:02	173_Non-Phe	13_10_14_1702_36_361	1	2.679	1.878	0.458	0.097	1.922	0.302	3.648	2.177	0.558	0.165	0.867	0.527
10/14/2013 17:03	173_Non-Phe	13_10_14_1703_37_172	1	2.679	1.834	0.411	0.101	1.739	0.288	3.648	2.196	0.558	0.168	0.867	0.542
10/14/2013 17:04	173_Non-Phe	13_10_14_1704_37_962	1	2.679	1.782	0.527	0.094	1.706	0.272	3.648	2.206	0.558	0.160	0.867	0.514
10/14/2013 17:05	173_Non-Phe	13_10_14_1705_38_702	1	2.679	1.712	0.713	0.096	1.928	0.268	3.648	2.211	0.558	0.158	0.867	0.514
10/14/2013 17:06	173_Non-Phe	13_10_14_1706_39_462	1	2.679	1.780	0.525	0.100	1.887	0.271	3.648	2.185	0.558	0.164	0.867	0.536
10/14/2013 17:07	173_Non-Phe	13_10_14_1707_40_232	1	2.679	1.766	0.470	0.097	1.727	0.287	3.648	2.193	0.558	0.160	0.867	0.518
10/14/2013 17:08	173_Non-Phe	13_10_14_1708_41_042	1	2.679	1.846	0.662	0.101	1.794	0.299	3.648	2.183	0.558	0.168	0.867	0.540
10/14/2013 17:09	173_Non-Phe	13_10_14_1709_41_782	1	2.679	1.794	0.639	0.104	1.777	0.293	3.648	2.193	0.558	0.169	0.867	0.540
10/14/2013 17:10	173_Non-Phe	13_10_14_1710_42_582	1	2.679	1.809	0.490	0.101	1.813	0.288	3.648	2.181	0.558	0.167	0.867	0.539
10/14/2013 17:11	173_Non-Phe	13_10_14_1711_43_292	1	2.679	1.927	0.534	0.098	1.760	0.294	3.648	2.173	0.558	0.169	0.867	0.557
10/14/2013 17:12	173_Non-Phe	13_10_14_1712_42_992	1	2.679	1.888	0.554	0.098	1.791	0.287	3.648	2.168	0.558	0.167	0.867	0.539
10/14/2013 17:13	173_Non-Phe	13_10_14_1713_43_802	1	2.679	1.865	0.511	0.102	1.721	0.286	3.648	2.172	0.558	0.169	0.867	0.553
10/14/2013 17:14	173_Non-Phe	13_10_14_1714_44_502	1	2.679	1.849	0.545	0.101	1.676	0.283	3.648	2.177	0.558	0.169	0.867	0.544
10/14/2013 17:15	173_Non-Phe	13_10_14_1715_45_343	1	2.679	1.743	0.515	0.098	1.768	0.271	3.648	2.196	0.558	0.162	0.867	0.527
10/14/2013 17:16	173_Non-Phe	13_10_14_1716_46_033	1	2.679	1.777	0.603	0.095	1.744	0.274	3.648	2.198	0.558	0.160	0.867	0.521
10/14/2013 17:17	173_Non-Phe	13_10_14_1717_46_833	1	2.679	1.918	0.467	0.096	1.825	0.286	3.648	2.185	0.558	0.168	0.867	0.545
10/14/2013 17:18	173_Non-Phe	13_10_14_1718_47_563	1	2.679	1.830	0.494	0.100	1.967	0.291	3.648	2.183	0.558	0.168	0.867	0.538
10/14/2013 17:19	173_Non-Phe	13_10_14_1719_48_383	1	2.679	1.765	0.578	0.098	1.787	0.290	3.648	2.190	0.558	0.164	0.867	0.522
10/14/2013 17:20	173_Non-Phe	13_10_14_1720_49_093	1	2.679	1.824	0.535	0.098	1.775	0.299	3.648	2.174	0.558	0.166	0.867	0.541
10/14/2013 17:21	173_Non-Phe	13_10_14_1721_49_883	1	2.679	1.799	0.555	0.100	1.820	0.286	3.648	2.199	0.558	0.167	0.867	0.546
10/14/2013 17:22	173_Non-Phe	13_10_14_1722_50_683	1	2.679	1.751	0.624	0.098	1.744	0.278	3.648	2.189	0.558	0.163	0.867	0.519
10/14/2013 17:23	173_Non-Phe	13_10_14_1723_51_453	1	2.679	1.780	0.497	0.097	1.705	0.269	3.648	2.199	0.558	0.161	0.867	0.513
10/14/2013 17:24	173_Non-Phe	13_10_14_1724_52_163	1	2.679	1.608	0.495	0.091	1.530	0.242	3.648	2.226	0.558	0.149	0.867	0.476
10/14/2013 17:25	173_Non-Phe	13_10_14_1725_52_963	1	2.679	1.541	0.333	0.085	1.545	0.229	3.648	2.225	0.558	0.142	0.867	0.457
10/14/2013 17:26	173_Non-Phe	13_10_14_1726_53_674	1	2.679	1.666	0.266	0.090	1.609	0.233	3.648	2.214	0.558	0.150	0.867	0.482
10/14/2013 17:27	173_Non-Phe	13_10_14_1727_54_454	1	2.679	1.685	0.509	0.093	1.754	0.242	3.648	2.226	0.558	0.153	0.867	0.500
10/14/2013 17:28	173_Non-Phe	13_10_14_1728_55_304	1	2.679	1.627	0.520	0.093	1.670	0.251	3.648	2.220	0.558	0.153	0.867	0.494
10/14/2013 17:29	173_Non-Phe	13_10_14_1729_56_064	1	2.679	1.834	0.684	0.097	1.651	0.268	3.648	2.217	0.558	0.165	0.867	0.526
10/14/2013 17:32	173_Non-Phe	13_10_14_1732_06_400	1	2.679	1.695	0.760	0.092	1.782	0.270	3.648	2.210	0.558	0.155	0.867	0.493
10/14/2013 17:33	173_Non-Phe	13_10_14_1733_07_210	1	2.679	1.722	0.776	0.098	1.917	0.292	3.648	2.165	0.558	0.161	0.867	0.511
10/14/2013 17:34	173_Non-Phe	13_10_14_1734_07_900	1	2.679	1.909	0.659	0.098	1.956	0.320	3.648	2.162	0.558	0.167	0.867	0.548
10/14/2013 17:35	173_Non-Phe	13_10_14_1735_08_740	1	2.679	1.932	0.737	0.102	2.107	0.334	3.648	2.129	0.558	0.172	0.867	0.568

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

10/14/2013 17:36	173_Non-Phe	13_10_14_1736_09_450	1	2.679	1.787	0.659	0.104	2.111	0.331	3.648	2.136	0.558	0.169	0.867	0.543
10/14/2013 17:37	173_Non-Phe	13_10_14_1737_10_280	1	2.679	1.903	0.968	0.102	2.078	0.331	3.648	2.152	0.558	0.171	0.867	0.556
10/14/2013 17:38	173_Non-Phe	13_10_14_1738_11_030	1	2.679	1.892	0.764	0.105	2.073	0.314	3.648	2.136	0.558	0.175	0.867	0.557
10/14/2013 17:39	173_Non-Phe	13_10_14_1739_11_730	1	2.679	1.849	0.596	0.101	1.976	0.311	3.648	2.152	0.558	0.169	0.867	0.551
10/14/2013 17:40	173_Non-Phe	13_10_14_1740_12_560	1	2.679	1.867	0.528	0.097	1.943	0.302	3.648	2.181	0.558	0.166	0.867	0.530
10/14/2013 17:41	173_Non-Phe	13_10_14_1741_13_270	1	2.679	1.432	0.211	0.087	1.911	0.163	3.648	1.885	0.558	0.152	0.867	0.443
10/14/2013 17:42	173_Non-Phe	13_10_14_1742_14_040	1	2.679	1.059	0.205	0.100	0.276	0.049	3.648	0.799	0.558	0.167	0.867	0.398
10/14/2013 17:43	173_Non-Phe	13_10_14_1743_14_781	1	2.679	1.076	0.205	0.099	0.276	0.045	3.648	0.374	0.558	0.171	0.867	0.411
10/14/2013 17:44	173_Non-Phe	13_10_14_1744_15_531	1	2.679	1.006	0.205	0.089	0.586	0.051	3.648	0.698	0.558	0.145	0.867	0.350
10/14/2013 17:45	173_Non-Phe	13_10_14_1745_16_341	1	2.679	0.994	0.205	0.061	0.441	0.038	3.648	0.538	0.558	0.098	0.867	0.312
10/14/2013 17:46	173_Non-Phe	13_10_14_1746_16_981	1	2.679	0.984	0.205	0.056	0.276	0.033	3.648	0.229	0.558	0.090	0.867	0.295
10/14/2013 17:47	173_Non-Phe	13_10_14_1747_17_691	1	2.679	0.946	0.205	0.060	0.276	0.031	3.648	0.149	0.558	0.094	0.867	0.299
10/14/2013 17:48	173_Non-Phe	13_10_14_1748_18_511	1	2.679	1.042	0.205	0.056	0.276	0.032	3.648	0.126	0.558	0.093	0.867	0.308
10/14/2013 17:49	173_Non-Phe	13_10_14_1749_19_221	1	2.679	1.087	0.205	0.054	0.276	0.032	3.648	0.127	0.558	0.092	0.867	0.316
		Average Conc. (ppm):	**1**	**2.679**	**1.686**	**0.507**	**0.094**	**1.615**	**0.251**	**3.648**	**1.936**	**0.558**	**0.157**	**0.867**	**0.501**

Dryer Stack Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/14/2013 17:58	173_Non-Phe	13_10_14_1758_26_092	1	2.679	1.704	0.585	0.098	2.079	0.293	3.648	2.182	0.558	0.161	0.867	0.516
10/14/2013 17:59	173_Non-Phe	13_10_14_1759_26_902	1	2.679	1.735	0.603	0.099	2.115	0.283	3.648	2.193	0.558	0.161	0.867	0.513
10/14/2013 18:00	173_Non-Phe	13_10_14_1800_27_632	1	2.679	1.818	0.479	0.101	2.119	0.279	3.648	2.210	0.558	0.168	0.867	0.530
10/14/2013 18:01	173_Non-Phe	13_10_14_1801_28_432	1	2.679	1.768	0.397	0.098	2.168	0.271	3.648	2.195	0.558	0.162	0.867	0.527
10/14/2013 18:02	173_Non-Phe	13_10_14_1802_29_182	1	2.679	1.859	0.423	0.099	2.196	0.286	3.648	2.175	0.558	0.167	0.867	0.536
10/14/2013 18:03	173_Non-Phe	13_10_14_1803_29_932	1	2.679	1.861	0.523	0.097	2.135	0.296	3.648	2.192	0.558	0.165	0.867	0.538
10/14/2013 18:04	173_Non-Phe	13_10_14_1804_30_752	1	2.679	1.776	0.445	0.104	2.231	0.298	3.648	2.168	0.558	0.170	0.867	0.540
10/14/2013 18:05	173_Non-Phe	13_10_14_1805_31_502	1	2.679	1.914	0.494	0.100	2.139	0.301	3.648	2.182	0.558	0.169	0.867	0.558
10/14/2013 18:06	173_Non-Phe	13_10_14_1806_32_222	1	2.679	1.773	0.560	0.101	2.088	0.271	3.648	2.208	0.558	0.164	0.867	0.532
10/14/2013 18:07	173_Non-Phe	13_10_14_1807_33_033	1	2.679	1.730	0.470	0.094	1.932	0.255	3.648	2.215	0.558	0.158	0.867	0.518
10/14/2013 18:08	173_Non-Phe	13_10_14_1808_33_783	1	2.679	1.709	0.531	0.096	2.026	0.252	3.648	2.235	0.558	0.159	0.867	0.517
10/14/2013 18:09	173_Non-Phe	13_10_14_1809_34_493	1	2.679	1.720	0.447	0.097	2.150	0.245	3.648	2.225	0.558	0.162	0.867	0.533
10/14/2013 18:10	173_Non-Phe	13_10_14_1810_35_313	1	2.679	1.858	0.577	0.097	2.101	0.262	3.648	2.199	0.558	0.164	0.867	0.527
10/14/2013 18:11	173_Non-Phe	13_10_14_1811_36_053	1	2.679	1.761	0.777	0.098	2.140	0.273	3.648	2.210	0.558	0.162	0.867	0.520
10/14/2013 18:12	173_Non-Phe	13_10_14_1812_36_863	1	2.679	1.787	0.738	0.097	2.252	0.274	3.648	2.194	0.558	0.162	0.867	0.530
10/14/2013 18:13	173_Non-Phe	13_10_14_1813_37_653	1	2.679	1.834	0.751	0.099	2.248	0.279	3.648	2.193	0.558	0.166	0.867	0.546
10/14/2013 18:14	173_Non-Phe	13_10_14_1814_38_393	1	2.679	1.794	0.734	0.101	2.361	0.298	3.648	2.177	0.558	0.167	0.867	0.544
10/14/2013 18:15	173_Non-Phe	13_10_14_1815_39_133	1	2.679	1.897	0.626	0.100	2.420	0.309	3.648	2.161	0.558	0.168	0.867	0.543
10/14/2013 18:16	173_Non-Phe	13_10_14_1816_39_933	1	2.679	1.888	0.531	0.100	2.270	0.309	3.648	2.169	0.558	0.169	0.867	0.543
10/14/2013 18:17	173_Non-Phe	13_10_14_1817_40_663	1	2.679	1.779	0.649	0.101	2.231	0.303	3.648	2.178	0.558	0.167	0.867	0.538
10/14/2013 18:18	173_Non-Phe	13_10_14_1818_41_463	1	2.679	1.904	0.627	0.102	2.215	0.289	3.648	2.203	0.558	0.171	0.867	0.549
10/14/2013 18:19	173_Non-Phe	13_10_14_1819_42_244	1	2.679	1.835	0.576	0.100	2.120	0.278	3.648	2.194	0.558	0.167	0.867	0.541
10/14/2013 18:20	173_Non-Phe	13_10_14_1820_42_954	1	2.679	1.739	0.450	0.098	2.074	0.277	3.648	2.213	0.558	0.163	0.867	0.526
10/14/2013 18:21	173_Non-Phe	13_10_14_1821_43_794	1	2.679	1.707	0.468	0.099	1.973	0.269	3.648	2.222	0.558	0.162	0.867	0.520
10/14/2013 18:22	173_Non-Phe	13_10_14_1822_44_554	1	2.679	1.808	0.542	0.100	2.166	0.268	3.648	2.213	0.558	0.166	0.867	0.539
10/14/2013 18:23	173_Non-Phe	13_10_14_1823_45_304	1	2.679	1.777	0.728	0.099	2.103	0.272	3.648	2.211	0.558	0.165	0.867	0.538
10/14/2013 18:24	173_Non-Phe	13_10_14_1824_46_064	1	2.679	1.704	0.796	0.098	2.169	0.269	3.648	2.222	0.558	0.160	0.867	0.511
10/14/2013 18:25	173_Non-Phe	13_10_14_1825_46_864	1	2.679	1.749	0.642	0.093	2.226	0.261	3.648	2.221	0.558	0.157	0.867	0.505
10/14/2013 18:26	173_Non-Phe	13_10_14_1826_47_634	1	2.679	1.774	0.621	0.097	2.089	0.260	3.648	2.235	0.558	0.161	0.867	0.519
10/14/2013 18:27	173_Non-Phe	13_10_14_1827_48_244	1	2.679	1.821	0.564	0.098	2.011	0.266	3.648	2.227	0.558	0.163	0.867	0.532
10/14/2013 18:28	173_Non-Phe	13_10_14_1828_49_064	1	2.679	1.796	0.735	0.094	1.950	0.258	3.648	2.250	0.558	0.158	0.867	0.517
10/14/2013 18:29	173_Non-Phe	13_10_14_1829_49_814	1	2.679	1.717	0.699	0.095	1.856	0.255	3.648	2.245	0.558	0.158	0.867	0.524
10/14/2013 18:30	173_Non-Phe	13_10_14_1830_50_525	1	2.679	1.719	0.583	0.097	1.961	0.260	3.648	2.240	0.558	0.160	0.867	0.507
10/14/2013 18:31	173_Non-Phe	13_10_14_1831_51_325	1	2.679	1.730	0.742	0.100	2.106	0.277	3.648	2.200	0.558	0.162	0.867	0.531
10/14/2013 18:32	173_Non-Phe	13_10_14_1832_52_055	1	2.679	1.825	0.861	0.101	2.133	0.300	3.648	2.199	0.558	0.167	0.867	0.544
10/14/2013 18:33	173_Non-Phe	13_10_14_1833_52_925	1	2.679	1.928	0.706	0.101	2.201	0.321	3.648	2.173	0.558	0.170	0.867	0.541
10/14/2013 18:34	173_Non-Phe	13_10_14_1834_53_625	1	2.679	1.829	0.653	0.104	2.351	0.326	3.648	2.176	0.558	0.171	0.867	0.547
10/14/2013 18:35	173_Non-Phe	13_10_14_1835_54_365	1	2.679	1.916	0.669	0.101	2.462	0.329	3.648	2.161	0.558	0.170	0.867	0.557
10/14/2013 18:36	173_Non-Phe	13_10_14_1836_55_185	1	2.679	1.954	0.740	0.108	2.479	0.335	3.648	2.151	0.558	0.179	0.867	0.575
10/14/2013 18:37	173_Non-Phe	13_10_14_1837_55_925	1	2.679	1.873	0.840	0.109	2.457	0.335	3.648	2.151	0.558	0.177	0.867	0.568
10/14/2013 18:38	173_Non-Phe	13_10_14_1838_56_745	1	2.679	1.862	0.605	0.101	2.324	0.316	3.648	2.183	0.558	0.169	0.867	0.545
10/14/2013 18:39	173_Non-Phe	13_10_14_1839_57_545	1	2.679	1.841	0.574	0.101	2.235	0.306	3.648	2.191	0.558	0.167	0.867	0.548
10/14/2013 18:40	173_Non-Phe	13_10_14_1840_58_315	1	2.679	1.774	0.428	0.104	2.154	0.279	3.648	2.223	0.558	0.170	0.867	0.531
10/14/2013 18:41	173_Non-Phe	13_10_14_1841_59_045	1	2.679	1.740	0.416	0.098	2.214	0.265	3.648	2.221	0.558	0.163	0.867	0.536
10/14/2013 18:42	173_Non-Phe	13_10_14_1842_59_866	1	2.679	1.813	0.647	0.097	2.183	0.255	3.648	2.221	0.558	0.164	0.867	0.528
10/14/2013 18:44	173_Non-Phe	13_10_14_1844_00_576	1	2.679	1.750	0.509	0.093	2.136	0.245	3.648	2.230	0.558	0.157	0.867	0.513
10/14/2013 18:45	173_Non-Phe	13_10_14_1845_01_296	1	2.679	1.752	0.475	0.097	2.105	0.250	3.648	2.227	0.558	0.161	0.867	0.515
10/14/2013 18:46	173_Non-Phe	13_10_14_1846_02_146	1	2.679	1.785	0.453	0.099	2.110	0.257	3.648	2.224	0.558	0.162	0.867	0.527
10/14/2013 18:47	173_Non-Phe	13_10_14_1847_02_896	1	2.679	1.670	0.722	0.096	2.034	0.259	3.648	2.231	0.558	0.156	0.867	0.508
10/14/2013 18:48	173_Non-Phe	13_10_14_1848_03_616	1	2.679	1.822	0.776	0.096	2.090	0.265	3.648	2.223	0.558	0.162	0.867	0.526
10/14/2013 18:49	173_Non-Phe	13_10_14_1849_04_376	1	2.679	1.748	0.943	0.096	2.052	0.275	3.648	2.229	0.558	0.159	0.867	0.518
10/14/2013 18:50	173_Non-Phe	13_10_14_1850_05_206	1	2.679	1.832	1.014	0.096	2.008	0.273	3.648	2.221	0.558	0.161	0.867	0.522
10/14/2013 18:51	173_Non-Phe	13_10_14_1851_05_936	1	2.679	1.749	0.949	0.094	1.874	0.268	3.648	2.226	0.558	0.158	0.867	0.522
10/14/2013 18:52	173_Non-Phe	13_10_14_1852_06_736	1	2.679	1.713	0.968	0.092	1.995	0.270	3.648	2.245	0.558	0.154	0.867	0.501
10/14/2013 18:53	173_Non-Phe	13_10_14_1853_06_456	1	2.679	1.811	0.860	0.096	1.920	0.268	3.648	2.232	0.558	0.161	0.867	0.513
10/14/2013 18:54	173_Non-Phe	13_10_14_1854_07_266	1	2.679	1.790	0.865	0.100	1.999	0.269	3.648	2.239	0.558	0.164	0.867	0.545
10/14/2013 18:55	173_Non-Phe	13_10_14_1855_07_977	1	2.679	1.758	0.883	0.097	1.976	0.286	3.648	2.223	0.558	0.162	0.867	0.525
10/14/2013 18:56	173_Non-Phe	13_10_14_1856_08_787	1	2.679	1.803	0.781	0.099	2.158	0.302	3.648	2.206	0.558	0.164	0.867	0.533
10/14/2013 18:57	173_Non-Phe	13_10_14_1857_09_477	1	2.679	1.813	0.767	0.103	2.131	0.305	3.648	2.217	0.558	0.170	0.867	0.537
10/14/2013 18:58	173_Non-Phe	13_10_14_1858_10_317	1	2.679	1.825	0.580	0.103	2.233	0.303	3.648	2.190	0.558	0.171	0.867	0.547
		Average Conc. (ppm):	**1**	**2.679**	**1.795**	**0.647**	**0.099**	**2.141**	**0.281**	**3.648**	**2.206**	**0.558**	**0.164**	**0.867**	**0.531**

GHM Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 9:11	173_Non-Phe	13_10_15_0911_33_428	1	2.679	1.117	0.205	0.070	2.719	0.086	3.648	1.672	0.558	0.118	0.867	0.362
10/15/2013 9:12	173_Non-Phe	13_10_15_0912_34_178	1	2.679	1.224	0.205	0.072	2.495	0.084	3.648	1.670	0.558	0.120	0.867	0.377
10/15/2013 9:13	173_Non-Phe	13_10_15_0913_34_978	1	2.679	1.136	0.205	0.066	2.555	0.085	3.648	1.681	0.558	0.118	0.867	0.349
10/15/2013 9:14	173_Non-Phe	13_10_15_0914_35_708	1	2.679	1.076	0.205	0.068	2.424	0.082	3.648	1.666	0.558	0.112	0.867	0.339
10/15/2013 9:15	173_Non-Phe	13_10_15_0915_36_448	1	2.679	1.119	0.205	0.063	2.427	0.084	3.648	1.669	0.558	0.112	0.867	0.330
10/15/2013 9:16	173_Non-Phe	13_10_15_0916_37_198	1	2.679	1.197	0.205	0.073	2.685	0.082	3.648	1.683	0.558	0.120	0.867	0.374
10/15/2013 9:17	173_Non-Phe	13_10_15_0917_37_999	1	2.679	1.177	0.205	0.066	2.624	0.084	3.648	1.688	0.558	0.113	0.867	0.343
10/15/2013 9:18	173_Non-Phe	13_10_15_0918_38_749	1	2.679	1.213	0.205	0.068	2.755	0.084	3.648	1.675	0.558	0.117	0.867	0.375
10/15/2013 9:19	173_Non-Phe	13_10_15_0919_39_499	1	2.679	1.071	0.205	0.063	2.818	0.083	3.648	1.693	0.558	0.110	0.867	0.328
10/15/2013 9:20	173_Non-Phe	13_10_15_0920_40_209	1	2.679	1.150	0.205	0.068	2.754	0.083	3.648	1.694	0.558	0.117	0.867	0.348
10/15/2013 9:21	173_Non-Phe	13_10_15_0921_41_019	1	2.679	1.251	0.205	0.072	2.735	0.086	3.648	1.691	0.558	0.122	0.867	0.372
10/15/2013 9:22	173_Non-Phe	13_10_15_0922_41_779	1	2.679	1.234	0.205	0.069	2.859	0.084	3.648	1.700	0.558	0.121	0.867	0.369
10/15/2013 9:23	173_Non-Phe	13_10_15_0923_42_539	1	2.679	1.163	0.205	0.067	2.725	0.084	3.648	1.692	0.558	0.118	0.867	0.353
10/15/2013 9:24	173_Non-Phe	13_10_15_0924_43_249	1	2.679	1.059	0.205	0.070	2.418	0.082	3.648	1.688	0.558	0.114	0.867	0.360
10/15/2013 9:25	173_Non-Phe	13_10_15_0925_44_059	1	2.679	1.121	0.205	0.068	2.467	0.081	3.648	1.661	0.558	0.115	0.867	0.347
10/15/2013 9:26	173_Non-Phe	13_10_15_0926_44_759	1	2.679	1.134	0.205	0.068	2.556	0.081	3.648	1.686	0.558	0.113	0.867	0.347
10/15/2013 9:27	173_Non-Phe	13_10_15_0927_45_529	1	2.679	1.166	0.205	0.069	2.511	0.085	3.648	1.669	0.558	0.116	0.867	0.363
10/15/2013 9:28	173_Non-Phe	13_10_15_0928_46_300	1	2.679	1.112	0.205	0.067	2.483	0.081	3.648	1.681	0.558	0.114	0.867	0.355
10/15/2013 9:29	173_Non-Phe	13_10_15_0929_47_100	1	2.679	1.153	0.205	0.064	2.538	0.082	3.648	1.662	0.558	0.109	0.867	0.349
10/15/2013 9:30	173_Non-Phe	13_10_15_0930_47_900	1	2.679	1.171	0.205	0.070	2.422	0.080	3.648	1.670	0.558	0.116	0.867	0.360
10/15/2013 9:31	173_Non-Phe	13_10_15_0931_48_670	1	2.679	1.024	0.205	0.069	2.732	0.081	3.648	1.668	0.558	0.111	0.867	0.330
10/15/2013 9:32	173_Non-Phe	13_10_15_0932_49_420	1	2.679	1.154	0.205	0.066	2.804	0.084	3.648	1.677	0.558	0.113	0.867	0.363
10/15/2013 9:33	173_Non-Phe	13_10_15_0933_50_130	1	2.679	1.103	0.205	0.066	2.904	0.084	3.648	1.681	0.558	0.109	0.867	0.333
10/15/2013 9:34	173_Non-Phe	13_10_15_0934_50_930	1	3.071	1.165	0.205	0.067	2.556	0.084	3.648	1.677	0.558	0.114	0.867	0.350
10/15/2013 9:35	173_Non-Phe	13_10_15_0935_51_710	1	2.679	1.175	0.205	0.068	2.680	0.083	3.648	1.675	0.558	0.115	0.867	0.357
10/15/2013 9:36	173_Non-Phe	13_10_15_0936_52_510	1	2.679	1.073	0.205	0.066	2.490	0.083	3.648	1.662	0.558	0.110	0.867	0.355
10/15/2013 9:37	173_Non-Phe	13_10_15_0937_53_310	1	2.679	1.109	0.205	0.063	2.422	0.083	3.648	1.664	0.558	0.107	0.867	0.340
10/15/2013 9:38	173_Non-Phe	13_10_15_0938_54_040	1	2.679	1.102	0.205	0.065	2.612	0.083	3.648	1.666	0.558	0.110	0.867	0.343

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

10/15/2013 9:39	173_Non-Phe	13_10_15_0939_54_760	1	2.679	1.013	0.205	0.062	2.663	0.082	3.648	1.684	0.558	0.103	0.867	0.323
10/15/2013 9:40	173_Non-Phe	13_10_15_0940_55_571	1	2.679	1.160	0.205	0.066	2.451	0.082	3.648	1.673	0.558	0.112	0.867	0.352
10/15/2013 9:41	173_Non-Phe	13_10_15_0941_56_301	1	2.679	1.177	0.205	0.068	2.447	0.081	3.648	1.680	0.558	0.115	0.867	0.355
10/15/2013 9:42	173_Non-Phe	13_10_15_0942_57_111	1	2.679	1.144	0.205	0.067	2.647	0.083	3.648	1.679	0.558	0.110	0.867	0.345
10/15/2013 9:43	173_Non-Phe	13_10_15_0943_57_921	1	2.679	1.089	0.205	0.066	2.542	0.085	3.648	1.677	0.558	0.109	0.867	0.328
10/15/2013 9:44	173_Non-Phe	13_10_15_0944_58_691	1	2.679	1.009	0.205	0.065	2.442	0.080	3.648	1.669	0.558	0.106	0.867	0.311
10/15/2013 9:45	173_Non-Phe	13_10_15_0945_59_421	1	2.679	1.133	0.205	0.065	2.511	0.081	3.648	1.679	0.558	0.111	0.867	0.351
10/15/2013 9:47	173_Non-Phe	13_10_15_0947_00_071	1	2.679	1.144	0.205	0.065	2.485	0.081	3.648	1.666	0.558	0.110	0.867	0.345
10/15/2013 9:48	173_Non-Phe	13_10_15_0948_00_871	1	2.679	1.110	0.205	0.070	2.752	0.085	3.648	1.674	0.558	0.114	0.867	0.351
10/15/2013 9:49	173_Non-Phe	13_10_15_0949_01_631	1	2.679	1.199	0.205	0.069	2.687	0.083	3.648	1.693	0.558	0.118	0.867	0.367
10/15/2013 9:50	173_Non-Phe	13_10_15_0950_02_421	1	2.679	1.101	0.205	0.065	2.625	0.082	3.648	1.693	0.558	0.109	0.867	0.339
10/15/2013 9:51	173_Non-Phe	13_10_15_0951_03_231	1	2.679	1.140	0.205	0.069	2.620	0.085	3.648	1.694	0.558	0.118	0.867	0.357
10/15/2013 9:52	173_Non-Phe	13_10_15_0952_03_891	1	2.679	1.142	0.205	0.063	2.899	0.085	3.648	1.693	0.558	0.110	0.867	0.345
10/15/2013 9:53	173_Non-Phe	13_10_15_0953_04_722	1	2.679	1.184	0.205	0.071	2.967	0.084	3.648	1.710	0.558	0.122	0.867	0.367
10/15/2013 9:54	173_Non-Phe	13_10_15_0954_05_522	1	2.679	1.106	0.205	0.067	2.592	0.088	3.648	1.698	0.558	0.114	0.867	0.337
10/15/2013 9:55	173_Non-Phe	13_10_15_0955_06_272	1	2.679	1.112	0.205	0.067	2.715	0.083	3.648	1.704	0.558	0.114	0.867	0.357
10/15/2013 9:56	173_Non-Phe	13_10_15_0956_06_992	1	2.679	1.117	0.205	0.067	2.534	0.081	3.648	1.692	0.558	0.116	0.867	0.349
10/15/2013 9:57	173_Non-Phe	13_10_15_0957_07_812	1	2.679	1.170	0.205	0.069	2.681	0.086	3.648	1.686	0.558	0.117	0.867	0.359
10/15/2013 9:58	173_Non-Phe	13_10_15_0958_08_512	1	2.679	1.039	0.205	0.066	2.749	0.087	3.648	1.697	0.558	0.109	0.867	0.320
10/15/2013 9:59	173_Non-Phe	13_10_15_0959_09_312	1	2.679	1.132	0.205	0.066	2.966	0.084	3.648	1.693	0.558	0.115	0.867	0.347
10/15/2013 10:00	173_Non-Phe	13_10_15_1000_10_052	1	2.679	1.148	0.205	0.064	3.015	0.089	3.648	1.709	0.558	0.112	0.867	0.338
10/15/2013 10:01	173_Non-Phe	13_10_15_1001_10_862	1	2.679	1.131	0.205	0.064	3.014	0.087	3.648	1.720	0.558	0.114	0.867	0.362
10/15/2013 10:02	173_Non-Phe	13_10_15_1002_11_672	1	2.679	1.151	0.205	0.070	2.937	0.088	3.648	1.707	0.558	0.118	0.867	0.369
10/15/2013 10:03	173_Non-Phe	13_10_15_1003_12_372	1	2.679	1.152	0.205	0.071	2.821	0.086	3.648	1.713	0.558	0.118	0.867	0.357
10/15/2013 10:04	173_Non-Phe	13_10_15_1004_13_182	1	2.679	1.131	0.205	0.068	2.896	0.088	3.648	1.699	0.558	0.114	0.867	0.350
10/15/2013 10:05	173_Non-Phe	13_10_15_1005_13_993	1	2.679	1.163	0.205	0.066	2.921	0.089	3.648	1.697	0.558	0.114	0.867	0.358
10/15/2013 10:06	173_Non-Phe	13_10_15_1006_14_753	1	2.679	1.163	0.205	0.071	2.603	0.084	3.648	1.694	0.558	0.116	0.867	0.362
10/15/2013 10:07	173_Non-Phe	13_10_15_1007_15_483	1	2.679	1.099	0.205	0.064	2.536	0.085	3.648	1.694	0.558	0.109	0.867	0.338
10/15/2013 10:08	173_Non-Phe	13_10_15_1008_16_293	1	2.679	1.191	0.205	0.067	2.761	0.084	3.648	1.684	0.558	0.116	0.867	0.361
10/15/2013 10:09	173_Non-Phe	13_10_15_1009_17_143	1	2.679	1.109	0.205	0.064	2.733	0.083	3.648	1.692	0.558	0.110	0.867	0.345
10/15/2013 10:10	173_Non-Phe	13_10_15_1010_17_863	1	2.679	1.160	0.205	0.067	2.628	0.083	3.648	1.664	0.558	0.114	0.867	0.350
10/15/2013 10:11	173_Non-Phe	13_10_15_1011_18_623	1	2.679	1.033	0.205	0.066	0.291	0.039	3.648	0.417	0.558	0.111	0.867	0.324
		Average Conc. (ppm):	**1**	**2.685**	**1.133**	**0.205**	**0.067**	**2.622**	**0.083**	**3.648**	**1.663**	**0.558**	**0.114**	**0.867**	**0.350**

GHM Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 10:22	173_Non-Phe	13_10_15_1022_26_154	1	2.679	1.092	0.205	0.070	3.039	0.088	3.648	1.720	0.558	0.118	0.867	0.342
10/15/2013 10:23	173_Non-Phe	13_10_15_1023_26_864	1	2.679	1.077	0.205	0.065	3.115	0.090	3.648	1.722	0.558	0.112	0.867	0.332
10/15/2013 10:24	173_Non-Phe	13_10_15_1024_27_684	1	2.679	1.166	0.205	0.065	3.097	0.091	3.648	1.717	0.558	0.113	0.867	0.342
10/15/2013 10:25	173_Non-Phe	13_10_15_1025_28_404	1	2.679	1.154	0.205	0.071	2.972	0.090	3.648	1.718	0.558	0.120	0.867	0.358
10/15/2013 10:26	173_Non-Phe	13_10_15_1026_29_214	1	2.679	1.221	0.205	0.064	2.788	0.087	3.648	1.712	0.558	0.111	0.867	0.345
10/15/2013 10:27	173_Non-Phe	13_10_15_1027_30_044	1	2.679	1.079	0.205	0.064	2.669	0.083	3.648	1.705	0.558	0.109	0.867	0.317
10/15/2013 10:28	173_Non-Phe	13_10_15_1028_30_805	1	2.679	1.154	0.205	0.069	2.757	0.086	3.648	1.699	0.558	0.113	0.867	0.367
10/15/2013 10:29	173_Non-Phe	13_10_15_1029_31_375	1	2.679	1.175	0.205	0.068	2.836	0.088	3.648	1.710	0.558	0.115	0.867	0.352
10/15/2013 10:30	173_Non-Phe	13_10_15_1030_32_205	1	2.679	1.150	0.205	0.073	2.951	0.085	3.648	1.713	0.558	0.121	0.867	0.367
10/15/2013 10:31	173_Non-Phe	13_10_15_1031_32_965	1	2.679	1.084	0.205	0.067	3.028	0.088	3.648	1.714	0.558	0.114	0.867	0.351
10/15/2013 10:32	173_Non-Phe	13_10_15_1032_33_755	1	2.679	1.087	0.205	0.063	3.113	0.087	3.648	1.715	0.558	0.111	0.867	0.333
10/15/2013 10:33	173_Non-Phe	13_10_15_1033_34_495	1	2.679	1.097	0.205	0.073	3.267	0.091	3.648	1.730	0.558	0.122	0.867	0.352
10/15/2013 10:34	173_Non-Phe	13_10_15_1034_35_205	1	2.679	1.143	0.205	0.070	3.379	0.092	3.648	1.736	0.558	0.119	0.867	0.350
10/15/2013 10:35	173_Non-Phe	13_10_15_1035_35_975	1	2.679	1.088	0.205	0.072	3.379	0.091	3.648	1.748	0.558	0.119	0.867	0.340
10/15/2013 10:36	173_Non-Phe	13_10_15_1036_36_815	1	2.679	1.116	0.205	0.065	3.402	0.093	3.648	1.743	0.558	0.114	0.867	0.340
10/15/2013 10:37	173_Non-Phe	13_10_15_1037_37_575	1	2.679	1.199	0.205	0.067	3.127	0.090	3.648	1.735	0.558	0.116	0.867	0.356
10/15/2013 10:38	173_Non-Phe	13_10_15_1038_38_255	1	2.679	1.142	0.205	0.068	3.188	0.089	3.648	1.735	0.558	0.115	0.867	0.356
10/15/2013 10:39	173_Non-Phe	13_10_15_1039_39_115	1	2.679	1.161	0.205	0.066	3.324	0.093	3.648	1.739	0.558	0.119	0.867	0.350
10/15/2013 10:40	173_Non-Phe	13_10_15_1040_39_786	1	2.679	1.205	0.205	0.068	3.262	0.088	3.648	1.741	0.558	0.119	0.867	0.362
10/15/2013 10:41	173_Non-Phe	13_10_15_1041_40_576	1	2.679	1.145	0.205	0.070	2.950	0.090	3.648	1.733	0.558	0.119	0.867	0.366
10/15/2013 10:42	173_Non-Phe	13_10_15_1042_41_326	1	2.679	1.197	0.205	0.068	2.834	0.084	3.648	1.732	0.558	0.116	0.867	0.353
10/15/2013 10:43	173_Non-Phe	13_10_15_1043_42_126	1	2.679	1.081	0.205	0.070	2.758	0.084	3.648	1.723	0.558	0.115	0.867	0.364
10/15/2013 10:44	173_Non-Phe	13_10_15_1044_42_866	1	2.679	1.088	0.205	0.066	2.600	0.082	3.648	1.715	0.558	0.110	0.867	0.331
10/15/2013 10:45	173_Non-Phe	13_10_15_1045_43_686	1	2.679	1.093	0.205	0.066	2.682	0.088	3.648	1.721	0.558	0.112	0.867	0.340
10/15/2013 10:46	173_Non-Phe	13_10_15_1046_44_456	1	2.679	1.063	0.205	0.069	2.635	0.084	3.648	1.690	0.558	0.115	0.867	0.358
10/15/2013 10:47	173_Non-Phe	13_10_15_1047_45_156	1	2.679	1.135	0.205	0.066	2.513	0.081	3.648	1.695	0.558	0.111	0.867	0.344
10/15/2013 10:48	173_Non-Phe	13_10_15_1048_45_966	1	2.679	1.117	0.205	0.068	2.401	0.081	3.648	1.680	0.558	0.114	0.867	0.347
10/15/2013 10:49	173_Non-Phe	13_10_15_1049_46_776	1	2.679	1.069	0.205	0.063	2.293	0.081	3.648	1.691	0.558	0.109	0.867	0.327
10/15/2013 10:50	173_Non-Phe	13_10_15_1050_47_546	1	2.679	1.033	0.205	0.063	2.338	0.084	3.648	1.676	0.558	0.109	0.867	0.330
10/15/2013 10:51	173_Non-Phe	13_10_15_1051_48_286	1	2.679	1.091	0.205	0.069	2.362	0.079	3.648	1.695	0.558	0.116	0.867	0.341
10/15/2013 10:52	173_Non-Phe	13_10_15_1052_49_107	1	2.679	1.219	0.205	0.065	2.019	0.078	3.648	1.680	0.558	0.114	0.867	0.356
10/15/2013 10:53	173_Non-Phe	13_10_15_1053_49_787	1	2.679	1.088	0.205	0.065	2.083	0.081	3.648	1.673	0.558	0.111	0.867	0.329
10/15/2013 10:54	173_Non-Phe	13_10_15_1054_50_637	1	2.679	1.122	0.205	0.067	2.367	0.083	3.648	1.695	0.558	0.117	0.867	0.348
10/15/2013 10:55	173_Non-Phe	13_10_15_1055_51_347	1	2.679	1.237	0.205	0.067	2.457	0.086	3.648	1.704	0.558	0.125	0.867	0.368
10/15/2013 10:56	173_Non-Phe	13_10_15_1056_52_137	1	2.679	1.134	0.205	0.072	2.315	0.082	3.648	1.713	0.558	0.121	0.867	0.359
10/15/2013 10:57	173_Non-Phe	13_10_15_1057_52_947	1	2.679	1.190	0.205	0.070	2.277	0.085	3.648	1.705	0.558	0.125	0.867	0.378
10/15/2013 10:58	173_Non-Phe	13_10_15_1058_53_697	1	2.679	1.179	0.205	0.068	2.508	0.083	3.648	1.714	0.558	0.123	0.867	0.354
10/15/2013 10:59	173_Non-Phe	13_10_15_1059_54_417	1	2.679	1.081	0.205	0.067	2.435	0.082	3.648	1.722	0.558	0.118	0.867	0.350
10/15/2013 11:00	173_Non-Phe	13_10_15_1100_55_187	1	2.679	1.126	0.205	0.063	2.651	0.086	3.648	1.735	0.558	0.114	0.867	0.343
10/15/2013 11:01	173_Non-Phe	13_10_15_1101_55_987	1	2.679	1.090	0.205	0.064	2.701	0.085	3.648	1.733	0.558	0.115	0.867	0.322
10/15/2013 11:02	173_Non-Phe	13_10_15_1102_56_697	1	2.679	1.129	0.205	0.068	2.614	0.081	3.648	1.726	0.558	0.118	0.867	0.352
10/15/2013 11:03	173_Non-Phe	13_10_15_1103_57_478	1	2.679	1.123	0.205	0.070	2.850	0.083	3.648	1.731	0.558	0.121	0.867	0.348
10/15/2013 11:04	173_Non-Phe	13_10_15_1104_58_198	1	2.745	1.132	0.205	0.070	3.000	0.088	3.648	1.746	0.558	0.123	0.867	0.351
10/15/2013 11:05	173_Non-Phe	13_10_15_1105_59_018	1	2.679	1.211	0.205	0.068	2.679	0.086	3.648	1.739	0.558	0.123	0.867	0.361
10/15/2013 11:06	173_Non-Phe	13_10_15_1106_59_828	1	2.679	1.081	0.205	0.065	2.455	0.084	3.648	1.721	0.558	0.108	0.867	0.334
10/15/2013 11:08	173_Non-Phe	13_10_15_1108_00_548	1	2.679	1.164	0.205	0.064	2.309	0.081	3.648	1.709	0.558	0.112	0.867	0.344
10/15/2013 11:09	173_Non-Phe	13_10_15_1109_01_358	1	2.679	1.157	0.205	0.063	2.235	0.081	3.648	1.692	0.558	0.109	0.867	0.341
10/15/2013 11:10	173_Non-Phe	13_10_15_1110_02_068	1	2.679	1.213	0.205	0.070	2.170	0.080	3.648	1.703	0.558	0.115	0.867	0.361
10/15/2013 11:11	173_Non-Phe	13_10_15_1111_02_698	1	2.679	1.160	0.205	0.064	2.475	0.080	3.648	1.699	0.558	0.113	0.867	0.343
10/15/2013 11:12	173_Non-Phe	13_10_15_1112_03_558	1	2.679	1.119	0.205	0.068	2.494	0.082	3.648	1.700	0.558	0.112	0.867	0.347
10/15/2013 11:13	173_Non-Phe	13_10_15_1113_04_308	1	2.679	1.169	0.205	0.066	2.392	0.081	3.648	1.700	0.558	0.113	0.867	0.364
10/15/2013 11:14	173_Non-Phe	13_10_15_1114_05_028	1	2.679	1.118	0.205	0.069	2.472	0.079	3.648	1.692	0.558	0.116	0.867	0.361
10/15/2013 11:15	173_Non-Phe	13_10_15_1115_05_778	1	2.679	1.171	0.205	0.065	2.464	0.082	3.648	1.692	0.558	0.112	0.867	0.348
10/15/2013 11:16	173_Non-Phe	13_10_15_1116_06_589	1	2.679	1.152	0.205	0.065	2.626	0.082	3.648	1.712	0.558	0.112	0.867	0.344
10/15/2013 11:17	173_Non-Phe	13_10_15_1117_07_339	1	2.679	1.088	0.205	0.067	2.795	0.086	3.648	1.732	0.558	0.114	0.867	0.345
10/15/2013 11:18	173_Non-Phe	13_10_15_1118_08_079	1	2.679	1.077	0.205	0.070	2.844	0.086	3.648	1.731	0.558	0.115	0.867	0.360
10/15/2013 11:19	173_Non-Phe	13_10_15_1119_08_799	1	2.679	1.059	0.205	0.069	2.666	0.085	3.648	1.717	0.558	0.113	0.867	0.353
10/15/2013 11:20	173_Non-Phe	13_10_15_1120_09_639	1	2.679	1.124	0.205	0.067	2.507	0.085	3.648	1.729	0.558	0.115	0.867	0.342
10/15/2013 11:21	173_Non-Phe	13_10_15_1121_10_369	1	2.679	1.044	0.205	0.066	2.575	0.082	3.648	1.718	0.558	0.110	0.867	0.334
10/15/2013 11:22	173_Non-Phe	13_10_15_1122_11_139	1	2.679	1.134	0.205	0.062	1.687	0.064	3.648	1.325	0.558	0.108	0.867	0.347
		Average Conc. (ppm):	**1**	**2.680**	**1.130**	**0.205**	**0.067**	**2.686**	**0.085**	**3.648**	**1.708**	**0.558**	**0.115**	**0.867**	**0.348**

GHM Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 11:40	173_Non-Phe	13_10_15_1140_25_001	1	2.679	1.202	0.205	0.065	2.783	0.083	3.648	1.717	0.558	0.115	0.867	0.353
10/15/2013 11:41	173_Non-Phe	13_10_15_1141_25_741	1	2.679	1.155	0.205	0.070	2.754	0.084	3.648	1.703	0.558	0.118	0.867	0.371
10/15/2013 11:42	173_Non-Phe	13_10_15_1142_26_581	1	2.679	1.090	0.205	0.064	2.845	0.084	3.648	1.712	0.558	0.112	0.867	0.338
10/15/2013 11:43	173_Non-Phe	13_10_15_1143_27_311	1	2.679	1.134	0.205	0.066	2.982	0.084	3.648	1.719	0.558	0.114	0.867	0.355
10/15/2013 11:44	173_Non-Phe	13_10_15_1144_28_151	1	2.679	1.138	0.205	0.071	2.825	0.085	3.648	1.727	0.558	0.119	0.867	0.355
10/15/2013 11:45	173_Non-Phe	13_10_15_1145_28_901	1	2.679	1.136	0.205	0.069	2.993	0.083	3.648	1.705	0.558	0.116	0.867	0.353
10/15/2013 11:46	173_Non-Phe	13_10_15_1146_29_691	1	2.679	1.141	0.205	0.069	2.928	0.085	3.648	1.723	0.558	0.120	0.867	0.349
10/15/2013 11:47	173_Non-Phe	13_10_15_1147_30_411	1	2.679	1.111	0.205	0.067	2.670	0.083	3.648	1.718	0.558	0.118	0.867	0.340
10/15/2013 11:48	173_Non-Phe	13_10_15_1148_31_121	1	2.679	1.129	0.205	0.073	2.790	0.080	3.648	1.734	0.558	0.124	0.867	0.367
10/15/2013 11:49	173_Non-Phe	13_10_15_1149_31_961	1	2.679	1.184	0.205	0.069	2.766	0.082	3.648	1.720	0.558	0.124	0.867	0.364

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

10/15/2013 11:50	173_Non-Phe	13_10_15_1150_32_751	1	2.679	1.120	0.205	0.070	2.672	0.082	3.648	1.713	0.558	0.120	0.867	0.356
10/15/2013 11:51	173_Non-Phe	13_10_15_1151_33_422	1	2.679	1.225	0.205	0.068	2.696	0.084	3.648	1.706	0.558	0.122	0.867	0.360
10/15/2013 11:52	173_Non-Phe	13_10_15_1152_34_122	1	2.679	1.106	0.205	0.068	3.032	0.082	3.648	1.736	0.558	0.122	0.867	0.344
10/15/2013 11:53	173_Non-Phe	13_10_15_1153_34_872	1	2.679	1.182	0.205	0.070	3.084	0.084	3.648	1.730	0.558	0.125	0.867	0.350
10/15/2013 11:54	173_Non-Phe	13_10_15_1154_35_682	1	2.679	1.191	0.205	0.069	2.978	0.087	3.648	1.739	0.558	0.123	0.867	0.360
10/15/2013 11:55	173_Non-Phe	13_10_15_1155_36_432	1	2.679	1.079	0.205	0.065	3.083	0.084	3.648	1.733	0.558	0.119	0.867	0.346
10/15/2013 11:56	173_Non-Phe	13_10_15_1156_37_172	1	2.679	1.128	0.205	0.070	2.930	0.085	3.648	1.735	0.558	0.124	0.867	0.348
10/15/2013 11:57	173_Non-Phe	13_10_15_1157_37_932	1	2.679	1.112	0.205	0.070	3.056	0.086	3.648	1.742	0.558	0.125	0.867	0.362
10/15/2013 11:58	173_Non-Phe	13_10_15_1158_38_682	1	2.679	1.129	0.205	0.071	3.313	0.086	3.648	1.748	0.558	0.129	0.867	0.346
10/15/2013 11:59	173_Non-Phe	13_10_15_1159_39_342	1	2.679	1.170	0.205	0.072	3.185	0.087	3.648	1.759	0.558	0.132	0.867	0.359
10/15/2013 12:00	173_Non-Phe	13_10_15_1200_40_092	1	2.679	1.131	0.205	0.063	2.746	0.084	3.648	1.738	0.558	0.115	0.867	0.340
10/15/2013 12:01	173_Non-Phe	13_10_15_1201_40_852	1	2.679	1.131	0.205	0.066	2.902	0.086	3.648	1.741	0.558	0.117	0.867	0.341
10/15/2013 12:02	173_Non-Phe	13_10_15_1202_41_642	1	2.679	1.115	0.205	0.070	2.981	0.083	3.648	1.727	0.558	0.119	0.867	0.341
10/15/2013 12:03	173_Non-Phe	13_10_15_1203_42_383	1	2.679	1.070	0.205	0.067	2.979	0.085	3.648	1.724	0.558	0.118	0.867	0.338
10/15/2013 12:04	173_Non-Phe	13_10_15_1204_43_183	1	2.679	1.126	0.205	0.068	3.046	0.086	3.648	1.730	0.558	0.122	0.867	0.361
10/15/2013 12:05	173_Non-Phe	13_10_15_1205_43_893	1	2.679	1.114	0.205	0.069	2.800	0.085	3.648	1.729	0.558	0.119	0.867	0.355
10/15/2013 12:06	173_Non-Phe	13_10_15_1206_44_713	1	2.679	1.071	0.205	0.064	2.783	0.082	3.648	1.716	0.558	0.112	0.867	0.325
10/15/2013 12:07	173_Non-Phe	13_10_15_1207_45_493	1	2.679	1.034	0.205	0.062	2.905	0.083	3.648	1.726	0.558	0.112	0.867	0.319
10/15/2013 12:08	173_Non-Phe	13_10_15_1208_46_233	1	2.679	1.075	0.205	0.066	3.030	0.082	3.648	1.730	0.558	0.116	0.867	0.344
10/15/2013 12:09	173_Non-Phe	13_10_15_1209_46_983	1	2.679	1.090	0.205	0.061	2.758	0.083	3.648	1.719	0.558	0.111	0.867	0.333
10/15/2013 12:10	173_Non-Phe	13_10_15_1210_47_703	1	2.679	1.073	0.205	0.064	2.795	0.080	3.648	1.715	0.558	0.109	0.867	0.339
10/15/2013 12:11	173_Non-Phe	13_10_15_1211_48_473	1	2.679	1.033	0.205	0.060	2.824	0.083	3.648	1.720	0.558	0.108	0.867	0.312
10/15/2013 12:12	173_Non-Phe	13_10_15_1212_49_233	1	2.679	1.036	0.205	0.064	2.739	0.080	3.648	1.726	0.558	0.110	0.867	0.342
10/15/2013 12:13	173_Non-Phe	13_10_15_1213_50_073	1	2.679	1.140	0.205	0.063	2.921	0.082	3.648	1.730	0.558	0.113	0.867	0.334
10/15/2013 12:14	173_Non-Phe	13_10_15_1214_50_783	1	2.679	1.117	0.205	0.063	2.963	0.083	3.648	1.726	0.558	0.112	0.867	0.335
10/15/2013 12:15	173_Non-Phe	13_10_15_1215_51_544	1	2.679	1.105	0.205	0.062	2.839	0.080	3.648	1.732	0.558	0.111	0.867	0.338
10/15/2013 12:16	173_Non-Phe	13_10_15_1216_52_314	1	2.679	1.038	0.205	0.065	2.898	0.081	3.648	1.717	0.558	0.115	0.867	0.325
10/15/2013 12:17	173_Non-Phe	13_10_15_1217_53_134	1	2.679	1.085	0.205	0.067	2.911	0.082	3.648	1.725	0.558	0.119	0.867	0.341
10/15/2013 12:18	173_Non-Phe	13_10_15_1218_53_834	1	2.679	1.100	0.205	0.064	2.922	0.082	3.648	1.731	0.558	0.118	0.867	0.330
10/15/2013 12:19	173_Non-Phe	13_10_15_1219_54_644	1	2.679	1.042	0.205	0.065	2.851	0.082	3.648	1.735	0.558	0.114	0.867	0.334
10/15/2013 12:20	173_Non-Phe	13_10_15_1220_55_414	1	2.679	1.053	0.205	0.066	2.920	0.084	3.648	1.740	0.558	0.122	0.867	0.332
10/15/2013 12:21	173_Non-Phe	13_10_15_1221_56_164	1	2.679	1.162	0.205	0.069	2.670	0.084	3.648	1.730	0.558	0.123	0.867	0.349
10/15/2013 12:22	173_Non-Phe	13_10_15_1222_56_874	1	2.679	1.045	0.205	0.065	2.597	0.083	3.648	1.732	0.558	0.114	0.867	0.331
10/15/2013 12:23	173_Non-Phe	13_10_15_1223_57_684	1	2.679	1.037	0.205	0.066	2.881	0.084	3.648	1.732	0.558	0.121	0.867	0.320
10/15/2013 12:24	173_Non-Phe	13_10_15_1224_58_414	1	2.679	1.107	0.205	0.067	3.059	0.088	3.648	1.746	0.558	0.123	0.867	0.349
10/15/2013 12:25	173_Non-Phe	13_10_15_1225_59_224	1	2.679	1.017	0.205	0.068	2.945	0.088	3.648	1.744	0.558	0.122	0.867	0.327
10/15/2013 12:27	173_Non-Phe	13_10_15_1227_00_014	1	2.679	1.189	0.205	0.067	2.909	0.086	3.648	1.764	0.558	0.124	0.867	0.354
10/15/2013 12:29	173_Non-Phe	13_10_15_1229_11_590	1	2.679	1.145	0.205	0.066	3.035	0.087	3.648	1.762	0.558	0.126	0.867	0.339
10/15/2013 12:30	173_Non-Phe	13_10_15_1230_12_390	1	2.679	1.077	0.205	0.074	3.034	0.089	3.648	1.756	0.558	0.130	0.867	0.347
10/15/2013 12:31	173_Non-Phe	13_10_15_1231_13_200	1	2.679	1.115	0.205	0.069	3.016	0.088	3.648	1.759	0.558	0.125	0.867	0.343
10/15/2013 12:32	173_Non-Phe	13_10_15_1232_13_940	1	2.679	1.064	0.205	0.069	2.885	0.085	3.648	1.755	0.558	0.130	0.867	0.342
10/15/2013 12:33	173_Non-Phe	13_10_15_1233_14_750	1	3.248	1.247	0.205	0.068	2.949	0.086	3.648	1.743	0.558	0.132	0.867	0.368
10/15/2013 12:34	173_Non-Phe	13_10_15_1234_15_450	1	2.679	1.043	0.205	0.070	2.936	0.089	3.648	1.754	0.558	0.127	0.867	0.340
10/15/2013 12:35	173_Non-Phe	13_10_15_1235_16_170	1	2.679	1.205	0.205	0.069	3.033	0.088	3.648	1.779	0.558	0.134	0.867	0.352
10/15/2013 12:36	173_Non-Phe	13_10_15_1236_16_880	1	2.679	1.147	0.205	0.069	3.016	0.090	3.648	1.774	0.558	0.133	0.867	0.349
10/15/2013 12:37	173_Non-Phe	13_10_15_1237_17_630	1	2.679	1.050	0.205	0.070	2.967	0.088	3.648	1.776	0.558	0.132	0.867	0.347
10/15/2013 12:38	173_Non-Phe	13_10_15_1238_18_480	1	2.679	1.124	0.205	0.068	2.996	0.088	3.648	1.762	0.558	0.130	0.867	0.354
10/15/2013 12:39	173_Non-Phe	13_10_15_1239_19_230	1	2.679	1.154	0.205	0.070	2.884	0.089	3.648	1.776	0.558	0.130	0.867	0.353
10/15/2013 12:40	173_Non-Phe	13_10_15_1240_19_910	1	2.679	1.146	0.205	0.071	2.915	0.090	3.648	1.778	0.558	0.137	0.867	0.363
		Average Conc. (ppm):	**1**	**2.688**	**1.114**	**0.205**	**0.067**	**2.909**	**0.085**	**3.648**	**1.736**	**0.558**	**0.121**	**0.867**	**0.345**

DHM Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 13:48	173_Non-Phe	13_10_15_1348_28_550	1	2.679	1.033	0.205	0.078	0.907	0.077	3.648	1.559	0.558	0.237	0.867	0.321
10/15/2013 13:49	173_Non-Phe	13_10_15_1349_29_260	1	2.679	1.141	0.205	0.080	0.935	0.079	3.648	1.561	0.558	0.245	0.867	0.353
10/15/2013 13:50	173_Non-Phe	13_10_15_1350_30_070	1	2.679	1.039	0.205	0.077	1.000	0.079	3.648	1.575	0.558	0.231	0.867	0.317
10/15/2013 13:51	173_Non-Phe	13_10_15_1351_30_870	1	2.679	1.055	0.205	0.078	0.995	0.078	3.648	1.566	0.558	0.231	0.867	0.335
10/15/2013 13:52	173_Non-Phe	13_10_15_1352_31_591	1	2.679	1.103	0.205	0.079	0.980	0.078	3.648	1.566	0.558	0.241	0.867	0.337
10/15/2013 13:53	173_Non-Phe	13_10_15_1353_32_351	1	2.679	1.072	0.205	0.078	0.994	0.078	3.648	1.571	0.558	0.242	0.867	0.332
10/15/2013 13:54	173_Non-Phe	13_10_15_1354_33_161	1	2.679	1.103	0.205	0.079	1.020	0.077	3.648	1.573	0.558	0.244	0.867	0.323
10/15/2013 13:55	173_Non-Phe	13_10_15_1355_33_891	1	2.679	1.049	0.205	0.076	0.984	0.080	3.648	1.567	0.558	0.226	0.867	0.331
10/15/2013 13:56	173_Non-Phe	13_10_15_1356_34_631	1	2.679	1.035	0.205	0.074	1.012	0.075	3.648	1.563	0.558	0.226	0.867	0.318
10/15/2013 13:57	173_Non-Phe	13_10_15_1357_35_441	1	2.679	0.988	0.205	0.073	0.954	0.077	3.648	1.555	0.558	0.215	0.867	0.322
10/15/2013 13:58	173_Non-Phe	13_10_15_1358_36_181	1	2.679	1.047	0.205	0.072	0.896	0.076	3.648	1.551	0.558	0.207	0.867	0.325
10/15/2013 13:59	173_Non-Phe	13_10_15_1359_36_931	1	2.679	1.104	0.205	0.073	0.854	0.076	3.648	1.564	0.558	0.216	0.867	0.334
10/15/2013 14:00	173_Non-Phe	13_10_15_1400_37_771	1	2.679	0.968	0.205	0.070	0.972	0.077	3.648	1.552	0.558	0.204	0.867	0.303
10/15/2013 14:01	173_Non-Phe	13_10_15_1401_38_521	1	2.679	1.157	0.205	0.070	0.933	0.078	3.648	1.563	0.558	0.211	0.867	0.341
10/15/2013 14:02	173_Non-Phe	13_10_15_1402_39_241	1	2.679	1.028	0.205	0.075	1.006	0.076	3.648	1.575	0.558	0.216	0.867	0.328
10/15/2013 14:03	173_Non-Phe	13_10_15_1403_40_061	1	2.679	1.097	0.205	0.069	0.980	0.078	3.648	1.560	0.558	0.214	0.867	0.331
10/15/2013 14:04	173_Non-Phe	13_10_15_1404_40_782	1	2.838	1.060	0.205	0.078	0.844	0.077	3.648	1.552	0.558	0.221	0.867	0.337
10/15/2013 14:05	173_Non-Phe	13_10_15_1405_41_592	1	2.679	1.093	0.205	0.074	0.910	0.077	3.648	1.552	0.558	0.211	0.867	0.337
10/15/2013 14:06	173_Non-Phe	13_10_15_1406_42_382	1	2.679	1.043	0.205	0.070	0.848	0.076	3.648	1.543	0.558	0.210	0.867	0.322
10/15/2013 14:07	173_Non-Phe	13_10_15_1407_43_092	1	2.679	1.087	0.205	0.077	0.904	0.075	3.648	1.545	0.558	0.218	0.867	0.345
10/15/2013 14:08	173_Non-Phe	13_10_15_1408_43_852	1	2.679	1.003	0.205	0.076	0.872	0.075	3.648	1.546	0.558	0.201	0.867	0.316
10/15/2013 14:09	173_Non-Phe	13_10_15_1409_44_632	1	3.328	1.067	0.205	0.075	0.792	0.076	3.648	1.553	0.558	0.199	0.867	0.326
10/15/2013 14:10	173_Non-Phe	13_10_15_1410_45_332	1	2.679	1.072	0.205	0.074	0.916	0.076	3.648	1.555	0.558	0.218	0.867	0.335
10/15/2013 14:11	173_Non-Phe	13_10_15_1411_46_132	1	2.679	1.025	0.205	0.079	0.993	0.078	3.648	1.555	0.558	0.230	0.867	0.319
10/15/2013 14:12	173_Non-Phe	13_10_15_1412_46_872	1	2.679	1.017	0.205	0.076	1.008	0.080	3.648	1.559	0.558	0.230	0.867	0.323
10/15/2013 14:13	173_Non-Phe	13_10_15_1413_47_622	1	2.679	1.037	0.205	0.079	0.950	0.078	3.648	1.562	0.558	0.238	0.867	0.323
10/15/2013 14:14	173_Non-Phe	13_10_15_1414_48_312	1	2.679	1.090	0.205	0.077	1.003	0.081	3.648	1.565	0.558	0.243	0.867	0.331
10/15/2013 14:15	173_Non-Phe	13_10_15_1415_48_983	1	2.679	1.073	0.205	0.075	0.960	0.078	3.648	1.561	0.558	0.228	0.867	0.326
10/15/2013 14:16	173_Non-Phe	13_10_15_1416_49_783	1	2.679	1.089	0.205	0.071	0.895	0.076	3.648	1.562	0.558	0.206	0.867	0.329
10/15/2013 14:17	173_Non-Phe	13_10_15_1417_50_483	1	3.337	1.113	0.205	0.077	0.966	0.076	3.648	1.561	0.558	0.229	0.867	0.339
10/15/2013 14:18	173_Non-Phe	13_10_15_1418_51_323	1	2.679	1.059	0.205	0.078	0.865	0.081	3.648	1.549	0.558	0.242	0.867	0.322
10/15/2013 14:19	173_Non-Phe	13_10_15_1419_52_043	1	2.679	0.996	0.205	0.079	0.930	0.080	3.648	1.558	0.558	0.250	0.867	0.317
10/15/2013 14:20	173_Non-Phe	13_10_15_1420_52_853	1	2.679	1.038	0.205	0.082	1.089	0.079	3.648	1.552	0.558	0.279	0.867	0.327
10/15/2013 14:21	173_Non-Phe	13_10_15_1421_53_513	1	2.679	1.097	0.205	0.087	1.077	0.079	3.648	1.559	0.558	0.277	0.867	0.324
10/15/2013 14:22	173_Non-Phe	13_10_15_1422_54_273	1	2.679	1.135	0.205	0.083	1.113	0.079	3.648	1.549	0.558	0.272	0.867	0.339
10/15/2013 14:23	173_Non-Phe	13_10_15_1423_55_033	1	3.379	1.051	0.205	0.090	1.071	0.079	3.648	1.561	0.558	0.284	0.867	0.321
10/15/2013 14:24	173_Non-Phe	13_10_15_1424_55_843	1	2.873	1.061	0.205	0.085	1.041	0.077	3.648	1.570	0.558	0.273	0.867	0.330
10/15/2013 14:25	173_Non-Phe	13_10_15_1425_56_593	1	2.679	1.009	0.205	0.081	1.021	0.082	3.648	1.585	0.558	0.269	0.867	0.321
10/15/2013 14:26	173_Non-Phe	13_10_15_1426_57_343	1	2.679	0.989	0.205	0.082	0.982	0.080	3.648	1.578	0.558	0.260	0.867	0.313
10/15/2013 14:27	173_Non-Phe	13_10_15_1427_58_154	1	2.679	1.061	0.205	0.078	1.025	0.080	3.648	1.579	0.558	0.244	0.867	0.322
10/15/2013 14:28	173_Non-Phe	13_10_15_1428_58_914	1	2.679	1.070	0.205	0.085	1.058	0.081	3.648	1.581	0.558	0.257	0.867	0.329
10/15/2013 14:29	173_Non-Phe	13_10_15_1429_59_664	1	2.679	1.092	0.205	0.091	1.048	0.080	3.648	1.586	0.558	0.271	0.867	0.342
10/15/2013 14:31	173_Non-Phe	13_10_15_1431_00_464	1	2.679	1.102	0.205	0.080	1.060	0.080	3.648	1.591	0.558	0.251	0.867	0.332
10/15/2013 14:32	173_Non-Phe	13_10_15_1432_01_174	1	2.679	1.103	0.205	0.080	1.019	0.080	3.648	1.597	0.558	0.254	0.867	0.337
10/15/2013 14:33	173_Non-Phe	13_10_15_1433_01_914	1	2.679	1.078	0.205	0.084	1.044	0.083	3.648	1.603	0.558	0.270	0.867	0.342
10/15/2013 14:34	173_Non-Phe	13_10_15_1434_02_734	1	3.096	1.135	0.205	0.086	1.045	0.080	3.648	1.606	0.558	0.266	0.867	0.342
10/15/2013 14:35	173_Non-Phe	13_10_15_1435_03_494	1	2.679	1.105	0.205	0.086	1.131	0.083	3.648	1.605	0.558	0.273	0.867	0.342
10/15/2013 14:36	173_Non-Phe	13_10_15_1436_04_204	1	2.679	1.077	0.205	0.087	1.054	0.083	3.648	1.602	0.558	0.266	0.867	0.337
10/15/2013 14:37	173_Non-Phe	13_10_15_1437_05_044	1	2.679	1.156	0.205	0.087	0.952	0.082	3.648	1.606	0.558	0.260	0.867	0.346
10/15/2013 14:38	173_Non-Phe	13_10_15_1438_05_754	1	2.679	1.072	0.205	0.082	1.063	0.081	3.648	1.589	0.558	0.258	0.867	0.334
10/15/2013 14:39	173_Non-Phe	13_10_15_1439_06_504	1	2.679	1.101	0.205	0.085	1.098	0.082	3.648	1.583	0.558	0.290	0.867	0.326
10/15/2013 14:40	173_Non-Phe	13_10_15_1440_07_295	1	2.679	1.088	0.205	0.092	1.171	0.083	3.648	1.587	0.558	0.306	0.867	0.335
10/15/2013 14:41	173_Non-Phe	13_10_15_1441_08_065	1	2.679	1.148	0.205	0.084	1.021	0.081	3.648	1.597	0.558	0.252	0.867	0.337
10/15/2013 14:42	173_Non-Phe	13_10_15_1442_08_775	1	2.679	1.105	0.205	0.079	0.961	0.080	3.648	1.582	0.558	0.235	0.867	0.335
10/15/2013 14:43	173_Non-Phe	13_10_15_1443_09_575	1	2.679	1.105	0.205	0.082	1.277	0.082	3.648	1.585	0.558	0.263	0.867	0.339
10/15/2013 14:44	173_Non-Phe	13_10_15_1444_10_335	1	2.679	1.101	0.205	0.082	1.337	0.080	3.648	1.573	0.558	0.253	0.867	0.347
10/15/2013 14:45	173_Non-Phe	13_10_15_1445_11_105	1	2.679	1.034	0.205	0.084	1.362	0.078	3.648	1.578	0.558	0.242	0.867	0.331
10/15/2013 14:46	173_Non-Phe	13_10_15_1446_11_845	1	2.679	1.100	0.205	0.080	1.395	0.079	3.648	1.564	0.558	0.241	0.867	0.331
10/15/2013 14:47	173_Non-Phe	13_10_15_1447_12_565	1	2.679	1.081	0.205	0.098	1.051	0.071	3.648	1.341	0.558	0.258	0.867	0.347

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 14:48	173_Non-Phe	13_10_15_1448_13_365	1	2.679	1.188	0.205	0.265	0.276	0.086	3.648	0.268	0.558	0.450	0.867	0.855
		Average Conc. (ppm):	**1**	**2.725**	**1.074**	**0.205**	**0.083**	**0.999**	**0.079**	**3.648**	**1.544**	**0.558**	**0.246**	**0.867**	**0.339**

Aspirator Run 1

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 17:36	173_Non-Phe	13_10_15_1736_20_230	1	2.679	1.465	0.832	0.177	3.012	0.143	3.648	2.019	0.558	0.652	0.867	0.556
10/15/2013 17:37	173_Non-Phe	13_10_15_1737_20_960	1	2.679	1.522	0.870	0.178	2.794	0.138	3.648	2.034	0.558	0.655	0.867	0.574
10/15/2013 17:38	173_Non-Phe	13_10_15_1738_21_720	1	2.679	1.461	0.814	0.179	2.783	0.140	3.648	2.037	0.558	0.658	0.867	0.548
10/15/2013 17:39	173_Non-Phe	13_10_15_1739_22_480	1	2.679	1.627	0.822	0.190	2.742	0.142	3.648	2.031	0.558	0.691	0.867	0.599
10/15/2013 17:40	173_Non-Phe	13_10_15_1740_23_240	1	2.679	1.535	0.797	0.184	2.665	0.139	3.648	2.027	0.558	0.686	0.867	0.586
10/15/2013 17:41	173_Non-Phe	13_10_15_1741_23_960	1	2.679	1.531	0.693	0.184	2.548	0.140	3.648	2.035	0.558	0.681	0.867	0.579
10/15/2013 17:42	173_Non-Phe	13_10_15_1742_24_741	1	2.679	1.409	0.845	0.186	2.682	0.141	3.648	2.025	0.558	0.678	0.867	0.565
10/15/2013 17:43	173_Non-Phe	13_10_15_1743_25_431	1	2.679	1.444	0.698	0.186	2.515	0.141	3.648	2.023	0.558	0.680	0.867	0.587
10/15/2013 17:44	173_Non-Phe	13_10_15_1744_26_271	1	2.679	1.453	0.731	0.183	2.557	0.138	3.648	2.026	0.558	0.683	0.867	0.581
10/15/2013 17:45	173_Non-Phe	13_10_15_1745_27_041	1	2.679	1.511	0.802	0.182	2.570	0.139	3.648	2.018	0.558	0.685	0.867	0.569
10/15/2013 17:46	173_Non-Phe	13_10_15_1746_27_711	1	2.679	1.515	0.834	0.184	2.492	0.141	3.648	2.038	0.558	0.692	0.867	0.579
10/15/2013 17:47	173_Non-Phe	13_10_15_1747_28_481	1	2.679	1.360	0.758	0.187	2.543	0.139	3.648	2.033	0.558	0.694	0.867	0.584
10/15/2013 17:48	173_Non-Phe	13_10_15_1748_29_241	1	2.679	1.434	0.859	0.184	2.549	0.139	3.648	2.028	0.558	0.694	0.867	0.587
10/15/2013 17:49	173_Non-Phe	13_10_15_1749_30_061	1	2.679	1.529	0.750	0.185	2.454	0.140	3.648	2.036	0.558	0.695	0.867	0.591
10/15/2013 17:50	173_Non-Phe	13_10_15_1750_30_771	1	2.679	1.495	0.766	0.189	2.365	0.137	3.648	2.034	0.558	0.698	0.867	0.591
10/15/2013 17:51	173_Non-Phe	13_10_15_1751_31_551	1	2.679	1.455	0.829	0.188	2.359	0.139	3.648	2.030	0.558	0.708	0.867	0.589
10/15/2013 17:52	173_Non-Phe	13_10_15_1752_32_281	1	2.679	1.523	0.920	0.191	2.432	0.142	3.648	2.027	0.558	0.707	0.867	0.597
10/15/2013 17:53	173_Non-Phe	13_10_15_1753_33_031	1	2.679	1.460	0.829	0.190	2.320	0.140	3.648	2.032	0.558	0.707	0.867	0.580
10/15/2013 17:54	173_Non-Phe	13_10_15_1754_33_752	1	2.679	1.440	0.778	0.191	2.342	0.138	3.648	2.032	0.558	0.708	0.867	0.586
10/15/2013 17:55	173_Non-Phe	13_10_15_1755_34_512	1	2.679	1.389	0.722	0.189	2.290	0.139	3.648	2.031	0.558	0.709	0.867	0.583
10/15/2013 17:56	173_Non-Phe	13_10_15_1756_35_272	1	2.679	1.438	0.831	0.189	2.326	0.140	3.648	2.037	0.558	0.712	0.867	0.592
10/15/2013 17:57	173_Non-Phe	13_10_15_1757_36_032	1	2.679	1.483	0.786	0.190	2.319	0.140	3.648	2.035	0.558	0.706	0.867	0.568
10/15/2013 17:58	173_Non-Phe	13_10_15_1758_36_842	1	2.679	1.517	0.829	0.193	2.286	0.140	3.648	2.029	0.558	0.711	0.867	0.607
10/15/2013 17:59	173_Non-Phe	13_10_15_1759_37_412	1	2.679	1.422	0.838	0.193	2.349	0.138	3.648	2.023	0.558	0.712	0.867	0.576
10/15/2013 18:00	173_Non-Phe	13_10_15_1800_38_222	1	2.679	1.518	0.852	0.194	2.320	0.140	3.648	2.026	0.558	0.720	0.867	0.589
10/15/2013 18:01	173_Non-Phe	13_10_15_1801_38_972	1	2.679	1.492	0.797	0.186	2.408	0.140	3.648	2.031	0.558	0.723	0.867	0.593
10/15/2013 18:02	173_Non-Phe	13_10_15_1802_39_732	1	2.679	1.501	0.892	0.191	2.390	0.143	3.648	2.023	0.558	0.718	0.867	0.599
10/15/2013 18:03	173_Non-Phe	13_10_15_1803_40_492	1	2.679	1.457	0.923	0.198	2.470	0.140	3.648	2.035	0.558	0.729	0.867	0.595
10/15/2013 18:04	173_Non-Phe	13_10_15_1804_41_282	1	2.679	1.427	0.860	0.192	2.416	0.142	3.648	2.035	0.558	0.724	0.867	0.601
10/15/2013 18:05	173_Non-Phe	13_10_15_1805_42_053	1	2.679	1.457	0.845	0.195	2.389	0.141	3.648	2.033	0.558	0.721	0.867	0.605
10/15/2013 18:06	173_Non-Phe	13_10_15_1806_42_763	1	2.679	1.455	0.872	0.191	2.433	0.141	3.648	2.045	0.558	0.714	0.867	0.594
10/15/2013 18:07	173_Non-Phe	13_10_15_1807_43_543	1	2.679	1.533	0.899	0.188	2.438	0.138	3.648	2.029	0.558	0.685	0.867	0.594
10/15/2013 18:08	173_Non-Phe	13_10_15_1808_44_293	1	2.679	1.473	0.930	0.175	2.542	0.138	3.648	2.041	0.558	0.639	0.867	0.567
10/15/2013 18:09	173_Non-Phe	13_10_15_1809_45_103	1	2.679	1.530	0.827	0.162	2.716	0.133	3.648	2.040	0.558	0.591	0.867	0.570
10/15/2013 18:10	173_Non-Phe	13_10_15_1810_45_773	1	2.679	1.467	0.843	0.152	2.683	0.132	3.648	2.032	0.558	0.535	0.867	0.532
10/15/2013 18:11	173_Non-Phe	13_10_15_1811_46_533	1	2.679	1.465	0.896	0.149	2.861	0.131	3.648	2.029	0.558	0.506	0.867	0.527
10/15/2013 18:12	173_Non-Phe	13_10_15_1812_47_343	1	2.679	1.460	0.869	0.148	2.908	0.131	3.648	2.045	0.558	0.519	0.867	0.516
10/15/2013 18:13	173_Non-Phe	13_10_15_1813_48_113	1	2.679	1.479	0.920	0.150	2.858	0.131	3.648	2.033	0.558	0.533	0.867	0.529
10/15/2013 18:14	173_Non-Phe	13_10_15_1814_48_813	1	2.679	1.426	0.797	0.159	2.908	0.130	3.648	2.046	0.558	0.560	0.867	0.523
10/15/2013 18:15	173_Non-Phe	13_10_15_1815_49_633	1	2.679	1.545	0.710	0.161	2.848	0.132	3.648	2.040	0.558	0.587	0.867	0.560
10/15/2013 18:16	173_Non-Phe	13_10_15_1816_50_353	1	2.679	1.475	0.840	0.168	2.960	0.134	3.648	2.043	0.558	0.606	0.867	0.557
10/15/2013 18:17	173_Non-Phe	13_10_15_1817_51_074	1	2.679	1.549	0.887	0.169	2.959	0.137	3.648	2.032	0.558	0.617	0.867	0.568
10/15/2013 18:18	173_Non-Phe	13_10_15_1818_51_864	1	2.679	1.523	0.832	0.174	3.033	0.140	3.648	2.023	0.558	0.636	0.867	0.568
10/15/2013 18:19	173_Non-Phe	13_10_15_1819_52_674	1	2.679	1.455	0.824	0.176	3.011	0.138	3.648	2.023	0.558	0.635	0.867	0.574
10/15/2013 18:20	173_Non-Phe	13_10_15_1820_53_414	1	2.679	1.525	0.867	0.180	2.935	0.139	3.648	2.035	0.558	0.650	0.867	0.571
10/15/2013 18:21	173_Non-Phe	13_10_15_1821_54_174	1	2.679	1.485	1.038	0.174	2.890	0.143	3.648	2.035	0.558	0.648	0.867	0.547
10/15/2013 18:22	173_Non-Phe	13_10_15_1822_54_894	1	2.679	1.541	0.921	0.175	2.867	0.141	3.648	2.040	0.558	0.665	0.867	0.575
10/15/2013 18:23	173_Non-Phe	13_10_15_1823_55_724	1	2.679	1.499	0.907	0.182	2.712	0.140	3.648	2.032	0.558	0.672	0.867	0.578
10/15/2013 18:24	173_Non-Phe	13_10_15_1824_56_494	1	2.679	1.450	1.055	0.179	2.739	0.141	3.648	2.035	0.558	0.678	0.867	0.582
10/15/2013 18:25	173_Non-Phe	13_10_15_1825_57_204	1	2.679	1.458	0.929	0.186	2.591	0.142	3.648	2.027	0.558	0.688	0.867	0.587
10/15/2013 18:26	173_Non-Phe	13_10_15_1826_57_954	1	2.679	1.382	0.853	0.189	2.655	0.141	3.648	2.018	0.558	0.693	0.867	0.569
10/15/2013 18:27	173_Non-Phe	13_10_15_1827_58_704	1	2.679	1.404	0.916	0.188	2.634	0.144	3.648	2.021	0.558	0.703	0.867	0.596
10/15/2013 18:28	173_Non-Phe	13_10_15_1828_59_474	1	2.679	1.495	0.864	0.189	2.664	0.141	3.648	2.017	0.558	0.710	0.867	0.591
10/15/2013 18:30	173_Non-Phe	13_10_15_1830_01_265	1	2.679	1.523	0.869	0.191	2.621	0.144	3.648	2.023	0.558	0.715	0.867	0.614
10/15/2013 18:31	173_Non-Phe	13_10_15_1831_02_065	1	2.679	1.462	0.855	0.191	2.669	0.142	3.648	2.025	0.558	0.718	0.867	0.593
10/15/2013 18:32	173_Non-Phe	13_10_15_1832_02_795	1	2.679	1.461	0.834	0.191	2.588	0.143	3.648	2.025	0.558	0.719	0.867	0.594
10/15/2013 18:33	173_Non-Phe	13_10_15_1833_03_555	1	2.679	1.538	0.802	0.189	2.604	0.145	3.648	2.024	0.558	0.718	0.867	0.625
10/15/2013 18:34	173_Non-Phe	13_10_15_1834_04_365	1	2.679	1.456	0.887	0.195	2.656	0.145	3.648	2.021	0.558	0.720	0.867	0.599
10/15/2013 18:35	173_Non-Phe	13_10_15_1835_05_115	1	2.679	1.404	0.856	0.196	2.665	0.146	3.648	2.040	0.558	0.726	0.867	0.606
10/15/2013 18:36	173_Non-Phe	13_10_15_1836_05_865	1	2.679	1.349	0.468	0.197	2.318	0.133	3.648	1.905	0.558	0.691	0.867	0.585
		Average Conc. (ppm):	**1**	**2.679**	**1.476**	**0.838**	**0.182**	**2.611**	**0.139**	**3.648**	**2.029**	**0.558**	**0.674**	**0.867**	**0.579**

Aspirator Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 18:49	173_Non-Phe	13_10_15_1849_15_616	1	2.679	1.423	0.866	0.189	2.743	0.144	3.648	2.008	0.558	0.722	0.867	0.608
10/15/2013 18:50	173_Non-Phe	13_10_15_1850_16_406	1	2.679	1.510	0.888	0.191	2.691	0.144	3.648	1.994	0.558	0.732	0.867	0.617
10/15/2013 18:51	173_Non-Phe	13_10_15_1851_17_216	1	2.679	1.433	0.826	0.197	2.698	0.145	3.648	2.006	0.558	0.735	0.867	0.608
10/15/2013 18:52	173_Non-Phe	13_10_15_1852_17_946	1	2.679	1.392	0.827	0.196	2.821	0.147	3.648	2.013	0.558	0.740	0.867	0.607
10/15/2013 18:53	173_Non-Phe	13_10_15_1853_18_657	1	2.679	1.473	0.940	0.200	2.817	0.145	3.648	1.992	0.558	0.759	0.867	0.608
10/15/2013 18:54	173_Non-Phe	13_10_15_1854_19_407	1	2.679	1.437	0.958	0.204	2.803	0.149	3.648	2.001	0.558	0.780	0.867	0.587
10/15/2013 18:55	173_Non-Phe	13_10_15_1855_20_197	1	2.679	1.578	0.836	0.210	2.848	0.155	3.648	2.007	0.558	0.796	0.867	0.606
10/15/2013 18:56	173_Non-Phe	13_10_15_1856_20_907	1	2.679	1.415	0.793	0.214	2.953	0.155	3.648	1.989	0.558	0.823	0.867	0.611
10/15/2013 18:57	173_Non-Phe	13_10_15_1857_21_717	1	2.679	1.412	0.803	0.213	2.977	0.159	3.648	2.000	0.558	0.830	0.867	0.590
10/15/2013 18:58	173_Non-Phe	13_10_15_1858_22_447	1	2.679	1.476	0.873	0.214	2.941	0.158	3.648	2.009	0.558	0.828	0.867	0.598
10/15/2013 18:59	173_Non-Phe	13_10_15_1859_23_207	1	2.679	1.480	1.003	0.219	2.970	0.160	3.648	1.989	0.558	0.834	0.867	0.608
10/15/2013 19:00	173_Non-Phe	13_10_15_1900_23_947	1	2.679	1.504	0.999	0.220	2.947	0.157	3.648	2.005	0.558	0.836	0.867	0.596
10/15/2013 19:01	173_Non-Phe	13_10_15_1901_24_647	1	2.679	1.501	1.075	0.218	3.047	0.159	3.648	2.001	0.558	0.836	0.867	0.621
10/15/2013 19:02	173_Non-Phe	13_10_15_1902_25_427	1	2.679	1.473	0.995	0.214	2.974	0.157	3.648	2.001	0.558	0.837	0.867	0.622
10/15/2013 19:03	173_Non-Phe	13_10_15_1903_26_167	1	2.679	1.455	0.913	0.225	3.030	0.162	3.648	1.993	0.558	0.847	0.867	0.613
10/15/2013 19:04	173_Non-Phe	13_10_15_1904_26_967	1	2.679	1.555	0.904	0.216	3.045	0.164	3.648	1.990	0.558	0.841	0.867	0.615
10/15/2013 19:05	173_Non-Phe	13_10_15_1905_27_678	1	2.679	1.403	0.982	0.220	3.005	0.165	3.648	2.013	0.558	0.839	0.867	0.604
10/15/2013 19:06	173_Non-Phe	13_10_15_1906_28_368	1	2.679	1.489	0.961	0.221	3.022	0.162	3.648	2.000	0.558	0.836	0.867	0.618
10/15/2013 19:07	173_Non-Phe	13_10_15_1907_29_148	1	2.679	1.488	0.801	0.218	3.023	0.162	3.648	2.010	0.558	0.822	0.867	0.614
10/15/2013 19:08	173_Non-Phe	13_10_15_1908_29_878	1	2.679	1.525	0.939	0.211	3.018	0.159	3.648	1.992	0.558	0.807	0.867	0.611
10/15/2013 19:09	173_Non-Phe	13_10_15_1909_30_628	1	2.679	1.462	0.873	0.205	2.954	0.160	3.648	2.001	0.558	0.791	0.867	0.601
10/15/2013 19:10	173_Non-Phe	13_10_15_1910_31_398	1	2.679	1.514	0.782	0.203	2.957	0.156	3.648	2.008	0.558	0.779	0.867	0.594
10/15/2013 19:11	173_Non-Phe	13_10_15_1911_32_168	1	2.679	1.437	0.865	0.203	2.910	0.154	3.648	2.002	0.558	0.764	0.867	0.602
10/15/2013 19:12	173_Non-Phe	13_10_15_1912_32_878	1	2.679	1.372	0.832	0.199	3.003	0.154	3.648	2.002	0.558	0.760	0.867	0.578
10/15/2013 19:13	173_Non-Phe	13_10_15_1913_33_668	1	2.679	1.411	0.830	0.202	2.931	0.153	3.648	2.004	0.558	0.764	0.867	0.589
10/15/2013 19:14	173_Non-Phe	13_10_15_1914_34_358	1	2.679	1.496	0.962	0.204	3.023	0.155	3.648	2.022	0.558	0.771	0.867	0.598
10/15/2013 19:15	173_Non-Phe	13_10_15_1915_35_158	1	2.679	1.496	0.838	0.197	2.868	0.154	3.648	2.000	0.558	0.760	0.867	0.598
10/15/2013 19:16	173_Non-Phe	13_10_15_1916_35_878	1	2.679	1.477	0.967	0.205	2.873	0.155	3.648	2.002	0.558	0.764	0.867	0.599
10/15/2013 19:17	173_Non-Phe	13_10_15_1917_36_589	1	2.679	1.518	0.884	0.196	2.825	0.153	3.648	2.005	0.558	0.749	0.867	0.611
10/15/2013 19:18	173_Non-Phe	13_10_15_1918_37_339	1	2.679	1.410	1.015	0.200	2.766	0.150	3.648	1.995	0.558	0.746	0.867	0.592
10/15/2013 19:19	173_Non-Phe	13_10_15_1919_38_159	1	2.679	1.476	0.819	0.195	2.766	0.148	3.648	1.995	0.558	0.727	0.867	0.601
10/15/2013 19:20	173_Non-Phe	13_10_15_1920_38_909	1	2.679	1.594	0.934	0.193	2.738	0.150	3.648	2.007	0.558	0.723	0.867	0.597
10/15/2013 19:21	173_Non-Phe	13_10_15_1921_39_459	1	2.679	1.515	0.795	0.194	2.721	0.148	3.648	2.000	0.558	0.726	0.867	0.587
10/15/2013 19:22	173_Non-Phe	13_10_15_1922_40_209	1	2.679	1.537	0.902	0.197	2.737	0.150	3.648	1.997	0.558	0.728	0.867	0.596
10/15/2013 19:23	173_Non-Phe	13_10_15_1923_41_009	1	2.679	1.437	0.837	0.193	2.735	0.149	3.648	1.999	0.558	0.734	0.867	0.605
10/15/2013 19:24	173_Non-Phe	13_10_15_1924_41_719	1	2.679	1.450	0.894	0.195	2.648	0.147	3.648	1.999	0.558	0.736	0.867	0.582
10/15/2013 19:25	173_Non-Phe	13_10_15_1925_43_529	1	2.679	1.398	0.694	0.195	2.604	0.150	3.648	1.996	0.558	0.730	0.867	0.569
10/15/2013 19:26	173_Non-Phe	13_10_15_1926_43_249	1	2.679	1.484	0.830	0.196	2.651	0.151	3.648	2.010	0.558	0.734	0.867	0.604
10/15/2013 19:27	173_Non-Phe	13_10_15_1927_43_949	1	2.679	1.482	0.776	0.201	2.708	0.151	3.648	2.008	0.558	0.738	0.867	0.569
10/15/2013 19:28	173_Non-Phe	13_10_15_1928_44_689	1	2.679	1.440	0.748	0.197	2.791	0.152	3.648	1.997	0.558	0.745	0.867	0.571
10/15/2013 19:29	173_Non-Phe	13_10_15_1929_45_530	1	2.679	1.444	0.633	0.201	2.806	0.155	3.648	1.989	0.558	0.748	0.867	0.585

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

10/15/2013 19:30	173_Non-Phe	13_10_15_1930_46_270	1	2.679	1.412	0.720	0.206	3.002	0.157	3.648	1.998	0.558	0.762	0.867	0.580
10/15/2013 19:31	173_Non-Phe	13_10_15_1931_47_030	1	2.679	1.500	0.729	0.207	3.079	0.160	3.648	2.002	0.558	0.767	0.867	0.604
10/15/2013 19:32	173_Non-Phe	13_10_15_1932_47_740	1	2.679	1.463	0.706	0.212	3.157	0.163	3.648	1.996	0.558	0.777	0.867	0.559
10/15/2013 19:33	173_Non-Phe	13_10_15_1933_48_540	1	2.679	1.506	0.657	0.206	3.198	0.166	3.648	2.005	0.558	0.776	0.867	0.582
10/15/2013 19:34	173_Non-Phe	13_10_15_1934_49_250	1	2.679	1.432	0.758	0.206	3.236	0.166	3.648	2.006	0.558	0.764	0.867	0.581
10/15/2013 19:35	173_Non-Phe	13_10_15_1935_50_070	1	2.679	1.500	0.601	0.202	3.120	0.164	3.648	2.007	0.558	0.757	0.867	0.579
10/15/2013 19:36	173_Non-Phe	13_10_15_1936_50_850	1	2.679	1.441	0.768	0.196	3.087	0.156	3.648	2.003	0.558	0.734	0.867	0.565
10/15/2013 19:37	173_Non-Phe	13_10_15_1937_51_560	1	2.679	1.397	0.651	0.190	3.082	0.160	3.648	2.002	0.558	0.716	0.867	0.556
10/15/2013 19:38	173_Non-Phe	13_10_15_1938_52_350	1	2.679	1.447	0.726	0.188	2.990	0.151	3.648	2.001	0.558	0.711	0.867	0.559
10/15/2013 19:39	173_Non-Phe	13_10_15_1939_53_120	1	2.679	1.531	0.706	0.185	2.924	0.150	3.648	2.011	0.558	0.694	0.867	0.562
10/15/2013 19:40	173_Non-Phe	13_10_15_1940_53_831	1	2.679	1.385	0.765	0.186	2.924	0.148	3.648	2.001	0.558	0.687	0.867	0.533
10/15/2013 19:41	173_Non-Phe	13_10_15_1941_54_551	1	2.679	1.471	0.649	0.180	2.910	0.147	3.648	2.008	0.558	0.679	0.867	0.545
10/15/2013 19:42	173_Non-Phe	13_10_15_1942_55_311	1	2.679	1.564	0.762	0.180	2.857	0.147	3.648	1.996	0.558	0.671	0.867	0.569
10/15/2013 19:43	173_Non-Phe	13_10_15_1943_56_131	1	2.679	1.500	0.719	0.179	2.878	0.150	3.648	2.012	0.558	0.674	0.867	0.554
10/15/2013 19:44	173_Non-Phe	13_10_15_1944_56_911	1	2.679	1.487	0.773	0.184	2.865	0.147	3.648	1.994	0.558	0.678	0.867	0.529
10/15/2013 19:45	173_Non-Phe	13_10_15_1945_57_631	1	2.679	1.454	0.885	0.187	2.802	0.146	3.648	2.007	0.558	0.662	0.867	0.549
10/15/2013 19:46	173_Non-Phe	13_10_15_1946_58_371	1	2.679	1.486	0.784	0.181	2.687	0.144	3.648	1.999	0.558	0.658	0.867	0.546
10/15/2013 19:47	173_Non-Phe	13_10_15_1947_59_161	1	2.679	1.494	0.812	0.175	2.721	0.142	3.648	1.999	0.558	0.652	0.867	0.538
10/15/2013 19:48	173_Non-Phe	13_10_15_1948_59_901	1	2.679	1.135	0.205	0.235	0.773	0.082	3.648	1.044	0.558	0.499	0.867	0.729
		Average Conc. (ppm):	**1**	**2.679**	**1.465**	**0.821**	**0.201**	**2.861**	**0.152**	**3.648**	**1.986**	**0.558**	**0.752**	**0.867**	**0.590**

Aspirator Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/15/2013 20:00	173_Non-Phe	13_10_15_2000_08_262	1	2.679	1.463	0.963	0.166	2.666	0.138	3.648	2.013	0.558	0.617	0.867	0.538
10/15/2013 20:01	173_Non-Phe	13_10_15_2001_09_022	1	2.679	1.456	0.887	0.166	2.713	0.138	3.648	2.019	0.558	0.609	0.867	0.533
10/15/2013 20:02	173_Non-Phe	13_10_15_2002_09_792	1	2.679	1.468	0.814	0.165	2.740	0.139	3.648	2.006	0.558	0.605	0.867	0.523
10/15/2013 20:03	173_Non-Phe	13_10_15_2003_10_502	1	2.679	1.413	0.784	0.166	2.812	0.135	3.648	2.009	0.558	0.602	0.867	0.524
10/15/2013 20:04	173_Non-Phe	13_10_15_2004_11_152	1	2.679	1.425	0.767	0.161	2.845	0.136	3.648	2.009	0.558	0.590	0.867	0.518
10/15/2013 20:05	173_Non-Phe	13_10_15_2005_11_943	1	2.679	1.355	0.933	0.162	2.867	0.136	3.648	2.019	0.558	0.580	0.867	0.505
10/15/2013 20:06	173_Non-Phe	13_10_15_2006_12_743	1	2.679	1.494	0.861	0.163	2.830	0.135	3.648	2.012	0.558	0.591	0.867	0.545
10/15/2013 20:07	173_Non-Phe	13_10_15_2007_13_463	1	2.679	1.401	0.926	0.166	2.768	0.135	3.648	2.018	0.558	0.599	0.867	0.528
10/15/2013 20:08	173_Non-Phe	13_10_15_2008_14_173	1	2.679	1.512	0.796	0.164	2.671	0.137	3.648	2.004	0.558	0.613	0.867	0.540
10/15/2013 20:09	173_Non-Phe	13_10_15_2009_14_993	1	2.679	1.387	0.870	0.170	2.751	0.136	3.648	2.011	0.558	0.619	0.867	0.515
10/15/2013 20:10	173_Non-Phe	13_10_15_2010_15_743	1	2.679	1.408	0.870	0.170	2.637	0.138	3.648	2.018	0.558	0.616	0.867	0.527
10/15/2013 20:11	173_Non-Phe	13_10_15_2011_16_563	1	2.679	1.448	0.991	0.169	2.640	0.134	3.648	2.007	0.558	0.610	0.867	0.536
10/15/2013 20:12	173_Non-Phe	13_10_15_2012_17_303	1	2.679	1.464	0.913	0.168	2.638	0.134	3.648	2.027	0.558	0.601	0.867	0.524
10/15/2013 20:13	173_Non-Phe	13_10_15_2013_18_053	1	2.679	1.444	0.858	0.162	2.565	0.135	3.648	2.007	0.558	0.589	0.867	0.540
10/15/2013 20:14	173_Non-Phe	13_10_15_2014_18_853	1	2.679	1.479	0.763	0.156	2.673	0.134	3.648	2.019	0.558	0.572	0.867	0.539
10/15/2013 20:15	173_Non-Phe	13_10_15_2015_19_553	1	2.679	1.444	0.837	0.156	2.655	0.133	3.648	2.024	0.558	0.567	0.867	0.517
10/15/2013 20:16	173_Non-Phe	13_10_15_2016_20_383	1	2.679	1.447	0.930	0.160	2.597	0.135	3.648	2.019	0.558	0.564	0.867	0.519
10/15/2013 20:17	173_Non-Phe	13_10_15_2017_21_104	1	2.679	1.454	0.863	0.159	2.604	0.132	3.648	2.024	0.558	0.571	0.867	0.539
10/15/2013 20:18	173_Non-Phe	13_10_15_2018_21_884	1	2.679	1.457	0.793	0.159	2.574	0.132	3.648	2.013	0.558	0.588	0.867	0.527
10/15/2013 20:19	173_Non-Phe	13_10_15_2019_22_634	1	2.679	1.481	0.881	0.166	2.543	0.131	3.648	2.003	0.558	0.606	0.867	0.533
10/15/2013 20:20	173_Non-Phe	13_10_15_2020_23_404	1	2.679	1.448	0.989	0.168	2.580	0.132	3.648	2.021	0.558	0.616	0.867	0.539
10/15/2013 20:21	173_Non-Phe	13_10_15_2021_24_064	1	2.679	1.370	0.835	0.172	2.461	0.132	3.648	2.039	0.558	0.616	0.867	0.524
10/15/2013 20:22	173_Non-Phe	13_10_15_2022_24_884	1	2.679	1.455	0.879	0.169	2.490	0.131	3.648	2.028	0.558	0.609	0.867	0.535
10/15/2013 20:23	173_Non-Phe	13_10_15_2023_25_664	1	2.679	1.487	0.928	0.166	2.466	0.133	3.648	2.014	0.558	0.611	0.867	0.529
10/15/2013 20:24	173_Non-Phe	13_10_15_2024_26_364	1	2.679	1.472	0.940	0.168	2.471	0.133	3.648	2.022	0.558	0.609	0.867	0.539
10/15/2013 20:25	173_Non-Phe	13_10_15_2025_27_134	1	2.679	1.507	0.840	0.166	2.437	0.130	3.648	2.027	0.558	0.608	0.867	0.542
10/15/2013 20:26	173_Non-Phe	13_10_15_2026_27_894	1	2.679	1.540	0.878	0.163	2.352	0.130	3.648	2.020	0.558	0.597	0.867	0.554
10/15/2013 20:27	173_Non-Phe	13_10_15_2027_28_654	1	2.679	1.468	0.890	0.159	2.390	0.134	3.648	2.035	0.558	0.584	0.867	0.521
10/15/2013 20:28	173_Non-Phe	13_10_15_2028_29_365	1	2.679	1.429	0.928	0.155	2.441	0.132	3.648	2.014	0.558	0.577	0.867	0.496
10/15/2013 20:29	173_Non-Phe	13_10_15_2029_30_125	1	2.679	1.405	0.728	0.161	2.425	0.131	3.648	2.017	0.558	0.571	0.867	0.508
10/15/2013 20:30	173_Non-Phe	13_10_15_2030_30_925	1	2.679	1.438	0.845	0.157	2.443	0.127	3.648	2.027	0.558	0.563	0.867	0.523
10/15/2013 20:31	173_Non-Phe	13_10_15_2031_31_715	1	2.679	1.472	0.880	0.155	2.443	0.130	3.648	2.027	0.558	0.549	0.867	0.525
10/15/2013 20:32	173_Non-Phe	13_10_15_2032_32_475	1	2.679	1.449	0.763	0.148	2.591	0.130	3.648	2.035	0.558	0.542	0.867	0.522
10/15/2013 20:33	173_Non-Phe	13_10_15_2033_33_185	1	2.679	1.506	0.727	0.156	2.570	0.127	3.648	2.035	0.558	0.545	0.867	0.532
10/15/2013 20:34	173_Non-Phe	13_10_15_2034_33_905	1	2.679	1.451	0.683	0.151	2.511	0.128	3.648	2.012	0.558	0.536	0.867	0.525
10/15/2013 20:35	173_Non-Phe	13_10_15_2035_34_705	1	2.679	1.496	0.745	0.154	2.516	0.129	3.648	2.029	0.558	0.535	0.867	0.526
10/15/2013 20:36	173_Non-Phe	13_10_15_2036_35_445	1	2.679	1.379	0.733	0.152	2.618	0.126	3.648	2.023	0.558	0.529	0.867	0.515
10/15/2013 20:37	173_Non-Phe	13_10_15_2037_36_255	1	2.679	1.429	0.709	0.151	2.560	0.127	3.648	2.017	0.558	0.538	0.867	0.503
10/15/2013 20:38	173_Non-Phe	13_10_15_2038_37_015	1	2.679	1.444	0.769	0.148	2.585	0.128	3.648	2.017	0.558	0.534	0.867	0.508
10/15/2013 20:39	173_Non-Phe	13_10_15_2039_37_755	1	2.679	1.510	0.788	0.146	2.614	0.127	3.648	2.020	0.558	0.535	0.867	0.516
10/15/2013 20:40	173_Non-Phe	13_10_15_2040_38_526	1	2.679	1.480	0.811	0.148	2.661	0.127	3.648	2.015	0.558	0.523	0.867	0.510
10/15/2013 20:41	173_Non-Phe	13_10_15_2041_39_246	1	2.679	1.550	0.821	0.147	2.817	0.125	3.648	2.022	0.558	0.518	0.867	0.533
10/15/2013 20:42	173_Non-Phe	13_10_15_2042_39_956	1	2.679	1.482	0.861	0.147	2.866	0.128	3.648	2.025	0.558	0.517	0.867	0.526
10/15/2013 20:43	173_Non-Phe	13_10_15_2043_40_746	1	2.679	1.450	0.767	0.144	3.009	0.127	3.648	2.027	0.558	0.510	0.867	0.511
10/15/2013 20:44	173_Non-Phe	13_10_15_2044_41_566	1	2.679	1.367	0.697	0.147	3.030	0.127	3.648	2.025	0.558	0.511	0.867	0.479
10/15/2013 20:45	173_Non-Phe	13_10_15_2045_42_186	1	2.679	1.451	0.668	0.145	3.099	0.129	3.648	2.025	0.558	0.512	0.867	0.489
10/15/2013 20:46	173_Non-Phe	13_10_15_2046_42_986	1	2.679	1.461	0.763	0.147	3.168	0.129	3.648	2.009	0.558	0.511	0.867	0.491
10/15/2013 20:47	173_Non-Phe	13_10_15_2047_43_726	1	2.679	1.420	0.708	0.141	3.080	0.129	3.648	2.021	0.558	0.499	0.867	0.479
10/15/2013 20:48	173_Non-Phe	13_10_15_2048_44_446	1	2.679	1.497	0.741	0.143	3.074	0.127	3.648	2.022	0.558	0.508	0.867	0.500
10/15/2013 20:49	173_Non-Phe	13_10_15_2049_45_236	1	2.679	1.406	0.703	0.147	3.044	0.129	3.648	2.022	0.558	0.505	0.867	0.489
10/15/2013 20:50	173_Non-Phe	13_10_15_2050_45_976	1	2.679	1.510	0.759	0.143	3.098	0.129	3.648	2.028	0.558	0.505	0.867	0.512
10/15/2013 20:51	173_Non-Phe	13_10_15_2051_46_746	1	2.679	1.387	0.697	0.143	3.143	0.124	3.648	2.021	0.558	0.495	0.867	0.475
10/15/2013 20:52	173_Non-Phe	13_10_15_2052_47_447	1	2.679	1.435	0.793	0.143	3.149	0.127	3.648	2.018	0.558	0.498	0.867	0.485
10/15/2013 20:53	173_Non-Phe	13_10_15_2053_48_167	1	2.679	1.416	0.697	0.145	3.218	0.126	3.648	2.019	0.558	0.492	0.867	0.502
10/15/2013 20:54	173_Non-Phe	13_10_15_2054_48_927	1	2.679	1.476	0.814	0.144	3.237	0.128	3.648	2.024	0.558	0.485	0.867	0.494
10/15/2013 20:55	173_Non-Phe	13_10_15_2055_49_707	1	2.679	1.451	0.686	0.140	3.263	0.125	3.648	2.026	0.558	0.473	0.867	0.491
10/15/2013 20:56	173_Non-Phe	13_10_15_2056_50_477	1	2.679	1.500	0.704	0.134	3.279	0.125	3.648	2.016	0.558	0.466	0.867	0.496
10/15/2013 20:57	173_Non-Phe	13_10_15_2057_51_217	1	2.679	1.398	0.715	0.137	3.241	0.126	3.648	2.030	0.558	0.470	0.867	0.459
10/15/2013 20:58	173_Non-Phe	13_10_15_2058_52_037	1	2.679	1.535	0.821	0.137	3.233	0.124	3.648	2.023	0.558	0.461	0.867	0.499
10/15/2013 20:59	173_Non-Phe	13_10_15_2059_52_747	1	2.679	1.178	0.205	0.180	1.738	0.087	3.648	1.438	0.558	0.442	0.867	0.585
10/15/2013 21:00	173_Non-Phe	13_10_15_2100_53_507	1	2.679	1.310	0.205	0.271	0.276	0.086	3.648	0.303	0.558	0.479	0.867	0.942
		Average Conc. (ppm):	**1**	**2.679**	**1.446**	**0.794**	**0.158**	**2.696**	**0.129**	**3.648**	**1.982**	**0.558**	**0.552**	**0.867**	**0.525**

DHM Run 2

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/16/2013 10:54	173_Non-Phe	13_10_16_1054_01_360	1	2.679	1.102	0.205	0.059	0.487	0.066	3.648	1.533	0.558	0.127	0.867	0.323
10/16/2013 10:55	173_Non-Phe	13_10_16_1055_02_170	1	2.679	1.066	0.205	0.069	0.569	0.069	3.648	1.534	0.558	0.156	0.867	0.335
10/16/2013 10:56	173_Non-Phe	13_10_16_1056_02_880	1	2.679	1.094	0.205	0.068	0.637	0.074	3.648	1.546	0.558	0.165	0.867	0.333
10/16/2013 10:57	173_Non-Phe	13_10_16_1057_03_610	1	2.679	1.072	0.205	0.068	0.668	0.070	3.648	1.546	0.558	0.168	0.867	0.310
10/16/2013 10:58	173_Non-Phe	13_10_16_1058_04_380	1	2.679	1.086	0.205	0.074	0.718	0.071	3.648	1.547	0.558	0.178	0.867	0.342
10/16/2013 10:59	173_Non-Phe	13_10_16_1059_05_200	1	2.679	1.061	0.205	0.070	0.717	0.071	3.648	1.545	0.558	0.162	0.867	0.319
10/16/2013 11:00	173_Non-Phe	13_10_16_1100_06_010	1	2.679	1.004	0.205	0.067	0.779	0.069	3.648	1.540	0.558	0.155	0.867	0.321
10/16/2013 11:01	173_Non-Phe	13_10_16_1101_06_711	1	2.679	1.107	0.205	0.067	0.772	0.071	3.648	1.523	0.558	0.168	0.867	0.331
10/16/2013 11:02	173_Non-Phe	13_10_16_1102_07_491	1	2.679	1.163	0.205	0.071	0.692	0.071	3.648	1.520	0.558	0.177	0.867	0.342
10/16/2013 11:03	173_Non-Phe	13_10_16_1103_08_231	1	2.679	1.040	0.205	0.067	0.724	0.068	3.648	1.527	0.558	0.169	0.867	0.322
10/16/2013 11:04	173_Non-Phe	13_10_16_1104_09_041	1	2.679	1.117	0.205	0.069	0.705	0.070	3.648	1.512	0.558	0.170	0.867	0.340
10/16/2013 11:05	173_Non-Phe	13_10_16_1105_09_761	1	2.679	1.105	0.205	0.068	0.732	0.068	3.648	1.511	0.558	0.171	0.867	0.334
10/16/2013 11:06	173_Non-Phe	13_10_16_1106_10_521	1	2.679	1.090	0.205	0.068	0.723	0.069	3.648	1.507	0.558	0.177	0.867	0.340
10/16/2013 11:07	173_Non-Phe	13_10_16_1107_11_331	1	2.679	1.139	0.205	0.071	0.648	0.069	3.648	1.511	0.558	0.175	0.867	0.344
10/16/2013 11:08	173_Non-Phe	13_10_16_1108_12_061	1	2.679	1.099	0.205	0.064	0.720	0.069	3.648	1.512	0.558	0.158	0.867	0.312
10/16/2013 11:09	173_Non-Phe	13_10_16_1109_12_911	1	2.679	1.007	0.205	0.069	0.674	0.071	3.648	1.519	0.558	0.160	0.867	0.329
10/16/2013 11:10	173_Non-Phe	13_10_16_1110_13_621	1	2.679	1.111	0.205	0.070	0.683	0.069	3.648	1.536	0.558	0.163	0.867	0.336
10/16/2013 11:11	173_Non-Phe	13_10_16_1111_14_401	1	2.679	1.139	0.205	0.067	0.678	0.071	3.648	1.548	0.558	0.167	0.867	0.339
10/16/2013 11:12	173_Non-Phe	13_10_16_1112_15_162	1	2.679	1.022	0.205	0.071	0.669	0.072	3.648	1.559	0.558	0.166	0.867	0.310
10/16/2013 11:13	173_Non-Phe	13_10_16_1113_15_972	1	2.679	1.103	0.205	0.070	0.715	0.073	3.648	1.563	0.558	0.173	0.867	0.339
10/16/2013 11:14	173_Non-Phe	13_10_16_1114_16_712	1	2.679	1.136	0.205	0.070	0.685	0.073	3.648	1.580	0.558	0.173	0.867	0.328
10/16/2013 11:15	173_Non-Phe	13_10_16_1115_17_532	1	2.679	1.155	0.205	0.071	0.681	0.073	3.648	1.570	0.558	0.175	0.867	0.334

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

10/16/2013 11:16	173_Non-Phe	13_10_16_1116_18_342	1	2.679	1.039	0.205	0.067	0.685	0.073	3.648	1.568	0.558	0.165	0.867	0.315
10/16/2013 11:17	173_Non-Phe	13_10_16_1117_19_052	1	2.679	1.096	0.205	0.065	0.586	0.071	3.648	1.571	0.558	0.159	0.867	0.330
10/16/2013 11:18	173_Non-Phe	13_10_16_1118_19_792	1	2.679	1.006	0.205	0.070	0.661	0.072	3.648	1.563	0.558	0.160	0.867	0.321
10/16/2013 11:19	173_Non-Phe	13_10_16_1119_20_502	1	2.679	1.188	0.205	0.072	0.666	0.072	3.648	1.572	0.558	0.179	0.867	0.351
10/16/2013 11:20	173_Non-Phe	13_10_16_1120_21_332	1	2.679	1.059	0.205	0.066	0.673	0.075	3.648	1.565	0.558	0.172	0.867	0.309
10/16/2013 11:21	173_Non-Phe	13_10_16_1121_22_052	1	2.679	1.126	0.205	0.071	0.612	0.074	3.648	1.575	0.558	0.180	0.867	0.346
10/16/2013 11:22	173_Non-Phe	13_10_16_1122_22_852	1	2.679	1.072	0.205	0.070	0.677	0.074	3.648	1.591	0.558	0.180	0.867	0.317
10/16/2013 11:23	173_Non-Phe	13_10_16_1123_23_562	1	2.679	1.098	0.205	0.069	0.753	0.074	3.648	1.581	0.558	0.178	0.867	0.330
10/16/2013 11:24	173_Non-Phe	13_10_16_1124_24_403	1	2.679	1.065	0.205	0.068	0.695	0.072	3.648	1.590	0.558	0.156	0.867	0.331
10/16/2013 11:25	173_Non-Phe	13_10_16_1125_25_123	1	2.679	1.042	0.205	0.065	0.618	0.071	3.648	1.589	0.558	0.162	0.867	0.313
10/16/2013 11:26	173_Non-Phe	13_10_16_1126_25_883	1	2.679	1.102	0.205	0.072	0.637	0.068	3.648	1.581	0.558	0.188	0.867	0.336
10/16/2013 11:27	173_Non-Phe	13_10_16_1127_26_683	1	2.679	1.187	0.205	0.076	0.639	0.076	3.648	1.589	0.558	0.225	0.867	0.340
10/16/2013 11:28	173_Non-Phe	13_10_16_1128_27_423	1	2.679	1.025	0.205	0.077	0.725	0.073	3.648	1.586	0.558	0.234	0.867	0.312
10/16/2013 11:29	173_Non-Phe	13_10_16_1129_28_223	1	2.679	1.095	0.205	0.079	0.762	0.075	3.648	1.585	0.558	0.245	0.867	0.331
10/16/2013 11:30	173_Non-Phe	13_10_16_1130_28_963	1	2.679	1.128	0.205	0.083	0.700	0.073	3.648	1.577	0.558	0.254	0.867	0.347
10/16/2013 11:31	173_Non-Phe	13_10_16_1131_29_793	1	2.679	1.039	0.205	0.074	0.762	0.073	3.648	1.581	0.558	0.250	0.867	0.307
10/16/2013 11:32	173_Non-Phe	13_10_16_1132_30_513	1	2.679	1.190	0.205	0.083	0.745	0.075	3.648	1.580	0.558	0.254	0.867	0.352
10/16/2013 11:33	173_Non-Phe	13_10_16_1133_31_273	1	2.679	0.974	0.205	0.078	0.770	0.073	3.648	1.579	0.558	0.215	0.867	0.312
10/16/2013 11:34	173_Non-Phe	13_10_16_1134_32_083	1	2.679	1.125	0.205	0.073	0.735	0.071	3.648	1.585	0.558	0.200	0.867	0.341
10/16/2013 11:35	173_Non-Phe	13_10_16_1135_32_843	1	2.679	1.113	0.205	0.072	0.771	0.075	3.648	1.589	0.558	0.203	0.867	0.328
10/16/2013 11:36	173_Non-Phe	13_10_16_1136_33_654	1	2.679	1.130	0.205	0.078	0.713	0.075	3.648	1.600	0.558	0.216	0.867	0.338
10/16/2013 11:37	173_Non-Phe	13_10_16_1137_34_364	1	2.679	1.075	0.205	0.075	0.788	0.077	3.648	1.612	0.558	0.208	0.867	0.317
10/16/2013 11:38	173_Non-Phe	13_10_16_1138_35_174	1	2.679	1.132	0.205	0.073	0.679	0.075	3.648	1.603	0.558	0.211	0.867	0.337
10/16/2013 11:39	173_Non-Phe	13_10_16_1139_35_894	1	2.679	1.057	0.205	0.080	0.731	0.076	3.648	1.592	0.558	0.210	0.867	0.329
10/16/2013 11:40	173_Non-Phe	13_10_16_1140_36_704	1	2.679	1.068	0.205	0.067	0.713	0.073	3.648	1.591	0.558	0.192	0.867	0.315
10/16/2013 11:41	173_Non-Phe	13_10_16_1141_37_464	1	2.679	1.072	0.205	0.068	0.659	0.074	3.648	1.588	0.558	0.185	0.867	0.323
10/16/2013 11:42	173_Non-Phe	13_10_16_1142_38_184	1	2.679	1.080	0.205	0.069	0.616	0.074	3.648	1.576	0.558	0.171	0.867	0.330
10/16/2013 11:43	173_Non-Phe	13_10_16_1143_38_984	1	2.679	1.031	0.205	0.075	0.676	0.072	3.648	1.590	0.558	0.193	0.867	0.325
10/16/2013 11:44	173_Non-Phe	13_10_16_1144_39_784	1	2.679	1.125	0.205	0.076	0.778	0.074	3.648	1.599	0.558	0.210	0.867	0.332
10/16/2013 11:45	173_Non-Phe	13_10_16_1145_40_504	1	2.679	1.107	0.205	0.074	0.709	0.075	3.648	1.590	0.558	0.202	0.867	0.325
10/16/2013 11:46	173_Non-Phe	13_10_16_1146_41_324	1	2.679	1.086	0.205	0.069	0.755	0.073	3.648	1.588	0.558	0.189	0.867	0.316
10/16/2013 11:47	173_Non-Phe	13_10_16_1147_42_084	1	2.679	1.097	0.205	0.071	0.780	0.074	3.648	1.581	0.558	0.187	0.867	0.330
10/16/2013 11:48	173_Non-Phe	13_10_16_1148_42_895	1	2.679	1.097	0.205	0.072	0.739	0.074	3.648	1.587	0.558	0.188	0.867	0.340
10/16/2013 11:49	173_Non-Phe	13_10_16_1149_43_655	1	2.679	1.040	0.205	0.073	0.770	0.072	3.648	1.581	0.558	0.194	0.867	0.328
10/16/2013 11:50	173_Non-Phe	13_10_16_1150_44_365	1	2.679	1.068	0.205	0.071	0.780	0.073	3.648	1.567	0.558	0.198	0.867	0.320
10/16/2013 11:51	173_Non-Phe	13_10_16_1151_45_185	1	2.679	1.036	0.205	0.075	0.764	0.075	3.648	1.572	0.558	0.196	0.867	0.320
10/16/2013 11:52	173_Non-Phe	13_10_16_1152_45_905	1	2.679	1.109	0.205	0.075	0.801	0.075	3.648	1.569	0.558	0.207	0.867	0.340
10/16/2013 11:53	173_Non-Phe	13_10_16_1153_46_655	1	2.679	1.025	0.205	0.086	0.587	0.063	3.648	1.282	0.558	0.218	0.867	0.334
10/16/2013 11:54	173_Non-Phe	13_10_16_1154_47_485	1	2.679	0.863	0.205	0.097	0.276	0.044	3.648	0.191	0.558	0.173	0.867	0.391
		Average Conc. (ppm):	**1**	**2.679**	**1.083**	**0.205**	**0.072**	**0.693**	**0.072**	**3.648**	**1.538**	**0.558**	**0.186**	**0.867**	**0.330**

DHM Run 3

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/16/2013 12:07	173_Non-Phe	13_10_16_1207_57_256	1	2.679	1.104	0.205	0.075	0.885	0.074	3.648	1.569	0.558	0.204	0.867	0.330
10/16/2013 12:08	173_Non-Phe	13_10_16_1208_58_076	1	2.679	1.135	0.205	0.072	0.786	0.075	3.648	1.558	0.558	0.197	0.867	0.338
10/16/2013 12:09	173_Non-Phe	13_10_16_1209_58_826	1	2.679	1.121	0.205	0.073	0.771	0.073	3.648	1.559	0.558	0.185	0.867	0.339
10/16/2013 12:10	173_Non-Phe	13_10_16_1210_59_526	1	2.679	1.084	0.205	0.076	0.784	0.075	3.648	1.565	0.558	0.180	0.867	0.342
10/16/2013 12:12	173_Non-Phe	13_10_16_1212_00_327	1	2.679	1.047	0.205	0.067	0.810	0.075	3.648	1.558	0.558	0.173	0.867	0.319
10/16/2013 12:13	173_Non-Phe	13_10_16_1213_01_027	1	2.679	1.185	0.205	0.070	0.855	0.077	3.648	1.565	0.558	0.178	0.867	0.348
10/16/2013 12:14	173_Non-Phe	13_10_16_1214_01_787	1	2.679	1.186	0.205	0.070	0.819	0.074	3.648	1.569	0.558	0.176	0.867	0.351
10/16/2013 12:15	173_Non-Phe	13_10_16_1215_02_607	1	2.679	1.054	0.205	0.072	0.853	0.072	3.648	1.588	0.558	0.182	0.867	0.333
10/16/2013 12:16	173_Non-Phe	13_10_16_1216_03_317	1	2.679	1.107	0.205	0.071	0.813	0.076	3.648	1.582	0.558	0.175	0.867	0.328
10/16/2013 12:17	173_Non-Phe	13_10_16_1217_04_127	1	2.679	1.111	0.205	0.072	0.980	0.075	3.648	1.615	0.558	0.183	0.867	0.332
10/16/2013 12:18	173_Non-Phe	13_10_16_1218_04_847	1	2.679	1.104	0.205	0.071	0.856	0.077	3.648	1.624	0.558	0.196	0.867	0.335
10/16/2013 12:19	173_Non-Phe	13_10_16_1219_05_647	1	2.679	1.038	0.205	0.078	0.847	0.078	3.648	1.625	0.558	0.206	0.867	0.342
10/16/2013 12:20	173_Non-Phe	13_10_16_1220_06_357	1	2.679	1.083	0.205	0.073	0.808	0.078	3.648	1.625	0.558	0.205	0.867	0.332
10/16/2013 12:21	173_Non-Phe	13_10_16_1221_07_137	1	2.679	1.041	0.205	0.070	0.815	0.076	3.648	1.611	0.558	0.197	0.867	0.316
10/16/2013 12:22	173_Non-Phe	13_10_16_1222_07_907	1	2.679	1.050	0.205	0.078	0.785	0.077	3.648	1.605	0.558	0.204	0.867	0.335
10/16/2013 12:23	173_Non-Phe	13_10_16_1223_08_667	1	2.679	1.055	0.205	0.077	0.788	0.075	3.648	1.584	0.558	0.207	0.867	0.330
10/16/2013 12:24	173_Non-Phe	13_10_16_1224_09_398	1	2.679	1.085	0.205	0.073	0.689	0.075	3.648	1.589	0.558	0.194	0.867	0.328
10/16/2013 12:25	173_Non-Phe	13_10_16_1225_10_208	1	2.679	1.087	0.205	0.071	0.697	0.077	3.648	1.597	0.558	0.193	0.867	0.332
10/16/2013 12:26	173_Non-Phe	13_10_16_1226_11_008	1	2.679	1.128	0.205	0.070	0.868	0.077	3.648	1.598	0.558	0.186	0.867	0.330
10/16/2013 12:27	173_Non-Phe	13_10_16_1227_11_718	1	2.679	1.092	0.205	0.067	0.841	0.074	3.648	1.602	0.558	0.189	0.867	0.322
10/16/2013 12:28	173_Non-Phe	13_10_16_1228_12_528	1	2.679	1.058	0.205	0.074	0.789	0.075	3.648	1.615	0.558	0.200	0.867	0.334
10/16/2013 12:29	173_Non-Phe	13_10_16_1229_13_248	1	2.679	1.140	0.205	0.073	0.800	0.077	3.648	1.608	0.558	0.193	0.867	0.340
10/16/2013 12:30	173_Non-Phe	13_10_16_1230_13_968	1	2.679	1.069	0.205	0.077	0.755	0.076	3.648	1.623	0.558	0.192	0.867	0.346
10/16/2013 12:31	173_Non-Phe	13_10_16_1231_14_768	1	2.679	1.164	0.205	0.071	0.753	0.075	3.648	1.615	0.558	0.182	0.867	0.347
10/16/2013 12:32	173_Non-Phe	13_10_16_1232_15_588	1	2.679	1.120	0.205	0.076	0.771	0.078	3.648	1.618	0.558	0.187	0.867	0.348
10/16/2013 12:33	173_Non-Phe	13_10_16_1233_16_308	1	2.679	1.151	0.205	0.076	0.819	0.077	3.648	1.617	0.558	0.194	0.867	0.362
10/16/2013 12:34	173_Non-Phe	13_10_16_1234_17_108	1	2.679	1.123	0.205	0.072	0.759	0.075	3.648	1.608	0.558	0.192	0.867	0.333
10/16/2013 12:35	173_Non-Phe	13_10_16_1235_17_878	1	2.679	1.112	0.205	0.072	0.667	0.076	3.648	1.626	0.558	0.178	0.867	0.327
10/16/2013 12:36	173_Non-Phe	13_10_16_1236_18_609	1	2.679	1.102	0.205	0.065	0.475	0.075	3.648	1.592	0.558	0.139	0.867	0.334
10/16/2013 12:37	173_Non-Phe	13_10_16_1237_19_339	1	2.679	1.077	0.205	0.066	0.605	0.075	3.648	1.600	0.558	0.157	0.867	0.326
10/16/2013 12:38	173_Non-Phe	13_10_16_1238_20_129	1	2.679	1.084	0.205	0.069	0.820	0.077	3.648	1.601	0.558	0.176	0.867	0.338
10/16/2013 12:39	173_Non-Phe	13_10_16_1239_20_839	1	2.679	1.073	0.205	0.071	0.787	0.075	3.648	1.616	0.558	0.180	0.867	0.337
10/16/2013 12:40	173_Non-Phe	13_10_16_1240_21_539	1	2.679	1.080	0.205	0.069	0.842	0.074	3.648	1.603	0.558	0.180	0.867	0.319
10/16/2013 12:41	173_Non-Phe	13_10_16_1241_22_279	1	2.679	1.095	0.205	0.074	0.889	0.076	3.648	1.597	0.558	0.179	0.867	0.329
10/16/2013 12:42	173_Non-Phe	13_10_16_1242_23_099	1	2.679	1.141	0.205	0.068	0.839	0.076	3.648	1.605	0.558	0.177	0.867	0.333
10/16/2013 12:43	173_Non-Phe	13_10_16_1243_23_869	1	2.679	1.110	0.205	0.074	0.812	0.074	3.648	1.608	0.558	0.165	0.867	0.338
10/16/2013 12:44	173_Non-Phe	13_10_16_1244_24_589	1	2.679	1.146	0.205	0.070	0.808	0.075	3.648	1.601	0.558	0.160	0.867	0.351
10/16/2013 12:45	173_Non-Phe	13_10_16_1245_25_399	1	2.679	1.083	0.205	0.071	0.710	0.076	3.648	1.601	0.558	0.168	0.867	0.344
10/16/2013 12:46	173_Non-Phe	13_10_16_1246_26_109	1	2.679	1.079	0.205	0.073	0.781	0.076	3.648	1.611	0.558	0.177	0.867	0.329
10/16/2013 12:47	173_Non-Phe	13_10_16_1247_26_920	1	2.679	1.107	0.205	0.068	0.869	0.074	3.648	1.621	0.558	0.171	0.867	0.326
10/16/2013 12:48	173_Non-Phe	13_10_16_1248_27_610	1	2.679	1.117	0.205	0.075	0.752	0.076	3.648	1.622	0.558	0.180	0.867	0.341
10/16/2013 12:49	173_Non-Phe	13_10_16_1249_28_360	1	2.679	1.059	0.205	0.073	0.739	0.074	3.648	1.619	0.558	0.183	0.867	0.333
10/16/2013 12:50	173_Non-Phe	13_10_16_1250_29_180	1	2.679	1.101	0.205	0.075	0.859	0.077	3.648	1.615	0.558	0.194	0.867	0.332
10/16/2013 12:51	173_Non-Phe	13_10_16_1251_29_900	1	2.679	1.067	0.205	0.069	0.797	0.077	3.648	1.618	0.558	0.192	0.867	0.325
10/16/2013 12:52	173_Non-Phe	13_10_16_1252_30_690	1	2.679	1.019	0.205	0.074	0.812	0.080	3.648	1.635	0.558	0.186	0.867	0.322
10/16/2013 12:53	173_Non-Phe	13_10_16_1253_31_410	1	2.679	1.131	0.205	0.073	0.798	0.079	3.648	1.624	0.558	0.190	0.867	0.330
10/16/2013 12:54	173_Non-Phe	13_10_16_1254_32_180	1	2.679	1.071	0.205	0.072	0.887	0.077	3.648	1.649	0.558	0.200	0.867	0.328
10/16/2013 12:55	173_Non-Phe	13_10_16_1255_33_000	1	2.679	1.103	0.205	0.081	0.917	0.079	3.648	1.662	0.558	0.219	0.867	0.333
10/16/2013 12:56	173_Non-Phe	13_10_16_1256_33_730	1	2.679	1.183	0.205	0.076	0.954	0.082	3.648	1.659	0.558	0.218	0.867	0.343
10/16/2013 12:57	173_Non-Phe	13_10_16_1257_34_470	1	2.679	1.038	0.205	0.075	0.921	0.082	3.648	1.660	0.558	0.207	0.867	0.319
10/16/2013 12:58	173_Non-Phe	13_10_16_1258_35_290	1	2.679	1.129	0.205	0.076	0.857	0.079	3.648	1.642	0.558	0.209	0.867	0.338
10/16/2013 12:59	173_Non-Phe	13_10_16_1259_36_101	1	2.679	1.168	0.205	0.075	0.965	0.077	3.648	1.632	0.558	0.220	0.867	0.341
10/16/2013 13:00	173_Non-Phe	13_10_16_1300_36_841	1	2.679	1.015	0.205	0.073	0.994	0.077	3.648	1.625	0.558	0.222	0.867	0.318
10/16/2013 13:01	173_Non-Phe	13_10_16_1301_37_541	1	2.679	1.097	0.205	0.075	0.992	0.079	3.648	1.616	0.558	0.229	0.867	0.323
10/16/2013 13:02	173_Non-Phe	13_10_16_1302_38_371	1	2.679	0.962	0.205	0.070	0.917	0.076	3.648	1.613	0.558	0.209	0.867	0.297
10/16/2013 13:03	173_Non-Phe	13_10_16_1303_39_101	1	2.679	1.042	0.205	0.069	0.789	0.075	3.648	1.614	0.558	0.203	0.867	0.324
10/16/2013 13:04	173_Non-Phe	13_10_16_1304_39_851	1	2.679	1.090	0.205	0.075	0.807	0.076	3.648	1.624	0.558	0.202	0.867	0.330
10/16/2013 13:05	173_Non-Phe	13_10_16_1305_40_591	1	2.679	1.052	0.205	0.076	0.814	0.077	3.648	1.610	0.558	0.209	0.867	0.335
10/16/2013 13:06	173_Non-Phe	13_10_16_1306_41_411	1	2.679	1.061	0.205	0.076	0.634	0.063	3.648	1.304	0.558	0.194	0.867	0.319
10/16/2013 13:07	173_Non-Phe	13_10_16_1307_42_181	1	2.679	0.876	0.205	0.093	0.276	0.039	3.648	0.201	0.558	0.162	0.867	0.360
		Average Conc. (ppm):	**1**	**2.679**	**1.090**	**0.205**	**0.073**	**0.803**	**0.075**	**3.648**	**1.580**	**0.558**	**0.190**	**0.867**	**0.333**

DHM Run 4

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)
10/16/2013 13:21	173_Non-Phe	13_10_16_1321_03_140	1	2.679	1.035	0.205	0.072	0.779	0.074	3.648	1.586	0.558	0.194	0.867	0.316
10/16/2013 13:22	173_Non-Phe	13_10_16_1322_03_770	1	2.679	1.131	0.205	0.067	0.759	0.076	3.648	1.589	0.558	0.181	0.867	0.324
10/16/2013 13:23	173_Non-Phe	13_10_16_1323_04_590	1	2.679	1.044	0.205	0.067	0.732	0.073	3.648	1.592	0.558	0.171	0.867	0.308

Company	ACT	Client #	Amory
Analyst Initials	STG	Job #	0913-173
Parameters	EPA Method 320	sample #	4

10/16/2013 13:24	173_Non-Phe 13_10_16_1324_05_290	1	2.679	1.091	0.205	0.072	0.851	0.077	3.648	1.598	0.558	0.207	0.867	0.338
10/16/2013 13:25	173_Non-Phe 13_10_16_1325_06_110	1	2.679	1.065	0.205	0.076	0.926	0.078	3.648	1.604	0.558	0.232	0.867	0.320
10/16/2013 13:26	173_Non-Phe 13_10_16_1326_06_890	1	2.679	1.114	0.205	0.080	0.982	0.079	3.648	1.613	0.558	0.244	0.867	0.327
10/16/2013 13:27	173_Non-Phe 13_10_16_1327_07_651	1	2.679	1.172	0.205	0.076	0.993	0.079	3.648	1.615	0.558	0.232	0.867	0.339
10/16/2013 13:28	173_Non-Phe 13_10_16_1328_08_371	1	2.679	1.178	0.205	0.080	1.037	0.081	3.648	1.633	0.558	0.231	0.867	0.343
10/16/2013 13:29	173_Non-Phe 13_10_16_1329_09_101	1	2.679	1.160	0.205	0.077	0.920	0.081	3.648	1.656	0.558	0.221	0.867	0.347
10/16/2013 13:30	173_Non-Phe 13_10_16_1330_09_901	1	2.679	1.135	0.205	0.080	0.940	0.083	3.648	1.670	0.558	0.230	0.867	0.341
10/16/2013 13:31	173_Non-Phe 13_10_16_1331_10_691	1	2.679	1.152	0.205	0.083	0.911	0.081	3.648	1.674	0.558	0.231	0.867	0.355
10/16/2013 13:32	173_Non-Phe 13_10_16_1332_11_411	1	2.679	1.101	0.205	0.080	0.954	0.084	3.648	1.682	0.558	0.231	0.867	0.338
10/16/2013 13:33	173_Non-Phe 13_10_16_1333_12_131	1	2.679	1.237	0.205	0.080	0.912	0.082	3.648	1.676	0.558	0.239	0.867	0.353
10/16/2013 13:34	173_Non-Phe 13_10_16_1334_12_951	1	2.679	1.143	0.205	0.082	0.937	0.084	3.648	1.667	0.558	0.248	0.867	0.332
10/16/2013 13:35	173_Non-Phe 13_10_16_1335_13_701	1	2.679	1.140	0.205	0.082	1.005	0.083	3.648	1.653	0.558	0.247	0.867	0.340
10/16/2013 13:36	173_Non-Phe 13_10_16_1336_14_461	1	2.679	1.188	0.205	0.085	0.929	0.082	3.648	1.648	0.558	0.245	0.867	0.345
10/16/2013 13:37	173_Non-Phe 13_10_16_1337_15_271	1	2.679	1.127	0.205	0.081	1.013	0.082	3.648	1.652	0.558	0.246	0.867	0.341
10/16/2013 13:38	173_Non-Phe 13_10_16_1338_15_941	1	2.679	1.121	0.205	0.084	1.067	0.081	3.648	1.655	0.558	0.257	0.867	0.342
10/16/2013 13:39	173_Non-Phe 13_10_16_1339_16_752	1	2.679	1.070	0.205	0.080	0.951	0.081	3.648	1.634	0.558	0.234	0.867	0.327
10/16/2013 13:40	173_Non-Phe 13_10_16_1340_17_442	1	2.679	1.140	0.205	0.076	0.950	0.083	3.648	1.634	0.558	0.218	0.867	0.350
10/16/2013 13:41	173_Non-Phe 13_10_16_1341_18_272	1	2.679	1.124	0.205	0.075	0.874	0.079	3.648	1.636	0.558	0.215	0.867	0.340
10/16/2013 13:42	173_Non-Phe 13_10_16_1342_18_982	1	2.679	1.106	0.205	0.076	0.824	0.080	3.648	1.624	0.558	0.200	0.867	0.330
10/16/2013 13:43	173_Non-Phe 13_10_16_1343_19_792	1	2.679	1.074	0.205	0.070	0.787	0.076	3.648	1.625	0.558	0.181	0.867	0.326
10/16/2013 13:44	173_Non-Phe 13_10_16_1344_20_512	1	2.679	1.102	0.205	0.071	0.724	0.079	3.648	1.615	0.558	0.173	0.867	0.342
10/16/2013 13:45	173_Non-Phe 13_10_16_1345_21_252	1	2.679	1.027	0.205	0.069	0.766	0.080	3.648	1.637	0.558	0.161	0.867	0.323
10/16/2013 13:46	173_Non-Phe 13_10_16_1346_22_032	1	2.679	1.092	0.205	0.071	0.780	0.081	3.648	1.653	0.558	0.160	0.867	0.335
10/16/2013 13:47	173_Non-Phe 13_10_16_1347_22_792	1	2.679	1.159	0.205	0.068	0.877	0.080	3.648	1.671	0.558	0.160	0.867	0.342
10/16/2013 13:48	173_Non-Phe 13_10_16_1348_23_542	1	2.679	1.138	0.205	0.067	0.894	0.082	3.648	1.686	0.558	0.163	0.867	0.336
10/16/2013 13:49	173_Non-Phe 13_10_16_1349_24_252	1	2.679	1.145	0.205	0.068	0.842	0.081	3.648	1.692	0.558	0.164	0.867	0.345
10/16/2013 13:50	173_Non-Phe 13_10_16_1350_25_052	1	2.679	1.181	0.205	0.076	0.886	0.084	3.648	1.692	0.558	0.179	0.867	0.353
10/16/2013 13:51	173_Non-Phe 13_10_16_1351_25_803	1	2.679	1.140	0.205	0.069	0.840	0.082	3.648	1.695	0.558	0.170	0.867	0.329
10/16/2013 13:52	173_Non-Phe 13_10_16_1352_26_603	1	2.679	1.105	0.205	0.074	0.795	0.081	3.648	1.675	0.558	0.179	0.867	0.341
10/16/2013 13:53	173_Non-Phe 13_10_16_1353_27_313	1	2.679	1.177	0.205	0.069	0.885	0.079	3.648	1.675	0.558	0.165	0.867	0.337
10/16/2013 13:54	173_Non-Phe 13_10_16_1354_28_013	1	2.679	1.152	0.205	0.069	0.902	0.079	3.648	1.674	0.558	0.162	0.867	0.345
10/16/2013 13:55	173_Non-Phe 13_10_16_1355_28_823	1	2.679	1.186	0.205	0.066	0.868	0.083	3.648	1.673	0.558	0.161	0.867	0.343
10/16/2013 13:56	173_Non-Phe 13_10_16_1356_29_593	1	2.679	1.103	0.205	0.070	0.913	0.082	3.648	1.681	0.558	0.160	0.867	0.336
10/16/2013 13:57	173_Non-Phe 13_10_16_1357_30_333	1	2.679	1.129	0.205	0.073	0.868	0.083	3.648	1.699	0.558	0.170	0.867	0.336
10/16/2013 13:58	173_Non-Phe 13_10_16_1358_31_053	1	2.679	1.104	0.205	0.070	0.963	0.084	3.648	1.702	0.558	0.168	0.867	0.346
10/16/2013 13:59	173_Non-Phe 13_10_16_1359_31_863	1	2.679	1.263	0.205	0.070	0.881	0.084	3.648	1.692	0.558	0.162	0.867	0.359
10/16/2013 14:00	173_Non-Phe 13_10_16_1400_32_603	1	2.679	1.189	0.205	0.071	0.772	0.083	3.648	1.680	0.558	0.157	0.867	0.356
10/16/2013 14:01	173_Non-Phe 13_10_16_1401_33_323	1	2.679	1.147	0.205	0.068	0.749	0.082	3.648	1.656	0.558	0.159	0.867	0.341
10/16/2013 14:02	173_Non-Phe 13_10_16_1402_34_073	1	2.679	1.143	0.205	0.074	0.823	0.079	3.648	1.642	0.558	0.174	0.867	0.342
10/16/2013 14:03	173_Non-Phe 13_10_16_1403_34_794	1	2.679	1.079	0.205	0.067	0.882	0.079	3.648	1.637	0.558	0.179	0.867	0.309
10/16/2013 14:04	173_Non-Phe 13_10_16_1404_35_484	1	2.679	1.046	0.205	0.074	0.855	0.078	3.648	1.632	0.558	0.187	0.867	0.316
10/16/2013 14:05	173_Non-Phe 13_10_16_1405_36_184	1	2.679	1.091	0.205	0.076	0.825	0.079	3.648	1.631	0.558	0.192	0.867	0.350
10/16/2013 14:06	173_Non-Phe 13_10_16_1406_36_954	1	2.679	1.115	0.205	0.075	0.840	0.079	3.648	1.636	0.558	0.190	0.867	0.341
10/16/2013 14:07	173_Non-Phe 13_10_16_1407_37_704	1	2.679	1.192	0.205	0.077	0.828	0.079	3.648	1.631	0.558	0.190	0.867	0.349
10/16/2013 14:08	173_Non-Phe 13_10_16_1408_38_404	1	2.679	1.097	0.205	0.072	0.788	0.078	3.648	1.639	0.558	0.185	0.867	0.338
10/16/2013 14:09	173_Non-Phe 13_10_16_1409_39_214	1	2.679	1.132	0.205	0.073	0.824	0.080	3.648	1.651	0.558	0.180	0.867	0.342
10/16/2013 14:10	173_Non-Phe 13_10_16_1410_39_914	1	2.679	1.171	0.205	0.069	0.789	0.081	3.648	1.670	0.558	0.167	0.867	0.343
10/16/2013 14:11	173_Non-Phe 13_10_16_1411_40_714	1	2.679	1.163	0.205	0.074	0.812	0.078	3.648	1.664	0.558	0.182	0.867	0.350
10/16/2013 14:12	173_Non-Phe 13_10_16_1412_41_424	1	2.679	1.165	0.205	0.075	0.824	0.082	3.648	1.681	0.558	0.188	0.867	0.350
10/16/2013 14:13	173_Non-Phe 13_10_16_1413_42_174	1	2.679	1.102	0.205	0.074	0.826	0.081	3.648	1.663	0.558	0.196	0.867	0.334
10/16/2013 14:14	173_Non-Phe 13_10_16_1414_42_985	1	2.679	1.164	0.205	0.076	0.743	0.079	3.648	1.656	0.558	0.189	0.867	0.352
10/16/2013 14:15	173_Non-Phe 13_10_16_1415_43_685	1	2.679	1.088	0.205	0.074	0.793	0.077	3.648	1.652	0.558	0.198	0.867	0.332
10/16/2013 14:16	173_Non-Phe 13_10_16_1416_44_515	1	2.679	1.115	0.205	0.074	0.693	0.079	3.648	1.636	0.558	0.192	0.867	0.339
10/16/2013 14:17	173_Non-Phe 13_10_16_1417_45_225	1	2.679	1.147	0.205	0.075	0.662	0.078	3.648	1.629	0.558	0.187	0.867	0.347
10/16/2013 14:18	173_Non-Phe 13_10_16_1418_45_945	1	2.679	1.111	0.205	0.071	0.713	0.077	3.648	1.646	0.558	0.187	0.867	0.332
10/16/2013 14:19	173_Non-Phe 13_10_16_1419_46_755	1	2.679	1.208	0.205	0.077	0.841	0.081	3.648	1.663	0.558	0.203	0.867	0.357
	Average Conc. (ppm):	**1**	**2.679**	**1.131**	**0.205**	**0.074**	**0.858**	**0.080**	**3.648**	**1.651**	**0.558**	**0.194**	**0.867**	**0.339**

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_14_091	1	-2.1	1.4	0.063	0.080	-0.29	1.54	0.0490	0.1120	-0.440	0.129	0.061	0.623	0.83	0.421	-1.932
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_32_611	1	-2.7	1.4	0.131	0.084	-0.28	1.60	0.1540	0.0970	-0.0440	0.137	0.049	0.642	1.57	0.437	-2.06
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_51_221	1	0.5	1.5	0.123	0.083	-0.41	1.63	0.049	0.1210	-0.275	0.133	0.053	0.649	-0.28	0.446	-2.054
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_09_721	1	-3.2	1.4	0.186	0.086	-0.56	1.64	-0.002	0.1110	-0.215	0.136	0.065	0.657	0.706	0.444	-2.111
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_28_311	1	-0.1	1.5	0.266	0.078	-0.46	1.64	0.116	0.1090	-0.0260	0.134	0.056	0.658	0.201	0.447	-2.111
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_46_821	1	-4.2	1.5	0.1490	0.087	-0.46	1.65	0.01200	0.1050	-0.223	0.139	0.060	0.659	0.398	0.442	-2.113
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_05_251	1	-0.5	1.5	-0.042	0.082	-0.50	1.64	-0.0100	0.1030	-0.366	0.135	0.048	0.656	1.19	0.432	-2.097
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_23_951	1	-2.1	1.5	-0.0880	0.084	-0.47	1.65	0.0590	0.1160	-0.05400	0.138	0.056	0.657	0.046	0.454	-2.1
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_42_401	1	-0.9	1.5	-0.033	0.081	-0.57	1.65	-0.210	0.1090	0.061	0.132	0.055	0.660	0.626	0.434	-2.122
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_01_001	1	-0.1	1.5	0.2150	0.077	-0.48	1.65	0.318	0.0980	-0.191	0.128	0.057	0.661	0.579	0.432	-2.083
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_19_511	1	-1.8	1.7	0.165	0.083	-0.51	1.65	-0.0680	0.1070	0.281	0.139	0.061	0.660	0.652	0.472	-2.103
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_38_051	1	-1.6	1.5	0.075	0.079	-0.38	1.65	0.168	0.1080	-0.150	0.129	0.067	0.659	1.49	0.454	-2.101
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_56_641	1	0.9	1.5	0.167	0.085	-0.52	1.64	0.170	0.1100	-0.117	0.138	0.062	0.663	1.45	0.449	-2.123
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_15_151	1	-3.1	1.5	0.0100	0.076	-0.55	1.65	-0.0580	0.1090	-0.0660	0.132	0.063	0.660	-0.77	0.435	-2.127
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_33_681	1	-1.3	1.4	0.184	0.079	-0.49	1.65	0.0090	0.1040	-0.174	0.130	0.052	0.660	0.899	0.429	-2.115
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_52_291	1	0.6	1.6	0.2580	0.080	-0.76	1.66	0.092	0.1010	-0.353	0.135	0.062	0.660	0.483	0.451	-2.132
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_10_741	1	4.4	1.4	-0.0290	0.078	-0.30	1.65	0.161	0.1190	-0.136	0.128	0.059	0.660	0.92	0.424	-2.113
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_29_331	1	1.9	1.5	0.133	0.084	-0.50	1.65	0.0250	0.1130	-0.053	0.136	0.056	0.661	0.5410	0.434	-2.142
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_47_881	1	0.6	1.5	0.2060	0.078	-0.56	1.65	0.030	0.1180	0.143	0.131	0.057	0.662	0.0590	0.443	-2.109
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_06_371	1	1.3	1.5	0.060	0.082	-0.55	1.65	-0.211	0.1080	-0.174	0.135	0.048	0.660	0.639	0.456	-2.164
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_24_991	1	-2.0	1.5	-0.061	0.082	-0.37	1.65	0.0280	0.1110	-0.003	0.135	0.059	0.658	0.74	0.457	-2.129
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_43_481	1	-1.3	1.4	0.034	0.078	-0.45	1.66	-0.333	0.1040	-0.063	0.128	0.061	0.661	0.99	0.430	-2.152
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_01_901	1	-3.9	1.6	0.127	0.079	-0.64	1.66	0.180	0.1200	0.152	0.136	0.064	0.665	-0.246	0.471	-2.131
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_20_611	1	-3.1	1.5	0.038	0.082	-0.49	1.65	0.0010	0.0980	-0.240	0.133	0.064	0.659	1.793	0.432	-2.136
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_39_101	1	0.4	1.6	0.1850	0.084	-0.43	1.65	0.138	0.0950	-0.216	0.138	0.050	0.659	-0.15	0.452	-2.15
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_57_711	1	-0.6	1.5	-0.042	0.083	-0.59	1.66	0.207	0.1070	-0.071	0.134	0.062	0.661	0.316	0.450	-2.109
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_16_192	1	-2.1	1.6	-0.034	0.083	-0.40	1.65	-0.0260	0.1080	-0.274	0.139	0.056	0.663	-0.09	0.465	-2.168
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_34_662	1	0.5	1.5	0.096	0.078	-0.58	1.65	0.0240	0.0970	-0.044	0.130	0.049	0.660	0.4480	0.442	-2.153
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_53_282	1	0.8	1.4	0.103	0.082	-0.50	1.65	0.1220	0.1040	-0.140	0.132	0.061	0.661	0.602	0.450	-2.126
					10/14/2013 12:23	0917-173_Nc	13_10_14_1223_11_782	1	-1.9	1.4	0.2580	0.081	-0.48	1.65	0.0960	0.1210	0.077	0.131	0.056	0.662	0.68	0.420	-2.149
					10/14/2013 12:44	0917-173_Nc	13_10_14_1244_45_810	1	1.68	0.992	-0.1870	0.162	107.1	0.879	-0.053	0.1070	1.372	0.214	3.39	0.0210	0.846	0.336	0.698
					10/14/2013 12:45	0917-173_Nc	13_10_14_1245_46_590	1	-0.09	0.951	-0.127	0.169	110.8	0.918	-0.107	0.1060	1.45	0.222	3.42	0.0220	0.678	0.338	0.73
					10/14/2013 12:46	0917-173_Nc	13_10_14_1246_47_390	1	0.76	1.041	-0.277	0.176	112.8	0.937	-0.001	0.1110	1.30	0.227	3.42	0.0230	0.479	0.346	0.721
					10/14/2013 12:47	0917-173_Nc	13_10_14_1247_48_200	1	0.65	0.921	-0.0260	0.173	113.7	0.943	-0.009	0.1110	1.45	0.227	3.42	0.0230	0.465	0.339	0.733
					10/14/2013 12:48	0917-173_Nc	13_10_14_1248_48_990	1	0.88	0.959	-0.238	0.171	114.5	0.944	0.1220	0.1120	1.59	0.223	3.42	0.0240	0.406	0.345	0.706
					10/14/2013 12:49	0917-173_Nc	13_10_14_1249_49_710	1	-0.22	0.972	-0.2430	0.1760	115	0.944	0.007	0.1180	1.44	0.227	3.42	0.0230	0.849	0.337	0.72
					10/14/2013 12:50	0917-173_Nc	13_10_14_1250_50_520	1	0.13	1.018	-0.178	0.182	116	0.955	0.009	0.1120	1.31	0.237	3.43	0.0230	1.747	0.355	0.716
Data	CYL	1	Start	A	10/14/2013 12:51	0917-173_Nc	13_10_14_1251_51_320	1	1.22	0.838	-0.293	0.150	99	0.823	0.050	0.0980	1.19	0.196	2.91	0.0190	0.684	0.293	0.706
					10/14/2013 12:52	0917-173_Nc	13_10_14_1252_52_020	1	0.37	0.817	-0.136	0.153	99	0.822	0.1180	0.0970	1.24	0.198	2.91	0.0210	0.439	0.287	0.736
					10/14/2013 12:53	0917-173_Nc	13_10_14_1253_52_871	1	0.63	0.858	-0.130	0.148	99	0.824	-0.005	0.101	1.27	0.193	2.91	0.0180	0.615	0.304	0.71
					10/14/2013 12:54	0917-173_Nc	13_10_14_1254_53_581	1	-0.72	0.868	-0.222	0.154	100	0.816	-0.037	0.0990	1.34	0.204	2.91	0.0200	0.430	0.288	0.709
					10/14/2013 12:55	0917-173_Nc	13_10_14_1255_54_371	1	1.26	0.880	-0.218	0.154	100	0.825	0.002	0.0920	1.27	0.199	2.92	0.0200	1.200	0.290	0.714
					10/14/2013 12:56	0917-173_Nc	13_10_14_1256_55_131	1	-1.23	0.790	-0.127	0.152	100	0.827	0.012	0.0990	1.41	0.198	2.91	0.0200	0.526	0.281	0.712
			Stop		10/14/2013 12:57	0917-173_Nc	13_10_14_1257_55_951	1	-0.57	0.820	-0.060	0.153	100	0.836	-0.028	0.106	1.29	0.198	2.91	0.0210	0.827	0.285	0.703
					10/14/2013 13:13	0917-173_Nc	13_10_14_1313_12_592	1	-3.119	1.934	4.04	0.107	2.55	0.302	0.163	2.12	-0.400	0.177	0.00900	0.0160	0.99	0.562	6.788
					10/14/2013 13:14	0917-173_Nc	13_10_14_1314_13_372	1	-3.318	1.895	3.77	0.107	2.14	0.302	0.055	2.11	-0.422	0.176	0.00900	0.0160	0.06	0.571	6.872
					10/14/2013 13:15	0917-173_Nc	13_10_14_1315_14_182	1	-2.09	1.851	5.26	0.104	2.15	0.291	-0.0110	2.15	-0.453	0.171	0.00900	0.0180	0.66	0.543	6.777
					10/14/2013 13:16	0917-173_Nc	13_10_14_1316_14_952	1	-2.43	1.85	6.32	0.109	2.28	0.290	0.0720	2.14	-0.34900	0.179	0.01100	0.0200	0.63	0.556	6.718
					10/14/2013 13:17	0917-173_Nc	13_10_14_1317_15_753	1	-3.50	1.90	7.69	0.112	2.44	0.283	0.0210	2.16	-0.4030	0.181	0.01	0.0210	0.48	0.558	6.511
					10/14/2013 13:18	0917-173_Nc	13_10_14_1318_16_493	1	-1.80	1.92	7.91	0.113	2.45	0.285	0.166	2.14	-0.52900	0.183	0.01	0.0230	1.32	0.570	6.449
					10/14/2013 13:19	0917-173_Nc	13_10_14_1319_17_313	1	-3.54	2.021	4.89	0.108	2.18	0.297	-0.024	2.13	-0.722	0.183	0.00600	0.0190	1.20	0.593	6.603
					10/14/2013 13:20	0917-173_Nc	13_10_14_1320_18_043	1	-2.710	1.914	3.76	0.102	2.11	0.302	0.100	2.14	-0.549	0.173	0.00900	0.0170	0.31	0.568	6.68
					10/14/2013 13:21	0917-173_Nc	13_10_14_1321_18_863	1	-2.403	1.978	4.18	0.110	2.09	0.299	0.198	2.14	-0.715	0.182	0.00800	0.0180	0.289	0.574	6.682
					10/14/2013 13:22	0917-173_Nc	13_10_14_1322_19_563	1	-2.813	1.884	2.55	0.106	1.96	0.307	0.155	2.13	-0.691	0.176	0.00300	0.0150	-0.11	0.563	6.758
					10/14/2013 13:23	0917-173_Nc	13_10_14_1323_20_333	1	-2.18	1.907	0.946	0.103	1.71	0.323	0.062	2.12	-0.9140	0.174	0.0030	0.0170	1.01	0.565	6.856
					10/14/2013 13:24	0917-173_Nc	13_10_14_1324_21_163	1	-4.017	1.864	0.814	0.108	1.78	0.337	0.109	2.11	-0.58100	0.176	0.0050	0.0180	0.26	0.561	6.659
					10/14/2013 13:25	0917-173_Nc	13_10_14_1325_21_853	1	-3.670	2.003	1.04	0.109	1.93	0.361	0.239	2.08	-0.514	0.184	0.0060	0.0190	-0.38	0.592	6.761
					10/14/2013 13:26	0917-173_Nc	13_10_14_1326_22_693	1	-5.40	2.035	1.31	0.111	2.00	0.375	0.237	2.07	-0.228	0.186	0.00100	0.0200	0.22	0.600	6.885
					10/14/2013 13:27	0917-173_Nc	13_10_14_1327_23_403	1	-4.70	2.083	1.62	0.112	2.18	0.376	0.224	2.07	-0.363	0.190	0.0090	0.0200	0.07	0.606	6.999
					10/14/2013 13:28	0917-173_Nc	13_10_14_1328_24_143	1	-2.02	2.005	1.48	0.109	2.08	0.363	0.205	2.05	-0.276	0.186	0.0110	0.0180	-0.12	0.599	7.064
					10/14/2013 13:29	0917-173_Nc	13_10_14_1329_24_954	1	-3.00	1.901	1.075	0.104	1.68	0.304	0.1970	2.14	-0.502	0.178	0.00100	0.0160	-0.10	0.569	7.845
					10/14/2013 13:30	0917-173_Nc	13_10_14_1330_25_774	1	-2.041	1.828	0.849	0.097	2.32	0.269	0.2720	2.18	-1.069	0.169	0.0130	0.01400	0.64	0.530	8.297
					10/14/2013 13:31	0917-173_Nc	13_10_14_1331_26_474	1	-1.69	1.696	0.696	0.103	20.4	0.300	0.104	2.18	-0.1520	0.169	0.509	0.01300	-0.21	0.517	6.546
					10/14/2013 13:32	0917-173_Nc	13_10_14_1332_27_274	1	-0.86	1.798	0.670	0.094	19.0	0.288	0.3550	2.18	-0.191	0.161	0.659	0.01300	0.56	0.506	5.806
					10/14/2013 13:33	0917-173_Nc	13_10_14_1333_28_094	1	-3.61	1.719	0.653	0.095	19.6	0.287	0.431	2.18	-0.1860	0.160	0.664	0.01300	0.77	0.499	5.726
					10/14/2013 13:34	0917-173_Nc	13_10_14_1334_28_844	1	-2.72	1.715	0.722	0.097	20.3	0.287	0.3550	2.18	-0.202	0.161	0.666	0.01200	0.416	0.496	5.574
					10/14/2013 13:35	0917-173_Nc	13_10_14_1335_29_594	1	-2.06	1.657	0.749	0.100	20.8	0.285	0.0780	2.17	-0.092	0.163	0.666	0.01200	0.27	0.509	5.417
					10/14/2013 13:36	0917-173_Nc	13_10_14_1336_30_204	1	-0.79	1.701	0.685	0.097	21.3	0.276	0.2850	2.19	0.004	0.161	0.663	0.01200	0.082	0.501	5.259
					10/14/2013 13:37	0917-173_Nc	13_10_14_1337_30_984	1	-1.022	1.584	0.724	0.097	20.5	0.282	0.25200	2.18	-0.152	0.158	0.631	0.01200	0.49	0.484	5.165
					10/14/2013 13:38	0917-173_Nc	13_10_14_1338_31_744	1	-1.91	1.657	0.721	0.094	20.6	0.296	0.468	2.19	0.007	0.154	0.630	0.01300	0.227	0.481	5.266
					10/14/2013 13:39	0917-173_Nc	13_10_14_1339_33_514	1	-0.69	1.649	0.615	0.098	20.8	0.304	0.325	2.15	-0.1730	0.160	0.628	0.01300	0.46	0.494	5.452
					10/14/2013 13:40	0917-173_Nc	13_10_14_1340_33_254	1	-2.70	1.755	0.693	0.097	20.0	0.295	0.1710	2.17	0.091	0.161	0.595	0.01400	0.13	0.507	5.472
					10/14/2013 13:41	0917-173_Nc	13_10_14_1341_34_055	1	-1.47	1.527	0.643	0.098	19.4	0.293	0.3640	2.17	0.159	0.158	0.573	0.01300	0.44	0.484	5.45
					10/14/2013 13:42	0917-173_Nc	13_10_14_1342_34_855	1	-1.65	1.778	0.404	0.099	19.4	0.299	0.1730	2.16	-0.420	0.164	0.572	0.01400	0.52	0.514	5.392
					10/14/2013 13:43	0917-173_Nc	13_10_14_1343_35_555	1	-2.13	1.747	0.412	0.096	19.4	0.297	0.16000	2.18	-0.371	0.161	0.570	0.01400	0.85	0.510	5.367
					10/14/2013 13:44	0917-173_Nc	13_10_14_1344_36_395	1	0.12	1.665	0.481	0.095	18.6	0.310	0.1850	2.14	-0.1220	0.158	0.547	0.0150	0.62	0.501	5.532
					10/14/2013 13:45	0917-173_Nc	13_10_14_1345_37_095	1	-2.27	1.748	0.696	0.101	18.3	0.316	0.177	2.16	-0.170	0.167	0.533	0.0150	-0.04	0.517	5.601
					10/14/2013 13:46	0917-173_Nc	13_10_14_1346_37_805	1	-2.93	1.864	0.686	0.094	18.5	0.316	0.0220	2.15	-0.4020	0.162	0.536	0.0150	0.047	0.531	5.596
					10/14/2013 13:47	0917-173_Nc	13_10_14_1347_38_655	1	-3.50	1.829	0.742	0.098	18.2	0.317	0.0290	2.14	-0.263	0.166	0.530	0.0150	1.11	0.537	5.637
					10/14/2013 13:48	0917-173_Nc	13_10_14_1348_39_415	1	-2.93	1.822	0.783	0.102	9.23	0.311	-0.19800	2.14	-0.249	0.169	0.231	0.0160	-0.16	0.545	6.087
					10/14/2013 13:49	0917-173_Nc	13_10_14_1349_40_155	1	-2.99	1.837	0.766	0.097	7.60	0.318	0.042	2.13	-0.4080	0.165	0.179	0.0160	-0.053	0.540	6.189
					10/14/2013 13:50	0917-173_Nc	13_10_14_1350_40_915	1	-2.49	1.865	0.729	0.098	7.42	0.322	-0.068	2.12	-0.395	0.166	0.174	0.0170	-0.508	0.535	6.287
					10/14/2013 13:51	0917-173_Nc	13_10_14_1351_41_695	1	-2.53	1.843	0.629	0.100	8.63	0.296	-0.104	2.13	-0.616	0.17	0.217	0.0150	0.00	0.545	6.186
					10/14/2013 13:52	0917-173_Nc	13_10_14_1352_42_406	1	-2.14	1.733	0.567	0.098	8.96	0.288	-0.131	2.14	-0.6030	0.16	0.228	0.0150	0.19	0.515	6.097
					10/14/2013 13:53	0917-173_Nc	13_10_14_1353_43_136	1	-3.13	1.738	0.442	0.097	9.06	0.287	-0.171	2.12	-0.530	0.16	0.226	0.0140	-0.318	0.519	6.037
Data	SPK	1	Start	A	10/14/2013 13:54	0917-173_Nc	13_10_14_1354_43_956	1	-2.689	1.752	0.553	0.099	8.83	0.281	0.037	2.14	-0.581	0.17	0.222	0.01400	0.23	0.529	5.922
					10/14/2013 13:55	0917-173_Nc	13_10_14_1355_44_666	1	-1.35	1.652	0.579	0.096	8.64	0.281	-0.119	2.11	-0.6030	0.16	0.228	0.01400	0.596	0.506	5.744
					10/14/2013 13:56	0917-173_Nc	13_10_14_1356_45_486	1	-3.044	1.713	0.484	0.092	8.38	0.271	0.059	2.12	-0.502	0.16	0.223	0.01300	-0.04	0.492	5.541
					10/14/2013 13:57	0917-173_Nc	13_10_14_1357_46_206	1	-3.067	1.686	0.574	0.093	8.43	0.264	0.104	2.12	-0.5540	0.16	0.223	0.01200	0.29	0.506	5.348
					10/14/2013 13:58	0917-173_Nc	13_10_14_1358_47_056	1	-2.401	1.692	0.730	0.094	8.42	0.274	0.081	2.11	-0.4920	0.16	0.222	0.01300	0.42	0.502	5.316
					10/14/2013 13:59	0917-173_Nc	13_10_14_1359_47_806	1	-2.588	1.739	0.738	0.092	8.26	0.286	-0.01700	2.11	-0.38800	0.16	0.222	0.01400	-0.42	0.501	5.31
			Stop		10/14/2013 14:00	0917-173_Nc	13_10_14_1400_48_546	1	-2.31	1.833	0.675	0.099	2.81	0.301	-0.195	2.08	-0.639	0.17	0.0340	0.0150	-0.523	0.534	5.425
					10/14/2013 14:01	0917-173_Nc	13_10_14_1401_49_266	1	-3.445	1.796	0.782	0.098	1.77	0.313	-0.111	2.09	-0.635	0.16	0.0100	0.0160	0.106	0.530	5.365
					10/14/2013 14:02	0917-173_Nc	13_10_14_1402_50_046	1	-2.21	1.882	0.822	0.099	1.72	0.310	-0.142	2.08	-0.619	0.17	0.0020	0.0160	-0.782	0.544	5.283
					10/14/2013 14:03	0917-173_Nc	13_10_14_1403_50_876	1	-2.34	1.897	0.726	0.101	1.64	0.313	0.009	2.07	-0.442	0.17	0.0070	0.0160	-0.24	0.548	5.236
					10/14/2013 14:04	0917-173_Nc	13_10_14_1404_51_627	1	-1.54	1.836	0.830	0.101	1.61	0.305	0.092	2.09	-0.413	0.17	0.0050	0.0160	-0.36	0.546	5.129
					10/14/2013 14:05	0917-173_Nc	13_10_14_1405_52_397	1	-3.497	1.942	0.711	0.101	1.53	0.305	0.101	2.07	-0.498	0.17	0.0100	0.0160	-0.05	0.562	5.056
Data	UNSPK	1	Start	A	10/14/2013 14:06	0917-173_Nc	13_10_14_1406_53_137	1	-2.87	1.868	0.780	0.098	1.51	0.310	-0.009	2.08	-0.532	0.17	0.0070	0.0160	-0.369	0.536	4.955
					10/14/2013 14:07	0917-173_Nc	13_10_14_1407_53_877	1	-3.94	1.905	0.939	0.105	1.36	0.306	0.144	2.09	-0.567	0.17	0.0030	0.0160	-0.43	0.562	4.86
					10/14/2013 14:08	0917-173_Nc	13_10_14_1408_54_687	1	-2.000	1.850	0.701	0.099	1.39	0.305	0.242	2.11	-0.6000	0.17	0.0050	0.0160	-0.11	0.553	4.812
					10/14/2013 14:09	0917-173_Nc	13_10_14_1409_55_387	1	-2.868	1.807	0.849	0.101	1.32	0.296	0.291	2.11	-0.559	0.17	0.0080	0.0150	-0.10	0.535	4.772
					10/14/2013 14:10	0917-173_Nc	13_10_14_1410_56_217	1	-4.401	1.822	0.710	0.102	1.34	0.286	0.105	2.12	-0.7220	0.17	0.0090	0.0150	0.06	0.541	4.761
					10/14/2013 14:11	0917-173_Nc	13_10_14_1411_56_937	1	-2.815	1.793	0.844	0.100	1.40	0.287	0.237	2.11	-0.535	0.17	0.0030	0.01400	-0.42	0.536	4.781
			Stop		10/14/2013 14:12	0917-173_Nc	13_10_14_1412_57_727	1	-2.088	1.800	0.761	0.102	1.41	0.294	0.089	2.12	-0.596	0.17	0.00200	0.0150	-0.374	0.534	4.848
					10/14/2013 14:39	0917-173_Nc	13_10_14_1439_49_359	1	-0.812	1.566	0.745	0.091	2.44	0.225	0.52	2.19	-0.813	0.149	-0.00200	0.01000	-0.409	0.470	5.578
					10/14/2013 14:40	0917-173_Nc	13_10_14_1440_50_130	1	-2.09900	1.698	0.962	0.093	2.71	0.263	0.35	2.17	-0.7780	0.155	0.00100	0.01300	-0.871	0.488	6.345
					10/14/2013 14:41	0917-173_Nc	13_10_14_1441_50_940	1	-2.697	1.713	0.87	0.097	2.68	0.269	0.31	2.17	-0.7940	0.162	0.00400	0.01300	-0.961	0.511	6.557
					10/14/2013 14:42	0917-173_Nc	13_10_14_1442_51_690	1	-2.517	1.774	0.964	0.097	2.87	0.270	0.52	2.17	-0.6880	0.164	0.00600	0.01300	-0.857	0.523	6.714
					10/14/2013 14:43	0917-173_Nc	13_10_14_1443_52_400	1	-2.174	1.789	0.806	0.099	2.93	0.291	0.40	2.15	-0.7380	0.165	0.00700	0.01400	-0.38	0.531	7.048
					10/14/2013 14:44	0917-173_Nc	13_10_14_1444_53_190	1	-1.683	1.733	0.502	0.103	3.18	0.307	0.48	2.11	-0.984	0.168	0.00700	0.0150	-0.56	0.521	7.352
					10/14/2013 14:45	0917-173_Nc	13_10_14_1445_53_900	1	-2.121	1.921	0.443	0.103	3.37	0.331	0.40	2.08	-0.990	0.174	0.0070	0.0160	-0.33	0.564	7.698
					10/14/2013 14:46	0917-173_Nc	13_10_14_1446_54_660	1	-3.001	1.946	0.765	0.107	3.65	0.344	0.54	2.06	-0.552	0.180	0.0030	0.0170	-0.93	0.579	8.004
					10/14/2013 14:47	0917-173_Nc	13_10_14_1447_55_500	1	-3.512	1.993	1.17	0.110	3.72	0.349	0.36	2.05	-0.812	0.184	0.00600	0.0170	-0.67	0.586	8.227
					10/14/2013 14:48	0917-173_Nc	13_10_14_1448_56_210	1	-5.490	1.943	1.129	0.105	3.68	0.341	0.27	2.06	-0.708	0.178	0.00400	0.0170	-0.92	0.561	8.363
					10/14/2013 14:49	0917-173_Nc	13_10_14_1449_56_940	1	-4.988	1.864	0.976	0.108	3.71	0.336	0.34	2.07	-0.805	0.177	-0.00200	0.0160	-0.965	0.558	8.355
					10/14/2013 14:50	0917-173_Nc	13_10_14_1450_57_730	1	-3.2760	1.832	1.01	0.104	3.59	0.329	0.41	2.07	-0.8560	0.173	0.00200	0.0160	-0.862	0.542	8.342
					10/14/2013 14:51	0917-173_Nc	13_10_14_1451_58_450	1	-4.464	1.821	0.850	0.106	3.54	0.317	0.51	2.10	-0.8560	0.175	0.00100	0.0150	-1.04	0.550	8.256
					10/14/2013 14:52	0917-173_Nc	13_10_14_1452_59_191	1	-5.244	1.765	0.634	0.101	3.44	0.300	0.49	2.08	-0.823	0.168	0.00500	0.0140	-0.72	0.535	8.216
					10/14/2013 14:54	0917-173_Nc	13_10_14_1454_00_001	1	-2.713	1.738	0.605	0.097	3.49	0.299	0.37	2.10	-0.944	0.164	0.00400	0.01400	-1.07	0.516	8.264
					10/14/2013 14:55	0917-173_Nc	13_10_14_1455_00_711	1	-1.4490	1.735	0.471	0.100	3.37	0.281	0.47	2.14	-0.705	0.166	0.00300	0.01300	-1.4170	0.517	8.09
					10/14/2013 14:56	0917-173_Nc	13_10_14_1456_01_501	1	-3.122	1.804	0.404	0.097	3.23	0.267	0.35	2.13	-0.875	0.165	0.00000	0.01300	-0.98	0.527	7.736
					10/14/2013 14:57	0917-173_Nc	13_10_14_1457_02_111	1	-2.695	1.776	0.498	0.092	3.09	0.261	0.47	2.15	-0.7360	0.159	0.00	0.01300	-0.66	0.519	7.54
					10/14/2013 14:58	0917-173_Nc	13_10_14_1458_02_821	1	-3.4170	1.721	0.618	0.094	3.12	0.254	0.46	2.14	-0.6360	0.159	0.00100	0.01200	-0.68	0.507	7.463
					10/14/2013 14:59	0917-173_Nc	13_10_14_1459_03_641	1	-1.474	1.710	0.651	0.093	3.00	0.237	0.54	2.16	-0.7250	0.157	-0.00400	0.01200	-1.19	0.504	7.249
					10/14/2013 15:00	0917-173_Nc	13_10_14_1500_04_351	1	-2.691	1.669	0.700	0.093	2.98	0.242	0.44	2.15	-0.800	0.156	-0.01	0.01100	-1.011	0.489	7.148
					10/14/2013 15:01	0917-173_Nc	13_10_14_1501_06_171	1	-1.4940	1.692	0.699	0.095	3.18	0.255	0.28	2.15	-0.771	0.159	0.00300	0.01200	-0.58	0.509	7.153
					10/14/2013 15:02	0917-173_Nc	13_10_14_1502_05_881	1	-2.267	1.759	0.727	0.092	3.20	0.276	0.49	2.13	-0.620	0.158	-0.00200	0.01300	-1.569	0.508	7.228
					10/14/2013 15:03	0917-173_Nc	13_10_14_1503_06_601	1	-3.175	1.743	0.628	0.097	3.22	0.290	0.51	2.11	-0.8310	0.161	0.00200	0.01400	-0.69	0.514	7.366
					10/14/2013 15:04	0917-173_Nc	13_10_14_1504_07_392	1	-3.217	1.705	0.346	0.095	3.21	0.306	0.40	2.13	-1.0180	0.159	0.00000	0.0150	-0.45	0.505	7.486
					10/14/2013 15:05	0917-173_Nc	13_10_14_1505_08_162	1	-1.636	1.736	0.522	0.099	3.32	0.306	0.29	2.10	-0.8960	0.164	0.00600	0.0150	-1.102	0.528	7.637
					10/14/2013 15:06	0917-173_Nc	13_10_14_1506_08_922	1	-2.082	1.793	0.504	0.102	3.60	0.317	0.18	2.07	-0.932	0.171	0.00600	0.0150	-1.17	0.537	7.708
					10/14/2013 15:07	0917-173_Nc	13_10_14_1507_09_632	1	-3.208	1.850	0.708	0.098	3.43	0.323	0.05	2.09	-0.854	0.169	0.00300	0.0150	-1.007	0.538	7.745
					10/14/2013 15:08	0917-173_Nc	13_10_14_1508_10_372	1	-1.498	1.854	0.715	0.100	3.40	0.318	0.00	2.07	-0.820	0.171	0.00500	0.0160	-0.90	0.536	7.758
					10/14/2013 15:09	0917-173_Nc	13_10_14_1509_11_132	1	-4.013	1.733	0.578	0.096	3.27	0.314	0.01	2.10	-0.8350	0.163	0.00200	0.0150	-0.98	0.510	7.675
					10/14/2013 15:10	0917-173_Nc	13_10_14_1510_11_932	1	-3.610	1.839	0.553	0.099	3.32	0.300	0.22	2.09	-0.9100	0.169	0.00200	0.0150	-0.94	0.537	7.641
					10/14/2013 15:11	0917-173_Nc	13_10_14_1511_12_642	1	-2.782	1.814	0.522	0.102	3.47	0.307	0.31	2.10	-0.536	0.170	0.00300	0.0150	-1.302	0.531	7.693
					10/14/2013 15:12	0917-173_Nc	13_10_14_1512_13_392	1	-4.1420	1.950	0.691	0.101	3.52	0.310	-0.04	2.08	-0.558	0.174	0.00300	0.0150	-1.712	0.558	7.696
					10/14/2013 15:13	0917-173_Nc	13_10_14_1513_14_212	1	-3.029	1.878	0.547	0.102	3.34	0.298	0.18	2.11	-0.688	0.173	0.00400	0.0140	-1.310	0.540	7.602
					10/14/2013 15:14	0917-173_Nc	13_10_14_1514_14_902	1	-4.122	1.764	0.538	0.100	3.16	0.293	0.00	2.10	-0.6970	0.166	-0.00100	0.01400	-0.61	0.532	7.509
Data	Run	1	Start	A	10/14/2013 15:15	0917-173_Nc	13_10_14_1515_15_632	1	-4.020	1.731	0.660	0.100	3.34	0.279	-0.05	2.15	-0.978	0.166	-0.00400	0.01300	-0.83	0.514	7.419
					10/14/2013 15:16	0917-173_Nc	13_10_14_1516_16_443	1	-2.722	1.823	0.624	0.096	3.30	0.277	-0.03	2.14	-0.914	0.163	0.00200	0.01300	-0.96	0.521	7.413
					10/14/2013 15:17	0917-173_Nc	13_10_14_1517_17_163	1	-2.408	1.757	0.576	0.099	3.27	0.283	0.09	2.15	-0.8490	0.164	0.00400	0.01400	-0.63	0.516	7.44
					10/14/2013 15:18	0917-173_Nc	13_10_14_1518_17_873	1	-1.6000	1.769	0.542	0.102	3.20	0.281	-0.04	2.15	-0.562	0.168	0.00100	0.01300	-1.117	0.524	7.515
					10/14/2013 15:19	0917-173_Nc	13_10_14_1519_18_713	1	-2.872	1.740	0.650	0.093	3.01	0.268	0.00	2.16	-0.834	0.158	0.00400	0.01300	-0.98	0.513	7.409
					10/14/2013 15:20	0917-173_Nc	13_10_14_1520_19_373	1	-2.016	1.666	0.817	0.095	2.99	0.265	0.31	2.18	-0.897	0.158	0.00000	0.01300	-0.69	0.493	7.27
					10/14/2013 15:21	0917-173_Nc	13_10_14_1521_20_233	1	-1.83800	1.694	0.820	0.093	3.09	0.264	0.17	2.17	-1.009	0.155	0.00100	0.01300	-0.39	0.498	7.197
					10/14/2013 15:22	0917-173_Nc	13_10_14_1522_20_953	1	-0.092	1.698	0.97	0.099	3.30	0.273	0.11	2.17	-0.911	0.163	-0.00100	0.01300	-1.441	0.520	7.242
					10/14/2013 15:23	0917-173_Nc	13_10_14_1523_21_683	1	-4.517	1.781	0.863	0.095	3.25	0.276	0.39	2.17	-0.855	0.161	0.00300	0.01300	-0.85	0.522	7.37
					10/14/2013 15:24	0917-173_Nc	13_10_14_1524_22_413	1	-1.195	1.781	0.909	0.097	3.19	0.280	0.13	2.16	-0.759	0.164	-0.00100	0.01400	-1.098	0.519	7.363

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 15:25	0917-173_Nc	13_10_14_1525_23_153	1	-1.3800	1.799	0.762	0.102	3.21	0.292	0.14	2.14	-0.521	0.169	0.00900	0.01400	-1.419	0.531	7.436
					10/14/2013 15:26	0917-173_Nc	13_10_14_1526_23_953	1	-2.6020	1.765	0.765	0.100	3.17	0.291	0.17	2.15	-0.911	0.164	0.00400	0.01400	0.01	0.516	7.419
					10/14/2013 15:27	0917-173_Nc	13_10_14_1527_24_733	1	-2.0220	1.847	0.853	0.096	3.20	0.277	0.11	2.15	-0.8660	0.163	0.00500	0.01400	-0.81	0.530	7.345
					10/14/2013 15:28	0917-173_Nc	13_10_14_1528_25_404	1	-1.7080	1.683	0.822	0.095	3.03	0.275	0.28	2.16	-0.911	0.157	0.00600	0.01400	-0.926	0.492	7.228
					10/14/2013 15:29	0917-173_Nc	13_10_14_1529_26_234	1	-2.843	1.708	0.86	0.100	3.21	0.278	0.20	2.14	-0.710	0.162	-0.00100	0.01400	-1.105	0.514	7.258
					10/14/2013 15:30	0917-173_Nc	13_10_14_1530_26_944	1	-6.052	1.781	0.831	0.096	3.40	0.298	0.07	2.13	-0.99400	0.163	0.00600	0.0150	-0.73	0.516	7.465
					10/14/2013 15:31	0917-173_Nc	13_10_14_1531_27_714	1	-2.830	1.841	0.669	0.103	3.30	0.311	0.00	2.10	-1.077	0.171	0.00400	0.0150	-0.988	0.546	7.551
					10/14/2013 15:32	0917-173_Nc	13_10_14_1532_28_464	1	-4.2010	1.838	0.610	0.096	3.28	0.300	0.05	2.14	-1.1140	0.165	0.00500	0.0150	-0.5500	0.537	7.56
					10/14/2013 15:33	0917-173_Nc	13_10_14_1533_29_184	1	-6.269	1.821	0.664	0.098	3.26	0.289	0.03	2.14	-1.027	0.166	0.00300	0.01400	-1.03	0.536	7.53
					10/14/2013 15:34	0917-173_Nc	13_10_14_1534_29_994	1	-1.890	1.874	0.700	0.096	3.31	0.280	0.31	2.14	-0.689	0.167	0.00100	0.01400	-1.428	0.540	7.579
					10/14/2013 15:35	0917-173_Nc	13_10_14_1535_30_714	1	-2.160	1.765	0.720	0.095	3.28	0.285	0.00	2.13	-0.788	0.162	0.00200	0.01400	-1.10	0.516	7.683
					10/14/2013 15:36	0917-173_Nc	13_10_14_1536_31_454	1	-2.460	1.814	0.814	0.100	3.48	0.299	0.12	2.13	-0.790	0.168	0.00500	0.0140	-0.836	0.532	7.705
					10/14/2013 15:37	0917-173_Nc	13_10_14_1537_32_154	1	-4.59700	1.791	0.736	0.100	3.35	0.300	0.25	2.13	-0.9310	0.167	0.00200	0.0150	-0.58	0.527	7.754
					10/14/2013 15:38	0917-173_Nc	13_10_14_1538_32_914	1	-4.066	1.835	0.613	0.096	3.51	0.313	0.11	2.13	-0.686	0.164	0.00000	0.0150	-0.97	0.532	7.849
					10/14/2013 15:39	0917-173_Nc	13_10_14_1539_33_524	1	-1.403	1.832	0.618	0.102	3.58	0.318	0.20	2.12	-0.790	0.171	-0.00100	0.0160	-1.636	0.538	7.8
					10/14/2013 15:40	0917-173_Nc	13_10_14_1540_34_355	1	-4.142	1.776	0.668	0.099	3.37	0.309	0.22	2.14	-1.0010	0.167	0.00000	0.0150	-1.11	0.533	7.648
					10/14/2013 15:41	0917-173_Nc	13_10_14_1541_35_025	1	-3.930	1.837	0.669	0.097	3.28	0.304	0.04	2.14	-1.0060	0.166	0.00000	0.0150	-1.126	0.536	7.557
					10/14/2013 15:42	0917-173_Nc	13_10_14_1542_35_845	1	-1.017	1.814	0.676	0.095	3.25	0.285	0.08	2.16	-1.0280	0.162	0.00000	0.01400	-1.05	0.524	7.452
					10/14/2013 15:43	0917-173_Nc	13_10_14_1543_36_595	1	-4.0220	1.748	0.722	0.096	3.39	0.274	0.13	2.17	-1.156	0.160	0.00300	0.01300	-0.61	0.510	7.541
					10/14/2013 15:44	0917-173_Nc	13_10_14_1544_37_325	1	-3.818	1.802	0.825	0.097	3.52	0.273	0.17	2.14	-0.9560	0.163	-0.00200	0.01300	-0.936	0.521	7.565
					10/14/2013 15:45	0917-173_Nc	13_10_14_1545_38_135	1	-2.571	1.851	0.700	0.094	3.39	0.279	0.37	2.15	-0.97400	0.162	0.00900	0.01400	-0.99	0.528	7.581
					10/14/2013 15:46	0917-173_Nc	13_10_14_1546_38_875	1	-3.767	1.879	0.758	0.100	3.42	0.287	0.14	2.13	-0.877	0.171	0.00200	0.01400	-0.90	0.536	7.823
					10/14/2013 15:47	0917-173_Nc	13_10_14_1547_39_575	1	-3.9380	1.837	0.694	0.100	3.57	0.295	0.46	2.14	-0.708	0.170	0.00000	0.01400	-1.375	0.530	7.847
					10/14/2013 15:48	0917-173_Nc	13_10_14_1548_40_315	1	-3.440	1.872	0.682	0.100	3.48	0.304	0.32	2.11	-0.787	0.171	0.00100	0.0150	-1.228	0.553	7.945
					10/14/2013 15:49	0917-173_Nc	13_10_14_1549_41_135	1	-3.590	1.865	0.584	0.101	3.41	0.309	0.32	2.10	-0.754	0.171	0.00700	0.0150	-1.627	0.532	7.979
					10/14/2013 15:50	0917-173_Nc	13_10_14_1550_41_845	1	-1.739	1.821	0.730	0.100	3.08	0.298	0.35	2.15	-0.672	0.169	0.00200	0.0150	-1.22	0.537	7.814
					10/14/2013 15:51	0917-173_Nc	13_10_14_1551_42_616	1	-1.286	1.811	0.696	0.097	3.10	0.283	0.17	2.15	-0.9780	0.166	-0.00200	0.01400	-0.994	0.534	7.59
					10/14/2013 15:52	0917-173_Nc	13_10_14_1552_43_326	1	-2.618	1.802	0.752	0.096	3.21	0.280	0.34	2.15	-0.980	0.162	-0.00100	0.01300	-0.84	0.533	7.632
					10/14/2013 15:53	0917-173_Nc	13_10_14_1553_44_066	1	-3.0790	1.776	0.685	0.099	3.30	0.283	0.38	2.16	-0.781	0.166	0.00200	0.01400	-1.257	0.539	7.76
					10/14/2013 15:54	0917-173_Nc	13_10_14_1554_44_886	1	-2.319	1.814	0.786	0.100	3.25	0.299	0.30	2.11	-0.863	0.170	0.00200	0.0150	-1.09	0.542	7.815
					10/14/2013 15:55	0917-173_Nc	13_10_14_1555_45_656	1	-3.839	1.849	0.920	0.098	3.29	0.307	0.24	2.12	-0.804	0.168	0.00200	0.0150	-1.334	0.539	7.887
					10/14/2013 15:56	0917-173_Nc	13_10_14_1556_46_316	1	-6.7580	1.900	0.717	0.102	3.36	0.301	0.10	2.13	-1.029	0.173	0.00100	0.0150	-0.69	0.549	7.932
					10/14/2013 15:57	0917-173_Nc	13_10_14_1557_47_126	1	-0.511	1.779	0.629	0.102	3.30	0.294	0.26	2.12	-1.0410	0.170	-0.00200	0.01400	-0.76	0.530	7.986
					10/14/2013 15:58	0917-173_Nc	13_10_14_1558_47_826	1	-4.146	1.819	0.604	0.100	3.30	0.298	0.18	2.13	-0.814	0.168	0.00100	0.01400	-0.69	0.536	7.999
					10/14/2013 15:59	0917-173_Nc	13_10_14_1559_48_586	1	-2.953	1.869	0.662	0.104	3.32	0.313	0.31	2.12	-1.030	0.172	-0.00200	0.0150	-1.187	0.551	7.972
					10/14/2013 16:00	0917-173_Nc	13_10_14_1600_49_366	1	-3.0140	1.825	0.510	0.102	3.00	0.300	0.13	2.11	-1.1840	0.171	0.00200	0.0150	-0.84	0.536	7.782
					10/14/2013 16:01	0917-173_Nc	13_10_14_1601_50_106	1	-1.245	1.875	0.515	0.098	2.84	0.279	0.38	2.14	-0.899	0.168	0.00200	0.01300	-0.722	0.540	7.501
					10/14/2013 16:02	0917-173_Nc	13_10_14_1602_50_926	1	-3.578	1.631	0.465	0.095	2.75	0.257	0.36	2.18	-0.920	0.159	0.00000	0.01300	-1.09	0.495	7.255
					10/14/2013 16:03	0917-173_Nc	13_10_14_1603_51_667	1	-0.949	1.759	0.642	0.098	2.80	0.259	0.26	2.17	-0.799	0.162	0.00100	0.01300	-1.14	0.526	7.046
					10/14/2013 16:04	0917-173_Nc	13_10_14_1604_52_377	1	-1.851	1.809	0.711	0.096	2.73	0.248	0.24	2.18	-0.8400	0.164	-0.00100	0.01200	-1.030	0.535	6.87
					10/14/2013 16:05	0917-173_Nc	13_10_14_1605_53_187	1	-0.279	1.700	0.580	0.093	2.73	0.235	0.20	2.20	-0.9030	0.157	0.00100	0.01200	-0.62	0.504	6.699
					10/14/2013 16:06	0917-173_Nc	13_10_14_1606_53_907	1	-2.439	1.760	0.661	0.090	2.66	0.237	0.43	2.18	-0.566	0.155	0.00300	0.01100	-0.959	0.502	6.577
					10/14/2013 16:07	0917-173_Nc	13_10_14_1607_54_617	1	-1.954	1.722	0.567	0.093	2.91	0.238	0.36	2.20	-0.729	0.156	-0.00500	0.01100	-0.84	0.516	6.478
					10/14/2013 16:08	0917-173_Nc	13_10_14_1608_55_427	1	-2.626	1.739	0.671	0.098	3.00	0.251	0.39	2.18	-0.7290	0.161	0.00100	0.01200	-1.108	0.516	6.525
					10/14/2013 16:09	0917-173_Nc	13_10_14_1609_56_147	1	-2.335	1.622	0.868	0.092	2.85	0.265	0.34	2.18	-0.629	0.153	-0.00100	0.01300	-1.203	0.485	6.479
					10/14/2013 16:10	0917-173_Nc	13_10_14_1610_56_957	1	-2.331	1.759	1.04	0.094	2.65	0.264	0.34	2.20	-0.844	0.157	0.00	0.01300	-0.44	0.507	6.413
					10/14/2013 16:11	0917-173_Nc	13_10_14_1611_57_677	1	-2.8390	1.773	1.09	0.093	2.52	0.275	0.45	2.19	-0.702	0.157	0.00100	0.01400	-1.135	0.507	6.422
					10/14/2013 16:12	0917-173_Nc	13_10_14_1612_58_447	1	-2.6690	1.747	0.934	0.091	2.64	0.282	0.39	2.19	-0.8240	0.156	0.00400	0.01400	-1.01	0.506	6.465
					10/14/2013 16:13	0917-173_Nc	13_10_14_1613_59_217	1	-2.372	1.777	0.857	0.098	2.56	0.293	0.55	2.18	-1.066	0.165	0.00100	0.0150	-0.442	0.524	6.59
					10/14/2013 16:14	0917-173_Nc	13_10_14_1614_59_927	1	-5.232	1.873	0.784	0.100	2.67	0.294	0.59	2.20	-0.831	0.170	-0.00300	0.01500	-0.714	0.564	6.678
			Stop		10/14/2013 16:16	0917-173_Nc	13_10_14_1616_00_738	1	-2.507	1.747	0.728	0.093	4.10	0.284	0.62	2.18	-1.140	0.159	0.0710	0.01400	-0.04	0.504	6.773
					10/14/2013 16:17	0917-173_Nc	13_10_14_1617_01_458	1	-0.935	1.206	-0.277	0.090	2.94	0.0850	0.473	1.433	-3.18	0.157	0.0780	0.00400	-1.488	0.402	10.724
					10/14/2013 16:18	0917-173_Nc	13_10_14_1618_02_278	1	0.0940	1.091	-0.715	0.099	0.285	0.0470	0.147	0.535	-3.73	0.168	-0.00300	0.00200	-1.012	0.385	11.369
					10/14/2013 16:19	0917-173_Nc	13_10_14_1619_03_028	1	-1.1700	0.982	-0.244	0.072	0.255	0.0380	0.131	0.320	-1.721	0.121	0.0100	0.00200	-1.1110	0.332	6.063
					10/14/2013 16:20	0917-173_Nc	13_10_14_1620_03_738	1	0.6880	0.925	-0.184	0.062	0.035	0.0350	0.2260	0.210	-1.244	0.100	0.00	0.00200	-0.484	0.312	4.305
					10/14/2013 16:21	0917-173_Nc	13_10_14_1621_04_478	1	1.7370	1.027	-0.1850	0.064	0.126	0.0360	0.1530	0.158	-1.0430	0.106	-0.00700	0.00200	-0.768	0.318	4.202
					10/14/2013 16:22	0917-173_Nc	13_10_14_1622_05_198	1	3.727	1.007	0.070	0.060	0.222	0.0420	0.3480	0.731	-0.064	0.097	-0.00500	0.00200	-0.147	0.305	1.733
					10/14/2013 16:23	0917-173_Nc	13_10_14_1623_05_968	1	1.08800	1.000	0.154	0.062	0.0800	0.0500	0.5310	1.045	-0.010	0.099	0.00	0.00300	-0.62	0.315	1.089
					10/14/2013 16:24	0917-173_Nc	13_10_14_1624_06_688	1	2.588	1.133	-0.057	0.063	0.1020	0.0500	0.6750	0.999	0.108	0.106	-0.00300	0.00200	-0.60	0.323	0.801
					10/14/2013 16:25	0917-173_Nc	13_10_14_1625_07_458	1	3.1780	1.063	0.079	0.061	0.111	0.0490	0.6980	1.003	0.108	0.101	0.00000	0.00200	-0.074	0.323	0.78
					10/14/2013 16:26	0917-173_Nc	13_10_14_1626_08_178	1	1.098	1.049	0.086	0.063	0.077	0.0500	0.5510	1.006	0.180	0.101	0.00	0.00300	-0.245	0.316	0.741
					10/14/2013 16:27	0917-173_Nc	13_10_14_1627_09_038	1	3.486	1.136	0.028	0.065	0.0710	0.0490	0.6820	0.994	-0.067	0.106	-0.00100	0.00200	-0.66	0.344	0.693
					10/14/2013 16:28	0917-173_Nc	13_10_14_1628_09_749	1	0.960	1.012	0.093	0.062	0.200	0.0530	0.466	0.997	0.120	0.101	-0.00400	0.00200	-0.669	0.312	0.652
					10/14/2013 16:29	0917-173_Nc	13_10_14_1629_10_499	1	0.005	1.037	0.243	0.064	0.150	0.0500	0.386	0.999	0.0320	0.102	0.00	0.00200	-0.254	0.328	0.614
					10/14/2013 16:30	0917-173_Nc	13_10_14_1630_12_259	1	1.0600	0.972	0.005	0.062	0.0790	0.0530	0.7030	1.013	0.007	0.102	-0.00100	0.00300	-0.475	0.307	0.603
					10/14/2013 16:31	0917-173_Nc	13_10_14_1631_13_069	1	2.424	1.081	0.087	0.058	0.139	0.0530	0.6110	1.022	0.1200	0.098	-0.01000	0.00200	-0.240	0.320	0.569
					10/14/2013 16:32	0917-173_Nc	13_10_14_1632_13_779	1	2.126	1.022	0.150	0.062	0.139	0.0490	0.6580	1.032	0.0330	0.100	-0.00500	0.00300	-0.377	0.307	0.502
					10/14/2013 16:33	0917-173_Nc	13_10_14_1633_14_599	1	1.2640	1.269	0.433	0.067	1.03	0.1410	0.740	1.577	-0.117	0.112	0.00000	0.00700	-0.65	0.369	1.988
					10/14/2013 16:34	0917-173_Nc	13_10_14_1634_15_299	1	-0.224	1.656	0.563	0.087	1.86	0.285	0.533	2.22	-0.725	0.149	-0.00100	0.01300	-0.197	0.481	4.446
					10/14/2013 16:35	0917-173_Nc	13_10_14_1635_16_099	1	-2.521	1.845	0.495	0.095	1.89	0.312	0.44	2.15	-0.8340	0.162	0.00200	0.0150	-0.766	0.531	5.087
					10/14/2013 16:36	0917-173_Nc	13_10_14_1636_16_869	1	-3.921	1.823	0.610	0.096	1.85	0.290	0.55	2.18	-0.780	0.162	0.00200	0.01400	-0.678	0.526	5.162
					10/14/2013 16:37	0917-173_Nc	13_10_14_1637_17_579	1	-5.050	1.960	0.463	0.103	2.17	0.285	0.062	2.20	-0.695	0.171	-0.00600	0.01400	-0.34	0.557	5.214
					10/14/2013 16:38	0917-173_Nc	13_10_14_1638_18_389	1	-3.9760	1.713	0.419	0.100	1.82	0.269	0.52	2.22	-0.8410	0.163	-0.00500	0.01300	-0.601	0.523	5.119
					10/14/2013 16:39	0917-173_Nc	13_10_14_1639_19_090	1	-2.006	1.642	0.263	0.092	1.60	0.247	0.44	2.21	-0.976	0.153	0.00100	0.01200	-0.872	0.485	4.9
					10/14/2013 16:40	0917-173_Nc	13_10_14_1640_19_900	1	-2.381	1.690	0.3710	0.091	1.60	0.230	0.596	2.23	-0.645	0.151	-0.00300	0.01100	-0.947	0.498	4.753
					10/14/2013 16:41	0917-173_Nc	13_10_14_1641_20_660	1	-0.3240	1.575	0.420	0.088	1.65	0.227	0.534	2.22	-0.82800	0.147	0.00000	0.01000	-0.690	0.467	4.701
					10/14/2013 16:42	0917-173_Nc	13_10_14_1642_21_390	1	-1.081	1.717	0.486	0.094	1.62	0.240	0.429	2.23	-0.7200	0.156	-0.00600	0.01100	-0.979	0.515	4.745
					10/14/2013 16:43	0917-173_Nc	13_10_14_1643_22_100	1	-2.247	1.572	0.559	0.091	1.48	0.224	0.556	2.23	-0.819	0.149	-0.00500	0.01100	-0.02	0.472	4.647
					10/14/2013 16:44	0917-173_Nc	13_10_14_1644_22_910	1	-1.310	1.692	0.647	0.089	1.54	0.231	0.576	2.22	-0.681	0.149	0.00000	0.01100	-0.451	0.484	4.678
					10/14/2013 16:45	0917-173_Nc	13_10_14_1645_23_640	1	1.566	1.693	0.575	0.090	1.73	0.257	0.342	2.23	-0.770	0.151	-0.00400	0.01200	-0.712	0.494	4.856
					10/14/2013 16:46	0917-173_Nc	13_10_14_1646_24_340	1	-1.436	1.720	0.825	0.092	1.75	0.284	0.325	2.20	-0.5540	0.152	0.00200	0.01500	-1.0550	0.500	5.03
					10/14/2013 16:47	0917-173_Nc	13_10_14_1647_25_160	1	-2.732	1.909	0.700	0.097	1.86	0.304	0.409	2.17	-0.7790	0.165	-0.00300	0.0150	-0.859	0.548	5.38
					10/14/2013 16:48	0917-173_Nc	13_10_14_1648_25_860	1	-4.577	1.783	0.607	0.099	1.83	0.306	0.317	2.17	-0.989	0.165	0.00300	0.0150	-0.7930	0.523	5.514
Data	Run	2	Start	A	10/14/2013 16:49	0917-173_Nc	13_10_14_1649_26_670	1	-1.207	1.819	0.552	0.101	1.96	0.318	0.334	2.16	-0.853	0.166	0.00200	0.0160	-0.311	0.536	5.73
					10/14/2013 16:50	0917-173_Nc	13_10_14_1650_27_360	1	-2.714	1.859	0.594	0.103	1.95	0.330	0.41	2.14	-0.9480	0.171	0.00000	0.0160	-0.969	0.549	6.002
					10/14/2013 16:51	0917-173_Nc	13_10_14_1651_28_211	1	-3.421	1.940	0.923	0.104	1.94	0.334	0.58	2.15	-0.518	0.175	0.00300	0.0170	-0.654	0.571	6.158
					10/14/2013 16:52	0917-173_Nc	13_10_14_1652_28_891	1	-3.896	1.802	0.562	0.097	1.81	0.317	0.46	2.15	-0.862	0.164	0.00300	0.0150	-0.488	0.532	6.152
					10/14/2013 16:53	0917-173_Nc	13_10_14_1653_29_651	1	-2.187	1.745	0.472	0.098	1.70	0.283	0.555	2.20	-0.8090	0.163	-0.00600	0.01400	-0.72	0.530	5.985
					10/14/2013 16:54	0917-173_Nc	13_10_14_1654_30_471	1	-2.244	1.826	0.332	0.098	1.64	0.273	0.567	2.21	-0.914	0.164	0.00000	0.01300	-0.404	0.531	5.921
					10/14/2013 16:55	0917-173_Nc	13_10_14_1655_31_191	1	-4.435	1.769	0.590	0.098	1.71	0.274	0.605	2.22	-0.7930	0.163	0.00200	0.01400	-0.762	0.521	5.934
					10/14/2013 16:56	0917-173_Nc	13_10_14_1656_31_901	1	-2.9200	1.610	0.411	0.096	1.66	0.252	0.529	2.23	-0.8800	0.154	0.00000	0.01200	-0.6700	0.476	5.778
					10/14/2013 16:57	0917-173_Nc	13_10_14_1657_32_741	1	-2.3770	1.798	0.470	0.090	1.80	0.244	0.561	2.22	-0.812	0.155	-0.00500	0.01200	-0.17	0.506	5.778
					10/14/2013 16:58	0917-173_Nc	13_10_14_1658_33_491	1	-1.346	1.825	0.441	0.097	1.85	0.267	0.492	2.19	-0.963	0.162	-0.00200	0.01300	-0.49	0.537	5.911
					10/14/2013 16:59	0917-173_Nc	13_10_14_1659_34_201	1	-0.716	1.855	0.607	0.100	1.95	0.294	0.311	2.18	-0.603	0.167	-0.00200	0.01400	-1.166	0.538	6.034
					10/14/2013 17:00	0917-173_Nc	13_10_14_1700_34_961	1	-1.437	1.766	0.503	0.101	1.84	0.302	0.49	2.19	-0.8020	0.166	0.00200	0.0150	-1.2580	0.525	6.116
					10/14/2013 17:01	0917-173_Nc	13_10_14_1701_35_681	1	-4.44	1.826	0.441	0.098	1.86	0.304	0.42	2.17	-0.8460	0.165	-0.00200	0.0150	-0.398	0.543	6.205
					10/14/2013 17:02	0917-173_Nc	13_10_14_1702_36_361	1	-2.070	1.878	0.458	0.097	1.92	0.302	0.43	2.18	-0.943	0.165	0.00000	0.01400	-0.916	0.527	6.251
					10/14/2013 17:03	0917-173_Nc	13_10_14_1703_37_172	1	-2.853	1.834	0.411	0.101	1.74	0.288	0.522	2.20	-0.8880	0.168	0.00000	0.01400	-0.31	0.542	6.159
					10/14/2013 17:04	0917-173_Nc	13_10_14_1704_37_962	1	-2.04300	1.782	0.527	0.094	1.71	0.272	0.483	2.21	-0.719	0.160	0.00000	0.01300	-0.525	0.514	5.972
					10/14/2013 17:05	0917-173_Nc	13_10_14_1705_38_702	1	-2.276	1.712	0.713	0.096	1.93	0.268	0.420	2.21	-0.805	0.158	-0.00200	0.01300	-0.691	0.514	6.022
					10/14/2013 17:06	0917-173_Nc	13_10_14_1706_39_462	1	-2.868	1.780	0.525	0.100	1.89	0.271	0.52	2.19	-0.599	0.164	0.00000	0.01300	-0.9350	0.536	6.094
					10/14/2013 17:07	0917-173_Nc	13_10_14_1707_40_232	1	0.780	1.766	0.470	0.097	1.73	0.287	0.58	2.19	-0.863	0.160	-0.00300	0.01400	-0.327	0.518	6.062
					10/14/2013 17:08	0917-173_Nc	13_10_14_1708_41_042	1	-4.3950	1.846	0.662	0.101	1.79	0.299	0.543	2.18	-0.7360	0.168	0.00000	0.01500	-0.974	0.540	6.107
					10/14/2013 17:09	0917-173_Nc	13_10_14_1709_41_782	1	-1.100	1.794	0.639	0.104	1.78	0.293	0.407	2.19	-0.49300	0.169	-0.00200	0.01400	-1.0930	0.540	6.144
					10/14/2013 17:10	0917-173_Nc	13_10_14_1710_42_582	1	0.177	1.809	0.490	0.101	1.81	0.288	0.313	2.18	-0.7150	0.167	-0.00100	0.01400	-0.56	0.539	6.173
					10/14/2013 17:11	0917-173_Nc	13_10_14_1711_43_292	1	-2.7540	1.927	0.534	0.098	1.76	0.294	0.466	2.17	-0.6660	0.169	-0.00100	0.01400	0.09	0.557	6.226
					10/14/2013 17:12	0917-173_Nc	13_10_14_1712_42_992	1	-2.235	1.888	0.554	0.098	1.79	0.287	0.418	2.17	-0.622	0.167	0.00100	0.01400	-0.30	0.539	6.23
					10/14/2013 17:13	0917-173_Nc	13_10_14_1713_43_802	1	-2.120	1.865	0.511	0.102	1.72	0.286	0.436	2.17	-0.834	0.169	-0.00100	0.01400	-0.490	0.553	6.259
					10/14/2013 17:14	0917-173_Nc	13_10_14_1714_44_502	1	-1.142	1.849	0.545	0.101	1.68	0.283	0.529	2.18	-0.729	0.169	-0.00100	0.01400	-0.313	0.544	6.265
					10/14/2013 17:15	0917-173_Nc	13_10_14_1715_45_343	1	-2.342	1.743	0.515	0.098	1.77	0.271	0.475	2.20	-0.8040	0.162	-0.00100	0.01300	-0.62	0.527	6.214
					10/14/2013 17:16	0917-173_Nc	13_10_14_1716_46_033	1	-2.8980	1.777	0.603	0.095	1.74	0.274	0.555	2.20	-0.720	0.160	-0.00200	0.01300	-0.51	0.521	6.249
					10/14/2013 17:17	0917-173_Nc	13_10_14_1717_46_833	1	-3.477	1.918	0.467	0.096	1.83	0.286	0.501	2.19	-0.742	0.168	-0.00200	0.01400	-0.748	0.545	6.283
					10/14/2013 17:18	0917-173_Nc	13_10_14_1718_47_563	1	-4.253	1.830	0.494	0.100	1.97	0.291	0.64	2.18	-0.955	0.168	0.00200	0.01400	-0.33	0.538	6.384
					10/14/2013 17:19	0917-173_Nc	13_10_14_1719_48_383	1	-2.792	1.765	0.578	0.098	1.79	0.290	0.373	2.19	-0.947	0.164	0.00300	0.01400	0.10	0.522	6.378
					10/14/2013 17:20	0917-173_Nc	13_10_14_1720_49_093	1	-2.996	1.824	0.535	0.098	1.78	0.299	0.562	2.17	-0.896	0.166	-0.00100	0.01500	-0.19	0.541	6.396
					10/14/2013 17:21	0917-173_Nc	13_10_14_1721_49_883	1	-2.825	1.799	0.555	0.100	1.82	0.286	0.502	2.20	-0.806	0.167	-0.00400	0.01400	-0.463	0.546	6.45
					10/14/2013 17:22	0917-173_Nc	13_10_14_1722_50_683	1	-3.388	1.751	0.624	0.098	1.74	0.278	0.455	2.19	-0.74800	0.163	-0.00400	0.01300	-0.535	0.519	6.409
					10/14/2013 17:23	0917-173_Nc	13_10_14_1723_51_453	1	-2.4570	1.780	0.497	0.097	1.71	0.269	0.472	2.20	-0.6670	0.161	-0.00400	0.01300	-0.473	0.513	6.309
					10/14/2013 17:24	0917-173_Nc	13_10_14_1724_52_163	1	-2.112	1.608	0.495	0.091	1.53	0.242	0.614	2.23	-0.744	0.149	-0.00200	0.01200	-0.72	0.476	6.066
					10/14/2013 17:25	0917-173_Nc	13_10_14_1725_52_963	1	-3.277	1.541	0.3330	0.085	1.55	0.229	0.535	2.23	-0.808	0.142	-0.00700	0.01100	-0.163	0.457	5.86
					10/14/2013 17:26	0917-173_Nc	13_10_14_1726_53_674	1	-1.807	1.666	0.266	0.090	1.61	0.233	0.518	2.21	-0.598	0.150	-0.00400	0.01100	-1.081	0.482	5.868
					10/14/2013 17:27	0917-173_Nc	13_10_14_1727_54_454	1	-3.7270	1.685	0.509	0.093	1.75	0.242	0.662	2.23	-0.705	0.153	-0.00400	0.01100	0.113	0.500	5.927
					10/14/2013 17:28	0917-173_Nc	13_10_14_1728_55_304	1	-2.121	1.627	0.520	0.093	1.67	0.251	0.473	2.22	-0.700	0.153	-0.00800	0.01200	-0.4210	0.494	5.969
					10/14/2013 17:29	0917-173_Nc	13_10_14_1729_56_064	1	-3.567	1.834	0.684	0.097	1.65	0.268	0.498	2.22	-0.38400	0.165	-0.00400	0.01300	-0.766	0.526	6.014
					10/14/2013 17:32	0917-173_Nc	13_10_14_1732_06_400	1	-1.578	1.695	0.760	0.092	1.78	0.270	0.712	2.21	-0.746	0.155	-0.00200	0.01300	0.143	0.493	6.063
					10/14/2013 17:33	0917-173_Nc	13_10_14_1733_07_210	1	-2.2820	1.722	0.776	0.098	1.92	0.292	0.242	2.17	-0.772	0.161	-0.00200	0.01400	-0.23	0.511	6.316
					10/14/2013 17:34	0917-173_Nc	13_10_14_1734_07_900	1	-3.173	1.909	0.659	0.098	1.96	0.320	0.535	2.16	-0.850	0.167	0.00200	0.0150	-0.08	0.548	6.531
					10/14/2013 17:35	0917-173_Nc	13_10_14_1735_08_740	1	-5.131	1.932	0.737	0.102	2.11	0.334	0.256	2.13	-0.787	0.172	0.00000	0.0160	-0.344	0.568	6.677
					10/14/2013 17:36	0917-173_Nc	13_10_14_1736_09_450	1	-2.717	1.787	0.659	0.104	2.11	0.331	0.335	2.14	-0.535	0.169	-0.0010	0.0160	-1.108	0.543	6.743
					10/14/2013 17:37	0917-173_Nc	13_10_14_1737_10_280	1	-2.805	1.903	0.968	0.102	2.08	0.331	0.53	2.15	-0.599	0.171	0.00200	0.0160	-0.416	0.556	6.774
					10/14/2013 17:38	0917-173_Nc	13_10_14_1738_11_030	1	-2.905	1.892	0.764	0.105	2.07	0.314	0.323	2.14	-0.712	0.175	-0.00100	0.0160	-0.800	0.557	6.798
					10/14/2013 17:39	0917-173_Nc	13_10_14_1739_11_730	1	-2.64	1.849	0.596	0.101	1.98	0.311	0.229	2.15	-0.880	0.169	-0.00400	0.0150	-0.35	0.551	6.802
					10/14/2013 17:40	0917-173_Nc	13_10_14_1740_12_560	1	-4.082	1.867	0.528	0.097	1.94	0.302	0.50	2.18	-0.545	0.166	0.00000	0.0150	-0.147	0.530	6.798
					10/14/2013 17:41	0917-173_Nc	13_10_14_1741_13_270	1	-2.219	1.432	0.211	0.087	1.91	0.163	0.706	1.885	-1.807	0.152	0.0040	0.00800	-1.041	0.443	8.963
					10/14/2013 17:42	0917-173_Nc	13_10_14_1742_14_040	1	-0.250	1.059	-0.4080	0.100	0.207	0.0490	0.424	0.799	-3.37	0.167	-0.00600	0.00300	-1.333	0.398	11.435
					10/14/2013 17:43	0917-173_Nc	13_10_14_1743_14_781	1	-2.0370	1.076	-0.601	0.099	-0.007	0.0450	0.029	0.374	-3.81	0.171	-0.00500	0.00200	-1.06	0.411	11.421
					10/14/2013 17:44	0917-173_Nc	13_10_14_1744_15_531	1	1.726	1.006	-0.288	0.089	0.586	0.0510	0.3450	0.698	-2.94	0.145	0.0060	0.00300	-0.57	0.350	9.549
					10/14/2013 17:45	0917-173_Nc	13_10_14_1745_16_341	1	0.971	0.994	0.0760	0.061	0.441	0.0380	0.439	0.538	-0.3010	0.098	0.00300	0.00200	-1.04	0.312	2.991
					10/14/2013 17:46	0917-173_Nc	13_10_14_1746_16_981	1	0.247	0.984	0.0700	0.056	0.200	0.0330	0.287	0.229	0.0010	0.090	0.00100	0.00200	-0.184	0.295	1.162
					10/14/2013 17:47	0917-173_Nc	13_10_14_1747_17_691	1	-0.327	0.946	0.113	0.060	0.125	0.0310	0.06800	0.149	0.191	0.094	0.00	0.00200	-0.58	0.299	0.899
					10/14/2013 17:48	0917-173_Nc	13_10_14_1748_18_511	1	1.223	1.042	-0.086	0.056	0.0650	0.0320	0.329	0.1260	-0.1250	0.093	-0.00600	0.00200	0.145	0.308	0.842
			Stop		10/14/2013 17:49	0917-173_Nc	13_10_14_1749_19_221	1	2.282	1.087	0.079	0.054	0.154	0.0320	0.263	0.1270	0.212	0.092	-0.00600	0.00200	-0.317	0.316	0.827
					10/14/2013 17:50	0917-173_Nc	13_10_14_1750_20_001	1	2.652	1.055	-0.0440	0.059	0.202	0.0450	0.5820	0.860	0.115	0.096	-0.01300	0.00200	-0.579	0.319	0.837
					10/14/2013 17:51	0917-173_Nc	13_10_14_1751_20_821	1	2.2470	1.060	0.0070	0.064	0.081	0.0510	0.63000	0.998	0.114	0.106	-0.00600	0.00200	-0.18	0.331	0.609
					10/14/2013 17:52	0917-173_Nc	13_10_14_1752_21_531	1	1.489	1.063	0.231	0.063	0.173	0.0480	0.5470	1.053	0.206	0.102	0.00	0.00200	-0.362	0.333	0.688
					10/14/2013 17:53	0917-173_Nc	13_10_14_1753_22_351	1	2.2420	1.214	0.256	0.065	0.659	0.1030	0.7640	1.446	-0.286	0.109	-0.01	0.00500	0.187	0.354	1.945
					10/14/2013 17:54	0917-173_Nc	13_10_14_1754_23_051	1	-1.2010	1.610	0.571	0.084	1.70	0.245	0.684	2.21	-0.506	0.142	0.00000	0.01200	-1.238	0.464	4.764
					10/14/2013 17:55	0917-173_Nc	13_10_14_1755_23_872	1	-0.66600	1.780	0.667	0.099	2.17	0.296	0.57	2.22	-0.643	0.164	-0.00500	0.01400	-0.962	0.517	6.056
					10/14/2013 17:56	0917-173_Nc	13_10_14_1756_24_582	1	-2.6460	1.651	0.518	0.100	2.15	0.299	0.43	2.18	-0.7680	0.164	0.00000	0.0150	-0.75	0.513	6.38

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 17:57	0917-173_Nc	13_10_14_1757_25_402	1	-3.602	1.947	0.626	0.095	2.14	0.297	0.36	2.18	-0.8370	0.166	0.00100	0.01400	-0.17	0.544	6.441
Data	Run	3	Start	A	10/14/2013 17:58	0917-173_Nc	13_10_14_1758_26_092	1	-3.1490	1.704	0.585	0.098	2.08	0.293	0.292	2.18	-0.714	0.161	-0.00200	0.01400	-0.40	0.516	6.39
					10/14/2013 17:59	0917-173_Nc	13_10_14_1759_26_902	1	-1.329	1.735	0.603	0.099	2.12	0.283	0.48	2.19	-0.783	0.161	0.00000	0.01400	-0.216	0.513	6.332
					10/14/2013 18:00	0917-173_Nc	13_10_14_1800_27_632	1	-1.974	1.818	0.479	0.101	2.12	0.279	0.50	2.21	-0.665	0.168	-0.00200	0.01400	-0.857	0.530	6.326
					10/14/2013 18:01	0917-173_Nc	13_10_14_1801_28_432	1	-1.807	1.768	0.3970	0.098	2.17	0.271	0.45	2.20	-0.585	0.162	0.00000	0.01300	-0.790	0.527	6.371
					10/14/2013 18:02	0917-173_Nc	13_10_14_1802_29_182	1	-1.111	1.859	0.423	0.099	2.20	0.286	0.40	2.18	-0.8900	0.167	0.00200	0.01400	-0.329	0.536	6.478
					10/14/2013 18:03	0917-173_Nc	13_10_14_1803_29_932	1	-2.0990	1.861	0.523	0.097	2.14	0.296	0.295	2.19	-0.8260	0.165	0.00000	0.01400	-0.60	0.538	6.519
					10/14/2013 18:04	0917-173_Nc	13_10_14_1804_30_752	1	-3.953	1.776	0.445	0.104	2.23	0.298	0.192	2.17	-0.6510	0.170	-0.00100	0.01400	-0.50	0.540	6.551
					10/14/2013 18:05	0917-173_Nc	13_10_14_1805_31_502	1	-2.7370	1.914	0.494	0.100	2.14	0.301	0.41	2.18	-0.739	0.169	-0.00600	0.0150	-0.873	0.558	6.433
					10/14/2013 18:06	0917-173_Nc	13_10_14_1806_32_222	1	-2.066	1.773	0.560	0.101	2.09	0.271	0.49	2.21	-0.639	0.164	0.00000	0.01300	-0.790	0.532	6.248
					10/14/2013 18:07	0917-173_Nc	13_10_14_1807_33_033	1	-2.395	1.730	0.470	0.094	1.93	0.255	0.357	2.22	-0.795	0.158	-0.00300	0.01200	-0.198	0.518	6.117
					10/14/2013 18:08	0917-173_Nc	13_10_14_1808_33_783	1	-1.635	1.709	0.531	0.096	2.03	0.252	0.457	2.24	-0.838	0.159	-0.00100	0.01200	-0.17	0.517	6.034
					10/14/2013 18:09	0917-173_Nc	13_10_14_1809_34_493	1	-3.0400	1.720	0.447	0.097	2.15	0.245	0.396	2.23	-0.632	0.162	-0.00700	0.01200	-0.533	0.533	5.995
					10/14/2013 18:10	0917-173_Nc	13_10_14_1810_35_313	1	-0.586	1.858	0.577	0.097	2.10	0.262	0.479	2.20	-0.670	0.164	-0.00200	0.01300	-0.052	0.527	6.008
					10/14/2013 18:11	0917-173_Nc	13_10_14_1811_36_053	1	-2.219	1.761	0.777	0.098	2.14	0.273	0.256	2.21	-0.6820	0.162	0.00200	0.01400	-0.652	0.520	6.093
					10/14/2013 18:12	0917-173_Nc	13_10_14_1812_36_863	1	-4.078	1.787	0.738	0.097	2.25	0.274	0.179	2.19	-0.6440	0.162	-0.00600	0.01300	-0.6600	0.530	6.106
					10/14/2013 18:13	0917-173_Nc	13_10_14_1813_37_653	1	-2.653	1.834	0.751	0.099	2.25	0.279	0.161	2.19	-0.670	0.166	-0.00400	0.01300	-0.6820	0.546	6.137
					10/14/2013 18:14	0917-173_Nc	13_10_14_1814_38_393	1	-4.422	1.794	0.734	0.101	2.36	0.298	0.291	2.18	-0.6080	0.167	-0.00100	0.01400	-0.468	0.544	6.299
					10/14/2013 18:15	0917-173_Nc	13_10_14_1815_39_133	1	-2.2920	1.897	0.626	0.100	2.42	0.309	0.33	2.16	-0.714	0.168	0.00000	0.0150	-0.28	0.543	6.365
					10/14/2013 18:16	0917-173_Nc	13_10_14_1816_39_933	1	-4.348	1.888	0.531	0.100	2.27	0.309	0.53	2.17	-0.809	0.169	-0.00400	0.0150	-0.844	0.543	6.347
					10/14/2013 18:17	0917-173_Nc	13_10_14_1817_40_663	1	-1.4690	1.779	0.649	0.101	2.23	0.303	0.377	2.18	-0.777	0.167	0.00000	0.0150	-0.13	0.538	6.242
					10/14/2013 18:18	0917-173_Nc	13_10_14_1818_41_463	1	-0.988	1.904	0.627	0.102	2.22	0.289	0.241	2.20	-0.7620	0.171	0.00100	0.01400	-0.726	0.549	6.169
					10/14/2013 18:19	0917-173_Nc	13_10_14_1819_42_244	1	-1.060	1.835	0.576	0.100	2.12	0.278	0.288	2.19	-0.6980	0.167	0.00000	0.01400	-0.589	0.541	6.114
					10/14/2013 18:20	0917-173_Nc	13_10_14_1820_42_954	1	-2.204	1.739	0.450	0.098	2.07	0.277	0.457	2.21	-0.6700	0.163	-0.00100	0.01300	-0.03	0.526	6.027
					10/14/2013 18:21	0917-173_Nc	13_10_14_1821_43_794	1	-3.956	1.707	0.468	0.099	1.97	0.269	0.342	2.22	-0.747	0.162	-0.00500	0.01300	-0.458	0.520	5.977
					10/14/2013 18:22	0917-173_Nc	13_10_14_1822_44_554	1	-2.870	1.808	0.542	0.100	2.17	0.268	0.286	2.21	-0.814	0.166	-0.00400	0.01300	-0.29	0.539	5.917
					10/14/2013 18:23	0917-173_Nc	13_10_14_1823_45_304	1	-6.2540	1.777	0.728	0.099	2.10	0.272	0.395	2.21	-0.503	0.165	-0.01000	0.01300	-0.31	0.538	5.899
					10/14/2013 18:24	0917-173_Nc	13_10_14_1824_46_064	1	-1.300	1.704	0.796	0.098	2.17	0.269	0.450	2.22	-0.5460	0.160	0.00000	0.01300	-0.417	0.511	5.784
					10/14/2013 18:25	0917-173_Nc	13_10_14_1825_46_864	1	-1.5830	1.749	0.642	0.093	2.23	0.261	0.498	2.22	-0.6540	0.157	-0.00300	0.01200	-0.152	0.505	5.666
					10/14/2013 18:26	0917-173_Nc	13_10_14_1826_47_634	1	-2.090	1.774	0.621	0.097	2.09	0.260	0.500	2.24	-0.73300	0.161	-0.00500	0.01200	-0.202	0.519	5.593
					10/14/2013 18:27	0917-173_Nc	13_10_14_1827_48_244	1	-2.919	1.821	0.564	0.098	2.01	0.266	0.495	2.23	-0.783	0.163	-0.00300	0.01200	-0.770	0.532	5.433
					10/14/2013 18:28	0917-173_Nc	13_10_14_1828_49_064	1	-2.1720	1.796	0.735	0.094	1.95	0.258	0.509	2.25	-0.353	0.158	-0.00600	0.01300	-0.5900	0.517	5.229
					10/14/2013 18:29	0917-173_Nc	13_10_14_1829_49_814	1	-2.0000	1.717	0.699	0.095	1.86	0.255	0.538	2.25	-0.698	0.158	-0.00400	0.01200	-1.102	0.524	5.109
					10/14/2013 18:30	0917-173_Nc	13_10_14_1830_50_525	1	-1.712	1.719	0.583	0.097	1.96	0.260	0.535	2.24	-0.6430	0.160	-0.00700	0.01300	-0.157	0.507	5.19
					10/14/2013 18:31	0917-173_Nc	13_10_14_1831_51_325	1	-3.629	1.730	0.742	0.100	2.11	0.277	0.322	2.20	-0.6260	0.162	0.00100	0.01400	-0.536	0.531	5.28
					10/14/2013 18:32	0917-173_Nc	13_10_14_1832_52_055	1	-1.487	1.825	0.861	0.101	2.13	0.300	0.463	2.20	-0.6180	0.167	-0.00500	0.0150	-0.450	0.544	5.407
					10/14/2013 18:33	0917-173_Nc	13_10_14_1833_52_925	1	-3.055	1.928	0.706	0.101	2.20	0.321	0.386	2.17	-0.594	0.170	0.00100	0.0160	-0.499	0.541	5.617
					10/14/2013 18:34	0917-173_Nc	13_10_14_1834_53_625	1	-2.008	1.829	0.653	0.104	2.35	0.326	0.136	2.18	-0.610	0.171	-0.00200	0.0160	-0.47	0.547	5.845
					10/14/2013 18:35	0917-173_Nc	13_10_14_1835_54_365	1	-0.921	1.916	0.669	0.101	2.46	0.329	0.40	2.16	-0.505	0.170	-0.00400	0.0160	-0.37	0.557	6.095
					10/14/2013 18:36	0917-173_Nc	13_10_14_1836_55_185	1	-2.859	1.954	0.740	0.108	2.48	0.335	0.331	2.15	-0.760	0.179	-0.00100	0.0160	-1.154	0.575	6.2
					10/14/2013 18:37	0917-173_Nc	13_10_14_1837_55_925	1	-2.521	1.873	0.840	0.109	2.46	0.335	0.26	2.15	-0.574	0.177	0.00100	0.0160	-0.759	0.568	6.309
					10/14/2013 18:38	0917-173_Nc	13_10_14_1838_56_745	1	-3.915	1.862	0.605	0.101	2.32	0.316	0.248	2.18	-0.649	0.169	-0.00400	0.0150	-0.385	0.545	6.305
					10/14/2013 18:39	0917-173_Nc	13_10_14_1839_57_545	1	-4.353	1.841	0.574	0.101	2.24	0.306	0.237	2.19	-0.622	0.167	0.00100	0.0150	-0.084	0.548	6.246
					10/14/2013 18:40	0917-173_Nc	13_10_14_1840_58_315	1	-3.121	1.774	0.428	0.104	2.15	0.279	0.368	2.22	-0.6590	0.170	-0.00200	0.01300	-0.203	0.531	6.123
					10/14/2013 18:41	0917-173_Nc	13_10_14_1841_59_045	1	-3.140	1.740	0.416	0.098	2.21	0.265	0.249	2.22	-0.821	0.163	-0.00800	0.01200	0.01	0.536	6.074
					10/14/2013 18:42	0917-173_Nc	13_10_14_1842_59_866	1	-2.3240	1.813	0.647	0.097	2.18	0.255	0.154	2.22	-0.474	0.164	-0.00100	0.01200	-1.217	0.528	5.94
					10/14/2013 18:44	0917-173_Nc	13_10_14_1844_00_576	1	-3.407	1.750	0.509	0.093	2.14	0.245	0.495	2.23	-0.5460	0.157	-0.00500	0.01100	-0.760	0.513	5.834
					10/14/2013 18:45	0917-173_Nc	13_10_14_1845_01_296	1	-2.084	1.752	0.475	0.097	2.11	0.250	0.413	2.23	-0.596	0.161	-0.00700	0.01200	-0.997	0.515	5.902
					10/14/2013 18:46	0917-173_Nc	13_10_14_1846_02_146	1	-3.399	1.785	0.453	0.099	2.11	0.257	0.529	2.22	-0.822	0.162	-0.00600	0.01200	-0.066	0.527	5.895
					10/14/2013 18:47	0917-173_Nc	13_10_14_1847_02_896	1	-3.7590	1.670	0.722	0.096	2.03	0.259	0.403	2.23	-0.617	0.156	-0.00500	0.01300	-0.900	0.508	5.934
					10/14/2013 18:48	0917-173_Nc	13_10_14_1848_03_616	1	-3.379	1.822	0.776	0.096	2.09	0.265	0.512	2.22	-0.711	0.162	-0.00400	0.01300	-0.844	0.526	6.004
					10/14/2013 18:49	0917-173_Nc	13_10_14_1849_04_376	1	-0.399	1.748	0.94	0.096	2.05	0.275	0.409	2.23	-0.7790	0.159	-0.00200	0.01400	-0.16	0.518	6.042
					10/14/2013 18:50	0917-173_Nc	13_10_14_1850_05_206	1	-2.040	1.832	1.01	0.096	2.01	0.273	0.568	2.22	-0.666	0.161	-0.00600	0.01300	-0.786	0.522	5.964
					10/14/2013 18:51	0917-173_Nc	13_10_14_1851_05_936	1	-0.4940	1.749	0.949	0.094	1.87	0.268	0.603	2.23	-0.807	0.158	0.00100	0.01300	-0.202	0.522	5.923
					10/14/2013 18:52	0917-173_Nc	13_10_14_1852_06_736	1	-2.510	1.713	0.968	0.092	2.00	0.270	0.542	2.25	-0.700	0.154	-0.00400	0.01300	-0.901	0.501	5.895
					10/14/2013 18:53	0917-173_Nc	13_10_14_1853_06_456	1	-1.728	1.811	0.860	0.096	1.92	0.268	0.497	2.23	-0.718	0.161	-0.00300	0.01300	-0.30	0.513	5.945
					10/14/2013 18:54	0917-173_Nc	13_10_14_1854_07_266	1	-4.687	1.790	0.87	0.100	2.00	0.269	0.741	2.24	-0.513	0.164	-0.00600	0.01300	-1.017	0.545	5.98
					10/14/2013 18:55	0917-173_Nc	13_10_14_1855_07_977	1	-1.317	1.758	0.883	0.097	1.98	0.286	0.675	2.22	-0.652	0.162	-0.00100	0.01400	-0.74	0.525	6.163
					10/14/2013 18:56	0917-173_Nc	13_10_14_1856_08_787	1	-1.267	1.803	0.781	0.099	2.16	0.302	0.348	2.21	-0.7900	0.164	-0.00400	0.01500	-0.406	0.533	6.337
					10/14/2013 18:57	0917-173_Nc	13_10_14_1857_09_477	1	-2.090	1.813	0.767	0.103	2.13	0.305	0.626	2.22	-0.706	0.170	-0.00300	0.01500	-0.479	0.537	6.37
			Stop		10/14/2013 18:58	0917-173_Nc	13_10_14_1858_10_317	1	-2.067	1.825	0.580	0.103	2.23	0.303	0.564	2.19	-0.7150	0.171	-0.00200	0.0150	-0.466	0.547	6.457
					10/14/2013 18:59	0917-173_Nc	13_10_14_1859_11_037	1	-2.621	1.892	0.560	0.101	2.20	0.307	0.481	2.17	-0.6670	0.172	-0.00300	0.0150	-0.559	0.554	6.422
					10/14/2013 19:00	0917-173_Nc	13_10_14_1900_11_837	1	-1.8900	1.790	0.482	0.100	2.03	0.274	0.471	2.17	-0.835	0.167	-0.00500	0.01300	-0.824	0.533	6.593
					10/14/2013 19:01	0917-173_Nc	13_10_14_1901_12_537	1	1.903	1.081	-0.294	0.092	0.501	0.0750	0.636	1.370	-2.997	0.159	-0.00600	0.00400	-1.295	0.392	10.519
					10/14/2013 19:02	0917-173_Nc	13_10_14_1902_13_297	1	-1.0910	1.042	-0.4610	0.103	0.137	0.0440	0.372	0.499	-3.61	0.173	-0.00200	0.00200	-1.303	0.406	11.181
					10/14/2013 19:23	0917-173_Nc	13_10_14_1923_47_489	1	-2.6	1.6	0.072	0.084	0.998	1.47	0.0190	0.1030	0.2860	0.139	0.058	0.597	-0.483	0.463	-1.813
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_06_009	1	0.6	1.7	0.0350	0.085	0.657	1.56	-0.1170	0.1100	0.100	0.143	0.058	0.631	0.379	0.476	-1.948
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_24_509	1	-0.3	1.5	-0.017	0.081	0.348	1.60	-0.0600	0.1060	0.003	0.135	0.052	0.646	-0.624	0.448	-2.025
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_43_109	1	-1.8	1.5	-0.020	0.083	0.12	1.63	0.132	0.1080	0.243	0.137	0.064	0.654	0.347	0.448	-2.009
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_01_599	1	-5.1	1.3	-0.001	0.083	-0.06	1.64	-0.217	0.0960	0.0730	0.128	0.060	0.661	0.413	0.418	-2.054
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_20_119	1	-1.0	1.4	0.1690	0.081	-0.18	1.65	0.156	0.1080	0.053	0.129	0.058	0.660	0.56	0.429	-2.029
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_38_729	1	1.2	1.4	-0.3170	0.083	-0.03	1.65	-0.0770	0.1040	0.216	0.132	0.054	0.659	-1.132	0.433	-2.061
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_57_229	1	0.6	1.6	-0.0180	0.083	-0.14	1.65	-0.1080	0.1000	0.142	0.140	0.058	0.662	-0.083	0.467	-2.06
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_15_809	1	1.0	1.4	-0.103	0.086	-0.15	1.64	-0.0340	0.1220	0.325	0.136	0.049	0.660	-1.57	0.465	-2.056
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_34_299	1	1.5	1.6	-0.028	0.089	-0.05	1.65	-0.034	0.1030	0.249	0.147	0.060	0.661	-1.49	0.493	-2.069
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_52_849	1	-3.9	1.4	0.04500	0.083	-0.26	1.65	-0.03300	0.1020	0.155	0.134	0.051	0.662	-1.059	0.451	-2.06
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_11_399	1	-3.7	1.5	0.0040	0.088	-0.19	1.65	-0.0940	0.1010	0.212	0.138	0.058	0.660	-0.45	0.451	-2.071
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_29_919	1	0.9	1.6	-0.152	0.084	-0.19	1.65	0.0780	0.1050	0.057	0.138	0.055	0.658	-0.363	0.456	-2.054
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_48_529	1	-0.8	1.7	-0.103	0.082	-0.34	1.65	0.1060	0.1070	0.0760	0.140	0.058	0.660	-1.18	0.483	-2.052
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_15_364	1	5.230	2.425	-0.43	0.145	-0.1140	0.0900	-0.1750	0.168	-0.094	0.232	0.00600	0.00500	-0.67	0.73	-0.014
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_21_414	1	0.3120	2.695	0.514	0.148	0.043	0.0860	0.163	0.182	0.47	0.246	0.00100	0.00600	1.538	0.80	-0.014
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_27_624	1	1.33	2.615	0.059	0.154	-0.1480	0.0880	-0.291	0.173	-0.420	0.249	-0.00400	0.00600	-0.287	0.77	-0.004
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_33_844	1	4.8440	2.678	-0.349	0.151	-0.209	0.092	0.411	0.193	-0.245	0.245	-0.01400	0.00800	0.113	0.85	-0.004
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_40_084	1	-1.726	2.398	0.290	0.131	0.251	0.0910	0.1880	0.177	0.010	0.217	0.00400	0.00600	1.07	0.72	0.052
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_46_324	1	-0.200	2.781	0.052	0.142	-0.113	0.0900	-0.1080	0.202	-0.188	0.240	0.00500	0.00700	-1.03	0.81	-0.006
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_52_344	1	4.098	2.532	-0.2200	0.145	0.1010	0.0920	-0.032	0.192	0.097	0.234	0.0050	0.00600	0.702	0.78	0.028
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_58_604	1	-1.16	2.622	-0.0390	0.147	-0.03300	0.0890	-0.1600	0.176	0.63	0.239	0.00400	0.00600	-1.66	0.80	-0.01
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_04_744	1	1.097	2.612	-0.311	0.151	-0.01	0.0900	-0.123	0.218	-0.151	0.244	-0.00500	0.00700	-1.63	0.81	0.004
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_10_954	1	5.860	2.618	0.160	0.140	0.0850	0.094	-0.005	0.200	-0.274	0.231	-0.01	0.00600	0.76	0.79	-0.006
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_17_134	1	6.596	2.510	0.216	0.140	-0.084	0.0890	-0.335	0.229	-0.019	0.230	-0.00100	0.00400	0.351	0.74	0.006
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_23_254	1	2.364	2.498	-0.2840	0.136	0.1010	0.094	0.1640	0.241	-0.060	0.222	0.00900	0.00500	0.99	0.73	0.043
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_29_424	1	-1.083	2.456	0.0970	0.158	0.1320	0.0880	-0.0730	0.267	-0.053	0.246	-0.01	0.00500	-0.78	0.82	0.005
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_35_674	1	-2.489	2.793	-0.318	0.156	0.090	0.095	0.216	0.251	-0.155	0.250	0.00	0.00500	1.197	0.82	0.054
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_41_864	1	7.0060	2.621	0.0830	0.159	0.193	0.0900	-0.002	0.283	-0.473	0.250	0.00800	0.00700	-0.414	0.85	0.07
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_48_034	1	-4.0130	2.645	0.283	0.152	-0.251	0.0890	0.006	0.290	0.095	0.244	-0.01600	0.00600	1.225	0.81	0.013
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_54_154	1	-4.95	2.596	-0.0410	0.151	0.302	0.0890	-0.092	0.297	-0.1780	0.239	-0.00600	0.00600	-1.384	0.79	0.084
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_00_404	1	1.938	2.721	0.0190	0.144	0.122	0.0870	0.185	0.315	0.0900	0.236	-0.01200	0.00500	-0.7220	0.80	-0.007
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_06_605	1	0.628	2.506	-0.181	0.142	0.177	0.0930	0.0600	0.325	-0.160	0.230	-0.01400	0.00500	1.21	0.78	0.022
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_12_795	1	-2.194	2.746	0.363	0.144	-0.141	0.0960	-0.296	0.378	0.259	0.239	-0.01900	0.00500	-0.327	0.80	0.022
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_18_965	1	-2.283	2.721	-0.0210	0.154	0.05700	0.0920	0.2620	0.406	-0.016	0.249	-0.00700	0.00600	0.841	0.82	0.034
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_25_075	1	2.70	2.767	0.203	0.146	-0.0020	0.094	0.3840	0.362	0.775	0.241	0.00100	0.00500	-1.54	0.78	0.054
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_31_265	1	2.404	2.727	0.131	0.150	0.230	0.0930	-0.508	0.375	-0.073	0.244	0.00100	0.00500	1.13	0.80	0.045
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_37_425	1	1.836	2.609	-0.212	0.155	-0.0660	0.0900	0.1170	0.381	-0.198	0.250	-0.00600	0.00600	1.07	0.81	0.016
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_43_715	1	3.585	2.444	0.074	0.159	-0.0280	0.0820	-0.048	0.384	-0.01	0.248	-0.00300	0.00600	-3.49	0.80	0.045
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_49_875	1	10.514	2.518	0.0490	0.153	0.0310	0.0960	0.567	0.397	0.13	0.241	-0.00700	0.00600	-0.666	0.79	0.124
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_55_975	1	2.371	2.504	-0.528	0.138	0.2750	0.093	0.3230	0.380	-0.544	0.227	-0.00200	0.00600	0.334	0.74	0.059
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_02_155	1	-2.216	2.900	0.044	0.156	0.0520	0.115	0.400	0.993	-0.650	0.258	-0.01200	0.00700	-0.06	0.86	-0.102
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_08_405	1	0.997	2.980	0.325	0.158	0.2490	0.179	-2.695	2.67	-0.73	0.261	-0.02600	0.00800	1.17	0.91	0.414
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_14_605	1	-3.885	3.006	0.089	0.174	0.0760	0.156	-2.46	1.44	-0.16	0.280	-0.0020	0.00700	-0.71	0.94	-0.415
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_20_695	1	-5.296	3.16	0.473	0.179	-0.280	0.145	-0.74	1.11	-0.35	0.29	-0.0050	0.00800	-0.64	0.97	-1.134
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_26_895	1	-0.9640	2.81	0.035	0.164	-0.0720	0.172	-0.09	2.28	0.14	0.27	0.0000	0.0080	-0.61	0.90	-2.056
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_33_125	1	-6.324	2.90	-0.448	0.165	-0.4050	0.192	2.70	3.1	0.40	0.27	0.0150	0.0090	-1.03	0.90	-3.043
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_39_295	1	-4.850	3.33	-0.009	0.183	-0.2470	0.249	5.93	4.0	0.10	0.30	0.0080	0.0100	-1.88	1.00	-3.887
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_45_485	1	-5.190	3.23	0.290	0.168	-0.122	0.291	7.7	5.1	0.49	0.29	-0.0010	0.0100	-4.62	0.97	-4.894
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_51_575	1	-4.010	3.39	0.307	0.186	-0.287	0.328	10.5	5.4	0.89	0.31	0.0380	0.0120	-2.04	1.01	-5.599
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_57_765	1	-5.85	3.21	0.3510	0.187	-0.463	0.307	9.4	5.4	1.21	0.31	0.0150	0.0130	-3.14	1.02	-5.175
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_03_955	1	-6.105	3.29	-0.086	0.184	-0.240	0.293	9.9	5.0	0.13	0.30	0.0280	0.0110	-3.33	1.04	-5.105
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_10_235	1	-2.987	3.05	0.181	0.178	-0.5470	0.270	8.3	4.5	0.35	0.29	0.0350	0.0110	-2.89	0.99	-4.913
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_16_435	1	-1.57	3.16	-0.090	0.181	-0.223	0.251	6.73	4.5	0.78	0.29	0.0120	0.0100	-1.60	0.98	-4.569
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_22_425	1	-2.08	3.35	0.181	0.169	-0.076	0.269	5.82	4.8	0.83	0.29	0.0220	0.0120	-5.04	0.97	-4.137
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_28_715	1	4.355	3.17	-0.0300	0.170	-0.4230	0.252	5.9	4.6	0.50	0.28	0.0210	0.0090	-3.12	0.94	-4.242
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_34_905	1	-8.2330	3.17	0.255	0.177	-0.036	0.224	5.59	4.3	0.28	0.29	0.0100	0.0110	-1.70	1.00	-3.973
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_41_095	1	-10.413	3.28	-0.320	0.162	-0.2350	0.217	4.32	4.0	0.17	0.28	0.0060	0.0100	-1.63	0.97	-3.498
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_47_295	1	-0.955	3.07	0.004	0.179	-0.2700	0.193	4.57	3.4	0.16	0.29	0.0020	0.0100	-2.84	0.93	-2.944
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_53_375	1	-8.695	2.98	-0.236	0.176	-0.1640	0.187	3.39	2.99	0.11	0.28	0.0020	0.0090	-1.35	0.94	-2.82
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_59_555	1	-2.63	3.22	-0.108	0.164	-0.094	0.168	2.92	2.41	-0.53	0.28	0.0020	0.0080	0.16	0.95	-2.25
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_05_845	1	-7.765	2.74	0.391	0.174	0.095	0.147	0.42	1.91	0.35	0.28	-0.0030	0.0070	-2.42	0.84	-1.822
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_12_035	1	-6.63	2.93	0.361	0.181	-0.2380	0.130	-0.19	1.97	0.03	0.29	0.0100	0.0070	-1.16	0.97	-1.516
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_18_215	1	-8.290	3.07	0.085	0.155	0.1690	0.131	-1.63	1.51	-0.09	0.27	-0.0130	0.0080	0.27	0.89	-1.106
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_24_285	1	-4.27	3.178	0.187	0.170	-0.02800	0.125	1.84	1.53	-0.33	0.28	0.0100	0.00700	0.29	0.94	-0.885
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_30_475	1	-2.237	3.15	-0.219	0.167	-0.129	0.127	-1.02	1.32	-0.71	0.28	-0.0080	0.00700	0.527	0.94	-0.628
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_36_655	1	-4.671	2.76	-0.093	0.159	0.017	0.133	-1.74	1.17	-0.49	0.26	-0.0250	0.00600	0.70	0.86	-0.421
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_42_915	1	-4.6320	2.977	-0.023	0.149	0.125	0.130	-1.87	1.17	-0.25	0.25	-0.0020	0.00600	-0.37	0.86	-0.265
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_49_085	1	-1.336	2.833	0.329	0.172	-0.152	0.135	-1.99	1.31	-0.35	0.28	-0.0250	0.00700	0.857	0.91	0.052
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_55_165	1	-1.759	2.916	0.230	0.172	0.218	0.146	-3.794	1.69	-0.19	0.28	-0.0070	0.00600	1.70	0.90	0.388
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_01_355	1	-0.495	3.031	-0.151	0.158	0.404	0.149	-2.62	1.86	0.06	0.27	-0.03500	0.00700	-1.27	0.90	0.493
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_07_635	1	-6.4170	2.875	0.194	0.169	-0.0040	0.153	-2.78	1.83	-0.534	0.27	-0.02900	0.00700	1.34	0.90	0.625
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_13_805	1	1.590	2.759	0.101	0.161	-0.284	0.157	-3.381	2.15	-0.07	0.26	-0.0030	0.00800	-0.83	0.87	0.749
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_19_995	1	-2.374	2.870	0.1470	0.160	0.0660	0.157	-3.126	2.30	-0.38	0.26	-0.0330	0.00700	-0.60	0.90	0.861
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_26_075	1	-9.863	2.816	-0.1860	0.150	0.0800	0.169	-3.077	2.61	-0.23	0.25	-0.0140	0.00800	1.08	0.86	1.018
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_32_285	1	3.050	2.811	0.2290	0.161	0.1530	0.166	-2.06	2.87	-0.27	0.26	-0.0210	0.00800	1.50	0.87	1.028
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_38_465	1	-1.314	2.820	0.102	0.158	-0.150	0.176	-4.010	2.90	-0.53	0.26	-0.02200	0.00800	0.424	0.88	1.238
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_44_745	1	0.302	2.925	0.610	0.162	-0.055	0.175	-2.844	3.15	-0.21	0.27	-0.0180	0.00700	-0.50700	0.88	1.335
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_50_775	1	-1.481	2.921	0.3440	0.161	0.2150	0.176	-3.587	3.32	-0.31	0.269	-0.0180	0.00900	-0.24	0.89	1.391
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_57_045	1	-7.71	4.061	0.388	0.157	0.3160	0.183	1.904	1.37	0.375	0.380	-0.02400	0.00700	2.276	0.86	1.418
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_03_195	1	-11.45	4.098	-0.331	0.217	0.027	0.189	2.211	1.13	-0.671	0.27	-0.0240	0.00700	-4.215	1.22	1.469
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_09_385	1	0.410	3.223	0.07500	0.159	0.2920	0.178	1.742	0.99	-0.775	0.275	-0.0080	0.00700	0.76	0.96	1.7
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_15_565	1	-7.5360	4.207	0.3820	0.161	0.369	0.199	1.070	0.89	0.762	0.380	-0.01800	0.00800	0.43	0.91	1.551
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_21_725	1	-8.463	3.870	0.365	0.167	0.2160	0.200	1.043	0.70	0.07	0.355	-0.02300	0.00600	0.614	0.95	1.767

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_27_905	1	-10.160	3.735	0.241	0.152	0.006	0.201	0.602	0.64	-0.859	0.254	-0.0200	0.00900	2.40	0.87	1.751
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_34_085	1	-13.458	3.902	0.727	0.158	0.290	0.205	1.101	0.61	0.790	0.348	-0.0160	0.00800	0.10	0.92	1.739
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_40_265	1	-9.697	3.600	0.244	0.167	0.160	0.208	0.668	0.65	0.335	0.333	-0.01500	0.00800	1.0680	0.87	1.741
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_46_545	1	-12.356	3.566	0.531	0.159	-0.513	0.150	1.091	0.70	0.057	0.333	-0.01800	0.00800	1.775	0.87	1.884
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_52_605	1	-3.93	3.587	-0.169	0.192	-0.28200	0.158	1.071	0.80	-0.147	0.317	-0.01800	0.00900	-1.46	1.07	-0.366
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_58_785	1	-12.796	3.578	-0.2390	0.215	-0.2550	0.155	1.045	0.93	-0.0610	0.342	-0.0230	0.00900	-1.24	1.10	-0.301
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_05_005	1	-1.131	3.599	-0.318	0.195	0.080	0.144	0.929	0.89	0.20	0.319	-0.02400	0.00900	-2.537	1.07	-0.246
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_11_245	1	-8.7220	3.321	-0.038	0.195	-0.14200	0.143	0.997	1.06	0.311	0.314	-0.03600	0.00800	-1.29	1.03	-0.243
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_17_425	1	-15.97	3.631	-0.080	0.187	-0.283	0.154	0.639	1.02	-0.048	0.317	-0.03200	0.00800	-3.07	1.07	-0.156
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_23_505	1	-8.18	3.569	0.04100	0.186	-0.311	0.144	0.466	1.04	-0.030	0.311	-0.00700	0.00900	-1.579	1.01	-0.18
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_29_645	1	-4.355	3.493	-0.143	0.188	-0.1550	0.153	0.612	1.08	0.135	0.310	-0.01700	0.00800	-0.58	1.05	-0.148
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_35_905	1	-4.370	3.361	0.207	0.193	-0.2040	0.153	0.61	1.13	-0.011	0.311	-0.03200	0.00900	-0.69	1.02	-0.064
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_42_075	1	-7.705	3.704	0.050	0.194	-0.0980	0.148	0.901	1.13	0.14	0.324	-0.02800	0.00800	-4.407	1.09	-0.082
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_48_245	1	-10.851	3.361	0.084	0.192	-0.2490	0.151	1.089	1.16	0.42	0.309	-0.01700	0.00900	-4.62	1.03	-0.074
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_54_325	1	-10.443	3.363	-0.154	0.190	-0.1750	0.155	1.146	1.18	-0.433	0.308	-0.02	0.00900	0.258	1.03	-0.107
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_00_595	1	-15.919	3.506	-0.152	0.195	-0.0120	0.145	1.162	1.12	-0.21	0.325	-0.00500	0.00900	-0.640	1.08	-0.128
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_06_775	1	-5.183	3.431	-0.391	0.180	-0.295	0.154	0.867	1.16	-0.420	0.303	-0.03400	0.00800	-2.121	1.00	-0.103
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_12_935	1	0.197	3.523	-0.136	0.190	-0.17200	0.155	1.122	1.30	-0.0740	0.312	-0.01800	0.00800	-1.8920	1.05	-0.049
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_19_205	1	-10.618	3.267	-0.069	0.195	-0.241	0.147	1.518	1.31	0.356	0.307	-0.02700	0.00800	-1.913	0.96	-0.004
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_25_285	1	-10.695	3.482	0.043	0.191	-0.154	0.148	0.17	1.25	-0.227	0.316	-0.02900	0.00800	-0.90	1.06	0.099
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_31_435	1	-2.55	3.245	0.174	0.178	-0.1150	0.154	1.355	1.37	-0.367	0.294	-0.03000	0.00800	-1.03	0.99	0.042
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_37_715	1	1.053	3.275	0.170	0.190	-0.142	0.150	1.211	1.44	-0.464	0.307	-0.03100	0.00800	-1.349	1.03	0.153
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_43_905	1	-9.903	3.226	-0.037	0.173	-0.108	0.151	0.722	1.50	0.377	0.285	-0.01700	0.00800	-1.19	0.94	0.072
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_50_095	1	-3.886	3.237	0.036	0.173	-0.363	0.148	0.678	1.54	0.57	0.286	-0.01800	0.00700	-2.84	0.96	0.217
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_56_175	1	-5.825	3.430	-0.00400	0.176	-0.0460	0.154	1.185	1.656	-0.683	0.294	-0.00500	0.00700	-1.27	0.99	0.236
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_02_365	1	-6.7570	3.323	-0.427	0.170	0.0950	0.140	0.56	1.717	-0.426	0.285	-0.02500	0.00700	0.999	0.98	0.132
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_08_595	1	-4.070	3.108	-0.076	0.174	0.0640	0.143	1.298	1.728	0.026	0.282	-0.02200	0.00900	-1.853	0.96	0.232
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_14_785	1	-2.85	3.079	-0.004	0.165	-0.1470	0.147	1.164	1.746	-0.214	0.269	-0.01100	0.00800	-1.652	0.92	0.25
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_20_855	1	-0.885	2.946	0.200	0.175	0.03800	0.154	0.935	1.784	0.441	0.277	-0.02000	0.00700	-0.503	0.88	0.223
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_27_035	1	-4.939	3.190	-0.238	0.181	-0.112	0.151	1.368	1.747	-0.210	0.295	-0.02100	0.00800	0.84	0.99	0.299
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_33_235	1	1.59	3.160	-0.476	0.165	-0.250	0.147	0.521	1.698	-0.3460	0.276	-0.02100	0.00800	-1.075	0.93	0.196
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_39_435	1	-9.258	3.039	0.148	0.187	0.136	0.145	1.144	1.727	0.150	0.297	-0.03	0.00800	-1.747	0.98	0.228
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_45_635	1	-0.0160	3.163	0.409	0.192	-0.327	0.150	0.447	1.716	-0.14	0.306	-0.01600	0.00700	-0.684	0.98	0.344
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_51_825	1	-3.31	3.466	-0.099	0.178	0.1450	0.157	1.013	1.692	-0.0400	0.299	-0.0080	0.00800	-1.099	1.00	0.277
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_58_005	1	-1.118	2.908	-0.0130	0.179	-0.258	0.157	0.944	1.705	-0.06	0.279	-0.02	0.00700	-1.295	0.94	0.219
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_04_185	1	-5.076	3.245	0.2180	0.173	-0.1090	0.146	0.825	1.715	-0.028	0.288	-0.02700	0.00800	-2.61	0.99	0.227
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_10_375	1	-7.40	3.256	0.0170	0.181	-0.1200	0.138	0.987	1.709	-0.444	0.298	-0.02200	0.00800	-0.88	0.98	0.262
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_16_615	1	-3.587	3.105	0.176	0.171	0.0240	0.146	1.335	1.746	-0.437	0.280	-0.00700	0.00700	0.063	0.98	0.311
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_22_685	1	-8.753	3.169	-0.0650	0.182	-0.237	0.151	1.315	1.725	0.116	0.298	-0.02900	0.00800	-1.05	1.01	0.282
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_28_855	1	-7.172	3.184	-0.2210	0.171	-0.1670	0.151	0.40	1.737	-0.35	0.285	-0.01200	0.00800	-0.19	0.95	0.273
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_35_135	1	-9.754	3.062	-0.00500	0.163	-0.113	0.156	0.677	1.731	-0.213	0.268	-0.01400	0.00800	-0.28	0.90	0.19
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_41_325	1	-9.091	3.207	0.142	0.169	-0.1640	0.146	1.043	1.794	-0.06	0.283	-0.02200	0.00700	-1.60	0.94	0.276
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_47_515	1	-9.044	3.362	0.1600	0.170	-0.069	0.153	0.497	1.681	0.12	0.288	-0.00200	0.00700	-2.011	0.98	0.311
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_53_595	1	-8.819	2.931	0.0340	0.164	-0.075	0.140	0.943	1.764	0.072	0.271	-0.02	0.00800	-0.75	0.89	0.326
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_59_795	1	-2.896	3.173	-0.125	0.175	0.006	0.151	0.425	1.802	-0.4180	0.285	-0.01700	0.00700	-0.90	0.96	0.301
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_05_975	1	-11.031	3.252	0.409	0.170	0.144	0.150	0.761	1.803	-0.234	0.284	-0.03400	0.00700	1.09	0.93	0.258
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_12_155	1	-7.126	3.156	-0.0470	0.176	-0.2320	0.146	0.951	1.824	0.042	0.286	-0.0340	0.00700	-1.77	0.95	0.286
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_18_405	1	-12.77	3.015	-0.1600	0.172	-0.201	0.144	0.913	1.837	0.335	0.283	-0.01000	0.00700	-1.81	0.97	0.311
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_24_465	1	-2.931	2.954	0.222	0.174	-0.120	0.158	0.870	1.829	0.245	0.280	-0.01800	0.00800	-2.01	0.92	0.321
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_30_645	1	-8.5230	3.236	0.163	0.171	-0.0380	0.147	1.142	1.777	-0.285	0.286	-0.01800	0.00700	-0.75	0.97	0.327
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_36_925	1	-2.011	2.926	0.1720	0.169	-0.1510	0.148	0.774	1.856	-0.05	0.271	-0.02800	0.00800	-1.40	0.84	0.294
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_43_035	1	-1.633	2.971	0.163	0.171	-0.02200	0.150	0.626	1.900	0.513	0.275	-0.01000	0.00700	-0.169	0.90	0.33
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_49_235	1	-6.832	2.870	-0.449	0.161	-0.0880	0.149	0.837	1.813	-0.32	0.262	-0.01700	0.00800	-0.988	0.88	0.331
Data	MDC	1	Start		10/14/2013 19:53	0917-173_Nc	13_10_14_1953_39_775	1	-4.0370	1.884	0.0260	0.105	-0.0930	0.1220	0.849	1.895	0.032	0.171	-0.02	0.00500	-1.602	0.569	0.359
					10/14/2013 19:54	0917-173_Nc	13_10_14_1954_40_496	1	-4.7340	1.897	0.110	0.106	-0.0570	0.1220	0.732	1.898	-0.0670	0.173	-0.02000	0.00500	-1.178	0.574	0.368
					10/14/2013 19:55	0917-173_Nc	13_10_14_1955_41_326	1	-3.3380	1.773	0.0170	0.103	-0.0600	0.1250	0.828	1.913	-0.239	0.166	-0.02	0.00500	-0.923	0.548	0.366
					10/14/2013 19:56	0917-173_Nc	13_10_14_1956_42_036	1	-3.244	2.017	-0.060	0.107	-0.127	0.1240	0.625	1.893	0.011	0.177	-0.02200	0.00500	-2.004	0.592	0.369
					10/14/2013 19:57	0917-173_Nc	13_10_14_1957_42_786	1	-4.015	1.888	0.1300	0.104	-0.0730	0.1210	0.734	1.914	-0.078	0.171	-0.02	0.00500	-1.277	0.576	0.415
					10/14/2013 19:58	0917-173_Nc	13_10_14_1958_43_596	1	-2.2260	1.855	0.0480	0.106	-0.0070	0.1220	0.803	1.886	-0.123	0.171	-0.02100	0.00500	-0.980	0.555	0.396
			Stop		10/14/2013 19:59	0917-173_Nc	13_10_14_1959_44_366	1	-2.589	1.841	0.069	0.105	0.0240	0.1210	0.780	1.901	-0.2040	0.170	-0.01800	0.00500	-0.7550	0.559	0.37
					10/15/2013 7:51	0917-173_Nc	13_10_15_0751_28_631	1	1.8	1.5	-0.166	0.082	0.02	1.52	-0.11000	0.0910	0.085	0.133	0.058	0.613	-0.544	0.427	-1.845
					10/15/2013 7:51	0917-173_Nc	13_10_15_0751_47_251	1	0.9	1.6	0.008	0.084	-0.17	1.59	0.1030	0.1010	0.150	0.140	0.054	0.639	-0.365	0.469	-1.955
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_05_741	1	0.1	1.6	0.1030	0.087	-0.29	1.62	0.148	0.1010	0.098	0.142	0.065	0.650	0.425	0.460	-1.978
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_24_331	1	1.1	1.5	-0.08800	0.079	-0.44	1.64	0.0910	0.1020	-0.062	0.130	0.059	0.656	0.44	0.422	-2.012
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_42_811	1	3.8	1.5	-0.087	0.085	-0.34	1.64	-0.11300	0.1010	-0.137	0.136	0.047	0.658	-0.03	0.470	-2.029
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_01_311	1	2.1	1.3	0.175	0.082	-0.29	1.65	-0.1380	0.1020	0.07700	0.129	0.063	0.662	-0.048	0.424	-2.002
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_19_911	1	2.0	1.5	0.073	0.087	-0.36	1.65	-0.167	0.1200	0.168	0.138	0.058	0.659	0.273	0.450	-2.002
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_38_392	1	-3.8	1.6	0.0050	0.080	-0.41	1.65	-0.1270	0.0970	0.044	0.137	0.061	0.656	-0.419	0.459	-2.032
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_56_902	1	-4.2	1.5	-0.102	0.085	-0.50	1.65	0.0020	0.1130	-0.022	0.138	0.054	0.660	1.40	0.446	-1.995
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_15_522	1	1.4	1.6	0.047	0.085	-0.42	1.66	0.1400	0.1050	0.0440	0.140	0.060	0.658	0.050	0.469	-2.02
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_34_022	1	1.0	1.6	-0.050	0.084	-0.45	1.65	-0.1750	0.0950	0.127	0.137	0.049	0.663	-0.635	0.459	-2.009
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_52_562	1	-0.5	1.5	0.009	0.084	-0.43	1.65	-0.351	0.1030	0.391	0.136	0.047	0.660	0.060	0.470	-2.013
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_11_052	1	0.2	1.5	-0.048	0.074	-0.43	1.66	0.058	0.1100	0.058	0.126	0.064	0.661	0.3340	0.420	-2.002
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_29_642	1	-3.2	1.4	-0.154	0.089	-0.44	1.65	0.096	0.1060	-0.017	0.137	0.055	0.663	0.144	0.434	-2.023
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_48_232	1	-1.4	1.6	-0.114	0.084	-0.50	1.65	-0.275	0.1030	-0.060	0.138	0.052	0.659	0.43	0.444	-2.027
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_06_712	1	-2.1	1.4	0.042	0.084	-0.33	1.65	-0.0340	0.1010	0.131	0.134	0.057	0.659	0.020	0.423	-2.029
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_25_332	1	-0.4	1.4	0.094	0.086	-0.49	1.65	-0.114	0.0930	0.243	0.136	0.061	0.660	0.815	0.433	-1.998
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_43_842	1	-0.6	1.6	-0.088	0.083	-0.46	1.65	0.109	0.1040	-0.004	0.138	0.057	0.658	1.324	0.454	-1.991
					10/15/2013 7:57	0917-173_Nc	13_10_15_0757_02_292	1	-0.5	1.4	-0.032	0.089	-0.50	1.65	-0.1740	0.0980	-0.138	0.140	0.053	0.658	0.49	0.446	-1.987
					10/15/2013 7:57	0917-173_Nc	13_10_15_0757_20_952	1	1.4	1.5	-0.069	0.087	-0.45	1.65	0.123	0.0990	0.262	0.137	0.056	0.658	-0.169	0.441	-1.999
					10/15/2013 9:06	0917-173_Nc	13_10_15_0906_30_678	1	2.016	1.109	0.031	0.069	1.78	0.0750	0.664	1.613	-0.753	0.114	0.00	0.00200	-0.40	0.356	5.033
					10/15/2013 9:07	0917-173_Nc	13_10_15_0907_30_378	1	-0.352	1.115	-0.013	0.066	2.10	0.0760	0.510	1.648	-0.573	0.113	-0.00300	0.00200	-1.011	0.349	5.504
					10/15/2013 9:08	0917-173_Nc	13_10_15_0908_31_128	1	1.312	1.146	0.045	0.067	1.94	0.0780	0.540	1.637	-0.517	0.114	-0.00700	0.00300	-0.77	0.366	5.14
					10/15/2013 9:09	0917-173_Nc	13_10_15_0909_31_938	1	2.826	1.134	0.143	0.064	1.93	0.0790	0.522	1.632	-0.461	0.109	-0.00100	0.00300	-0.842	0.350	4.8
					10/15/2013 9:10	0917-173_Nc	13_10_15_0910_32_668	1	1.878	1.078	0.16100	0.067	2.31	0.0810	0.496	1.645	-0.5940	0.112	-0.00200	0.00200	-0.322	0.340	5.483
Data	Run	4	Start	A	10/15/2013 9:11	0917-173_Nc	13_10_15_0911_33_428	1	-0.297	1.117	0.026	0.070	2.72	0.0860	0.551	1.672	-0.788	0.118	-0.00400	0.00300	0.18	0.362	6.376
					10/15/2013 9:12	0917-173_Nc	13_10_15_0912_34_178	1	2.267	1.224	0.089	0.072	2.50	0.0840	0.548	1.670	-0.6770	0.120	-0.00400	0.00300	-0.821	0.377	5.402
					10/15/2013 9:13	0917-173_Nc	13_10_15_0913_34_978	1	-2.199	1.136	0.033	0.066	2.56	0.0850	0.709	1.681	-0.447	0.118	0.00	0.00200	-1.11	0.349	5.394
					10/15/2013 9:14	0917-173_Nc	13_10_15_0914_35_708	1	-0.4960	1.076	0.054	0.068	2.42	0.0820	0.498	1.666	-0.634	0.112	0.00000	0.00200	-0.46	0.339	4.964
					10/15/2013 9:15	0917-173_Nc	13_10_15_0915_36_448	1	0.879	1.119	0.0620	0.063	2.43	0.0840	0.440	1.669	-0.452	0.112	-0.00600	0.00300	-0.87	0.330	4.892
					10/15/2013 9:16	0917-173_Nc	13_10_15_0916_37_198	1	1.8050	1.197	-0.039	0.073	2.69	0.0820	0.552	1.683	-0.589	0.120	0.00	0.00200	-0.50	0.374	5.58
					10/15/2013 9:17	0917-173_Nc	13_10_15_0917_37_999	1	0.6580	1.177	0.0700	0.066	2.62	0.0840	0.477	1.688	-0.504	0.113	-0.00300	0.00200	-0.846	0.343	5.639
					10/15/2013 9:18	0917-173_Nc	13_10_15_0918_38_749	1	-0.816	1.213	0.092	0.068	2.76	0.0840	0.574	1.675	-0.726	0.117	-0.00300	0.00300	-0.75	0.375	5.722
					10/15/2013 9:19	0917-173_Nc	13_10_15_0919_39_499	1	1.276	1.071	0.0340	0.063	2.82	0.0830	0.688	1.693	-0.521	0.110	-0.00300	0.00300	-0.681	0.328	5.676
					10/15/2013 9:20	0917-173_Nc	13_10_15_0920_40_209	1	-1.244	1.150	0.037	0.068	2.75	0.0830	0.7490	1.694	-0.596	0.117	-0.00700	0.00300	-0.56	0.348	5.495
					10/15/2013 9:21	0917-173_Nc	13_10_15_0921_41_019	1	1.579	1.251	0.0120	0.072	2.74	0.0860	0.507	1.691	-0.6130	0.122	-0.00200	0.00300	-0.565	0.372	5.337
					10/15/2013 9:22	0917-173_Nc	13_10_15_0922_41_779	1	0.3140	1.234	0.138	0.069	2.86	0.0840	0.574	1.700	-0.7880	0.121	-0.00500	0.00300	-0.10	0.369	6.155
					10/15/2013 9:23	0917-173_Nc	13_10_15_0923_42_539	1	1.0170	1.163	-0.0190	0.067	2.73	0.0840	0.380	1.692	-0.732	0.118	-0.00100	0.00300	-0.41	0.353	6.167
					10/15/2013 9:24	0917-173_Nc	13_10_15_0924_43_249	1	-1.223	1.059	0.116	0.070	2.42	0.0820	0.522	1.688	-0.78600	0.114	0.00000	0.00300	0.35	0.360	5.208
					10/15/2013 9:25	0917-173_Nc	13_10_15_0925_44_059	1	1.476	1.121	0.0140	0.068	2.47	0.0810	0.568	1.661	-0.598	0.115	0.00000	0.00200	-0.51	0.347	5.133
					10/15/2013 9:26	0917-173_Nc	13_10_15_0926_44_759	1	-0.829	1.134	-0.042	0.068	2.56	0.0810	0.556	1.686	-0.675	0.113	0.00	0.00300	-0.57	0.347	5.338
					10/15/2013 9:27	0917-173_Nc	13_10_15_0927_45_529	1	-1.624	1.166	-0.081	0.069	2.51	0.0850	0.623	1.669	-0.569	0.116	-0.00300	0.00300	-1.06	0.363	5.345
					10/15/2013 9:28	0917-173_Nc	13_10_15_0928_46_300	1	1.723	1.112	0.022	0.067	2.48	0.0810	0.457	1.681	-0.625	0.114	-0.00300	0.00300	-0.52	0.355	5.069
					10/15/2013 9:29	0917-173_Nc	13_10_15_0929_47_100	1	1.7280	1.153	-0.02	0.064	2.54	0.0820	0.543	1.662	-0.650	0.109	0.00000	0.00200	-0.12	0.349	4.991
					10/15/2013 9:30	0917-173_Nc	13_10_15_0930_47_900	1	-0.240	1.171	0.047	0.070	2.42	0.0800	0.438	1.670	-0.6360	0.116	-0.00400	0.00300	-0.101	0.360	4.704
					10/15/2013 9:31	0917-173_Nc	13_10_15_0931_48_670	1	1.250	1.024	0.110	0.069	2.73	0.0810	0.616	1.668	-0.668	0.111	0.00200	0.00300	-0.17	0.330	5.27
					10/15/2013 9:32	0917-173_Nc	13_10_15_0932_49_420	1	0.8500	1.154	-0.002	0.066	2.80	0.0840	0.567	1.677	-0.650	0.113	-0.00200	0.00300	-0.22	0.363	5.292
					10/15/2013 9:33	0917-173_Nc	13_10_15_0933_50_130	1	-0.315	1.103	0.141	0.066	2.90	0.0840	0.482	1.681	-0.764	0.109	-0.00700	0.00300	-0.54	0.333	5.239
					10/15/2013 9:34	0917-173_Nc	13_10_15_0934_50_930	1	3.0710	1.165	0.0000	0.067	2.56	0.0840	0.539	1.677	-0.609	0.114	-0.00500	0.00200	-0.660	0.350	4.416
					10/15/2013 9:35	0917-173_Nc	13_10_15_0935_51_710	1	-0.430	1.175	0.067	0.068	2.68	0.0830	0.510	1.675	-0.690	0.115	0.00100	0.00300	-0.38	0.357	4.553
					10/15/2013 9:36	0917-173_Nc	13_10_15_0936_52_510	1	-1.2160	1.073	0.102	0.066	2.49	0.0830	0.480	1.662	-0.496	0.110	-0.00300	0.00200	-0.35	0.355	4.287
					10/15/2013 9:37	0917-173_Nc	13_10_15_0937_53_310	1	0.520	1.109	0.045	0.063	2.42	0.0830	0.362	1.664	-0.520	0.107	-0.00100	0.00300	-0.73	0.340	4.103
					10/15/2013 9:38	0917-173_Nc	13_10_15_0938_54_040	1	0.581	1.102	-0.0520	0.0650	2.61	0.0830	0.470	1.666	-0.645	0.110	-0.00300	0.00200	-0.402	0.343	4.774
					10/15/2013 9:39	0917-173_Nc	13_10_15_0939_54_760	1	-0.5150	1.013	0.079	0.0620	2.66	0.0820	0.394	1.684	-0.706	0.103	-0.00600	0.00300	-0.152	0.323	4.93
					10/15/2013 9:40	0917-173_Nc	13_10_15_0940_55_571	1	-0.9070	1.160	0.064	0.066	2.45	0.0820	0.436	1.673	-0.492	0.112	-0.00200	0.00300	-0.75	0.352	4.502
					10/15/2013 9:41	0917-173_Nc	13_10_15_0941_56_301	1	0.995	1.177	0.1220	0.068	2.45	0.0810	0.558	1.680	-0.555	0.115	-0.00300	0.00300	-0.79	0.355	4.511
					10/15/2013 9:42	0917-173_Nc	13_10_15_0942_57_111	1	-0.680	1.144	-0.0250	0.067	2.65	0.0830	0.622	1.679	-0.710	0.110	-0.00800	0.00200	-0.12	0.345	4.586
					10/15/2013 9:43	0917-173_Nc	13_10_15_0943_57_921	1	1.4540	1.089	0.0800	0.066	2.54	0.0850	0.495	1.677	-0.758	0.109	-0.00100	0.00300	-0.30	0.328	4.462
					10/15/2013 9:44	0917-173_Nc	13_10_15_0944_58_691	1	0.472	1.009	0.0220	0.065	2.44	0.0800	0.506	1.669	-0.485	0.106	-0.00200	0.00200	-0.19	0.311	4.498
					10/15/2013 9:45	0917-173_Nc	13_10_15_0945_59_421	1	0.645	1.133	0.065	0.065	2.51	0.0810	0.6370	1.679	-0.376	0.111	-0.00200	0.00300	-0.65	0.351	4.433
					10/15/2013 9:47	0917-173_Nc	13_10_15_0947_00_071	1	0.998	1.144	0.0490	0.065	2.49	0.0810	0.608	1.666	-0.492	0.110	-0.00100	0.00300	-1.000	0.345	4.359
					10/15/2013 9:48	0917-173_Nc	13_10_15_0948_00_871	1	-0.3200	1.110	0.040	0.070	2.75	0.0850	0.457	1.674	-0.545	0.114	-0.00600	0.00300	-0.733	0.351	4.875
					10/15/2013 9:49	0917-173_Nc	13_10_15_0949_01_631	1	0.647	1.199	0.017	0.069	2.69	0.0830	0.564	1.693	-0.757	0.118	-0.01000	0.00200	-0.53	0.367	5.071
					10/15/2013 9:50	0917-173_Nc	13_10_15_0950_02_421	1	0.4850	1.101	-0.046	0.065	2.63	0.0820	0.529	1.693	-0.705	0.109	0.00	0.00300	-0.06	0.339	4.897
					10/15/2013 9:51	0917-173_Nc	13_10_15_0951_03_231	1	0.1600	1.140	0.042	0.069	2.62	0.0850	0.498	1.694	-0.532	0.118	-0.00300	0.00300	0.04	0.357	5.073
					10/15/2013 9:52	0917-173_Nc	13_10_15_0952_03_891	1	0.314	1.142	0.0020	0.063	2.90	0.0850	0.403	1.693	-0.6700	0.110	-0.00500	0.00200	-0.22	0.345	5.445
					10/15/2013 9:53	0917-173_Nc	13_10_15_0953_04_722	1	2.6700	1.184	0.0470	0.071	2.97	0.0840	0.448	1.710	-0.718	0.122	-0.00300	0.00300	-0.52	0.367	6.068
					10/15/2013 9:54	0917-173_Nc	13_10_15_0954_05_522	1	1.262	1.106	0.023	0.067	2.59	0.0880	0.494	1.698	-0.707	0.114	-0.00300	0.00300	-0.78	0.337	5.047
					10/15/2013 9:55	0917-173_Nc	13_10_15_0955_06_272	1	0.563	1.112	0.102	0.067	2.72	0.0830	0.482	1.704	-0.663	0.114	-0.00400	0.00300	-0.18	0.357	5.21
					10/15/2013 9:56	0917-173_Nc	13_10_15_0956_06_992	1	-1.074	1.117	0.201	0.067	2.53	0.0810	0.566	1.692	-0.470	0.116	-0.00800	0.00300	-0.80	0.349	4.763
					10/15/2013 9:57	0917-173_Nc	13_10_15_0957_07_812	1	-0.4080	1.170	0.031	0.069	2.68	0.0860	0.502	1.686	-0.586	0.117	-0.00600	0.00300	-1.102	0.359	5.179
					10/15/2013 9:58	0917-173_Nc	13_10_15_0958_08_512	1	0.2620	1.039	0.00300	0.066	2.75	0.0870	0.553	1.697	-0.805	0.109	-0.00500	0.00200	-0.52	0.320	5.566
					10/15/2013 9:59	0917-173_Nc	13_10_15_0959_09_312	1	1.302	1.132	-0.0470	0.066	2.97	0.0840	0.528	1.693	-0.698	0.115	-0.00500	0.00300	0.01	0.347	5.562
					10/15/2013 10:00	0917-173_Nc	13_10_15_1000_10_052	1	0.754	1.148	0.057	0.064	3.02	0.0890	0.578	1.709	-0.753	0.112	0.00	0.00300	-0.14	0.338	5.675
					10/15/2013 10:01	0917-173_Nc	13_10_15_1001_10_862	1	1.323	1.131	0.106	0.064	3.01	0.0870	0.594	1.720	-0.744	0.114	-0.00400	0.00300	-0.79	0.362	5.531
					10/15/2013 10:02	0917-173_Nc	13_10_15_1002_11_672	1	-0.916	1.151	-0.013	0.070	2.94	0.0880	0.451	1.707	-0.780	0.118	-0.00500	0.00300	-0.29	0.369	5.406
					10/15/2013 10:03	0917-173_Nc	13_10_15_1003_12_372	1	-0.494	1.152	0.061	0.071	2.82	0.0860	0.412	1.713	-0.755	0.118	-0.00400	0.00300	-0.601	0.357	5.181
					10/15/2013 10:04	0917-173_Nc	13_10_15_1004_13_182	1	2.115	1.131	0.0470	0.068	2.90	0.0880	0.466	1.699	-0.661	0.114	-0.00500	0.00200	-0.998	0.350	5.336
					10/15/2013 10:05	0917-173_Nc	13_10_15_1005_13_993	1	-1.633	1.163	0.0130	0.066	2.92	0.0890	0.366	1.697	-0.698	0.114	0.00000	0.00300	-0.44	0.358	5.142
					10/15/2013 10:06	0917-173_Nc	13_10_15_1006_14_753	1	0.306	1.163	-0.007	0.071	2.60	0.0840	0.503	1.694	-0.549	0.116	-0.00200	0.00300	-0.243	0.362	4.854
					10/15/2013 10:07	0917-173_Nc	13_10_15_1007_15_483	1	0.436	1.099	0.045	0.064	2.54	0.0850	0.591	1.694	-0.545	0.109	-0.00500	0.00200	-0.557	0.338	4.569
					10/15/2013 10:08	0917-173_Nc	13_10_15_1008_16_293	1	-1.4680	1.191	0.044	0.067	2.76	0.0840	0.590	1.684	-0.577	0.116	-0.00400	0.00300	-0.74	0.361	5.019
					10/15/2013 10:09	0917-173_Nc	13_10_15_1009_17_143	1	0.482	1.109	-0.1310	0.064	2.73	0.0830	0.543	1.692	-0.707	0.110	-0.00500	0.00300	-0.72	0.345	4.853
					10/15/2013 10:10	0917-173_Nc	13_10_15_1010_17_863	1	-0.936	1.160	-0.009	0.067	2.63	0.0830	0.534	1.664	-0.724	0.114	-0.00800	0.00300	-0.44	0.350	4.953
			Stop		10/15/2013 10:11	0917-173_Nc	13_10_15_1011_18_623	1	-0.489	1.033	-0.085	0.066	0.291	0.0390	0.1290	0.417	-1.3240	0.111	-0.00300	0.00200	-0.762	0.324	4.421
					10/15/2013 10:12	0917-173_Nc	13_10_15_1012_19_383	1	-1.763	0.896	-0.0740	0.064	0.076	0.0380	0.0430	0.1100	-1.472	0.103	-0.00300	0.00200	-0.35	0.300	4.198
					10/15/2013 10:13	0917-173_Nc	13_10_15_1013_20_163	1	0.394	0.993	-0.2950	0.067	0.0510	0.0340	-0.0040	0.0890	-1.584	0.109	-0.00300	0.00200	-0.528	0.304	4.174
					10/15/2013 10:14	0917-173_Nc	13_10_15_1014_20_973	1	-2.000	0.996	-0.018	0.064	0.111	0.0370	-0.1930	0.1640	-1.305	0.103	-0.00400	0.00200	-0.51	0.315	3.767
					10/15/2013 10:15	0917-173_Nc	13_10_15_1015_21_773	1	0.622	1.042	0.0730	0.058	0.216	0.0340	0.0360	0.1650	-0.229	0.096	0.00000	0.00200	-0.777	0.309	1.185

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 10:16	0917-173_Nc	13_10_15_1016_22_594	1	-0.573	1.046	-0.0130	0.057	0.136	0.0350	-0.0190	0.0840	-0.039	0.095	0.00	0.00200	-0.237	0.315	0.449
					10/15/2013 10:17	0917-173_Nc	13_10_15_1017_23_324	1	-0.7110	0.901	-0.0170	0.055	0.157	0.0340	0.0320	0.0730	0.134	0.088	-0.00600	0.00200	-0.873	0.284	0.383
					10/15/2013 10:18	0917-173_Nc	13_10_15_1018_24_144	1	0.999	1.062	0.0460	0.064	2.26	0.0650	0.299	1.141	-0.462	0.103	0.00100	0.00200	-0.395	0.336	3.909
					10/15/2013 10:19	0917-173_Nc	13_10_15_1019_23_844	1	1.193	1.225	0.020	0.0670	3.05	0.0910	0.402	1.688	-0.773	0.117	-0.00400	0.00300	-0.720	0.351	5.806
					10/15/2013 10:20	0917-173_Nc	13_10_15_1020_24_554	1	-1.6730	1.063	0.029	0.068	3.11	0.0910	0.201	1.720	-0.9340	0.114	-0.00700	0.00300	0.16	0.348	6.161
					10/15/2013 10:21	0917-173_Nc	13_10_15_1021_25_404	1	-1.4620	1.199	0.0780	0.067	3.16	0.0890	0.469	1.718	-0.761	0.118	-0.00300	0.00300	-0.51	0.362	6.674
Data	Run	5	Start	A	10/15/2013 10:22	0917-173_Nc	13_10_15_1022_26_154	1	-1.127	1.092	-0.008	0.070	3.04	0.0880	0.493	1.720	-0.903	0.118	-0.00200	0.00300	-0.56	0.342	5.824
					10/15/2013 10:23	0917-173_Nc	13_10_15_1023_26_864	1	1.475	1.077	0.052	0.065	3.12	0.0900	0.430	1.722	-0.660	0.112	-0.00200	0.00300	-0.44	0.332	5.944
					10/15/2013 10:24	0917-173_Nc	13_10_15_1024_27_684	1	-0.6640	1.166	0.195	0.065	3.10	0.0910	0.366	1.717	-0.741	0.113	-0.00200	0.00300	-1.10	0.342	5.739
					10/15/2013 10:25	0917-173_Nc	13_10_15_1025_28_404	1	0.031	1.154	0.102	0.071	2.97	0.0900	0.456	1.718	-0.660	0.120	-0.00800	0.00300	0.15	0.358	5.329
					10/15/2013 10:26	0917-173_Nc	13_10_15_1026_29_214	1	0.624	1.221	-0.047	0.064	2.79	0.0870	0.389	1.712	-0.545	0.111	-0.00400	0.00300	-0.578	0.345	5.098
					10/15/2013 10:27	0917-173_Nc	13_10_15_1027_30_044	1	0.156	1.079	0.067	0.064	2.67	0.0830	0.419	1.705	-0.683	0.109	-0.00300	0.00300	-0.65	0.317	4.943
					10/15/2013 10:28	0917-173_Nc	13_10_15_1028_30_805	1	-0.0030	1.154	0.1370	0.069	2.76	0.0860	0.418	1.699	-0.671	0.113	-0.00200	0.00300	-0.277	0.367	4.988
					10/15/2013 10:29	0917-173_Nc	13_10_15_1029_31_375	1	-0.055	1.175	0.1420	0.068	2.84	0.0880	0.439	1.710	-0.718	0.115	-0.00700	0.00300	-0.756	0.352	5.373
					10/15/2013 10:30	0917-173_Nc	13_10_15_1030_32_205	1	-1.157	1.150	0.123	0.073	2.95	0.0850	0.469	1.713	-0.677	0.121	-0.00400	0.00300	-0.77	0.367	5.465
					10/15/2013 10:31	0917-173_Nc	13_10_15_1031_32_965	1	-1.519	1.084	0.125	0.067	3.03	0.0880	0.287	1.714	-0.707	0.114	-0.00300	0.00300	-0.35	0.351	5.576
					10/15/2013 10:32	0917-173_Nc	13_10_15_1032_33_755	1	0.692	1.087	0.0850	0.063	3.11	0.0870	0.352	1.715	-0.704	0.111	-0.00900	0.00300	-0.58	0.333	5.769
					10/15/2013 10:33	0917-173_Nc	13_10_15_1033_34_495	1	0.166	1.097	0.043	0.073	3.27	0.0910	0.467	1.730	-0.669	0.122	-0.00200	0.00300	-0.47	0.352	6.169
					10/15/2013 10:34	0917-173_Nc	13_10_15_1034_35_205	1	-1.631	1.143	-0.0740	0.070	3.38	0.0920	0.279	1.736	-0.763	0.119	-0.00200	0.00300	-0.08	0.350	6.449
					10/15/2013 10:35	0917-173_Nc	13_10_15_1035_35_975	1	0.310	1.088	-0.048	0.072	3.38	0.0910	0.415	1.748	-0.819	0.119	-0.00500	0.00300	0.22	0.340	6.27
					10/15/2013 10:36	0917-173_Nc	13_10_15_1036_36_815	1	0.047	1.116	0.0590	0.065	3.40	0.0930	0.353	1.743	-0.8580	0.114	-0.00500	0.00300	0.16	0.340	6.296
					10/15/2013 10:37	0917-173_Nc	13_10_15_1037_37_575	1	1.31400	1.199	0.013	0.067	3.13	0.0900	0.438	1.735	-0.533	0.116	-0.00300	0.00300	-0.80	0.356	5.643
					10/15/2013 10:38	0917-173_Nc	13_10_15_1038_38_255	1	0.448	1.142	0.0380	0.068	3.19	0.0890	0.549	1.735	-0.802	0.115	-0.00500	0.00300	-0.69	0.356	5.811
					10/15/2013 10:39	0917-173_Nc	13_10_15_1039_39_115	1	-0.8700	1.161	0.042	0.066	3.32	0.0930	0.524	1.739	-0.864	0.119	-0.00100	0.00300	-0.35	0.350	6.198
					10/15/2013 10:40	0917-173_Nc	13_10_15_1040_39_786	1	0.465	1.205	0.093	0.068	3.26	0.0880	0.421	1.741	-0.796	0.119	-0.00700	0.00300	-0.85	0.362	6.185
					10/15/2013 10:41	0917-173_Nc	13_10_15_1041_40_576	1	0.595	1.145	-0.052	0.070	2.95	0.0900	0.471	1.733	-0.702	0.119	-0.00400	0.00300	-0.10	0.366	5.599
					10/15/2013 10:42	0917-173_Nc	13_10_15_1042_41_326	1	0.7580	1.197	0.034	0.068	2.83	0.0840	0.411	1.732	-0.664	0.116	0.00000	0.00300	-0.51	0.353	5.424
					10/15/2013 10:43	0917-173_Nc	13_10_15_1043_42_126	1	0.4420	1.081	0.080	0.070	2.76	0.0840	0.569	1.723	-0.7660	0.115	-0.00200	0.00300	-0.36	0.364	5.093
					10/15/2013 10:44	0917-173_Nc	13_10_15_1044_42_866	1	1.251	1.088	0.0620	0.066	2.60	0.0820	0.508	1.715	-0.641	0.110	-0.00400	0.00200	-0.908	0.331	4.593
					10/15/2013 10:45	0917-173_Nc	13_10_15_1045_43_686	1	-3.106	1.093	0.018	0.066	2.68	0.0880	0.519	1.721	-0.749	0.112	-0.00200	0.00300	-0.587	0.340	4.98
					10/15/2013 10:46	0917-173_Nc	13_10_15_1046_44_456	1	-0.137	1.063	0.062	0.069	2.64	0.0840	0.579	1.690	-0.570	0.115	-0.00400	0.00300	-0.604	0.358	4.902
					10/15/2013 10:47	0917-173_Nc	13_10_15_1047_45_156	1	0.481	1.135	0.01	0.066	2.51	0.0810	0.614	1.695	-0.640	0.111	-0.00600	0.00200	-0.68	0.344	4.565
					10/15/2013 10:48	0917-173_Nc	13_10_15_1048_45_966	1	0.727	1.117	-0.012	0.068	2.40	0.0810	0.503	1.680	-0.680	0.114	-0.00600	0.00200	-0.70	0.347	4.893
					10/15/2013 10:49	0917-173_Nc	13_10_15_1049_46_776	1	-0.020	1.069	0.050	0.063	2.29	0.0810	0.7700	1.691	-0.669	0.109	-0.00200	0.00200	-0.65	0.327	5.213
					10/15/2013 10:50	0917-173_Nc	13_10_15_1050_47_546	1	-1.4400	1.033	-0.0100	0.063	2.34	0.0840	0.360	1.676	-0.757	0.109	-0.00700	0.00200	-0.56	0.330	5.602
					10/15/2013 10:51	0917-173_Nc	13_10_15_1051_48_286	1	-0.376	1.091	0.088	0.069	2.36	0.0790	0.523	1.695	-0.801	0.116	-0.00500	0.00300	-0.29	0.341	6.084
					10/15/2013 10:52	0917-173_Nc	13_10_15_1052_49_107	1	0.358	1.219	0.143	0.065	2.02	0.0780	0.570	1.680	-0.707	0.114	-0.00300	0.00300	-0.47	0.356	5.957
					10/15/2013 10:53	0917-173_Nc	13_10_15_1053_49_787	1	1.177	1.088	-0.028	0.065	2.08	0.0810	0.488	1.673	-0.785	0.111	-0.00700	0.00200	-0.51	0.329	6.501
					10/15/2013 10:54	0917-173_Nc	13_10_15_1054_50_637	1	-2.184	1.122	-0.025	0.067	2.37	0.0830	0.582	1.695	-0.891	0.117	-0.00300	0.00200	-0.15	0.348	7.583
					10/15/2013 10:55	0917-173_Nc	13_10_15_1055_51_347	1	0.681	1.237	-0.0220	0.067	2.46	0.0860	0.533	1.704	-1.126	0.125	-0.00400	0.00300	-0.37	0.368	8.5
					10/15/2013 10:56	0917-173_Nc	13_10_15_1056_52_137	1	1.591	1.134	0.067	0.072	2.32	0.0820	0.520	1.713	-0.975	0.121	-0.00600	0.00300	-0.75	0.359	7.847
					10/15/2013 10:57	0917-173_Nc	13_10_15_1057_52_947	1	0.8880	1.190	0.0470	0.070	2.28	0.0850	0.557	1.705	-1.097	0.125	-0.00500	0.00300	0.19	0.378	8.385
					10/15/2013 10:58	0917-173_Nc	13_10_15_1058_53_697	1	-1.611	1.179	0.0860	0.068	2.51	0.0830	0.508	1.714	-1.057	0.123	-0.00900	0.00300	-0.43	0.354	8.651
					10/15/2013 10:59	0917-173_Nc	13_10_15_1059_54_417	1	0.3700	1.081	0.034	0.067	2.44	0.0820	0.595	1.722	-0.923	0.118	-0.00600	0.00200	-0.44	0.350	8.361
					10/15/2013 11:00	0917-173_Nc	13_10_15_1100_55_187	1	0.740	1.126	-0.153	0.063	2.65	0.0860	0.527	1.735	-1.1500	0.114	-0.00500	0.00300	-0.27	0.343	7.994
					10/15/2013 11:01	0917-173_Nc	13_10_15_1101_55_987	1	0.843	1.090	-0.0210	0.0640	2.70	0.0850	0.592	1.733	-0.952	0.115	-0.00300	0.00300	-0.54	0.322	7.798
					10/15/2013 11:02	0917-173_Nc	13_10_15_1102_56_697	1	-1.2200	1.129	-0.0530	0.068	2.61	0.0810	0.619	1.726	-0.797	0.118	0.00200	0.00300	-0.90	0.352	6.814
					10/15/2013 11:03	0917-173_Nc	13_10_15_1103_57_478	1	-1.250	1.123	0.053	0.070	2.85	0.0830	0.595	1.731	-0.980	0.121	-0.00200	0.00300	-0.63	0.348	7.244
					10/15/2013 11:04	0917-173_Nc	13_10_15_1104_58_198	1	2.745	1.132	-0.050	0.070	3.00	0.0880	0.396	1.746	-0.9470	0.123	-0.00400	0.00200	0.15	0.351	7.322
					10/15/2013 11:05	0917-173_Nc	13_10_15_1105_59_018	1	0.540	1.211	0.0150	0.068	2.68	0.0860	0.402	1.739	-1.017	0.123	-0.00200	0.00300	-0.36	0.361	6.759
					10/15/2013 11:06	0917-173_Nc	13_10_15_1106_59_828	1	-0.60100	1.081	-0.0230	0.065	2.46	0.0840	0.596	1.721	-0.753	0.108	-0.00400	0.00300	-0.23	0.334	5.533
					10/15/2013 11:08	0917-173_Nc	13_10_15_1108_00_548	1	2.124	1.164	-0.0090	0.064	2.31	0.0810	0.574	1.709	-0.658	0.112	-0.00400	0.00200	-0.70	0.344	5.282
					10/15/2013 11:09	0917-173_Nc	13_10_15_1109_01_358	1	-0.388	1.157	0.0140	0.063	2.24	0.0810	0.512	1.692	-0.727	0.109	-0.00400	0.00300	-0.69	0.341	4.798
					10/15/2013 11:10	0917-173_Nc	13_10_15_1110_02_068	1	-0.960	1.213	0.0270	0.070	2.17	0.0800	0.621	1.703	-0.568	0.115	-0.00600	0.00200	-0.695	0.361	4.573
					10/15/2013 11:11	0917-173_Nc	13_10_15_1111_02_698	1	-0.065	1.160	0.060	0.064	2.48	0.0800	0.647	1.699	-0.535	0.113	-0.00600	0.00200	-0.64	0.343	5.209
					10/15/2013 11:12	0917-173_Nc	13_10_15_1112_03_558	1	-1.197	1.119	0.148	0.068	2.49	0.0820	0.514	1.700	-0.668	0.112	-0.00300	0.00300	-0.22	0.347	5.3
					10/15/2013 11:13	0917-173_Nc	13_10_15_1113_04_308	1	-0.604	1.169	0.064	0.066	2.39	0.0810	0.500	1.700	-0.561	0.113	-0.00100	0.00300	-0.64	0.364	4.961
					10/15/2013 11:14	0917-173_Nc	13_10_15_1114_05_028	1	0.351	1.118	0.062	0.069	2.47	0.0790	0.418	1.692	-0.734	0.116	-0.00200	0.00300	-0.527	0.361	4.842
					10/15/2013 11:15	0917-173_Nc	13_10_15_1115_05_778	1	-0.9760	1.171	0.006	0.065	2.46	0.0820	0.662	1.692	-0.785	0.112	-0.00500	0.00300	-0.11	0.348	4.712
					10/15/2013 11:16	0917-173_Nc	13_10_15_1116_06_589	1	-0.07600	1.152	0.012	0.065	2.63	0.0820	0.711	1.712	-0.757	0.112	-0.00200	0.00300	-0.48	0.344	5.084
					10/15/2013 11:17	0917-173_Nc	13_10_15_1117_07_339	1	-1.266	1.088	-0.0340	0.067	2.80	0.0860	0.647	1.732	-0.621	0.114	-0.00400	0.00300	-0.955	0.345	5.552
					10/15/2013 11:18	0917-173_Nc	13_10_15_1118_08_079	1	0.740	1.077	0.098	0.070	2.84	0.0860	0.575	1.731	-0.595	0.115	-0.00500	0.00200	-0.75	0.360	5.869
					10/15/2013 11:19	0917-173_Nc	13_10_15_1119_08_799	1	1.384	1.059	0.0890	0.069	2.67	0.0850	0.506	1.717	-0.825	0.113	-0.00500	0.00300	0.06	0.353	5.193
					10/15/2013 11:20	0917-173_Nc	13_10_15_1120_09_639	1	-2.7670	1.124	0.0070	0.067	2.51	0.0850	0.638	1.729	-0.584	0.115	-0.00900	0.00300	-0.84	0.342	5.053
					10/15/2013 11:21	0917-173_Nc	13_10_15_1121_10_369	1	1.208	1.044	0.065	0.066	2.58	0.0820	0.587	1.718	-0.712	0.110	-0.00400	0.00300	-1.266	0.334	5.012
			Stop		10/15/2013 11:22	0917-173_Nc	13_10_15_1122_11_139	1	-0.081	1.134	-0.002	0.0620	1.69	0.0640	0.4870	1.325	-0.822	0.108	-0.00600	0.00200	-0.62	0.347	4.318
					10/15/2013 11:23	0917-173_Nc	13_10_15_1123_11_899	1	-0.120	0.949	-0.078	0.064	0.153	0.0340	0.0240	0.209	-1.387	0.103	0.00000	0.00200	-1.012	0.306	4.11
					10/15/2013 11:24	0917-173_Nc	13_10_15_1124_12_709	1	-1.0330	1.021	-0.0800	0.065	0.0230	0.0360	-0.092	0.1010	-1.501	0.108	0.00300	0.00200	-0.415	0.317	4.024
					10/15/2013 11:25	0917-173_Nc	13_10_15_1125_13_419	1	-2.080	0.992	-0.090	0.061	0.092	0.0340	-0.0190	0.0840	-1.336	0.103	-0.00200	0.00200	-0.778	0.306	3.98
					10/15/2013 11:26	0917-173_Nc	13_10_15_1126_14_229	1	-1.734	0.965	-0.0690	0.066	0.0610	0.0360	-0.0900	0.0800	-1.401	0.106	0.00	0.00200	-0.408	0.318	3.998
					10/15/2013 11:27	0917-173_Nc	13_10_15_1127_15_039	1	1.318	0.946	0.090	0.062	0.1170	0.0400	0.2870	0.554	-0.994	0.099	-0.00200	0.00200	-0.482	0.310	3.602
					10/15/2013 11:28	0917-173_Nc	13_10_15_1128_15_740	1	0.3580	1.201	0.0850	0.059	0.1530	0.0590	0.5110	1.309	-0.442	0.103	-0.00200	0.00200	-0.328	0.344	2.438
					10/15/2013 11:29	0917-173_Nc	13_10_15_1129_16_560	1	-0.7050	1.098	0.0570	0.064	0.215	0.0610	0.433	1.400	-0.303	0.110	-0.00100	0.00300	-0.65	0.334	5.254
					10/15/2013 11:30	0917-173_Nc	13_10_15_1130_17_280	1	-0.197	1.057	0.223	0.065	0.598	0.0650	0.634	1.435	-0.69	0.128	0.00000	0.00200	-0.79	0.328	12.261
					10/15/2013 11:31	0917-173_Nc	13_10_15_1131_18_090	1	-0.777	1.099	0.561	0.093	1.98	0.079	0.337	1.630	-1.87	0.287	-0.0040	0.00300	-1.25	0.355	42.447
					10/15/2013 11:32	0917-173_Nc	13_10_15_1132_18_840	1	3.38500	1.043	0.114	0.0650	0.377	0.0610	0.332	1.384	-0.57	0.117	-0.00400	0.00200	-1.26	0.329	8.795
					10/15/2013 11:33	0917-173_Nc	13_10_15_1133_19_640	1	0.893	1.012	0.169	0.064	0.1030	0.0590	0.6460	1.318	-0.113	0.101	-0.00500	0.00200	-0.979	0.330	1.612
					10/15/2013 11:34	0917-173_Nc	13_10_15_1134_20_440	1	0.4480	1.064	0.041	0.067	1.84	0.0760	0.430	1.576	-0.522	0.110	-0.00700	0.00200	-0.77	0.343	3.856
					10/15/2013 11:35	0917-173_Nc	13_10_15_1135_21_150	1	0.0150	1.177	0.171	0.066	2.73	0.0830	0.598	1.706	-0.622	0.114	-0.00500	0.00300	-0.39	0.368	5.095
					10/15/2013 11:36	0917-173_Nc	13_10_15_1136_21_900	1	1.6630	1.123	0.0310	0.070	2.88	0.0820	0.584	1.708	-0.799	0.119	-0.00700	0.00200	-0.68	0.363	5.621
					10/15/2013 11:37	0917-173_Nc	13_10_15_1137_22_650	1	-0.484	1.220	0.0510	0.0650	2.78	0.0830	0.450	1.709	-0.732	0.114	-0.00500	0.00300	-0.36	0.352	5.208
					10/15/2013 11:38	0917-173_Nc	13_10_15_1138_23_470	1	2.108	1.091	0.0080	0.070	2.74	0.0830	0.434	1.713	-0.576	0.115	-0.00600	0.00300	-0.30	0.352	4.963
					10/15/2013 11:39	0917-173_Nc	13_10_15_1139_24_240	1	0.3530	1.074	0.139	0.071	2.76	0.0830	0.517	1.706	-0.701	0.117	-0.00200	0.00300	-0.78	0.355	5.249
Data	Run	6	Start	A	10/15/2013 11:40	0917-173_Nc	13_10_15_1140_25_001	1	-0.691	1.202	0.069	0.065	2.78	0.0830	0.461	1.717	-0.593	0.115	-0.00400	0.00300	-1.38	0.353	5.511
					10/15/2013 11:41	0917-173_Nc	13_10_15_1141_25_741	1	-2.501	1.155	0.064	0.070	2.75	0.0840	0.558	1.703	-0.650	0.118	-0.00400	0.00200	-0.48	0.371	5.38
					10/15/2013 11:42	0917-173_Nc	13_10_15_1142_26_581	1	1.075	1.090	0.091	0.064	2.85	0.0840	0.614	1.712	-0.854	0.112	-0.00800	0.00300	-0.30	0.338	5.72
					10/15/2013 11:43	0917-173_Nc	13_10_15_1143_27_311	1	-0.816	1.134	-0.046	0.066	2.98	0.0840	0.475	1.719	-0.688	0.114	-0.00100	0.00300	-0.84	0.355	6.069
					10/15/2013 11:44	0917-173_Nc	13_10_15_1144_28_151	1	0.396	1.138	0.065	0.071	2.83	0.0850	0.7570	1.727	-0.746	0.119	-0.00700	0.00300	-0.55	0.355	5.7
					10/15/2013 11:45	0917-173_Nc	13_10_15_1145_28_901	1	0.159	1.136	0.112	0.069	2.99	0.0830	0.491	1.705	-0.743	0.116	-0.00500	0.00300	-0.955	0.353	6.256
					10/15/2013 11:46	0917-173_Nc	13_10_15_1146_29_691	1	-0.358	1.141	-0.0680	0.069	2.93	0.0850	0.503	1.723	-0.906	0.120	-0.00100	0.00200	-0.48	0.349	7.406
					10/15/2013 11:47	0917-173_Nc	13_10_15_1147_30_411	1	0.426	1.111	0.009	0.067	2.67	0.0830	0.637	1.718	-0.830	0.118	-0.00600	0.00300	-1.01	0.340	6.982
					10/15/2013 11:48	0917-173_Nc	13_10_15_1148_31_121	1	-0.404	1.129	0.179	0.073	2.79	0.0800	0.644	1.734	-0.821	0.124	-0.01100	0.00200	-0.66	0.367	7.811
					10/15/2013 11:49	0917-173_Nc	13_10_15_1149_31_961	1	0.632	1.184	0.076	0.069	2.77	0.0820	0.648	1.720	-1.009	0.124	-0.00200	0.00300	-0.37	0.364	7.496
					10/15/2013 11:50	0917-173_Nc	13_10_15_1150_32_751	1	-2.4280	1.120	0.134	0.070	2.67	0.0820	0.588	1.713	-0.836	0.120	-0.00300	0.00300	-1.14	0.356	7.111
					10/15/2013 11:51	0917-173_Nc	13_10_15_1151_33_422	1	0.295	1.225	-0.0800	0.068	2.70	0.0840	0.575	1.706	-0.966	0.122	-0.00300	0.00300	-0.42	0.360	7.837
					10/15/2013 11:52	0917-173_Nc	13_10_15_1152_34_122	1	1.626	1.106	0.001	0.068	3.03	0.0820	0.359	1.736	-0.978	0.122	-0.01200	0.00300	-0.72	0.344	8.053
					10/15/2013 11:53	0917-173_Nc	13_10_15_1153_34_872	1	2.400	1.182	0.070	0.070	3.08	0.0840	0.656	1.730	-0.808	0.125	-0.00600	0.00300	-1.23	0.350	7.778
					10/15/2013 11:54	0917-173_Nc	13_10_15_1154_35_682	1	0.4710	1.191	0.0030	0.069	2.98	0.0870	0.574	1.739	-0.973	0.123	-0.00200	0.00300	-0.44	0.360	7.947
					10/15/2013 11:55	0917-173_Nc	13_10_15_1155_36_432	1	0.0570	1.079	0.084	0.065	3.08	0.0840	0.621	1.733	-0.9290	0.119	-0.00400	0.00300	0.15	0.346	8.761
					10/15/2013 11:56	0917-173_Nc	13_10_15_1156_37_172	1	1.584	1.128	0.0670	0.070	2.93	0.0850	0.635	1.735	-0.892	0.124	-0.00100	0.00300	-0.34	0.348	8.603
					10/15/2013 11:57	0917-173_Nc	13_10_15_1157_37_932	1	-0.552	1.112	0.0580	0.070	3.06	0.0860	0.660	1.742	-0.985	0.125	-0.00300	0.00200	-0.41	0.362	9.147
					10/15/2013 11:58	0917-173_Nc	13_10_15_1158_38_682	1	-1.773	1.129	0.0280	0.071	3.31	0.0860	0.6770	1.748	-1.1190	0.129	-0.00500	0.00200	-0.43	0.346	10.325
					10/15/2013 11:59	0917-173_Nc	13_10_15_1159_39_342	1	0.532	1.170	-0.062	0.072	3.19	0.0870	0.677	1.759	-0.928	0.132	-0.00600	0.00300	-0.33	0.359	10.323
					10/15/2013 12:00	0917-173_Nc	13_10_15_1200_40_092	1	-1.326	1.131	0.0920	0.063	2.75	0.0840	0.602	1.738	-0.790	0.115	0.00	0.00300	-0.53	0.340	8.154
					10/15/2013 12:01	0917-173_Nc	13_10_15_1201_40_852	1	1.788	1.131	0.044	0.066	2.90	0.0860	0.625	1.741	-1.024	0.117	-0.00700	0.00300	-0.23	0.341	8.278
					10/15/2013 12:02	0917-173_Nc	13_10_15_1202_41_642	1	0.441	1.115	-0.0370	0.070	2.98	0.0830	0.587	1.727	-0.937	0.119	-0.00400	0.00300	-0.39	0.341	8.812
					10/15/2013 12:03	0917-173_Nc	13_10_15_1203_42_383	1	1.741	1.070	0.083	0.0670	2.98	0.0850	0.497	1.724	-0.843	0.118	-0.00600	0.00300	-0.44	0.338	8.57
					10/15/2013 12:04	0917-173_Nc	13_10_15_1204_43_183	1	0.28200	1.126	0.055	0.068	3.05	0.0860	0.521	1.730	-0.969	0.12	-0.00500	0.00300	-0.83	0.361	8.154
					10/15/2013 12:05	0917-173_Nc	13_10_15_1205_43_893	1	1.079	1.114	0.161	0.069	2.80	0.0850	0.560	1.729	-0.723	0.12	-0.00600	0.00300	-1.00	0.355	7.236
					10/15/2013 12:06	0917-173_Nc	13_10_15_1206_44_713	1	0.35000	1.071	0.067	0.064	2.78	0.0820	0.556	1.716	-0.872	0.11	-0.00400	0.00300	-0.16	0.325	6.838
					10/15/2013 12:07	0917-173_Nc	13_10_15_1207_45_493	1	1.274	1.034	0.048	0.0620	2.91	0.0830	0.704	1.726	-0.868	0.11	-0.00100	0.00300	-0.93	0.319	7.397
					10/15/2013 12:08	0917-173_Nc	13_10_15_1208_46_233	1	-1.0050	1.075	0.118	0.066	3.03	0.0820	0.535	1.730	-0.950	0.12	-0.00500	0.00200	-0.24	0.344	7.525
					10/15/2013 12:09	0917-173_Nc	13_10_15_1209_46_983	1	-0.153	1.090	-0.0310	0.061	2.76	0.0830	0.743	1.719	-0.941	0.11	-0.00300	0.00300	-1.00	0.333	6.649
					10/15/2013 12:10	0917-173_Nc	13_10_15_1210_47_703	1	-0.0720	1.073	0.040	0.064	2.80	0.0800	0.631	1.715	-0.723	0.11	-0.00100	0.00300	-0.65	0.339	6.229
					10/15/2013 12:11	0917-173_Nc	13_10_15_1211_48_473	1	1.650	1.033	0.0220	0.0600	2.82	0.0830	0.664	1.720	-0.751	0.11	-0.00100	0.00200	-0.74	0.312	6.99
					10/15/2013 12:12	0917-173_Nc	13_10_15_1212_49_233	1	-2.110	1.036	0.0570	0.064	2.74	0.0800	0.532	1.726	-0.732	0.11	0.00000	0.00300	-0.56	0.342	6.6
					10/15/2013 12:13	0917-173_Nc	13_10_15_1213_50_073	1	1.314	1.140	0.062	0.063	2.92	0.0820	0.602	1.730	-1.035	0.11	-0.00500	0.00300	0.30	0.334	6.788
					10/15/2013 12:14	0917-173_Nc	13_10_15_1214_50_783	1	-0.8810	1.117	0.061	0.063	2.96	0.0830	0.696	1.726	-0.938	0.11	0.00	0.00300	-0.74	0.335	7.218
					10/15/2013 12:15	0917-173_Nc	13_10_15_1215_51_544	1	1.514	1.105	0.079	0.062	2.84	0.0800	0.628	1.732	-0.751	0.11	-0.00500	0.00200	-0.94	0.338	6.888
					10/15/2013 12:16	0917-173_Nc	13_10_15_1216_52_314	1	-0.710	1.038	-0.0090	0.065	2.90	0.0810	0.598	1.717	-0.849	0.12	-0.00300	0.00300	-0.67	0.325	7.561
					10/15/2013 12:17	0917-173_Nc	13_10_15_1217_53_134	1	0.043	1.085	0.075	0.067	2.91	0.0820	0.590	1.725	-1.043	0.12	-0.00500	0.00300	-0.11	0.341	8.436
					10/15/2013 12:18	0917-173_Nc	13_10_15_1218_53_834	1	0.1870	1.100	0.105	0.0640	2.92	0.0820	0.514	1.731	-1.006	0.12	-0.00700	0.00300	-0.51	0.330	8.664
					10/15/2013 12:19	0917-173_Nc	13_10_15_1219_54_644	1	-2.878	1.042	0.073	0.065	2.85	0.0820	0.673	1.735	-1.009	0.11	-0.00300	0.00300	-0.53	0.334	8.708
					10/15/2013 12:20	0917-173_Nc	13_10_15_1220_55_414	1	-0.8070	1.053	-0.0780	0.066	2.92	0.0840	0.635	1.740	-1.032	0.12	-0.00400	0.00300	-0.25	0.332	9.502
					10/15/2013 12:21	0917-173_Nc	13_10_15_1221_56_164	1	-0.3020	1.162	0.039	0.069	2.67	0.0840	0.608	1.730	-1.007	0.12	-0.00100	0.00300	-0.77	0.349	8.4
					10/15/2013 12:22	0917-173_Nc	13_10_15_1222_56_874	1	1.0500	1.045	0.036	0.065	2.60	0.0830	0.588	1.732	-0.980	0.11	-0.00400	0.00200	-0.59	0.331	8.307
					10/15/2013 12:23	0917-173_Nc	13_10_15_1223_57_684	1	-1.0540	1.037	0.095	0.066	2.88	0.0840	0.526	1.732	-1.057	0.12	-0.00400	0.00300	-0.45	0.320	9.509
					10/15/2013 12:24	0917-173_Nc	13_10_15_1224_58_414	1	2.259	1.107	-0.05300	0.067	3.06	0.0880	0.715	1.746	-1.013	0.12	-0.00400	0.00300	-0.46	0.349	9.922
					10/15/2013 12:25	0917-173_Nc	13_10_15_1225_59_224	1	-0.686	1.017	0.009	0.068	2.95	0.0880	0.552	1.744	-1.047	0.12	-0.00400	0.00300	-0.92	0.327	9.408
					10/15/2013 12:27	0917-173_Nc	13_10_15_1227_00_014	1	0.602	1.189	0.0010	0.067	2.91	0.0860	0.600	1.764	-1.155	0.12	-0.00400	0.00300	-0.06	0.354	9.883
					10/15/2013 12:29	0917-173_Nc	13_10_15_1229_11_590	1	-0.695	1.145	0.0350	0.066	3.04	0.0870	0.640	1.762	-1.124	0.13	-0.00400	0.00300	-0.62	0.339	10.424
					10/15/2013 12:30	0917-173_Nc	13_10_15_1230_12_390	1	-1.6670	1.077	0.074	0.074	3.03	0.0890	0.703	1.756	-1.054	0.13	-0.00400	0.00300	-1.07	0.347	10.238
					10/15/2013 12:31	0917-173_Nc	13_10_15_1231_13_200	1	0.041	1.115	-0.08300	0.069	3.02	0.0880	0.489	1.759	-1.149	0.13	-0.00500	0.00300	-0.46	0.343	10.159
					10/15/2013 12:32	0917-173_Nc	13_10_15_1232_13_940	1	-0.663	1.064	0.028	0.069	2.89	0.0850	0.493	1.755	-1.220	0.13	-0.01000	0.00300	-0.46	0.342	10.509
					10/15/2013 12:33	0917-173_Nc	13_10_15_1233_14_750	1	3.2480	1.247	-0.0070	0.068	2.95	0.0860	0.509	1.743	-1.156	0.13	-0.00300	0.00300	-0.47	0.368	10.805
					10/15/2013 12:34	0917-173_Nc	13_10_15_1234_15_450	1	-0.368	1.043	0.081	0.070	2.94	0.0890	0.554	1.754	-1.023	0.13	-0.00600	0.00300	-0.62	0.340	10.871
					10/15/2013 12:35	0917-173_Nc	13_10_15_1235_16_170	1	0.534	1.205	-0.087	0.069	3.03	0.0880	0.617	1.779	-1.414	0.13	-0.00700	0.00300	-0.04	0.352	11.812
					10/15/2013 12:36	0917-173_Nc	13_10_15_1236_16_880	1	0.3180	1.147	0.028	0.069	3.02	0.0900	0.583	1.774	-1.145	0.133	-0.00500	0.00300	-0.20	0.349	11.498
					10/15/2013 12:37	0917-173_Nc	13_10_15_1237_17_630	1	1.020	1.050	0.034	0.070	2.97	0.0880	0.609	1.776	-1.083	0.132	-0.00300	0.00300	-0.68	0.347	11.877
					10/15/2013 12:38	0917-173_Nc	13_10_15_1238_18_480	1	0.6380	1.124	0.075	0.068	3.00	0.0880	0.601	1.762	-1.164	0.130	-0.00600	0.00300	-0.46	0.354	11.565
					10/15/2013 12:39	0917-173_Nc	13_10_15_1239_19_230	1	0.432	1.154	-0.0660	0.070	2.88	0.0890	0.549	1.776	-1.112	0.130	-0.00500	0.00300	-0.52	0.353	11.24
			Stop		10/15/2013 12:40	0917-173_Nc	13_10_15_1240_19_910	1	0.899	1.146	0.0710	0.071	2.92	0.0900	0.505	1.778	-1.068	0.137	-0.00500	0.00300	-0.83	0.363	10.928
					10/15/2013 12:41	0917-173_Nc	13_10_15_1241_20_701	1	-0.062	1.168	0.052	0.068	2.40	0.0780	0.658	1.684	-0.814	0.122	-0.00100	0.00300	-0.66	0.358	8.971
					10/15/2013 12:48	0917-173_Nc	13_10_15_1248_06_391	1	0.55	1.124	0.1470	0.137	3.42	0.092	0.334	1.689	-2.50	0.498	-0.0020	0.00400	-1.9	0.39	76.699
					10/15/2013 12:49	0917-173_Nc	13_10_15_1249_07_101	1	-0.560	1.190	0.1320	0.146	3.72	0.098	0.364	1.691	-2.60	0.565	-0.0040	0.00400	-2.7	0.42	88.627
					10/15/2013 12:50	0917-173_Nc	13_10_15_1250_07_921	1	-2.19	1.128	0.202	0.152	3.71	0.100	0.106	1.690	-2.53	0.580	-0.0040	0.00400	-2.8	0.41	90.125
					10/15/2013 12:51	0917-173_Nc	13_10_15_1251_08_741	1	-1.53	1.187	0.136	0.151	3.71	0.099	0.277	1.652	-2.80	0.582	-0.0030	0.00400	-2.6	0.42	90.664
					10/15/2013 12:52	0917-173_Nc	13_10_15_1252_09_461	1	-0.46	1.193	0.029	0.152	3.68	0.101	0.353	1.655	-2.63	0.576	-0.0020	0.00400	-2.7	0.43	89.848
					10/15/2013 12:53	0917-173_Nc	13_10_15_1253_10_282	1	1.723	1.104	0.019	0.110	2.33	0.085	0.204	1.589	-1.77	0.384	-0.0030	0.00300	-2.2	0.366	53.13

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 12:54	0917-173_Nc	13_10_15_1254_11_012	1	-1.401	1.034	0.071	0.065	0.238	0.0620	0.5000	1.341	-0.331	0.108	-0.00200	0.00200	-0.45	0.332	5.044
					10/15/2013 12:55	0917-173_Nc	13_10_15_1255_11_762	1	1.001	1.072	0.089	0.062	0.0910	0.0600	0.4870	1.303	-0.122	0.101	-0.00800	0.00300	-0.7100	0.332	1.971
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_08_205	1	1.0	1.4	-0.373	0.086	-0.41	1.56	-0.0920	0.1060	-0.115	0.136	0.065	0.628	0.1340	0.443	-1.958
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_26_705	1	-1.3	1.5	0.01700	0.084	-0.36	1.60	0.115	0.1090	0.109	0.138	0.058	0.642	-0.385	0.446	-2.002
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_45_395	1	-1.1	1.6	-0.137	0.087	-0.43	1.62	-0.185	0.1030	-0.010	0.144	0.075	0.651	0.20	0.481	-2.016
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_03_885	1	0.2	1.5	-0.301	0.082	-0.45	1.63	-0.0920	0.1020	0.054	0.135	0.053	0.655	-0.395	0.450	-2.051
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_22_355	1	-1.3	1.5	-0.203	0.085	-0.43	1.65	-0.2550	0.1070	-0.184	0.137	0.055	0.656	0.80	0.459	-2.066
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_41_005	1	0.8	1.5	-0.0860	0.082	-0.42	1.65	-0.1010	0.1100	-0.1600	0.134	0.072	0.655	0.150	0.445	-2.07
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_59_495	1	1.6	1.5	-0.0350	0.083	-0.44	1.65	-0.1040	0.1000	-0.037	0.136	0.060	0.657	-0.5140	0.453	-2.044
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_17_965	1	2.2	1.5	0.037	0.081	-0.48	1.65	-0.0880	0.1100	-0.050	0.134	0.066	0.654	-0.528	0.447	-2.075
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_36_575	1	-2.9	1.4	-0.165	0.088	-0.47	1.64	-0.1380	0.1040	0.006	0.137	0.062	0.657	0.2630	0.438	-2.081
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_55_075	1	3.9	1.5	0.1380	0.086	-0.49	1.64	0.147	0.1030	0.176	0.138	0.072	0.652	-1.675	0.455	-2.076
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_13_675	1	3.4	1.6	0.032	0.081	-0.47	1.64	-0.0300	0.1170	-0.19700	0.136	0.076	0.655	-0.056	0.450	-2.068
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_32_115	1	-1.0	1.4	0.231	0.085	-0.62	1.65	-0.2160	0.1090	-0.033	0.134	0.058	0.655	-0.743	0.449	-2.055
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_50_625	1	1.0	1.6	-0.0860	0.079	-0.59	1.64	-0.0590	0.1140	-0.298	0.135	0.062	0.654	0.08	0.463	-2.048
					10/15/2013 13:33	0917-173_Nc	13_10_15_1333_17_119	1	-0.072	1.124	-0.027	0.086	1.070	0.0860	0.4160	1.792	-2.604	0.230	-0.00700	0.00300	-0.40	0.367	32.501
					10/15/2013 13:34	0917-173_Nc	13_10_15_1334_17_799	1	1.390	1.189	-0.060	0.082	1.084	0.0880	0.4930	1.790	-2.462	0.221	-0.00600	0.00300	-0.49	0.354	32.55
					10/15/2013 13:35	0917-173_Nc	13_10_15_1335_18_609	1	0.256	1.215	-0.027	0.078	1.052	0.0880	0.5020	1.776	-2.441	0.226	-0.00200	0.00300	-0.84	0.346	32.108
					10/15/2013 13:36	0917-173_Nc	13_10_15_1336_19_359	1	1.881	1.193	0.015	0.082	1.055	0.0900	0.393	1.766	-2.637	0.238	-0.00800	0.00300	-0.64	0.363	34.171
					10/15/2013 13:37	0917-173_Nc	13_10_15_1337_20_129	1	-0.348	1.203	-0.089	0.083	1.000	0.0880	0.417	1.770	-2.717	0.239	-0.00100	0.00300	-0.35	0.358	34.193
					10/15/2013 13:38	0917-173_Nc	13_10_15_1338_20_929	1	-0.073	1.118	-0.337	0.095	0.356	0.0490	0.3380	0.792	-3.674	0.192	0.00	0.00200	-1.44	0.400	19.078
					10/15/2013 13:39	0917-173_Nc	13_10_15_1339_21_689	1	-0.265	1.010	-0.567	0.110	-0.0510	0.0470	-0.064	0.1520	-4.41	0.192	-0.01	0.00200	-1.81	0.429	12.558
					10/15/2013 13:40	0917-173_Nc	13_10_15_1340_22_460	1	0.073	0.997	-0.672	0.106	-0.0840	0.0460	0.0290	0.1060	-4.36	0.189	-0.00800	0.00200	-1.97	0.438	12.219
					10/15/2013 13:41	0917-173_Nc	13_10_15_1341_23_230	1	-0.244	1.036	-0.675	0.116	-0.0780	0.0460	0.0580	0.0990	-4.39	0.196	-0.00500	0.00200	-1.59	0.457	12.134
					10/15/2013 13:42	0917-173_Nc	13_10_15_1342_23_980	1	-0.547	0.996	-0.6160	0.112	-0.0760	0.0450	-0.113	0.0960	-4.44	0.193	-0.00400	0.00200	-0.75	0.442	12.061
					10/15/2013 13:43	0917-173_Nc	13_10_15_1343_24_780	1	0.028	1.000	-0.521	0.108	-0.0270	0.0450	0.0550	0.1250	-4.35	0.185	0.00000	0.00200	-0.95	0.428	12.509
					10/15/2013 13:44	0917-173_Nc	13_10_15_1344_25_530	1	2.328	1.101	-0.129	0.080	0.814	0.0730	0.455	1.561	-2.874	0.210	-0.00900	0.00300	-1.16	0.337	29.127
					10/15/2013 13:45	0917-173_Nc	13_10_15_1345_26_340	1	0.944	1.203	-0.025	0.085	1.000	0.0860	0.6040	1.778	-2.78	0.245	-0.00700	0.00300	-0.39	0.391	34.988
					10/15/2013 13:46	0917-173_Nc	13_10_15_1346_27_110	1	-0.607	1.169	-0.035	0.082	0.952	0.0850	0.5470	1.756	-2.73	0.249	-0.00300	0.00300	-0.70	0.351	36.491
					10/15/2013 13:47	0917-173_Nc	13_10_15_1347_27_820	1	1.474	1.172	0.017	0.081	1.043	0.0860	0.47000	1.765	-2.860	0.248	-0.00400	0.00400	-0.63	0.358	36.937
Data	Run	13	Start	A	10/15/2013 13:48	0917-173_Nc	13_10_15_1348_28_550	1	2.428	1.033	-0.056	0.078	0.907	0.0770	0.4050	1.559	-2.52	0.237	-0.00500	0.00300	-0.90	0.321	39.12
					10/15/2013 13:49	0917-173_Nc	13_10_15_1349_29_260	1	2.097	1.141	-0.058	0.080	0.935	0.0790	0.51500	1.561	-2.855	0.245	-0.00100	0.00200	-0.21	0.353	40.738
					10/15/2013 13:50	0917-173_Nc	13_10_15_1350_30_070	1	1.338	1.039	-0.034	0.077	1.000	0.0790	0.41	1.575	-2.550	0.231	-0.00800	0.00300	-0.32	0.317	38.562
					10/15/2013 13:51	0917-173_Nc	13_10_15_1351_30_870	1	0.810	1.055	0.015	0.078	0.995	0.0780	0.3600	1.566	-2.45	0.231	0.00000	0.00300	-1.19	0.335	37.944
					10/15/2013 13:52	0917-173_Nc	13_10_15_1352_31_591	1	0.177	1.103	0.008	0.079	0.980	0.0780	0.4250	1.566	-2.753	0.241	-0.00400	0.00300	-0.49	0.337	39.096
					10/15/2013 13:53	0917-173_Nc	13_10_15_1353_32_351	1	1.612	1.072	0.021	0.078	0.994	0.0780	0.4880	1.571	-2.872	0.242	-0.00700	0.00300	-0.45	0.332	40.205
					10/15/2013 13:54	0917-173_Nc	13_10_15_1354_33_161	1	0.700	1.103	0.065	0.079	1.020	0.0770	0.3570	1.573	-2.68	0.244	-0.00300	0.00300	-0.85	0.323	39.603
					10/15/2013 13:55	0917-173_Nc	13_10_15_1355_33_891	1	-1.250	1.049	-0.005	0.076	0.984	0.0800	0.35200	1.567	-2.643	0.226	-0.0090	0.00300	-0.20	0.331	37.386
					10/15/2013 13:56	0917-173_Nc	13_10_15_1356_34_631	1	0.616	1.035	-0.064	0.074	1.012	0.0750	0.238	1.563	-2.53	0.226	-0.00800	0.00300	-1.12	0.318	36.656
					10/15/2013 13:57	0917-173_Nc	13_10_15_1357_35_441	1	1.357	0.988	-0.135	0.073	0.954	0.0770	0.4170	1.555	-2.325	0.215	-0.00500	0.00300	-0.52	0.322	35.18
					10/15/2013 13:58	0917-173_Nc	13_10_15_1358_36_181	1	-0.986	1.047	-0.052	0.072	0.896	0.0760	0.4920	1.551	-2.378	0.207	-0.00600	0.00300	-0.23	0.325	34.221
					10/15/2013 13:59	0917-173_Nc	13_10_15_1359_36_931	1	-0.793	1.104	0.052	0.073	0.854	0.0760	0.617	1.564	-2.428	0.216	-0.00400	0.00300	-0.48	0.334	33.888
					10/15/2013 14:00	0917-173_Nc	13_10_15_1400_37_771	1	-1.240	0.968	-0.09000	0.070	0.972	0.0770	0.528	1.552	-2.246	0.204	-0.00300	0.00300	-1.03	0.303	33.897
					10/15/2013 14:01	0917-173_Nc	13_10_15_1401_38_521	1	0.2490	1.157	0.105	0.070	0.933	0.0780	0.5000	1.563	-2.353	0.211	-0.00200	0.00300	-1.15	0.341	34.613
					10/15/2013 14:02	0917-173_Nc	13_10_15_1402_39_241	1	1.880	1.028	-0.035	0.075	1.006	0.0760	0.44800	1.575	-2.38	0.216	-0.00200	0.00300	-0.76	0.328	35.471
					10/15/2013 14:03	0917-173_Nc	13_10_15_1403_40_061	1	0.196	1.097	-0.018	0.069	0.980	0.0780	0.5050	1.560	-2.321	0.214	-0.00400	0.00300	-0.65	0.331	35.16
					10/15/2013 14:04	0917-173_Nc	13_10_15_1404_40_782	1	2.838	1.060	0.044	0.078	0.844	0.0770	0.3940	1.552	-2.411	0.221	-0.00100	0.00300	-0.82	0.337	35.389
					10/15/2013 14:05	0917-173_Nc	13_10_15_1405_41_592	1	0.743	1.093	-0.070	0.074	0.910	0.0770	0.5030	1.552	-2.376	0.211	-0.00900	0.00300	-0.28	0.337	34.955
					10/15/2013 14:06	0917-173_Nc	13_10_15_1406_42_382	1	0.668	1.043	0.093	0.070	0.848	0.0760	0.4820	1.543	-2.37	0.210	-0.00500	0.00300	-0.50	0.322	34.215
					10/15/2013 14:07	0917-173_Nc	13_10_15_1407_43_092	1	0.410	1.087	0.007	0.077	0.904	0.0750	0.3550	1.545	-2.409	0.218	-0.00500	0.00300	-0.13	0.345	35.176
					10/15/2013 14:08	0917-173_Nc	13_10_15_1408_43_852	1	1.767	1.003	-0.047	0.076	0.872	0.0750	0.4480	1.546	-2.26	0.201	-0.00400	0.00300	-0.42	0.316	32.444
					10/15/2013 14:09	0917-173_Nc	13_10_15_1409_44_632	1	3.328	1.067	-0.074	0.075	0.792	0.0760	0.5080	1.553	-2.044	0.199	-0.00100	0.00300	-0.54	0.326	31.462
					10/15/2013 14:10	0917-173_Nc	13_10_15_1410_45_332	1	-0.773	1.072	0.068	0.074	0.916	0.0760	0.3810	1.555	-2.392	0.218	-0.00200	0.00300	-0.23	0.335	35.79
					10/15/2013 14:11	0917-173_Nc	13_10_15_1411_46_132	1	1.052	1.025	-0.0440	0.079	0.993	0.0780	0.46800	1.555	-2.574	0.230	-0.00300	0.00300	-0.67	0.319	37.818
					10/15/2013 14:12	0917-173_Nc	13_10_15_1412_46_872	1	2.646	1.017	-0.030	0.076	1.008	0.0800	0.5310	1.559	-2.65	0.230	-0.00100	0.00300	-0.56	0.323	37.592
					10/15/2013 14:13	0917-173_Nc	13_10_15_1413_47_622	1	-0.827	1.037	-0.0630	0.079	0.950	0.0780	0.337	1.562	-2.828	0.238	-0.00200	0.00200	-0.41	0.323	39.185
					10/15/2013 14:14	0917-173_Nc	13_10_15_1414_48_312	1	1.247	1.090	-0.042	0.077	1.003	0.0810	0.204	1.565	-2.66	0.243	-0.00600	0.00300	-0.68	0.331	39.886
					10/15/2013 14:15	0917-173_Nc	13_10_15_1415_48_983	1	1.033	1.073	-0.030	0.075	0.960	0.0780	0.3960	1.561	-2.582	0.228	-0.00600	0.00300	-0.25	0.326	36.881
					10/15/2013 14:16	0917-173_Nc	13_10_15_1416_49_783	1	-0.361	1.089	-0.001	0.071	0.895	0.0760	0.43500	1.562	-2.182	0.206	-0.00900	0.00300	-0.62	0.329	33.22
					10/15/2013 14:17	0917-173_Nc	13_10_15_1417_50_483	1	3.337	1.113	-0.0460	0.077	0.966	0.0760	0.4310	1.561	-2.674	0.229	-0.00800	0.00300	-0.38	0.339	38
					10/15/2013 14:18	0917-173_Nc	13_10_15_1418_51_323	1	1.044	1.059	-0.0910	0.078	0.865	0.0810	0.4340	1.549	-2.829	0.242	-0.00700	0.00300	-0.2	0.322	39.942
					10/15/2013 14:19	0917-173_Nc	13_10_15_1419_52_043	1	0.448	0.996	-0.058	0.079	0.930	0.0800	0.4990	1.558	-2.78	0.250	-0.00500	0.00300	-0.1	0.317	41.355
					10/15/2013 14:20	0917-173_Nc	13_10_15_1420_52_853	1	0.844	1.038	-0.196	0.082	1.089	0.079	0.4460	1.552	-3.217	0.279	-0.00400	0.00300	-0.1	0.327	46.364
					10/15/2013 14:21	0917-173_Nc	13_10_15_1421_53_513	1	1.564	1.097	-0.135	0.087	1.077	0.079	0.345	1.559	-3.330	0.277	-0.00400	0.00300	-0.4	0.324	45.843
					10/15/2013 14:22	0917-173_Nc	13_10_15_1422_54_273	1	0.762	1.135	-0.072	0.083	1.113	0.0790	0.4070	1.549	-3.25	0.272	-0.00400	0.00300	-0.1	0.339	45.165
					10/15/2013 14:23	0917-173_Nc	13_10_15_1423_55_033	1	3.379	1.051	-0.091	0.090	1.071	0.0790	0.4620	1.561	-3.19	0.284	-0.00200	0.00300	-0.7	0.321	46.194
					10/15/2013 14:24	0917-173_Nc	13_10_15_1424_55_843	1	2.8730	1.061	-0.1590	0.085	1.041	0.0770	0.4790	1.570	-3.02	0.273	-0.00100	0.00300	-1.1	0.330	44.535
					10/15/2013 14:25	0917-173_Nc	13_10_15_1425_56_593	1	1.270	1.009	-0.1810	0.081	1.021	0.0820	0.4570	1.585	-3.315	0.269	-0.00600	0.00300	-0.1	0.321	44.498
					10/15/2013 14:26	0917-173_Nc	13_10_15_1426_57_343	1	0.5960	0.989	-0.133	0.082	0.982	0.0800	0.4120	1.578	-3.043	0.260	-0.0090	0.00300	0.3	0.313	43.435
					10/15/2013 14:27	0917-173_Nc	13_10_15_1427_58_154	1	0.776	1.061	-0.038	0.078	1.025	0.0800	0.41100	1.579	-2.803	0.244	-0.00300	0.00300	0.0	0.322	40.057
					10/15/2013 14:28	0917-173_Nc	13_10_15_1428_58_914	1	0.074	1.070	-0.071	0.085	1.058	0.0810	0.3250	1.581	-2.92	0.257	-0.00100	0.00300	-0.2	0.329	41.928
					10/15/2013 14:29	0917-173_Nc	13_10_15_1429_59_664	1	1.357	1.092	-0.051	0.091	1.048	0.0800	0.353	1.586	-2.83	0.271	-0.00400	0.00300	-0.69	0.342	42.559
					10/15/2013 14:31	0917-173_Nc	13_10_15_1431_00_464	1	0.552	1.102	-0.071	0.080	1.060	0.0800	0.328	1.591	-2.722	0.251	-0.01100	0.00300	-0.52	0.332	40.943
					10/15/2013 14:32	0917-173_Nc	13_10_15_1432_01_174	1	1.408	1.103	-0.073	0.080	1.019	0.0800	0.3950	1.597	-2.978	0.254	-0.00900	0.00300	-0.15	0.337	41.889
					10/15/2013 14:33	0917-173_Nc	13_10_15_1433_01_914	1	0.542	1.078	-0.0790	0.084	1.044	0.0830	0.377	1.603	-3.185	0.270	-0.00500	0.00300	-0.5	0.342	44.842
					10/15/2013 14:34	0917-173_Nc	13_10_15_1434_02_734	1	3.096	1.135	0.011	0.086	1.045	0.0800	0.5080	1.606	-2.988	0.266	-0.00200	0.00300	-0.40	0.342	43.47
					10/15/2013 14:35	0917-173_Nc	13_10_15_1435_03_494	1	1.600	1.105	-0.226	0.086	1.131	0.0830	0.414	1.605	-3.159	0.273	-0.00400	0.00300	-0.4	0.342	44.396
					10/15/2013 14:36	0917-173_Nc	13_10_15_1436_04_204	1	0.603	1.077	-0.17000	0.087	1.054	0.0830	0.278	1.602	-3.12	0.266	-0.00400	0.00300	-0.4	0.337	43.366
					10/15/2013 14:37	0917-173_Nc	13_10_15_1437_05_044	1	2.207	1.156	-0.029	0.087	0.952	0.0820	0.3640	1.606	-2.73	0.260	-0.00400	0.00300	-0.4	0.346	41.761
					10/15/2013 14:38	0917-173_Nc	13_10_15_1438_05_754	1	1.589	1.072	-0.1740	0.082	1.063	0.0810	0.5200	1.589	-2.889	0.258	-0.00600	0.00300	-0.5	0.334	41.906
					10/15/2013 14:39	0917-173_Nc	13_10_15_1439_06_504	1	0.780	1.101	-0.2170	0.085	1.098	0.0820	0.4440	1.583	-3.403	0.290	-0.00400	0.00300	-0.4	0.326	47.73
					10/15/2013 14:40	0917-173_Nc	13_10_15_1440_07_295	1	1.315	1.088	-0.242	0.092	1.171	0.083	0.338	1.587	-3.851	0.306	-0.00300	0.00300	0.3	0.335	50.461
					10/15/2013 14:41	0917-173_Nc	13_10_15_1441_08_065	1	1.8820	1.148	-0.138	0.084	1.021	0.0810	0.4550	1.597	-2.753	0.252	-0.00500	0.00300	-0.38	0.337	40.212
					10/15/2013 14:42	0917-173_Nc	13_10_15_1442_08_775	1	0.984	1.105	-0.022	0.079	0.961	0.0800	0.5290	1.582	-2.33	0.235	-0.0060	0.00300	-1.14	0.335	36.197
					10/15/2013 14:43	0917-173_Nc	13_10_15_1443_09_575	1	2.004	1.105	-0.109	0.082	1.277	0.0820	0.312	1.585	-2.78	0.263	-0.0050	0.00300	-0.73	0.339	42.602
					10/15/2013 14:44	0917-173_Nc	13_10_15_1444_10_335	1	1.591	1.101	-0.037	0.082	1.34	0.0800	0.4190	1.573	-2.703	0.253	-0.00700	0.00300	-0.3	0.347	40.777
					10/15/2013 14:45	0917-173_Nc	13_10_15_1445_11_105	1	1.030	1.034	-0.067	0.084	1.36	0.0780	0.5380	1.578	-2.634	0.242	-0.00300	0.00300	-0.17	0.331	40.004
					10/15/2013 14:46	0917-173_Nc	13_10_15_1446_11_845	1	1.645	1.100	-0.079	0.080	1.40	0.0790	0.4360	1.564	-2.642	0.241	-0.00100	0.00300	-0.12	0.331	39.282
					10/15/2013 14:47	0917-173_Nc	13_10_15_1447_12_565	1	1.8930	1.081	-0.2990	0.098	1.051	0.0710	0.4880	1.341	-4.0080	0.258	-0.00700	0.00300	-0.96	0.347	38.589
			Stop		10/15/2013 14:48	0917-173_Nc	13_10_15_1448_13_365	1	-2.638	1.188	-1.663	0.265	-0.1730	0.0860	-0.178	0.268	-11.44	0.450	-0.01100	0.00300	-3.29	0.86	36.643
					10/15/2013 14:49	0917-173_Nc	13_10_15_1449_14_125	1	-2.908	1.295	-2.058	0.308	-0.2450	0.1010	-0.297	0.197	-13.58	0.523	-0.01500	0.00400	-4.35	1.02	36.222
					10/15/2013 14:50	0917-173_Nc	13_10_15_1450_14_835	1	-0.397	1.196	-1.4100	0.207	-0.1420	0.0700	-0.187	0.142	-8.74	0.347	-0.01100	0.00300	-2.19	0.691	23.178
					10/15/2013 14:51	0917-173_Nc	13_10_15_1451_15_635	1	-0.691	1.023	-0.636	0.112	-0.0840	0.0470	-0.0410	0.0910	-4.35	0.191	-0.00600	0.00200	-1.13	0.426	12.463
					10/15/2013 14:52	0917-173_Nc	13_10_15_1452_16_326	1	1.443	1.016	-0.686	0.112	-0.0140	0.0450	-0.117	0.0950	-4.18	0.193	-0.00800	0.00200	-1.807	0.428	12.183
					10/15/2013 14:53	0917-173_Nc	13_10_15_1453_17_106	1	0.882	1.041	-0.5680	0.105	0.597	0.0460	0.223	0.596	-4.318	0.225	-0.00500	0.00200	-1.17	0.392	24.375
					10/15/2013 14:54	0917-173_Nc	13_10_15_1454_17_846	1	1.069	1.134	-0.3120	0.110	1.64	0.091	0.452	1.738	-4.443	0.363	-0.0060	0.00400	-0.8	0.36	52.709
					10/15/2013 14:55	0917-173_Nc	13_10_15_1455_18_566	1	1.530	1.019	-0.210	0.089	1.056	0.0600	0.4850	1.108	-3.185	0.232	-0.00500	0.00200	-0.50	0.333	29.115
					10/15/2013 14:56	0917-173_Nc	13_10_15_1456_19_316	1	1.7220	1.057	-0.0900	0.058	0.1700	0.0370	0.254	0.258	-0.4690	0.100	0.00000	0.00200	0.040	0.315	4.965
					10/15/2013 14:57	0917-173_Nc	13_10_15_1457_20_026	1	0.7040	0.973	0.0930	0.055	0.0010	0.0320	-0.0820	0.0820	0.045	0.090	0.00400	0.00200	-0.074	0.296	0.748
					10/15/2013 14:58	0917-173_Nc	13_10_15_1458_20_766	1	1.804	1.046	0.0400	0.058	0.1620	0.0360	0.1700	0.217	-0.214	0.098	0.00100	0.00200	-0.631	0.313	4.429
					10/15/2013 14:59	0917-173_Nc	13_10_15_1459_21_486	1	2.918	1.257	-0.099	0.093	1.47	0.0830	0.6670	1.688	-3.41	0.301	-0.00600	0.00300	-0.1	0.376	43.538
					10/15/2013 15:00	0917-173_Nc	13_10_15_1500_22_256	1	2.731	1.200	-0.1950	0.097	1.69	0.089	0.459	1.775	-3.79	0.333	-0.0110	0.00300	-0.6	0.371	48.789
					10/15/2013 15:01	0917-173_Nc	13_10_15_1501_22_966	1	2.259	1.238	-0.2190	0.104	1.64	0.093	0.489	1.780	-3.809	0.338	-0.00500	0.00300	-0.1	0.396	49.485
					10/15/2013 15:02	0917-173_Nc	13_10_15_1502_23_686	1	2.33	1.189	-0.152	0.102	1.72	0.095	0.445	1.771	-3.81	0.333	0.00000	0.00300	-0.3	0.380	48.6
					10/15/2013 15:03	0917-173_Nc	13_10_15_1503_24_507	1	1.138	1.239	-0.109	0.099	1.63	0.091	0.529	1.765	-3.45	0.326	-0.00500	0.00300	-0.5	0.363	47.221
					10/15/2013 15:04	0917-173_Nc	13_10_15_1504_25_227	1	1.645	1.271	0.049	0.097	1.60	0.0880	0.344	1.777	-3.08	0.308	-0.00800	0.00300	-0.6	0.380	44.536
					10/15/2013 15:05	0917-173_Nc	13_10_15_1505_25_977	1	2.056	1.162	-0.001	0.094	1.78	0.0910	0.530	1.771	-2.68	0.296	-0.0030	0.00400	-1.13	0.365	42.34
					10/15/2013 15:06	0917-173_Nc	13_10_15_1506_26_777	1	3.572	1.166	0.009	0.087	1.61	0.0900	0.6170	1.778	-2.32	0.270	-0.00100	0.00300	-0.78	0.373	38.789
					10/15/2013 15:07	0917-173_Nc	13_10_15_1507_27_487	1	1.543	1.189	-0.070	0.089	1.65	0.0930	0.339	1.783	-2.61	0.284	-0.00600	0.00300	-0.66	0.359	41.127
					10/15/2013 15:08	0917-173_Nc	13_10_15_1508_28_247	1	2.221	1.184	-0.100	0.095	1.72	0.0890	0.338	1.785	-2.94	0.305	-0.00600	0.00300	-0.6	0.358	44.747
					10/15/2013 15:09	0917-173_Nc	13_10_15_1509_29_047	1	-0.566	1.189	-0.1650	0.097	1.65	0.0870	0.463	1.769	-2.724	0.289	-0.00500	0.00300	-1.11	0.384	40.568
					10/15/2013 15:10	0917-173_Nc	13_10_15_1510_29_767	1	3.649	1.217	-0.050	0.089	1.51	0.0910	0.231	1.781	-2.52	0.258	-0.00300	0.00300	-0.52	0.385	36.688
					10/15/2013 15:11	0917-173_Nc	13_10_15_1511_30_507	1	0.285	1.153	-0.118	0.093	1.62	0.0890	0.365	1.790	-2.729	0.276	-0.0060	0.00300	-0.40	0.363	39.984
					10/15/2013 15:12	0917-173_Nc	13_10_15_1512_31_257	1	1.573	1.185	-0.132	0.084	1.49	0.0880	0.4500	1.791	-2.67	0.264	-0.00400	0.00300	-0.41	0.367	38.86
					10/15/2013 15:13	0917-173_Nc	13_10_15_1513_32_067	1	2.800	1.129	0.144	0.087	1.41	0.0910	0.5650	1.791	-2.39	0.271	-0.00400	0.00300	-0.82	0.343	38.32
					10/15/2013 15:14	0917-173_Nc	13_10_15_1514_32_827	1	1.528	1.278	-0.080	0.093	1.41	0.0890	0.3630	1.794	-2.48	0.272	-0.00400	0.00300	-0.89	0.386	37.811
					10/15/2013 15:15	0917-173_Nc	13_10_15_1515_33_558	1	1.677	1.122	-0.088	0.093	1.56	0.0910	0.427	1.807	-2.75	0.284	-0.00400	0.00300	-0.54	0.373	41.788
					10/15/2013 15:16	0917-173_Nc	13_10_15_1516_34_268	1	1.134	1.234	-0.098	0.092	1.54	0.0900	0.405	1.814	-2.80	0.295	-0.0110	0.00300	-0.5	0.368	43.127
					10/15/2013 15:17	0917-173_Nc	13_10_15_1517_35_018	1	1.404	1.332	-0.139	0.093	1.69	0.0930	0.357	1.815	-2.81	0.307	-0.00600	0.00300	-1.0	0.387	44.763
					10/15/2013 15:18	0917-173_Nc	13_10_15_1518_35_828	1	2.353	1.181	-0.132	0.100	1.73	0.0930	0.341	1.790	-3.02	0.310	-0.0110	0.00300	-0.6	0.373	45.497
					10/15/2013 15:19	0917-173_Nc	13_10_15_1519_36_558	1	1.929	1.220	-0.044	0.100	1.67	0.091	0.289	1.786	-3.26	0.320	-0.0100	0.00300	-0.4	0.367	47.067
					10/15/2013 15:20	0917-173_Nc	13_10_15_1520_37_258	1	1.809	1.195	-0.17600	0.101	1.61	0.091	0.301	1.777	-3.52	0.328	-0.00100	0.00300	-0.5	0.362	47.687
					10/15/2013 15:21	0917-173_Nc	13_10_15_1521_38_078	1	0.267	1.237	-0.157	0.096	1.60	0.0930	0.387	1.762	-2.99	0.299	-0.00700	0.00300	-0.1	0.380	44.071
					10/15/2013 15:22	0917-173_Nc	13_10_15_1522_38_848	1	3.283	1.190	-0.119	0.090	1.54	0.0890	0.5830	1.758	-2.47	0.279	-0.00800	0.00400	-0.34	0.366	40.636
					10/15/2013 15:23	0917-173_Nc	13_10_15_1523_39_558	1	2.239	1.167	-0.104	0.087	1.61	0.0870	0.347	1.758	-2.67	0.269	0.00000	0.00400	-0.4	0.364	40.383
					10/15/2013 15:24	0917-173_Nc	13_10_15_1524_40_308	1	-1.366	1.387	-0.130	0.092	1.60	0.0880	0.433	1.763	-2.66	0.291	-0.00800	0.00300	-0.27	0.401	41.593
					10/15/2013 15:25	0917-173_Nc	13_10_15_1525_41_068	1	1.765	1.256	-0.087	0.094	1.63	0.0910	0.436	1.767	-2.99	0.306	-0.00900	0.00300	-0.6	0.376	44.63
					10/15/2013 15:26	0917-173_Nc	13_10_15_1526_41_828	1	4.6300	1.252	-0.1750	0.096	1.68	0.0920	0.460	1.779	-2.74	0.296	-0.00800	0.00300	-0.3	0.385	43.782
					10/15/2013 15:27	0917-173_Nc	13_10_15_1527_42_579	1	2.251	1.213	0.060	0.092	1.59	0.0930	0.463	1.784	-2.63	0.289	-0.00500	0.00400	-0.4	0.390	41.693
					10/15/2013 15:28	0917-173_Nc	13_10_15_1528_43_389	1	1.645	1.204	-0.0680	0.095	1.54	0.0880	0.256	1.777	-2.76	0.292	-0.0060	0.00300	-0.69	0.385	41.74
					10/15/2013 15:29	0917-173_Nc	13_10_15_1529_44_109	1	4.193	1.236	-0.043	0.091	1.55	0.0880	0.422	1.774	-2.68	0.274	-0.00700	0.00300	-0.50	0.383	39.768
					10/15/2013 15:30	0917-173_Nc	13_10_15_1530_44_859	1	1.63	1.098	-0.026	0.093	1.49	0.0860	0.364	1.764	-2.62	0.264	-0.0090	0.00300	-0.84	0.365	38.702
					10/15/2013 15:31	0917-173_Nc	13_10_15_1531_45_589	1	1.770	1.182	-0.093	0.093	1.60	0.0870	0.489	1.762	-2.72	0.285	-0.00400	0.00400	-1.18	0.368	41.516
					10/15/2013 15:32	0917-173_Nc	13_10_15_1532_46_389	1	0.117	1.175	-0.076	0.090	1.51	0.0890	0.5210	1.760	-2.77	0.286	-0.00700	0.00300	-0.49	0.366	41.923
					10/15/2013 15:33	0917-173_Nc	13_10_15_1533_47_159	1	1.71	1.178	-0.152	0.099	1.51	0.0880	0.452	1.769	-3.14	0.306	-0.00500	0.00400	-0.6	0.369	44.804
					10/15/2013 15:34	0917-173_Nc	13_10_15_1534_47_909	1	0.641	1.162	-0.069	0.101	1.63	0.092	0.410	1.760	-3.32	0.328	-0.00700	0.00300	-1.1	0.357	48.22
					10/15/2013 15:35	0917-173_Nc	13_10_15_1535_48_669	1	2.670	1.311	-0.1340	0.093	1.67	0.0910	0.505	1.777	-3.15	0.312	-0.00800	0.00300	-0.98	0.385	45.657
					10/15/2013 15:36	0917-173_Nc	13_10_15_1536_49_389	1	1.561	1.238	-0.278	0.098	1.60	0.0900	0.425	1.785	-3.02	0.303	-0.00800	0.00400	-0.3	0.383	44.082
					10/15/2013 15:37	0917-173_Nc	13_10_15_1537_50_209	1	1.768	1.290	-0.073	0.091	1.57	0.0900	0.293	1.787	-2.94	0.304	-0.00600	0.00300	-0.90	0.375	43.716
					10/15/2013 15:38	0917-173_Nc	13_10_15_1538_50_819	1	3.389	1.259	-0.0270	0.093	1.56	0.0890	0.555	1.779	-2.89	0.297	-0.00500	0.00400	-0.82	0.387	43.207
					10/15/2013 15:39	0917-173_Nc	13_10_15_1539_51_530	1	1.058	1.232	0.0310	0.090	1.47	0.0910	0.312	1.792	-2.38	0.273	-0.00500	0.00300	-0.73	0.386	39.232
					10/15/2013 15:40	0917-173_Nc	13_10_15_1540_52_350	1	0.83	1.298	-0.0930	0.088	1.43	0.0880	0.4740	1.777	-2.16	0.252	-0.00800	0.00300	-0.56	0.393	35.341
					10/15/2013 15:41	0917-173_Nc	13_10_15_1541_53_060	1	0.745	1.282	-0.138	0.085	1.47	0.0880	0.376	1.776	-2.12	0.253	-0.00800	0.00300	-1.29	0.385	35.498
					10/15/2013 15:42	0917-173_Nc	13_10_15_1542_53_840	1	3.17	1.296	-0.022	0.088	1.52	0.0880	0.5620	1.782	-2.00	0.254	-0.00600	0.00300	-0.88	0.394	36.456
					10/15/2013 15:43	0917-173_Nc	13_10_15_1543_54_630	1	0.5610	1.219	0.039	0.081	1.43	0.0890	0.506	1.774	-1.90	0.243	-0.00700	0.00300	-1.23	0.364	35.91
					10/15/2013 15:44	0917-173_Nc	13_10_15_1544_55_400	1	2.395	1.247	0.021	0.085	1.40	0.0840	0.538	1.769	-1.86	0.244	-0.00500	0.00300	-0.87	0.366	34.708
					10/15/2013 15:45	0917-173_Nc	13_10_15_1545_56_160	1	1.5080	1.133	-0.053	0.061	0.505	0.0690	0.4730	1.487	-0.573	0.127	-0.00700	0.00300	-0.64	0.341	13.22
					10/15/2013 15:46	0917-173_Nc	13_10_15_1546_56_880	1	4.1750	1.098	-0.024	0.063	-0.0130	0.0580	0.5700	1.296	-0.007	0.104	-0.00200	0.00200	-0.1570	0.347	1.431
					10/15/2013 15:47	0917-173_Nc	13_10_15_1547_57_600	1	0.507	1.133	-0.0580	0.074	0.704	0.0700	0.679	1.569	-1.795	0.183	-0.00300	0.00300	-0.35	0.361	23.616

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 15:48	0917-173_Nc	13_10_15_1548_58_420	1	3.8140	1.205	0.109	0.083	0.956	0.0760	0.368	1.670	-2.46	0.249	-0.00600	0.00300	-0.88	0.357	35.542
					10/15/2013 15:49	0917-173_Nc	13_10_15_1549_59_170	1	0.992	1.190	-0.038	0.087	0.996	0.0780	0.550	1.663	-2.37	0.247	-0.00200	0.00300	-0.60	0.368	36.323
					10/15/2013 15:50	0917-173_Nc	13_10_15_1550_59_920	1	3.145	1.203	-0.032	0.080	1.021	0.0770	0.666	1.654	-2.554	0.244	-0.00400	0.00300	-0.22	0.362	36.005
					10/15/2013 15:52	0917-173_Nc	13_10_15_1552_00_631	1	2.236	1.144	-0.019	0.084	0.960	0.0780	0.494	1.637	-2.42	0.243	-0.00400	0.00300	-0.72	0.366	34.79
					10/15/2013 15:53	0917-173_Nc	13_10_15_1553_01_401	1	3.28	1.164	-0.011	0.063	0.1050	0.0620	0.459	1.338	-0.356	0.107	-0.00600	0.00300	-0.601	0.357	6.048
					10/15/2013 15:54	0917-173_Nc	13_10_15_1554_02_221	1	0.765	1.091	0.032	0.060	-0.0370	0.0570	0.466	1.288	-0.1750	0.099	-0.00300	0.00200	0.523	0.329	0.931
					10/15/2013 15:55	0917-173_Nc	13_10_15_1555_02_931	1	4.042	1.073	0.043	0.061	-0.0150	0.0590	0.5950	1.283	-0.002	0.100	-0.00100	0.00200	0.123	0.332	0.682
					10/15/2013 15:56	0917-173_Nc	13_10_15_1556_03_701	1	1.626	1.179	0.041	0.064	-0.0170	0.0580	0.6750	1.285	-0.179	0.106	-0.00500	0.00300	-0.730	0.354	0.597
					10/15/2013 15:57	0917-173_Nc	13_10_15_1557_04_531	1	1.587	1.120	0.047	0.0570	-0.0600	0.0580	0.7230	1.278	0.113	0.098	-0.00700	0.00200	-0.523	0.333	0.547
					10/15/2013 15:58	0917-173_Nc	13_10_15_1558_05_231	1	1.969	1.164	-0.002	0.063	0.0410	0.0580	0.6510	1.294	-0.056	0.106	-0.00600	0.00200	-0.423	0.348	0.52
					10/15/2013 15:59	0917-173_Nc	13_10_15_1559_06_001	1	2.4270	1.126	0.151	0.063	-0.0230	0.0580	0.6170	1.292	-0.118	0.105	-0.00200	0.00200	-0.365	0.350	0.538
					10/15/2013 16:00	0917-173_Nc	13_10_15_1600_06_721	1	0.819	1.111	0.008	0.060	-0.085	0.0570	0.534	1.310	-0.064	0.101	-0.00500	0.00200	-0.079	0.343	0.596
					10/15/2013 16:01	0917-173_Nc	13_10_15_1601_07_521	1	1.899	1.119	0.012	0.062	-0.095	0.0590	0.5930	1.291	-0.017	0.102	0.00	0.00300	-0.398	0.341	0.569
					10/15/2013 16:02	0917-173_Nc	13_10_15_1602_08_231	1	0.488	1.099	-0.079	0.062	0.03	0.0550	0.6740	1.291	0.001	0.102	-0.00300	0.00300	-0.73	0.335	0.516
					10/15/2013 16:03	0917-173_Nc	13_10_15_1603_08_982	1	3.480	1.173	0.039	0.058	-0.067	0.0600	0.551	1.293	-0.021	0.100	-0.01	0.00200	-0.98	0.336	0.45
					10/15/2013 16:04	0917-173_Nc	13_10_15_1604_09_802	1	1.3920	1.118	0.051	0.062	0.0410	0.0560	0.6520	1.290	-0.094	0.103	0.00	0.00200	-0.068	0.342	0.373
					10/15/2013 16:05	0917-173_Nc	13_10_15_1605_10_512	1	3.169	1.150	0.028	0.062	0.0020	0.0580	0.452	1.290	-0.028	0.102	-0.00200	0.00200	-0.856	0.345	0.644
					10/15/2013 16:06	0917-173_Nc	13_10_15_1606_11_262	1	2.0490	1.183	0.025	0.061	-0.036	0.0590	0.472	1.299	-0.030	0.103	-0.00400	0.00200	-0.206	0.356	0.863
					10/15/2013 16:07	0917-173_Nc	13_10_15_1607_12_092	1	2.542	1.110	0.083	0.062	-0.052	0.0590	0.535	1.282	-0.033	0.102	0.00	0.00300	-0.03	0.343	0.366
					10/15/2013 16:08	0917-173_Nc	13_10_15_1608_12_842	1	1.909	1.160	0.044	0.061	-0.053	0.0580	0.6660	1.291	-0.006	0.104	-0.00600	0.00200	0.037	0.355	0.415
					10/15/2013 16:09	0917-173_Nc	13_10_15_1609_13_572	1	1.8600	1.214	0.068	0.063	-0.052	0.0570	0.518	1.300	0.048	0.106	-0.01	0.00300	-0.149	0.360	0.448
					10/15/2013 16:10	0917-173_Nc	13_10_15_1610_14_332	1	4.082	1.005	0.168	0.061	-0.0510	0.0560	0.7070	1.295	-0.020	0.099	-0.01	0.00200	-0.499	0.328	0.437
					10/15/2013 16:11	0917-173_Nc	13_10_15_1611_15_062	1	3.643	1.086	0.056	0.061	-0.0170	0.0570	0.612	1.294	-0.050	0.100	0.00	0.00200	-0.433	0.329	0.453
					10/15/2013 16:12	0917-173_Nc	13_10_15_1612_15_872	1	2.102	1.176	0.045	0.064	-0.059	0.0580	0.7090	1.294	-0.0300	0.108	-0.00300	0.00300	0.2270	0.363	0.654
					10/15/2013 16:13	0917-173_Nc	13_10_15_1613_16_622	1	1.8440	1.237	-0.019	0.063	-0.0380	0.0580	0.589	1.303	0.130	0.106	0.00	0.00200	-0.439	0.361	0.834
					10/15/2013 16:14	0917-173_Nc	13_10_15_1614_17_342	1	4.295	1.083	-0.007	0.061	-0.0210	0.0610	0.668	1.313	0.024	0.100	-0.00100	0.00300	-0.6700	0.336	1.123
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_19_744	1	-1.1	1.5	0.142	0.089	-0.44	1.45	-0.211	0.1010	0.074	0.142	0.056	0.593	0.192	0.446	-1.824
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_38_254	1	1.3	1.5	-0.038	0.081	-0.43	1.55	0.072	0.1120	-0.028	0.134	0.056	0.625	-0.76	0.450	-1.944
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_56_754	1	-3.2	1.5	0.0210	0.082	-0.44	1.60	0.0080	0.1000	-0.035	0.134	0.057	0.642	-0.879	0.439	-2.014
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_15_384	1	-0.5	1.4	-0.0010	0.084	-0.59	1.62	-0.04400	0.1030	-0.054	0.134	0.054	0.650	-0.335	0.440	-1.991
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_33_854	1	-2.6	1.5	0.028	0.079	-0.44	1.63	-0.02700	0.0960	0.12500	0.132	0.061	0.654	-0.721	0.436	-2.055
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_52_344	1	-0.4	1.4	0.0470	0.083	-0.35	1.65	0.281	0.1060	-0.1490	0.130	0.059	0.651	-0.318	0.430	-2.079
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_10_944	1	0.3	1.5	0.207	0.081	-0.48	1.64	-0.112	0.0990	-0.247	0.132	0.062	0.654	-0.282	0.448	-2.055
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_29_464	1	-3.7	1.4	-0.030	0.079	-0.47	1.65	-0.0320	0.1160	-0.169	0.128	0.061	0.653	-0.513	0.425	-2.089
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_48_084	1	-0.6	1.5	0.2750	0.086	-0.52	1.64	0.0690	0.1120	0.326	0.138	0.064	0.659	0.528	0.436	-2.056
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_06_504	1	-0.4	1.6	0.19500	0.089	-0.52	1.65	0.0860	0.0980	0.101	0.144	0.050	0.654	-0.89	0.469	-2.068
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_25_004	1	-1.2	1.4	0.2530	0.081	-0.48	1.64	0.091	0.1080	0.132	0.132	0.066	0.659	-1.18	0.419	-2.059
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_43_654	1	-1.5	1.6	0.253	0.084	-0.41	1.64	-0.001	0.1080	0.263	0.140	0.053	0.655	-1.07	0.470	-2.084
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_02_124	1	-1.6	1.5	-0.02200	0.082	-0.54	1.65	-0.02000	0.1080	0.202	0.136	0.053	0.654	-0.440	0.445	-2.094
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_20_734	1	-3.7	1.4	-0.116	0.087	-0.45	1.64	-0.104	0.0990	-0.182	0.136	0.056	0.654	-0.0280	0.446	-2.066
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_39_234	1	-1.6	1.4	0.012	0.086	-0.53	1.65	-0.218	0.0980	0.2480	0.137	0.043	0.654	-0.44	0.445	-2.081
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_57_744	1	-4.0	1.5	0.032	0.085	-0.48	1.64	-0.033	0.1040	-0.173	0.139	0.051	0.658	0.3100	0.453	-2.068
					10/15/2013 17:05	0917-173_Nc	13_10_15_1705_46_267	1	-2.99	1.613	0.819	0.202	4.36	0.162	-0.278	2.19	-2.54	0.73	-0.0110	0.00500	-4.1	0.60	106.09
					10/15/2013 17:06	0917-173_Nc	13_10_15_1706_46_977	1	-2.38	1.563	0.855	0.203	4.33	0.161	-0.12	2.21	-2.32	0.75	-0.0060	0.00500	-4.2	0.59	108.771
					10/15/2013 17:07	0917-173_Nc	13_10_15_1707_47_767	1	-3.55	1.538	0.952	0.199	4.24	0.164	-0.14	2.20	-2.35	0.75	-0.0070	0.00500	-4.1	0.61	108.396
					10/15/2013 17:08	0917-173_Nc	13_10_15_1708_48_517	1	-3.25	1.692	0.792	0.202	4.35	0.166	-0.125	2.20	-2.47	0.75	-0.0110	0.00500	-4.1	0.61	110.409
					10/15/2013 17:09	0917-173_Nc	13_10_15_1709_49_367	1	-3.13	1.592	0.842	0.204	4.31	0.165	-0.12	2.22	-2.50	0.76	-0.0050	0.00600	-4.1	0.61	111.097
					10/15/2013 17:10	0917-173_Nc	13_10_15_1710_50_057	1	-2.47	1.546	0.747	0.214	4.37	0.169	-0.253	2.22	-2.75	0.81	-0.0050	0.00600	-4.2	0.62	115.878
					10/15/2013 17:11	0917-173_Nc	13_10_15_1711_50_897	1	-2.50	1.547	0.809	0.210	4.27	0.170	-0.348	2.20	-2.72	0.80	-0.0130	0.00600	-4.8	0.60	116.964
					10/15/2013 17:12	0917-173_Nc	13_10_15_1712_51_607	1	-2.70	1.640	0.761	0.216	4.15	0.166	-0.404	2.20	-2.55	0.82	-0.0100	0.00600	-4.7	0.64	118.572
					10/15/2013 17:13	0917-173_Nc	13_10_15_1713_52_367	1	-2.86	1.601	0.811	0.217	4.12	0.170	-0.573	2.21	-2.28	0.81	-0.0060	0.00500	-4.5	0.63	118.827
					10/15/2013 17:14	0917-173_Nc	13_10_15_1714_53_138	1	-1.49	1.496	0.840	0.216	3.95	0.166	-0.451	2.19	-2.08	0.81	-0.0060	0.00600	-5.3	0.63	118.445
					10/15/2013 17:15	0917-173_Nc	13_10_15_1715_53_758	1	-0.79	1.536	0.933	0.214	3.78	0.164	-0.198	2.20	-1.55	0.80	-0.0090	0.00500	-5.6	0.65	117.714
					10/15/2013 17:16	0917-173_Nc	13_10_15_1716_54_528	1	-2.09	1.681	1.009	0.208	3.73	0.164	-0.273	2.21	-1.20	0.79	-0.0080	0.00600	-5.6	0.63	116.146
					10/15/2013 17:17	0917-173_Nc	13_10_15_1717_55_258	1	-1.33	1.634	1.028	0.210	3.63	0.163	-0.402	2.19	-1.37	0.79	-0.0120	0.00600	-5.1	0.66	116.545
					10/15/2013 17:18	0917-173_Nc	13_10_15_1718_56_058	1	-3.74	1.642	0.921	0.207	3.59	0.162	-0.227	2.20	-1.34	0.78	-0.0040	0.00500	-6.3	0.65	115.879
					10/15/2013 17:19	0917-173_Nc	13_10_15_1719_56_858	1	-0.96	1.584	0.998	0.210	3.62	0.164	-0.152	2.20	-1.03	0.78	-0.0150	0.00600	-6.0	0.62	116.318
					10/15/2013 17:20	0917-173_Nc	13_10_15_1720_57_568	1	-2.14	1.555	0.937	0.202	3.67	0.161	-0.141	2.20	-1.33	0.75	-0.0070	0.00500	-5.4	0.63	111.608
					10/15/2013 17:21	0917-173_Nc	13_10_15_1721_58_318	1	-1.94	1.513	1.036	0.194	3.72	0.158	-0.062	2.21	-0.94	0.72	-0.0090	0.00500	-5.2	0.59	106.666
					10/15/2013 17:22	0917-173_Nc	13_10_15_1722_59_158	1	-1.58	1.585	0.867	0.200	3.60	0.158	-0.174	2.20	-1.23	0.73	-0.0010	0.00500	-5.0	0.62	108.486
					10/15/2013 17:23	0917-173_Nc	13_10_15_1723_59_868	1	-3.53	1.610	0.907	0.201	3.77	0.157	-0.162	2.20	-1.91	0.75	-0.0120	0.00500	-3.8	0.62	110.489
					10/15/2013 17:25	0917-173_Nc	13_10_15_1725_00_688	1	-2.31	1.511	0.811	0.206	3.80	0.163	-0.031	2.20	-2.12	0.76	-0.0060	0.00500	-4.1	0.61	112.419
					10/15/2013 17:26	0917-173_Nc	13_10_15_1726_01_458	1	-2.46	1.512	0.751	0.196	3.68	0.161	0.011	2.20	-2.01	0.75	-0.0020	0.00500	-4.6	0.58	108.88
					10/15/2013 17:27	0917-173_Nc	13_10_15_1727_02_149	1	-3.58	1.470	0.842	0.205	3.59	0.159	-0.149	2.19	-1.86	0.76	-0.0070	0.00600	-4.8	0.60	110.979
					10/15/2013 17:28	0917-173_Nc	13_10_15_1728_02_979	1	-0.83	1.572	0.875	0.191	3.49	0.157	-0.064	2.21	-1.71	0.72	-0.0100	0.00500	-3.9	0.59	105.808
					10/15/2013 17:30	0917-173_Nc	13_10_15_1730_15_740	1	-1.99	1.509	0.735	0.192	3.41	0.153	-0.028	2.19	-1.56	0.71	-0.0060	0.00500	-5.1	0.59	105.018
					10/15/2013 17:31	0917-173_Nc	13_10_15_1731_16_470	1	-1.82	1.540	0.801	0.191	3.39	0.154	-0.045	2.20	-1.41	0.71	-0.0020	0.00500	-4.6	0.60	105.54
					10/15/2013 17:32	0917-173_Nc	13_10_15_1732_17_210	1	-3.49	1.539	0.812	0.195	3.35	0.152	-0.199	2.20	-1.42	0.72	-0.0100	0.00500	-5.0	0.60	107.453
					10/15/2013 17:33	0917-173_Nc	13_10_15_1733_17_960	1	-1.96	1.471	0.751	0.197	3.33	0.155	0.025	2.22	-1.49	0.73	-0.0040	0.00500	-4.7	0.61	109.343
					10/15/2013 17:34	0917-173_Nc	13_10_15_1734_18_770	1	-2.95	1.579	0.747	0.193	3.30	0.156	0.199	2.22	-1.63	0.73	-0.0060	0.00500	-4.7	0.60	107.454
					10/15/2013 17:35	0917-173_Nc	13_10_15_1735_19_520	1	-1.16	1.684	0.872	0.193	3.33	0.154	-0.056	2.20	-1.31	0.71	-0.0090	0.00500	-4.3	0.61	106.119
Data	Run	7	Start	A	10/15/2013 17:36	0917-173_Nc	13_10_15_1736_20_230	1	-3.51	1.465	0.832	0.177	3.01	0.143	-0.031	2.02	-1.14	0.65	-0.0030	0.00500	-3.8	0.56	106.831
					10/15/2013 17:37	0917-173_Nc	13_10_15_1737_20_960	1	-0.42	1.522	0.870	0.178	2.79	0.138	0.033	2.03	-0.81	0.66	-0.0110	0.00500	-5.0	0.57	106.705
					10/15/2013 17:38	0917-173_Nc	13_10_15_1738_21_720	1	-0.68	1.461	0.814	0.179	2.78	0.140	0.010	2.04	-0.98	0.66	-0.0070	0.00500	-4.7	0.55	108.419
					10/15/2013 17:39	0917-173_Nc	13_10_15_1739_22_480	1	-1.47	1.627	0.822	0.190	2.74	0.142	-0.037	2.03	-0.78	0.69	-0.0110	0.00500	-5.2	0.60	112.168
					10/15/2013 17:40	0917-173_Nc	13_10_15_1740_23_240	1	-1.04	1.535	0.797	0.184	2.67	0.139	-0.153	2.03	-0.70	0.69	-0.0050	0.00500	-5.0	0.59	112.145
					10/15/2013 17:41	0917-173_Nc	13_10_15_1741_23_960	1	-1.70	1.531	0.693	0.184	2.55	0.140	-0.059	2.04	-0.71	0.68	-0.0080	0.00500	-5.2	0.58	112.025
					10/15/2013 17:42	0917-173_Nc	13_10_15_1742_24_741	1	-2.46	1.409	0.845	0.186	2.68	0.141	0.014	2.03	-0.47	0.68	-0.0050	0.00500	-5.6	0.57	111.839
					10/15/2013 17:43	0917-173_Nc	13_10_15_1743_25_431	1	-1.95	1.444	0.698	0.186	2.52	0.141	-0.077	2.02	-0.74	0.68	-0.0100	0.00500	-5.1	0.59	112.005
					10/15/2013 17:44	0917-173_Nc	13_10_15_1744_26_271	1	-1.21	1.453	0.731	0.183	2.56	0.138	-0.083	2.03	-0.81	0.68	-0.0090	0.00500	-5.4	0.58	111.785
					10/15/2013 17:45	0917-173_Nc	13_10_15_1745_27_041	1	-1.67	1.511	0.802	0.182	2.57	0.139	-0.030	2.02	-0.86	0.69	-0.0070	0.00500	-4.9	0.57	113.426
					10/15/2013 17:46	0917-173_Nc	13_10_15_1746_27_711	1	-1.82	1.515	0.834	0.184	2.49	0.141	0.023	2.04	-0.51	0.69	-0.0040	0.00500	-6.2	0.58	113.615
					10/15/2013 17:47	0917-173_Nc	13_10_15_1747_28_481	1	-3.17	1.360	0.758	0.187	2.54	0.139	-0.1450	2.03	-0.67	0.69	-0.0110	0.00500	-5.8	0.58	114.241
					10/15/2013 17:48	0917-173_Nc	13_10_15_1748_29_241	1	-0.92	1.434	0.859	0.184	2.55	0.139	-0.236	2.03	-0.59	0.69	-0.0080	0.00500	-5.6	0.59	115.272
					10/15/2013 17:49	0917-173_Nc	13_10_15_1749_30_061	1	-1.80	1.529	0.750	0.185	2.45	0.140	0.0800	2.04	-0.94	0.70	-0.0060	0.00500	-5.5	0.59	114.548
					10/15/2013 17:50	0917-173_Nc	13_10_15_1750_30_771	1	-1.46	1.495	0.766	0.189	2.37	0.137	-0.1480	2.03	-0.83	0.70	-0.0090	0.00500	-5.9	0.59	115.64
					10/15/2013 17:51	0917-173_Nc	13_10_15_1751_31_551	1	-0.94	1.455	0.829	0.188	2.36	0.139	-0.177	2.03	-0.65	0.71	-0.0040	0.00500	-5.8	0.59	116.512
					10/15/2013 17:52	0917-173_Nc	13_10_15_1752_32_281	1	-2.57	1.523	0.920	0.191	2.43	0.142	0.1090	2.03	-0.53	0.71	-0.0120	0.00500	-5.6	0.60	117.57
					10/15/2013 17:53	0917-173_Nc	13_10_15_1753_33_031	1	-0.85	1.460	0.829	0.190	2.32	0.140	-0.136	2.03	-0.65	0.71	-0.0080	0.00500	-5.7	0.58	116.604
					10/15/2013 17:54	0917-173_Nc	13_10_15_1754_33_752	1	-3.48	1.440	0.778	0.191	2.34	0.138	-0.133	2.03	-0.74	0.71	-0.0050	0.00500	-5.9	0.59	115.701
					10/15/2013 17:55	0917-173_Nc	13_10_15_1755_34_512	1	-3.15	1.389	0.722	0.189	2.29	0.139	-0.0330	2.03	-0.69	0.71	-0.0060	0.00500	-5.6	0.58	116.737
					10/15/2013 17:56	0917-173_Nc	13_10_15_1756_35_272	1	-1.72	1.438	0.831	0.189	2.33	0.140	0.0010	2.04	-0.61	0.71	-0.0080	0.00500	-5.7	0.59	116.806
					10/15/2013 17:57	0917-173_Nc	13_10_15_1757_36_032	1	-1.27	1.483	0.786	0.190	2.32	0.140	0.0050	2.04	-0.59	0.71	-0.0050	0.00500	-5.7	0.57	117.339
					10/15/2013 17:58	0917-173_Nc	13_10_15_1758_36_842	1	-1.76	1.517	0.829	0.193	2.29	0.140	-0.078	2.03	-0.71	0.71	-0.0090	0.00500	-5.3	0.61	117.332
					10/15/2013 17:59	0917-173_Nc	13_10_15_1759_37_412	1	-1.78	1.422	0.838	0.193	2.35	0.138	-0.206	2.02	-0.79	0.71	-0.0060	0.00500	-5.2	0.58	118.111
					10/15/2013 18:00	0917-173_Nc	13_10_15_1800_38_222	1	-2.52	1.518	0.852	0.194	2.32	0.140	0.01800	2.03	-0.87	0.72	-0.0050	0.00500	-5.8	0.59	117.94
					10/15/2013 18:01	0917-173_Nc	13_10_15_1801_38_972	1	0.26	1.492	0.797	0.186	2.41	0.140	-0.208	2.03	-1.04	0.72	-0.0040	0.00500	-5.7	0.59	118.476
					10/15/2013 18:02	0917-173_Nc	13_10_15_1802_39_732	1	-2.13	1.501	0.892	0.191	2.39	0.143	-0.0740	2.02	-0.88	0.72	-0.0060	0.00500	-5.6	0.60	118.867
					10/15/2013 18:03	0917-173_Nc	13_10_15_1803_40_492	1	-2.53	1.457	0.923	0.198	2.47	0.140	-0.0360	2.04	-0.69	0.73	-0.0060	0.00500	-5.6	0.60	119.576
					10/15/2013 18:04	0917-173_Nc	13_10_15_1804_41_282	1	-3.05	1.427	0.860	0.192	2.42	0.142	-0.0460	2.04	-0.55	0.72	-0.0110	0.00500	-6.2	0.60	119.329
					10/15/2013 18:05	0917-173_Nc	13_10_15_1805_42_053	1	-1.80	1.457	0.845	0.195	2.39	0.141	-0.0460	2.03	-0.48	0.72	-0.0040	0.00500	-5.6	0.61	119.578
					10/15/2013 18:06	0917-173_Nc	13_10_15_1806_42_763	1	-1.59	1.455	0.872	0.191	2.43	0.141	-0.0530	2.05	-0.44	0.71	-0.0060	0.00500	-5.4	0.59	117.227
					10/15/2013 18:07	0917-173_Nc	13_10_15_1807_43_543	1	-2.05	1.533	0.899	0.188	2.44	0.138	-0.00700	2.03	-0.45	0.69	-0.0070	0.00500	-5.9	0.59	113.271
					10/15/2013 18:08	0917-173_Nc	13_10_15_1808_44_293	1	0.21	1.473	0.930	0.175	2.54	0.138	0.0200	2.04	-0.21	0.64	-0.0050	0.00500	-5.1	0.57	105.76
					10/15/2013 18:09	0917-173_Nc	13_10_15_1809_45_103	1	-4.12	1.530	0.827	0.162	2.72	0.133	0.174	2.04	-0.08	0.59	-0.0080	0.00500	-4.7	0.57	97.805
					10/15/2013 18:10	0917-173_Nc	13_10_15_1810_45_773	1	-0.06	1.467	0.843	0.152	2.68	0.132	0.189	2.032	-0.19	0.54	-0.0090	0.00400	-5.1	0.53	87.627
					10/15/2013 18:11	0917-173_Nc	13_10_15_1811_46_533	1	-0.43	1.465	0.896	0.149	2.86	0.131	0.188	2.029	-0.32	0.51	-0.0090	0.00400	-3.9	0.53	82.612
					10/15/2013 18:12	0917-173_Nc	13_10_15_1812_47_343	1	-3.777	1.460	0.869	0.148	2.91	0.131	0.028	2.05	-0.28	0.52	-0.0060	0.00500	-4.4	0.52	84.065
					10/15/2013 18:13	0917-173_Nc	13_10_15_1813_48_113	1	-2.56	1.479	0.920	0.150	2.86	0.131	0.228	2.033	-0.27	0.53	-0.0090	0.00500	-4.3	0.53	86.408
					10/15/2013 18:14	0917-173_Nc	13_10_15_1814_48_813	1	-1.69	1.426	0.797	0.159	2.91	0.130	0.173	2.05	-0.29	0.56	-0.0070	0.00500	-4.5	0.52	91.981
					10/15/2013 18:15	0917-173_Nc	13_10_15_1815_49_633	1	0.32	1.545	0.710	0.161	2.85	0.132	0.235	2.04	-0.38	0.59	-0.0080	0.00500	-4.6	0.56	95.938
					10/15/2013 18:16	0917-173_Nc	13_10_15_1816_50_353	1	-3.10	1.475	0.840	0.168	2.96	0.134	0.246	2.04	-0.71	0.61	-0.0090	0.00500	-5.1	0.56	98.65
					10/15/2013 18:17	0917-173_Nc	13_10_15_1817_51_074	1	-2.09	1.549	0.887	0.169	2.96	0.137	0.063	2.03	-0.98	0.62	-0.0070	0.00400	-4.4	0.57	101.051
					10/15/2013 18:18	0917-173_Nc	13_10_15_1818_51_864	1	-3.43	1.523	0.832	0.174	3.03	0.140	0.018	2.02	-1.25	0.64	-0.0050	0.00500	-4.6	0.57	102.308
					10/15/2013 18:19	0917-173_Nc	13_10_15_1819_52_674	1	-0.32	1.455	0.824	0.176	3.01	0.138	-0.323	2.02	-1.28	0.64	-0.0110	0.00400	-4.3	0.57	103.855
					10/15/2013 18:20	0917-173_Nc	13_10_15_1820_53_414	1	-1.66	1.525	0.867	0.180	2.94	0.139	0.009	2.04	-1.21	0.65	-0.0090	0.00500	-4.2	0.57	105.065
					10/15/2013 18:21	0917-173_Nc	13_10_15_1821_54_174	1	-2.48	1.485	1.038	0.174	2.89	0.143	0.075	2.04	-1.07	0.65	-0.0050	0.00500	-4.9	0.55	105.716
					10/15/2013 18:22	0917-173_Nc	13_10_15_1822_54_894	1	-0.96	1.541	0.921	0.175	2.87	0.141	0.096	2.04	-1.03	0.67	-0.0020	0.00500	-5.2	0.58	107.681
					10/15/2013 18:23	0917-173_Nc	13_10_15_1823_55_724	1	-1.48	1.499	0.907	0.182	2.71	0.140	0.145	2.03	-1.01	0.67	-0.0060	0.00500	-4.9	0.58	109.79
					10/15/2013 18:24	0917-173_Nc	13_10_15_1824_56_494	1	-5.69	1.450	1.055	0.179	2.74	0.141	0.045	2.04	-0.67	0.68	-0.0100	0.00500	-4.9	0.58	110.99
					10/15/2013 18:25	0917-173_Nc	13_10_15_1825_57_204	1	-2.05	1.458	0.929	0.186	2.59	0.142	0.034	2.03	-0.61	0.69	-0.0060	0.00500	-5.8	0.59	112.76
					10/15/2013 18:26	0917-173_Nc	13_10_15_1826_57_954	1	-2.05	1.382	0.853	0.189	2.66	0.141	0.070	2.02	-0.79	0.69	-0.0090	0.00500	-5.1	0.57	114.387
					10/15/2013 18:27	0917-173_Nc	13_10_15_1827_58_704	1	-2.15	1.404	0.916	0.188	2.63	0.144	0.072	2.02	-1.05	0.70	-0.0070	0.00500	-5.2	0.60	114.662
					10/15/2013 18:28	0917-173_Nc	13_10_15_1828_59_474	1	-0.90	1.495	0.864	0.189	2.66	0.141	-0.043	2.02	-0.67	0.71	-0.0050	0.00500	-5.9	0.59	115.784
					10/15/2013 18:30	0917-173_Nc	13_10_15_1830_01_265	1	-1.56	1.523	0.869	0.191	2.62	0.144	-0.002	2.02	-0.87	0.72	-0.0060	0.00500	-4.9	0.61	116.542
					10/15/2013 18:31	0917-173_Nc	13_10_15_1831_02_065	1	-0.41	1.462	0.855	0.191	2.67	0.142	0.035	2.03	-0.79	0.72	-0.0050	0.00500	-6.1	0.59	117.503
					10/15/2013 18:32	0917-173_Nc	13_10_15_1832_02_795	1	-2.51	1.461	0.834	0.191	2.59	0.143	-0.080	2.03	-0.72	0.72	-0.0100	0.00500	-5.4	0.59	117.391
					10/15/2013 18:33	0917-173_Nc	13_10_15_1833_03_555	1	-3.38	1.538	0.802	0.189	2.60	0.145	-0.066	2.02	-0.82	0.72	-0.0060	0.00500	-5.4	0.63	118.428
					10/15/2013 18:34	0917-173_Nc	13_10_15_1834_04_365	1	-1.55	1.456	0.887	0.195	2.66	0.145	0.009	2.02	-0.75	0.72	-0.0070	0.00500	-5.4	0.60	117.567
					10/15/2013 18:35	0917-173_Nc	13_10_15_1835_05_115	1	-2.45	1.404	0.856	0.196	2.67	0.146	0.038	2.04	-0.85	0.73	-0.0070	0.00500	-5.3	0.61	118.717
			Stop		10/15/2013 18:36	0917-173_Nc	13_10_15_1836_05_865	1	-3.02	1.349	0.468	0.197	2.32	0.133	0.037	1.905	-2.46	0.69	-0.0050	0.00500	-5.4	0.59	109.027
					10/15/2013 18:37	0917-173_Nc	13_10_15_1837_06_585	1	-4.807	1.295	-1.641	0.291	0.122	0.0900	-0.201	0.634	-11.60	0.55	-0.01400	0.00300	-4.19	0.98	45.998
					10/15/2013 18:38	0917-173_Nc	13_10_15_1838_07_425	1	-5.587	1.347	-2.066	0.309	-0.091	0.0930	-0.283	0.226	-13.16	0.54	-0.01100	0.00300	-4.04	1.05	38.34
					10/15/2013 18:39	0917-173_Nc	13_10_15_1839_08_065	1	-4.88	1.352	-2.067	0.307	-0.201	0.0960	-0.246	0.207	-13.36	0.54	-0.00900	0.00300	-3.74	1.07	37.472
					10/15/2013 18:40	0917-173_Nc	13_10_15_1840_08_765	1	-5.93	1.333	-2.195	0.315	-0.2130	0.0990	-0.273	0.191	-13.36	0.54	-0.01200	0.00300	-3.85	1.07	37.128
					10/15/2013 18:41	0917-173_Nc	13_10_15_1841_09_505	1	-5.76	1.343	-1.993	0.314	-0.119	0.1020	-0.257	0.196	-13.21	0.54	-0.00700	0.00300	-3.87	1.09	36.878
					10/15/2013 18:42	0917-173_Nc	13_10_15_1842_10_276	1	-6.080	1.298	-2.058	0.308	-0.194	0.1000	-0.351	0.200	-13.32	0.53	-0.00800	0.00300	-4.36	1.07	36.822
					10/15/2013 18:43	0917-173_Nc	13_10_15_1843_11_086	1	-3.889	1.146	-1.527	0.235	-0.088	0.0750	-0.177	0.152	-9.71	0.40	-0.00800	0.00300	-3.93	0.804	26.779
					10/15/2013 18:44	0917-173_Nc	13_10_15_1844_11_866	1	-0.486	0.926	-0.247	0.068	0.081	0.0330	0.021	0.0830	-1.648	0.12	0.00	0.00200	-0.857	0.313	6.24
					10/15/2013 18:45	0917-173_Nc	13_10_15_1845_12_596	1	-0.177	0.972	-0.0110	0.051	0.0650	0.0310	0.094	0.0710	0.23800	0.09	0.00	0.00200	0.125	0.277	1.576
					10/15/2013 18:46	0917-173_Nc	13_10_15_1846_13_396	1	-2.203	1.242	0.568	0.126	2.04	0.093	0.511	1.438	-0.90	0.46	-0.0100	0.00400	-3.5	0.43	59.317
					10/15/2013 18:47	0917-173_Nc	13_10_15_1847_14_166	1	-3.41	1.663	0.893	0.198	3.11	0.153	0.113	2.19	-1.25	0.76	-0.0010	0.00600	-5.6	0.63	115.506
					10/15/2013 18:48	0917-173_Nc	13_10_15_1848_14_866	1	-1.60	1.588	0.929	0.210	3.13	0.157	0.033	2.18	-1.02	0.79	-0.0060	0.00600	-6.4	0.66	118.639
Data	Run	8	Start	A	10/15/2013 18:49	0917-173_Nc	13_10_15_1849_15_616	1	-4.06	1.423	0.866	0.189	2.74	0.144	-0.072	2.01	-0.86	0.72	-0.0030	0.00500	-5.1	0.61	118.726
					10/15/2013 18:50	0917-173_Nc	13_10_15_1850_16_406	1	-1.47	1.510	0.888	0.191	2.69	0.144	-0.366	1.99	-0.66	0.73	-0.0090	0.00500	-5.8	0.62	119.513
					10/15/2013 18:51	0917-173_Nc	13_10_15_1851_17_216	1	-2.67	1.433	0.826	0.197	2.70	0.145	0.027	2.01	-0.89	0.74	-0.0060	0.00500	-5.3	0.61	120.453
					10/15/2013 18:52	0917-173_Nc	13_10_15_1852_17_946	1	-2.46	1.392	0.827	0.196	2.82	0.147	-0.085	2.01	-0.83	0.74	-0.0060	0.00500	-5.8	0.61	121.051
					10/15/2013 18:53	0917-173_Nc	13_10_15_1853_18_657	1	-1.96	1.473	0.940	0.200	2.82	0.145	-0.146	1.99	-1.00	0.76	-0.0060	0.00500	-6.0	0.61	123.478
					10/15/2013 18:54	0917-173_Nc	13_10_15_1854_19_407	1	-1.28	1.437	0.958	0.204	2.80	0.149	-0.079	2.00	-1.51	0.78	-0.0100	0.00500	-5.5	0.59	126.759

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 18:55	0917-173_Nc	13_10_15_1855_20_197	1	-0.36	1.578	0.836	0.210	2.85	0.155	-0.203	2.01	-1.89	0.80	-0.0030	0.00600	-5.6	0.61	128.95
					10/15/2013 18:56	0917-173_Nc	13_10_15_1856_20_907	1	-3.40	1.415	0.793	0.214	2.95	0.155	-0.269	1.99	-2.52	0.82	-0.0080	0.00500	-4.9	0.61	132.304
					10/15/2013 18:57	0917-173_Nc	13_10_15_1857_21_717	1	-0.85	1.412	0.803	0.213	2.98	0.159	-0.374	2.00	-2.66	0.83	-0.0050	0.00500	-5.3	0.59	134.15
					10/15/2013 18:58	0917-173_Nc	13_10_15_1858_22_447	1	0.00	1.476	0.873	0.214	2.94	0.158	-0.212	2.01	-2.57	0.83	-0.0060	0.00500	-5.4	0.60	134.011
					10/15/2013 18:59	0917-173_Nc	13_10_15_1859_23_207	1	-3.89	1.480	1.003	0.219	2.97	0.160	-0.355	1.99	-2.22	0.83	-0.0100	0.00600	-5.3	0.61	133.955
					10/15/2013 19:00	0917-173_Nc	13_10_15_1900_23_947	1	-2.78	1.504	0.999	0.220	2.95	0.157	-0.502	2.01	-2.10	0.84	-0.0060	0.00500	-5.6	0.60	133.555
					10/15/2013 19:01	0917-173_Nc	13_10_15_1901_24_647	1	-3.18	1.501	1.075	0.218	3.05	0.159	-0.377	2.00	-2.17	0.84	-0.0050	0.00600	-5.7	0.62	134.241
					10/15/2013 19:02	0917-173_Nc	13_10_15_1902_25_427	1	-1.59	1.473	0.995	0.214	2.97	0.157	-0.369	2.00	-2.38	0.84	-0.0070	0.00600	-4.9	0.62	135.13
					10/15/2013 19:03	0917-173_Nc	13_10_15_1903_26_167	1	-2.24	1.455	0.913	0.225	3.03	0.162	-0.144	1.99	-2.39	0.85	-0.0060	0.00500	-5.8	0.61	136.342
					10/15/2013 19:04	0917-173_Nc	13_10_15_1904_26_967	1	-2.21	1.555	0.904	0.216	3.05	0.164	-0.478	1.99	-2.48	0.84	-0.0030	0.00500	-5.1	0.62	136.763
					10/15/2013 19:05	0917-173_Nc	13_10_15_1905_27_678	1	-1.13	1.403	0.982	0.220	3.01	0.165	-0.292	2.01	-2.30	0.84	-0.0020	0.00500	-5.7	0.60	135.275
					10/15/2013 19:06	0917-173_Nc	13_10_15_1906_28_368	1	-3.22	1.489	0.961	0.221	3.02	0.162	-0.537	2.00	-2.29	0.84	-0.0030	0.00500	-5.6	0.62	133.523
					10/15/2013 19:07	0917-173_Nc	13_10_15_1907_29_148	1	-1.45	1.488	0.801	0.218	3.02	0.162	-0.309	2.01	-2.13	0.82	-0.0080	0.00500	-5.3	0.61	132.729
					10/15/2013 19:08	0917-173_Nc	13_10_15_1908_29_878	1	-2.90	1.525	0.939	0.211	3.02	0.159	-0.351	1.99	-2.05	0.81	-0.0060	0.00600	-5.5	0.61	130.741
					10/15/2013 19:09	0917-173_Nc	13_10_15_1909_30_628	1	-2.51	1.462	0.873	0.205	2.95	0.160	-0.384	2.00	-1.77	0.79	-0.0090	0.00500	-5.5	0.60	128.359
					10/15/2013 19:10	0917-173_Nc	13_10_15_1910_31_398	1	-0.38	1.514	0.782	0.203	2.96	0.156	-0.233	2.01	-1.83	0.78	-0.0070	0.00500	-5.1	0.59	126.346
					10/15/2013 19:11	0917-173_Nc	13_10_15_1911_32_168	1	-1.64	1.437	0.865	0.203	2.91	0.154	-0.375	2.00	-1.56	0.76	-0.0050	0.00500	-5.2	0.60	124.642
					10/15/2013 19:12	0917-173_Nc	13_10_15_1912_32_878	1	-2.21	1.372	0.832	0.199	3.00	0.154	-0.426	2.00	-1.47	0.76	-0.0060	0.00500	-5.0	0.58	123.995
					10/15/2013 19:13	0917-173_Nc	13_10_15_1913_33_668	1	-2.21	1.411	0.830	0.202	2.93	0.153	-0.242	2.00	-1.61	0.76	-0.0010	0.00500	-5.0	0.59	124.839
					10/15/2013 19:14	0917-173_Nc	13_10_15_1914_34_358	1	0.08	1.496	0.962	0.204	3.02	0.155	-0.072	2.02	-1.45	0.77	-0.0070	0.00500	-4.8	0.60	125.734
					10/15/2013 19:15	0917-173_Nc	13_10_15_1915_35_158	1	-2.68	1.496	0.838	0.197	2.87	0.154	-0.229	2.00	-1.49	0.76	-0.0100	0.00500	-4.4	0.60	124.854
					10/15/2013 19:16	0917-173_Nc	13_10_15_1916_35_878	1	-0.82	1.477	0.967	0.205	2.87	0.155	-0.243	2.00	-1.23	0.76	0.0000	0.00500	-5.3	0.60	124.187
					10/15/2013 19:17	0917-173_Nc	13_10_15_1917_36_589	1	-3.38	1.518	0.884	0.196	2.83	0.153	-0.188	2.01	-1.22	0.75	-0.0040	0.00500	-5.3	0.61	122.84
					10/15/2013 19:18	0917-173_Nc	13_10_15_1918_37_339	1	-1.10	1.410	1.015	0.200	2.77	0.150	-0.159	2.00	-1.22	0.75	-0.0070	0.00500	-5.2	0.59	121.181
					10/15/2013 19:19	0917-173_Nc	13_10_15_1919_38_159	1	-1.37	1.476	0.819	0.195	2.77	0.148	-0.414	2.00	-0.83	0.73	-0.0060	0.00500	-5.9	0.60	118.846
					10/15/2013 19:20	0917-173_Nc	13_10_15_1920_38_909	1	-0.84	1.594	0.934	0.193	2.74	0.150	-0.195	2.01	-0.91	0.72	-0.0060	0.00500	-5.3	0.60	119.157
					10/15/2013 19:21	0917-173_Nc	13_10_15_1921_39_459	1	-2.85	1.515	0.795	0.194	2.72	0.148	-0.202	2.00	-0.95	0.73	-0.0070	0.00500	-5.6	0.59	119.695
					10/15/2013 19:22	0917-173_Nc	13_10_15_1922_40_209	1	-3.64	1.537	0.902	0.197	2.74	0.150	-0.036	2.00	-1.06	0.73	-0.0040	0.00500	-5.1	0.60	119.682
					10/15/2013 19:23	0917-173_Nc	13_10_15_1923_41_009	1	-3.82	1.437	0.837	0.193	2.74	0.149	-0.259	2.00	-1.04	0.73	-0.0050	0.00500	-5.1	0.61	120.029
					10/15/2013 19:24	0917-173_Nc	13_10_15_1924_41_719	1	-3.31	1.450	0.894	0.195	2.65	0.147	-0.287	2.00	-0.92	0.74	-0.0040	0.00500	-5.7	0.58	120.693
					10/15/2013 19:25	0917-173_Nc	13_10_15_1925_43_529	1	-0.02	1.398	0.694	0.195	2.60	0.150	-0.256	2.00	-1.07	0.73	-0.0050	0.00500	-5.5	0.57	120.737
					10/15/2013 19:26	0917-173_Nc	13_10_15_1926_43_249	1	-2.58	1.484	0.830	0.196	2.65	0.151	-0.149	2.01	-0.98	0.73	-0.0020	0.00500	-6.0	0.60	119.877
					10/15/2013 19:27	0917-173_Nc	13_10_15_1927_43_949	1	-3.22	1.482	0.776	0.201	2.71	0.151	-0.090	2.01	-1.22	0.74	-0.0040	0.00500	-5.8	0.57	120.441
					10/15/2013 19:28	0917-173_Nc	13_10_15_1928_44_689	1	-2.41	1.440	0.748	0.197	2.79	0.152	-0.222	2.00	-1.53	0.75	-0.0050	0.00500	-5.3	0.57	121.01
					10/15/2013 19:29	0917-173_Nc	13_10_15_1929_45_530	1	-0.11	1.444	0.633	0.201	2.81	0.155	-0.272	1.99	-1.85	0.75	-0.0050	0.00500	-4.6	0.59	121.762
					10/15/2013 19:30	0917-173_Nc	13_10_15_1930_46_270	1	-2.12	1.412	0.720	0.206	3.00	0.157	-0.198	2.00	-2.11	0.76	-0.0070	0.00500	-4.4	0.58	123.626
					10/15/2013 19:31	0917-173_Nc	13_10_15_1931_47_030	1	-1.33	1.500	0.729	0.207	3.08	0.160	-0.248	2.00	-2.00	0.77	-0.0070	0.00500	-5.0	0.60	124.311
					10/15/2013 19:32	0917-173_Nc	13_10_15_1932_47_740	1	-0.86	1.463	0.706	0.212	3.16	0.163	-0.29	2.00	-2.20	0.78	-0.0100	0.00500	-4.8	0.56	125.021
					10/15/2013 19:33	0917-173_Nc	13_10_15_1933_48_540	1	-1.84	1.506	0.657	0.206	3.20	0.166	-0.19	2.01	-2.39	0.78	-0.0070	0.00500	-4.6	0.58	124.943
					10/15/2013 19:34	0917-173_Nc	13_10_15_1934_49_250	1	-0.49	1.432	0.758	0.206	3.24	0.166	-0.20	2.01	-2.18	0.76	-0.0070	0.00500	-4.2	0.58	123.402
					10/15/2013 19:35	0917-173_Nc	13_10_15_1935_50_070	1	-2.04	1.500	0.6010	0.202	3.12	0.164	-0.502	2.01	-2.26	0.76	-0.0070	0.00500	-4.3	0.58	121.573
					10/15/2013 19:36	0917-173_Nc	13_10_15_1936_50_850	1	-1.55	1.441	0.768	0.196	3.09	0.156	-0.28	2.00	-1.89	0.73	-0.0090	0.00500	-4.4	0.57	118.386
					10/15/2013 19:37	0917-173_Nc	13_10_15_1937_51_560	1	-1.03	1.397	0.651	0.190	3.08	0.160	-0.275	2.00	-2.07	0.72	-0.0040	0.00500	-3.7	0.56	116.791
					10/15/2013 19:38	0917-173_Nc	13_10_15_1938_52_350	1	-0.83	1.447	0.726	0.188	2.99	0.151	-0.221	2.00	-1.95	0.71	-0.0090	0.00500	-4.5	0.56	115.501
					10/15/2013 19:39	0917-173_Nc	13_10_15_1939_53_120	1	-0.29	1.531	0.706	0.185	2.92	0.150	-0.074	2.01	-1.72	0.69	-0.0040	0.00500	-4.2	0.56	113.403
					10/15/2013 19:40	0917-173_Nc	13_10_15_1940_53_831	1	-1.71	1.385	0.765	0.186	2.92	0.148	-0.021	2.00	-1.60	0.69	-0.0080	0.00500	-4.3	0.53	111.833
					10/15/2013 19:41	0917-173_Nc	13_10_15_1941_54_551	1	-3.03	1.471	0.649	0.180	2.91	0.147	-0.172	2.01	-1.69	0.68	-0.0100	0.00500	-4.3	0.55	110.371
					10/15/2013 19:42	0917-173_Nc	13_10_15_1942_55_311	1	-1.71	1.564	0.762	0.180	2.86	0.147	-0.101	2.00	-1.64	0.67	-0.0060	0.00500	-4.0	0.57	109.372
					10/15/2013 19:43	0917-173_Nc	13_10_15_1943_56_131	1	0.38	1.500	0.719	0.179	2.88	0.150	-0.113	2.01	-1.71	0.67	-0.0110	0.00500	-4.1	0.55	110.008
					10/15/2013 19:44	0917-173_Nc	13_10_15_1944_56_911	1	0.00	1.487	0.773	0.184	2.87	0.147	0.021	1.99	-1.56	0.68	-0.0040	0.00500	-4.6	0.53	109.32
					10/15/2013 19:45	0917-173_Nc	13_10_15_1945_57_631	1	-1.14	1.454	0.885	0.187	2.80	0.146	-0.155	2.01	-1.45	0.66	-0.0070	0.00500	-3.9	0.55	108.029
					10/15/2013 19:46	0917-173_Nc	13_10_15_1946_58_371	1	-0.75	1.486	0.784	0.181	2.69	0.144	0.013	2.00	-1.41	0.66	-0.0090	0.00500	-3.6	0.55	107.554
					10/15/2013 19:47	0917-173_Nc	13_10_15_1947_59_161	1	0.81	1.494	0.812	0.175	2.72	0.142	-0.042	2.00	-1.26	0.65	-0.0090	0.00400	-4.3	0.54	107.184
			Stop		10/15/2013 19:48	0917-173_Nc	13_10_15_1948_59_901	1	-2.863	1.135	-0.960	0.235	0.773	0.0820	0.206	1.044	-8.30	0.50	-0.00800	0.00300	-3.38	0.73	57.096
					10/15/2013 19:50	0917-173_Nc	13_10_15_1950_00_701	1	-3.69	1.204	-1.961	0.301	-0.131	0.0920	-0.1010	0.245	-12.47	0.52	-0.01800	0.00300	-3.07	0.99	37.947
					10/15/2013 19:51	0917-173_Nc	13_10_15_1951_01_461	1	-3.29	1.399	-2.009	0.312	-0.121	0.0950	-0.268	0.200	-13.19	0.53	-0.0130	0.00300	-3.46	1.05	37.625
					10/15/2013 19:52	0917-173_Nc	13_10_15_1952_02_181	1	-5.217	1.366	-2.014	0.311	-0.2210	0.0980	-0.477	0.201	-13.13	0.53	-0.00900	0.00400	-3.82	1.03	37.411
					10/15/2013 19:53	0917-173_Nc	13_10_15_1953_02_942	1	-4.131	1.195	-1.714	0.253	-0.079	0.0850	-0.254	0.168	-10.72	0.43	-0.01000	0.00400	-2.88	0.83	29.937
					10/15/2013 19:54	0917-173_Nc	13_10_15_1954_03_702	1	-0.534	0.954	-0.255	0.072	0.0050	0.0320	-0.0510	0.0830	-2.026	0.12	-0.00200	0.00200	-0.05	0.321	7.129
					10/15/2013 19:55	0917-173_Nc	13_10_15_1955_04_512	1	0.634	0.939	0.015	0.061	0.089	0.0510	0.696	1.109	-0.021	0.10	-0.00300	0.00200	-0.683	0.313	2.854
					10/15/2013 19:56	0917-173_Nc	13_10_15_1956_05_172	1	1.214	1.032	-0.0040	0.060	0.154	0.0550	0.706	1.319	-0.039	0.10	-0.00900	0.00200	0.264	0.327	2.693
					10/15/2013 19:57	0917-173_Nc	13_10_15_1957_05_982	1	0.659	1.107	0.285	0.077	0.800	0.0750	0.6950	1.569	-0.39	0.20	-0.00400	0.00300	-1.41	0.355	21.413
					10/15/2013 19:58	0917-173_Nc	13_10_15_1958_06_702	1	-0.364	1.459	0.774	0.165	2.49	0.131	0.269	2.156	-1.25	0.58	-0.0090	0.00500	-4.2	0.53	88.013
					10/15/2013 19:59	0917-173_Nc	13_10_15_1959_07_442	1	-3.35	1.566	0.918	0.185	2.88	0.147	0.067	2.19	-1.05	0.67	-0.0080	0.00500	-5.0	0.57	102.706
Data	Run	9	Start	A	10/15/2013 20:00	0917-173_Nc	13_10_15_2000_08_262	1	-2.733	1.463	0.963	0.166	2.67	0.138	0.179	2.01	-1.04	0.62	-0.0040	0.00500	-4.4	0.54	101.576
					10/15/2013 20:01	0917-173_Nc	13_10_15_2001_09_022	1	-1.433	1.456	0.887	0.166	2.71	0.138	0.146	2.02	-0.94	0.61	-0.0070	0.00500	-4.3	0.53	100.656
					10/15/2013 20:02	0917-173_Nc	13_10_15_2002_09_792	1	-3.68	1.468	0.814	0.165	2.74	0.139	0.151	2.006	-1.16	0.61	-0.0090	0.00500	-3.7	0.52	99.708
					10/15/2013 20:03	0917-173_Nc	13_10_15_2003_10_502	1	-2.01	1.413	0.784	0.166	2.81	0.135	0.137	2.01	-1.14	0.60	-0.0070	0.00500	-4.1	0.52	98.671
					10/15/2013 20:04	0917-173_Nc	13_10_15_2004_11_152	1	-1.64	1.425	0.767	0.161	2.85	0.136	-0.096	2.01	-1.39	0.59	-0.0100	0.00500	-3.7	0.52	96.412
					10/15/2013 20:05	0917-173_Nc	13_10_15_2005_11_943	1	-0.71	1.355	0.933	0.162	2.87	0.136	0.115	2.02	-1.15	0.58	-0.0040	0.00500	-3.4	0.51	96.052
					10/15/2013 20:06	0917-173_Nc	13_10_15_2006_12_743	1	-2.302	1.494	0.861	0.163	2.83	0.135	-0.090	2.01	-1.24	0.59	-0.0060	0.00500	-3.9	0.55	96.196
					10/15/2013 20:07	0917-173_Nc	13_10_15_2007_13_463	1	-1.26	1.401	0.926	0.166	2.77	0.135	0.024	2.02	-1.32	0.60	-0.0080	0.00500	-4.1	0.53	98.934
					10/15/2013 20:08	0917-173_Nc	13_10_15_2008_14_173	1	-3.24	1.512	0.796	0.164	2.67	0.137	-0.086	2.00	-1.34	0.61	-0.0070	0.00400	-3.9	0.54	99.839
					10/15/2013 20:09	0917-173_Nc	13_10_15_2009_14_993	1	-4.163	1.387	0.870	0.170	2.75	0.136	0.037	2.01	-1.39	0.62	-0.0040	0.00500	-4.1	0.52	101.179
					10/15/2013 20:10	0917-173_Nc	13_10_15_2010_15_743	1	-1.01	1.408	0.870	0.170	2.64	0.138	-0.006	2.02	-1.44	0.62	-0.0050	0.00500	-4.3	0.53	100.846
					10/15/2013 20:11	0917-173_Nc	13_10_15_2011_16_563	1	-1.22	1.448	0.991	0.169	2.64	0.134	0.084	2.01	-1.35	0.61	-0.0050	0.00400	-4.0	0.54	99.606
					10/15/2013 20:12	0917-173_Nc	13_10_15_2012_17_303	1	0.05	1.464	0.913	0.168	2.64	0.134	0.048	2.03	-1.22	0.60	-0.0060	0.00500	-4.2	0.52	97.069
					10/15/2013 20:13	0917-173_Nc	13_10_15_2013_18_053	1	-2.43	1.444	0.858	0.162	2.57	0.135	-0.016	2.01	-1.30	0.59	-0.0080	0.00400	-4.2	0.54	95.712
					10/15/2013 20:14	0917-173_Nc	13_10_15_2014_18_853	1	-1.90	1.479	0.763	0.156	2.67	0.134	0.180	2.019	-1.22	0.57	-0.0030	0.00500	-3.9	0.54	94.709
					10/15/2013 20:15	0917-173_Nc	13_10_15_2015_19_553	1	-2.58	1.444	0.837	0.156	2.66	0.133	0.054	2.02	-1.09	0.57	-0.0060	0.00500	-4.3	0.52	92.975
					10/15/2013 20:16	0917-173_Nc	13_10_15_2016_20_383	1	-1.37	1.447	0.930	0.160	2.60	0.135	0.027	2.02	-0.77	0.56	-0.0090	0.00500	-4.5	0.52	91.827
					10/15/2013 20:17	0917-173_Nc	13_10_15_2017_21_104	1	-0.79	1.454	0.863	0.159	2.60	0.132	0.153	2.024	-0.92	0.57	-0.0080	0.00500	-4.0	0.54	94.118
					10/15/2013 20:18	0917-173_Nc	13_10_15_2018_21_884	1	-1.48	1.457	0.793	0.159	2.57	0.132	0.186	2.013	-1.21	0.59	-0.0080	0.00500	-3.8	0.53	96.657
					10/15/2013 20:19	0917-173_Nc	13_10_15_2019_22_634	1	-2.15	1.481	0.881	0.166	2.54	0.131	0.128	2.003	-1.14	0.61	-0.0090	0.00500	-4.4	0.53	99.144
					10/15/2013 20:20	0917-173_Nc	13_10_15_2020_23_404	1	-3.91	1.448	0.989	0.168	2.58	0.132	0.094	2.021	-1.23	0.62	-0.0110	0.00500	-4.0	0.54	101.881
					10/15/2013 20:21	0917-173_Nc	13_10_15_2021_24_064	1	-0.82	1.370	0.835	0.172	2.46	0.132	0.096	2.04	-1.51	0.62	-0.0040	0.00500	-4.1	0.52	100.737
					10/15/2013 20:22	0917-173_Nc	13_10_15_2022_24_884	1	-1.88	1.455	0.879	0.169	2.49	0.131	-0.047	2.028	-1.44	0.61	-0.0090	0.00500	-3.7	0.54	100.468
					10/15/2013 20:23	0917-173_Nc	13_10_15_2023_25_664	1	-2.10	1.487	0.928	0.166	2.47	0.133	-0.0050	2.014	-1.26	0.61	-0.0070	0.00500	-4.2	0.53	99.971
					10/15/2013 20:24	0917-173_Nc	13_10_15_2024_26_364	1	-1.08	1.472	0.940	0.168	2.47	0.133	0.177	2.022	-1.31	0.61	-0.0070	0.00500	-4.4	0.54	99.906
					10/15/2013 20:25	0917-173_Nc	13_10_15_2025_27_134	1	-1.45	1.507	0.840	0.166	2.44	0.130	0.045	2.03	-1.31	0.61	-0.0070	0.00400	-4.1	0.54	99.192
					10/15/2013 20:26	0917-173_Nc	13_10_15_2026_27_894	1	-2.93	1.540	0.878	0.163	2.35	0.130	0.221	2.020	-1.25	0.60	-0.0070	0.00400	-4.1	0.55	97.683
					10/15/2013 20:27	0917-173_Nc	13_10_15_2027_28_654	1	-1.04	1.468	0.890	0.159	2.39	0.134	0.265	2.035	-1.29	0.58	-0.0060	0.00400	-3.8	0.52	95.975
					10/15/2013 20:28	0917-173_Nc	13_10_15_2028_29_365	1	-0.93	1.429	0.928	0.155	2.44	0.132	0.131	2.014	-1.13	0.58	-0.0080	0.00400	-4.2	0.50	95.412
					10/15/2013 20:29	0917-173_Nc	13_10_15_2029_30_125	1	-2.23	1.405	0.728	0.161	2.43	0.131	-0.0790	2.017	-1.03	0.57	-0.0100	0.00500	-4.4	0.51	93.849
					10/15/2013 20:30	0917-173_Nc	13_10_15_2030_30_925	1	-3.72	1.438	0.845	0.157	2.44	0.127	0.082	2.027	-1.21	0.56	-0.0020	0.00500	-3.3	0.52	92.342
					10/15/2013 20:31	0917-173_Nc	13_10_15_2031_31_715	1	-2.06	1.472	0.880	0.155	2.44	0.130	0.130	2.027	-1.01	0.55	-0.0080	0.00500	-3.5	0.53	90.951
					10/15/2013 20:32	0917-173_Nc	13_10_15_2032_32_475	1	-1.81	1.449	0.763	0.148	2.59	0.130	0.264	2.035	-1.11	0.54	-0.0080	0.00500	-3.1	0.52	89.415
					10/15/2013 20:33	0917-173_Nc	13_10_15_2033_33_185	1	-0.69	1.506	0.727	0.156	2.57	0.127	0.192	2.035	-1.21	0.55	-0.0060	0.00500	-4.3	0.53	87.983
					10/15/2013 20:34	0917-173_Nc	13_10_15_2034_33_905	1	-0.72	1.451	0.683	0.151	2.51	0.128	0.145	2.012	-1.12	0.54	-0.0070	0.00400	-3.7	0.53	87.458
					10/15/2013 20:35	0917-173_Nc	13_10_15_2035_34_705	1	-3.85	1.496	0.745	0.154	2.52	0.129	0.346	2.029	-1.18	0.54	-0.0080	0.00500	-3.9	0.53	87.128
					10/15/2013 20:36	0917-173_Nc	13_10_15_2036_35_445	1	-1.76	1.379	0.733	0.152	2.62	0.126	0.183	2.023	-1.29	0.53	-0.0070	0.00400	-3.7	0.52	87.045
					10/15/2013 20:37	0917-173_Nc	13_10_15_2037_36_255	1	-1.40	1.429	0.709	0.151	2.56	0.127	0.161	2.017	-1.24	0.54	-0.0080	0.00500	-3.7	0.50	87.807
					10/15/2013 20:38	0917-173_Nc	13_10_15_2038_37_015	1	-1.25	1.444	0.769	0.148	2.59	0.128	0.178	2.017	-1.22	0.53	-0.0110	0.00400	-3.9	0.51	87.663
					10/15/2013 20:39	0917-173_Nc	13_10_15_2039_37_755	1	-2.57	1.510	0.788	0.146	2.61	0.127	0.121	2.020	-1.35	0.54	-0.0070	0.00500	-3.3	0.52	87.054
					10/15/2013 20:40	0917-173_Nc	13_10_15_2040_38_526	1	-3.706	1.480	0.811	0.148	2.66	0.127	0.124	2.015	-1.44	0.52	-0.0080	0.00400	-3.0	0.51	85.311
					10/15/2013 20:41	0917-173_Nc	13_10_15_2041_39_246	1	-1.16	1.550	0.821	0.147	2.82	0.125	0.126	2.02	-1.51	0.52	-0.0090	0.00500	-3.6	0.53	83.598
					10/15/2013 20:42	0917-173_Nc	13_10_15_2042_39_956	1	-2.405	1.482	0.861	0.147	2.87	0.128	0.130	2.03	-1.47	0.52	-0.0090	0.00400	-2.6	0.53	82.509
					10/15/2013 20:43	0917-173_Nc	13_10_15_2043_40_746	1	-2.203	1.450	0.767	0.144	3.01	0.127	0.188	2.03	-1.72	0.51	-0.0050	0.00500	-3.6	0.51	81.485
					10/15/2013 20:44	0917-173_Nc	13_10_15_2044_41_566	1	-2.16	1.367	0.697	0.147	3.03	0.127	0.329	2.03	-1.84	0.51	-0.0080	0.00400	-3.6	0.48	80.985
					10/15/2013 20:45	0917-173_Nc	13_10_15_2045_42_186	1	-2.64	1.451	0.668	0.145	3.10	0.129	0.092	2.03	-2.08	0.51	-0.0080	0.00400	-2.6	0.49	81.312
					10/15/2013 20:46	0917-173_Nc	13_10_15_2046_42_986	1	0.53	1.461	0.763	0.147	3.17	0.129	0.28	2.01	-2.12	0.51	-0.0120	0.00500	-3.2	0.49	80.751
					10/15/2013 20:47	0917-173_Nc	13_10_15_2047_43_726	1	-3.13	1.420	0.708	0.141	3.08	0.129	0.118	2.02	-1.91	0.50	-0.0050	0.00400	-2.6	0.48	81.068
					10/15/2013 20:48	0917-173_Nc	13_10_15_2048_44_446	1	-2.959	1.497	0.741	0.143	3.07	0.127	0.126	2.02	-1.92	0.51	-0.0070	0.00500	-2.4	0.50	81.173
					10/15/2013 20:49	0917-173_Nc	13_10_15_2049_45_236	1	-3.426	1.406	0.703	0.147	3.04	0.129	0.187	2.02	-2.07	0.51	-0.0050	0.00400	-2.1	0.49	80.303
					10/15/2013 20:50	0917-173_Nc	13_10_15_2050_45_976	1	-0.17	1.510	0.759	0.143	3.10	0.129	0.304	2.03	-1.91	0.51	-0.0100	0.00400	-2.6	0.51	79.692
					10/15/2013 20:51	0917-173_Nc	13_10_15_2051_46_746	1	-1.90	1.387	0.697	0.143	3.14	0.124	0.231	2.021	-1.91	0.50	-0.0090	0.00400	-2.7	0.48	78.846
					10/15/2013 20:52	0917-173_Nc	13_10_15_2052_47_447	1	-1.519	1.435	0.793	0.143	3.15	0.127	0.168	2.018	-1.90	0.50	-0.0110	0.00500	-2.6	0.49	78.501
					10/15/2013 20:53	0917-173_Nc	13_10_15_2053_48_167	1	-2.12	1.416	0.697	0.145	3.22	0.126	0.056	2.02	-1.79	0.49	-0.0070	0.00500	-2.6	0.50	77.608
					10/15/2013 20:54	0917-173_Nc	13_10_15_2054_48_927	1	-2.638	1.476	0.814	0.144	3.24	0.128	0.072	2.02	-1.76	0.49	-0.0060	0.00500	-3.1	0.49	76.497
					10/15/2013 20:55	0917-173_Nc	13_10_15_2055_49_707	1	-1.725	1.451	0.686	0.140	3.26	0.125	0.172	2.03	-1.95	0.47	-0.0070	0.00400	-2.5	0.49	74.739
					10/15/2013 20:56	0917-173_Nc	13_10_15_2056_50_477	1	-1.687	1.500	0.704	0.134	3.28	0.125	0.290	2.02	-1.59	0.47	-0.0080	0.00400	-3.0	0.50	73.572
					10/15/2013 20:57	0917-173_Nc	13_10_15_2057_51_217	1	-1.049	1.398	0.715	0.137	3.24	0.126	0.139	2.03	-1.79	0.47	-0.0090	0.00500	-3.3	0.46	73.4
					10/15/2013 20:58	0917-173_Nc	13_10_15_2058_52_037	1	-4.54	1.535	0.821	0.137	3.23	0.124	0.292	2.02	-1.80	0.46	-0.0140	0.00400	-2.3	0.50	72.893
					10/15/2013 20:59	0917-173_Nc	13_10_15_2059_52_747	1	-1.688	1.178	-0.4050	0.180	1.74	0.0870	0.421	1.438	-6.246	0.44	-0.01100	0.00300	-3.3	0.59	57.94
			Stop		10/15/2013 21:00	0917-173_Nc	13_10_15_2100_53_507	1	-4.08	1.310	-1.721	0.271	-0.031	0.0860	-0.248	0.303	-11.72	0.48	-0.00800	0.00300	-3.53	0.94	37.921
					10/15/2013 21:01	0917-173_Nc	13_10_15_2101_54_237	1	-1.731	1.084	-0.918	0.159	-0.032	0.0530	-0.0500	0.158	-6.58	0.28	-0.00600	0.00200	-1.54	0.579	19.279
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_01_112	1	-0.4	1.5	-0.1200	0.081	-0.66	1.48	-0.425	0.0980	-0.088	0.133	0.055	0.596	0.222	0.446	-1.863
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_19_662	1	0.1	1.6	-0.098	0.082	-0.45	1.57	-0.0880	0.0980	-0.04700	0.139	0.059	0.633	-0.082	0.466	-1.977
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_38_242	1	2.4	1.6	0.050	0.088	-0.52	1.61	-0.295	0.0970	-0.226	0.145	0.063	0.647	-0.1020	0.466	-2.018
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_56_802	1	1.1	1.6	0.064	0.082	-0.58	1.64	-0.222	0.0960	-0.316	0.137	0.056	0.655	1.49	0.445	-2.033
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_15_223	1	-3.2	1.5	0.0290	0.083	-0.51	1.65	0.0050	0.1090	-0.262	0.136	0.057	0.657	0.44	0.457	-2.069
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_33_823	1	0.8	1.4	0.066	0.082	-0.54	1.65	-0.252	0.1120	-0.397	0.132	0.053	0.661	0.762	0.422	-2.048
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_52_323	1	2.9	1.5	-0.076	0.086	-0.59	1.65	-0.162	0.1060	0.359	0.137	0.058	0.660	-0.674	0.457	-2.05
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_10_943	1	0.9	1.4	-0.0060	0.077	-0.55	1.65	-0.080	0.1080	0.067	0.127	0.051	0.656	-0.369	0.427	-2.036
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_29_463	1	0.4	1.6	0.1960	0.085	-0.48	1.65	-0.01000	0.1010	0.234	0.141	0.070	0.656	-0.656	0.468	-2.09
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_47_913	1	-2.5	1.5	0.091	0.086	-0.51	1.65	-0.1880	0.1050	-0.062	0.138	0.051	0.658	0.417	0.444	-2.069
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_06_603	1	2.8	1.5	-0.047	0.086	-0.59	1.65	-0.391	0.1090	-0.040	0.139	0.060	0.657	-0.25	0.442	-2.08
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_25_043	1	-1.7	1.5	-0.0760	0.084	-0.60	1.65	-0.474	0.0980	-0.1360	0.138	0.059	0.656	0.144	0.464	-2.045
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_43_553	1	0.0	1.5	0.1350	0.084	-0.51	1.65	-0.246	0.1080	-0.047	0.137	0.055	0.656	-0.08	0.463	-2.08
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_02_113	1	1.0	1.5	0.010	0.080	-0.61	1.65	0.0280	0.1020	-0.2390	0.132	0.058	0.656	0.421	0.440	-2.088
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_20_623	1	1.9	1.3	0.0110	0.083	-0.51	1.65	-0.305	0.1000	-0.102	0.132	0.060	0.658	0.070	0.436	-2.105
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_39_233	1	-1.8	1.5	-0.038	0.084	-0.52	1.65	-0.372	0.1040	-0.126	0.135	0.059	0.659	0.281	0.445	-2.081
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_57_753	1	0.3	1.3	0.0190	0.086	-0.55	1.65	-0.217	0.1080	-0.107	0.134	0.057	0.659	0.272	0.420	-2.08
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_45_404	1	2.9190	2.712	-0.094	0.142	0.025	0.0850	-0.111	0.148	0.246	0.237	-0.00600	0.00500	-0.56	0.82	0.029
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_51_574	1	-2.598	2.695	0.248	0.148	0.0910	0.093	0.04300	0.211	0.48	0.240	0.00500	0.00500	-2.03	0.79	-0.008
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_57_784	1	-2.714	2.522	-0.552	0.145	-0.0120	0.0900	0.621	0.498	-0.44	0.233	-0.01100	0.00500	0.31	0.77	0.076
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_04_024	1	5.888	2.541	0.156	0.152	-0.067	0.112	0.584	1.324	0.409	0.243	0.0060	0.00700	-1.31	0.80	0.08
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_10_174	1	3.862	2.711	0.014	0.145	0.02900	0.1160	0.685	1.872	-0.208	0.243	0.00100	0.00600	-0.64	0.82	0.212
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_16_234	1	0.43	2.817	0.125	0.155	-0.0470	0.129	0.221	1.988	-0.344	0.254	-0.01200	0.00700	1.121	0.85	0.285

Location Disc. # Start/Stop Instrument

				Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_22_494	1	-0.904	2.788	0.248	0.161	-0.311	0.141	0.810	2.079	-0.191	0.258	0.00100	0.00800	-0.179	0.84	0.28
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_28_654	1	5.00	2.887	0.03	0.165	-0.1060	0.136	0.48	2.000	-0.474	0.267	-0.02700	0.00700	-0.62	0.86	0.275
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_34_894	1	-2.302	3.086	-0.088	0.161	-0.253	0.140	0.714	1.952	0.20	0.271	-0.01800	0.00600	-1.698	0.91	0.329
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_41_054	1	0.702	3.075	0.052	0.165	-0.2490	0.139	0.42	1.880	0.02200	0.273	-0.01700	0.00800	-0.841	0.94	0.255
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_47_144	1	-2.231	2.995	0.0070	0.172	-0.096	0.142	1.183	1.766	-0.2040	0.276	-0.01500	0.00800	-0.1660	0.91	0.233
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_53_364	1	-3.16	3.211	0.069	0.172	-0.248	0.140	0.993	1.709	-0.436	0.284	-0.02100	0.00700	-0.04	0.94	0.229
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_59_554	1	-0.174	3.111	-0.003	0.171	-0.0090	0.137	0.620	1.606	-0.051	0.281	-0.02	0.00700	0.015	0.93	0.106
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_05_784	1	-1.539	3.207	0.093	0.160	0.0570	0.142	0.56	1.511	-0.14	0.270	-0.00300	0.00800	-1.256	0.90	0.141
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_11_964	1	-0.523	3.014	-0.032	0.178	-0.388	0.132	0.739	1.46	-0.203	0.283	-0.00300	0.00700	-0.405	0.94	0.128
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_18_044	1	-0.685	3.563	-0.191	0.178	-0.281	0.147	0.690	1.31	-0.365	0.304	-0.01700	0.00800	-2.19	1.01	0.071
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_24_244	1	-2.42	3.047	-0.136	0.181	-0.1870	0.142	1.157	1.29	0.544	0.290	-0.02300	0.00800	-3.61	0.95	0.029
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_30_434	1	-5.305	3.122	-0.0970	0.174	-0.258	0.145	1.264	1.26	-0.078	0.284	-0.00500	0.00700	-2.31	0.95	-0.018
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_36_724	1	-1.932	3.536	0.346	0.183	-0.610	0.147	0.49	1.23	-0.40	0.306	-0.00800	0.00800	-3.28	1.03	0.03
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_42_884	1	-3.711	3.368	-0.419	0.166	-0.1330	0.151	1.369	1.36	0.04	0.286	-0.02200	0.00800	-1.25	0.96	0.075
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_49_014	1	-0.127	3.405	0.218	0.179	-0.241	0.140	1.412	1.41	0.309	0.298	-0.01100	0.00800	-2.228	1.02	0.146
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_55_204	1	5.22	3.196	-0.179	0.188	-0.1310	0.139	0.877	1.41	0.447	0.302	-0.0110	0.00800	-0.70	0.96	0.072
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_01_394	1	-4.110	3.206	0.2770	0.177	-0.1410	0.146	1.382	1.485	-0.046	0.290	-0.01300	0.00800	-1.82	0.98	0.146
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_07_574	1	-4.956	3.282	0.336	0.171	-0.0800	0.146	1.370	1.569	0.06	0.285	-0.00900	0.00700	-1.63	1.00	0.172
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_13_664	1	-0.991	3.230	0.091	0.173	-0.1330	0.141	1.011	1.502	-0.053	0.288	-0.01900	0.00800	-0.91	0.94	0.188
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_19_844	1	-4.794	3.545	0.199	0.175	-0.140	0.149	1.355	1.563	0.12	0.298	-0.02200	0.00800	-2.68	1.04	0.271
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_26_064	1	0.008	3.464	0.299	0.169	-0.219	0.140	1.273	1.524	-0.129	0.287	0.00900	0.00700	-2.50	0.98	0.26
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_32_244	1	-3.555	3.290	0.023	0.171	0.222	0.143	1.267	1.570	-0.325	0.284	-0.01200	0.00700	-1.95	0.94	0.215
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_38_444	1	1.06	3.016	-0.204	0.171	-0.174	0.140	1.054	1.544	0.53	0.279	-0.02300	0.00800	-4.57	0.93	0.254
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_44_534	1	-0.3930	3.261	0.106	0.180	-0.0930	0.138	0.767	1.581	0.27	0.295	-0.01400	0.00700	-1.455	0.96	0.243
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_50_814	1	-2.587	3.393	-0.035	0.168	-0.0780	0.149	0.765	1.595	0.22	0.284	-0.01800	0.00800	-1.268	0.97	0.335
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_56_934	1	-2.018	3.353	-0.049	0.175	-0.1900	0.145	0.660	1.528	0.312	0.291	-0.01900	0.00800	-1.12	0.99	0.29
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_03_164	1	-2.793	3.061	-0.360	0.161	0.168	0.136	1.584	1.452	-0.03	0.266	-0.00400	0.00800	-1.58	0.875	0.32
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_09_364	1	-4.803	3.192	-0.207	0.174	-0.1380	0.144	1.501	1.552	-0.34	0.29	-0.00200	0.00700	-1.06	0.98	0.309
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_15_454	1	-3.57	3.433	0.007	0.169	-0.0040	0.145	1.168	1.517	-0.064	0.291	-0.01200	0.00700	-1.130	1.01	0.355
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_21_724	1	-5.7590	3.115	-0.065	0.174	-0.172	0.146	1.222	1.516	-0.340	0.284	-0.01100	0.00700	-2.757	0.91	0.306
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_27_854	1	4.232	3.049	0.2370	0.178	-0.392	0.145	0.857	1.522	0.04	0.29	-0.01600	0.00800	0.25	0.97	0.318
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_34_044	1	-7.097	3.143	-0.227	0.182	-0.1010	0.144	0.698	1.527	-0.178	0.295	-0.00700	0.00800	-1.98	1.00	0.4
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_40_254	1	-1.541	3.253	-0.155	0.166	-0.213	0.142	0.652	1.514	0.255	0.279	-0.00700	0.00800	-1.581	0.97	0.349
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_46_344	1	-5.746	3.086	0.089	0.174	-0.1150	0.140	1.085	1.566	-0.241	0.283	-0.01100	0.00800	-0.99	0.90	0.411
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_52_544	1	-1.19	3.237	0.1200	0.174	-0.0380	0.148	0.875	1.679	-0.22	0.287	-0.00900	0.00700	-2.86	0.97	0.35
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_58_824	1	0.6880	2.925	-0.125	0.177	-0.172	0.140	0.812	1.802	0.15	0.278	-0.01500	0.00700	-2.10	0.89	0.352
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_05_014	1	-2.361	3.076	-0.476	0.162	-0.344	0.139	1.268	1.889	-0.07	0.272	-0.00700	0.00600	-1.729	0.93	0.459
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_11_214	1	-0.256	3.083	0.122	0.159	0.1120	0.140	1.074	1.917	0.00	0.268	-0.01900	0.00800	-2.54	0.88	0.445
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_17_304	1	6.071	2.764	-0.012	0.160	-0.370	0.143	1.049	1.971	0.40	0.260	-0.00600	0.00600	-3.86	0.88	0.448
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_23_504	1	-11.917	2.718	-0.332	0.160	-0.253	0.139	1.134	1.941	-0.586	0.259	0.00200	0.00700	0.47	0.84	0.467
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_29_674	1	1.06	2.703	0.302	0.169	-0.0260	0.144	1.070	2.032	-0.066	0.266	-0.00200	0.00700	-1.3020	0.82	0.477
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_35_864	1	4.487	3.004	0.33	0.152	-0.060	0.1360	0.884	2.043	0.072	0.255	-0.01300	0.00700	0.292	0.854	0.546
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_42_064	1	1.19	2.905	-0.033	0.156	-0.153	0.142	0.978	1.994	-0.380	0.255	-0.02700	0.00700	-1.35	0.85	0.65
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_48_164	1	-4.754	2.948	0.212	0.168	0.05200	0.142	1.301	1.974	-0.079	0.273	-0.01100	0.00700	0.296	0.89	0.495
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_54_354	1	-5.064	3.013	0.0020	0.157	0.0420	0.145	0.903	2.052	-0.14	0.262	-0.02600	0.00800	-1.71	0.85	0.531
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_00_544	1	-6.21	3.062	-0.094	0.162	-0.0210	0.143	1.414	1.872	0.50	0.274	-0.01100	0.00800	-1.42	0.92	0.556
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_06_824	1	-5.474	3.444	-0.207	0.171	-0.307	0.135	1.289	1.747	-0.054	0.290	-0.01400	0.00700	-1.0550	0.98	0.39
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_13_024	1	0.109	3.364	0.118	0.173	-0.278	0.144	1.091	1.692	-0.385	0.288	-0.02	0.00700	-0.624	0.98	0.383
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_19_124	1	-4.5060	3.172	-0.25	0.163	-0.13900	0.147	0.884	1.711	0.143	0.270	-0.02900	0.00800	-1.063	0.93	0.33
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_25_284	1	-2.531	3.236	-0.283	0.163	-0.244	0.150	1.106	1.730	0.075	0.275	-0.02	0.00800	-0.16	0.92	0.373
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_31_534	1	-1.25	3.227	-0.333	0.168	-0.2250	0.140	0.630	1.695	-0.1240	0.281	-0.02100	0.00700	-0.878	0.94	0.381
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_37_714	1	-0.657	3.181	-0.030	0.162	-0.397	0.146	1.298	1.629	-0.39	0.269	-0.00100	0.00800	-1.40	0.89	0.451
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_43_764	1	-1.675	3.275	-0.108	0.175	-0.1200	0.135	1.158	1.702	-0.209	0.287	-0.00700	0.00800	-1.109	0.97	0.447
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_50_014	1	-6.972	3.012	0.091	0.163	-0.149	0.152	1.084	1.743	0.062	0.265	-0.01400	0.00800	-1.546	0.89	0.401
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_56_204	1	-1.398	2.964	0.286	0.162	-0.0300	0.142	1.043	1.745	-0.11	0.263	-0.01100	0.00800	-1.059	0.843	0.396
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_02_384	1	2.07	3.198	-0.0820	0.165	-0.112	0.144	1.116	1.721	-0.4540	0.279	-0.00900	0.00700	0.00	0.95	0.459
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_08_564	1	-6.980	3.182	-0.1110	0.171	-0.244	0.142	1.354	1.644	-0.034	0.284	-0.02400	0.00800	-1.42	0.93	0.341
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_14_644	1	-8.933	3.227	0.052	0.162	0.0050	0.139	0.566	1.676	-0.3840	0.274	-0.01600	0.00700	-0.88	0.93	0.462
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_20_854	1	-4.815	3.146	-0.099	0.175	-0.404	0.148	0.914	1.683	0.132	0.286	-0.00700	0.00800	-0.84	0.92	0.417
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_27_034	1	-10.575	3.320	0.079	0.160	-0.133	0.145	0.798	1.775	0.2450	0.275	-0.01900	0.00800	-1.32	0.94	0.513
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_33_324	1	-5.041	3.213	-0.3270	0.168	0.093	0.149	1.414	1.727	-0.039	0.281	-0.0010	0.00700	-0.46	0.96	0.472
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_39_434	1	-6.993	3.267	0.089	0.164	-0.0030	0.144	1.9010	1.799	0.0560	0.278	-0.00600	0.00700	-1.3890	0.96	0.482
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_45_614	1	-5.451	3.366	-0.012	0.162	-0.190	0.146	0.785	1.766	0.183	0.281	-0.00700	0.00800	-2.36	0.96	0.472
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_51_794	1	0.236	2.888	-0.035	0.160	-0.154	0.148	0.781	1.760	-0.016	0.261	-0.01900	0.00700	-0.640	0.88	0.53
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_57_974	1	-2.678	3.074	0.1780	0.178	-0.079	0.1420	0.976	1.825	-0.487	0.283	-0.01500	0.00700	-1.035	0.92	0.492
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_04_164	1	-5.070	3.036	0.005	0.168	-0.112	0.145	0.997	1.748	-0.662	0.275	-0.01200	0.00700	-0.683	0.92	0.509
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_10_344	1	-5.751	3.249	0.068	0.162	-0.0760	0.141	0.900	1.764	-0.330	0.277	-0.01800	0.00700	-1.852	0.92	0.518
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_16_424	1	-6.828	2.909	-0.063	0.165	0.257	0.141	1.074	1.751	-0.601	0.267	-0.01600	0.00700	-0.14	0.91	0.545
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_22_644	1	-4.13	3.222	-0.216	0.175	0.0500	0.146	1.436	1.773	-0.455	0.289	-0.01800	0.00700	-0.43	0.97	0.467
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_28_894	1	-3.05	2.907	-0.499	0.168	-0.0600	0.149	0.710	1.818	0.101	0.268	-0.01000	0.00600	-1.02	0.90	0.54
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_35_104	1	-4.615	3.059	-0.0170	0.168	-0.212	0.151	1.127	1.823	0.30	0.274	-0.01	0.00700	-0.92	0.91	0.536
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_41_284	1	-0.823	3.271	0.153	0.166	-0.294	0.142	1.798	1.852	0.98	0.281	-0.01700	0.00800	-4.13	0.97	0.548
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_47_374	1	-4.556	3.064	0.149	0.163	-0.3610	0.142	1.291	1.837	0.273	0.273	-0.00700	0.00700	-3.63	0.91	0.517
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_53_604	1	-5.451	2.914	-0.112	0.165	-0.270	0.142	0.758	1.889	0.04	0.269	-0.00500	0.00600	-2.33	0.90	0.602
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_59_774	1	-0.92	2.945	0.227	0.168	-0.098	0.142	1.022	1.869	-0.027	0.273	-0.00300	0.00700	0.4640	0.90	0.58
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_05_954	1	-1.375	2.962	-0.076	0.165	-0.0410	0.143	1.190	1.828	-0.348	0.268	-0.01400	0.00700	-1.80	0.92	0.514
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_12_164	1	-4.699	3.197	-0.268	0.171	-0.318	0.142	0.561	1.852	-0.085	0.282	-0.03200	0.00800	1.64	0.93	0.596
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_18_254	1	0.472	3.061	-0.145	0.171	-0.115	0.139	1.044	1.829	-0.110	0.281	-0.02	0.00800	-2.345	0.92	0.557
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_24_434	1	-4.922	3.338	0.1540	0.159	-0.124	0.144	0.915	1.788	0.184	0.276	-0.01	0.00700	-1.246	0.94	0.548
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_30_714	1	4.37	2.967	-0.127	0.172	-0.172	0.141	1.278	1.836	-0.239	0.277	-0.00400	0.00700	-2.123	0.91	0.54
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_36_934	1	-0.890	2.993	-0.3920	0.168	0.059	0.149	0.740	1.904	-0.100	0.271	-0.01200	0.00700	-3.49	0.89	0.561
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_43_054	1	-10.98	3.340	-0.227	0.182	-0.0030	0.149	0.587	1.821	-0.315	0.300	-0.0370	0.00700	-0.257	1.04	0.632
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_49_204	1	-3.31	3.006	-0.219	0.164	-0.316	0.136	1.149	1.842	0.23	0.268	-0.01	0.00800	-2.34	0.93	0.478
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_55_384	1	3.95	3.158	-0.061	0.167	-0.260	0.143	1.014	1.875	-0.3090	0.275	-0.01000	0.00700	-0.67	0.93	0.585
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_01_574	1	0.152	3.420	0.1020	0.167	-0.445	0.135	0.62	1.852	0.05	0.285	-0.00600	0.00800	-2.90	0.97	0.608
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_07_744	1	1.69	2.950	0.311	0.170	-0.221	0.135	1.397	1.860	0.180	0.274	-0.00700	0.00700	-0.071	0.92	0.532
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_13_864	1	-4.362	3.080	0.0940	0.166	-0.0010	0.134	1.355	1.877	0.134	0.274	-0.0330	0.00600	-1.361	0.89	0.59
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_20_044	1	-1.89	2.897	0.093	0.168	-0.240	0.147	0.819	1.825	-0.279	0.270	-0.02100	0.00700	-2.76	0.88	0.576
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_26_224	1	-4.265	3.271	-0.133	0.171	-0.070	0.139	1.261	1.875	-0.274	0.283	-0.00400	0.00800	-0.959	0.98	0.573
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_32_514	1	-0.478	3.033	0.0560	0.176	0.0540	0.142	1.096	1.914	-0.257	0.280	-0.02200	0.00700	-0.94	0.94	0.615
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_38_704	1	-2.6240	3.163	0.076	0.161	0.08800	0.145	1.371	1.846	-1.119	0.271	-0.01500	0.00600	-0.250	0.94	0.618
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_44_744	1	0.132	3.191	-0.162	0.176	-0.0900	0.137	1.015	1.899	0.350	0.286	-0.00800	0.00600	-0.71	0.96	0.58
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_50_935	1	-1.56	3.204	-0.082	0.169	-0.1690	0.138	1.272	1.859	-0.26	0.284	-0.01500	0.00700	-1.62	0.96	0.574
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_57_195	1	-0.9490	3.081	0.124	0.162	0.251	0.150	1.453	1.848	-0.356	0.267	-0.01400	0.00700	-0.411	0.90	0.655
10/15/2013 21:40	0917-173_Nc	13_10_15_2140_35_345	1	-2.465	1.998	0.0030	0.100	-0.078	0.1240	1.268	1.876	0.037	0.170	-0.02	0.00500	-1.121	0.578	0.643
10/15/2013 21:41	0917-173_Nc	13_10_15_2141_36_035	1	-3.0280	1.858	-0.0050	0.102	-0.150	0.1220	1.632	1.862	-0.164	0.168	-0.01300	0.00500	-1.449	0.569	0.672
10/15/2013 21:42	0917-173_Nc	13_10_15_2142_36_795	1	-2.399	1.968	0.047	0.100	-0.0960	0.1220	1.330	1.854	0.043	0.168	-0.01400	0.00500	-1.308	0.577	0.705
10/15/2013 21:43	0917-173_Nc	13_10_15_2143_37_565	1	0.146	1.940	0.0640	0.103	-0.131	0.1170	1.352	1.869	-0.112	0.171	-0.02	0.00500	-0.809	0.577	0.722
10/15/2013 21:44	0917-173_Nc	13_10_15_2144_38_285	1	-2.133	1.963	0.0880	0.103	-0.0310	0.1210	1.431	1.862	-0.185	0.171	-0.01700	0.00500	-0.6640	0.577	0.742
10/15/2013 21:45	0917-173_Nc	13_10_15_2145_39_091	1	-1.494	1.909	0.002	0.103	-0.117	0.1220	1.216	1.844	-0.096	0.169	-0.01300	0.00500	-1.047	0.575	0.772
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_19_287	1	0.657	3.104	0.270	0.154	-0.117	0.136	1.639	1.995	0.28	0.260	-0.03400	0.00700	-3.13	0.87	0.777
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_25_447	1	-1.732	2.812	-0.006	0.166	0.0390	0.134	1.471	2.040	-0.157	0.265	-0.02600	0.00700	-0.293	0.87	0.745
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_31_687	1	0.695	2.881	-0.015	0.154	0.0510	0.1310	1.196	2.046	-0.28	0.252	-0.02700	0.00700	-1.35	0.85	0.717
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_37_897	1	-2.36	2.916	-0.193	0.155	-0.0550	0.1370	1.131	2.101	-0.20	0.259	-0.02000	0.00600	-1.272	0.88	0.711
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_44_007	1	-4.746	2.790	0.049	0.162	0.02700	0.1300	0.926	2.059	0.075	0.260	-0.00800	0.00700	-1.81	0.84	0.718
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_50_147	1	1.090	2.905	-0.139	0.153	0.0450	0.132	1.4890	2.106	-0.227	0.253	-0.00800	0.00800	0.103	0.83	0.721
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_56_407	1	-5.342	3.207	-0.219	0.145	0.0840	0.139	0.731	2.173	-0.39	0.259	-0.02400	0.00600	-1.36	0.88	0.697
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_02_587	1	-0.80	2.796	0.240	0.148	0.00800	0.1230	1.170	2.110	-0.203	0.248	-0.01	0.00700	-0.163	0.83	0.702
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_08_757	1	-5.908	2.837	0.323	0.150	-0.127	0.1350	1.143	2.114	-0.281	0.249	-0.01000	0.00700	0.882	0.83	0.702
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_14_867	1	0.18	3.056	-0.086	0.154	-0.089	0.1280	0.615	2.070	-0.357	0.256	0.00500	0.00600	0.096	0.87	0.643
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_21_057	1	-6.532	2.831	0.12	0.162	-0.1110	0.137	1.541	2.116	-0.108	0.258	-0.01500	0.00600	-0.101	0.85	0.679
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_27_247	1	-6.165	2.858	-0.084	0.150	-0.04100	0.1260	1.3920	2.098	-0.403	0.254	0.00200	0.00700	-0.91	0.87	0.657
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_33_507	1	-9.175	2.749	-0.0200	0.149	0.010	0.137	1.348	2.097	-0.1990	0.247	-0.0170	0.00600	-1.09	0.81	0.599
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_39_707	1	1.33	2.885	-0.12	0.147	-0.339	0.123	1.6230	2.101	-0.371	0.250	0.01100	0.00600	0.72	0.83	0.539
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_45_807	1	-3.390	2.795	-0.314	0.159	-0.0080	0.122	0.880	2.075	0.113	0.261	-0.01600	0.00600	-1.29	0.86	0.579
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_51_967	1	6.61	3.004	0.307	0.157	-0.1450	0.1160	0.531	2.038	-0.10	0.264	-0.00900	0.00600	-1.952	0.91	0.565
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_58_167	1	0.8620	2.844	-0.135	0.148	-0.0590	0.1180	1.020	2.053	0.147	0.247	0.00000	0.00600	-2.62	0.84	0.521
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_04_347	1	4.716	2.673	0.053	0.144	-0.0550	0.115	0.749	2.017	-0.208	0.239	-0.02000	0.00700	-2.54	0.81	0.479
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_10_547	1	-5.69	2.774	-0.1050	0.148	-0.104	0.1190	1.1900	1.985	0.315	0.248	-0.01100	0.00600	-0.84	0.85	0.414
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_16_637	1	-3.694	2.675	0.299	0.149	0.0010	0.1190	0.971	1.972	-0.496	0.247	-0.00200	0.00500	-1.596	0.83	0.476
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_22_817	1	-0.199	2.833	0.080	0.143	-0.143	0.1210	1.305	1.949	-0.505	0.242	-0.0200	0.00600	1.34	0.84	0.502
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_29_027	1	0.261	2.725	-0.022	0.150	0.1480	0.1210	0.876	1.925	-0.078	0.247	-0.01	0.00500	0.13	0.85	0.462
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_35_237	1	2.950	2.693	0.118	0.143	0.014	0.1100	1.176	1.888	-0.120	0.238	-0.00100	0.00500	-1.526	0.77	0.435
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_41_427	1	0.762	2.874	0.123	0.150	-0.0200	0.1100	1.42	1.882	-0.280	0.252	0.00000	0.00400	-2.06	0.85	0.42
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_47_587	1	7.458	2.712	0.120	0.145	-0.248	0.110	0.553	1.820	-0.366	0.244	-0.01	0.00500	-0.327	0.79	0.422
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_53_757	1	10.353	2.810	0.01	0.151	-0.006	0.1160	1.013	1.815	-0.449	0.252	-0.01300	0.00600	0.772	0.86	0.436
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_59_967	1	-1.04	2.956	-0.017	0.156	-0.080	0.1150	1.040	1.847	0.166	0.258	-0.01600	0.00600	-0.15	0.86	0.391
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_06_167	1	-7.11	2.872	0.314	0.162	0.066	0.1130	1.3610	1.885	0.442	0.261	-0.01400	0.00500	0.6310	0.91	0.385
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_12_367	1	-2.706	2.842	0.523	0.151	-0.0110	0.1100	1.117	1.857	0.008	0.250	0.00300	0.00600	0.6140	0.83	0.404
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_18_507	1	3.2780	2.705	-0.399	0.145	0.194	0.1060	1.058	1.830	0.14	0.239	-0.00800	0.00600	-1.91	0.82	0.413
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_24_717	1	-0.925	2.671	0.118	0.149	0.124	0.1150	1.2450	1.847	-0.600	0.244	0.00	0.00600	-0.90	0.82	0.419
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_30_827	1	8.8880	2.505	0.109	0.152	-0.182	0.1060	0.668	1.820	-0.07	0.240	-0.00100	0.00600	-3.01	0.79	0.345
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_37_127	1	1.45	2.665	-0.176	0.145	-0.118	0.1140	0.9320	1.868	-0.484	0.237	-0.00800	0.00700	-0.36	0.79	0.407
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_43_317	1	0.922	2.616	0.179	0.154	0.0580	0.121	0.326	1.867	-0.220	0.245	0.00700	0.00600	-1.37	0.78	0.406
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_49_337	1	5.784	2.379	0.098	0.152	-0.04200	0.117	1.3720	1.795	0.070	0.236	-0.00600	0.00500	0.83	0.81	0.421
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_55_607	1	6.991	2.752	0.188	0.154	0.1620	0.119	0.721	1.792	-0.21	0.252	-0.01600	0.00700	-1.37	0.83	0.418
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_01_797	1	7.269	2.783	0.000	0.154	0.221	0.1000	0.943	1.772	0.14	0.254	0.00700	0.00600	-3.00	0.86	0.34
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_08_017	1	-0.177	2.723	0.0890	0.151	0.1380	0.1000	1.153	1.798	0.000	0.242	-0.00600	0.00600	-2.03	0.80	0.41
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_14_017	1	1.6060	2.670	-0.212	0.141	0.1100	0.127	1.362	1.815	-0.212	0.236	-0.02100	0.00700	-0.351	0.78	0.37
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_20_217	1	-1.26	2.844	0.264	0.157	0.1980	0.1180	0.9020	1.820	0.137	0.253	0.01000	0.00600	-0.55	0.88	0.399
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_26_507	1	2.958	2.871	0.455	0.148	0.111	0.1120	1.551	1.804	0.44	0.249	0.00400	0.00600	-1.75	0.82	0.361
10/15/2013 21:52	0917-173_Nc	13_10_15_2152_06_718	1	0.116	1.241	0.170	0.0660	-0.105	0.0780	1.0760	1.802	0.06	0.111	-0.00600	0.00300	-1.205	0.359	0.411
10/15/2013 21:53	0917-173_Nc	13_10_15_2153_07_498	1	1.134	1.138	0.056	0.069	0.0270	0.0770	0.785	1.784	-0.050	0.110	0.00	0.00300	-0.450	0.379	0.435
10/15/2013 21:54	0917-173_Nc	13_10_15_2154_08_258	1	-0.236	1.140	0.070	0.066	-0.0290	0.0770	0.981	1.766	-0.057	0.106	-0.00500	0.00300	-0.1510	0.350	0.401
10/15/2013 21:55	0917-173_Nc	13_10_15_2155_09_028	1	1.545	1.133	0.067	0.063	0.01500	0.0740	1.0150	1.750	-0.081	0.103	-0.01000	0.00300	-1.21	0.347	0.409
10/15/2013 21:56	0917-173_Nc	13_10_15_2156_09_848	1	2.900	1.118	0.076	0.063	-0.03100	0.0730	1.1840	1.746	-0.130	0.103	-0.00800	0.00300	-0.5740	0.340	0.418
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_04_240	1	1.7	1.5	0.051	0.079	-0.37	1.40	0.191	0.0920	-0.109	0.129	0.061	0.571	0.2880	0.432	-1.735
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_22_760	1	0.6	1.4	-0.047	0.085	-0.39	1.53	0.183	0.0940	-0.030	0.134	0.063	0.613	0.0160	0.433	-1.895
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_41_360	1	1.3	1.3	-0.0440	0.076	-0.62	1.58	0.0330	0.0950	-0.013	0.124	0.065	0.637	-0.562	0.409	-1.943

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 8:35	0917-173_Nc	13_10_16_0835_59_860	1	-0.4	1.5	0.031	0.082	-0.48	1.61	-0.0600	0.0950	-0.374	0.133	0.064	0.647	1.361	0.446	-1.963
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_18_370	1	-2.2	1.5	0.0680	0.084	-0.53	1.63	0.0030	0.0960	-0.317	0.135	0.069	0.657	0.35	0.446	-2.011
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_36_990	1	-0.6	1.3	-0.087	0.091	-0.49	1.64	0.057	0.0900	-0.2170	0.138	0.066	0.653	0.533	0.439	-2.052
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_55_400	1	0.8	1.4	0.175	0.081	-0.55	1.64	-0.09600	0.0990	0.0720	0.130	0.058	0.656	-0.7950	0.440	-2.007
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_14_090	1	1.6	1.5	0.0940	0.078	-0.66	1.64	0.154	0.1050	0.281	0.131	0.069	0.652	-0.2120	0.426	-2.052
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_32_591	1	2.1	1.4	-0.0740	0.074	-0.54	1.65	-0.0100	0.1050	-0.232	0.121	0.064	0.657	0.3180	0.408	-2.026
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_51_001	1	-0.6	1.5	-0.001	0.087	-0.61	1.64	-0.0730	0.0940	-0.0820	0.140	0.072	0.660	0.87	0.473	-2.027
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_09_661	1	-2.2	1.5	-0.1030	0.083	-0.51	1.64	0.0660	0.0910	0.075	0.137	0.075	0.658	0.216	0.468	-2.034
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_28_111	1	-2.4	1.5	-0.121	0.087	-0.50	1.64	0.1350	0.0980	-0.140	0.139	0.069	0.654	0.047	0.455	-2.028
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_46_631	1	-0.1	1.7	-0.0700	0.075	-0.61	1.65	-0.1350	0.1050	0.261	0.132	0.074	0.658	-1.196	0.453	-2.027
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_05_251	1	2.2	1.4	-0.011	0.078	-0.46	1.64	0.0660	0.1000	0.000	0.128	0.071	0.655	-0.010	0.424	-2.042
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_23_781	1	-0.4	1.5	0.035	0.084	-0.55	1.65	0.120	0.1030	0.014	0.136	0.064	0.658	0.461	0.439	-1.999
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_42_371	1	-2.4	1.4	-0.020	0.081	-0.49	1.64	-0.141	0.1000	0.066	0.133	0.064	0.659	0.286	0.431	-1.989
					10/16/2013 8:40	0917-173_Nc	13_10_16_0840_00_791	1	0.5	1.6	0.060	0.080	-0.49	1.64	-0.1400	0.1050	-0.1690	0.135	0.060	0.659	0.487	0.462	-1.991
					10/16/2013 10:53	0917-173_Nc	13_10_16_1053_00_580	1	0.546	1.192	0.000	0.073	0.719	0.0800	0.425	1.742	-1.258	0.148	-0.00200	0.00500	0.04	0.363	16.314
Data	Run	10	Start	A	10/16/2013 10:54	0917-173_Nc	13_10_16_1054_01_360	1	-0.08	1.102	0.070	0.059	0.487	0.0660	0.287	1.533	-0.993	0.127	-0.00300	0.00500	-0.99	0.323	15.581
					10/16/2013 10:55	0917-173_Nc	13_10_16_1055_02_170	1	0.978	1.066	-0.075	0.069	0.569	0.0690	0.347	1.534	-1.391	0.156	-0.00800	0.00500	-0.68	0.335	21.12
					10/16/2013 10:56	0917-173_Nc	13_10_16_1056_02_880	1	-2.597	1.094	-0.037	0.068	0.637	0.0740	0.496	1.546	-1.590	0.165	-0.00500	0.00400	-0.64	0.333	23.645
					10/16/2013 10:57	0917-173_Nc	13_10_16_1057_03_610	1	-0.21	1.072	0.161	0.068	0.668	0.0700	0.471	1.546	-1.581	0.168	-0.00300	0.00500	-0.87	0.310	24.249
					10/16/2013 10:58	0917-173_Nc	13_10_16_1058_04_380	1	-2.260	1.086	-0.033	0.074	0.718	0.0710	0.485	1.547	-1.800	0.178	-0.00300	0.00400	-0.99	0.342	25.999
					10/16/2013 10:59	0917-173_Nc	13_10_16_1059_05_200	1	-2.59	1.061	-0.0310	0.070	0.717	0.0710	0.474	1.545	-1.52	0.162	-0.00300	0.00500	-1.16	0.319	23.552
					10/16/2013 11:00	0917-173_Nc	13_10_16_1100_06_010	1	-0.63	1.004	0.048	0.067	0.779	0.0690	0.528	1.540	-1.383	0.155	-0.00500	0.00500	-1.31	0.321	22.834
					10/16/2013 11:01	0917-173_Nc	13_10_16_1101_06_711	1	-0.250	1.107	-0.039	0.067	0.772	0.0710	0.318	1.523	-1.696	0.168	-0.00300	0.00400	-0.94	0.331	24.928
					10/16/2013 11:02	0917-173_Nc	13_10_16_1102_07_491	1	-0.72	1.163	-0.1020	0.071	0.692	0.0710	0.491	1.520	-1.77	0.177	-0.00100	0.00500	-1.22	0.342	26.326
					10/16/2013 11:03	0917-173_Nc	13_10_16_1103_08_231	1	-1.32	1.040	0.052	0.067	0.724	0.0680	0.441	1.527	-1.722	0.169	-0.00300	0.00500	-0.86	0.322	25.312
					10/16/2013 11:04	0917-173_Nc	13_10_16_1104_09_041	1	0.40	1.117	0.1000	0.069	0.705	0.0700	0.483	1.512	-1.595	0.170	-0.00600	0.00500	-0.82	0.340	24.685
					10/16/2013 11:05	0917-173_Nc	13_10_16_1105_09_761	1	-1.63	1.105	0.0050	0.068	0.732	0.0680	0.404	1.511	-1.757	0.171	0.00100	0.00400	-0.73	0.334	25.936
					10/16/2013 11:06	0917-173_Nc	13_10_16_1106_10_521	1	-0.786	1.090	0.093	0.068	0.723	0.0690	0.551	1.507	-1.934	0.177	0.00	0.00400	-0.10	0.340	26.809
					10/16/2013 11:07	0917-173_Nc	13_10_16_1107_11_331	1	-1.688	1.139	0.009	0.071	0.648	0.0690	0.471	1.511	-1.822	0.175	-0.00500	0.00500	-0.21	0.344	26.115
					10/16/2013 11:08	0917-173_Nc	13_10_16_1108_12_061	1	-1.624	1.099	0.058	0.064	0.720	0.0690	0.568	1.512	-1.581	0.158	-0.00600	0.00500	-0.69	0.312	22.876
					10/16/2013 11:09	0917-173_Nc	13_10_16_1109_12_911	1	-0.431	1.007	-0.0600	0.069	0.674	0.0710	0.442	1.519	-1.598	0.160	-0.00200	0.00500	-0.60	0.329	23.369
					10/16/2013 11:10	0917-173_Nc	13_10_16_1110_13_621	1	-0.42	1.111	-0.057	0.070	0.683	0.0690	0.387	1.536	-1.45	0.163	-0.00400	0.00500	-1.25	0.336	23.982
					10/16/2013 11:11	0917-173_Nc	13_10_16_1111_14_401	1	-3.12	1.139	-0.075	0.067	0.678	0.0710	0.489	1.548	-1.509	0.167	-0.00400	0.00400	-1.05	0.339	24.141
					10/16/2013 11:12	0917-173_Nc	13_10_16_1112_15_162	1	0.01	1.022	0.079	0.071	0.669	0.0720	0.421	1.559	-1.548	0.166	0.00000	0.00500	-0.52	0.310	24.869
					10/16/2013 11:13	0917-173_Nc	13_10_16_1113_15_972	1	1.36	1.103	-0.07100	0.070	0.715	0.0730	0.448	1.563	-1.719	0.173	-0.00100	0.00500	-0.98	0.339	25.933
					10/16/2013 11:14	0917-173_Nc	13_10_16_1114_16_712	1	-0.91	1.136	0.010	0.070	0.685	0.0730	0.340	1.580	-1.976	0.173	-0.00700	0.00400	0.01	0.328	25.534
					10/16/2013 11:15	0917-173_Nc	13_10_16_1115_17_532	1	0.66	1.155	-0.124	0.071	0.681	0.0730	0.618	1.570	-2.030	0.175	-0.00500	0.00400	-0.63	0.334	26.796
					10/16/2013 11:16	0917-173_Nc	13_10_16_1116_18_342	1	1.49	1.039	-0.0630	0.067	0.685	0.0730	0.359	1.568	-1.754	0.165	-0.00600	0.00500	-0.64	0.315	24.895
					10/16/2013 11:17	0917-173_Nc	13_10_16_1117_19_052	1	-0.436	1.096	0.0560	0.065	0.586	0.0710	0.449	1.571	-1.433	0.159	-0.00600	0.00500	-0.68	0.330	23.226
					10/16/2013 11:18	0917-173_Nc	13_10_16_1118_19_792	1	-0.998	1.006	-0.0430	0.070	0.661	0.0720	0.466	1.563	-1.639	0.160	-0.00700	0.00500	-0.76	0.321	22.946
					10/16/2013 11:19	0917-173_Nc	13_10_16_1119_20_502	1	-2.14	1.188	0.069	0.072	0.666	0.0720	0.527	1.572	-1.809	0.179	-0.00700	0.00500	-1.25	0.351	27.019
					10/16/2013 11:20	0917-173_Nc	13_10_16_1120_21_332	1	-0.73	1.059	-0.1310	0.066	0.673	0.0750	0.349	1.565	-1.73	0.172	-0.00300	0.00500	-0.88	0.309	26.365
					10/16/2013 11:21	0917-173_Nc	13_10_16_1121_22_052	1	-1.678	1.126	-0.091	0.071	0.612	0.0740	0.469	1.575	-1.938	0.180	-0.00600	0.00500	-0.61	0.346	26.794
					10/16/2013 11:22	0917-173_Nc	13_10_16_1122_22_852	1	0.25	1.072	0.081	0.070	0.677	0.0740	0.412	1.591	-1.933	0.180	-0.00300	0.00500	-0.73	0.317	28.089
					10/16/2013 11:23	0917-173_Nc	13_10_16_1123_23_562	1	-2.03	1.098	0.025	0.069	0.753	0.0740	0.405	1.581	-1.849	0.178	-0.00600	0.00500	-0.47	0.330	26.157
					10/16/2013 11:24	0917-173_Nc	13_10_16_1124_24_403	1	0.023	1.065	-0.014	0.068	0.695	0.0720	0.387	1.590	-1.527	0.156	-0.00400	0.00500	-0.38	0.331	22.963
					10/16/2013 11:25	0917-173_Nc	13_10_16_1125_25_123	1	-1.11	1.042	-0.009	0.065	0.618	0.0710	0.499	1.589	-1.577	0.162	-0.00400	0.00500	-0.60	0.313	25.024
					10/16/2013 11:26	0917-173_Nc	13_10_16_1126_25_883	1	-1.571	1.102	-0.0400	0.072	0.637	0.0680	0.447	1.581	-1.893	0.188	-0.00300	0.00400	-0.40	0.336	29.163
					10/16/2013 11:27	0917-173_Nc	13_10_16_1127_26_683	1	-0.25	1.187	-0.0660	0.076	0.639	0.0760	0.570	1.589	-2.45	0.225	-0.00800	0.00500	-1.24	0.340	35.801
					10/16/2013 11:28	0917-173_Nc	13_10_16_1128_27_423	1	-0.89	1.025	-0.0540	0.077	0.725	0.0730	0.350	1.586	-2.641	0.234	-0.00400	0.00500	-0.80	0.312	37.818
					10/16/2013 11:29	0917-173_Nc	13_10_16_1129_28_223	1	-1.665	1.095	-0.1380	0.079	0.762	0.0750	0.349	1.585	-2.893	0.245	0.00300	0.00400	-0.9	0.331	40.471
					10/16/2013 11:30	0917-173_Nc	13_10_16_1130_28_963	1	-2.875	1.128	-0.001	0.083	0.700	0.073	0.361	1.577	-2.69	0.254	-0.00200	0.00500	-1.03	0.347	41.09
					10/16/2013 11:31	0917-173_Nc	13_10_16_1131_29_793	1	-0.83	1.039	-0.0580	0.074	0.762	0.0730	0.322	1.581	-2.77	0.250	-0.00400	0.00400	-0.5	0.307	40.327
					10/16/2013 11:32	0917-173_Nc	13_10_16_1132_30_513	1	0.18	1.190	-0.036	0.083	0.745	0.0750	0.337	1.580	-2.717	0.254	-0.00300	0.00500	-0.2	0.352	40.658
					10/16/2013 11:33	0917-173_Nc	13_10_16_1133_31_273	1	-0.88	0.974	-0.114	0.078	0.770	0.0730	0.479	1.579	-2.32	0.215	-0.00600	0.00500	-0.60	0.312	34.379
					10/16/2013 11:34	0917-173_Nc	13_10_16_1134_32_083	1	-0.431	1.125	-0.039	0.073	0.735	0.0710	0.394	1.585	-2.203	0.200	-0.00600	0.00500	-0.73	0.341	30.565
					10/16/2013 11:35	0917-173_Nc	13_10_16_1135_32_843	1	-1.86	1.113	0.0080	0.072	0.771	0.0750	0.283	1.589	-2.11	0.203	-0.00200	0.00500	-1.28	0.328	32.456
					10/16/2013 11:36	0917-173_Nc	13_10_16_1136_33_654	1	-0.765	1.130	-0.091	0.078	0.713	0.0750	0.448	1.600	-2.199	0.216	-0.00200	0.00500	-0.64	0.338	32.664
					10/16/2013 11:37	0917-173_Nc	13_10_16_1137_34_364	1	-1.72	1.075	-0.095	0.075	0.788	0.0770	0.366	1.612	-2.331	0.208	-0.00300	0.00500	-0.84	0.317	33
					10/16/2013 11:38	0917-173_Nc	13_10_16_1138_35_174	1	-1.27	1.132	-0.144	0.073	0.679	0.0750	0.477	1.603	-2.123	0.211	-0.00300	0.00500	-0.94	0.337	32.746
					10/16/2013 11:39	0917-173_Nc	13_10_16_1139_35_894	1	-0.23	1.057	-0.067	0.080	0.731	0.0760	0.358	1.592	-2.170	0.210	-0.00700	0.00500	-0.84	0.329	32.1
					10/16/2013 11:40	0917-173_Nc	13_10_16_1140_36_704	1	-0.57	1.068	-0.0180	0.067	0.713	0.0730	0.313	1.591	-1.938	0.192	-0.00700	0.00500	-0.90	0.315	30.932
					10/16/2013 11:41	0917-173_Nc	13_10_16_1141_37_464	1	-0.772	1.072	-0.026	0.068	0.659	0.0740	0.518	1.588	-1.871	0.185	-0.00400	0.00500	-0.75	0.323	28.903
					10/16/2013 11:42	0917-173_Nc	13_10_16_1142_38_184	1	-1.237	1.080	-0.055	0.069	0.616	0.0740	0.329	1.576	-1.723	0.171	-0.00300	0.00400	-0.91	0.330	24.703
					10/16/2013 11:43	0917-173_Nc	13_10_16_1143_38_984	1	-0.469	1.031	-0.010	0.075	0.676	0.0720	0.389	1.590	-2.093	0.193	-0.00200	0.00400	-0.55	0.325	29.868
					10/16/2013 11:44	0917-173_Nc	13_10_16_1144_39_784	1	-3.414	1.125	-0.0900	0.076	0.778	0.0740	0.305	1.599	-2.267	0.210	-0.00200	0.00500	-0.43	0.332	32.63
					10/16/2013 11:45	0917-173_Nc	13_10_16_1145_40_504	1	-2.192	1.107	-0.0270	0.074	0.709	0.0750	0.236	1.590	-1.979	0.202	-0.00200	0.00500	-1.00	0.325	30.509
					10/16/2013 11:46	0917-173_Nc	13_10_16_1146_41_324	1	0.88	1.086	-0.076	0.069	0.755	0.0730	0.457	1.588	-2.03	0.189	0.00100	0.00500	-0.79	0.316	29.185
					10/16/2013 11:47	0917-173_Nc	13_10_16_1147_42_084	1	-0.37	1.097	-0.0720	0.071	0.780	0.0740	0.340	1.581	-1.953	0.187	-0.00600	0.00500	-0.72	0.330	29.398
					10/16/2013 11:48	0917-173_Nc	13_10_16_1148_42_895	1	-1.034	1.097	0.059	0.072	0.739	0.0740	0.382	1.587	-1.88	0.188	-0.00300	0.00500	-0.79	0.340	29.042
					10/16/2013 11:49	0917-173_Nc	13_10_16_1149_43_655	1	-1.27	1.040	-0.0330	0.073	0.770	0.0720	0.288	1.581	-1.995	0.194	-0.00200	0.00500	-0.78	0.328	30.244
					10/16/2013 11:50	0917-173_Nc	13_10_16_1150_44_365	1	-1.534	1.068	-0.021	0.071	0.780	0.0730	0.325	1.567	-2.15	0.198	0.00000	0.00500	-1.26	0.320	30.795
					10/16/2013 11:51	0917-173_Nc	13_10_16_1151_45_185	1	-1.05	1.036	-0.0360	0.075	0.764	0.0750	0.347	1.572	-1.970	0.196	-0.00600	0.00500	-1.12	0.320	29.796
					10/16/2013 11:52	0917-173_Nc	13_10_16_1152_45_905	1	-0.794	1.109	0.097	0.075	0.801	0.0750	0.373	1.569	-2.063	0.207	-0.00900	0.00500	-0.70	0.340	31.248
					10/16/2013 11:53	0917-173_Nc	13_10_16_1153_46_655	1	-0.75	1.025	-0.362	0.086	0.587	0.0630	0.244	1.282	-3.6270	0.218	-0.00500	0.00500	-1.36	0.334	31.401
			Stop		10/16/2013 11:54	0917-173_Nc	13_10_16_1154_47_485	1	-1.075	0.863	-0.712	0.097	-0.0470	0.0440	-0.103	0.191	-4.01	0.173	-0.00400	0.00500	-1.27	0.391	13.497
					10/16/2013 11:55	0917-173_Nc	13_10_16_1155_48_205	1	-3.318	0.985	-0.654	0.110	-0.1080	0.0500	-0.261	0.1070	-4.41	0.187	-0.00800	0.00600	-1.24	0.444	12.279
					10/16/2013 11:56	0917-173_Nc	13_10_16_1156_48_955	1	-2.937	1.045	-0.666	0.111	-0.09200	0.0480	-0.438	0.1070	-4.30	0.192	-0.00400	0.00600	-1.25	0.446	12.154
					10/16/2013 11:57	0917-173_Nc	13_10_16_1157_49_705	1	-2.62300	1.010	-0.6120	0.112	-0.0910	0.0470	-0.193	0.1000	-4.52	0.190	-0.00700	0.00600	-1.37	0.418	12.072
					10/16/2013 11:58	0917-173_Nc	13_10_16_1158_50_365	1	-2.957	1.026	-0.544	0.101	0.045	0.0430	-0.280	0.0780	-3.66	0.171	-0.00800	0.00600	-1.10	0.413	10.204
					10/16/2013 11:59	0917-173_Nc	13_10_16_1159_51_106	1	0.902	0.911	-0.008	0.056	0.0520	0.0350	-0.228	0.0750	-0.753	0.091	-0.00500	0.00500	0.23	0.302	2.144
					10/16/2013 12:00	0917-173_Nc	13_10_16_1200_51_926	1	-1.539	0.999	-0.0120	0.054	0.0170	0.0340	-0.1380	0.0700	-0.1100	0.091	-0.00300	0.00600	-0.306	0.301	0.39
					10/16/2013 12:01	0917-173_Nc	13_10_16_1201_52_646	1	0.000	1.002	-0.0140	0.053	-0.00500	0.0350	-0.0940	0.0610	0.0150	0.088	0.00	0.00600	-0.524	0.294	0.326
					10/16/2013 12:02	0917-173_Nc	13_10_16_1202_53_466	1	0.056	0.934	0.114	0.058	0.285	0.0390	0.068	0.423	-0.640	0.100	0.00200	0.00500	0.04	0.299	6.602
					10/16/2013 12:03	0917-173_Nc	13_10_16_1203_54_266	1	-0.90	1.232	-0.034	0.084	1.021	0.0800	0.424	1.733	-2.271	0.21	-0.00300	0.00600	-1.12	0.381	28.809
					10/16/2013 12:04	0917-173_Nc	13_10_16_1204_55_016	1	0.12	1.202	-0.062	0.088	1.048	0.0850	0.274	1.787	-2.531	0.23	-0.00100	0.00500	-0.44	0.369	31.671
					10/16/2013 12:05	0917-173_Nc	13_10_16_1205_55_716	1	-1.902	1.187	0.044	0.087	0.938	0.0860	0.217	1.779	-2.494	0.24	-0.00400	0.00500	-1.22	0.370	32.145
					10/16/2013 12:06	0917-173_Nc	13_10_16_1206_56_536	1	-0.99	1.228	-0.024	0.083	0.941	0.0830	0.243	1.775	-2.623	0.23	-0.01000	0.00500	-0.44	0.373	33.012
Data	Run	11	Start	A	10/16/2013 12:07	0917-173_Nc	13_10_16_1207_57_256	1	-2.11	1.104	-0.072	0.075	0.885	0.0740	0.302	1.569	-2.177	0.20	-0.00700	0.00500	-0.67	0.330	31.592
					10/16/2013 12:08	0917-173_Nc	13_10_16_1208_58_076	1	-0.99	1.135	-0.059	0.072	0.786	0.0750	0.244	1.558	-2.15	0.20	-0.00400	0.00500	-0.73	0.338	30.586
					10/16/2013 12:09	0917-173_Nc	13_10_16_1209_58_826	1	1.22	1.121	-0.0910	0.073	0.771	0.0730	0.335	1.559	-1.83	0.19	-0.00400	0.00500	-0.98	0.339	27.123
					10/16/2013 12:10	0917-173_Nc	13_10_16_1210_59_526	1	-0.122	1.084	0.0320	0.076	0.784	0.0750	0.297	1.565	-1.626	0.18	-0.00600	0.00500	-1.02	0.342	26.357
					10/16/2013 12:12	0917-173_Nc	13_10_16_1212_00_327	1	-1.48	1.047	-0.034	0.067	0.810	0.0750	0.197	1.558	-1.67	0.17	-0.00800	0.00500	-1.05	0.319	25.732
					10/16/2013 12:13	0917-173_Nc	13_10_16_1213_01_027	1	-0.87	1.185	0.0090	0.070	0.855	0.0770	0.242	1.565	-1.601	0.18	-0.00400	0.00500	-0.61	0.348	25.856
					10/16/2013 12:14	0917-173_Nc	13_10_16_1214_01_787	1	-2.97	1.186	0.095	0.070	0.819	0.0740	0.225	1.569	-1.498	0.18	-0.00600	0.00500	-0.97	0.351	25.702
					10/16/2013 12:15	0917-173_Nc	13_10_16_1215_02_607	1	-0.95	1.054	0.003	0.072	0.853	0.0720	0.050	1.588	-1.566	0.18	-0.00400	0.00500	-0.82	0.333	26.936
					10/16/2013 12:16	0917-173_Nc	13_10_16_1216_03_317	1	-1.820	1.107	-0.027	0.071	0.813	0.0760	0.172	1.582	-1.729	0.18	-0.00600	0.00500	-0.83	0.328	26.444
					10/16/2013 12:17	0917-173_Nc	13_10_16_1217_04_127	1	-1.21	1.111	0.034	0.072	0.980	0.0750	0.264	1.615	-1.943	0.18	-0.00500	0.00500	-0.66	0.332	28.214
					10/16/2013 12:18	0917-173_Nc	13_10_16_1218_04_847	1	-1.36	1.104	-0.0250	0.071	0.856	0.0770	0.223	1.624	-1.872	0.20	-0.00300	0.00500	-0.41	0.335	29.991
					10/16/2013 12:19	0917-173_Nc	13_10_16_1219_05_647	1	-0.59	1.038	0.0230	0.078	0.847	0.0780	0.264	1.625	-2.047	0.21	-0.00400	0.00500	-0.77	0.342	32.131
					10/16/2013 12:20	0917-173_Nc	13_10_16_1220_06_357	1	-0.517	1.083	0.043	0.073	0.808	0.0780	0.220	1.625	-2.008	0.21	0.00000	0.00500	-0.99	0.332	31.927
					10/16/2013 12:21	0917-173_Nc	13_10_16_1221_07_137	1	-1.28	1.041	-0.0280	0.070	0.815	0.0760	0.263	1.611	-1.93	0.20	-0.00500	0.00500	-1.22	0.316	31.366
					10/16/2013 12:22	0917-173_Nc	13_10_16_1222_07_907	1	-0.830	1.050	-0.176	0.078	0.785	0.0770	0.118	1.605	-2.042	0.20	-0.00500	0.00500	-1.15	0.335	31.738
					10/16/2013 12:23	0917-173_Nc	13_10_16_1223_08_667	1	-1.43	1.055	-0.04300	0.077	0.788	0.0750	0.210	1.584	-1.971	0.21	-0.00500	0.00500	-1.01	0.330	31.706
					10/16/2013 12:24	0917-173_Nc	13_10_16_1224_09_398	1	-0.32	1.085	-0.025	0.073	0.689	0.0750	0.389	1.589	-1.946	0.19	-0.00500	0.00500	-0.72	0.328	29.803
					10/16/2013 12:25	0917-173_Nc	13_10_16_1225_10_208	1	-2.23	1.087	-0.036	0.071	0.697	0.0770	0.213	1.597	-1.84	0.19	-0.00700	0.00500	-1.06	0.332	29.7
					10/16/2013 12:26	0917-173_Nc	13_10_16_1226_11_008	1	-1.55	1.128	-0.0200	0.070	0.868	0.0770	0.118	1.598	-1.852	0.19	-0.00800	0.00500	-0.07	0.330	28.865
					10/16/2013 12:27	0917-173_Nc	13_10_16_1227_11_718	1	-1.172	1.092	-0.0380	0.067	0.841	0.0740	0.036	1.602	-1.737	0.19	-0.00800	0.00500	-0.96	0.322	28.946
					10/16/2013 12:28	0917-173_Nc	13_10_16_1228_12_528	1	-1.468	1.058	-0.0270	0.074	0.789	0.0750	0.194	1.615	-1.75	0.20	-0.00900	0.00500	-1.28	0.334	30.11
					10/16/2013 12:29	0917-173_Nc	13_10_16_1229_13_248	1	-0.54	1.140	-0.1410	0.073	0.800	0.0770	0.172	1.608	-1.86	0.19	-0.00400	0.00500	-0.50	0.340	29.727
					10/16/2013 12:30	0917-173_Nc	13_10_16_1230_13_968	1	-0.38	1.069	0.0870	0.077	0.755	0.0760	0.294	1.623	-1.496	0.19	-0.00700	0.00500	-0.61	0.346	28.63
					10/16/2013 12:31	0917-173_Nc	13_10_16_1231_14_768	1	-0.963	1.164	-0.01300	0.071	0.753	0.0750	0.255	1.615	-1.625	0.18	-0.00500	0.00500	-1.10	0.347	26.904
					10/16/2013 12:32	0917-173_Nc	13_10_16_1232_15_588	1	-0.84	1.120	-0.172	0.076	0.771	0.0780	0.391	1.618	-1.907	0.19	-0.00500	0.00500	-0.42	0.348	28.398
					10/16/2013 12:33	0917-173_Nc	13_10_16_1233_16_308	1	-0.871	1.151	-0.034	0.076	0.819	0.0770	0.341	1.617	-1.78	0.19	-0.00700	0.00500	-0.80	0.362	29.381
					10/16/2013 12:34	0917-173_Nc	13_10_16_1234_17_108	1	-0.16	1.123	-0.02700	0.072	0.759	0.0750	0.197	1.608	-1.69	0.19	-0.00300	0.00500	-1.02	0.333	29.77
					10/16/2013 12:35	0917-173_Nc	13_10_16_1235_17_878	1	-1.65	1.112	-0.108	0.072	0.667	0.0760	0.279	1.626	-1.58	0.18	-0.00600	0.00500	-1.15	0.327	28.192
					10/16/2013 12:36	0917-173_Nc	13_10_16_1236_18_609	1	-0.718	1.102	0.014	0.065	0.475	0.0750	0.204	1.592	-1.062	0.14	-0.00500	0.00500	-0.49	0.334	17.654
					10/16/2013 12:37	0917-173_Nc	13_10_16_1237_19_339	1	-1.74	1.077	-0.048	0.066	0.605	0.0750	0.302	1.600	-1.534	0.16	-0.00200	0.00500	-0.67	0.326	22.265
					10/16/2013 12:38	0917-173_Nc	13_10_16_1238_20_129	1	-1.24	1.084	-0.0730	0.069	0.820	0.0770	0.274	1.601	-1.837	0.18	-0.00200	0.00500	-0.08	0.338	25.508
					10/16/2013 12:39	0917-173_Nc	13_10_16_1239_20_839	1	-1.223	1.073	0.058	0.071	0.787	0.0750	0.283	1.616	-1.580	0.18	-0.00200	0.00500	-1.06	0.337	26.384
					10/16/2013 12:40	0917-173_Nc	13_10_16_1240_21_539	1	-1.054	1.080	-0.067	0.069	0.842	0.0740	0.361	1.603	-1.68	0.18	-0.00400	0.00500	-1.14	0.319	27.279
					10/16/2013 12:41	0917-173_Nc	13_10_16_1241_22_279	1	-0.41	1.095	-0.0410	0.074	0.889	0.0760	0.312	1.597	-1.912	0.18	0.00100	0.00500	-0.53	0.329	27.667
					10/16/2013 12:42	0917-173_Nc	13_10_16_1242_23_099	1	-0.31	1.141	-0.0270	0.068	0.839	0.0760	0.341	1.605	-1.657	0.18	-0.00400	0.00500	-0.87	0.333	26.765
					10/16/2013 12:43	0917-173_Nc	13_10_16_1243_23_869	1	-0.89	1.110	0.058	0.074	0.812	0.0740	0.324	1.608	-1.498	0.17	-0.00800	0.00500	-0.11	0.338	24.041
					10/16/2013 12:44	0917-173_Nc	13_10_16_1244_24_589	1	-0.97	1.146	0.022	0.070	0.808	0.0750	0.333	1.601	-1.442	0.16	0.00	0.00500	-0.70	0.351	23.263
					10/16/2013 12:45	0917-173_Nc	13_10_16_1245_25_399	1	0.03	1.083	0.002	0.071	0.710	0.0760	0.173	1.601	-1.535	0.17	-0.00200	0.00500	-0.52	0.344	24.568
					10/16/2013 12:46	0917-173_Nc	13_10_16_1246_26_109	1	0.845	1.079	0.02500	0.073	0.781	0.0760	0.314	1.611	-1.584	0.18	-0.00600	0.00500	-0.80	0.329	25.672
					10/16/2013 12:47	0917-173_Nc	13_10_16_1247_26_920	1	-0.145	1.107	-0.0520	0.068	0.869	0.0740	0.269	1.621	-1.742	0.17	-0.00400	0.00500	0.00	0.326	25.83
					10/16/2013 12:48	0917-173_Nc	13_10_16_1248_27_610	1	-1.46	1.117	0.046	0.075	0.752	0.0760	0.361	1.622	-1.597	0.18	-0.00400	0.00500	-0.72	0.341	26.283
					10/16/2013 12:49	0917-173_Nc	13_10_16_1249_28_360	1	-0.049	1.059	-0.068	0.073	0.739	0.0740	0.302	1.619	-1.802	0.18	-0.00300	0.00500	-0.72	0.333	27.87
					10/16/2013 12:50	0917-173_Nc	13_10_16_1250_29_180	1	0.040	1.101	-0.06700	0.075	0.859	0.0770	0.386	1.615	-1.84	0.19	-0.00300	0.00500	-1.43	0.332	29.909
					10/16/2013 12:51	0917-173_Nc	13_10_16_1251_29_900	1	-2.34	1.067	-0.078	0.069	0.797	0.0770	0.342	1.618	-1.97	0.19	-0.00700	0.00500	-0.79	0.325	30.407
					10/16/2013 12:52	0917-173_Nc	13_10_16_1252_30_690	1	-0.16	1.019	-0.006	0.074	0.812	0.0800	0.373	1.635	-1.710	0.19	-0.00700	0.00500	-0.91	0.322	28.468
					10/16/2013 12:53	0917-173_Nc	13_10_16_1253_31_410	1	-0.821	1.131	0.103	0.073	0.798	0.0790	0.195	1.624	-1.875	0.19	-0.00800	0.00500	-0.64	0.330	29.199
					10/16/2013 12:54	0917-173_Nc	13_10_16_1254_32_180	1	-1.63	1.071	-0.039	0.072	0.887	0.0770	0.313	1.649	-1.998	0.20	-0.00600	0.00500	-0.65	0.328	31.616
					10/16/2013 12:55	0917-173_Nc	13_10_16_1255_33_000	1	-3.09	1.103	0.015	0.081	0.917	0.0790	0.227	1.662	-2.09	0.22	-0.00400	0.00500	-0.96	0.333	34.293
					10/16/2013 12:56	0917-173_Nc	13_10_16_1256_33_730	1	-1.476	1.183	-0.042	0.076	0.954	0.0820	0.166	1.659	-2.257	0.22	-0.00500	0.00500	-0.37	0.343	34.406
					10/16/2013 12:57	0917-173_Nc	13_10_16_1257_34_470	1	-1.374	1.038	-0.092	0.075	0.921	0.0820	0.326	1.660	-2.17	0.21	-0.00700	0.00500	-0.72	0.319	33.073
					10/16/2013 12:58	0917-173_Nc	13_10_16_1258_35_290	1	-0.81	1.129	-0.0150	0.076	0.857	0.0790	0.297	1.642	-2.03	0.21	-0.00100	0.00500	-1.05	0.338	32.278
					10/16/2013 12:59	0917-173_Nc	13_10_16_1259_36_101	1	-0.527	1.168	-0.1480	0.075	0.965	0.0770	0.157	1.632	-2.373	0.22	-0.00500	0.00500	-0.61	0.341	34.818
					10/16/2013 13:00	0917-173_Nc	13_10_16_1300_36_841	1	-1.16	1.015	-0.0790	0.073	0.994	0.0770	0.364	1.625	-2.361	0.22	-0.00800	0.00500	-0.68	0.318	35.749
					10/16/2013 13:01	0917-173_Nc	13_10_16_1301_37_541	1	-0.623	1.097	-0.0990	0.075	0.992	0.0790	0.265	1.616	-2.442	0.23	-0.00500	0.00500	-1.03	0.323	37.263
					10/16/2013 13:02	0917-173_Nc	13_10_16_1302_38_371	1	-0.10	0.962	-0.078	0.070	0.917	0.0760	0.295	1.613	-2.21	0.21	-0.00800	0.00500	-0.86	0.297	34.991
					10/16/2013 13:03	0917-173_Nc	13_10_16_1303_39_101	1	-1.223	1.042	0.037	0.069	0.789	0.0750	0.369	1.614	-2.101	0.20	-0.00600	0.00500	-0.54	0.324	32.294
					10/16/2013 13:04	0917-173_Nc	13_10_16_1304_39_851	1	-1.76	1.090	-0.01400	0.075	0.807	0.0760	0.299	1.624	-2.138	0.20	-0.00500	0.00500	-0.31	0.330	32.053
					10/16/2013 13:05	0917-173_Nc	13_10_16_1305_40_591	1	-0.72	1.052	-0.1340	0.076	0.814	0.0770	0.223	1.610	-2.133	0.21	-0.00900	0.00500	-0.53	0.335	33.159
					10/16/2013 13:06	0917-173_Nc	13_10_16_1306_41_411	1	-1.47	1.061	-0.151	0.076	0.634	0.0630	0.266	1.304	-2.772	0.19	-0.00400	0.00500	-0.76	0.319	29.228
			Stop		10/16/2013 13:07	0917-173_Nc	13_10_16_1307_42_181	1	-1.735	0.876	-0.5370	0.093	0.0290	0.0390	-0.011	0.201	-3.94	0.16	-0.00500	0.00500	-1.34	0.360	13.026
					10/16/2013 13:08	0917-173_Nc	13_10_16_1308_42_881	1	-1.5990	0.999	-0.5630	0.106	-0.1330	0.0450	-0.247	0.1150	-4.47	0.18	-0.00300	0.00600	-1.72	0.409	12.045

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 13:09	0917-173_Nc	13_10_16_1309_43_691	1	-0.630	0.964	-0.687	0.103	-0.08500	0.0440	-0.139	0.0940	-4.34	0.18	-0.00700	0.00500	-1.13	0.400	11.919
					10/16/2013 13:10	0917-173_Nc	13_10_16_1310_44_401	1	-1.814	0.921	-0.4120	0.076	0.0140	0.0380	-0.232	0.0800	-2.613	0.12	0.00100	0.00500	-1.206	0.313	6.981
					10/16/2013 13:11	0917-173_Nc	13_10_16_1311_45_182	1	-1.665	0.918	-0.114	0.052	0.0070	0.0340	-0.171	0.0620	-0.420	0.08	-0.00100	0.00600	-0.263	0.276	1.112
					10/16/2013 13:12	0917-173_Nc	13_10_16_1312_45_992	1	-1.299	0.985	-0.009	0.055	0.339	0.0390	0.104	0.464	-0.703	0.11	0.00	0.00500	-0.73	0.289	9.857
					10/16/2013 13:13	0917-173_Nc	13_10_16_1313_46_712	1	-1.55	1.256	-0.010	0.088	1.198	0.0890	0.135	1.857	-2.917	0.28	-0.00700	0.00600	-0.5	0.370	41.824
					10/16/2013 13:15	0917-173_Nc	13_10_16_1315_58_340	1	-0.40	1.214	-0.07900	0.093	1.239	0.0930	0.230	1.878	-2.967	0.28	-0.00400	0.00500	-1.0	0.379	40.752
					10/16/2013 13:16	0917-173_Nc	13_10_16_1316_59_150	1	0.288	1.197	-0.026	0.087	1.124	0.0890	0.302	1.858	-2.811	0.25	-0.00900	0.00600	-0.61	0.380	35.913
					10/16/2013 13:17	0917-173_Nc	13_10_16_1317_59_820	1	0.26	1.126	0.0330	0.082	0.967	0.0870	0.259	1.823	-2.368	0.22	0.00000	0.00500	-0.57	0.363	31.713
					10/16/2013 13:19	0917-173_Nc	13_10_16_1319_00_620	1	-0.146	1.266	-0.0110	0.077	0.928	0.0850	0.481	1.809	-1.886	0.21	-0.00300	0.00500	-0.64	0.379	28.308
					10/16/2013 13:20	0917-173_Nc	13_10_16_1320_01_430	1	-0.73	1.254	-0.004	0.076	0.825	0.0830	0.471	1.790	-1.798	0.20	-0.00600	0.00600	-1.18	0.359	27.366
Data	Run	12	Start	A	10/16/2013 13:21	0917-173_Nc	13_10_16_1321_03_140	1	0.01	1.035	0.005	0.072	0.779	0.0740	0.321	1.586	-1.942	0.19	-0.00700	0.00500	-0.49	0.316	31.005
					10/16/2013 13:22	0917-173_Nc	13_10_16_1322_03_770	1	-0.12	1.131	0.027	0.067	0.759	0.0760	0.379	1.589	-1.64	0.18	-0.00200	0.00500	-0.75	0.324	27.6
					10/16/2013 13:23	0917-173_Nc	13_10_16_1323_04_590	1	-0.21	1.044	-0.0360	0.067	0.732	0.0730	0.421	1.592	-1.51	0.17	-0.00700	0.00500	-0.93	0.308	25.693
					10/16/2013 13:24	0917-173_Nc	13_10_16_1324_05_290	1	-2.73	1.091	-0.034	0.072	0.851	0.0770	0.399	1.598	-1.988	0.21	0.00000	0.00500	-0.60	0.338	32.727
					10/16/2013 13:25	0917-173_Nc	13_10_16_1325_06_110	1	-2.34	1.065	-0.061	0.076	0.926	0.0780	0.223	1.604	-2.45	0.23	-0.00500	0.00500	-1.04	0.320	37.94
					10/16/2013 13:26	0917-173_Nc	13_10_16_1326_06_890	1	-0.305	1.114	-0.112	0.080	0.982	0.0790	0.221	1.613	-2.783	0.24	-0.00600	0.00500	-0.51	0.327	39.725
					10/16/2013 13:27	0917-173_Nc	13_10_16_1327_07_651	1	0.34	1.172	0.018	0.076	0.993	0.0790	0.393	1.615	-2.38	0.23	-0.00500	0.00500	-0.70	0.339	37.76
					10/16/2013 13:28	0917-173_Nc	13_10_16_1328_08_371	1	0.26	1.178	0.025	0.080	1.037	0.0810	0.303	1.633	-2.223	0.23	-0.00600	0.00500	-0.66	0.343	37.429
					10/16/2013 13:29	0917-173_Nc	13_10_16_1329_09_101	1	0.46	1.160	0.0140	0.077	0.920	0.0810	0.441	1.656	-2.058	0.22	-0.00600	0.00500	-0.70	0.347	34.919
					10/16/2013 13:30	0917-173_Nc	13_10_16_1330_09_901	1	0.01	1.135	-0.0360	0.080	0.940	0.0830	0.342	1.670	-2.271	0.23	-0.00700	0.00500	-0.80	0.341	37.105
					10/16/2013 13:31	0917-173_Nc	13_10_16_1331_10_691	1	-1.51	1.152	-0.002	0.083	0.911	0.0810	0.292	1.674	-2.23	0.23	-0.00600	0.00500	-0.87	0.355	36.482
					10/16/2013 13:32	0917-173_Nc	13_10_16_1332_11_411	1	-0.37	1.101	-0.0740	0.080	0.954	0.0840	0.446	1.682	-2.32	0.23	-0.00400	0.00500	-0.86	0.338	38.219
					10/16/2013 13:33	0917-173_Nc	13_10_16_1333_12_131	1	-0.51	1.237	-0.1140	0.080	0.912	0.0820	0.084	1.676	-2.378	0.24	-0.00500	0.00500	-0.78	0.353	38.915
					10/16/2013 13:34	0917-173_Nc	13_10_16_1334_12_951	1	-0.481	1.143	-0.033	0.082	0.937	0.0840	0.212	1.667	-2.497	0.25	-0.00200	0.00500	-0.54	0.332	40.764
					10/16/2013 13:35	0917-173_Nc	13_10_16_1335_13_701	1	1.63	1.140	-0.03400	0.082	1.005	0.0830	0.283	1.653	-2.379	0.25	-0.00400	0.00400	-0.3	0.340	40.547
					10/16/2013 13:36	0917-173_Nc	13_10_16_1336_14_461	1	-0.36	1.188	-0.013	0.085	0.929	0.0820	0.199	1.648	-2.26	0.25	-0.00700	0.00500	-1.12	0.345	39.901
					10/16/2013 13:37	0917-173_Nc	13_10_16_1337_15_271	1	-1.115	1.127	0.024	0.081	1.013	0.0820	0.208	1.652	-2.34	0.25	-0.00400	0.00500	-0.89	0.341	40.397
					10/16/2013 13:38	0917-173_Nc	13_10_16_1338_15_941	1	0.02	1.121	-0.10900	0.084	1.067	0.0810	0.245	1.655	-2.627	0.26	-0.00300	0.00500	-0.4	0.342	42.197
					10/16/2013 13:39	0917-173_Nc	13_10_16_1339_16_752	1	1.61	1.070	-0.192	0.080	0.951	0.0810	0.362	1.634	-2.33	0.23	-0.00400	0.00500	-0.75	0.327	38.277
					10/16/2013 13:40	0917-173_Nc	13_10_16_1340_17_442	1	0.234	1.140	-0.0960	0.076	0.950	0.0830	0.375	1.634	-1.918	0.22	-0.00800	0.00500	-0.86	0.350	34.676
					10/16/2013 13:41	0917-173_Nc	13_10_16_1341_18_272	1	-1.84	1.124	0.031	0.075	0.874	0.0790	0.225	1.636	-1.88	0.22	-0.00300	0.00500	-0.84	0.340	33.603
					10/16/2013 13:42	0917-173_Nc	13_10_16_1342_18_982	1	-0.70	1.106	0.048	0.076	0.824	0.0800	0.312	1.624	-1.808	0.20	-0.01200	0.00500	-1.10	0.330	30.969
					10/16/2013 13:43	0917-173_Nc	13_10_16_1343_19_792	1	0.10	1.074	-0.0190	0.070	0.787	0.0760	0.278	1.625	-1.700	0.18	-0.00700	0.00500	-0.61	0.326	28.121
					10/16/2013 13:44	0917-173_Nc	13_10_16_1344_20_512	1	-2.097	1.102	0.049	0.071	0.724	0.0790	0.309	1.615	-1.454	0.17	-0.00500	0.00400	-0.36	0.342	25.886
					10/16/2013 13:45	0917-173_Nc	13_10_16_1345_21_252	1	-0.366	1.027	-0.004	0.069	0.766	0.0800	0.292	1.637	-1.124	0.16	-0.00800	0.00500	-0.98	0.323	23.416
					10/16/2013 13:46	0917-173_Nc	13_10_16_1346_22_032	1	0.29	1.092	0.032	0.071	0.780	0.0810	0.247	1.653	-1.207	0.16	-0.00800	0.00600	-0.39	0.335	22.324
					10/16/2013 13:47	0917-173_Nc	13_10_16_1347_22_792	1	1.009	1.159	0.041	0.068	0.877	0.0800	0.409	1.671	-0.96	0.16	-0.00900	0.00500	-1.13	0.342	22.325
					10/16/2013 13:48	0917-173_Nc	13_10_16_1348_23_542	1	0.756	1.138	0.011	0.067	0.894	0.0820	0.406	1.686	-1.16	0.16	-0.00800	0.00500	-0.74	0.336	23.572
					10/16/2013 13:49	0917-173_Nc	13_10_16_1349_24_252	1	-0.89	1.145	0.038	0.068	0.842	0.0810	0.273	1.692	-1.204	0.16	-0.01200	0.00500	-0.32	0.345	23.868
					10/16/2013 13:50	0917-173_Nc	13_10_16_1350_25_052	1	0.62	1.181	-0.015	0.076	0.886	0.0840	0.350	1.692	-1.456	0.18	-0.00900	0.00500	-0.28	0.353	25.997
					10/16/2013 13:51	0917-173_Nc	13_10_16_1351_25_803	1	-1.75	1.140	0.101	0.069	0.840	0.0820	0.308	1.695	-1.21	0.17	-0.00600	0.00500	-0.89	0.329	26.098
					10/16/2013 13:52	0917-173_Nc	13_10_16_1352_26_603	1	-1.39	1.105	-0.0230	0.074	0.795	0.0810	0.385	1.675	-1.298	0.18	-0.01000	0.00500	-0.58	0.341	25.122
					10/16/2013 13:53	0917-173_Nc	13_10_16_1353_27_313	1	0.085	1.177	0.0510	0.069	0.885	0.0790	0.285	1.675	-1.272	0.17	-0.00400	0.00500	-0.94	0.337	23.4
					10/16/2013 13:54	0917-173_Nc	13_10_16_1354_28_013	1	0.428	1.152	0.012	0.069	0.902	0.0790	0.499	1.674	-1.16	0.16	-0.00800	0.00500	-0.93	0.345	22.547
					10/16/2013 13:55	0917-173_Nc	13_10_16_1355_28_823	1	-1.41	1.186	-0.02900	0.066	0.868	0.0830	0.342	1.673	-1.212	0.16	-0.00900	0.00500	-0.59	0.343	22.614
					10/16/2013 13:56	0917-173_Nc	13_10_16_1356_29_593	1	-0.24	1.103	-0.0140	0.070	0.913	0.0820	0.463	1.681	-1.194	0.16	-0.00700	0.00500	-0.41	0.336	22.947
					10/16/2013 13:57	0917-173_Nc	13_10_16_1357_30_333	1	0.38	1.129	0.045	0.073	0.868	0.0830	0.446	1.699	-1.263	0.17	-0.00800	0.00500	-0.43	0.336	24.257
					10/16/2013 13:58	0917-173_Nc	13_10_16_1358_31_053	1	0.526	1.104	-0.0050	0.070	0.963	0.0840	0.334	1.702	-1.346	0.17	-0.00600	0.00500	0.15	0.346	24.353
					10/16/2013 13:59	0917-173_Nc	13_10_16_1359_31_863	1	-1.75	1.263	0.059	0.070	0.881	0.0840	0.588	1.692	-1.217	0.16	-0.01200	0.00500	-0.47	0.359	23.672
					10/16/2013 14:00	0917-173_Nc	13_10_16_1400_32_603	1	0.05	1.189	0.075	0.071	0.772	0.0830	0.407	1.680	-0.990	0.16	-0.00700	0.00500	-0.55	0.356	21.242
					10/16/2013 14:01	0917-173_Nc	13_10_16_1401_33_323	1	-0.44	1.147	0.030	0.068	0.749	0.0820	0.397	1.656	-1.20	0.16	-0.00400	0.00500	-0.75	0.341	23.125
					10/16/2013 14:02	0917-173_Nc	13_10_16_1402_34_073	1	1.90	1.143	0.037	0.074	0.823	0.0790	0.477	1.642	-1.528	0.174	-0.00600	0.00500	-0.10	0.342	25.609
					10/16/2013 14:03	0917-173_Nc	13_10_16_1403_34_794	1	0.85	1.079	0.041	0.067	0.882	0.0790	0.369	1.637	-1.441	0.179	-0.00700	0.00500	-0.46	0.309	26.833
					10/16/2013 14:04	0917-173_Nc	13_10_16_1404_35_484	1	0.64	1.046	0.0180	0.074	0.855	0.0780	0.420	1.632	-1.521	0.187	-0.00500	0.00500	-0.98	0.316	28.028
					10/16/2013 14:05	0917-173_Nc	13_10_16_1405_36_184	1	-0.961	1.091	-0.0450	0.076	0.825	0.0790	0.434	1.631	-1.434	0.192	-0.00600	0.00500	-0.91	0.350	28.372
					10/16/2013 14:06	0917-173_Nc	13_10_16_1406_36_954	1	-1.52	1.115	0.002	0.075	0.840	0.0790	0.417	1.636	-1.616	0.190	-0.00500	0.00500	-0.78	0.341	28.439
					10/16/2013 14:07	0917-173_Nc	13_10_16_1407_37_704	1	0.83	1.192	0.011	0.077	0.828	0.0790	0.361	1.631	-1.55	0.190	-0.00500	0.00500	-0.52	0.349	28.802
					10/16/2013 14:08	0917-173_Nc	13_10_16_1408_38_404	1	0.324	1.097	-0.0110	0.072	0.788	0.0780	0.390	1.639	-1.436	0.185	-0.00900	0.00500	-0.34	0.338	28.127
					10/16/2013 14:09	0917-173_Nc	13_10_16_1409_39_214	1	0.41	1.132	0.048	0.073	0.824	0.0800	0.459	1.651	-1.45	0.180	-0.00500	0.00500	-0.54	0.342	26.387
					10/16/2013 14:10	0917-173_Nc	13_10_16_1410_39_914	1	0.21	1.171	0.032	0.069	0.789	0.0810	0.297	1.670	-1.26	0.167	-0.00300	0.00500	-0.55	0.343	25.966
					10/16/2013 14:11	0917-173_Nc	13_10_16_1411_40_714	1	-1.39	1.163	0.0230	0.074	0.812	0.0780	0.337	1.664	-1.44	0.182	-0.00400	0.00500	-0.63	0.350	27.185
					10/16/2013 14:12	0917-173_Nc	13_10_16_1412_41_424	1	-1.996	1.165	0.041	0.075	0.824	0.0820	0.447	1.681	-1.38	0.188	-0.00800	0.00500	-0.66	0.350	28.73
					10/16/2013 14:13	0917-173_Nc	13_10_16_1413_42_174	1	0.31	1.102	-0.054	0.074	0.826	0.0810	0.519	1.663	-1.42	0.196	-0.00500	0.00500	-0.99	0.334	29.985
					10/16/2013 14:14	0917-173_Nc	13_10_16_1414_42_985	1	-0.08	1.164	-0.119	0.076	0.743	0.0790	0.443	1.656	-1.630	0.189	-0.00600	0.00500	-0.44	0.352	29.571
					10/16/2013 14:15	0917-173_Nc	13_10_16_1415_43_685	1	-1.310	1.088	-0.053	0.074	0.793	0.0770	0.311	1.652	-1.49	0.198	-0.00900	0.00400	-1.18	0.332	29.897
					10/16/2013 14:16	0917-173_Nc	13_10_16_1416_44_515	1	-0.49	1.115	-0.0070	0.074	0.693	0.0790	0.386	1.636	-1.414	0.192	-0.00800	0.00500	-0.80	0.339	29.295
					10/16/2013 14:17	0917-173_Nc	13_10_16_1417_45_225	1	-0.32	1.147	0.001	0.075	0.662	0.0780	0.328	1.629	-1.34	0.187	-0.00700	0.00500	-1.08	0.347	28.197
					10/16/2013 14:18	0917-173_Nc	13_10_16_1418_45_945	1	-1.43	1.111	-0.0590	0.071	0.713	0.0770	0.277	1.646	-1.45	0.187	-0.00400	0.00500	-0.57	0.332	29.197
			Stop		10/16/2013 14:19	0917-173_Nc	13_10_16_1419_46_755	1	-1.47	1.208	-0.083	0.077	0.841	0.0810	0.455	1.663	-1.69	0.203	-0.00200	0.00500	-0.95	0.357	30.794
					10/16/2013 15:07	0917-173_Nc	13_10_16_1507_27_499	1	2.2	1.5	0.112	0.080	-0.35	1.07	-0.278	0.0950	0.118	0.130	0.042	0.450	-1.05	0.429	-1.301
					10/16/2013 15:07	0917-173_Nc	13_10_16_1507_46_029	1	2.5	1.5	0.12100	0.080	-0.46	1.33	0.0270	0.1100	-0.187	0.132	0.058	0.547	0.36	0.439	-1.644
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_04_639	1	1.1	1.5	-0.1380	0.084	-0.43	1.47	-0.1360	0.1070	-0.062	0.135	0.054	0.599	-0.2610	0.443	-1.833
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_23_129	1	0.9	1.6	0.1450	0.085	-0.43	1.55	-0.02900	0.1000	0.190	0.140	0.058	0.628	-0.001	0.471	-1.929
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_41_629	1	1.3	1.4	0.069	0.079	-0.39	1.60	0.0400	0.1090	-0.026	0.126	0.048	0.639	-1.227	0.417	-1.935
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_00_239	1	-0.2	1.5	0.160	0.084	-0.59	1.61	-0.0920	0.1040	0.023	0.138	0.056	0.646	0.003	0.454	-2.005
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_18_749	1	2.2	1.5	0.1590	0.080	-0.43	1.63	-0.103	0.1000	0.096	0.133	0.043	0.650	0.099	0.435	-2.004
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_37_259	1	-2.2	1.6	-0.0010	0.080	-0.50	1.63	-0.1000	0.1140	-0.410	0.135	0.052	0.650	-0.1520	0.440	-1.973
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_55_859	1	-0.7	1.3	0.003	0.083	-0.49	1.64	0.255	0.1090	0.040	0.130	0.049	0.656	1.031	0.412	-2.015
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_14_359	1	1.7	1.4	0.126	0.084	-0.61	1.63	-0.0590	0.0980	0.219	0.135	0.059	0.655	0.216	0.448	-2.028
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_32_979	1	-1.0	1.7	-0.0270	0.086	-0.25	1.64	0.0850	0.0990	0.1220	0.143	0.055	0.652	-0.589	0.486	-2.015
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_51_429	1	-0.5	1.5	0.244	0.084	-0.43	1.64	-0.303	0.0940	-0.026	0.136	0.062	0.658	-0.051	0.444	-2.009
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_09_939	1	1.6	1.4	-0.229	0.088	-0.44	1.63	-0.0300	0.0900	-0.132	0.142	0.042	0.652	0.33	0.464	-2.04
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_28_549	1	0.5	1.5	0.208	0.077	-0.55	1.64	0.205	0.0990	0.1100	0.128	0.063	0.654	0.269	0.440	-2.003
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_47_059	1	2.3	1.5	0.006	0.083	-0.48	1.64	0.1560	0.1140	0.193	0.137	0.065	0.657	-0.019	0.453	-2.033
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_05_669	1	-5.8	1.5	0.066	0.086	-0.53	1.64	0.0820	0.1100	-0.113	0.139	0.050	0.657	0.5440	0.459	-2.006
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_24_089	1	-0.9	1.6	-0.222	0.083	-0.50	1.64	0.0870	0.1090	0.262	0.137	0.053	0.653	-0.079	0.463	-2.025
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_42_599	1	0.0	1.5	-0.033	0.085	-0.59	1.64	0.0380	0.1100	-0.0360	0.137	0.045	0.654	-0.774	0.439	-2.025
					10/16/2013 15:13	0917-173_Nc	13_10_16_1513_01_239	1	-2.0	1.5	-0.091	0.089	-0.44	1.63	-0.0570	0.0970	-0.153	0.142	0.051	0.658	-0.075	0.457	-2.019
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_39_510	1	-10.334	3.203	0.006	0.187	-0.347	0.139	0.810	1.29	-0.219	0.30	-0.01	0.00800	-1.43	0.99	-0.132
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_45_660	1	-2.019	3.341	0.162	0.180	-0.120	0.147	0.842	1.32	-0.242	0.294	-0.01100	0.00700	0.44	0.99	-0.149
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_51_900	1	-3.253	3.437	-0.245	0.189	-0.077	0.143	0.926	1.28	-0.284	0.31	-0.01500	0.00800	-1.979	1.04	-0.098
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_58_140	1	-4.768	3.401	-0.097	0.183	-0.05900	0.145	0.985	1.25	-0.370	0.30	-0.01100	0.00800	-0.628	1.00	-0.056
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_04_280	1	-3.210	3.138	-0.137	0.196	-0.0930	0.146	0.729	1.26	-0.201	0.31	-0.01100	0.00800	0.36	1.02	-0.143
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_10_440	1	-3.741	3.100	-0.162	0.174	-0.1600	0.142	1.222	1.25	-0.160	0.28	-0.02200	0.00700	-2.11	0.95	-0.168
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_16_600	1	-1.096	3.253	0.179	0.177	-0.198	0.144	0.567	1.24	0.368	0.292	-0.02400	0.00800	-2.99	0.95	-0.076
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_22_760	1	-5.401	3.436	-0.328	0.188	-0.286	0.137	1.432	1.28	0.09	0.31	-0.01800	0.00800	-3.26	1.03	-0.057
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_29_030	1	-6.865	3.381	-0.039	0.181	-0.029	0.138	0.916	1.25	0.22	0.30	-0.01900	0.00700	-2.90	1.01	-0.127
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_35_200	1	-3.374	3.599	-0.401	0.190	0.094	0.143	1.5740	1.28	-0.030	0.32	-0.01200	0.00700	-0.464	1.05	-0.101
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_41_280	1	-1.475	3.147	-0.351	0.184	-0.1850	0.143	1.110	1.29	0.090	0.30	-0.02200	0.00700	-1.190	1.01	-0.107
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_47_500	1	-1.519	3.365	0.059	0.191	-0.196	0.147	1.706	1.32	-0.475	0.31	-0.02200	0.00600	-0.746	1.02	-0.11
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_53_690	1	-3.020	3.545	-0.029	0.188	-0.535	0.141	1.113	1.31	0.030	0.308	-0.01800	0.00800	-2.28	1.02	-0.087
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_59_901	1	-3.698	3.316	-0.283	0.190	-0.269	0.145	1.165	1.38	0.28	0.30	-0.01300	0.00700	-2.0380	1.02	-0.078
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_06_101	1	2.08	3.141	-0.267	0.189	-0.426	0.145	1.151	1.38	0.077	0.302	-0.00700	0.00700	-1.83	1.00	0.061
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_12_201	1	-6.304	3.126	-0.371	0.184	-0.1790	0.147	1.172	1.450	-0.187	0.292	0.0010	0.00800	-0.643	0.95	0.038
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_18_411	1	-5.895	3.375	-0.2520	0.178	-0.166	0.137	0.843	1.443	0.402	0.295	-0.00800	0.00700	-3.03	0.98	-0.006
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_24_601	1	1.46	3.355	0.269	0.178	-0.178	0.146	2.043	1.510	-0.218	0.295	-0.01800	0.00700	0.30	0.97	0.067
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_30_811	1	-9.45	3.050	-0.157	0.187	-0.174	0.144	0.691	1.586	-0.454	0.292	-0.01500	0.00800	-0.406	0.95	0.05
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_37_001	1	-0.909	3.097	-0.2320	0.175	-0.327	0.136	1.331	1.590	-0.113	0.282	-0.01500	0.00800	-0.813	0.95	0.149
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_43_091	1	-8.917	3.149	0.120	0.180	-0.0590	0.1430	1.592	1.649	-0.235	0.293	-0.01	0.00800	-0.88	0.99	0.112
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_49_291	1	-4.19	3.024	-0.1390	0.175	-0.151	0.140	1.376	1.660	-0.429	0.282	-0.01100	0.00800	-0.50	0.92	0.208
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_55_501	1	-2.601	2.998	-0.104	0.168	-0.181	0.147	1.055	1.717	-0.547	0.272	-0.00200	0.00800	0.453	0.91	0.19
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_01_701	1	1.41	2.861	-0.3930	0.170	-0.0020	0.134	1.358	1.770	0.3310	0.271	-0.01600	0.00800	-1.16	0.91	0.214
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_07_801	1	1.211	3.211	-0.215	0.174	-0.205	0.136	1.047	1.816	-0.189	0.285	-0.01200	0.00800	-0.37	0.96	0.179
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_14_001	1	-2.310	3.103	0.095	0.167	-0.210	0.139	1.197	1.778	-0.042	0.276	-0.02200	0.00600	-0.38	0.91	0.26
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_20_221	1	-5.271	3.058	0.146	0.173	-0.146	0.148	1.260	1.786	-0.2640	0.281	-0.00900	0.00700	-1.400	0.91	0.224
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_26_421	1	-1.381	3.128	-0.336	0.181	-0.094	0.139	1.384	1.848	-0.347	0.291	0.00400	0.00600	-1.26	0.96	0.292
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_32_621	1	-3.921	3.077	0.221	0.171	-0.196	0.134	0.898	1.913	-0.419	0.278	-0.01900	0.00600	-1.91	0.94	0.261
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_38_721	1	-2.218	3.126	-0.219	0.166	-0.167	0.149	0.743	1.839	0.029	0.275	-0.02800	0.00600	-0.693	0.93	0.291
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_44_921	1	-2.742	3.067	-0.135	0.175	0.103	0.144	0.971	1.906	-0.76	0.283	-0.01100	0.00700	2.14	0.96	0.306
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_51_121	1	0.566	2.940	0.050	0.154	0.0230	0.139	1.221	1.958	-0.153	0.255	-0.02000	0.00700	-1.11	0.869	0.287
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_57_331	1	-9.117	3.061	-0.100	0.163	0.0340	0.143	1.432	1.977	0.1290	0.274	-0.01700	0.00600	0.890	0.89	0.309
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_03_531	1	-4.776	3.029	-0.2840	0.166	-0.0460	0.142	0.618	1.995	0.01	0.273	-0.03200	0.00800	-2.404	0.89	0.298
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_09_641	1	4.0990	2.622	0.110	0.158	0.0590	0.138	0.929	2.010	0.107	0.253	-0.01800	0.00700	-2.67	0.79	0.375
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_15_841	1	-0.495	2.947	0.235	0.171	0.179	0.1310	1.165	1.978	-0.330	0.273	-0.01	0.00600	-0.448	0.90	0.331
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_21_961	1	-1.725	2.711	-0.297	0.166	-0.213	0.139	1.118	1.997	-0.1160	0.258	-0.01400	0.00700	0.25	0.87	0.31
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_28_171	1	-2.32	3.112	-0.1420	0.169	-0.0720	0.1300	1.040	2.017	0.018	0.280	-0.01700	0.00600	0.13	0.92	0.354
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_34_381	1	-8.858	3.015	-0.162	0.159	0.0730	0.137	1.042	2.007	-0.248	0.266	-0.03200	0.00700	0.849	0.91	0.326
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_40_481	1	-1.258	2.752	0.436	0.164	-0.293	0.142	0.924	1.992	0.085	0.260	-0.02300	0.00700	-0.29	0.85	0.354
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_46_691	1	0.395	2.923	-0.344	0.167	-0.304	0.133	0.890	2.048	-0.044	0.269	-0.01900	0.00700	0.32	0.89	0.209
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_52_891	1	-3.250	2.894	-0.282	0.165	-0.1180	0.1450	1.018	2.084	-0.695	0.263	-0.01	0.00600	0.380	0.85	0.302
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_59_101	1	1.6830	2.930	0.151	0.161	-0.438	0.134	1.265	2.013	-0.036	0.263	-0.01200	0.00700	-1.85	0.90	0.338
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_05_301	1	-5.8210	2.615	0.006	0.141	-0.116	0.1320	0.557	2.061	0.10	0.235	-0.02000	0.00600	-0.4980	0.77	0.331
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_11_411	1	-2.2340	2.917	-0.073	0.155	-0.012	0.1340	1.691	2.058	-0.545	0.258	-0.01100	0.00600	-0.11	0.85	0.329
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_17_611	1	-0.278	2.873	-0.116	0.149	0.0940	0.136	1.140	2.037	-0.623	0.249	-0.01	0.00500	-0.56	0.83	0.389
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_23_821	1	3.62	2.816	0.316	0.149	0.1550	0.137	0.696	1.994	0.07400	0.249	-0.00900	0.00700	0.24	0.82	0.329
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_30_021	1	2.745	2.890	-0.1290	0.163	-0.167	0.131	1.193	2.058	-0.337	0.262	-0.01700	0.00700	-0.87	0.86	0.379
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_36_221	1	4.175	3.014	-0.209	0.154	-0.264	0.131	0.970	2.042	0.11	0.261	0.00300	0.00700	-1.02	0.88	0.369
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_42_321	1	-0.706	2.974	-0.0540	0.150	-0.0300	0.1250	1.019	2.034	-0.187	0.253	-0.00300	0.00600	-1.495	0.86	0.311
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_48_521	1	-4.780	2.794	0.0820	0.151	0.0460	0.133	0.689	2.083	0.010	0.248	-0.01200	0.00700	0.62	0.82	0.335
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_54_721	1	2.445	2.910	0.2510	0.153	-0.116	0.132	0.667	2.074	0.327	0.255	-0.02	0.00600	-0.366	0.85	0.359
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_00_911	1	-6.484	2.639	-0.23	0.149	0.0950	0.133	0.904	2.072	0.108	0.242	-0.01100	0.00600	0.70	0.80	0.351
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_07_101	1	-3.033	2.753	-0.396	0.161	-0.196	0.127	0.745	2.070	-0.132	0.259	-0.00800	0.00500	0.712	0.83	0.31
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_13_191	1	-6.610	2.705	0.6060	0.143	-0.0060	0.130	1.077	2.044	0.236	0.241	0.00000	0.00700	-1.58	0.80	0.322
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_19_381	1	-0.500	2.709	0.268	0.157	0.0470	0.1270	1.081	2.035	0.03	0.252	-0.0180	0.00700	-1.326	0.81	0.339
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_25_571	1	1.682	2.976	0.145	0.146	-0.0020	0.128	0.559	2.014	0.192	0.252	-0.01400	0.00600	-0.59	0.83	0.235
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_31_771	1	3.111	2.681	-0.094	0.152	0.273	0.121	0.850	2.013	-0.072	0.244	0.00000	0.00600	-0.74	0.81	0.301
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_37_861	1	-3.42	2.804	0.026	0.144	-0.1610	0.1220	0.885	1.996	-0.251	0.242	-0.01500	0.00600	-0.536	0.81	0.263
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_44_051	1	-0.631	2.848	0.084	0.152	0.0190	0.133	0.736	2.004	0.0720	0.252	-0.00500	0.00600	0.326	0.85	0.373
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_50_351	1	2.431	2.863	0.002	0.160	0.0260	0.1220	1.226	2.022	-0.327	0.259	-0.01300	0.00700	1.62	0.85	0.281

Location **Disc.** **#** **Start/Stop** **Instrument**

				Label 1-Analyte		**Label** 2-Analyte		**Label** 3-Analyte/Spike		**Label** 4-Analyte		**Label** 5-Analyte		**Label** Tracer		**Label** 6-Analyte		
Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/16/2013 15:30	0917-173_Nc	13_10_16_1530_56_551	1	5.741	2.589	0.081	0.160	0.0330	0.1180	0.980	2.017	-0.251	0.248	-0.01100	0.00600	0.09	0.79	0.306
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_02_751	1	-5.0750	2.769	0.140	0.137	-0.1000	0.1220	0.757	2.005	0.144	0.235	-0.01500	0.00600	1.33	0.773	0.289
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_08_851	1	1.025	2.881	-0.0470	0.155	-0.0230	0.1230	0.693	1.976	-0.014	0.256	-0.01100	0.00500	-0.956	0.84	0.267
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_15_041	1	2.1400	2.875	-0.1850	0.148	-0.06000	0.1220	0.965	1.973	-0.163	0.251	0.00700	0.00700	-0.701	0.85	0.313
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_21_231	1	4.478	2.749	-0.1710	0.149	-0.083	0.124	0.888	1.959	-0.365	0.241	-0.00600	0.00600	1.432	0.82	0.233
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_27_441	1	-0.116	2.719	0.135	0.154	-0.0040	0.119	1.202	1.990	-0.274	0.249	-0.01000	0.00600	0.45	0.82	0.247
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_33_631	1	3.6560	2.839	-0.267	0.146	0.1530	0.1130	1.3440	1.970	0.04	0.245	-0.00100	0.00600	-0.59	0.84	0.234
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_39_721	1	5.177	2.832	-0.033	0.151	-0.0290	0.127	1.072	1.939	-0.187	0.250	0.01400	0.00500	0.273	0.83	0.231
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_45_921	1	-1.44	2.646	-0.284	0.155	-0.155	0.1180	0.581	1.908	-0.331	0.245	-0.0020	0.00500	0.433	0.79	0.281
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_52_121	1	4.149	2.865	0.110	0.152	-0.059	0.1200	0.801	1.925	-0.150	0.254	-0.01200	0.00500	1.34	0.83	0.233
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_58_311	1	3.165	2.318	-0.130	0.145	0.145	0.1180	0.907	1.876	-0.544	0.226	0.00700	0.00600	-0.07	0.75	0.245
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_04_511	1	8.256	3.046	0.190	0.144	-0.175	0.112	1.0520	1.872	-0.158	0.250	-0.00900	0.00700	0.780	0.85	0.265
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_10_611	1	-0.998	2.720	0.1980	0.152	0.181	0.1140	0.761	1.897	0.307	0.248	-0.02000	0.00600	-2.33	0.84	0.223
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_16_801	1	-4.992	2.731	-0.132	0.144	0.0110	0.1180	0.988	1.854	-0.114	0.242	-0.01300	0.00500	-0.149	0.82	0.211
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_23_091	1	0.264	2.887	0.0140	0.148	0.032	0.1160	0.964	1.857	-0.665	0.249	0.00200	0.00500	-0.11	0.86	0.226
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_29_201	1	-2.467	2.915	0.167	0.153	0.203	0.1190	0.988	1.882	-0.248	0.259	-0.00600	0.00600	1.120	0.85	0.227
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_35_501	1	-0.038	2.643	0.082	0.152	-0.211	0.114	1.178	1.831	-0.486	0.245	-0.00100	0.00600	1.091	0.79	0.217
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_41_501	1	2.626	2.893	-0.1060	0.138	-0.167	0.1170	0.348	1.846	0.001	0.240	-0.01500	0.00500	0.85	0.81	0.224
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_47_691	1	0.6810	2.884	0.0920	0.146	0.263	0.1120	1.053	1.792	-0.462	0.245	-0.00900	0.00600	0.62	0.81	0.246
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_53_981	1	-4.061	3.033	0.1660	0.144	0.1750	0.1190	0.940	1.862	-0.153	0.249	0.00500	0.00500	0.16	0.87	0.257
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_00_181	1	2.275	2.932	0.002	0.153	0.258	0.1100	0.799	1.809	-0.036	0.251	0.00700	0.00600	0.437	0.84	0.25
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_06_381	1	8.28	2.514	-0.422	0.152	0.1510	0.1070	1.070	1.819	-1.263	0.243	-0.00900	0.00600	1.63	0.77	0.193
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_12_481	1	5.00	2.561	0.245	0.154	0.269	0.1160	0.866	1.801	-0.104	0.247	0.00900	0.00600	1.78	0.81	0.262
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_18_681	1	-5.169	2.651	0.17	0.151	0.248	0.1170	0.864	1.787	-0.030	0.246	-0.00400	0.00600	0.622	0.81	0.218
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_24_881	1	-2.826	2.839	0.417	0.150	-0.0160	0.1100	0.640	1.863	-0.322	0.248	-0.01700	0.00600	-0.3290	0.84	0.19
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_31_081	1	5.987	2.811	-0.5060	0.155	-0.276	0.138	0.879	1.978	-0.285	0.254	-0.00300	0.00700	-0.900	0.85	0.25
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_37_271	1	-7.877	2.964	0.186	0.165	-0.209	0.142	0.24	1.694	-0.221	0.270	-0.01200	0.00700	0.1780	0.90	0.087
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_43_371	1	-6.781	3.072	-0.096	0.159	-0.373	0.154	0.986	1.611	-0.552	0.267	0.0000	0.00800	0.52	0.869	-0.056
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_49_561	1	-1.60	3.319	-0.072	0.175	-0.268	0.152	1.323	1.602	-0.557	0.291	-0.03300	0.00700	-0.07	0.98	-0.091
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_55_761	1	1.750	2.965	-0.0490	0.187	-0.038	0.148	0.947	1.537	-0.30	0.295	-0.02700	0.00700	-1.39	0.93	-0.058
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_01_961	1	-4.87	3.261	-0.132	0.176	-0.394	0.143	1.799	1.597	-0.068	0.292	-0.02300	0.00600	-0.760	0.98	-0.04
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_08_051	1	-1.8430	3.272	0.163	0.181	-0.2430	0.142	1.445	1.695	0.3370	0.293	-0.01100	0.00800	0.111	0.98	0.037
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_14_241	1	-2.293	3.275	-0.130	0.178	-0.1630	0.141	1.160	1.628	-0.319	0.294	-0.01900	0.00700	-0.14	0.98	0.114
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_20_441	1	-4.646	3.180	-0.08	0.180	-0.181	0.138	0.700	1.656	0.051	0.293	-0.00900	0.00700	-0.16	0.96	0.069
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_26_631	1	5.6150	3.127	0.0630	0.178	-0.237	0.144	1.034	1.724	0.086	0.286	-0.01000	0.00700	-1.055	0.97	0.056
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_32_831	1	-0.617	3.387	0.179	0.164	-0.002	0.151	0.386	1.712	-0.142	0.282	-0.00800	0.00700	-0.665	0.96	0.106
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_38_921	1	-1.14	3.204	-0.480	0.180	-0.1000	0.145	1.073	1.730	0.022	0.295	-0.02	0.00700	-2.34	0.98	0.156
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_45_121	1	-5.477	3.167	0.0940	0.172	-0.224	0.144	0.22	1.781	0.16	0.286	-0.00300	0.00700	-1.188	0.92	0.119
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_51_321	1	-2.447	3.065	-0.38	0.173	-0.139	0.141	0.829	1.785	-0.45	0.278	-0.03000	0.00700	0.764	0.91	0.181
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_57_611	1	-1.138	2.770	-0.148	0.171	-0.310	0.142	0.735	1.826	-0.326	0.267	-0.00400	0.00700	-0.01	0.89	0.206
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_03_811	1	-1.855	3.018	0.1350	0.163	0.021	0.1330	0.851	1.893	0.0130	0.267	0.0050	0.00700	1.31	0.90	0.221
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_09_821	1	0.57	3.083	0.077	0.165	-0.127	0.150	0.756	1.890	-0.25	0.272	-0.00400	0.00600	-2.251	0.90	0.237
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_16_021	1	-2.19	3.025	0.0020	0.170	-0.019	0.138	0.771	1.918	0.023	0.274	-0.01900	0.00600	-0.97	0.91	0.249
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_22_221	1	-1.4420	2.846	0.003	0.160	-0.306	0.144	0.785	1.906	0.147	0.263	-0.01100	0.00700	0.57	0.88	0.255
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_28_421	1	-3.847	2.625	0.135	0.163	-0.237	0.145	0.18	1.943	-0.1210	0.256	-0.02000	0.00700	-1.79	0.84	0.258
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_34_611	1	-5.609	2.751	-0.61	0.165	-0.04800	0.1430	0.953	1.943	-0.718	0.262	-0.00700	0.00700	1.20	0.88	0.308
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_40_711	1	-2.64	3.006	0.303	0.163	-0.0730	0.1400	1.071	1.999	0.025	0.266	-0.01100	0.00600	0.171	0.89	0.262
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_46_901	1	-5.7670	3.130	-0.31	0.154	-0.2070	0.135	0.746	1.954	-0.662	0.264	-0.02100	0.00700	1.63	0.88	0.286
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_53_101	1	-3.94	3.309	0.227	0.179	-0.0260	0.146	0.745	1.978	-0.175	0.291	0.00400	0.00700	-0.265	0.96	0.279
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_59_391	1	-0.36	2.774	0.130	0.165	-0.0400	0.136	0.741	2.029	-0.060	0.265	-0.01200	0.00700	-0.002	0.86	0.277
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_05_581	1	-2.32	3.041	0.326	0.162	-0.0920	0.138	0.23	1.968	0.212	0.269	0.00	0.00700	0.336	0.91	0.257
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_11_681	1	2.763	2.928	-0.002	0.150	-0.06700	0.145	0.511	2.020	-0.234	0.251	-0.02400	0.00700	-0.05	0.86	0.248
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_17_881	1	-1.853	3.131	0.309	0.153	-0.212	0.148	0.829	1.970	0.352	0.258	-0.03100	0.00600	-0.823	0.88	0.268
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_24_081	1	-7.6880	3.008	-0.1550	0.166	-0.125	0.139	0.691	2.027	-0.404	0.270	-0.02400	0.00600	0.30	0.90	0.311
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_30_271	1	5.112	2.961	0.403	0.161	-0.056	0.1320	0.681	2.064	0.029	0.263	-0.02800	0.00700	-0.92	0.88	0.265
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_36_471	1	-1.918	3.002	0.076	0.158	-0.335	0.139	0.857	2.048	-0.017	0.261	-0.02	0.00700	-1.609	0.87	0.323
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_42_561	1	4.57	2.853	0.206	0.150	-0.116	0.138	1.133	2.018	0.213	0.250	-0.00700	0.00600	-1.7850	0.83	0.288
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_48_751	1	-1.32	2.890	-0.053	0.158	-0.0240	0.131	0.932	2.074	0.138	0.261	-0.01500	0.00700	-0.646	0.89	0.306
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_54_941	1	-9.56	2.796	-0.087	0.155	-0.171	0.132	1.234	2.077	-0.071	0.253	-0.02500	0.00700	0.760	0.83	0.306
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_01_141	1	3.978	2.628	-0.045	0.155	-0.168	0.1360	0.909	2.055	-0.052	0.249	-0.02000	0.00700	0.016	0.81	0.328
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_07_351	1	1.6090	3.041	-0.041	0.172	-0.0100	0.130	0.973	2.031	-0.290	0.278	-0.01400	0.00600	0.1700	0.93	0.345
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_13_431	1	-1.033	2.797	0.123	0.154	-0.2030	0.135	0.769	2.020	-0.28	0.252	-0.01600	0.00700	0.03	0.812	0.34
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_19_631	1	-1.856	2.895	0.260	0.163	-0.207	0.1290	0.881	2.042	0.138	0.264	-0.00200	0.00700	-0.147	0.91	0.241
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_25_841	1	-3.92	3.070	0.048	0.153	0.1930	0.131	0.743	2.065	-0.215	0.263	0.00300	0.00600	-1.211	0.88	0.313
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_32_041	1	2.107	2.849	-0.090	0.150	-0.203	0.134	0.950	2.060	-0.339	0.253	-0.00800	0.00700	1.342	0.825	0.296
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_38_151	1	-0.16	2.711	-0.050	0.162	0.211	0.130	1.037	2.058	-0.18	0.260	-0.01000	0.00600	-1.339	0.86	0.237
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_44_351	1	-1.743	2.884	-0.410	0.156	-0.1110	0.134	0.788	2.071	-0.3950	0.253	-0.01900	0.00600	-0.77	0.87	0.258
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_50_551	1	-5.2750	2.716	-0.001	0.148	-0.140	0.124	1.120	2.043	0.025	0.245	-0.01600	0.00600	-0.57	0.81	0.269
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_56_752	1	5.657	2.857	0.097	0.154	-0.113	0.129	0.732	2.046	0.24	0.256	-0.00900	0.00500	-1.93	0.87	0.266
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_02_952	1	-5.497	2.626	-0.122	0.144	-0.0130	0.1290	1.526	2.001	-0.068	0.237	-0.02000	0.00700	-1.403	0.792	0.251
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_09_052	1	-3.67	2.443	-0.109	0.148	-0.178	0.1240	0.825	2.015	-0.620	0.237	-0.02200	0.00700	1.17	0.78	0.196
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_15_252	1	-1.70	2.654	0.2430	0.162	-0.128	0.1300	0.723	2.066	-0.3290	0.254	-0.03100	0.00600	0.770	0.82	0.336
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_21_442	1	7.14	2.890	0.307	0.152	-0.1000	0.125	0.659	1.985	0.24	0.255	0.00600	0.00500	-3.27	0.86	0.262
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_27_642	1	-4.208	2.659	0.1220	0.158	-0.2270	0.1170	1.115	2.052	-0.408	0.253	-0.01200	0.00600	2.29	0.83	0.261
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_33_832	1	-0.13	2.631	-0.129	0.153	0.0800	0.1160	0.728	1.994	-0.017	0.249	-0.01500	0.00600	-1.353	0.84	0.331
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_39_922	1	0.019	2.776	-0.014	0.164	-0.092	0.1230	0.982	2.009	-0.028	0.260	-0.01	0.00500	-1.90	0.86	0.281
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_46_132	1	3.564	2.663	0.2170	0.142	-0.139	0.1190	0.694	2.012	0.237	0.235	-0.00400	0.00700	-1.625	0.754	0.209
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_52_322	1	1.041	2.735	-0.254	0.156	0.0130	0.1200	0.362	1.989	-0.318	0.255	-0.01000	0.00500	-1.13	0.83	0.247
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_58_522	1	-5.519	2.713	0.221	0.154	-0.132	0.1230	0.999	1.968	-0.46	0.248	-0.00600	0.00500	0.542	0.83	0.198
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_04_712	1	-2.737	2.586	-0.125	0.140	0.0120	0.133	0.843	1.956	-0.156	0.234	-0.01200	0.00600	-0.119	0.77	0.198
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_10_822	1	1.201	2.897	0.279	0.145	-0.0660	0.121	0.212	1.973	0.074	0.246	-0.01500	0.00600	0.46	0.787	0.254
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_17_012	1	-1.034	2.457	-0.148	0.157	-0.0690	0.1210	0.716	1.970	-0.165	0.245	-0.00700	0.00700	0.202	0.79	0.274
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_23_302	1	-3.729	2.888	-0.276	0.157	0.162	0.122	1.093	1.933	-0.461	0.257	0.00200	0.00600	-1.234	0.83	0.241
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_29_492	1	2.98	2.692	-0.046	0.148	-0.042	0.1200	0.699	1.902	-0.23100	0.240	-0.01	0.00600	-0.23	0.81	0.249
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_35_682	1	1.477	2.770	-0.188	0.155	-0.02600	0.1150	0.460	1.889	-0.251	0.253	0.00000	0.00500	-1.413	0.82	0.232
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_41_772	1	3.020	2.695	0.137	0.160	-0.0050	0.1160	0.923	1.913	-0.3960	0.254	-0.00900	0.00500	-1.185	0.84	0.239
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_47_962	1	3.696	2.754	-0.269	0.151	0.0860	0.1150	0.532	1.920	0.103	0.249	-0.00300	0.00500	-1.78	0.82	0.241
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_54_152	1	6.9970	2.606	0.161	0.154	-0.169	0.1170	0.599	1.889	-0.263	0.244	-0.00500	0.00600	-1.35	0.81	0.245
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_00_342	1	4.7390	2.863	0.316	0.162	0.1000	0.1200	1.3110	1.911	0.46	0.261	-0.01000	0.00600	-0.847	0.87	0.221
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_06_532	1	5.198	2.889	0.2520	0.157	-0.0750	0.1130	0.304	1.898	-0.1610	0.256	-0.00700	0.00600	0.942	0.88	0.227
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_12_632	1	-0.408	2.595	0.220	0.152	-0.138	0.1160	0.609	1.846	-0.60	0.243	0.00	0.00500	-0.12	0.79	0.188
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_18_832	1	-0.840	2.812	0.085	0.148	0.1050	0.1230	1.015	1.849	-0.60	0.249	-0.00700	0.00600	1.41	0.83	0.224
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_25_022	1	-3.368	2.748	0.228	0.146	0.340	0.1130	1.024	1.820	0.466	0.241	0.00500	0.00700	-1.11	0.79	0.233
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_31_212	1	-7.879	2.587	0.0270	0.149	-0.01000	0.1110	0.788	1.789	-0.150	0.243	-0.00300	0.00600	-0.22	0.82	0.157
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_37_502	1	1.077	2.576	0.1100	0.150	-0.0630	0.1070	1.142	1.835	-0.573	0.244	-0.01300	0.00600	1.368	0.78	0.189
10/16/2013 15:41	0917-173_Nc	13_10_16_1541_19_642	1	1.5670	1.263	0.1610	0.069	-0.0070	0.0830	0.896	1.848	-0.3440	0.114	-0.01	0.00300	-0.073	0.372	0.21
10/16/2013 15:42	0917-173_Nc	13_10_16_1542_20_432	1	0.475	1.164	0.093	0.072	0.0470	0.0820	1.003	1.849	-0.2310	0.113	-0.00600	0.00300	0.293	0.366	0.23
10/16/2013 15:43	0917-173_Nc	13_10_16_1543_21_152	1	1.123	1.188	0.046	0.066	0.0490	0.0830	0.905	1.846	-0.018	0.108	-0.00500	0.00300	-0.25400	0.357	0.213
10/16/2013 15:44	0917-173_Nc	13_10_16_1544_21_922	1	1.799	1.286	-0.0310	0.0650	0.01900	0.0850	0.849	1.856	-0.010	0.111	-0.01	0.00300	-0.179	0.369	0.229
10/16/2013 15:45	0917-173_Nc	13_10_16_1545_22_636	1	1.454	1.192	0.041	0.070	-0.101	0.0830	0.685	1.858	-0.2390	0.111	-0.00300	0.00300	-0.121	0.347	0.226
10/16/2013 15:46	0917-173_Nc	13_10_16_1546_23_436	1	0.155	1.337	0.038	0.0700	0.0050	0.0830	0.826	1.873	-0.0840	0.117	-0.00500	0.00300	0.214	0.381	0.223

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 12:14	0917-173_No	13_10_14_1214_14_091	1	-1.8	1.2	0.054	0.068	-0.25	1.31	0.0420	0.0950	-0.374	0.110	0.052	0.529	0.71	0.358	-1.643
					10/14/2013 12:14	0917-173_No	13_10_14_1214_32_611	1	-2.3	1.2	0.111	0.071	-0.24	1.36	0.1310	0.0830	-0.0380	0.116	0.042	0.546	1.34	0.372	-1.752
					10/14/2013 12:14	0917-173_No	13_10_14_1214_51_221	1	0.5	1.3	0.105	0.070	-0.35	1.38	0.042	0.1030	-0.234	0.113	0.045	0.552	-0.23	0.379	-1.747
					10/14/2013 12:15	0917-173_No	13_10_14_1215_09_721	1	-2.8	1.2	0.158	0.073	-0.47	1.40	-0.001	0.0940	-0.183	0.116	0.055	0.559	0.600	0.377	-1.795
					10/14/2013 12:15	0917-173_No	13_10_14_1215_28_311	1	-0.1	1.3	0.226	0.066	-0.39	1.40	0.099	0.0920	-0.0220	0.114	0.048	0.559	0.171	0.380	-1.795
					10/14/2013 12:15	0917-173_No	13_10_14_1215_46_821	1	-3.6	1.3	0.1260	0.074	-0.39	1.40	0.01100	0.0900	-0.190	0.118	0.051	0.560	0.338	0.376	-1.797
					10/14/2013 12:16	0917-173_No	13_10_14_1216_05_251	1	-0.4	1.3	-0.036	0.070	-0.43	1.40	-0.0090	0.0870	-0.311	0.115	0.041	0.558	1.02	0.367	-1.784
					10/14/2013 12:16	0917-173_No	13_10_14_1216_23_951	1	-1.8	1.3	-0.0750	0.072	-0.40	1.40	0.0500	0.0990	-0.04600	0.117	0.047	0.558	0.039	0.386	-1.785
					10/14/2013 12:16	0917-173_No	13_10_14_1216_42_401	1	-0.8	1.2	-0.028	0.069	-0.48	1.41	-0.179	0.0930	0.052	0.113	0.047	0.561	0.533	0.369	-1.804
					10/14/2013 12:17	0917-173_No	13_10_14_1217_01_001	1	-0.1	1.3	0.1820	0.065	-0.41	1.40	0.270	0.0830	-0.163	0.109	0.048	0.562	0.492	0.367	-1.772
					10/14/2013 12:17	0917-173_No	13_10_14_1217_19_511	1	-1.6	1.4	0.140	0.070	-0.43	1.40	-0.0580	0.0910	0.239	0.119	0.052	0.561	0.554	0.401	-1.789
					10/14/2013 12:17	0917-173_No	13_10_14_1217_38_051	1	-1.4	1.2	0.064	0.067	-0.32	1.41	0.143	0.0920	-0.128	0.110	0.057	0.561	1.27	0.386	-1.787
					10/14/2013 12:17	0917-173_No	13_10_14_1217_56_641	1	0.7	1.3	0.142	0.073	-0.44	1.40	0.145	0.0930	-0.099	0.118	0.053	0.563	1.23	0.382	-1.806
					10/14/2013 12:18	0917-173_No	13_10_14_1218_15_151	1	-2.6	1.3	0.0090	0.065	-0.47	1.41	-0.0490	0.0920	-0.0560	0.112	0.054	0.561	-0.65	0.370	-1.808
					10/14/2013 12:18	0917-173_No	13_10_14_1218_33_681	1	-1.1	1.2	0.157	0.067	-0.42	1.40	0.0080	0.0890	-0.148	0.111	0.044	0.561	0.764	0.365	-1.798
					10/14/2013 12:18	0917-173_No	13_10_14_1218_52_291	1	0.5	1.3	0.2190	0.068	-0.65	1.41	0.079	0.0860	-0.300	0.115	0.053	0.561	0.411	0.384	-1.813
					10/14/2013 12:19	0917-173_No	13_10_14_1219_10_741	1	3.8	1.2	-0.0250	0.066	-0.26	1.40	0.137	0.1010	-0.116	0.109	0.050	0.561	0.78	0.361	-1.797
					10/14/2013 12:19	0917-173_No	13_10_14_1219_29_331	1	1.6	1.3	0.113	0.071	-0.42	1.40	0.0220	0.0960	-0.045	0.116	0.047	0.562	0.4600	0.369	-1.822
					10/14/2013 12:19	0917-173_No	13_10_14_1219_47_881	1	0.5	1.3	0.1750	0.067	-0.48	1.41	0.025	0.1010	0.122	0.111	0.049	0.563	0.0500	0.376	-1.793
					10/14/2013 12:20	0917-173_No	13_10_14_1220_06_371	1	1.1	1.3	0.051	0.069	-0.46	1.41	-0.179	0.0920	-0.148	0.115	0.041	0.561	0.543	0.388	-1.84
					10/14/2013 12:20	0917-173_No	13_10_14_1220_24_991	1	-1.7	1.3	-0.052	0.070	-0.32	1.41	0.0240	0.0950	-0.002	0.115	0.051	0.559	0.63	0.389	-1.81
					10/14/2013 12:20	0917-173_No	13_10_14_1220_43_481	1	-1.1	1.2	0.029	0.066	-0.39	1.41	-0.283	0.0880	-0.053	0.109	0.052	0.562	0.84	0.366	-1.83
					10/14/2013 12:21	0917-173_No	13_10_14_1221_01_901	1	-3.3	1.4	0.108	0.067	-0.54	1.41	0.153	0.1020	0.129	0.116	0.054	0.566	-0.209	0.401	-1.812
					10/14/2013 12:21	0917-173_No	13_10_14_1221_20_611	1	-2.6	1.2	0.032	0.070	-0.42	1.41	0.0010	0.0830	-0.204	0.113	0.055	0.560	1.524	0.367	-1.816
					10/14/2013 12:21	0917-173_No	13_10_14_1221_39_101	1	0.3	1.3	0.1570	0.071	-0.37	1.41	0.117	0.0810	-0.183	0.117	0.043	0.560	-0.12	0.385	-1.829
					10/14/2013 12:21	0917-173_No	13_10_14_1221_57_711	1	-0.5	1.2	-0.036	0.071	-0.50	1.41	0.176	0.0910	-0.060	0.114	0.053	0.562	0.269	0.382	-1.793
					10/14/2013 12:22	0917-173_No	13_10_14_1222_16_192	1	-1.8	1.3	-0.029	0.071	-0.34	1.40	-0.0220	0.0910	-0.233	0.118	0.048	0.564	-0.07	0.395	-1.844
					10/14/2013 12:22	0917-173_No	13_10_14_1222_34_662	1	0.4	1.3	0.082	0.066	-0.49	1.40	0.0210	0.0830	-0.037	0.111	0.041	0.562	0.3810	0.376	-1.831
					10/14/2013 12:22	0917-173_No	13_10_14_1222_53_282	1	0.7	1.2	0.088	0.070	-0.42	1.40	0.1040	0.0880	-0.119	0.112	0.052	0.562	0.512	0.382	-1.808
					10/14/2013 12:23	0917-173_No	13_10_14_1223_11_782	1	-1.6	1.2	0.2190	0.069	-0.40	1.40	0.0810	0.1030	0.065	0.112	0.048	0.563	0.58	0.357	-1.827
					10/14/2013 12:44	0917-173_No	13_10_14_1244_45_810	1	1.43	0.843	-0.1590	0.138	91.1	0.748	-0.045	0.0910	1.166	0.182	2.88	0.0180	0.720	0.286	0.594
					10/14/2013 12:45	0917-173_No	13_10_14_1245_46_590	1	-0.08	0.808	-0.108	0.143	94.2	0.781	-0.091	0.0900	1.24	0.188	2.91	0.0190	0.576	0.287	0.621
					10/14/2013 12:46	0917-173_No	13_10_14_1246_47_390	1	0.65	0.885	-0.235	0.150	96.0	0.797	-0.001	0.0940	1.11	0.193	2.91	0.0190	0.407	0.294	0.613
					10/14/2013 12:47	0917-173_No	13_10_14_1247_48_200	1	0.55	0.783	-0.0220	0.147	96.7	0.802	-0.007	0.0940	1.24	0.193	2.90	0.0190	0.395	0.288	0.623
					10/14/2013 12:48	0917-173_No	13_10_14_1248_48_990	1	0.74	0.816	-0.202	0.145	97.4	0.803	0.1040	0.0950	1.35	0.189	2.91	0.0210	0.346	0.293	0.601
					10/14/2013 12:49	0917-173_No	13_10_14_1249_49_710	1	-0.18	0.826	-0.2070	0.1500	98	0.803	0.006	0.1010	1.23	0.193	2.91	0.0190	0.722	0.286	0.613
					10/14/2013 12:50	0917-173_No	13_10_14_1250_50_520	1	0.11	0.866	-0.152	0.155	98	0.812	0.007	0.0950	1.12	0.201	2.92	0.0190	1.486	0.302	0.609
Data	CYL	1	Start	A	10/14/2013 12:51	0917-173_No	13_10_14_1251_51_320	1	1.22	0.838	-0.293	0.150	99	0.823	0.050	0.0980	1.19	0.196	2.91	0.0190	0.684	0.293	0.6
					10/14/2013 12:52	0917-173_No	13_10_14_1252_52_020	1	0.37	0.817	-0.136	0.153	99	0.822	0.1180	0.0970	1.24	0.198	2.91	0.0210	0.439	0.287	0.626
					10/14/2013 12:53	0917-173_No	13_10_14_1253_52_871	1	0.63	0.858	-0.130	0.148	99	0.824	-0.005	0.101	1.27	0.193	2.91	0.0180	0.615	0.304	0.604
					10/14/2013 12:54	0917-173_No	13_10_14_1254_53_581	1	-0.72	0.868	-0.222	0.154	100	0.816	-0.037	0.0990	1.34	0.204	2.91	0.0200	0.430	0.288	0.603
					10/14/2013 12:55	0917-173_No	13_10_14_1255_54_371	1	1.26	0.880	-0.218	0.154	100	0.825	0.002	0.0920	1.27	0.199	2.92	0.0200	1.200	0.290	0.607
					10/14/2013 12:56	0917-173_No	13_10_14_1256_55_131	1	-1.23	0.790	-0.127	0.152	100	0.827	0.012	0.0990	1.41	0.198	2.91	0.0200	0.526	0.281	0.606
			Stop		10/14/2013 12:57	0917-173_No	13_10_14_1257_55_951	1	-0.57	0.820	-0.060	0.153	100	0.836	-0.028	0.106	1.29	0.198	2.91	0.0210	0.827	0.285	0.598
					10/14/2013 13:13	0917-173_No	13_10_14_1313_12_592	1	-2.652	1.645	3.43	0.091	2.16	0.257	0.139	1.80	-0.340	0.151	0.00800	0.0140	0.84	0.478	5.772
					10/14/2013 13:14	0917-173_No	13_10_14_1314_13_372	1	-2.821	1.612	3.20	0.091	1.82	0.257	0.047	1.79	-0.359	0.150	0.00700	0.0140	0.05	0.486	5.844
					10/14/2013 13:15	0917-173_No	13_10_14_1315_14_182	1	-1.77	1.574	4.47	0.088	1.83	0.247	-0.0100	1.82	-0.385	0.145	0.00800	0.0160	0.56	0.462	5.763
					10/14/2013 13:16	0917-173_No	13_10_14_1316_14_952	1	-2.07	1.58	5.38	0.093	1.94	0.247	0.0610	1.82	-0.29700	0.152	0.01000	0.0170	0.54	0.473	5.712
					10/14/2013 13:17	0917-173_No	13_10_14_1317_15_753	1	-2.98	1.62	6.54	0.095	2.07	0.241	0.0170	1.83	-0.3430	0.154	0.01	0.0180	0.40	0.475	5.536
					10/14/2013 13:18	0917-173_No	13_10_14_1318_16_493	1	-1.53	1.63	6.73	0.096	2.08	0.243	0.141	1.82	-0.45000	0.155	0.01	0.0190	1.13	0.485	5.483
					10/14/2013 13:19	0917-173_No	13_10_14_1319_17_313	1	-3.01	1.718	4.15	0.091	1.85	0.252	-0.020	1.81	-0.614	0.156	0.00500	0.0160	1.02	0.504	5.615
					10/14/2013 13:20	0917-173_No	13_10_14_1320_18_043	1	-2.304	1.628	3.20	0.087	1.79	0.257	0.085	1.82	-0.467	0.147	0.00700	0.0140	0.27	0.483	5.68
					10/14/2013 13:21	0917-173_No	13_10_14_1321_18_863	1	-2.044	1.682	3.56	0.094	1.78	0.254	0.168	1.82	-0.608	0.155	0.00600	0.0150	0.245	0.488	5.682
					10/14/2013 13:22	0917-173_No	13_10_14_1322_19_563	1	-2.392	1.602	2.17	0.090	1.67	0.261	0.132	1.81	-0.588	0.150	0.00300	0.0130	-0.09	0.479	5.746
					10/14/2013 13:23	0917-173_No	13_10_14_1323_20_333	1	-1.85	1.622	0.805	0.088	1.45	0.275	0.053	1.80	-0.7770	0.148	0.0030	0.0140	0.86	0.481	5.83
					10/14/2013 13:24	0917-173_No	13_10_14_1324_21_163	1	-3.416	1.585	0.692	0.092	1.51	0.287	0.093	1.80	-0.49400	0.150	0.0050	0.0150	0.22	0.477	5.662
					10/14/2013 13:25	0917-173_No	13_10_14_1325_21_853	1	-3.121	1.703	0.88	0.092	1.64	0.307	0.203	1.77	-0.437	0.156	0.0050	0.0160	-0.33	0.503	5.749
					10/14/2013 13:26	0917-173_No	13_10_14_1326_22_693	1	-4.59	1.731	1.11	0.094	1.70	0.318	0.202	1.76	-0.194	0.158	0.00100	0.0170	0.19	0.510	5.855
					10/14/2013 13:27	0917-173_No	13_10_14_1327_23_403	1	-4.00	1.772	1.38	0.095	1.86	0.320	0.190	1.76	-0.309	0.162	0.0080	0.0170	0.06	0.516	5.952
					10/14/2013 13:28	0917-173_No	13_10_14_1328_24_143	1	-1.72	1.705	1.26	0.093	1.77	0.309	0.175	1.74	-0.235	0.158	0.0090	0.0160	-0.10	0.510	6.007
					10/14/2013 13:29	0917-173_No	13_10_14_1329_24_954	1	-2.55	1.616	0.914	0.089	1.43	0.259	0.1680	1.82	-0.427	0.151	0.00100	0.0140	-0.08	0.484	6.671
					10/14/2013 13:30	0917-173_No	13_10_14_1330_25_774	1	-1.736	1.554	0.722	0.083	1.98	0.229	0.2320	1.86	-0.909	0.144	0.0110	0.01200	0.54	0.451	7.055
					10/14/2013 13:31	0917-173_No	13_10_14_1331_26_474	1	-1.44	1.442	0.592	0.087	17.3	0.255	0.088	1.85	-0.1290	0.144	0.433	0.01100	-0.18	0.440	5.566
					10/14/2013 13:32	0917-173_No	13_10_14_1332_27_274	1	-0.73	1.529	0.570	0.080	16.2	0.245	0.3020	1.86	-0.163	0.137	0.561	0.01100	0.48	0.430	4.937
					10/14/2013 13:33	0917-173_No	13_10_14_1333_28_094	1	-3.07	1.462	0.556	0.081	16.7	0.244	0.366	1.85	-0.1590	0.136	0.565	0.01100	0.66	0.424	4.869
					10/14/2013 13:34	0917-173_No	13_10_14_1334_28_844	1	-2.31	1.458	0.614	0.082	17.2	0.244	0.3020	1.86	-0.172	0.137	0.567	0.01000	0.354	0.422	4.74
					10/14/2013 13:35	0917-173_No	13_10_14_1335_29_594	1	-1.75	1.409	0.637	0.085	17.7	0.242	0.0660	1.84	-0.079	0.138	0.566	0.01000	0.23	0.433	4.606
					10/14/2013 13:36	0917-173_No	13_10_14_1336_30_204	1	-0.67	1.446	0.583	0.083	18.1	0.235	0.2420	1.86	0.003	0.137	0.564	0.01000	0.070	0.426	4.472
					10/14/2013 13:37	0917-173_No	13_10_14_1337_30_984	1	-0.869	1.347	0.616	0.083	17.4	0.240	0.21400	1.86	-0.130	0.134	0.537	0.01000	0.42	0.411	4.392
					10/14/2013 13:38	0917-173_No	13_10_14_1338_31_744	1	-1.62	1.409	0.613	0.080	17.5	0.252	0.398	1.86	0.006	0.131	0.536	0.01100	0.193	0.409	4.477
					10/14/2013 13:39	0917-173_No	13_10_14_1339_33_514	1	-0.58	1.402	0.523	0.084	17.7	0.259	0.277	1.83	-0.1470	0.136	0.534	0.01100	0.39	0.420	4.636
					10/14/2013 13:40	0917-173_No	13_10_14_1340_33_254	1	-2.30	1.492	0.590	0.082	17.0	0.251	0.1450	1.85	0.077	0.137	0.506	0.01100	0.11	0.431	4.653
					10/14/2013 13:41	0917-173_No	13_10_14_1341_34_055	1	-1.25	1.298	0.547	0.084	16.5	0.249	0.3090	1.84	0.135	0.134	0.487	0.01100	0.37	0.411	4.634
					10/14/2013 13:42	0917-173_No	13_10_14_1342_34_855	1	-1.41	1.512	0.344	0.084	16.5	0.254	0.1470	1.83	-0.357	0.139	0.486	0.01200	0.44	0.437	4.585
					10/14/2013 13:43	0917-173_No	13_10_14_1343_35_555	1	-1.81	1.486	0.351	0.081	16.5	0.253	0.13600	1.85	-0.315	0.137	0.485	0.01200	0.72	0.434	4.564
					10/14/2013 13:44	0917-173_No	13_10_14_1344_36_395	1	0.10	1.416	0.409	0.081	15.8	0.264	0.1570	1.82	-0.1040	0.134	0.466	0.0130	0.53	0.426	4.704
					10/14/2013 13:45	0917-173_No	13_10_14_1345_37_095	1	-1.93	1.487	0.592	0.086	15.6	0.269	0.150	1.84	-0.145	0.142	0.453	0.0130	-0.04	0.439	4.763
					10/14/2013 13:46	0917-173_No	13_10_14_1346_37_805	1	-2.49	1.585	0.583	0.080	15.7	0.269	0.0190	1.83	-0.3420	0.138	0.456	0.0130	0.040	0.451	4.759
					10/14/2013 13:47	0917-173_No	13_10_14_1347_38_655	1	-2.98	1.555	0.631	0.083	15.5	0.269	0.0240	1.82	-0.224	0.141	0.450	0.0130	0.95	0.457	4.793
					10/14/2013 13:48	0917-173_No	13_10_14_1348_39_415	1	-2.49	1.550	0.666	0.087	7.84	0.265	-0.16900	1.82	-0.212	0.144	0.196	0.0130	-0.14	0.464	5.176
					10/14/2013 13:49	0917-173_No	13_10_14_1349_40_155	1	-2.54	1.563	0.652	0.082	6.47	0.270	0.036	1.81	-0.3470	0.140	0.152	0.0140	-0.045	0.459	5.262
					10/14/2013 13:50	0917-173_No	13_10_14_1350_40_915	1	-2.11	1.586	0.620	0.083	6.31	0.274	-0.058	1.81	-0.336	0.141	0.148	0.0140	-0.432	0.455	5.346
					10/14/2013 13:51	0917-173_No	13_10_14_1351_41_695	1	-2.15	1.567	0.535	0.085	7.34	0.252	-0.089	1.82	-0.524	0.14	0.184	0.0130	0.00	0.464	5.26
					10/14/2013 13:52	0917-173_No	13_10_14_1352_42_406	1	-1.82	1.474	0.482	0.083	7.62	0.245	-0.111	1.82	-0.5130	0.14	0.193	0.0120	0.16	0.438	5.184
					10/14/2013 13:53	0917-173_No	13_10_14_1353_43_136	1	-2.66	1.478	0.376	0.083	7.70	0.244	-0.145	1.81	-0.451	0.14	0.192	0.0120	-0.271	0.441	5.134
Data	SPK	1	Start	A	10/14/2013 13:54	0917-173_No	13_10_14_1354_43_956	1	-2.286	1.490	0.470	0.084	7.51	0.239	0.031	1.82	-0.494	0.14	0.189	0.01200	0.19	0.450	5.035
					10/14/2013 13:55	0917-173_No	13_10_14_1355_44_666	1	-1.15	1.404	0.492	0.082	7.35	0.239	-0.101	1.80	-0.5130	0.14	0.194	0.01200	0.506	0.430	4.884
					10/14/2013 13:56	0917-173_No	13_10_14_1356_45_486	1	-2.589	1.457	0.412	0.079	7.12	0.230	0.050	1.80	-0.427	0.13	0.190	0.01100	-0.03	0.418	4.712
					10/14/2013 13:57	0917-173_No	13_10_14_1357_46_206	1	-2.608	1.433	0.488	0.079	7.17	0.225	0.089	1.80	-0.4710	0.13	0.190	0.01100	0.24	0.430	4.548
					10/14/2013 13:58	0917-173_No	13_10_14_1358_47_056	1	-2.042	1.439	0.621	0.080	7.16	0.233	0.069	1.79	-0.4180	0.13	0.189	0.01100	0.36	0.427	4.52
					10/14/2013 13:59	0917-173_No	13_10_14_1359_47_806	1	-2.201	1.478	0.627	0.078	7.02	0.243	-0.01400	1.80	-0.33000	0.13	0.189	0.01200	-0.36	0.426	4.515
			Stop		10/14/2013 14:00	0917-173_No	13_10_14_1400_48_546	1	-1.96	1.559	0.574	0.084	2.39	0.256	-0.166	1.77	-0.543	0.14	0.0290	0.0130	-0.445	0.454	4.613
					10/14/2013 14:01	0917-173_No	13_10_14_1401_49_266	1	-2.930	1.528	0.665	0.083	1.51	0.266	-0.095	1.77	-0.540	0.14	0.0080	0.0140	0.090	0.451	4.562
					10/14/2013 14:02	0917-173_No	13_10_14_1402_50_046	1	-1.88	1.600	0.699	0.085	1.46	0.264	-0.121	1.77	-0.526	0.14	0.0010	0.0140	-0.665	0.462	4.493
					10/14/2013 14:03	0917-173_No	13_10_14_1403_50_876	1	-1.99	1.613	0.617	0.085	1.40	0.267	0.007	1.76	-0.376	0.14	0.0060	0.0140	-0.20	0.466	4.453
					10/14/2013 14:04	0917-173_No	13_10_14_1404_51_627	1	-1.31	1.561	0.705	0.086	1.37	0.260	0.078	1.78	-0.351	0.14	0.0040	0.0130	-0.31	0.464	4.361
					10/14/2013 14:05	0917-173_No	13_10_14_1405_52_397	1	-2.973	1.651	0.604	0.086	1.30	0.259	0.086	1.76	-0.423	0.15	0.0090	0.0140	-0.04	0.478	4.299
Data	UNSPK	1	Start	A	10/14/2013 14:06	0917-173_No	13_10_14_1406_53_137	1	-2.44	1.588	0.663	0.084	1.29	0.263	-0.008	1.77	-0.452	0.14	0.0060	0.0140	-0.314	0.456	4.213
					10/14/2013 14:07	0917-173_No	13_10_14_1407_53_877	1	-3.35	1.620	0.798	0.089	1.16	0.260	0.123	1.78	-0.482	0.15	0.0030	0.0130	-0.36	0.478	4.132
					10/14/2013 14:08	0917-173_No	13_10_14_1408_54_687	1	-1.700	1.573	0.596	0.084	1.18	0.259	0.206	1.79	-0.5100	0.14	0.0040	0.0140	-0.09	0.470	4.092
					10/14/2013 14:09	0917-173_No	13_10_14_1409_55_387	1	-2.438	1.536	0.722	0.086	1.13	0.252	0.248	1.79	-0.475	0.14	0.0060	0.0130	-0.09	0.455	4.058
					10/14/2013 14:10	0917-173_No	13_10_14_1410_56_217	1	-3.742	1.549	0.604	0.087	1.14	0.243	0.089	1.80	-0.6140	0.14	0.0080	0.0130	0.05	0.460	4.048
					10/14/2013 14:11	0917-173_No	13_10_14_1411_56_937	1	-2.394	1.525	0.717	0.085	1.19	0.244	0.201	1.79	-0.455	0.14	0.0030	0.01200	-0.35	0.456	4.066
			Stop		10/14/2013 14:12	0917-173_No	13_10_14_1412_57_727	1	-1.775	1.530	0.647	0.086	1.20	0.250	0.075	1.80	-0.506	0.14	0.00200	0.0130	-0.318	0.454	4.122
					10/14/2013 14:39	0917-173_No	13_10_14_1439_49_359	1	-0.690	1.332	0.633	0.078	2.07	0.191	0.44	1.86	-0.691	0.126	-0.00200	0.00900	-0.348	0.400	4.744
					10/14/2013 14:40	0917-173_No	13_10_14_1440_50_130	1	-1.78500	1.444	0.818	0.079	2.30	0.224	0.30	1.85	-0.6610	0.132	0.00100	0.01100	-0.741	0.415	5.395
					10/14/2013 14:41	0917-173_No	13_10_14_1441_50_940	1	-2.293	1.457	0.74	0.083	2.28	0.229	0.27	1.84	-0.6750	0.137	0.00300	0.01100	-0.817	0.434	5.575
					10/14/2013 14:42	0917-173_No	13_10_14_1442_51_690	1	-2.140	1.508	0.820	0.083	2.44	0.229	0.44	1.85	-0.5850	0.139	0.00500	0.01100	-0.729	0.445	5.709
					10/14/2013 14:43	0917-173_No	13_10_14_1443_52_400	1	-1.848	1.521	0.685	0.084	2.49	0.247	0.34	1.83	-0.6280	0.140	0.00600	0.01200	-0.32	0.452	5.993
					10/14/2013 14:44	0917-173_No	13_10_14_1444_53_190	1	-1.431	1.474	0.427	0.088	2.70	0.261	0.41	1.79	-0.837	0.142	0.00600	0.0130	-0.48	0.443	6.252
					10/14/2013 14:45	0917-173_No	13_10_14_1445_53_900	1	-1.803	1.634	0.377	0.088	2.86	0.281	0.34	1.77	-0.842	0.148	0.0060	0.0140	-0.28	0.480	6.546
					10/14/2013 14:46	0917-173_No	13_10_14_1446_54_660	1	-2.552	1.655	0.651	0.091	3.10	0.292	0.46	1.75	-0.470	0.153	0.0030	0.0140	-0.79	0.492	6.806
					10/14/2013 14:47	0917-173_No	13_10_14_1447_55_500	1	-2.987	1.694	0.99	0.094	3.16	0.296	0.30	1.74	-0.691	0.156	0.00500	0.0140	-0.57	0.498	6.996
					10/14/2013 14:48	0917-173_No	13_10_14_1448_56_210	1	-4.669	1.652	0.960	0.089	3.13	0.290	0.23	1.75	-0.602	0.151	0.00300	0.0140	-0.79	0.477	7.112
					10/14/2013 14:49	0917-173_No	13_10_14_1449_56_940	1	-4.241	1.585	0.830	0.092	3.15	0.286	0.29	1.76	-0.685	0.151	0.00200	0.0140	-0.820	0.474	7.105
					10/14/2013 14:50	0917-173_No	13_10_14_1450_57_730	1	-2.7860	1.558	0.86	0.088	3.06	0.279	0.35	1.76	-0.7280	0.148	0.00200	0.0140	-0.733	0.461	7.093
					10/14/2013 14:51	0917-173_No	13_10_14_1451_58_450	1	-3.796	1.548	0.722	0.090	3.01	0.270	0.44	1.79	-0.7280	0.149	0.00100	0.0130	-0.89	0.468	7.02
					10/14/2013 14:52	0917-173_No	13_10_14_1452_59_191	1	-4.459	1.501	0.539	0.086	2.93	0.255	0.41	1.77	-0.700	0.143	0.00500	0.0120	-0.61	0.455	6.986
					10/14/2013 14:54	0917-173_No	13_10_14_1454_00_001	1	-2.307	1.478	0.514	0.083	2.97	0.254	0.31	1.78	-0.803	0.139	0.00400	0.01200	-0.91	0.439	7.027
					10/14/2013 14:55	0917-173_No	13_10_14_1455_00_711	1	-1.2320	1.475	0.401	0.085	2.86	0.239	0.40	1.82	-0.599	0.141	0.00300	0.01100	-1.2050	0.440	6.879
					10/14/2013 14:56	0917-173_No	13_10_14_1456_01_501	1	-2.655	1.534	0.344	0.082	2.74	0.227	0.30	1.81	-0.744	0.140	0.00000	0.01100	-0.84	0.448	6.579
					10/14/2013 14:57	0917-173_No	13_10_14_1457_02_111	1	-2.291	1.510	0.424	0.079	2.63	0.222	0.40	1.83	-0.6260	0.135	0.00	0.01100	-0.56	0.441	6.411
					10/14/2013 14:58	0917-173_No	13_10_14_1458_02_821	1	-2.9060	1.464	0.525	0.080	2.65	0.216	0.40	1.82	-0.5410	0.135	0.00100	0.01000	-0.58	0.431	6.346
					10/14/2013 14:59	0917-173_No	13_10_14_1459_03_641	1	-1.253	1.454	0.554	0.079	2.55	0.201	0.46	1.84	-0.6170	0.133	-0.00300	0.01000	-1.01	0.428	6.164
					10/14/2013 15:00	0917-173_No	13_10_14_1500_04_351	1	-2.288	1.419	0.596	0.079	2.54	0.206	0.37	1.83	-0.680	0.133	-0.01	0.01000	-0.860	0.416	6.078
					10/14/2013 15:01	0917-173_No	13_10_14_1501_06_171	1	-1.2700	1.439	0.594	0.081	2.70	0.217	0.24	1.83	-0.655	0.135	0.00200	0.01000	-0.49	0.433	6.082
					10/14/2013 15:02	0917-173_No	13_10_14_1502_05_881	1	-1.928	1.496	0.619	0.079	2.72	0.235	0.41	1.81	-0.528	0.134	-0.00100	0.01100	-1.334	0.432	6.147
					10/14/2013 15:03	0917-173_No	13_10_14_1503_06_601	1	-2.699	1.482	0.534	0.082	2.74	0.247	0.44	1.80	-0.7070	0.137	0.00200	0.01200	-0.59	0.437	6.264
					10/14/2013 15:04	0917-173_No	13_10_14_1504_07_392	1	-2.736	1.450	0.294	0.081	2.73	0.260	0.34	1.81	-0.8660	0.135	0.00000	0.0130	-0.38	0.429	6.365
					10/14/2013 15:05	0917-173_No	13_10_14_1505_08_162	1	-1.391	1.476	0.444	0.084	2.82	0.260	0.24	1.79	-0.7620	0.140	0.00500	0.0120	-0.937	0.449	6.494
					10/14/2013 15:06	0917-173_No	13_10_14_1506_08_922	1	-1.770	1.525	0.428	0.087	3.06	0.270	0.16	1.76	-0.792	0.145	0.00500	0.0130	-1.00	0.457	6.555
					10/14/2013 15:07	0917-173_No	13_10_14_1507_09_632	1	-2.728	1.573	0.602	0.084	2.92	0.275	0.04	1.77	-0.726	0.144	0.00200	0.0130	-0.856	0.458	6.586
					10/14/2013 15:08	0917-173_No	13_10_14_1508_10_372	1	-1.274	1.577	0.608	0.085	2.89	0.271	0.00	1.76	-0.697	0.145	0.00400	0.0140	-0.77	0.456	6.597
					10/14/2013 15:09	0917-173_No	13_10_14_1509_11_132	1	-3.413	1.474	0.491	0.082	2.78	0.267	0.01	1.79	-0.7100	0.139	0.00200	0.0130	-0.84	0.433	6.527
					10/14/2013 15:10	0917-173_No	13_10_14_1510_11_932	1	-3.070	1.563	0.470	0.084	2.82	0.255	0.19	1.78	-0.7740	0.143	0.00200	0.0130	-0.80	0.456	6.498
					10/14/2013 15:11	0917-173_No	13_10_14_1511_12_642	1	-2.365	1.543	0.444	0.087	2.95	0.261	0.27	1.79	-0.456	0.144	0.00200	0.0130	-1.107	0.452	6.541
					10/14/2013 15:12	0917-173_No	13_10_14_1512_13_392	1	-3.5220	1.658	0.588	0.086	2.99	0.264	-0.04	1.77	-0.474	0.148	0.00300	0.0130	-1.456	0.474	6.545
					10/14/2013 15:13	0917-173_No	13_10_14_1513_14_212	1	-2.575	1.597	0.465	0.087	2.84	0.254	0.15	1.80	-0.585	0.147	0.00300	0.0120	-1.114	0.459	6.465
					10/14/2013 15:14	0917-173_No	13_10_14_1514_14_902	1	-3.505	1.500	0.458	0.085	2.69	0.249	0.00	1.79	-0.5930	0.141	-0.00100	0.01200	-0.52	0.452	6.385
Data	Run	1	Start	A	10/14/2013 15:15	0917-173_No	13_10_14_1515_15_632	1	-3.391	1.460	0.557	0.085	2.81	0.235	-0.04	1.81	-0.825	0.140	-0.00300	0.01100	-0.70	0.433	6.258
					10/14/2013 15:16	0917-173_No	13_10_14_1516_16_443	1	-2.296	1.538	0.527	0.081	2.79	0.233	-0.03	1.81	-0.771	0.137	0.00200	0.01100	-0.81	0.439	6.253
					10/14/2013 15:17	0917-173_No	13_10_14_1517_17_163	1	-2.032	1.482	0.486	0.084	2.76	0.238	0.07	1.81	-0.7160	0.139	0.00300	0.01200	-0.53	0.435	6.276
					10/14/2013 15:18	0917-173_No	13_10_14_1518_17_873	1	-1.3500	1.492	0.457	0.086	2.70	0.237	-0.03	1.81	-0.474	0.142	0.00000	0.01100	-0.943	0.442	6.339
					10/14/2013 15:19	0917-173_No	13_10_14_1519_18_713	1	-2.423	1.468	0.548	0.078	2.54	0.226	0.00	1.82	-0.703	0.134	0.00300	0.01100	-0.82	0.432	6.25
					10/14/2013 15:20	0917-173_No	13_10_14_1520_19_373	1	-1.701	1.406	0.689	0.080	2.53	0.224	0.26	1.84	-0.757	0.133	0.00000	0.01100	-0.58	0.416	6.132
					10/14/2013 15:21	0917-173_No	13_10_14_1521_20_233	1	-1.55100	1.429	0.692	0.078	2.61	0.223	0.15	1.83	-0.851	0.131	0.00100	0.01100	-0.33	0.420	6.071
					10/14/2013 15:22	0917-173_No	13_10_14_1522_20_953	1	-0.077	1.433	0.82	0.084	2.78	0.230	0.09	1.83	-0.769	0.137	0.00000	0.01100	-1.215	0.438	6.109
					10/14/2013 15:23	0917-173_No	13_10_14_1523_21_683	1	-3.810	1.502	0.728	0.080	2.74	0.233	0.33	1.83	-0.721	0.136	0.00300	0.01100	-0.72	0.440	6.217
					10/14/2013 15:24	0917-173_No	13_10_14_1524_22_413	1	-1.008	1.503	0.767	0.082	2.69	0.236	0.11	1.82	-0.640	0.139	-0.00100	0.01200	-0.926	0.438	6.211

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 15:25	0917-173_No	13_10_14_1525_23_153	1	-1.1640	1.517	0.643	0.086	2.71	0.246	0.12	1.80	-0.439	0.142	0.00800	0.01200	-1.197	0.448	6.272
					10/14/2013 15:26	0917-173_No	13_10_14_1526_23_953	1	-2.1950	1.489	0.645	0.084	2.68	0.246	0.14	1.82	-0.769	0.138	0.00400	0.01200	0.01	0.436	6.258
					10/14/2013 15:27	0917-173_No	13_10_14_1527_24_733	1	-1.7050	1.558	0.720	0.081	2.70	0.234	0.10	1.81	-0.7300	0.138	0.00400	0.01200	-0.68	0.447	6.196
					10/14/2013 15:28	0917-173_No	13_10_14_1528_25_404	1	-1.4410	1.420	0.693	0.080	2.56	0.232	0.24	1.82	-0.768	0.132	0.00500	0.01200	-0.781	0.415	6.097
					10/14/2013 15:29	0917-173_No	13_10_14_1529_26_234	1	-2.398	1.441	0.73	0.084	2.71	0.235	0.17	1.81	-0.599	0.136	-0.00100	0.01200	-0.932	0.434	6.122
					10/14/2013 15:30	0917-173_No	13_10_14_1530_26_944	1	-5.105	1.503	0.701	0.081	2.86	0.252	0.06	1.80	-0.83900	0.137	0.00500	0.0120	-0.62	0.435	6.297
					10/14/2013 15:31	0917-173_No	13_10_14_1531_27_714	1	-2.387	1.553	0.564	0.087	2.78	0.262	0.00	1.77	-0.909	0.144	0.00300	0.0130	-0.833	0.461	6.37
					10/14/2013 15:32	0917-173_No	13_10_14_1532_28_464	1	-3.5440	1.550	0.515	0.081	2.77	0.253	0.04	1.80	-0.9400	0.140	0.00400	0.0120	-0.4640	0.453	6.377
					10/14/2013 15:33	0917-173_No	13_10_14_1533_29_184	1	-5.288	1.536	0.560	0.082	2.75	0.243	0.03	1.80	-0.866	0.140	0.00300	0.01200	-0.87	0.452	6.351
					10/14/2013 15:34	0917-173_No	13_10_14_1534_29_994	1	-1.594	1.581	0.590	0.081	2.79	0.236	0.26	1.80	-0.581	0.141	0.00100	0.01200	-1.204	0.456	6.394
					10/14/2013 15:35	0917-173_No	13_10_14_1535_30_714	1	-1.822	1.489	0.608	0.080	2.77	0.241	0.00	1.79	-0.664	0.136	0.00200	0.01200	-0.93	0.435	6.481
					10/14/2013 15:36	0917-173_No	13_10_14_1536_31_454	1	-2.075	1.530	0.686	0.085	2.93	0.253	0.10	1.80	-0.666	0.142	0.00400	0.0120	-0.705	0.449	6.499
					10/14/2013 15:37	0917-173_No	13_10_14_1537_32_154	1	-3.87800	1.511	0.621	0.084	2.83	0.253	0.21	1.80	-0.7850	0.141	0.00200	0.0120	-0.49	0.445	6.54
					10/14/2013 15:38	0917-173_No	13_10_14_1538_32_914	1	-3.430	1.548	0.517	0.081	2.96	0.264	0.09	1.80	-0.578	0.139	0.00000	0.0130	-0.82	0.448	6.621
					10/14/2013 15:39	0917-173_No	13_10_14_1539_33_524	1	-1.184	1.546	0.522	0.086	3.02	0.268	0.16	1.79	-0.666	0.144	-0.00100	0.0130	-1.380	0.454	6.58
					10/14/2013 15:40	0917-173_No	13_10_14_1540_34_355	1	-3.494	1.498	0.564	0.083	2.84	0.261	0.19	1.80	-0.8440	0.141	0.00000	0.0120	-0.93	0.450	6.451
					10/14/2013 15:41	0917-173_No	13_10_14_1541_35_025	1	-3.315	1.550	0.564	0.082	2.77	0.256	0.03	1.81	-0.8480	0.140	0.00000	0.0130	-0.949	0.452	6.374
					10/14/2013 15:42	0917-173_No	13_10_14_1542_35_845	1	-0.858	1.530	0.570	0.080	2.74	0.240	0.07	1.82	-0.8670	0.137	0.00000	0.01200	-0.89	0.442	6.286
					10/14/2013 15:43	0917-173_No	13_10_14_1543_36_595	1	-3.3930	1.474	0.609	0.081	2.86	0.231	0.11	1.83	-0.975	0.135	0.00300	0.01100	-0.52	0.430	6.361
					10/14/2013 15:44	0917-173_No	13_10_14_1544_37_325	1	-3.220	1.520	0.696	0.082	2.97	0.230	0.15	1.81	-0.8060	0.137	-0.00200	0.01100	-0.790	0.440	6.381
					10/14/2013 15:45	0917-173_No	13_10_14_1545_38_135	1	-2.169	1.561	0.591	0.079	2.86	0.235	0.31	1.81	-0.82100	0.136	0.00700	0.01100	-0.83	0.445	6.395
					10/14/2013 15:46	0917-173_No	13_10_14_1546_38_875	1	-3.178	1.585	0.640	0.084	2.89	0.242	0.12	1.79	-0.740	0.144	0.00100	0.01100	-0.76	0.453	6.599
					10/14/2013 15:47	0917-173_No	13_10_14_1547_39_575	1	-3.3220	1.549	0.585	0.084	3.01	0.249	0.39	1.81	-0.597	0.143	0.00000	0.01200	-1.160	0.447	6.619
					10/14/2013 15:48	0917-173_No	13_10_14_1548_40_315	1	-2.902	1.579	0.575	0.084	2.93	0.256	0.27	1.78	-0.664	0.144	0.00100	0.0130	-1.036	0.466	6.702
					10/14/2013 15:49	0917-173_No	13_10_14_1549_41_135	1	-3.028	1.573	0.493	0.085	2.88	0.261	0.27	1.78	-0.636	0.144	0.00600	0.0130	-1.372	0.449	6.73
					10/14/2013 15:50	0917-173_No	13_10_14_1550_41_845	1	-1.467	1.536	0.616	0.084	2.60	0.251	0.29	1.81	-0.567	0.142	0.00200	0.0120	-1.03	0.453	6.592
					10/14/2013 15:51	0917-173_No	13_10_14_1551_42_616	1	-1.084	1.528	0.587	0.082	2.61	0.239	0.14	1.82	-0.8250	0.140	-0.00100	0.01100	-0.839	0.451	6.403
					10/14/2013 15:52	0917-173_No	13_10_14_1552_43_326	1	-2.208	1.520	0.634	0.081	2.71	0.236	0.29	1.82	-0.827	0.137	-0.00100	0.01100	-0.71	0.449	6.438
					10/14/2013 15:53	0917-173_No	13_10_14_1553_44_066	1	-2.5970	1.498	0.578	0.083	2.78	0.239	0.32	1.82	-0.659	0.140	0.00200	0.01200	-1.061	0.455	6.546
					10/14/2013 15:54	0917-173_No	13_10_14_1554_44_886	1	-1.956	1.530	0.663	0.084	2.74	0.252	0.26	1.78	-0.728	0.144	0.00200	0.0120	-0.92	0.457	6.592
					10/14/2013 15:55	0917-173_No	13_10_14_1555_45_656	1	-3.238	1.559	0.776	0.083	2.77	0.259	0.20	1.78	-0.678	0.142	0.00100	0.0130	-1.126	0.454	6.653
					10/14/2013 15:56	0917-173_No	13_10_14_1556_46_316	1	-5.7000	1.603	0.605	0.086	2.83	0.254	0.08	1.79	-0.868	0.146	0.00100	0.0130	-0.59	0.463	6.691
					10/14/2013 15:57	0917-173_No	13_10_14_1557_47_126	1	-0.431	1.500	0.531	0.086	2.78	0.248	0.22	1.79	-0.8790	0.143	-0.00200	0.01200	-0.64	0.447	6.736
					10/14/2013 15:58	0917-173_No	13_10_14_1558_47_826	1	-3.497	1.534	0.509	0.085	2.79	0.251	0.15	1.79	-0.686	0.141	0.00100	0.01200	-0.58	0.452	6.748
					10/14/2013 15:59	0917-173_No	13_10_14_1559_48_586	1	-2.491	1.576	0.559	0.088	2.80	0.264	0.26	1.79	-0.869	0.145	-0.00200	0.0130	-1.001	0.465	6.724
					10/14/2013 16:00	0917-173_No	13_10_14_1600_49_366	1	-2.5430	1.540	0.430	0.086	2.53	0.253	0.11	1.78	-0.9990	0.144	0.00100	0.0120	-0.71	0.452	6.564
					10/14/2013 16:01	0917-173_No	13_10_14_1601_50_106	1	-1.050	1.582	0.434	0.083	2.39	0.235	0.32	1.81	-0.758	0.141	0.00200	0.01100	-0.609	0.455	6.327
					10/14/2013 16:02	0917-173_No	13_10_14_1602_50_926	1	-3.018	1.376	0.392	0.080	2.32	0.217	0.30	1.84	-0.776	0.134	0.00000	0.01100	-0.92	0.418	6.12
					10/14/2013 16:03	0917-173_No	13_10_14_1603_51_667	1	-0.801	1.484	0.542	0.082	2.37	0.218	0.22	1.83	-0.674	0.137	0.00100	0.01100	-0.96	0.444	5.944
					10/14/2013 16:04	0917-173_No	13_10_14_1604_52_377	1	-1.562	1.526	0.600	0.081	2.30	0.209	0.21	1.84	-0.7080	0.138	-0.00100	0.01000	-0.869	0.452	5.795
					10/14/2013 16:05	0917-173_No	13_10_14_1605_53_187	1	-0.236	1.434	0.489	0.078	2.30	0.198	0.17	1.85	-0.7620	0.132	0.00100	0.01000	-0.52	0.425	5.651
					10/14/2013 16:06	0917-173_No	13_10_14_1606_53_907	1	-2.058	1.485	0.557	0.076	2.25	0.200	0.37	1.84	-0.478	0.130	0.00200	0.00900	-0.809	0.423	5.548
					10/14/2013 16:07	0917-173_No	13_10_14_1607_54_617	1	-1.648	1.452	0.478	0.079	2.46	0.201	0.30	1.86	-0.615	0.132	-0.00400	0.00900	-0.71	0.435	5.465
					10/14/2013 16:08	0917-173_No	13_10_14_1608_55_427	1	-2.215	1.467	0.566	0.083	2.53	0.212	0.33	1.84	-0.6150	0.136	0.00100	0.01000	-0.935	0.435	5.504
					10/14/2013 16:09	0917-173_No	13_10_14_1609_56_147	1	-1.969	1.368	0.732	0.078	2.40	0.223	0.28	1.84	-0.530	0.129	-0.00100	0.01100	-1.015	0.409	5.465
					10/14/2013 16:10	0917-173_No	13_10_14_1610_56_957	1	-1.966	1.483	0.88	0.079	2.24	0.223	0.28	1.86	-0.712	0.132	0.00	0.01100	-0.37	0.428	5.41
					10/14/2013 16:11	0917-173_No	13_10_14_1611_57_677	1	-2.3950	1.496	0.92	0.079	2.12	0.232	0.38	1.85	-0.592	0.133	0.00100	0.01200	-0.957	0.428	5.417
					10/14/2013 16:12	0917-173_No	13_10_14_1612_58_447	1	-2.2510	1.473	0.787	0.077	2.22	0.238	0.33	1.85	-0.6950	0.132	0.00400	0.01200	-0.85	0.427	5.453
					10/14/2013 16:13	0917-173_No	13_10_14_1613_59_217	1	-2.001	1.499	0.723	0.083	2.16	0.247	0.47	1.83	-0.899	0.139	0.00100	0.0120	-0.373	0.442	5.559
					10/14/2013 16:14	0917-173_No	13_10_14_1614_59_927	1	-4.413	1.580	0.662	0.084	2.25	0.248	0.50	1.85	-0.701	0.144	-0.00200	0.01200	-0.603	0.476	5.633
			Stop		10/14/2013 16:16	0917-173_No	13_10_14_1616_00_738	1	-2.115	1.474	0.614	0.078	3.45	0.240	0.52	1.84	-0.962	0.134	0.0600	0.01200	-0.03	0.426	5.714
					10/14/2013 16:17	0917-173_No	13_10_14_1617_01_458	1	-0.788	1.017	-0.234	0.076	2.48	0.0720	0.399	1.209	-2.69	0.132	0.0660	0.00300	-1.255	0.339	9.046
					10/14/2013 16:18	0917-173_No	13_10_14_1618_02_278	1	0.0790	0.920	-0.603	0.084	0.241	0.0390	0.124	0.451	-3.15	0.141	-0.00300	0.00200	-0.853	0.324	9.591
					10/14/2013 16:19	0917-173_No	13_10_14_1619_03_028	1	-0.9870	0.829	-0.206	0.061	0.215	0.0320	0.110	0.270	-1.451	0.102	0.0080	0.00100	-0.9370	0.280	5.115
					10/14/2013 16:20	0917-173_No	13_10_14_1620_03_738	1	0.5810	0.780	-0.155	0.052	0.030	0.0290	0.1900	0.177	-1.049	0.085	0.00	0.00200	-0.408	0.263	3.631
					10/14/2013 16:21	0917-173_No	13_10_14_1621_04_478	1	1.4650	0.866	-0.1560	0.054	0.107	0.0300	0.1290	0.133	-0.8800	0.089	-0.00600	0.00200	-0.648	0.268	3.545
					10/14/2013 16:22	0917-173_No	13_10_14_1622_05_198	1	3.144	0.850	0.059	0.050	0.187	0.0350	0.2940	0.617	-0.054	0.082	-0.00400	0.00200	-0.124	0.258	1.462
					10/14/2013 16:23	0917-173_No	13_10_14_1623_05_968	1	0.91700	0.843	0.130	0.052	0.0680	0.0430	0.4480	0.881	-0.009	0.084	0.00	0.00200	-0.52	0.266	0.919
					10/14/2013 16:24	0917-173_No	13_10_14_1624_06_688	1	2.183	0.955	-0.048	0.053	0.0860	0.0420	0.5690	0.843	0.091	0.089	-0.00300	0.00200	-0.51	0.273	0.675
					10/14/2013 16:25	0917-173_No	13_10_14_1625_07_458	1	2.6810	0.897	0.067	0.051	0.094	0.0420	0.5890	0.846	0.091	0.085	0.00000	0.00200	-0.063	0.272	0.658
					10/14/2013 16:26	0917-173_No	13_10_14_1626_08_178	1	0.926	0.885	0.072	0.053	0.065	0.0420	0.4650	0.849	0.152	0.085	0.00	0.00200	-0.207	0.266	0.625
					10/14/2013 16:27	0917-173_No	13_10_14_1627_09_038	1	2.941	0.958	0.024	0.055	0.0600	0.0410	0.5750	0.838	-0.057	0.089	-0.00100	0.00200	-0.56	0.290	0.585
					10/14/2013 16:28	0917-173_No	13_10_14_1628_09_749	1	0.810	0.854	0.078	0.052	0.169	0.0450	0.393	0.841	0.101	0.085	-0.00300	0.00200	-0.564	0.264	0.55
					10/14/2013 16:29	0917-173_No	13_10_14_1629_10_499	1	0.005	0.875	0.205	0.054	0.126	0.0420	0.326	0.843	0.0270	0.086	0.00	0.00200	-0.214	0.276	0.518
					10/14/2013 16:30	0917-173_No	13_10_14_1630_12_259	1	0.8940	0.820	0.004	0.052	0.0660	0.0440	0.5930	0.855	0.006	0.086	-0.00100	0.00200	-0.401	0.259	0.508
					10/14/2013 16:31	0917-173_No	13_10_14_1631_13_069	1	2.045	0.912	0.073	0.049	0.117	0.0450	0.5160	0.862	0.1010	0.083	-0.00900	0.00200	-0.203	0.270	0.48
					10/14/2013 16:32	0917-173_No	13_10_14_1632_13_779	1	1.793	0.862	0.127	0.052	0.117	0.0410	0.5550	0.870	0.0280	0.084	-0.00500	0.00200	-0.318	0.259	0.423
					10/14/2013 16:33	0917-173_No	13_10_14_1633_14_599	1	1.0660	1.070	0.365	0.056	0.87	0.1190	0.624	1.330	-0.099	0.095	0.00000	0.00600	-0.55	0.311	1.677
					10/14/2013 16:34	0917-173_No	13_10_14_1634_15_299	1	-0.189	1.397	0.475	0.074	1.57	0.240	0.449	1.87	-0.611	0.126	0.00000	0.01100	-0.166	0.405	3.75
					10/14/2013 16:35	0917-173_No	13_10_14_1635_16_099	1	-2.127	1.556	0.418	0.081	1.60	0.264	0.37	1.82	-0.7040	0.137	0.00100	0.0130	-0.646	0.448	4.291
					10/14/2013 16:36	0917-173_No	13_10_14_1636_16_869	1	-3.308	1.538	0.515	0.081	1.56	0.244	0.46	1.84	-0.658	0.137	0.00200	0.01200	-0.572	0.444	4.354
					10/14/2013 16:37	0917-173_No	13_10_14_1637_17_579	1	-4.260	1.654	0.391	0.087	1.83	0.241	0.052	1.85	-0.586	0.144	-0.00500	0.01200	-0.28	0.470	4.399
					10/14/2013 16:38	0917-173_No	13_10_14_1638_18_389	1	-3.3540	1.445	0.353	0.085	1.54	0.227	0.44	1.87	-0.7090	0.137	-0.00400	0.01100	-0.507	0.441	4.318
					10/14/2013 16:39	0917-173_No	13_10_14_1639_19_090	1	-1.692	1.385	0.222	0.077	1.35	0.209	0.37	1.87	-0.823	0.129	0.00100	0.01000	-0.736	0.409	4.133
					10/14/2013 16:40	0917-173_No	13_10_14_1640_19_900	1	-2.008	1.426	0.3130	0.077	1.35	0.194	0.503	1.88	-0.544	0.128	-0.00300	0.00900	-0.799	0.420	4.01
					10/14/2013 16:41	0917-173_No	13_10_14_1641_20_660	1	-0.2740	1.328	0.355	0.074	1.39	0.192	0.450	1.88	-0.69800	0.124	0.00000	0.00900	-0.582	0.394	3.966
					10/14/2013 16:42	0917-173_No	13_10_14_1642_21_390	1	-0.912	1.449	0.410	0.080	1.37	0.202	0.362	1.88	-0.6070	0.131	-0.00500	0.00900	-0.826	0.434	4.003
					10/14/2013 16:43	0917-173_No	13_10_14_1643_22_100	1	-1.895	1.326	0.471	0.076	1.25	0.189	0.469	1.88	-0.691	0.125	-0.00400	0.00900	-0.02	0.398	3.92
					10/14/2013 16:44	0917-173_No	13_10_14_1644_22_910	1	-1.105	1.427	0.546	0.075	1.30	0.195	0.485	1.87	-0.574	0.125	0.00000	0.00900	-0.380	0.409	3.946
					10/14/2013 16:45	0917-173_No	13_10_14_1645_23_640	1	1.321	1.428	0.485	0.076	1.46	0.216	0.289	1.88	-0.649	0.127	-0.00300	0.01000	-0.601	0.417	4.096
					10/14/2013 16:46	0917-173_No	13_10_14_1646_24_340	1	-1.211	1.451	0.696	0.077	1.48	0.240	0.274	1.86	-0.4670	0.128	0.00100	0.01200	-0.8900	0.422	4.243
					10/14/2013 16:47	0917-173_No	13_10_14_1647_25_160	1	-2.304	1.610	0.591	0.082	1.57	0.257	0.345	1.83	-0.6570	0.139	-0.00200	0.0130	-0.724	0.462	4.538
					10/14/2013 16:48	0917-173_No	13_10_14_1648_25_860	1	-3.861	1.504	0.512	0.084	1.54	0.258	0.267	1.83	-0.834	0.139	0.00200	0.0130	-0.6690	0.441	4.651
Data	Run	2	Start	A	10/14/2013 16:49	0917-173_No	13_10_14_1649_26_670	1	-1.018	1.534	0.465	0.085	1.65	0.268	0.282	1.82	-0.719	0.140	0.00100	0.0130	-0.262	0.452	4.834
					10/14/2013 16:50	0917-173_No	13_10_14_1650_27_360	1	-2.290	1.568	0.501	0.087	1.64	0.278	0.34	1.81	-0.8000	0.144	0.00000	0.0140	-0.817	0.463	5.063
					10/14/2013 16:51	0917-173_No	13_10_14_1651_28_211	1	-2.886	1.637	0.778	0.087	1.63	0.282	0.49	1.81	-0.437	0.147	0.00300	0.0140	-0.551	0.482	5.194
					10/14/2013 16:52	0917-173_No	13_10_14_1652_28_891	1	-3.286	1.520	0.474	0.082	1.52	0.267	0.39	1.81	-0.727	0.139	0.00300	0.0130	-0.411	0.449	5.19
					10/14/2013 16:53	0917-173_No	13_10_14_1653_29_651	1	-1.845	1.472	0.398	0.083	1.43	0.239	0.468	1.86	-0.6830	0.138	-0.00500	0.01200	-0.61	0.447	5.049
					10/14/2013 16:54	0917-173_No	13_10_14_1654_30_471	1	-1.893	1.541	0.280	0.083	1.38	0.230	0.478	1.86	-0.771	0.138	0.00000	0.01100	-0.341	0.448	4.994
					10/14/2013 16:55	0917-173_No	13_10_14_1655_31_191	1	-3.741	1.493	0.498	0.083	1.44	0.231	0.510	1.87	-0.6690	0.138	0.00200	0.01100	-0.643	0.439	5.006
					10/14/2013 16:56	0917-173_No	13_10_14_1656_31_901	1	-2.4630	1.358	0.347	0.081	1.40	0.213	0.446	1.88	-0.7420	0.130	0.00000	0.01000	-0.5650	0.402	4.874
					10/14/2013 16:57	0917-173_No	13_10_14_1657_32_741	1	-2.0050	1.517	0.397	0.076	1.52	0.206	0.473	1.88	-0.685	0.131	-0.00400	0.01000	-0.14	0.427	4.874
					10/14/2013 16:58	0917-173_No	13_10_14_1658_33_491	1	-1.135	1.539	0.372	0.082	1.56	0.225	0.415	1.85	-0.812	0.137	-0.00100	0.01100	-0.42	0.453	4.987
					10/14/2013 16:59	0917-173_No	13_10_14_1659_34_201	1	-0.604	1.565	0.512	0.084	1.64	0.248	0.262	1.84	-0.508	0.141	-0.00200	0.01200	-0.984	0.454	5.09
					10/14/2013 17:00	0917-173_No	13_10_14_1700_34_961	1	-1.212	1.490	0.425	0.085	1.55	0.255	0.41	1.85	-0.6770	0.140	0.00200	0.0130	-1.0610	0.443	5.159
					10/14/2013 17:01	0917-173_No	13_10_14_1701_35_681	1	-3.75	1.540	0.372	0.083	1.57	0.257	0.35	1.83	-0.7130	0.139	-0.00200	0.0130	-0.336	0.458	5.234
					10/14/2013 17:02	0917-173_No	13_10_14_1702_36_361	1	-1.746	1.585	0.386	0.082	1.62	0.255	0.37	1.84	-0.796	0.139	0.00000	0.01200	-0.773	0.445	5.273
					10/14/2013 17:03	0917-173_No	13_10_14_1703_37_172	1	-2.406	1.547	0.346	0.085	1.47	0.243	0.441	1.85	-0.7490	0.141	0.00000	0.01200	-0.26	0.458	5.196
					10/14/2013 17:04	0917-173_No	13_10_14_1704_37_962	1	-1.72300	1.503	0.444	0.079	1.44	0.230	0.407	1.86	-0.606	0.135	0.00000	0.01100	-0.443	0.433	5.037
					10/14/2013 17:05	0917-173_No	13_10_14_1705_38_702	1	-1.920	1.444	0.601	0.081	1.63	0.226	0.354	1.87	-0.679	0.133	-0.00200	0.01100	-0.583	0.433	5.079
					10/14/2013 17:06	0917-173_No	13_10_14_1706_39_462	1	-2.419	1.501	0.443	0.084	1.59	0.229	0.44	1.84	-0.506	0.138	0.00000	0.01100	-0.7880	0.452	5.141
					10/14/2013 17:07	0917-173_No	13_10_14_1707_40_232	1	0.658	1.489	0.397	0.081	1.46	0.242	0.49	1.85	-0.728	0.135	-0.00200	0.01200	-0.276	0.437	5.113
					10/14/2013 17:08	0917-173_No	13_10_14_1708_41_042	1	-3.7070	1.557	0.559	0.085	1.51	0.253	0.458	1.84	-0.6200	0.142	0.00000	0.01200	-0.821	0.455	5.151
					10/14/2013 17:09	0917-173_No	13_10_14_1709_41_782	1	-0.928	1.513	0.539	0.087	1.50	0.247	0.344	1.85	-0.41600	0.142	-0.00200	0.01200	-0.9220	0.455	5.183
					10/14/2013 17:10	0917-173_No	13_10_14_1710_42_582	1	0.150	1.526	0.413	0.086	1.53	0.243	0.264	1.84	-0.6040	0.141	-0.00100	0.01200	-0.47	0.455	5.207
					10/14/2013 17:11	0917-173_No	13_10_14_1711_43_292	1	-2.3230	1.625	0.450	0.082	1.49	0.248	0.393	1.83	-0.5620	0.142	-0.00100	0.01200	0.08	0.470	5.252
					10/14/2013 17:12	0917-173_No	13_10_14_1712_42_992	1	-1.885	1.592	0.467	0.083	1.51	0.242	0.352	1.83	-0.525	0.141	0.00000	0.01200	-0.25	0.455	5.256
					10/14/2013 17:13	0917-173_No	13_10_14_1713_43_802	1	-1.789	1.573	0.431	0.086	1.45	0.241	0.368	1.83	-0.704	0.143	0.00100	0.01200	-0.413	0.467	5.28
					10/14/2013 17:14	0917-173_No	13_10_14_1714_44_502	1	-0.964	1.560	0.460	0.086	1.41	0.239	0.446	1.84	-0.615	0.143	-0.00100	0.01200	-0.264	0.459	5.285
					10/14/2013 17:15	0917-173_No	13_10_14_1715_45_343	1	-1.976	1.471	0.434	0.082	1.49	0.229	0.401	1.85	-0.6790	0.137	-0.00100	0.01100	-0.53	0.444	5.242
					10/14/2013 17:16	0917-173_No	13_10_14_1716_46_033	1	-2.4440	1.499	0.508	0.080	1.47	0.232	0.468	1.85	-0.608	0.135	-0.00200	0.01100	-0.43	0.439	5.271
					10/14/2013 17:17	0917-173_No	13_10_14_1717_46_833	1	-2.933	1.618	0.394	0.081	1.54	0.241	0.423	1.84	-0.626	0.141	-0.00200	0.01200	-0.631	0.459	5.3
					10/14/2013 17:18	0917-173_No	13_10_14_1718_47_563	1	-3.588	1.544	0.417	0.085	1.66	0.245	0.54	1.84	-0.806	0.141	0.00200	0.01200	-0.28	0.454	5.385
					10/14/2013 17:19	0917-173_No	13_10_14_1719_48_383	1	-2.355	1.489	0.488	0.083	1.51	0.245	0.315	1.85	-0.799	0.138	0.00200	0.01200	0.08	0.440	5.38
					10/14/2013 17:20	0917-173_No	13_10_14_1720_49_093	1	-2.527	1.538	0.451	0.083	1.50	0.252	0.474	1.83	-0.756	0.140	-0.00100	0.01200	-0.16	0.456	5.395
					10/14/2013 17:21	0917-173_No	13_10_14_1721_49_883	1	-2.383	1.518	0.468	0.085	1.54	0.241	0.424	1.86	-0.680	0.140	-0.00300	0.01200	-0.391	0.460	5.441
					10/14/2013 17:22	0917-173_No	13_10_14_1722_50_683	1	-2.858	1.477	0.526	0.082	1.47	0.235	0.384	1.85	-0.63100	0.137	-0.00400	0.01100	-0.451	0.438	5.406
					10/14/2013 17:23	0917-173_No	13_10_14_1723_51_453	1	-2.0730	1.502	0.420	0.082	1.44	0.227	0.398	1.86	-0.5620	0.135	-0.00400	0.01100	-0.399	0.433	5.322
					10/14/2013 17:24	0917-173_No	13_10_14_1724_52_163	1	-1.781	1.356	0.418	0.077	1.29	0.204	0.518	1.88	-0.628	0.126	-0.00200	0.01000	-0.61	0.402	5.117
					10/14/2013 17:25	0917-173_No	13_10_14_1725_52_963	1	-2.765	1.300	0.2810	0.072	1.30	0.193	0.451	1.88	-0.682	0.120	-0.00600	0.00900	-0.137	0.386	4.943
					10/14/2013 17:26	0917-173_No	13_10_14_1726_53_674	1	-1.525	1.406	0.224	0.076	1.36	0.196	0.437	1.87	-0.505	0.127	-0.00300	0.00900	-0.912	0.407	4.95
					10/14/2013 17:27	0917-173_No	13_10_14_1727_54_454	1	-3.1440	1.422	0.429	0.079	1.48	0.204	0.558	1.88	-0.595	0.129	-0.00300	0.01000	0.095	0.422	5
					10/14/2013 17:28	0917-173_No	13_10_14_1728_55_304	1	-1.789	1.372	0.439	0.079	1.41	0.212	0.399	1.87	-0.591	0.129	-0.00600	0.01000	-0.3550	0.417	5.035
					10/14/2013 17:29	0917-173_No	13_10_14_1729_56_064	1	-3.009	1.547	0.577	0.082	1.39	0.226	0.420	1.87	-0.32400	0.139	-0.00300	0.01100	-0.646	0.443	5.073
					10/14/2013 17:32	0917-173_No	13_10_14_1732_06_400	1	-1.331	1.430	0.641	0.078	1.50	0.228	0.600	1.86	-0.629	0.130	-0.00100	0.01100	0.121	0.415	5.115
					10/14/2013 17:33	0917-173_No	13_10_14_1733_07_210	1	-1.9250	1.453	0.654	0.082	1.62	0.246	0.204	1.83	-0.651	0.136	-0.00200	0.01200	-0.19	0.431	5.328
					10/14/2013 17:34	0917-173_No	13_10_14_1734_07_900	1	-2.677	1.610	0.555	0.083	1.65	0.270	0.451	1.82	-0.717	0.141	0.00200	0.0130	-0.07	0.462	5.509
					10/14/2013 17:35	0917-173_No	13_10_14_1735_08_740	1	-4.328	1.630	0.621	0.086	1.78	0.281	0.216	1.80	-0.664	0.145	0.00000	0.0140	-0.290	0.479	5.632
					10/14/2013 17:36	0917-173_No	13_10_14_1736_09_450	1	-2.292	1.507	0.556	0.088	1.78	0.280	0.283	1.80	-0.452	0.142	0.0000	0.0130	-0.934	0.458	5.688
					10/14/2013 17:37	0917-173_No	13_10_14_1737_10_280	1	-2.366	1.605	0.817	0.086	1.75	0.279	0.44	1.82	-0.505	0.144	0.00100	0.0130	-0.351	0.469	5.714
					10/14/2013 17:38	0917-173_No	13_10_14_1738_11_030	1	-2.450	1.596	0.644	0.088	1.75	0.265	0.273	1.80	-0.600	0.147	-0.00100	0.0130	-0.675	0.470	5.734
					10/14/2013 17:39	0917-173_No	13_10_14_1739_11_730	1	-2.23	1.559	0.502	0.085	1.67	0.262	0.194	1.82	-0.742	0.142	-0.00300	0.0130	-0.29	0.465	5.738
					10/14/2013 17:40	0917-173_No	13_10_14_1740_12_560	1	-3.443	1.575	0.445	0.082	1.64	0.254	0.42	1.84	-0.459	0.140	0.00000	0.0130	-0.124	0.447	5.735
					10/14/2013 17:41	0917-173_No	13_10_14_1741_13_270	1	-1.872	1.208	0.178	0.073	1.61	0.137	0.596	1.590	-1.524	0.128	0.0040	0.00700	-0.878	0.374	7.561
					10/14/2013 17:42	0917-173_No	13_10_14_1742_14_040	1	-0.211	0.893	-0.3440	0.084	0.174	0.0410	0.358	0.674	-2.84	0.141	-0.00500	0.00200	-1.124	0.335	9.646
					10/14/2013 17:43	0917-173_No	13_10_14_1743_14_781	1	-1.7190	0.908	-0.507	0.083	-0.006	0.0380	0.024	0.315	-3.21	0.144	-0.00500	0.00200	-0.90	0.347	9.634
					10/14/2013 17:44	0917-173_No	13_10_14_1744_15_531	1	1.456	0.848	-0.243	0.075	0.494	0.0430	0.2910	0.589	-2.48	0.122	0.0050	0.00200	-0.48	0.295	8.055
					10/14/2013 17:45	0917-173_No	13_10_14_1745_16_341	1	0.819	0.838	0.0640	0.052	0.372	0.0320	0.371	0.454	-0.2540	0.083	0.00300	0.00200	-0.88	0.263	2.523
					10/14/2013 17:46	0917-173_No	13_10_14_1746_16_981	1	0.208	0.830	0.0590	0.048	0.169	0.0280	0.242	0.193	0.0000	0.076	0.00100	0.00200	-0.155	0.249	0.98
					10/14/2013 17:47	0917-173_No	13_10_14_1747_17_691	1	-0.276	0.798	0.095	0.051	0.105	0.0260	0.05800	0.126	0.161	0.079	0.00	0.00200	-0.49	0.252	0.758
					10/14/2013 17:48	0917-173_No	13_10_14_1748_18_511	1	1.032	0.879	-0.073	0.047	0.0550	0.0270	0.278	0.1060	-0.1060	0.078	-0.00500	0.00200	0.122	0.259	0.71
			Stop		10/14/2013 17:49	0917-173_No	13_10_14_1749_19_221	1	1.925	0.917	0.067	0.045	0.130	0.0270	0.222	0.1070	0.179	0.077	-0.00500	0.00200	-0.267	0.266	0.698
					10/14/2013 17:50	0917-173_No	13_10_14_1750_20_001	1	2.237	0.890	-0.0370	0.049	0.170	0.0380	0.4910	0.725	0.097	0.081	-0.01100	0.00200	-0.488	0.269	0.706
					10/14/2013 17:51	0917-173_No	13_10_14_1751_20_821	1	1.8950	0.894	0.0060	0.054	0.068	0.0430	0.53200	0.842	0.096	0.089	-0.00500	0.00200	-0.16	0.279	0.514
					10/14/2013 17:52	0917-173_No	13_10_14_1752_21_531	1	1.256	0.897	0.195	0.053	0.146	0.0410	0.4610	0.888	0.174	0.086	0.00	0.00200	-0.306	0.281	0.58
					10/14/2013 17:53	0917-173_No	13_10_14_1753_22_351	1	1.8910	1.024	0.216	0.055	0.556	0.0870	0.6440	1.219	-0.241	0.092	-0.01	0.00400	0.158	0.299	1.641
					10/14/2013 17:54	0917-173_No	13_10_14_1754_23_051	1	-1.0130	1.358	0.482	0.071	1.44	0.206	0.577	1.87	-0.427	0.120	0.00000	0.01000	-1.044	0.391	4.019
					10/14/2013 17:55	0917-173_No	13_10_14_1755_23_872	1	-0.56200	1.501	0.562	0.083	1.83	0.249	0.48	1.88	-0.542	0.138	-0.00400	0.01200	-0.811	0.436	5.108
					10/14/2013 17:56	0917-173_No	13_10_14_1756_24_582	1	-2.2320	1.393	0.437	0.085	1.81	0.252	0.36	1.84	-0.6480	0.138	0.00000	0.0120	-0.64	0.433	5.381

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 17:57	0917-173_No	13_10_14_1757_25_402	1	-3.039	1.642	0.528	0.080	1.81	0.251	0.31	1.84	-0.7060	0.140	0.00100	0.01200	-0.15	0.459	5.433
Data	Run	3	Start	A	10/14/2013 17:58	0917-173_No	13_10_14_1758_26_092	1	-2.6560	1.438	0.494	0.083	1.75	0.248	0.246	1.84	-0.602	0.136	-0.00200	0.01200	-0.33	0.435	5.39
					10/14/2013 17:59	0917-173_No	13_10_14_1759_26_902	1	-1.121	1.463	0.509	0.083	1.78	0.239	0.40	1.85	-0.660	0.136	0.00000	0.01100	-0.182	0.433	5.341
					10/14/2013 18:00	0917-173_No	13_10_14_1800_27_632	1	-1.665	1.534	0.404	0.085	1.79	0.235	0.42	1.86	-0.561	0.141	-0.00200	0.01100	-0.723	0.447	5.336
					10/14/2013 18:01	0917-173_No	13_10_14_1801_28_432	1	-1.525	1.492	0.3350	0.082	1.83	0.228	0.38	1.85	-0.493	0.137	0.00000	0.01100	-0.666	0.444	5.374
					10/14/2013 18:02	0917-173_No	13_10_14_1802_29_182	1	-0.937	1.568	0.357	0.084	1.85	0.241	0.34	1.84	-0.7510	0.141	0.00200	0.01100	-0.277	0.452	5.465
					10/14/2013 18:03	0917-173_No	13_10_14_1803_29_932	1	-1.7710	1.570	0.442	0.082	1.80	0.249	0.249	1.85	-0.6970	0.139	0.00000	0.01200	-0.51	0.454	5.499
					10/14/2013 18:04	0917-173_No	13_10_14_1804_30_752	1	-3.334	1.498	0.375	0.087	1.88	0.251	0.162	1.83	-0.5500	0.143	-0.00100	0.01200	-0.42	0.456	5.526
					10/14/2013 18:05	0917-173_No	13_10_14_1805_31_502	1	-2.3090	1.615	0.417	0.084	1.80	0.254	0.34	1.84	-0.623	0.143	-0.00500	0.0120	-0.736	0.471	5.427
					10/14/2013 18:06	0917-173_No	13_10_14_1806_32_222	1	-1.743	1.495	0.472	0.085	1.76	0.229	0.41	1.86	-0.539	0.139	0.00000	0.01100	-0.667	0.449	5.27
					10/14/2013 18:07	0917-173_No	13_10_14_1807_33_033	1	-2.020	1.460	0.396	0.079	1.63	0.215	0.301	1.87	-0.670	0.133	-0.00200	0.01000	-0.167	0.437	5.16
					10/14/2013 18:08	0917-173_No	13_10_14_1808_33_783	1	-1.379	1.442	0.448	0.081	1.71	0.212	0.385	1.89	-0.707	0.134	-0.00100	0.01000	-0.14	0.436	5.09
					10/14/2013 18:09	0917-173_No	13_10_14_1809_34_493	1	-2.5640	1.451	0.377	0.082	1.81	0.207	0.334	1.88	-0.533	0.137	-0.00600	0.01000	-0.450	0.450	5.057
					10/14/2013 18:10	0917-173_No	13_10_14_1810_35_313	1	-0.495	1.567	0.487	0.082	1.77	0.221	0.404	1.86	-0.565	0.138	-0.00200	0.01100	-0.044	0.445	5.068
					10/14/2013 18:11	0917-173_No	13_10_14_1811_36_053	1	-1.872	1.485	0.655	0.083	1.81	0.231	0.216	1.87	-0.5750	0.137	0.00200	0.01100	-0.550	0.439	5.14
					10/14/2013 18:12	0917-173_No	13_10_14_1812_36_863	1	-3.440	1.507	0.623	0.082	1.90	0.231	0.151	1.85	-0.5430	0.137	-0.00500	0.01100	-0.5570	0.447	5.151
					10/14/2013 18:13	0917-173_No	13_10_14_1813_37_653	1	-2.238	1.547	0.634	0.083	1.90	0.235	0.136	1.85	-0.565	0.140	-0.00300	0.01100	-0.5750	0.461	5.177
					10/14/2013 18:14	0917-173_No	13_10_14_1814_38_393	1	-3.730	1.513	0.619	0.085	1.99	0.251	0.246	1.84	-0.5130	0.141	-0.00100	0.01200	-0.395	0.459	5.314
					10/14/2013 18:15	0917-173_No	13_10_14_1815_39_133	1	-1.9340	1.600	0.528	0.084	2.04	0.261	0.28	1.82	-0.602	0.142	0.00000	0.0130	-0.24	0.458	5.369
					10/14/2013 18:16	0917-173_No	13_10_14_1816_39_933	1	-3.668	1.593	0.448	0.085	1.92	0.261	0.45	1.83	-0.683	0.142	-0.00300	0.0130	-0.712	0.458	5.354
					10/14/2013 18:17	0917-173_No	13_10_14_1817_40_663	1	-1.2390	1.501	0.547	0.085	1.88	0.255	0.318	1.84	-0.655	0.141	0.00000	0.0120	-0.11	0.454	5.265
					10/14/2013 18:18	0917-173_No	13_10_14_1818_41_463	1	-0.833	1.606	0.529	0.086	1.87	0.244	0.204	1.86	-0.6430	0.144	0.00100	0.01200	-0.613	0.463	5.204
					10/14/2013 18:19	0917-173_No	13_10_14_1819_42_244	1	-0.895	1.548	0.486	0.084	1.79	0.235	0.243	1.85	-0.5880	0.141	0.00000	0.01200	-0.497	0.456	5.158
					10/14/2013 18:20	0917-173_No	13_10_14_1820_42_954	1	-1.859	1.467	0.380	0.083	1.75	0.234	0.385	1.87	-0.5660	0.137	-0.00100	0.01100	-0.02	0.444	5.084
					10/14/2013 18:21	0917-173_No	13_10_14_1821_43_794	1	-3.337	1.440	0.395	0.084	1.66	0.227	0.289	1.88	-0.631	0.137	-0.00400	0.01100	-0.386	0.439	5.042
					10/14/2013 18:22	0917-173_No	13_10_14_1822_44_554	1	-2.421	1.525	0.457	0.084	1.83	0.226	0.242	1.87	-0.687	0.140	-0.00300	0.01100	-0.25	0.455	4.991
					10/14/2013 18:23	0917-173_No	13_10_14_1823_45_304	1	-5.2750	1.499	0.614	0.084	1.77	0.230	0.334	1.87	-0.424	0.139	-0.00900	0.01100	-0.26	0.454	4.976
					10/14/2013 18:24	0917-173_No	13_10_14_1824_46_064	1	-1.096	1.437	0.672	0.083	1.83	0.227	0.379	1.88	-0.4610	0.135	0.00000	0.01100	-0.352	0.431	4.879
					10/14/2013 18:25	0917-173_No	13_10_14_1825_46_864	1	-1.3350	1.475	0.541	0.078	1.88	0.220	0.420	1.87	-0.5520	0.133	-0.00200	0.01000	-0.128	0.426	4.779
					10/14/2013 18:26	0917-173_No	13_10_14_1826_47_634	1	-1.763	1.497	0.524	0.082	1.76	0.220	0.421	1.89	-0.61800	0.136	-0.00400	0.01000	-0.171	0.438	4.718
					10/14/2013 18:27	0917-173_No	13_10_14_1827_48_244	1	-2.462	1.536	0.476	0.083	1.70	0.224	0.418	1.88	-0.660	0.138	-0.00300	0.01000	-0.650	0.448	4.583
					10/14/2013 18:28	0917-173_No	13_10_14_1828_49_064	1	-1.8320	1.515	0.620	0.079	1.65	0.217	0.429	1.90	-0.297	0.133	-0.00500	0.01100	-0.4970	0.436	4.411
					10/14/2013 18:29	0917-173_No	13_10_14_1829_49_814	1	-1.6870	1.448	0.589	0.080	1.57	0.215	0.454	1.89	-0.589	0.133	-0.00300	0.01000	-0.929	0.442	4.31
					10/14/2013 18:30	0917-173_No	13_10_14_1830_50_525	1	-1.444	1.450	0.492	0.082	1.65	0.220	0.452	1.89	-0.5420	0.135	-0.00600	0.01100	-0.132	0.428	4.378
					10/14/2013 18:31	0917-173_No	13_10_14_1831_51_325	1	-3.061	1.459	0.626	0.084	1.78	0.234	0.271	1.86	-0.5280	0.137	0.00100	0.01200	-0.452	0.448	4.454
					10/14/2013 18:32	0917-173_No	13_10_14_1832_52_055	1	-1.255	1.540	0.727	0.085	1.80	0.253	0.390	1.86	-0.5210	0.141	-0.00400	0.0120	-0.380	0.459	4.561
					10/14/2013 18:33	0917-173_No	13_10_14_1833_52_925	1	-2.577	1.627	0.595	0.085	1.86	0.271	0.325	1.83	-0.501	0.143	0.00100	0.0130	-0.421	0.456	4.738
					10/14/2013 18:34	0917-173_No	13_10_14_1834_53_625	1	-1.694	1.543	0.550	0.088	1.98	0.275	0.115	1.84	-0.514	0.144	-0.00200	0.0140	-0.39	0.462	4.93
					10/14/2013 18:35	0917-173_No	13_10_14_1835_54_365	1	-0.777	1.616	0.565	0.086	2.08	0.277	0.33	1.82	-0.426	0.144	-0.00400	0.0130	-0.31	0.470	5.141
					10/14/2013 18:36	0917-173_No	13_10_14_1836_55_185	1	-2.411	1.648	0.624	0.091	2.09	0.283	0.279	1.82	-0.641	0.151	-0.00100	0.0140	-0.973	0.485	5.23
					10/14/2013 18:37	0917-173_No	13_10_14_1837_55_925	1	-2.127	1.580	0.708	0.092	2.07	0.283	0.22	1.82	-0.484	0.150	0.00100	0.0140	-0.640	0.479	5.322
					10/14/2013 18:38	0917-173_No	13_10_14_1838_56_745	1	-3.302	1.570	0.511	0.085	1.96	0.266	0.210	1.84	-0.548	0.142	-0.00300	0.0130	-0.325	0.460	5.318
					10/14/2013 18:39	0917-173_No	13_10_14_1839_57_545	1	-3.672	1.553	0.484	0.085	1.89	0.258	0.200	1.85	-0.525	0.141	0.00000	0.0120	-0.071	0.462	5.269
					10/14/2013 18:40	0917-173_No	13_10_14_1840_58_315	1	-2.633	1.497	0.361	0.088	1.82	0.236	0.310	1.88	-0.5560	0.143	-0.00100	0.01100	-0.171	0.448	5.165
					10/14/2013 18:41	0917-173_No	13_10_14_1841_59_045	1	-2.648	1.468	0.351	0.083	1.87	0.224	0.210	1.88	-0.693	0.137	-0.00700	0.01000	0.01	0.452	5.123
					10/14/2013 18:42	0917-173_No	13_10_14_1842_59_866	1	-1.9610	1.529	0.546	0.082	1.84	0.215	0.130	1.87	-0.400	0.138	-0.00100	0.01000	-1.027	0.445	5.01
					10/14/2013 18:44	0917-173_No	13_10_14_1844_00_576	1	-2.874	1.476	0.430	0.079	1.80	0.207	0.417	1.88	-0.4610	0.132	-0.00400	0.01000	-0.641	0.433	4.921
					10/14/2013 18:45	0917-173_No	13_10_14_1845_01_296	1	-1.758	1.478	0.401	0.082	1.78	0.211	0.348	1.88	-0.503	0.136	-0.00600	0.01000	-0.841	0.435	4.978
					10/14/2013 18:46	0917-173_No	13_10_14_1846_02_146	1	-2.868	1.506	0.382	0.083	1.78	0.217	0.446	1.88	-0.693	0.137	-0.00500	0.01000	-0.055	0.445	4.973
					10/14/2013 18:47	0917-173_No	13_10_14_1847_02_896	1	-3.1710	1.409	0.609	0.081	1.72	0.219	0.340	1.88	-0.520	0.132	-0.00400	0.01100	-0.759	0.428	5.006
					10/14/2013 18:48	0917-173_No	13_10_14_1848_03_616	1	-2.850	1.537	0.655	0.081	1.76	0.223	0.432	1.88	-0.600	0.137	-0.00400	0.01100	-0.712	0.443	5.065
					10/14/2013 18:49	0917-173_No	13_10_14_1849_04_376	1	-0.336	1.474	0.80	0.081	1.73	0.232	0.345	1.88	-0.6570	0.134	-0.00200	0.01100	-0.14	0.437	5.096
					10/14/2013 18:50	0917-173_No	13_10_14_1850_05_206	1	-1.721	1.546	0.86	0.081	1.69	0.230	0.479	1.87	-0.562	0.136	-0.00500	0.01100	-0.663	0.440	5.031
					10/14/2013 18:51	0917-173_No	13_10_14_1851_05_936	1	-0.4160	1.476	0.800	0.079	1.58	0.226	0.508	1.88	-0.681	0.133	0.00100	0.01100	-0.171	0.440	4.996
					10/14/2013 18:52	0917-173_No	13_10_14_1852_06_736	1	-2.118	1.445	0.816	0.077	1.68	0.228	0.457	1.89	-0.590	0.130	-0.00300	0.01100	-0.760	0.423	4.973
					10/14/2013 18:53	0917-173_No	13_10_14_1853_06_456	1	-1.458	1.528	0.725	0.081	1.62	0.226	0.419	1.88	-0.606	0.136	-0.00200	0.01100	-0.25	0.433	5.015
					10/14/2013 18:54	0917-173_No	13_10_14_1854_07_266	1	-3.953	1.510	0.73	0.084	1.69	0.227	0.625	1.89	-0.432	0.139	-0.00500	0.01100	-0.858	0.460	5.044
					10/14/2013 18:55	0917-173_No	13_10_14_1855_07_977	1	-1.111	1.483	0.745	0.082	1.67	0.241	0.570	1.88	-0.550	0.136	-0.00100	0.01200	-0.62	0.443	5.199
					10/14/2013 18:56	0917-173_No	13_10_14_1856_08_787	1	-1.068	1.521	0.659	0.083	1.82	0.255	0.293	1.86	-0.6670	0.139	-0.00300	0.01200	-0.342	0.449	5.346
					10/14/2013 18:57	0917-173_No	13_10_14_1857_09_477	1	-1.763	1.529	0.647	0.087	1.80	0.257	0.528	1.87	-0.596	0.143	-0.00300	0.01200	-0.404	0.453	5.373
			Stop		10/14/2013 18:58	0917-173_No	13_10_14_1858_10_317	1	-1.743	1.540	0.490	0.087	1.88	0.256	0.475	1.85	-0.6040	0.144	-0.00200	0.0120	-0.393	0.462	5.447
					10/14/2013 18:59	0917-173_No	13_10_14_1859_11_037	1	-2.229	1.609	0.476	0.086	1.87	0.261	0.409	1.84	-0.5670	0.146	-0.00300	0.0120	-0.475	0.471	5.461
					10/14/2013 19:00	0917-173_No	13_10_14_1900_11_837	1	-1.6070	1.522	0.410	0.085	1.73	0.233	0.400	1.85	-0.710	0.142	-0.00400	0.01100	-0.701	0.453	5.607
					10/14/2013 19:01	0917-173_No	13_10_14_1901_12_537	1	1.618	0.919	-0.250	0.079	0.426	0.0640	0.541	1.165	-2.549	0.135	-0.00500	0.00300	-1.101	0.333	8.945
					10/14/2013 19:02	0917-173_No	13_10_14_1902_13_297	1	-0.9280	0.886	-0.3920	0.087	0.116	0.0380	0.317	0.424	-3.07	0.147	-0.00200	0.00200	-1.108	0.345	9.508
					10/14/2013 19:23	0917-173_No	13_10_14_1923_47_489	1	-2.2	1.4	0.061	0.071	0.849	1.25	0.0160	0.0870	0.2430	0.118	0.049	0.508	-0.411	0.393	-1.541
					10/14/2013 19:24	0917-173_No	13_10_14_1924_06_009	1	0.5	1.4	0.0300	0.072	0.559	1.33	-0.0990	0.0940	0.085	0.121	0.049	0.536	0.323	0.404	-1.656
					10/14/2013 19:24	0917-173_No	13_10_14_1924_24_509	1	-0.2	1.3	-0.014	0.069	0.296	1.36	-0.0510	0.0910	0.002	0.115	0.045	0.549	-0.530	0.381	-1.722
					10/14/2013 19:24	0917-173_No	13_10_14_1924_43_109	1	-1.5	1.3	-0.017	0.071	0.10	1.39	0.112	0.0920	0.207	0.117	0.055	0.557	0.295	0.381	-1.708
					10/14/2013 19:25	0917-173_No	13_10_14_1925_01_599	1	-4.3	1.1	-0.001	0.071	-0.05	1.39	-0.185	0.0810	0.0620	0.109	0.051	0.562	0.352	0.355	-1.746
					10/14/2013 19:25	0917-173_No	13_10_14_1925_20_119	1	-0.8	1.2	0.1430	0.069	-0.15	1.40	0.133	0.0920	0.045	0.110	0.049	0.561	0.47	0.365	-1.725
					10/14/2013 19:25	0917-173_No	13_10_14_1925_38_729	1	1.0	1.2	-0.2700	0.070	-0.03	1.40	-0.0660	0.0880	0.184	0.113	0.046	0.560	-0.963	0.368	-1.752
					10/14/2013 19:25	0917-173_No	13_10_14_1925_57_229	1	0.5	1.4	-0.0160	0.070	-0.12	1.40	-0.0920	0.0850	0.121	0.119	0.049	0.563	-0.070	0.397	-1.752
					10/14/2013 19:26	0917-173_No	13_10_14_1926_15_809	1	0.8	1.2	-0.088	0.073	-0.13	1.40	-0.0290	0.1040	0.276	0.116	0.042	0.561	-1.34	0.395	-1.749
					10/14/2013 19:26	0917-173_No	13_10_14_1926_34_299	1	1.3	1.4	-0.023	0.075	-0.04	1.40	-0.029	0.0880	0.212	0.125	0.051	0.562	-1.27	0.419	-1.759
					10/14/2013 19:26	0917-173_No	13_10_14_1926_52_849	1	-3.3	1.2	0.03900	0.071	-0.22	1.40	-0.02800	0.0870	0.132	0.114	0.043	0.563	-0.900	0.383	-1.751
					10/14/2013 19:27	0917-173_No	13_10_14_1927_11_399	1	-3.2	1.3	0.0030	0.075	-0.16	1.40	-0.0800	0.0860	0.180	0.118	0.049	0.561	-0.38	0.383	-1.761
					10/14/2013 19:27	0917-173_No	13_10_14_1927_29_919	1	0.7	1.3	-0.129	0.072	-0.16	1.41	0.0660	0.0890	0.049	0.117	0.047	0.560	-0.308	0.387	-1.747
					10/14/2013 19:27	0917-173_No	13_10_14_1927_48_529	1	-0.7	1.4	-0.087	0.070	-0.29	1.41	0.0900	0.0910	0.0640	0.119	0.049	0.561	-1.01	0.410	-1.745
					10/14/2013 19:40	0917-173_No	13_10_14_1940_15_364	1	4.447	2.062	-0.37	0.123	-0.0970	0.0760	-0.1490	0.143	-0.080	0.197	0.00500	0.00400	-0.57	0.62	-0.012
					10/14/2013 19:40	0917-173_No	13_10_14_1940_21_414	1	0.2650	2.291	0.437	0.126	0.037	0.0730	0.139	0.155	0.40	0.209	0.00100	0.00500	1.308	0.68	-0.012
					10/14/2013 19:40	0917-173_No	13_10_14_1940_27_624	1	1.13	2.224	0.050	0.131	-0.1260	0.0750	-0.248	0.147	-0.357	0.211	-0.00400	0.00500	-0.244	0.65	-0.003
					10/14/2013 19:40	0917-173_No	13_10_14_1940_33_844	1	4.1190	2.277	-0.297	0.128	-0.178	0.078	0.350	0.165	-0.208	0.208	-0.01200	0.00600	0.096	0.72	-0.004
					10/14/2013 19:40	0917-173_No	13_10_14_1940_40_084	1	-1.467	2.039	0.246	0.112	0.213	0.0770	0.1600	0.151	0.008	0.184	0.00300	0.00500	0.91	0.62	0.044
					10/14/2013 19:40	0917-173_No	13_10_14_1940_46_324	1	-0.170	2.365	0.044	0.121	-0.096	0.0760	-0.0920	0.172	-0.160	0.204	0.00400	0.00600	-0.87	0.69	-0.005
					10/14/2013 19:40	0917-173_No	13_10_14_1940_52_344	1	3.485	2.153	-0.1870	0.124	0.0860	0.0780	-0.027	0.163	0.082	0.199	0.0040	0.00500	0.597	0.67	0.024
					10/14/2013 19:40	0917-173_No	13_10_14_1940_58_604	1	-0.99	2.230	-0.0330	0.125	-0.02800	0.0760	-0.1360	0.150	0.53	0.203	0.00400	0.00500	-1.41	0.68	-0.009
					10/14/2013 19:41	0917-173_No	13_10_14_1941_04_744	1	0.933	2.221	-0.265	0.129	-0.01	0.0760	-0.105	0.185	-0.129	0.208	-0.00400	0.00600	-1.39	0.69	0.003
					10/14/2013 19:41	0917-173_No	13_10_14_1941_10_954	1	4.983	2.226	0.136	0.119	0.0720	0.080	-0.004	0.170	-0.233	0.196	-0.01	0.00500	0.65	0.67	-0.005
					10/14/2013 19:41	0917-173_No	13_10_14_1941_17_134	1	5.609	2.135	0.184	0.119	-0.071	0.0760	-0.285	0.195	-0.016	0.196	0.00000	0.00400	0.298	0.63	0.005
					10/14/2013 19:41	0917-173_No	13_10_14_1941_23_254	1	2.010	2.124	-0.2420	0.116	0.0860	0.080	0.1390	0.205	-0.051	0.188	0.00800	0.00400	0.84	0.62	0.036
					10/14/2013 19:41	0917-173_No	13_10_14_1941_29_424	1	-0.921	2.088	0.0820	0.134	0.1120	0.0740	-0.0620	0.227	-0.045	0.210	0.00	0.00500	-0.66	0.70	0.004
					10/14/2013 19:41	0917-173_No	13_10_14_1941_35_674	1	-2.117	2.375	-0.270	0.133	0.077	0.081	0.184	0.213	-0.132	0.213	0.00	0.00500	1.018	0.69	0.046
					10/14/2013 19:41	0917-173_No	13_10_14_1941_41_864	1	5.9580	2.229	0.0700	0.135	0.165	0.0770	-0.001	0.240	-0.402	0.213	0.00600	0.00600	-0.352	0.72	0.06
					10/14/2013 19:41	0917-173_No	13_10_14_1941_48_034	1	-3.4130	2.249	0.241	0.129	-0.214	0.0760	0.005	0.247	0.081	0.207	-0.01400	0.00500	1.041	0.69	0.011
					10/14/2013 19:41	0917-173_No	13_10_14_1941_54_154	1	-4.21	2.208	-0.0350	0.128	0.256	0.0760	-0.078	0.253	-0.1520	0.203	-0.00500	0.00500	-1.177	0.67	0.071
					10/14/2013 19:42	0917-173_No	13_10_14_1942_00_404	1	1.648	2.314	0.0160	0.123	0.104	0.0740	0.157	0.268	0.0770	0.200	-0.01000	0.00400	-0.6140	0.68	-0.006
					10/14/2013 19:42	0917-173_No	13_10_14_1942_06_605	1	0.534	2.131	-0.154	0.121	0.150	0.0790	0.0510	0.276	-0.136	0.196	-0.01200	0.00400	1.03	0.66	0.019
					10/14/2013 19:42	0917-173_No	13_10_14_1942_12_795	1	-1.866	2.335	0.309	0.122	-0.120	0.0810	-0.252	0.322	0.220	0.203	-0.01600	0.00400	-0.278	0.68	0.019
					10/14/2013 19:42	0917-173_No	13_10_14_1942_18_965	1	-1.941	2.314	-0.0180	0.131	0.04900	0.0780	0.2230	0.345	-0.014	0.212	-0.00600	0.00500	0.715	0.70	0.029
					10/14/2013 19:42	0917-173_No	13_10_14_1942_25_075	1	2.30	2.353	0.173	0.124	-0.0020	0.080	0.3270	0.308	0.659	0.205	0.00100	0.00500	-1.31	0.66	0.046
					10/14/2013 19:42	0917-173_No	13_10_14_1942_31_265	1	2.044	2.319	0.112	0.128	0.196	0.0790	-0.432	0.319	-0.062	0.208	-0.00100	0.00400	0.96	0.68	-0.039
					10/14/2013 19:42	0917-173_No	13_10_14_1942_37_425	1	1.561	2.219	-0.180	0.132	-0.0560	0.0770	0.1000	0.324	-0.168	0.212	-0.00500	0.00500	0.91	0.69	0.013
					10/14/2013 19:42	0917-173_No	13_10_14_1942_43_715	1	3.049	2.079	0.063	0.135	-0.0240	0.0700	-0.041	0.327	-0.01	0.211	-0.00200	0.00500	-2.97	0.68	0.038
					10/14/2013 19:42	0917-173_No	13_10_14_1942_49_875	1	8.940	2.141	0.0420	0.130	0.0260	0.0820	0.482	0.337	0.11	0.205	-0.00600	0.00500	-0.566	0.67	0.105
					10/14/2013 19:42	0917-173_No	13_10_14_1942_55_975	1	2.017	2.130	-0.449	0.117	0.2340	0.079	0.2750	0.323	-0.463	0.193	-0.00200	0.00500	0.284	0.63	0.05
					10/14/2013 19:43	0917-173_No	13_10_14_1943_02_155	1	-1.885	2.466	0.037	0.133	0.0440	0.097	0.340	0.844	-0.553	0.219	-0.01000	0.00600	-0.05	0.73	-0.087
					10/14/2013 19:43	0917-173_No	13_10_14_1943_08_405	1	0.847	2.534	0.276	0.135	0.2110	0.152	1.785	2.20	0.04	0.338	-0.02200	0.00700	1.00	0.77	0.352
					10/14/2013 19:43	0917-173_No	13_10_14_1943_14_605	1	-3.304	2.556	0.076	0.148	0.0640	0.133	-2.09	1.22	-0.14	0.238	-0.0020	0.00600	-0.60	0.80	-0.353
					10/14/2013 19:43	0917-173_No	13_10_14_1943_20_695	1	-4.503	2.68	0.402	0.152	-0.238	0.123	-0.63	0.94	-0.30	0.25	-0.0040	0.00700	-0.55	0.83	-0.964
					10/14/2013 19:43	0917-173_No	13_10_14_1943_26_895	1	-0.8190	2.39	0.030	0.140	-0.0610	0.146	-0.08	1.94	0.12	0.23	0.0000	0.0070	-0.52	0.77	-1.748
					10/14/2013 19:43	0917-173_No	13_10_14_1943_33_125	1	-5.378	2.47	-0.381	0.141	-0.3450	0.163	2.30	2.6	0.34	0.23	0.0120	0.0070	-0.88	0.76	-2.587
					10/14/2013 19:43	0917-173_No	13_10_14_1943_39_295	1	-4.124	2.83	-0.008	0.156	-0.2100	0.212	5.05	3.4	0.08	0.26	0.0070	0.0080	-1.60	0.85	-3.305
					10/14/2013 19:43	0917-173_No	13_10_14_1943_45_485	1	-4.413	2.75	0.246	0.143	-0.104	0.248	6.6	4.3	0.42	0.24	-0.0010	0.0090	-3.93	0.83	-4.161
					10/14/2013 19:43	0917-173_No	13_10_14_1943_51_575	1	-3.410	2.88	0.261	0.158	-0.244	0.279	8.9	4.6	0.75	0.26	0.0330	0.0100	-1.74	0.86	-4.761
					10/14/2013 19:43	0917-173_No	13_10_14_1943_57_765	1	-4.97	2.73	0.2990	0.159	-0.394	0.261	8.0	4.6	1.03	0.26	0.0130	0.0110	-2.67	0.87	-4.401
					10/14/2013 19:44	0917-173_No	13_10_14_1944_03_955	1	-5.191	2.79	-0.073	0.157	-0.204	0.249	8.4	4.2	0.11	0.26	0.0230	0.0100	-2.84	0.89	-4.341
					10/14/2013 19:44	0917-173_No	13_10_14_1944_10_235	1	-2.540	2.59	0.154	0.152	-0.4650	0.230	7.0	3.8	0.30	0.25	0.0300	0.0090	-2.46	0.84	-4.178
					10/14/2013 19:44	0917-173_No	13_10_14_1944_16_435	1	-1.34	2.69	-0.076	0.154	-0.190	0.213	5.73	3.8	0.67	0.25	0.0100	0.0090	-1.36	0.83	-3.885
					10/14/2013 19:44	0917-173_No	13_10_14_1944_22_425	1	-1.77	2.85	0.154	0.143	-0.065	0.229	4.95	4.1	0.71	0.25	0.0180	0.0100	-4.29	0.82	-3.518
					10/14/2013 19:44	0917-173_No	13_10_14_1944_28_715	1	3.704	2.70	-0.0260	0.145	-0.3590	0.214	5.0	4.0	0.43	0.24	0.0170	0.0070	-2.66	0.80	-3.607
					10/14/2013 19:44	0917-173_No	13_10_14_1944_34_905	1	-7.0010	2.70	0.217	0.151	-0.031	0.190	4.75	3.6	0.23	0.25	0.0090	0.0100	-1.45	0.85	-3.378
					10/14/2013 19:44	0917-173_No	13_10_14_1944_41_095	1	-8.854	2.79	-0.272	0.137	-0.2000	0.185	3.67	3.4	0.15	0.24	0.0060	0.0090	-1.39	0.83	-2.974
					10/14/2013 19:44	0917-173_No	13_10_14_1944_47_295	1	-0.812	2.61	0.003	0.152	-0.2290	0.164	3.89	2.9	0.14	0.24	0.0020	0.0090	-2.42	0.79	-2.503
					10/14/2013 19:44	0917-173_No	13_10_14_1944_53_375	1	-7.394	2.53	-0.201	0.150	-0.1400	0.159	2.89	2.54	0.09	0.24	0.0010	0.0080	-1.15	0.80	-2.398
					10/14/2013 19:44	0917-173_No	13_10_14_1944_59_555	1	-2.24	2.74	-0.091	0.139	-0.080	0.143	2.48	2.05	-0.45	0.24	0.0020	0.0070	0.14	0.81	-1.913
					10/14/2013 19:45	0917-173_No	13_10_14_1945_05_845	1	-6.603	2.33	0.333	0.148	0.081	0.125	0.36	1.62	0.29	0.24	-0.0020	0.0060	-2.05	0.72	-1.549
					10/14/2013 19:45	0917-173_No	13_10_14_1945_12_035	1	-5.64	2.49	0.307	0.154	-0.2030	0.111	-0.17	1.67	0.03	0.24	0.0090	0.0060	-0.98	0.83	-1.289
					10/14/2013 19:45	0917-173_No	13_10_14_1945_18_215	1	-7.049	2.61	0.072	0.132	0.1440	0.111	-1.39	1.29	-0.08	0.23	-0.0110	0.0070	0.23	0.75	-0.94
					10/14/2013 19:45	0917-173_No	13_10_14_1945_24_285	1	-3.63	2.702	0.159	0.145	-0.02400	0.106	1.56	1.30	-0.28	0.24	0.0080	0.00600	0.25	0.80	-0.753
					10/14/2013 19:45	0917-173_No	13_10_14_1945_30_475	1	-1.902	2.68	-0.187	0.142	-0.110	0.108	-0.87	1.12	-0.61	0.24	-0.0070	0.00600	0.448	0.80	-0.534
					10/14/2013 19:45	0917-173_No	13_10_14_1945_36_655	1	-3.972	2.35	-0.079	0.135	0.014	0.113	-1.48	0.99	-0.41	0.22	-0.0210	0.00500	0.59	0.73	-0.358
					10/14/2013 19:45	0917-173_No	13_10_14_1945_42_915	1	-3.9390	2.532	-0.020	0.127	0.106	0.111	-1.59	0.99	-0.22	0.22	-0.0020	0.00500	-0.32	0.73	-0.226
					10/14/2013 19:45	0917-173_No	13_10_14_1945_49_085	1	-1.136	2.409	0.280	0.146	-0.129	0.115	-1.69	1.12	-0.30	0.24	-0.0220	0.00600	0.729	0.78	0.044
					10/14/2013 19:45	0917-173_No	13_10_14_1945_55_165	1	-1.495	2.479	0.196	0.147	0.185	0.124	-3.227	1.43	-0.16	0.24	-0.0060	0.00500	1.44	0.77	0.33
					10/14/2013 19:46	0917-173_No	13_10_14_1946_01_355	1	-0.421	2.578	-0.128	0.135	0.343	0.126	-2.23	1.59	0.05	0.23	-0.03000	0.00600	-1.08	0.76	0.419
					10/14/2013 19:46	0917-173_No	13_10_14_1946_07_635	1	-5.4560	2.444	0.165	0.143	-0.0030	0.130	-2.36	1.55	-0.455	0.23	-0.02500	0.00600	1.14	0.77	0.531
					10/14/2013 19:46	0917-173_No	13_10_14_1946_13_805	1	1.352	2.346	0.086	0.137	-0.734	0.172	1.587	2.76	0.67	0.36	-0.0020	0.00600	-4.91	1.19	0.637
					10/14/2013 19:46	0917-173_No	13_10_14_1946_19_995	1	-8.900	3.942	0.1250	0.136	0.0560	0.134	1.705	2.56	0.42	0.36	-0.0280	0.00600	-4.78	1.23	0.733
					10/14/2013 19:46	0917-173_No	13_10_14_1946_26_075	1	-15.235	3.883	-0.4010	0.212	0.0680	0.143	1.713	2.15	0.53	0.35	-0.0120	0.00700	0.91	0.73	0.866
					10/14/2013 19:46	0917-173_No	13_10_14_1946_32_285	1	2.593	2.390	0.1950	0.137	0.1300	0.141	2.48	1.86	0.44	0.34	-0.0180	0.00600	1.28	0.74	0.874
					10/14/2013 19:46	0917-173_No	13_10_14_1946_38_465	1	-7.634	3.594	0.087	0.134	-0.571	0.144	0.748	1.78	0.19	0.33	-0.01800	0.00700	0.360	0.75	1.052
					10/14/2013 19:46	0917-173_No	13_10_14_1946_44_745	1	0.257	2.487	0.519	0.138	-0.480	0.147	1.687	1.46	0.46	0.33	-0.0160	0.00600	-4.04500	1.09	1.135
					10/14/2013 19:46	0917-173_No	13_10_14_1946_50_775	1	-7.487	3.458	0.2930	0.137	0.1830	0.150	1.008	1.24	0.30	0.314	-0.0160	0.00700	-3.68	1.06	1.183
					10/14/2013 19:46	0917-173_No	13_10_14_1946_57_045	1	-6.56	3.453	0.330	0.133	0.2690	0.155	1.619	1.17	0.319	0.323	-0.02000	0.00600	1.936	0.73	1.206
					10/14/2013 19:47	0917-173_No	13_10_14_1947_03_195	1	-9.73	3.485	-0.282	0.185	0.023	0.160	1.881	0.96	-0.570	0.23	-0.0200	0.00600	-3.584	1.03	1.249
					10/14/2013 19:47	0917-173_No	13_10_14_1947_09_385	1	-5.562	3.694	-0.14200	0.186	-0.1440	0.131	1.481	0.84	-0.108	0.314	-0.0060	0.00800	-2.54	1.06	-0.853
					10/14/2013 19:47	0917-173_No	13_10_14_1947_15_565	1	-6.4080	3.578	0.1290	0.197	-0.068	0.131	0.910	0.76	0.648	0.323	-0.01500	0.00800	-2.99	1.09	-0.92
					10/14/2013 19:47	0917-173_No	13_10_14_1947_21_725	1	-7.197	3.291	0.118	0.186	-0.1870	0.127	0.887	0.59	0.06	0.302	-0.01900	0.00600	-2.487	1.02	-0.67

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 19:47	0917-173_No	13_10_14_1947_27_905	1	-8.639	3.176	0.022	0.183	-0.355	0.130	0.512	0.54	-0.213	0.293	-0.0170	0.00900	-0.98	0.99	-0.625
					10/14/2013 19:47	0917-173_No	13_10_14_1947_34_085	1	-11.444	3.318	0.431	0.176	-0.104	0.132	0.936	0.52	0.672	0.296	-0.0130	0.00800	-2.76	0.99	-0.575
					10/14/2013 19:47	0917-173_No	13_10_14_1947_40_265	1	-8.246	3.061	0.029	0.171	-0.210	0.138	0.568	0.55	0.285	0.283	-0.01300	0.00700	-1.7610	0.92	-0.516
					10/14/2013 19:47	0917-173_No	13_10_14_1947_46_545	1	-10.506	3.032	0.277	0.174	-0.436	0.128	0.928	0.60	0.048	0.283	-0.01600	0.00600	-1.124	0.92	-0.339
					10/14/2013 19:47	0917-173_No	13_10_14_1947_52_605	1	-3.35	3.050	-0.144	0.163	-0.24000	0.134	0.911	0.68	-0.125	0.270	-0.01500	0.00700	-1.24	0.91	-0.311
					10/14/2013 19:47	0917-173_No	13_10_14_1947_58_785	1	-10.881	3.043	-0.2030	0.183	-0.2160	0.132	0.888	0.79	-0.0520	0.290	-0.0200	0.00700	-1.05	0.94	-0.256
					10/14/2013 19:48	0917-173_No	13_10_14_1948_05_005	1	-0.962	3.060	-0.271	0.166	0.068	0.123	0.790	0.76	0.17	0.271	-0.02000	0.00800	-2.157	0.91	-0.209
					10/14/2013 19:48	0917-173_No	13_10_14_1948_11_245	1	-7.4170	2.824	-0.032	0.166	-0.12100	0.122	0.847	0.90	0.264	0.267	-0.03000	0.00700	-1.10	0.88	-0.206
					10/14/2013 19:48	0917-173_No	13_10_14_1948_17_425	1	-13.58	3.087	-0.068	0.159	-0.241	0.131	0.543	0.86	-0.041	0.270	-0.02700	0.00700	-2.61	0.91	-0.133
					10/14/2013 19:48	0917-173_No	13_10_14_1948_23_505	1	-6.95	3.035	0.03500	0.158	-0.265	0.123	0.396	0.88	-0.026	0.265	-0.00600	0.00800	-1.342	0.86	-0.153
					10/14/2013 19:48	0917-173_No	13_10_14_1948_29_645	1	-3.703	2.970	-0.122	0.159	-0.1320	0.130	0.521	0.92	0.115	0.264	-0.01400	0.00700	-0.49	0.90	-0.126
					10/14/2013 19:48	0917-173_No	13_10_14_1948_35_905	1	-3.716	2.858	0.176	0.164	-0.1740	0.130	0.51	0.96	-0.009	0.265	-0.02700	0.00700	-0.59	0.87	-0.054
					10/14/2013 19:48	0917-173_No	13_10_14_1948_42_075	1	-6.552	3.149	0.042	0.165	-0.0830	0.126	0.766	0.96	0.12	0.276	-0.02400	0.00700	-3.747	0.92	-0.069
					10/14/2013 19:48	0917-173_No	13_10_14_1948_48_245	1	-9.227	2.858	0.071	0.163	-0.2110	0.128	0.926	0.99	0.35	0.263	-0.01400	0.00800	-3.92	0.88	-0.063
					10/14/2013 19:48	0917-173_No	13_10_14_1948_54_325	1	-8.880	2.860	-0.131	0.161	-0.1490	0.132	0.974	1.01	-0.368	0.262	-0.02	0.00700	0.219	0.88	-0.091
					10/14/2013 19:49	0917-173_No	13_10_14_1949_00_595	1	-13.537	2.982	-0.130	0.166	-0.0100	0.123	0.988	0.96	-0.18	0.276	-0.00400	0.00700	-0.544	0.92	-0.109
					10/14/2013 19:49	0917-173_No	13_10_14_1949_06_775	1	-4.407	2.918	-0.332	0.153	-0.251	0.131	0.737	0.99	-0.358	0.258	-0.02900	0.00700	-1.803	0.85	-0.088
					10/14/2013 19:49	0917-173_No	13_10_14_1949_12_935	1	0.168	2.996	-0.116	0.161	-0.14700	0.131	0.954	1.10	-0.0630	0.265	-0.01500	0.00700	-1.6090	0.90	-0.042
					10/14/2013 19:49	0917-173_No	13_10_14_1949_19_205	1	-9.029	2.778	-0.059	0.166	-0.205	0.125	1.291	1.11	0.303	0.261	-0.02300	0.00700	-1.627	0.82	-0.004
					10/14/2013 19:49	0917-173_No	13_10_14_1949_25_285	1	-9.095	2.961	0.036	0.163	-0.131	0.126	0.14	1.07	-0.193	0.269	-0.02500	0.00700	-0.77	0.90	0.084
					10/14/2013 19:49	0917-173_No	13_10_14_1949_31_435	1	-2.17	2.760	0.148	0.151	-0.0980	0.131	1.152	1.16	-0.312	0.250	-0.02600	0.00700	-0.87	0.84	0.036
					10/14/2013 19:49	0917-173_No	13_10_14_1949_37_715	1	0.895	2.785	0.145	0.162	-0.121	0.127	1.030	1.23	-0.395	0.261	-0.02600	0.00700	-1.148	0.88	0.13
					10/14/2013 19:49	0917-173_No	13_10_14_1949_43_905	1	-8.421	2.743	-0.032	0.147	-0.092	0.128	0.614	1.28	0.320	0.242	-0.01400	0.00700	-1.01	0.80	0.061
					10/14/2013 19:49	0917-173_No	13_10_14_1949_50_095	1	-3.305	2.752	0.031	0.147	-0.308	0.126	0.576	1.31	0.48	0.243	-0.01500	0.00600	-2.42	0.82	0.184
					10/14/2013 19:49	0917-173_No	13_10_14_1949_56_175	1	-4.954	2.916	-0.00400	0.150	-0.0390	0.131	1.008	1.408	-0.581	0.250	-0.00400	0.00600	-1.08	0.84	0.2
					10/14/2013 19:50	0917-173_No	13_10_14_1950_02_365	1	-5.7450	2.825	-0.363	0.145	0.0810	0.119	0.48	1.460	-0.363	0.243	-0.02200	0.00600	0.850	0.83	0.112
					10/14/2013 19:50	0917-173_No	13_10_14_1950_08_595	1	-3.461	2.643	-0.065	0.148	0.0540	0.122	1.104	1.469	0.022	0.240	-0.01900	0.00800	-1.576	0.82	0.198
					10/14/2013 19:50	0917-173_No	13_10_14_1950_14_785	1	-2.42	2.618	-0.003	0.141	-0.1250	0.125	0.990	1.484	-0.182	0.229	-0.00900	0.00700	-1.405	0.78	0.212
					10/14/2013 19:50	0917-173_No	13_10_14_1950_20_855	1	-0.753	2.505	0.170	0.149	0.03200	0.131	0.795	1.517	0.375	0.235	-0.01700	0.00600	-0.427	0.75	0.189
					10/14/2013 19:50	0917-173_No	13_10_14_1950_27_035	1	-4.200	2.713	-0.202	0.154	-0.095	0.128	1.163	1.485	-0.179	0.251	-0.01800	0.00700	0.71	0.85	0.254
					10/14/2013 19:50	0917-173_No	13_10_14_1950_33_235	1	1.35	2.687	-0.405	0.141	-0.213	0.125	0.443	1.444	-0.2940	0.235	-0.01800	0.00700	-0.914	0.80	0.166
					10/14/2013 19:50	0917-173_No	13_10_14_1950_39_435	1	-7.872	2.584	0.126	0.159	0.116	0.123	0.973	1.469	0.127	0.253	-0.02	0.00700	-1.485	0.83	0.194
					10/14/2013 19:50	0917-173_No	13_10_14_1950_45_635	1	-0.0130	2.689	0.348	0.164	-0.278	0.128	0.380	1.459	-0.12	0.261	-0.01400	0.00600	-0.582	0.84	0.292
					10/14/2013 19:50	0917-173_No	13_10_14_1950_51_825	1	-2.81	2.947	-0.084	0.152	0.1230	0.133	0.862	1.439	-0.0340	0.254	-0.0070	0.00700	-0.935	0.85	0.236
					10/14/2013 19:50	0917-173_No	13_10_14_1950_58_005	1	-0.951	2.473	-0.0110	0.152	-0.220	0.134	0.803	1.450	-0.05	0.237	-0.02	0.00600	-1.101	0.80	0.186
					10/14/2013 19:51	0917-173_No	13_10_14_1951_04_185	1	-4.316	2.759	0.1850	0.147	-0.0930	0.125	0.702	1.458	-0.024	0.245	-0.02300	0.00600	-2.22	0.84	0.193
					10/14/2013 19:51	0917-173_No	13_10_14_1951_10_375	1	-6.30	2.769	0.0150	0.154	-0.1020	0.117	0.839	1.453	-0.378	0.253	-0.01900	0.00600	-0.75	0.83	0.223
					10/14/2013 19:51	0917-173_No	13_10_14_1951_16_615	1	-3.050	2.641	0.150	0.145	0.0200	0.124	1.135	1.485	-0.372	0.238	-0.00600	0.00600	0.054	0.83	0.264
					10/14/2013 19:51	0917-173_No	13_10_14_1951_22_685	1	-7.443	2.695	-0.0550	0.155	-0.202	0.128	1.118	1.467	0.099	0.253	-0.02500	0.00600	-0.89	0.86	0.24
					10/14/2013 19:51	0917-173_No	13_10_14_1951_28_855	1	-6.099	2.707	-0.1880	0.145	-0.1420	0.128	0.34	1.477	-0.30	0.242	-0.01000	0.00600	-0.16	0.81	0.232
					10/14/2013 19:51	0917-173_No	13_10_14_1951_35_135	1	-8.294	2.604	-0.00400	0.138	-0.096	0.133	0.576	1.472	-0.181	0.228	-0.01200	0.00700	-0.23	0.76	0.162
					10/14/2013 19:51	0917-173_No	13_10_14_1951_41_325	1	-7.731	2.727	0.120	0.144	-0.1400	0.124	0.887	1.525	-0.06	0.241	-0.01900	0.00600	-1.36	0.80	0.235
					10/14/2013 19:51	0917-173_No	13_10_14_1951_47_515	1	-7.691	2.859	0.1360	0.145	-0.059	0.130	0.423	1.429	0.11	0.245	-0.00100	0.00600	-1.710	0.83	0.265
					10/14/2013 19:51	0917-173_No	13_10_14_1951_53_595	1	-7.499	2.492	0.0290	0.140	-0.064	0.119	0.802	1.500	0.061	0.231	-0.02	0.00700	-0.63	0.76	0.277
					10/14/2013 19:51	0917-173_No	13_10_14_1951_59_795	1	-2.463	2.698	-0.106	0.149	0.005	0.128	0.362	1.532	-0.3550	0.242	-0.01500	0.00600	-0.77	0.81	0.256
					10/14/2013 19:52	0917-173_No	13_10_14_1952_05_975	1	-9.380	2.765	0.348	0.145	0.122	0.128	0.647	1.533	-0.199	0.242	-0.02900	0.00600	0.92	0.79	0.219
					10/14/2013 19:52	0917-173_No	13_10_14_1952_12_155	1	-6.059	2.684	-0.0400	0.149	-0.1980	0.124	0.809	1.551	0.036	0.243	-0.0290	0.00600	-1.50	0.81	0.243
					10/14/2013 19:52	0917-173_No	13_10_14_1952_18_405	1	-10.86	2.564	-0.1360	0.146	-0.171	0.122	0.776	1.562	0.285	0.241	-0.00900	0.00600	-1.54	0.83	0.264
					10/14/2013 19:52	0917-173_No	13_10_14_1952_24_465	1	-2.492	2.512	0.188	0.148	-0.102	0.134	0.739	1.555	0.208	0.238	-0.01600	0.00700	-1.71	0.78	0.273
					10/14/2013 19:52	0917-173_No	13_10_14_1952_30_645	1	-7.2470	2.751	0.139	0.145	-0.0320	0.125	0.971	1.511	-0.242	0.243	-0.01500	0.00600	-0.64	0.82	0.278
					10/14/2013 19:52	0917-173_No	13_10_14_1952_36_925	1	-1.710	2.488	0.1460	0.143	-0.1280	0.126	0.659	1.579	-0.05	0.231	-0.02400	0.00700	-1.19	0.72	0.25
					10/14/2013 19:52	0917-173_No	13_10_14_1952_43_035	1	-1.388	2.526	0.139	0.146	-0.01800	0.127	0.533	1.616	0.436	0.234	-0.00800	0.00600	-0.144	0.76	0.281
					10/14/2013 19:52	0917-173_No	13_10_14_1952_49_235	1	-5.809	2.440	-0.382	0.137	-0.0750	0.127	0.712	1.542	-0.27	0.223	-0.01400	0.00700	-0.840	0.74	0.281
Data	MDC	1	Start		10/14/2013 19:53	0917-173_No	13_10_14_1953_39_775	1	-3.4330	1.602	0.0220	0.089	-0.0790	0.1040	0.722	1.611	0.027	0.145	-0.01	0.00400	-1.363	0.484	0.305
					10/14/2013 19:54	0917-173_No	13_10_14_1954_40_496	1	-4.0250	1.613	0.094	0.090	-0.0490	0.1040	0.622	1.614	-0.0570	0.147	-0.01700	0.00400	-1.002	0.488	0.313
					10/14/2013 19:55	0917-173_No	13_10_14_1955_41_326	1	-2.8390	1.508	0.0150	0.088	-0.0510	0.1070	0.704	1.626	-0.203	0.141	-0.02	0.00400	-0.785	0.466	0.312
					10/14/2013 19:56	0917-173_No	13_10_14_1956_42_036	1	-2.759	1.715	-0.051	0.091	-0.108	0.1050	0.532	1.610	0.010	0.151	-0.01800	0.00400	-1.704	0.504	0.314
					10/14/2013 19:57	0917-173_No	13_10_14_1957_42_786	1	-3.414	1.606	0.1100	0.089	-0.0620	0.1020	0.624	1.627	-0.066	0.145	-0.02	0.00400	-1.086	0.490	0.353
					10/14/2013 19:58	0917-173_No	13_10_14_1958_43_596	1	-1.8930	1.577	0.0410	0.090	-0.0060	0.1040	0.683	1.603	-0.104	0.145	-0.01800	0.00500	-0.833	0.472	0.337
			Stop		10/14/2013 19:59	0917-173_No	13_10_14_1959_44_366	1	-2.201	1.565	0.059	0.089	0.0200	0.1030	0.663	1.617	-0.1730	0.145	-0.01500	0.00500	-0.6420	0.476	0.314
					10/15/2013 7:51	0917-173_No	13_10_15_0751_28_631	1	1.5	1.2	-0.141	0.070	0.02	1.29	-0.09400	0.0780	0.072	0.113	0.050	0.521	-0.462	0.363	-1.569
					10/15/2013 7:51	0917-173_No	13_10_15_0751_47_251	1	0.7	1.3	0.007	0.071	-0.15	1.35	0.0880	0.0860	0.127	0.119	0.046	0.543	-0.310	0.399	-1.662
					10/15/2013 7:52	0917-173_No	13_10_15_0752_05_741	1	0.1	1.3	0.0870	0.074	-0.25	1.38	0.125	0.0860	0.083	0.121	0.055	0.553	0.362	0.391	-1.682
					10/15/2013 7:52	0917-173_No	13_10_15_0752_24_331	1	1.0	1.2	-0.07500	0.067	-0.37	1.40	0.0770	0.0860	-0.053	0.111	0.050	0.557	0.37	0.359	-1.711
					10/15/2013 7:52	0917-173_No	13_10_15_0752_42_811	1	3.2	1.3	-0.074	0.072	-0.29	1.39	-0.09600	0.0860	-0.117	0.116	0.040	0.560	-0.02	0.400	-1.725
					10/15/2013 7:53	0917-173_No	13_10_15_0753_01_311	1	1.8	1.1	0.149	0.070	-0.25	1.40	-0.1170	0.0870	0.06500	0.110	0.053	0.563	-0.041	0.361	-1.703
					10/15/2013 7:53	0917-173_No	13_10_15_0753_19_911	1	1.7	1.2	0.062	0.074	-0.31	1.40	-0.142	0.1020	0.143	0.118	0.050	0.560	0.232	0.382	-1.702
					10/15/2013 7:53	0917-173_No	13_10_15_0753_38_392	1	-3.3	1.4	0.0040	0.068	-0.35	1.40	-0.1080	0.0830	0.038	0.116	0.052	0.558	-0.356	0.390	-1.728
					10/15/2013 7:53	0917-173_No	13_10_15_0753_56_902	1	-3.6	1.3	-0.087	0.072	-0.42	1.41	0.0020	0.0960	-0.019	0.117	0.045	0.561	1.19	0.380	-1.697
					10/15/2013 7:54	0917-173_No	13_10_15_0754_15_522	1	1.2	1.3	0.040	0.072	-0.35	1.41	0.1190	0.0900	0.0370	0.119	0.051	0.560	0.043	0.399	-1.718
					10/15/2013 7:54	0917-173_No	13_10_15_0754_34_022	1	0.9	1.3	-0.043	0.071	-0.38	1.40	-0.1490	0.0810	0.108	0.116	0.042	0.564	-0.540	0.390	-1.708
					10/15/2013 7:54	0917-173_No	13_10_15_0754_52_562	1	-0.4	1.3	0.007	0.072	-0.37	1.40	-0.299	0.0870	0.332	0.115	0.040	0.561	0.051	0.400	-1.712
					10/15/2013 7:55	0917-173_No	13_10_15_0755_11_052	1	0.2	1.3	-0.040	0.063	-0.37	1.41	0.049	0.0930	0.050	0.107	0.054	0.562	0.2840	0.357	-1.702
					10/15/2013 7:55	0917-173_No	13_10_15_0755_29_642	1	-2.7	1.2	-0.131	0.075	-0.37	1.40	0.082	0.0900	-0.015	0.117	0.047	0.563	0.122	0.369	-1.72
					10/15/2013 7:55	0917-173_No	13_10_15_0755_48_232	1	-1.2	1.3	-0.097	0.071	-0.42	1.40	-0.234	0.0870	-0.051	0.118	0.044	0.561	0.37	0.378	-1.723
					10/15/2013 7:56	0917-173_No	13_10_15_0756_06_712	1	-1.8	1.2	0.036	0.071	-0.28	1.40	-0.0290	0.0860	0.112	0.114	0.049	0.560	0.017	0.360	-1.725
					10/15/2013 7:56	0917-173_No	13_10_15_0756_25_332	1	-0.4	1.2	0.080	0.073	-0.42	1.41	-0.097	0.0790	0.206	0.115	0.052	0.561	0.693	0.368	-1.699
					10/15/2013 7:56	0917-173_No	13_10_15_0756_43_842	1	-0.5	1.4	-0.075	0.071	-0.39	1.40	0.093	0.0880	-0.004	0.117	0.049	0.560	1.126	0.386	-1.693
					10/15/2013 7:57	0917-173_No	13_10_15_0757_02_292	1	-0.4	1.2	-0.027	0.076	-0.43	1.40	-0.1480	0.0840	-0.117	0.119	0.045	0.559	0.42	0.380	-1.689
					10/15/2013 7:57	0917-173_No	13_10_15_0757_20_952	1	1.2	1.2	-0.058	0.074	-0.38	1.40	0.105	0.0840	0.223	0.116	0.048	0.560	-0.144	0.375	-1.7
					10/15/2013 9:06	0917-173_No	13_10_15_0906_30_678	1	1.714	0.943	0.026	0.059	1.51	0.0640	0.565	1.372	-0.640	0.097	0.00	0.00200	-0.34	0.303	4.28
					10/15/2013 9:07	0917-173_No	13_10_15_0907_30_378	1	-0.299	0.948	-0.011	0.056	1.79	0.0650	0.433	1.402	-0.487	0.096	-0.00200	0.00200	-0.859	0.296	4.68
					10/15/2013 9:08	0917-173_No	13_10_15_0908_31_128	1	1.116	0.974	0.039	0.057	1.65	0.0670	0.460	1.392	-0.440	0.097	-0.00600	0.00200	-0.65	0.311	4.371
					10/15/2013 9:09	0917-173_No	13_10_15_0909_31_938	1	2.403	0.964	0.121	0.055	1.64	0.0670	0.444	1.388	-0.392	0.093	-0.00100	0.00300	-0.716	0.297	4.082
					10/15/2013 9:10	0917-173_No	13_10_15_0910_32_668	1	1.597	0.917	0.13700	0.057	1.97	0.0690	0.422	1.399	-0.5050	0.095	-0.00200	0.00200	-0.274	0.289	4.663
Data	Run	4	Start	A	10/15/2013 9:11	0917-173_No	13_10_15_0911_33_428	1	-0.250	0.943	0.022	0.059	2.29	0.0720	0.465	1.410	-0.664	0.099	-0.00300	0.00300	0.15	0.305	5.378
					10/15/2013 9:12	0917-173_No	13_10_15_0912_34_178	1	1.913	1.033	0.075	0.061	2.11	0.0710	0.462	1.409	-0.5710	0.101	-0.00400	0.00200	-0.692	0.318	4.557
					10/15/2013 9:13	0917-173_No	13_10_15_0913_34_978	1	-1.855	0.958	0.028	0.056	2.16	0.0710	0.598	1.418	-0.377	0.099	0.00	0.00200	-0.94	0.294	4.55
					10/15/2013 9:14	0917-173_No	13_10_15_0914_35_708	1	-0.4180	0.908	0.046	0.058	2.04	0.0690	0.420	1.405	-0.535	0.094	0.00000	0.00200	-0.38	0.286	4.187
					10/15/2013 9:15	0917-173_No	13_10_15_0915_36_448	1	0.742	0.944	0.0520	0.054	2.05	0.0710	0.372	1.408	-0.382	0.095	-0.00500	0.00200	-0.74	0.279	4.127
					10/15/2013 9:16	0917-173_No	13_10_15_0916_37_198	1	1.5230	1.010	-0.033	0.062	2.27	0.0700	0.465	1.420	-0.497	0.102	0.00	0.00200	-0.42	0.315	4.707
					10/15/2013 9:17	0917-173_No	13_10_15_0917_37_999	1	0.5550	0.993	0.0590	0.056	2.21	0.0710	0.402	1.424	-0.426	0.096	-0.00300	0.00200	-0.714	0.290	4.757
					10/15/2013 9:18	0917-173_No	13_10_15_0918_38_749	1	-0.688	1.023	0.078	0.057	2.32	0.0710	0.484	1.413	-0.612	0.099	-0.00300	0.00200	-0.63	0.316	4.826
					10/15/2013 9:19	0917-173_No	13_10_15_0919_39_499	1	1.077	0.903	0.0280	0.053	2.38	0.0700	0.580	1.428	-0.439	0.093	-0.00300	0.00200	-0.574	0.277	4.788
					10/15/2013 9:20	0917-173_No	13_10_15_0920_40_209	1	-1.049	0.970	0.031	0.058	2.32	0.0700	0.6320	1.429	-0.502	0.099	-0.00600	0.00200	-0.47	0.294	4.635
					10/15/2013 9:21	0917-173_No	13_10_15_0921_41_019	1	1.332	1.055	0.0100	0.061	2.31	0.0730	0.428	1.427	-0.5170	0.103	-0.00200	0.00200	-0.476	0.314	4.502
					10/15/2013 9:22	0917-173_No	13_10_15_0922_41_779	1	0.2650	1.041	0.116	0.058	2.41	0.0710	0.485	1.434	-0.6650	0.102	-0.00400	0.00200	-0.08	0.312	5.192
					10/15/2013 9:23	0917-173_No	13_10_15_0923_42_539	1	0.8580	0.981	-0.0160	0.056	2.30	0.0710	0.321	1.427	-0.618	0.099	-0.00100	0.00200	-0.34	0.298	5.202
					10/15/2013 9:24	0917-173_No	13_10_15_0924_43_249	1	-1.031	0.893	0.098	0.059	2.04	0.0690	0.440	1.424	-0.66300	0.096	0.00000	0.00200	0.29	0.303	4.393
					10/15/2013 9:25	0917-173_No	13_10_15_0925_44_059	1	1.245	0.946	0.0120	0.058	2.08	0.0680	0.479	1.401	-0.504	0.097	0.00000	0.00200	-0.43	0.293	4.33
					10/15/2013 9:26	0917-173_No	13_10_15_0926_44_759	1	-0.699	0.957	-0.035	0.058	2.16	0.0680	0.469	1.422	-0.570	0.095	0.00	0.00200	-0.48	0.293	4.503
					10/15/2013 9:27	0917-173_No	13_10_15_0927_45_529	1	-1.370	0.984	-0.068	0.059	2.12	0.0710	0.525	1.408	-0.480	0.098	-0.00200	0.00200	-0.90	0.306	4.509
					10/15/2013 9:28	0917-173_No	13_10_15_0928_46_300	1	1.453	0.938	0.018	0.056	2.09	0.0690	0.385	1.418	-0.527	0.096	-0.00200	0.00200	-0.44	0.300	4.276
					10/15/2013 9:29	0917-173_No	13_10_15_0929_47_100	1	1.4570	0.973	-0.02	0.054	2.14	0.0690	0.458	1.402	-0.548	0.092	0.00000	0.00200	-0.10	0.294	4.21
					10/15/2013 9:30	0917-173_No	13_10_15_0930_47_900	1	-0.202	0.988	0.040	0.059	2.04	0.0670	0.370	1.409	-0.5370	0.098	-0.00400	0.00200	-0.085	0.304	3.968
					10/15/2013 9:31	0917-173_No	13_10_15_0931_48_670	1	1.054	0.864	0.093	0.058	2.30	0.0690	0.520	1.407	-0.564	0.094	0.00200	0.00300	-0.15	0.278	4.446
					10/15/2013 9:32	0917-173_No	13_10_15_0932_49_420	1	0.7170	0.973	-0.002	0.056	2.37	0.0710	0.478	1.415	-0.549	0.096	-0.00200	0.00200	-0.18	0.306	4.464
					10/15/2013 9:33	0917-173_No	13_10_15_0933_50_130	1	-0.266	0.930	0.119	0.055	2.45	0.0700	0.406	1.418	-0.644	0.092	-0.00500	0.00200	-0.45	0.280	4.419
					10/15/2013 9:34	0917-173_No	13_10_15_0934_50_930	1	2.5910	0.982	0.0000	0.057	2.16	0.0710	0.455	1.415	-0.513	0.096	-0.00400	0.00200	-0.557	0.295	3.725
					10/15/2013 9:35	0917-173_No	13_10_15_0935_51_710	1	-0.363	0.991	0.056	0.057	2.26	0.0700	0.430	1.413	-0.582	0.097	0.00100	0.00300	-0.32	0.301	3.841
					10/15/2013 9:36	0917-173_No	13_10_15_0936_52_510	1	-1.0260	0.905	0.086	0.055	2.10	0.0700	0.405	1.402	-0.419	0.093	-0.00200	0.00200	-0.29	0.300	3.616
					10/15/2013 9:37	0917-173_No	13_10_15_0937_53_310	1	0.439	0.935	0.038	0.054	2.04	0.0700	0.305	1.404	-0.438	0.090	-0.00100	0.00200	-0.62	0.287	3.461
					10/15/2013 9:38	0917-173_No	13_10_15_0938_54_040	1	0.490	0.930	-0.0440	0.0550	2.20	0.0700	0.396	1.405	-0.544	0.093	-0.00200	0.00200	-0.339	0.289	4.027
					10/15/2013 9:39	0917-173_No	13_10_15_0939_54_760	1	-0.4350	0.854	0.067	0.0520	2.25	0.0700	0.333	1.421	-0.595	0.087	-0.00500	0.00200	-0.129	0.273	4.158
					10/15/2013 9:40	0917-173_No	13_10_15_0940_55_571	1	-0.7650	0.979	0.054	0.056	2.07	0.0700	0.367	1.411	-0.415	0.095	-0.00200	0.00200	-0.63	0.297	3.797
					10/15/2013 9:41	0917-173_No	13_10_15_0941_56_301	1	0.839	0.993	0.1030	0.057	2.06	0.0680	0.471	1.417	-0.468	0.097	-0.00200	0.00200	-0.67	0.300	3.805
					10/15/2013 9:42	0917-173_No	13_10_15_0942_57_111	1	-0.574	0.965	-0.0210	0.056	2.23	0.0700	0.525	1.417	-0.599	0.093	-0.00700	0.00200	-0.10	0.291	3.869
					10/15/2013 9:43	0917-173_No	13_10_15_0943_57_921	1	1.2260	0.918	0.0680	0.056	2.14	0.0720	0.418	1.414	-0.640	0.092	-0.00100	0.00200	-0.26	0.277	3.764
					10/15/2013 9:44	0917-173_No	13_10_15_0944_58_691	1	0.398	0.851	0.0190	0.054	2.06	0.0680	0.427	1.408	-0.409	0.090	-0.00200	0.00200	-0.16	0.263	3.794
					10/15/2013 9:45	0917-173_No	13_10_15_0945_59_421	1	0.544	0.955	0.055	0.054	2.12	0.0690	0.5370	1.417	-0.317	0.094	-0.00200	0.00200	-0.55	0.296	3.739
					10/15/2013 9:47	0917-173_No	13_10_15_0947_00_071	1	0.842	0.965	0.0410	0.055	2.10	0.0690	0.513	1.405	-0.415	0.093	-0.00100	0.00200	-0.844	0.291	3.677
					10/15/2013 9:48	0917-173_No	13_10_15_0948_00_871	1	-0.2700	0.936	0.034	0.059	2.32	0.0710	0.386	1.412	-0.459	0.096	-0.00500	0.00200	-0.618	0.296	4.112
					10/15/2013 9:49	0917-173_No	13_10_15_0949_01_631	1	0.546	1.011	0.014	0.059	2.27	0.0700	0.475	1.428	-0.639	0.099	-0.00900	0.00200	-0.45	0.310	4.277
					10/15/2013 9:50	0917-173_No	13_10_15_0950_02_421	1	0.4090	0.928	-0.039	0.054	2.22	0.0700	0.446	1.428	-0.594	0.092	0.00	0.00200	-0.05	0.286	4.131
					10/15/2013 9:51	0917-173_No	13_10_15_0951_03_231	1	0.1350	0.961	0.035	0.058	2.21	0.0720	0.420	1.429	-0.448	0.100	-0.00300	0.00200	0.04	0.301	4.279
					10/15/2013 9:52	0917-173_No	13_10_15_0952_03_891	1	0.265	0.963	0.0020	0.053	2.45	0.0720	0.340	1.428	-0.5650	0.093	-0.00400	0.00200	-0.19	0.291	4.593
					10/15/2013 9:53	0917-173_No	13_10_15_0953_04_722	1	2.2530	0.999	0.0400	0.060	2.50	0.0710	0.378	1.443	-0.605	0.103	-0.00300	0.00200	-0.44	0.310	5.119
					10/15/2013 9:54	0917-173_No	13_10_15_0954_05_522	1	1.065	0.933	0.019	0.056	2.19	0.0740	0.417	1.432	-0.597	0.096	-0.00200	0.00200	-0.66	0.284	4.258
					10/15/2013 9:55	0917-173_No	13_10_15_0955_06_272	1	0.475	0.938	0.086	0.056	2.29	0.0700	0.406	1.437	-0.559	0.096	-0.00300	0.00200	-0.15	0.301	4.395
					10/15/2013 9:56	0917-173_No	13_10_15_0956_06_992	1	-0.906	0.943	0.169	0.056	2.14	0.0680	0.478	1.427	-0.397	0.098	-0.00700	0.00200	-0.67	0.295	4.018
					10/15/2013 9:57	0917-173_No	13_10_15_0957_07_812	1	-0.3440	0.987	0.026	0.058	2.26	0.0730	0.423	1.422	-0.495	0.099	-0.00500	0.00200	-0.930	0.302	4.369
					10/15/2013 9:58	0917-173_No	13_10_15_0958_08_512	1	0.2210	0.877	0.00300	0.056	2.32	0.0730	0.467	1.431	-0.679	0.092	-0.00400	0.00200	-0.43	0.270	4.695
					10/15/2013 9:59	0917-173_No	13_10_15_0959_09_312	1	1.098	0.955	-0.0400	0.056	2.50	0.0710	0.446	1.428	-0.589	0.097	-0.00400	0.00300	0.01	0.293	4.692
					10/15/2013 10:00	0917-173_No	13_10_15_1000_10_052	1	0.636	0.969	0.048	0.054	2.54	0.0750	0.488	1.442	-0.635	0.095	0.00	0.00300	-0.12	0.285	4.787
					10/15/2013 10:01	0917-173_No	13_10_15_1001_10_862	1	1.116	0.954	0.089	0.054	2.54	0.0740	0.501	1.451	-0.628	0.096	-0.00400	0.00200	-0.67	0.305	4.665
					10/15/2013 10:02	0917-173_No	13_10_15_1002_11_672	1	-0.773	0.970	-0.011	0.059	2.48	0.0750	0.380	1.440	-0.658	0.099	-0.00500	0.00300	-0.24	0.312	4.56
					10/15/2013 10:03	0917-173_No	13_10_15_1003_12_372	1	-0.417	0.972	0.052	0.060	2.38	0.0730	0.347	1.445	-0.636	0.099	-0.00400	0.00200	-0.507	0.301	4.37
					10/15/2013 10:04	0917-173_No	13_10_15_1004_13_182	1	1.784	0.954	0.0400	0.057	2.44	0.0740	0.393	1.433	-0.558	0.096	-0.00400	0.00200	-0.842	0.295	4.501
					10/15/2013 10:05	0917-173_No	13_10_15_1005_13_993	1	-1.378	0.981	0.0110	0.055	2.46	0.0750	0.309	1.431	-0.589	0.096	0.00000	0.00200	-0.37	0.302	4.337
					10/15/2013 10:06	0917-173_No	13_10_15_1006_14_753	1	0.258	0.981	-0.006	0.060	2.20	0.0710	0.425	1.429	-0.463	0.098	-0.00100	0.00200	-0.205	0.305	4.094
					10/15/2013 10:07	0917-173_No	13_10_15_1007_15_483	1	0.368	0.927	0.038	0.054	2.14	0.0720	0.498	1.429	-0.459	0.092	-0.00400	0.00200	-0.470	0.286	3.854
					10/15/2013 10:08	0917-173_No	13_10_15_1008_16_293	1	-1.2380	1.005	0.037	0.057	2.33	0.0710	0.497	1.421	-0.487	0.098	-0.00300	0.00200	-0.62	0.305	4.234
					10/15/2013 10:09	0917-173_No	13_10_15_1009_17_143	1	0.406	0.935	-0.1100	0.054	2.31	0.0700	0.458	1.427	-0.596	0.093	-0.00400	0.00200	-0.61	0.291	4.094
					10/15/2013 10:10	0917-173_No	13_10_15_1010_17_863	1	-0.790	0.978	-0.007	0.056	2.22	0.0700	0.451	1.404	-0.610	0.096	-0.00600	0.00200	-0.37	0.295	4.178
			Stop		10/15/2013 10:11	0917-173_No	13_10_15_1011_18_623	1	-0.413	0.871	-0.072	0.056	0.245	0.0330	0.1090	0.352	-1.1170	0.094	-0.00200	0.00200	-0.643	0.273	3.729
					10/15/2013 10:12	0917-173_No	13_10_15_1012_19_383	1	-1.487	0.756	-0.0620	0.054	0.064	0.0320	0.0360	0.0930	-1.242	0.087	-0.00300	0.00200	-0.29	0.253	3.541
					10/15/2013 10:13	0917-173_No	13_10_15_1013_20_163	1	0.332	0.837	-0.2490	0.056	0.0430	0.0290	-0.0040	0.0750	-1.336	0.092	-0.00200	0.00200	-0.445	0.257	3.521
					10/15/2013 10:14	0917-173_No	13_10_15_1014_20_973	1	-1.687	0.840	-0.015	0.054	0.093	0.0310	-0.1630	0.1390	-1.101	0.087	-0.00400	0.00100	-0.43	0.266	3.177
					10/15/2013 10:15	0917-173_No	13_10_15_1015_21_773	1	0.525	0.879	0.0610	0.049	0.182	0.0290	0.0310	0.1390	-0.193	0.081	0.00000	0.00200	-0.655	0.260	1

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 10:16	0917-173_No	13_10_15_1016_22_594	1	-0.483	0.882	-0.0110	0.048	0.115	0.0290	-0.0160	0.0700	-0.033	0.080	0.00	0.00100	-0.200	0.266	0.379
					10/15/2013 10:17	0917-173_No	13_10_15_1017_23_324	1	-0.6000	0.760	-0.0140	0.046	0.132	0.0280	0.0270	0.0620	0.113	0.074	-0.00500	0.00200	-0.736	0.240	0.323
					10/15/2013 10:18	0917-173_No	13_10_15_1018_24_144	1	0.843	0.896	0.0390	0.054	1.91	0.0550	0.252	0.963	-0.390	0.087	0.00100	0.00200	-0.334	0.284	3.298
					10/15/2013 10:19	0917-173_No	13_10_15_1019_23_844	1	1.006	1.033	0.017	0.0560	2.57	0.0770	0.339	1.424	-0.652	0.099	-0.00300	0.00200	-0.608	0.296	4.898
					10/15/2013 10:20	0917-173_No	13_10_15_1020_24_554	1	-1.4110	0.897	0.025	0.057	2.62	0.0770	0.169	1.451	-0.7880	0.096	-0.00600	0.00200	0.13	0.293	5.197
					10/15/2013 10:21	0917-173_No	13_10_15_1021_25_404	1	-1.2330	1.011	0.0660	0.057	2.66	0.0750	0.396	1.449	-0.642	0.099	-0.00200	0.00200	-0.43	0.305	5.63
Data	Run	5	Start	A	10/15/2013 10:22	0917-173_No	13_10_15_1022_26_154	1	-0.951	0.921	-0.007	0.059	2.56	0.0740	0.416	1.451	-0.762	0.099	-0.00100	0.00200	-0.47	0.288	4.913
					10/15/2013 10:23	0917-173_No	13_10_15_1023_26_864	1	1.244	0.909	0.044	0.055	2.63	0.0760	0.362	1.452	-0.557	0.095	-0.00100	0.00200	-0.37	0.280	5.014
					10/15/2013 10:24	0917-173_No	13_10_15_1024_27_684	1	-0.5600	0.984	0.165	0.055	2.61	0.0770	0.309	1.448	-0.625	0.096	-0.00200	0.00300	-0.93	0.288	4.841
					10/15/2013 10:25	0917-173_No	13_10_15_1025_28_404	1	0.027	0.974	0.086	0.060	2.51	0.0760	0.385	1.450	-0.556	0.101	-0.00700	0.00200	0.13	0.302	4.495
					10/15/2013 10:26	0917-173_No	13_10_15_1026_29_214	1	0.527	1.030	-0.040	0.054	2.35	0.0740	0.328	1.444	-0.460	0.093	-0.00300	0.00300	-0.488	0.291	4.301
					10/15/2013 10:27	0917-173_No	13_10_15_1027_30_044	1	0.131	0.910	0.056	0.054	2.25	0.0700	0.354	1.438	-0.576	0.092	-0.00200	0.00200	-0.55	0.267	4.17
					10/15/2013 10:28	0917-173_No	13_10_15_1028_30_805	1	-0.0030	0.973	0.1150	0.058	2.33	0.0730	0.353	1.433	-0.566	0.095	-0.00200	0.00200	-0.233	0.309	4.208
					10/15/2013 10:29	0917-173_No	13_10_15_1029_31_375	1	-0.047	0.992	0.1200	0.057	2.39	0.0740	0.370	1.442	-0.605	0.097	-0.00600	0.00200	-0.638	0.297	4.532
					10/15/2013 10:30	0917-173_No	13_10_15_1030_32_205	1	-0.976	0.970	0.103	0.061	2.49	0.0720	0.396	1.445	-0.571	0.102	-0.00300	0.00200	-0.65	0.309	4.61
					10/15/2013 10:31	0917-173_No	13_10_15_1031_32_965	1	-1.281	0.914	0.106	0.056	2.55	0.0740	0.242	1.446	-0.597	0.096	-0.00300	0.00200	-0.29	0.296	4.703
					10/15/2013 10:32	0917-173_No	13_10_15_1032_33_755	1	0.584	0.917	0.0720	0.053	2.63	0.0740	0.297	1.447	-0.594	0.093	-0.00700	0.00300	-0.49	0.281	4.867
					10/15/2013 10:33	0917-173_No	13_10_15_1033_34_495	1	0.140	0.925	0.036	0.062	2.76	0.0760	0.394	1.459	-0.565	0.103	-0.00100	0.00200	-0.39	0.297	5.204
					10/15/2013 10:34	0917-173_No	13_10_15_1034_35_205	1	-1.376	0.964	-0.0620	0.059	2.85	0.0780	0.236	1.465	-0.643	0.101	-0.00200	0.00300	-0.06	0.295	5.44
					10/15/2013 10:35	0917-173_No	13_10_15_1035_35_975	1	0.261	0.917	-0.040	0.061	2.85	0.0770	0.350	1.474	-0.691	0.101	-0.00400	0.00200	0.18	0.287	5.289
					10/15/2013 10:36	0917-173_No	13_10_15_1036_36_815	1	0.039	0.942	0.0500	0.055	2.87	0.0780	0.298	1.470	-0.7240	0.096	-0.00400	0.00200	0.13	0.286	5.311
					10/15/2013 10:37	0917-173_No	13_10_15_1037_37_575	1	1.10900	1.012	0.011	0.056	2.64	0.0760	0.369	1.464	-0.450	0.097	-0.00200	0.00200	-0.68	0.300	4.76
					10/15/2013 10:38	0917-173_No	13_10_15_1038_38_255	1	0.378	0.963	0.0320	0.058	2.69	0.0750	0.463	1.463	-0.677	0.097	-0.00400	0.00200	-0.59	0.300	4.902
					10/15/2013 10:39	0917-173_No	13_10_15_1039_39_115	1	-0.7340	0.979	0.035	0.056	2.80	0.0780	0.442	1.467	-0.729	0.100	0.00000	0.00300	-0.29	0.295	5.228
					10/15/2013 10:40	0917-173_No	13_10_15_1040_39_786	1	0.392	1.016	0.079	0.057	2.75	0.0740	0.355	1.469	-0.672	0.100	-0.00600	0.00200	-0.72	0.305	5.218
					10/15/2013 10:41	0917-173_No	13_10_15_1041_40_576	1	0.502	0.966	-0.044	0.059	2.49	0.0760	0.398	1.462	-0.592	0.100	-0.00300	0.00200	-0.08	0.309	4.723
					10/15/2013 10:42	0917-173_No	13_10_15_1042_41_326	1	0.6400	1.010	0.029	0.057	2.39	0.0710	0.347	1.461	-0.560	0.098	0.00000	0.00200	-0.43	0.298	4.576
					10/15/2013 10:43	0917-173_No	13_10_15_1043_42_126	1	0.3730	0.912	0.067	0.059	2.33	0.0710	0.480	1.453	-0.6460	0.097	-0.00200	0.00200	-0.30	0.307	4.296
					10/15/2013 10:44	0917-173_No	13_10_15_1044_42_866	1	1.055	0.918	0.0520	0.056	2.19	0.0690	0.428	1.447	-0.541	0.093	-0.00400	0.00200	-0.766	0.279	3.874
					10/15/2013 10:45	0917-173_No	13_10_15_1045_43_686	1	-2.620	0.922	0.015	0.056	2.26	0.0740	0.437	1.452	-0.632	0.095	-0.00200	0.00200	-0.495	0.286	4.201
					10/15/2013 10:46	0917-173_No	13_10_15_1046_44_456	1	-0.115	0.897	0.053	0.058	2.22	0.0710	0.488	1.426	-0.480	0.097	-0.00400	0.00200	-0.510	0.302	4.135
					10/15/2013 10:47	0917-173_No	13_10_15_1047_45_156	1	0.406	0.958	0.01	0.055	2.12	0.0680	0.518	1.429	-0.540	0.094	-0.00500	0.00200	-0.57	0.291	3.85
					10/15/2013 10:48	0917-173_No	13_10_15_1048_45_966	1	0.613	0.942	-0.010	0.057	2.03	0.0680	0.425	1.417	-0.573	0.096	-0.00500	0.00200	-0.59	0.293	4.128
					10/15/2013 10:49	0917-173_No	13_10_15_1049_46_776	1	-0.017	0.902	0.043	0.053	1.94	0.0680	0.6500	1.426	-0.564	0.092	-0.00100	0.00200	-0.55	0.276	4.397
					10/15/2013 10:50	0917-173_No	13_10_15_1050_47_546	1	-1.2150	0.872	-0.0090	0.053	1.97	0.0710	0.304	1.414	-0.639	0.092	-0.00600	0.00200	-0.47	0.278	4.725
					10/15/2013 10:51	0917-173_No	13_10_15_1051_48_286	1	-0.317	0.920	0.074	0.058	1.99	0.0670	0.441	1.430	-0.676	0.098	-0.00500	0.00200	-0.25	0.287	5.132
					10/15/2013 10:52	0917-173_No	13_10_15_1052_49_107	1	0.302	1.028	0.120	0.055	1.70	0.0660	0.481	1.417	-0.597	0.097	-0.00200	0.00200	-0.40	0.300	5.025
					10/15/2013 10:53	0917-173_No	13_10_15_1053_49_787	1	0.993	0.917	-0.024	0.055	1.76	0.0680	0.412	1.411	-0.662	0.094	-0.00600	0.00200	-0.43	0.278	5.484
					10/15/2013 10:54	0917-173_No	13_10_15_1054_50_637	1	-1.842	0.947	-0.021	0.056	2.00	0.0700	0.491	1.430	-0.751	0.098	-0.00300	0.00200	-0.13	0.294	6.397
					10/15/2013 10:55	0917-173_No	13_10_15_1055_51_347	1	0.575	1.044	-0.0190	0.057	2.07	0.0730	0.450	1.437	-0.950	0.105	-0.00300	0.00200	-0.32	0.311	7.17
					10/15/2013 10:56	0917-173_No	13_10_15_1056_52_137	1	1.342	0.957	0.057	0.060	1.95	0.0690	0.439	1.445	-0.822	0.102	-0.00500	0.00200	-0.63	0.302	6.619
					10/15/2013 10:57	0917-173_No	13_10_15_1057_52_947	1	0.7490	1.004	0.0400	0.059	1.92	0.0720	0.470	1.438	-0.925	0.106	-0.00500	0.00200	0.16	0.319	7.073
					10/15/2013 10:58	0917-173_No	13_10_15_1058_53_697	1	-1.359	0.995	0.0730	0.058	2.12	0.0700	0.429	1.446	-0.892	0.104	-0.00800	0.00200	-0.36	0.298	7.297
					10/15/2013 10:59	0917-173_No	13_10_15_1059_54_417	1	0.3120	0.912	0.028	0.056	2.05	0.0690	0.502	1.452	-0.779	0.100	-0.00500	0.00200	-0.37	0.295	7.053
					10/15/2013 11:00	0917-173_No	13_10_15_1100_55_187	1	0.624	0.950	-0.129	0.053	2.24	0.0730	0.445	1.463	-0.9700	0.096	-0.00400	0.00200	-0.23	0.289	6.743
					10/15/2013 11:01	0917-173_No	13_10_15_1101_55_987	1	0.711	0.919	-0.0180	0.0540	2.28	0.0720	0.499	1.461	-0.803	0.097	-0.00200	0.00200	-0.45	0.272	6.578
					10/15/2013 11:02	0917-173_No	13_10_15_1102_56_697	1	-1.0300	0.952	-0.0440	0.057	2.21	0.0680	0.522	1.456	-0.672	0.100	0.00200	0.00200	-0.76	0.297	5.747
					10/15/2013 11:03	0917-173_No	13_10_15_1103_57_478	1	-1.054	0.948	0.045	0.059	2.40	0.0700	0.502	1.460	-0.827	0.102	-0.00200	0.00200	-0.53	0.294	6.111
					10/15/2013 11:04	0917-173_No	13_10_15_1104_58_198	1	2.315	0.955	-0.042	0.059	2.53	0.0740	0.334	1.473	-0.7990	0.104	-0.00300	0.00200	0.12	0.296	6.176
					10/15/2013 11:05	0917-173_No	13_10_15_1105_59_018	1	0.456	1.022	0.0120	0.057	2.26	0.0720	0.339	1.467	-0.858	0.104	-0.00100	0.00200	-0.30	0.305	5.702
					10/15/2013 11:06	0917-173_No	13_10_15_1106_59_828	1	-0.50700	0.912	-0.0190	0.055	2.07	0.0710	0.503	1.451	-0.635	0.091	-0.00400	0.00200	-0.19	0.281	4.668
					10/15/2013 11:08	0917-173_No	13_10_15_1108_00_548	1	1.791	0.982	-0.0070	0.054	1.95	0.0680	0.484	1.441	-0.555	0.095	-0.00400	0.00200	-0.59	0.290	4.455
					10/15/2013 11:09	0917-173_No	13_10_15_1109_01_358	1	-0.328	0.976	0.0120	0.053	1.89	0.0680	0.432	1.427	-0.613	0.092	-0.00300	0.00200	-0.58	0.288	4.047
					10/15/2013 11:10	0917-173_No	13_10_15_1110_02_068	1	-0.809	1.023	0.0230	0.059	1.83	0.0680	0.524	1.436	-0.479	0.097	-0.00500	0.00200	-0.586	0.304	3.857
					10/15/2013 11:11	0917-173_No	13_10_15_1111_02_698	1	-0.055	0.978	0.051	0.054	2.09	0.0670	0.545	1.433	-0.451	0.095	-0.00500	0.00200	-0.54	0.289	4.394
					10/15/2013 11:12	0917-173_No	13_10_15_1112_03_558	1	-1.010	0.944	0.125	0.058	2.10	0.0700	0.434	1.434	-0.563	0.095	-0.00300	0.00200	-0.19	0.293	4.471
					10/15/2013 11:13	0917-173_No	13_10_15_1113_04_308	1	-0.510	0.986	0.054	0.056	2.02	0.0680	0.421	1.434	-0.473	0.096	-0.00100	0.00200	-0.54	0.307	4.185
					10/15/2013 11:14	0917-173_No	13_10_15_1114_05_028	1	0.296	0.943	0.052	0.058	2.09	0.0660	0.353	1.427	-0.619	0.098	-0.00200	0.00200	-0.445	0.305	4.084
					10/15/2013 11:15	0917-173_No	13_10_15_1115_05_778	1	-0.8230	0.988	0.005	0.055	2.08	0.0690	0.558	1.427	-0.662	0.094	-0.00400	0.00300	-0.10	0.294	3.975
					10/15/2013 11:16	0917-173_No	13_10_15_1116_06_589	1	-0.06400	0.972	0.011	0.055	2.22	0.0690	0.600	1.444	-0.639	0.094	-0.00100	0.00300	-0.40	0.290	4.289
					10/15/2013 11:17	0917-173_No	13_10_15_1117_07_339	1	-1.068	0.918	-0.0290	0.057	2.36	0.0730	0.546	1.461	-0.524	0.096	-0.00300	0.00300	-0.806	0.291	4.684
					10/15/2013 11:18	0917-173_No	13_10_15_1118_08_079	1	0.624	0.908	0.083	0.059	2.40	0.0720	0.485	1.460	-0.502	0.097	-0.00400	0.00200	-0.63	0.304	4.95
					10/15/2013 11:19	0917-173_No	13_10_15_1119_08_799	1	1.167	0.893	0.0750	0.058	2.25	0.0720	0.426	1.449	-0.696	0.095	-0.00400	0.00200	0.05	0.298	4.381
					10/15/2013 11:20	0917-173_No	13_10_15_1120_09_639	1	-2.3340	0.949	0.0060	0.056	2.12	0.0720	0.539	1.458	-0.492	0.097	-0.00800	0.00200	-0.71	0.289	4.262
					10/15/2013 11:21	0917-173_No	13_10_15_1121_10_369	1	1.019	0.880	0.055	0.056	2.17	0.0690	0.495	1.449	-0.601	0.093	-0.00400	0.00200	-1.068	0.281	4.228
			Stop		10/15/2013 11:22	0917-173_No	13_10_15_1122_11_139	1	-0.068	0.957	-0.002	0.0530	1.42	0.0540	0.4110	1.117	-0.693	0.091	-0.00500	0.00200	-0.53	0.293	3.643
					10/15/2013 11:23	0917-173_No	13_10_15_1123_11_899	1	-0.101	0.801	-0.066	0.054	0.129	0.0290	0.0200	0.177	-1.170	0.087	0.00000	0.00200	-0.853	0.258	3.467
					10/15/2013 11:24	0917-173_No	13_10_15_1124_12_709	1	-0.8710	0.862	-0.0670	0.055	0.0200	0.0310	-0.078	0.0850	-1.266	0.091	0.00200	0.00200	-0.350	0.267	3.394
					10/15/2013 11:25	0917-173_No	13_10_15_1125_13_419	1	-1.754	0.837	-0.076	0.052	0.078	0.0290	-0.0160	0.0710	-1.127	0.087	-0.00200	0.00200	-0.656	0.258	3.357
					10/15/2013 11:26	0917-173_No	13_10_15_1126_14_229	1	-1.463	0.814	-0.0580	0.055	0.0510	0.0300	-0.0760	0.0670	-1.182	0.089	0.00	0.00200	-0.344	0.269	3.373
					10/15/2013 11:27	0917-173_No	13_10_15_1127_15_039	1	1.111	0.798	0.076	0.052	0.0990	0.0340	0.2420	0.468	-0.838	0.084	-0.00200	0.00200	-0.406	0.261	3.038
					10/15/2013 11:28	0917-173_No	13_10_15_1128_15_740	1	0.3020	1.013	0.0720	0.050	0.1290	0.0500	0.4310	1.104	-0.373	0.086	-0.00100	0.00200	-0.277	0.290	2.056
					10/15/2013 11:29	0917-173_No	13_10_15_1129_16_560	1	-0.5950	0.926	0.0490	0.054	0.181	0.0510	0.365	1.181	-0.256	0.092	0.00000	0.00200	-0.55	0.282	4.432
					10/15/2013 11:30	0917-173_No	13_10_15_1130_17_280	1	-0.166	0.891	0.188	0.055	0.504	0.0540	0.535	1.211	-0.58	0.108	0.00000	0.00200	-0.66	0.276	10.343
					10/15/2013 11:31	0917-173_No	13_10_15_1131_18_090	1	-0.655	0.927	0.473	0.078	1.67	0.067	0.284	1.375	-1.58	0.242	-0.0030	0.00200	-1.05	0.299	35.805
					10/15/2013 11:32	0917-173_No	13_10_15_1132_18_840	1	2.85500	0.880	0.097	0.0550	0.318	0.0510	0.280	1.167	-0.48	0.098	-0.00300	0.00200	-1.06	0.277	7.419
					10/15/2013 11:33	0917-173_No	13_10_15_1133_19_640	1	0.753	0.853	0.143	0.054	0.0870	0.0490	0.5450	1.112	-0.095	0.086	-0.00400	0.00200	-0.826	0.278	1.36
					10/15/2013 11:34	0917-173_No	13_10_15_1134_20_440	1	0.3780	0.898	0.035	0.056	1.55	0.0640	0.363	1.330	-0.440	0.093	-0.00600	0.00200	-0.65	0.289	3.253
					10/15/2013 11:35	0917-173_No	13_10_15_1135_21_150	1	0.0130	0.992	0.145	0.056	2.30	0.0700	0.504	1.439	-0.524	0.096	-0.00500	0.00200	-0.32	0.310	4.298
					10/15/2013 11:36	0917-173_No	13_10_15_1136_21_900	1	1.4030	0.948	0.0260	0.059	2.43	0.0690	0.493	1.441	-0.674	0.100	-0.00600	0.00200	-0.57	0.306	4.742
					10/15/2013 11:37	0917-173_No	13_10_15_1137_22_650	1	-0.409	1.029	0.0430	0.0550	2.35	0.0700	0.380	1.441	-0.617	0.097	-0.00400	0.00200	-0.31	0.297	4.393
					10/15/2013 11:38	0917-173_No	13_10_15_1138_23_470	1	1.778	0.920	0.0070	0.059	2.31	0.0700	0.366	1.445	-0.486	0.097	-0.00500	0.00200	-0.25	0.297	4.186
					10/15/2013 11:39	0917-173_No	13_10_15_1139_24_240	1	0.2980	0.906	0.117	0.060	2.33	0.0700	0.436	1.439	-0.591	0.099	-0.00200	0.00200	-0.66	0.300	4.428
Data	Run	6	Start	A	10/15/2013 11:40	0917-173_No	13_10_15_1140_25_001	1	-0.583	1.014	0.058	0.055	2.35	0.0700	0.389	1.448	-0.500	0.097	-0.00400	0.00200	-1.17	0.298	4.648
					10/15/2013 11:41	0917-173_No	13_10_15_1141_25_741	1	-2.109	0.974	0.054	0.059	2.32	0.0710	0.471	1.437	-0.548	0.099	-0.00400	0.00200	-0.41	0.313	4.538
					10/15/2013 11:42	0917-173_No	13_10_15_1142_26_581	1	0.907	0.919	0.077	0.054	2.40	0.0710	0.518	1.445	-0.720	0.094	-0.00700	0.00200	-0.25	0.285	4.825
					10/15/2013 11:43	0917-173_No	13_10_15_1143_27_311	1	-0.688	0.956	-0.039	0.056	2.52	0.0710	0.401	1.450	-0.580	0.096	-0.00100	0.00200	-0.71	0.300	5.12
					10/15/2013 11:44	0917-173_No	13_10_15_1144_28_151	1	0.334	0.960	0.055	0.060	2.38	0.0710	0.6380	1.457	-0.629	0.100	-0.00600	0.00200	-0.46	0.300	4.808
					10/15/2013 11:45	0917-173_No	13_10_15_1145_28_901	1	0.134	0.958	0.094	0.058	2.52	0.0700	0.414	1.439	-0.627	0.098	-0.00400	0.00200	-0.806	0.297	5.278
					10/15/2013 11:46	0917-173_No	13_10_15_1146_29_691	1	-0.302	0.962	-0.0570	0.058	2.47	0.0710	0.424	1.453	-0.765	0.102	-0.00100	0.00200	-0.40	0.295	6.247
					10/15/2013 11:47	0917-173_No	13_10_15_1147_30_411	1	0.360	0.937	0.008	0.057	2.25	0.0700	0.537	1.449	-0.700	0.099	-0.00500	0.00200	-0.85	0.286	5.89
					10/15/2013 11:48	0917-173_No	13_10_15_1148_31_121	1	-0.341	0.952	0.151	0.061	2.35	0.0680	0.543	1.463	-0.692	0.104	-0.00900	0.00200	-0.55	0.310	6.589
					10/15/2013 11:49	0917-173_No	13_10_15_1149_31_961	1	0.533	0.999	0.064	0.058	2.33	0.0700	0.547	1.451	-0.851	0.104	-0.00200	0.00200	-0.31	0.307	6.323
					10/15/2013 11:50	0917-173_No	13_10_15_1150_32_751	1	-2.0480	0.945	0.113	0.059	2.25	0.0700	0.496	1.445	-0.705	0.101	-0.00300	0.00200	-0.96	0.300	5.999
					10/15/2013 11:51	0917-173_No	13_10_15_1151_33_422	1	0.249	1.034	-0.0680	0.057	2.27	0.0710	0.485	1.439	-0.815	0.103	-0.00300	0.00200	-0.35	0.304	6.611
					10/15/2013 11:52	0917-173_No	13_10_15_1152_34_122	1	1.372	0.933	0.001	0.058	2.56	0.0690	0.303	1.464	-0.825	0.103	-0.01000	0.00200	-0.61	0.290	6.793
					10/15/2013 11:53	0917-173_No	13_10_15_1153_34_872	1	2.024	0.997	0.059	0.059	2.60	0.0710	0.553	1.459	-0.682	0.105	-0.00500	0.00200	-1.04	0.295	6.561
					10/15/2013 11:54	0917-173_No	13_10_15_1154_35_682	1	0.3980	1.004	0.0020	0.058	2.51	0.0730	0.484	1.467	-0.821	0.103	-0.00200	0.00200	-0.37	0.304	6.703
					10/15/2013 11:55	0917-173_No	13_10_15_1155_36_432	1	0.0480	0.910	0.070	0.055	2.60	0.0710	0.524	1.462	-0.7840	0.101	-0.00300	0.00300	0.12	0.292	7.391
					10/15/2013 11:56	0917-173_No	13_10_15_1156_37_172	1	1.336	0.952	0.0570	0.059	2.47	0.0720	0.536	1.464	-0.752	0.104	-0.00100	0.00200	-0.28	0.294	7.257
					10/15/2013 11:57	0917-173_No	13_10_15_1157_37_932	1	-0.466	0.938	0.0490	0.059	2.58	0.0730	0.557	1.469	-0.831	0.106	-0.00300	0.00200	-0.34	0.305	7.716
					10/15/2013 11:58	0917-173_No	13_10_15_1158_38_682	1	-1.496	0.953	0.0240	0.060	2.79	0.0730	0.5710	1.474	-0.9440	0.109	-0.00400	0.00200	-0.36	0.291	8.709
					10/15/2013 11:59	0917-173_No	13_10_15_1159_39_342	1	0.449	0.987	-0.052	0.061	2.69	0.0730	0.571	1.483	-0.783	0.111	-0.00500	0.00300	-0.28	0.303	8.707
					10/15/2013 12:00	0917-173_No	13_10_15_1200_40_092	1	-1.119	0.954	0.0770	0.053	2.32	0.0710	0.507	1.466	-0.666	0.097	0.00	0.00300	-0.45	0.286	6.878
					10/15/2013 12:01	0917-173_No	13_10_15_1201_40_852	1	1.508	0.954	0.037	0.056	2.45	0.0730	0.527	1.469	-0.864	0.098	-0.00600	0.00200	-0.19	0.287	6.983
					10/15/2013 12:02	0917-173_No	13_10_15_1202_41_642	1	0.372	0.941	-0.0310	0.059	2.52	0.0700	0.495	1.456	-0.791	0.101	-0.00300	0.00200	-0.33	0.287	7.433
					10/15/2013 12:03	0917-173_No	13_10_15_1203_42_383	1	1.468	0.903	0.070	0.0570	2.51	0.0720	0.419	1.454	-0.711	0.100	-0.00500	0.00200	-0.37	0.285	7.229
					10/15/2013 12:04	0917-173_No	13_10_15_1204_43_183	1	0.23800	0.950	0.047	0.057	2.57	0.0720	0.440	1.459	-0.818	0.10	-0.00400	0.00200	-0.70	0.305	6.879
					10/15/2013 12:05	0917-173_No	13_10_15_1205_43_893	1	0.910	0.940	0.136	0.058	2.36	0.0720	0.472	1.459	-0.610	0.10	-0.00500	0.00200	-0.85	0.299	6.104
					10/15/2013 12:06	0917-173_No	13_10_15_1206_44_713	1	0.29500	0.903	0.057	0.054	2.35	0.0690	0.469	1.447	-0.735	0.10	-0.00400	0.00200	-0.14	0.274	5.769
					10/15/2013 12:07	0917-173_No	13_10_15_1207_45_493	1	1.074	0.872	0.041	0.0520	2.45	0.0700	0.594	1.456	-0.733	0.10	-0.00100	0.00200	-0.78	0.269	6.239
					10/15/2013 12:08	0917-173_No	13_10_15_1208_46_233	1	-0.8480	0.907	0.100	0.056	2.56	0.0690	0.451	1.459	-0.801	0.10	-0.00400	0.00200	-0.20	0.290	6.348
					10/15/2013 12:09	0917-173_No	13_10_15_1209_46_983	1	-0.129	0.919	-0.0260	0.051	2.33	0.0700	0.627	1.450	-0.794	0.09	-0.00300	0.00200	-0.84	0.281	5.608
					10/15/2013 12:10	0917-173_No	13_10_15_1210_47_703	1	-0.0600	0.905	0.034	0.054	2.36	0.0670	0.533	1.446	-0.610	0.09	-0.00100	0.00200	-0.55	0.286	5.255
					10/15/2013 12:11	0917-173_No	13_10_15_1211_48_473	1	1.391	0.871	0.0180	0.0510	2.38	0.0700	0.560	1.451	-0.633	0.09	-0.00100	0.00200	-0.62	0.263	5.896
					10/15/2013 12:12	0917-173_No	13_10_15_1212_49_233	1	-1.780	0.874	0.0480	0.054	2.31	0.0670	0.449	1.456	-0.617	0.09	0.00000	0.00200	-0.47	0.289	5.568
					10/15/2013 12:13	0917-173_No	13_10_15_1213_50_073	1	1.108	0.962	0.052	0.053	2.46	0.0690	0.508	1.459	-0.873	0.10	-0.00400	0.00200	0.25	0.282	5.726
					10/15/2013 12:14	0917-173_No	13_10_15_1214_50_783	1	-0.7430	0.943	0.052	0.053	2.50	0.0700	0.587	1.456	-0.791	0.09	0.00	0.00200	-0.62	0.282	6.089
					10/15/2013 12:15	0917-173_No	13_10_15_1215_51_544	1	1.277	0.932	0.067	0.052	2.40	0.0670	0.530	1.461	-0.633	0.09	-0.00400	0.00200	-0.79	0.285	5.81
					10/15/2013 12:16	0917-173_No	13_10_15_1216_52_314	1	-0.599	0.876	-0.0070	0.055	2.45	0.0690	0.505	1.449	-0.716	0.10	-0.00300	0.00200	-0.57	0.274	6.378
					10/15/2013 12:17	0917-173_No	13_10_15_1217_53_134	1	0.036	0.915	0.064	0.056	2.46	0.0690	0.497	1.455	-0.880	0.10	-0.00400	0.00200	-0.09	0.288	7.116
					10/15/2013 12:18	0917-173_No	13_10_15_1218_53_834	1	0.1570	0.928	0.088	0.0540	2.47	0.0690	0.434	1.460	-0.848	0.10	-0.00500	0.00200	-0.43	0.279	7.309
					10/15/2013 12:19	0917-173_No	13_10_15_1219_54_644	1	-2.428	0.879	0.062	0.054	2.41	0.0690	0.568	1.464	-0.851	0.10	-0.00300	0.00200	-0.45	0.281	7.345
					10/15/2013 12:20	0917-173_No	13_10_15_1220_55_414	1	-0.6810	0.888	-0.0660	0.056	2.46	0.0710	0.536	1.468	-0.871	0.10	-0.00400	0.00200	-0.21	0.280	8.015
					10/15/2013 12:21	0917-173_No	13_10_15_1221_56_164	1	-0.2550	0.980	0.033	0.058	2.25	0.0710	0.513	1.459	-0.849	0.10	-0.00100	0.00200	-0.65	0.294	7.086
					10/15/2013 12:22	0917-173_No	13_10_15_1222_56_874	1	0.8860	0.881	0.030	0.055	2.19	0.0700	0.496	1.461	-0.827	0.10	-0.00400	0.00200	-0.50	0.279	7.007
					10/15/2013 12:23	0917-173_No	13_10_15_1223_57_684	1	-0.8890	0.875	0.080	0.056	2.43	0.0710	0.444	1.461	-0.891	0.10	-0.00400	0.00200	-0.38	0.270	8.021
					10/15/2013 12:24	0917-173_No	13_10_15_1224_58_414	1	1.906	0.933	-0.04400	0.057	2.58	0.0740	0.603	1.472	-0.854	0.10	-0.00400	0.00200	-0.39	0.295	8.37
					10/15/2013 12:25	0917-173_No	13_10_15_1225_59_224	1	-0.579	0.858	0.007	0.057	2.48	0.0740	0.466	1.471	-0.884	0.10	-0.00300	0.00200	-0.78	0.276	7.936
					10/15/2013 12:27	0917-173_No	13_10_15_1227_00_014	1	0.508	1.003	0.0010	0.057	2.45	0.0720	0.506	1.488	-0.974	0.11	-0.00300	0.00200	-0.05	0.299	8.337
					10/15/2013 12:29	0917-173_No	13_10_15_1229_11_590	1	-0.586	0.966	0.0300	0.056	2.56	0.0740	0.540	1.486	-0.948	0.11	-0.00300	0.00200	-0.52	0.286	8.793
					10/15/2013 12:30	0917-173_No	13_10_15_1230_12_390	1	-1.4060	0.908	0.062	0.062	2.56	0.0750	0.593	1.482	-0.889	0.11	-0.00400	0.00200	-0.90	0.293	8.636
					10/15/2013 12:31	0917-173_No	13_10_15_1231_13_200	1	0.035	0.940	-0.07000	0.058	2.54	0.0740	0.412	1.484	-0.969	0.11	-0.00500	0.00200	-0.39	0.289	8.569
					10/15/2013 12:32	0917-173_No	13_10_15_1232_13_940	1	-0.559	0.898	0.023	0.058	2.43	0.0720	0.416	1.480	-1.029	0.11	-0.00800	0.00200	-0.39	0.289	8.865
					10/15/2013 12:33	0917-173_No	13_10_15_1233_14_750	1	2.7400	1.052	-0.0060	0.057	2.49	0.0730	0.429	1.470	-0.975	0.11	-0.00200	0.00200	-0.40	0.310	9.115
					10/15/2013 12:34	0917-173_No	13_10_15_1234_15_450	1	-0.310	0.880	0.069	0.059	2.48	0.0750	0.467	1.479	-0.863	0.11	-0.00500	0.00300	-0.52	0.287	9.17
					10/15/2013 12:35	0917-173_No	13_10_15_1235_16_170	1	0.450	1.016	-0.073	0.059	2.56	0.0740	0.521	1.500	-1.193	0.11	-0.00600	0.00200	-0.03	0.297	9.964
					10/15/2013 12:36	0917-173_No	13_10_15_1236_16_880	1	0.2680	0.967	0.023	0.058	2.54	0.0760	0.492	1.497	-0.965	0.112	-0.00400	0.00300	-0.17	0.294	9.699
					10/15/2013 12:37	0917-173_No	13_10_15_1237_17_630	1	0.861	0.885	0.029	0.059	2.50	0.0740	0.513	1.498	-0.914	0.112	-0.00200	0.00200	-0.58	0.293	10.019
					10/15/2013 12:38	0917-173_No	13_10_15_1238_18_480	1	0.5380	0.948	0.063	0.057	2.53	0.0740	0.507	1.486	-0.982	0.109	-0.00500	0.00300	-0.39	0.299	9.756
					10/15/2013 12:39	0917-173_No	13_10_15_1239_19_230	1	0.365	0.973	-0.0560	0.059	2.43	0.0750	0.463	1.498	-0.938	0.110	-0.00400	0.00200	-0.44	0.298	9.482
			Stop		10/15/2013 12:40	0917-173_No	13_10_15_1240_19_910	1	0.759	0.967	0.0600	0.060	2.46	0.0760	0.426	1.500	-0.901	0.115	-0.00400	0.00200	-0.70	0.306	9.218
					10/15/2013 12:41	0917-173_No	13_10_15_1241_20_701	1	-0.053	0.993	0.044	0.058	2.04	0.0670	0.560	1.432	-0.692	0.104	-0.00100	0.00200	-0.56	0.305	7.628
					10/15/2013 12:48	0917-173_No	13_10_15_1248_06_391	1	0.47	0.955	0.1250	0.116	2.91	0.078	0.284	1.436	-2.13	0.424	-0.0020	0.00300	-1.6	0.33	65.22
					10/15/2013 12:49	0917-173_No	13_10_15_1249_07_101	1	-0.476	1.012	0.1120	0.124	3.17	0.083	0.310	1.438	-2.21	0.480	-0.0030	0.00400	-2.3	0.36	75.363
					10/15/2013 12:50	0917-173_No	13_10_15_1250_07_921	1	-1.86	0.960	0.172	0.129	3.15	0.085	0.091	1.437	-2.15	0.493	-0.0030	0.00400	-2.4	0.35	76.637
					10/15/2013 12:51	0917-173_No	13_10_15_1251_08_741	1	-1.30	1.009	0.116	0.129	3.15	0.084	0.235	1.405	-2.38	0.495	-0.0020	0.00300	-2.2	0.36	77.095
					10/15/2013 12:52	0917-173_No	13_10_15_1252_09_461	1	-0.39	1.014	0.025	0.129	3.13	0.086	0.300	1.408	-2.23	0.490	-0.0020	0.00400	-2.3	0.37	76.401
					10/15/2013 12:53	0917-173_No	13_10_15_1253_10_282	1	1.465	0.939	0.016	0.093	1.99	0.072	0.173	1.351	-1.51	0.327	-0.0020	0.00300	-1.8	0.311	45.179

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 12:54	0917-173_No	13_10_15_1254_11_012	1	-1.191	0.879	0.061	0.056	0.202	0.0530	0.4250	1.141	-0.282	0.092	-0.00100	0.00200	-0.38	0.282	4.289
					10/15/2013 12:55	0917-173_No	13_10_15_1255_11_762	1	0.852	0.912	0.076	0.053	0.0770	0.0510	0.4140	1.108	-0.103	0.086	-0.00700	0.00300	-0.6040	0.283	1.676
					10/15/2013 13:11	0917-173_No	13_10_15_1311_08_205	1	0.8	1.2	-0.318	0.073	-0.35	1.33	-0.0790	0.0900	-0.098	0.116	0.056	0.534	0.1140	0.376	-1.665
					10/15/2013 13:11	0917-173_No	13_10_15_1311_26_705	1	-1.1	1.3	0.01500	0.072	-0.31	1.36	0.098	0.0920	0.093	0.117	0.049	0.546	-0.328	0.379	-1.702
					10/15/2013 13:11	0917-173_No	13_10_15_1311_45_395	1	-1.0	1.4	-0.117	0.074	-0.37	1.38	-0.157	0.0880	-0.008	0.123	0.064	0.553	0.17	0.409	-1.714
					10/15/2013 13:12	0917-173_No	13_10_15_1312_03_885	1	0.1	1.3	-0.256	0.070	-0.39	1.39	-0.0780	0.0870	0.046	0.115	0.045	0.557	-0.336	0.383	-1.744
					10/15/2013 13:12	0917-173_No	13_10_15_1312_22_355	1	-1.1	1.3	-0.173	0.072	-0.37	1.40	-0.2170	0.0910	-0.156	0.117	0.046	0.558	0.68	0.391	-1.757
					10/15/2013 13:12	0917-173_No	13_10_15_1312_41_005	1	0.7	1.3	-0.0730	0.070	-0.36	1.40	-0.0860	0.0940	-0.1360	0.114	0.061	0.557	0.127	0.378	-1.76
					10/15/2013 13:12	0917-173_No	13_10_15_1312_59_495	1	1.4	1.3	-0.0300	0.070	-0.38	1.40	-0.0880	0.0850	-0.032	0.115	0.051	0.559	-0.4370	0.385	-1.738
					10/15/2013 13:13	0917-173_No	13_10_15_1313_17_965	1	1.8	1.3	0.032	0.069	-0.41	1.40	-0.0750	0.0930	-0.043	0.114	0.056	0.556	-0.449	0.380	-1.765
					10/15/2013 13:13	0917-173_No	13_10_15_1313_36_575	1	-2.5	1.2	-0.140	0.075	-0.40	1.40	-0.1180	0.0880	0.005	0.116	0.052	0.559	0.2240	0.373	-1.769
					10/15/2013 13:13	0917-173_No	13_10_15_1313_55_075	1	3.3	1.3	0.1180	0.073	-0.42	1.40	0.125	0.0870	0.150	0.117	0.061	0.554	-1.424	0.387	-1.765
					10/15/2013 13:14	0917-173_No	13_10_15_1314_13_675	1	2.9	1.3	0.027	0.068	-0.40	1.40	-0.0250	0.1000	-0.16800	0.116	0.064	0.557	-0.047	0.383	-1.759
					10/15/2013 13:14	0917-173_No	13_10_15_1314_32_115	1	-0.9	1.2	0.196	0.072	-0.53	1.40	-0.1840	0.0930	-0.028	0.114	0.050	0.557	-0.632	0.382	-1.747
					10/15/2013 13:14	0917-173_No	13_10_15_1314_50_625	1	0.9	1.4	-0.0730	0.067	-0.50	1.40	-0.0500	0.0970	-0.254	0.115	0.053	0.557	0.07	0.394	-1.742
					10/15/2013 13:33	0917-173_No	13_10_15_1333_17_119	1	-0.061	0.956	-0.023	0.073	0.910	0.0730	0.3540	1.524	-2.214	0.196	-0.00600	0.00300	-0.34	0.312	27.637
					10/15/2013 13:34	0917-173_No	13_10_15_1334_17_799	1	1.182	1.011	-0.051	0.070	0.922	0.0750	0.4190	1.522	-2.094	0.188	-0.00500	0.00300	-0.41	0.301	27.679
					10/15/2013 13:35	0917-173_No	13_10_15_1335_18_609	1	0.218	1.033	-0.023	0.066	0.895	0.0740	0.4270	1.510	-2.076	0.193	-0.00200	0.00300	-0.71	0.294	27.303
					10/15/2013 13:36	0917-173_No	13_10_15_1336_19_359	1	1.599	1.014	0.013	0.069	0.897	0.0760	0.334	1.501	-2.242	0.203	-0.00700	0.00300	-0.54	0.309	29.057
					10/15/2013 13:37	0917-173_No	13_10_15_1337_20_129	1	-0.296	1.023	-0.076	0.071	0.851	0.0740	0.355	1.505	-2.311	0.203	-0.00100	0.00300	-0.30	0.305	29.076
					10/15/2013 13:38	0917-173_No	13_10_15_1338_20_929	1	-0.062	0.950	-0.287	0.081	0.303	0.0410	0.2870	0.673	-3.124	0.163	0.00	0.00200	-1.22	0.340	16.223
					10/15/2013 13:39	0917-173_No	13_10_15_1339_21_689	1	-0.225	0.858	-0.482	0.094	-0.0430	0.0400	-0.055	0.1290	-3.75	0.163	-0.01	0.00200	-1.54	0.365	10.679
					10/15/2013 13:40	0917-173_No	13_10_15_1340_22_460	1	0.062	0.847	-0.571	0.090	-0.0720	0.0390	0.0250	0.0900	-3.71	0.160	-0.00700	0.00200	-1.67	0.373	10.391
					10/15/2013 13:41	0917-173_No	13_10_15_1341_23_230	1	-0.208	0.881	-0.574	0.098	-0.0660	0.0390	0.0490	0.0840	-3.73	0.167	-0.00400	0.00200	-1.35	0.389	10.318
					10/15/2013 13:42	0917-173_No	13_10_15_1342_23_980	1	-0.465	0.847	-0.5230	0.095	-0.0650	0.0390	-0.096	0.0820	-3.78	0.164	-0.00400	0.00200	-0.63	0.376	10.256
					10/15/2013 13:43	0917-173_No	13_10_15_1343_24_780	1	0.024	0.850	-0.443	0.092	-0.0230	0.0380	0.0470	0.1060	-3.70	0.157	0.00000	0.00200	-0.81	0.364	10.637
					10/15/2013 13:44	0917-173_No	13_10_15_1344_25_530	1	1.980	0.936	-0.110	0.068	0.692	0.0620	0.387	1.328	-2.444	0.179	-0.00700	0.00200	-0.98	0.286	24.767
					10/15/2013 13:45	0917-173_No	13_10_15_1345_26_340	1	0.803	1.023	-0.022	0.072	0.850	0.0730	0.5140	1.512	-2.36	0.208	-0.00600	0.00200	-0.33	0.332	29.752
					10/15/2013 13:46	0917-173_No	13_10_15_1346_27_110	1	-0.516	0.994	-0.030	0.070	0.810	0.0730	0.4650	1.494	-2.32	0.212	-0.00200	0.00300	-0.60	0.299	31.029
					10/15/2013 13:47	0917-173_No	13_10_15_1347_27_820	1	1.253	0.997	0.015	0.069	0.887	0.0730	0.40000	1.501	-2.432	0.211	-0.00300	0.00300	-0.54	0.305	31.409
Data	Run	13	Start	A	10/15/2013 13:48	0917-173_No	13_10_15_1348_28_550	1	2.329	0.991	-0.054	0.075	0.870	0.0740	0.3880	1.495	-2.41	0.228	-0.00500	0.00300	-0.86	0.308	33.266
					10/15/2013 13:49	0917-173_No	13_10_15_1349_29_260	1	2.011	1.094	-0.056	0.077	0.897	0.0760	0.49400	1.497	-2.739	0.235	-0.00100	0.00200	-0.20	0.339	34.641
					10/15/2013 13:50	0917-173_No	13_10_15_1350_30_070	1	1.284	0.997	-0.032	0.074	0.959	0.0760	0.40	1.511	-2.446	0.221	-0.00800	0.00300	-0.30	0.304	32.791
					10/15/2013 13:51	0917-173_No	13_10_15_1351_30_870	1	0.777	1.012	0.014	0.075	0.955	0.0750	0.3450	1.502	-2.35	0.222	0.00000	0.00300	-1.14	0.322	32.265
					10/15/2013 13:52	0917-173_No	13_10_15_1352_31_591	1	0.170	1.058	0.008	0.076	0.940	0.0750	0.4080	1.502	-2.640	0.231	-0.00300	0.00200	-0.47	0.323	33.245
					10/15/2013 13:53	0917-173_No	13_10_15_1353_32_351	1	1.546	1.028	0.020	0.075	0.953	0.0750	0.4680	1.507	-2.755	0.233	-0.00700	0.00300	-0.43	0.318	34.188
					10/15/2013 13:54	0917-173_No	13_10_15_1354_33_161	1	0.672	1.058	0.062	0.076	0.978	0.0740	0.3420	1.509	-2.57	0.234	-0.00300	0.00300	-0.81	0.310	33.676
					10/15/2013 13:55	0917-173_No	13_10_15_1355_33_891	1	-1.199	1.006	-0.005	0.073	0.944	0.0770	0.33700	1.503	-2.535	0.216	-0.0090	0.00300	-0.19	0.318	31.79
					10/15/2013 13:56	0917-173_No	13_10_15_1356_34_631	1	0.591	0.993	-0.061	0.071	0.971	0.0720	0.228	1.499	-2.43	0.216	-0.00800	0.00300	-1.07	0.305	31.17
					10/15/2013 13:57	0917-173_No	13_10_15_1357_35_441	1	1.301	0.947	-0.130	0.070	0.915	0.0730	0.4000	1.491	-2.230	0.206	-0.00500	0.00300	-0.50	0.309	29.915
					10/15/2013 13:58	0917-173_No	13_10_15_1358_36_181	1	-0.945	1.005	-0.050	0.069	0.860	0.0730	0.4720	1.488	-2.281	0.198	-0.00600	0.00300	-0.22	0.312	29.1
					10/15/2013 13:59	0917-173_No	13_10_15_1359_36_931	1	0.761	1.059	0.050	0.070	0.819	0.0720	0.591	1.501	-2.329	0.208	-0.00400	0.00300	-0.46	0.320	28.816
					10/15/2013 14:00	0917-173_No	13_10_15_1400_37_771	1	-1.189	0.928	-0.08600	0.067	0.932	0.0730	0.507	1.488	-2.155	0.196	-0.00300	0.00300	-0.99	0.291	28.824
					10/15/2013 14:01	0917-173_No	13_10_15_1401_38_521	1	0.2390	1.110	0.101	0.067	0.895	0.0750	0.4800	1.499	-2.257	0.203	-0.00200	0.00300	-1.10	0.327	29.433
					10/15/2013 14:02	0917-173_No	13_10_15_1402_39_241	1	1.804	0.986	-0.033	0.072	0.965	0.0720	0.43000	1.510	-2.28	0.208	-0.00200	0.00300	-0.73	0.315	30.162
					10/15/2013 14:03	0917-173_No	13_10_15_1403_40_061	1	0.188	1.052	-0.017	0.066	0.940	0.0750	0.4840	1.496	-2.226	0.205	-0.00400	0.00300	-0.62	0.317	29.898
					10/15/2013 14:04	0917-173_No	13_10_15_1404_40_782	1	2.722	1.017	0.043	0.075	0.810	0.0740	0.3780	1.488	-2.312	0.212	-0.00100	0.00300	-0.79	0.323	30.093
					10/15/2013 14:05	0917-173_No	13_10_15_1405_41_592	1	0.713	1.048	-0.067	0.071	0.873	0.0740	0.4820	1.489	-2.279	0.202	-0.00800	0.00300	-0.27	0.324	29.723
					10/15/2013 14:06	0917-173_No	13_10_15_1406_42_382	1	0.641	1.000	0.089	0.068	0.813	0.0730	0.4630	1.480	-2.27	0.202	-0.00400	0.00300	-0.48	0.309	29.094
					10/15/2013 14:07	0917-173_No	13_10_15_1407_43_092	1	0.393	1.042	0.007	0.074	0.867	0.0720	0.3410	1.482	-2.311	0.209	-0.00400	0.00300	-0.12	0.331	29.911
					10/15/2013 14:08	0917-173_No	13_10_15_1408_43_852	1	1.695	0.962	-0.045	0.073	0.837	0.0720	0.4290	1.483	-2.17	0.193	-0.00400	0.00300	-0.41	0.303	27.588
					10/15/2013 14:09	0917-173_No	13_10_15_1409_44_632	1	3.193	1.023	-0.071	0.072	0.760	0.0730	0.4870	1.489	-1.961	0.191	-0.00100	0.00300	-0.52	0.313	26.754
					10/15/2013 14:10	0917-173_No	13_10_15_1410_45_332	1	-0.741	1.028	0.065	0.071	0.878	0.0730	0.3650	1.491	-2.294	0.209	-0.00200	0.00300	-0.22	0.321	30.434
					10/15/2013 14:11	0917-173_No	13_10_15_1411_46_132	1	1.009	0.983	-0.0420	0.076	0.953	0.0750	0.44900	1.492	-2.469	0.221	-0.00300	0.00200	-0.64	0.306	32.158
					10/15/2013 14:12	0917-173_No	13_10_15_1412_46_872	1	2.538	0.976	-0.028	0.073	0.967	0.0760	0.5100	1.496	-2.54	0.220	-0.00100	0.00200	-0.54	0.310	31.966
					10/15/2013 14:13	0917-173_No	13_10_15_1413_47_622	1	-0.794	0.995	-0.0600	0.076	0.911	0.0750	0.323	1.498	-2.713	0.229	-0.00200	0.00200	-0.40	0.310	33.32
					10/15/2013 14:14	0917-173_No	13_10_15_1414_48_312	1	1.196	1.046	-0.041	0.074	0.962	0.0770	0.196	1.502	-2.55	0.233	-0.00600	0.00300	-0.65	0.318	33.917
					10/15/2013 14:15	0917-173_No	13_10_15_1415_48_983	1	0.991	1.029	-0.029	0.072	0.921	0.0750	0.3800	1.498	-2.477	0.218	-0.00600	0.00300	-0.24	0.313	31.361
					10/15/2013 14:16	0917-173_No	13_10_15_1416_49_783	1	-0.346	1.045	-0.001	0.068	0.859	0.0730	0.41700	1.498	-2.093	0.198	-0.00900	0.00300	-0.59	0.315	28.248
					10/15/2013 14:17	0917-173_No	13_10_15_1417_50_483	1	3.201	1.068	-0.0440	0.074	0.926	0.0720	0.4130	1.498	-2.565	0.219	-0.00800	0.00300	-0.37	0.325	32.313
					10/15/2013 14:18	0917-173_No	13_10_15_1418_51_323	1	1.002	1.016	-0.0870	0.075	0.830	0.0770	0.4160	1.486	-2.714	0.232	-0.00700	0.00300	-0.1	0.309	33.964
					10/15/2013 14:19	0917-173_No	13_10_15_1419_52_043	1	0.430	0.956	-0.055	0.076	0.892	0.0760	0.4790	1.494	-2.66	0.240	-0.00500	0.00300	-0.1	0.305	35.165
					10/15/2013 14:20	0917-173_No	13_10_15_1420_52_853	1	0.809	0.995	-0.188	0.079	1.045	0.076	0.4280	1.489	-3.086	0.267	-0.00300	0.00300	-0.1	0.314	39.425
					10/15/2013 14:21	0917-173_No	13_10_15_1421_53_513	1	1.500	1.052	-0.130	0.083	1.033	0.075	0.331	1.495	-3.194	0.266	-0.00400	0.00300	-0.4	0.310	38.982
					10/15/2013 14:22	0917-173_No	13_10_15_1422_54_273	1	0.731	1.089	-0.069	0.080	1.068	0.0750	0.3900	1.486	-3.12	0.261	-0.00400	0.00300	-0.1	0.325	38.406
					10/15/2013 14:23	0917-173_No	13_10_15_1423_55_033	1	3.241	1.008	-0.088	0.086	1.027	0.0760	0.4430	1.497	-3.06	0.272	-0.00200	0.00300	-0.6	0.308	39.281
					10/15/2013 14:24	0917-173_No	13_10_15_1424_55_843	1	2.7550	1.018	-0.1520	0.082	0.998	0.0740	0.4600	1.506	-2.90	0.262	-0.00100	0.00300	-1.1	0.317	37.87
					10/15/2013 14:25	0917-173_No	13_10_15_1425_56_593	1	1.218	0.967	-0.1740	0.078	0.979	0.0790	0.4390	1.520	-3.180	0.258	-0.00600	0.00300	-0.1	0.308	37.838
					10/15/2013 14:26	0917-173_No	13_10_15_1426_57_343	1	0.5710	0.949	-0.128	0.079	0.942	0.0760	0.3950	1.514	-2.919	0.250	-0.0080	0.00300	0.3	0.300	36.935
					10/15/2013 14:27	0917-173_No	13_10_15_1427_58_154	1	0.744	1.018	-0.037	0.075	0.983	0.0770	0.39500	1.514	-2.688	0.234	-0.00300	0.00300	0.0	0.309	34.062
					10/15/2013 14:28	0917-173_No	13_10_15_1428_58_914	1	0.071	1.026	-0.068	0.081	1.015	0.0780	0.3120	1.516	-2.81	0.247	-0.00100	0.00300	-0.2	0.316	35.653
					10/15/2013 14:29	0917-173_No	13_10_15_1429_59_664	1	1.302	1.047	-0.049	0.087	1.006	0.0760	0.338	1.521	-2.71	0.260	-0.00400	0.00300	-0.66	0.329	36.19
					10/15/2013 14:31	0917-173_No	13_10_15_1431_00_464	1	0.530	1.057	-0.068	0.077	1.016	0.0770	0.315	1.526	-2.611	0.241	-0.01000	0.00300	-0.50	0.318	34.816
					10/15/2013 14:32	0917-173_No	13_10_15_1432_01_174	1	1.350	1.058	-0.070	0.077	0.978	0.0770	0.3780	1.532	-2.856	0.244	-0.00800	0.00300	-0.14	0.323	35.62
					10/15/2013 14:33	0917-173_No	13_10_15_1433_01_914	1	0.520	1.034	-0.0760	0.080	1.001	0.0790	0.361	1.538	-3.055	0.259	-0.00400	0.00300	-0.4	0.328	38.13
					10/15/2013 14:34	0917-173_No	13_10_15_1434_02_734	1	2.970	1.088	0.010	0.082	1.002	0.0770	0.4870	1.540	-2.866	0.255	-0.00200	0.00300	-0.38	0.328	36.965
					10/15/2013 14:35	0917-173_No	13_10_15_1435_03_494	1	1.535	1.060	-0.216	0.082	1.085	0.0800	0.397	1.540	-3.031	0.262	-0.00400	0.00300	-0.4	0.328	37.752
					10/15/2013 14:36	0917-173_No	13_10_15_1436_04_204	1	0.578	1.033	-0.16300	0.083	1.011	0.0790	0.267	1.536	-2.99	0.256	-0.00400	0.00300	-0.4	0.324	36.876
					10/15/2013 14:37	0917-173_No	13_10_15_1437_05_044	1	2.117	1.109	-0.028	0.084	0.913	0.0790	0.3490	1.541	-2.62	0.250	-0.00400	0.00300	-0.4	0.332	35.511
					10/15/2013 14:38	0917-173_No	13_10_15_1438_05_754	1	1.524	1.028	-0.1670	0.079	1.020	0.0780	0.4990	1.524	-2.771	0.247	-0.00600	0.00300	-0.5	0.320	35.635
					10/15/2013 14:39	0917-173_No	13_10_15_1439_06_504	1	0.748	1.056	-0.2080	0.081	1.053	0.0780	0.4260	1.519	-3.264	0.278	-0.00400	0.00300	-0.4	0.312	40.586
					10/15/2013 14:40	0917-173_No	13_10_15_1440_07_295	1	1.261	1.044	-0.232	0.088	1.123	0.080	0.324	1.522	-3.694	0.293	-0.00300	0.00300	0.3	0.321	42.909
					10/15/2013 14:41	0917-173_No	13_10_15_1441_08_065	1	1.8050	1.101	-0.132	0.080	0.980	0.0780	0.4370	1.532	-2.640	0.242	-0.00500	0.00300	-0.37	0.324	34.194
					10/15/2013 14:42	0917-173_No	13_10_15_1442_08_775	1	0.943	1.060	-0.021	0.076	0.922	0.0760	0.5080	1.517	-2.24	0.225	-0.0060	0.00300	-1.09	0.321	30.779
					10/15/2013 14:43	0917-173_No	13_10_15_1443_09_575	1	1.922	1.060	-0.105	0.078	1.225	0.0780	0.299	1.520	-2.67	0.252	-0.0040	0.00300	-0.70	0.325	36.226
					10/15/2013 14:44	0917-173_No	13_10_15_1444_10_335	1	1.526	1.056	-0.035	0.079	1.28	0.0770	0.4020	1.509	-2.592	0.242	-0.00600	0.00300	-0.3	0.333	34.674
					10/15/2013 14:45	0917-173_No	13_10_15_1445_11_105	1	0.988	0.992	-0.065	0.080	1.31	0.0750	0.5160	1.513	-2.526	0.232	-0.00300	0.00300	-0.16	0.318	34.017
					10/15/2013 14:46	0917-173_No	13_10_15_1446_11_845	1	1.578	1.055	-0.076	0.077	1.34	0.0760	0.4180	1.500	-2.534	0.232	-0.00100	0.00200	-0.11	0.318	33.403
					10/15/2013 14:47	0917-173_No	13_10_15_1447_12_565	1	1.8150	1.037	-0.2870	0.094	1.008	0.0690	0.4680	1.286	-3.8440	0.247	-0.00700	0.00200	-0.92	0.333	32.813
			Stop		10/15/2013 14:48	0917-173_No	13_10_15_1448_13_365	1	-2.530	1.139	-1.595	0.254	-0.1660	0.0830	-0.171	0.257	-10.97	0.431	-0.01100	0.00300	-3.16	0.82	31.159
					10/15/2013 14:49	0917-173_No	13_10_15_1449_14_125	1	-2.472	1.101	-1.750	0.262	-0.2080	0.0850	-0.252	0.167	-11.54	0.444	-0.01300	0.00300	-3.70	0.87	30.801
					10/15/2013 14:50	0917-173_No	13_10_15_1450_14_835	1	-0.337	1.017	-1.1990	0.176	-0.1210	0.0600	-0.159	0.121	-7.43	0.295	-0.00900	0.00200	-1.87	0.588	19.709
					10/15/2013 14:51	0917-173_No	13_10_15_1451_15_635	1	-0.588	0.870	-0.541	0.096	-0.0710	0.0400	-0.0350	0.0780	-3.70	0.163	-0.00500	0.00200	-0.96	0.362	10.598
					10/15/2013 14:52	0917-173_No	13_10_15_1452_16_326	1	1.227	0.864	-0.584	0.096	-0.0120	0.0390	-0.099	0.0810	-3.55	0.164	-0.00700	0.00200	-1.537	0.364	10.36
					10/15/2013 14:53	0917-173_No	13_10_15_1453_17_106	1	0.750	0.885	-0.4830	0.089	0.508	0.0390	0.190	0.507	-3.672	0.191	-0.00400	0.00200	-0.99	0.334	20.727
					10/15/2013 14:54	0917-173_No	13_10_15_1454_17_846	1	0.909	0.964	-0.2650	0.094	1.40	0.078	0.385	1.478	-3.778	0.309	-0.0050	0.00300	-0.6	0.31	44.82
					10/15/2013 14:55	0917-173_No	13_10_15_1455_18_566	1	1.301	0.867	-0.178	0.075	0.898	0.0510	0.4120	0.942	-2.708	0.197	-0.00400	0.00200	-0.43	0.283	24.758
					10/15/2013 14:56	0917-173_No	13_10_15_1456_19_316	1	1.4650	0.899	-0.0770	0.049	0.1440	0.0310	0.216	0.219	-0.3990	0.085	0.00000	0.00200	0.034	0.268	4.222
					10/15/2013 14:57	0917-173_No	13_10_15_1457_20_026	1	0.5990	0.827	0.0790	0.047	0.0010	0.0270	-0.0700	0.0700	0.038	0.076	0.00300	0.00200	-0.063	0.252	0.636
					10/15/2013 14:58	0917-173_No	13_10_15_1458_20_766	1	1.534	0.889	0.0340	0.050	0.1380	0.0310	0.1450	0.184	-0.182	0.083	0.00100	0.00200	-0.537	0.266	3.766
					10/15/2013 14:59	0917-173_No	13_10_15_1459_21_486	1	2.481	1.069	-0.084	0.079	1.25	0.0700	0.5670	1.435	-2.90	0.256	-0.00500	0.00300	-0.1	0.320	37.022
					10/15/2013 15:00	0917-173_No	13_10_15_1500_22_256	1	2.323	1.020	-0.1660	0.083	1.44	0.076	0.390	1.509	-3.22	0.283	-0.0090	0.00200	-0.5	0.315	41.487
					10/15/2013 15:01	0917-173_No	13_10_15_1501_22_966	1	1.921	1.052	-0.1870	0.088	1.40	0.079	0.416	1.514	-3.239	0.287	-0.00500	0.00300	0.0	0.337	42.079
					10/15/2013 15:02	0917-173_No	13_10_15_1502_23_686	1	1.98	1.011	-0.129	0.087	1.46	0.081	0.379	1.506	-3.24	0.283	0.00000	0.00300	-0.3	0.323	41.327
					10/15/2013 15:03	0917-173_No	13_10_15_1503_24_507	1	0.968	1.054	-0.093	0.084	1.38	0.078	0.450	1.501	-2.93	0.277	-0.00400	0.00300	-0.5	0.309	40.154
					10/15/2013 15:04	0917-173_No	13_10_15_1504_25_227	1	1.398	1.081	0.042	0.083	1.36	0.0750	0.293	1.511	-2.62	0.262	-0.00600	0.00300	-0.5	0.323	37.871
					10/15/2013 15:05	0917-173_No	13_10_15_1505_25_977	1	1.748	0.988	-0.001	0.080	1.52	0.0770	0.451	1.506	-2.28	0.252	-0.0030	0.00300	-0.96	0.310	36.003
					10/15/2013 15:06	0917-173_No	13_10_15_1506_26_777	1	3.037	0.991	0.008	0.074	1.37	0.0760	0.5250	1.512	-1.97	0.230	-0.00100	0.00300	-0.66	0.318	32.984
					10/15/2013 15:07	0917-173_No	13_10_15_1507_27_487	1	1.312	1.011	-0.059	0.076	1.41	0.0790	0.288	1.516	-2.22	0.242	-0.00500	0.00300	-0.56	0.305	34.972
					10/15/2013 15:08	0917-173_No	13_10_15_1508_28_247	1	1.889	1.007	-0.085	0.081	1.46	0.0760	0.287	1.518	-2.50	0.259	-0.00500	0.00300	-0.5	0.304	38.05
					10/15/2013 15:09	0917-173_No	13_10_15_1509_29_047	1	-0.482	1.011	-0.1410	0.083	1.40	0.0740	0.393	1.504	-2.316	0.246	-0.00400	0.00300	-0.94	0.326	34.497
					10/15/2013 15:10	0917-173_No	13_10_15_1510_29_767	1	3.103	1.035	-0.042	0.076	1.28	0.0770	0.196	1.514	-2.14	0.219	-0.00300	0.00300	-0.44	0.327	31.197
					10/15/2013 15:11	0917-173_No	13_10_15_1511_30_507	1	0.242	0.981	-0.100	0.079	1.37	0.0760	0.310	1.522	-2.321	0.235	-0.0050	0.00300	-0.34	0.309	34
					10/15/2013 15:12	0917-173_No	13_10_15_1512_31_257	1	1.338	1.008	-0.113	0.071	1.27	0.0750	0.3830	1.523	-2.27	0.224	-0.00300	0.00300	-0.35	0.312	33.044
					10/15/2013 15:13	0917-173_No	13_10_15_1513_32_067	1	2.381	0.960	0.122	0.074	1.20	0.0770	0.4800	1.523	-2.03	0.230	-0.00400	0.00300	-0.69	0.291	32.585
					10/15/2013 15:14	0917-173_No	13_10_15_1514_32_827	1	1.299	1.087	-0.068	0.079	1.20	0.0750	0.3080	1.526	-2.11	0.231	-0.00300	0.00300	-0.76	0.328	32.152
					10/15/2013 15:15	0917-173_No	13_10_15_1515_33_558	1	1.426	0.954	-0.075	0.079	1.32	0.0770	0.363	1.537	-2.34	0.242	-0.00400	0.00300	-0.46	0.317	35.534
					10/15/2013 15:16	0917-173_No	13_10_15_1516_34_268	1	0.964	1.049	-0.083	0.078	1.31	0.0770	0.345	1.543	-2.38	0.251	-0.0090	0.00300	-0.4	0.313	36.672
					10/15/2013 15:17	0917-173_No	13_10_15_1517_35_018	1	1.194	1.132	-0.118	0.079	1.44	0.0790	0.303	1.544	-2.39	0.261	-0.00500	0.00300	-0.9	0.329	38.063
					10/15/2013 15:18	0917-173_No	13_10_15_1518_35_828	1	2.001	1.004	-0.112	0.085	1.47	0.0790	0.290	1.522	-2.57	0.264	-0.0100	0.00300	-0.5	0.317	38.688
					10/15/2013 15:19	0917-173_No	13_10_15_1519_36_558	1	1.641	1.038	-0.038	0.085	1.42	0.077	0.246	1.519	-2.77	0.272	-0.0080	0.00300	-0.4	0.312	40.023
					10/15/2013 15:20	0917-173_No	13_10_15_1520_37_258	1	1.538	1.016	-0.14900	0.086	1.37	0.078	0.256	1.511	-3.00	0.279	-0.00100	0.00300	-0.4	0.308	40.55
					10/15/2013 15:21	0917-173_No	13_10_15_1521_38_078	1	0.227	1.052	-0.134	0.081	1.36	0.0790	0.329	1.498	-2.54	0.254	-0.00600	0.00300	-0.1	0.323	37.476
					10/15/2013 15:22	0917-173_No	13_10_15_1522_38_848	1	2.791	1.012	-0.101	0.077	1.31	0.0760	0.4950	1.494	-2.10	0.237	-0.00700	0.00300	-0.29	0.311	34.554
					10/15/2013 15:23	0917-173_No	13_10_15_1523_39_558	1	1.904	0.993	-0.088	0.074	1.37	0.0740	0.295	1.495	-2.27	0.228	0.00000	0.00300	-0.3	0.310	34.34
					10/15/2013 15:24	0917-173_No	13_10_15_1524_40_308	1	-1.161	1.180	-0.111	0.079	1.36	0.0740	0.368	1.499	-2.26	0.247	-0.00600	0.00300	-0.23	0.341	35.368
					10/15/2013 15:25	0917-173_No	13_10_15_1525_41_068	1	1.501	1.068	-0.074	0.080	1.39	0.0770	0.371	1.502	-2.54	0.261	-0.00700	0.00300	-0.5	0.319	37.95
					10/15/2013 15:26	0917-173_No	13_10_15_1526_41_828	1	3.9370	1.064	-0.1490	0.082	1.43	0.0780	0.391	1.513	-2.33	0.251	-0.00700	0.00300	-0.3	0.328	37.23
					10/15/2013 15:27	0917-173_No	13_10_15_1527_42_579	1	1.914	1.031	0.051	0.079	1.35	0.0790	0.394	1.517	-2.24	0.245	-0.00400	0.00300	-0.4	0.331	35.453
					10/15/2013 15:28	0917-173_No	13_10_15_1528_43_389	1	1.399	1.024	-0.0580	0.081	1.31	0.0750	0.218	1.511	-2.34	0.248	-0.0050	0.00300	-0.59	0.328	35.493
					10/15/2013 15:29	0917-173_No	13_10_15_1529_44_109	1	3.566	1.051	-0.037	0.077	1.32	0.0750	0.359	1.509	-2.28	0.233	-0.00600	0.00300	-0.42	0.326	33.816
					10/15/2013 15:30	0917-173_No	13_10_15_1530_44_859	1	1.39	0.934	-0.022	0.079	1.27	0.0730	0.309	1.500	-2.23	0.225	-0.0080	0.00300	-0.72	0.310	32.91
					10/15/2013 15:31	0917-173_No	13_10_15_1531_45_589	1	1.505	1.005	-0.079	0.079	1.36	0.0740	0.416	1.498	-2.31	0.243	-0.00300	0.00300	-1.00	0.313	35.303
					10/15/2013 15:32	0917-173_No	13_10_15_1532_46_389	1	0.099	0.999	-0.064	0.076	1.28	0.0750	0.4430	1.496	-2.35	0.243	-0.00600	0.00300	-0.42	0.311	35.649
					10/15/2013 15:33	0917-173_No	13_10_15_1533_47_159	1	1.46	1.001	-0.130	0.084	1.28	0.0750	0.384	1.504	-2.67	0.260	-0.00500	0.00300	-0.5	0.314	38.099
					10/15/2013 15:34	0917-173_No	13_10_15_1534_47_909	1	0.545	0.988	-0.058	0.086	1.39	0.079	0.349	1.497	-2.82	0.279	-0.00600	0.00300	-0.9	0.304	41.004
					10/15/2013 15:35	0917-173_No	13_10_15_1535_48_669	1	2.270	1.115	-0.1140	0.079	1.42	0.0770	0.430	1.511	-2.68	0.266	-0.00700	0.00300	-0.84	0.328	38.824
					10/15/2013 15:36	0917-173_No	13_10_15_1536_49_389	1	1.327	1.053	-0.236	0.084	1.36	0.0760	0.361	1.517	-2.57	0.258	-0.00700	0.00300	-0.3	0.325	37.485
					10/15/2013 15:37	0917-173_No	13_10_15_1537_50_209	1	1.503	1.097	-0.062	0.077	1.34	0.0770	0.249	1.520	-2.50	0.258	-0.00500	0.00300	-0.77	0.319	37.174
					10/15/2013 15:38	0917-173_No	13_10_15_1538_50_819	1	2.882	1.070	-0.0230	0.079	1.33	0.0760	0.472	1.513	-2.46	0.253	-0.00500	0.00300	-0.70	0.329	36.74
					10/15/2013 15:39	0917-173_No	13_10_15_1539_51_530	1	0.899	1.048	0.0260	0.077	1.25	0.0770	0.265	1.524	-2.02	0.232	-0.00400	0.00300	-0.62	0.328	33.361
					10/15/2013 15:40	0917-173_No	13_10_15_1540_52_350	1	0.71	1.104	-0.0790	0.075	1.21	0.0740	0.4030	1.511	-1.84	0.214	-0.00700	0.00300	-0.47	0.334	30.052
					10/15/2013 15:41	0917-173_No	13_10_15_1541_53_060	1	0.634	1.090	-0.117	0.072	1.25	0.0750	0.320	1.510	-1.80	0.215	-0.00700	0.00300	-1.09	0.328	30.186
					10/15/2013 15:42	0917-173_No	13_10_15_1542_53_840	1	2.69	1.102	-0.019	0.075	1.29	0.0750	0.4780	1.515	-1.70	0.216	-0.00500	0.00200	-0.75	0.335	31
					10/15/2013 15:43	0917-173_No	13_10_15_1543_54_630	1	0.4770	1.036	0.033	0.069	1.21	0.0750	0.431	1.508	-1.62	0.207	-0.00600	0.00200	-1.05	0.309	30.536
					10/15/2013 15:44	0917-173_No	13_10_15_1544_55_400	1	2.036	1.061	0.018	0.072	1.19	0.0710	0.457	1.504	-1.58	0.208	-0.00500	0.00200	-0.74	0.311	29.513
					10/15/2013 15:45	0917-173_No	13_10_15_1545_56_160	1	1.2830	0.963	-0.045	0.052	0.430	0.0580	0.4020	1.264	-0.487	0.108	-0.00600	0.00200	-0.54	0.290	11.242
					10/15/2013 15:46	0917-173_No	13_10_15_1546_56_880	1	3.5510	0.934	-0.021	0.053	-0.0110	0.0490	0.4850	1.102	-0.006	0.088	-0.00200	0.00200	-0.1330	0.295	1.217
					10/15/2013 15:47	0917-173_No	13_10_15_1547_57_600	1	0.431	0.963	-0.0490	0.063	0.599	0.0590	0.577	1.334	-1.526	0.156	-0.00300	0.00200	-0.30	0.307	20.082

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
									Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					10/15/2013 15:48	0917-173_No	13_10_15_1548_58_420	1	3.2430	1.025	0.093	0.071	0.813	0.0640	0.313	1.420	-2.09	0.212	-0.00500	0.00200	-0.75	0.303	30.223
					10/15/2013 15:49	0917-173_No	13_10_15_1549_59_170	1	0.843	1.012	-0.033	0.074	0.847	0.0660	0.468	1.414	-2.01	0.210	-0.00200	0.00200	-0.51	0.313	30.887
					10/15/2013 15:50	0917-173_No	13_10_15_1550_59_920	1	2.675	1.023	-0.027	0.068	0.868	0.0660	0.567	1.406	-2.172	0.208	-0.00300	0.00300	-0.18	0.308	30.617
					10/15/2013 15:52	0917-173_No	13_10_15_1552_00_631	1	1.901	0.972	-0.016	0.072	0.816	0.0660	0.420	1.392	-2.06	0.206	-0.00400	0.00300	-0.61	0.311	29.584
					10/15/2013 15:53	0917-173_No	13_10_15_1553_01_401	1	2.79	0.990	-0.010	0.053	0.0890	0.0530	0.390	1.138	-0.303	0.091	-0.00500	0.00200	-0.511	0.303	5.143
					10/15/2013 15:54	0917-173_No	13_10_15_1554_02_221	1	0.651	0.927	0.027	0.051	-0.0320	0.0480	0.397	1.095	-0.1490	0.084	-0.00300	0.00200	0.445	0.280	0.791
					10/15/2013 15:55	0917-173_No	13_10_15_1555_02_931	1	3.437	0.912	0.037	0.052	-0.0120	0.0500	0.5060	1.091	-0.002	0.085	-0.00100	0.00200	0.105	0.282	0.58
					10/15/2013 15:56	0917-173_No	13_10_15_1556_03_701	1	1.382	1.003	0.035	0.054	-0.0140	0.0490	0.5740	1.092	-0.152	0.090	-0.00400	0.00200	-0.621	0.301	0.508
					10/15/2013 15:57	0917-173_No	13_10_15_1557_04_531	1	1.349	0.953	0.040	0.0490	-0.0510	0.0490	0.6150	1.087	0.096	0.084	-0.00600	0.00200	-0.445	0.283	0.465
					10/15/2013 15:58	0917-173_No	13_10_15_1558_05_231	1	1.674	0.990	-0.001	0.053	0.0350	0.0490	0.5530	1.100	-0.048	0.090	-0.00500	0.00200	-0.360	0.296	0.442
					10/15/2013 15:59	0917-173_No	13_10_15_1559_06_001	1	2.0630	0.957	0.129	0.053	-0.0190	0.0500	0.5250	1.098	-0.100	0.089	-0.00100	0.00200	-0.310	0.298	0.457
					10/15/2013 16:00	0917-173_No	13_10_15_1600_06_721	1	0.697	0.945	0.007	0.051	-0.072	0.0490	0.454	1.114	-0.054	0.085	-0.00400	0.00200	-0.067	0.291	0.507
					10/15/2013 16:01	0917-173_No	13_10_15_1601_07_521	1	1.614	0.951	0.010	0.053	-0.081	0.0500	0.5040	1.098	-0.014	0.087	0.00	0.00200	-0.338	0.290	0.484
					10/15/2013 16:02	0917-173_No	13_10_15_1602_08_231	1	0.415	0.935	-0.067	0.053	0.02	0.0460	0.5730	1.098	0.001	0.087	-0.00300	0.00300	-0.62	0.285	0.439
					10/15/2013 16:03	0917-173_No	13_10_15_1603_08_982	1	2.959	0.997	0.033	0.049	-0.057	0.0510	0.468	1.099	-0.018	0.085	0.00	0.00200	-0.84	0.286	0.383
					10/15/2013 16:04	0917-173_No	13_10_15_1604_09_802	1	1.1840	0.951	0.043	0.053	0.0350	0.0480	0.5550	1.097	-0.080	0.087	0.00	0.00200	-0.058	0.291	0.317
					10/15/2013 16:05	0917-173_No	13_10_15_1605_10_512	1	2.695	0.978	0.024	0.053	0.0020	0.0490	0.384	1.097	-0.024	0.087	-0.00100	0.00200	-0.728	0.293	0.548
					10/15/2013 16:06	0917-173_No	13_10_15_1606_11_262	1	1.7420	1.006	0.022	0.052	-0.030	0.0510	0.401	1.104	-0.025	0.087	-0.00400	0.00200	-0.175	0.303	0.734
					10/15/2013 16:07	0917-173_No	13_10_15_1607_12_092	1	2.162	0.944	0.071	0.052	-0.044	0.0500	0.455	1.091	-0.028	0.087	0.00	0.00200	-0.02	0.292	0.311
					10/15/2013 16:08	0917-173_No	13_10_15_1608_12_842	1	1.624	0.986	0.037	0.052	-0.045	0.0490	0.5670	1.098	-0.005	0.088	-0.00500	0.00200	0.031	0.302	0.353
					10/15/2013 16:09	0917-173_No	13_10_15_1609_13_572	1	1.5810	1.032	0.058	0.054	-0.044	0.0480	0.441	1.105	0.041	0.090	0.00	0.00200	-0.127	0.306	0.381
					10/15/2013 16:10	0917-173_No	13_10_15_1610_14_332	1	3.471	0.855	0.143	0.051	-0.0440	0.0470	0.6010	1.101	-0.017	0.084	-0.01	0.00200	-0.425	0.279	0.372
					10/15/2013 16:11	0917-173_No	13_10_15_1611_15_062	1	3.098	0.923	0.047	0.052	-0.0150	0.0480	0.520	1.100	-0.042	0.085	0.00	0.00200	-0.368	0.280	0.385
					10/15/2013 16:12	0917-173_No	13_10_15_1612_15_872	1	1.787	1.000	0.038	0.055	-0.050	0.0500	0.6030	1.101	-0.0260	0.092	-0.00300	0.00200	0.1930	0.309	0.556
					10/15/2013 16:13	0917-173_No	13_10_15_1613_16_622	1	1.5680	1.052	-0.017	0.054	-0.0320	0.0490	0.501	1.108	0.111	0.090	0.00	0.00200	-0.373	0.307	0.709
					10/15/2013 16:14	0917-173_No	13_10_15_1614_17_342	1	3.652	0.921	-0.006	0.052	-0.0180	0.0520	0.568	1.116	0.021	0.085	-0.00100	0.00200	-0.5690	0.286	0.955
					10/15/2013 16:27	0917-173_No	13_10_15_1627_19_744	1	-1.0	1.3	0.120	0.076	-0.37	1.24	-0.180	0.0860	0.063	0.121	0.047	0.505	0.163	0.379	-1.551
					10/15/2013 16:27	0917-173_No	13_10_15_1627_38_254	1	1.1	1.3	-0.032	0.069	-0.36	1.32	0.062	0.0950	-0.024	0.114	0.047	0.532	-0.64	0.383	-1.653
					10/15/2013 16:27	0917-173_No	13_10_15_1627_56_754	1	-2.7	1.2	0.0180	0.070	-0.37	1.36	0.0070	0.0850	-0.030	0.114	0.048	0.546	-0.747	0.373	-1.713
					10/15/2013 16:28	0917-173_No	13_10_15_1628_15_384	1	-0.4	1.2	-0.0010	0.072	-0.50	1.37	-0.03700	0.0880	-0.046	0.114	0.046	0.553	-0.285	0.374	-1.693
					10/15/2013 16:28	0917-173_No	13_10_15_1628_33_854	1	-2.2	1.3	0.024	0.067	-0.38	1.39	-0.02300	0.0820	0.10600	0.113	0.052	0.556	-0.613	0.371	-1.748
					10/15/2013 16:28	0917-173_No	13_10_15_1628_52_344	1	-0.3	1.2	0.0400	0.070	-0.30	1.40	0.239	0.0900	-0.1270	0.111	0.050	0.553	-0.271	0.365	-1.768
					10/15/2013 16:29	0917-173_No	13_10_15_1629_10_944	1	0.3	1.3	0.176	0.069	-0.41	1.40	-0.095	0.0850	-0.210	0.112	0.053	0.556	-0.240	0.381	-1.748
					10/15/2013 16:29	0917-173_No	13_10_15_1629_29_464	1	-3.2	1.2	-0.026	0.067	-0.40	1.40	-0.0280	0.0980	-0.144	0.109	0.052	0.555	-0.436	0.361	-1.776
					10/15/2013 16:29	0917-173_No	13_10_15_1629_48_084	1	-0.5	1.3	0.2340	0.073	-0.44	1.40	0.0580	0.0950	0.277	0.117	0.054	0.561	0.449	0.371	-1.749
					10/15/2013 16:30	0917-173_No	13_10_15_1630_06_504	1	-0.3	1.3	0.16600	0.076	-0.44	1.40	0.0730	0.0830	0.086	0.122	0.043	0.556	-0.75	0.399	-1.759
					10/15/2013 16:30	0917-173_No	13_10_15_1630_25_004	1	-1.1	1.2	0.2160	0.069	-0.41	1.40	0.078	0.0920	0.112	0.112	0.057	0.560	-1.00	0.356	-1.751
					10/15/2013 16:30	0917-173_No	13_10_15_1630_43_654	1	-1.3	1.3	0.215	0.071	-0.35	1.40	-0.001	0.0920	0.224	0.119	0.045	0.557	-0.91	0.400	-1.772
					10/15/2013 16:31	0917-173_No	13_10_15_1631_02_124	1	-1.3	1.2	-0.01900	0.070	-0.46	1.40	-0.01700	0.0920	0.172	0.115	0.045	0.556	-0.374	0.378	-1.781
					10/15/2013 16:31	0917-173_No	13_10_15_1631_20_734	1	-3.1	1.2	-0.098	0.074	-0.38	1.40	-0.089	0.0840	-0.155	0.116	0.048	0.556	-0.0240	0.380	-1.757
					10/15/2013 16:31	0917-173_No	13_10_15_1631_39_234	1	-1.3	1.2	0.010	0.073	-0.45	1.40	-0.185	0.0830	0.2110	0.117	0.037	0.556	-0.37	0.378	-1.769
					10/15/2013 16:31	0917-173_No	13_10_15_1631_57_744	1	-3.4	1.3	0.027	0.072	-0.41	1.39	-0.028	0.0880	-0.147	0.118	0.043	0.559	0.2630	0.385	-1.759
					10/15/2013 17:05	0917-173_No	13_10_15_1705_46_267	1	-2.54	1.372	0.696	0.172	3.70	0.138	-0.236	1.87	-2.16	0.62	-0.0090	0.00400	-3.5	0.51	90.213
					10/15/2013 17:06	0917-173_No	13_10_15_1706_46_977	1	-2.02	1.329	0.727	0.173	3.68	0.137	-0.10	1.88	-1.97	0.64	-0.0050	0.00400	-3.6	0.50	92.492
					10/15/2013 17:07	0917-173_No	13_10_15_1707_47_767	1	-3.02	1.307	0.810	0.169	3.61	0.139	-0.12	1.87	-2.00	0.64	-0.0060	0.00500	-3.5	0.52	92.173
					10/15/2013 17:08	0917-173_No	13_10_15_1708_48_517	1	-2.76	1.439	0.673	0.172	3.70	0.141	-0.106	1.87	-2.10	0.64	-0.0090	0.00500	-3.5	0.52	93.885
					10/15/2013 17:09	0917-173_No	13_10_15_1709_49_367	1	-2.66	1.353	0.716	0.174	3.66	0.141	-0.10	1.88	-2.12	0.65	-0.0040	0.00500	-3.5	0.52	94.47
					10/15/2013 17:10	0917-173_No	13_10_15_1710_50_057	1	-2.10	1.315	0.635	0.182	3.72	0.144	-0.215	1.89	-2.34	0.69	-0.0040	0.00500	-3.6	0.53	98.536
					10/15/2013 17:11	0917-173_No	13_10_15_1711_50_897	1	-2.12	1.315	0.688	0.179	3.63	0.145	-0.296	1.87	-2.31	0.68	-0.0110	0.00500	-4.1	0.51	99.459
					10/15/2013 17:12	0917-173_No	13_10_15_1712_51_607	1	-2.30	1.395	0.647	0.183	3.53	0.141	-0.344	1.87	-2.16	0.70	-0.0090	0.00500	-4.0	0.54	100.827
					10/15/2013 17:13	0917-173_No	13_10_15_1713_52_367	1	-2.43	1.361	0.690	0.184	3.50	0.144	-0.488	1.88	-1.94	0.69	-0.0050	0.00400	-3.8	0.53	101.043
					10/15/2013 17:14	0917-173_No	13_10_15_1714_53_138	1	-1.26	1.272	0.715	0.184	3.36	0.141	-0.383	1.86	-1.77	0.69	-0.0050	0.00500	-4.5	0.53	100.718
					10/15/2013 17:15	0917-173_No	13_10_15_1715_53_758	1	-0.67	1.306	0.794	0.182	3.22	0.139	-0.169	1.87	-1.32	0.68	-0.0080	0.00500	-4.7	0.55	100.097
					10/15/2013 17:16	0917-173_No	13_10_15_1716_54_528	1	-1.78	1.430	0.858	0.177	3.17	0.139	-0.232	1.88	-1.02	0.67	-0.0070	0.00500	-4.7	0.54	98.764
					10/15/2013 17:17	0917-173_No	13_10_15_1717_55_258	1	-1.13	1.389	0.874	0.179	3.09	0.138	-0.342	1.86	-1.17	0.67	-0.0100	0.00500	-4.4	0.56	99.103
					10/15/2013 17:18	0917-173_No	13_10_15_1718_56_058	1	-3.18	1.396	0.783	0.176	3.05	0.138	-0.193	1.87	-1.14	0.67	-0.0030	0.00500	-5.3	0.56	98.537
					10/15/2013 17:19	0917-173_No	13_10_15_1719_56_858	1	-0.81	1.347	0.848	0.179	3.08	0.139	-0.129	1.87	-0.87	0.67	-0.0130	0.00500	-5.1	0.53	98.91
					10/15/2013 17:20	0917-173_No	13_10_15_1720_57_568	1	-1.82	1.322	0.797	0.172	3.12	0.137	-0.120	1.87	-1.13	0.64	-0.0060	0.00400	-4.6	0.54	94.905
					10/15/2013 17:21	0917-173_No	13_10_15_1721_58_318	1	-1.65	1.286	0.881	0.165	3.16	0.134	-0.053	1.88	-0.80	0.61	-0.0080	0.00400	-4.4	0.50	90.702
					10/15/2013 17:22	0917-173_No	13_10_15_1722_59_158	1	-1.35	1.348	0.737	0.170	3.06	0.134	-0.148	1.87	-1.05	0.62	-0.0010	0.00400	-4.3	0.53	92.25
					10/15/2013 17:23	0917-173_No	13_10_15_1723_59_868	1	-3.00	1.369	0.771	0.171	3.20	0.133	-0.138	1.87	-1.63	0.64	-0.0100	0.00400	-3.2	0.53	93.954
					10/15/2013 17:25	0917-173_No	13_10_15_1725_00_688	1	-1.97	1.285	0.690	0.175	3.23	0.139	-0.026	1.87	-1.81	0.65	-0.0050	0.00500	-3.5	0.52	95.594
					10/15/2013 17:26	0917-173_No	13_10_15_1726_01_458	1	-2.09	1.285	0.639	0.166	3.13	0.137	0.009	1.87	-1.71	0.64	-0.0020	0.00500	-4.0	0.49	92.585
					10/15/2013 17:27	0917-173_No	13_10_15_1727_02_149	1	-3.04	1.250	0.716	0.175	3.05	0.135	-0.126	1.86	-1.58	0.64	-0.0060	0.00500	-4.1	0.51	94.37
					10/15/2013 17:28	0917-173_No	13_10_15_1728_02_979	1	-0.71	1.337	0.744	0.162	2.97	0.133	-0.055	1.88	-1.46	0.61	-0.0090	0.00500	-3.3	0.50	89.973
					10/15/2013 17:30	0917-173_No	13_10_15_1730_15_740	1	-1.69	1.283	0.625	0.163	2.90	0.130	-0.024	1.87	-1.33	0.61	-0.0050	0.00400	-4.3	0.50	89.301
					10/15/2013 17:31	0917-173_No	13_10_15_1731_16_470	1	-1.55	1.310	0.681	0.163	2.89	0.131	-0.038	1.87	-1.20	0.61	-0.0010	0.00500	-3.9	0.51	89.745
					10/15/2013 17:32	0917-173_No	13_10_15_1732_17_210	1	-2.97	1.308	0.690	0.166	2.85	0.130	-0.169	1.87	-1.21	0.61	-0.0080	0.00500	-4.3	0.51	91.371
					10/15/2013 17:33	0917-173_No	13_10_15_1733_17_960	1	-1.67	1.251	0.639	0.167	2.83	0.132	0.021	1.89	-1.27	0.62	-0.0040	0.00400	-4.0	0.52	92.979
					10/15/2013 17:34	0917-173_No	13_10_15_1734_18_770	1	-2.51	1.343	0.635	0.165	2.80	0.133	0.169	1.89	-1.39	0.62	-0.0050	0.00400	-4.0	0.51	91.373
					10/15/2013 17:35	0917-173_No	13_10_15_1735_19_520	1	-0.99	1.432	0.741	0.164	2.83	0.131	-0.048	1.87	-1.11	0.60	-0.0080	0.00400	-3.6	0.52	90.237
Data	Run	7	Start	A	10/15/2013 17:36	0917-173_No	13_10_15_1736_20_230	1	-3.24	1.355	0.769	0.163	2.79	0.132	-0.028	1.87	-1.05	0.60	-0.0030	0.00400	-3.5	0.51	90.842
					10/15/2013 17:37	0917-173_No	13_10_15_1737_20_960	1	-0.39	1.408	0.805	0.164	2.59	0.127	0.030	1.88	-0.75	0.61	-0.0100	0.00500	-4.6	0.53	90.736
					10/15/2013 17:38	0917-173_No	13_10_15_1738_21_720	1	-0.62	1.352	0.754	0.165	2.58	0.129	0.009	1.89	-0.91	0.61	-0.0060	0.00500	-4.3	0.51	92.193
					10/15/2013 17:39	0917-173_No	13_10_15_1739_22_480	1	-2.05	1.505	0.760	0.176	2.54	0.131	-0.035	1.88	-0.72	0.64	-0.0100	0.00400	-4.8	0.55	95.38
					10/15/2013 17:40	0917-173_No	13_10_15_1740_23_240	1	-0.96	1.420	0.738	0.170	2.47	0.129	-0.142	1.88	-0.65	0.63	-0.0050	0.00500	-4.7	0.54	95.361
					10/15/2013 17:41	0917-173_No	13_10_15_1741_23_960	1	-1.57	1.417	0.641	0.170	2.36	0.129	-0.055	1.88	-0.66	0.63	-0.0070	0.00500	-4.9	0.54	95.259
					10/15/2013 17:42	0917-173_No	13_10_15_1742_24_741	1	-2.28	1.304	0.782	0.172	2.48	0.131	0.013	1.87	-0.44	0.63	-0.0040	0.00400	-5.1	0.52	95.102
					10/15/2013 17:43	0917-173_No	13_10_15_1743_25_431	1	-1.81	1.336	0.645	0.172	2.33	0.130	-0.071	1.87	-0.68	0.63	-0.0090	0.00400	-4.8	0.54	95.242
					10/15/2013 17:44	0917-173_No	13_10_15_1744_26_271	1	-1.12	1.344	0.676	0.170	2.37	0.128	-0.076	1.88	-0.75	0.63	-0.0090	0.00400	-5.0	0.54	95.055
					10/15/2013 17:45	0917-173_No	13_10_15_1745_27_041	1	-1.54	1.398	0.742	0.168	2.38	0.128	-0.028	1.87	-0.80	0.63	-0.0060	0.00500	-4.5	0.53	96.451
					10/15/2013 17:46	0917-173_No	13_10_15_1746_27_711	1	-1.68	1.402	0.771	0.171	2.31	0.130	0.021	1.89	-0.47	0.64	-0.0030	0.00500	-5.8	0.54	96.611
					10/15/2013 17:47	0917-173_No	13_10_15_1747_28_481	1	-2.93	1.258	0.702	0.173	2.35	0.129	-0.1340	1.88	-0.62	0.64	-0.0100	0.00500	-5.3	0.54	97.143
					10/15/2013 17:48	0917-173_No	13_10_15_1748_29_241	1	-0.85	1.327	0.795	0.170	2.36	0.129	-0.218	1.88	-0.55	0.64	-0.0080	0.00500	-5.2	0.54	98.02
					10/15/2013 17:49	0917-173_No	13_10_15_1749_30_061	1	-1.67	1.415	0.694	0.171	2.27	0.130	0.0740	1.88	-0.87	0.64	-0.0050	0.00400	-5.1	0.55	97.405
					10/15/2013 17:50	0917-173_No	13_10_15_1750_30_771	1	-1.35	1.383	0.708	0.175	2.19	0.127	-0.1370	1.88	-0.77	0.65	-0.0080	0.00500	-5.5	0.55	98.333
					10/15/2013 17:51	0917-173_No	13_10_15_1751_31_551	1	-0.87	1.346	0.767	0.174	2.18	0.129	-0.164	1.88	-0.60	0.66	-0.0040	0.00500	-5.4	0.55	99.075
					10/15/2013 17:52	0917-173_No	13_10_15_1752_32_281	1	-2.38	1.409	0.852	0.176	2.25	0.131	0.1010	1.88	-0.49	0.65	-0.0110	0.00500	-5.2	0.55	99.974
					10/15/2013 17:53	0917-173_No	13_10_15_1753_33_031	1	-0.78	1.351	0.767	0.176	2.15	0.129	-0.125	1.88	-0.60	0.65	-0.0080	0.00500	-5.2	0.54	99.153
					10/15/2013 17:54	0917-173_No	13_10_15_1754_33_752	1	-3.22	1.333	0.719	0.177	2.17	0.128	-0.123	1.88	-0.69	0.66	-0.0050	0.00400	-5.5	0.54	98.385
					10/15/2013 17:55	0917-173_No	13_10_15_1755_34_512	1	-2.91	1.285	0.668	0.175	2.12	0.129	-0.0310	1.88	-0.64	0.66	-0.0060	0.00500	-5.1	0.54	99.266
					10/15/2013 17:56	0917-173_No	13_10_15_1756_35_272	1	-1.59	1.330	0.769	0.175	2.15	0.129	0.0010	1.89	-0.57	0.66	-0.0080	0.00500	-5.3	0.55	99.325
					10/15/2013 17:57	0917-173_No	13_10_15_1757_36_032	1	-1.17	1.372	0.727	0.176	2.15	0.129	0.0050	1.88	-0.55	0.65	-0.0040	0.00500	-5.2	0.53	99.778
					10/15/2013 17:58	0917-173_No	13_10_15_1758_36_842	1	-1.62	1.403	0.767	0.178	2.12	0.129	-0.072	1.88	-0.66	0.66	-0.0080	0.00500	-4.9	0.56	99.772
					10/15/2013 17:59	0917-173_No	13_10_15_1759_37_412	1	-1.65	1.315	0.776	0.179	2.17	0.127	-0.190	1.87	-0.73	0.66	-0.0060	0.00500	-4.8	0.53	100.435
					10/15/2013 18:00	0917-173_No	13_10_15_1800_38_222	1	-2.34	1.405	0.788	0.180	2.15	0.130	0.01700	1.88	-0.80	0.67	-0.0040	0.00500	-5.4	0.55	100.289
					10/15/2013 18:01	0917-173_No	13_10_15_1801_38_972	1	0.24	1.381	0.737	0.172	2.23	0.129	-0.192	1.88	-0.96	0.67	-0.0030	0.00500	-5.3	0.55	100.744
					10/15/2013 18:02	0917-173_No	13_10_15_1802_39_732	1	-1.97	1.389	0.825	0.177	2.21	0.133	-0.0690	1.87	-0.81	0.67	-0.0060	0.00500	-5.2	0.55	101.077
					10/15/2013 18:03	0917-173_No	13_10_15_1803_40_492	1	-2.34	1.348	0.854	0.183	2.29	0.130	-0.0330	1.88	-0.64	0.68	-0.0050	0.00500	-5.2	0.55	101.68
					10/15/2013 18:04	0917-173_No	13_10_15_1804_41_282	1	-2.82	1.320	0.796	0.178	2.24	0.131	-0.0430	1.88	-0.51	0.67	-0.0100	0.00500	-5.8	0.56	101.47
					10/15/2013 18:05	0917-173_No	13_10_15_1805_42_053	1	-1.66	1.348	0.782	0.180	2.21	0.130	-0.0430	1.88	-0.44	0.67	-0.0030	0.00500	-5.1	0.56	101.682
					10/15/2013 18:06	0917-173_No	13_10_15_1806_42_763	1	-1.47	1.346	0.806	0.177	2.25	0.130	-0.0490	1.89	-0.41	0.66	-0.0050	0.00400	-5.0	0.55	99.683
					10/15/2013 18:07	0917-173_No	13_10_15_1807_43_543	1	-1.90	1.418	0.831	0.174	2.26	0.127	-0.00600	1.88	-0.42	0.63	-0.0070	0.00500	-5.5	0.55	96.319
					10/15/2013 18:08	0917-173_No	13_10_15_1808_44_293	1	0.19	1.363	0.861	0.162	2.35	0.128	0.0190	1.89	-0.20	0.59	-0.0050	0.00500	-4.7	0.53	89.932
					10/15/2013 18:09	0917-173_No	13_10_15_1809_45_103	1	-3.81	1.415	0.766	0.150	2.51	0.123	0.161	1.89	-0.07	0.55	-0.0070	0.00400	-4.3	0.53	83.168
					10/15/2013 18:10	0917-173_No	13_10_15_1810_45_773	1	-0.05	1.358	0.780	0.140	2.48	0.122	0.175	1.880	-0.18	0.50	-0.0090	0.00400	-4.8	0.49	74.513
					10/15/2013 18:11	0917-173_No	13_10_15_1811_46_533	1	-0.40	1.355	0.829	0.137	2.65	0.122	0.174	1.877	-0.30	0.47	-0.0080	0.00400	-3.6	0.49	70.248
					10/15/2013 18:12	0917-173_No	13_10_15_1812_47_343	1	-3.494	1.351	0.804	0.137	2.69	0.121	0.026	1.89	-0.26	0.48	-0.0050	0.00400	-4.1	0.48	71.484
					10/15/2013 18:13	0917-173_No	13_10_15_1813_48_113	1	-2.37	1.369	0.851	0.139	2.65	0.121	0.211	1.881	-0.25	0.49	-0.0090	0.00400	-4.0	0.49	73.476
					10/15/2013 18:14	0917-173_No	13_10_15_1814_48_813	1	-1.56	1.319	0.738	0.147	2.69	0.121	0.160	1.89	-0.27	0.52	-0.0060	0.00400	-4.1	0.48	78.215
					10/15/2013 18:15	0917-173_No	13_10_15_1815_49_633	1	0.30	1.429	0.657	0.149	2.64	0.122	0.217	1.89	-0.35	0.54	-0.0080	0.00400	-4.2	0.52	81.58
					10/15/2013 18:16	0917-173_No	13_10_15_1816_50_353	1	-2.87	1.365	0.777	0.156	2.74	0.124	0.228	1.89	-0.66	0.56	-0.0090	0.00400	-4.7	0.52	83.886
					10/15/2013 18:17	0917-173_No	13_10_15_1817_51_074	1	-1.94	1.433	0.821	0.156	2.74	0.126	0.058	1.88	-0.90	0.57	-0.0060	0.00400	-4.1	0.53	85.928
					10/15/2013 18:18	0917-173_No	13_10_15_1818_51_864	1	-3.17	1.409	0.770	0.161	2.81	0.129	0.017	1.87	-1.16	0.59	-0.0050	0.00500	-4.3	0.53	86.997
					10/15/2013 18:19	0917-173_No	13_10_15_1819_52_674	1	-0.30	1.346	0.762	0.163	2.79	0.128	-0.299	1.87	-1.18	0.59	-0.0110	0.00400	-4.0	0.53	88.312
					10/15/2013 18:20	0917-173_No	13_10_15_1820_53_414	1	-1.53	1.411	0.802	0.166	2.72	0.128	0.009	1.88	-1.12	0.60	-0.0090	0.00400	-3.9	0.53	89.341
					10/15/2013 18:21	0917-173_No	13_10_15_1821_54_174	1	-2.30	1.374	0.960	0.161	2.67	0.133	0.069	1.88	-0.99	0.60	-0.0050	0.00500	-4.6	0.51	89.894
					10/15/2013 18:22	0917-173_No	13_10_15_1822_54_894	1	-0.89	1.426	0.852	0.162	2.65	0.131	0.089	1.89	-0.95	0.62	-0.0020	0.00400	-4.9	0.53	91.566
					10/15/2013 18:23	0917-173_No	13_10_15_1823_55_724	1	-1.37	1.387	0.840	0.168	2.51	0.129	0.134	1.88	-0.93	0.62	-0.0060	0.00400	-4.6	0.54	93.359
					10/15/2013 18:24	0917-173_No	13_10_15_1824_56_494	1	-5.26	1.342	0.976	0.166	2.53	0.131	0.042	1.88	-0.62	0.63	-0.0090	0.00500	-4.6	0.54	94.379
					10/15/2013 18:25	0917-173_No	13_10_15_1825_57_204	1	-1.90	1.349	0.859	0.172	2.40	0.131	0.031	1.88	-0.56	0.64	-0.0050	0.00400	-5.3	0.54	95.884
					10/15/2013 18:26	0917-173_No	13_10_15_1826_57_954	1	-1.89	1.278	0.789	0.174	2.46	0.130	0.065	1.87	-0.73	0.64	-0.0080	0.00500	-4.8	0.53	97.267
					10/15/2013 18:27	0917-173_No	13_10_15_1827_58_704	1	-1.99	1.299	0.848	0.174	2.44	0.133	0.067	1.87	-0.97	0.65	-0.0070	0.00500	-4.8	0.55	97.501
					10/15/2013 18:28	0917-173_No	13_10_15_1828_59_474	1	-0.84	1.383	0.799	0.175	2.47	0.131	-0.040	1.87	-0.62	0.66	-0.0050	0.00500	-5.4	0.55	98.455
					10/15/2013 18:30	0917-173_No	13_10_15_1830_01_265	1	-1.45	1.409	0.804	0.176	2.43	0.133	-0.002	1.87	-0.81	0.66	-0.0060	0.00400	-4.5	0.57	99.1
					10/15/2013 18:31	0917-173_No	13_10_15_1831_02_065	1	-0.38	1.352	0.791	0.177	2.47	0.132	0.032	1.87	-0.73	0.66	-0.0050	0.00500	-5.7	0.55	99.918
					10/15/2013 18:32	0917-173_No	13_10_15_1832_02_795	1	-2.32	1.351	0.772	0.177	2.39	0.132	-0.074	1.87	-0.67	0.67	-0.0090	0.00500	-5.0	0.55	99.823
					10/15/2013 18:33	0917-173_No	13_10_15_1833_03_555	1	-3.12	1.422	0.742	0.175	2.41	0.134	-0.061	1.87	-0.76	0.66	-0.0060	0.00500	-5.0	0.58	100.704
					10/15/2013 18:34	0917-173_No	13_10_15_1834_04_365	1	-1.43	1.347	0.821	0.180	2.46	0.134	0.009	1.87	-0.69	0.67	-0.0060	0.00500	-5.0	0.55	99.972
					10/15/2013 18:35	0917-173_No	13_10_15_1835_05_115	1	-2.26	1.299	0.792	0.182	2.47	0.135	0.035	1.89	-0.79	0.67	-0.0070	0.00500	-4.9	0.56	100.95
			Stop		10/15/2013 18:36	0917-173_No	13_10_15_1836_05_865	1	-2.80	1.248	0.433	0.182	2.14	0.123	0.035	1.762	-2.28	0.64	-0.0050	0.00400	-5.0	0.54	92.71
					10/15/2013 18:37	0917-173_No	13_10_15_1837_06_585	1	-4.087	1.101	-1.396	0.248	0.104	0.0770	-0.171	0.539	-9.86	0.47	-0.01200	0.00300	-3.56	0.83	39.114
					10/15/2013 18:38	0917-173_No	13_10_15_1838_07_425	1	-4.750	1.146	-1.757	0.263	-0.078	0.0790	-0.241	0.192	-11.19	0.46	-0.00900	0.00300	-3.44	0.89	32.602
					10/15/2013 18:39	0917-173_No	13_10_15_1839_08_065	1	-4.15	1.149	-1.758	0.261	-0.171	0.0820	-0.210	0.176	-11.36	0.46	-0.00800	0.00300	-3.18	0.91	31.864
					10/15/2013 18:40	0917-173_No	13_10_15_1840_08_765	1	-5.04	1.134	-1.867	0.268	-0.1810	0.0840	-0.232	0.162	-11.36	0.46	-0.01000	0.00300	-3.27	0.91	31.572
					10/15/2013 18:41	0917-173_No	13_10_15_1841_09_505	1	-4.90	1.142	-1.695	0.267	-0.101	0.0870	-0.219	0.167	-11.23	0.46	-0.00600	0.00300	-3.29	0.93	31.359
					10/15/2013 18:42	0917-173_No	13_10_15_1842_10_276	1	-5.170	1.103	-1.750	0.262	-0.165	0.0850	-0.298	0.170	-11.33	0.45	-0.00700	0.00300	-3.71	0.91	31.312
					10/15/2013 18:43	0917-173_No	13_10_15_1843_11_086	1	-3.307	0.974	-1.298	0.200	-0.075	0.0640	-0.151	0.129	-8.26	0.34	-0.00700	0.00200	-3.34	0.684	22.771
					10/15/2013 18:44	0917-173_No	13_10_15_1844_11_866	1	-0.413	0.787	-0.210	0.058	0.068	0.0280	0.017	0.0710	-1.401	0.10	0.00	0.00100	-0.729	0.266	5.306
					10/15/2013 18:45	0917-173_No	13_10_15_1845_12_596	1	-0.151	0.827	-0.0100	0.043	0.0550	0.0260	0.080	0.0600	0.20200	0.07	0.00	0.00200	0.106	0.235	1.34
					10/15/2013 18:46	0917-173_No	13_10_15_1846_13_396	1	-1.874	1.056	0.483	0.107	1.73	0.079	0.434	1.223	-0.76	0.39	-0.0080	0.00300	-3.0	0.36	50.44
					10/15/2013 18:47	0917-173_No	13_10_15_1847_14_166	1	-2.90	1.414	0.759	0.168	2.65	0.130	0.096	1.86	-1.06	0.65	-0.0010	0.00500	-4.8	0.54	98.22
					10/15/2013 18:48	0917-173_No	13_10_15_1848_14_866	1	-1.36	1.350	0.790	0.178	2.66	0.134	0.028	1.85	-0.87	0.67	-0.0050	0.00500	-5.4	0.56	100.883
Data	Run	8	Start	A	10/15/2013 18:49	0917-173_No	13_10_15_1849_15_616	1	-3.75	1.317	0.801	0.175	2.54	0.134	-0.067	1.86	-0.80	0.67	-0.0030	0.00400	-4.7	0.56	100.957
					10/15/2013 18:50	0917-173_No	13_10_15_1850_16_406	1	-1.36	1.397	0.821	0.176	2.49	0.134	-0.339	1.85	-0.61	0.68	-0.0090	0.00500	-5.3	0.57	101.627
					10/15/2013 18:51	0917-173_No	13_10_15_1851_17_216	1	-2.47	1.326	0.764	0.182	2.50	0.134	0.025	1.86	-0.82	0.68	-0.0060	0.00500	-4.9	0.56	102.426
					10/15/2013 18:52	0917-173_No	13_10_15_1852_17_946	1	-2.28	1.288	0.765	0.181	2.61	0.136	-0.078	1.86	-0.77	0.69	-0.0050	0.00500	-5.4	0.56	102.935
					10/15/2013 18:53	0917-173_No	13_10_15_1853_18_657	1	-1.81	1.363	0.870	0.185	2.61	0.134	-0.135	1.84	-0.92	0.70	-0.0050	0.00400	-5.6	0.56	104.998
					10/15/2013 18:54	0917-173_No	13_10_15_1854_19_407	1	-1.18	1.330	0.886	0.189	2.59	0.138	-0.073	1.85	-1.40	0.72	-0.0090	0.00500	-5.1	0.54	107.789

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 18:55	0917-173_No	13_10_15_1855_20_197	1	-0.34	1.460	0.773	0.194	2.64	0.144	-0.188	1.86	-1.75	0.74	-0.0030	0.00500	-5.2	0.56	109.651
					10/15/2013 18:56	0917-173_No	13_10_15_1856_20_907	1	-3.15	1.309	0.734	0.198	2.73	0.144	-0.249	1.84	-2.33	0.76	-0.0070	0.00500	-4.5	0.57	112.503
					10/15/2013 18:57	0917-173_No	13_10_15_1857_21_717	1	-0.79	1.306	0.743	0.197	2.75	0.147	-0.346	1.85	-2.46	0.77	-0.0040	0.00500	-4.9	0.55	114.073
					10/15/2013 18:58	0917-173_No	13_10_15_1858_22_447	1	0.00	1.366	0.808	0.198	2.72	0.146	-0.196	1.86	-2.38	0.77	-0.0060	0.00500	-5.0	0.55	113.955
					10/15/2013 18:59	0917-173_No	13_10_15_1859_23_207	1	-3.60	1.369	0.928	0.202	2.75	0.148	-0.329	1.84	-2.05	0.77	-0.0090	0.00500	-4.9	0.56	113.907
					10/15/2013 19:00	0917-173_No	13_10_15_1900_23_947	1	-2.57	1.392	0.924	0.203	2.73	0.145	-0.464	1.86	-1.95	0.77	-0.0050	0.00500	-5.2	0.55	113.567
					10/15/2013 19:01	0917-173_No	13_10_15_1901_24_647	1	-2.94	1.389	0.995	0.202	2.82	0.147	-0.348	1.85	-2.01	0.77	-0.0040	0.00500	-5.2	0.58	114.151
					10/15/2013 19:02	0917-173_No	13_10_15_1902_25_427	1	-1.47	1.363	0.920	0.198	2.75	0.146	-0.342	1.85	-2.20	0.77	-0.0070	0.00600	-4.6	0.58	114.906
					10/15/2013 19:03	0917-173_No	13_10_15_1903_26_167	1	-2.07	1.347	0.844	0.208	2.80	0.150	-0.134	1.84	-2.21	0.78	-0.0060	0.00500	-5.4	0.57	115.937
					10/15/2013 19:04	0917-173_No	13_10_15_1904_26_967	1	-2.05	1.439	0.836	0.199	2.82	0.151	-0.442	1.84	-2.29	0.78	-0.0030	0.00500	-4.7	0.57	116.295
					10/15/2013 19:05	0917-173_No	13_10_15_1905_27_678	1	-1.05	1.298	0.909	0.204	2.78	0.152	-0.270	1.86	-2.13	0.78	-0.0020	0.00500	-5.3	0.56	115.03
					10/15/2013 19:06	0917-173_No	13_10_15_1906_28_368	1	-2.98	1.378	0.889	0.204	2.80	0.149	-0.497	1.85	-2.12	0.77	-0.0030	0.00500	-5.1	0.57	113.54
					10/15/2013 19:07	0917-173_No	13_10_15_1907_29_148	1	-1.34	1.377	0.741	0.202	2.80	0.150	-0.286	1.86	-1.97	0.76	-0.0070	0.00500	-4.9	0.57	112.865
					10/15/2013 19:08	0917-173_No	13_10_15_1908_29_878	1	-2.68	1.411	0.869	0.195	2.79	0.147	-0.325	1.84	-1.90	0.75	-0.0050	0.00500	-5.1	0.57	111.174
					10/15/2013 19:09	0917-173_No	13_10_15_1909_30_628	1	-2.32	1.353	0.807	0.190	2.73	0.148	-0.355	1.85	-1.64	0.73	-0.0080	0.00500	-5.1	0.56	109.149
					10/15/2013 19:10	0917-173_No	13_10_15_1910_31_398	1	-0.36	1.401	0.723	0.188	2.74	0.144	-0.216	1.86	-1.69	0.72	-0.0060	0.00500	-4.8	0.55	107.437
					10/15/2013 19:11	0917-173_No	13_10_15_1911_32_168	1	-1.52	1.330	0.800	0.187	2.69	0.143	-0.347	1.85	-1.44	0.71	-0.0050	0.00500	-4.8	0.56	105.988
					10/15/2013 19:12	0917-173_No	13_10_15_1912_32_878	1	-2.05	1.269	0.770	0.184	2.78	0.143	-0.394	1.85	-1.36	0.70	-0.0060	0.00400	-4.6	0.54	105.438
					10/15/2013 19:13	0917-173_No	13_10_15_1913_33_668	1	-2.05	1.306	0.768	0.187	2.71	0.141	-0.224	1.85	-1.49	0.71	-0.0010	0.00500	-4.7	0.55	106.155
					10/15/2013 19:14	0917-173_No	13_10_15_1914_34_358	1	0.08	1.384	0.890	0.189	2.80	0.144	-0.067	1.87	-1.34	0.71	-0.0060	0.00500	-4.4	0.55	106.917
					10/15/2013 19:15	0917-173_No	13_10_15_1915_35_158	1	-2.48	1.384	0.776	0.183	2.65	0.142	-0.212	1.85	-1.38	0.70	-0.0090	0.00500	-4.1	0.55	106.168
					10/15/2013 19:16	0917-173_No	13_10_15_1916_35_878	1	-0.76	1.367	0.895	0.189	2.66	0.144	-0.225	1.85	-1.14	0.71	0.0000	0.00500	-4.9	0.55	105.601
					10/15/2013 19:17	0917-173_No	13_10_15_1917_36_589	1	-3.12	1.404	0.818	0.182	2.61	0.142	-0.174	1.86	-1.13	0.69	-0.0040	0.00500	-4.9	0.57	104.456
					10/15/2013 19:18	0917-173_No	13_10_15_1918_37_339	1	-1.02	1.305	0.939	0.185	2.56	0.139	-0.147	1.85	-1.13	0.69	-0.0070	0.00500	-4.9	0.55	103.045
					10/15/2013 19:19	0917-173_No	13_10_15_1919_38_159	1	-1.27	1.366	0.758	0.180	2.56	0.137	-0.383	1.85	-0.77	0.67	-0.0050	0.00500	-5.4	0.56	101.059
					10/15/2013 19:20	0917-173_No	13_10_15_1920_38_909	1	-0.78	1.475	0.865	0.179	2.53	0.139	-0.180	1.86	-0.84	0.67	-0.0060	0.00500	-4.9	0.55	101.324
					10/15/2013 19:21	0917-173_No	13_10_15_1921_39_459	1	-2.64	1.402	0.735	0.180	2.52	0.137	-0.187	1.85	-0.88	0.67	-0.0070	0.00500	-5.2	0.54	101.781
					10/15/2013 19:22	0917-173_No	13_10_15_1922_40_209	1	-3.37	1.422	0.834	0.183	2.53	0.139	-0.033	1.85	-0.98	0.67	-0.0040	0.00500	-4.7	0.55	101.771
					10/15/2013 19:23	0917-173_No	13_10_15_1923_41_009	1	-3.53	1.330	0.775	0.179	2.53	0.138	-0.240	1.85	-0.97	0.68	-0.0040	0.00500	-4.7	0.56	102.066
					10/15/2013 19:24	0917-173_No	13_10_15_1924_41_719	1	-3.06	1.341	0.827	0.180	2.45	0.136	-0.265	1.85	-0.85	0.68	-0.0040	0.00500	-5.3	0.54	102.63
					10/15/2013 19:25	0917-173_No	13_10_15_1925_43_529	1	-0.02	1.293	0.642	0.181	2.41	0.139	-0.236	1.86	-0.99	0.68	-0.0050	0.00500	-5.1	0.53	102.668
					10/15/2013 19:26	0917-173_No	13_10_15_1926_43_249	1	-2.39	1.373	0.768	0.182	2.45	0.139	-0.138	1.86	-0.91	0.68	-0.0020	0.00500	-5.5	0.56	101.936
					10/15/2013 19:27	0917-173_No	13_10_15_1927_43_949	1	-2.98	1.371	0.718	0.186	2.51	0.139	-0.084	1.86	-1.13	0.68	-0.0030	0.00500	-5.3	0.53	102.416
					10/15/2013 19:28	0917-173_No	13_10_15_1928_44_689	1	-2.23	1.332	0.692	0.182	2.58	0.140	-0.206	1.85	-1.42	0.69	-0.0050	0.00500	-4.9	0.53	102.899
					10/15/2013 19:29	0917-173_No	13_10_15_1929_45_530	1	-0.10	1.336	0.585	0.186	2.60	0.144	-0.252	1.84	-1.71	0.69	-0.0050	0.00500	-4.2	0.54	103.539
					10/15/2013 19:30	0917-173_No	13_10_15_1930_46_270	1	-1.96	1.306	0.666	0.190	2.78	0.145	-0.183	1.85	-1.96	0.71	-0.0060	0.00400	-4.0	0.54	105.124
					10/15/2013 19:31	0917-173_No	13_10_15_1931_47_030	1	-1.23	1.388	0.674	0.192	2.85	0.148	-0.229	1.85	-1.85	0.71	-0.0060	0.00400	-4.6	0.56	105.707
					10/15/2013 19:32	0917-173_No	13_10_15_1932_47_740	1	-0.79	1.354	0.653	0.196	2.92	0.150	-0.27	1.85	-2.04	0.72	-0.0090	0.00500	-4.5	0.52	106.311
					10/15/2013 19:33	0917-173_No	13_10_15_1933_48_540	1	-1.71	1.393	0.608	0.191	2.96	0.154	-0.18	1.86	-2.21	0.72	-0.0060	0.00500	-4.2	0.54	106.244
					10/15/2013 19:34	0917-173_No	13_10_15_1934_49_250	1	-0.46	1.325	0.701	0.190	2.99	0.154	-0.18	1.86	-2.01	0.71	-0.0060	0.00500	-3.9	0.54	104.934
					10/15/2013 19:35	0917-173_No	13_10_15_1935_50_070	1	-1.89	1.388	0.5560	0.187	2.89	0.151	-0.464	1.86	-2.10	0.70	-0.0060	0.00400	-4.0	0.54	103.378
					10/15/2013 19:36	0917-173_No	13_10_15_1936_50_850	1	-1.43	1.333	0.711	0.181	2.86	0.145	-0.26	1.85	-1.75	0.68	-0.0080	0.00500	-4.1	0.52	100.668
					10/15/2013 19:37	0917-173_No	13_10_15_1937_51_560	1	-0.96	1.293	0.602	0.176	2.85	0.148	-0.255	1.85	-1.92	0.66	-0.0030	0.00500	-3.4	0.51	99.312
					10/15/2013 19:38	0917-173_No	13_10_15_1938_52_350	1	-0.77	1.339	0.672	0.174	2.77	0.140	-0.204	1.85	-1.81	0.66	-0.0080	0.00500	-4.1	0.52	98.215
					10/15/2013 19:39	0917-173_No	13_10_15_1939_53_120	1	-0.27	1.416	0.653	0.172	2.71	0.139	-0.069	1.86	-1.60	0.64	-0.0040	0.00400	-3.9	0.52	96.431
					10/15/2013 19:40	0917-173_No	13_10_15_1940_53_831	1	-1.58	1.282	0.708	0.172	2.71	0.137	-0.019	1.85	-1.48	0.64	-0.0070	0.00500	-4.0	0.49	95.096
					10/15/2013 19:41	0917-173_No	13_10_15_1941_54_551	1	-2.81	1.361	0.600	0.166	2.69	0.136	-0.159	1.86	-1.57	0.63	-0.0090	0.00400	-4.0	0.50	93.853
					10/15/2013 19:42	0917-173_No	13_10_15_1942_55_311	1	-1.58	1.447	0.705	0.167	2.64	0.136	-0.093	1.85	-1.52	0.62	-0.0060	0.00400	-3.7	0.53	93.003
					10/15/2013 19:43	0917-173_No	13_10_15_1943_56_131	1	0.35	1.388	0.665	0.166	2.66	0.139	-0.104	1.86	-1.59	0.62	-0.0100	0.00400	-3.8	0.51	93.545
					10/15/2013 19:44	0917-173_No	13_10_15_1944_56_911	1	0.00	1.376	0.715	0.170	2.65	0.136	0.019	1.85	-1.45	0.63	-0.0040	0.00400	-4.3	0.49	92.959
					10/15/2013 19:45	0917-173_No	13_10_15_1945_57_631	1	-1.05	1.345	0.819	0.173	2.59	0.135	-0.143	1.86	-1.34	0.61	-0.0070	0.00500	-3.6	0.51	91.861
					10/15/2013 19:46	0917-173_No	13_10_15_1946_58_371	1	-0.70	1.375	0.725	0.167	2.49	0.133	0.012	1.85	-1.30	0.61	-0.0080	0.00400	-3.3	0.51	91.458
					10/15/2013 19:47	0917-173_No	13_10_15_1947_59_161	1	0.75	1.382	0.751	0.161	2.52	0.132	-0.039	1.85	-1.16	0.60	-0.0080	0.00400	-4.0	0.50	91.142
			Stop		10/15/2013 19:48	0917-173_No	13_10_15_1948_59_901	1	-2.649	1.050	-0.889	0.218	0.715	0.0750	0.190	0.966	-7.68	0.46	-0.00800	0.00200	-3.12	0.67	48.551
					10/15/2013 19:50	0917-173_No	13_10_15_1950_00_701	1	-3.14	1.024	-1.668	0.256	-0.111	0.0790	-0.0860	0.209	-10.61	0.44	-0.01500	0.00200	-2.61	0.84	32.268
					10/15/2013 19:51	0917-173_No	13_10_15_1951_01_461	1	-2.80	1.190	-1.708	0.265	-0.103	0.0810	-0.228	0.170	-11.21	0.45	-0.0110	0.00300	-2.94	0.90	31.994
					10/15/2013 19:52	0917-173_No	13_10_15_1952_02_181	1	-4.436	1.162	-1.712	0.264	-0.1880	0.0830	-0.405	0.171	-11.16	0.45	-0.00800	0.00300	-3.25	0.88	31.812
					10/15/2013 19:53	0917-173_No	13_10_15_1953_02_942	1	-3.513	1.016	-1.458	0.215	-0.067	0.0720	-0.216	0.143	-9.12	0.37	-0.00800	0.00300	-2.45	0.71	25.457
					10/15/2013 19:54	0917-173_No	13_10_15_1954_03_702	1	-0.454	0.811	-0.217	0.061	0.0050	0.0270	-0.0440	0.0700	-1.722	0.10	-0.00200	0.00200	-0.04	0.273	6.062
					10/15/2013 19:55	0917-173_No	13_10_15_1955_04_512	1	0.539	0.798	0.013	0.052	0.076	0.0430	0.592	0.943	-0.018	0.08	-0.00300	0.00200	-0.581	0.266	2.427
					10/15/2013 19:56	0917-173_No	13_10_15_1956_05_172	1	1.033	0.877	-0.0030	0.051	0.131	0.0470	0.600	1.121	-0.033	0.09	-0.00800	0.00200	0.225	0.278	2.29
					10/15/2013 19:57	0917-173_No	13_10_15_1957_05_982	1	0.560	0.941	0.242	0.066	0.681	0.0640	0.5910	1.335	-0.33	0.17	-0.00300	0.00200	-1.20	0.302	18.208
					10/15/2013 19:58	0917-173_No	13_10_15_1958_06_702	1	-0.309	1.241	0.659	0.140	2.11	0.111	0.229	1.834	-1.06	0.50	-0.0070	0.00400	-3.6	0.45	74.841
					10/15/2013 19:59	0917-173_No	13_10_15_1959_07_442	1	-2.85	1.332	0.781	0.158	2.45	0.125	0.057	1.86	-0.89	0.57	-0.0070	0.00400	-4.3	0.49	87.335
Data	Run	9	Start	A	10/15/2013 20:00	0917-173_No	13_10_15_2000_08_262	1	-2.528	1.354	0.891	0.153	2.47	0.127	0.165	1.86	-0.96	0.57	-0.0040	0.00400	-4.1	0.50	86.374
					10/15/2013 20:01	0917-173_No	13_10_15_2001_09_022	1	-1.325	1.347	0.821	0.154	2.51	0.127	0.135	1.87	-0.87	0.56	-0.0070	0.00400	-4.0	0.49	85.591
					10/15/2013 20:02	0917-173_No	13_10_15_2002_09_792	1	-3.41	1.359	0.753	0.152	2.54	0.129	0.140	1.856	-1.07	0.56	-0.0080	0.00400	-3.5	0.48	84.786
					10/15/2013 20:03	0917-173_No	13_10_15_2003_10_502	1	-1.86	1.307	0.725	0.154	2.60	0.125	0.127	1.86	-1.06	0.56	-0.0060	0.00400	-3.8	0.49	83.904
					10/15/2013 20:04	0917-173_No	13_10_15_2004_11_152	1	-1.52	1.318	0.710	0.149	2.63	0.126	-0.089	1.86	-1.28	0.55	-0.0090	0.00400	-3.4	0.48	81.983
					10/15/2013 20:05	0917-173_No	13_10_15_2005_11_943	1	-0.66	1.253	0.864	0.149	2.65	0.126	0.106	1.87	-1.06	0.54	-0.0040	0.00400	-3.2	0.47	81.676
					10/15/2013 20:06	0917-173_No	13_10_15_2006_12_743	1	-2.129	1.382	0.797	0.151	2.62	0.125	-0.083	1.86	-1.15	0.55	-0.0050	0.00400	-3.6	0.50	81.799
					10/15/2013 20:07	0917-173_No	13_10_15_2007_13_463	1	-1.16	1.296	0.856	0.153	2.56	0.125	0.022	1.87	-1.22	0.56	-0.0070	0.00400	-3.8	0.49	84.127
					10/15/2013 20:08	0917-173_No	13_10_15_2008_14_173	1	-3.00	1.399	0.737	0.152	2.47	0.127	-0.080	1.85	-1.24	0.57	-0.0070	0.00400	-3.6	0.50	84.897
					10/15/2013 20:09	0917-173_No	13_10_15_2009_14_993	1	-3.852	1.283	0.805	0.157	2.55	0.126	0.034	1.86	-1.29	0.57	-0.0040	0.00400	-3.8	0.48	86.036
					10/15/2013 20:10	0917-173_No	13_10_15_2010_15_743	1	-0.93	1.302	0.805	0.157	2.44	0.128	-0.006	1.87	-1.33	0.57	-0.0050	0.00400	-4.0	0.49	85.753
					10/15/2013 20:11	0917-173_No	13_10_15_2011_16_563	1	-1.13	1.339	0.917	0.156	2.44	0.124	0.078	1.86	-1.25	0.56	-0.0050	0.00400	-3.7	0.50	84.698
					10/15/2013 20:12	0917-173_No	13_10_15_2012_17_303	1	0.05	1.355	0.844	0.156	2.44	0.124	0.044	1.88	-1.13	0.56	-0.0060	0.00500	-3.9	0.49	82.542
					10/15/2013 20:13	0917-173_No	13_10_15_2013_18_053	1	-2.25	1.336	0.794	0.150	2.37	0.125	-0.015	1.86	-1.20	0.54	-0.0080	0.00400	-3.9	0.50	81.387
					10/15/2013 20:14	0917-173_No	13_10_15_2014_18_853	1	-1.75	1.369	0.706	0.144	2.47	0.124	0.167	1.868	-1.13	0.53	-0.0030	0.00400	-3.6	0.50	80.534
					10/15/2013 20:15	0917-173_No	13_10_15_2015_19_553	1	-2.39	1.336	0.775	0.145	2.46	0.123	0.050	1.87	-1.01	0.53	-0.0060	0.00500	-4.0	0.48	79.06
					10/15/2013 20:16	0917-173_No	13_10_15_2016_20_383	1	-1.27	1.338	0.861	0.148	2.40	0.125	0.025	1.87	-0.71	0.52	-0.0080	0.00400	-4.1	0.48	78.084
					10/15/2013 20:17	0917-173_No	13_10_15_2017_21_104	1	-0.73	1.345	0.798	0.147	2.41	0.122	0.141	1.873	-0.85	0.53	-0.0080	0.00400	-3.7	0.50	80.033
					10/15/2013 20:18	0917-173_No	13_10_15_2018_21_884	1	-1.37	1.348	0.734	0.147	2.38	0.122	0.172	1.862	-1.12	0.54	-0.0080	0.00400	-3.5	0.49	82.192
					10/15/2013 20:19	0917-173_No	13_10_15_2019_22_634	1	-1.99	1.370	0.815	0.153	2.35	0.122	0.119	1.853	-1.06	0.56	-0.0080	0.00400	-4.0	0.49	84.306
					10/15/2013 20:20	0917-173_No	13_10_15_2020_23_404	1	-3.62	1.340	0.915	0.155	2.39	0.122	0.087	1.870	-1.14	0.57	-0.0100	0.00400	-3.7	0.50	86.633
					10/15/2013 20:21	0917-173_No	13_10_15_2021_24_064	1	-0.76	1.267	0.772	0.159	2.28	0.122	0.088	1.89	-1.40	0.57	-0.0040	0.00500	-3.8	0.49	85.661
					10/15/2013 20:22	0917-173_No	13_10_15_2022_24_884	1	-1.74	1.346	0.813	0.157	2.30	0.121	-0.044	1.876	-1.33	0.56	-0.0080	0.00400	-3.4	0.50	85.432
					10/15/2013 20:23	0917-173_No	13_10_15_2023_25_664	1	-1.94	1.376	0.858	0.153	2.28	0.123	-0.0040	1.863	-1.17	0.57	-0.0060	0.00400	-3.9	0.49	85.01
					10/15/2013 20:24	0917-173_No	13_10_15_2024_26_364	1	-1.00	1.362	0.870	0.155	2.29	0.123	0.164	1.871	-1.22	0.56	-0.0060	0.00500	-4.0	0.50	84.954
					10/15/2013 20:25	0917-173_No	13_10_15_2025_27_134	1	-1.34	1.394	0.777	0.153	2.25	0.120	0.042	1.88	-1.21	0.56	-0.0060	0.00400	-3.8	0.50	84.347
					10/15/2013 20:26	0917-173_No	13_10_15_2026_27_894	1	-2.71	1.425	0.812	0.151	2.18	0.120	0.205	1.869	-1.16	0.55	-0.0070	0.00400	-3.8	0.51	83.063
					10/15/2013 20:27	0917-173_No	13_10_15_2027_28_654	1	-0.96	1.358	0.824	0.147	2.21	0.124	0.245	1.883	-1.19	0.54	-0.0060	0.00400	-3.6	0.48	81.612
					10/15/2013 20:28	0917-173_No	13_10_15_2028_29_365	1	-0.86	1.322	0.859	0.144	2.26	0.122	0.122	1.863	-1.04	0.53	-0.0080	0.00400	-3.9	0.46	81.132
					10/15/2013 20:29	0917-173_No	13_10_15_2029_30_125	1	-2.06	1.300	0.674	0.149	2.24	0.121	-0.0730	1.866	-0.95	0.53	-0.0090	0.00500	-4.1	0.47	79.803
					10/15/2013 20:30	0917-173_No	13_10_15_2030_30_925	1	-3.45	1.330	0.782	0.145	2.26	0.118	0.076	1.876	-1.12	0.52	-0.0020	0.00400	-3.1	0.48	78.522
					10/15/2013 20:31	0917-173_No	13_10_15_2031_31_715	1	-1.91	1.361	0.814	0.143	2.26	0.120	0.120	1.875	-0.94	0.51	-0.0070	0.00400	-3.2	0.49	77.34
					10/15/2013 20:32	0917-173_No	13_10_15_2032_32_475	1	-1.67	1.341	0.705	0.137	2.40	0.120	0.244	1.883	-1.03	0.50	-0.0070	0.00400	-2.9	0.48	76.033
					10/15/2013 20:33	0917-173_No	13_10_15_2033_33_185	1	-0.64	1.393	0.672	0.144	2.38	0.118	0.178	1.883	-1.12	0.50	-0.0060	0.00400	-4.0	0.49	74.815
					10/15/2013 20:34	0917-173_No	13_10_15_2034_33_905	1	-0.67	1.342	0.632	0.140	2.32	0.119	0.134	1.861	-1.04	0.50	-0.0060	0.00400	-3.4	0.49	74.369
					10/15/2013 20:35	0917-173_No	13_10_15_2035_34_705	1	-3.56	1.384	0.689	0.142	2.33	0.119	0.320	1.877	-1.09	0.50	-0.0080	0.00400	-3.6	0.49	74.088
					10/15/2013 20:36	0917-173_No	13_10_15_2036_35_445	1	-1.63	1.276	0.678	0.141	2.42	0.116	0.170	1.871	-1.19	0.49	-0.0060	0.00400	-3.4	0.48	74.018
					10/15/2013 20:37	0917-173_No	13_10_15_2037_36_255	1	-1.30	1.322	0.656	0.140	2.37	0.118	0.149	1.866	-1.15	0.50	-0.0070	0.00400	-3.4	0.47	74.666
					10/15/2013 20:38	0917-173_No	13_10_15_2038_37_015	1	-1.16	1.336	0.711	0.136	2.39	0.118	0.164	1.866	-1.13	0.49	-0.0110	0.00400	-3.6	0.47	74.543
					10/15/2013 20:39	0917-173_No	13_10_15_2039_37_755	1	-2.38	1.397	0.729	0.135	2.42	0.117	0.112	1.869	-1.25	0.50	-0.0070	0.00400	-3.1	0.48	74.025
					10/15/2013 20:40	0917-173_No	13_10_15_2040_38_526	1	-3.429	1.369	0.751	0.137	2.46	0.118	0.115	1.864	-1.33	0.48	-0.0070	0.00400	-2.8	0.47	72.543
					10/15/2013 20:41	0917-173_No	13_10_15_2041_39_246	1	-1.07	1.434	0.759	0.136	2.61	0.116	0.117	1.87	-1.40	0.48	-0.0090	0.00400	-3.3	0.49	71.087
					10/15/2013 20:42	0917-173_No	13_10_15_2042_39_956	1	-2.225	1.371	0.796	0.136	2.65	0.118	0.120	1.87	-1.36	0.48	-0.0080	0.00400	-2.4	0.49	70.16
					10/15/2013 20:43	0917-173_No	13_10_15_2043_40_746	1	-2.038	1.342	0.710	0.133	2.78	0.118	0.174	1.88	-1.59	0.47	-0.0080	0.00400	-3.3	0.47	69.29
					10/15/2013 20:44	0917-173_No	13_10_15_2044_41_566	1	-2.00	1.265	0.645	0.136	2.80	0.117	0.305	1.87	-1.71	0.47	-0.0080	0.00400	-3.4	0.44	68.865
					10/15/2013 20:45	0917-173_No	13_10_15_2045_42_186	1	-2.44	1.343	0.618	0.134	2.87	0.119	0.085	1.87	-1.92	0.47	-0.0070	0.00400	-2.4	0.45	69.143
					10/15/2013 20:46	0917-173_No	13_10_15_2046_42_986	1	0.49	1.352	0.706	0.136	2.93	0.120	0.26	1.86	-1.96	0.47	-0.0110	0.00400	-2.9	0.45	68.666
					10/15/2013 20:47	0917-173_No	13_10_15_2047_43_726	1	-2.89	1.314	0.655	0.130	2.85	0.119	0.110	1.87	-1.77	0.46	-0.0050	0.00400	-2.4	0.44	68.935
					10/15/2013 20:48	0917-173_No	13_10_15_2048_44_446	1	-2.738	1.385	0.686	0.132	2.84	0.117	0.116	1.87	-1.78	0.47	-0.0070	0.00400	-2.2	0.46	69.024
					10/15/2013 20:49	0917-173_No	13_10_15_2049_45_236	1	-3.169	1.300	0.651	0.136	2.82	0.119	0.173	1.87	-1.91	0.47	-0.0040	0.00400	-1.9	0.45	68.285
					10/15/2013 20:50	0917-173_No	13_10_15_2050_45_976	1	-0.16	1.397	0.702	0.133	2.87	0.119	0.281	1.88	-1.77	0.47	-0.0100	0.00400	-2.4	0.47	67.765
					10/15/2013 20:51	0917-173_No	13_10_15_2051_46_746	1	-1.76	1.283	0.645	0.132	2.91	0.114	0.213	1.870	-1.77	0.46	-0.0080	0.00400	-2.5	0.44	67.046
					10/15/2013 20:52	0917-173_No	13_10_15_2052_47_447	1	-1.405	1.328	0.734	0.132	2.91	0.118	0.156	1.867	-1.76	0.46	-0.0100	0.00400	-2.4	0.45	66.752
					10/15/2013 20:53	0917-173_No	13_10_15_2053_48_167	1	-1.96	1.310	0.645	0.134	2.98	0.117	0.052	1.87	-1.66	0.46	-0.0060	0.00400	-2.4	0.47	65.993
					10/15/2013 20:54	0917-173_No	13_10_15_2054_48_927	1	-2.441	1.366	0.753	0.133	3.00	0.118	0.067	1.87	-1.63	0.45	-0.0060	0.00400	-2.9	0.46	65.048
					10/15/2013 20:55	0917-173_No	13_10_15_2055_49_707	1	-1.596	1.343	0.635	0.129	3.02	0.116	0.159	1.87	-1.81	0.44	-0.0060	0.00400	-2.3	0.45	63.553
					10/15/2013 20:56	0917-173_No	13_10_15_2056_50_477	1	-1.560	1.387	0.652	0.124	3.03	0.115	0.268	1.87	-1.47	0.43	-0.0080	0.00400	-2.8	0.46	62.561
					10/15/2013 20:57	0917-173_No	13_10_15_2057_51_217	1	-0.971	1.293	0.661	0.127	3.00	0.117	0.129	1.88	-1.65	0.44	-0.0080	0.00400	-3.0	0.43	62.415
					10/15/2013 20:58	0917-173_No	13_10_15_2058_52_037	1	-4.20	1.420	0.759	0.127	2.99	0.115	0.270	1.87	-1.66	0.43	-0.0130	0.00400	-2.1	0.46	61.984
					10/15/2013 20:59	0917-173_No	13_10_15_2059_52_747	1	-1.562	1.089	-0.3750	0.166	1.61	0.0810	0.389	1.330	-5.779	0.41	-0.01000	0.00300	-3.1	0.54	49.269
			Stop		10/15/2013 21:00	0917-173_No	13_10_15_2100_53_507	1	-3.77	1.212	-1.593	0.251	-0.029	0.0800	-0.230	0.280	-10.85	0.44	-0.00800	0.00300	-3.27	0.87	32.246
					10/15/2013 21:01	0917-173_No	13_10_15_2101_54_237	1	-1.472	0.922	-0.781	0.135	-0.027	0.0450	-0.0430	0.134	-5.59	0.24	-0.00500	0.00200	-1.31	0.493	16.394
					10/15/2013 21:15	0917-173_No	13_10_15_2115_01_112	1	-0.3	1.2	-0.1020	0.069	-0.56	1.26	-0.362	0.0830	-0.075	0.113	0.046	0.507	0.189	0.380	-1.585
					10/15/2013 21:15	0917-173_No	13_10_15_2115_19_662	1	0.1	1.4	-0.084	0.069	-0.38	1.34	-0.0750	0.0830	-0.04000	0.118	0.050	0.538	-0.070	0.396	-1.681
					10/15/2013 21:15	0917-173_No	13_10_15_2115_38_242	1	2.1	1.3	0.043	0.075	-0.44	1.37	-0.251	0.0820	-0.192	0.123	0.053	0.550	-0.0870	0.396	-1.716
					10/15/2013 21:15	0917-173_No	13_10_15_2115_56_802	1	0.9	1.3	0.054	0.070	-0.49	1.39	-0.189	0.0820	-0.269	0.116	0.048	0.557	1.26	0.378	-1.729
					10/15/2013 21:16	0917-173_No	13_10_15_2116_15_223	1	-2.8	1.3	0.0240	0.070	-0.44	1.40	0.0040	0.0920	-0.223	0.115	0.048	0.559	0.38	0.388	-1.759
					10/15/2013 21:16	0917-173_No	13_10_15_2116_33_823	1	0.7	1.2	0.056	0.069	-0.46	1.40	-0.214	0.0950	-0.338	0.112	0.045	0.562	0.648	0.359	-1.742
					10/15/2013 21:16	0917-173_No	13_10_15_2116_52_323	1	2.5	1.2	-0.064	0.073	-0.50	1.40	-0.137	0.0900	0.305	0.117	0.050	0.561	-0.573	0.388	-1.743
					10/15/2013 21:17	0917-173_No	13_10_15_2117_10_943	1	0.7	1.2	-0.0050	0.066	-0.47	1.40	-0.068	0.0910	0.057	0.108	0.043	0.558	-0.314	0.363	-1.731
					10/15/2013 21:17	0917-173_No	13_10_15_2117_29_463	1	0.3	1.4	0.1660	0.072	-0.41	1.41	-0.00900	0.0860	0.199	0.120	0.059	0.558	-0.557	0.398	-1.777
					10/15/2013 21:17	0917-173_No	13_10_15_2117_47_913	1	-2.1	1.3	0.077	0.073	-0.43	1.40	-0.1600	0.0890	-0.053	0.117	0.044	0.560	0.354	0.378	-1.759
					10/15/2013 21:18	0917-173_No	13_10_15_2118_06_603	1	2.4	1.3	-0.040	0.073	-0.50	1.40	-0.333	0.0920	-0.034	0.118	0.051	0.558	-0.21	0.376	-1.768
					10/15/2013 21:18	0917-173_No	13_10_15_2118_25_043	1	-1.4	1.3	-0.0640	0.072	-0.51	1.40	-0.403	0.0830	-0.1160	0.118	0.050	0.558	0.123	0.395	-1.739
					10/15/2013 21:18	0917-173_No	13_10_15_2118_43_553	1	0.0	1.3	0.1150	0.071	-0.43	1.40	-0.209	0.0910	-0.040	0.117	0.047	0.557	-0.07	0.393	-1.769
					10/15/2013 21:19	0917-173_No	13_10_15_2119_02_113	1	0.8	1.3	0.009	0.068	-0.52	1.40	0.0240	0.0870	-0.2030	0.112	0.049	0.558	0.358	0.374	-1.775
					10/15/2013 21:19	0917-173_No	13_10_15_2119_20_623	1	1.6	1.1	0.0100	0.071	-0.43	1.40	-0.259	0.0850	-0.087	0.112	0.051	0.559	0.060	0.370	-1.79
					10/15/2013 21:19	0917-173_No	13_10_15_2119_39_233	1	-1.5	1.3	-0.032	0.071	-0.45	1.40	-0.316	0.0890	-0.107	0.115	0.050	0.560	0.239	0.379	-1.769
					10/15/2013 21:19	0917-173_No	13_10_15_2119_57_753	1	0.2	1.1	0.0160	0.073	-0.47	1.40	-0.185	0.0920	-0.091	0.114	0.048	0.560	0.232	0.357	-1.768
					10/15/2013 21:29	0917-173_No	13_10_15_2129_45_404	1	2.4820	2.306	-0.080	0.121	0.021	0.0720	-0.094	0.125	0.210	0.202	-0.00500	0.00400	-0.48	0.69	0.024
					10/15/2013 21:29	0917-173_No	13_10_15_2129_51_574	1	-2.209	2.292	0.211	0.126	0.0770	0.079	0.03600	0.179	0.41	0.204	0.00400	0.00400	-1.73	0.67	-0.007
					10/15/2013 21:29	0917-173_No	13_10_15_2129_57_784	1	-2.308	2.145	-0.469	0.124	-0.0110	0.0760	0.528	0.424	-0.38	0.198	-0.01000	0.00400	0.26	0.65	0.064
					10/15/2013 21:30	0917-173_No	13_10_15_2130_04_024	1	5.007	2.161	0.133	0.129	-0.057	0.095	0.497	1.126	0.348	0.206	0.0050	0.00600	-1.12	0.68	0.068
					10/15/2013 21:30	0917-173_No	13_10_15_2130_10_174	1	3.284	2.305	0.012	0.124	0.02500	0.0990	0.582	1.592	-0.177	0.207	0.00100	0.00500	-0.55	0.70	0.18
					10/15/2013 21:30	0917-173_No	13_10_15_2130_16_234	1	0.37	2.396	0.106	0.132	-0.0400	0.110	0.188	1.691	-0.292	0.216	-0.01000	0.00600	0.953	0.72	0.242

Location **Disc.** **#** **Start/Stop** **Instrument**

				Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/15/2013 21:30	0917-173_No	13_10_15_2130_22_494	1	-0.769	2.371	0.211	0.137	-0.264	0.120	0.688	1.768	-0.163	0.220	-0.00100	0.00600	-0.152	0.71	0.238
10/15/2013 21:30	0917-173_No	13_10_15_2130_28_654	1	4.25	2.455	0.03	0.140	-0.0900	0.116	0.41	1.701	-0.403	0.227	-0.02300	0.00600	-0.53	0.73	0.234
10/15/2013 21:30	0917-173_No	13_10_15_2130_34_894	1	-1.958	2.624	-0.075	0.137	-0.215	0.119	0.607	1.660	0.17	0.230	-0.01500	0.00600	-1.444	0.77	0.279
10/15/2013 21:30	0917-173_No	13_10_15_2130_41_054	1	0.597	2.615	0.044	0.140	-0.2110	0.118	0.36	1.599	0.01900	0.232	-0.01400	0.00700	-0.715	0.80	0.217
10/15/2013 21:30	0917-173_No	13_10_15_2130_47_144	1	-1.897	2.547	0.0060	0.146	-0.082	0.121	1.006	1.502	-0.1730	0.235	-0.01300	0.00700	-0.1410	0.78	0.198
10/15/2013 21:30	0917-173_No	13_10_15_2130_53_364	1	-2.69	2.731	0.059	0.147	-0.211	0.119	0.844	1.453	-0.370	0.242	-0.01800	0.00600	-0.04	0.80	0.194
10/15/2013 21:30	0917-173_No	13_10_15_2130_59_554	1	-0.148	2.645	-0.003	0.145	-0.0080	0.117	0.527	1.366	-0.043	0.239	-0.02	0.00600	0.013	0.79	0.09
10/15/2013 21:31	0917-173_No	13_10_15_2131_05_784	1	-1.309	2.727	0.079	0.136	0.0490	0.121	0.48	1.285	-0.12	0.230	-0.00300	0.00700	-1.068	0.77	0.12
10/15/2013 21:31	0917-173_No	13_10_15_2131_11_964	1	-0.445	2.563	-0.028	0.151	-0.330	0.112	0.628	1.24	-0.173	0.241	-0.00300	0.00600	-0.344	0.80	0.109
10/15/2013 21:31	0917-173_No	13_10_15_2131_18_044	1	-0.583	3.030	-0.162	0.151	-0.239	0.125	0.586	1.12	-0.310	0.259	-0.01500	0.00700	-1.86	0.86	0.06
10/15/2013 21:31	0917-173_No	13_10_15_2131_24_244	1	-2.06	2.591	-0.116	0.154	-0.1590	0.121	0.984	1.10	0.462	0.246	-0.01900	0.00700	-3.07	0.81	0.025
10/15/2013 21:31	0917-173_No	13_10_15_2131_30_434	1	-4.511	2.655	-0.0830	0.148	-0.220	0.123	1.075	1.08	-0.066	0.242	-0.00400	0.00600	-1.96	0.81	-0.016
10/15/2013 21:31	0917-173_No	13_10_15_2131_36_724	1	-1.643	3.007	0.294	0.156	-0.519	0.125	0.42	1.04	-0.34	0.260	-0.00700	0.00700	-2.79	0.87	0.025
10/15/2013 21:31	0917-173_No	13_10_15_2131_42_884	1	-3.156	2.864	-0.356	0.141	-0.1130	0.128	1.164	1.15	0.04	0.243	-0.01900	0.00700	-1.07	0.81	0.064
10/15/2013 21:31	0917-173_No	13_10_15_2131_49_014	1	-0.108	2.895	0.186	0.152	-0.205	0.119	1.201	1.20	0.263	0.253	-0.01000	0.00700	-1.895	0.86	0.124
10/15/2013 21:31	0917-173_No	13_10_15_2131_55_204	1	4.43	2.718	-0.152	0.160	-0.1120	0.118	0.746	1.20	0.380	0.257	-0.0090	0.00700	-0.60	0.82	0.061
10/15/2013 21:32	0917-173_No	13_10_15_2132_01_394	1	-3.495	2.727	0.2360	0.150	-0.1200	0.125	1.175	1.263	-0.039	0.247	-0.01100	0.00600	-1.55	0.84	0.124
10/15/2013 21:32	0917-173_No	13_10_15_2132_07_574	1	-4.214	2.791	0.286	0.146	-0.0680	0.124	1.165	1.334	0.05	0.243	-0.00700	0.00600	-1.38	0.85	0.146
10/15/2013 21:32	0917-173_No	13_10_15_2132_13_664	1	-0.843	2.747	0.077	0.147	-0.1130	0.120	0.859	1.277	-0.045	0.245	-0.01600	0.00700	-0.77	0.80	0.16
10/15/2013 21:32	0917-173_No	13_10_15_2132_19_844	1	-4.077	3.015	0.170	0.149	-0.119	0.126	1.152	1.329	0.10	0.253	-0.01900	0.00700	-2.28	0.88	0.23
10/15/2013 21:32	0917-173_No	13_10_15_2132_26_064	1	0.007	2.945	0.255	0.143	-0.186	0.119	1.082	1.296	-0.110	0.244	0.00800	0.00600	-2.12	0.83	0.221
10/15/2013 21:32	0917-173_No	13_10_15_2132_32_244	1	-3.023	2.797	0.020	0.145	0.189	0.122	1.078	1.335	-0.276	0.242	-0.01000	0.00600	-1.66	0.80	0.183
10/15/2013 21:32	0917-173_No	13_10_15_2132_38_444	1	0.90	2.565	-0.173	0.146	-0.148	0.119	0.896	1.313	0.45	0.238	-0.02000	0.00700	-3.89	0.79	0.216
10/15/2013 21:32	0917-173_No	13_10_15_2132_44_534	1	-0.3340	2.773	0.090	0.153	-0.0790	0.117	0.652	1.344	0.23	0.251	-0.01200	0.00600	-1.237	0.81	0.207
10/15/2013 21:32	0917-173_No	13_10_15_2132_50_814	1	-2.199	2.885	-0.030	0.143	-0.0660	0.127	0.650	1.357	0.19	0.242	-0.01600	0.00700	-1.078	0.83	0.285
10/15/2013 21:32	0917-173_No	13_10_15_2132_56_934	1	-1.716	2.851	-0.041	0.149	-0.1620	0.124	0.561	1.300	0.265	0.247	-0.01600	0.00700	-0.96	0.84	0.246
10/15/2013 21:33	0917-173_No	13_10_15_2133_03_164	1	-2.375	2.603	-0.306	0.137	0.143	0.116	1.347	1.235	-0.03	0.226	-0.00300	0.00700	-1.35	0.744	0.272
10/15/2013 21:33	0917-173_No	13_10_15_2133_09_364	1	-4.084	2.714	-0.176	0.148	-0.1170	0.123	1.276	1.319	-0.29	0.24	-0.00100	0.00600	-0.90	0.84	0.263
10/15/2013 21:33	0917-173_No	13_10_15_2133_15_454	1	-3.03	2.919	0.006	0.144	-0.0040	0.123	0.993	1.290	-0.055	0.248	-0.01000	0.00600	-0.961	0.86	0.302
10/15/2013 21:33	0917-173_No	13_10_15_2133_21_724	1	-4.8970	2.649	-0.056	0.148	-0.146	0.124	1.039	1.289	-0.289	0.241	-0.00900	0.00600	-2.344	0.78	0.26
10/15/2013 21:33	0917-173_No	13_10_15_2133_27_854	1	3.599	2.592	0.2010	0.152	-0.334	0.124	0.729	1.294	0.03	0.24	-0.01300	0.00700	0.21	0.83	0.27
10/15/2013 21:33	0917-173_No	13_10_15_2133_34_044	1	-6.035	2.672	-0.193	0.155	-0.0860	0.123	0.594	1.298	-0.151	0.251	-0.00600	0.00700	-1.68	0.85	0.34
10/15/2013 21:33	0917-173_No	13_10_15_2133_40_254	1	-1.310	2.766	-0.132	0.141	-0.181	0.121	0.554	1.288	0.217	0.237	-0.00600	0.00700	-1.344	0.83	0.297
10/15/2013 21:33	0917-173_No	13_10_15_2133_46_344	1	-4.886	2.624	0.076	0.148	-0.0980	0.119	0.923	1.332	-0.205	0.241	-0.00900	0.00700	-0.84	0.77	0.349
10/15/2013 21:33	0917-173_No	13_10_15_2133_52_544	1	-1.01	2.753	0.1020	0.148	-0.0320	0.126	0.744	1.427	-0.19	0.244	-0.00800	0.00600	-2.43	0.83	0.298
10/15/2013 21:33	0917-173_No	13_10_15_2133_58_824	1	0.5850	2.488	-0.106	0.151	-0.146	0.119	0.691	1.532	0.12	0.236	-0.01300	0.00600	-1.78	0.76	0.299
10/15/2013 21:34	0917-173_No	13_10_15_2134_05_014	1	-2.008	2.616	-0.405	0.138	-0.292	0.118	1.078	1.607	-0.06	0.231	-0.00600	0.00500	-1.470	0.79	0.39
10/15/2013 21:34	0917-173_No	13_10_15_2134_11_214	1	-0.218	2.622	0.103	0.135	0.0950	0.119	0.913	1.630	0.00	0.228	-0.01600	0.00600	-2.16	0.75	0.378
10/15/2013 21:34	0917-173_No	13_10_15_2134_17_304	1	5.162	2.350	-0.010	0.136	-0.315	0.122	0.892	1.676	0.34	0.221	-0.00500	0.00500	-3.29	0.74	0.381
10/15/2013 21:34	0917-173_No	13_10_15_2134_23_504	1	-10.134	2.311	-0.282	0.136	-0.215	0.118	0.965	1.650	-0.498	0.220	0.00100	0.00600	0.40	0.71	0.397
10/15/2013 21:34	0917-173_No	13_10_15_2134_29_674	1	0.90	2.299	0.257	0.143	-0.0220	0.123	0.910	1.728	-0.057	0.226	-0.00200	0.00600	-1.1070	0.70	0.406
10/15/2013 21:34	0917-173_No	13_10_15_2134_35_864	1	3.815	2.554	0.28	0.129	-0.051	0.1150	0.752	1.737	0.062	0.217	-0.01100	0.00600	0.248	0.726	0.465
10/15/2013 21:34	0917-173_No	13_10_15_2134_42_064	1	1.01	2.470	-0.028	0.133	-0.130	0.121	0.832	1.695	-0.323	0.217	-0.02300	0.00600	-1.15	0.72	0.553
10/15/2013 21:34	0917-173_No	13_10_15_2134_48_164	1	-4.043	2.507	0.180	0.143	0.04400	0.121	1.106	1.679	-0.067	0.232	-0.00900	0.00600	0.252	0.76	0.421
10/15/2013 21:34	0917-173_No	13_10_15_2134_54_354	1	-4.306	2.562	0.0020	0.133	0.0360	0.123	0.768	1.745	-0.12	0.223	-0.02200	0.00600	-1.46	0.72	0.451
10/15/2013 21:35	0917-173_No	13_10_15_2135_00_544	1	-5.28	2.603	-0.080	0.138	-0.0180	0.122	1.202	1.592	0.43	0.233	-0.00900	0.00700	-1.20	0.79	0.472
10/15/2013 21:35	0917-173_No	13_10_15_2135_06_824	1	-4.655	2.929	-0.176	0.145	-0.261	0.115	1.096	1.486	-0.046	0.247	-0.01200	0.00600	-0.8970	0.83	0.332
10/15/2013 21:35	0917-173_No	13_10_15_2135_13_024	1	0.093	2.860	0.100	0.147	-0.236	0.122	0.928	1.438	-0.327	0.245	-0.02	0.00600	-0.531	0.84	0.326
10/15/2013 21:35	0917-173_No	13_10_15_2135_19_124	1	-3.8310	2.698	-0.21	0.139	-0.11800	0.125	0.752	1.455	0.121	0.230	-0.02500	0.00700	-0.904	0.79	0.28
10/15/2013 21:35	0917-173_No	13_10_15_2135_25_284	1	-2.153	2.752	-0.240	0.138	-0.207	0.127	0.940	1.471	0.064	0.234	-0.01	0.00700	-0.14	0.78	0.317
10/15/2013 21:35	0917-173_No	13_10_15_2135_31_534	1	-1.06	2.744	-0.283	0.143	-0.1910	0.119	0.536	1.441	-0.1050	0.239	-0.01800	0.00600	-0.747	0.80	0.324
10/15/2013 21:35	0917-173_No	13_10_15_2135_37_714	1	-0.559	2.705	-0.025	0.138	-0.337	0.124	1.104	1.385	-0.33	0.229	-0.00100	0.00700	-1.19	0.76	0.384
10/15/2013 21:35	0917-173_No	13_10_15_2135_43_764	1	-1.424	2.785	-0.092	0.149	-0.1020	0.115	0.985	1.448	-0.178	0.244	-0.00600	0.00700	-0.943	0.83	0.38
10/15/2013 21:35	0917-173_No	13_10_15_2135_50_014	1	-5.929	2.561	0.077	0.138	-0.126	0.129	0.922	1.482	0.052	0.225	-0.01200	0.00700	-1.315	0.75	0.341
10/15/2013 21:35	0917-173_No	13_10_15_2135_56_204	1	-1.189	2.520	0.244	0.138	-0.0260	0.121	0.887	1.484	-0.09	0.224	-0.01000	0.00700	-0.901	0.716	0.336
10/15/2013 21:36	0917-173_No	13_10_15_2136_02_384	1	1.76	2.719	-0.0690	0.140	-0.095	0.122	0.949	1.464	-0.3860	0.237	-0.00800	0.00600	0.00	0.81	0.391
10/15/2013 21:36	0917-173_No	13_10_15_2136_08_564	1	-5.935	2.706	-0.0940	0.146	-0.207	0.121	1.152	1.398	-0.029	0.241	-0.02100	0.00700	-1.21	0.79	0.29
10/15/2013 21:36	0917-173_No	13_10_15_2136_14_644	1	-7.596	2.744	0.044	0.137	0.0050	0.118	0.481	1.425	-0.3260	0.233	-0.01400	0.00600	-0.75	0.79	0.393
10/15/2013 21:36	0917-173_No	13_10_15_2136_20_854	1	-4.095	2.675	-0.084	0.149	-0.344	0.126	0.778	1.431	0.112	0.243	-0.00600	0.00600	-0.71	0.78	0.354
10/15/2013 21:36	0917-173_No	13_10_15_2136_27_034	1	-8.992	2.823	0.067	0.136	-0.113	0.124	0.679	1.509	0.2080	0.234	-0.01600	0.00700	-1.12	0.80	0.436
10/15/2013 21:36	0917-173_No	13_10_15_2136_33_324	1	-4.286	2.732	-0.2780	0.143	0.079	0.126	1.202	1.469	-0.033	0.239	-0.0010	0.00600	-0.39	0.81	0.402
10/15/2013 21:36	0917-173_No	13_10_15_2136_39_434	1	-5.946	2.778	0.076	0.139	-0.0030	0.123	1.6160	1.530	0.0480	0.236	-0.00500	0.00600	-1.1810	0.81	0.41
10/15/2013 21:36	0917-173_No	13_10_15_2136_45_614	1	-4.635	2.863	-0.010	0.137	-0.161	0.124	0.668	1.501	0.156	0.239	-0.00600	0.00600	-2.01	0.82	0.401
10/15/2013 21:36	0917-173_No	13_10_15_2136_51_794	1	0.200	2.456	-0.030	0.136	-0.131	0.126	0.664	1.497	-0.014	0.222	-0.01600	0.00600	-0.544	0.74	0.451
10/15/2013 21:36	0917-173_No	13_10_15_2136_57_974	1	-2.277	2.614	0.1510	0.152	-0.067	0.1210	0.830	1.552	-0.414	0.241	-0.01300	0.00600	-0.880	0.78	0.418
10/15/2013 21:37	0917-173_No	13_10_15_2137_04_164	1	-4.311	2.581	0.004	0.143	-0.095	0.123	0.847	1.486	-0.563	0.234	-0.01000	0.00600	-0.581	0.78	0.433
10/15/2013 21:37	0917-173_No	13_10_15_2137_10_344	1	-4.891	2.763	0.057	0.138	-0.0650	0.120	0.766	1.500	-0.280	0.235	-0.01500	0.00600	-1.575	0.79	0.441
10/15/2013 21:37	0917-173_No	13_10_15_2137_16_424	1	-5.806	2.474	-0.053	0.140	0.218	0.120	0.913	1.489	-0.511	0.227	-0.01400	0.00600	-0.12	0.77	0.463
10/15/2013 21:37	0917-173_No	13_10_15_2137_22_644	1	-3.51	2.739	-0.184	0.149	0.0430	0.124	1.221	1.508	-0.387	0.245	-0.01500	0.00600	-0.36	0.82	0.397
10/15/2013 21:37	0917-173_No	13_10_15_2137_28_894	1	-2.60	2.472	-0.425	0.143	-0.0510	0.127	0.604	1.546	0.086	0.228	-0.00900	0.00500	-0.87	0.77	0.459
10/15/2013 21:37	0917-173_No	13_10_15_2137_35_104	1	-3.924	2.602	-0.0140	0.143	-0.180	0.128	0.959	1.550	0.26	0.233	-0.01	0.00600	-0.78	0.77	0.456
10/15/2013 21:37	0917-173_No	13_10_15_2137_41_284	1	-0.700	2.781	0.130	0.141	-0.250	0.121	1.529	1.575	0.83	0.239	-0.01400	0.00700	-3.51	0.83	0.466
10/15/2013 21:37	0917-173_No	13_10_15_2137_47_374	1	-3.874	2.605	0.127	0.139	-0.3070	0.121	1.097	1.562	0.232	0.232	-0.00600	0.00600	-3.08	0.77	0.44
10/15/2013 21:37	0917-173_No	13_10_15_2137_53_604	1	-4.635	2.478	-0.095	0.140	-0.229	0.121	0.645	1.606	0.04	0.229	-0.00400	0.00500	-1.98	0.76	0.512
10/15/2013 21:37	0917-173_No	13_10_15_2137_59_774	1	-0.78	2.505	0.193	0.143	-0.083	0.121	0.869	1.589	-0.023	0.232	-0.00200	0.00600	0.3950	0.76	0.493
10/15/2013 21:38	0917-173_No	13_10_15_2138_05_954	1	-1.169	2.519	-0.064	0.140	-0.0350	0.121	1.012	1.554	-0.296	0.228	-0.01200	0.00600	-1.53	0.79	0.437
10/15/2013 21:38	0917-173_No	13_10_15_2138_12_164	1	-3.996	2.719	-0.228	0.145	-0.271	0.121	0.477	1.575	-0.072	0.240	-0.02700	0.00700	1.39	0.79	0.507
10/15/2013 21:38	0917-173_No	13_10_15_2138_18_254	1	0.401	2.603	-0.124	0.146	-0.098	0.118	0.887	1.556	-0.094	0.239	-0.02	0.00700	-1.994	0.79	0.474
10/15/2013 21:38	0917-173_No	13_10_15_2138_24_434	1	-4.185	2.838	0.1310	0.135	-0.106	0.123	0.778	1.520	0.157	0.235	-0.01	0.00600	-1.060	0.80	0.466
10/15/2013 21:38	0917-173_No	13_10_15_2138_30_714	1	3.72	2.523	-0.108	0.147	-0.146	0.120	1.087	1.561	-0.203	0.236	-0.00300	0.00600	-1.806	0.77	0.459
10/15/2013 21:38	0917-173_No	13_10_15_2138_36_934	1	-0.757	2.545	-0.3340	0.143	0.050	0.127	0.630	1.619	-0.085	0.231	-0.01000	0.00600	-2.96	0.76	0.477
10/15/2013 21:38	0917-173_No	13_10_15_2138_43_054	1	-9.34	2.840	-0.193	0.155	-0.0030	0.127	0.499	1.549	-0.268	0.255	-0.0320	0.00600	-0.219	0.88	0.537
10/15/2013 21:38	0917-173_No	13_10_15_2138_49_204	1	-2.81	2.556	-0.186	0.140	-0.269	0.116	0.977	1.566	0.19	0.228	-0.01	0.00700	-1.99	0.79	0.406
10/15/2013 21:38	0917-173_No	13_10_15_2138_55_384	1	3.36	2.685	-0.052	0.142	-0.221	0.122	0.863	1.594	-0.2630	0.234	-0.00900	0.00600	-0.57	0.79	0.498
10/15/2013 21:39	0917-173_No	13_10_15_2139_01_574	1	0.129	2.908	0.0870	0.142	-0.379	0.115	0.52	1.575	0.04	0.242	-0.00500	0.00600	-2.46	0.83	0.517
10/15/2013 21:39	0917-173_No	13_10_15_2139_07_744	1	1.44	2.509	0.264	0.145	-0.188	0.115	1.188	1.581	0.153	0.233	-0.00600	0.00600	-0.060	0.78	0.453
10/15/2013 21:39	0917-173_No	13_10_15_2139_13_864	1	-3.709	2.619	0.0800	0.141	-0.0010	0.114	1.152	1.596	0.114	0.233	-0.0280	0.00500	-1.157	0.76	0.502
10/15/2013 21:39	0917-173_No	13_10_15_2139_20_044	1	-1.61	2.463	0.079	0.143	-0.204	0.125	0.697	1.552	-0.237	0.229	-0.01800	0.00600	-2.35	0.75	0.49
10/15/2013 21:39	0917-173_No	13_10_15_2139_26_224	1	-3.627	2.782	-0.113	0.146	-0.060	0.118	1.073	1.595	-0.233	0.241	-0.00300	0.00700	-0.815	0.83	0.487
10/15/2013 21:39	0917-173_No	13_10_15_2139_32_514	1	-0.407	2.579	0.0480	0.150	0.0460	0.121	0.932	1.627	-0.218	0.238	-0.01900	0.00600	-0.80	0.80	0.523
10/15/2013 21:39	0917-173_No	13_10_15_2139_38_704	1	-2.2310	2.689	0.064	0.137	0.07500	0.123	1.165	1.570	-0.951	0.230	-0.01300	0.00500	-0.213	0.80	0.525
10/15/2013 21:39	0917-173_No	13_10_15_2139_44_744	1	0.112	2.714	-0.138	0.149	-0.0770	0.117	0.863	1.615	0.298	0.243	-0.00700	0.00500	-0.60	0.81	0.493
10/15/2013 21:39	0917-173_No	13_10_15_2139_50_935	1	-1.33	2.725	-0.070	0.144	-0.1440	0.117	1.081	1.581	-0.22	0.241	-0.01300	0.00600	-1.38	0.82	0.488
10/15/2013 21:39	0917-173_No	13_10_15_2139_57_195	1	-0.8070	2.620	0.105	0.137	0.213	0.127	1.235	1.571	-0.302	0.227	-0.01200	0.00600	-0.349	0.77	0.557
10/15/2013 21:40	0917-173_No	13_10_15_2140_35_345	1	-2.096	1.699	0.0030	0.085	-0.067	0.1050	1.078	1.595	0.031	0.145	-0.02	0.00400	-0.953	0.492	0.546
10/15/2013 21:41	0917-173_No	13_10_15_2141_36_035	1	-2.5750	1.580	-0.0050	0.087	-0.128	0.1040	1.387	1.583	-0.139	0.143	-0.01100	0.00400	-1.232	0.484	0.572
10/15/2013 21:42	0917-173_No	13_10_15_2142_36_795	1	-2.040	1.674	0.040	0.085	-0.0820	0.1030	1.131	1.576	0.037	0.143	-0.01200	0.00500	-1.113	0.490	0.599
10/15/2013 21:43	0917-173_No	13_10_15_2143_37_565	1	0.124	1.650	0.0540	0.088	-0.111	0.1000	1.149	1.589	-0.096	0.145	-0.01	0.00500	-0.688	0.490	0.614
10/15/2013 21:44	0917-173_No	13_10_15_2144_38_285	1	-1.814	1.669	0.0750	0.087	-0.0270	0.1020	1.217	1.583	-0.157	0.146	-0.01400	0.00400	-0.5650	0.491	0.631
10/15/2013 21:45	0917-173_No	13_10_15_2145_39_091	1	-1.270	1.623	0.002	0.087	-0.099	0.1040	1.034	1.568	-0.081	0.144	-0.01100	0.00400	-0.890	0.489	0.656
10/15/2013 21:47	0917-173_No	13_10_15_2147_19_287	1	0.559	2.640	0.230	0.131	-0.099	0.116	1.394	1.696	0.24	0.221	-0.02900	0.00600	-2.66	0.74	0.661
10/15/2013 21:47	0917-173_No	13_10_15_2147_25_447	1	-1.473	2.391	-0.005	0.142	0.0330	0.114	1.251	1.734	-0.133	0.225	-0.02200	0.00600	-0.249	0.74	0.634
10/15/2013 21:47	0917-173_No	13_10_15_2147_31_687	1	0.591	2.450	-0.013	0.131	0.0430	0.1110	1.017	1.740	-0.23	0.214	-0.02300	0.00600	-1.15	0.72	0.61
10/15/2013 21:47	0917-173_No	13_10_15_2147_37_897	1	-2.01	2.480	-0.164	0.132	-0.0470	0.1160	0.962	1.787	-0.17	0.220	-0.01700	0.00500	-1.082	0.75	0.605
10/15/2013 21:47	0917-173_No	13_10_15_2147_44_007	1	-4.036	2.372	0.042	0.138	0.02300	0.1100	0.788	1.751	0.064	0.221	-0.00700	0.00600	-1.54	0.72	0.611
10/15/2013 21:47	0917-173_No	13_10_15_2147_50_147	1	0.927	2.471	-0.118	0.130	0.0380	0.113	1.2660	1.791	-0.193	0.215	-0.00700	0.00600	0.088	0.71	0.613
10/15/2013 21:47	0917-173_No	13_10_15_2147_56_407	1	-4.543	2.727	-0.186	0.124	0.0710	0.118	0.622	1.847	-0.33	0.220	-0.02000	0.00600	-1.16	0.75	0.593
10/15/2013 21:48	0917-173_No	13_10_15_2148_02_587	1	-0.68	2.378	0.204	0.126	0.00700	0.1050	0.995	1.795	-0.172	0.211	-0.01	0.00600	-0.139	0.70	0.597
10/15/2013 21:48	0917-173_No	13_10_15_2148_08_757	1	-5.024	2.412	0.274	0.128	-0.108	0.1150	0.972	1.798	-0.239	0.212	-0.00800	0.00600	0.750	0.71	0.597
10/15/2013 21:48	0917-173_No	13_10_15_2148_14_867	1	0.16	2.598	-0.073	0.131	-0.076	0.1090	0.523	1.760	-0.303	0.217	0.00500	0.00500	0.082	0.74	0.546
10/15/2013 21:48	0917-173_No	13_10_15_2148_21_057	1	-5.554	2.407	0.10	0.138	-0.0940	0.117	1.310	1.799	-0.092	0.219	-0.01200	0.00500	-0.086	0.72	0.577
10/15/2013 21:48	0917-173_No	13_10_15_2148_27_247	1	-5.242	2.431	-0.072	0.127	-0.03500	0.1070	1.1840	1.784	-0.342	0.216	0.00200	0.00600	-0.77	0.74	0.559
10/15/2013 21:48	0917-173_No	13_10_15_2148_33_507	1	-7.802	2.338	-0.0170	0.127	0.008	0.117	1.147	1.783	-0.1690	0.210	-0.0150	0.00500	-0.93	0.69	0.509
10/15/2013 21:48	0917-173_No	13_10_15_2148_39_707	1	1.13	2.453	-0.11	0.125	-0.288	0.105	1.3800	1.787	-0.315	0.213	0.01000	0.00500	0.61	0.71	0.458
10/15/2013 21:48	0917-173_No	13_10_15_2148_45_807	1	-2.882	2.377	-0.267	0.135	-0.0070	0.103	0.749	1.765	0.096	0.222	-0.01400	0.00500	-1.10	0.73	0.493
10/15/2013 21:48	0917-173_No	13_10_15_2148_51_967	1	5.62	2.554	0.261	0.134	-0.1230	0.0990	0.452	1.733	-0.09	0.225	-0.00700	0.00500	-1.660	0.77	0.48
10/15/2013 21:48	0917-173_No	13_10_15_2148_58_167	1	0.7330	2.418	-0.115	0.126	-0.0510	0.1000	0.867	1.745	0.125	0.210	0.00000	0.00500	-2.23	0.72	0.443
10/15/2013 21:49	0917-173_No	13_10_15_2149_04_347	1	4.010	2.273	0.045	0.123	-0.0470	0.098	0.637	1.715	-0.177	0.203	-0.01700	0.00600	-2.16	0.69	0.407
10/15/2013 21:49	0917-173_No	13_10_15_2149_10_547	1	-4.84	2.359	-0.0890	0.126	-0.089	0.1010	1.0120	1.688	0.267	0.211	-0.00900	0.00500	-0.71	0.72	0.352
10/15/2013 21:49	0917-173_No	13_10_15_2149_16_637	1	-3.141	2.275	0.254	0.127	0.0010	0.1010	0.826	1.677	-0.422	0.210	-0.00100	0.00400	-1.357	0.71	0.405
10/15/2013 21:49	0917-173_No	13_10_15_2149_22_817	1	-0.169	2.409	0.068	0.122	-0.122	0.1030	1.109	1.658	-0.429	0.206	-0.0170	0.00500	1.14	0.71	0.427
10/15/2013 21:49	0917-173_No	13_10_15_2149_29_027	1	0.222	2.317	-0.019	0.128	0.1260	0.1030	0.745	1.637	-0.067	0.210	-0.01	0.00400	0.11	0.72	0.393
10/15/2013 21:49	0917-173_No	13_10_15_2149_35_237	1	2.509	2.290	0.100	0.121	0.012	0.0930	1.000	1.606	-0.102	0.202	-0.00100	0.00400	-1.297	0.66	0.37
10/15/2013 21:49	0917-173_No	13_10_15_2149_41_427	1	0.648	2.444	0.105	0.128	-0.0170	0.0940	1.21	1.601	-0.238	0.214	0.00000	0.00300	-1.75	0.73	0.357
10/15/2013 21:49	0917-173_No	13_10_15_2149_47_587	1	6.342	2.306	0.102	0.123	-0.211	0.093	0.470	1.547	-0.311	0.207	-0.01	0.00400	-0.278	0.67	0.359
10/15/2013 21:49	0917-173_No	13_10_15_2149_53_757	1	8.804	2.389	0.01	0.129	-0.005	0.0990	0.861	1.544	-0.382	0.214	-0.01100	0.00500	0.657	0.73	0.371
10/15/2013 21:49	0917-173_No	13_10_15_2149_59_967	1	-0.88	2.514	-0.015	0.133	-0.068	0.0980	0.885	1.571	0.141	0.219	-0.01300	0.00500	-0.13	0.73	0.332
10/15/2013 21:50	0917-173_No	13_10_15_2150_06_167	1	-6.05	2.443	0.267	0.138	0.056	0.0960	1.1570	1.603	0.376	0.222	-0.01200	0.00500	0.5370	0.77	0.327
10/15/2013 21:50	0917-173_No	13_10_15_2150_12_367	1	-2.301	2.417	0.445	0.128	-0.0100	0.0930	0.950	1.579	0.007	0.212	0.00300	0.00500	0.5220	0.70	0.344
10/15/2013 21:50	0917-173_No	13_10_15_2150_18_507	1	2.7870	2.300	-0.339	0.123	0.165	0.0900	0.900	1.556	0.12	0.204	-0.00700	0.00500	-1.62	0.70	0.351
10/15/2013 21:50	0917-173_No	13_10_15_2150_24_717	1	-0.787	2.271	0.100	0.127	0.106	0.0980	1.0580	1.570	-0.511	0.208	0.00	0.00500	-0.76	0.70	0.356
10/15/2013 21:50	0917-173_No	13_10_15_2150_30_827	1	7.5580	2.130	0.093	0.129	-0.155	0.0900	0.568	1.548	-0.06	0.204	0.00000	0.00500	-2.56	0.67	0.294
10/15/2013 21:50	0917-173_No	13_10_15_2150_37_127	1	1.24	2.266	-0.150	0.123	-0.100	0.0970	0.7930	1.588	-0.411	0.201	-0.00700	0.00600	-0.31	0.67	0.346
10/15/2013 21:50	0917-173_No	13_10_15_2150_43_317	1	0.784	2.224	0.152	0.131	0.0490	0.103	0.278	1.587	-0.187	0.209	0.00600	0.00500	-1.17	0.66	0.345
10/15/2013 21:50	0917-173_No	13_10_15_2150_49_337	1	4.918	2.023	0.083	0.129	-0.03500	0.100	1.1670	1.527	0.059	0.200	-0.00500	0.00500	0.71	0.69	0.358
10/15/2013 21:50	0917-173_No	13_10_15_2150_55_607	1	5.945	2.340	0.160	0.131	0.1370	0.101	0.613	1.523	-0.18	0.214	-0.01400	0.00600	-1.17	0.71	0.356
10/15/2013 21:51	0917-173_No	13_10_15_2151_01_797	1	6.181	2.366	0.000	0.131	0.188	0.0850	0.802	1.507	0.12	0.216	0.00600	0.00500	-2.55	0.73	0.289
10/15/2013 21:51	0917-173_No	13_10_15_2151_08_017	1	-0.151	2.316	0.0760	0.128	0.1180	0.0850	0.981	1.529	0.000	0.206	-0.00500	0.00500	-1.72	0.68	0.349
10/15/2013 21:51	0917-173_No	13_10_15_2151_14_017	1	1.3660	2.270	-0.181	0.120	0.0940	0.108	1.158	1.544	-0.180	0.201	-0.01800	0.00600	-0.299	0.66	0.314
10/15/2013 21:51	0917-173_No	13_10_15_2151_20_217	1	-1.07	2.418	0.224	0.133	0.1690	0.1000	0.7670	1.548	0.116	0.215	0.00800	0.00500	-0.47	0.75	0.339
10/15/2013 21:51	0917-173_No	13_10_15_2151_26_507	1	2.516	2.441	0.387	0.125	0.094	0.0950	1.319	1.534	0.37	0.212	0.00400	0.00500	-1.49	0.70	0.307
10/15/2013 21:52	0917-173_No	13_10_15_2152_06_718	1	0.099	1.055	0.145	0.0560	-0.089	0.0660	0.9150	1.532	0.05	0.094	-0.00500	0.00200	-1.025	0.306	0.35
10/15/2013 21:53	0917-173_No	13_10_15_2153_07_498	1	0.964	0.967	0.048	0.058	0.0230	0.0660	0.668	1.517	-0.043	0.094	0.00	0.00300	-0.382	0.323	0.37
10/15/2013 21:54	0917-173_No	13_10_15_2154_08_258	1	-0.200	0.969	0.060	0.056	-0.0240	0.0660	0.834	1.502	-0.048	0.090	-0.00400	0.00200	-0.1290	0.298	0.341
10/15/2013 21:55	0917-173_No	13_10_15_2155_09_028	1	1.314	0.964	0.057	0.054	0.01300	0.0630	0.8630	1.488	-0.069	0.087	-0.00900	0.00200	-1.03	0.295	0.348
10/15/2013 21:56	0917-173_No	13_10_15_2156_09_848	1	2.466	0.951	0.064	0.053	-0.02600	0.0620	1.0070	1.485	-0.111	0.087	-0.00700	0.00200	-0.4880	0.289	0.356
10/16/2013 8:35	0917-173_No	13_10_16_0835_04_240	1	1.5	1.2	0.043	0.067	-0.32	1.19	0.162	0.0780	-0.093	0.110	0.052	0.485	0.2450	0.367	-1.475
10/16/2013 8:35	0917-173_No	13_10_16_0835_22_760	1	0.6	1.2	-0.040	0.072	-0.33	1.30	0.155	0.0800	-0.026	0.114	0.054	0.521	0.0140	0.368	-1.611
10/16/2013 8:35	0917-173_No	13_10_16_0835_41_360	1	1.1	1.1	-0.0370	0.065	-0.52	1.35	0.0280	0.0810	-0.011	0.105	0.055	0.541	-0.478	0.348	-1.652

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
									Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					10/16/2013 8:35	0917-173_No	13_10_16_0835_59_860	1	-0.3	1.3	0.027	0.070	-0.41	1.37	-0.0510	0.0810	-0.318	0.113	0.054	0.550	1.157	0.379	-1.669
					10/16/2013 8:36	0917-173_No	13_10_16_0836_18_370	1	-1.8	1.2	0.0580	0.071	-0.45	1.38	0.0020	0.0810	-0.270	0.115	0.058	0.559	0.30	0.379	-1.71
					10/16/2013 8:36	0917-173_No	13_10_16_0836_36_990	1	-0.5	1.1	-0.074	0.077	-0.42	1.39	0.048	0.0770	-0.1850	0.118	0.056	0.555	0.453	0.373	-1.745
					10/16/2013 8:36	0917-173_No	13_10_16_0836_55_400	1	0.7	1.2	0.149	0.069	-0.46	1.40	-0.08100	0.0840	0.0610	0.110	0.050	0.557	-0.6760	0.374	-1.706
					10/16/2013 8:37	0917-173_No	13_10_16_0837_14_090	1	1.4	1.3	0.0800	0.067	-0.56	1.39	0.131	0.0890	0.239	0.111	0.059	0.554	-0.1800	0.363	-1.745
					10/16/2013 8:37	0917-173_No	13_10_16_0837_32_591	1	1.8	1.2	-0.0630	0.063	-0.46	1.40	-0.0090	0.0890	-0.198	0.103	0.054	0.558	0.2700	0.347	-1.723
					10/16/2013 8:37	0917-173_No	13_10_16_0837_51_001	1	-0.5	1.3	0.000	0.074	-0.52	1.40	-0.0620	0.0800	-0.0700	0.119	0.061	0.561	0.74	0.402	-1.724
					10/16/2013 8:38	0917-173_No	13_10_16_0838_09_661	1	-1.8	1.3	-0.0880	0.070	-0.43	1.40	0.0560	0.0770	0.064	0.116	0.064	0.559	0.183	0.398	-1.729
					10/16/2013 8:38	0917-173_No	13_10_16_0838_28_111	1	-2.0	1.3	-0.103	0.074	-0.43	1.39	0.1150	0.0830	-0.119	0.119	0.059	0.556	0.040	0.387	-1.725
					10/16/2013 8:38	0917-173_No	13_10_16_0838_46_631	1	-0.1	1.4	-0.0600	0.064	-0.52	1.40	-0.1150	0.0890	0.222	0.112	0.063	0.560	-1.017	0.385	-1.723
					10/16/2013 8:39	0917-173_No	13_10_16_0839_05_251	1	1.9	1.2	-0.010	0.066	-0.39	1.40	0.0560	0.0850	0.000	0.109	0.060	0.557	-0.008	0.361	-1.737
					10/16/2013 8:39	0917-173_No	13_10_16_0839_23_781	1	-0.3	1.3	0.030	0.071	-0.46	1.40	0.102	0.0880	0.012	0.115	0.054	0.559	0.392	0.374	-1.7
					10/16/2013 8:39	0917-173_No	13_10_16_0839_42_371	1	-2.0	1.2	-0.017	0.069	-0.41	1.40	-0.120	0.0850	0.056	0.113	0.054	0.560	0.244	0.367	-1.692
					10/16/2013 8:40	0917-173_No	13_10_16_0840_00_791	1	0.5	1.3	0.051	0.068	-0.42	1.39	-0.1190	0.0890	-0.1440	0.115	0.051	0.561	0.414	0.393	-1.693
					10/16/2013 10:53	0917-173_No	13_10_16_1053_00_580	1	0.465	1.013	0.000	0.062	0.611	0.0680	0.362	1.481	-1.069	0.126	-0.00200	0.00500	0.03	0.308	13.873
Data	Run	10	Start	A	10/16/2013 10:54	0917-173_No	13_10_16_1054_01_360	1	-0.08	1.057	0.067	0.057	0.468	0.0640	0.275	1.470	-0.953	0.122	-0.00200	0.00500	-0.95	0.310	13.249
					10/16/2013 10:55	0917-173_No	13_10_16_1055_02_170	1	0.938	1.022	-0.072	0.067	0.546	0.0660	0.332	1.471	-1.334	0.150	-0.00800	0.00400	-0.65	0.322	17.959
					10/16/2013 10:56	0917-173_No	13_10_16_1056_02_880	1	-2.491	1.050	-0.035	0.066	0.611	0.0710	0.476	1.483	-1.525	0.159	-0.00400	0.00400	-0.62	0.320	20.106
					10/16/2013 10:57	0917-173_No	13_10_16_1057_03_610	1	-0.20	1.028	0.155	0.065	0.640	0.0670	0.452	1.483	-1.516	0.161	-0.00300	0.00500	-0.84	0.297	20.62
					10/16/2013 10:58	0917-173_No	13_10_16_1058_04_380	1	-2.168	1.042	-0.032	0.071	0.689	0.0680	0.466	1.484	-1.726	0.171	-0.00300	0.00400	-0.95	0.328	22.108
					10/16/2013 10:59	0917-173_No	13_10_16_1059_05_200	1	-2.48	1.018	-0.0300	0.067	0.688	0.0680	0.454	1.482	-1.46	0.156	-0.00200	0.00400	-1.12	0.306	20.027
					10/16/2013 11:00	0917-173_No	13_10_16_1100_06_010	1	-0.61	0.963	0.046	0.065	0.747	0.0660	0.506	1.477	-1.326	0.149	-0.00500	0.00500	-1.26	0.308	19.417
					10/16/2013 11:01	0917-173_No	13_10_16_1101_06_711	1	-0.240	1.062	-0.037	0.064	0.741	0.0680	0.305	1.461	-1.626	0.161	-0.00300	0.00400	-0.90	0.317	21.197
					10/16/2013 11:02	0917-173_No	13_10_16_1102_07_491	1	-0.69	1.115	-0.0970	0.068	0.664	0.0680	0.471	1.458	-1.70	0.170	-0.00100	0.00500	-1.17	0.328	22.386
					10/16/2013 11:03	0917-173_No	13_10_16_1103_08_231	1	-1.26	0.997	0.050	0.065	0.694	0.0650	0.423	1.464	-1.652	0.162	-0.00200	0.00400	-0.83	0.309	21.524
					10/16/2013 11:04	0917-173_No	13_10_16_1104_09_041	1	0.38	1.071	0.0960	0.066	0.677	0.0670	0.463	1.450	-1.530	0.163	-0.00600	0.00500	-0.79	0.326	20.991
					10/16/2013 11:05	0917-173_No	13_10_16_1105_09_761	1	-1.57	1.060	0.0050	0.065	0.702	0.0650	0.387	1.449	-1.685	0.164	0.00100	0.00400	-0.70	0.320	22.055
					10/16/2013 11:06	0917-173_No	13_10_16_1106_10_521	1	-0.754	1.046	0.089	0.065	0.694	0.0660	0.529	1.445	-1.855	0.170	0.00	0.00400	-0.09	0.326	22.797
					10/16/2013 11:07	0917-173_No	13_10_16_1107_11_331	1	-1.619	1.092	0.009	0.068	0.621	0.0660	0.452	1.449	-1.748	0.168	-0.00400	0.00400	-0.20	0.330	22.206
					10/16/2013 11:08	0917-173_No	13_10_16_1108_12_061	1	-1.557	1.054	0.055	0.061	0.690	0.0660	0.545	1.450	-1.517	0.152	-0.00600	0.00400	-0.67	0.299	19.452
					10/16/2013 11:09	0917-173_No	13_10_16_1109_12_911	1	-0.413	0.966	-0.0580	0.066	0.647	0.0680	0.424	1.457	-1.533	0.154	-0.00200	0.00500	-0.57	0.315	19.872
					10/16/2013 11:10	0917-173_No	13_10_16_1110_13_621	1	-0.40	1.065	-0.055	0.067	0.655	0.0670	0.372	1.473	-1.39	0.157	-0.00400	0.00400	-1.20	0.322	20.392
					10/16/2013 11:11	0917-173_No	13_10_16_1111_14_401	1	-2.99	1.092	-0.072	0.064	0.651	0.0680	0.469	1.485	-1.447	0.160	-0.00400	0.00400	-1.01	0.325	20.528
					10/16/2013 11:12	0917-173_No	13_10_16_1112_15_162	1	0.01	0.980	0.076	0.068	0.642	0.0690	0.404	1.495	-1.485	0.159	0.00000	0.00500	-0.50	0.297	21.147
					10/16/2013 11:13	0917-173_No	13_10_16_1113_15_972	1	1.30	1.058	-0.06800	0.068	0.686	0.0700	0.429	1.499	-1.649	0.166	-0.00100	0.00500	-0.94	0.325	22.052
					10/16/2013 11:14	0917-173_No	13_10_16_1114_16_712	1	-0.87	1.090	0.010	0.067	0.657	0.0700	0.326	1.516	-1.895	0.166	-0.00600	0.00400	0.01	0.315	21.713
					10/16/2013 11:15	0917-173_No	13_10_16_1115_17_532	1	0.63	1.108	-0.119	0.069	0.653	0.0700	0.593	1.506	-1.947	0.168	-0.00500	0.00400	-0.60	0.321	22.785
					10/16/2013 11:16	0917-173_No	13_10_16_1116_18_342	1	1.43	0.996	-0.0600	0.065	0.657	0.0700	0.345	1.504	-1.682	0.158	-0.00600	0.00500	-0.61	0.302	21.169
					10/16/2013 11:17	0917-173_No	13_10_16_1117_19_052	1	-0.419	1.051	0.0540	0.062	0.562	0.0690	0.431	1.507	-1.374	0.152	-0.00600	0.00500	-0.65	0.317	19.75
					10/16/2013 11:18	0917-173_No	13_10_16_1118_19_792	1	-0.958	0.965	-0.0410	0.067	0.634	0.0690	0.447	1.499	-1.572	0.154	-0.00600	0.00500	-0.73	0.308	19.512
					10/16/2013 11:19	0917-173_No	13_10_16_1119_20_502	1	-2.05	1.140	0.067	0.069	0.639	0.0690	0.505	1.508	-1.735	0.172	-0.00700	0.00400	-1.20	0.337	22.975
					10/16/2013 11:20	0917-173_No	13_10_16_1120_21_332	1	-0.70	1.015	-0.1250	0.064	0.646	0.0720	0.334	1.502	-1.66	0.165	-0.00200	0.00400	-0.84	0.296	22.419
					10/16/2013 11:21	0917-173_No	13_10_16_1121_22_052	1	-1.610	1.080	-0.087	0.068	0.587	0.0710	0.450	1.511	-1.859	0.173	-0.00600	0.00500	-0.58	0.332	22.784
					10/16/2013 11:22	0917-173_No	13_10_16_1122_22_852	1	0.24	1.029	0.078	0.067	0.649	0.0710	0.395	1.526	-1.854	0.173	-0.00300	0.00500	-0.70	0.304	23.885
					10/16/2013 11:23	0917-173_No	13_10_16_1123_23_562	1	-1.95	1.053	0.024	0.066	0.723	0.0710	0.388	1.517	-1.774	0.170	-0.00600	0.00500	-0.45	0.317	22.242
					10/16/2013 11:24	0917-173_No	13_10_16_1124_24_403	1	0.022	1.022	-0.013	0.065	0.667	0.0690	0.371	1.525	-1.465	0.150	-0.00400	0.00400	-0.36	0.317	19.526
					10/16/2013 11:25	0917-173_No	13_10_16_1125_25_123	1	-1.07	1.000	-0.009	0.062	0.593	0.0680	0.479	1.524	-1.513	0.155	-0.00400	0.00500	-0.58	0.300	21.279
					10/16/2013 11:26	0917-173_No	13_10_16_1126_25_883	1	-1.507	1.057	-0.0390	0.069	0.611	0.0650	0.429	1.517	-1.816	0.180	-0.00300	0.00400	-0.38	0.322	24.799
					10/16/2013 11:27	0917-173_No	13_10_16_1127_26_683	1	-0.24	1.139	-0.0630	0.073	0.613	0.0730	0.546	1.524	-2.35	0.215	-0.00700	0.00500	-1.19	0.327	30.443
					10/16/2013 11:28	0917-173_No	13_10_16_1128_27_423	1	-0.85	0.983	-0.0520	0.074	0.695	0.0700	0.336	1.521	-2.533	0.224	-0.00400	0.00500	-0.76	0.300	32.158
					10/16/2013 11:29	0917-173_No	13_10_16_1129_28_223	1	-1.597	1.050	-0.1320	0.076	0.731	0.0720	0.335	1.520	-2.775	0.235	0.00300	0.00400	-0.8	0.317	34.414
					10/16/2013 11:30	0917-173_No	13_10_16_1130_28_963	1	-2.758	1.082	0.000	0.079	0.671	0.070	0.346	1.513	-2.58	0.243	-0.00200	0.00500	-0.99	0.332	34.941
					10/16/2013 11:31	0917-173_No	13_10_16_1131_29_793	1	-0.80	0.997	-0.0550	0.071	0.731	0.0700	0.309	1.517	-2.66	0.239	-0.00400	0.00400	-0.5	0.295	34.292
					10/16/2013 11:32	0917-173_No	13_10_16_1132_30_513	1	0.17	1.141	-0.035	0.079	0.714	0.0720	0.323	1.516	-2.606	0.243	-0.00300	0.00500	-0.2	0.338	34.573
					10/16/2013 11:33	0917-173_No	13_10_16_1133_31_273	1	-0.84	0.984	-0.110	0.075	0.739	0.0700	0.460	1.515	-2.22	0.206	-0.00600	0.00500	-0.57	0.299	29.234
					10/16/2013 11:34	0917-173_No	13_10_16_1134_32_083	1	-0.413	1.080	-0.037	0.070	0.705	0.0680	0.378	1.520	-2.113	0.192	-0.00600	0.00500	-0.70	0.327	25.99
					10/16/2013 11:35	0917-173_No	13_10_16_1135_32_843	1	-1.79	1.068	0.0080	0.069	0.740	0.0720	0.271	1.525	-2.03	0.195	-0.00200	0.00400	-1.23	0.314	27.598
					10/16/2013 11:36	0917-173_No	13_10_16_1136_33_654	1	-0.734	1.084	-0.087	0.074	0.684	0.0720	0.430	1.534	-2.109	0.207	-0.00200	0.00400	-0.61	0.324	27.776
					10/16/2013 11:37	0917-173_No	13_10_16_1137_34_364	1	-1.65	1.031	-0.091	0.072	0.756	0.0740	0.351	1.546	-2.235	0.200	-0.00300	0.00500	-0.81	0.304	28.061
					10/16/2013 11:38	0917-173_No	13_10_16_1138_35_174	1	-1.22	1.086	-0.138	0.070	0.651	0.0720	0.457	1.538	-2.036	0.202	-0.00300	0.00400	-0.90	0.323	27.846
					10/16/2013 11:39	0917-173_No	13_10_16_1139_35_894	1	-0.22	1.014	-0.064	0.076	0.701	0.0730	0.343	1.527	-2.081	0.202	-0.00700	0.00400	-0.80	0.315	27.296
					10/16/2013 11:40	0917-173_No	13_10_16_1140_36_704	1	-0.55	1.024	-0.0170	0.064	0.684	0.0700	0.300	1.527	-1.859	0.185	-0.00700	0.00500	-0.87	0.302	26.303
					10/16/2013 11:41	0917-173_No	13_10_16_1141_37_464	1	-0.741	1.028	-0.025	0.065	0.632	0.0710	0.497	1.523	-1.795	0.177	-0.00400	0.00500	-0.72	0.310	24.577
					10/16/2013 11:42	0917-173_No	13_10_16_1142_38_184	1	-1.186	1.036	-0.053	0.066	0.591	0.0710	0.316	1.512	-1.653	0.164	-0.00300	0.00400	-0.88	0.316	21.006
					10/16/2013 11:43	0917-173_No	13_10_16_1143_38_984	1	-0.450	0.989	-0.010	0.072	0.649	0.0690	0.373	1.526	-2.007	0.185	-0.00200	0.00400	-0.53	0.312	25.398
					10/16/2013 11:44	0917-173_No	13_10_16_1144_39_784	1	-3.275	1.079	-0.0860	0.073	0.747	0.0710	0.292	1.534	-2.174	0.202	-0.00200	0.00400	-0.42	0.318	27.747
					10/16/2013 11:45	0917-173_No	13_10_16_1145_40_504	1	-2.103	1.062	-0.0260	0.071	0.680	0.0720	0.226	1.525	-1.898	0.193	-0.00200	0.00500	-0.96	0.312	25.943
					10/16/2013 11:46	0917-173_No	13_10_16_1146_41_324	1	0.85	1.042	-0.073	0.066	0.724	0.0700	0.438	1.523	-1.94	0.181	0.00100	0.00400	-0.76	0.303	24.817
					10/16/2013 11:47	0917-173_No	13_10_16_1147_42_084	1	-0.35	1.052	-0.0690	0.068	0.748	0.0710	0.326	1.516	-1.873	0.179	-0.00600	0.00500	-0.69	0.317	24.998
					10/16/2013 11:48	0917-173_No	13_10_16_1148_42_895	1	-0.992	1.052	0.056	0.069	0.708	0.0710	0.366	1.522	-1.81	0.180	-0.00300	0.00500	-0.75	0.327	24.696
					10/16/2013 11:49	0917-173_No	13_10_16_1149_43_655	1	-1.22	0.998	-0.0320	0.070	0.739	0.0690	0.277	1.517	-1.913	0.186	-0.00200	0.00500	-0.75	0.314	25.717
					10/16/2013 11:50	0917-173_No	13_10_16_1150_44_365	1	-1.472	1.025	-0.020	0.068	0.748	0.0700	0.312	1.503	-2.07	0.190	0.00000	0.00500	-1.21	0.307	26.186
					10/16/2013 11:51	0917-173_No	13_10_16_1151_45_185	1	-1.00	0.993	-0.0350	0.072	0.733	0.0720	0.332	1.508	-1.890	0.188	-0.00600	0.00500	-1.08	0.307	25.337
					10/16/2013 11:52	0917-173_No	13_10_16_1152_45_905	1	-0.762	1.064	0.093	0.072	0.768	0.0720	0.358	1.505	-1.979	0.199	-0.00900	0.00500	-0.67	0.326	26.572
					10/16/2013 11:53	0917-173_No	13_10_16_1153_46_655	1	-0.72	0.984	-0.347	0.082	0.563	0.0600	0.234	1.229	-3.4790	0.209	-0.00500	0.00500	-1.31	0.320	26.701
			Stop		10/16/2013 11:54	0917-173_No	13_10_16_1154_47_485	1	-1.031	0.828	-0.683	0.093	-0.0450	0.0420	-0.099	0.183	-3.84	0.166	-0.00400	0.00500	-1.21	0.375	11.477
					10/16/2013 11:55	0917-173_No	13_10_16_1155_48_205	1	-2.822	0.837	-0.556	0.093	-0.0920	0.0430	-0.222	0.0910	-3.75	0.159	-0.00600	0.00500	-1.06	0.377	10.441
					10/16/2013 11:56	0917-173_No	13_10_16_1156_48_955	1	-2.498	0.888	-0.566	0.094	-0.07800	0.0400	-0.373	0.0910	-3.65	0.164	-0.00400	0.00500	-1.06	0.380	10.335
					10/16/2013 11:57	0917-173_No	13_10_16_1157_49_705	1	-2.23000	0.859	-0.5210	0.095	-0.0770	0.0400	-0.164	0.0850	-3.84	0.161	-0.00600	0.00500	-1.17	0.355	10.265
					10/16/2013 11:58	0917-173_No	13_10_16_1158_50_365	1	-2.515	0.873	-0.463	0.085	0.038	0.0360	-0.238	0.0660	-3.11	0.145	-0.00600	0.00500	-0.94	0.351	8.676
					10/16/2013 11:59	0917-173_No	13_10_16_1159_51_106	1	0.767	0.775	-0.007	0.048	0.0440	0.0300	-0.194	0.0630	-0.640	0.077	-0.00400	0.00400	0.19	0.256	1.823
					10/16/2013 12:00	0917-173_No	13_10_16_1200_51_926	1	-1.309	0.849	-0.0100	0.046	0.0140	0.0290	-0.1170	0.0600	-0.0930	0.077	-0.00200	0.00500	-0.261	0.256	0.332
					10/16/2013 12:01	0917-173_No	13_10_16_1201_52_646	1	0.000	0.852	-0.0120	0.045	-0.00500	0.0290	-0.0800	0.0520	0.0130	0.075	0.00	0.00500	-0.445	0.250	0.277
					10/16/2013 12:02	0917-173_No	13_10_16_1202_53_466	1	0.048	0.794	0.097	0.050	0.242	0.0330	0.058	0.360	-0.544	0.085	0.00200	0.00400	0.04	0.254	5.614
					10/16/2013 12:03	0917-173_No	13_10_16_1203_54_266	1	-0.77	1.047	-0.029	0.072	0.868	0.0680	0.361	1.473	-1.931	0.18	-0.00300	0.00500	-0.95	0.324	24.497
					10/16/2013 12:04	0917-173_No	13_10_16_1204_55_016	1	0.10	1.022	-0.053	0.074	0.891	0.0730	0.233	1.519	-2.152	0.20	-0.00100	0.00500	-0.37	0.314	26.932
					10/16/2013 12:05	0917-173_No	13_10_16_1205_55_716	1	-1.617	1.010	0.038	0.074	0.798	0.0730	0.184	1.513	-2.121	0.20	-0.00400	0.00400	-1.03	0.314	27.334
					10/16/2013 12:06	0917-173_No	13_10_16_1206_56_536	1	-0.84	1.044	-0.020	0.070	0.800	0.0710	0.207	1.510	-2.230	0.20	-0.00800	0.00400	-0.38	0.317	28.071
Data	Run	11	Start	A	10/16/2013 12:07	0917-173_No	13_10_16_1207_57_256	1	-2.03	1.059	-0.069	0.072	0.849	0.0710	0.290	1.505	-2.088	0.20	-0.00600	0.00500	-0.64	0.317	26.864
					10/16/2013 12:08	0917-173_No	13_10_16_1208_58_076	1	-0.95	1.089	-0.057	0.069	0.754	0.0720	0.234	1.495	-2.06	0.19	-0.00400	0.00500	-0.70	0.325	26.009
					10/16/2013 12:09	0917-173_No	13_10_16_1209_58_826	1	1.17	1.075	-0.0870	0.070	0.740	0.0700	0.322	1.496	-1.75	0.18	-0.00400	0.00400	-0.94	0.325	23.064
					10/16/2013 12:10	0917-173_No	13_10_16_1210_59_526	1	-0.117	1.040	0.0310	0.073	0.752	0.0720	0.285	1.501	-1.560	0.17	-0.00600	0.00400	-0.97	0.328	22.412
					10/16/2013 12:12	0917-173_No	13_10_16_1212_00_327	1	-1.42	1.004	-0.033	0.064	0.777	0.0720	0.189	1.494	-1.60	0.17	-0.00700	0.00500	-1.01	0.306	21.881
					10/16/2013 12:13	0917-173_No	13_10_16_1213_01_027	1	-0.83	1.137	0.0090	0.067	0.820	0.0740	0.232	1.501	-1.536	0.17	-0.00400	0.00500	-0.59	0.334	21.986
					10/16/2013 12:14	0917-173_No	13_10_16_1214_01_787	1	-2.84	1.137	0.091	0.067	0.786	0.0710	0.216	1.505	-1.437	0.17	-0.00600	0.00500	-0.93	0.337	21.855
					10/16/2013 12:15	0917-173_No	13_10_16_1215_02_607	1	-0.91	1.011	0.003	0.069	0.818	0.0690	0.048	1.523	-1.502	0.18	-0.00400	0.00500	-0.78	0.319	22.904
					10/16/2013 12:16	0917-173_No	13_10_16_1216_03_317	1	-1.746	1.062	-0.026	0.068	0.779	0.0730	0.165	1.517	-1.659	0.17	-0.00600	0.00500	-0.80	0.315	22.487
					10/16/2013 12:17	0917-173_No	13_10_16_1217_04_127	1	-1.16	1.066	0.032	0.069	0.940	0.0720	0.253	1.549	-1.863	0.18	-0.00500	0.00400	-0.63	0.318	23.991
					10/16/2013 12:18	0917-173_No	13_10_16_1218_04_847	1	-1.30	1.059	-0.0240	0.068	0.821	0.0740	0.214	1.558	-1.795	0.19	-0.00300	0.00500	-0.39	0.322	25.503
					10/16/2013 12:19	0917-173_No	13_10_16_1219_05_647	1	-0.56	0.996	0.0220	0.075	0.813	0.0750	0.253	1.559	-1.963	0.20	-0.00400	0.00500	-0.74	0.328	27.322
					10/16/2013 12:20	0917-173_No	13_10_16_1220_06_357	1	-0.496	1.039	0.041	0.070	0.775	0.0750	0.211	1.559	-1.926	0.20	0.00000	0.00500	-0.95	0.319	27.149
					10/16/2013 12:21	0917-173_No	13_10_16_1221_07_137	1	-1.23	0.999	-0.0270	0.067	0.781	0.0730	0.252	1.545	-1.85	0.19	-0.00500	0.00500	-1.17	0.303	26.672
					10/16/2013 12:22	0917-173_No	13_10_16_1222_07_907	1	-0.797	1.007	-0.168	0.075	0.753	0.0740	0.113	1.539	-1.959	0.20	-0.00500	0.00500	-1.10	0.322	26.988
					10/16/2013 12:23	0917-173_No	13_10_16_1223_08_667	1	-1.37	1.012	-0.04100	0.074	0.756	0.0720	0.202	1.519	-1.890	0.20	-0.00500	0.00500	-0.97	0.316	26.961
					10/16/2013 12:24	0917-173_No	13_10_16_1224_09_398	1	-0.31	1.041	-0.024	0.070	0.660	0.0720	0.373	1.524	-1.867	0.19	-0.00500	0.00500	-0.69	0.315	25.342
					10/16/2013 12:25	0917-173_No	13_10_16_1225_10_208	1	-2.14	1.043	-0.034	0.068	0.668	0.0740	0.204	1.532	-1.76	0.19	-0.00700	0.00500	-1.02	0.318	25.255
					10/16/2013 12:26	0917-173_No	13_10_16_1226_11_008	1	-1.48	1.082	-0.0200	0.067	0.832	0.0740	0.114	1.533	-1.777	0.18	-0.00800	0.00400	-0.06	0.316	24.545
					10/16/2013 12:27	0917-173_No	13_10_16_1227_11_718	1	-1.124	1.047	-0.0370	0.064	0.807	0.0710	0.035	1.537	-1.667	0.18	-0.00700	0.00500	-0.92	0.309	24.614
					10/16/2013 12:28	0917-173_No	13_10_16_1228_12_528	1	-1.408	1.015	-0.0260	0.071	0.757	0.0720	0.186	1.549	-1.68	0.19	-0.00800	0.00500	-1.22	0.320	25.604
					10/16/2013 12:29	0917-173_No	13_10_16_1229_13_248	1	-0.51	1.093	-0.1360	0.070	0.767	0.0740	0.165	1.543	-1.79	0.19	-0.00300	0.00500	-0.48	0.327	25.278
					10/16/2013 12:30	0917-173_No	13_10_16_1230_13_968	1	-0.36	1.025	0.0840	0.074	0.724	0.0730	0.282	1.557	-1.434	0.19	-0.00600	0.00500	-0.59	0.332	24.345
					10/16/2013 12:31	0917-173_No	13_10_16_1231_14_768	1	-0.924	1.116	-0.01300	0.068	0.722	0.0720	0.244	1.549	-1.559	0.17	-0.00500	0.00500	-1.06	0.333	22.878
					10/16/2013 12:32	0917-173_No	13_10_16_1232_15_588	1	-0.81	1.074	-0.165	0.072	0.739	0.0750	0.375	1.552	-1.829	0.18	-0.00500	0.00500	-0.40	0.333	24.148
					10/16/2013 12:33	0917-173_No	13_10_16_1233_16_308	1	-0.835	1.104	-0.033	0.073	0.786	0.0740	0.327	1.551	-1.71	0.19	-0.00700	0.00500	-0.77	0.347	24.984
					10/16/2013 12:34	0917-173_No	13_10_16_1234_17_108	1	-0.15	1.077	-0.02600	0.069	0.728	0.0720	0.189	1.543	-1.62	0.18	-0.00300	0.00500	-0.98	0.319	25.315
					10/16/2013 12:35	0917-173_No	13_10_16_1235_17_878	1	-1.58	1.066	-0.103	0.069	0.640	0.0730	0.268	1.559	-1.51	0.17	-0.00600	0.00400	-1.10	0.313	23.973
					10/16/2013 12:36	0917-173_No	13_10_16_1236_18_609	1	-0.689	1.057	0.014	0.063	0.456	0.0720	0.195	1.527	-1.018	0.13	-0.00500	0.00500	-0.47	0.321	15.012
					10/16/2013 12:37	0917-173_No	13_10_16_1237_19_339	1	-1.67	1.033	-0.046	0.063	0.580	0.0720	0.289	1.535	-1.471	0.15	-0.00200	0.00500	-0.64	0.313	18.933
					10/16/2013 12:38	0917-173_No	13_10_16_1238_20_129	1	-1.19	1.039	-0.0700	0.066	0.787	0.0740	0.263	1.536	-1.762	0.17	-0.00200	0.00500	-0.07	0.325	21.69
					10/16/2013 12:39	0917-173_No	13_10_16_1239_20_839	1	-1.173	1.030	0.056	0.068	0.754	0.0720	0.272	1.550	-1.516	0.17	-0.00200	0.00500	-1.01	0.323	22.436
					10/16/2013 12:40	0917-173_No	13_10_16_1240_21_539	1	-1.011	1.036	-0.065	0.066	0.807	0.0710	0.346	1.537	-1.61	0.17	-0.00400	0.00400	-1.09	0.306	23.197
					10/16/2013 12:41	0917-173_No	13_10_16_1241_22_279	1	-0.39	1.051	-0.0390	0.071	0.852	0.0730	0.299	1.532	-1.834	0.17	0.00100	0.00500	-0.51	0.316	23.526
					10/16/2013 12:42	0917-173_No	13_10_16_1242_23_099	1	-0.30	1.094	-0.0260	0.065	0.805	0.0730	0.327	1.540	-1.590	0.17	-0.00400	0.00500	-0.84	0.319	22.759
					10/16/2013 12:43	0917-173_No	13_10_16_1243_23_869	1	-0.85	1.065	0.056	0.071	0.779	0.0710	0.311	1.542	-1.436	0.16	-0.00800	0.00500	-0.11	0.324	20.443
					10/16/2013 12:44	0917-173_No	13_10_16_1244_24_589	1	-0.93	1.099	0.021	0.068	0.775	0.0720	0.319	1.536	-1.384	0.15	0.00	0.00500	-0.67	0.336	19.781
					10/16/2013 12:45	0917-173_No	13_10_16_1245_25_399	1	0.03	1.039	0.002	0.068	0.681	0.0730	0.166	1.536	-1.472	0.16	-0.00200	0.00500	-0.50	0.330	20.891
					10/16/2013 12:46	0917-173_No	13_10_16_1246_26_109	1	0.811	1.035	0.02400	0.070	0.749	0.0730	0.302	1.545	-1.519	0.17	-0.00500	0.00500	-0.77	0.316	21.83
					10/16/2013 12:47	0917-173_No	13_10_16_1247_26_920	1	-0.139	1.062	-0.0500	0.065	0.833	0.0710	0.258	1.555	-1.671	0.16	-0.00400	0.00500	0.00	0.312	21.965
					10/16/2013 12:48	0917-173_No	13_10_16_1248_27_610	1	-1.40	1.071	0.044	0.072	0.722	0.0730	0.347	1.556	-1.532	0.17	-0.00400	0.00500	-0.69	0.327	22.35
					10/16/2013 12:49	0917-173_No	13_10_16_1249_28_360	1	-0.047	1.016	-0.066	0.070	0.709	0.0710	0.289	1.553	-1.728	0.18	-0.00300	0.00500	-0.69	0.320	23.699
					10/16/2013 12:50	0917-173_No	13_10_16_1250_29_180	1	0.038	1.056	-0.06400	0.072	0.824	0.0740	0.370	1.549	-1.76	0.19	-0.00300	0.00500	-1.37	0.318	25.433
					10/16/2013 12:51	0917-173_No	13_10_16_1251_29_900	1	-2.25	1.024	-0.075	0.066	0.764	0.0740	0.328	1.552	-1.89	0.19	-0.00600	0.00500	-0.75	0.312	25.857
					10/16/2013 12:52	0917-173_No	13_10_16_1252_30_690	1	-0.15	0.977	-0.006	0.071	0.779	0.0760	0.358	1.568	-1.640	0.18	-0.00600	0.00500	-0.87	0.309	24.208
					10/16/2013 12:53	0917-173_No	13_10_16_1253_31_410	1	-0.788	1.084	0.099	0.070	0.765	0.0760	0.187	1.558	-1.799	0.18	-0.00800	0.00500	-0.62	0.316	24.829
					10/16/2013 12:54	0917-173_No	13_10_16_1254_32_180	1	-1.57	1.028	-0.037	0.069	0.851	0.0740	0.300	1.582	-1.917	0.19	-0.00500	0.00400	-0.62	0.314	26.884
					10/16/2013 12:55	0917-173_No	13_10_16_1255_33_000	1	-2.97	1.058	0.014	0.078	0.879	0.0760	0.218	1.594	-2.00	0.21	-0.00300	0.00500	-0.92	0.319	29.161
					10/16/2013 12:56	0917-173_No	13_10_16_1256_33_730	1	-1.416	1.134	-0.041	0.073	0.915	0.0790	0.159	1.591	-2.164	0.21	-0.00400	0.00500	-0.36	0.329	29.257
					10/16/2013 12:57	0917-173_No	13_10_16_1257_34_470	1	-1.318	0.995	-0.088	0.072	0.883	0.0780	0.312	1.592	-2.08	0.20	-0.00700	0.00500	-0.69	0.306	28.123
					10/16/2013 12:58	0917-173_No	13_10_16_1258_35_290	1	-0.78	1.083	-0.0140	0.073	0.822	0.0760	0.285	1.575	-1.95	0.20	-0.00100	0.00500	-1.01	0.324	27.447
					10/16/2013 12:59	0917-173_No	13_10_16_1259_36_101	1	-0.505	1.121	-0.1420	0.072	0.926	0.0740	0.151	1.565	-2.276	0.21	-0.00500	0.00500	-0.58	0.327	29.607
					10/16/2013 13:00	0917-173_No	13_10_16_1300_36_841	1	-1.12	0.973	-0.0760	0.070	0.953	0.0740	0.349	1.559	-2.265	0.21	-0.00800	0.00500	-0.65	0.305	30.398
					10/16/2013 13:01	0917-173_No	13_10_16_1301_37_541	1	-0.598	1.052	-0.0950	0.072	0.951	0.0750	0.255	1.550	-2.342	0.22	-0.00500	0.00500	-0.99	0.310	31.686
					10/16/2013 13:02	0917-173_No	13_10_16_1302_38_371	1	-0.09	0.923	-0.075	0.067	0.879	0.0730	0.283	1.547	-2.12	0.20	-0.00700	0.00500	-0.82	0.285	29.754
					10/16/2013 13:03	0917-173_No	13_10_16_1303_39_101	1	-1.173	0.999	0.036	0.067	0.757	0.0720	0.354	1.548	-2.015	0.20	-0.00600	0.00500	-0.52	0.310	27.461
					10/16/2013 13:04	0917-173_No	13_10_16_1304_39_851	1	-1.69	1.045	-0.01400	0.072	0.774	0.0730	0.287	1.558	-2.051	0.19	-0.00500	0.00400	-0.30	0.317	27.256
					10/16/2013 13:05	0917-173_No	13_10_16_1305_40_591	1	-0.69	1.009	-0.1290	0.073	0.781	0.0740	0.214	1.544	-2.046	0.20	-0.00800	0.00500	-0.51	0.321	28.196
					10/16/2013 13:06	0917-173_No	13_10_16_1306_41_411	1	-1.41	1.018	-0.145	0.073	0.608	0.0600	0.255	1.250	-2.659	0.19	-0.00400	0.00400	-0.73	0.306	24.854
			Stop		10/16/2013 13:07	0917-173_No	13_10_16_1307_42_181	1	-1.665	0.840	-0.5150	0.089	0.0270	0.0370	-0.011	0.192	-3.78	0.16	-0.00400	0.00500	-1.29	0.345	11.077
					10/16/2013 13:08	0917-173_No	13_10_16_1308_42_881	1	-1.3600	0.850	-0.4790	0.091	-0.1130	0.0380	-0.210	0.0970	-3.80	0.16	-0.00300	0.00500	-1.46	0.348	10.242

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 13:09	0917-173_No	13_10_16_1309_43_691	1	-0.536	0.820	-0.584	0.088	-0.07200	0.0380	-0.118	0.0800	-3.69	0.15	-0.00600	0.00500	-0.96	0.340	10.135
					10/16/2013 13:10	0917-173_No	13_10_16_1310_44_401	1	-1.543	0.783	-0.3500	0.064	0.0120	0.0320	-0.198	0.0680	-2.222	0.11	0.00100	0.00500	-1.026	0.266	5.936
					10/16/2013 13:11	0917-173_No	13_10_16_1311_45_182	1	-1.416	0.780	-0.097	0.044	0.0060	0.0290	-0.145	0.0530	-0.358	0.07	-0.00100	0.00500	-0.224	0.235	0.946
					10/16/2013 13:12	0917-173_No	13_10_16_1312_45_992	1	-1.105	0.838	-0.008	0.047	0.288	0.0330	0.088	0.394	-0.598	0.09	0.00	0.00400	-0.62	0.246	8.382
					10/16/2013 13:13	0917-173_No	13_10_16_1313_46_712	1	-1.32	1.068	-0.008	0.075	1.019	0.0760	0.115	1.579	-2.481	0.24	-0.00600	0.00500	-0.4	0.314	35.565
					10/16/2013 13:15	0917-173_No	13_10_16_1315_58_340	1	-0.34	1.033	-0.06700	0.079	1.054	0.0790	0.196	1.597	-2.523	0.24	-0.00400	0.00500	-0.8	0.322	34.653
					10/16/2013 13:16	0917-173_No	13_10_16_1316_59_150	1	0.245	1.018	-0.022	0.074	0.956	0.0750	0.257	1.580	-2.390	0.21	-0.00700	0.00500	-0.52	0.323	30.538
					10/16/2013 13:17	0917-173_No	13_10_16_1317_59_820	1	0.22	0.958	0.0280	0.070	0.822	0.0740	0.220	1.550	-2.014	0.19	0.00000	0.00500	-0.48	0.309	26.967
					10/16/2013 13:19	0917-173_No	13_10_16_1319_00_620	1	-0.124	1.076	-0.0090	0.065	0.789	0.0720	0.409	1.538	-1.604	0.18	-0.00300	0.00400	-0.54	0.322	24.072
					10/16/2013 13:20	0917-173_No	13_10_16_1320_01_430	1	-0.62	1.066	-0.003	0.064	0.702	0.0710	0.401	1.522	-1.529	0.17	-0.00500	0.00500	-1.01	0.305	23.271
Data	Run	12	Start	A	10/16/2013 13:21	0917-173_No	13_10_16_1321_03_140	1	0.01	0.992	0.005	0.069	0.747	0.0710	0.308	1.522	-1.863	0.19	-0.00700	0.00500	-0.47	0.303	26.364
					10/16/2013 13:22	0917-173_No	13_10_16_1322_03_770	1	-0.12	1.085	0.026	0.064	0.728	0.0730	0.364	1.524	-1.57	0.17	-0.00200	0.00400	-0.72	0.311	23.469
					10/16/2013 13:23	0917-173_No	13_10_16_1323_04_590	1	-0.20	1.001	-0.0340	0.064	0.702	0.0700	0.404	1.527	-1.45	0.16	-0.00700	0.00500	-0.89	0.295	21.847
					10/16/2013 13:24	0917-173_No	13_10_16_1324_05_290	1	-2.62	1.047	-0.032	0.069	0.816	0.0730	0.383	1.533	-1.906	0.20	0.00000	0.00500	-0.57	0.325	27.829
					10/16/2013 13:25	0917-173_No	13_10_16_1325_06_110	1	-2.24	1.022	-0.059	0.073	0.889	0.0740	0.214	1.539	-2.35	0.22	-0.00500	0.00500	-1.00	0.307	32.261
					10/16/2013 13:26	0917-173_No	13_10_16_1326_06_890	1	-0.293	1.069	-0.107	0.076	0.942	0.0760	0.212	1.547	-2.669	0.23	-0.00600	0.00500	-0.49	0.313	33.78
					10/16/2013 13:27	0917-173_No	13_10_16_1327_07_651	1	0.33	1.124	0.017	0.073	0.952	0.0760	0.377	1.549	-2.28	0.22	-0.00500	0.00500	-0.67	0.325	32.109
					10/16/2013 13:28	0917-173_No	13_10_16_1328_08_371	1	0.25	1.130	0.024	0.077	0.994	0.0780	0.290	1.566	-2.132	0.22	-0.00600	0.00500	-0.64	0.329	31.827
					10/16/2013 13:29	0917-173_No	13_10_16_1329_09_101	1	0.44	1.112	0.0130	0.074	0.883	0.0770	0.423	1.588	-1.974	0.21	-0.00600	0.00400	-0.67	0.333	29.693
					10/16/2013 13:30	0917-173_No	13_10_16_1330_09_901	1	0.01	1.089	-0.0350	0.077	0.902	0.0790	0.328	1.602	-2.178	0.22	-0.00700	0.00500	-0.77	0.327	31.552
					10/16/2013 13:31	0917-173_No	13_10_16_1331_10_691	1	-1.45	1.105	-0.001	0.080	0.874	0.0780	0.281	1.605	-2.14	0.22	-0.00500	0.00500	-0.83	0.340	31.022
					10/16/2013 13:32	0917-173_No	13_10_16_1332_11_411	1	-0.35	1.056	-0.0710	0.077	0.915	0.0800	0.428	1.613	-2.22	0.22	-0.00400	0.00400	-0.82	0.324	32.499
					10/16/2013 13:33	0917-173_No	13_10_16_1333_12_131	1	-0.49	1.186	-0.1090	0.077	0.875	0.0790	0.081	1.607	-2.281	0.23	-0.00500	0.00500	-0.75	0.338	33.091
					10/16/2013 13:34	0917-173_No	13_10_16_1334_12_951	1	-0.462	1.096	-0.031	0.078	0.898	0.0810	0.203	1.599	-2.395	0.24	-0.00200	0.00500	-0.52	0.319	34.663
					10/16/2013 13:35	0917-173_No	13_10_16_1335_13_701	1	1.56	1.093	-0.03200	0.079	0.964	0.0790	0.271	1.586	-2.282	0.24	-0.00400	0.00400	-0.3	0.326	34.479
					10/16/2013 13:36	0917-173_No	13_10_16_1336_14_461	1	-0.34	1.139	-0.012	0.081	0.891	0.0790	0.191	1.581	-2.17	0.24	-0.00700	0.00500	-1.07	0.331	33.929
					10/16/2013 13:37	0917-173_No	13_10_16_1337_15_271	1	-1.070	1.081	0.023	0.078	0.971	0.0790	0.199	1.585	-2.25	0.24	-0.00400	0.00500	-0.86	0.328	34.351
					10/16/2013 13:38	0917-173_No	13_10_16_1338_15_941	1	0.02	1.075	-0.10500	0.080	1.024	0.0780	0.235	1.588	-2.520	0.25	-0.00300	0.00500	-0.3	0.329	35.882
					10/16/2013 13:39	0917-173_No	13_10_16_1339_16_752	1	1.55	1.027	-0.184	0.077	0.912	0.0770	0.348	1.567	-2.24	0.22	-0.00400	0.00500	-0.72	0.313	32.549
					10/16/2013 13:40	0917-173_No	13_10_16_1340_17_442	1	0.225	1.093	-0.0920	0.073	0.912	0.0790	0.360	1.568	-1.840	0.21	-0.00700	0.00500	-0.83	0.336	29.487
					10/16/2013 13:41	0917-173_No	13_10_16_1341_18_272	1	-1.77	1.078	0.030	0.072	0.838	0.0760	0.216	1.570	-1.80	0.21	-0.00200	0.00500	-0.81	0.326	28.574
					10/16/2013 13:42	0917-173_No	13_10_16_1342_18_982	1	-0.67	1.061	0.046	0.073	0.790	0.0770	0.299	1.557	-1.734	0.19	-0.01200	0.00500	-1.05	0.317	26.334
					10/16/2013 13:43	0917-173_No	13_10_16_1343_19_792	1	0.09	1.030	-0.0180	0.067	0.755	0.0730	0.267	1.559	-1.631	0.17	-0.00700	0.00400	-0.58	0.312	23.912
					10/16/2013 13:44	0917-173_No	13_10_16_1344_20_512	1	-2.011	1.057	0.047	0.068	0.694	0.0750	0.296	1.549	-1.394	0.17	-0.00500	0.00400	-0.35	0.328	22.012
					10/16/2013 13:45	0917-173_No	13_10_16_1345_21_252	1	-0.351	0.985	-0.003	0.066	0.735	0.0770	0.280	1.570	-1.078	0.16	-0.00700	0.00500	-0.94	0.309	19.912
					10/16/2013 13:46	0917-173_No	13_10_16_1346_22_032	1	0.28	1.047	0.031	0.068	0.749	0.0780	0.237	1.586	-1.157	0.15	-0.00800	0.00500	-0.38	0.322	18.983
					10/16/2013 13:47	0917-173_No	13_10_16_1347_22_792	1	0.968	1.112	0.040	0.065	0.841	0.0770	0.393	1.603	-0.92	0.15	-0.00800	0.00500	-1.08	0.328	18.984
					10/16/2013 13:48	0917-173_No	13_10_16_1348_23_542	1	0.725	1.092	0.010	0.065	0.858	0.0790	0.389	1.618	-1.12	0.16	-0.00800	0.00500	-0.71	0.322	20.044
					10/16/2013 13:49	0917-173_No	13_10_16_1349_24_252	1	-0.85	1.098	0.037	0.066	0.808	0.0780	0.262	1.622	-1.155	0.16	-0.01200	0.00500	-0.31	0.331	20.296
					10/16/2013 13:50	0917-173_No	13_10_16_1350_25_052	1	0.60	1.133	-0.014	0.073	0.850	0.0810	0.336	1.623	-1.397	0.17	-0.00900	0.00500	-0.27	0.339	22.106
					10/16/2013 13:51	0917-173_No	13_10_16_1351_25_803	1	-1.68	1.093	0.097	0.066	0.806	0.0790	0.295	1.626	-1.16	0.16	-0.00600	0.00500	-0.86	0.315	22.192
					10/16/2013 13:52	0917-173_No	13_10_16_1352_26_603	1	-1.34	1.060	-0.0230	0.071	0.763	0.0780	0.370	1.606	-1.245	0.17	-0.01000	0.00500	-0.55	0.328	21.362
					10/16/2013 13:53	0917-173_No	13_10_16_1353_27_313	1	0.082	1.129	0.0490	0.066	0.849	0.0760	0.273	1.607	-1.220	0.16	-0.00400	0.00500	-0.90	0.323	19.898
					10/16/2013 13:54	0917-173_No	13_10_16_1354_28_013	1	0.411	1.105	0.012	0.066	0.865	0.0760	0.479	1.606	-1.11	0.16	-0.00700	0.00500	-0.89	0.331	19.173
					10/16/2013 13:55	0917-173_No	13_10_16_1355_28_823	1	-1.36	1.137	-0.02800	0.063	0.832	0.0790	0.328	1.605	-1.163	0.16	-0.00900	0.00400	-0.56	0.329	19.23
					10/16/2013 13:56	0917-173_No	13_10_16_1356_29_593	1	-0.23	1.058	-0.0140	0.067	0.876	0.0790	0.444	1.612	-1.145	0.15	-0.00700	0.00500	-0.39	0.322	19.513
					10/16/2013 13:57	0917-173_No	13_10_16_1357_30_333	1	0.37	1.083	0.043	0.070	0.832	0.0800	0.428	1.630	-1.211	0.16	-0.00800	0.00500	-0.41	0.322	20.627
					10/16/2013 13:58	0917-173_No	13_10_16_1358_31_053	1	0.504	1.059	-0.0050	0.067	0.923	0.0810	0.320	1.632	-1.291	0.16	-0.00600	0.00500	0.14	0.332	20.708
					10/16/2013 13:59	0917-173_No	13_10_16_1359_31_863	1	-1.68	1.211	0.057	0.067	0.845	0.0810	0.564	1.623	-1.168	0.16	-0.01100	0.00500	-0.45	0.345	20.129
					10/16/2013 14:00	0917-173_No	13_10_16_1400_32_603	1	0.04	1.141	0.072	0.068	0.740	0.0800	0.390	1.611	-0.949	0.15	-0.00700	0.00500	-0.52	0.342	18.063
					10/16/2013 14:01	0917-173_No	13_10_16_1401_33_323	1	-0.43	1.101	0.029	0.065	0.718	0.0780	0.381	1.588	-1.15	0.15	-0.00400	0.00500	-0.72	0.327	19.664
					10/16/2013 14:02	0917-173_No	13_10_16_1402_34_073	1	1.83	1.097	0.035	0.071	0.789	0.0760	0.458	1.575	-1.465	0.167	-0.00600	0.00500	-0.09	0.328	21.776
					10/16/2013 14:03	0917-173_No	13_10_16_1403_34_794	1	0.81	1.035	0.039	0.064	0.846	0.0750	0.354	1.570	-1.382	0.172	-0.00700	0.00500	-0.44	0.297	22.817
					10/16/2013 14:04	0917-173_No	13_10_16_1404_35_484	1	0.61	1.004	0.0180	0.071	0.820	0.0740	0.403	1.565	-1.459	0.180	-0.00500	0.00400	-0.94	0.303	23.833
					10/16/2013 14:05	0917-173_No	13_10_16_1405_36_184	1	-0.922	1.047	-0.0430	0.073	0.792	0.0760	0.417	1.565	-1.376	0.184	-0.00600	0.00500	-0.87	0.336	24.125
					10/16/2013 14:06	0917-173_No	13_10_16_1406_36_954	1	-1.46	1.069	0.002	0.072	0.805	0.0760	0.400	1.569	-1.550	0.182	-0.00500	0.00500	-0.75	0.327	24.183
					10/16/2013 14:07	0917-173_No	13_10_16_1407_37_704	1	0.79	1.143	0.010	0.074	0.795	0.0750	0.346	1.564	-1.49	0.182	-0.00500	0.00500	-0.50	0.334	24.492
					10/16/2013 14:08	0917-173_No	13_10_16_1408_38_404	1	0.310	1.052	-0.0110	0.069	0.756	0.0740	0.374	1.572	-1.377	0.178	-0.00900	0.00400	-0.32	0.324	23.917
					10/16/2013 14:09	0917-173_No	13_10_16_1409_39_214	1	0.40	1.086	0.046	0.070	0.790	0.0770	0.440	1.584	-1.39	0.173	-0.00500	0.00500	-0.52	0.328	22.438
					10/16/2013 14:10	0917-173_No	13_10_16_1410_39_914	1	0.20	1.123	0.031	0.066	0.757	0.0780	0.285	1.602	-1.21	0.160	-0.00300	0.00500	-0.53	0.329	22.08
					10/16/2013 14:11	0917-173_No	13_10_16_1411_40_714	1	-1.34	1.116	0.0220	0.071	0.778	0.0750	0.323	1.596	-1.38	0.174	-0.00400	0.00500	-0.60	0.336	23.116
					10/16/2013 14:12	0917-173_No	13_10_16_1412_41_424	1	-1.915	1.117	0.039	0.072	0.791	0.0790	0.429	1.612	-1.32	0.180	-0.00800	0.00400	-0.63	0.335	24.43
					10/16/2013 14:13	0917-173_No	13_10_16_1413_42_174	1	0.30	1.057	-0.052	0.071	0.793	0.0780	0.498	1.595	-1.36	0.188	-0.00400	0.00500	-0.95	0.321	25.498
					10/16/2013 14:14	0917-173_No	13_10_16_1414_42_985	1	-0.07	1.117	-0.114	0.072	0.712	0.0760	0.425	1.588	-1.563	0.181	-0.00600	0.00500	-0.42	0.338	25.146
					10/16/2013 14:15	0917-173_No	13_10_16_1415_43_685	1	-1.256	1.043	-0.050	0.071	0.761	0.0740	0.298	1.584	-1.43	0.190	-0.00900	0.00400	-1.13	0.319	25.423
					10/16/2013 14:16	0917-173_No	13_10_16_1416_44_515	1	-0.47	1.069	-0.0070	0.071	0.664	0.0750	0.370	1.570	-1.356	0.184	-0.00800	0.00500	-0.77	0.325	24.911
					10/16/2013 14:17	0917-173_No	13_10_16_1417_45_225	1	-0.31	1.100	0.001	0.072	0.635	0.0750	0.315	1.563	-1.29	0.180	-0.00600	0.00500	-1.04	0.333	23.977
					10/16/2013 14:18	0917-173_No	13_10_16_1418_45_945	1	-1.38	1.065	-0.0570	0.068	0.684	0.0730	0.265	1.579	-1.39	0.179	-0.00400	0.00500	-0.55	0.319	24.827
			Stop		10/16/2013 14:19	0917-173_No	13_10_16_1419_46_755	1	-1.41	1.159	-0.079	0.073	0.807	0.0770	0.436	1.596	-1.62	0.195	-0.00200	0.00500	-0.91	0.343	26.186
					10/16/2013 15:07	0917-173_No	13_10_16_1507_27_499	1	1.9	1.3	0.096	0.068	-0.30	0.91	-0.237	0.0810	0.101	0.111	0.036	0.383	-0.89	0.365	-1.106
					10/16/2013 15:07	0917-173_No	13_10_16_1507_46_029	1	2.1	1.3	0.10300	0.068	-0.39	1.13	0.0230	0.0930	-0.159	0.112	0.049	0.465	0.31	0.373	-1.398
					10/16/2013 15:08	0917-173_No	13_10_16_1508_04_639	1	0.9	1.3	-0.1180	0.071	-0.36	1.25	-0.1150	0.0910	-0.053	0.115	0.046	0.509	-0.2220	0.377	-1.558
					10/16/2013 15:08	0917-173_No	13_10_16_1508_23_129	1	0.8	1.3	0.1230	0.073	-0.37	1.32	-0.02500	0.0850	0.162	0.119	0.049	0.534	-0.001	0.400	-1.64
					10/16/2013 15:08	0917-173_No	13_10_16_1508_41_629	1	1.1	1.2	0.059	0.067	-0.33	1.36	0.0340	0.0920	-0.022	0.107	0.041	0.543	-1.044	0.355	-1.646
					10/16/2013 15:09	0917-173_No	13_10_16_1509_00_239	1	-0.2	1.3	0.136	0.072	-0.50	1.37	-0.0780	0.0890	0.020	0.117	0.048	0.550	0.002	0.386	-1.705
					10/16/2013 15:09	0917-173_No	13_10_16_1509_18_749	1	1.8	1.3	0.1350	0.068	-0.37	1.38	-0.088	0.0850	0.081	0.113	0.036	0.552	0.085	0.370	-1.704
					10/16/2013 15:09	0917-173_No	13_10_16_1509_37_259	1	-1.9	1.3	-0.0010	0.068	-0.43	1.39	-0.0850	0.0970	-0.348	0.114	0.045	0.553	-0.1290	0.374	-1.678
					10/16/2013 15:09	0917-173_No	13_10_16_1509_55_859	1	-0.6	1.1	0.003	0.070	-0.42	1.39	0.216	0.0930	0.034	0.110	0.041	0.558	0.876	0.350	-1.713
					10/16/2013 15:10	0917-173_No	13_10_16_1510_14_359	1	1.4	1.2	0.108	0.072	-0.52	1.39	-0.0500	0.0830	0.186	0.115	0.050	0.557	0.184	0.381	-1.725
					10/16/2013 15:10	0917-173_No	13_10_16_1510_32_979	1	-0.8	1.4	-0.0230	0.073	-0.21	1.39	0.0730	0.0840	0.1040	0.122	0.047	0.554	-0.501	0.414	-1.713
					10/16/2013 15:10	0917-173_No	13_10_16_1510_51_429	1	-0.4	1.2	0.208	0.072	-0.37	1.39	-0.258	0.0800	-0.022	0.115	0.053	0.559	-0.043	0.378	-1.709
					10/16/2013 15:11	0917-173_No	13_10_16_1511_09_939	1	1.4	1.2	-0.195	0.075	-0.37	1.39	-0.0260	0.0770	-0.113	0.120	0.036	0.555	0.28	0.394	-1.735
					10/16/2013 15:11	0917-173_No	13_10_16_1511_28_549	1	0.4	1.3	0.177	0.066	-0.47	1.39	0.174	0.0840	0.0940	0.109	0.054	0.556	0.229	0.375	-1.703
					10/16/2013 15:11	0917-173_No	13_10_16_1511_47_059	1	1.9	1.3	0.005	0.071	-0.40	1.40	0.1330	0.0970	0.164	0.117	0.056	0.559	-0.016	0.385	-1.729
					10/16/2013 15:12	0917-173_No	13_10_16_1512_05_669	1	-4.9	1.3	0.056	0.073	-0.45	1.40	0.0700	0.0930	-0.096	0.118	0.042	0.559	0.4630	0.390	-1.706
					10/16/2013 15:12	0917-173_No	13_10_16_1512_24_089	1	-0.8	1.3	-0.189	0.070	-0.43	1.39	0.0740	0.0930	0.223	0.116	0.045	0.556	-0.067	0.394	-1.722
					10/16/2013 15:12	0917-173_No	13_10_16_1512_42_599	1	0.0	1.2	-0.028	0.072	-0.50	1.40	0.0320	0.0940	-0.0310	0.117	0.038	0.556	-0.658	0.373	-1.722
					10/16/2013 15:13	0917-173_No	13_10_16_1513_01_239	1	-1.7	1.3	-0.078	0.076	-0.38	1.39	-0.0490	0.0820	-0.130	0.121	0.044	0.560	-0.064	0.389	-1.717
					10/16/2013 15:24	0917-173_No	13_10_16_1524_39_510	1	-8.788	2.724	0.005	0.159	-0.295	0.118	0.689	1.10	-0.186	0.26	-0.01	0.00700	-1.21	0.84	-0.112
					10/16/2013 15:24	0917-173_No	13_10_16_1524_45_660	1	-1.717	2.841	0.138	0.153	-0.102	0.125	0.716	1.12	-0.206	0.250	-0.01000	0.00600	0.38	0.84	-0.127
					10/16/2013 15:24	0917-173_No	13_10_16_1524_51_900	1	-2.766	2.923	-0.208	0.161	-0.065	0.121	0.788	1.09	-0.242	0.26	-0.01300	0.00700	-1.683	0.88	-0.083
					10/16/2013 15:24	0917-173_No	13_10_16_1524_58_140	1	-4.054	2.892	-0.083	0.156	-0.05000	0.123	0.838	1.07	-0.315	0.26	-0.00900	0.00700	-0.534	0.85	-0.048
					10/16/2013 15:25	0917-173_No	13_10_16_1525_04_280	1	-2.730	2.668	-0.117	0.167	-0.0790	0.124	0.620	1.07	-0.171	0.26	-0.00900	0.00700	0.31	0.86	-0.122
					10/16/2013 15:25	0917-173_No	13_10_16_1525_10_440	1	-3.181	2.636	-0.138	0.148	-0.1360	0.121	1.039	1.06	-0.136	0.24	-0.01900	0.00600	-1.79	0.81	-0.143
					10/16/2013 15:25	0917-173_No	13_10_16_1525_16_600	1	-0.932	2.766	0.152	0.151	-0.168	0.122	0.482	1.05	0.313	0.248	-0.02100	0.00700	-2.54	0.81	-0.065
					10/16/2013 15:25	0917-173_No	13_10_16_1525_22_760	1	-4.593	2.922	-0.279	0.160	-0.243	0.116	1.218	1.09	0.07	0.26	-0.01500	0.00600	-2.77	0.87	-0.048
					10/16/2013 15:25	0917-173_No	13_10_16_1525_29_030	1	-5.838	2.875	-0.033	0.154	-0.025	0.117	0.779	1.06	0.19	0.26	-0.01600	0.00600	-2.47	0.86	-0.108
					10/16/2013 15:25	0917-173_No	13_10_16_1525_35_200	1	-2.869	3.060	-0.341	0.161	0.080	0.122	1.3380	1.09	-0.025	0.27	-0.01000	0.00600	-0.395	0.89	-0.086
					10/16/2013 15:25	0917-173_No	13_10_16_1525_41_280	1	-1.255	2.676	-0.299	0.157	-0.1580	0.122	0.944	1.09	0.077	0.25	-0.01800	0.00600	-1.012	0.86	-0.091
					10/16/2013 15:25	0917-173_No	13_10_16_1525_47_500	1	-1.292	2.862	0.050	0.163	-0.166	0.125	1.451	1.12	-0.404	0.26	-0.01900	0.00500	-0.634	0.87	-0.093
					10/16/2013 15:25	0917-173_No	13_10_16_1525_53_690	1	-2.568	3.015	-0.025	0.160	-0.455	0.120	0.946	1.11	0.026	0.262	-0.01500	0.00700	-1.94	0.87	-0.074
					10/16/2013 15:25	0917-173_No	13_10_16_1525_59_901	1	-3.144	2.819	-0.241	0.162	-0.228	0.123	0.990	1.17	0.24	0.26	-0.01100	0.00600	-1.7330	0.87	-0.067
					10/16/2013 15:26	0917-173_No	13_10_16_1526_06_101	1	1.77	2.671	-0.227	0.161	-0.362	0.123	0.979	1.17	0.066	0.257	-0.00600	0.00600	-1.55	0.85	0.052
					10/16/2013 15:26	0917-173_No	13_10_16_1526_12_201	1	-5.361	2.658	-0.316	0.156	-0.1520	0.125	0.997	1.233	-0.159	0.248	0.0010	0.00700	-0.547	0.81	0.033
					10/16/2013 15:26	0917-173_No	13_10_16_1526_18_411	1	-5.013	2.870	-0.2140	0.151	-0.141	0.117	0.717	1.227	0.342	0.251	-0.00700	0.00600	-2.57	0.84	-0.005
					10/16/2013 15:26	0917-173_No	13_10_16_1526_24_601	1	1.24	2.853	0.229	0.152	-0.152	0.124	1.737	1.284	-0.186	0.251	-0.01500	0.00600	0.25	0.83	0.057
					10/16/2013 15:26	0917-173_No	13_10_16_1526_30_811	1	-8.03	2.594	-0.134	0.159	-0.148	0.122	0.587	1.348	-0.386	0.248	-0.01200	0.00700	-0.345	0.81	0.042
					10/16/2013 15:26	0917-173_No	13_10_16_1526_37_001	1	-0.773	2.634	-0.1980	0.149	-0.278	0.116	1.132	1.352	-0.096	0.240	-0.01300	0.00700	-0.691	0.81	0.126
					10/16/2013 15:26	0917-173_No	13_10_16_1526_43_091	1	-7.582	2.678	0.102	0.153	-0.0500	0.1220	1.354	1.402	-0.200	0.249	-0.01	0.00700	-0.75	0.84	0.096
					10/16/2013 15:26	0917-173_No	13_10_16_1526_49_291	1	-3.56	2.571	-0.1180	0.149	-0.128	0.119	1.170	1.412	-0.365	0.239	-0.00900	0.00700	-0.43	0.78	0.177
					10/16/2013 15:26	0917-173_No	13_10_16_1526_55_501	1	-2.212	2.549	-0.088	0.143	-0.154	0.125	0.897	1.460	-0.466	0.231	-0.00200	0.00700	0.385	0.77	0.161
					10/16/2013 15:27	0917-173_No	13_10_16_1527_01_701	1	1.20	2.433	-0.3340	0.145	-0.0010	0.114	1.155	1.505	0.2810	0.230	-0.01300	0.00700	-0.99	0.78	0.182
					10/16/2013 15:27	0917-173_No	13_10_16_1527_07_801	1	1.030	2.730	-0.183	0.148	-0.174	0.116	0.890	1.544	-0.161	0.242	-0.01000	0.00700	-0.32	0.82	0.152
					10/16/2013 15:27	0917-173_No	13_10_16_1527_14_001	1	-1.964	2.639	0.081	0.142	-0.178	0.118	1.018	1.512	-0.035	0.235	-0.01900	0.00500	-0.32	0.78	0.221
					10/16/2013 15:27	0917-173_No	13_10_16_1527_20_221	1	-4.482	2.601	0.124	0.147	-0.124	0.126	1.072	1.518	-0.2240	0.239	-0.00700	0.00600	-1.191	0.77	0.191
					10/16/2013 15:27	0917-173_No	13_10_16_1527_26_421	1	-1.174	2.660	-0.286	0.154	-0.080	0.118	1.177	1.571	-0.295	0.247	0.00400	0.00500	-1.07	0.82	0.248
					10/16/2013 15:27	0917-173_No	13_10_16_1527_32_621	1	-3.334	2.617	0.188	0.145	-0.166	0.114	0.764	1.627	-0.357	0.237	-0.01600	0.00500	-1.63	0.80	0.222
					10/16/2013 15:27	0917-173_No	13_10_16_1527_38_721	1	-1.886	2.658	-0.186	0.141	-0.142	0.127	0.632	1.564	0.025	0.234	-0.02400	0.00500	-0.589	0.79	0.247
					10/16/2013 15:27	0917-173_No	13_10_16_1527_44_921	1	-2.332	2.608	-0.115	0.149	0.088	0.123	0.825	1.620	-0.65	0.241	-0.01000	0.00600	1.82	0.81	0.26
					10/16/2013 15:27	0917-173_No	13_10_16_1527_51_121	1	0.481	2.500	0.042	0.131	0.0190	0.118	1.039	1.665	-0.130	0.217	-0.01700	0.00600	-0.95	0.739	0.244
					10/16/2013 15:27	0917-173_No	13_10_16_1527_57_331	1	-7.753	2.603	-0.085	0.139	0.0290	0.121	1.218	1.681	0.1090	0.233	-0.01500	0.00500	0.757	0.76	0.263
					10/16/2013 15:28	0917-173_No	13_10_16_1528_03_531	1	-4.061	2.575	-0.2420	0.141	-0.0390	0.120	0.526	1.696	0.01	0.232	-0.02700	0.00600	-2.044	0.76	0.253
					10/16/2013 15:28	0917-173_No	13_10_16_1528_09_641	1	3.4850	2.230	0.094	0.134	0.0500	0.117	0.790	1.709	0.091	0.215	-0.01500	0.00600	-2.27	0.67	0.319
					10/16/2013 15:28	0917-173_No	13_10_16_1528_15_841	1	-0.421	2.506	0.200	0.145	0.152	0.1110	0.991	1.682	-0.280	0.232	-0.01	0.00500	-0.381	0.76	0.281
					10/16/2013 15:28	0917-173_No	13_10_16_1528_21_961	1	-1.467	2.305	-0.253	0.141	-0.181	0.118	0.951	1.698	-0.0990	0.220	-0.01200	0.00600	0.22	0.74	0.263
					10/16/2013 15:28	0917-173_No	13_10_16_1528_28_171	1	-1.97	2.646	-0.1210	0.144	-0.0610	0.1110	0.884	1.715	0.016	0.238	-0.01400	0.00500	0.11	0.78	0.301
					10/16/2013 15:28	0917-173_No	13_10_16_1528_34_381	1	-7.532	2.563	-0.138	0.135	0.0620	0.116	0.886	1.707	-0.211	0.226	-0.02700	0.00600	0.722	0.77	0.277
					10/16/2013 15:28	0917-173_No	13_10_16_1528_40_481	1	-1.070	2.340	0.370	0.140	-0.249	0.121	0.786	1.694	0.072	0.221	-0.02000	0.00600	-0.25	0.72	0.301
					10/16/2013 15:28	0917-173_No	13_10_16_1528_46_691	1	0.336	2.486	-0.293	0.142	-0.259	0.114	0.757	1.742	-0.037	0.229	-0.01600	0.00600	0.28	0.76	0.178
					10/16/2013 15:28	0917-173_No	13_10_16_1528_52_891	1	-2.763	2.461	-0.240	0.141	-0.1000	0.1230	0.865	1.772	-0.591	0.224	-0.01	0.00500	0.323	0.72	0.256
					10/16/2013 15:28	0917-173_No	13_10_16_1528_59_101	1	1.4310	2.491	0.129	0.137	-0.372	0.114	1.076	1.712	-0.031	0.224	-0.01000	0.00600	-1.58	0.76	0.288
					10/16/2013 15:29	0917-173_No	13_10_16_1529_05_301	1	-4.9490	2.223	0.005	0.120	-0.098	0.1130	0.473	1.752	0.08	0.200	-0.01700	0.00500	-0.4240	0.66	0.282
					10/16/2013 15:29	0917-173_No	13_10_16_1529_11_411	1	-1.9000	2.481	-0.062	0.132	-0.010	0.1140	1.438	1.750	-0.464	0.220	-0.00900	0.00500	-0.09	0.72	0.28
					10/16/2013 15:29	0917-173_No	13_10_16_1529_17_611	1	-0.237	2.443	-0.099	0.127	0.0800	0.116	0.969	1.732	-0.529	0.212	-0.01	0.00400	-0.48	0.71	0.331
					10/16/2013 15:29	0917-173_No	13_10_16_1529_23_821	1	3.08	2.395	0.269	0.127	0.1320	0.117	0.592	1.695	0.06300	0.211	-0.00800	0.00600	0.20	0.69	0.28
					10/16/2013 15:29	0917-173_No	13_10_16_1529_30_021	1	2.334	2.457	-0.1090	0.138	-0.142	0.111	1.014	1.750	-0.286	0.223	-0.01400	0.00600	-0.74	0.73	0.322
					10/16/2013 15:29	0917-173_No	13_10_16_1529_36_221	1	3.550	2.563	-0.178	0.131	-0.224	0.112	0.824	1.736	0.09	0.222	0.00300	0.00600	-0.86	0.75	0.314
					10/16/2013 15:29	0917-173_No	13_10_16_1529_42_321	1	-0.601	2.529	-0.0460	0.128	-0.0250	0.1060	0.866	1.729	-0.159	0.215	-0.00200	0.00500	-1.271	0.73	0.264
					10/16/2013 15:29	0917-173_No	13_10_16_1529_48_521	1	-4.065	2.376	0.0700	0.128	0.0390	0.113	0.586	1.771	0.009	0.211	-0.01000	0.00600	0.53	0.70	0.285
					10/16/2013 15:29	0917-173_No	13_10_16_1529_54_721	1	2.079	2.475	0.2130	0.130	-0.098	0.112	0.567	1.764	0.278	0.216	-0.02	0.00500	-0.311	0.72	0.305
					10/16/2013 15:30	0917-173_No	13_10_16_1530_00_911	1	-5.514	2.244	-0.19	0.126	0.0810	0.113	0.769	1.762	0.092	0.206	-0.01000	0.00500	0.60	0.68	0.298
					10/16/2013 15:30	0917-173_No	13_10_16_1530_07_101	1	-2.579	2.341	-0.337	0.137	-0.167	0.108	0.633	1.761	-0.112	0.220	-0.00700	0.00500	0.605	0.70	0.263
					10/16/2013 15:30	0917-173_No	13_10_16_1530_13_191	1	-5.621	2.300	0.5150	0.121	-0.0050	0.110	0.916	1.738	0.201	0.205	0.00000	0.00600	-1.35	0.68	0.274
					10/16/2013 15:30	0917-173_No	13_10_16_1530_19_381	1	-0.426	2.303	0.228	0.133	0.0400	0.1080	0.920	1.730	0.03	0.214	-0.0150	0.00600	-1.128	0.69	0.288
					10/16/2013 15:30	0917-173_No	13_10_16_1530_25_571	1	1.430	2.531	0.123	0.124	-0.0020	0.109	0.476	1.713	0.164	0.214	-0.01200	0.00500	-0.51	0.71	0.199
					10/16/2013 15:30	0917-173_No	13_10_16_1530_31_771	1	2.645	2.280	-0.080	0.129	0.232	0.103	0.723	1.712	-0.061	0.208	0.00000	0.00500	-0.63	0.69	0.256
					10/16/2013 15:30	0917-173_No	13_10_16_1530_37_861	1	-2.91	2.385	0.022	0.122	-0.1370	0.1040	0.752	1.698	-0.213	0.206	-0.01300	0.00500	-0.456	0.69	0.224
					10/16/2013 15:30	0917-173_No	13_10_16_1530_44_051	1	-0.537	2.422	0.072	0.129	0.0160	0.113	0.626	1.704	0.0620	0.214	-0.00400	0.00500	0.278	0.73	0.317
					10/16/2013 15:30	0917-173_No	13_10_16_1530_50_351	1	2.067	2.435	0.001	0.136	0.0220	0.1040	1.042	1.720	-0.278	0.220	-0.01100	0.00600	1.37	0.72	0.239

Location **Disc.** **#** **Start/Stop** **Instrument**

				Label		**Label**		**Label**		**Label**		**Label**		**Label**		**Label**		
				1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/16/2013 15:30	0917-173_No	13_10_16_1530_56_551	1	4.882	2.202	0.069	0.136	0.0280	0.1010	0.834	1.715	-0.213	0.211	-0.00900	0.00500	0.08	0.67	0.26
10/16/2013 15:31	0917-173_No	13_10_16_1531_02_751	1	-4.3160	2.354	0.119	0.116	-0.0850	0.1040	0.644	1.705	0.123	0.200	-0.01300	0.00500	1.13	0.657	0.246
10/16/2013 15:31	0917-173_No	13_10_16_1531_08_851	1	0.871	2.450	-0.0400	0.132	-0.0200	0.1040	0.590	1.680	-0.012	0.218	-0.00900	0.00400	-0.813	0.72	0.227
10/16/2013 15:31	0917-173_No	13_10_16_1531_15_041	1	1.8190	2.445	-0.1580	0.126	-0.05100	0.1040	0.820	1.678	-0.139	0.213	0.00600	0.00600	-0.596	0.72	0.266
10/16/2013 15:31	0917-173_No	13_10_16_1531_21_231	1	3.808	2.337	-0.1450	0.127	-0.071	0.105	0.755	1.666	-0.310	0.205	-0.00500	0.00500	1.218	0.70	0.199
10/16/2013 15:31	0917-173_No	13_10_16_1531_27_441	1	-0.099	2.312	0.115	0.131	-0.0030	0.101	1.022	1.693	-0.233	0.212	-0.00800	0.00500	0.38	0.69	0.21
10/16/2013 15:31	0917-173_No	13_10_16_1531_33_631	1	3.1090	2.414	-0.227	0.124	0.1300	0.0960	1.1430	1.675	0.04	0.208	-0.00100	0.00500	-0.50	0.72	0.199
10/16/2013 15:31	0917-173_No	13_10_16_1531_39_721	1	4.402	2.408	-0.028	0.129	-0.0250	0.108	0.911	1.648	-0.159	0.213	0.01200	0.00400	0.232	0.70	0.197
10/16/2013 15:31	0917-173_No	13_10_16_1531_45_921	1	-1.22	2.250	-0.241	0.132	-0.132	0.1000	0.494	1.622	-0.281	0.209	-0.0010	0.00400	0.368	0.67	0.239
10/16/2013 15:31	0917-173_No	13_10_16_1531_52_121	1	3.528	2.437	0.094	0.129	-0.050	0.1020	0.681	1.637	-0.127	0.216	-0.01100	0.00500	1.14	0.71	0.198
10/16/2013 15:31	0917-173_No	13_10_16_1531_58_311	1	2.691	1.971	-0.110	0.123	0.123	0.1010	0.771	1.595	-0.462	0.192	0.00600	0.00500	-0.06	0.64	0.208
10/16/2013 15:32	0917-173_No	13_10_16_1532_04_511	1	7.020	2.591	0.162	0.122	-0.149	0.095	0.8950	1.592	-0.135	0.212	-0.00800	0.00600	0.663	0.72	0.225
10/16/2013 15:32	0917-173_No	13_10_16_1532_10_611	1	-0.848	2.313	0.1680	0.129	0.154	0.0970	0.647	1.613	0.261	0.211	-0.01700	0.00500	-1.98	0.72	0.19
10/16/2013 15:32	0917-173_No	13_10_16_1532_16_801	1	-4.245	2.322	-0.112	0.122	0.0100	0.1000	0.840	1.576	-0.097	0.206	-0.01100	0.00400	-0.126	0.70	0.179
10/16/2013 15:32	0917-173_No	13_10_16_1532_23_091	1	0.225	2.455	0.0120	0.125	0.027	0.0990	0.819	1.579	-0.565	0.212	0.00100	0.00500	-0.09	0.73	0.192
10/16/2013 15:32	0917-173_No	13_10_16_1532_29_201	1	-2.098	2.479	0.142	0.130	0.172	0.1010	0.840	1.600	-0.211	0.220	-0.00500	0.00500	0.952	0.72	0.193
10/16/2013 15:32	0917-173_No	13_10_16_1532_35_501	1	-0.033	2.247	0.070	0.129	-0.179	0.097	1.002	1.557	-0.413	0.208	-0.00100	0.00500	0.928	0.67	0.184
10/16/2013 15:32	0917-173_No	13_10_16_1532_41_501	1	2.233	2.460	-0.0910	0.117	-0.142	0.1000	0.296	1.569	0.000	0.204	-0.01300	0.00400	0.72	0.69	0.191
10/16/2013 15:32	0917-173_No	13_10_16_1532_47_691	1	0.5790	2.453	0.0780	0.124	0.223	0.0950	0.895	1.524	-0.393	0.209	-0.00800	0.00500	0.53	0.69	0.209
10/16/2013 15:32	0917-173_No	13_10_16_1532_53_981	1	-3.453	2.579	0.1410	0.123	0.1490	0.1010	0.799	1.583	-0.130	0.212	0.00400	0.00400	0.13	0.74	0.218
10/16/2013 15:33	0917-173_No	13_10_16_1533_00_181	1	1.934	2.493	0.001	0.130	0.219	0.0930	0.680	1.539	-0.031	0.213	0.00600	0.00500	0.371	0.72	0.212
10/16/2013 15:33	0917-173_No	13_10_16_1533_06_381	1	7.04	2.138	-0.359	0.129	0.1280	0.0910	0.910	1.547	-1.074	0.207	-0.00800	0.00500	1.38	0.65	0.164
10/16/2013 15:33	0917-173_No	13_10_16_1533_12_481	1	4.25	2.178	0.208	0.131	0.229	0.0980	0.737	1.531	-0.088	0.210	0.00800	0.00500	1.51	0.69	0.223
10/16/2013 15:33	0917-173_No	13_10_16_1533_18_681	1	-4.395	2.254	0.15	0.128	0.211	0.0990	0.735	1.520	-0.026	0.209	-0.00300	0.00500	0.529	0.69	0.185
10/16/2013 15:33	0917-173_No	13_10_16_1533_24_881	1	-2.403	2.414	0.355	0.128	-0.0140	0.0940	0.545	1.584	-0.274	0.211	-0.01400	0.00500	-0.2800	0.71	0.162
10/16/2013 15:33	0917-173_No	13_10_16_1533_31_081	1	5.091	2.390	-0.4300	0.132	-0.234	0.117	0.748	1.682	-0.242	0.216	-0.00200	0.00600	-0.765	0.72	0.212
10/16/2013 15:33	0917-173_No	13_10_16_1533_37_271	1	-6.698	2.520	0.158	0.140	-0.178	0.121	0.21	1.440	-0.188	0.229	-0.01000	0.00600	0.1510	0.77	0.074
10/16/2013 15:33	0917-173_No	13_10_16_1533_43_371	1	-5.766	2.612	-0.082	0.135	-0.317	0.131	0.838	1.370	-0.469	0.227	0.0000	0.00700	0.44	0.739	-0.047
10/16/2013 15:33	0917-173_No	13_10_16_1533_49_561	1	-1.36	2.822	-0.061	0.149	-0.228	0.129	1.125	1.362	-0.474	0.247	-0.02800	0.00600	-0.06	0.83	-0.078
10/16/2013 15:33	0917-173_No	13_10_16_1533_55_761	1	1.488	2.522	-0.0420	0.159	-0.032	0.126	0.805	1.307	-0.25	0.251	-0.02300	0.00600	-1.18	0.79	-0.049
10/16/2013 15:34	0917-173_No	13_10_16_1534_01_961	1	-4.14	2.773	-0.113	0.150	-0.335	0.122	1.530	1.358	-0.058	0.248	-0.02000	0.00500	-0.646	0.84	-0.034
10/16/2013 15:34	0917-173_No	13_10_16_1534_08_051	1	-1.5670	2.782	0.139	0.154	-0.2060	0.121	1.229	1.441	0.2870	0.249	-0.01000	0.00700	0.094	0.84	0.032
10/16/2013 15:34	0917-173_No	13_10_16_1534_14_241	1	-1.950	2.785	-0.110	0.151	-0.1390	0.120	0.986	1.385	-0.272	0.250	-0.01600	0.00600	-0.12	0.83	0.097
10/16/2013 15:34	0917-173_No	13_10_16_1534_20_441	1	-3.951	2.704	-0.07	0.153	-0.154	0.117	0.595	1.408	0.043	0.250	-0.00800	0.00600	-0.14	0.81	0.059
10/16/2013 15:34	0917-173_No	13_10_16_1534_26_631	1	4.7750	2.659	0.0530	0.152	-0.202	0.122	0.879	1.466	0.073	0.243	-0.00900	0.00600	-0.897	0.82	0.047
10/16/2013 15:34	0917-173_No	13_10_16_1534_32_831	1	-0.524	2.880	0.153	0.140	-0.002	0.128	0.328	1.456	-0.121	0.240	-0.00700	0.00600	-0.566	0.82	0.09
10/16/2013 15:34	0917-173_No	13_10_16_1534_38_921	1	-0.97	2.725	-0.408	0.153	-0.0850	0.124	0.912	1.471	0.018	0.251	-0.02	0.00600	-1.99	0.83	0.133
10/16/2013 15:34	0917-173_No	13_10_16_1534_45_121	1	-4.657	2.693	0.0800	0.146	-0.191	0.123	0.19	1.514	0.14	0.243	-0.00200	0.00600	-1.011	0.78	0.101
10/16/2013 15:34	0917-173_No	13_10_16_1534_51_321	1	-2.080	2.606	-0.32	0.147	-0.118	0.120	0.705	1.518	-0.38	0.236	-0.02500	0.00600	0.650	0.77	0.154
10/16/2013 15:34	0917-173_No	13_10_16_1534_57_611	1	-0.967	2.356	-0.126	0.146	-0.263	0.120	0.625	1.553	-0.277	0.227	-0.00400	0.00600	-0.01	0.75	0.175
10/16/2013 15:35	0917-173_No	13_10_16_1535_03_811	1	-1.577	2.566	0.1150	0.139	0.018	0.1130	0.724	1.610	0.0110	0.227	0.0040	0.00600	1.11	0.76	0.188
10/16/2013 15:35	0917-173_No	13_10_16_1535_09_821	1	0.48	2.621	0.066	0.140	-0.108	0.128	0.643	1.607	-0.22	0.231	-0.00400	0.00500	-1.914	0.76	0.201
10/16/2013 15:35	0917-173_No	13_10_16_1535_16_021	1	-1.86	2.572	0.0020	0.145	-0.017	0.117	0.655	1.631	0.019	0.233	-0.01600	0.00600	-0.82	0.77	0.212
10/16/2013 15:35	0917-173_No	13_10_16_1535_22_221	1	-1.2260	2.420	0.003	0.136	-0.260	0.123	0.668	1.621	0.125	0.223	-0.01000	0.00600	0.49	0.75	0.217
10/16/2013 15:35	0917-173_No	13_10_16_1535_28_421	1	-3.271	2.232	0.115	0.138	-0.202	0.123	0.16	1.652	-0.1030	0.218	-0.01700	0.00600	-1.53	0.72	0.219
10/16/2013 15:35	0917-173_No	13_10_16_1535_34_611	1	-4.770	2.339	-0.52	0.140	-0.04000	0.1210	0.810	1.652	-0.610	0.223	-0.00600	0.00600	1.02	0.75	0.262
10/16/2013 15:35	0917-173_No	13_10_16_1535_40_711	1	-2.24	2.556	0.258	0.138	-0.0620	0.1190	0.911	1.700	0.022	0.226	-0.00900	0.00500	0.146	0.76	0.223
10/16/2013 15:35	0917-173_No	13_10_16_1535_46_901	1	-4.9040	2.661	-0.26	0.131	-0.1760	0.115	0.635	1.662	-0.563	0.225	-0.01800	0.00600	1.39	0.75	0.243
10/16/2013 15:35	0917-173_No	13_10_16_1535_53_101	1	-3.35	2.813	0.193	0.152	-0.0220	0.124	0.633	1.682	-0.149	0.248	0.00300	0.00600	-0.226	0.82	0.237
10/16/2013 15:35	0917-173_No	13_10_16_1535_59_391	1	-0.30	2.359	0.111	0.141	-0.0340	0.115	0.631	1.725	-0.051	0.225	-0.01000	0.00600	-0.002	0.74	0.236
10/16/2013 15:36	0917-173_No	13_10_16_1536_05_581	1	-1.98	2.586	0.277	0.138	-0.0780	0.117	0.19	1.674	0.180	0.228	0.00	0.00600	0.285	0.77	0.218
10/16/2013 15:36	0917-173_No	13_10_16_1536_11_681	1	2.350	2.490	-0.002	0.127	-0.05700	0.123	0.434	1.717	-0.199	0.214	-0.02100	0.00600	-0.04	0.73	0.211
10/16/2013 15:36	0917-173_No	13_10_16_1536_17_881	1	-1.576	2.663	0.263	0.131	-0.180	0.126	0.705	1.675	0.300	0.220	-0.02600	0.00500	-0.700	0.75	0.228
10/16/2013 15:36	0917-173_No	13_10_16_1536_24_081	1	-6.5370	2.558	-0.1320	0.141	-0.106	0.118	0.588	1.723	-0.344	0.229	-0.02000	0.00500	0.25	0.77	0.264
10/16/2013 15:36	0917-173_No	13_10_16_1536_30_271	1	4.347	2.518	0.343	0.137	-0.047	0.1130	0.579	1.755	0.024	0.224	-0.02400	0.00600	-0.78	0.75	0.226
10/16/2013 15:36	0917-173_No	13_10_16_1536_36_471	1	-1.631	2.553	0.065	0.134	-0.285	0.118	0.729	1.742	-0.015	0.222	-0.01	0.00600	-1.368	0.74	0.274
10/16/2013 15:36	0917-173_No	13_10_16_1536_42_561	1	3.89	2.426	0.175	0.128	-0.099	0.117	0.963	1.716	0.181	0.212	-0.00600	0.00500	-1.5180	0.71	0.245
10/16/2013 15:36	0917-173_No	13_10_16_1536_48_751	1	-1.12	2.457	-0.045	0.135	-0.0200	0.111	0.793	1.763	0.118	0.222	-0.01200	0.00600	-0.549	0.75	0.26
10/16/2013 15:36	0917-173_No	13_10_16_1536_54_941	1	-8.13	2.378	-0.074	0.132	-0.145	0.112	1.049	1.766	-0.061	0.215	-0.02100	0.00600	0.646	0.70	0.26
10/16/2013 15:37	0917-173_No	13_10_16_1537_01_141	1	3.383	2.235	-0.039	0.132	-0.143	0.1160	0.773	1.748	-0.044	0.212	-0.01700	0.00600	0.014	0.68	0.279
10/16/2013 15:37	0917-173_No	13_10_16_1537_07_351	1	1.3680	2.586	-0.035	0.146	-0.0090	0.110	0.828	1.727	-0.247	0.236	-0.01200	0.00500	0.1440	0.79	0.293
10/16/2013 15:37	0917-173_No	13_10_16_1537_13_431	1	-0.878	2.378	0.104	0.131	-0.1730	0.115	0.654	1.718	-0.24	0.214	-0.01400	0.00600	0.03	0.690	0.289
10/16/2013 15:37	0917-173_No	13_10_16_1537_19_631	1	-1.578	2.462	0.221	0.139	-0.176	0.1090	0.749	1.736	0.117	0.225	-0.00200	0.00600	-0.125	0.77	0.205
10/16/2013 15:37	0917-173_No	13_10_16_1537_25_841	1	-3.33	2.610	0.041	0.130	0.1640	0.111	0.631	1.756	-0.183	0.223	0.00300	0.00500	-1.030	0.74	0.266
10/16/2013 15:37	0917-173_No	13_10_16_1537_32_041	1	1.792	2.422	-0.077	0.127	-0.172	0.114	0.808	1.752	-0.289	0.215	-0.00700	0.00600	1.142	0.702	0.252
10/16/2013 15:37	0917-173_No	13_10_16_1537_38_151	1	-0.13	2.306	-0.043	0.138	0.179	0.110	0.882	1.750	-0.15	0.221	-0.00800	0.00500	-1.139	0.73	0.201
10/16/2013 15:37	0917-173_No	13_10_16_1537_44_351	1	-1.482	2.452	-0.349	0.133	-0.0940	0.114	0.670	1.761	-0.3360	0.215	-0.01600	0.00500	-0.65	0.74	0.219
10/16/2013 15:37	0917-173_No	13_10_16_1537_50_551	1	-4.4850	2.309	-0.001	0.126	-0.119	0.106	0.953	1.737	0.022	0.208	-0.01300	0.00500	-0.48	0.69	0.229
10/16/2013 15:37	0917-173_No	13_10_16_1537_56_752	1	4.810	2.429	0.082	0.131	-0.096	0.110	0.622	1.740	0.21	0.218	-0.00800	0.00400	-1.64	0.74	0.226
10/16/2013 15:38	0917-173_No	13_10_16_1538_02_952	1	-4.674	2.233	-0.103	0.123	-0.0110	0.1100	1.298	1.701	-0.058	0.202	-0.01700	0.00600	-1.193	0.673	0.214
10/16/2013 15:38	0917-173_No	13_10_16_1538_09_052	1	-3.12	2.077	-0.093	0.126	-0.151	0.1060	0.702	1.713	-0.528	0.201	-0.01900	0.00600	0.99	0.66	0.167
10/16/2013 15:38	0917-173_No	13_10_16_1538_15_252	1	-1.44	2.257	0.2070	0.138	-0.109	0.1100	0.615	1.757	-0.2800	0.216	-0.02600	0.00500	0.655	0.70	0.286
10/16/2013 15:38	0917-173_No	13_10_16_1538_21_442	1	6.07	2.458	0.261	0.130	-0.0850	0.106	0.561	1.688	0.21	0.217	0.00500	0.00500	-2.78	0.73	0.223
10/16/2013 15:38	0917-173_No	13_10_16_1538_27_642	1	-3.579	2.261	0.1030	0.135	-0.1930	0.0990	0.948	1.745	-0.347	0.215	-0.01000	0.00500	1.95	0.70	0.222
10/16/2013 15:38	0917-173_No	13_10_16_1538_33_832	1	-0.11	2.237	-0.110	0.130	0.0680	0.0990	0.619	1.696	-0.015	0.212	-0.01300	0.00500	-1.150	0.72	0.282
10/16/2013 15:38	0917-173_No	13_10_16_1538_39_922	1	0.016	2.361	-0.012	0.139	-0.079	0.1050	0.835	1.709	-0.024	0.221	0.00	0.00500	-1.61	0.73	0.239
10/16/2013 15:38	0917-173_No	13_10_16_1538_46_132	1	3.031	2.265	0.1840	0.120	-0.118	0.1020	0.590	1.711	0.202	0.200	-0.00300	0.00600	-1.382	0.641	0.178
10/16/2013 15:38	0917-173_No	13_10_16_1538_52_322	1	0.885	2.325	-0.216	0.133	0.0110	0.1020	0.308	1.691	-0.271	0.217	-0.00800	0.00400	-0.96	0.70	0.21
10/16/2013 15:38	0917-173_No	13_10_16_1538_58_522	1	-4.693	2.307	0.188	0.131	-0.113	0.1050	0.849	1.674	-0.39	0.211	-0.00500	0.00400	0.461	0.70	0.168
10/16/2013 15:39	0917-173_No	13_10_16_1539_04_712	1	-2.327	2.199	-0.106	0.119	0.0100	0.113	0.717	1.663	-0.132	0.199	-0.01000	0.00500	-0.102	0.65	0.168
10/16/2013 15:39	0917-173_No	13_10_16_1539_10_822	1	1.022	2.463	0.237	0.123	-0.0560	0.103	0.180	1.677	0.063	0.209	-0.01200	0.00500	0.39	0.669	0.216
10/16/2013 15:39	0917-173_No	13_10_16_1539_17_012	1	-0.879	2.089	-0.126	0.134	-0.0590	0.1030	0.609	1.675	-0.140	0.208	-0.00600	0.00600	0.172	0.67	0.233
10/16/2013 15:39	0917-173_No	13_10_16_1539_23_302	1	-3.171	2.456	-0.235	0.133	0.138	0.104	0.930	1.644	-0.392	0.219	0.00200	0.00500	-1.049	0.70	0.205
10/16/2013 15:39	0917-173_No	13_10_16_1539_29_492	1	2.53	2.289	-0.039	0.126	-0.036	0.1020	0.595	1.617	-0.19700	0.204	-0.01	0.00500	-0.19	0.68	0.212
10/16/2013 15:39	0917-173_No	13_10_16_1539_35_682	1	1.256	2.355	-0.160	0.132	-0.02200	0.0970	0.391	1.606	-0.214	0.215	0.00000	0.00400	-1.201	0.69	0.198
10/16/2013 15:39	0917-173_No	13_10_16_1539_41_772	1	2.568	2.291	0.117	0.136	-0.0040	0.0990	0.785	1.627	-0.3360	0.216	-0.00800	0.00400	-1.008	0.71	0.203
10/16/2013 15:39	0917-173_No	13_10_16_1539_47_962	1	3.143	2.342	-0.229	0.129	0.0730	0.0980	0.452	1.633	0.088	0.211	-0.00200	0.00500	-1.51	0.70	0.205
10/16/2013 15:39	0917-173_No	13_10_16_1539_54_152	1	5.9500	2.216	0.137	0.131	-0.144	0.1000	0.509	1.606	-0.223	0.208	-0.00400	0.00500	-1.14	0.69	0.208
10/16/2013 15:40	0917-173_No	13_10_16_1540_00_342	1	4.0300	2.434	0.269	0.138	0.0850	0.1020	1.1150	1.625	0.39	0.222	-0.00900	0.00500	-0.720	0.74	0.188
10/16/2013 15:40	0917-173_No	13_10_16_1540_06_532	1	4.420	2.457	0.2140	0.133	-0.0640	0.0960	0.258	1.614	-0.1370	0.218	-0.00600	0.00500	0.801	0.75	0.193
10/16/2013 15:40	0917-173_No	13_10_16_1540_12_632	1	-0.347	2.206	0.187	0.129	-0.117	0.0990	0.518	1.570	-0.51	0.207	0.00	0.00500	-0.10	0.67	0.159
10/16/2013 15:40	0917-173_No	13_10_16_1540_18_832	1	-0.715	2.391	0.072	0.126	0.0900	0.1040	0.863	1.572	-0.51	0.212	-0.00600	0.00500	1.20	0.71	0.19
10/16/2013 15:40	0917-173_No	13_10_16_1540_25_022	1	-2.864	2.337	0.194	0.124	0.289	0.0960	0.871	1.548	0.396	0.205	0.00400	0.00600	-0.94	0.67	0.198
10/16/2013 15:40	0917-173_No	13_10_16_1540_31_212	1	-6.700	2.200	0.0230	0.127	-0.00900	0.0940	0.670	1.521	-0.128	0.207	-0.00300	0.00500	-0.19	0.70	0.134
10/16/2013 15:40	0917-173_No	13_10_16_1540_37_502	1	0.916	2.191	0.0940	0.128	-0.0530	0.0910	0.971	1.560	-0.487	0.207	-0.01100	0.00500	1.163	0.67	0.161
10/16/2013 15:41	0917-173_No	13_10_16_1541_19_642	1	1.3330	1.074	0.1370	0.058	-0.0060	0.0710	0.762	1.571	-0.2930	0.097	-0.01	0.00300	-0.062	0.316	0.178
10/16/2013 15:42	0917-173_No	13_10_16_1542_20_432	1	0.404	0.990	0.079	0.061	0.0400	0.0700	0.853	1.572	-0.1960	0.096	-0.00500	0.00200	0.249	0.311	0.195
10/16/2013 15:43	0917-173_No	13_10_16_1543_21_152	1	0.955	1.010	0.039	0.056	0.0420	0.0710	0.769	1.570	-0.015	0.091	-0.00400	0.00300	-0.21600	0.304	0.181
10/16/2013 15:44	0917-173_No	13_10_16_1544_21_922	1	1.530	1.093	-0.0260	0.0550	0.01600	0.0720	0.722	1.579	-0.008	0.094	-0.01	0.00300	-0.152	0.314	0.195
10/16/2013 15:45	0917-173_No	13_10_16_1545_22_636	1	1.236	1.013	0.035	0.059	-0.086	0.0710	0.582	1.580	-0.2030	0.095	-0.00200	0.00300	-0.103	0.295	0.192
10/16/2013 15:46	0917-173_No	13_10_16_1546_23_436	1	0.132	1.137	0.032	0.0600	0.0050	0.0710	0.702	1.593	-0.0710	0.100	-0.00400	0.00200	0.182	0.324	0.189

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 12:14	0917-173_No	13_10_14_1214_14_091	1	-2.1	1.4	0.064	0.080	-0.29	1.56	0.0500	0.1130	-0.443	0.130	0.062	0.628	0.84	0.425	-1.948
					10/14/2013 12:14	0917-173_No	13_10_14_1214_32_611	1	-2.7	1.5	0.132	0.084	-0.28	1.61	0.1550	0.0980	-0.0450	0.138	0.049	0.647	1.58	0.441	-2.077
					10/14/2013 12:14	0917-173_No	13_10_14_1214_51_221	1	0.6	1.5	0.124	0.083	-0.41	1.64	0.050	0.1220	-0.277	0.134	0.054	0.654	-0.28	0.449	-2.071
					10/14/2013 12:15	0917-173_No	13_10_14_1215_09_721	1	-3.3	1.4	0.187	0.087	-0.56	1.65	-0.002	0.1120	-0.217	0.138	0.065	0.663	0.711	0.447	-2.128
					10/14/2013 12:15	0917-173_No	13_10_14_1215_28_311	1	-0.1	1.5	0.268	0.078	-0.46	1.65	0.117	0.1090	-0.0260	0.135	0.057	0.663	0.202	0.451	-2.128
					10/14/2013 12:15	0917-173_No	13_10_14_1215_46_821	1	-4.3	1.5	0.1500	0.087	-0.46	1.66	0.01300	0.1060	-0.225	0.140	0.061	0.664	0.401	0.445	-2.13
					10/14/2013 12:16	0917-173_No	13_10_14_1216_05_251	1	-0.5	1.5	-0.042	0.083	-0.51	1.66	-0.0100	0.1030	-0.369	0.136	0.049	0.661	1.20	0.435	-2.114
					10/14/2013 12:16	0917-173_No	13_10_14_1216_23_951	1	-2.1	1.6	-0.0890	0.085	-0.48	1.66	0.0590	0.1170	-0.05400	0.139	0.056	0.662	0.046	0.457	-2.117
					10/14/2013 12:16	0917-173_No	13_10_14_1216_42_401	1	-0.9	1.5	-0.034	0.082	-0.57	1.67	-0.212	0.1100	0.062	0.133	0.055	0.665	0.631	0.437	-2.139
					10/14/2013 12:17	0917-173_No	13_10_14_1217_01_001	1	-0.1	1.5	0.2160	0.077	-0.48	1.67	0.321	0.0990	-0.193	0.129	0.057	0.666	0.583	0.436	-2.1
					10/14/2013 12:17	0917-173_No	13_10_14_1217_19_511	1	-1.8	1.7	0.166	0.083	-0.51	1.66	-0.0680	0.1080	0.283	0.140	0.061	0.665	0.657	0.476	-2.12
					10/14/2013 12:17	0917-173_No	13_10_14_1217_38_051	1	-1.6	1.5	0.075	0.079	-0.38	1.67	0.169	0.1090	-0.151	0.130	0.067	0.665	1.50	0.458	-2.118
					10/14/2013 12:17	0917-173_No	13_10_14_1217_56_641	1	0.9	1.5	0.168	0.086	-0.52	1.66	0.171	0.1110	-0.118	0.139	0.062	0.668	1.46	0.452	-2.14
					10/14/2013 12:18	0917-173_No	13_10_14_1218_15_151	1	-3.1	1.6	0.0100	0.077	-0.55	1.67	-0.0580	0.1100	-0.0670	0.133	0.064	0.665	-0.77	0.439	-2.144
					10/14/2013 12:18	0917-173_No	13_10_14_1218_33_681	1	-1.3	1.5	0.186	0.079	-0.50	1.67	0.0090	0.1050	-0.175	0.131	0.052	0.665	0.906	0.432	-2.132
					10/14/2013 12:18	0917-173_No	13_10_14_1218_52_291	1	0.6	1.6	0.2600	0.080	-0.77	1.68	0.093	0.1020	-0.356	0.136	0.062	0.665	0.487	0.455	-2.149
					10/14/2013 12:19	0917-173_No	13_10_14_1219_10_741	1	4.5	1.4	-0.0290	0.078	-0.31	1.66	0.163	0.1200	-0.138	0.129	0.060	0.665	0.93	0.428	-2.13
					10/14/2013 12:19	0917-173_No	13_10_14_1219_29_331	1	1.9	1.5	0.134	0.084	-0.50	1.66	0.0260	0.1140	-0.054	0.137	0.056	0.667	0.5460	0.438	-2.16
					10/14/2013 12:19	0917-173_No	13_10_14_1219_47_881	1	0.6	1.5	0.2080	0.079	-0.57	1.67	0.030	0.1190	0.144	0.132	0.058	0.667	0.0600	0.446	-2.126
					10/14/2013 12:20	0917-173_No	13_10_14_1220_06_371	1	1.3	1.5	0.061	0.082	-0.55	1.67	-0.213	0.1080	-0.176	0.136	0.049	0.665	0.644	0.460	-2.181
					10/14/2013 12:20	0917-173_No	13_10_14_1220_24_991	1	-2.0	1.5	-0.061	0.083	-0.38	1.67	0.0280	0.1120	-0.003	0.136	0.060	0.663	0.74	0.461	-2.146
					10/14/2013 12:20	0917-173_No	13_10_14_1220_43_481	1	-1.3	1.5	0.035	0.079	-0.46	1.67	-0.335	0.1050	-0.063	0.129	0.061	0.666	1.00	0.434	-2.169
					10/14/2013 12:21	0917-173_No	13_10_14_1221_01_901	1	-3.9	1.6	0.128	0.080	-0.64	1.67	0.181	0.1210	0.153	0.137	0.064	0.671	-0.248	0.475	-2.148
					10/14/2013 12:21	0917-173_No	13_10_14_1221_20_611	1	-3.1	1.5	0.038	0.082	-0.49	1.67	0.0010	0.0990	-0.242	0.134	0.065	0.664	1.807	0.436	-2.153
					10/14/2013 12:21	0917-173_No	13_10_14_1221_39_101	1	0.4	1.6	0.1860	0.084	-0.44	1.67	0.139	0.0960	-0.217	0.139	0.051	0.664	-0.15	0.456	-2.168
					10/14/2013 12:21	0917-173_No	13_10_14_1221_57_711	1	-0.6	1.5	-0.042	0.084	-0.60	1.67	0.209	0.1080	-0.071	0.135	0.062	0.666	0.318	0.453	-2.126
					10/14/2013 12:22	0917-173_No	13_10_14_1222_16_192	1	-2.1	1.6	-0.035	0.084	-0.40	1.66	-0.0260	0.1080	-0.276	0.140	0.057	0.669	-0.09	0.469	-2.186
					10/14/2013 12:22	0917-173_No	13_10_14_1222_34_662	1	0.5	1.5	0.097	0.079	-0.58	1.66	0.0240	0.0980	-0.044	0.131	0.049	0.666	0.4520	0.445	-2.17
					10/14/2013 12:22	0917-173_No	13_10_14_1222_53_282	1	0.8	1.4	0.104	0.082	-0.50	1.66	0.1230	0.1040	-0.141	0.133	0.061	0.666	0.607	0.453	-2.143
					10/14/2013 12:23	0917-173_No	13_10_14_1223_11_782	1	-1.9	1.4	0.2600	0.082	-0.48	1.66	0.0970	0.1220	0.077	0.132	0.057	0.667	0.69	0.424	-2.166
					10/14/2013 12:44	0917-173_No	13_10_14_1244_45_810	1	1.70	1.000	-0.1880	0.163	108.0	0.887	-0.054	0.1080	1.383	0.215	3.42	0.0220	0.853	0.339	0.704
					10/14/2013 12:45	0917-173_No	13_10_14_1245_46_590	1	-0.09	0.958	-0.128	0.170	111.7	0.926	-0.108	0.1060	1.46	0.223	3.44	0.0220	0.683	0.341	0.736
					10/14/2013 12:46	0917-173_No	13_10_14_1246_47_390	1	0.76	1.049	-0.279	0.177	113.8	0.945	-0.001	0.1120	1.31	0.229	3.45	0.0230	0.483	0.349	0.727
					10/14/2013 12:47	0917-173_No	13_10_14_1247_48_200	1	0.66	0.928	-0.0260	0.174	114.6	0.951	-0.009	0.1110	1.46	0.228	3.44	0.0230	0.469	0.342	0.739
					10/14/2013 12:48	0917-173_No	13_10_14_1248_48_990	1	0.88	0.967	-0.240	0.172	115.4	0.952	0.1230	0.1130	1.60	0.224	3.45	0.0240	0.410	0.347	0.712
					10/14/2013 12:49	0917-173_No	13_10_14_1249_49_710	1	-0.22	0.979	-0.2450	0.1780	116	0.952	0.007	0.1190	1.45	0.229	3.45	0.0230	0.855	0.339	0.726
					10/14/2013 12:50	0917-173_No	13_10_14_1250_50_520	1	0.13	1.026	-0.180	0.184	117	0.962	0.009	0.1130	1.32	0.239	3.46	0.0230	1.762	0.358	0.722
Data	CYL	1	Start	A	10/14/2013 12:51	0917-173_No	13_10_14_1251_51_320	1	1.45	0.994	-0.347	0.178	117	0.975	0.059	0.1160	1.42	0.232	3.45	0.0230	0.811	0.348	0.712
					10/14/2013 12:52	0917-173_No	13_10_14_1252_52_020	1	0.44	0.968	-0.161	0.181	118	0.975	0.1400	0.1150	1.47	0.234	3.45	0.0250	0.521	0.340	0.742
					10/14/2013 12:53	0917-173_No	13_10_14_1253_52_871	1	0.74	1.018	-0.155	0.175	118	0.977	-0.006	0.120	1.50	0.229	3.46	0.0220	0.730	0.360	0.716
					10/14/2013 12:54	0917-173_No	13_10_14_1254_53_581	1	-0.85	1.029	-0.264	0.183	118	0.967	-0.043	0.1170	1.59	0.242	3.45	0.0230	0.509	0.341	0.715
					10/14/2013 12:55	0917-173_No	13_10_14_1255_54_371	1	1.49	1.043	-0.259	0.183	118	0.977	0.002	0.1090	1.51	0.236	3.46	0.0230	1.422	0.344	0.719
					10/14/2013 12:56	0917-173_No	13_10_14_1256_55_131	1	-1.45	0.936	-0.150	0.180	118	0.980	0.014	0.1170	1.67	0.235	3.46	0.0230	0.624	0.333	0.718
			Stop		10/14/2013 12:57	0917-173_No	13_10_14_1257_55_951	1	-0.68	0.972	-0.071	0.182	118	0.991	-0.033	0.125	1.53	0.234	3.45	0.0240	0.980	0.338	0.709
					10/14/2013 13:13	0917-173_No	13_10_14_1313_12_592	1	-3.144	1.950	4.07	0.107	2.57	0.305	0.165	2.13	-0.403	0.179	0.00900	0.0170	1.00	0.567	6.843
					10/14/2013 13:14	0917-173_No	13_10_14_1314_13_372	1	-3.345	1.911	3.80	0.107	2.16	0.305	0.055	2.13	-0.425	0.177	0.00900	0.0170	0.06	0.576	6.928
					10/14/2013 13:15	0917-173_No	13_10_14_1315_14_182	1	-2.10	1.866	5.30	0.105	2.16	0.293	-0.0110	2.16	-0.457	0.172	0.01000	0.0180	0.66	0.547	6.831
					10/14/2013 13:16	0917-173_No	13_10_14_1316_14_952	1	-2.45	1.87	6.37	0.110	2.30	0.293	0.0730	2.16	-0.35200	0.180	0.01100	0.0200	0.64	0.560	6.772
					10/14/2013 13:17	0917-173_No	13_10_14_1317_15_753	1	-3.53	1.92	7.75	0.113	2.46	0.285	0.0210	2.17	-0.4060	0.182	0.01	0.0210	0.48	0.563	6.563
					10/14/2013 13:18	0917-173_No	13_10_14_1318_16_493	1	-1.81	1.93	7.97	0.114	2.47	0.288	0.167	2.16	-0.53400	0.184	0.01	0.0230	1.33	0.575	6.501
					10/14/2013 13:19	0917-173_No	13_10_14_1319_17_313	1	-3.57	2.037	4.92	0.108	2.20	0.299	-0.024	2.14	-0.728	0.185	0.00600	0.0190	1.21	0.598	6.656
					10/14/2013 13:20	0917-173_No	13_10_14_1320_18_043	1	-2.731	1.930	3.79	0.103	2.13	0.305	0.101	2.16	-0.554	0.175	0.00900	0.0170	0.32	0.572	6.734
					10/14/2013 13:21	0917-173_No	13_10_14_1321_18_863	1	-2.423	1.993	4.22	0.111	2.11	0.301	0.200	2.16	-0.721	0.183	0.00800	0.0180	0.291	0.579	6.736
					10/14/2013 13:22	0917-173_No	13_10_14_1322_19_563	1	-2.835	1.899	2.57	0.107	1.98	0.309	0.156	2.15	-0.697	0.178	0.00300	0.0150	-0.11	0.567	6.812
					10/14/2013 13:23	0917-173_No	13_10_14_1323_20_333	1	-2.20	1.923	0.954	0.104	1.72	0.326	0.063	2.14	-0.9210	0.175	0.0030	0.0170	1.01	0.570	6.911
					10/14/2013 13:24	0917-173_No	13_10_14_1324_21_163	1	-4.050	1.879	0.820	0.109	1.79	0.340	0.110	2.13	-0.58500	0.178	0.0050	0.0180	0.26	0.565	6.713
					10/14/2013 13:25	0917-173_No	13_10_14_1325_21_853	1	-3.699	2.019	1.04	0.109	1.95	0.364	0.241	2.10	-0.519	0.185	0.0060	0.0190	-0.39	0.597	6.816
					10/14/2013 13:26	0917-173_No	13_10_14_1326_22_693	1	-5.45	2.052	1.32	0.112	2.01	0.378	0.239	2.08	-0.230	0.187	0.00100	0.0200	0.22	0.605	6.941
					10/14/2013 13:27	0917-173_No	13_10_14_1327_23_403	1	-4.74	2.100	1.63	0.112	2.20	0.379	0.225	2.09	-0.366	0.192	0.0090	0.0200	0.07	0.611	7.056
					10/14/2013 13:28	0917-173_No	13_10_14_1328_24_143	1	-2.04	2.022	1.49	0.110	2.10	0.366	0.207	2.06	-0.278	0.188	0.0110	0.0190	-0.12	0.604	7.121
					10/14/2013 13:29	0917-173_No	13_10_14_1329_24_954	1	-3.02	1.916	1.083	0.105	1.70	0.306	0.1990	2.16	-0.506	0.179	0.00100	0.0170	-0.10	0.573	7.908
					10/14/2013 13:30	0917-173_No	13_10_14_1330_25_774	1	-2.058	1.843	0.856	0.098	2.34	0.271	0.2750	2.20	-1.077	0.171	0.0130	0.01400	0.64	0.534	8.364
					10/14/2013 13:31	0917-173_No	13_10_14_1331_26_474	1	-1.71	1.710	0.702	0.104	20.5	0.303	0.104	2.19	-0.1530	0.171	0.513	0.01300	-0.21	0.521	6.598
					10/14/2013 13:32	0917-173_No	13_10_14_1332_27_274	1	-0.87	1.812	0.676	0.095	19.1	0.290	0.3580	2.20	-0.193	0.162	0.665	0.01300	0.57	0.510	5.853
					10/14/2013 13:33	0917-173_No	13_10_14_1333_28_094	1	-3.64	1.733	0.659	0.096	19.8	0.289	0.434	2.19	-0.1880	0.161	0.670	0.01300	0.78	0.503	5.772
					10/14/2013 13:34	0917-173_No	13_10_14_1334_28_844	1	-2.74	1.729	0.728	0.098	20.4	0.290	0.3580	2.20	-0.204	0.162	0.672	0.01200	0.419	0.500	5.619
					10/14/2013 13:35	0917-173_No	13_10_14_1335_29_594	1	-2.07	1.671	0.755	0.101	21.0	0.287	0.0790	2.19	-0.093	0.164	0.671	0.01200	0.27	0.514	5.46
					10/14/2013 13:36	0917-173_No	13_10_14_1336_30_204	1	-0.79	1.714	0.691	0.098	21.4	0.278	0.2870	2.21	0.004	0.162	0.668	0.01200	0.082	0.505	5.301
					10/14/2013 13:37	0917-173_No	13_10_14_1337_30_984	1	-1.030	1.597	0.730	0.098	20.6	0.285	0.25400	2.20	-0.154	0.159	0.636	0.01200	0.50	0.488	5.206
					10/14/2013 13:38	0917-173_No	13_10_14_1338_31_744	1	-1.92	1.670	0.727	0.095	20.8	0.299	0.471	2.21	0.007	0.155	0.635	0.01300	0.229	0.485	5.308
					10/14/2013 13:39	0917-173_No	13_10_14_1339_33_514	1	-0.69	1.662	0.620	0.099	21.0	0.307	0.328	2.17	-0.1750	0.162	0.633	0.01300	0.47	0.498	5.496
					10/14/2013 13:40	0917-173_No	13_10_14_1340_33_254	1	-2.72	1.769	0.699	0.098	20.2	0.298	0.1720	2.19	0.092	0.162	0.600	0.01400	0.13	0.511	5.516
					10/14/2013 13:41	0917-173_No	13_10_14_1341_34_055	1	-1.48	1.539	0.648	0.099	19.5	0.295	0.3670	2.19	0.160	0.159	0.577	0.01300	0.44	0.488	5.494
					10/14/2013 13:42	0917-173_No	13_10_14_1342_34_855	1	-1.67	1.792	0.408	0.100	19.5	0.301	0.1740	2.17	-0.424	0.165	0.577	0.01400	0.53	0.519	5.435
					10/14/2013 13:43	0917-173_No	13_10_14_1343_35_555	1	-2.14	1.761	0.416	0.097	19.6	0.300	0.16100	2.19	-0.374	0.162	0.575	0.01400	0.86	0.514	5.411
					10/14/2013 13:44	0917-173_No	13_10_14_1344_36_395	1	0.12	1.679	0.485	0.096	18.8	0.313	0.1870	2.16	-0.1230	0.159	0.552	0.0150	0.62	0.505	5.577
					10/14/2013 13:45	0917-173_No	13_10_14_1345_37_095	1	-2.29	1.763	0.702	0.102	18.5	0.319	0.178	2.18	-0.172	0.169	0.537	0.0150	-0.05	0.521	5.646
					10/14/2013 13:46	0917-173_No	13_10_14_1346_37_805	1	-2.95	1.879	0.691	0.095	18.6	0.319	0.0230	2.16	-0.4050	0.164	0.540	0.0150	0.047	0.535	5.641
					10/14/2013 13:47	0917-173_No	13_10_14_1347_38_655	1	-3.53	1.844	0.748	0.098	18.4	0.319	0.0290	2.16	-0.265	0.167	0.534	0.0150	1.12	0.542	5.683
					10/14/2013 13:48	0917-173_No	13_10_14_1348_39_415	1	-2.95	1.837	0.790	0.103	9.30	0.314	-0.20000	2.15	-0.251	0.171	0.232	0.0160	-0.16	0.550	6.136
					10/14/2013 13:49	0917-173_No	13_10_14_1349_40_155	1	-3.01	1.852	0.773	0.097	7.67	0.321	0.042	2.15	-0.4120	0.166	0.181	0.0160	-0.053	0.544	6.239
					10/14/2013 13:50	0917-173_No	13_10_14_1350_40_915	1	-2.51	1.880	0.735	0.098	7.48	0.325	-0.068	2.14	-0.398	0.168	0.176	0.0170	-0.512	0.539	6.337
					10/14/2013 13:51	0917-173_No	13_10_14_1351_41_695	1	-2.55	1.858	0.635	0.101	8.70	0.299	-0.105	2.15	-0.621	0.17	0.218	0.0150	0.00	0.550	6.236
					10/14/2013 13:52	0917-173_No	13_10_14_1352_42_406	1	-2.16	1.747	0.572	0.099	9.03	0.291	-0.132	2.15	-0.6080	0.16	0.229	0.0150	0.19	0.519	6.146
					10/14/2013 13:53	0917-173_No	13_10_14_1353_43_136	1	-3.16	1.752	0.446	0.098	9.13	0.290	-0.172	2.14	-0.534	0.16	0.228	0.0140	-0.321	0.523	6.086
Data	SPK	1	Start	A	10/14/2013 13:54	0917-173_No	13_10_14_1354_43_956	1	-2.711	1.766	0.557	0.100	8.90	0.283	0.037	2.15	-0.586	0.17	0.224	0.01400	0.23	0.533	5.97
					10/14/2013 13:55	0917-173_No	13_10_14_1355_44_666	1	-1.36	1.665	0.584	0.097	8.71	0.283	-0.120	2.13	-0.6080	0.16	0.230	0.01400	0.600	0.510	5.79
					10/14/2013 13:56	0917-173_No	13_10_14_1356_45_486	1	-3.069	1.727	0.488	0.093	8.45	0.273	0.060	2.14	-0.506	0.16	0.225	0.01300	-0.04	0.496	5.585
					10/14/2013 13:57	0917-173_No	13_10_14_1357_46_206	1	-3.092	1.699	0.578	0.094	8.50	0.266	0.105	2.14	-0.5580	0.16	0.225	0.01300	0.29	0.510	5.392
					10/14/2013 13:58	0917-173_No	13_10_14_1358_47_056	1	-2.421	1.705	0.736	0.094	8.49	0.276	0.082	2.13	-0.4960	0.16	0.224	0.01300	0.43	0.506	5.359
					10/14/2013 13:59	0917-173_No	13_10_14_1359_47_806	1	-2.609	1.753	0.744	0.092	8.33	0.288	-0.01700	2.13	-0.39100	0.16	0.224	0.01400	-0.43	0.505	5.353
			Stop		10/14/2013 14:00	0917-173_No	13_10_14_1400_48_546	1	-2.32	1.848	0.680	0.100	2.83	0.303	-0.197	2.10	-0.644	0.17	0.0340	0.0150	-0.527	0.539	5.468
					10/14/2013 14:01	0917-173_No	13_10_14_1401_49_266	1	-3.473	1.811	0.789	0.099	1.78	0.316	-0.112	2.10	-0.640	0.17	0.0100	0.0160	0.107	0.534	5.408
					10/14/2013 14:02	0917-173_No	13_10_14_1402_50_046	1	-2.23	1.897	0.829	0.100	1.73	0.312	-0.143	2.09	-0.624	0.17	0.0020	0.0160	-0.788	0.548	5.326
					10/14/2013 14:03	0917-173_No	13_10_14_1403_50_876	1	-2.36	1.912	0.732	0.101	1.65	0.316	0.009	2.09	-0.446	0.17	0.0070	0.0160	-0.24	0.552	5.279
					10/14/2013 14:04	0917-173_No	13_10_14_1404_51_627	1	-1.56	1.851	0.836	0.102	1.63	0.308	0.092	2.11	-0.416	0.17	0.0050	0.0160	-0.36	0.551	5.17
					10/14/2013 14:05	0917-173_No	13_10_14_1405_52_397	1	-3.525	1.958	0.716	0.102	1.54	0.308	0.101	2.09	-0.502	0.17	0.0110	0.0160	-0.05	0.566	5.097
Data	UNSPK	1	Start	A	10/14/2013 14:06	0917-173_No	13_10_14_1406_53_137	1	-2.89	1.883	0.786	0.099	1.53	0.312	-0.009	2.10	-0.536	0.17	0.0070	0.0160	-0.372	0.540	4.995
					10/14/2013 14:07	0917-173_No	13_10_14_1407_53_877	1	-3.97	1.920	0.946	0.106	1.37	0.309	0.145	2.11	-0.572	0.17	0.0030	0.0160	-0.43	0.567	4.899
					10/14/2013 14:08	0917-173_No	13_10_14_1408_54_687	1	-2.016	1.864	0.707	0.100	1.40	0.307	0.244	2.13	-0.6050	0.17	0.0050	0.0160	-0.11	0.557	4.851
					10/14/2013 14:09	0917-173_No	13_10_14_1409_55_387	1	-2.891	1.821	0.856	0.102	1.33	0.298	0.294	2.13	-0.564	0.17	0.0080	0.0150	-0.10	0.539	4.811
					10/14/2013 14:10	0917-173_No	13_10_14_1410_56_217	1	-4.436	1.837	0.716	0.103	1.35	0.289	0.106	2.13	-0.7280	0.17	0.0090	0.0150	0.06	0.546	4.799
					10/14/2013 14:11	0917-173_No	13_10_14_1411_56_937	1	-2.838	1.807	0.850	0.100	1.41	0.289	0.239	2.12	-0.539	0.17	0.0030	0.01500	-0.42	0.540	4.82
			Stop		10/14/2013 14:12	0917-173_No	13_10_14_1412_57_727	1	-2.105	1.814	0.767	0.103	1.42	0.296	0.089	2.13	-0.600	0.17	0.00200	0.0150	-0.377	0.538	4.887
					10/14/2013 14:39	0917-173_No	13_10_14_1439_49_359	1	-0.818	1.579	0.751	0.092	2.46	0.226	0.52	2.20	-0.819	0.150	-0.00200	0.01000	-0.412	0.474	5.623
					10/14/2013 14:40	0917-173_No	13_10_14_1440_50_130	1	-2.11600	1.712	0.969	0.094	2.73	0.266	0.35	2.19	-0.7840	0.156	0.00200	0.01300	-0.878	0.492	6.396
					10/14/2013 14:41	0917-173_No	13_10_14_1441_50_940	1	-2.718	1.727	0.88	0.098	2.70	0.271	0.32	2.18	-0.8010	0.163	0.00400	0.01300	-0.968	0.515	6.609
					10/14/2013 14:42	0917-173_No	13_10_14_1442_51_690	1	-2.537	1.788	0.972	0.098	2.90	0.272	0.52	2.19	-0.6940	0.165	0.00600	0.01400	-0.864	0.527	6.768
					10/14/2013 14:43	0917-173_No	13_10_14_1443_52_400	1	-2.191	1.803	0.812	0.100	2.95	0.293	0.40	2.16	-0.7440	0.166	0.00700	0.01400	-0.38	0.536	7.105
					10/14/2013 14:44	0917-173_No	13_10_14_1444_53_190	1	-1.696	1.747	0.506	0.104	3.20	0.309	0.48	2.12	-0.992	0.169	0.00800	0.0150	-0.57	0.526	7.411
					10/14/2013 14:45	0917-173_No	13_10_14_1445_53_900	1	-2.138	1.937	0.447	0.104	3.40	0.333	0.40	2.10	-0.998	0.176	0.0070	0.0160	-0.34	0.569	7.76
					10/14/2013 14:46	0917-173_No	13_10_14_1446_54_660	1	-3.026	1.962	0.771	0.108	3.68	0.346	0.54	2.08	-0.557	0.181	0.0030	0.0170	-0.94	0.583	8.068
					10/14/2013 14:47	0917-173_No	13_10_14_1447_55_500	1	-3.541	2.009	1.18	0.111	3.75	0.351	0.36	2.06	-0.819	0.185	0.00600	0.0170	-0.68	0.591	8.293
					10/14/2013 14:48	0917-173_No	13_10_14_1448_56_210	1	-5.535	1.959	1.138	0.105	3.71	0.344	0.28	2.08	-0.714	0.179	0.00400	0.0170	-0.93	0.565	8.431
					10/14/2013 14:49	0917-173_No	13_10_14_1449_56_940	1	-5.028	1.879	0.984	0.109	3.74	0.339	0.35	2.09	-0.811	0.179	0.00200	0.0170	-0.972	0.562	8.422
					10/14/2013 14:50	0917-173_No	13_10_14_1450_57_730	1	-3.3020	1.846	1.02	0.105	3.62	0.331	0.41	2.08	-0.8630	0.175	0.00200	0.0160	-0.869	0.547	8.409
					10/14/2013 14:51	0917-173_No	13_10_14_1451_58_450	1	-4.500	1.836	0.856	0.106	3.56	0.320	0.52	2.12	-0.8630	0.177	0.00100	0.0160	-1.05	0.554	8.322
					10/14/2013 14:52	0917-173_No	13_10_14_1452_59_191	1	-5.286	1.779	0.639	0.102	3.47	0.303	0.49	2.10	-0.830	0.170	0.00500	0.0150	-0.73	0.539	8.282
					10/14/2013 14:54	0917-173_No	13_10_14_1454_00_001	1	-2.735	1.752	0.610	0.098	3.52	0.301	0.37	2.12	-0.952	0.165	0.00400	0.01400	-1.08	0.520	8.33
					10/14/2013 14:55	0917-173_No	13_10_14_1455_00_711	1	-1.4610	1.749	0.475	0.100	3.40	0.283	0.48	2.15	-0.710	0.167	0.00300	0.01300	-1.4280	0.521	8.155
					10/14/2013 14:56	0917-173_No	13_10_14_1456_01_501	1	-3.147	1.818	0.407	0.097	3.25	0.269	0.35	2.15	-0.883	0.166	0.00000	0.01300	-0.99	0.532	7.799
					10/14/2013 14:57	0917-173_No	13_10_14_1457_02_111	1	-2.716	1.790	0.502	0.093	3.12	0.263	0.47	2.17	-0.7420	0.160	0.00	0.01300	-0.67	0.523	7.601
					10/14/2013 14:58	0917-173_No	13_10_14_1458_02_821	1	-3.4450	1.735	0.623	0.095	3.14	0.256	0.47	2.16	-0.6410	0.160	0.00100	0.01200	-0.69	0.511	7.523
					10/14/2013 14:59	0917-173_No	13_10_14_1459_03_641	1	-1.486	1.724	0.657	0.094	3.02	0.238	0.54	2.18	-0.7310	0.158	-0.00400	0.01200	-1.20	0.508	7.307
					10/14/2013 15:00	0917-173_No	13_10_14_1500_04_351	1	-2.713	1.682	0.706	0.094	3.01	0.244	0.44	2.17	-0.806	0.157	-0.01	0.01100	-1.019	0.493	7.206
					10/14/2013 15:01	0917-173_No	13_10_14_1501_06_171	1	-1.5060	1.706	0.704	0.096	3.21	0.257	0.28	2.17	-0.777	0.160	0.00300	0.01200	-0.58	0.513	7.211
					10/14/2013 15:02	0917-173_No	13_10_14_1502_05_881	1	-2.286	1.773	0.733	0.093	3.23	0.278	0.49	2.15	-0.625	0.159	-0.00200	0.01400	-1.582	0.512	7.287
					10/14/2013 15:03	0917-173_No	13_10_14_1503_06_601	1	-3.200	1.757	0.633	0.097	3.25	0.293	0.52	2.13	-0.8380	0.163	0.00200	0.01400	-0.70	0.518	7.426
					10/14/2013 15:04	0917-173_No	13_10_14_1504_07_392	1	-3.243	1.719	0.349	0.096	3.23	0.309	0.40	2.14	-1.0270	0.160	0.00000	0.0150	-0.45	0.509	7.546
					10/14/2013 15:05	0917-173_No	13_10_14_1505_08_162	1	-1.649	1.750	0.526	0.100	3.34	0.308	0.29	2.12	-0.9030	0.166	0.00600	0.0150	-1.111	0.532	7.699
					10/14/2013 15:06	0917-173_No	13_10_14_1506_08_922	1	-2.099	1.808	0.508	0.103	3.63	0.320	0.18	2.09	-0.939	0.172	0.00600	0.0150	-1.18	0.542	7.77
					10/14/2013 15:07	0917-173_No	13_10_14_1507_09_632	1	-3.234	1.865	0.714	0.099	3.46	0.326	0.05	2.10	-0.861	0.170	0.00300	0.0160	-1.015	0.543	7.808
					10/14/2013 15:08	0917-173_No	13_10_14_1508_10_372	1	-1.511	1.869	0.721	0.101	3.42	0.321	0.00	2.09	-0.827	0.172	0.00500	0.0160	-0.91	0.540	7.821
					10/14/2013 15:09	0917-173_No	13_10_14_1509_11_132	1	-4.046	1.747	0.582	0.097	3.30	0.317	0.01	2.12	-0.8410	0.165	0.00200	0.0150	-0.99	0.514	7.737
					10/14/2013 15:10	0917-173_No	13_10_14_1510_11_932	1	-3.639	1.853	0.557	0.100	3.35	0.302	0.22	2.11	-0.9170	0.170	0.00200	0.0150	-0.94	0.541	7.703
					10/14/2013 15:11	0917-173_No	13_10_14_1511_12_642	1	-2.804	1.829	0.526	0.103	3.50	0.309	0.31	2.12	-0.541	0.171	0.00300	0.0150	-1.312	0.535	7.755
					10/14/2013 15:12	0917-173_No	13_10_14_1512_13_392	1	-4.1760	1.965	0.697	0.102	3.55	0.312	-0.04	2.09	-0.562	0.175	0.00300	0.0150	-1.726	0.562	7.758
					10/14/2013 15:13	0917-173_No	13_10_14_1513_14_212	1	-3.053	1.893	0.551	0.103	3.37	0.301	0.18	2.13	-0.693	0.175	0.00400	0.0150	-1.320	0.544	7.664
					10/14/2013 15:14	0917-173_No	13_10_14_1514_14_902	1	-4.156	1.779	0.543	0.101	3.19	0.295	0.00	2.12	-0.7030	0.167	-0.00100	0.01400	-0.62	0.536	7.57
Data	Run	1	Start	A	10/14/2013 15:15	0917-173_No	13_10_14_1515_15_632	1	-4.020	1.731	0.660	0.100	3.34	0.279	-0.05	2.15	-0.978	0.166	-0.00400	0.01300	-0.83	0.514	7.419
					10/14/2013 15:16	0917-173_No	13_10_14_1516_16_443	1	-2.722	1.823	0.624	0.096	3.30	0.277	-0.03	2.14	-0.914	0.163	0.00200	0.01300	-0.96	0.521	7.413
					10/14/2013 15:17	0917-173_No	13_10_14_1517_17_163	1	-2.408	1.757	0.576	0.099	3.27	0.283	0.09	2.15	-0.8490	0.164	0.00400	0.01400	-0.63	0.516	7.44
					10/14/2013 15:18	0917-173_No	13_10_14_1518_17_873	1	-1.6000	1.769	0.542	0.102	3.20	0.281	-0.04	2.15	-0.562	0.168	0.00100	0.01300	-1.117	0.524	7.515
					10/14/2013 15:19	0917-173_No	13_10_14_1519_18_713	1	-2.872	1.740	0.650	0.093	3.01	0.268	0.00	2.16	-0.834	0.158	0.00400	0.01300	-0.98	0.513	7.409
					10/14/2013 15:20	0917-173_No	13_10_14_1520_19_373	1	-2.016	1.666	0.817	0.095	2.99	0.265	0.31	2.18	-0.897	0.158	0.00000	0.01300	-0.69	0.493	7.27
					10/14/2013 15:21	0917-173_No	13_10_14_1521_20_233	1	-1.83800	1.694	0.820	0.093	3.09	0.264	0.17	2.17	-1.009	0.155	0.00100	0.01300	-0.39	0.498	7.197
					10/14/2013 15:22	0917-173_No	13_10_14_1522_20_953	1	-0.092	1.698	0.97	0.099	3.30	0.273	0.11	2.17	-0.911	0.163	-0.00100	0.01300	-1.441	0.520	7.242
					10/14/2013 15:23	0917-173_No	13_10_14_1523_21_683	1	-4.517	1.781	0.863	0.095	3.25	0.276	0.39	2.17	-0.855	0.161	0.00300	0.01300	-0.85	0.522	7.37
					10/14/2013 15:24	0917-173_No	13_10_14_1524_22_413	1	-1.195	1.781	0.909	0.097	3.19	0.280	0.13	2.16	-0.759	0.164	-0.00100	0.01400	-1.098	0.519	7.363

Location	Disc.	#	Start/Stop	Instrument	Date	Method Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 15:25	0917-173_No13_10_14_1525_23_153	1	-1.3800	1.799	0.762	0.102	3.21	0.292	0.14	2.14	-0.521	0.169	0.00900	0.01400	-1.419	0.531	7.436
					10/14/2013 15:26	0917-173_No13_10_14_1526_23_953	1	-2.6020	1.765	0.765	0.100	3.17	0.291	0.17	2.15	-0.911	0.164	0.00400	0.01400	0.01	0.516	7.419
					10/14/2013 15:27	0917-173_No13_10_14_1527_24_733	1	-2.0220	1.847	0.853	0.096	3.20	0.277	0.11	2.15	-0.8660	0.163	0.00500	0.01400	-0.81	0.530	7.345
					10/14/2013 15:28	0917-173_No13_10_14_1528_25_404	1	-1.7080	1.683	0.822	0.095	3.03	0.275	0.28	2.16	-0.911	0.157	0.00600	0.01400	-0.926	0.492	7.228
					10/14/2013 15:29	0917-173_No13_10_14_1529_26_234	1	-2.843	1.708	0.86	0.100	3.21	0.278	0.20	2.14	-0.710	0.162	-0.00100	0.01400	-1.105	0.514	7.258
					10/14/2013 15:30	0917-173_No13_10_14_1530_26_944	1	-6.052	1.781	0.831	0.096	3.40	0.298	0.07	2.13	-0.99400	0.163	0.00600	0.0150	-0.73	0.516	7.465
					10/14/2013 15:31	0917-173_No13_10_14_1531_27_714	1	-2.830	1.840	0.669	0.103	3.30	0.311	0.00	2.10	-1.077	0.171	0.00400	0.0150	-0.988	0.546	7.551
					10/14/2013 15:32	0917-173_No13_10_14_1532_28_464	1	-4.2010	1.838	0.610	0.096	3.28	0.300	0.05	2.14	-1.1140	0.165	-0.00500	0.0150	-0.5500	0.537	7.56
					10/14/2013 15:33	0917-173_No13_10_14_1533_29_184	1	-6.269	1.821	0.664	0.098	3.26	0.289	0.03	2.14	-1.027	0.166	0.00300	0.01400	-1.03	0.536	7.53
					10/14/2013 15:34	0917-173_No13_10_14_1534_29_994	1	-1.890	1.874	0.700	0.096	3.31	0.280	0.31	2.14	-0.689	0.167	0.00100	0.01400	-1.428	0.540	7.579
					10/14/2013 15:35	0917-173_No13_10_14_1535_30_714	1	-2.160	1.765	0.720	0.095	3.28	0.285	0.00	2.13	-0.788	0.162	0.00200	0.01400	-1.10	0.516	7.683
					10/14/2013 15:36	0917-173_No13_10_14_1536_31_454	1	-2.460	1.814	0.814	0.100	3.48	0.299	0.12	2.15	-0.790	0.168	0.00500	0.0140	-0.836	0.532	7.705
					10/14/2013 15:37	0917-173_No13_10_14_1537_32_154	1	-4.59700	1.791	0.736	0.100	3.35	0.300	0.25	2.13	-0.9310	0.167	0.00200	0.0150	-0.58	0.527	7.754
					10/14/2013 15:38	0917-173_No13_10_14_1538_32_914	1	-4.066	1.835	0.613	0.096	3.51	0.313	0.11	2.13	-0.686	0.164	0.00000	0.0150	-0.97	0.532	7.849
					10/14/2013 15:39	0917-173_No13_10_14_1539_33_524	1	-1.403	1.832	0.618	0.102	3.58	0.318	0.20	2.12	-0.790	0.171	-0.00100	0.0160	-1.636	0.538	7.8
					10/14/2013 15:40	0917-173_No13_10_14_1540_34_355	1	-4.142	1.776	0.668	0.099	3.37	0.309	0.22	2.14	-1.0010	0.167	0.00000	0.0150	-1.11	0.533	7.648
					10/14/2013 15:41	0917-173_No13_10_14_1541_35_025	1	-3.930	1.837	0.669	0.097	3.28	0.304	0.04	2.14	-1.0060	0.166	0.00000	0.0150	-1.126	0.536	7.557
					10/14/2013 15:42	0917-173_No13_10_14_1542_35_845	1	-1.017	1.814	0.676	0.095	3.25	0.285	0.08	2.16	-1.0280	0.162	0.00000	0.01400	-1.05	0.524	7.452
					10/14/2013 15:43	0917-173_No13_10_14_1543_36_595	1	-4.0220	1.748	0.722	0.096	3.39	0.274	0.13	2.17	-1.156	0.160	0.00300	0.01300	-0.61	0.510	7.541
					10/14/2013 15:44	0917-173_No13_10_14_1544_37_325	1	-3.818	1.802	0.825	0.097	3.52	0.273	0.17	2.14	-0.9560	0.163	-0.00200	0.01300	-0.936	0.521	7.565
					10/14/2013 15:45	0917-173_No13_10_14_1545_38_135	1	-2.571	1.851	0.700	0.094	3.39	0.279	0.37	2.15	-0.97400	0.162	0.00900	0.01400	-0.99	0.528	7.581
					10/14/2013 15:46	0917-173_No13_10_14_1546_38_875	1	-3.767	1.879	0.758	0.100	3.42	0.287	0.14	2.13	-0.877	0.171	0.00200	0.01400	-0.90	0.536	7.823
					10/14/2013 15:47	0917-173_No13_10_14_1547_39_575	1	-3.9380	1.837	0.694	0.100	3.57	0.295	0.46	2.14	-0.708	0.170	0.00000	0.01400	-1.375	0.530	7.847
					10/14/2013 15:48	0917-173_No13_10_14_1548_40_315	1	-3.440	1.872	0.682	0.100	3.48	0.304	0.32	2.11	-0.787	0.171	0.00100	0.0150	-1.228	0.553	7.945
					10/14/2013 15:49	0917-173_No13_10_14_1549_41_135	1	-3.590	1.865	0.584	0.101	3.41	0.309	0.32	2.10	-0.754	0.171	0.00700	0.0150	-1.627	0.532	7.979
					10/14/2013 15:50	0917-173_No13_10_14_1550_41_845	1	-1.739	1.821	0.730	0.100	3.08	0.298	0.35	2.15	-0.672	0.169	0.00200	0.0150	-1.22	0.537	7.814
					10/14/2013 15:51	0917-173_No13_10_14_1551_42_616	1	-1.286	1.811	0.696	0.097	3.10	0.283	0.17	2.15	-0.9780	0.166	-0.00200	0.01400	-0.994	0.534	7.59
					10/14/2013 15:52	0917-173_No13_10_14_1552_43_326	1	-2.618	1.802	0.752	0.096	3.21	0.280	0.34	2.15	-0.980	0.162	-0.00100	0.01300	-0.84	0.533	7.632
					10/14/2013 15:53	0917-173_No13_10_14_1553_44_066	1	-3.0790	1.776	0.685	0.099	3.30	0.283	0.38	2.16	-0.781	0.166	0.00200	0.01400	-1.257	0.539	7.76
					10/14/2013 15:54	0917-173_No13_10_14_1554_44_886	1	-2.319	1.814	0.786	0.100	3.25	0.299	0.30	2.11	-0.863	0.170	0.00200	0.0150	-1.09	0.542	7.815
					10/14/2013 15:55	0917-173_No13_10_14_1555_45_656	1	-3.839	1.849	0.920	0.098	3.29	0.307	0.24	2.12	-0.804	0.168	0.00200	0.0150	-1.334	0.539	7.887
					10/14/2013 15:56	0917-173_No13_10_14_1556_46_316	1	-6.7580	1.900	0.717	0.102	3.36	0.301	0.10	2.13	-1.029	0.173	0.00100	0.0150	-0.69	0.549	7.932
					10/14/2013 15:57	0917-173_No13_10_14_1557_47_126	1	-0.511	1.779	0.629	0.102	3.30	0.294	0.26	2.12	-1.0410	0.170	-0.00200	0.01400	-0.76	0.530	7.986
					10/14/2013 15:58	0917-173_No13_10_14_1558_47_826	1	-4.146	1.819	0.604	0.100	3.30	0.298	0.18	2.13	-0.814	0.168	0.00100	0.01400	-0.69	0.536	7.999
					10/14/2013 15:59	0917-173_No13_10_14_1559_48_586	1	-2.953	1.869	0.662	0.104	3.32	0.313	0.31	2.12	-1.030	0.172	-0.00200	0.0150	-1.187	0.551	7.972
					10/14/2013 16:00	0917-173_No13_10_14_1600_49_366	1	-3.0140	1.825	0.510	0.102	3.00	0.300	0.13	2.11	-1.1840	0.171	0.00200	0.0150	-0.84	0.536	7.782
					10/14/2013 16:01	0917-173_No13_10_14_1601_50_106	1	-1.245	1.875	0.515	0.098	2.84	0.279	0.38	2.14	-0.899	0.168	0.00200	0.01300	-0.722	0.540	7.501
					10/14/2013 16:02	0917-173_No13_10_14_1602_50_926	1	-3.578	1.631	0.465	0.095	2.75	0.257	0.36	2.18	-0.920	0.159	0.00000	0.01300	-1.09	0.495	7.255
					10/14/2013 16:03	0917-173_No13_10_14_1603_51_667	1	-0.949	1.759	0.642	0.098	2.80	0.259	0.26	2.17	-0.799	0.162	0.00100	0.01300	-1.14	0.526	7.046
					10/14/2013 16:04	0917-173_No13_10_14_1604_52_377	1	-1.851	1.809	0.711	0.096	2.73	0.248	0.24	2.18	-0.8400	0.164	-0.00100	0.01200	-1.030	0.535	6.87
					10/14/2013 16:05	0917-173_No13_10_14_1605_53_187	1	-0.279	1.700	0.580	0.093	2.73	0.235	0.20	2.20	-0.9030	0.157	0.00100	0.01200	-0.62	0.504	6.699
					10/14/2013 16:06	0917-173_No13_10_14_1606_53_907	1	-2.439	1.760	0.661	0.090	2.66	0.237	0.43	2.18	-0.566	0.155	0.00300	0.01100	-0.959	0.502	6.577
					10/14/2013 16:07	0917-173_No13_10_14_1607_54_617	1	-1.954	1.722	0.567	0.093	2.91	0.238	0.36	2.20	-0.729	0.156	-0.00500	0.01100	-0.84	0.516	6.478
					10/14/2013 16:08	0917-173_No13_10_14_1608_55_427	1	-2.626	1.739	0.671	0.098	3.00	0.251	0.39	2.18	-0.7290	0.161	0.00100	0.01200	-1.108	0.516	6.525
					10/14/2013 16:09	0917-173_No13_10_14_1609_56_147	1	-2.335	1.622	0.868	0.092	2.85	0.265	0.34	2.18	-0.629	0.153	-0.00100	0.01300	-1.203	0.485	6.479
					10/14/2013 16:10	0917-173_No13_10_14_1610_56_957	1	-2.331	1.759	1.04	0.094	2.65	0.264	0.34	2.20	-0.844	0.157	0.00	0.01300	-0.44	0.507	6.413
					10/14/2013 16:11	0917-173_No13_10_14_1611_57_677	1	-2.8390	1.773	1.09	0.093	2.52	0.275	0.45	2.19	-0.702	0.157	0.00100	0.01400	-1.135	0.507	6.422
					10/14/2013 16:12	0917-173_No13_10_14_1612_58_447	1	-2.6690	1.747	0.934	0.091	2.64	0.282	0.39	2.19	-0.8240	0.156	0.00400	0.01400	-1.01	0.506	6.465
					10/14/2013 16:13	0917-173_No13_10_14_1613_59_217	1	-2.372	1.777	0.857	0.098	2.56	0.293	0.55	2.18	-1.066	0.165	0.00100	0.0150	-0.442	0.524	6.59
					10/14/2013 16:14	0917-173_No13_10_14_1614_59_927	1	-5.232	1.873	0.784	0.100	2.67	0.294	0.59	2.20	-0.831	0.170	-0.00300	0.01500	-0.714	0.564	6.678
			Stop		10/14/2013 16:16	0917-173_No13_10_14_1616_00_738	1	-2.507	1.747	0.728	0.093	4.10	0.284	0.62	2.18	-1.140	0.159	0.0710	0.01400	-0.04	0.504	6.773
					10/14/2013 16:17	0917-173_No13_10_14_1617_01_458	1	-0.935	1.206	-0.277	0.090	2.94	0.0850	0.473	1.433	-3.18	0.157	0.0780	0.00400	-1.488	0.402	10.724
					10/14/2013 16:18	0917-173_No13_10_14_1618_02_278	1	0.0940	1.091	-0.715	0.099	0.285	0.0470	0.147	0.535	-3.73	0.168	-0.00300	0.00200	-1.012	0.385	11.369
					10/14/2013 16:19	0917-173_No13_10_14_1619_03_028	1	-1.1700	0.982	-0.244	0.072	0.255	0.0380	0.131	0.320	-1.721	0.121	0.0100	0.00200	-1.1110	0.332	6.063
					10/14/2013 16:20	0917-173_No13_10_14_1620_03_738	1	0.6880	0.925	-0.184	0.062	0.035	0.0350	0.2260	0.210	-1.244	0.100	0.00	0.00200	-0.484	0.312	4.305
					10/14/2013 16:21	0917-173_No13_10_14_1621_04_478	1	1.7370	1.027	-0.1850	0.064	0.126	0.0360	0.1530	0.158	-1.0430	0.106	-0.00700	0.00200	-0.768	0.318	4.202
					10/14/2013 16:22	0917-173_No13_10_14_1622_05_198	1	3.727	1.007	0.070	0.060	0.222	0.0420	0.3480	0.731	-0.064	0.097	-0.00500	0.00200	-0.147	0.305	1.733
					10/14/2013 16:23	0917-173_No13_10_14_1623_05_968	1	1.08800	1.000	0.154	0.062	0.0800	0.0500	0.5310	1.045	-0.010	0.099	0.00	0.00300	-0.62	0.315	1.089
					10/14/2013 16:24	0917-173_No13_10_14_1624_06_688	1	2.588	1.133	-0.057	0.063	0.1020	0.0500	0.6750	0.999	0.108	0.106	-0.00300	0.00200	-0.60	0.323	0.801
					10/14/2013 16:25	0917-173_No13_10_14_1625_07_458	1	3.1780	1.063	0.079	0.061	0.111	0.0490	0.6980	1.003	0.108	0.101	0.00000	0.00200	-0.074	0.323	0.78
					10/14/2013 16:26	0917-173_No13_10_14_1626_08_178	1	1.098	1.049	0.086	0.063	0.077	0.0500	0.5510	1.006	0.180	0.101	0.00	0.00300	-0.245	0.316	0.741
					10/14/2013 16:27	0917-173_No13_10_14_1627_09_038	1	3.486	1.136	0.028	0.065	0.0710	0.0490	0.6820	0.994	-0.067	0.106	-0.00100	0.00200	-0.66	0.344	0.693
					10/14/2013 16:28	0917-173_No13_10_14_1628_09_749	1	0.960	1.012	0.093	0.062	0.200	0.0530	0.466	0.997	0.120	0.101	-0.00400	0.00200	-0.669	0.312	0.652
					10/14/2013 16:29	0917-173_No13_10_14_1629_10_499	1	0.005	1.037	0.243	0.064	0.150	0.0500	0.386	0.999	0.0320	0.102	0.00	0.00200	-0.254	0.328	0.614
					10/14/2013 16:30	0917-173_No13_10_14_1630_12_259	1	1.0600	0.972	0.005	0.062	0.0790	0.0530	0.7030	1.013	0.007	0.102	-0.00100	0.00300	-0.475	0.307	0.603
					10/14/2013 16:31	0917-173_No13_10_14_1631_13_069	1	2.424	1.081	0.087	0.058	0.139	0.0530	0.6110	1.022	0.1200	0.098	-0.01000	0.00200	-0.240	0.320	0.569
					10/14/2013 16:32	0917-173_No13_10_14_1632_13_779	1	2.126	1.022	0.150	0.062	0.139	0.0490	0.6580	1.032	0.0330	0.100	-0.00500	0.00300	-0.377	0.307	0.502
					10/14/2013 16:33	0917-173_No13_10_14_1633_14_599	1	1.2640	1.269	0.433	0.067	1.03	0.1410	0.740	1.577	-0.117	0.112	0.00000	0.00700	-0.65	0.369	1.988
					10/14/2013 16:34	0917-173_No13_10_14_1634_15_299	1	-0.224	1.656	0.563	0.087	1.86	0.285	0.533	2.22	-0.725	0.149	-0.00100	0.01300	-0.197	0.481	4.446
					10/14/2013 16:35	0917-173_No13_10_14_1635_16_099	1	-2.521	1.845	0.495	0.095	1.89	0.312	0.44	2.15	-0.8340	0.162	0.00200	0.0150	-0.766	0.531	5.087
					10/14/2013 16:36	0917-173_No13_10_14_1636_16_869	1	-3.921	1.823	0.610	0.096	1.85	0.290	0.55	2.18	-0.780	0.162	0.00200	0.01400	-0.678	0.526	5.162
					10/14/2013 16:37	0917-173_No13_10_14_1637_17_579	1	-5.050	1.960	0.463	0.103	2.17	0.285	0.062	2.20	-0.695	0.171	-0.00600	0.01400	-0.34	0.557	5.214
					10/14/2013 16:38	0917-173_No13_10_14_1638_18_389	1	-3.9760	1.713	0.419	0.100	1.82	0.269	0.52	2.22	-0.8410	0.163	-0.00500	0.01300	-0.601	0.523	5.119
					10/14/2013 16:39	0917-173_No13_10_14_1639_19_090	1	-2.006	1.642	0.263	0.092	1.60	0.247	0.44	2.21	-0.976	0.153	0.00100	0.01200	-0.872	0.485	4.9
					10/14/2013 16:40	0917-173_No13_10_14_1640_19_900	1	-2.381	1.690	0.3710	0.091	1.60	0.230	0.596	2.23	-0.645	0.151	-0.00300	0.01100	-0.947	0.498	4.753
					10/14/2013 16:41	0917-173_No13_10_14_1641_20_660	1	-0.3240	1.575	0.420	0.088	1.65	0.227	0.534	2.22	-0.82800	0.147	0.00000	0.01000	-0.690	0.467	4.701
					10/14/2013 16:42	0917-173_No13_10_14_1642_21_390	1	-1.081	1.717	0.486	0.094	1.62	0.240	0.429	2.23	-0.7200	0.156	-0.00600	0.01100	-0.979	0.515	4.745
					10/14/2013 16:43	0917-173_No13_10_14_1643_22_100	1	-2.247	1.572	0.559	0.091	1.48	0.224	0.556	2.23	-0.819	0.149	-0.00500	0.01100	-0.02	0.472	4.647
					10/14/2013 16:44	0917-173_No13_10_14_1644_22_910	1	-1.310	1.692	0.647	0.089	1.54	0.231	0.576	2.22	-0.681	0.149	0.00000	0.01100	-0.451	0.484	4.678
					10/14/2013 16:45	0917-173_No13_10_14_1645_23_640	1	1.566	1.693	0.575	0.090	1.73	0.257	0.342	2.23	-0.770	0.151	-0.00400	0.01200	-0.712	0.494	4.856
					10/14/2013 16:46	0917-173_No13_10_14_1646_24_340	1	-1.436	1.720	0.825	0.092	1.75	0.284	0.325	2.20	-0.5540	0.152	0.00200	0.01500	-1.0550	0.500	5.03
					10/14/2013 16:47	0917-173_No13_10_14_1647_25_160	1	-2.732	1.909	0.700	0.097	1.86	0.304	0.409	2.17	-0.7790	0.165	-0.00300	0.0150	-0.859	0.548	5.38
					10/14/2013 16:48	0917-173_No13_10_14_1648_25_860	1	-4.577	1.783	0.607	0.099	1.83	0.306	0.317	2.17	-0.989	0.165	0.00300	0.0150	-0.7930	0.523	5.514
Data	Run	2	Start	A	10/14/2013 16:49	0917-173_No13_10_14_1649_26_670	1	-1.207	1.819	0.552	0.101	1.96	0.318	0.334	2.16	-0.853	0.166	0.00200	0.0160	-0.311	0.536	5.73
					10/14/2013 16:50	0917-173_No13_10_14_1650_27_360	1	-2.714	1.859	0.594	0.103	1.95	0.330	0.41	2.14	-0.9480	0.171	0.00000	0.0160	-0.969	0.549	6.002
					10/14/2013 16:51	0917-173_No13_10_14_1651_28_211	1	-3.421	1.940	0.923	0.104	1.94	0.334	0.58	2.15	-0.518	0.175	0.00300	0.0170	-0.654	0.571	6.158
					10/14/2013 16:52	0917-173_No13_10_14_1652_28_891	1	-3.896	1.802	0.562	0.097	1.81	0.317	0.46	2.15	-0.862	0.164	0.00300	0.0150	-0.488	0.532	6.152
					10/14/2013 16:53	0917-173_No13_10_14_1653_29_651	1	-2.187	1.745	0.472	0.098	1.70	0.283	0.555	2.20	-0.8090	0.163	-0.00600	0.01400	-0.72	0.530	5.985
					10/14/2013 16:54	0917-173_No13_10_14_1654_30_471	1	-2.244	1.826	0.332	0.098	1.64	0.273	0.567	2.21	-0.914	0.164	0.00000	0.01300	-0.404	0.531	5.921
					10/14/2013 16:55	0917-173_No13_10_14_1655_31_191	1	-4.435	1.769	0.590	0.098	1.71	0.274	0.605	2.22	-0.7930	0.163	0.00200	0.01400	-0.762	0.521	5.934
					10/14/2013 16:56	0917-173_No13_10_14_1656_31_901	1	-2.9200	1.610	0.411	0.096	1.66	0.252	0.529	2.23	-0.8800	0.154	0.00000	0.01200	-0.6700	0.476	5.778
					10/14/2013 16:57	0917-173_No13_10_14_1657_32_741	1	-2.3770	1.798	0.470	0.090	1.80	0.244	0.561	2.22	-0.812	0.155	-0.00500	0.01200	-0.17	0.506	5.778
					10/14/2013 16:58	0917-173_No13_10_14_1658_33_491	1	-1.346	1.825	0.441	0.097	1.85	0.267	0.492	2.19	-0.963	0.162	-0.00200	0.01300	-0.49	0.537	5.911
					10/14/2013 16:59	0917-173_No13_10_14_1659_34_201	1	-0.716	1.855	0.607	0.100	1.95	0.294	0.311	2.18	-0.603	0.167	-0.00200	0.01400	-1.166	0.538	6.034
					10/14/2013 17:00	0917-173_No13_10_14_1700_34_961	1	-1.437	1.766	0.503	0.101	1.84	0.302	0.49	2.19	-0.8020	0.166	0.00200	0.0150	-1.2580	0.525	6.116
					10/14/2013 17:01	0917-173_No13_10_14_1701_35_681	1	-4.44	1.826	0.441	0.098	1.86	0.304	0.42	2.17	-0.8460	0.165	-0.00200	0.0150	-0.398	0.543	6.205
					10/14/2013 17:02	0917-173_No13_10_14_1702_36_361	1	-2.070	1.878	0.458	0.097	1.92	0.302	0.43	2.18	-0.943	0.165	0.00000	0.01400	-0.916	0.527	6.251
					10/14/2013 17:03	0917-173_No13_10_14_1703_37_172	1	-2.853	1.834	0.411	0.101	1.74	0.288	0.522	2.20	-0.8880	0.168	0.00000	0.01400	-0.31	0.542	6.159
					10/14/2013 17:04	0917-173_No13_10_14_1704_37_962	1	-2.04300	1.782	0.527	0.094	1.71	0.272	0.483	2.21	-0.719	0.160	0.00000	0.01300	-0.525	0.514	5.972
					10/14/2013 17:05	0917-173_No13_10_14_1705_38_702	1	-2.276	1.712	0.713	0.096	1.93	0.268	0.420	2.21	-0.805	0.158	-0.00200	0.01300	-0.691	0.514	6.022
					10/14/2013 17:06	0917-173_No13_10_14_1706_39_462	1	-2.868	1.780	0.525	0.100	1.89	0.271	0.52	2.19	-0.599	0.164	0.00000	0.01300	-0.9350	0.536	6.094
					10/14/2013 17:07	0917-173_No13_10_14_1707_40_232	1	0.780	1.766	0.470	0.097	1.73	0.287	0.58	2.19	-0.863	0.160	-0.00300	0.01400	-0.327	0.518	6.062
					10/14/2013 17:08	0917-173_No13_10_14_1708_41_042	1	-4.3950	1.846	0.662	0.101	1.79	0.299	0.543	2.18	-0.7360	0.168	0.00000	0.01500	-0.974	0.540	6.107
					10/14/2013 17:09	0917-173_No13_10_14_1709_41_782	1	-1.100	1.794	0.639	0.104	1.78	0.293	0.407	2.19	-0.49300	0.169	-0.00200	0.01400	-1.0930	0.540	6.144
					10/14/2013 17:10	0917-173_No13_10_14_1710_42_582	1	0.177	1.809	0.490	0.101	1.81	0.288	0.313	2.18	-0.7150	0.167	-0.00100	0.01400	-0.56	0.539	6.173
					10/14/2013 17:11	0917-173_No13_10_14_1711_43_292	1	-2.7540	1.927	0.534	0.098	1.76	0.294	0.466	2.17	-0.6660	0.169	-0.00100	0.01400	0.09	0.557	6.226
					10/14/2013 17:12	0917-173_No13_10_14_1712_42_992	1	-2.235	1.888	0.554	0.098	1.79	0.287	0.418	2.17	-0.622	0.167	0.00100	0.01400	-0.30	0.539	6.23
					10/14/2013 17:13	0917-173_No13_10_14_1713_43_802	1	-2.120	1.865	0.511	0.102	1.72	0.286	0.436	2.17	-0.834	0.169	0.00100	0.01400	-0.490	0.553	6.259
					10/14/2013 17:14	0917-173_No13_10_14_1714_44_502	1	-1.142	1.849	0.545	0.101	1.68	0.283	0.529	2.18	-0.729	0.169	-0.00100	0.01400	-0.313	0.544	6.265
					10/14/2013 17:15	0917-173_No13_10_14_1715_45_343	1	-2.342	1.743	0.515	0.098	1.77	0.271	0.475	2.20	-0.8040	0.162	-0.00100	0.01300	-0.62	0.527	6.214
					10/14/2013 17:16	0917-173_No13_10_14_1716_46_033	1	-2.8980	1.777	0.603	0.095	1.74	0.274	0.555	2.20	-0.720	0.160	-0.00200	0.01300	-0.51	0.521	6.249
					10/14/2013 17:17	0917-173_No13_10_14_1717_46_833	1	-3.477	1.918	0.467	0.096	1.83	0.286	0.501	2.19	-0.742	0.168	-0.00200	0.01400	-0.748	0.545	6.283
					10/14/2013 17:18	0917-173_No13_10_14_1718_47_563	1	-4.253	1.830	0.494	0.100	1.97	0.291	0.64	2.18	-0.955	0.168	0.00200	0.01400	-0.33	0.538	6.384
					10/14/2013 17:19	0917-173_No13_10_14_1719_48_383	1	-2.792	1.765	0.578	0.098	1.79	0.290	0.373	2.19	-0.947	0.164	0.00300	0.01400	0.10	0.522	6.378
					10/14/2013 17:20	0917-173_No13_10_14_1720_49_093	1	-2.996	1.824	0.535	0.098	1.78	0.299	0.562	2.17	-0.896	0.166	-0.00100	0.01500	-0.19	0.541	6.396
					10/14/2013 17:21	0917-173_No13_10_14_1721_49_883	1	-2.825	1.799	0.555	0.100	1.82	0.286	0.502	2.20	-0.806	0.167	-0.00400	0.01400	-0.463	0.546	6.45
					10/14/2013 17:22	0917-173_No13_10_14_1722_50_683	1	-3.388	1.751	0.624	0.098	1.74	0.278	0.455	2.19	-0.74800	0.163	-0.00400	0.01300	-0.535	0.519	6.409
					10/14/2013 17:23	0917-173_No13_10_14_1723_51_453	1	-2.4570	1.780	0.497	0.097	1.71	0.269	0.472	2.20	-0.6670	0.161	-0.00400	0.01300	-0.473	0.513	6.309
					10/14/2013 17:24	0917-173_No13_10_14_1724_52_163	1	-2.112	1.608	0.495	0.091	1.53	0.242	0.614	2.23	-0.744	0.149	-0.00200	0.01200	-0.72	0.476	6.066
					10/14/2013 17:25	0917-173_No13_10_14_1725_52_963	1	-3.277	1.541	0.3330	0.085	1.55	0.229	0.535	2.23	-0.808	0.142	-0.00700	0.01100	-0.163	0.457	5.86
					10/14/2013 17:26	0917-173_No13_10_14_1726_53_674	1	-1.807	1.666	0.266	0.090	1.61	0.233	0.518	2.21	-0.598	0.150	-0.00400	0.01100	-1.081	0.482	5.868
					10/14/2013 17:27	0917-173_No13_10_14_1727_54_454	1	-3.7270	1.685	0.509	0.093	1.75	0.242	0.662	2.23	-0.705	0.153	-0.00400	0.01100	0.113	0.500	5.927
					10/14/2013 17:28	0917-173_No13_10_14_1728_55_304	1	-2.121	1.627	0.520	0.093	1.67	0.251	0.473	2.22	-0.700	0.153	-0.00800	0.01200	-0.4210	0.494	5.969
					10/14/2013 17:29	0917-173_No13_10_14_1729_56_064	1	-3.567	1.834	0.684	0.097	1.65	0.268	0.498	2.22	-0.38400	0.165	-0.00400	0.01300	-0.766	0.526	6.014
					10/14/2013 17:32	0917-173_No13_10_14_1732_06_400	1	-1.578	1.695	0.760	0.092	1.78	0.270	0.712	2.21	-0.746	0.155	-0.00200	0.01300	0.143	0.493	6.063
					10/14/2013 17:33	0917-173_No13_10_14_1733_07_210	1	-2.2820	1.722	0.776	0.098	1.92	0.292	0.242	2.17	-0.772	0.161	-0.00200	0.01400	-0.23	0.511	6.316
					10/14/2013 17:34	0917-173_No13_10_14_1734_07_900	1	-3.173	1.909	0.659	0.098	1.96	0.320	0.535	2.16	-0.850	0.167	0.00200	0.0150	-0.08	0.548	6.531
					10/14/2013 17:35	0917-173_No13_10_14_1735_08_740	1	-5.131	1.932	0.737	0.102	2.11	0.334	0.256	2.13	-0.787	0.172	0.00000	0.0160	-0.344	0.568	6.677
					10/14/2013 17:36	0917-173_No13_10_14_1736_09_450	1	-2.717	1.787	0.659	0.104	2.11	0.331	0.335	2.14	-0.535	0.169	-0.0010	0.0160	-1.108	0.543	6.743
					10/14/2013 17:37	0917-173_No13_10_14_1737_10_280	1	-2.805	1.903	0.968	0.102	2.08	0.331	0.53	2.15	-0.599	0.171	0.00200	0.0160	-0.416	0.556	6.774
					10/14/2013 17:38	0917-173_No13_10_14_1738_11_030	1	-2.905	1.892	0.764	0.105	2.07	0.314	0.323	2.14	-0.712	0.175	-0.00100	0.0160	-0.800	0.557	6.798
					10/14/2013 17:39	0917-173_No13_10_14_1739_11_730	1	-2.64	1.849	0.596	0.101	1.98	0.311	0.229	2.15	-0.880	0.169	-0.00400	0.0150	-0.35	0.551	6.802
					10/14/2013 17:40	0917-173_No13_10_14_1740_12_560	1	-4.082	1.867	0.528	0.097	1.94	0.302	0.50	2.18	-0.545	0.166	0.00000	0.0150	-0.147	0.530	6.798
					10/14/2013 17:41	0917-173_No13_10_14_1741_13_270	1	-2.219	1.432	0.211	0.087	1.91	0.163	0.706	1.885	-1.807	0.152	0.0040	0.00800	-1.041	0.443	8.963
					10/14/2013 17:42	0917-173_No13_10_14_1742_14_040	1	-0.250	1.059	-0.4080	0.100	0.207	0.0490	0.424	0.799	-3.37	0.167	-0.00600	0.00300	-1.333	0.398	11.435
					10/14/2013 17:43	0917-173_No13_10_14_1743_14_781	1	-2.0370	1.076	-0.601	0.099	-0.007	0.0450	0.029	0.374	-3.81	0.171	-0.00500	0.00200	-1.06	0.411	11.421
					10/14/2013 17:44	0917-173_No13_10_14_1744_15_531	1	1.726	1.006	-0.288	0.089	0.586	0.0510	0.3450	0.698	-2.94	0.145	0.0060	0.00300	-0.57	0.350	9.549
					10/14/2013 17:45	0917-173_No13_10_14_1745_16_341	1	0.971	0.994	0.0760	0.061	0.441	0.0380	0.439	0.538	-0.3010	0.098	0.00300	0.00200	-1.04	0.312	2.991
					10/14/2013 17:46	0917-173_No13_10_14_1746_16_981	1	0.247	0.984	0.0700	0.056	0.200	0.0330	0.287	0.229	0.0010	0.090	0.00100	0.00200	-0.184	0.295	1.162
					10/14/2013 17:47	0917-173_No13_10_14_1747_17_691	1	-0.327	0.946	0.113	0.060	0.125	0.0310	0.06800	0.149	0.191	0.094	0.00	0.00200	-0.58	0.299	0.899
					10/14/2013 17:48	0917-173_No13_10_14_1748_18_511	1	1.223	1.042	-0.086	0.056	0.0650	0.0320	0.329	0.1260	-0.1250	0.093	-0.00600	0.00200	0.145	0.308	0.842
			Stop		10/14/2013 17:49	0917-173_No13_10_14_1749_19_221	1	2.282	1.087	0.079	0.054	0.154	0.0320	0.263	0.1270	0.212	0.092	-0.00600	0.00200	-0.317	0.316	0.827
					10/14/2013 17:50	0917-173_No13_10_14_1750_20_001	1	2.652	1.055	-0.0440	0.059	0.202	0.0450	0.5820	0.860	0.115	0.096	-0.01300	0.00200	-0.579	0.319	0.837
					10/14/2013 17:51	0917-173_No13_10_14_1751_20_821	1	2.2470	1.060	0.0070	0.064	0.081	0.0510	0.63000	0.998	0.114	0.106	-0.00600	0.00200	-0.18	0.331	0.609
					10/14/2013 17:52	0917-173_No13_10_14_1752_21_531	1	1.489	1.063	0.231	0.063	0.173	0.0480	0.5470	1.053	0.206	0.102	0.00	0.00200	-0.362	0.333	0.688
					10/14/2013 17:53	0917-173_No13_10_14_1753_22_351	1	2.2420	1.214	0.256	0.065	0.659	0.1030	0.7640	1.446	-0.286	0.109	-0.01	0.00500	0.187	0.354	1.945
					10/14/2013 17:54	0917-173_No13_10_14_1754_23_051	1	-1.2010	1.610	0.571	0.084	1.70	0.245	0.684	2.21	-0.506	0.142	0.00000	0.01200	-1.238	0.464	4.764
					10/14/2013 17:55	0917-173_No13_10_14_1755_23_872	1	-0.66600	1.780	0.667	0.099	2.17	0.296	0.57	2.22	-0.643	0.164	-0.00500	0.01400	-0.962	0.517	6.056
					10/14/2013 17:56	0917-173_No13_10_14_1756_24_582	1	-2.6460	1.651	0.518	0.100	2.15	0.299	0.43	2.18	-0.7680	0.164	0.00000	0.0150	-0.75	0.513	6.38

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 17:57	0917-173_No	13_10_14_1757_25_402	1	-3.602	1.947	0.626	0.095	2.14	0.297	0.36	2.18	-0.8370	0.166	0.00100	0.01400	-0.17	0.544	6.441
Data	Run	3	Start	A	10/14/2013 17:58	0917-173_No	13_10_14_1758_26_092	1	-3.1490	1.704	0.585	0.098	2.08	0.293	0.292	2.18	-0.714	0.161	-0.00200	0.01400	-0.40	0.516	6.39
					10/14/2013 17:59	0917-173_No	13_10_14_1759_26_902	1	-1.329	1.735	0.603	0.099	2.12	0.283	0.48	2.19	-0.783	0.161	0.00000	0.01400	-0.216	0.513	6.332
					10/14/2013 18:00	0917-173_No	13_10_14_1800_27_632	1	-1.974	1.818	0.479	0.101	2.12	0.279	0.50	2.21	-0.665	0.168	-0.00200	0.01400	-0.857	0.530	6.326
					10/14/2013 18:01	0917-173_No	13_10_14_1801_28_432	1	-1.807	1.768	0.3970	0.098	2.17	0.271	0.45	2.20	-0.585	0.162	0.00000	0.01300	-0.790	0.527	6.371
					10/14/2013 18:02	0917-173_No	13_10_14_1802_29_182	1	-1.111	1.859	0.423	0.099	2.20	0.286	0.40	2.18	-0.8900	0.167	0.00200	0.01400	-0.329	0.536	6.478
					10/14/2013 18:03	0917-173_No	13_10_14_1803_29_932	1	-2.0990	1.861	0.523	0.097	2.14	0.296	0.295	2.19	-0.8260	0.165	0.00000	0.01400	-0.60	0.538	6.519
					10/14/2013 18:04	0917-173_No	13_10_14_1804_30_752	1	-3.953	1.776	0.445	0.104	2.23	0.298	0.192	2.17	-0.6510	0.170	-0.00100	0.01400	-0.50	0.540	6.551
					10/14/2013 18:05	0917-173_No	13_10_14_1805_31_502	1	-2.7370	1.914	0.494	0.100	2.14	0.301	0.41	2.18	-0.739	0.169	-0.00600	0.0150	-0.873	0.558	6.433
					10/14/2013 18:06	0917-173_No	13_10_14_1806_32_222	1	-2.066	1.773	0.560	0.101	2.09	0.271	0.49	2.21	-0.639	0.164	0.00000	0.01300	-0.790	0.532	6.248
					10/14/2013 18:07	0917-173_No	13_10_14_1807_33_033	1	-2.395	1.730	0.470	0.094	1.93	0.255	0.357	2.22	-0.795	0.158	-0.00300	0.01200	-0.198	0.518	6.117
					10/14/2013 18:08	0917-173_No	13_10_14_1808_33_783	1	-1.635	1.709	0.531	0.096	2.03	0.252	0.457	2.24	-0.838	0.159	-0.00100	0.01200	-0.17	0.517	6.034
					10/14/2013 18:09	0917-173_No	13_10_14_1809_34_493	1	-3.0400	1.720	0.447	0.097	2.15	0.245	0.396	2.23	-0.632	0.162	-0.00700	0.01200	-0.533	0.533	5.995
					10/14/2013 18:10	0917-173_No	13_10_14_1810_35_313	1	-0.586	1.858	0.577	0.097	2.10	0.262	0.479	2.20	-0.670	0.164	-0.00200	0.01300	-0.052	0.527	6.008
					10/14/2013 18:11	0917-173_No	13_10_14_1811_36_053	1	-2.219	1.761	0.777	0.098	2.14	0.273	0.256	2.21	-0.6820	0.162	0.00200	0.01400	-0.652	0.520	6.093
					10/14/2013 18:12	0917-173_No	13_10_14_1812_36_863	1	-4.078	1.787	0.738	0.097	2.25	0.274	0.179	2.19	-0.6440	0.162	-0.00600	0.01300	-0.6600	0.530	6.106
					10/14/2013 18:13	0917-173_No	13_10_14_1813_37_653	1	-2.653	1.834	0.751	0.099	2.25	0.279	0.161	2.19	-0.670	0.166	-0.00400	0.01300	-0.6820	0.546	6.137
					10/14/2013 18:14	0917-173_No	13_10_14_1814_38_393	1	-4.422	1.794	0.734	0.101	2.36	0.298	0.291	2.18	-0.6080	0.167	-0.00100	0.01400	-0.468	0.544	6.299
					10/14/2013 18:15	0917-173_No	13_10_14_1815_39_133	1	-2.2920	1.897	0.626	0.100	2.42	0.309	0.33	2.16	-0.714	0.168	0.00000	0.0150	-0.28	0.543	6.365
					10/14/2013 18:16	0917-173_No	13_10_14_1816_39_933	1	-4.348	1.888	0.531	0.100	2.27	0.309	0.53	2.17	-0.809	0.169	-0.00400	0.0150	-0.844	0.543	6.347
					10/14/2013 18:17	0917-173_No	13_10_14_1817_40_663	1	-1.4690	1.779	0.649	0.101	2.23	0.303	0.377	2.18	-0.777	0.167	0.00000	0.0150	-0.13	0.538	6.242
					10/14/2013 18:18	0917-173_No	13_10_14_1818_41_463	1	-0.988	1.904	0.627	0.102	2.22	0.289	0.241	2.20	-0.7620	0.171	0.00100	0.01400	-0.726	0.549	6.169
					10/14/2013 18:19	0917-173_No	13_10_14_1819_42_244	1	-1.060	1.835	0.576	0.100	2.12	0.278	0.288	2.19	-0.6980	0.167	0.00000	0.01400	-0.589	0.541	6.114
					10/14/2013 18:20	0917-173_No	13_10_14_1820_42_954	1	-2.204	1.739	0.450	0.098	2.07	0.277	0.457	2.21	-0.6700	0.163	-0.00100	0.01300	-0.03	0.526	6.027
					10/14/2013 18:21	0917-173_No	13_10_14_1821_43_794	1	-3.956	1.707	0.468	0.099	1.97	0.269	0.342	2.22	-0.747	0.162	-0.00500	0.01300	-0.458	0.520	5.977
					10/14/2013 18:22	0917-173_No	13_10_14_1822_44_554	1	-2.870	1.808	0.542	0.100	2.17	0.268	0.286	2.21	-0.814	0.166	-0.00400	0.01300	-0.29	0.539	5.917
					10/14/2013 18:23	0917-173_No	13_10_14_1823_45_304	1	-6.2540	1.777	0.728	0.099	2.10	0.272	0.395	2.21	-0.503	0.165	-0.01000	0.01300	-0.31	0.538	5.899
					10/14/2013 18:24	0917-173_No	13_10_14_1824_46_064	1	-1.300	1.704	0.796	0.098	2.17	0.269	0.450	2.22	-0.5460	0.160	0.00000	0.01300	-0.417	0.511	5.784
					10/14/2013 18:25	0917-173_No	13_10_14_1825_46_864	1	-1.5830	1.749	0.642	0.093	2.23	0.261	0.498	2.22	-0.6540	0.157	-0.00300	0.01200	-0.152	0.505	5.666
					10/14/2013 18:26	0917-173_No	13_10_14_1826_47_634	1	-2.090	1.774	0.621	0.097	2.09	0.260	0.500	2.24	-0.73300	0.161	-0.00500	0.01200	-0.202	0.519	5.593
					10/14/2013 18:27	0917-173_No	13_10_14_1827_48_244	1	-2.919	1.821	0.564	0.098	2.01	0.266	0.495	2.23	-0.783	0.163	-0.00300	0.01200	-0.770	0.532	5.433
					10/14/2013 18:28	0917-173_No	13_10_14_1828_49_064	1	-2.1720	1.796	0.735	0.094	1.95	0.258	0.509	2.25	-0.353	0.158	-0.00600	0.01300	-0.5900	0.517	5.229
					10/14/2013 18:29	0917-173_No	13_10_14_1829_49_814	1	-2.0000	1.717	0.699	0.095	1.86	0.255	0.538	2.25	-0.698	0.158	-0.00400	0.01200	-1.102	0.524	5.109
					10/14/2013 18:30	0917-173_No	13_10_14_1830_50_525	1	-1.712	1.719	0.583	0.097	1.96	0.260	0.535	2.24	-0.6430	0.160	-0.00700	0.01300	-0.157	0.507	5.19
					10/14/2013 18:31	0917-173_No	13_10_14_1831_51_325	1	-3.629	1.730	0.742	0.100	2.11	0.277	0.322	2.20	-0.6260	0.162	0.00100	0.01400	-0.536	0.531	5.28
					10/14/2013 18:32	0917-173_No	13_10_14_1832_52_055	1	-1.487	1.825	0.861	0.101	2.13	0.300	0.463	2.20	-0.6180	0.167	-0.00500	0.0150	-0.450	0.544	5.407
					10/14/2013 18:33	0917-173_No	13_10_14_1833_52_925	1	-3.055	1.928	0.706	0.101	2.20	0.321	0.386	2.17	-0.594	0.170	0.00100	0.0160	-0.499	0.541	5.617
					10/14/2013 18:34	0917-173_No	13_10_14_1834_53_625	1	-2.008	1.829	0.653	0.104	2.35	0.326	0.136	2.18	-0.610	0.171	-0.00200	0.0160	-0.47	0.547	5.845
					10/14/2013 18:35	0917-173_No	13_10_14_1835_54_365	1	-0.921	1.916	0.669	0.101	2.46	0.329	0.40	2.16	-0.505	0.170	-0.00400	0.0160	-0.37	0.557	6.095
					10/14/2013 18:36	0917-173_No	13_10_14_1836_55_185	1	-2.859	1.954	0.740	0.108	2.48	0.335	0.331	2.15	-0.760	0.179	-0.00100	0.0160	-1.154	0.575	6.2
					10/14/2013 18:37	0917-173_No	13_10_14_1837_55_925	1	-2.521	1.873	0.840	0.109	2.46	0.335	0.26	2.15	-0.574	0.177	0.00100	0.0160	-0.759	0.568	6.309
					10/14/2013 18:38	0917-173_No	13_10_14_1838_56_745	1	-3.915	1.862	0.605	0.101	2.32	0.316	0.248	2.18	-0.649	0.169	-0.00400	0.0150	-0.385	0.545	6.305
					10/14/2013 18:39	0917-173_No	13_10_14_1839_57_545	1	-4.353	1.841	0.574	0.101	2.24	0.306	0.237	2.19	-0.622	0.167	0.00100	0.0150	-0.084	0.548	6.246
					10/14/2013 18:40	0917-173_No	13_10_14_1840_58_315	1	-3.121	1.774	0.428	0.104	2.15	0.279	0.368	2.22	-0.6590	0.170	-0.00200	0.01300	-0.203	0.531	6.123
					10/14/2013 18:41	0917-173_No	13_10_14_1841_59_045	1	-3.140	1.740	0.416	0.098	2.21	0.265	0.249	2.22	-0.821	0.163	-0.00800	0.01200	0.01	0.536	6.074
					10/14/2013 18:42	0917-173_No	13_10_14_1842_59_866	1	-2.3240	1.813	0.647	0.097	2.18	0.255	0.154	2.22	-0.474	0.164	-0.00100	0.01200	-1.217	0.528	5.94
					10/14/2013 18:44	0917-173_No	13_10_14_1844_00_576	1	-3.407	1.750	0.509	0.093	2.14	0.245	0.495	2.23	-0.5460	0.157	-0.00500	0.01100	-0.760	0.513	5.834
					10/14/2013 18:45	0917-173_No	13_10_14_1845_01_296	1	-2.084	1.752	0.475	0.097	2.11	0.250	0.413	2.23	-0.596	0.161	-0.00700	0.01200	-0.997	0.515	5.902
					10/14/2013 18:46	0917-173_No	13_10_14_1846_02_146	1	-3.399	1.785	0.453	0.099	2.11	0.257	0.529	2.22	-0.822	0.162	-0.00600	0.01200	-0.066	0.527	5.895
					10/14/2013 18:47	0917-173_No	13_10_14_1847_02_896	1	-3.7590	1.670	0.722	0.096	2.03	0.259	0.403	2.23	-0.617	0.156	-0.00500	0.01300	-0.900	0.508	5.934
					10/14/2013 18:48	0917-173_No	13_10_14_1848_03_616	1	-3.379	1.822	0.776	0.096	2.09	0.265	0.512	2.22	-0.711	0.162	-0.00400	0.01300	-0.844	0.526	6.004
					10/14/2013 18:49	0917-173_No	13_10_14_1849_04_376	1	-0.399	1.748	0.94	0.096	2.05	0.275	0.409	2.23	-0.7790	0.159	-0.00200	0.01400	-0.16	0.518	6.042
					10/14/2013 18:50	0917-173_No	13_10_14_1850_05_206	1	-2.040	1.832	1.01	0.096	2.01	0.273	0.568	2.22	-0.666	0.161	-0.00600	0.01300	-0.786	0.522	5.964
					10/14/2013 18:51	0917-173_No	13_10_14_1851_05_936	1	-0.4940	1.749	0.949	0.094	1.87	0.268	0.603	2.23	-0.807	0.158	0.00100	0.01300	-0.202	0.522	5.923
					10/14/2013 18:52	0917-173_No	13_10_14_1852_06_736	1	-2.510	1.713	0.968	0.092	2.00	0.270	0.542	2.25	-0.700	0.154	-0.00400	0.01300	-0.901	0.501	5.895
					10/14/2013 18:53	0917-173_No	13_10_14_1853_06_456	1	-1.728	1.811	0.860	0.096	1.92	0.268	0.497	2.23	-0.718	0.161	-0.00300	0.01300	-0.30	0.513	5.945
					10/14/2013 18:54	0917-173_No	13_10_14_1854_07_266	1	-4.687	1.790	0.87	0.100	2.00	0.269	0.741	2.24	-0.513	0.164	-0.00600	0.01300	-1.017	0.545	5.98
					10/14/2013 18:55	0917-173_No	13_10_14_1855_07_977	1	-1.317	1.758	0.883	0.097	1.98	0.286	0.675	2.22	-0.652	0.162	-0.00100	0.01400	-0.74	0.525	6.163
					10/14/2013 18:56	0917-173_No	13_10_14_1856_08_787	1	-1.267	1.803	0.781	0.099	2.16	0.302	0.348	2.21	-0.7900	0.164	-0.00400	0.01500	-0.406	0.533	6.337
					10/14/2013 18:57	0917-173_No	13_10_14_1857_09_477	1	-2.090	1.813	0.767	0.103	2.13	0.305	0.626	2.22	-0.706	0.170	-0.00300	0.01500	-0.479	0.537	6.37
			Stop		10/14/2013 18:58	0917-173_No	13_10_14_1858_10_317	1	-2.067	1.825	0.580	0.103	2.23	0.303	0.564	2.19	-0.7150	0.171	-0.00200	0.0150	-0.466	0.547	6.457
					10/14/2013 18:59	0917-173_No	13_10_14_1859_11_037	1	-2.642	1.908	0.564	0.102	2.22	0.310	0.485	2.19	-0.6720	0.173	-0.00300	0.0150	-0.563	0.559	6.474
					10/14/2013 19:00	0917-173_No	13_10_14_1900_11_837	1	-1.9050	1.805	0.486	0.101	2.05	0.276	0.475	2.19	-0.841	0.168	-0.00500	0.01300	-0.831	0.537	6.646
					10/14/2013 19:01	0917-173_No	13_10_14_1901_12_537	1	1.918	1.090	-0.297	0.093	0.506	0.0760	0.641	1.381	-3.021	0.160	-0.00600	0.00400	-1.306	0.395	10.604
					10/14/2013 19:02	0917-173_No	13_10_14_1902_13_297	1	-1.1000	1.050	-0.4640	0.103	0.138	0.0450	0.375	0.503	-3.64	0.174	-0.00200	0.00200	-1.313	0.409	11.271
					10/14/2013 19:23	0917-173_No	13_10_14_1923_47_489	1	-2.7	1.6	0.073	0.084	1.006	1.48	0.0190	0.1040	0.2880	0.140	0.059	0.602	-0.487	0.466	-1.827
					10/14/2013 19:24	0917-173_No	13_10_14_1924_06_009	1	0.6	1.7	0.0350	0.085	0.663	1.57	-0.1170	0.1110	0.101	0.144	0.058	0.636	0.383	0.479	-1.964
					10/14/2013 19:24	0917-173_No	13_10_14_1924_24_509	1	-0.3	1.5	-0.017	0.082	0.350	1.61	-0.0600	0.1070	0.003	0.136	0.053	0.651	-0.629	0.451	-2.041
					10/14/2013 19:24	0917-173_No	13_10_14_1924_43_109	1	-1.8	1.5	-0.020	0.084	0.12	1.64	0.133	0.1090	0.245	0.138	0.065	0.660	0.350	0.452	-2.025
					10/14/2013 19:25	0917-173_No	13_10_14_1925_01_599	1	-5.1	1.3	-0.001	0.084	-0.06	1.65	-0.219	0.0970	0.0740	0.129	0.060	0.667	0.417	0.421	-2.07
					10/14/2013 19:25	0917-173_No	13_10_14_1925_20_119	1	-1.0	1.4	0.1700	0.082	-0.18	1.66	0.157	0.1090	0.053	0.130	0.058	0.666	0.56	0.432	-2.045
					10/14/2013 19:25	0917-173_No	13_10_14_1925_38_729	1	1.2	1.4	-0.3200	0.084	-0.03	1.66	-0.0780	0.1050	0.218	0.133	0.055	0.664	-1.141	0.436	-2.078
					10/14/2013 19:25	0917-173_No	13_10_14_1925_57_229	1	0.6	1.6	-0.0180	0.083	-0.15	1.66	-0.1090	0.1010	0.143	0.141	0.059	0.667	-0.084	0.471	-2.077
					10/14/2013 19:26	0917-173_No	13_10_14_1926_15_809	1	1.0	1.4	-0.104	0.087	-0.15	1.66	-0.0340	0.1230	0.328	0.137	0.049	0.665	-1.59	0.468	-2.073
					10/14/2013 19:26	0917-173_No	13_10_14_1926_34_299	1	1.5	1.6	-0.028	0.089	-0.05	1.66	-0.034	0.1040	0.251	0.148	0.061	0.666	-1.51	0.497	-2.086
					10/14/2013 19:26	0917-173_No	13_10_14_1926_52_849	1	-3.9	1.4	0.04600	0.084	-0.26	1.66	-0.03300	0.1030	0.156	0.135	0.051	0.667	-1.067	0.454	-2.076
					10/14/2013 19:27	0917-173_No	13_10_14_1927_11_399	1	-3.8	1.5	0.0040	0.089	-0.19	1.66	-0.0950	0.1010	0.213	0.139	0.058	0.666	-0.45	0.454	-2.088
					10/14/2013 19:27	0917-173_No	13_10_14_1927_29_919	1	0.9	1.6	-0.153	0.085	-0.19	1.67	0.0790	0.1060	0.058	0.139	0.056	0.663	-0.365	0.459	-2.071
					10/14/2013 19:27	0917-173_No	13_10_14_1927_48_529	1	-0.8	1.7	-0.104	0.083	-0.34	1.67	0.1070	0.1070	0.0760	0.141	0.058	0.665	-1.19	0.486	-2.069
					10/14/2013 19:40	0917-173_No	13_10_14_1940_15_364	1	5.272	2.444	-0.44	0.146	-0.1150	0.0900	-0.1760	0.169	-0.094	0.234	0.00600	0.00500	-0.68	0.73	-0.014
					10/14/2013 19:40	0917-173_No	13_10_14_1940_21_414	1	0.3140	2.716	0.518	0.149	0.043	0.0870	0.165	0.184	0.47	0.248	0.00100	0.00600	1.551	0.81	-0.014
					10/14/2013 19:40	0917-173_No	13_10_14_1940_27_624	1	1.34	2.636	0.059	0.156	-0.1490	0.0880	-0.293	0.174	-0.423	0.251	-0.00400	0.00600	-0.290	0.78	-0.004
					10/14/2013 19:40	0917-173_No	13_10_14_1940_33_844	1	4.8830	2.700	-0.352	0.152	-0.211	0.093	0.415	0.195	-0.247	0.247	-0.01400	0.00800	0.114	0.85	-0.005
					10/14/2013 19:40	0917-173_No	13_10_14_1940_40_084	1	-1.740	2.417	0.292	0.132	0.253	0.0920	0.1900	0.179	0.010	0.218	0.00400	0.00600	1.08	0.73	0.052
					10/14/2013 19:40	0917-173_No	13_10_14_1940_46_324	1	-0.201	2.804	0.052	0.143	-0.114	0.0900	-0.1090	0.204	-0.190	0.242	0.00500	0.00700	-1.04	0.81	-0.006
					10/14/2013 19:40	0917-173_No	13_10_14_1940_52_344	1	4.131	2.553	-0.2220	0.147	0.1010	0.0930	-0.032	0.193	0.097	0.236	0.0050	0.00600	0.708	0.79	0.028
					10/14/2013 19:40	0917-173_No	13_10_14_1940_58_604	1	-1.17	2.643	-0.0390	0.148	-0.03300	0.0900	-0.1610	0.178	0.63	0.241	0.00400	0.00600	-1.67	0.81	-0.01
					10/14/2013 19:41	0917-173_No	13_10_14_1941_04_744	1	1.106	2.633	-0.314	0.153	-0.01	0.0910	-0.124	0.219	-0.153	0.246	-0.00500	0.00700	-1.65	0.81	0.004
					10/14/2013 19:41	0917-173_No	13_10_14_1941_10_954	1	5.907	2.639	0.162	0.141	0.0850	0.095	-0.005	0.201	-0.277	0.233	-0.01	0.00600	0.77	0.80	-0.006
					10/14/2013 19:41	0917-173_No	13_10_14_1941_17_134	1	6.649	2.531	0.218	0.142	-0.084	0.0900	-0.338	0.231	-0.019	0.232	-0.00100	0.00400	0.354	0.75	0.006
					10/14/2013 19:41	0917-173_No	13_10_14_1941_23_254	1	2.383	2.518	-0.2860	0.138	0.1010	0.095	0.1650	0.243	-0.060	0.223	0.00900	0.00500	1.00	0.74	0.043
					10/14/2013 19:41	0917-173_No	13_10_14_1941_29_424	1	-1.091	2.475	0.0980	0.159	0.1330	0.0880	-0.0740	0.269	-0.053	0.248	-0.01	0.00500	-0.79	0.83	0.005
					10/14/2013 19:41	0917-173_No	13_10_14_1941_35_674	1	-2.509	2.816	-0.320	0.158	0.091	0.096	0.218	0.253	-0.157	0.252	0.00	0.00600	1.206	0.82	0.055
					10/14/2013 19:41	0917-173_No	13_10_14_1941_41_864	1	7.0630	2.642	0.0830	0.160	0.195	0.0910	-0.002	0.285	-0.477	0.252	0.00800	0.00700	-0.418	0.85	0.071
					10/14/2013 19:41	0917-173_No	13_10_14_1941_48_034	1	-4.0460	2.666	0.286	0.153	-0.253	0.0900	0.006	0.293	0.096	0.246	-0.01600	0.00600	1.235	0.82	0.013
					10/14/2013 19:41	0917-173_No	13_10_14_1941_54_154	1	-4.99	2.617	-0.0420	0.152	0.304	0.0900	-0.093	0.300	-0.1800	0.241	-0.00600	0.00600	-1.395	0.80	0.085
					10/14/2013 19:42	0917-173_No	13_10_14_1942_00_404	1	1.953	2.743	0.0190	0.145	0.123	0.0880	0.187	0.318	0.0910	0.238	-0.01200	0.00500	-0.7280	0.81	-0.007
					10/14/2013 19:42	0917-173_No	13_10_14_1942_06_605	1	0.633	2.527	-0.183	0.143	0.178	0.0930	0.0610	0.328	-0.162	0.232	-0.01400	0.00500	1.22	0.78	0.022
					10/14/2013 19:42	0917-173_No	13_10_14_1942_12_795	1	-2.212	2.768	0.366	0.145	-0.142	0.0970	-0.298	0.381	0.261	0.241	-0.01900	0.00500	-0.329	0.80	0.022
					10/14/2013 19:42	0917-173_No	13_10_14_1942_18_965	1	-2.302	2.743	-0.0220	0.155	0.05800	0.0920	0.2650	0.409	-0.017	0.251	-0.00700	0.00600	0.848	0.83	0.034
					10/14/2013 19:42	0917-173_No	13_10_14_1942_25_075	1	2.72	2.789	0.205	0.147	-0.0020	0.095	0.3870	0.365	0.781	0.243	0.00100	0.00500	-1.55	0.79	0.055
					10/14/2013 19:42	0917-173_No	13_10_14_1942_31_265	1	2.423	2.749	0.132	0.151	0.232	0.0940	-0.513	0.378	-0.074	0.246	0.00100	0.00500	1.14	0.81	0.046
					10/14/2013 19:42	0917-173_No	13_10_14_1942_37_425	1	1.851	2.630	-0.214	0.156	-0.0660	0.0910	0.1180	0.384	-0.199	0.252	-0.00700	0.00600	1.08	0.82	0.016
					10/14/2013 19:42	0917-173_No	13_10_14_1942_43_715	1	3.614	2.464	0.074	0.160	-0.0290	0.0820	-0.049	0.387	-0.01	0.250	-0.00300	0.00600	-3.52	0.81	0.046
					10/14/2013 19:42	0917-173_No	13_10_14_1942_49_875	1	10.598	2.538	0.0490	0.154	0.0310	0.0970	0.571	0.400	0.13	0.242	-0.00700	0.00600	-0.671	0.79	0.125
					10/14/2013 19:42	0917-173_No	13_10_14_1942_55_975	1	2.391	2.525	-0.532	0.139	0.2770	0.094	0.3260	0.383	-0.548	0.229	-0.00200	0.00600	0.337	0.74	0.059
					10/14/2013 19:43	0917-173_No	13_10_14_1943_02_155	1	-2.234	2.923	0.044	0.157	0.0530	0.115	0.403	1.001	-0.655	0.260	-0.01200	0.00700	-0.06	0.87	-0.103
					10/14/2013 19:43	0917-173_No	13_10_14_1943_08_405	1	1.005	3.004	0.328	0.160	0.2510	0.181	-2.717	2.70	-0.74	0.263	-0.02600	0.00800	1.18	0.91	0.417
					10/14/2013 19:43	0917-173_No	13_10_14_1943_14_605	1	-3.917	3.031	0.090	0.175	0.0760	0.158	-2.48	1.45	-0.16	0.282	-0.0020	0.00700	-0.71	0.95	-0.418
					10/14/2013 19:43	0917-173_No	13_10_14_1943_20_695	1	-5.339	3.18	0.476	0.180	-0.282	0.146	-0.75	1.12	-0.35	0.29	-0.0050	0.00800	-0.65	0.98	-1.143
					10/14/2013 19:43	0917-173_No	13_10_14_1943_26_895	1	-0.9710	2.84	0.035	0.166	-0.0730	0.173	-0.09	2.30	0.14	0.27	0.0000	0.0080	-0.62	0.91	-2.073
					10/14/2013 19:43	0917-173_No	13_10_14_1943_33_125	1	-6.375	2.93	-0.452	0.167	-0.4090	0.194	2.72	3.1	0.40	0.27	0.0150	0.0090	-1.04	0.90	-3.067
					10/14/2013 19:43	0917-173_No	13_10_14_1943_39_295	1	-4.890	3.36	-0.009	0.185	-0.2490	0.251	5.98	4.1	0.10	0.30	0.0080	0.0100	-1.89	1.00	-3.918
					10/14/2013 19:43	0917-173_No	13_10_14_1943_45_485	1	-5.232	3.26	0.292	0.169	-0.123	0.294	7.8	5.1	0.49	0.29	-0.0010	0.0100	-4.66	0.98	-4.933
					10/14/2013 19:43	0917-173_No	13_10_14_1943_51_575	1	-4.043	3.42	0.309	0.187	-0.289	0.331	10.5	5.5	0.89	0.31	0.0390	0.0120	-2.06	1.02	-5.644
					10/14/2013 19:43	0917-173_No	13_10_14_1943_57_765	1	-5.89	3.23	0.3540	0.188	-0.467	0.310	9.5	5.4	1.22	0.31	0.0150	0.0130	-3.16	1.03	-5.217
					10/14/2013 19:44	0917-173_No	13_10_14_1944_03_955	1	-6.154	3.31	-0.087	0.186	-0.242	0.295	10.0	5.0	0.14	0.31	0.0280	0.0120	-3.36	1.05	-5.146
					10/14/2013 19:44	0917-173_No	13_10_14_1944_10_235	1	-3.011	3.07	0.182	0.180	-0.5510	0.272	8.3	4.5	0.35	0.29	0.0350	0.0110	-2.91	1.00	-4.953
					10/14/2013 19:44	0917-173_No	13_10_14_1944_16_435	1	-1.59	3.19	-0.090	0.183	-0.225	0.253	6.79	4.6	0.79	0.30	0.0120	0.0100	-1.61	0.99	-4.606
					10/14/2013 19:44	0917-173_No	13_10_14_1944_22_425	1	-2.10	3.37	0.183	0.170	-0.077	0.271	5.87	4.8	0.84	0.29	0.0220	0.0120	-5.08	0.97	-4.17
					10/14/2013 19:44	0917-173_No	13_10_14_1944_28_715	1	4.391	3.20	-0.0300	0.171	-0.4260	0.254	6.0	4.7	0.51	0.28	0.0210	0.0090	-3.15	0.94	-4.276
					10/14/2013 19:44	0917-173_No	13_10_14_1944_34_905	1	-8.2990	3.20	0.257	0.179	-0.037	0.226	5.63	4.3	0.28	0.29	0.0100	0.0110	-1.72	1.01	-4.005
					10/14/2013 19:44	0917-173_No	13_10_14_1944_41_095	1	-10.497	3.30	-0.323	0.163	-0.2370	0.219	4.35	4.0	0.17	0.29	0.0070	0.0100	-1.65	0.98	-3.526
					10/14/2013 19:44	0917-173_No	13_10_14_1944_47_295	1	-0.963	3.09	0.004	0.180	-0.2720	0.194	4.61	3.5	0.16	0.29	0.0020	0.0100	-2.86	0.94	-2.968
					10/14/2013 19:44	0917-173_No	13_10_14_1944_53_375	1	-8.766	3.00	-0.238	0.177	-0.1650	0.188	3.42	3.01	0.11	0.29	0.0020	0.0090	-1.36	0.94	-2.843
					10/14/2013 19:44	0917-173_No	13_10_14_1944_59_555	1	-2.65	3.24	-0.108	0.165	-0.095	0.170	2.95	2.43	-0.53	0.28	0.0020	0.0080	0.16	0.96	-2.268
					10/14/2013 19:45	0917-173_No	13_10_14_1945_05_845	1	-7.828	2.77	0.394	0.175	0.096	0.149	0.42	1.92	0.35	0.28	-0.0030	0.0070	-2.44	0.85	-1.836
					10/14/2013 19:45	0917-173_No	13_10_14_1945_12_035	1	-6.69	2.95	0.364	0.183	-0.2400	0.131	-0.20	1.98	0.03	0.29	0.0100	0.0070	-1.17	0.98	-1.528
					10/14/2013 19:45	0917-173_No	13_10_14_1945_18_215	1	-8.357	3.09	0.085	0.157	0.1700	0.132	-1.65	1.52	-0.09	0.27	-0.0130	0.0080	0.28	0.89	-1.115
					10/14/2013 19:45	0917-173_No	13_10_14_1945_24_285	1	-4.31	3.203	0.189	0.172	-0.02800	0.126	1.85	1.54	-0.34	0.29	0.0100	0.00700	0.29	0.95	-0.893
					10/14/2013 19:45	0917-173_No	13_10_14_1945_30_475	1	-2.255	3.17	-0.221	0.168	-0.130	0.128	-1.03	1.33	-0.72	0.28	-0.0080	0.00700	0.531	0.95	-0.634
					10/14/2013 19:45	0917-173_No	13_10_14_1945_36_655	1	-4.708	2.78	-0.094	0.161	0.017	0.134	-1.75	1.18	-0.49	0.26	-0.0250	0.00700	0.70	0.86	-0.425
					10/14/2013 19:45	0917-173_No	13_10_14_1945_42_915	1	-4.6700	3.001	-0.023	0.150	0.126	0.131	-1.89	1.18	-0.25	0.26	-0.0020	0.00600	-0.38	0.86	-0.267
					10/14/2013 19:45	0917-173_No	13_10_14_1945_49_085	1	-1.347	2.856	0.331	0.173	-0.153	0.136	-2.00	1.32	-0.35	0.28	-0.0260	0.00700	0.864	0.92	0.052
					10/14/2013 19:45	0917-173_No	13_10_14_1945_55_165	1	-1.773	2.939	0.232	0.174	0.219	0.148	-3.825	1.70	-0.19	0.28	-0.0070	0.00600	1.71	0.91	0.391
					10/14/2013 19:46	0917-173_No	13_10_14_1946_01_355	1	-0.499	3.056	-0.152	0.160	0.407	0.150	-2.64	1.88	0.07	0.27	-0.03600	0.00700	-1.28	0.90	0.497
					10/14/2013 19:46	0917-173_No	13_10_14_1946_07_635	1	-6.4680	2.898	0.196	0.170	-0.0040	0.154	-2.80	1.84	-0.539	0.27	-0.02900	0.00800	1.35	0.91	0.63
					10/14/2013 19:46	0917-173_No	13_10_14_1946_13_805	1	1.603	2.782	0.102	0.162	-0.286	0.159	-3.408	2.17	-0.07	0.26	-0.0030	0.00800	-0.84	0.88	0.755
					10/14/2013 19:46	0917-173_No	13_10_14_1946_19_995	1	-2.394	2.893	0.1480	0.161	0.0670	0.159	-3.151	2.32	-0.38	0.26	-0.0330	0.00700	-0.60	0.90	0.868
					10/14/2013 19:46	0917-173_No	13_10_14_1946_26_075	1	-9.942	2.839	-0.1870	0.151	0.0810	0.170	-3.102	2.63	-0.23	0.26	-0.0150	0.00800	1.08	0.86	1.027
					10/14/2013 19:46	0917-173_No	13_10_14_1946_32_285	1	3.074	2.833	0.2310	0.162	0.1540	0.167	-2.08	2.89	-0.27	0.26	-0.0220	0.00800	1.51	0.88	1.036
					10/14/2013 19:46	0917-173_No	13_10_14_1946_38_465	1	-1.325	2.843	0.103	0.159	-0.151	0.177	-4.043	2.92	-0.53	0.26	-0.02200	0.00800	0.427	0.89	1.248
					10/14/2013 19:46	0917-173_No	13_10_14_1946_44_745	1	0.304	2.949	0.615	0.164	-0.055	0.177	-2.867	3.17	-0.21	0.27	-0.0190	0.00700	-0.51100	0.89	1.346
					10/14/2013 19:46	0917-173_No	13_10_14_1946_50_775	1	-1.492	2.945	0.3470	0.162	0.2170	0.178	-3.616	3.35	-0.32	0.272	-0.0180	0.00900	-0.24	0.90	1.403
					10/14/2013 19:46	0917-173_No	13_10_14_1946_57_045	1	-0.43	2.921	0.391	0.158	0.3190	0.184	-2.733	3.31	-0.350	0.262	-0.02400	0.00700	2.295	0.87	1.429
					10/14/2013 19:47	0917-173_No	13_10_14_1947_03_195	1	-11.54	4.131	-0.334	0.219	0.028	0.190	2.229	1.14	-0.676	0.27	-0.0240	0.00700	-4.249	1.23	1.481
					10/14/2013 19:47	0917-173_No	13_10_14_1947_09_385	1	0.413	3.249	0.07600	0.160	0.2940	0.180	1.756	0.99	-0.781	0.277	-0.0080	0.00800	0.76	0.97	1.714
					10/14/2013 19:47	0917-173_No	13_10_14_1947_15_565	1	-7.5970	4.241	0.3850	0.163	0.372	0.200	1.079	0.90	0.769	0.383	-0.01900	0.00800	0.44	0.92	1.563
					10/14/2013 19:47	0917-173_No	13_10_14_1947_21_725	1	-8.531	3.901	0.368	0.168	0.2180	0.202	1.052	0.70	0.07	0.358	-0.02300	0.00600	0.619	0.95	1.781

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
									Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					10/14/2013 19:47	0917-173_No	13_10_14_1947_27_905	1	-10.242	3.765	0.243	0.153	0.006	0.203	0.607	0.64	-0.866	0.256	-0.0200	0.01000	2.42	0.88	1.765
					10/14/2013 19:47	0917-173_No	13_10_14_1947_34_085	1	-13.567	3.934	0.733	0.159	0.292	0.207	1.110	0.62	0.797	0.351	-0.0160	0.00800	0.11	0.93	1.753
					10/14/2013 19:47	0917-173_No	13_10_14_1947_40_265	1	-9.776	3.629	0.246	0.168	0.161	0.210	0.674	0.65	0.338	0.336	-0.01500	0.00800	1.0760	0.88	1.755
					10/14/2013 19:47	0917-173_No	13_10_14_1947_46_545	1	-12.455	3.595	0.535	0.160	-0.517	0.151	1.100	0.71	0.057	0.336	-0.01800	0.00800	1.789	0.88	1.899
					10/14/2013 19:47	0917-173_No	13_10_14_1947_52_605	1	-3.97	3.616	-0.170	0.193	-0.28500	0.159	1.080	0.81	-0.148	0.319	-0.01800	0.00900	-1.47	1.08	-0.369
					10/14/2013 19:47	0917-173_No	13_10_14_1947_58_785	1	-12.900	3.607	-0.2410	0.217	-0.2570	0.156	1.053	0.94	-0.0610	0.344	-0.0230	0.00900	-1.25	1.11	-0.304
					10/14/2013 19:48	0917-173_No	13_10_14_1948_05_005	1	-1.140	3.628	-0.321	0.197	0.081	0.145	0.936	0.90	0.20	0.322	-0.02400	0.00900	-2.557	1.08	-0.248
					10/14/2013 19:48	0917-173_No	13_10_14_1948_11_245	1	-8.7930	3.348	-0.038	0.196	-0.14300	0.144	1.005	1.07	0.313	0.316	-0.03600	0.00800	-1.30	1.04	-0.245
					10/14/2013 19:48	0917-173_No	13_10_14_1948_17_425	1	-16.10	3.660	-0.081	0.188	-0.286	0.156	0.644	1.02	-0.048	0.320	-0.03200	0.00800	-3.09	1.08	-0.157
					10/14/2013 19:48	0917-173_No	13_10_14_1948_23_505	1	-8.24	3.598	0.04100	0.188	-0.314	0.145	0.470	1.05	-0.030	0.314	-0.00700	0.00900	-1.591	1.02	-0.181
					10/14/2013 19:48	0917-173_No	13_10_14_1948_29_645	1	-4.390	3.521	-0.144	0.189	-0.1570	0.154	0.617	1.09	0.136	0.313	-0.01700	0.00800	-0.58	1.06	-0.149
					10/14/2013 19:48	0917-173_No	13_10_14_1948_35_905	1	-4.406	3.388	0.209	0.194	-0.2060	0.154	0.61	1.14	-0.011	0.314	-0.03200	0.00900	-0.70	1.03	-0.064
					10/14/2013 19:48	0917-173_No	13_10_14_1948_42_075	1	-7.767	3.734	0.050	0.195	-0.0980	0.149	0.909	1.14	0.14	0.327	-0.02800	0.00800	-4.442	1.10	-0.082
					10/14/2013 19:48	0917-173_No	13_10_14_1948_48_245	1	-10.939	3.388	0.084	0.193	-0.2510	0.152	1.098	1.17	0.42	0.311	-0.01700	0.00900	-4.65	1.04	-0.075
					10/14/2013 19:48	0917-173_No	13_10_14_1948_54_325	1	-10.527	3.390	-0.155	0.191	-0.1760	0.156	1.155	1.19	-0.436	0.310	-0.02	0.00900	0.260	1.04	-0.108
					10/14/2013 19:49	0917-173_No	13_10_14_1949_00_595	1	-16.048	3.535	-0.154	0.197	-0.0120	0.146	1.171	1.13	-0.21	0.327	-0.00500	0.00900	-0.645	1.09	-0.129
					10/14/2013 19:49	0917-173_No	13_10_14_1949_06_775	1	-5.225	3.459	-0.394	0.182	-0.298	0.155	0.874	1.17	-0.424	0.306	-0.03400	0.00800	-2.138	1.01	-0.104
					10/14/2013 19:49	0917-173_No	13_10_14_1949_12_935	1	0.199	3.552	-0.138	0.191	-0.17400	0.156	1.131	1.31	-0.0740	0.315	-0.01800	0.00800	-1.9070	1.06	-0.049
					10/14/2013 19:49	0917-173_No	13_10_14_1949_19_205	1	-10.704	3.293	-0.070	0.196	-0.243	0.148	1.530	1.32	0.359	0.309	-0.02700	0.00800	-1.929	0.97	-0.004
					10/14/2013 19:49	0917-173_No	13_10_14_1949_25_285	1	-10.781	3.510	0.043	0.193	-0.155	0.149	0.17	1.26	-0.228	0.318	-0.02900	0.00800	-0.91	1.07	0.099
					10/14/2013 19:49	0917-173_No	13_10_14_1949_31_435	1	-2.57	3.272	0.175	0.179	-0.1160	0.155	1.366	1.38	-0.370	0.297	-0.03000	0.00800	-1.04	1.00	0.042
					10/14/2013 19:49	0917-173_No	13_10_14_1949_37_715	1	1.061	3.301	0.172	0.192	-0.143	0.151	1.221	1.45	-0.468	0.309	-0.03100	0.00800	-1.360	1.04	0.154
					10/14/2013 19:49	0917-173_No	13_10_14_1949_43_905	1	-9.983	3.252	-0.037	0.175	-0.109	0.152	0.728	1.51	0.380	0.287	-0.01700	0.00800	-1.20	0.95	0.073
					10/14/2013 19:49	0917-173_No	13_10_14_1949_50_095	1	-3.918	3.263	0.037	0.174	-0.366	0.150	0.683	1.56	0.57	0.288	-0.01800	0.00700	-2.87	0.97	0.219
					10/14/2013 19:49	0917-173_No	13_10_14_1949_56_175	1	-5.872	3.457	-0.00400	0.178	-0.0460	0.155	1.195	1.669	-0.689	0.296	-0.00500	0.00700	-1.28	1.00	0.237
					10/14/2013 19:50	0917-173_No	13_10_14_1950_02_365	1	-6.8110	3.349	-0.430	0.172	0.0960	0.141	0.57	1.731	-0.430	0.288	-0.02600	0.00700	1.007	0.99	0.133
					10/14/2013 19:50	0917-173_No	13_10_14_1950_08_595	1	-4.103	3.133	-0.077	0.175	0.0650	0.144	1.309	1.742	0.026	0.284	-0.02200	0.00900	-1.868	0.97	0.234
					10/14/2013 19:50	0917-173_No	13_10_14_1950_14_785	1	-2.87	3.103	-0.004	0.167	-0.1480	0.148	1.174	1.760	-0.216	0.271	-0.01100	0.00800	-1.666	0.93	0.252
					10/14/2013 19:50	0917-173_No	13_10_14_1950_20_855	1	-0.892	2.970	0.202	0.176	0.03800	0.155	0.942	1.799	0.444	0.279	-0.02000	0.00700	-0.507	0.89	0.224
					10/14/2013 19:50	0917-173_No	13_10_14_1950_27_035	1	-4.979	3.216	-0.240	0.183	-0.113	0.152	1.379	1.761	-0.212	0.298	-0.02200	0.00800	0.85	1.00	0.301
					10/14/2013 19:50	0917-173_No	13_10_14_1950_33_235	1	1.60	3.185	-0.480	0.167	-0.252	0.148	0.525	1.712	-0.3480	0.278	-0.02100	0.00800	-1.084	0.94	0.197
					10/14/2013 19:50	0917-173_No	13_10_14_1950_39_435	1	-9.332	3.063	0.149	0.189	0.137	0.146	1.153	1.741	0.151	0.299	-0.03	0.00800	-1.761	0.99	0.23
					10/14/2013 19:50	0917-173_No	13_10_14_1950_45_635	1	-0.0160	3.188	0.413	0.194	-0.329	0.151	0.450	1.730	-0.14	0.309	-0.01600	0.00800	-0.690	0.99	0.347
					10/14/2013 19:50	0917-173_No	13_10_14_1950_51_825	1	-3.33	3.494	-0.100	0.180	0.1460	0.158	1.022	1.705	-0.0410	0.301	-0.0080	0.00800	-1.108	1.00	0.279
					10/14/2013 19:50	0917-173_No	13_10_14_1950_58_005	1	-1.127	2.932	-0.0130	0.180	-0.261	0.159	0.952	1.719	-0.06	0.281	-0.02	0.00700	-1.305	0.95	0.221
					10/14/2013 19:51	0917-173_No	13_10_14_1951_04_185	1	-5.117	3.271	0.2200	0.174	-0.1100	0.148	0.832	1.729	-0.028	0.291	-0.02700	0.00800	-2.64	1.00	0.229
					10/14/2013 19:51	0917-173_No	13_10_14_1951_10_375	1	-7.46	3.283	0.0170	0.182	-0.1210	0.139	0.994	1.723	-0.448	0.301	-0.02200	0.00800	-0.88	0.98	0.264
					10/14/2013 19:51	0917-173_No	13_10_14_1951_16_615	1	-3.616	3.130	0.178	0.172	0.0240	0.147	1.346	1.760	-0.441	0.282	-0.00700	0.00700	0.064	0.98	0.313
					10/14/2013 19:51	0917-173_No	13_10_14_1951_22_685	1	-8.823	3.195	-0.0660	0.183	-0.239	0.152	1.326	1.739	0.117	0.300	-0.02900	0.00800	-1.06	1.02	0.284
					10/14/2013 19:51	0917-173_No	13_10_14_1951_28_855	1	-7.230	3.210	-0.2230	0.172	-0.1680	0.152	0.40	1.751	-0.35	0.287	-0.01200	0.00800	-0.19	0.96	0.275
					10/14/2013 19:51	0917-173_No	13_10_14_1951_35_135	1	-9.833	3.087	-0.00500	0.164	-0.114	0.157	0.683	1.745	-0.214	0.270	-0.01400	0.00800	-0.28	0.90	0.192
					10/14/2013 19:51	0917-173_No	13_10_14_1951_41_325	1	-9.164	3.233	0.143	0.170	-0.1660	0.147	1.051	1.808	-0.07	0.285	-0.02200	0.00700	-1.61	0.95	0.278
					10/14/2013 19:51	0917-173_No	13_10_14_1951_47_515	1	-9.117	3.390	0.1610	0.172	-0.070	0.155	0.501	1.694	0.13	0.290	-0.00200	0.00700	-2.027	0.98	0.314
					10/14/2013 19:51	0917-173_No	13_10_14_1951_53_595	1	-8.890	2.955	0.0350	0.166	-0.076	0.141	0.950	1.779	0.072	0.273	-0.02	0.00800	-0.75	0.90	0.328
					10/14/2013 19:51	0917-173_No	13_10_14_1951_59_795	1	-2.920	3.199	-0.126	0.176	0.006	0.152	0.429	1.817	-0.4210	0.287	-0.01700	0.00800	-0.91	0.96	0.304
					10/14/2013 19:52	0917-173_No	13_10_14_1952_05_975	1	-11.119	3.278	0.412	0.172	0.145	0.152	0.767	1.818	-0.236	0.287	-0.03400	0.00700	1.09	0.94	0.26
					10/14/2013 19:52	0917-173_No	13_10_14_1952_12_155	1	-7.183	3.182	-0.0470	0.177	-0.2340	0.147	0.959	1.838	0.043	0.288	-0.0340	0.00700	-1.78	0.96	0.288
					10/14/2013 19:52	0917-173_No	13_10_14_1952_18_405	1	-12.87	3.040	-0.1620	0.173	-0.203	0.145	0.920	1.852	0.337	0.285	-0.01000	0.00700	-1.83	0.98	0.313
					10/14/2013 19:52	0917-173_No	13_10_14_1952_24_465	1	-2.955	2.978	0.223	0.175	-0.121	0.159	0.877	1.843	0.247	0.282	-0.01800	0.00800	-2.03	0.93	0.324
					10/14/2013 19:52	0917-173_No	13_10_14_1952_30_645	1	-8.5910	3.262	0.165	0.172	-0.0380	0.148	1.151	1.791	-0.287	0.289	-0.01800	0.00700	-0.76	0.97	0.33
					10/14/2013 19:52	0917-173_No	13_10_14_1952_36_925	1	-2.028	2.950	0.1730	0.170	-0.1520	0.149	0.781	1.871	-0.05	0.273	-0.02800	0.00800	-1.42	0.85	0.296
					10/14/2013 19:52	0917-173_No	13_10_14_1952_43_035	1	-1.646	2.995	0.164	0.173	-0.02200	0.151	0.631	1.915	0.517	0.278	-0.01000	0.00700	-0.171	0.90	0.333
					10/14/2013 19:52	0917-173_No	13_10_14_1952_49_235	1	-6.887	2.893	-0.453	0.163	-0.0890	0.150	0.844	1.828	-0.32	0.264	-0.01700	0.00800	-0.996	0.88	0.334
Data	MDC	1	Start		10/14/2013 19:53	0917-173_No	13_10_14_1953_39_775	1	-4.0700	1.899	0.0260	0.106	-0.0930	0.1230	0.855	1.910	0.032	0.172	-0.02	0.00500	-1.615	0.574	0.362
					10/14/2013 19:54	0917-173_No	13_10_14_1954_40_496	1	-4.7720	1.912	0.111	0.106	-0.0580	0.1230	0.738	1.914	-0.0670	0.175	-0.02000	0.00500	-1.188	0.579	0.371
					10/14/2013 19:55	0917-173_No	13_10_14_1955_41_326	1	-3.3650	1.788	0.0170	0.104	-0.0610	0.1260	0.835	1.928	-0.241	0.168	-0.02	0.00500	-0.931	0.553	0.369
					10/14/2013 19:56	0917-173_No	13_10_14_1956_42_036	1	-3.270	2.033	-0.061	0.108	-0.128	0.1250	0.630	1.909	0.011	0.179	-0.02200	0.00500	-2.021	0.597	0.372
					10/14/2013 19:57	0917-173_No	13_10_14_1957_42_786	1	-4.047	1.904	0.1310	0.105	-0.0740	0.1220	0.740	1.929	-0.078	0.172	-0.02	0.00500	-1.288	0.580	0.419
					10/14/2013 19:58	0917-173_No	13_10_14_1958_43_596	1	-2.2440	1.869	0.0480	0.107	-0.0080	0.1230	0.809	1.901	-0.124	0.172	-0.02100	0.00500	-0.988	0.560	0.399
			Stop		10/14/2013 19:59	0917-173_No	13_10_14_1959_44_366	1	-2.609	1.855	0.070	0.106	0.0240	0.1220	0.786	1.917	-0.2060	0.172	-0.01800	0.00500	-0.7610	0.564	0.373
					10/15/2013 7:51	0917-173_No	13_10_15_0751_28_631	1	1.8	1.5	-0.167	0.082	0.02	1.53	-0.11100	0.0920	0.085	0.135	0.059	0.618	-0.548	0.430	-1.86
					10/15/2013 7:51	0917-173_No	13_10_15_0751_47_251	1	0.9	1.6	0.008	0.084	-0.18	1.60	0.1040	0.1020	0.151	0.141	0.054	0.644	-0.367	0.473	-1.97
					10/15/2013 7:52	0917-173_No	13_10_15_0752_05_741	1	0.1	1.6	0.1030	0.088	-0.29	1.63	0.149	0.1020	0.099	0.143	0.065	0.655	0.429	0.464	-1.994
					10/15/2013 7:52	0917-173_No	13_10_15_0752_24_331	1	1.1	1.5	-0.08900	0.080	-0.44	1.65	0.0910	0.1020	-0.063	0.131	0.059	0.661	0.44	0.426	-2.028
					10/15/2013 7:52	0917-173_No	13_10_15_0752_42_811	1	3.8	1.5	-0.088	0.086	-0.34	1.65	-0.11400	0.1020	-0.138	0.137	0.048	0.664	-0.03	0.474	-2.045
					10/15/2013 7:53	0917-173_No	13_10_15_0753_01_311	1	2.1	1.3	0.177	0.083	-0.30	1.66	-0.1390	0.1030	0.07800	0.130	0.063	0.667	-0.048	0.428	-2.019
					10/15/2013 7:53	0917-173_No	13_10_15_0753_19_911	1	2.0	1.5	0.074	0.088	-0.37	1.66	-0.169	0.1210	0.170	0.139	0.059	0.664	0.275	0.453	-2.018
					10/15/2013 7:53	0917-173_No	13_10_15_0753_38_392	1	-3.9	1.6	0.0050	0.081	-0.42	1.66	-0.1290	0.0980	0.044	0.138	0.062	0.661	-0.422	0.463	-2.048
					10/15/2013 7:53	0917-173_No	13_10_15_0753_56_902	1	-4.2	1.6	-0.103	0.086	-0.50	1.67	0.0020	0.1140	-0.022	0.139	0.054	0.665	1.42	0.450	-2.012
					10/15/2013 7:54	0917-173_No	13_10_15_0754_15_522	1	1.5	1.6	0.047	0.085	-0.42	1.67	0.1410	0.1060	0.0440	0.141	0.061	0.663	0.050	0.473	-2.036
					10/15/2013 7:54	0917-173_No	13_10_15_0754_34_022	1	1.0	1.6	-0.051	0.085	-0.45	1.66	-0.1770	0.0960	0.128	0.138	0.049	0.668	-0.640	0.462	-2.025
					10/15/2013 7:54	0917-173_No	13_10_15_0754_52_562	1	-0.5	1.5	0.009	0.085	-0.44	1.66	-0.354	0.1040	0.394	0.137	0.048	0.665	0.060	0.474	-2.03
					10/15/2013 7:55	0917-173_No	13_10_15_0755_11_052	1	0.2	1.5	-0.048	0.075	-0.44	1.67	0.058	0.1110	0.059	0.127	0.064	0.666	0.3360	0.423	-2.018
					10/15/2013 7:55	0917-173_No	13_10_15_0755_29_642	1	-3.2	1.4	-0.156	0.089	-0.44	1.66	0.097	0.1070	-0.017	0.138	0.055	0.668	0.145	0.437	-2.039
					10/15/2013 7:55	0917-173_No	13_10_15_0755_48_232	1	-1.4	1.6	-0.115	0.085	-0.50	1.66	-0.277	0.1040	-0.061	0.139	0.052	0.665	0.43	0.448	-2.043
					10/15/2013 7:56	0917-173_No	13_10_15_0756_06_712	1	-2.1	1.4	0.043	0.085	-0.33	1.66	-0.0350	0.1020	0.133	0.135	0.058	0.664	0.020	0.427	-2.045
					10/15/2013 7:56	0917-173_No	13_10_15_0756_25_332	1	-0.5	1.4	0.095	0.087	-0.49	1.67	-0.115	0.0940	0.245	0.137	0.061	0.665	0.821	0.437	-2.014
					10/15/2013 7:56	0917-173_No	13_10_15_0756_43_842	1	-0.6	1.6	-0.089	0.084	-0.47	1.66	0.110	0.1050	-0.005	0.139	0.058	0.663	1.335	0.458	-2.007
					10/15/2013 7:57	0917-173_No	13_10_15_0757_02_292	1	-0.5	1.4	-0.032	0.090	-0.51	1.66	-0.1750	0.0990	-0.139	0.141	0.053	0.663	0.49	0.450	-2.003
					10/15/2013 7:57	0917-173_No	13_10_15_0757_20_952	1	1.4	1.5	-0.069	0.087	-0.45	1.66	0.124	0.0990	0.265	0.138	0.057	0.664	-0.170	0.445	-2.015
					10/15/2013 9:06	0917-173_No	13_10_15_0906_30_678	1	2.032	1.117	0.031	0.070	1.79	0.0750	0.669	1.626	-0.759	0.115	0.00	0.00300	-0.41	0.359	5.073
					10/15/2013 9:07	0917-173_No	13_10_15_0907_30_378	1	-0.355	1.124	-0.013	0.067	2.12	0.0770	0.514	1.662	-0.578	0.114	-0.00300	0.00200	-1.019	0.351	5.548
					10/15/2013 9:08	0917-173_No	13_10_15_0908_31_128	1	1.323	1.155	0.046	0.068	1.96	0.0790	0.545	1.650	-0.521	0.115	-0.00700	0.00300	-0.77	0.369	5.181
					10/15/2013 9:09	0917-173_No	13_10_15_0909_31_938	1	2.849	1.143	0.144	0.065	1.94	0.0800	0.526	1.645	-0.465	0.110	-0.00100	0.00300	-0.849	0.352	4.839
					10/15/2013 9:10	0917-173_No	13_10_15_0910_32_668	1	1.893	1.087	0.16200	0.067	2.33	0.0810	0.500	1.658	-0.5990	0.113	-0.00200	0.00200	-0.325	0.342	5.527
Data	Run	4	Start	A	10/15/2013 9:11	0917-173_No	13_10_15_0911_33_428	1	-0.297	1.117	0.026	0.070	2.72	0.0860	0.551	1.672	-0.788	0.118	-0.00400	0.00300	0.18	0.362	6.376
					10/15/2013 9:12	0917-173_No	13_10_15_0912_34_178	1	2.267	1.224	0.089	0.072	2.50	0.0840	0.548	1.670	-0.6770	0.120	-0.00400	0.00300	-0.821	0.377	5.402
					10/15/2013 9:13	0917-173_No	13_10_15_0913_34_978	1	-2.199	1.136	0.033	0.066	2.56	0.0850	0.709	1.681	-0.447	0.118	0.00	0.00200	-1.11	0.349	5.394
					10/15/2013 9:14	0917-173_No	13_10_15_0914_35_708	1	-0.4960	1.076	0.054	0.068	2.42	0.0820	0.498	1.666	-0.634	0.112	0.00000	0.00200	-0.46	0.339	4.964
					10/15/2013 9:15	0917-173_No	13_10_15_0915_36_448	1	0.879	1.119	0.0620	0.063	2.43	0.0840	0.440	1.669	-0.452	0.112	-0.00600	0.00300	-0.87	0.330	4.892
					10/15/2013 9:16	0917-173_No	13_10_15_0916_37_198	1	1.8050	1.197	-0.039	0.073	2.69	0.0820	0.552	1.683	-0.589	0.120	0.00	0.00200	-0.50	0.374	5.58
					10/15/2013 9:17	0917-173_No	13_10_15_0917_37_999	1	0.6580	1.177	0.0700	0.066	2.62	0.0840	0.477	1.688	-0.504	0.113	-0.00300	0.00200	-0.846	0.343	5.639
					10/15/2013 9:18	0917-173_No	13_10_15_0918_38_749	1	-0.816	1.213	0.092	0.068	2.76	0.0840	0.574	1.675	-0.726	0.117	-0.00300	0.00300	-0.75	0.375	5.722
					10/15/2013 9:19	0917-173_No	13_10_15_0919_39_499	1	1.276	1.071	0.0340	0.063	2.82	0.0830	0.688	1.693	-0.521	0.110	-0.00300	0.00300	-0.681	0.328	5.676
					10/15/2013 9:20	0917-173_No	13_10_15_0920_40_209	1	-1.244	1.150	0.037	0.068	2.75	0.0830	0.7490	1.694	-0.596	0.117	-0.00700	0.00300	-0.76	0.348	5.495
					10/15/2013 9:21	0917-173_No	13_10_15_0921_41_019	1	1.579	1.251	0.0120	0.072	2.74	0.0860	0.507	1.691	-0.6130	0.122	-0.00200	0.00300	-0.565	0.372	5.337
					10/15/2013 9:22	0917-173_No	13_10_15_0922_41_779	1	0.3140	1.234	0.138	0.069	2.86	0.0840	0.574	1.700	-0.7880	0.121	-0.00500	0.00300	-0.10	0.369	6.155
					10/15/2013 9:23	0917-173_No	13_10_15_0923_42_539	1	1.0170	1.163	-0.0190	0.067	2.73	0.0840	0.380	1.692	-0.732	0.118	-0.00100	0.00300	-0.41	0.353	6.167
					10/15/2013 9:24	0917-173_No	13_10_15_0924_43_249	1	-1.223	1.059	0.116	0.070	2.42	0.0820	0.522	1.688	-0.78600	0.114	0.00000	0.00300	0.35	0.360	5.208
					10/15/2013 9:25	0917-173_No	13_10_15_0925_44_059	1	1.476	1.121	0.0140	0.068	2.47	0.0810	0.568	1.661	-0.598	0.115	0.00000	0.00200	-0.51	0.347	5.133
					10/15/2013 9:26	0917-173_No	13_10_15_0926_44_759	1	-0.829	1.134	-0.042	0.068	2.56	0.0810	0.556	1.686	-0.675	0.113	0.00	0.00300	-0.57	0.347	5.338
					10/15/2013 9:27	0917-173_No	13_10_15_0927_45_529	1	-1.624	1.166	-0.081	0.069	2.51	0.0850	0.623	1.669	-0.569	0.116	-0.00300	0.00300	-1.06	0.363	5.345
					10/15/2013 9:28	0917-173_No	13_10_15_0928_46_300	1	1.723	1.112	0.022	0.067	2.48	0.0810	0.457	1.681	-0.625	0.114	-0.00300	0.00300	-0.52	0.355	5.069
					10/15/2013 9:29	0917-173_No	13_10_15_0929_47_100	1	1.7280	1.153	-0.02	0.064	2.54	0.0820	0.543	1.662	-0.650	0.109	0.00000	0.00200	-0.12	0.349	4.991
					10/15/2013 9:30	0917-173_No	13_10_15_0930_47_900	1	-0.240	1.171	0.047	0.070	2.42	0.0800	0.438	1.670	-0.6360	0.116	-0.00400	0.00300	-0.101	0.360	4.704
					10/15/2013 9:31	0917-173_No	13_10_15_0931_48_670	1	1.250	1.024	0.110	0.069	2.73	0.0810	0.616	1.668	-0.668	0.111	-0.00300	0.00300	-0.17	0.330	5.27
					10/15/2013 9:32	0917-173_No	13_10_15_0932_49_420	1	0.8500	1.154	-0.002	0.066	2.80	0.0840	0.567	1.677	-0.650	0.113	-0.00200	0.00300	-0.22	0.363	5.292
					10/15/2013 9:33	0917-173_No	13_10_15_0933_50_130	1	-0.315	1.103	0.141	0.066	2.90	0.0840	0.482	1.681	-0.764	0.109	-0.00700	0.00300	-0.54	0.333	5.239
					10/15/2013 9:34	0917-173_No	13_10_15_0934_50_930	1	3.0710	1.165	0.0000	0.067	2.56	0.0840	0.539	1.677	-0.609	0.114	-0.00500	0.00200	-0.660	0.350	4.416
					10/15/2013 9:35	0917-173_No	13_10_15_0935_51_710	1	-0.430	1.175	0.067	0.068	2.68	0.0830	0.510	1.675	-0.690	0.115	0.00100	0.00300	-0.38	0.357	4.553
					10/15/2013 9:36	0917-173_No	13_10_15_0936_52_510	1	-1.2160	1.073	0.102	0.066	2.49	0.0830	0.480	1.662	-0.496	0.110	-0.00300	0.00200	-0.35	0.355	4.287
					10/15/2013 9:37	0917-173_No	13_10_15_0937_53_310	1	0.520	1.109	0.045	0.063	2.42	0.0830	0.362	1.664	-0.520	0.107	-0.00100	0.00300	-0.73	0.340	4.103
					10/15/2013 9:38	0917-173_No	13_10_15_0938_54_040	1	0.581	1.102	-0.0520	0.0650	2.61	0.0830	0.470	1.666	-0.645	0.110	-0.00300	0.00200	-0.402	0.343	4.774
					10/15/2013 9:39	0917-173_No	13_10_15_0939_54_760	1	-0.5150	1.013	0.079	0.0620	2.66	0.0820	0.394	1.684	-0.706	0.103	-0.00600	0.00300	-0.152	0.323	4.93
					10/15/2013 9:40	0917-173_No	13_10_15_0940_55_571	1	-0.9070	1.160	0.064	0.066	2.45	0.0820	0.436	1.673	-0.492	0.112	-0.00200	0.00300	-0.75	0.352	4.502
					10/15/2013 9:41	0917-173_No	13_10_15_0941_56_301	1	0.995	1.177	0.1220	0.068	2.45	0.0810	0.558	1.680	-0.555	0.115	-0.00300	0.00300	-0.79	0.355	4.511
					10/15/2013 9:42	0917-173_No	13_10_15_0942_57_111	1	-0.680	1.144	-0.0250	0.067	2.65	0.0830	0.622	1.679	-0.710	0.110	-0.00800	0.00300	-0.12	0.345	4.586
					10/15/2013 9:43	0917-173_No	13_10_15_0943_57_921	1	1.4540	1.089	0.0800	0.066	2.54	0.0850	0.495	1.677	-0.758	0.109	-0.00100	0.00300	-0.30	0.328	4.462
					10/15/2013 9:44	0917-173_No	13_10_15_0944_58_691	1	0.472	1.009	0.0220	0.065	2.44	0.0800	0.506	1.669	-0.485	0.106	-0.00200	0.00200	-0.19	0.311	4.498
					10/15/2013 9:45	0917-173_No	13_10_15_0945_59_421	1	0.645	1.133	0.065	0.065	2.51	0.0810	0.6370	1.679	-0.376	0.111	-0.00200	0.00300	-0.65	0.351	4.433
					10/15/2013 9:47	0917-173_No	13_10_15_0947_00_071	1	0.998	1.144	0.0490	0.065	2.49	0.0810	0.608	1.666	-0.492	0.110	-0.00100	0.00300	-1.000	0.345	4.359
					10/15/2013 9:48	0917-173_No	13_10_15_0948_00_871	1	-0.3200	1.110	0.040	0.070	2.75	0.0850	0.457	1.674	-0.545	0.114	-0.00600	0.00300	-0.733	0.351	4.875
					10/15/2013 9:49	0917-173_No	13_10_15_0949_01_631	1	0.647	1.199	0.017	0.069	2.69	0.0830	0.564	1.693	-0.757	0.118	-0.01000	0.00200	-0.53	0.367	5.071
					10/15/2013 9:50	0917-173_No	13_10_15_0950_02_421	1	0.4850	1.101	-0.046	0.065	2.63	0.0820	0.529	1.693	-0.705	0.109	0.00	0.00200	-0.06	0.339	4.897
					10/15/2013 9:51	0917-173_No	13_10_15_0951_03_231	1	0.1600	1.140	0.042	0.069	2.62	0.0850	0.498	1.694	-0.532	0.118	-0.00300	0.00200	0.04	0.357	5.073
					10/15/2013 9:52	0917-173_No	13_10_15_0952_03_891	1	0.314	1.142	0.0020	0.063	2.90	0.0850	0.403	1.693	-0.6700	0.110	-0.00500	0.00200	-0.22	0.345	5.445
					10/15/2013 9:53	0917-173_No	13_10_15_0953_04_722	1	2.6700	1.184	0.0470	0.071	2.97	0.0840	0.448	1.710	-0.718	0.122	-0.00300	0.00300	-0.52	0.367	6.068
					10/15/2013 9:54	0917-173_No	13_10_15_0954_05_522	1	1.262	1.106	0.023	0.067	2.59	0.0880	0.494	1.698	-0.707	0.114	-0.00300	0.00200	-0.78	0.337	5.047
					10/15/2013 9:55	0917-173_No	13_10_15_0955_06_272	1	0.563	1.112	0.102	0.067	2.72	0.0830	0.482	1.704	-0.663	0.114	-0.00400	0.00300	-0.18	0.357	5.21
					10/15/2013 9:56	0917-173_No	13_10_15_0956_06_992	1	-1.074	1.117	0.201	0.067	2.53	0.0810	0.566	1.692	-0.470	0.116	-0.00800	0.00300	-0.80	0.349	4.763
					10/15/2013 9:57	0917-173_No	13_10_15_0957_07_812	1	-0.4080	1.170	0.031	0.069	2.68	0.0860	0.502	1.686	-0.586	0.117	-0.00600	0.00300	-1.102	0.359	5.179
					10/15/2013 9:58	0917-173_No	13_10_15_0958_08_512	1	0.2620	1.039	0.00300	0.066	2.75	0.0870	0.553	1.697	-0.805	0.109	-0.00500	0.00200	-0.52	0.320	5.566
					10/15/2013 9:59	0917-173_No	13_10_15_0959_09_312	1	1.302	1.132	-0.0470	0.066	2.97	0.0840	0.528	1.693	-0.698	0.115	-0.00500	0.00300	0.01	0.347	5.562
					10/15/2013 10:00	0917-173_No	13_10_15_1000_10_052	1	0.754	1.148	0.057	0.064	3.02	0.0890	0.578	1.709	-0.753	0.112	0.00	0.00300	-0.14	0.338	5.675
					10/15/2013 10:01	0917-173_No	13_10_15_1001_10_862	1	1.323	1.131	0.106	0.064	3.01	0.0870	0.594	1.720	-0.744	0.114	-0.00400	0.00300	-0.79	0.362	5.531
					10/15/2013 10:02	0917-173_No	13_10_15_1002_11_672	1	-0.916	1.151	-0.013	0.070	2.94	0.0880	0.451	1.707	-0.780	0.118	-0.00500	0.00300	-0.29	0.369	5.406
					10/15/2013 10:03	0917-173_No	13_10_15_1003_12_372	1	-0.494	1.152	0.061	0.071	2.82	0.0860	0.412	1.713	-0.755	0.118	-0.00400	0.00300	-0.601	0.357	5.181
					10/15/2013 10:04	0917-173_No	13_10_15_1004_13_182	1	2.115	1.131	0.0470	0.068	2.90	0.0880	0.466	1.699	-0.661	0.114	-0.00500	0.00200	-0.998	0.350	5.336
					10/15/2013 10:05	0917-173_No	13_10_15_1005_13_993	1	-1.633	1.163	0.0130	0.066	2.92	0.0890	0.366	1.697	-0.698	0.114	0.00000	0.00200	-0.44	0.358	5.142
					10/15/2013 10:06	0917-173_No	13_10_15_1006_14_753	1	0.306	1.163	-0.007	0.071	2.60	0.0840	0.503	1.694	-0.549	0.116	-0.00200	0.00300	-0.243	0.362	4.854
					10/15/2013 10:07	0917-173_No	13_10_15_1007_15_483	1	0.436	1.099	0.045	0.064	2.54	0.0850	0.591	1.694	-0.545	0.109	-0.00500	0.00200	-0.557	0.338	4.569
					10/15/2013 10:08	0917-173_No	13_10_15_1008_16_293	1	-1.4680	1.191	0.044	0.067	2.76	0.0840	0.590	1.684	-0.577	0.116	-0.00400	0.00300	-0.74	0.361	5.019
					10/15/2013 10:09	0917-173_No	13_10_15_1009_17_143	1	0.482	1.109	-0.1310	0.064	2.73	0.0830	0.543	1.692	-0.707	0.110	-0.00500	0.00300	-0.72	0.345	4.853
					10/15/2013 10:10	0917-173_No	13_10_15_1010_17_863	1	-0.936	1.160	-0.009	0.067	2.63	0.0830	0.534	1.664	-0.724	0.114	-0.00800	0.00300	-0.44	0.350	4.953
			Stop		10/15/2013 10:11	0917-173_No	13_10_15_1011_18_623	1	-0.489	1.033	-0.085	0.066	0.291	0.0390	0.1290	0.417	-1.3240	0.111	-0.00300	0.00200	-0.762	0.324	4.421
					10/15/2013 10:12	0917-173_No	13_10_15_1012_19_383	1	-1.763	0.896	-0.0740	0.064	0.076	0.0380	0.0430	0.1100	-1.472	0.103	-0.00300	0.00200	-0.35	0.300	4.198
					10/15/2013 10:13	0917-173_No	13_10_15_1013_20_163	1	0.394	0.993	-0.2950	0.067	0.0510	0.0340	-0.0040	0.0890	-1.584	0.109	-0.00300	0.00200	-0.528	0.304	4.174
					10/15/2013 10:14	0917-173_No	13_10_15_1014_20_973	1	-2.000	0.996	-0.018	0.064	0.111	0.0370	-0.1930	0.1640	-1.305	0.103	-0.00400	0.00200	-0.51	0.315	3.767
					10/15/2013 10:15	0917-173_No	13_10_15_1015_21_773	1	0.622	1.042	0.0730	0.058	0.216	0.0340	0.0360	0.1650	-0.229	0.096	0.00000	0.00200	-0.777	0.309	1.185

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 10:16	0917-173_No	13_10_15_1016_22_594	1	-0.573	1.046	-0.0130	0.057	0.136	0.0350	-0.0190	0.0840	-0.039	0.095	0.00	0.00200	-0.237	0.315	0.449
					10/15/2013 10:17	0917-173_No	13_10_15_1017_23_324	1	-0.7110	0.901	-0.0170	0.055	0.157	0.0340	0.0320	0.0730	0.134	0.088	-0.00600	0.00200	-0.873	0.284	0.383
					10/15/2013 10:18	0917-173_No	13_10_15_1018_24_144	1	0.999	1.062	0.0460	0.064	2.26	0.0650	0.299	1.141	-0.462	0.103	0.00100	0.00200	-0.395	0.336	3.909
					10/15/2013 10:19	0917-173_No	13_10_15_1019_23_844	1	1.193	1.225	0.020	0.0670	3.05	0.0910	0.402	1.688	-0.773	0.117	-0.00400	0.00300	-0.720	0.351	5.806
					10/15/2013 10:20	0917-173_No	13_10_15_1020_24_554	1	-1.6730	1.063	0.029	0.068	3.11	0.0910	0.201	1.720	-0.9340	0.114	-0.00700	0.00300	0.16	0.348	6.161
					10/15/2013 10:21	0917-173_No	13_10_15_1021_25_404	1	-1.4620	1.199	0.0780	0.067	3.16	0.0890	0.469	1.718	-0.761	0.118	-0.00300	0.00300	-0.51	0.362	6.674
Data	Run	5	Start	A	10/15/2013 10:22	0917-173_No	13_10_15_1022_26_154	1	-1.127	1.092	-0.008	0.070	3.04	0.0880	0.493	1.720	-0.903	0.118	-0.00200	0.00300	-0.56	0.342	5.824
					10/15/2013 10:23	0917-173_No	13_10_15_1023_26_864	1	1.475	1.077	0.052	0.065	3.12	0.0900	0.430	1.722	-0.660	0.112	-0.00200	0.00300	-0.44	0.332	5.944
					10/15/2013 10:24	0917-173_No	13_10_15_1024_27_684	1	-0.6640	1.166	0.195	0.065	3.10	0.0910	0.366	1.717	-0.741	0.113	-0.00200	0.00300	-1.10	0.342	5.739
					10/15/2013 10:25	0917-173_No	13_10_15_1025_28_404	1	0.031	1.154	0.102	0.071	2.97	0.0900	0.456	1.718	-0.660	0.120	-0.00800	0.00300	0.15	0.358	5.329
					10/15/2013 10:26	0917-173_No	13_10_15_1026_29_214	1	0.624	1.221	-0.047	0.064	2.79	0.0870	0.389	1.712	-0.545	0.111	-0.00400	0.00300	-0.578	0.345	5.098
					10/15/2013 10:27	0917-173_No	13_10_15_1027_30_044	1	0.156	1.079	0.067	0.064	2.67	0.0830	0.419	1.705	-0.683	0.109	-0.00300	0.00300	-0.65	0.317	4.943
					10/15/2013 10:28	0917-173_No	13_10_15_1028_30_805	1	-0.0030	1.154	0.1370	0.069	2.76	0.0860	0.418	1.699	-0.671	0.113	-0.00200	0.00300	-0.277	0.367	4.988
					10/15/2013 10:29	0917-173_No	13_10_15_1029_31_375	1	-0.055	1.175	0.1420	0.068	2.84	0.0880	0.439	1.710	-0.718	0.115	-0.00700	0.00300	-0.756	0.352	5.373
					10/15/2013 10:30	0917-173_No	13_10_15_1030_32_205	1	-1.157	1.150	0.123	0.073	2.95	0.0850	0.469	1.713	-0.677	0.121	-0.00400	0.00300	-0.77	0.367	5.465
					10/15/2013 10:31	0917-173_No	13_10_15_1031_32_965	1	-1.519	1.084	0.125	0.067	3.03	0.0880	0.287	1.714	-0.707	0.114	-0.00300	0.00300	-0.35	0.351	5.576
					10/15/2013 10:32	0917-173_No	13_10_15_1032_33_755	1	0.692	1.087	0.0850	0.063	3.11	0.0870	0.352	1.715	-0.704	0.111	-0.00900	0.00300	-0.58	0.333	5.769
					10/15/2013 10:33	0917-173_No	13_10_15_1033_34_495	1	0.166	1.097	0.043	0.073	3.27	0.0910	0.467	1.730	-0.669	0.122	-0.00200	0.00300	-0.47	0.352	6.169
					10/15/2013 10:34	0917-173_No	13_10_15_1034_35_205	1	-1.631	1.143	-0.0740	0.070	3.38	0.0920	0.279	1.736	-0.763	0.119	-0.00200	0.00300	-0.08	0.350	6.449
					10/15/2013 10:35	0917-173_No	13_10_15_1035_35_975	1	0.310	1.088	-0.048	0.072	3.38	0.0910	0.415	1.748	-0.819	0.119	-0.00500	0.00300	0.22	0.340	6.27
					10/15/2013 10:36	0917-173_No	13_10_15_1036_36_815	1	0.047	1.116	0.0590	0.065	3.40	0.0930	0.353	1.743	-0.8580	0.114	-0.00500	0.00300	0.16	0.340	6.296
					10/15/2013 10:37	0917-173_No	13_10_15_1037_37_575	1	1.31400	1.199	0.013	0.067	3.13	0.0900	0.438	1.735	-0.533	0.116	-0.00300	0.00300	-0.80	0.356	5.643
					10/15/2013 10:38	0917-173_No	13_10_15_1038_38_255	1	0.448	1.142	0.0380	0.068	3.19	0.0890	0.549	1.735	-0.802	0.115	-0.00500	0.00300	-0.69	0.356	5.811
					10/15/2013 10:39	0917-173_No	13_10_15_1039_39_115	1	-0.8700	1.161	0.042	0.066	3.32	0.0930	0.524	1.739	-0.864	0.119	-0.00100	0.00300	-0.35	0.350	6.198
					10/15/2013 10:40	0917-173_No	13_10_15_1040_39_786	1	0.465	1.205	0.093	0.068	3.26	0.0880	0.421	1.741	-0.796	0.119	-0.00700	0.00300	-0.85	0.362	6.185
					10/15/2013 10:41	0917-173_No	13_10_15_1041_40_576	1	0.595	1.145	-0.052	0.070	2.95	0.0900	0.471	1.733	-0.702	0.119	-0.00400	0.00300	-0.10	0.366	5.599
					10/15/2013 10:42	0917-173_No	13_10_15_1042_41_326	1	0.7580	1.197	0.034	0.068	2.83	0.0840	0.411	1.732	-0.664	0.116	0.00000	0.00300	-0.51	0.353	5.424
					10/15/2013 10:43	0917-173_No	13_10_15_1043_42_126	1	0.4420	1.081	0.080	0.070	2.76	0.0840	0.569	1.723	-0.7660	0.115	-0.00200	0.00300	-0.36	0.364	5.093
					10/15/2013 10:44	0917-173_No	13_10_15_1044_42_866	1	1.251	1.088	0.0620	0.066	2.60	0.0820	0.508	1.715	-0.641	0.110	-0.00400	0.00200	-0.908	0.331	4.593
					10/15/2013 10:45	0917-173_No	13_10_15_1045_43_686	1	-3.106	1.093	0.018	0.066	2.68	0.0880	0.519	1.721	-0.749	0.112	-0.00200	0.00300	-0.587	0.340	4.98
					10/15/2013 10:46	0917-173_No	13_10_15_1046_44_456	1	-0.137	1.063	0.062	0.069	2.64	0.0840	0.579	1.690	-0.570	0.115	-0.00400	0.00300	-0.604	0.358	4.902
					10/15/2013 10:47	0917-173_No	13_10_15_1047_45_156	1	0.481	1.135	0.01	0.066	2.51	0.0810	0.614	1.695	-0.640	0.111	-0.00600	0.00200	-0.68	0.344	4.565
					10/15/2013 10:48	0917-173_No	13_10_15_1048_45_966	1	0.727	1.117	-0.012	0.068	2.40	0.0810	0.503	1.680	-0.680	0.114	-0.00600	0.00200	-0.70	0.347	4.893
					10/15/2013 10:49	0917-173_No	13_10_15_1049_46_776	1	-0.020	1.069	0.050	0.063	2.29	0.0810	0.7700	1.691	-0.669	0.109	-0.00200	0.00300	-0.65	0.327	5.213
					10/15/2013 10:50	0917-173_No	13_10_15_1050_47_546	1	-1.4400	1.033	-0.0100	0.063	2.34	0.0840	0.360	1.676	-0.757	0.109	-0.00700	0.00200	-0.56	0.330	5.602
					10/15/2013 10:51	0917-173_No	13_10_15_1051_48_286	1	-0.376	1.091	0.088	0.069	2.36	0.0790	0.523	1.695	-0.801	0.116	-0.00500	0.00300	-0.29	0.341	6.084
					10/15/2013 10:52	0917-173_No	13_10_15_1052_49_107	1	0.358	1.219	0.143	0.065	2.02	0.0780	0.570	1.680	-0.707	0.114	-0.00300	0.00300	-0.47	0.356	5.957
					10/15/2013 10:53	0917-173_No	13_10_15_1053_49_787	1	1.177	1.088	-0.028	0.065	2.08	0.0810	0.488	1.673	-0.785	0.111	-0.00700	0.00200	-0.51	0.329	6.501
					10/15/2013 10:54	0917-173_No	13_10_15_1054_50_637	1	-2.184	1.122	-0.025	0.067	2.37	0.0830	0.582	1.695	-0.891	0.117	-0.00300	0.00300	-0.15	0.348	7.583
					10/15/2013 10:55	0917-173_No	13_10_15_1055_51_347	1	0.681	1.237	-0.0220	0.067	2.46	0.0860	0.533	1.704	-1.126	0.125	-0.00400	0.00300	-0.37	0.368	8.5
					10/15/2013 10:56	0917-173_No	13_10_15_1056_52_137	1	1.591	1.134	0.067	0.072	2.32	0.0820	0.520	1.713	-0.975	0.121	-0.00600	0.00300	-0.75	0.359	7.847
					10/15/2013 10:57	0917-173_No	13_10_15_1057_52_947	1	0.8880	1.190	0.0470	0.070	2.28	0.0850	0.557	1.705	-1.097	0.125	-0.00500	0.00300	0.19	0.378	8.385
					10/15/2013 10:58	0917-173_No	13_10_15_1058_53_697	1	-1.611	1.179	0.0860	0.068	2.51	0.0830	0.508	1.714	-1.057	0.123	-0.00900	0.00300	-0.43	0.354	8.651
					10/15/2013 10:59	0917-173_No	13_10_15_1059_54_417	1	0.3700	1.081	0.034	0.067	2.44	0.0820	0.595	1.722	-0.923	0.118	-0.00600	0.00200	-0.44	0.350	8.361
					10/15/2013 11:00	0917-173_No	13_10_15_1100_55_187	1	0.740	1.126	-0.153	0.063	2.65	0.0860	0.527	1.735	-1.1500	0.114	-0.00500	0.00300	-0.27	0.343	7.994
					10/15/2013 11:01	0917-173_No	13_10_15_1101_55_987	1	0.843	1.090	-0.0210	0.0640	2.70	0.0850	0.592	1.733	-0.952	0.115	-0.00300	0.00300	-0.54	0.322	7.798
					10/15/2013 11:02	0917-173_No	13_10_15_1102_56_697	1	-1.2200	1.129	-0.0530	0.068	2.61	0.0810	0.619	1.726	-0.797	0.118	0.00200	0.00300	-0.90	0.352	6.814
					10/15/2013 11:03	0917-173_No	13_10_15_1103_57_478	1	-1.250	1.123	0.053	0.070	2.85	0.0830	0.595	1.731	-0.980	0.121	-0.00200	0.00300	-0.63	0.348	7.244
					10/15/2013 11:04	0917-173_No	13_10_15_1104_58_198	1	2.745	1.132	-0.050	0.070	3.00	0.0880	0.396	1.746	-0.9470	0.123	-0.00400	0.00200	0.15	0.351	7.322
					10/15/2013 11:05	0917-173_No	13_10_15_1105_59_018	1	0.540	1.211	0.0150	0.068	2.68	0.0860	0.402	1.739	-1.017	0.123	-0.00200	0.00300	-0.36	0.361	6.759
					10/15/2013 11:06	0917-173_No	13_10_15_1106_59_828	1	-0.60100	1.081	-0.0230	0.065	2.46	0.0840	0.596	1.721	-0.753	0.108	-0.00400	0.00300	-0.23	0.334	5.533
					10/15/2013 11:08	0917-173_No	13_10_15_1108_00_548	1	2.124	1.164	-0.0090	0.064	2.31	0.0810	0.574	1.709	-0.658	0.112	-0.00400	0.00200	-0.70	0.344	5.282
					10/15/2013 11:09	0917-173_No	13_10_15_1109_01_358	1	-0.388	1.157	0.0140	0.063	2.24	0.0810	0.512	1.692	-0.727	0.109	-0.00400	0.00300	-0.69	0.341	4.798
					10/15/2013 11:10	0917-173_No	13_10_15_1110_02_068	1	-0.960	1.213	0.0270	0.070	2.17	0.0800	0.621	1.703	-0.568	0.115	-0.00600	0.00200	-0.695	0.361	4.573
					10/15/2013 11:11	0917-173_No	13_10_15_1111_02_698	1	-0.065	1.160	0.060	0.064	2.48	0.0800	0.647	1.699	-0.535	0.113	-0.00600	0.00200	-0.64	0.343	5.209
					10/15/2013 11:12	0917-173_No	13_10_15_1112_03_558	1	-1.197	1.119	0.148	0.068	2.49	0.0820	0.514	1.700	-0.668	0.112	-0.00300	0.00300	-0.22	0.347	5.3
					10/15/2013 11:13	0917-173_No	13_10_15_1113_04_308	1	-0.604	1.169	0.064	0.066	2.39	0.0810	0.500	1.700	-0.561	0.113	-0.00100	0.00300	-0.64	0.364	4.961
					10/15/2013 11:14	0917-173_No	13_10_15_1114_05_028	1	0.351	1.118	0.062	0.069	2.47	0.0790	0.418	1.692	-0.734	0.116	-0.00200	0.00300	-0.527	0.361	4.842
					10/15/2013 11:15	0917-173_No	13_10_15_1115_05_778	1	-0.9760	1.171	0.006	0.065	2.46	0.0820	0.662	1.692	-0.785	0.112	-0.00500	0.00300	-0.11	0.348	4.712
					10/15/2013 11:16	0917-173_No	13_10_15_1116_06_589	1	-0.07600	1.152	0.012	0.065	2.63	0.0820	0.711	1.712	-0.757	0.112	-0.00200	0.00300	-0.48	0.344	5.084
					10/15/2013 11:17	0917-173_No	13_10_15_1117_07_339	1	-1.266	1.088	-0.0340	0.067	2.80	0.0860	0.647	1.732	-0.621	0.114	-0.00400	0.00300	-0.955	0.345	5.552
					10/15/2013 11:18	0917-173_No	13_10_15_1118_08_079	1	0.740	1.077	0.098	0.070	2.84	0.0860	0.575	1.731	-0.595	0.115	-0.00600	0.00300	-0.75	0.360	5.869
					10/15/2013 11:19	0917-173_No	13_10_15_1119_08_799	1	1.384	1.059	0.0890	0.069	2.67	0.0850	0.506	1.717	-0.825	0.113	-0.00500	0.00300	0.06	0.353	5.193
					10/15/2013 11:20	0917-173_No	13_10_15_1120_09_639	1	-2.7670	1.124	0.0070	0.067	2.51	0.0850	0.638	1.729	-0.584	0.115	-0.00900	0.00300	-0.84	0.342	5.053
					10/15/2013 11:21	0917-173_No	13_10_15_1121_10_369	1	1.208	1.044	0.065	0.066	2.58	0.0820	0.587	1.718	-0.712	0.110	-0.00400	0.00300	-1.266	0.334	5.012
			Stop		10/15/2013 11:22	0917-173_No	13_10_15_1122_11_139	1	-0.081	1.134	-0.002	0.0620	1.69	0.0640	0.4870	1.325	-0.822	0.108	-0.00600	0.00200	-0.62	0.347	4.318
					10/15/2013 11:23	0917-173_No	13_10_15_1123_11_899	1	-0.120	0.949	-0.078	0.064	0.153	0.0340	0.0240	0.209	-1.387	0.103	0.00000	0.00200	-1.012	0.306	4.11
					10/15/2013 11:24	0917-173_No	13_10_15_1124_12_709	1	-1.0330	1.021	-0.0800	0.065	0.0230	0.0360	-0.092	0.1010	-1.501	0.108	0.00300	0.00200	-0.415	0.317	4.024
					10/15/2013 11:25	0917-173_No	13_10_15_1125_13_419	1	-2.080	0.992	-0.090	0.061	0.092	0.0340	-0.0190	0.0840	-1.336	0.103	-0.00200	0.00200	-0.778	0.306	3.98
					10/15/2013 11:26	0917-173_No	13_10_15_1126_14_229	1	-1.734	0.965	-0.0690	0.066	0.0610	0.0360	-0.0900	0.0800	-1.401	0.106	0.00	0.00200	-0.408	0.318	3.998
					10/15/2013 11:27	0917-173_No	13_10_15_1127_15_039	1	1.318	0.946	0.090	0.062	0.1170	0.0400	0.2870	0.554	-0.994	0.099	-0.00200	0.00200	-0.482	0.310	3.602
					10/15/2013 11:28	0917-173_No	13_10_15_1128_15_740	1	0.3580	1.201	0.0850	0.059	0.1530	0.0590	0.5110	1.309	-0.442	0.103	-0.00200	0.00200	-0.328	0.344	2.438
					10/15/2013 11:29	0917-173_No	13_10_15_1129_16_560	1	-0.7050	1.098	0.0570	0.064	0.215	0.0610	0.433	1.400	-0.303	0.110	-0.00100	0.00300	-0.65	0.334	5.254
					10/15/2013 11:30	0917-173_No	13_10_15_1130_17_280	1	-0.197	1.057	0.223	0.065	0.598	0.0650	0.634	1.435	-0.69	0.128	0.00000	0.00200	-0.79	0.328	12.261
					10/15/2013 11:31	0917-173_No	13_10_15_1131_18_090	1	-0.777	1.099	0.561	0.093	1.98	0.079	0.337	1.630	-1.87	0.287	-0.0040	0.00300	-1.25	0.355	42.447
					10/15/2013 11:32	0917-173_No	13_10_15_1132_18_840	1	3.38500	1.043	0.114	0.0650	0.377	0.0610	0.332	1.384	-0.57	0.117	-0.00400	0.00200	-1.26	0.329	8.795
					10/15/2013 11:33	0917-173_No	13_10_15_1133_19_640	1	0.893	1.012	0.169	0.064	0.1030	0.0590	0.6460	1.318	-0.113	0.101	-0.00500	0.00200	-0.979	0.330	1.612
					10/15/2013 11:34	0917-173_No	13_10_15_1134_20_440	1	0.4480	1.064	0.041	0.067	1.84	0.0760	0.430	1.576	-0.522	0.110	-0.00700	0.00200	-0.77	0.343	3.856
					10/15/2013 11:35	0917-173_No	13_10_15_1135_21_150	1	0.0150	1.177	0.171	0.066	2.73	0.0830	0.598	1.706	-0.622	0.114	-0.00500	0.00300	-0.39	0.368	5.095
					10/15/2013 11:36	0917-173_No	13_10_15_1136_21_900	1	1.6630	1.123	0.0310	0.070	2.88	0.0820	0.584	1.708	-0.799	0.119	-0.00700	0.00200	-0.68	0.363	5.621
					10/15/2013 11:37	0917-173_No	13_10_15_1137_22_650	1	-0.484	1.220	0.0510	0.0650	2.78	0.0830	0.450	1.709	-0.732	0.114	-0.00500	0.00300	-0.36	0.352	5.208
					10/15/2013 11:38	0917-173_No	13_10_15_1138_23_470	1	2.108	1.091	0.0080	0.070	2.74	0.0830	0.434	1.713	-0.576	0.115	-0.00600	0.00300	-0.30	0.352	4.963
					10/15/2013 11:39	0917-173_No	13_10_15_1139_24_240	1	0.3530	1.074	0.139	0.071	2.76	0.0830	0.517	1.706	-0.701	0.117	-0.00200	0.00300	-0.78	0.355	5.249
Data	Run	6	Start	A	10/15/2013 11:40	0917-173_No	13_10_15_1140_25_001	1	-0.691	1.202	0.069	0.065	2.78	0.0830	0.461	1.717	-0.593	0.115	-0.00400	0.00300	-1.38	0.353	5.511
					10/15/2013 11:41	0917-173_No	13_10_15_1141_25_741	1	-2.501	1.155	0.064	0.070	2.75	0.0840	0.558	1.703	-0.650	0.118	-0.00400	0.00200	-0.48	0.371	5.38
					10/15/2013 11:42	0917-173_No	13_10_15_1142_26_581	1	1.075	1.090	0.091	0.064	2.85	0.0840	0.614	1.712	-0.854	0.112	-0.00800	0.00300	-0.30	0.338	5.72
					10/15/2013 11:43	0917-173_No	13_10_15_1143_27_311	1	-0.816	1.134	-0.046	0.066	2.98	0.0840	0.475	1.719	-0.688	0.114	-0.00100	0.00300	-0.84	0.355	6.069
					10/15/2013 11:44	0917-173_No	13_10_15_1144_28_151	1	0.396	1.138	0.065	0.071	2.83	0.0850	0.7570	1.727	-0.746	0.119	-0.00700	0.00300	-0.55	0.355	5.7
					10/15/2013 11:45	0917-173_No	13_10_15_1145_28_901	1	0.159	1.136	0.112	0.069	2.99	0.0830	0.491	1.705	-0.743	0.116	-0.00500	0.00300	-0.955	0.353	6.256
					10/15/2013 11:46	0917-173_No	13_10_15_1146_29_691	1	-0.358	1.141	-0.0680	0.069	2.93	0.0850	0.503	1.723	-0.906	0.120	-0.00100	0.00200	-0.48	0.349	7.406
					10/15/2013 11:47	0917-173_No	13_10_15_1147_30_411	1	0.426	1.111	0.009	0.067	2.67	0.0830	0.637	1.718	-0.830	0.118	-0.00600	0.00300	-1.01	0.340	6.982
					10/15/2013 11:48	0917-173_No	13_10_15_1148_31_121	1	-0.404	1.129	0.179	0.073	2.79	0.0800	0.644	1.734	-0.821	0.124	-0.01100	0.00200	-0.66	0.367	7.811
					10/15/2013 11:49	0917-173_No	13_10_15_1149_31_961	1	0.632	1.184	0.076	0.069	2.77	0.0820	0.648	1.720	-1.009	0.124	-0.00200	0.00300	-0.37	0.364	7.496
					10/15/2013 11:50	0917-173_No	13_10_15_1150_32_751	1	-2.4280	1.120	0.134	0.070	2.67	0.0820	0.588	1.713	-0.836	0.120	-0.00300	0.00300	-1.14	0.356	7.111
					10/15/2013 11:51	0917-173_No	13_10_15_1151_33_422	1	0.295	1.225	-0.0800	0.068	2.70	0.0840	0.575	1.706	-0.966	0.122	-0.00300	0.00300	-0.42	0.360	7.837
					10/15/2013 11:52	0917-173_No	13_10_15_1152_34_122	1	1.626	1.106	0.001	0.068	3.03	0.0820	0.359	1.736	-0.978	0.122	-0.01200	0.00300	-0.72	0.344	8.053
					10/15/2013 11:53	0917-173_No	13_10_15_1153_34_872	1	2.400	1.182	0.070	0.070	3.08	0.0840	0.656	1.730	-0.808	0.125	-0.00600	0.00300	-1.23	0.350	7.778
					10/15/2013 11:54	0917-173_No	13_10_15_1154_35_682	1	0.4710	1.191	0.0030	0.069	2.98	0.0870	0.574	1.739	-0.973	0.123	-0.00200	0.00300	-0.44	0.360	7.947
					10/15/2013 11:55	0917-173_No	13_10_15_1155_36_432	1	0.0570	1.079	0.084	0.065	3.08	0.0840	0.621	1.733	-0.9290	0.119	-0.00400	0.00300	0.15	0.346	8.761
					10/15/2013 11:56	0917-173_No	13_10_15_1156_37_172	1	1.584	1.128	0.0670	0.070	2.93	0.0850	0.635	1.735	-0.892	0.124	-0.00100	0.00300	-0.34	0.348	8.603
					10/15/2013 11:57	0917-173_No	13_10_15_1157_37_932	1	-0.552	1.112	0.0580	0.070	3.06	0.0860	0.660	1.742	-0.985	0.125	-0.00300	0.00200	-0.41	0.362	9.147
					10/15/2013 11:58	0917-173_No	13_10_15_1158_38_682	1	-1.773	1.129	0.0280	0.071	3.31	0.0860	0.6770	1.748	-1.1190	0.129	-0.00500	0.00200	-0.43	0.346	10.325
					10/15/2013 11:59	0917-173_No	13_10_15_1159_39_342	1	0.532	1.170	-0.062	0.072	3.19	0.0870	0.677	1.759	-0.928	0.132	-0.00600	0.00300	-0.33	0.359	10.323
					10/15/2013 12:00	0917-173_No	13_10_15_1200_40_092	1	-1.326	1.131	0.0920	0.063	2.75	0.0840	0.602	1.738	-0.790	0.115	0.00	0.00300	-0.53	0.340	8.154
					10/15/2013 12:01	0917-173_No	13_10_15_1201_40_852	1	1.788	1.131	0.044	0.066	2.90	0.0860	0.625	1.741	-1.024	0.117	-0.00700	0.00300	-0.23	0.341	8.278
					10/15/2013 12:02	0917-173_No	13_10_15_1202_41_642	1	0.441	1.115	-0.0370	0.070	2.98	0.0830	0.587	1.727	-0.937	0.119	-0.00400	0.00300	-0.39	0.341	8.812
					10/15/2013 12:03	0917-173_No	13_10_15_1203_42_383	1	1.741	1.070	0.083	0.0670	2.98	0.0850	0.497	1.724	-0.843	0.118	-0.00600	0.00300	-0.44	0.338	8.57
					10/15/2013 12:04	0917-173_No	13_10_15_1204_43_183	1	0.28200	1.126	0.055	0.068	3.05	0.0860	0.521	1.730	-0.969	0.12	-0.00500	0.00300	-0.83	0.361	8.154
					10/15/2013 12:05	0917-173_No	13_10_15_1205_43_893	1	1.079	1.114	0.161	0.069	2.80	0.0850	0.560	1.729	-0.723	0.12	-0.00600	0.00300	-1.00	0.355	7.236
					10/15/2013 12:06	0917-173_No	13_10_15_1206_44_713	1	0.35000	1.071	0.067	0.064	2.78	0.0820	0.556	1.716	-0.872	0.11	-0.00400	0.00300	-0.16	0.325	6.838
					10/15/2013 12:07	0917-173_No	13_10_15_1207_45_493	1	1.274	1.034	0.048	0.0620	2.91	0.0830	0.704	1.726	-0.868	0.11	-0.00100	0.00300	-0.93	0.319	7.397
					10/15/2013 12:08	0917-173_No	13_10_15_1208_46_233	1	-1.0050	1.075	0.118	0.066	3.03	0.0820	0.535	1.730	-0.950	0.12	-0.00500	0.00200	-0.24	0.344	7.525
					10/15/2013 12:09	0917-173_No	13_10_15_1209_46_983	1	-0.153	1.090	-0.0310	0.061	2.76	0.0830	0.743	1.719	-0.941	0.11	-0.00300	0.00300	-1.00	0.333	6.649
					10/15/2013 12:10	0917-173_No	13_10_15_1210_47_703	1	-0.0720	1.073	0.040	0.064	2.80	0.0800	0.631	1.715	-0.723	0.11	-0.00100	0.00300	-0.65	0.339	6.229
					10/15/2013 12:11	0917-173_No	13_10_15_1211_48_473	1	1.650	1.033	0.0220	0.0600	2.82	0.0830	0.664	1.720	-0.751	0.11	-0.00100	0.00200	-0.74	0.312	6.99
					10/15/2013 12:12	0917-173_No	13_10_15_1212_49_233	1	-2.110	1.036	0.0570	0.064	2.74	0.0800	0.532	1.726	-0.732	0.11	0.00000	0.00300	-0.56	0.342	6.6
					10/15/2013 12:13	0917-173_No	13_10_15_1213_50_073	1	1.314	1.140	0.062	0.063	2.92	0.0820	0.602	1.730	-1.035	0.11	-0.00500	0.00300	0.30	0.334	6.788
					10/15/2013 12:14	0917-173_No	13_10_15_1214_50_783	1	-0.8810	1.117	0.061	0.063	2.96	0.0830	0.696	1.726	-0.938	0.11	0.00	0.00300	-0.74	0.335	7.218
					10/15/2013 12:15	0917-173_No	13_10_15_1215_51_544	1	1.514	1.105	0.079	0.062	2.84	0.0800	0.628	1.732	-0.751	0.11	-0.00500	0.00200	-0.94	0.338	6.888
					10/15/2013 12:16	0917-173_No	13_10_15_1216_52_314	1	-0.710	1.038	-0.0090	0.065	2.90	0.0810	0.598	1.717	-0.849	0.12	-0.00300	0.00300	-0.67	0.325	7.561
					10/15/2013 12:17	0917-173_No	13_10_15_1217_53_134	1	0.043	1.085	0.075	0.067	2.91	0.0820	0.590	1.725	-1.043	0.12	-0.00500	0.00300	-0.11	0.341	8.436
					10/15/2013 12:18	0917-173_No	13_10_15_1218_53_834	1	0.1870	1.100	0.105	0.0640	2.92	0.0820	0.514	1.731	-1.006	0.12	-0.00700	0.00300	-0.51	0.330	8.664
					10/15/2013 12:19	0917-173_No	13_10_15_1219_54_644	1	-2.878	1.042	0.073	0.065	2.85	0.0820	0.673	1.735	-1.009	0.11	-0.00300	0.00300	-0.53	0.334	8.708
					10/15/2013 12:20	0917-173_No	13_10_15_1220_55_414	1	-0.8070	1.053	-0.0780	0.066	2.92	0.0840	0.635	1.740	-1.032	0.12	-0.00400	0.00300	-0.25	0.332	9.502
					10/15/2013 12:21	0917-173_No	13_10_15_1221_56_164	1	-0.3020	1.162	0.039	0.069	2.67	0.0840	0.608	1.730	-1.007	0.12	-0.00100	0.00300	-0.77	0.349	8.4
					10/15/2013 12:22	0917-173_No	13_10_15_1222_56_874	1	1.0500	1.045	0.036	0.065	2.60	0.0830	0.588	1.732	-0.980	0.11	-0.00400	0.00200	-0.59	0.331	8.307
					10/15/2013 12:23	0917-173_No	13_10_15_1223_57_684	1	-1.0540	1.037	0.095	0.066	2.88	0.0840	0.526	1.732	-1.057	0.12	-0.00400	0.00300	-0.45	0.320	9.509
					10/15/2013 12:24	0917-173_No	13_10_15_1224_58_414	1	2.259	1.107	-0.05300	0.067	3.06	0.0880	0.715	1.746	-1.013	0.12	-0.00400	0.00300	-0.46	0.349	9.922
					10/15/2013 12:25	0917-173_No	13_10_15_1225_59_224	1	-0.686	1.017	0.009	0.068	2.95	0.0880	0.552	1.744	-1.047	0.12	-0.00400	0.00300	-0.92	0.327	9.408
					10/15/2013 12:27	0917-173_No	13_10_15_1227_00_014	1	0.602	1.189	0.0010	0.067	2.91	0.0860	0.600	1.764	-1.155	0.12	-0.00400	0.00300	-0.06	0.354	9.883
					10/15/2013 12:29	0917-173_No	13_10_15_1229_11_590	1	-0.695	1.145	0.0350	0.066	3.04	0.0870	0.640	1.762	-1.124	0.13	-0.00400	0.00300	-0.62	0.339	10.424
					10/15/2013 12:30	0917-173_No	13_10_15_1230_12_390	1	-1.6670	1.077	0.074	0.074	3.03	0.0890	0.703	1.756	-1.054	0.13	-0.00400	0.00300	-1.07	0.347	10.238
					10/15/2013 12:31	0917-173_No	13_10_15_1231_13_200	1	0.041	1.115	-0.08300	0.069	3.02	0.0880	0.489	1.759	-1.149	0.13	-0.00500	0.00300	-0.46	0.343	10.159
					10/15/2013 12:32	0917-173_No	13_10_15_1232_13_940	1	-0.663	1.064	0.028	0.069	2.89	0.0850	0.493	1.755	-1.220	0.13	-0.01000	0.00300	-0.46	0.342	10.509
					10/15/2013 12:33	0917-173_No	13_10_15_1233_14_750	1	3.2480	1.247	-0.0070	0.068	2.95	0.0860	0.509	1.743	-1.156	0.13	-0.00300	0.00300	-0.47	0.368	10.805
					10/15/2013 12:34	0917-173_No	13_10_15_1234_15_450	1	-0.368	1.043	0.081	0.070	2.94	0.0890	0.554	1.754	-1.023	0.13	-0.00600	0.00300	-0.62	0.340	10.871
					10/15/2013 12:35	0917-173_No	13_10_15_1235_16_170	1	0.534	1.205	-0.087	0.069	3.03	0.0880	0.617	1.779	-1.414	0.13	-0.00700	0.00300	-0.04	0.352	11.812
					10/15/2013 12:36	0917-173_No	13_10_15_1236_16_880	1	0.3180	1.147	0.028	0.069	3.02	0.0900	0.583	1.774	-1.145	0.133	-0.00500	0.00300	-0.20	0.349	11.498
					10/15/2013 12:37	0917-173_No	13_10_15_1237_17_630	1	1.020	1.050	0.034	0.070	2.97	0.0880	0.609	1.776	-1.083	0.132	-0.00300	0.00300	-0.68	0.347	11.877
					10/15/2013 12:38	0917-173_No	13_10_15_1238_18_480	1	0.6380	1.124	0.075	0.068	3.00	0.0880	0.601	1.762	-1.164	0.130	-0.00600	0.00300	-0.46	0.354	11.565
					10/15/2013 12:39	0917-173_No	13_10_15_1239_19_230	1	0.432	1.154	-0.0660	0.070	2.88	0.0890	0.549	1.776	-1.112	0.130	-0.00500	0.00300	-0.52	0.353	11.24
			Stop		10/15/2013 12:40	0917-173_No	13_10_15_1240_19_910	1	0.899	1.146	0.0710	0.071	2.92	0.0900	0.505	1.778	-1.068	0.137	-0.00500	0.00300	-0.83	0.363	10.928
					10/15/2013 12:41	0917-173_No	13_10_15_1241_20_701	1	-0.063	1.177	0.053	0.068	2.42	0.0790	0.663	1.697	-0.820	0.123	-0.00100	0.00300	-0.67	0.361	9.043
					10/15/2013 12:48	0917-173_No	13_10_15_1248_06_391	1	0.56	1.133	0.1480	0.138	3.45	0.093	0.337	1.703	-2.52	0.502	-0.0020	0.00400	-1.9	0.39	77.317
					10/15/2013 12:49	0917-173_No	13_10_15_1249_07_101	1	-0.564	1.199	0.1330	0.147	3.75	0.099	0.367	1.705	-2.62	0.569	-0.0040	0.00400	-2.7	0.42	89.342
					10/15/2013 12:50	0917-173_No	13_10_15_1250_07_921	1	-2.21	1.138	0.204	0.153	3.74	0.101	0.107	1.703	-2.55	0.585	-0.0040	0.00500	-2.8	0.42	90.852
					10/15/2013 12:51	0917-173_No	13_10_15_1251_08_741	1	-1.54	1.196	0.137	0.152	3.74	0.100	0.279	1.666	-2.82	0.586	-0.0030	0.00400	-2.6	0.42	91.395
					10/15/2013 12:52	0917-173_No	13_10_15_1252_09_461	1	-0.46	1.203	0.029	0.153	3.71	0.102	0.356	1.669	-2.65	0.581	-0.0020	0.00400	-2.7	0.43	90.572
					10/15/2013 12:53	0917-173_No	13_10_15_1253_10_282	1	1.737	1.113	0.019	0.110	2.35	0.086	0.205	1.602	-1.79	0.388	-0.0030	0.00300	-2.2	0.368	53.559

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 12:54	0917-173_No	13_10_15_1254_11_012	1	-1.412	1.042	0.072	0.066	0.240	0.0630	0.5040	1.352	-0.334	0.109	-0.00200	0.00200	-0.45	0.335	5.084
					10/15/2013 12:55	0917-173_No	13_10_15_1255_11_762	1	1.010	1.081	0.090	0.062	0.0910	0.0610	0.4910	1.313	-0.123	0.102	-0.00800	0.00300	-0.7160	0.335	1.987
					10/15/2013 13:11	0917-173_No	13_10_15_1311_08_205	1	1.0	1.4	-0.376	0.087	-0.42	1.57	-0.0930	0.1070	-0.116	0.137	0.066	0.633	0.1350	0.446	-1.974
					10/15/2013 13:11	0917-173_No	13_10_15_1311_26_705	1	-1.3	1.5	0.01800	0.085	-0.36	1.61	0.116	0.1100	0.110	0.139	0.058	0.647	-0.389	0.450	-2.018
					10/15/2013 13:11	0917-173_No	13_10_15_1311_45_395	1	-1.1	1.6	-0.138	0.088	-0.44	1.64	-0.186	0.1040	-0.010	0.145	0.076	0.656	0.20	0.485	-2.032
					10/15/2013 13:12	0917-173_No	13_10_15_1312_03_885	1	0.2	1.5	-0.303	0.083	-0.46	1.65	-0.0930	0.1030	0.054	0.136	0.054	0.661	-0.398	0.454	-2.068
					10/15/2013 13:12	0917-173_No	13_10_15_1312_22_355	1	-1.3	1.5	-0.205	0.086	-0.44	1.66	-0.2570	0.1080	-0.185	0.139	0.055	0.661	0.80	0.463	-2.083
					10/15/2013 13:12	0917-173_No	13_10_15_1312_41_005	1	0.8	1.5	-0.0870	0.083	-0.42	1.66	-0.1020	0.1110	-0.1620	0.135	0.073	0.661	0.151	0.448	-2.087
					10/15/2013 13:12	0917-173_No	13_10_15_1312_59_495	1	1.6	1.5	-0.0350	0.084	-0.44	1.66	-0.1050	0.1000	-0.038	0.137	0.061	0.663	-0.5180	0.457	-2.06
					10/15/2013 13:13	0917-173_No	13_10_15_1313_17_965	1	2.2	1.5	0.037	0.082	-0.49	1.66	-0.0890	0.1100	-0.051	0.135	0.067	0.659	-0.532	0.451	-2.092
					10/15/2013 13:13	0917-173_No	13_10_15_1313_36_575	1	-2.9	1.4	-0.166	0.089	-0.47	1.66	-0.1390	0.1040	0.006	0.138	0.062	0.662	0.2650	0.442	-2.097
					10/15/2013 13:13	0917-173_No	13_10_15_1313_55_075	1	4.0	1.5	0.1400	0.087	-0.50	1.66	0.148	0.1040	0.177	0.139	0.073	0.657	-1.688	0.459	-2.093
					10/15/2013 13:14	0917-173_No	13_10_15_1314_13_675	1	3.4	1.6	0.032	0.081	-0.48	1.66	-0.0300	0.1180	-0.19900	0.137	0.076	0.660	-0.056	0.454	-2.085
					10/15/2013 13:14	0917-173_No	13_10_15_1314_32_115	1	-1.0	1.5	0.232	0.086	-0.63	1.66	-0.2180	0.1100	-0.033	0.135	0.059	0.660	-0.749	0.453	-2.071
					10/15/2013 13:14	0917-173_No	13_10_15_1314_50_625	1	1.1	1.7	-0.0870	0.080	-0.59	1.66	-0.0590	0.1150	-0.301	0.136	0.063	0.660	0.08	0.467	-2.065
					10/15/2013 13:33	0917-173_No	13_10_15_1333_17_119	1	-0.073	1.133	-0.027	0.087	1.079	0.0870	0.4190	1.807	-2.625	0.232	-0.00700	0.00300	-0.41	0.370	32.764
					10/15/2013 13:34	0917-173_No	13_10_15_1334_17_799	1	1.402	1.199	-0.061	0.083	1.093	0.0880	0.4970	1.805	-2.482	0.223	-0.00600	0.00300	-0.49	0.357	32.813
					10/15/2013 13:35	0917-173_No	13_10_15_1335_18_609	1	0.258	1.225	-0.027	0.078	1.061	0.0880	0.5060	1.790	-2.461	0.228	-0.00200	0.00300	-0.85	0.349	32.367
					10/15/2013 13:36	0917-173_No	13_10_15_1336_19_359	1	1.896	1.202	0.015	0.082	1.063	0.0900	0.396	1.780	-2.658	0.240	-0.00900	0.00300	-0.64	0.366	34.447
					10/15/2013 13:37	0917-173_No	13_10_15_1337_20_129	1	-0.351	1.213	-0.090	0.084	1.008	0.0880	0.421	1.784	-2.739	0.241	-0.00100	0.00300	-0.35	0.361	34.468
					10/15/2013 13:38	0917-173_No	13_10_15_1338_20_929	1	-0.073	1.127	-0.340	0.096	0.359	0.0490	0.3410	0.798	-3.704	0.194	0.00	0.00200	-1.45	0.403	19.232
					10/15/2013 13:39	0917-173_No	13_10_15_1339_21_689	1	-0.267	1.018	-0.571	0.111	-0.0510	0.0480	-0.065	0.1530	-4.44	0.193	-0.01	0.00200	-1.82	0.433	12.66
					10/15/2013 13:40	0917-173_No	13_10_15_1340_22_460	1	0.074	1.005	-0.677	0.107	-0.0850	0.0470	0.0300	0.1070	-4.40	0.190	-0.00800	0.00200	-1.98	0.442	12.318
					10/15/2013 13:41	0917-173_No	13_10_15_1341_23_230	1	-0.246	1.044	-0.681	0.117	-0.0790	0.0470	0.0580	0.1000	-4.43	0.197	-0.00500	0.00200	-1.60	0.461	12.232
					10/15/2013 13:42	0917-173_No	13_10_15_1342_23_980	1	-0.551	1.005	-0.6210	0.113	-0.0770	0.0460	-0.114	0.0970	-4.48	0.194	-0.00500	0.00200	-0.75	0.446	12.159
					10/15/2013 13:43	0917-173_No	13_10_15_1343_24_780	1	0.028	1.008	-0.525	0.109	-0.0270	0.0450	0.0550	0.1260	-4.39	0.186	0.00000	0.00200	-0.96	0.432	12.61
					10/15/2013 13:44	0917-173_No	13_10_15_1344_25_530	1	2.347	1.110	-0.130	0.080	0.821	0.0730	0.459	1.574	-2.897	0.212	-0.00900	0.00300	-1.17	0.340	29.361
					10/15/2013 13:45	0917-173_No	13_10_15_1345_26_340	1	0.952	1.212	-0.026	0.085	1.008	0.0870	0.6090	1.793	-2.80	0.247	-0.00700	0.00300	-0.39	0.394	35.27
					10/15/2013 13:46	0917-173_No	13_10_15_1346_27_110	1	-0.611	1.178	-0.035	0.083	0.960	0.0860	0.5510	1.771	-2.75	0.251	-0.00300	0.00300	-0.71	0.354	36.785
					10/15/2013 13:47	0917-173_No	13_10_15_1347_27_820	1	1.486	1.181	0.017	0.082	1.052	0.0870	0.47400	1.779	-2.883	0.250	-0.00400	0.00400	-0.64	0.361	37.235
Data	Run	13	Start	A	10/15/2013 13:48	0917-173_No	13_10_15_1348_28_550	1	2.761	1.175	-0.064	0.089	1.032	0.0880	0.4600	1.773	-2.86	0.270	-0.00500	0.00300	-1.02	0.365	39.436
					10/15/2013 13:49	0917-173_No	13_10_15_1349_29_260	1	2.384	1.297	-0.066	0.091	1.064	0.0900	0.58500	1.775	-3.247	0.278	-0.00100	0.00300	-0.24	0.402	41.066
					10/15/2013 13:50	0917-173_No	13_10_15_1350_30_070	1	1.522	1.182	-0.038	0.088	1.137	0.0900	0.47	1.791	-2.900	0.263	-0.00900	0.00300	-0.36	0.360	38.873
					10/15/2013 13:51	0917-173_No	13_10_15_1351_30_870	1	0.921	1.199	0.017	0.088	1.132	0.0890	0.4100	1.780	-2.79	0.263	0.00000	0.00300	-1.35	0.381	38.249
					10/15/2013 13:52	0917-173_No	13_10_15_1352_31_591	1	0.202	1.254	0.010	0.090	1.115	0.0880	0.4830	1.781	-3.130	0.274	-0.00400	0.00300	-0.55	0.383	39.411
					10/15/2013 13:53	0917-173_No	13_10_15_1353_32_351	1	1.833	1.219	0.024	0.089	1.130	0.0890	0.5550	1.786	-3.265	0.276	-0.00800	0.00300	-0.51	0.377	40.529
					10/15/2013 13:54	0917-173_No	13_10_15_1354_33_161	1	0.796	1.254	0.074	0.090	1.159	0.0880	0.4050	1.788	-3.05	0.277	-0.00300	0.00300	-0.97	0.367	39.923
					10/15/2013 13:55	0917-173_No	13_10_15_1355_33_891	1	-1.421	1.193	-0.006	0.087	1.119	0.0910	0.40000	1.781	-3.005	0.257	-0.0100	0.00400	-0.22	0.377	37.687
					10/15/2013 13:56	0917-173_No	13_10_15_1356_34_631	1	0.700	1.177	-0.073	0.084	1.151	0.0850	0.271	1.777	-2.88	0.256	-0.00900	0.00300	-1.27	0.361	36.952
					10/15/2013 13:57	0917-173_No	13_10_15_1357_35_441	1	1.542	1.123	-0.154	0.084	1.085	0.0870	0.4740	1.768	-2.644	0.244	-0.00500	0.00300	-0.59	0.367	35.464
					10/15/2013 13:58	0917-173_No	13_10_15_1358_36_181	1	-1.121	1.191	-0.059	0.082	1.019	0.0860	0.5600	1.764	-2.705	0.235	-0.00700	0.00400	-0.26	0.370	34.498
					10/15/2013 13:59	0917-173_No	13_10_15_1359_36_931	1	0.902	1.256	0.059	0.084	0.971	0.0860	0.701	1.779	-2.761	0.246	-0.00500	0.00300	-0.55	0.380	34.161
					10/15/2013 14:00	0917-173_No	13_10_15_1400_37_771	1	-1.409	1.100	-0.10200	0.080	1.105	0.0870	0.601	1.764	-2.554	0.232	-0.00300	0.00300	-1.17	0.345	34.17
					10/15/2013 14:01	0917-173_No	13_10_15_1401_38_521	1	0.2830	1.316	0.120	0.079	1.061	0.0890	0.5690	1.777	-2.675	0.240	-0.00200	0.00300	-1.31	0.388	34.892
					10/15/2013 14:02	0917-173_No	13_10_15_1402_39_241	1	2.138	1.169	-0.039	0.085	1.144	0.0860	0.51000	1.790	-2.70	0.246	-0.00200	0.00300	-0.87	0.373	35.757
					10/15/2013 14:03	0917-173_No	13_10_15_1403_40_061	1	0.223	1.247	-0.020	0.079	1.114	0.0890	0.5740	1.774	-2.639	0.243	-0.00500	0.00400	-0.74	0.376	35.444
					10/15/2013 14:04	0917-173_No	13_10_15_1404_40_782	1	3.227	1.205	0.051	0.089	0.960	0.0880	0.4480	1.764	-2.741	0.251	-0.00100	0.00300	-0.94	0.383	35.675
					10/15/2013 14:05	0917-173_No	13_10_15_1405_41_592	1	0.845	1.243	-0.079	0.084	1.035	0.0880	0.5720	1.765	-2.701	0.240	-0.01000	0.00300	-0.32	0.384	35.237
					10/15/2013 14:06	0917-173_No	13_10_15_1406_42_382	1	0.760	1.185	0.106	0.080	0.964	0.0870	0.5480	1.754	-2.69	0.239	-0.00500	0.00300	-0.57	0.366	34.49
					10/15/2013 14:07	0917-173_No	13_10_15_1407_43_092	1	0.466	1.236	0.008	0.087	1.028	0.0850	0.4040	1.757	-2.739	0.248	-0.00500	0.00300	-0.14	0.392	35.459
					10/15/2013 14:08	0917-173_No	13_10_15_1408_43_852	1	2.009	1.140	-0.054	0.086	0.992	0.0850	0.5090	1.758	-2.57	0.229	-0.00500	0.00300	-0.48	0.360	32.705
					10/15/2013 14:09	0917-173_No	13_10_15_1409_44_632	1	3.785	1.213	-0.084	0.085	0.901	0.0860	0.5780	1.765	-2.324	0.227	-0.00100	0.00300	-0.62	0.371	31.716
					10/15/2013 14:10	0917-173_No	13_10_15_1410_45_332	1	-0.879	1.219	0.077	0.084	1.041	0.0870	0.4330	1.768	-2.720	0.248	-0.00300	0.00300	-0.26	0.381	36.079
					10/15/2013 14:11	0917-173_No	13_10_15_1411_46_132	1	1.196	1.166	-0.0500	0.090	1.129	0.0890	0.53200	1.768	-2.926	0.262	-0.00400	0.00300	-0.76	0.362	38.123
					10/15/2013 14:12	0917-173_No	13_10_15_1412_46_872	1	3.009	1.157	-0.034	0.087	1.146	0.0910	0.6040	1.773	-3.01	0.261	-0.00100	0.00300	-0.64	0.367	37.895
					10/15/2013 14:13	0917-173_No	13_10_15_1413_47_622	1	-0.941	1.179	-0.0710	0.090	1.080	0.0890	0.383	1.776	-3.216	0.271	-0.00300	0.00300	-0.47	0.367	39.501
					10/15/2013 14:14	0917-173_No	13_10_15_1414_48_312	1	1.418	1.240	-0.048	0.087	1.141	0.0920	0.232	1.780	-3.03	0.276	-0.00700	0.00300	-0.77	0.377	40.208
					10/15/2013 14:15	0917-173_No	13_10_15_1415_48_983	1	1.175	1.220	-0.034	0.085	1.092	0.0890	0.4500	1.775	-2.936	0.259	-0.00700	0.00400	-0.28	0.371	37.178
					10/15/2013 14:16	0917-173_No	13_10_15_1416_49_783	1	-0.410	1.239	-0.001	0.081	1.018	0.0870	0.49400	1.776	-2.481	0.235	-0.01000	0.00300	-0.70	0.374	33.488
					10/15/2013 14:17	0917-173_No	13_10_15_1417_50_483	1	3.795	1.266	-0.0520	0.087	1.098	0.0860	0.4900	1.775	-3.041	0.260	-0.00900	0.00300	-0.43	0.385	38.307
					10/15/2013 14:18	0917-173_No	13_10_15_1418_51_323	1	1.187	1.204	-0.1040	0.089	0.984	0.0920	0.4940	1.762	-3.217	0.275	-0.00800	0.00300	-0.2	0.366	40.264
					10/15/2013 14:19	0917-173_No	13_10_15_1419_52_043	1	0.509	1.133	-0.065	0.090	1.057	0.0900	0.5680	1.771	-3.16	0.284	-0.00600	0.00300	-0.2	0.361	41.688
					10/15/2013 14:20	0917-173_No	13_10_15_1420_52_853	1	0.959	1.180	-0.223	0.094	1.238	0.090	0.5070	1.765	-3.658	0.317	-0.00400	0.00300	-0.1	0.372	46.738
					10/15/2013 14:21	0917-173_No	13_10_15_1421_53_513	1	1.779	1.248	-0.154	0.098	1.225	0.089	0.393	1.773	-3.787	0.315	-0.00500	0.00300	-0.4	0.368	46.213
					10/15/2013 14:22	0917-173_No	13_10_15_1422_54_273	1	0.867	1.290	-0.081	0.094	1.266	0.0890	0.4630	1.761	-3.70	0.309	-0.00400	0.00300	-0.1	0.385	45.529
					10/15/2013 14:23	0917-173_No	13_10_15_1423_55_033	1	3.842	1.195	-0.104	0.102	1.218	0.0900	0.5260	1.775	-3.63	0.323	-0.00200	0.00300	-0.8	0.365	46.567
					10/15/2013 14:24	0917-173_No	13_10_15_1424_55_843	1	3.2670	1.207	-0.1800	0.097	1.183	0.0870	0.5450	1.785	-3.44	0.310	-0.00100	0.00300	-1.3	0.376	44.894
					10/15/2013 14:25	0917-173_No	13_10_15_1425_56_593	1	1.444	1.147	-0.2060	0.092	1.161	0.0940	0.5200	1.802	-3.770	0.306	-0.00700	0.00400	-0.1	0.365	44.857
					10/15/2013 14:26	0917-173_No	13_10_15_1426_57_343	1	0.6770	1.125	-0.151	0.094	1.117	0.0910	0.4680	1.794	-3.460	0.296	-0.0100	0.00400	0.4	0.356	43.785
					10/15/2013 14:27	0917-173_No	13_10_15_1427_58_154	1	0.882	1.207	-0.044	0.089	1.166	0.0910	0.46800	1.795	-3.187	0.277	-0.00300	0.00300	0.0	0.366	40.38
					10/15/2013 14:28	0917-173_No	13_10_15_1428_58_914	1	0.084	1.217	-0.081	0.096	1.203	0.0920	0.3700	1.797	-3.33	0.292	-0.00100	0.00300	-0.2	0.374	42.266
					10/15/2013 14:29	0917-173_No	13_10_15_1429_59_664	1	1.543	1.242	-0.058	0.104	1.192	0.0900	0.401	1.803	-3.22	0.309	-0.00400	0.00300	-0.78	0.389	42.903
					10/15/2013 14:31	0917-173_No	13_10_15_1431_00_464	1	0.628	1.253	-0.081	0.091	1.205	0.0910	0.373	1.810	-3.095	0.285	-0.01200	0.00300	-0.59	0.377	41.273
					10/15/2013 14:32	0917-173_No	13_10_15_1432_01_174	1	1.601	1.255	-0.083	0.091	1.159	0.0910	0.4490	1.816	-3.386	0.289	-0.01000	0.00300	-0.17	0.383	42.227
					10/15/2013 14:33	0917-173_No	13_10_15_1433_01_914	1	0.616	1.225	-0.0900	0.095	1.187	0.0940	0.428	1.823	-3.622	0.307	-0.00500	0.00400	-0.5	0.388	45.203
					10/15/2013 14:34	0917-173_No	13_10_15_1434_02_734	1	3.520	1.290	0.012	0.097	1.188	0.0910	0.5770	1.826	-3.398	0.303	-0.00300	0.00300	-0.45	0.389	43.821
					10/15/2013 14:35	0917-173_No	13_10_15_1435_03_494	1	1.819	1.257	-0.257	0.097	1.286	0.0950	0.471	1.825	-3.593	0.311	-0.00500	0.00400	-0.5	0.389	44.754
					10/15/2013 14:36	0917-173_No	13_10_15_1436_04_204	1	0.685	1.225	-0.19300	0.098	1.198	0.0940	0.316	1.821	-3.55	0.303	-0.00400	0.00300	-0.5	0.384	43.715
					10/15/2013 14:37	0917-173_No	13_10_15_1437_05_044	1	2.509	1.315	-0.033	0.099	1.083	0.0930	0.4140	1.826	-3.11	0.296	-0.00500	0.00300	-0.5	0.393	42.098
					10/15/2013 14:38	0917-173_No	13_10_15_1438_05_754	1	1.806	1.219	-0.1980	0.094	1.209	0.0920	0.5910	1.806	-3.285	0.293	-0.00700	0.00300	-0.5	0.379	42.244
					10/15/2013 14:39	0917-173_No	13_10_15_1439_06_504	1	0.887	1.252	-0.2470	0.096	1.249	0.0930	0.5050	1.800	-3.870	0.330	-0.00500	0.00300	-0.5	0.370	48.115
					10/15/2013 14:40	0917-173_No	13_10_15_1440_07_295	1	1.495	1.237	-0.275	0.104	1.332	0.095	0.384	1.804	-4.379	0.348	-0.00400	0.00300	0.4	0.381	50.867
					10/15/2013 14:41	0917-173_No	13_10_15_1441_08_065	1	2.1400	1.306	-0.157	0.095	1.161	0.0920	0.5180	1.816	-3.130	0.287	-0.00600	0.00300	-0.43	0.384	40.536
					10/15/2013 14:42	0917-173_No	13_10_15_1442_08_775	1	1.118	1.256	-0.025	0.090	1.093	0.0900	0.6020	1.799	-2.65	0.267	-0.0070	0.00300	-1.29	0.381	36.489
					10/15/2013 14:43	0917-173_No	13_10_15_1443_09_575	1	2.278	1.256	-0.124	0.093	1.452	0.0930	0.355	1.803	-3.16	0.299	-0.0050	0.00300	-0.83	0.385	42.946
					10/15/2013 14:44	0917-173_No	13_10_15_1444_10_335	1	1.810	1.252	-0.042	0.094	1.52	0.0910	0.4770	1.789	-3.073	0.287	-0.00800	0.00300	-0.3	0.395	41.105
					10/15/2013 14:45	0917-173_No	13_10_15_1445_11_105	1	1.171	1.176	-0.077	0.095	1.55	0.0880	0.6110	1.794	-2.995	0.275	-0.00400	0.00300	-0.19	0.377	40.326
					10/15/2013 14:46	0917-173_No	13_10_15_1446_11_845	1	1.871	1.251	-0.090	0.091	1.59	0.0900	0.4960	1.778	-3.004	0.275	-0.00100	0.00300	-0.13	0.377	39.599
					10/15/2013 14:47	0917-173_No	13_10_15_1447_12_565	1	2.1520	1.230	-0.3400	0.111	1.195	0.0810	0.5550	1.524	-4.5570	0.293	-0.00800	0.00300	-1.09	0.394	38.9
			Stop		10/15/2013 14:48	0917-173_No	13_10_15_1448_13_365	1	-3.000	1.351	-1.891	0.301	-0.1960	0.0980	-0.203	0.305	-13.00	0.511	-0.01300	0.00300	-3.74	0.97	36.938
					10/15/2013 14:49	0917-173_No	13_10_15_1449_14_125	1	-2.931	1.305	-2.075	0.310	-0.2470	0.1010	-0.299	0.198	-13.68	0.527	-0.01500	0.00400	-4.39	1.03	36.514
					10/15/2013 14:50	0917-173_No	13_10_15_1450_14_835	1	-0.400	1.206	-1.4220	0.209	-0.1430	0.0710	-0.189	0.144	-8.81	0.350	-0.01100	0.00300	-2.21	0.696	23.365
					10/15/2013 14:51	0917-173_No	13_10_15_1451_15_635	1	-0.697	1.031	-0.641	0.113	-0.0840	0.0470	-0.0410	0.0920	-4.38	0.193	-0.00600	0.00200	-1.14	0.429	12.564
					10/15/2013 14:52	0917-173_No	13_10_15_1452_16_326	1	1.455	1.024	-0.692	0.113	-0.0150	0.0460	-0.118	0.0960	-4.21	0.194	-0.00800	0.00200	-1.822	0.431	12.281
					10/15/2013 14:53	0917-173_No	13_10_15_1453_17_106	1	0.889	1.049	-0.5720	0.106	0.602	0.0460	0.225	0.601	-4.353	0.227	-0.00500	0.00200	-1.18	0.396	24.571
					10/15/2013 14:54	0917-173_No	13_10_15_1454_17_846	1	1.078	1.143	-0.3140	0.111	1.66	0.092	0.456	1.752	-4.479	0.366	-0.0060	0.00400	-0.8	0.37	53.134
					10/15/2013 14:55	0917-173_No	13_10_15_1455_18_566	1	1.542	1.028	-0.211	0.089	1.065	0.0610	0.4890	1.117	-3.210	0.234	-0.00500	0.00200	-0.51	0.336	29.35
					10/15/2013 14:56	0917-173_No	13_10_15_1456_19_316	1	1.7360	1.065	-0.0910	0.058	0.1710	0.0370	0.257	0.260	-0.4730	0.101	0.00000	0.00200	0.040	0.318	5.005
					10/15/2013 14:57	0917-173_No	13_10_15_1457_20_026	1	0.7100	0.980	0.0940	0.056	0.0010	0.0330	-0.0830	0.0820	0.045	0.091	0.00400	0.00200	-0.074	0.299	0.754
					10/15/2013 14:58	0917-173_No	13_10_15_1458_20_766	1	1.819	1.054	0.0400	0.059	0.1640	0.0360	0.1720	0.218	-0.215	0.098	0.00100	0.00200	-0.636	0.315	4.465
					10/15/2013 14:59	0917-173_No	13_10_15_1459_21_486	1	2.941	1.267	-0.100	0.094	1.48	0.0830	0.6730	1.702	-3.43	0.304	-0.00600	0.00300	-0.1	0.379	43.889
					10/15/2013 15:00	0917-173_No	13_10_15_1500_22_256	1	2.753	1.209	-0.1960	0.098	1.70	0.090	0.463	1.789	-3.82	0.335	-0.0110	0.00300	-0.6	0.374	49.182
					10/15/2013 15:01	0917-173_No	13_10_15_1501_22_966	1	2.277	1.248	-0.2210	0.105	1.65	0.093	0.493	1.794	-3.840	0.340	-0.00500	0.00300	-0.1	0.399	49.884
					10/15/2013 15:02	0917-173_No	13_10_15_1502_23_686	1	2.35	1.199	-0.153	0.103	1.73	0.095	0.449	1.785	-3.84	0.336	0.00000	0.00300	-0.4	0.383	48.992
					10/15/2013 15:03	0917-173_No	13_10_15_1503_24_507	1	1.148	1.249	-0.110	0.100	1.64	0.092	0.533	1.779	-3.47	0.328	-0.00500	0.00400	-0.5	0.366	47.602
					10/15/2013 15:04	0917-173_No	13_10_15_1504_25_227	1	1.658	1.281	0.049	0.098	1.61	0.0890	0.347	1.791	-3.10	0.310	-0.00800	0.00400	-0.6	0.383	44.895
					10/15/2013 15:05	0917-173_No	13_10_15_1505_25_977	1	2.072	1.171	-0.001	0.095	1.80	0.0910	0.534	1.786	-2.70	0.298	-0.0030	0.00400	-1.14	0.368	42.681
					10/15/2013 15:06	0917-173_No	13_10_15_1506_26_777	1	3.601	1.175	0.009	0.088	1.62	0.0900	0.6220	1.792	-2.34	0.272	-0.00100	0.00300	-0.79	0.376	39.102
					10/15/2013 15:07	0917-173_No	13_10_15_1507_27_487	1	1.555	1.198	-0.070	0.090	1.67	0.0940	0.341	1.798	-2.63	0.286	-0.00600	0.00300	-0.66	0.362	41.459
					10/15/2013 15:08	0917-173_No	13_10_15_1508_28_247	1	2.239	1.193	-0.101	0.096	1.73	0.0900	0.341	1.800	-2.97	0.308	-0.00600	0.00400	-0.6	0.361	45.108
					10/15/2013 15:09	0917-173_No	13_10_15_1509_29_047	1	-0.571	1.199	-0.1670	0.098	1.66	0.0880	0.466	1.783	-2.746	0.291	-0.00500	0.00300	-1.12	0.387	40.895
					10/15/2013 15:10	0917-173_No	13_10_15_1510_29_767	1	3.679	1.227	-0.050	0.090	1.52	0.0910	0.233	1.795	-2.54	0.260	-0.00300	0.00300	-0.52	0.388	36.984
					10/15/2013 15:11	0917-173_No	13_10_15_1511_30_507	1	0.287	1.163	-0.119	0.094	1.63	0.0900	0.368	1.805	-2.751	0.278	-0.0060	0.00300	-0.40	0.366	40.307
					10/15/2013 15:12	0917-173_No	13_10_15_1512_31_257	1	1.586	1.195	-0.133	0.085	1.51	0.0890	0.4530	1.805	-2.69	0.266	-0.00400	0.00300	-0.41	0.370	39.173
					10/15/2013 15:13	0917-173_No	13_10_15_1513_32_067	1	2.823	1.138	0.145	0.088	1.42	0.0910	0.5690	1.805	-2.41	0.273	-0.00400	0.00300	-0.82	0.345	38.629
					10/15/2013 15:14	0917-173_No	13_10_15_1514_32_827	1	1.540	1.289	-0.081	0.094	1.42	0.0890	0.3660	1.809	-2.50	0.274	-0.00400	0.00300	-0.90	0.389	38.115
					10/15/2013 15:15	0917-173_No	13_10_15_1515_33_558	1	1.690	1.131	-0.089	0.094	1.57	0.0920	0.430	1.822	-2.77	0.286	-0.00400	0.00300	-0.54	0.376	42.125
					10/15/2013 15:16	0917-173_No	13_10_15_1516_34_268	1	1.143	1.244	-0.099	0.093	1.55	0.0910	0.409	1.829	-2.83	0.297	-0.0110	0.00300	-0.5	0.371	43.474
					10/15/2013 15:17	0917-173_No	13_10_15_1517_35_018	1	1.416	1.342	-0.140	0.094	1.71	0.0940	0.360	1.830	-2.84	0.309	-0.00600	0.00300	-1.0	0.391	45.124
					10/15/2013 15:18	0917-173_No	13_10_15_1518_35_828	1	2.372	1.191	-0.133	0.101	1.74	0.0930	0.344	1.804	-3.04	0.312	-0.0110	0.00300	-0.6	0.376	45.864
					10/15/2013 15:19	0917-173_No	13_10_15_1519_36_558	1	1.945	1.230	-0.045	0.101	1.68	0.091	0.291	1.801	-3.28	0.323	-0.0100	0.00300	-0.4	0.370	47.447
					10/15/2013 15:20	0917-173_No	13_10_15_1520_37_258	1	1.824	1.204	-0.17700	0.101	1.63	0.092	0.304	1.791	-3.55	0.331	-0.00100	0.00300	-0.5	0.365	48.071
					10/15/2013 15:21	0917-173_No	13_10_15_1521_38_078	1	0.269	1.247	-0.159	0.097	1.62	0.0930	0.391	1.776	-3.01	0.301	-0.00700	0.00300	-0.1	0.383	44.427
					10/15/2013 15:22	0917-173_No	13_10_15_1522_38_848	1	3.309	1.200	-0.120	0.091	1.55	0.0900	0.5870	1.772	-2.49	0.281	-0.00800	0.00400	-0.35	0.369	40.963
					10/15/2013 15:23	0917-173_No	13_10_15_1523_39_558	1	2.257	1.177	-0.105	0.088	1.62	0.0880	0.350	1.772	-2.69	0.271	0.00000	0.00400	-0.4	0.367	40.709
					10/15/2013 15:24	0917-173_No	13_10_15_1524_40_308	1	-1.377	1.398	-0.131	0.093	1.61	0.0880	0.436	1.777	-2.68	0.293	-0.00800	0.00300	-0.27	0.405	41.929
					10/15/2013 15:25	0917-173_No	13_10_15_1525_41_068	1	1.779	1.266	-0.088	0.095	1.64	0.0920	0.440	1.781	-3.02	0.309	-0.00900	0.00300	-0.6	0.379	44.99
					10/15/2013 15:26	0917-173_No	13_10_15_1526_41_828	1	4.6670	1.262	-0.1760	0.097	1.70	0.0920	0.464	1.793	-2.76	0.298	-0.00800	0.00300	-0.3	0.388	44.136
					10/15/2013 15:27	0917-173_No	13_10_15_1527_42_579	1	2.270	1.223	0.060	0.093	1.60	0.0940	0.467	1.799	-2.65	0.291	-0.00500	0.00400	-0.4	0.393	42.029
					10/15/2013 15:28	0917-173_No	13_10_15_1528_43_389	1	1.658	1.214	-0.0690	0.095	1.55	0.0890	0.258	1.791	-2.78	0.294	-0.0060	0.00300	-0.70	0.388	42.076
					10/15/2013 15:29	0917-173_No	13_10_15_1529_44_109	1	4.227	1.246	-0.043	0.092	1.57	0.0890	0.425	1.789	-2.70	0.276	-0.00700	0.00300	-0.50	0.386	40.089
					10/15/2013 15:30	0917-173_No	13_10_15_1530_44_859	1	1.65	1.107	-0.026	0.094	1.50	0.0870	0.367	1.778	-2.64	0.266	-0.0090	0.00300	-0.85	0.368	39.014
					10/15/2013 15:31	0917-173_No	13_10_15_1531_45_589	1	1.784	1.192	-0.093	0.093	1.61	0.0880	0.493	1.776	-2.74	0.288	-0.00400	0.00400	-1.19	0.371	41.851
					10/15/2013 15:32	0917-173_No	13_10_15_1532_46_389	1	0.118	1.185	-0.076	0.091	1.52	0.0890	0.5250	1.774	-2.79	0.289	-0.00700	0.00300	-0.49	0.369	42.261
					10/15/2013 15:33	0917-173_No	13_10_15_1533_47_159	1	1.73	1.187	-0.154	0.100	1.52	0.0890	0.456	1.783	-3.17	0.308	-0.00600	0.00400	-0.6	0.372	45.165
					10/15/2013 15:34	0917-173_No	13_10_15_1534_47_909	1	0.647	1.172	-0.069	0.102	1.65	0.093	0.414	1.774	-3.35	0.330	-0.00700	0.00300	-1.1	0.360	48.609
					10/15/2013 15:35	0917-173_No	13_10_15_1535_48_669	1	2.691	1.322	-0.1350	0.094	1.68	0.0920	0.509	1.792	-3.17	0.315	-0.00800	0.00300	-0.99	0.389	46.025
					10/15/2013 15:36	0917-173_No	13_10_15_1536_49_389	1	1.574	1.248	-0.280	0.099	1.61	0.0910	0.428	1.799	-3.04	0.306	-0.00800	0.00400	-0.3	0.386	44.438
					10/15/2013 15:37	0917-173_No	13_10_15_1537_50_209	1	1.782	1.300	-0.073	0.092	1.58	0.0910	0.295	1.802	-2.96	0.306	-0.00600	0.00300	-0.91	0.378	44.069
					10/15/2013 15:38	0917-173_No	13_10_15_1538_50_819	1	3.417	1.269	-0.0270	0.094	1.58	0.0900	0.560	1.794	-2.92	0.300	-0.00500	0.00400	-0.83	0.391	43.555
					10/15/2013 15:39	0917-173_No	13_10_15_1539_51_530	1	1.066	1.242	0.0310	0.091	1.49	0.0920	0.314	1.807	-2.40	0.275	-0.00500	0.00300	-0.73	0.389	39.548
					10/15/2013 15:40	0917-173_No	13_10_15_1540_52_350	1	0.84	1.309	-0.0940	0.089	1.44	0.0880	0.4780	1.792	-2.18	0.254	-0.00900	0.00300	-0.56	0.396	35.626
					10/15/2013 15:41	0917-173_No	13_10_15_1541_53_060	1	0.751	1.292	-0.139	0.086	1.48	0.0890	0.379	1.791	-2.14	0.255	-0.00800	0.00300	-1.30	0.388	35.785
					10/15/2013 15:42	0917-173_No	13_10_15_1542_53_840	1	3.19	1.306	-0.022	0.088	1.53	0.0890	0.5670	1.796	-2.02	0.256	-0.00600	0.00300	-0.89	0.397	36.75
					10/15/2013 15:43	0917-173_No	13_10_15_1543_54_630	1	0.5650	1.228	0.039	0.082	1.44	0.0890	0.511	1.788	-1.92	0.245	-0.00700	0.00300	-1.24	0.367	36.2
					10/15/2013 15:44	0917-173_No	13_10_15_1544_55_400	1	2.414	1.257	0.021	0.086	1.41	0.0850	0.542	1.783	-1.87	0.246	-0.00500	0.00300	-0.87	0.369	34.987
					10/15/2013 15:45	0917-173_No	13_10_15_1545_56_160	1	1.5210	1.142	-0.053	0.061	0.509	0.0690	0.4770	1.499	-0.578	0.128	-0.00700	0.00300	-0.64	0.344	13.327
					10/15/2013 15:46	0917-173_No	13_10_15_1546_56_880	1	4.2090	1.107	-0.024	0.063	-0.0130	0.0580	0.5750	1.306	-0.007	0.105	-0.00200	0.00200	-0.1580	0.350	1.443
					10/15/2013 15:47	0917-173_No	13_10_15_1547_57_600	1	0.511	1.142	-0.0580	0.075	0.710	0.0700	0.684	1.582	-1.809	0.185	-0.00300	0.00300	-0.35	0.364	23.807

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 15:48	0917-173_No	13_10_15_1548_58_420	1	3.8450	1.215	0.110	0.084	0.963	0.0760	0.371	1.684	-2.48	0.251	-0.00600	0.00300	-0.89	0.360	35.829
					10/15/2013 15:49	0917-173_No	13_10_15_1549_59_170	1	1.000	1.200	-0.039	0.087	1.004	0.0780	0.554	1.676	-2.39	0.249	-0.00200	0.00300	-0.61	0.371	36.616
					10/15/2013 15:50	0917-173_No	13_10_15_1550_59_920	1	3.171	1.212	-0.032	0.081	1.029	0.0780	0.672	1.667	-2.575	0.246	-0.00400	0.00300	-0.22	0.365	36.296
					10/15/2013 15:52	0917-173_No	13_10_15_1552_00_631	1	2.254	1.153	-0.019	0.085	0.968	0.0790	0.498	1.651	-2.44	0.245	-0.00400	0.00300	-0.73	0.369	35.071
					10/15/2013 15:53	0917-173_No	13_10_15_1553_01_401	1	3.31	1.174	-0.011	0.063	0.1060	0.0630	0.463	1.349	-0.359	0.108	-0.00600	0.00300	-0.606	0.360	6.097
					10/15/2013 15:54	0917-173_No	13_10_15_1554_02_221	1	0.771	1.099	0.032	0.061	-0.0380	0.0570	0.470	1.299	-0.1760	0.099	-0.00300	0.00200	0.527	0.332	0.938
					10/15/2013 15:55	0917-173_No	13_10_15_1555_02_931	1	4.075	1.082	0.044	0.062	-0.0150	0.0600	0.5990	1.294	-0.002	0.101	-0.00100	0.00200	0.124	0.334	0.687
					10/15/2013 15:56	0917-173_No	13_10_15_1556_03_701	1	1.639	1.189	0.042	0.064	-0.0170	0.0590	0.6800	1.295	-0.181	0.107	-0.00500	0.00300	-0.736	0.357	0.602
					10/15/2013 15:57	0917-173_No	13_10_15_1557_04_531	1	1.600	1.129	0.047	0.0580	-0.0600	0.0590	0.7290	1.288	0.113	0.099	-0.00700	0.00200	-0.528	0.335	0.551
					10/15/2013 15:58	0917-173_No	13_10_15_1558_05_231	1	1.985	1.173	-0.002	0.063	0.0420	0.0580	0.6560	1.305	-0.057	0.107	-0.00600	0.00200	-0.427	0.351	0.524
					10/15/2013 15:59	0917-173_No	13_10_15_1559_06_001	1	2.4460	1.135	0.152	0.063	-0.0230	0.0590	0.6220	1.302	-0.118	0.105	-0.00200	0.00200	-0.368	0.353	0.542
					10/15/2013 16:00	0917-173_No	13_10_15_1600_06_721	1	0.826	1.120	0.008	0.061	-0.086	0.0580	0.538	1.320	-0.065	0.101	-0.00500	0.00200	-0.080	0.345	0.601
					10/15/2013 16:01	0917-173_No	13_10_15_1601_07_521	1	1.914	1.128	0.012	0.062	-0.096	0.0590	0.5980	1.302	-0.017	0.103	0.00	0.00300	-0.401	0.344	0.574
					10/15/2013 16:02	0917-173_No	13_10_15_1602_08_231	1	0.492	1.108	-0.080	0.062	0.03	0.0550	0.6800	1.302	0.001	0.103	-0.00300	0.00300	-0.74	0.338	0.52
					10/15/2013 16:03	0917-173_No	13_10_15_1603_08_982	1	3.508	1.182	0.040	0.059	-0.067	0.0600	0.555	1.303	-0.021	0.101	-0.01	0.00200	-0.99	0.339	0.454
					10/15/2013 16:04	0917-173_No	13_10_15_1604_09_802	1	1.4030	1.127	0.051	0.063	0.0410	0.0570	0.6580	1.301	-0.095	0.103	0.00	0.00200	-0.069	0.345	0.376
					10/15/2013 16:05	0917-173_No	13_10_15_1605_10_512	1	3.195	1.160	0.028	0.062	0.0020	0.0580	0.456	1.301	-0.028	0.103	-0.00200	0.00200	-0.863	0.348	0.649
					10/15/2013 16:06	0917-173_No	13_10_15_1606_11_262	1	2.0650	1.192	0.026	0.061	-0.036	0.0600	0.476	1.309	-0.030	0.103	-0.00400	0.00200	-0.208	0.359	0.87
					10/15/2013 16:07	0917-173_No	13_10_15_1607_12_092	1	2.563	1.119	0.084	0.062	-0.052	0.0590	0.540	1.293	-0.033	0.103	0.00	0.00300	-0.03	0.346	0.369
					10/15/2013 16:08	0917-173_No	13_10_15_1608_12_842	1	1.925	1.169	0.044	0.062	-0.053	0.0580	0.6720	1.302	-0.006	0.104	-0.00600	0.00200	0.037	0.358	0.419
					10/15/2013 16:09	0917-173_No	13_10_15_1609_13_572	1	1.8750	1.223	0.069	0.064	-0.052	0.0570	0.522	1.310	0.049	0.107	-0.01	0.00300	-0.151	0.363	0.451
					10/15/2013 16:10	0917-173_No	13_10_15_1610_14_332	1	4.115	1.013	0.170	0.061	-0.0520	0.0560	0.7130	1.305	-0.020	0.099	-0.01	0.00200	-0.503	0.331	0.441
					10/15/2013 16:11	0917-173_No	13_10_15_1611_15_062	1	3.673	1.094	0.056	0.061	-0.0170	0.0570	0.616	1.304	-0.050	0.100	0.00	0.00200	-0.436	0.332	0.457
					10/15/2013 16:12	0917-173_No	13_10_15_1612_15_872	1	2.119	1.186	0.045	0.065	-0.060	0.0590	0.7140	1.305	-0.0300	0.109	-0.00300	0.00300	0.2290	0.366	0.659
					10/15/2013 16:13	0917-173_No	13_10_15_1613_16_622	1	1.8590	1.247	-0.020	0.064	-0.0380	0.0580	0.593	1.313	0.131	0.107	0.00	0.00200	-0.443	0.364	0.84
					10/15/2013 16:14	0917-173_No	13_10_15_1614_17_342	1	4.330	1.092	-0.008	0.062	-0.0220	0.0610	0.673	1.324	0.024	0.101	-0.00100	0.00300	-0.6750	0.339	1.132
					10/15/2013 16:27	0917-173_No	13_10_15_1627_19_744	1	-1.2	1.5	0.143	0.090	-0.44	1.46	-0.213	0.1020	0.074	0.143	0.056	0.598	0.193	0.449	-1.839
					10/15/2013 16:27	0917-173_No	13_10_15_1627_38_254	1	1.3	1.5	-0.038	0.082	-0.43	1.57	0.073	0.1130	-0.028	0.135	0.056	0.630	-0.76	0.454	-1.959
					10/15/2013 16:27	0917-173_No	13_10_15_1627_56_754	1	-3.2	1.5	0.0210	0.083	-0.44	1.61	0.0080	0.1010	-0.036	0.135	0.057	0.647	-0.886	0.442	-2.03
					10/15/2013 16:28	0917-173_No	13_10_15_1628_15_384	1	-0.5	1.5	-0.0010	0.085	-0.60	1.63	-0.04400	0.1040	-0.055	0.135	0.054	0.655	-0.338	0.444	-2.007
					10/15/2013 16:28	0917-173_No	13_10_15_1628_33_854	1	-2.6	1.5	0.028	0.080	-0.44	1.65	-0.02700	0.0970	0.12600	0.134	0.062	0.659	-0.727	0.439	-2.072
					10/15/2013 16:28	0917-173_No	13_10_15_1628_52_344	1	-0.4	1.4	0.0470	0.083	-0.35	1.66	0.283	0.1070	-0.1500	0.131	0.060	0.656	-0.321	0.433	-2.096
					10/15/2013 16:29	0917-173_No	13_10_15_1629_10_944	1	0.3	1.5	0.208	0.081	-0.49	1.66	-0.113	0.1000	-0.249	0.133	0.063	0.660	-0.284	0.452	-2.072
					10/15/2013 16:29	0917-173_No	13_10_15_1629_29_464	1	-3.8	1.4	-0.031	0.080	-0.47	1.66	-0.0330	0.1170	-0.170	0.129	0.062	0.658	-0.517	0.428	-2.106
					10/15/2013 16:29	0917-173_No	13_10_15_1629_48_084	1	-0.6	1.5	0.2780	0.086	-0.52	1.66	0.0690	0.1130	0.328	0.139	0.064	0.665	0.532	0.440	-2.073
					10/15/2013 16:30	0917-173_No	13_10_15_1630_06_504	1	-0.4	1.6	0.19700	0.090	-0.53	1.66	0.0870	0.0980	0.102	0.145	0.050	0.659	-0.89	0.473	-2.085
					10/15/2013 16:30	0917-173_No	13_10_15_1630_25_004	1	-1.2	1.4	0.2560	0.082	-0.48	1.66	0.092	0.1090	0.133	0.133	0.067	0.664	-1.19	0.422	-2.076
					10/15/2013 16:30	0917-173_No	13_10_15_1630_43_654	1	-1.6	1.6	0.255	0.084	-0.42	1.66	-0.001	0.1090	0.266	0.141	0.054	0.660	-1.08	0.474	-2.101
					10/15/2013 16:31	0917-173_No	13_10_15_1631_02_124	1	-1.6	1.5	-0.02200	0.083	-0.55	1.66	-0.02000	0.1090	0.204	0.137	0.054	0.659	-0.443	0.448	-2.111
					10/15/2013 16:31	0917-173_No	13_10_15_1631_20_734	1	-3.7	1.4	-0.117	0.088	-0.45	1.66	-0.105	0.1000	-0.184	0.137	0.056	0.659	-0.0280	0.450	-2.082
					10/15/2013 16:31	0917-173_No	13_10_15_1631_39_234	1	-1.6	1.4	0.012	0.087	-0.54	1.66	-0.220	0.0990	0.2500	0.138	0.043	0.659	-0.44	0.448	-2.097
					10/15/2013 16:31	0917-173_No	13_10_15_1631_57_744	1	-4.1	1.5	0.032	0.086	-0.49	1.65	-0.033	0.1050	-0.174	0.140	0.051	0.663	0.3120	0.456	-2.085
					10/15/2013 17:05	0917-173_No	13_10_15_1705_46_267	1	-3.01	1.626	0.826	0.203	4.39	0.163	-0.280	2.21	-2.56	0.74	-0.0110	0.00500	-4.2	0.60	106.945
					10/15/2013 17:06	0917-173_No	13_10_15_1706_46_977	1	-2.40	1.576	0.861	0.205	4.36	0.162	-0.12	2.22	-2.34	0.75	-0.0060	0.00500	-4.3	0.59	109.648
					10/15/2013 17:07	0917-173_No	13_10_15_1707_47_767	1	-3.58	1.550	0.960	0.201	4.28	0.165	-0.14	2.22	-2.37	0.75	-0.0070	0.00600	-4.1	0.61	109.27
					10/15/2013 17:08	0917-173_No	13_10_15_1708_48_517	1	-3.28	1.705	0.798	0.203	4.39	0.167	-0.126	2.22	-2.49	0.76	-0.0110	0.00600	-4.1	0.61	111.3
					10/15/2013 17:09	0917-173_No	13_10_15_1709_49_367	1	-3.15	1.604	0.849	0.206	4.34	0.167	-0.12	2.23	-2.52	0.77	-0.0050	0.00600	-4.1	0.62	111.992
					10/15/2013 17:10	0917-173_No	13_10_15_1710_50_057	1	-2.49	1.559	0.753	0.215	4.41	0.170	-0.255	2.24	-2.77	0.81	-0.0050	0.00600	-4.2	0.62	116.813
					10/15/2013 17:11	0917-173_No	13_10_15_1711_50_897	1	-2.52	1.559	0.816	0.212	4.31	0.171	-0.351	2.22	-2.74	0.81	-0.0130	0.00600	-4.8	0.60	117.907
					10/15/2013 17:12	0917-173_No	13_10_15_1712_51_607	1	-2.73	1.654	0.767	0.218	4.19	0.168	-0.408	2.22	-2.57	0.83	-0.0100	0.00600	-4.7	0.64	119.528
					10/15/2013 17:13	0917-173_No	13_10_15_1713_52_367	1	-2.88	1.614	0.817	0.218	4.15	0.171	-0.578	2.22	-2.30	0.82	-0.0060	0.00500	-4.5	0.63	119.785
					10/15/2013 17:14	0917-173_No	13_10_15_1714_53_138	1	-1.50	1.508	0.847	0.218	3.98	0.168	-0.454	2.21	-2.10	0.82	-0.0060	0.00600	-5.4	0.63	119.4
					10/15/2013 17:15	0917-173_No	13_10_15_1715_53_758	1	-0.79	1.548	0.941	0.216	3.81	0.165	-0.200	2.22	-1.56	0.81	-0.0090	0.00500	-5.6	0.65	118.663
					10/15/2013 17:16	0917-173_No	13_10_15_1716_54_528	1	-2.11	1.695	1.018	0.210	3.76	0.165	-0.275	2.23	-1.21	0.80	-0.0090	0.00600	-5.6	0.64	117.083
					10/15/2013 17:17	0917-173_No	13_10_15_1717_55_258	1	-1.34	1.647	1.036	0.212	3.66	0.164	-0.405	2.21	-1.38	0.79	-0.0120	0.00600	-5.2	0.66	117.485
					10/15/2013 17:18	0917-173_No	13_10_15_1718_56_058	1	-3.77	1.655	0.928	0.209	3.62	0.163	-0.229	2.21	-1.35	0.79	-0.0040	0.00500	-6.3	0.66	116.814
					10/15/2013 17:19	0917-173_No	13_10_15_1719_56_858	1	-0.97	1.597	1.006	0.212	3.65	0.165	-0.153	2.22	-1.04	0.79	-0.0160	0.00600	-6.0	0.63	117.256
					10/15/2013 17:20	0917-173_No	13_10_15_1720_57_568	1	-2.16	1.568	0.945	0.204	3.70	0.162	-0.143	2.22	-1.34	0.76	-0.0070	0.00500	-5.4	0.64	112.508
					10/15/2013 17:21	0917-173_No	13_10_15_1721_58_318	1	-1.96	1.525	1.044	0.195	3.75	0.159	-0.063	2.22	-0.95	0.73	-0.0090	0.00500	-5.3	0.59	107.526
					10/15/2013 17:22	0917-173_No	13_10_15_1722_59_158	1	-1.60	1.598	0.874	0.202	3.63	0.159	-0.176	2.21	-1.24	0.74	-0.0010	0.00500	-5.0	0.63	109.361
					10/15/2013 17:23	0917-173_No	13_10_15_1723_59_868	1	-3.56	1.623	0.914	0.203	3.80	0.158	-0.164	2.21	-1.93	0.76	-0.0120	0.00500	-3.8	0.63	111.38
					10/15/2013 17:25	0917-173_No	13_10_15_1725_00_688	1	-2.33	1.524	0.818	0.208	3.83	0.164	-0.031	2.22	-2.14	0.77	-0.0060	0.00500	-4.1	0.62	113.325
					10/15/2013 17:26	0917-173_No	13_10_15_1726_01_458	1	-2.48	1.524	0.757	0.197	3.71	0.162	0.011	2.22	-2.03	0.75	-0.0020	0.00500	-4.7	0.58	109.759
					10/15/2013 17:27	0917-173_No	13_10_15_1727_02_149	1	-3.61	1.482	0.849	0.207	3.61	0.161	-0.150	2.20	-1.88	0.76	-0.0070	0.00600	-4.8	0.60	111.874
					10/15/2013 17:28	0917-173_No	13_10_15_1728_02_979	1	-0.84	1.585	0.882	0.192	3.52	0.158	-0.065	2.22	-1.73	0.72	-0.0100	0.00500	-3.9	0.59	106.661
					10/15/2013 17:30	0917-173_No	13_10_15_1730_15_740	1	-2.01	1.522	0.741	0.193	3.43	0.154	-0.028	2.21	-1.58	0.72	-0.0060	0.00500	-5.1	0.60	105.865
					10/15/2013 17:31	0917-173_No	13_10_15_1731_16_470	1	-1.84	1.553	0.807	0.193	3.42	0.155	-0.045	2.22	-1.42	0.72	-0.0020	0.00500	-4.6	0.60	106.391
					10/15/2013 17:32	0917-173_No	13_10_15_1732_17_210	1	-3.52	1.551	0.818	0.196	3.37	0.154	-0.200	2.22	-1.44	0.73	-0.0100	0.00500	-5.1	0.61	108.319
					10/15/2013 17:33	0917-173_No	13_10_15_1733_17_960	1	-1.98	1.483	0.758	0.198	3.35	0.157	0.025	2.24	-1.50	0.73	-0.0040	0.00500	-4.8	0.61	110.225
					10/15/2013 17:34	0917-173_No	13_10_15_1734_18_770	1	-2.98	1.592	0.753	0.195	3.32	0.158	0.201	2.24	-1.65	0.73	-0.0060	0.00500	-4.7	0.60	108.321
					10/15/2013 17:35	0917-173_No	13_10_15_1735_19_520	1	-1.17	1.697	0.879	0.195	3.35	0.156	-0.057	2.22	-1.32	0.72	-0.0090	0.00500	-4.3	0.62	106.975
Data	Run	7	Start	A	10/15/2013 17:36	0917-173_No	13_10_15_1736_20_230	1	-3.85	1.607	0.912	0.194	3.30	0.156	-0.034	2.21	-1.25	0.72	-0.0040	0.00500	-4.2	0.61	107.692
					10/15/2013 17:37	0917-173_No	13_10_15_1737_20_960	1	-0.46	1.669	0.954	0.195	3.06	0.151	0.036	2.23	-0.89	0.72	-0.0120	0.00600	-5.5	0.63	107.566
					10/15/2013 17:38	0917-173_No	13_10_15_1738_21_720	1	-0.74	1.602	0.893	0.196	3.05	0.153	0.011	2.23	-1.08	0.72	-0.0070	0.00600	-5.1	0.60	109.294
					10/15/2013 17:39	0917-173_No	13_10_15_1739_22_480	1	-1.61	1.785	0.901	0.209	3.01	0.156	-0.041	2.23	-0.86	0.76	-0.0120	0.00500	-5.7	0.66	113.072
					10/15/2013 17:40	0917-173_No	13_10_15_1740_23_240	1	-1.14	1.684	0.874	0.202	2.92	0.153	-0.168	2.22	-0.77	0.75	-0.0060	0.00600	-5.5	0.64	113.049
					10/15/2013 17:41	0917-173_No	13_10_15_1741_23_960	1	-1.87	1.679	0.760	0.202	2.80	0.153	-0.065	2.23	-0.78	0.75	-0.0090	0.00500	-5.8	0.64	112.928
					10/15/2013 17:42	0917-173_No	13_10_15_1742_24_741	1	-2.70	1.546	0.927	0.203	2.94	0.155	0.016	2.22	-0.52	0.74	-0.0050	0.00500	-6.1	0.62	112.741
					10/15/2013 17:43	0917-173_No	13_10_15_1743_25_431	1	-2.14	1.584	0.765	0.204	2.76	0.154	-0.084	2.22	-0.81	0.75	-0.0110	0.00500	-5.6	0.64	112.908
					10/15/2013 17:44	0917-173_No	13_10_15_1744_26_271	1	-1.33	1.594	0.801	0.201	2.81	0.151	-0.091	2.22	-0.88	0.75	-0.0100	0.00500	-5.9	0.64	112.686
					10/15/2013 17:45	0917-173_No	13_10_15_1745_27_041	1	-1.83	1.657	0.880	0.199	2.82	0.152	-0.033	2.21	-0.95	0.75	-0.0070	0.00500	-5.4	0.62	114.341
					10/15/2013 17:46	0917-173_No	13_10_15_1746_27_711	1	-1.99	1.662	0.915	0.202	2.73	0.154	0.025	2.24	-0.55	0.76	-0.0040	0.00500	-6.8	0.64	114.531
					10/15/2013 17:47	0917-173_No	13_10_15_1747_28_481	1	-3.48	1.492	0.832	0.205	2.79	0.153	-0.1590	2.23	-0.74	0.76	-0.0120	0.00500	-6.3	0.64	115.162
					10/15/2013 17:48	0917-173_No	13_10_15_1748_29_241	1	-1.01	1.573	0.942	0.202	2.80	0.153	-0.258	2.23	-0.65	0.76	-0.0090	0.00500	-6.1	0.64	116.201
					10/15/2013 17:49	0917-173_No	13_10_15_1749_30_061	1	-1.98	1.677	0.822	0.203	2.69	0.154	0.0880	2.23	-1.04	0.76	-0.0060	0.00500	-6.0	0.65	115.472
					10/15/2013 17:50	0917-173_No	13_10_15_1750_30_771	1	-1.60	1.639	0.840	0.207	2.59	0.150	-0.1630	2.23	-0.91	0.77	-0.0100	0.00600	-6.5	0.65	116.572
					10/15/2013 17:51	0917-173_No	13_10_15_1751_31_551	1	-1.03	1.596	0.909	0.206	2.59	0.153	-0.194	2.23	-0.72	0.78	-0.0050	0.00600	-6.4	0.65	117.452
					10/15/2013 17:52	0917-173_No	13_10_15_1752_32_281	1	-2.82	1.671	1.010	0.209	2.67	0.156	0.1200	2.22	-0.59	0.78	-0.0130	0.00600	-6.1	0.65	118.518
					10/15/2013 17:53	0917-173_No	13_10_15_1753_33_031	1	-0.93	1.602	0.909	0.208	2.54	0.153	-0.149	2.23	-0.71	0.78	-0.0090	0.00500	-6.2	0.64	117.545
					10/15/2013 17:54	0917-173_No	13_10_15_1754_33_752	1	-3.82	1.580	0.853	0.210	2.57	0.152	-0.146	2.23	-0.81	0.78	-0.0060	0.00500	-6.5	0.64	116.634
					10/15/2013 17:55	0917-173_No	13_10_15_1755_34_512	1	-3.45	1.524	0.792	0.207	2.51	0.153	-0.0360	2.23	-0.76	0.78	-0.0070	0.00600	-6.1	0.64	117.679
					10/15/2013 17:56	0917-173_No	13_10_15_1756_35_272	1	-1.89	1.577	0.911	0.208	2.55	0.153	0.0010	2.24	-0.67	0.78	-0.0090	0.00600	-6.2	0.65	117.748
					10/15/2013 17:57	0917-173_No	13_10_15_1757_36_032	1	-1.39	1.626	0.862	0.209	2.54	0.153	0.0060	2.23	-0.65	0.77	-0.0050	0.00600	-6.2	0.62	118.285
					10/15/2013 17:58	0917-173_No	13_10_15_1758_36_842	1	-1.92	1.663	0.909	0.211	2.51	0.153	-0.086	2.23	-0.78	0.78	-0.0100	0.00500	-5.9	0.67	118.278
					10/15/2013 17:59	0917-173_No	13_10_15_1759_37_412	1	-1.96	1.559	0.919	0.212	2.58	0.151	-0.225	2.22	-0.87	0.78	-0.0070	0.00500	-5.7	0.63	119.063
					10/15/2013 18:00	0917-173_No	13_10_15_1800_38_222	1	-2.77	1.665	0.935	0.213	2.54	0.154	0.02000	2.22	-0.95	0.79	-0.0050	0.00500	-6.4	0.65	118.891
					10/15/2013 18:01	0917-173_No	13_10_15_1801_38_972	1	0.29	1.637	0.874	0.204	2.64	0.153	-0.228	2.23	-1.14	0.79	-0.0040	0.00600	-6.3	0.65	119.431
					10/15/2013 18:02	0917-173_No	13_10_15_1802_39_732	1	-2.34	1.647	0.978	0.210	2.62	0.157	-0.0820	2.22	-0.96	0.79	-0.0070	0.00500	-6.1	0.66	119.826
					10/15/2013 18:03	0917-173_No	13_10_15_1803_40_492	1	-2.77	1.598	1.012	0.217	2.71	0.154	-0.0390	2.23	-0.75	0.80	-0.0060	0.00500	-6.1	0.65	120.54
					10/15/2013 18:04	0917-173_No	13_10_15_1804_41_282	1	-3.35	1.565	0.944	0.211	2.65	0.155	-0.0510	2.23	-0.61	0.79	-0.0120	0.00500	-6.8	0.66	120.291
					10/15/2013 18:05	0917-173_No	13_10_15_1805_42_053	1	-1.97	1.598	0.926	0.213	2.62	0.154	-0.0510	2.23	-0.52	0.79	-0.0040	0.00500	-6.1	0.66	120.542
					10/15/2013 18:06	0917-173_No	13_10_15_1806_42_763	1	-1.74	1.595	0.956	0.210	2.67	0.155	-0.0580	2.24	-0.49	0.78	-0.0060	0.00500	-5.9	0.65	118.172
					10/15/2013 18:07	0917-173_No	13_10_15_1807_43_543	1	-2.25	1.681	0.986	0.206	2.67	0.151	-0.00700	2.23	-0.50	0.75	-0.0080	0.00600	-6.5	0.65	114.185
					10/15/2013 18:08	0917-173_No	13_10_15_1808_44_293	1	0.23	1.616	1.020	0.192	2.79	0.151	0.0220	2.24	-0.24	0.70	-0.0060	0.00600	-5.5	0.62	106.613
					10/15/2013 18:09	0917-173_No	13_10_15_1809_45_103	1	-4.52	1.678	0.908	0.177	2.98	0.146	0.190	2.24	-0.09	0.65	-0.0080	0.00500	-5.1	0.63	98.594
					10/15/2013 18:10	0917-173_No	13_10_15_1810_45_773	1	-0.06	1.610	0.924	0.166	2.94	0.145	0.207	2.229	-0.21	0.59	-0.0100	0.00500	-5.6	0.58	88.334
					10/15/2013 18:11	0917-173_No	13_10_15_1811_46_533	1	-0.47	1.606	0.982	0.163	3.14	0.144	0.207	2.225	-0.35	0.55	-0.0100	0.00500	-4.3	0.58	83.278
					10/15/2013 18:12	0917-173_No	13_10_15_1812_47_343	1	-4.142	1.601	0.953	0.162	3.19	0.143	0.031	2.24	-0.31	0.57	-0.0060	0.00500	-4.8	0.57	84.743
					10/15/2013 18:13	0917-173_No	13_10_15_1813_48_113	1	-2.81	1.623	1.009	0.165	3.14	0.143	0.250	2.230	-0.30	0.59	-0.0100	0.00500	-4.7	0.58	87.104
					10/15/2013 18:14	0917-173_No	13_10_15_1814_48_813	1	-1.85	1.564	0.874	0.174	3.19	0.143	0.190	2.24	-0.31	0.61	-0.0070	0.00500	-4.9	0.57	92.723
					10/15/2013 18:15	0917-173_No	13_10_15_1815_49_633	1	0.35	1.695	0.779	0.177	3.12	0.144	0.257	2.24	-0.42	0.64	-0.0090	0.00500	-5.0	0.61	96.712
					10/15/2013 18:16	0917-173_No	13_10_15_1816_50_353	1	-3.40	1.618	0.921	0.184	3.25	0.147	0.270	2.24	-0.78	0.67	-0.0100	0.00500	-5.5	0.61	99.445
					10/15/2013 18:17	0917-173_No	13_10_15_1817_51_074	1	-2.29	1.699	0.973	0.185	3.25	0.150	0.069	2.23	-1.07	0.68	-0.0070	0.00500	-4.8	0.62	101.866
					10/15/2013 18:18	0917-173_No	13_10_15_1818_51_864	1	-3.76	1.670	0.913	0.190	3.33	0.153	0.020	2.22	-1.37	0.70	-0.0060	0.00500	-5.1	0.62	103.133
					10/15/2013 18:19	0917-173_No	13_10_15_1819_52_674	1	-0.36	1.596	0.904	0.193	3.30	0.151	-0.354	2.22	-1.40	0.70	-0.0130	0.00500	-4.7	0.63	104.693
					10/15/2013 18:20	0917-173_No	13_10_15_1820_53_414	1	-1.82	1.672	0.951	0.197	3.22	0.152	0.010	2.23	-1.33	0.71	-0.0100	0.00500	-4.6	0.63	105.913
					10/15/2013 18:21	0917-173_No	13_10_15_1821_54_174	1	-2.72	1.628	1.138	0.191	3.17	0.157	0.082	2.23	-1.17	0.71	-0.0060	0.00500	-5.4	0.60	106.568
					10/15/2013 18:22	0917-173_No	13_10_15_1822_54_894	1	-1.05	1.690	1.010	0.192	3.15	0.155	0.105	2.24	-1.12	0.73	-0.0020	0.00500	-5.8	0.63	108.55
					10/15/2013 18:23	0917-173_No	13_10_15_1823_55_724	1	-1.62	1.644	0.995	0.199	2.98	0.153	0.159	2.23	-1.10	0.74	-0.0070	0.00500	-5.4	0.63	110.675
					10/15/2013 18:24	0917-173_No	13_10_15_1824_56_494	1	-6.24	1.591	1.157	0.197	3.00	0.155	0.050	2.23	-0.73	0.74	-0.0110	0.00500	-5.4	0.64	111.885
					10/15/2013 18:25	0917-173_No	13_10_15_1825_57_204	1	-2.25	1.599	1.018	0.204	2.84	0.156	0.037	2.22	-0.66	0.75	-0.0060	0.00500	-6.3	0.64	113.669
					10/15/2013 18:26	0917-173_No	13_10_15_1826_57_954	1	-2.24	1.515	0.935	0.207	2.91	0.155	0.077	2.21	-0.86	0.76	-0.0090	0.00500	-5.6	0.62	115.309
					10/15/2013 18:27	0917-173_No	13_10_15_1827_58_704	1	-2.36	1.540	1.005	0.206	2.89	0.158	0.079	2.22	-1.15	0.77	-0.0080	0.00500	-5.7	0.65	115.586
					10/15/2013 18:28	0917-173_No	13_10_15_1828_59_474	1	-0.99	1.639	0.948	0.207	2.92	0.155	-0.048	2.21	-0.74	0.78	-0.0050	0.00600	-6.4	0.65	116.717
					10/15/2013 18:30	0917-173_No	13_10_15_1830_01_265	1	-1.71	1.670	0.953	0.209	2.88	0.157	-0.002	2.22	-0.96	0.78	-0.0070	0.00500	-5.3	0.67	117.482
					10/15/2013 18:31	0917-173_No	13_10_15_1831_02_065	1	-0.45	1.603	0.937	0.210	2.93	0.156	0.038	2.22	-0.87	0.79	-0.0050	0.00500	-6.7	0.65	118.451
					10/15/2013 18:32	0917-173_No	13_10_15_1832_02_795	1	-2.75	1.602	0.915	0.210	2.84	0.157	-0.088	2.22	-0.79	0.79	-0.0110	0.00600	-5.9	0.65	118.338
					10/15/2013 18:33	0917-173_No	13_10_15_1833_03_555	1	-3.70	1.686	0.880	0.207	2.86	0.159	-0.073	2.22	-0.90	0.79	-0.0070	0.00600	-5.9	0.69	119.383
					10/15/2013 18:34	0917-173_No	13_10_15_1834_04_365	1	-1.70	1.597	0.973	0.214	2.91	0.159	0.010	2.22	-0.82	0.79	-0.0070	0.00500	-5.9	0.66	118.515
					10/15/2013 18:35	0917-173_No	13_10_15_1835_05_115	1	-2.68	1.540	0.939	0.215	2.92	0.160	0.042	2.24	-0.93	0.80	-0.0080	0.00600	-5.8	0.67	119.674
			Stop		10/15/2013 18:36	0917-173_No	13_10_15_1836_05_865	1	-3.32	1.480	0.513	0.216	2.54	0.146	0.041	2.089	-2.70	0.76	-0.0050	0.00500	-5.9	0.64	109.906
					10/15/2013 18:37	0917-173_No	13_10_15_1837_06_585	1	-4.845	1.305	-1.655	0.294	0.123	0.0910	-0.202	0.640	-11.69	0.56	-0.01400	0.00300	-4.22	0.99	46.369
					10/15/2013 18:38	0917-173_No	13_10_15_1838_07_425	1	-5.632	1.358	-2.083	0.311	-0.092	0.0940	-0.285	0.228	-13.27	0.55	-0.01100	0.00300	-4.07	1.05	38.65
					10/15/2013 18:39	0917-173_No	13_10_15_1839_08_065	1	-4.92	1.362	-2.084	0.310	-0.203	0.0970	-0.248	0.209	-13.47	0.54	-0.00900	0.00300	-3.77	1.08	37.774
					10/15/2013 18:40	0917-173_No	13_10_15_1840_08_765	1	-5.97	1.344	-2.213	0.317	-0.2150	0.1000	-0.275	0.192	-13.47	0.54	-0.01200	0.00300	-3.88	1.08	37.428
					10/15/2013 18:41	0917-173_No	13_10_15_1841_09_505	1	-5.81	1.354	-2.009	0.317	-0.120	0.1030	-0.259	0.198	-13.31	0.54	-0.00800	0.00300	-3.90	1.10	37.175
					10/15/2013 18:42	0917-173_No	13_10_15_1842_10_276	1	-6.129	1.308	-2.075	0.311	-0.196	0.1010	-0.354	0.202	-13.43	0.54	-0.00800	0.00300	-4.40	1.08	37.12
					10/15/2013 18:43	0917-173_No	13_10_15_1843_11_086	1	-3.921	1.155	-1.539	0.237	-0.089	0.0760	-0.179	0.153	-9.79	0.41	-0.00800	0.00300	-3.96	0.811	26.995
					10/15/2013 18:44	0917-173_No	13_10_15_1844_11_866	1	-0.489	0.933	-0.249	0.069	0.081	0.0340	0.021	0.0840	-1.661	0.12	0.00	0.00200	-0.864	0.315	6.291
					10/15/2013 18:45	0917-173_No	13_10_15_1845_12_596	1	-0.178	0.980	-0.0110	0.051	0.0650	0.0310	0.095	0.0720	0.24000	0.09	0.00	0.00200	0.126	0.279	1.588
					10/15/2013 18:46	0917-173_No	13_10_15_1846_13_396	1	-2.221	1.252	0.573	0.127	2.06	0.094	0.515	1.449	-0.90	0.46	-0.0100	0.00400	-3.6	0.43	59.796
					10/15/2013 18:47	0917-173_No	13_10_15_1847_14_166	1	-3.44	1.676	0.900	0.199	3.14	0.154	0.114	2.21	-1.26	0.77	-0.0010	0.00600	-5.6	0.64	116.438
					10/15/2013 18:48	0917-173_No	13_10_15_1848_14_866	1	-1.61	1.601	0.937	0.211	3.16	0.158	0.034	2.20	-1.03	0.80	-0.0060	0.00600	-6.4	0.67	119.596
Data	Run	8	Start	A	10/15/2013 18:49	0917-173_No	13_10_15_1849_15_616	1	-4.45	1.561	0.950	0.207	3.01	0.158	-0.079	2.20	-0.94	0.79	-0.0030	0.00500	-5.6	0.67	119.683
					10/15/2013 18:50	0917-173_No	13_10_15_1850_16_406	1	-1.62	1.657	0.974	0.209	2.95	0.158	-0.401	2.19	-0.72	0.80	-0.0100	0.00600	-6.3	0.68	120.477
					10/15/2013 18:51	0917-173_No	13_10_15_1851_17_216	1	-2.93	1.572	0.905	0.216	2.96	0.159	0.029	2.20	-0.97	0.81	-0.0070	0.00600	-5.8	0.67	121.424
					10/15/2013 18:52	0917-173_No	13_10_15_1852_17_946	1	-2.70	1.527	0.907	0.215	3.09	0.161	-0.093	2.21	-0.91	0.81	-0.0060	0.00500	-6.4	0.67	122.027
					10/15/2013 18:53	0917-173_No	13_10_15_1853_18_657	1	-2.15	1.616	1.032	0.220	3.09	0.159	-0.160	2.19	-1.09	0.83	-0.0060	0.00500	-6.6	0.67	124.474
					10/15/2013 18:54	0917-173_No	13_10_15_1854_19_407	1	-1.40	1.576	1.051	0.224	3.08	0.164	-0.087	2.20	-1.66	0.86	-0.0110	0.00500	-6.0	0.64	127.782

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 18:55	0917-173_No13_10_15_1855_20_197		1	-0.40	1.730	0.917	0.230	3.12	0.170	-0.222	2.20	-2.08	0.87	-0.0030	0.00600	-6.1	0.67	129.99
					10/15/2013 18:56	0917-173_No13_10_15_1856_20_907		1	-3.73	1.552	0.870	0.235	3.24	0.171	-0.295	2.18	-2.76	0.90	-0.0080	0.00600	-5.3	0.67	133.371
					10/15/2013 18:57	0917-173_No13_10_15_1857_21_717		1	-0.93	1.548	0.880	0.234	3.27	0.174	-0.410	2.19	-2.92	0.91	-0.0050	0.00600	-5.8	0.65	135.231
					10/15/2013 18:58	0917-173_No13_10_15_1858_22_447		1	0.00	1.619	0.958	0.235	3.23	0.173	-0.232	2.20	-2.82	0.91	-0.0070	0.00600	-5.9	0.66	135.092
					10/15/2013 18:59	0917-173_No13_10_15_1859_23_207		1	-4.26	1.623	1.100	0.240	3.26	0.175	-0.390	2.18	-2.44	0.92	-0.0110	0.00600	-5.8	0.67	135.035
					10/15/2013 19:00	0917-173_No13_10_15_1900_23_947		1	-3.04	1.650	1.096	0.241	3.23	0.172	-0.550	2.20	-2.31	0.92	-0.0060	0.00600	-6.1	0.65	134.632
					10/15/2013 19:01	0917-173_No13_10_15_1901_24_647		1	-3.49	1.647	1.179	0.239	3.34	0.174	-0.413	2.20	-2.38	0.92	-0.0050	0.00600	-6.2	0.68	135.324
					10/15/2013 19:02	0917-173_No13_10_15_1902_25_427		1	-1.75	1.615	1.091	0.235	3.26	0.173	-0.405	2.19	-2.61	0.92	-0.0080	0.00700	-5.4	0.68	136.219
					10/15/2013 19:03	0917-173_No13_10_15_1903_26_167		1	-2.46	1.596	1.001	0.247	3.32	0.178	-0.158	2.19	-2.62	0.93	-0.0070	0.00600	-6.4	0.67	137.442
					10/15/2013 19:04	0917-173_No13_10_15_1904_26_967		1	-2.43	1.705	0.991	0.236	3.34	0.180	-0.524	2.18	-2.72	0.92	-0.0040	0.00600	-5.5	0.67	137.866
					10/15/2013 19:05	0917-173_No13_10_15_1905_27_678		1	-1.24	1.539	1.077	0.242	3.30	0.181	-0.320	2.21	-2.52	0.92	-0.0020	0.00600	-6.3	0.66	136.366
					10/15/2013 19:06	0917-173_No13_10_15_1906_28_368		1	-3.53	1.633	1.054	0.242	3.32	0.177	-0.589	2.19	-2.51	0.92	-0.0040	0.00600	-6.1	0.68	134.599
					10/15/2013 19:07	0917-173_No13_10_15_1907_29_148		1	-1.59	1.632	0.879	0.239	3.32	0.178	-0.339	2.20	-2.34	0.90	-0.0090	0.00600	-5.8	0.67	133.8
					10/15/2013 19:08	0917-173_No13_10_15_1908_29_878		1	-3.18	1.673	1.030	0.232	3.31	0.175	-0.385	2.19	-2.25	0.89	-0.0070	0.00600	-6.1	0.67	131.795
					10/15/2013 19:09	0917-173_No13_10_15_1909_30_628		1	-2.75	1.604	0.957	0.225	3.24	0.175	-0.421	2.20	-1.94	0.87	-0.0100	0.00600	-6.1	0.66	129.394
					10/15/2013 19:10	0917-173_No13_10_15_1910_31_398		1	-0.42	1.661	0.857	0.223	3.24	0.171	-0.256	2.20	-2.01	0.86	-0.0070	0.00600	-5.6	0.65	127.364
					10/15/2013 19:11	0917-173_No13_10_15_1911_32_168		1	-1.80	1.577	0.949	0.222	3.19	0.169	-0.411	2.20	-1.71	0.84	-0.0050	0.00600	-5.7	0.66	125.647
					10/15/2013 19:12	0917-173_No13_10_15_1912_32_878		1	-2.43	1.504	0.912	0.218	3.29	0.169	-0.468	2.20	-1.62	0.83	-0.0070	0.00500	-5.5	0.63	124.995
					10/15/2013 19:13	0917-173_No13_10_15_1913_33_668		1	-2.43	1.548	0.910	0.222	3.21	0.168	-0.265	2.20	-1.76	0.84	-0.0010	0.00600	-5.5	0.65	125.846
					10/15/2013 19:14	0917-173_No13_10_15_1914_34_358		1	0.09	1.641	1.055	0.224	3.32	0.170	-0.079	2.22	-1.59	0.85	-0.0080	0.00500	-5.2	0.66	126.748
					10/15/2013 19:15	0917-173_No13_10_15_1915_35_158		1	-2.94	1.641	0.919	0.216	3.15	0.169	-0.251	2.19	-1.64	0.83	-0.0110	0.00600	-4.9	0.66	125.861
					10/15/2013 19:16	0917-173_No13_10_15_1916_35_878		1	-0.90	1.620	1.061	0.224	3.15	0.170	-0.267	2.20	-1.35	0.84	0.0000	0.00600	-5.8	0.66	125.188
					10/15/2013 19:17	0917-173_No13_10_15_1917_36_589		1	-3.70	1.665	0.970	0.215	3.10	0.168	-0.206	2.20	-1.33	0.82	-0.0050	0.00600	-5.8	0.67	123.83
					10/15/2013 19:18	0917-173_No13_10_15_1918_37_339		1	-1.21	1.547	1.114	0.220	3.03	0.165	-0.175	2.19	-1.34	0.82	-0.0080	0.00600	-5.8	0.65	122.158
					10/15/2013 19:19	0917-173_No13_10_15_1919_38_159		1	-1.50	1.619	0.898	0.214	3.03	0.162	-0.455	2.19	-0.91	0.80	-0.0060	0.00600	-6.4	0.66	119.804
					10/15/2013 19:20	0917-173_No13_10_15_1920_38_909		1	-0.92	1.749	1.025	0.212	3.00	0.164	-0.213	2.20	-1.00	0.79	-0.0070	0.00600	-5.8	0.66	120.118
					10/15/2013 19:21	0917-173_No13_10_15_1921_39_459		1	-3.13	1.662	0.872	0.213	2.98	0.163	-0.222	2.19	-1.04	0.80	-0.0080	0.00600	-6.2	0.64	120.66
					10/15/2013 19:22	0917-173_No13_10_15_1922_40_209		1	-3.99	1.686	0.989	0.217	3.00	0.164	-0.039	2.19	-1.16	0.80	-0.0050	0.00600	-5.6	0.65	120.647
					10/15/2013 19:23	0917-173_No13_10_15_1923_41_009		1	-4.19	1.576	0.918	0.212	3.00	0.163	-0.285	2.19	-1.15	0.81	-0.0050	0.00600	-5.5	0.66	120.997
					10/15/2013 19:24	0917-173_No13_10_15_1924_41_719		1	-3.63	1.590	0.980	0.214	2.91	0.162	-0.314	2.19	-1.00	0.81	-0.0040	0.00500	-6.3	0.64	121.666
					10/15/2013 19:25	0917-173_No13_10_15_1925_43_529		1	-0.02	1.533	0.761	0.214	2.86	0.165	-0.280	2.19	-1.17	0.80	-0.0060	0.00500	-6.0	0.63	121.711
					10/15/2013 19:26	0917-173_No13_10_15_1926_43_249		1	-2.83	1.628	0.911	0.215	2.91	0.165	-0.164	2.20	-1.08	0.81	-0.0020	0.00500	-6.6	0.66	120.843
					10/15/2013 19:27	0917-173_No13_10_15_1927_43_949		1	-3.53	1.625	0.851	0.220	2.97	0.165	-0.099	2.20	-1.34	0.81	-0.0040	0.00600	-6.3	0.62	121.412
					10/15/2013 19:28	0917-173_No13_10_15_1928_44_689		1	-2.65	1.579	0.820	0.216	3.06	0.166	-0.244	2.19	-1.68	0.82	-0.0050	0.00600	-5.8	0.63	121.985
					10/15/2013 19:29	0917-173_No13_10_15_1929_45_530		1	-0.12	1.583	0.694	0.220	3.08	0.170	-0.298	2.18	-2.03	0.82	-0.0060	0.00600	-5.0	0.64	122.744
					10/15/2013 19:30	0917-173_No13_10_15_1930_46_270		1	-2.32	1.548	0.789	0.226	3.29	0.172	-0.217	2.19	-2.32	0.84	-0.0080	0.00600	-4.8	0.64	124.623
					10/15/2013 19:31	0917-173_No13_10_15_1931_47_030		1	-1.46	1.645	0.800	0.227	3.38	0.176	-0.272	2.20	-2.19	0.84	-0.0080	0.00500	-5.5	0.66	125.314
					10/15/2013 19:32	0917-173_No13_10_15_1932_47_740		1	-0.94	1.605	0.774	0.232	3.46	0.178	-0.32	2.19	-2.42	0.85	-0.0100	0.00600	-5.3	0.61	126.03
					10/15/2013 19:33	0917-173_No13_10_15_1933_48_540		1	-2.02	1.651	0.720	0.226	3.51	0.182	-0.21	2.20	-2.62	0.85	-0.0070	0.00600	-5.0	0.64	125.95
					10/15/2013 19:34	0917-173_No13_10_15_1934_49_250		1	-0.54	1.570	0.832	0.225	3.55	0.183	-0.22	2.20	-2.39	0.84	-0.0070	0.00600	-4.6	0.64	124.397
					10/15/2013 19:35	0917-173_No13_10_15_1935_50_070		1	-2.24	1.645	0.6590	0.222	3.42	0.179	-0.550	2.20	-2.48	0.83	-0.0070	0.00500	-4.8	0.64	122.553
					10/15/2013 19:36	0917-173_No13_10_15_1936_50_850		1	-1.70	1.580	0.843	0.215	3.39	0.172	-0.31	2.20	-2.08	0.81	-0.0100	0.00500	-4.8	0.62	119.34
					10/15/2013 19:37	0917-173_No13_10_15_1937_51_560		1	-1.13	1.532	0.714	0.208	3.38	0.175	-0.302	2.20	-2.27	0.79	-0.0040	0.00500	-4.0	0.61	117.733
					10/15/2013 19:38	0917-173_No13_10_15_1938_52_350		1	-0.91	1.588	0.796	0.206	3.28	0.166	-0.242	2.19	-2.14	0.78	-0.0100	0.00500	-4.9	0.61	116.433
					10/15/2013 19:39	0917-173_No13_10_15_1939_53_120		1	-0.32	1.679	0.775	0.203	3.21	0.165	-0.081	2.21	-1.89	0.76	-0.0050	0.00500	-4.6	0.62	114.317
					10/15/2013 19:40	0917-173_No13_10_15_1940_53_831		1	-1.88	1.519	0.839	0.204	3.21	0.162	-0.023	2.19	-1.76	0.75	-0.0090	0.00500	-4.8	0.58	112.735
					10/15/2013 19:41	0917-173_No13_10_15_1941_54_551		1	-3.33	1.613	0.712	0.197	3.19	0.161	-0.188	2.20	-1.86	0.74	-0.0110	0.00500	-4.7	0.60	111.261
					10/15/2013 19:42	0917-173_No13_10_15_1942_55_311		1	-1.87	1.715	0.836	0.198	3.13	0.161	-0.111	2.19	-1.80	0.74	-0.0070	0.00500	-4.4	0.63	110.254
					10/15/2013 19:43	0917-173_No13_10_15_1943_56_131		1	0.41	1.646	0.788	0.196	3.16	0.165	-0.124	2.21	-1.88	0.74	-0.0120	0.00500	-4.5	0.61	110.896
					10/15/2013 19:44	0917-173_No13_10_15_1944_56_911		1	0.00	1.631	0.847	0.202	3.14	0.161	0.023	2.19	-1.71	0.74	-0.0040	0.00500	-5.1	0.58	110.201
					10/15/2013 19:45	0917-173_No13_10_15_1945_57_631		1	-1.25	1.595	0.970	0.205	3.07	0.160	-0.169	2.20	-1.59	0.73	-0.0080	0.00500	-4.3	0.60	108.9
					10/15/2013 19:46	0917-173_No13_10_15_1946_58_371		1	-0.83	1.630	0.860	0.198	2.95	0.158	0.014	2.19	-1.54	0.72	-0.0100	0.00500	-3.9	0.60	108.422
					10/15/2013 19:47	0917-173_No13_10_15_1947_59_161		1	0.88	1.639	0.890	0.191	2.99	0.156	-0.046	2.19	-1.38	0.72	-0.0100	0.00500	-4.7	0.59	108.048
			Stop		10/15/2013 19:48	0917-173_No13_10_15_1948_59_901		1	-3.140	1.245	-1.053	0.258	0.848	0.0890	0.226	1.145	-9.11	0.55	-0.00900	0.00300	-3.70	0.80	57.557
					10/15/2013 19:50	0917-173_No13_10_15_1950_00_701		1	-3.72	1.214	-1.977	0.303	-0.132	0.0930	-0.1020	0.247	-12.57	0.53	-0.01800	0.00300	-3.09	0.99	38.253
					10/15/2013 19:51	0917-173_No13_10_15_1951_01_461		1	-3.32	1.410	-2.025	0.314	-0.122	0.0950	-0.270	0.202	-13.29	0.54	-0.0130	0.00300	-3.49	1.06	37.928
					10/15/2013 19:52	0917-173_No13_10_15_1952_02_181		1	-5.259	1.377	-2.030	0.313	-0.2230	0.0990	-0.480	0.202	-13.23	0.53	-0.00900	0.00400	-3.85	1.04	37.713
					10/15/2013 19:53	0917-173_No13_10_15_1953_02_942		1	-4.164	1.205	-1.728	0.255	-0.080	0.0860	-0.256	0.169	-10.81	0.43	-0.01000	0.00400	-2.90	0.84	30.178
					10/15/2013 19:54	0917-173_No13_10_15_1954_03_702		1	-0.538	0.962	-0.257	0.073	0.0060	0.0320	-0.0520	0.0830	-2.042	0.12	-0.00200	0.00200	-0.05	0.323	7.186
					10/15/2013 19:55	0917-173_No13_10_15_1955_04_512		1	0.639	0.946	0.015	0.061	0.090	0.0520	0.702	1.118	-0.022	0.10	-0.00300	0.00200	-0.689	0.315	2.877
					10/15/2013 19:56	0917-173_No13_10_15_1956_05_172		1	1.224	1.040	-0.0040	0.061	0.155	0.0560	0.712	1.329	-0.040	0.10	-0.01000	0.00200	0.266	0.330	2.715
					10/15/2013 19:57	0917-173_No13_10_15_1957_05_982		1	0.664	1.116	0.287	0.078	0.807	0.0760	0.7010	1.582	-0.39	0.20	-0.00400	0.00300	-1.42	0.358	21.585
					10/15/2013 19:58	0917-173_No13_10_15_1958_06_702		1	-0.367	1.471	0.781	0.166	2.51	0.132	0.271	2.174	-1.26	0.59	-0.0090	0.00500	-4.3	0.53	88.723
					10/15/2013 19:59	0917-173_No13_10_15_1959_07_442		1	-3.38	1.579	0.925	0.187	2.90	0.148	0.067	2.21	-1.06	0.68	-0.0080	0.00500	-5.1	0.58	103.534
Data	Run	9	Start	A	10/15/2013 20:00	0917-173_No13_10_15_2000_08_262		1	-2.997	1.605	1.056	0.182	2.92	0.151	0.196	2.21	-1.14	0.68	-0.0040	0.00500	-4.8	0.59	102.395
					10/15/2013 20:01	0917-173_No13_10_15_2001_09_022		1	-1.571	1.596	0.973	0.182	2.98	0.151	0.160	2.21	-1.03	0.67	-0.0080	0.00500	-4.7	0.59	101.467
					10/15/2013 20:02	0917-173_No13_10_15_2002_09_792		1	-4.04	1.611	0.892	0.181	3.01	0.153	0.166	2.200	-1.27	0.66	-0.0100	0.00500	-4.1	0.57	100.512
					10/15/2013 20:03	0917-173_No13_10_15_2003_10_502		1	-2.20	1.550	0.859	0.182	3.08	0.148	0.150	2.20	-1.25	0.66	-0.0070	0.00500	-4.5	0.58	99.466
					10/15/2013 20:04	0917-173_No13_10_15_2004_11_152		1	-1.80	1.563	0.841	0.176	3.12	0.149	-0.106	2.20	-1.52	0.65	-0.0110	0.00500	-4.0	0.57	97.189
					10/15/2013 20:05	0917-173_No13_10_15_2005_11_943		1	-0.78	1.486	1.024	0.177	3.15	0.149	0.126	2.21	-1.26	0.64	-0.0050	0.00500	-3.7	0.55	96.826
					10/15/2013 20:06	0917-173_No13_10_15_2006_12_743		1	-2.524	1.638	0.945	0.179	3.10	0.149	-0.098	2.21	-1.36	0.65	-0.0070	0.00500	-4.2	0.60	96.972
					10/15/2013 20:07	0917-173_No13_10_15_2007_13_463		1	-1.38	1.536	1.015	0.182	3.04	0.148	0.026	2.21	-1.45	0.66	-0.0090	0.00500	-4.5	0.58	99.732
					10/15/2013 20:08	0917-173_No13_10_15_2008_14_173		1	-3.56	1.659	0.873	0.180	2.93	0.150	-0.095	2.20	-1.47	0.67	-0.0080	0.00500	-4.3	0.59	100.644
					10/15/2013 20:09	0917-173_No13_10_15_2009_14_993		1	-4.566	1.521	0.955	0.186	3.02	0.149	0.041	2.21	-1.53	0.68	-0.0050	0.00500	-4.5	0.57	101.994
					10/15/2013 20:10	0917-173_No13_10_15_2010_15_743		1	-1.11	1.544	0.955	0.186	2.89	0.151	-0.007	2.21	-1.57	0.68	-0.0060	0.00500	-4.7	0.58	101.659
					10/15/2013 20:11	0917-173_No13_10_15_2011_16_563		1	-1.34	1.588	1.087	0.185	2.90	0.146	0.092	2.20	-1.48	0.67	-0.0060	0.00500	-4.4	0.59	100.409
					10/15/2013 20:12	0917-173_No13_10_15_2012_17_303		1	0.06	1.606	1.001	0.185	2.89	0.147	0.052	2.22	-1.34	0.66	-0.0070	0.00500	-4.6	0.58	97.852
					10/15/2013 20:13	0917-173_No13_10_15_2013_18_053		1	-2.67	1.583	0.941	0.177	2.81	0.148	-0.018	2.20	-1.42	0.65	-0.0090	0.00500	-4.6	0.59	96.483
					10/15/2013 20:14	0917-173_No13_10_15_2014_18_853		1	-2.08	1.622	0.837	0.171	2.93	0.147	0.198	2.215	-1.34	0.63	-0.0040	0.00500	-4.2	0.59	95.472
					10/15/2013 20:15	0917-173_No13_10_15_2015_19_553		1	-2.83	1.583	0.918	0.172	2.91	0.146	0.059	2.22	-1.20	0.62	-0.0070	0.00500	-4.7	0.57	93.724
					10/15/2013 20:16	0917-173_No13_10_15_2016_20_383		1	-1.50	1.587	1.020	0.175	2.85	0.148	0.030	2.22	-0.85	0.62	-0.0100	0.00500	-4.9	0.57	92.568
					10/15/2013 20:17	0917-173_No13_10_15_2017_21_104		1	-0.86	1.595	0.946	0.175	2.86	0.144	0.167	2.220	-1.01	0.63	-0.0090	0.00500	-4.4	0.59	94.877
					10/15/2013 20:18	0917-173_No13_10_15_2018_21_884		1	-1.62	1.598	0.870	0.174	2.82	0.144	0.204	2.207	-1.33	0.65	-0.0090	0.00500	-4.2	0.58	97.437
					10/15/2013 20:19	0917-173_No13_10_15_2019_22_634		1	-2.36	1.625	0.967	0.182	2.79	0.144	0.141	2.197	-1.25	0.67	-0.0090	0.00500	-4.8	0.59	99.944
					10/15/2013 20:20	0917-173_No13_10_15_2020_23_404		1	-4.29	1.588	1.084	0.184	2.83	0.145	0.103	2.217	-1.35	0.68	-0.0120	0.00500	-4.4	0.59	102.703
					10/15/2013 20:21	0917-173_No13_10_15_2021_24_064		1	-0.90	1.502	0.915	0.189	2.70	0.145	0.105	2.24	-1.65	0.68	-0.0050	0.00500	-4.5	0.58	101.55
					10/15/2013 20:22	0917-173_No13_10_15_2022_24_884		1	-2.06	1.596	0.964	0.186	2.73	0.144	-0.052	2.224	-1.58	0.67	-0.0100	0.00500	-4.1	0.59	101.278
					10/15/2013 20:23	0917-173_No13_10_15_2023_25_664		1	-2.30	1.631	1.017	0.182	2.71	0.146	-0.0050	2.209	-1.38	0.67	-0.0080	0.00500	-4.6	0.58	100.777
					10/15/2013 20:24	0917-173_No13_10_15_2024_26_364		1	-1.18	1.614	1.031	0.184	2.71	0.146	0.195	2.217	-1.44	0.67	-0.0080	0.00600	-4.8	0.59	100.711
					10/15/2013 20:25	0917-173_No13_10_15_2025_27_134		1	-1.59	1.653	0.922	0.182	2.67	0.142	0.050	2.22	-1.43	0.67	-0.0080	0.00500	-4.5	0.60	99.992
					10/15/2013 20:26	0917-173_No13_10_15_2026_27_894		1	-3.22	1.689	0.963	0.179	2.58	0.142	0.243	2.215	-1.37	0.66	-0.0080	0.00500	-4.5	0.61	98.47
					10/15/2013 20:27	0917-173_No13_10_15_2027_28_654		1	-1.14	1.610	0.976	0.174	2.62	0.147	0.291	2.232	-1.41	0.64	-0.0070	0.00500	-4.2	0.57	96.749
					10/15/2013 20:28	0917-173_No13_10_15_2028_29_365		1	-1.02	1.567	1.018	0.170	2.68	0.144	0.144	2.209	-1.24	0.63	-0.0090	0.00500	-4.6	0.55	96.181
					10/15/2013 20:29	0917-173_No13_10_15_2029_30_125		1	-2.44	1.541	0.799	0.176	2.66	0.144	-0.0860	2.212	-1.13	0.63	-0.0110	0.00500	-4.8	0.56	94.606
					10/15/2013 20:30	0917-173_No13_10_15_2030_30_925		1	-4.08	1.577	0.927	0.172	2.68	0.140	0.090	2.224	-1.32	0.62	-0.0030	0.00500	-3.7	0.57	93.087
					10/15/2013 20:31	0917-173_No13_10_15_2031_31_715		1	-2.26	1.614	0.966	0.170	2.68	0.142	0.142	2.223	-1.11	0.60	-0.0090	0.00500	-3.9	0.58	91.685
					10/15/2013 20:32	0917-173_No13_10_15_2032_32_475		1	-1.98	1.590	0.836	0.163	2.84	0.143	0.290	2.232	-1.22	0.59	-0.0090	0.00500	-3.4	0.57	90.136
					10/15/2013 20:33	0917-173_No13_10_15_2033_33_185		1	-0.76	1.651	0.797	0.171	2.82	0.139	0.211	2.232	-1.33	0.60	-0.0070	0.00500	-4.7	0.58	88.692
					10/15/2013 20:34	0917-173_No13_10_15_2034_33_905		1	-0.79	1.591	0.749	0.166	2.76	0.140	0.159	2.206	-1.23	0.59	-0.0080	0.00500	-4.1	0.58	88.163
					10/15/2013 20:35	0917-173_No13_10_15_2035_34_705		1	-4.22	1.640	0.817	0.169	2.76	0.141	0.379	2.225	-1.29	0.59	-0.0090	0.00500	-4.2	0.58	87.831
					10/15/2013 20:36	0917-173_No13_10_15_2036_35_445		1	-1.93	1.512	0.804	0.167	2.87	0.138	0.201	2.218	-1.41	0.58	-0.0080	0.00500	-4.0	0.57	87.747
					10/15/2013 20:37	0917-173_No13_10_15_2037_36_255		1	-1.54	1.567	0.778	0.166	2.81	0.140	0.176	2.212	-1.36	0.59	-0.0080	0.00500	-4.1	0.55	88.515
					10/15/2013 20:38	0917-173_No13_10_15_2038_37_015		1	-1.37	1.583	0.843	0.162	2.84	0.140	0.195	2.213	-1.34	0.59	-0.0130	0.00500	-4.2	0.56	88.37
					10/15/2013 20:39	0917-173_No13_10_15_2039_37_755		1	-2.82	1.656	0.865	0.161	2.87	0.139	0.133	2.215	-1.48	0.59	-0.0080	0.00500	-3.6	0.57	87.756
					10/15/2013 20:40	0917-173_No13_10_15_2040_38_526		1	-4.065	1.623	0.890	0.162	2.92	0.140	0.136	2.210	-1.57	0.57	-0.0090	0.00500	-3.3	0.56	85.999
					10/15/2013 20:41	0917-173_No13_10_15_2041_39_246		1	-1.27	1.700	0.900	0.161	3.09	0.138	0.139	2.22	-1.66	0.57	-0.0100	0.00500	-3.9	0.59	84.272
					10/15/2013 20:42	0917-173_No13_10_15_2042_39_956		1	-2.638	1.625	0.944	0.161	3.14	0.140	0.143	2.22	-1.61	0.57	-0.0100	0.00500	-2.8	0.58	83.174
					10/15/2013 20:43	0917-173_No13_10_15_2043_40_746		1	-2.416	1.591	0.841	0.158	3.30	0.140	0.207	2.22	-1.89	0.56	-0.0050	0.00500	-3.9	0.56	82.142
					10/15/2013 20:44	0917-173_No13_10_15_2044_41_566		1	-2.37	1.499	0.765	0.162	3.32	0.139	0.361	2.22	-2.02	0.56	-0.0090	0.00500	-4.0	0.53	81.638
					10/15/2013 20:45	0917-173_No13_10_15_2045_42_186		1	-2.90	1.592	0.732	0.159	3.40	0.141	0.101	2.22	-2.28	0.56	-0.0090	0.00500	-2.9	0.54	81.968
					10/15/2013 20:46	0917-173_No13_10_15_2046_42_986		1	0.58	1.603	0.837	0.161	3.48	0.142	0.31	2.20	-2.32	0.56	-0.0130	0.00500	-3.5	0.54	81.403
					10/15/2013 20:47	0917-173_No13_10_15_2047_43_726		1	-3.43	1.558	0.777	0.154	3.38	0.141	0.130	2.22	-2.09	0.55	-0.0060	0.00500	-2.8	0.53	81.722
					10/15/2013 20:48	0917-173_No13_10_15_2048_44_446		1	-3.245	1.642	0.813	0.157	3.37	0.139	0.138	2.22	-2.11	0.56	-0.0080	0.00500	-2.6	0.55	81.827
					10/15/2013 20:49	0917-173_No13_10_15_2049_45_236		1	-3.757	1.542	0.771	0.161	3.34	0.141	0.205	2.22	-2.27	0.55	-0.0050	0.00400	-2.3	0.54	80.95
					10/15/2013 20:50	0917-173_No13_10_15_2050_45_976		1	-0.19	1.656	0.832	0.157	3.40	0.141	0.334	2.22	-2.09	0.55	-0.0120	0.00400	-2.9	0.56	80.334
					10/15/2013 20:51	0917-173_No13_10_15_2051_46_746		1	-2.08	1.521	0.765	0.157	3.45	0.136	0.253	2.217	-2.09	0.54	-0.0100	0.00500	-3.0	0.52	79.482
					10/15/2013 20:52	0917-173_No13_10_15_2052_47_447		1	-1.666	1.574	0.870	0.156	3.45	0.139	0.185	2.214	-2.08	0.55	-0.0120	0.00500	-2.9	0.53	79.134
					10/15/2013 20:53	0917-173_No13_10_15_2053_48_167		1	-2.32	1.553	0.765	0.159	3.53	0.139	0.062	2.22	-1.96	0.54	-0.0070	0.00500	-2.9	0.55	78.234
					10/15/2013 20:54	0917-173_No13_10_15_2054_48_927		1	-2.893	1.619	0.893	0.158	3.55	0.140	0.079	2.22	-1.93	0.53	-0.0070	0.00500	-3.4	0.54	77.114
					10/15/2013 20:55	0917-173_No13_10_15_2055_49_707		1	-1.892	1.592	0.752	0.153	3.58	0.137	0.189	2.22	-2.14	0.52	-0.0070	0.00500	-2.7	0.54	75.341
					10/15/2013 20:56	0917-173_No13_10_15_2056_50_477		1	-1.850	1.645	0.772	0.147	3.60	0.137	0.318	2.21	-1.74	0.51	-0.0090	0.00500	-3.3	0.54	74.165
					10/15/2013 20:57	0917-173_No13_10_15_2057_51_217		1	-1.151	1.533	0.784	0.151	3.56	0.138	0.153	2.23	-1.96	0.52	-0.0100	0.00500	-3.6	0.50	73.992
					10/15/2013 20:58	0917-173_No13_10_15_2058_52_037		1	-4.98	1.684	0.900	0.150	3.55	0.136	0.320	2.22	-1.97	0.51	-0.0160	0.00500	-2.5	0.55	73.481
					10/15/2013 20:59	0917-173_No13_10_15_2059_52_747		1	-1.851	1.291	-0.4440	0.197	1.91	0.0960	0.461	1.577	-6.851	0.49	-0.01200	0.00300	-3.6	0.64	58.408
			Stop		10/15/2013 21:00	0917-173_No13_10_15_2100_53_507		1	-4.47	1.437	-1.888	0.297	-0.034	0.0950	-0.272	0.332	-12.86	0.53	-0.00900	0.00400	-3.87	1.03	38.227
					10/15/2013 21:01	0917-173_No13_10_15_2101_54_237		1	-1.745	1.092	-0.925	0.160	-0.032	0.0530	-0.0500	0.159	-6.63	0.29	-0.00600	0.00200	-1.55	0.584	19.435
					10/15/2013 21:15	0917-173_No13_10_15_2115_01_112		1	-0.4	1.5	-0.1210	0.082	-0.66	1.49	-0.429	0.0980	-0.089	0.134	0.055	0.601	0.224	0.450	-1.878
					10/15/2013 21:15	0917-173_No13_10_15_2115_19_662		1	0.1	1.6	-0.099	0.082	-0.45	1.59	-0.0880	0.0990	-0.04700	0.140	0.059	0.638	-0.083	0.470	-1.993
					10/15/2013 21:15	0917-173_No13_10_15_2115_38_242		1	2.4	1.6	0.050	0.089	-0.52	1.62	-0.298	0.0970	-0.227	0.146	0.063	0.652	-0.1030	0.470	-2.034
					10/15/2013 21:15	0917-173_No13_10_15_2115_56_802		1	1.1	1.6	0.064	0.082	-0.58	1.65	-0.224	0.0970	-0.319	0.138	0.057	0.660	1.50	0.448	-2.049
					10/15/2013 21:16	0917-173_No13_10_15_2116_15_223		1	-3.3	1.5	0.0290	0.083	-0.52	1.66	0.0050	0.1090	-0.265	0.137	0.057	0.663	0.44	0.460	-2.085
					10/15/2013 21:16	0917-173_No13_10_15_2116_33_823		1	0.8	1.4	0.066	0.082	-0.55	1.66	-0.254	0.1130	-0.400	0.133	0.053	0.666	0.768	0.425	-2.065
					10/15/2013 21:16	0917-173_No13_10_15_2116_52_323		1	3.0	1.5	-0.076	0.086	-0.60	1.66	-0.163	0.1070	0.361	0.138	0.059	0.666	-0.679	0.460	-2.066
					10/15/2013 21:17	0917-173_No13_10_15_2117_10_943		1	0.9	1.4	-0.0060	0.078	-0.56	1.66	-0.080	0.1080	0.068	0.128	0.051	0.662	-0.372	0.430	-2.052
					10/15/2013 21:17	0917-173_No13_10_15_2117_29_463		1	0.4	1.6	0.1970	0.086	-0.48	1.67	-0.01000	0.1020	0.236	0.143	0.070	0.661	-0.661	0.472	-2.107
					10/15/2013 21:17	0917-173_No13_10_15_2117_47_913		1	-2.5	1.5	0.091	0.086	-0.51	1.66	-0.1890	0.1060	-0.062	0.139	0.052	0.664	0.420	0.448	-2.086
					10/15/2013 21:18	0917-173_No13_10_15_2118_06_603		1	2.8	1.5	-0.047	0.087	-0.59	1.66	-0.395	0.1090	-0.040	0.140	0.060	0.662	-0.25	0.446	-2.096
					10/15/2013 21:18	0917-173_No13_10_15_2118_25_043		1	-1.7	1.5	-0.0760	0.085	-0.61	1.66	-0.478	0.0980	-0.1370	0.140	0.060	0.662	0.146	0.468	-2.061
					10/15/2013 21:18	0917-173_No13_10_15_2118_43_553		1	0.0	1.6	0.1360	0.084	-0.51	1.66	-0.248	0.1080	-0.047	0.138	0.055	0.661	-0.08	0.466	-2.097
					10/15/2013 21:19	0917-173_No13_10_15_2119_02_113		1	1.0	1.6	0.011	0.080	-0.61	1.66	0.0290	0.1030	-0.2410	0.133	0.058	0.662	0.425	0.444	-2.105
					10/15/2013 21:19	0917-173_No13_10_15_2119_20_623		1	1.9	1.4	0.0110	0.084	-0.51	1.66	-0.307	0.1010	-0.103	0.133	0.061	0.663	0.071	0.439	-2.122
					10/15/2013 21:19	0917-173_No13_10_15_2119_39_233		1	-1.8	1.5	-0.038	0.085	-0.53	1.66	-0.375	0.1050	-0.127	0.137	0.059	0.664	0.284	0.449	-2.098
					10/15/2013 21:19	0917-173_No13_10_15_2119_57_753		1	0.3	1.3	0.0190	0.086	-0.56	1.66	-0.219	0.1090	-0.108	0.135	0.057	0.664	0.274	0.423	-2.096
					10/15/2013 21:29	0917-173_No13_10_15_2129_45_404		1	2.9420	2.734	-0.095	0.143	0.025	0.0850	-0.112	0.149	0.248	0.239	-0.00600	0.00500	-0.56	0.82	0.029
					10/15/2013 21:29	0917-173_No13_10_15_2129_51_574		1	-2.619	2.717	0.250	0.149	0.0920	0.093	0.04300	0.213	0.48	0.242	0.00500	0.00500	-2.05	0.79	-0.008
					10/15/2013 21:29	0917-173_No13_10_15_2129_57_784		1	-2.736	2.542	-0.556	0.147	-0.0130	0.0900	0.626	0.502	-0.45	0.234	-0.01100	0.00500	0.31	0.77	0.076
					10/15/2013 21:30	0917-173_No13_10_15_2130_04_024		1	5.936	2.562	0.157	0.153	-0.067	0.112	0.589	1.335	0.412	0.245	0.0060	0.00700	-1.33	0.80	0.081
					10/15/2013 21:30	0917-173_No13_10_15_2130_10_174		1	3.894	2.733	0.014	0.147	0.03000	0.1170	0.690	1.887	-0.209	0.245	0.00100	0.00600	-0.65	0.83	0.214
					10/15/2013 21:30	0917-173_No13_10_15_2130_16_234		1	0.44	2.840	0.126	0.156	-0.0470	0.130	0.223	2.004	-0.347	0.256	-0.01200	0.00700	1.130	0.85	0.287

Location Disc. # Start/Stop Instrument

				Label 1-Analyte		**Label** 2-Analyte		**Label** 3-Analyte/Spike		**Label** 4-Analyte		**Label** 5-Analyte		**Label** Tracer		**Label** 6-Analyte		
Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/15/2013 21:30	0917-173_No	13_10_15_2130_22_494	1	-0.911	2.810	0.250	0.162	-0.313	0.142	0.816	2.096	-0.193	0.260	0.00100	0.00800	-0.180	0.85	0.282
10/15/2013 21:30	0917-173_No	13_10_15_2130_28_654	1	5.04	2.910	0.03	0.167	-0.1070	0.138	0.48	2.017	-0.478	0.269	-0.02700	0.00700	-0.63	0.87	0.277
10/15/2013 21:30	0917-173_No	13_10_15_2130_34_894	1	-2.321	3.111	-0.089	0.163	-0.255	0.141	0.720	1.968	0.20	0.273	-0.01800	0.00700	-1.712	0.92	0.331
10/15/2013 21:30	0917-173_No	13_10_15_2130_41_054	1	0.708	3.100	0.053	0.166	-0.2510	0.140	0.42	1.896	0.02200	0.275	-0.01700	0.00800	-0.848	0.95	0.257
10/15/2013 21:30	0917-173_No	13_10_15_2130_47_144	1	-2.249	3.019	0.0070	0.174	-0.097	0.143	1.192	1.780	-0.2050	0.279	-0.01500	0.00800	-0.1670	0.92	0.235
10/15/2013 21:30	0917-173_No	13_10_15_2130_53_364	1	-3.19	3.237	0.070	0.174	-0.250	0.141	1.001	1.723	-0.439	0.286	-0.02100	0.00700	-0.04	0.95	0.23
10/15/2013 21:30	0917-173_No	13_10_15_2130_59_554	1	-0.175	3.136	-0.003	0.172	-0.0090	0.139	0.625	1.619	-0.051	0.284	-0.02	0.00700	0.016	0.94	0.107
10/15/2013 21:31	0917-173_No	13_10_15_2131_05_784	1	-1.552	3.233	0.094	0.162	0.0580	0.143	0.56	1.524	-0.14	0.272	-0.00300	0.00800	-1.267	0.91	0.142
10/15/2013 21:31	0917-173_No	13_10_15_2131_11_964	1	-0.527	3.038	-0.033	0.179	-0.391	0.133	0.745	1.47	-0.205	0.285	-0.00300	0.00700	-0.408	0.95	0.129
10/15/2013 21:31	0917-173_No	13_10_15_2131_18_044	1	-0.691	3.592	-0.192	0.180	-0.283	0.148	0.695	1.33	-0.368	0.307	-0.01700	0.00800	-2.20	1.02	0.071
10/15/2013 21:31	0917-173_No	13_10_15_2131_24_244	1	-2.44	3.072	-0.137	0.183	-0.1880	0.143	1.167	1.31	0.548	0.292	-0.02300	0.00800	-3.64	0.95	0.029
10/15/2013 21:31	0917-173_No	13_10_15_2131_30_434	1	-5.348	3.147	-0.0980	0.175	-0.260	0.146	1.274	1.28	-0.078	0.287	-0.00500	0.00700	-2.33	0.96	-0.018
10/15/2013 21:31	0917-173_No	13_10_15_2131_36_724	1	-1.948	3.564	0.349	0.185	-0.615	0.148	0.49	1.24	-0.41	0.308	-0.00800	0.00800	-3.30	1.04	0.03
10/15/2013 21:31	0917-173_No	13_10_15_2131_42_884	1	-3.741	3.395	-0.422	0.167	-0.1340	0.152	1.380	1.37	0.04	0.288	-0.02200	0.00800	-1.26	0.96	0.076
10/15/2013 21:31	0917-173_No	13_10_15_2131_49_014	1	-0.128	3.432	0.220	0.180	-0.242	0.141	1.424	1.43	0.312	0.300	-0.01100	0.00800	-2.246	1.02	0.147
10/15/2013 21:31	0917-173_No	13_10_15_2131_55_204	1	5.26	3.222	-0.181	0.190	-0.1320	0.140	0.884	1.42	0.451	0.305	-0.0110	0.00800	-0.71	0.97	0.073
10/15/2013 21:32	0917-173_No	13_10_15_2132_01_394	1	-4.143	3.232	0.2790	0.178	-0.1420	0.148	1.393	1.497	-0.046	0.293	-0.01300	0.00800	-1.83	0.99	0.147
10/15/2013 21:32	0917-173_No	13_10_15_2132_07_574	1	-4.996	3.308	0.339	0.173	-0.0810	0.147	1.381	1.582	0.06	0.288	-0.00900	0.00700	-1.64	1.01	0.174
10/15/2013 21:32	0917-173_No	13_10_15_2132_13_664	1	-0.999	3.256	0.091	0.175	-0.1350	0.142	1.019	1.514	-0.053	0.290	-0.01900	0.00800	-0.92	0.95	0.19
10/15/2013 21:32	0917-173_No	13_10_15_2132_19_844	1	-4.833	3.574	0.201	0.176	-0.141	0.150	1.366	1.575	0.12	0.300	-0.02300	0.00800	-2.70	1.05	0.273
10/15/2013 21:32	0917-173_No	13_10_15_2132_26_064	1	0.008	3.492	0.302	0.170	-0.220	0.141	1.283	1.536	-0.130	0.290	0.00900	0.00700	-2.52	0.98	0.262
10/15/2013 21:32	0917-173_No	13_10_15_2132_32_244	1	-3.584	3.316	0.023	0.172	0.224	0.144	1.277	1.582	-0.328	0.286	-0.01200	0.00700	-1.96	0.95	0.217
10/15/2013 21:32	0917-173_No	13_10_15_2132_38_444	1	1.07	3.040	-0.205	0.173	-0.175	0.141	1.062	1.557	0.53	0.282	-0.02400	0.00800	-4.61	0.93	0.256
10/15/2013 21:32	0917-173_No	13_10_15_2132_44_534	1	-0.3960	3.287	0.107	0.181	-0.0940	0.139	0.773	1.594	0.27	0.297	-0.01400	0.00700	-1.467	0.97	0.245
10/15/2013 21:32	0917-173_No	13_10_15_2132_50_814	1	-2.607	3.420	-0.035	0.169	-0.0790	0.150	0.771	1.608	0.22	0.287	-0.01900	0.00800	-1.278	0.98	0.338
10/15/2013 21:32	0917-173_No	13_10_15_2132_56_934	1	-2.034	3.380	-0.049	0.176	-0.1920	0.147	0.665	1.541	0.315	0.293	-0.01900	0.00800	-1.13	1.00	0.292
10/15/2013 21:33	0917-173_No	13_10_15_2133_03_164	1	-2.815	3.086	-0.363	0.162	0.169	0.137	1.597	1.464	-0.03	0.268	-0.00400	0.00800	-1.60	0.882	0.323
10/15/2013 21:33	0917-173_No	13_10_15_2133_09_364	1	-4.841	3.217	-0.209	0.175	-0.1390	0.145	1.513	1.564	-0.34	0.29	-0.00200	0.00700	-1.07	0.99	0.311
10/15/2013 21:33	0917-173_No	13_10_15_2133_15_454	1	-3.59	3.461	0.008	0.171	-0.0040	0.146	1.177	1.529	-0.065	0.294	-0.01200	0.00700	-1.139	1.02	0.357
10/15/2013 21:33	0917-173_No	13_10_15_2133_21_724	1	-5.8060	3.140	-0.066	0.176	-0.173	0.147	1.231	1.529	-0.343	0.286	-0.01100	0.00700	-2.779	0.92	0.308
10/15/2013 21:33	0917-173_No	13_10_15_2133_27_854	1	4.266	3.073	0.2390	0.180	-0.396	0.147	0.864	1.535	0.04	0.29	-0.01600	0.00800	0.25	0.98	0.32
10/15/2013 21:33	0917-173_No	13_10_15_2133_34_044	1	-7.154	3.168	-0.228	0.184	-0.1020	0.145	0.704	1.539	-0.179	0.298	-0.00700	0.00800	-2.00	1.01	0.403
10/15/2013 21:33	0917-173_No	13_10_15_2133_40_254	1	-1.553	3.279	-0.157	0.167	-0.215	0.143	0.657	1.526	0.257	0.282	-0.00700	0.00800	-1.593	0.98	0.352
10/15/2013 21:33	0917-173_No	13_10_15_2133_46_344	1	-5.792	3.111	0.090	0.175	-0.1160	0.142	1.094	1.579	-0.243	0.285	-0.01100	0.00800	-1.00	0.91	0.414
10/15/2013 21:33	0917-173_No	13_10_15_2133_52_544	1	-1.20	3.263	0.1210	0.176	-0.0380	0.149	0.882	1.692	-0.22	0.289	-0.00900	0.00700	-2.88	0.98	0.353
10/15/2013 21:33	0917-173_No	13_10_15_2133_58_824	1	0.6930	2.949	-0.126	0.178	-0.173	0.141	0.819	1.816	0.15	0.280	-0.01500	0.00700	-2.11	0.90	0.355
10/15/2013 21:34	0917-173_No	13_10_15_2134_05_014	1	-2.380	3.101	-0.480	0.164	-0.347	0.140	1.278	1.905	-0.07	0.274	-0.00700	0.00600	-1.743	0.94	0.463
10/15/2013 21:34	0917-173_No	13_10_15_2134_11_214	1	-0.258	3.108	0.123	0.160	0.1130	0.141	1.083	1.933	0.00	0.270	-0.01900	0.00800	-2.56	0.89	0.449
10/15/2013 21:34	0917-173_No	13_10_15_2134_17_304	1	6.120	2.786	-0.012	0.162	-0.373	0.144	1.058	1.986	0.40	0.262	-0.00600	0.00600	-3.89	0.88	0.451
10/15/2013 21:34	0917-173_No	13_10_15_2134_23_504	1	-12.013	2.740	-0.335	0.161	-0.255	0.140	1.143	1.957	-0.591	0.261	0.00200	0.00700	0.47	0.84	0.471
10/15/2013 21:34	0917-173_No	13_10_15_2134_29_674	1	1.07	2.725	0.305	0.170	-0.0260	0.145	1.078	2.049	-0.067	0.268	-0.00200	0.00700	-1.3130	0.83	0.481
10/15/2013 21:34	0917-173_No	13_10_15_2134_35_864	1	4.523	3.028	0.33	0.153	-0.060	0.1370	0.892	2.060	0.073	0.257	-0.01300	0.00700	0.294	0.861	0.551
10/15/2013 21:34	0917-173_No	13_10_15_2134_42_064	1	1.20	2.928	-0.033	0.157	-0.155	0.143	0.986	2.010	-0.383	0.257	-0.02700	0.00700	-1.37	0.86	0.655
10/15/2013 21:34	0917-173_No	13_10_15_2134_48_164	1	-4.792	2.972	0.214	0.169	0.05300	0.144	1.311	1.990	-0.080	0.275	-0.01100	0.00700	0.299	0.90	0.499
10/15/2013 21:34	0917-173_No	13_10_15_2134_54_354	1	-5.105	3.037	0.0020	0.158	0.0420	0.146	0.911	2.069	-0.14	0.264	-0.02600	0.00800	-1.73	0.86	0.535
10/15/2013 21:35	0917-173_No	13_10_15_2135_00_544	1	-6.26	3.086	-0.095	0.163	-0.0210	0.144	1.425	1.887	0.51	0.276	-0.01100	0.00800	-1.43	0.93	0.56
10/15/2013 21:35	0917-173_No	13_10_15_2135_06_824	1	-5.518	3.472	-0.209	0.172	-0.310	0.136	1.300	1.761	-0.055	0.293	-0.01400	0.00700	-1.0630	0.99	0.393
10/15/2013 21:35	0917-173_No	13_10_15_2135_13_024	1	0.110	3.391	0.119	0.174	-0.280	0.145	1.100	1.705	-0.388	0.290	-0.02	0.00700	-0.629	0.99	0.386
10/15/2013 21:35	0917-173_No	13_10_15_2135_19_124	1	-4.5420	3.198	-0.25	0.165	-0.14000	0.148	0.891	1.725	0.144	0.273	-0.03000	0.00800	-1.072	0.94	0.332
10/15/2013 21:35	0917-173_No	13_10_15_2135_25_284	1	-2.552	3.262	-0.285	0.164	-0.246	0.151	1.114	1.744	0.075	0.277	-0.02	0.00800	-0.16	0.92	0.376
10/15/2013 21:35	0917-173_No	13_10_15_2135_31_534	1	-1.26	3.253	-0.335	0.170	-0.2270	0.141	0.635	1.709	-0.1250	0.283	-0.02100	0.00700	-0.885	0.95	0.384
10/15/2013 21:35	0917-173_No	13_10_15_2135_37_714	1	-0.662	3.207	-0.030	0.163	-0.400	0.147	1.309	1.642	-0.39	0.272	-0.00100	0.00900	-1.41	0.90	0.455
10/15/2013 21:35	0917-173_No	13_10_15_2135_43_764	1	-1.688	3.301	-0.109	0.176	-0.1200	0.136	1.167	1.716	-0.211	0.290	-0.00700	0.00800	-1.118	0.98	0.451
10/15/2013 21:35	0917-173_No	13_10_15_2135_50_014	1	-7.028	3.037	0.091	0.164	-0.150	0.153	1.093	1.757	0.062	0.267	-0.01400	0.00800	-1.559	0.89	0.404
10/15/2013 21:35	0917-173_No	13_10_15_2135_56_204	1	-1.410	2.988	0.289	0.163	-0.0310	0.143	1.052	1.759	-0.11	0.265	-0.01100	0.00800	-1.068	0.849	0.399
10/15/2013 21:36	0917-173_No	13_10_15_2136_02_384	1	2.09	3.224	-0.0820	0.167	-0.113	0.145	1.125	1.735	-0.4570	0.281	-0.00900	0.00700	0.00	0.96	0.463
10/15/2013 21:36	0917-173_No	13_10_15_2136_08_564	1	-7.036	3.208	-0.1120	0.173	-0.246	0.143	1.365	1.657	-0.035	0.286	-0.02500	0.00800	-1.44	0.93	0.343
10/15/2013 21:36	0917-173_No	13_10_15_2136_14_644	1	-9.005	3.253	0.052	0.163	0.0050	0.140	0.570	1.690	-0.3870	0.277	-0.01600	0.00700	-0.89	0.93	0.466
10/15/2013 21:36	0917-173_No	13_10_15_2136_20_854	1	-4.854	3.171	-0.100	0.177	-0.407	0.149	0.922	1.697	0.133	0.288	-0.00700	0.00800	-0.85	0.93	0.42
10/15/2013 21:36	0917-173_No	13_10_15_2136_27_034	1	-10.660	3.347	0.079	0.162	-0.134	0.147	0.805	1.789	0.2470	0.277	-0.01900	0.00800	-1.33	0.95	0.517
10/15/2013 21:36	0917-173_No	13_10_15_2136_33_324	1	-5.081	3.239	-0.3300	0.170	0.093	0.150	1.425	1.741	-0.039	0.283	-0.0010	0.00700	-0.47	0.96	0.476
10/15/2013 21:36	0917-173_No	13_10_15_2136_39_434	1	-7.049	3.293	0.090	0.165	-0.0030	0.146	1.9160	1.814	0.0570	0.280	-0.00600	0.00700	-1.4000	0.96	0.486
10/15/2013 21:36	0917-173_No	13_10_15_2136_45_614	1	-5.495	3.394	-0.012	0.163	-0.191	0.147	0.792	1.780	0.185	0.283	-0.00700	0.00800	-2.38	0.97	0.475
10/15/2013 21:36	0917-173_No	13_10_15_2136_51_794	1	0.237	2.912	-0.035	0.161	-0.155	0.150	0.787	1.774	-0.017	0.263	-0.02000	0.00700	-0.645	0.88	0.535
10/15/2013 21:36	0917-173_No	13_10_15_2136_57_974	1	-2.700	3.099	0.1790	0.180	-0.079	0.1430	0.984	1.840	-0.491	0.285	-0.01500	0.00700	-1.043	0.93	0.496
10/15/2013 21:37	0917-173_No	13_10_15_2137_04_164	1	-5.111	3.060	0.005	0.169	-0.113	0.146	1.005	1.762	-0.668	0.277	-0.01200	0.00700	-0.689	0.92	0.513
10/15/2013 21:37	0917-173_No	13_10_15_2137_10_344	1	-5.798	3.275	0.068	0.164	-0.0770	0.142	0.908	1.778	-0.332	0.279	-0.01800	0.00700	-1.867	0.93	0.523
10/15/2013 21:37	0917-173_No	13_10_15_2137_16_424	1	-6.883	2.933	-0.063	0.166	0.259	0.142	1.082	1.765	-0.606	0.269	-0.01700	0.00700	-0.14	0.92	0.549
10/15/2013 21:37	0917-173_No	13_10_15_2137_22_644	1	-4.16	3.248	-0.218	0.177	0.0510	0.148	1.448	1.788	-0.458	0.291	-0.01800	0.00700	-0.43	0.98	0.47
10/15/2013 21:37	0917-173_No	13_10_15_2137_28_894	1	-3.08	2.931	-0.503	0.169	-0.0600	0.150	0.716	1.832	0.102	0.270	-0.01000	0.00600	-1.03	0.91	0.544
10/15/2013 21:37	0917-173_No	13_10_15_2137_35_104	1	-4.652	3.084	-0.0170	0.170	-0.214	0.152	1.137	1.838	0.31	0.276	-0.01	0.00700	-0.92	0.92	0.541
10/15/2013 21:37	0917-173_No	13_10_15_2137_41_284	1	-0.830	3.297	0.155	0.167	-0.297	0.143	1.812	1.867	0.98	0.283	-0.01700	0.00800	-4.17	0.98	0.552
10/15/2013 21:37	0917-173_No	13_10_15_2137_47_374	1	-4.593	3.089	0.150	0.165	-0.3640	0.143	1.301	1.852	0.275	0.275	-0.00700	0.00700	-3.66	0.92	0.521
10/15/2013 21:37	0917-173_No	13_10_15_2137_53_604	1	-5.495	2.937	-0.113	0.166	-0.272	0.144	0.764	1.904	0.04	0.271	-0.00500	0.00600	-2.35	0.91	0.607
10/15/2013 21:37	0917-173_No	13_10_15_2137_59_774	1	-0.93	2.969	0.229	0.169	-0.098	0.143	1.031	1.884	-0.027	0.275	-0.00300	0.00700	0.4680	0.90	0.585
10/15/2013 21:38	0917-173_No	13_10_15_2138_05_954	1	-1.386	2.986	-0.076	0.166	-0.0410	0.144	1.199	1.843	-0.351	0.270	-0.01400	0.00700	-1.82	0.93	0.518
10/15/2013 21:38	0917-173_No	13_10_15_2138_12_164	1	-4.737	3.223	-0.270	0.172	-0.321	0.143	0.566	1.867	-0.086	0.285	-0.03200	0.00800	1.65	0.93	0.601
10/15/2013 21:38	0917-173_No	13_10_15_2138_18_254	1	0.476	3.086	-0.147	0.173	-0.116	0.140	1.052	1.844	-0.111	0.284	-0.02	0.00800	-2.363	0.93	0.561
10/15/2013 21:38	0917-173_No	13_10_15_2138_24_434	1	-4.961	3.365	0.1550	0.160	-0.125	0.146	0.923	1.802	0.186	0.278	-0.01	0.00700	-1.256	0.95	0.553
10/15/2013 21:38	0917-173_No	13_10_15_2138_30_714	1	4.41	2.991	-0.128	0.174	-0.173	0.142	1.288	1.850	-0.240	0.279	-0.00400	0.00700	-2.141	0.91	0.544
10/15/2013 21:38	0917-173_No	13_10_15_2138_36_934	1	-0.897	3.017	-0.3950	0.169	0.059	0.150	0.746	1.920	-0.101	0.273	-0.01200	0.00700	-3.51	0.90	0.565
10/15/2013 21:38	0917-173_No	13_10_15_2138_43_054	1	-11.07	3.367	-0.228	0.183	-0.0030	0.150	0.592	1.836	-0.317	0.302	-0.0370	0.00700	-0.259	1.05	0.637
10/15/2013 21:38	0917-173_No	13_10_15_2138_49_204	1	-3.33	3.030	-0.221	0.166	-0.318	0.137	1.158	1.857	0.23	0.270	-0.01	0.00800	-2.36	0.94	0.481
10/15/2013 21:38	0917-173_No	13_10_15_2138_55_384	1	3.99	3.183	-0.062	0.168	-0.262	0.144	1.023	1.890	-0.3110	0.277	-0.01100	0.00700	-0.68	0.93	0.59
10/15/2013 21:39	0917-173_No	13_10_15_2139_01_574	1	0.153	3.447	0.1030	0.169	-0.449	0.136	0.62	1.867	0.05	0.287	-0.00600	0.00800	-2.92	0.98	0.613
10/15/2013 21:39	0917-173_No	13_10_15_2139_07_744	1	1.70	2.974	0.313	0.172	-0.222	0.137	1.409	1.875	0.181	0.276	-0.00700	0.00700	-0.071	0.92	0.536
10/15/2013 21:39	0917-173_No	13_10_15_2139_13_864	1	-4.397	3.104	0.0950	0.167	-0.0010	0.135	1.366	1.892	0.135	0.277	-0.0330	0.00600	-1.372	0.90	0.595
10/15/2013 21:39	0917-173_No	13_10_15_2139_20_044	1	-1.91	2.920	0.094	0.169	-0.242	0.149	0.826	1.839	-0.281	0.272	-0.02100	0.00700	-2.78	0.89	0.581
10/15/2013 21:39	0917-173_No	13_10_15_2139_26_224	1	-4.299	3.298	-0.134	0.173	-0.071	0.140	1.272	1.890	-0.276	0.286	-0.00400	0.00800	-0.967	0.98	0.578
10/15/2013 21:39	0917-173_No	13_10_15_2139_32_514	1	-0.482	3.057	0.0570	0.178	0.0540	0.143	1.105	1.929	-0.259	0.283	-0.02200	0.00800	-0.94	0.95	0.62
10/15/2013 21:39	0917-173_No	13_10_15_2139_38_704	1	-2.6450	3.188	0.076	0.162	0.08900	0.146	1.382	1.861	-1.128	0.273	-0.01500	0.00600	-0.252	0.94	0.623
10/15/2013 21:39	0917-173_No	13_10_15_2139_44_744	1	0.133	3.217	-0.164	0.177	-0.0910	0.138	1.023	1.915	0.353	0.288	-0.00800	0.00600	-0.71	0.97	0.584
10/15/2013 21:39	0917-173_No	13_10_15_2139_50_935	1	-1.57	3.230	-0.083	0.170	-0.1710	0.139	1.282	1.874	-0.26	0.286	-0.01500	0.00700	-1.63	0.97	0.578
10/15/2013 21:39	0917-173_No	13_10_15_2139_57_195	1	-0.9570	3.106	0.125	0.163	0.253	0.151	1.464	1.863	-0.358	0.269	-0.01400	0.00700	-0.414	0.91	0.66
10/15/2013 21:40	0917-173_No	13_10_15_2140_35_345	1	-2.485	2.014	0.0030	0.101	-0.079	0.1250	1.278	1.891	0.037	0.172	-0.02	0.00500	-1.130	0.583	0.648
10/15/2013 21:41	0917-173_No	13_10_15_2141_36_035	1	-3.0520	1.873	-0.0050	0.103	-0.152	0.1230	1.645	1.877	-0.165	0.169	-0.01300	0.00500	-1.461	0.574	0.678
10/15/2013 21:42	0917-173_No	13_10_15_2142_36_795	1	-2.418	1.984	0.047	0.100	-0.0970	0.1220	1.341	1.869	0.043	0.170	-0.01400	0.00500	-1.319	0.581	0.71
10/15/2013 21:43	0917-173_No	13_10_15_2143_37_565	1	0.147	1.956	0.0650	0.104	-0.132	0.1180	1.362	1.884	-0.113	0.172	-0.02	0.00500	-0.816	0.581	0.728
10/15/2013 21:44	0917-173_No	13_10_15_2144_38_285	1	-2.150	1.979	0.0890	0.103	-0.0320	0.1220	1.443	1.877	-0.186	0.172	-0.01700	0.00500	-0.6690	0.582	0.748
10/15/2013 21:45	0917-173_No	13_10_15_2145_39_091	1	-1.506	1.924	0.002	0.104	-0.118	0.1230	1.226	1.859	-0.097	0.170	-0.01300	0.00500	-1.055	0.579	0.778
10/15/2013 21:47	0917-173_No	13_10_15_2147_19_287	1	0.663	3.129	0.272	0.155	-0.118	0.137	1.652	2.011	0.28	0.262	-0.03400	0.00700	-3.15	0.88	0.783
10/15/2013 21:47	0917-173_No	13_10_15_2147_25_447	1	-1.746	2.835	-0.006	0.168	0.0400	0.135	1.483	2.056	-0.158	0.267	-0.02600	0.00700	-0.296	0.88	0.751
10/15/2013 21:47	0917-173_No	13_10_15_2147_31_687	1	0.701	2.904	-0.015	0.156	0.0520	0.1320	1.206	2.063	-0.28	0.254	-0.02700	0.00700	-1.36	0.86	0.723
10/15/2013 21:47	0917-173_No	13_10_15_2147_37_897	1	-2.38	2.940	-0.194	0.157	-0.0550	0.1380	1.140	2.118	-0.20	0.261	-0.02000	0.00600	-1.282	0.89	0.717
10/15/2013 21:47	0917-173_No	13_10_15_2147_44_007	1	-4.784	2.812	0.049	0.163	0.02700	0.1310	0.934	2.075	0.075	0.262	-0.00800	0.00700	-1.83	0.85	0.724
10/15/2013 21:47	0917-173_No	13_10_15_2147_50_147	1	1.098	2.929	-0.140	0.154	0.0460	0.134	1.5010	2.123	-0.229	0.255	-0.00800	0.00800	0.104	0.84	0.726
10/15/2013 21:47	0917-173_No	13_10_15_2147_56_407	1	-5.385	3.233	-0.220	0.147	0.0850	0.140	0.737	2.190	-0.39	0.261	-0.02400	0.00700	-1.37	0.89	0.702
10/15/2013 21:48	0917-173_No	13_10_15_2148_02_587	1	-0.81	2.819	0.242	0.149	0.00900	0.1240	1.179	2.127	-0.204	0.250	-0.01	0.00700	-0.164	0.83	0.707
10/15/2013 21:48	0917-173_No	13_10_15_2148_08_757	1	-5.955	2.860	0.325	0.152	-0.128	0.1360	1.152	2.131	-0.284	0.251	-0.01000	0.00700	0.890	0.84	0.708
10/15/2013 21:48	0917-173_No	13_10_15_2148_14_867	1	0.18	3.080	-0.087	0.155	-0.090	0.1290	0.620	2.087	-0.359	0.258	0.00500	0.00600	0.097	0.87	0.648
10/15/2013 21:48	0917-173_No	13_10_15_2148_21_057	1	-6.584	2.853	0.12	0.163	-0.1110	0.138	1.553	2.133	-0.108	0.260	-0.01500	0.00600	-0.102	0.85	0.685
10/15/2013 21:48	0917-173_No	13_10_15_2148_27_247	1	-6.215	2.881	-0.085	0.151	-0.04200	0.1270	1.4030	2.114	-0.406	0.256	0.00200	0.00700	-0.92	0.88	0.663
10/15/2013 21:48	0917-173_No	13_10_15_2148_33_507	1	-9.249	2.771	-0.0210	0.150	0.010	0.138	1.359	2.114	-0.2010	0.249	-0.0170	0.00600	-1.10	0.82	0.604
10/15/2013 21:48	0917-173_No	13_10_15_2148_39_707	1	1.34	2.908	-0.13	0.148	-0.342	0.124	1.6360	2.118	-0.374	0.252	0.01100	0.00600	0.73	0.84	0.543
10/15/2013 21:48	0917-173_No	13_10_15_2148_45_807	1	-3.417	2.817	-0.317	0.160	-0.0080	0.123	0.887	2.092	0.114	0.263	-0.01600	0.00600	-1.30	0.86	0.584
10/15/2013 21:48	0917-173_No	13_10_15_2148_51_967	1	6.66	3.028	0.309	0.158	-0.1460	0.1170	0.536	2.054	-0.10	0.267	-0.00900	0.00600	-1.968	0.91	0.57
10/15/2013 21:48	0917-173_No	13_10_15_2148_58_167	1	0.8680	2.867	-0.136	0.149	-0.0600	0.1180	1.028	2.069	0.149	0.249	0.00000	0.00600	-2.64	0.85	0.526
10/15/2013 21:49	0917-173_No	13_10_15_2149_04_347	1	4.754	2.695	0.053	0.145	-0.0550	0.116	0.755	2.033	-0.209	0.241	-0.02000	0.00700	-2.56	0.82	0.483
10/15/2013 21:49	0917-173_No	13_10_15_2149_10_547	1	-5.74	2.796	-0.1060	0.149	-0.105	0.1200	1.2000	2.001	0.317	0.250	-0.01100	0.00600	-0.84	0.85	0.418
10/15/2013 21:49	0917-173_No	13_10_15_2149_16_637	1	-3.724	2.696	0.301	0.150	0.0010	0.1200	0.979	1.988	-0.500	0.249	-0.00200	0.00500	-1.609	0.84	0.48
10/15/2013 21:49	0917-173_No	13_10_15_2149_22_817	1	-0.201	2.856	0.081	0.144	-0.144	0.1220	1.315	1.965	-0.509	0.244	-0.0200	0.00600	1.35	0.84	0.506
10/15/2013 21:49	0917-173_No	13_10_15_2149_29_027	1	0.263	2.747	-0.023	0.152	0.1490	0.1220	0.883	1.941	-0.079	0.249	-0.01	0.00500	0.13	0.85	0.466
10/15/2013 21:49	0917-173_No	13_10_15_2149_35_237	1	2.974	2.715	0.119	0.144	0.014	0.1110	1.186	1.904	-0.121	0.240	-0.00100	0.00500	-1.538	0.78	0.438
10/15/2013 21:49	0917-173_No	13_10_15_2149_41_427	1	0.768	2.897	0.124	0.151	-0.0210	0.1110	1.43	1.898	-0.282	0.254	0.00000	0.00400	-2.07	0.86	0.423
10/15/2013 21:49	0917-173_No	13_10_15_2149_47_587	1	7.518	2.734	0.121	0.146	-0.250	0.111	0.557	1.834	-0.369	0.246	-0.01	0.00500	-0.330	0.80	0.426
10/15/2013 21:49	0917-173_No	13_10_15_2149_53_757	1	10.437	2.832	0.01	0.153	-0.006	0.1170	1.021	1.830	-0.453	0.254	-0.01300	0.00600	0.778	0.87	0.439
10/15/2013 21:49	0917-173_No	13_10_15_2149_59_967	1	-1.05	2.980	-0.018	0.158	-0.080	0.1160	1.049	1.862	0.168	0.260	-0.01600	0.00600	-0.15	0.86	0.394
10/15/2013 21:50	0917-173_No	13_10_15_2150_06_167	1	-7.17	2.896	0.316	0.163	0.066	0.1130	1.3720	1.901	0.446	0.264	-0.01400	0.00500	0.6360	0.91	0.388
10/15/2013 21:50	0917-173_No	13_10_15_2150_12_367	1	-2.728	2.865	0.527	0.152	-0.0110	0.1100	1.126	1.872	0.008	0.252	0.00300	0.00600	0.6180	0.83	0.407
10/15/2013 21:50	0917-173_No	13_10_15_2150_18_507	1	3.3040	2.726	-0.402	0.146	0.196	0.1060	1.067	1.845	0.14	0.241	-0.00900	0.00600	-1.93	0.83	0.416
10/15/2013 21:50	0917-173_No	13_10_15_2150_24_717	1	-0.933	2.693	0.119	0.150	0.125	0.1160	1.2550	1.862	-0.605	0.246	0.00	0.00600	-0.91	0.83	0.422
10/15/2013 21:50	0917-173_No	13_10_15_2150_30_827	1	8.9600	2.525	0.110	0.153	-0.183	0.1060	0.673	1.835	-0.07	0.242	-0.00100	0.00600	-3.03	0.79	0.348
10/15/2013 21:50	0917-173_No	13_10_15_2150_37_127	1	1.46	2.687	-0.178	0.146	-0.118	0.1150	0.9400	1.883	-0.488	0.239	-0.00800	0.00700	-0.37	0.80	0.41
10/15/2013 21:50	0917-173_No	13_10_15_2150_43_317	1	0.929	2.637	0.180	0.155	0.0580	0.122	0.329	1.882	-0.222	0.247	0.00700	0.00600	-1.38	0.78	0.41
10/15/2013 21:50	0917-173_No	13_10_15_2150_49_337	1	5.831	2.399	0.098	0.153	-0.04200	0.118	1.3830	1.810	0.070	0.238	-0.00600	0.00500	0.84	0.81	0.424
10/15/2013 21:50	0917-173_No	13_10_15_2150_55_607	1	7.047	2.774	0.190	0.155	0.1630	0.120	0.727	1.806	-0.22	0.254	-0.01600	0.00700	-1.38	0.84	0.422
10/15/2013 21:51	0917-173_No	13_10_15_2151_01_797	1	7.328	2.805	0.000	0.155	0.222	0.1000	0.950	1.786	0.14	0.256	0.00700	0.00600	-3.02	0.86	0.342
10/15/2013 21:51	0917-173_No	13_10_15_2151_08_017	1	-0.179	2.745	0.0900	0.152	0.1390	0.1000	1.163	1.812	0.000	0.244	-0.00600	0.00600	-2.04	0.80	0.413
10/15/2013 21:51	0917-173_No	13_10_15_2151_14_017	1	1.6190	2.692	-0.214	0.143	0.1110	0.128	1.373	1.830	-0.213	0.238	-0.02100	0.00700	-0.354	0.79	0.373
10/15/2013 21:51	0917-173_No	13_10_15_2151_20_217	1	-1.27	2.867	0.266	0.158	0.2000	0.1190	0.9090	1.835	0.138	0.255	0.01000	0.00600	-0.56	0.88	0.402
10/15/2013 21:51	0917-173_No	13_10_15_2151_26_507	1	2.982	2.894	0.459	0.149	0.112	0.1130	1.563	1.818	0.44	0.251	0.00400	0.00600	-1.76	0.83	0.364
10/15/2013 21:52	0917-173_No	13_10_15_2152_06_718	1	0.117	1.251	0.171	0.0670	-0.106	0.0780	1.0850	1.816	0.06	0.112	-0.00600	0.00300	-1.215	0.362	0.415
10/15/2013 21:53	0917-173_No	13_10_15_2153_07_498	1	1.143	1.147	0.056	0.069	0.0270	0.0780	0.792	1.798	-0.051	0.111	0.00	0.00300	-0.453	0.382	0.439
10/15/2013 21:54	0917-173_No	13_10_15_2154_08_258	1	-0.238	1.149	0.071	0.066	-0.0290	0.0780	0.989	1.780	-0.057	0.107	-0.00500	0.00300	-0.1530	0.353	0.404
10/15/2013 21:55	0917-173_No	13_10_15_2155_09_028	1	1.557	1.143	0.068	0.063	0.01500	0.0750	1.0230	1.764	-0.082	0.103	-0.01000	0.00300	-1.22	0.350	0.412
10/15/2013 21:56	0917-173_No	13_10_15_2156_09_848	1	2.923	1.127	0.076	0.063	-0.03100	0.0740	1.1930	1.760	-0.131	0.104	-0.00800	0.00300	-0.5780	0.342	0.422
10/16/2013 8:35	0917-173_No	13_10_16_0835_04_240	1	1.7	1.5	0.051	0.080	-0.38	1.41	0.192	0.0920	-0.110	0.130	0.062	0.576	0.2900	0.436	-1.749
10/16/2013 8:35	0917-173_No	13_10_16_0835_22_760	1	0.7	1.4	-0.048	0.086	-0.39	1.54	0.184	0.0950	-0.031	0.135	0.064	0.618	0.0160	0.436	-1.91
10/16/2013 8:35	0917-173_No	13_10_16_0835_41_360	1	1.4	1.4	-0.0440	0.077	-0.62	1.60	0.0340	0.0960	-0.013	0.125	0.065	0.642	-0.567	0.412	-1.958

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 8:35	0917-173_No	13_10_16_0835_59_860	1	-0.4	1.5	0.032	0.083	-0.49	1.63	-0.0610	0.0960	-0.377	0.134	0.064	0.652	1.372	0.450	-1.979
					10/16/2013 8:36	0917-173_No	13_10_16_0836_18_370	1	-2.2	1.5	0.0680	0.085	-0.53	1.64	0.0030	0.0960	-0.320	0.136	0.069	0.662	0.35	0.449	-2.027
					10/16/2013 8:36	0917-173_No	13_10_16_0836_36_990	1	-0.6	1.3	-0.088	0.092	-0.49	1.65	0.057	0.0910	-0.2190	0.139	0.066	0.658	0.537	0.442	-2.069
					10/16/2013 8:36	0917-173_No	13_10_16_0836_55_400	1	0.8	1.4	0.177	0.082	-0.55	1.65	-0.09600	0.0990	0.0720	0.131	0.059	0.661	-0.8010	0.444	-2.023
					10/16/2013 8:37	0917-173_No	13_10_16_0837_14_090	1	1.7	1.5	0.0950	0.079	-0.66	1.65	0.156	0.1060	0.284	0.132	0.070	0.657	-0.2140	0.430	-2.069
					10/16/2013 8:37	0917-173_No	13_10_16_0837_32_591	1	2.1	1.4	-0.0750	0.075	-0.55	1.66	-0.0100	0.1060	-0.234	0.122	0.064	0.662	0.3200	0.411	-2.042
					10/16/2013 8:37	0917-173_No	13_10_16_0837_51_001	1	-0.6	1.5	-0.001	0.088	-0.62	1.65	-0.0740	0.0950	-0.0830	0.141	0.073	0.665	0.87	0.476	-2.043
					10/16/2013 8:38	0917-173_No	13_10_16_0838_09_661	1	-2.2	1.5	-0.1040	0.083	-0.52	1.66	0.0660	0.0910	0.076	0.138	0.075	0.663	0.217	0.472	-2.05
					10/16/2013 8:38	0917-173_No	13_10_16_0838_28_111	1	-2.4	1.5	-0.122	0.088	-0.50	1.65	0.1360	0.0990	-0.142	0.141	0.070	0.659	0.047	0.459	-2.045
					10/16/2013 8:38	0917-173_No	13_10_16_0838_46_631	1	-0.1	1.7	-0.0710	0.076	-0.61	1.66	-0.1360	0.1060	0.263	0.133	0.074	0.664	-1.206	0.456	-2.043
					10/16/2013 8:39	0917-173_No	13_10_16_0839_05_251	1	2.2	1.4	-0.011	0.079	-0.46	1.66	0.0660	0.1010	0.000	0.129	0.071	0.661	-0.010	0.428	-2.059
					10/16/2013 8:39	0917-173_No	13_10_16_0839_23_781	1	-0.4	1.5	0.035	0.084	-0.55	1.66	0.121	0.1040	0.015	0.137	0.064	0.663	0.464	0.443	-2.016
					10/16/2013 8:39	0917-173_No	13_10_16_0839_42_371	1	-2.4	1.5	-0.020	0.082	-0.49	1.65	-0.142	0.1010	0.067	0.134	0.064	0.664	0.289	0.435	-2.005
					10/16/2013 8:40	0917-173_No	13_10_16_0840_00_791	1	0.5	1.6	0.061	0.081	-0.49	1.65	-0.1410	0.1060	-0.1700	0.136	0.061	0.665	0.490	0.466	-2.007
					10/16/2013 10:53	0917-173_No	13_10_16_1053_00_580	1	0.551	1.201	0.000	0.074	0.724	0.0810	0.429	1.756	-1.268	0.149	-0.00200	0.00500	0.04	0.366	16.446
Data	Run	10	Start	A	10/16/2013 10:54	0917-173_No	13_10_16_1054_01_360	1	-0.09	1.253	0.080	0.067	0.554	0.0760	0.326	1.743	-1.130	0.144	-0.00300	0.00600	-1.13	0.368	15.707
					10/16/2013 10:55	0917-173_No	13_10_16_1055_02_170	1	1.112	1.212	-0.085	0.079	0.647	0.0790	0.394	1.744	-1.582	0.178	-0.00900	0.00500	-0.77	0.381	21.29
					10/16/2013 10:56	0917-173_No	13_10_16_1056_02_880	1	-2.953	1.244	-0.042	0.078	0.724	0.0840	0.564	1.758	-1.808	0.188	-0.00500	0.00500	-0.73	0.379	23.836
					10/16/2013 10:57	0917-173_No	13_10_16_1057_03_610	1	-0.24	1.219	0.184	0.077	0.759	0.0800	0.536	1.758	-1.797	0.191	-0.00300	0.00600	-0.99	0.352	24.445
					10/16/2013 10:58	0917-173_No	13_10_16_1058_04_380	1	-2.570	1.235	-0.038	0.085	0.816	0.0810	0.552	1.759	-2.046	0.203	-0.00300	0.00500	-1.12	0.389	26.209
					10/16/2013 10:59	0917-173_No	13_10_16_1059_05_200	1	-2.95	1.207	-0.0360	0.079	0.815	0.0810	0.538	1.757	-1.73	0.184	-0.00300	0.00500	-1.32	0.363	23.742
					10/16/2013 11:00	0917-173_No	13_10_16_1100_06_010	1	-0.72	1.141	0.054	0.077	0.886	0.0790	0.600	1.751	-1.573	0.177	-0.00600	0.00600	-1.49	0.365	23.019
					10/16/2013 11:01	0917-173_No	13_10_16_1101_06_711	1	-0.285	1.259	-0.044	0.076	0.878	0.0810	0.361	1.732	-1.928	0.191	-0.00300	0.00500	-1.07	0.376	25.129
					10/16/2013 11:02	0917-173_No	13_10_16_1102_07_491	1	-0.82	1.322	-0.1160	0.081	0.787	0.0800	0.558	1.729	-2.02	0.201	-0.00100	0.00600	-1.39	0.389	26.538
					10/16/2013 11:03	0917-173_No	13_10_16_1103_08_231	1	-1.50	1.182	0.059	0.076	0.823	0.0770	0.502	1.736	-1.958	0.192	-0.00300	0.00500	-0.98	0.366	25.516
					10/16/2013 11:04	0917-173_No	13_10_16_1104_09_041	1	0.45	1.270	0.1140	0.078	0.802	0.0790	0.549	1.719	-1.814	0.194	-0.00700	0.00600	-0.93	0.387	24.884
					10/16/2013 11:05	0917-173_No	13_10_16_1105_09_761	1	-1.86	1.256	0.0060	0.077	0.832	0.0770	0.459	1.718	-1.998	0.194	0.00100	0.00500	-0.83	0.379	26.146
					10/16/2013 11:06	0917-173_No	13_10_16_1106_10_521	1	-0.894	1.240	0.106	0.077	0.822	0.0780	0.627	1.713	-2.199	0.202	0.00	0.00500	-0.11	0.386	27.025
					10/16/2013 11:07	0917-173_No	13_10_16_1107_11_331	1	-1.919	1.295	0.010	0.081	0.737	0.0780	0.536	1.718	-2.072	0.199	-0.00500	0.00500	-0.24	0.392	26.325
					10/16/2013 11:08	0917-173_No	13_10_16_1108_12_061	1	-1.846	1.249	0.066	0.073	0.818	0.0780	0.646	1.719	-1.798	0.180	-0.00700	0.00500	-0.79	0.355	23.06
					10/16/2013 11:09	0917-173_No	13_10_16_1109_12_911	1	-0.490	1.145	-0.0680	0.079	0.767	0.0810	0.502	1.727	-1.818	0.182	-0.00200	0.00600	-0.68	0.374	23.557
					10/16/2013 11:10	0917-173_No	13_10_16_1110_13_621	1	-0.47	1.263	-0.065	0.079	0.776	0.0790	0.441	1.747	-1.65	0.186	-0.00500	0.00500	-1.43	0.382	24.175
					10/16/2013 11:11	0917-173_No	13_10_16_1111_14_401	1	-3.55	1.295	-0.085	0.076	0.771	0.0810	0.556	1.760	-1.716	0.190	-0.00400	0.00500	-1.20	0.385	24.336
					10/16/2013 11:12	0917-173_No	13_10_16_1112_15_162	1	0.01	1.162	0.090	0.080	0.761	0.0820	0.479	1.773	-1.760	0.188	0.00000	0.00600	-0.59	0.353	25.069
					10/16/2013 11:13	0917-173_No	13_10_16_1113_15_972	1	1.54	1.255	-0.08000	0.080	0.814	0.0830	0.509	1.777	-1.955	0.197	-0.00100	0.00600	-1.11	0.385	26.142
					10/16/2013 11:14	0917-173_No	13_10_16_1114_16_712	1	-1.03	1.292	0.011	0.079	0.779	0.0830	0.387	1.797	-2.247	0.197	-0.00700	0.00500	0.01	0.374	25.74
					10/16/2013 11:15	0917-173_No	13_10_16_1115_17_532	1	0.75	1.314	-0.141	0.081	0.774	0.0830	0.703	1.785	-2.308	0.199	-0.00600	0.00500	-0.71	0.380	27.012
					10/16/2013 11:16	0917-173_No	13_10_16_1116_18_342	1	1.69	1.181	-0.0710	0.076	0.779	0.0830	0.409	1.783	-1.994	0.187	-0.00700	0.00500	-0.73	0.358	25.096
					10/16/2013 11:17	0917-173_No	13_10_16_1117_19_052	1	-0.496	1.246	0.0640	0.074	0.666	0.0810	0.511	1.786	-1.629	0.180	-0.00700	0.00600	-0.78	0.376	23.413
					10/16/2013 11:18	0917-173_No	13_10_16_1118_19_792	1	-1.135	1.144	-0.0490	0.080	0.752	0.0810	0.530	1.777	-1.863	0.182	-0.00700	0.00500	-0.87	0.365	23.131
					10/16/2013 11:19	0917-173_No	13_10_16_1119_20_502	1	-2.43	1.351	0.079	0.082	0.757	0.0820	0.599	1.788	-2.057	0.204	-0.00800	0.00500	-1.43	0.399	27.237
					10/16/2013 11:20	0917-173_No	13_10_16_1120_21_332	1	-0.83	1.204	-0.1490	0.075	0.765	0.0850	0.396	1.780	-1.97	0.196	-0.00300	0.00500	-1.00	0.351	26.578
					10/16/2013 11:21	0917-173_No	13_10_16_1121_22_052	1	-1.908	1.280	-0.103	0.080	0.695	0.0840	0.534	1.791	-2.204	0.205	-0.00700	0.00500	-0.69	0.393	27.01
					10/16/2013 11:22	0917-173_No	13_10_16_1122_22_852	1	0.29	1.219	0.092	0.079	0.770	0.0840	0.468	1.809	-2.198	0.205	-0.00400	0.00600	-0.83	0.360	28.316
					10/16/2013 11:23	0917-173_No	13_10_16_1123_23_562	1	-2.31	1.249	0.028	0.079	0.857	0.0840	0.460	1.798	-2.103	0.202	-0.00700	0.00600	-0.53	0.376	26.368
					10/16/2013 11:24	0917-173_No	13_10_16_1124_24_403	1	0.026	1.211	-0.015	0.077	0.790	0.0810	0.440	1.808	-1.736	0.178	-0.00500	0.00500	-0.43	0.376	23.148
					10/16/2013 11:25	0917-173_No	13_10_16_1125_25_123	1	-1.26	1.185	-0.010	0.074	0.703	0.0810	0.567	1.807	-1.794	0.184	-0.00500	0.00600	-0.69	0.355	25.226
					10/16/2013 11:26	0917-173_No	13_10_16_1126_25_883	1	-1.786	1.254	-0.0460	0.081	0.724	0.0780	0.508	1.798	-2.153	0.213	-0.00300	0.00500	-0.45	0.382	29.398
					10/16/2013 11:27	0917-173_No	13_10_16_1127_26_683	1	-0.28	1.350	-0.0750	0.087	0.727	0.0860	0.648	1.807	-2.78	0.255	-0.00900	0.00600	-1.41	0.387	36.09
					10/16/2013 11:28	0917-173_No	13_10_16_1128_27_423	1	-1.01	1.166	-0.0620	0.088	0.824	0.0830	0.399	1.803	-3.003	0.266	-0.00400	0.00500	-0.91	0.355	38.123
					10/16/2013 11:29	0917-173_No	13_10_16_1129_28_223	1	-1.894	1.245	-0.1570	0.090	0.866	0.0860	0.397	1.802	-3.290	0.278	0.00400	0.00500	-1.0	0.376	40.797
					10/16/2013 11:30	0917-173_No	13_10_16_1130_28_963	1	-3.270	1.282	-0.001	0.094	0.796	0.082	0.410	1.793	-3.06	0.288	-0.00200	0.00600	-1.18	0.394	41.422
					10/16/2013 11:31	0917-173_No	13_10_16_1131_29_793	1	-0.95	1.181	-0.0660	0.084	0.867	0.0830	0.366	1.798	-3.15	0.284	-0.00500	0.00500	-0.6	0.349	40.652
					10/16/2013 11:32	0917-173_No	13_10_16_1132_30_513	1	0.20	1.353	-0.041	0.094	0.847	0.0850	0.383	1.797	-3.089	0.289	-0.00400	0.00600	-0.2	0.401	40.986
					10/16/2013 11:33	0917-173_No	13_10_16_1133_31_273	1	-1.00	1.108	-0.130	0.088	0.876	0.0830	0.545	1.796	-2.63	0.245	-0.00700	0.00600	-0.68	0.355	34.656
					10/16/2013 11:34	0917-173_No	13_10_16_1134_32_083	1	-0.490	1.280	-0.044	0.083	0.836	0.0810	0.448	1.802	-2.505	0.227	-0.00700	0.00600	-0.83	0.387	30.811
					10/16/2013 11:35	0917-173_No	13_10_16_1135_32_843	1	-2.12	1.266	0.0090	0.081	0.877	0.0850	0.322	1.807	-2.40	0.231	-0.00300	0.00500	-1.45	0.373	32.717
					10/16/2013 11:36	0917-173_No	13_10_16_1136_33_654	1	-0.870	1.285	-0.103	0.088	0.811	0.0850	0.509	1.819	-2.501	0.245	-0.00200	0.00500	-0.72	0.385	32.928
					10/16/2013 11:37	0917-173_No	13_10_16_1137_34_364	1	-1.96	1.222	-0.108	0.085	0.896	0.0870	0.417	1.833	-2.650	0.237	-0.00300	0.00600	-0.96	0.361	33.266
					10/16/2013 11:38	0917-173_No	13_10_16_1138_35_174	1	-1.45	1.288	-0.164	0.083	0.772	0.0860	0.542	1.823	-2.414	0.240	-0.00300	0.00500	-1.07	0.383	33.01
					10/16/2013 11:39	0917-173_No	13_10_16_1139_35_894	1	-0.27	1.202	-0.076	0.090	0.831	0.0860	0.407	1.811	-2.467	0.239	-0.00800	0.00500	-0.95	0.374	32.359
					10/16/2013 11:40	0917-173_No	13_10_16_1140_36_704	1	-0.65	1.214	-0.0210	0.076	0.811	0.0830	0.356	1.810	-2.204	0.219	-0.00800	0.00500	-1.03	0.358	31.182
					10/16/2013 11:41	0917-173_No	13_10_16_1141_37_464	1	-0.878	1.219	-0.029	0.077	0.750	0.0840	0.589	1.805	-2.127	0.210	-0.00500	0.00600	-0.85	0.367	29.136
					10/16/2013 11:42	0917-173_No	13_10_16_1142_38_184	1	-1.406	1.228	-0.063	0.078	0.701	0.0840	0.375	1.792	-1.959	0.195	-0.00400	0.00500	-1.04	0.375	24.902
					10/16/2013 11:43	0917-173_No	13_10_16_1143_38_984	1	-0.533	1.172	-0.012	0.085	0.769	0.0820	0.442	1.808	-2.379	0.220	-0.00200	0.00500	-0.63	0.370	30.109
					10/16/2013 11:44	0917-173_No	13_10_16_1144_39_784	1	-3.883	1.279	-0.1020	0.087	0.885	0.0840	0.347	1.818	-2.578	0.239	-0.00200	0.00500	-0.49	0.377	32.893
					10/16/2013 11:45	0917-173_No	13_10_16_1145_40_504	1	-2.493	1.259	-0.0310	0.084	0.806	0.0850	0.268	1.808	-2.251	0.229	-0.00200	0.00500	-1.13	0.370	30.755
					10/16/2013 11:46	0917-173_No	13_10_16_1146_41_324	1	1.00	1.235	-0.086	0.079	0.859	0.0830	0.519	1.806	-2.30	0.215	0.00100	0.00500	-0.90	0.359	29.421
					10/16/2013 11:47	0917-173_No	13_10_16_1147_42_084	1	-0.42	1.247	-0.0820	0.081	0.887	0.0840	0.387	1.798	-2.220	0.212	-0.00700	0.00600	-0.82	0.376	29.635
					10/16/2013 11:48	0917-173_No	13_10_16_1148_42_895	1	-1.176	1.247	0.067	0.082	0.840	0.0840	0.434	1.804	-2.14	0.214	-0.00300	0.00600	-0.89	0.387	29.277
					10/16/2013 11:49	0917-173_No	13_10_16_1149_43_655	1	-1.44	1.183	-0.0380	0.083	0.876	0.0820	0.328	1.798	-2.268	0.221	-0.00300	0.00600	-0.88	0.372	30.488
					10/16/2013 11:50	0917-173_No	13_10_16_1150_44_365	1	-1.745	1.215	-0.023	0.081	0.887	0.0820	0.369	1.781	-2.45	0.225	0.00000	0.00600	-1.43	0.363	31.044
					10/16/2013 11:51	0917-173_No	13_10_16_1151_45_185	1	-1.19	1.178	-0.0410	0.085	0.869	0.0860	0.394	1.787	-2.241	0.223	-0.00700	0.00500	-1.28	0.364	30.036
					10/16/2013 11:52	0917-173_No	13_10_16_1152_45_905	1	-0.903	1.261	0.110	0.085	0.911	0.0850	0.425	1.784	-2.346	0.236	-0.01000	0.00600	-0.80	0.387	31.5
					10/16/2013 11:53	0917-173_No	13_10_16_1153_46_655	1	-0.85	1.166	-0.411	0.098	0.668	0.0710	0.277	1.457	-4.1240	0.248	-0.00600	0.00600	-1.55	0.379	31.654
			Stop		10/16/2013 11:54	0917-173_No	13_10_16_1154_47_485	1	-1.222	0.982	-0.810	0.111	-0.0530	0.0500	-0.117	0.217	-4.56	0.196	-0.00500	0.00600	-1.44	0.444	13.606
					10/16/2013 11:55	0917-173_No	13_10_16_1155_48_205	1	-3.345	0.992	-0.659	0.111	-0.1090	0.0510	-0.263	0.1070	-4.45	0.189	-0.00800	0.00600	-1.25	0.447	12.378
					10/16/2013 11:56	0917-173_No	13_10_16_1156_48_955	1	-2.961	1.053	-0.671	0.112	-0.09300	0.0480	-0.442	0.1080	-4.33	0.194	-0.00400	0.00600	-1.26	0.450	12.252
					10/16/2013 11:57	0917-173_No	13_10_16_1157_49_705	1	-2.64400	1.018	-0.6170	0.113	-0.0910	0.0480	-0.194	0.1000	-4.56	0.191	-0.00700	0.00600	-1.38	0.421	12.169
					10/16/2013 11:58	0917-173_No	13_10_16_1158_50_365	1	-2.981	1.034	-0.549	0.101	0.045	0.0430	-0.282	0.0790	-3.69	0.172	-0.00800	0.00600	-1.11	0.417	10.286
					10/16/2013 11:59	0917-173_No	13_10_16_1159_51_106	1	0.909	0.919	-0.008	0.057	0.0530	0.0350	-0.230	0.0750	-0.759	0.092	-0.00500	0.00500	0.23	0.304	2.161
					10/16/2013 12:00	0917-173_No	13_10_16_1200_51_926	1	-1.552	1.007	-0.0120	0.055	0.0170	0.0350	-0.1390	0.0710	-0.1110	0.091	-0.00300	0.00600	-0.309	0.304	0.393
					10/16/2013 12:01	0917-173_No	13_10_16_1201_52_646	1	0.000	1.010	-0.0140	0.054	-0.00500	0.0350	-0.0950	0.0610	0.0150	0.089	0.00	0.00600	-0.528	0.296	0.329
					10/16/2013 12:02	0917-173_No	13_10_16_1202_53_466	1	0.057	0.941	0.115	0.059	0.287	0.0390	0.069	0.427	-0.645	0.100	0.00200	0.00500	0.04	0.301	6.655
					10/16/2013 12:03	0917-173_No	13_10_16_1203_54_266	1	-0.91	1.242	-0.035	0.085	1.029	0.0800	0.427	1.747	-2.289	0.22	-0.00300	0.00600	-1.13	0.385	29.041
					10/16/2013 12:04	0917-173_No	13_10_16_1204_55_016	1	0.12	1.211	-0.063	0.088	1.057	0.0860	0.277	1.801	-2.551	0.24	-0.00100	0.00600	-0.44	0.372	31.927
					10/16/2013 12:05	0917-173_No	13_10_16_1205_55_716	1	-1.917	1.197	0.045	0.088	0.945	0.0870	0.218	1.793	-2.514	0.24	-0.00400	0.00500	-1.23	0.373	32.404
					10/16/2013 12:06	0917-173_No	13_10_16_1206_56_536	1	-1.00	1.238	-0.024	0.083	0.948	0.0840	0.245	1.790	-2.644	0.24	-0.01000	0.00500	-0.45	0.376	33.278
Data	Run	11	Start	A	10/16/2013 12:07	0917-173_No	13_10_16_1207_57_256	1	-2.40	1.256	-0.082	0.085	1.006	0.0840	0.344	1.784	-2.475	0.23	-0.00800	0.00600	-0.76	0.375	31.847
					10/16/2013 12:08	0917-173_No	13_10_16_1208_58_076	1	-1.13	1.290	-0.067	0.081	0.894	0.0850	0.277	1.772	-2.44	0.22	-0.00500	0.00600	-0.83	0.385	30.833
					10/16/2013 12:09	0917-173_No	13_10_16_1209_58_826	1	1.39	1.275	-0.1030	0.083	0.877	0.0830	0.381	1.773	-2.08	0.21	-0.00400	0.00500	-1.11	0.385	27.342
					10/16/2013 12:10	0917-173_No	13_10_16_1210_59_526	1	-0.138	1.233	0.0370	0.087	0.892	0.0850	0.338	1.780	-1.849	0.20	-0.00700	0.00500	-1.16	0.389	26.57
					10/16/2013 12:12	0917-173_No	13_10_16_1212_00_327	1	-1.68	1.190	-0.039	0.076	0.921	0.0860	0.224	1.772	-1.90	0.20	-0.00900	0.00600	-1.20	0.363	25.939
					10/16/2013 12:13	0917-173_No	13_10_16_1213_01_027	1	-0.99	1.348	0.0100	0.079	0.972	0.0870	0.275	1.779	-1.820	0.20	-0.00500	0.00500	-0.70	0.396	26.064
					10/16/2013 12:14	0917-173_No	13_10_16_1214_01_787	1	-3.37	1.348	0.108	0.080	0.931	0.0850	0.256	1.784	-1.703	0.20	-0.00700	0.00500	-1.10	0.399	25.909
					10/16/2013 12:15	0917-173_No	13_10_16_1215_02_607	1	-1.08	1.199	0.004	0.081	0.970	0.0820	0.057	1.805	-1.781	0.21	-0.00500	0.00600	-0.93	0.378	27.153
					10/16/2013 12:16	0917-173_No	13_10_16_1216_03_317	1	-2.070	1.259	-0.030	0.080	0.924	0.0860	0.196	1.799	-1.966	0.20	-0.00700	0.00600	-0.95	0.373	26.658
					10/16/2013 12:17	0917-173_No	13_10_16_1217_04_127	1	-1.38	1.263	0.038	0.081	1.115	0.0850	0.300	1.837	-2.209	0.21	-0.00500	0.00500	-0.75	0.377	28.441
					10/16/2013 12:18	0917-173_No	13_10_16_1218_04_847	1	-1.54	1.255	-0.0280	0.081	0.973	0.0880	0.253	1.847	-2.128	0.22	-0.00300	0.00500	-0.46	0.381	30.233
					10/16/2013 12:19	0917-173_No	13_10_16_1219_05_647	1	-0.67	1.180	0.0260	0.089	0.964	0.0890	0.301	1.848	-2.327	0.23	-0.00500	0.00500	-0.87	0.388	32.39
					10/16/2013 12:20	0917-173_No	13_10_16_1220_06_357	1	-0.588	1.231	0.048	0.083	0.919	0.0890	0.251	1.848	-2.284	0.23	0.00000	0.00600	-1.13	0.378	32.185
					10/16/2013 12:21	0917-173_No	13_10_16_1221_07_137	1	-1.46	1.184	-0.0310	0.079	0.926	0.0870	0.299	1.832	-2.20	0.22	-0.00600	0.00500	-1.38	0.359	31.619
					10/16/2013 12:22	0917-173_No	13_10_16_1222_07_907	1	-0.944	1.194	-0.200	0.088	0.893	0.0870	0.134	1.825	-2.322	0.23	-0.00600	0.00500	-1.31	0.381	31.993
					10/16/2013 12:23	0917-173_No	13_10_16_1223_08_667	1	-1.62	1.200	-0.04800	0.088	0.896	0.0850	0.239	1.801	-2.241	0.24	-0.00600	0.00600	-1.15	0.375	31.961
					10/16/2013 12:24	0917-173_No	13_10_16_1224_09_398	1	-0.37	1.234	-0.028	0.083	0.783	0.0850	0.442	1.807	-2.213	0.22	-0.00600	0.00600	-0.82	0.373	30.043
					10/16/2013 12:25	0917-173_No	13_10_16_1225_10_208	1	-2.53	1.236	-0.040	0.081	0.792	0.0870	0.242	1.816	-2.09	0.22	-0.00800	0.00600	-1.21	0.377	29.939
					10/16/2013 12:26	0917-173_No	13_10_16_1226_11_008	1	-1.76	1.283	-0.0230	0.079	0.987	0.0880	0.135	1.817	-2.106	0.21	-0.01000	0.00500	-0.07	0.375	29.098
					10/16/2013 12:27	0917-173_No	13_10_16_1227_11_718	1	-1.332	1.242	-0.0440	0.076	0.956	0.0840	0.041	1.822	-1.976	0.22	-0.00900	0.00600	-1.09	0.366	29.18
					10/16/2013 12:28	0917-173_No	13_10_16_1228_12_528	1	-1.669	1.203	-0.0310	0.084	0.897	0.0860	0.220	1.836	-1.99	0.23	-0.01000	0.00500	-1.45	0.379	30.353
					10/16/2013 12:29	0917-173_No	13_10_16_1229_13_248	1	-0.61	1.296	-0.1610	0.083	0.909	0.0880	0.195	1.829	-2.12	0.22	-0.00400	0.00600	-0.57	0.387	29.967
					10/16/2013 12:30	0917-173_No	13_10_16_1230_13_968	1	-0.43	1.216	0.0990	0.087	0.858	0.0860	0.334	1.846	-1.701	0.22	-0.00800	0.00600	-0.70	0.394	28.86
					10/16/2013 12:31	0917-173_No	13_10_16_1231_14_768	1	-1.095	1.323	-0.01500	0.080	0.856	0.0850	0.289	1.837	-1.848	0.21	-0.00600	0.00500	-1.26	0.395	27.121
					10/16/2013 12:32	0917-173_No	13_10_16_1232_15_588	1	-0.96	1.273	-0.196	0.086	0.877	0.0890	0.444	1.839	-2.168	0.21	-0.00600	0.00500	-0.48	0.395	28.627
					10/16/2013 12:33	0917-173_No	13_10_16_1233_16_308	1	-0.990	1.309	-0.039	0.087	0.931	0.0880	0.388	1.839	-2.02	0.22	-0.00800	0.00500	-0.91	0.411	29.618
					10/16/2013 12:34	0917-173_No	13_10_16_1234_17_108	1	-0.18	1.277	-0.03000	0.082	0.863	0.0860	0.224	1.829	-1.92	0.22	-0.00300	0.00600	-1.16	0.378	30.01
					10/16/2013 12:35	0917-173_No	13_10_16_1235_17_878	1	-1.88	1.264	-0.123	0.082	0.759	0.0860	0.318	1.849	-1.80	0.20	-0.00700	0.00500	-1.30	0.372	28.419
					10/16/2013 12:36	0917-173_No	13_10_16_1236_18_609	1	-0.816	1.253	0.016	0.074	0.540	0.0860	0.232	1.811	-1.207	0.16	-0.00500	0.00600	-0.56	0.380	17.797
					10/16/2013 12:37	0917-173_No	13_10_16_1237_19_339	1	-1.98	1.225	-0.055	0.075	0.688	0.0850	0.343	1.819	-1.744	0.18	-0.00300	0.00600	-0.76	0.370	22.445
					10/16/2013 12:38	0917-173_No	13_10_16_1238_20_129	1	-1.41	1.232	-0.0830	0.078	0.932	0.0870	0.312	1.821	-2.089	0.20	-0.00200	0.00600	-0.09	0.385	25.714
					10/16/2013 12:39	0917-173_No	13_10_16_1239_20_839	1	-1.390	1.221	0.066	0.080	0.894	0.0860	0.322	1.838	-1.797	0.21	-0.00300	0.00600	-1.20	0.383	26.597
					10/16/2013 12:40	0917-173_No	13_10_16_1240_21_539	1	-1.199	1.228	-0.077	0.079	0.957	0.0850	0.411	1.822	-1.91	0.20	-0.00400	0.00500	-1.29	0.362	27.499
					10/16/2013 12:41	0917-173_No	13_10_16_1241_22_279	1	-0.46	1.246	-0.0460	0.084	1.011	0.0860	0.354	1.816	-2.174	0.20	0.00100	0.00600	-0.60	0.374	27.89
					10/16/2013 12:42	0917-173_No	13_10_16_1242_23_099	1	-0.36	1.297	-0.0300	0.077	0.954	0.0860	0.388	1.825	-1.884	0.20	-0.00400	0.00500	-0.99	0.379	26.98
					10/16/2013 12:43	0917-173_No	13_10_16_1243_23_869	1	-1.01	1.263	0.066	0.084	0.923	0.0850	0.368	1.828	-1.703	0.19	-0.01000	0.00600	-0.13	0.384	24.235
					10/16/2013 12:44	0917-173_No	13_10_16_1244_24_589	1	-1.11	1.303	0.025	0.080	0.919	0.0850	0.378	1.821	-1.640	0.18	-0.01	0.00600	-0.79	0.399	23.45
					10/16/2013 12:45	0917-173_No	13_10_16_1245_25_399	1	0.04	1.231	0.002	0.081	0.808	0.0870	0.197	1.821	-1.745	0.19	-0.00300	0.00500	-0.59	0.392	24.766
					10/16/2013 12:46	0917-173_No	13_10_16_1246_26_109	1	0.961	1.226	0.02900	0.083	0.888	0.0860	0.357	1.832	-1.801	0.20	-0.00600	0.00600	-0.91	0.374	25.879
					10/16/2013 12:47	0917-173_No	13_10_16_1247_26_920	1	-0.165	1.258	-0.0590	0.078	0.988	0.0840	0.306	1.844	-1.981	0.19	-0.00500	0.00600	0.00	0.370	26.039
					10/16/2013 12:48	0917-173_No	13_10_16_1248_27_610	1	-1.66	1.270	0.052	0.085	0.856	0.0860	0.411	1.845	-1.816	0.21	-0.00500	0.00600	-0.81	0.388	26.495
					10/16/2013 12:49	0917-173_No	13_10_16_1249_28_360	1	-0.055	1.205	-0.078	0.083	0.840	0.0840	0.343	1.841	-2.049	0.21	-0.00400	0.00500	-0.82	0.379	28.095
					10/16/2013 12:50	0917-173_No	13_10_16_1250_29_180	1	0.045	1.252	-0.07600	0.085	0.976	0.0870	0.439	1.837	-2.09	0.22	-0.00300	0.00600	-1.62	0.377	30.15
					10/16/2013 12:51	0917-173_No	13_10_16_1251_29_900	1	-2.66	1.214	-0.089	0.078	0.906	0.0880	0.389	1.840	-2.24	0.22	-0.00700	0.00600	-0.89	0.369	30.653
					10/16/2013 12:52	0917-173_No	13_10_16_1252_30_690	1	-0.18	1.159	-0.007	0.084	0.923	0.0900	0.424	1.859	-1.944	0.21	-0.00700	0.00600	-1.04	0.366	28.698
					10/16/2013 12:53	0917-173_No	13_10_16_1253_31_410	1	-0.934	1.286	0.117	0.083	0.907	0.0900	0.222	1.847	-2.132	0.22	-0.01000	0.00500	-0.73	0.375	29.435
					10/16/2013 12:54	0917-173_No	13_10_16_1254_32_180	1	-1.86	1.218	-0.044	0.082	1.008	0.0880	0.356	1.875	-2.272	0.23	-0.00700	0.00500	-0.74	0.373	31.871
					10/16/2013 12:55	0917-173_No	13_10_16_1255_33_000	1	-3.52	1.254	0.017	0.093	1.042	0.0900	0.258	1.889	-2.37	0.25	-0.00400	0.00600	-1.09	0.378	34.57
					10/16/2013 12:56	0917-173_No	13_10_16_1256_33_730	1	-1.678	1.345	-0.048	0.086	1.085	0.0930	0.189	1.887	-2.566	0.25	-0.00500	0.00600	-0.42	0.390	34.684
					10/16/2013 12:57	0917-173_No	13_10_16_1257_34_470	1	-1.563	1.180	-0.105	0.085	1.047	0.0930	0.370	1.888	-2.47	0.24	-0.00800	0.00600	-0.82	0.362	33.34
					10/16/2013 12:58	0917-173_No	13_10_16_1258_35_290	1	-0.92	1.284	-0.0170	0.086	0.975	0.0900	0.338	1.867	-2.31	0.24	-0.00200	0.00500	-1.20	0.385	32.538
					10/16/2013 12:59	0917-173_No	13_10_16_1259_36_101	1	-0.599	1.328	-0.1680	0.086	1.097	0.0880	0.179	1.855	-2.698	0.25	-0.00600	0.00500	-0.69	0.387	35.099
					10/16/2013 13:00	0917-173_No	13_10_16_1300_36_841	1	-1.32	1.154	-0.0900	0.083	1.130	0.0880	0.414	1.848	-2.685	0.25	-0.00900	0.00600	-0.77	0.361	36.037
					10/16/2013 13:01	0917-173_No	13_10_16_1301_37_541	1	-0.709	1.247	-0.1120	0.085	1.128	0.0890	0.302	1.837	-2.777	0.26	-0.00600	0.00500	-1.18	0.367	37.563
					10/16/2013 13:02	0917-173_No	13_10_16_1302_38_371	1	-0.11	1.094	-0.089	0.079	1.042	0.0870	0.336	1.834	-2.52	0.24	-0.00900	0.00600	-0.97	0.338	35.273
					10/16/2013 13:03	0917-173_No	13_10_16_1303_39_101	1	-1.390	1.185	0.042	0.079	0.897	0.0850	0.420	1.835	-2.389	0.23	-0.00700	0.00600	-0.62	0.368	32.554
					10/16/2013 13:04	0917-173_No	13_10_16_1304_39_851	1	-2.01	1.239	-0.01600	0.086	0.917	0.0870	0.340	1.847	-2.432	0.23	-0.00600	0.00500	-0.35	0.375	32.312
					10/16/2013 13:05	0917-173_No	13_10_16_1305_40_591	1	-0.82	1.196	-0.1530	0.087	0.925	0.0880	0.254	1.831	-2.425	0.24	-0.01000	0.00600	-0.60	0.381	33.426
					10/16/2013 13:06	0917-173_No	13_10_16_1306_41_411	1	-1.67	1.207	-0.172	0.087	0.721	0.0710	0.302	1.482	-3.152	0.22	-0.00500	0.00500	-0.87	0.363	29.464
			Stop		10/16/2013 13:07	0917-173_No	13_10_16_1307_42_181	1	-1.973	0.996	-0.6110	0.106	0.0330	0.0440	-0.013	0.228	-4.48	0.18	-0.00500	0.00500	-1.53	0.409	13.131
					10/16/2013 13:08	0917-173_No	13_10_16_1308_42_881	1	-1.6120	1.008	-0.5680	0.107	-0.1340	0.0460	-0.249	0.1150	-4.51	0.18	-0.00400	0.00600	-1.74	0.412	12.142

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 13:09	0917-173_No	13_10_16_1309_43_691	1	-0.635	0.972	-0.693	0.104	-0.08600	0.0450	-0.140	0.0950	-4.37	0.18	-0.00700	0.00500	-1.14	0.403	12.015
					10/16/2013 13:10	0917-173_No	13_10_16_1310_44_401	1	-1.829	0.928	-0.4150	0.076	0.0140	0.0380	-0.234	0.0810	-2.634	0.13	0.00100	0.00500	-1.216	0.316	7.037
					10/16/2013 13:11	0917-173_No	13_10_16_1311_45_182	1	-1.679	0.925	-0.115	0.053	0.0070	0.0340	-0.172	0.0620	-0.424	0.08	-0.00100	0.00600	-0.265	0.278	1.121
					10/16/2013 13:12	0917-173_No	13_10_16_1312_45_992	1	-1.310	0.993	-0.009	0.055	0.342	0.0390	0.105	0.467	-0.709	0.11	0.00	0.00500	-0.74	0.291	9.937
					10/16/2013 13:13	0917-173_No	13_10_16_1313_46_712	1	-1.56	1.267	-0.010	0.089	1.208	0.0900	0.136	1.872	-2.941	0.28	-0.00700	0.00600	-0.5	0.373	42.161
					10/16/2013 13:15	0917-173_No	13_10_16_1315_58_340	1	-0.40	1.224	-0.08000	0.094	1.249	0.0940	0.232	1.894	-2.991	0.28	-0.00400	0.00500	-1.0	0.382	41.081
					10/16/2013 13:16	0917-173_No	13_10_16_1316_59_150	1	0.291	1.207	-0.026	0.088	1.133	0.0890	0.304	1.873	-2.834	0.25	-0.00900	0.00600	-0.62	0.383	36.202
					10/16/2013 13:17	0917-173_No	13_10_16_1317_59_820	1	0.26	1.135	0.0340	0.083	0.975	0.0880	0.261	1.837	-2.387	0.23	0.00000	0.00600	-0.57	0.366	31.968
					10/16/2013 13:19	0917-173_No	13_10_16_1319_00_620	1	-0.147	1.276	-0.0110	0.078	0.935	0.0850	0.485	1.823	-1.902	0.21	-0.00300	0.00500	-0.65	0.382	28.537
					10/16/2013 13:20	0917-173_No	13_10_16_1320_01_430	1	-0.74	1.264	-0.004	0.076	0.832	0.0840	0.475	1.804	-1.813	0.21	-0.00600	0.00600	-1.19	0.361	27.587
Data	Run	12	Start	A	10/16/2013 13:21	0917-173_No	13_10_16_1321_03_140	1	0.01	1.176	0.006	0.082	0.885	0.0840	0.365	1.804	-2.208	0.22	-0.00800	0.00600	-0.55	0.359	31.255
					10/16/2013 13:22	0917-173_No	13_10_16_1322_03_770	1	-0.14	1.286	0.030	0.076	0.863	0.0860	0.431	1.807	-1.87	0.21	-0.00200	0.00500	-0.85	0.369	27.822
					10/16/2013 13:23	0917-173_No	13_10_16_1323_04_590	1	-0.24	1.187	-0.0410	0.076	0.833	0.0830	0.478	1.811	-1.72	0.19	-0.00800	0.00500	-1.05	0.350	25.9
					10/16/2013 13:24	0917-173_No	13_10_16_1324_05_290	1	-3.11	1.241	-0.038	0.082	0.967	0.0870	0.454	1.817	-2.260	0.24	0.00100	0.00600	-0.68	0.385	32.991
					10/16/2013 13:25	0917-173_No	13_10_16_1325_06_110	1	-2.66	1.211	-0.070	0.087	1.053	0.0880	0.254	1.824	-2.79	0.26	-0.00600	0.00600	-1.19	0.364	38.246
					10/16/2013 13:26	0917-173_No	13_10_16_1326_06_890	1	-0.347	1.267	-0.127	0.090	1.117	0.0900	0.252	1.834	-3.165	0.28	-0.00700	0.00600	-0.58	0.371	40.046
					10/16/2013 13:27	0917-173_No	13_10_16_1327_07_651	1	0.39	1.333	0.020	0.087	1.129	0.0900	0.447	1.836	-2.70	0.26	-0.00600	0.00600	-0.80	0.386	38.064
					10/16/2013 13:28	0917-173_No	13_10_16_1328_08_371	1	0.30	1.339	0.029	0.091	1.179	0.0920	0.344	1.856	-2.528	0.26	-0.00700	0.00500	-0.76	0.390	37.73
					10/16/2013 13:29	0917-173_No	13_10_16_1329_09_101	1	0.52	1.319	0.0160	0.088	1.047	0.0920	0.502	1.883	-2.340	0.25	-0.00700	0.00500	-0.80	0.395	35.201
					10/16/2013 13:30	0917-173_No	13_10_16_1330_09_901	1	0.01	1.291	-0.0410	0.091	1.069	0.0940	0.388	1.899	-2.582	0.26	-0.00800	0.00600	-0.91	0.388	37.404
					10/16/2013 13:31	0917-173_No	13_10_16_1331_10_691	1	-1.71	1.310	-0.002	0.095	1.036	0.0920	0.333	1.903	-2.54	0.26	-0.00700	0.00600	-0.99	0.403	36.776
					10/16/2013 13:32	0917-173_No	13_10_16_1332_11_411	1	-0.42	1.252	-0.0840	0.091	1.085	0.0950	0.508	1.913	-2.63	0.26	-0.00400	0.00500	-0.97	0.384	38.527
					10/16/2013 13:33	0917-173_No	13_10_16_1333_12_131	1	-0.58	1.406	-0.1290	0.091	1.037	0.0940	0.095	1.905	-2.704	0.27	-0.00600	0.00600	-0.89	0.401	39.229
					10/16/2013 13:34	0917-173_No	13_10_16_1334_12_951	1	-0.547	1.299	-0.037	0.093	1.065	0.0950	0.241	1.896	-2.839	0.28	-0.00200	0.00500	-0.62	0.378	41.092
					10/16/2013 13:35	0917-173_No	13_10_16_1335_13_701	1	1.85	1.296	-0.03900	0.094	1.143	0.0940	0.322	1.880	-2.705	0.28	-0.00500	0.00500	-0.3	0.387	40.874
					10/16/2013 13:36	0917-173_No	13_10_16_1336_14_461	1	-0.40	1.350	-0.014	0.096	1.056	0.0930	0.226	1.874	-2.57	0.28	-0.00800	0.00600	-1.27	0.392	40.222
					10/16/2013 13:37	0917-173_No	13_10_16_1337_15_271	1	-1.268	1.281	0.027	0.093	1.151	0.0930	0.236	1.879	-2.66	0.28	-0.00400	0.00600	-1.02	0.388	40.723
					10/16/2013 13:38	0917-173_No	13_10_16_1338_15_941	1	0.02	1.275	-0.12400	0.095	1.214	0.0920	0.279	1.882	-2.987	0.29	-0.00300	0.00500	-0.4	0.389	42.538
					10/16/2013 13:39	0917-173_No	13_10_16_1339_16_752	1	1.84	1.217	-0.219	0.091	1.082	0.0920	0.412	1.858	-2.65	0.27	-0.00500	0.00600	-0.85	0.371	38.586
					10/16/2013 13:40	0917-173_No	13_10_16_1340_17_442	1	0.266	1.296	-0.1090	0.087	1.081	0.0940	0.427	1.858	-2.181	0.25	-0.00900	0.00600	-0.98	0.398	34.956
					10/16/2013 13:41	0917-173_No	13_10_16_1341_18_272	1	-2.10	1.278	0.035	0.085	0.993	0.0900	0.256	1.861	-2.13	0.24	-0.00300	0.00600	-0.95	0.386	33.874
					10/16/2013 13:42	0917-173_No	13_10_16_1342_18_982	1	-0.79	1.258	0.054	0.086	0.937	0.0910	0.354	1.846	-2.055	0.23	-0.01400	0.00600	-1.25	0.375	31.219
					10/16/2013 13:43	0917-173_No	13_10_16_1343_19_792	1	0.11	1.221	-0.0210	0.079	0.895	0.0870	0.317	1.848	-1.934	0.21	-0.00800	0.00500	-0.69	0.370	28.347
					10/16/2013 13:44	0917-173_No	13_10_16_1344_20_512	1	-2.384	1.253	0.055	0.080	0.823	0.0890	0.351	1.837	-1.653	0.20	-0.00500	0.00500	-0.41	0.389	26.095
					10/16/2013 13:45	0917-173_No	13_10_16_1345_21_252	1	-0.416	1.168	-0.004	0.078	0.871	0.0910	0.332	1.861	-1.278	0.18	-0.00900	0.00600	-1.12	0.367	23.605
					10/16/2013 13:46	0917-173_No	13_10_16_1346_22_032	1	0.33	1.241	0.037	0.081	0.887	0.0920	0.281	1.880	-1.372	0.18	-0.00900	0.00600	-0.45	0.381	22.504
					10/16/2013 13:47	0917-173_No	13_10_16_1347_22_792	1	1.147	1.318	0.047	0.077	0.997	0.0910	0.466	1.900	-1.09	0.18	-0.01000	0.00500	-1.28	0.389	22.505
					10/16/2013 13:48	0917-173_No	13_10_16_1348_23_542	1	0.860	1.294	0.012	0.077	1.017	0.0930	0.461	1.918	-1.32	0.19	-0.00900	0.00600	-0.84	0.382	23.762
					10/16/2013 13:49	0917-173_No	13_10_16_1349_24_252	1	-1.01	1.302	0.044	0.078	0.958	0.0920	0.311	1.923	-1.369	0.19	-0.01400	0.00600	-0.37	0.392	24.06
					10/16/2013 13:50	0917-173_No	13_10_16_1350_25_052	1	0.71	1.343	-0.017	0.086	1.008	0.0960	0.398	1.924	-1.656	0.20	-0.01100	0.00600	-0.32	0.401	26.206
					10/16/2013 13:51	0917-173_No	13_10_16_1351_25_803	1	-1.99	1.296	0.115	0.078	0.955	0.0940	0.350	1.928	-1.37	0.19	-0.00700	0.00600	-1.02	0.374	26.308
					10/16/2013 13:52	0917-173_No	13_10_16_1352_26_603	1	-1.58	1.257	-0.0270	0.084	0.904	0.0920	0.438	1.904	-1.476	0.20	-0.01100	0.00600	-0.66	0.388	25.324
					10/16/2013 13:53	0917-173_No	13_10_16_1353_27_313	1	0.097	1.338	0.0580	0.079	1.006	0.0900	0.324	1.905	-1.446	0.19	-0.00500	0.00600	-1.07	0.383	23.588
					10/16/2013 13:54	0917-173_No	13_10_16_1354_28_013	1	0.487	1.310	0.014	0.078	1.025	0.0900	0.568	1.903	-1.32	0.18	-0.00900	0.00600	-1.06	0.392	22.729
					10/16/2013 13:55	0917-173_No	13_10_16_1355_28_823	1	-1.61	1.348	-0.03300	0.075	0.986	0.0940	0.389	1.903	-1.378	0.18	-0.01000	0.00500	-0.67	0.390	22.796
					10/16/2013 13:56	0917-173_No	13_10_16_1356_29_593	1	-0.28	1.254	-0.0160	0.079	1.039	0.0930	0.526	1.911	-1.358	0.18	-0.00800	0.00600	-0.46	0.382	23.132
					10/16/2013 13:57	0917-173_No	13_10_16_1357_30_333	1	0.43	1.283	0.051	0.083	0.987	0.0950	0.508	1.932	-1.436	0.19	-0.00900	0.00600	-0.48	0.382	24.453
					10/16/2013 13:58	0917-173_No	13_10_16_1358_31_053	1	0.598	1.255	-0.0060	0.079	1.095	0.0960	0.380	1.935	-1.530	0.19	-0.00700	0.00600	0.17	0.393	24.549
					10/16/2013 13:59	0917-173_No	13_10_16_1359_31_863	1	-1.99	1.436	0.067	0.079	1.002	0.0960	0.668	1.923	-1.384	0.19	-0.01400	0.00600	-0.53	0.409	23.863
					10/16/2013 14:00	0917-173_No	13_10_16_1400_32_603	1	0.05	1.352	0.085	0.081	0.877	0.0950	0.463	1.910	-1.125	0.18	-0.00800	0.00500	-0.62	0.405	21.413
					10/16/2013 14:01	0917-173_No	13_10_16_1401_33_323	1	-0.50	1.305	0.034	0.077	0.851	0.0930	0.452	1.883	-1.36	0.18	-0.00500	0.00600	-0.86	0.388	23.312
					10/16/2013 14:02	0917-173_No	13_10_16_1402_34_073	1	2.17	1.300	0.042	0.084	0.936	0.0900	0.543	1.867	-1.737	0.198	-0.00700	0.00500	-0.11	0.388	25.815
					10/16/2013 14:03	0917-173_No	13_10_16_1403_34_794	1	0.96	1.227	0.047	0.076	1.003	0.0890	0.420	1.862	-1.638	0.204	-0.00800	0.00600	-0.53	0.352	27.05
					10/16/2013 14:04	0917-173_No	13_10_16_1404_35_484	1	0.73	1.190	0.0210	0.084	0.972	0.0880	0.478	1.855	-1.730	0.213	-0.00600	0.00500	-1.11	0.359	28.254
					10/16/2013 14:05	0917-173_No	13_10_16_1405_36_184	1	-1.093	1.241	-0.0510	0.087	0.938	0.0900	0.494	1.855	-1.631	0.219	-0.00700	0.00500	-1.04	0.398	28.6
					10/16/2013 14:06	0917-173_No	13_10_16_1406_36_954	1	-1.73	1.268	0.002	0.086	0.955	0.0900	0.474	1.860	-1.838	0.216	-0.00600	0.00600	-0.89	0.387	28.669
					10/16/2013 14:07	0917-173_No	13_10_16_1407_37_704	1	0.94	1.355	0.012	0.087	0.942	0.0890	0.410	1.854	-1.77	0.216	-0.00600	0.00600	-0.59	0.396	29.034
					10/16/2013 14:08	0917-173_No	13_10_16_1408_38_404	1	0.368	1.247	-0.0130	0.082	0.896	0.0880	0.443	1.864	-1.633	0.211	-0.01000	0.00500	-0.38	0.384	28.354
					10/16/2013 14:09	0917-173_No	13_10_16_1409_39_214	1	0.47	1.287	0.055	0.083	0.936	0.0920	0.522	1.878	-1.65	0.205	-0.00600	0.00600	-0.61	0.389	26.6
					10/16/2013 14:10	0917-173_No	13_10_16_1410_39_914	1	0.24	1.331	0.036	0.078	0.897	0.0920	0.338	1.899	-1.43	0.190	-0.00300	0.00600	-0.62	0.389	26.175
					10/16/2013 14:11	0917-173_No	13_10_16_1411_40_714	1	-1.58	1.323	0.0260	0.085	0.923	0.0890	0.383	1.892	-1.64	0.207	-0.00400	0.00500	-0.72	0.398	27.404
					10/16/2013 14:12	0917-173_No	13_10_16_1412_41_424	1	-2.270	1.325	0.046	0.085	0.937	0.0940	0.508	1.911	-1.57	0.214	-0.01000	0.00500	-0.75	0.398	28.962
					10/16/2013 14:13	0917-173_No	13_10_16_1413_42_174	1	0.35	1.253	-0.062	0.084	0.940	0.0920	0.590	1.891	-1.61	0.223	-0.00500	0.00600	-1.12	0.380	30.227
					10/16/2013 14:14	0917-173_No	13_10_16_1414_42_985	1	-0.09	1.324	-0.135	0.086	0.844	0.0900	0.504	1.883	-1.853	0.215	-0.00700	0.00500	-0.50	0.401	29.81
					10/16/2013 14:15	0917-173_No	13_10_16_1415_43_685	1	-1.489	1.237	-0.060	0.085	0.902	0.0870	0.353	1.878	-1.69	0.225	-0.01000	0.00500	-1.35	0.378	30.138
					10/16/2013 14:16	0917-173_No	13_10_16_1416_44_515	1	-0.56	1.267	-0.0080	0.084	0.788	0.0890	0.439	1.861	-1.608	0.218	-0.00900	0.00600	-0.91	0.386	29.532
					10/16/2013 14:17	0917-173_No	13_10_16_1417_45_225	1	-0.37	1.304	0.001	0.086	0.753	0.0890	0.373	1.853	-1.53	0.213	-0.00800	0.00600	-1.23	0.395	28.424
					10/16/2013 14:18	0917-173_No	13_10_16_1418_45_945	1	-1.63	1.263	-0.0670	0.081	0.811	0.0870	0.315	1.871	-1.64	0.213	-0.00400	0.00500	-0.65	0.378	29.432
			Stop		10/16/2013 14:19	0917-173_No	13_10_16_1419_46_755	1	-1.67	1.374	-0.094	0.087	0.957	0.0920	0.517	1.892	-1.92	0.231	-0.00200	0.00600	-1.08	0.406	31.043
					10/16/2013 15:07	0917-173_No	13_10_16_1507_27_499	1	2.2	1.5	0.113	0.081	-0.35	1.08	-0.281	0.0960	0.119	0.131	0.043	0.454	-1.06	0.433	-1.311
					10/16/2013 15:07	0917-173_No	13_10_16_1507_46_029	1	2.5	1.5	0.12200	0.081	-0.47	1.34	0.0270	0.1110	-0.188	0.133	0.058	0.552	0.36	0.442	-1.657
					10/16/2013 15:08	0917-173_No	13_10_16_1508_04_639	1	1.1	1.5	-0.1390	0.085	-0.43	1.49	-0.1370	0.1080	-0.063	0.136	0.054	0.604	-0.2640	0.446	-1.847
					10/16/2013 15:08	0917-173_No	13_10_16_1508_23_129	1	0.9	1.6	0.1460	0.086	-0.43	1.56	-0.02900	0.1010	0.192	0.141	0.058	0.633	-0.001	0.474	-1.945
					10/16/2013 15:08	0917-173_No	13_10_16_1508_41_629	1	1.3	1.4	0.070	0.079	-0.39	1.61	0.0410	0.1100	-0.026	0.127	0.048	0.644	-1.237	0.421	-1.951
					10/16/2013 15:09	0917-173_No	13_10_16_1509_00_239	1	-0.2	1.5	0.161	0.085	-0.60	1.62	-0.0920	0.1050	0.024	0.139	0.057	0.652	0.003	0.458	-2.021
					10/16/2013 15:09	0917-173_No	13_10_16_1509_18_749	1	2.2	1.5	0.1600	0.081	-0.43	1.64	-0.104	0.1010	0.096	0.134	0.043	0.655	0.100	0.439	-2.02
					10/16/2013 15:09	0917-173_No	13_10_16_1509_37_259	1	-2.2	1.6	-0.0010	0.080	-0.50	1.65	-0.1010	0.1150	-0.413	0.136	0.053	0.656	-0.1530	0.443	-1.989
					10/16/2013 15:09	0917-173_No	13_10_16_1509_55_859	1	-0.7	1.3	0.003	0.084	-0.49	1.65	0.257	0.1100	0.041	0.131	0.049	0.661	1.039	0.415	-2.031
					10/16/2013 15:10	0917-173_No	13_10_16_1510_14_359	1	1.7	1.4	0.128	0.085	-0.61	1.65	-0.0590	0.0990	0.221	0.136	0.060	0.661	0.218	0.451	-2.045
					10/16/2013 15:10	0917-173_No	13_10_16_1510_32_979	1	-1.0	1.7	-0.0280	0.086	-0.25	1.65	0.0860	0.1000	0.1230	0.144	0.056	0.657	-0.594	0.490	-2.031
					10/16/2013 15:10	0917-173_No	13_10_16_1510_51_429	1	-0.5	1.5	0.246	0.085	-0.44	1.65	-0.306	0.0950	-0.026	0.137	0.062	0.663	-0.051	0.448	-2.025
					10/16/2013 15:11	0917-173_No	13_10_16_1511_09_939	1	1.6	1.5	-0.231	0.089	-0.44	1.65	-0.0300	0.0910	-0.133	0.143	0.043	0.658	0.33	0.467	-2.056
					10/16/2013 15:11	0917-173_No	13_10_16_1511_28_549	1	0.5	1.5	0.210	0.078	-0.56	1.65	0.207	0.1000	0.1110	0.129	0.064	0.659	0.271	0.444	-2.019
					10/16/2013 15:11	0917-173_No	13_10_16_1511_47_059	1	2.3	1.5	0.006	0.084	-0.48	1.66	0.1570	0.1150	0.195	0.139	0.066	0.662	-0.019	0.457	-2.049
					10/16/2013 15:12	0917-173_No	13_10_16_1512_05_669	1	-5.9	1.5	0.067	0.087	-0.53	1.65	0.0820	0.1100	-0.114	0.140	0.050	0.662	0.5490	0.463	-2.022
					10/16/2013 15:12	0917-173_No	13_10_16_1512_24_089	1	-0.9	1.6	-0.224	0.084	-0.51	1.65	0.0880	0.1100	0.264	0.138	0.054	0.659	-0.079	0.467	-2.041
					10/16/2013 15:12	0917-173_No	13_10_16_1512_42_599	1	0.0	1.5	-0.033	0.085	-0.59	1.66	0.0380	0.1110	-0.0360	0.138	0.045	0.659	-0.781	0.443	-2.042
					10/16/2013 15:13	0917-173_No	13_10_16_1513_01_239	1	-2.0	1.5	-0.092	0.090	-0.45	1.65	-0.0580	0.0980	-0.154	0.143	0.052	0.664	-0.076	0.461	-2.035
					10/16/2013 15:24	0917-173_No	13_10_16_1524_39_510	1	-10.418	3.229	0.006	0.189	-0.350	0.140	0.816	1.30	-0.221	0.31	-0.01	0.00800	-1.44	1.00	-0.133
					10/16/2013 15:24	0917-173_No	13_10_16_1524_45_660	1	-2.035	3.368	0.164	0.181	-0.121	0.148	0.849	1.33	-0.244	0.296	-0.01100	0.00700	0.44	1.00	-0.151
					10/16/2013 15:24	0917-173_No	13_10_16_1524_51_900	1	-3.279	3.465	-0.247	0.190	-0.077	0.144	0.934	1.29	-0.287	0.31	-0.01500	0.00800	-1.995	1.05	-0.099
					10/16/2013 15:24	0917-173_No	13_10_16_1524_58_140	1	-4.806	3.429	-0.098	0.185	-0.05900	0.146	0.993	1.26	-0.373	0.30	-0.01100	0.00800	-0.633	1.01	-0.057
					10/16/2013 15:25	0917-173_No	13_10_16_1525_04_280	1	-3.236	3.163	-0.138	0.198	-0.0940	0.147	0.735	1.27	-0.202	0.31	-0.01100	0.00800	0.36	1.02	-0.144
					10/16/2013 15:25	0917-173_No	13_10_16_1525_10_440	1	-3.771	3.125	-0.163	0.175	-0.1610	0.143	1.232	1.26	-0.161	0.28	-0.02200	0.00700	-2.12	0.96	-0.17
					10/16/2013 15:25	0917-173_No	13_10_16_1525_16_600	1	-1.105	3.279	0.180	0.179	-0.200	0.145	0.572	1.25	0.371	0.294	-0.02400	0.00800	-3.01	0.96	-0.077
					10/16/2013 15:25	0917-173_No	13_10_16_1525_22_760	1	-5.445	3.463	-0.331	0.190	-0.288	0.138	1.444	1.29	0.09	0.31	-0.01800	0.00800	-3.29	1.03	-0.057
					10/16/2013 15:25	0917-173_No	13_10_16_1525_29_030	1	-6.920	3.408	-0.040	0.183	-0.029	0.139	0.924	1.26	0.23	0.31	-0.01900	0.00700	-2.93	1.02	-0.128
					10/16/2013 15:25	0917-173_No	13_10_16_1525_35_200	1	-3.401	3.628	-0.404	0.191	0.095	0.144	1.5860	1.29	-0.030	0.32	-0.01200	0.00800	-0.468	1.06	-0.101
					10/16/2013 15:25	0917-173_No	13_10_16_1525_41_280	1	-1.487	3.172	-0.354	0.186	-0.1870	0.144	1.119	1.30	0.091	0.30	-0.02200	0.00800	-1.200	1.02	-0.108
					10/16/2013 15:25	0917-173_No	13_10_16_1525_47_500	1	-1.531	3.392	0.060	0.193	-0.197	0.148	1.720	1.33	-0.478	0.31	-0.02200	0.00600	-0.752	1.03	-0.111
					10/16/2013 15:25	0917-173_No	13_10_16_1525_53_690	1	-3.044	3.574	-0.030	0.189	-0.540	0.142	1.122	1.32	0.030	0.310	-0.01800	0.00800	-2.30	1.03	-0.088
					10/16/2013 15:25	0917-173_No	13_10_16_1525_59_901	1	-3.728	3.342	-0.285	0.192	-0.271	0.146	1.174	1.39	0.28	0.31	-0.01300	0.00700	-2.0540	1.03	-0.079
					10/16/2013 15:26	0917-173_No	13_10_16_1526_06_101	1	2.09	3.167	-0.270	0.191	-0.429	0.146	1.160	1.39	0.078	0.304	-0.00700	0.00700	-1.84	1.00	0.061
					10/16/2013 15:26	0917-173_No	13_10_16_1526_12_201	1	-6.355	3.151	-0.374	0.185	-0.1800	0.148	1.182	1.462	-0.188	0.294	0.0010	0.00800	-0.648	0.96	0.039
					10/16/2013 15:26	0917-173_No	13_10_16_1526_18_411	1	-5.943	3.402	-0.2540	0.179	-0.167	0.138	0.849	1.455	0.405	0.297	-0.00800	0.00700	-3.05	0.99	-0.006
					10/16/2013 15:26	0917-173_No	13_10_16_1526_24_601	1	1.47	3.382	0.271	0.180	-0.180	0.147	2.059	1.523	-0.220	0.298	-0.01800	0.00700	0.30	0.98	0.068
					10/16/2013 15:26	0917-173_No	13_10_16_1526_30_811	1	-9.52	3.075	-0.159	0.189	-0.176	0.145	0.696	1.598	-0.458	0.294	-0.01500	0.00800	-0.409	0.96	0.05
					10/16/2013 15:26	0917-173_No	13_10_16_1526_37_001	1	-0.916	3.122	-0.2340	0.177	-0.329	0.137	1.342	1.603	-0.114	0.284	-0.01500	0.00800	-0.820	0.96	0.15
					10/16/2013 15:26	0917-173_No	13_10_16_1526_43_091	1	-8.989	3.175	0.121	0.182	-0.0590	0.1440	1.605	1.662	-0.237	0.295	-0.01	0.00800	-0.89	1.00	0.113
					10/16/2013 15:26	0917-173_No	13_10_16_1526_49_291	1	-4.22	3.048	-0.1400	0.176	-0.152	0.141	1.387	1.674	-0.433	0.284	-0.01100	0.00800	-0.51	0.93	0.21
					10/16/2013 15:26	0917-173_No	13_10_16_1526_55_501	1	-2.622	3.022	-0.105	0.169	-0.182	0.148	1.063	1.730	-0.552	0.274	-0.00200	0.00800	0.456	0.92	0.191
					10/16/2013 15:27	0917-173_No	13_10_16_1527_01_701	1	1.42	2.884	-0.3960	0.172	-0.0020	0.135	1.369	1.784	0.3340	0.273	-0.01600	0.00800	-1.17	0.92	0.216
					10/16/2013 15:27	0917-173_No	13_10_16_1527_07_801	1	1.221	3.237	-0.217	0.175	-0.206	0.138	1.055	1.830	-0.190	0.287	-0.01200	0.00800	-0.37	0.97	0.181
					10/16/2013 15:27	0917-173_No	13_10_16_1527_14_001	1	-2.328	3.128	0.096	0.168	-0.211	0.140	1.207	1.792	-0.042	0.278	-0.02300	0.00600	-0.38	0.92	0.262
					10/16/2013 15:27	0917-173_No	13_10_16_1527_20_221	1	-5.314	3.083	0.147	0.175	-0.147	0.149	1.270	1.800	-0.2660	0.283	-0.00900	0.00700	-1.411	0.92	0.226
					10/16/2013 15:27	0917-173_No	13_10_16_1527_26_421	1	-1.392	3.153	-0.339	0.183	-0.095	0.140	1.395	1.863	-0.349	0.293	0.00400	0.00600	-1.27	0.97	0.295
					10/16/2013 15:27	0917-173_No	13_10_16_1527_32_621	1	-3.953	3.102	0.223	0.172	-0.197	0.135	0.905	1.928	-0.423	0.281	-0.01900	0.00600	-1.93	0.95	0.263
					10/16/2013 15:27	0917-173_No	13_10_16_1527_38_721	1	-2.236	3.152	-0.221	0.168	-0.169	0.151	0.749	1.854	0.029	0.277	-0.02800	0.00600	-0.698	0.94	0.293
					10/16/2013 15:27	0917-173_No	13_10_16_1527_44_921	1	-2.765	3.092	-0.136	0.176	0.104	0.145	0.978	1.921	-0.77	0.285	-0.01100	0.00700	2.16	0.96	0.308
					10/16/2013 15:27	0917-173_No	13_10_16_1527_51_121	1	0.570	2.964	0.050	0.155	0.0230	0.140	1.231	1.974	-0.154	0.258	-0.02000	0.00700	-1.12	0.876	0.289
					10/16/2013 15:27	0917-173_No	13_10_16_1527_57_331	1	-9.191	3.085	-0.101	0.165	0.0350	0.144	1.444	1.993	0.1300	0.276	-0.01800	0.00600	0.897	0.90	0.311
					10/16/2013 15:28	0917-173_No	13_10_16_1528_03_531	1	-4.814	3.053	-0.2860	0.167	-0.0460	0.143	0.623	2.011	0.01	0.275	-0.03200	0.00800	-2.423	0.90	0.3
					10/16/2013 15:28	0917-173_No	13_10_16_1528_09_641	1	4.1320	2.643	0.111	0.159	0.0600	0.139	0.937	2.026	0.108	0.255	-0.01800	0.00700	-2.70	0.79	0.378
					10/16/2013 15:28	0917-173_No	13_10_16_1528_15_841	1	-0.499	2.971	0.237	0.172	0.180	0.1320	1.175	1.994	-0.332	0.275	-0.01	0.00600	-0.452	0.91	0.333
					10/16/2013 15:28	0917-173_No	13_10_16_1528_21_961	1	-1.739	2.733	-0.300	0.167	-0.215	0.140	1.127	2.013	-0.1170	0.261	-0.01400	0.00700	0.26	0.88	0.312
					10/16/2013 15:28	0917-173_No	13_10_16_1528_28_171	1	-2.34	3.137	-0.1430	0.171	-0.0720	0.1310	1.048	2.033	0.019	0.282	-0.01700	0.00600	0.13	0.93	0.357
					10/16/2013 15:28	0917-173_No	13_10_16_1528_34_381	1	-8.930	3.039	-0.164	0.160	0.0730	0.138	1.050	2.023	-0.250	0.268	-0.03200	0.00800	0.856	0.91	0.328
					10/16/2013 15:28	0917-173_No	13_10_16_1528_40_481	1	-1.268	2.774	0.439	0.166	-0.295	0.143	0.932	2.008	0.086	0.262	-0.02300	0.00700	-0.30	0.86	0.356
					10/16/2013 15:28	0917-173_No	13_10_16_1528_46_691	1	0.398	2.947	-0.347	0.168	-0.307	0.135	0.898	2.065	-0.044	0.271	-0.01900	0.00700	0.33	0.90	0.211
					10/16/2013 15:28	0917-173_No	13_10_16_1528_52_891	1	-3.276	2.917	-0.285	0.167	-0.1190	0.1460	1.026	2.101	-0.700	0.265	-0.01	0.00600	0.383	0.86	0.304
					10/16/2013 15:28	0917-173_No	13_10_16_1528_59_101	1	1.6970	2.954	0.152	0.162	-0.441	0.135	1.275	2.029	-0.037	0.265	-0.01200	0.00700	-1.87	0.90	0.341
					10/16/2013 15:29	0917-173_No	13_10_16_1529_05_301	1	-5.8670	2.636	0.006	0.143	-0.117	0.1330	0.561	2.077	0.10	0.237	-0.02100	0.00600	-0.5020	0.78	0.334
					10/16/2013 15:29	0917-173_No	13_10_16_1529_11_411	1	-2.2520	2.941	-0.073	0.157	-0.012	0.1350	1.704	2.075	-0.550	0.261	-0.01100	0.00600	-0.11	0.86	0.331
					10/16/2013 15:29	0917-173_No	13_10_16_1529_17_611	1	-0.280	2.896	-0.117	0.150	0.0950	0.138	1.149	2.053	-0.628	0.251	-0.01	0.00500	-0.57	0.84	0.392
					10/16/2013 15:29	0917-173_No	13_10_16_1529_23_821	1	3.65	2.839	0.319	0.150	0.1570	0.138	0.702	2.010	0.07500	0.251	-0.01000	0.00700	0.24	0.82	0.332
					10/16/2013 15:29	0917-173_No	13_10_16_1529_30_021	1	2.768	2.913	-0.1300	0.164	-0.169	0.132	1.202	2.074	-0.340	0.264	-0.01700	0.00700	-0.88	0.87	0.382
					10/16/2013 15:29	0917-173_No	13_10_16_1529_36_221	1	4.208	3.039	-0.211	0.156	-0.266	0.132	0.977	2.058	0.11	0.263	0.00300	0.00700	-1.02	0.89	0.372
					10/16/2013 15:29	0917-173_No	13_10_16_1529_42_321	1	-0.712	2.998	-0.0540	0.151	-0.0300	0.1260	1.027	2.050	-0.189	0.255	-0.00300	0.00600	-1.507	0.86	0.313
					10/16/2013 15:29	0917-173_No	13_10_16_1529_48_521	1	-4.819	2.816	0.0830	0.152	0.0460	0.134	0.695	2.100	0.010	0.250	-0.01200	0.00700	0.62	0.83	0.338
					10/16/2013 15:29	0917-173_No	13_10_16_1529_54_721	1	2.465	2.934	0.2530	0.154	-0.117	0.133	0.672	2.091	0.329	0.257	-0.02	0.00600	-0.369	0.86	0.362
					10/16/2013 15:30	0917-173_No	13_10_16_1530_00_911	1	-6.536	2.660	-0.23	0.150	0.0960	0.134	0.911	2.089	0.109	0.244	-0.01100	0.00600	0.71	0.80	0.354
					10/16/2013 15:30	0917-173_No	13_10_16_1530_07_101	1	-3.058	2.775	-0.400	0.163	-0.198	0.128	0.751	2.087	-0.133	0.261	-0.00800	0.00500	0.718	0.83	0.312
					10/16/2013 15:30	0917-173_No	13_10_16_1530_13_191	1	-6.663	2.727	0.6110	0.144	-0.0060	0.131	1.085	2.060	0.238	0.243	0.00000	0.00700	-1.60	0.80	0.324
					10/16/2013 15:30	0917-173_No	13_10_16_1530_19_381	1	-0.504	2.731	0.270	0.158	0.0480	0.1280	1.090	2.051	0.03	0.254	-0.0180	0.00700	-1.337	0.81	0.342
					10/16/2013 15:30	0917-173_No	13_10_16_1530_25_571	1	1.695	3.000	0.146	0.147	-0.0020	0.129	0.564	2.030	0.194	0.254	-0.01500	0.00600	-0.60	0.84	0.237
					10/16/2013 15:30	0917-173_No	13_10_16_1530_31_771	1	3.136	2.703	-0.095	0.153	0.275	0.122	0.857	2.030	-0.073	0.246	0.00000	0.00600	-0.75	0.81	0.304
					10/16/2013 15:30	0917-173_No	13_10_16_1530_37_861	1	-3.45	2.827	0.026	0.145	-0.1620	0.1230	0.892	2.012	-0.253	0.244	-0.01500	0.00600	-0.540	0.81	0.265
					10/16/2013 15:30	0917-173_No	13_10_16_1530_44_051	1	-0.637	2.871	0.085	0.153	0.0190	0.134	0.742	2.020	0.0730	0.254	-0.00500	0.00600	0.329	0.86	0.376
					10/16/2013 15:30	0917-173_No	13_10_16_1530_50_351	1	2.450	2.886	0.002	0.161	0.0260	0.1230	1.236	2.039	-0.330	0.261	-0.01300	0.00700	1.63	0.86	0.283

Location	Disc.	#	Start/Stop	Instrument			Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/16/2013 15:30	0917-173_No13_10_16_1530_56_551		1	5.788	2.610	0.082	0.161	0.0330	0.1190	0.988	2.033	-0.253	0.250	-0.01100	0.00600	0.09	0.80	0.308
10/16/2013 15:31	0917-173_No13_10_16_1531_02_751		1	-5.1160	2.791	0.141	0.138	-0.1000	0.1230	0.763	2.021	0.146	0.237	-0.01600	0.00600	1.34	0.779	0.292
10/16/2013 15:31	0917-173_No13_10_16_1531_08_851		1	1.033	2.904	-0.0470	0.156	-0.0230	0.1240	0.699	1.992	-0.014	0.258	-0.01100	0.00500	-0.963	0.85	0.269
10/16/2013 15:31	0917-173_No13_10_16_1531_15_041		1	2.1570	2.898	-0.1870	0.150	-0.06000	0.1230	0.972	1.989	-0.165	0.253	0.00700	0.00700	-0.707	0.86	0.315
10/16/2013 15:31	0917-173_No13_10_16_1531_21_231		1	4.514	2.771	-0.1720	0.151	-0.084	0.125	0.895	1.975	-0.368	0.243	-0.00600	0.00600	1.444	0.83	0.235
10/16/2013 15:31	0917-173_No13_10_16_1531_27_441		1	-0.117	2.740	0.136	0.155	-0.0040	0.119	1.212	2.006	-0.276	0.251	-0.01000	0.00600	0.45	0.82	0.249
10/16/2013 15:31	0917-173_No13_10_16_1531_33_631		1	3.6860	2.862	-0.270	0.147	0.1540	0.1140	1.3550	1.986	0.04	0.247	-0.00100	0.00600	-0.60	0.85	0.236
10/16/2013 15:31	0917-173_No13_10_16_1531_39_721		1	5.219	2.855	-0.033	0.153	-0.0290	0.128	1.080	1.954	-0.188	0.252	0.01400	0.00500	0.275	0.83	0.233
10/16/2013 15:31	0917-173_No13_10_16_1531_45_921		1	-1.45	2.667	-0.286	0.156	-0.156	0.1190	0.586	1.923	-0.333	0.247	-0.0020	0.00500	0.437	0.79	0.284
10/16/2013 15:31	0917-173_No13_10_16_1531_52_121		1	4.183	2.889	0.111	0.154	-0.060	0.1210	0.808	1.940	-0.151	0.256	-0.01300	0.00500	1.35	0.84	0.235
10/16/2013 15:31	0917-173_No13_10_16_1531_58_311		1	3.191	2.337	-0.131	0.146	0.146	0.1190	0.914	1.891	-0.548	0.228	0.00700	0.00600	-0.07	0.75	0.247
10/16/2013 15:32	0917-173_No13_10_16_1532_04_511		1	8.322	3.071	0.192	0.145	-0.177	0.113	1.0610	1.887	-0.160	0.252	-0.00900	0.00700	0.786	0.86	0.267
10/16/2013 15:32	0917-173_No13_10_16_1532_10_611		1	-1.006	2.742	0.2000	0.153	0.183	0.1150	0.767	1.913	0.310	0.250	-0.02000	0.00600	-2.35	0.85	0.225
10/16/2013 15:32	0917-173_No13_10_16_1532_16_801		1	-5.033	2.753	-0.133	0.145	0.0110	0.1190	0.996	1.869	-0.115	0.244	-0.01400	0.00500	-0.150	0.83	0.213
10/16/2013 15:32	0917-173_No13_10_16_1532_23_091		1	0.267	2.910	0.0140	0.149	0.032	0.1170	0.971	1.872	-0.670	0.251	-0.00200	0.00500	-0.11	0.86	0.228
10/16/2013 15:32	0917-173_No13_10_16_1532_29_201		1	-2.487	2.939	0.168	0.155	0.204	0.1200	0.996	1.897	-0.250	0.261	-0.00600	0.00600	1.129	0.86	0.229
10/16/2013 15:32	0917-173_No13_10_16_1532_35_501		1	-0.039	2.664	0.083	0.153	-0.213	0.115	1.187	1.845	-0.490	0.247	-0.00100	0.00600	1.100	0.80	0.218
10/16/2013 15:32	0917-173_No13_10_16_1532_41_501		1	2.647	2.916	-0.1070	0.139	-0.169	0.1180	0.351	1.861	0.001	0.241	-0.01500	0.00500	0.85	0.82	0.226
10/16/2013 15:32	0917-173_No13_10_16_1532_47_691		1	0.6860	2.907	0.0930	0.147	0.265	0.1130	1.061	1.807	-0.466	0.247	-0.00900	0.00600	0.62	0.82	0.248
10/16/2013 15:32	0917-173_No13_10_16_1532_53_981		1	-4.093	3.058	0.1680	0.145	0.1770	0.1200	0.948	1.877	-0.154	0.251	0.00500	0.00500	0.16	0.88	0.259
10/16/2013 15:33	0917-173_No13_10_16_1533_00_181		1	2.293	2.956	0.002	0.154	0.260	0.1110	0.806	1.824	-0.036	0.253	0.00700	0.00600	0.440	0.85	0.252
10/16/2013 15:33	0917-173_No13_10_16_1533_06_381		1	8.35	2.535	-0.425	0.153	0.1520	0.1080	1.078	1.834	-1.273	0.245	-0.00900	0.00600	1.64	0.77	0.195
10/16/2013 15:33	0917-173_No13_10_16_1533_12_481		1	5.04	2.582	0.247	0.156	0.271	0.1170	0.873	1.816	-0.105	0.249	0.00900	0.00600	1.79	0.82	0.264
10/16/2013 15:33	0917-173_No13_10_16_1533_18_681		1	-5.211	2.672	0.17	0.152	0.250	0.1170	0.871	1.802	-0.030	0.248	-0.00400	0.00600	0.627	0.82	0.22
10/16/2013 15:33	0917-173_No13_10_16_1533_24_881		1	-2.849	2.862	0.421	0.151	-0.0160	0.1110	0.646	1.878	-0.324	0.250	-0.01700	0.00600	-0.3320	0.84	0.192
10/16/2013 15:33	0917-173_No13_10_16_1533_31_081		1	6.036	2.833	-0.5100	0.156	-0.278	0.139	0.886	1.993	-0.287	0.256	-0.00300	0.00700	-0.907	0.85	0.252
10/16/2013 15:33	0917-173_No13_10_16_1533_37_271		1	-7.940	2.988	0.187	0.166	-0.211	0.143	0.25	1.707	-0.222	0.272	-0.01200	0.00700	0.1800	0.91	0.088
10/16/2013 15:33	0917-173_No13_10_16_1533_43_371		1	-6.836	3.097	-0.097	0.160	-0.376	0.155	0.994	1.624	-0.556	0.270	0.0000	0.00800	0.53	0.876	-0.056
10/16/2013 15:33	0917-173_No13_10_16_1533_49_561		1	-1.62	3.345	-0.072	0.177	-0.270	0.153	1.333	1.615	-0.562	0.293	-0.03300	0.00700	-0.08	0.99	-0.092
10/16/2013 15:33	0917-173_No13_10_16_1533_55_761		1	1.765	2.989	-0.0490	0.189	-0.038	0.149	0.954	1.549	-0.30	0.297	-0.02800	0.00700	-1.40	0.94	-0.058
10/16/2013 15:34	0917-173_No13_10_16_1534_01_961		1	-4.91	3.287	-0.133	0.178	-0.397	0.144	1.814	1.610	-0.069	0.294	-0.02300	0.00600	-0.766	0.99	-0.04
10/16/2013 15:34	0917-173_No13_10_16_1534_08_051		1	-1.8580	3.298	0.164	0.182	-0.2440	0.143	1.457	1.709	0.3400	0.296	-0.01100	0.00800	0.112	0.99	0.038
10/16/2013 15:34	0917-173_No13_10_16_1534_14_241		1	-2.312	3.301	-0.131	0.179	-0.1650	0.142	1.169	1.641	-0.322	0.296	-0.01900	0.00700	-0.15	0.99	0.115
10/16/2013 15:34	0917-173_No13_10_16_1534_20_441		1	-4.684	3.205	-0.08	0.181	-0.183	0.139	0.705	1.670	0.051	0.296	-0.00900	0.00700	-0.16	0.96	0.069
10/16/2013 15:34	0917-173_No13_10_16_1534_26_631		1	5.6610	3.152	0.0630	0.180	-0.239	0.145	1.042	1.738	0.087	0.288	-0.01000	0.00700	-1.063	0.97	0.056
10/16/2013 15:34	0917-173_No13_10_16_1534_32_831		1	-0.622	3.414	0.181	0.166	-0.002	0.152	0.389	1.726	-0.143	0.284	-0.00900	0.00700	-0.671	0.97	0.107
10/16/2013 15:34	0917-173_No13_10_16_1534_38_921		1	-1.15	3.230	-0.484	0.181	-0.1010	0.147	1.082	1.744	0.022	0.297	-0.02	0.00700	-2.35	0.99	0.158
10/16/2013 15:34	0917-173_No13_10_16_1534_45_121		1	-5.521	3.193	0.0950	0.173	-0.226	0.145	0.22	1.795	0.16	0.288	-0.00300	0.00700	-1.198	0.93	0.12
10/16/2013 15:34	0917-173_No13_10_16_1534_51_321		1	-2.466	3.090	-0.38	0.175	-0.140	0.142	0.836	1.800	-0.45	0.280	-0.03000	0.00700	0.770	0.92	0.183
10/16/2013 15:34	0917-173_No13_10_16_1534_57_611		1	-1.147	2.792	-0.149	0.173	-0.312	0.143	0.741	1.841	-0.328	0.270	-0.00400	0.00700	-0.01	0.89	0.207
10/16/2013 15:35	0917-173_No13_10_16_1535_03_811		1	-1.870	3.042	0.1360	0.165	0.021	0.1340	0.858	1.908	0.0130	0.269	0.0050	0.00700	1.32	0.90	0.223
10/16/2013 15:35	0917-173_No13_10_16_1535_09_821		1	0.57	3.108	0.078	0.166	-0.128	0.151	0.763	1.905	-0.26	0.274	-0.00400	0.00600	-2.269	0.90	0.238
10/16/2013 15:35	0917-173_No13_10_16_1535_16_021		1	-2.21	3.049	0.0020	0.171	-0.020	0.139	0.777	1.933	0.023	0.276	-0.01900	0.00700	-0.98	0.92	0.251
10/16/2013 15:35	0917-173_No13_10_16_1535_22_221		1	-1.4540	2.869	0.003	0.161	-0.308	0.145	0.791	1.921	0.148	0.265	-0.01100	0.00700	0.58	0.89	0.257
10/16/2013 15:35	0917-173_No13_10_16_1535_28_421		1	-3.878	2.646	0.137	0.164	-0.239	0.146	0.19	1.958	-0.1220	0.258	-0.02000	0.00700	-1.81	0.85	0.26
10/16/2013 15:35	0917-173_No13_10_16_1535_34_611		1	-5.654	2.773	-0.61	0.166	-0.04800	0.1440	0.960	1.959	-0.724	0.265	-0.00700	0.00700	1.21	0.89	0.311
10/16/2013 15:35	0917-173_No13_10_16_1535_40_711		1	-2.66	3.030	0.305	0.164	-0.0740	0.1410	1.079	2.015	0.026	0.268	-0.01100	0.00600	0.173	0.90	0.264
10/16/2013 15:35	0917-173_No13_10_16_1535_46_901		1	-5.8140	3.155	-0.31	0.156	-0.2090	0.137	0.752	1.970	-0.668	0.266	-0.02100	0.00700	1.65	0.88	0.288
10/16/2013 15:35	0917-173_No13_10_16_1535_53_101		1	-3.97	3.335	0.228	0.180	-0.0260	0.147	0.751	1.994	-0.177	0.294	0.00400	0.00700	-0.267	0.97	0.281
10/16/2013 15:35	0917-173_No13_10_16_1535_59_391		1	-0.36	2.796	0.131	0.167	-0.0410	0.137	0.747	2.045	-0.060	0.267	-0.01200	0.00700	-0.003	0.87	0.279
10/16/2013 15:36	0917-173_No13_10_16_1536_05_581		1	-2.34	3.066	0.328	0.163	-0.0920	0.139	0.23	1.984	0.213	0.271	0.00	0.00700	0.338	0.92	0.259
10/16/2013 15:36	0917-173_No13_10_16_1536_11_681		1	2.785	2.952	-0.002	0.151	-0.06700	0.146	0.515	2.036	-0.236	0.253	-0.02500	0.00700	-0.05	0.86	0.25
10/16/2013 15:36	0917-173_No13_10_16_1536_17_881		1	-1.868	3.156	0.311	0.155	-0.213	0.149	0.835	1.986	0.355	0.261	-0.03100	0.00600	-0.830	0.89	0.27
10/16/2013 15:36	0917-173_No13_10_16_1536_24_081		1	-7.7500	3.032	-0.1560	0.168	-0.126	0.140	0.697	2.043	-0.408	0.272	-0.02400	0.00600	0.30	0.91	0.313
10/16/2013 15:36	0917-173_No13_10_16_1536_30_271		1	5.153	2.984	0.406	0.162	-0.056	0.1340	0.687	2.081	0.029	0.265	-0.02900	0.00700	-0.92	0.89	0.268
10/16/2013 15:36	0917-173_No13_10_16_1536_36_471		1	-1.934	3.027	0.077	0.159	-0.338	0.140	0.864	2.065	-0.017	0.264	-0.02	0.00700	-1.622	0.88	0.325
10/16/2013 15:36	0917-173_No13_10_16_1536_42_561		1	4.61	2.876	0.208	0.152	-0.117	0.139	1.142	2.034	0.215	0.252	-0.00700	0.00600	-1.7990	0.84	0.29
10/16/2013 15:36	0917-173_No13_10_16_1536_48_751		1	-1.33	2.913	-0.053	0.160	-0.0240	0.132	0.940	2.090	0.139	0.263	-0.01500	0.00700	-0.651	0.89	0.308
10/16/2013 15:36	0917-173_No13_10_16_1536_54_941		1	-9.64	2.819	-0.088	0.157	-0.172	0.133	1.244	2.094	-0.072	0.255	-0.02500	0.00700	0.766	0.83	0.309
10/16/2013 15:37	0917-173_No13_10_16_1537_01_141		1	4.011	2.649	-0.046	0.157	-0.169	0.1370	0.916	2.072	-0.052	0.251	-0.02000	0.00700	0.016	0.81	0.331
10/16/2013 15:37	0917-173_No13_10_16_1537_07_351		1	1.6220	3.066	-0.042	0.173	-0.0100	0.131	0.981	2.047	-0.293	0.280	-0.01400	0.00600	0.1710	0.93	0.348
10/16/2013 15:37	0917-173_No13_10_16_1537_13_431		1	-1.041	2.819	0.124	0.156	-0.2050	0.136	0.776	2.036	-0.28	0.254	-0.01600	0.00700	0.03	0.818	0.343
10/16/2013 15:37	0917-173_No13_10_16_1537_19_631		1	-1.870	2.919	0.262	0.164	-0.209	0.1300	0.888	2.058	0.139	0.266	-0.00200	0.00600	-0.148	0.92	0.243
10/16/2013 15:37	0917-173_No13_10_16_1537_25_841		1	-3.95	3.095	0.049	0.155	0.1950	0.132	0.749	2.082	-0.217	0.265	0.00300	0.00600	-1.221	0.88	0.316
10/16/2013 15:37	0917-173_No13_10_16_1537_32_041		1	2.124	2.872	-0.091	0.151	-0.204	0.135	0.957	2.077	-0.342	0.255	-0.00800	0.00700	1.353	0.832	0.299
10/16/2013 15:37	0917-173_No13_10_16_1537_38_151		1	-0.16	2.733	-0.051	0.163	0.213	0.131	1.046	2.075	-0.18	0.262	-0.01000	0.00600	-1.350	0.86	0.239
10/16/2013 15:37	0917-173_No13_10_16_1537_44_351		1	-1.757	2.907	-0.413	0.157	-0.1120	0.135	0.794	2.088	-0.3980	0.255	-0.01900	0.00600	-0.77	0.87	0.26
10/16/2013 15:37	0917-173_No13_10_16_1537_50_551		1	-5.3170	2.737	-0.001	0.149	-0.141	0.125	1.129	2.060	0.026	0.247	-0.01600	0.00700	-0.57	0.82	0.271
10/16/2013 15:37	0917-173_No13_10_16_1537_56_752		1	5.702	2.880	0.097	0.155	-0.114	0.130	0.738	2.062	0.25	0.258	-0.00900	0.00500	-1.95	0.88	0.268
10/16/2013 15:38	0917-173_No13_10_16_1538_02_952		1	-5.541	2.647	-0.123	0.146	-0.0130	0.1300	1.539	2.017	-0.069	0.239	-0.02100	0.00700	-1.415	0.798	0.253
10/16/2013 15:38	0917-173_No13_10_16_1538_09_052		1	-3.70	2.462	-0.110	0.149	-0.179	0.1250	0.832	2.031	-0.625	0.238	-0.02300	0.00700	1.18	0.79	0.198
10/16/2013 15:38	0917-173_No13_10_16_1538_15_252		1	-1.71	2.675	0.2450	0.163	-0.129	0.1310	0.729	2.083	-0.3320	0.256	-0.03100	0.00600	0.776	0.83	0.339
10/16/2013 15:38	0917-173_No13_10_16_1538_21_442		1	7.20	2.914	0.309	0.154	-0.1010	0.126	0.665	2.001	0.24	0.257	0.00600	0.00500	-3.30	0.86	0.265
10/16/2013 15:38	0917-173_No13_10_16_1538_27_642		1	-4.242	2.680	0.1230	0.159	-0.2290	0.1180	1.124	2.068	-0.411	0.255	-0.01200	0.00600	2.31	0.83	0.264
10/16/2013 15:38	0917-173_No13_10_16_1538_33_832		1	-0.13	2.652	-0.130	0.154	0.0810	0.1170	0.734	2.010	-0.017	0.251	-0.01500	0.00600	-1.364	0.85	0.334
10/16/2013 15:38	0917-173_No13_10_16_1538_39_922		1	0.019	2.799	-0.014	0.165	-0.093	0.1240	0.990	2.026	-0.029	0.262	-0.01	0.00500	-1.91	0.87	0.283
10/16/2013 15:38	0917-173_No13_10_16_1538_46_132		1	3.593	2.685	0.2180	0.143	-0.140	0.1200	0.700	2.028	0.239	0.237	-0.00400	0.00700	-1.638	0.760	0.211
10/16/2013 15:38	0917-173_No13_10_16_1538_52_322		1	1.049	2.757	-0.256	0.157	0.0130	0.1210	0.365	2.005	-0.321	0.257	-0.01000	0.00500	-1.13	0.83	0.249
10/16/2013 15:38	0917-173_No13_10_16_1538_58_522		1	-5.564	2.735	0.223	0.155	-0.133	0.1240	1.007	1.984	-0.46	0.250	-0.00600	0.00500	0.546	0.83	0.199
10/16/2013 15:39	0917-173_No13_10_16_1539_04_712		1	-2.759	2.607	-0.126	0.141	0.0120	0.134	0.849	1.972	-0.157	0.235	-0.01200	0.00600	-0.120	0.77	0.199
10/16/2013 15:39	0917-173_No13_10_16_1539_10_822		1	1.211	2.920	0.281	0.146	-0.0660	0.122	0.213	1.989	0.075	0.248	-0.01500	0.00600	0.47	0.793	0.256
10/16/2013 15:39	0917-173_No13_10_16_1539_17_012		1	-1.042	2.477	-0.150	0.158	-0.0700	0.1220	0.721	1.986	-0.167	0.247	-0.00700	0.00700	0.204	0.79	0.276
10/16/2013 15:39	0917-173_No13_10_16_1539_23_302		1	-3.759	2.911	-0.279	0.158	0.163	0.123	1.102	1.949	-0.464	0.259	0.00200	0.00600	-1.244	0.83	0.243
10/16/2013 15:39	0917-173_No13_10_16_1539_29_492		1	3.00	2.714	-0.047	0.149	-0.043	0.1210	0.705	1.917	-0.23300	0.242	-0.01	0.00600	-0.23	0.81	0.251
10/16/2013 15:39	0917-173_No13_10_16_1539_35_682		1	1.489	2.792	-0.189	0.157	-0.02600	0.1150	0.464	1.904	-0.253	0.255	0.00000	0.00500	-1.424	0.82	0.234
10/16/2013 15:39	0917-173_No13_10_16_1539_41_772		1	3.044	2.716	0.138	0.161	-0.0050	0.1170	0.930	1.929	-0.3990	0.256	-0.00900	0.00500	-1.194	0.85	0.241
10/16/2013 15:39	0917-173_No13_10_16_1539_47_962		1	3.726	2.777	-0.271	0.153	0.0870	0.1160	0.536	1.935	0.104	0.251	-0.00300	0.00500	-1.79	0.83	0.243
10/16/2013 15:39	0917-173_No13_10_16_1539_54_152		1	7.0530	2.627	0.162	0.155	-0.171	0.1180	0.604	1.904	-0.265	0.246	-0.00500	0.00600	-1.36	0.81	0.247
10/16/2013 15:40	0917-173_No13_10_16_1540_00_342		1	4.7780	2.886	0.319	0.163	0.1010	0.1210	1.3220	1.926	0.47	0.263	-0.01000	0.00600	-0.853	0.87	0.223
10/16/2013 15:40	0917-173_No13_10_16_1540_06_532		1	5.240	2.913	0.2540	0.158	-0.0760	0.1140	0.306	1.913	-0.1630	0.258	-0.00800	0.00600	0.949	0.89	0.229
10/16/2013 15:40	0917-173_No13_10_16_1540_12_632		1	-0.411	2.616	0.222	0.153	-0.139	0.1170	0.614	1.861	-0.60	0.245	0.00	0.00500	-0.12	0.80	0.189
10/16/2013 15:40	0917-173_No13_10_16_1540_18_832		1	-0.847	2.835	0.086	0.150	0.1060	0.1240	1.023	1.864	-0.61	0.251	-0.00700	0.00600	1.42	0.84	0.226
10/16/2013 15:40	0917-173_No13_10_16_1540_25_022		1	-3.395	2.771	0.230	0.147	0.343	0.1140	1.032	1.835	0.470	0.243	0.00500	0.00700	-1.12	0.79	0.235
10/16/2013 15:40	0917-173_No13_10_16_1540_31_212		1	-7.943	2.608	0.0270	0.151	-0.01000	0.1120	0.794	1.803	-0.151	0.245	-0.00300	0.00600	-0.23	0.83	0.158
10/16/2013 15:40	0917-173_No13_10_16_1540_37_502		1	1.086	2.597	0.1110	0.151	-0.0630	0.1080	1.152	1.850	-0.577	0.246	-0.01300	0.00600	1.379	0.79	0.19
10/16/2013 15:41	0917-173_No13_10_16_1541_19_642		1	1.5800	1.273	0.1620	0.069	-0.0070	0.0840	0.903	1.863	-0.3470	0.115	-0.01	0.00300	-0.074	0.375	0.212
10/16/2013 15:42	0917-173_No13_10_16_1542_20_432		1	0.479	1.173	0.093	0.072	0.0480	0.0830	1.011	1.864	-0.2330	0.114	-0.00700	0.00300	0.296	0.369	0.232
10/16/2013 15:43	0917-173_No13_10_16_1543_21_152		1	1.132	1.197	0.047	0.067	0.0500	0.0840	0.912	1.861	-0.018	0.108	-0.00500	0.00300	-0.25600	0.360	0.215
10/16/2013 15:44	0917-173_No13_10_16_1544_21_922		1	1.814	1.296	-0.0310	0.0650	0.01900	0.0850	0.856	1.871	-0.010	0.112	-0.01	0.00300	-0.181	0.372	0.231
10/16/2013 15:45	0917-173_No13_10_16_1545_22_636		1	1.466	1.201	0.041	0.070	-0.102	0.0840	0.691	1.873	-0.2410	0.112	-0.00300	0.00300	-0.122	0.350	0.227
10/16/2013 15:46	0917-173_No13_10_16_1546_23_436		1	0.156	1.348	0.039	0.0710	0.0050	0.0840	0.832	1.888	-0.0850	0.118	-0.00500	0.00300	0.216	0.384	0.225

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_14_091	1	-2.1	1.4	0.064	0.080	-0.29	1.56	0.0500	0.1130	-0.443	0.130	0.062	0.628	0.84	0.425	-1.948
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_32_611	1	-2.7	1.5	0.132	0.084	-0.28	1.61	0.1550	0.0980	-0.0450	0.138	0.049	0.647	1.58	0.441	-2.077
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_51_221	1	0.6	1.5	0.124	0.083	-0.41	1.64	0.050	0.1220	-0.277	0.134	0.054	0.654	-0.28	0.449	-2.071
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_09_721	1	-3.3	1.4	0.187	0.087	-0.56	1.65	-0.002	0.1120	-0.217	0.138	0.065	0.663	0.711	0.447	-2.128
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_28_311	1	-0.1	1.5	0.268	0.078	-0.46	1.65	0.117	0.1090	-0.0260	0.135	0.057	0.663	0.202	0.451	-2.128
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_46_821	1	-4.3	1.5	0.1500	0.087	-0.46	1.66	0.01300	0.1060	-0.225	0.140	0.061	0.664	0.401	0.445	-2.13
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_05_251	1	-0.5	1.5	-0.042	0.083	-0.51	1.66	-0.0100	0.1030	-0.369	0.136	0.049	0.661	1.20	0.435	-2.114
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_23_951	1	-2.1	1.6	-0.0890	0.085	-0.48	1.66	0.0590	0.1170	-0.05400	0.139	0.056	0.662	0.046	0.457	-2.117
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_42_401	1	-0.9	1.5	-0.034	0.082	-0.57	1.67	-0.212	0.1100	0.062	0.133	0.055	0.665	0.631	0.437	-2.139
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_01_001	1	-0.1	1.5	0.2160	0.077	-0.48	1.67	0.321	0.0990	-0.193	0.129	0.057	0.666	0.583	0.436	-2.1
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_19_511	1	-1.8	1.7	0.166	0.083	-0.51	1.66	-0.0680	0.1080	0.283	0.140	0.061	0.665	0.657	0.476	-2.12
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_38_051	1	-1.6	1.5	0.075	0.079	-0.38	1.67	0.169	0.1090	-0.151	0.130	0.067	0.665	1.50	0.458	-2.118
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_56_641	1	0.9	1.5	0.168	0.086	-0.52	1.66	0.171	0.1110	-0.118	0.139	0.062	0.668	1.46	0.452	-2.14
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_15_151	1	-3.1	1.6	0.0100	0.077	-0.55	1.67	-0.0580	0.1100	-0.0670	0.133	0.064	0.665	-0.77	0.439	-2.144
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_33_681	1	-1.3	1.5	0.186	0.079	-0.50	1.67	0.0090	0.1050	-0.175	0.131	0.052	0.665	0.906	0.432	-2.132
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_52_291	1	0.6	1.6	0.2600	0.080	-0.77	1.68	0.093	0.1020	-0.356	0.136	0.062	0.665	0.487	0.455	-2.149
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_10_741	1	4.5	1.4	-0.0290	0.078	-0.31	1.66	0.163	0.1200	-0.138	0.129	0.060	0.665	0.93	0.428	-2.13
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_29_331	1	1.9	1.5	0.134	0.084	-0.50	1.66	0.0260	0.1140	-0.054	0.137	0.056	0.667	0.5460	0.438	-2.16
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_47_881	1	0.6	1.5	0.2080	0.079	-0.57	1.67	0.030	0.1190	0.144	0.132	0.058	0.667	0.0600	0.446	-2.126
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_06_371	1	1.3	1.5	0.061	0.082	-0.55	1.67	-0.213	0.1080	-0.176	0.136	0.049	0.665	0.644	0.460	-2.181
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_24_991	1	-2.0	1.5	-0.061	0.083	-0.38	1.67	0.0280	0.1120	-0.003	0.136	0.060	0.663	0.74	0.461	-2.146
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_43_481	1	-1.3	1.5	0.035	0.079	-0.46	1.67	-0.335	0.1050	-0.063	0.129	0.061	0.666	1.00	0.434	-2.169
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_01_901	1	-3.9	1.6	0.128	0.080	-0.64	1.67	0.181	0.1210	0.153	0.137	0.064	0.671	-0.248	0.475	-2.148
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_20_611	1	-3.1	1.5	0.038	0.082	-0.49	1.67	0.0010	0.0990	-0.242	0.134	0.065	0.664	1.807	0.436	-2.153
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_39_101	1	0.4	1.6	0.1860	0.084	-0.44	1.67	0.139	0.0960	-0.217	0.139	0.051	0.664	-0.15	0.456	-2.168
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_57_711	1	-0.6	1.5	-0.042	0.084	-0.60	1.67	0.209	0.1080	-0.071	0.135	0.062	0.666	0.318	0.453	-2.126
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_16_192	1	-2.1	1.6	-0.035	0.084	-0.40	1.66	-0.0260	0.1080	-0.276	0.140	0.057	0.669	-0.09	0.469	-2.186
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_34_662	1	0.5	1.5	0.097	0.079	-0.58	1.66	0.0240	0.0980	-0.044	0.131	0.049	0.666	0.4520	0.445	-2.17
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_53_282	1	0.8	1.4	0.104	0.082	-0.50	1.66	0.1230	0.1040	-0.141	0.133	0.061	0.666	0.607	0.453	-2.143
					10/14/2013 12:23	0917-173_Nc	13_10_14_1223_11_782	1	-1.9	1.4	0.2600	0.082	-0.48	1.66	0.0970	0.1220	0.077	0.132	0.057	0.667	0.69	0.424	-2.166
					10/14/2013 12:44	0917-173_Nc	13_10_14_1244_45_810	1	1.70	1.000	-0.1880	0.163	108.0	0.887	-0.054	0.1080	1.383	0.215	3.42	0.0220	0.853	0.339	0.704
					10/14/2013 12:45	0917-173_Nc	13_10_14_1245_46_590	1	-0.09	0.958	-0.128	0.170	111.7	0.926	-0.108	0.1060	1.46	0.223	3.44	0.0220	0.683	0.341	0.736
					10/14/2013 12:46	0917-173_Nc	13_10_14_1246_47_390	1	0.76	1.049	-0.279	0.177	113.8	0.945	-0.001	0.1120	1.31	0.229	3.45	0.0230	0.483	0.349	0.727
					10/14/2013 12:47	0917-173_Nc	13_10_14_1247_48_200	1	0.66	0.928	-0.0260	0.174	114.6	0.951	-0.009	0.1110	1.46	0.228	3.44	0.0230	0.469	0.342	0.739
					10/14/2013 12:48	0917-173_Nc	13_10_14_1248_48_990	1	0.88	0.967	-0.240	0.172	115.4	0.952	0.1230	0.1130	1.60	0.224	3.45	0.0240	0.410	0.347	0.712
					10/14/2013 12:49	0917-173_Nc	13_10_14_1249_49_710	1	-0.22	0.979	-0.2450	0.1780	116	0.952	0.007	0.1190	1.45	0.229	3.45	0.0230	0.855	0.339	0.726
					10/14/2013 12:50	0917-173_Nc	13_10_14_1250_50_520	1	0.13	1.026	-0.180	0.184	117	0.962	0.009	0.1130	1.32	0.239	3.46	0.0230	1.762	0.358	0.722
Data	CYL	1	Start	A	10/14/2013 12:51	0917-173_Nc	13_10_14_1251_51_320	1	1.45	0.994	-0.347	0.178	117	0.975	0.059	0.1160	1.42	0.232	3.45	0.0230	0.811	0.348	0.712
					10/14/2013 12:52	0917-173_Nc	13_10_14_1252_52_020	1	0.44	0.968	-0.161	0.181	118	0.975	0.1400	0.1150	1.47	0.234	3.45	0.0250	0.521	0.340	0.742
					10/14/2013 12:53	0917-173_Nc	13_10_14_1253_52_871	1	0.74	1.018	-0.155	0.175	118	0.977	-0.006	0.120	1.50	0.229	3.46	0.0220	0.730	0.360	0.716
					10/14/2013 12:54	0917-173_Nc	13_10_14_1254_53_581	1	-0.85	1.029	-0.264	0.183	118	0.967	-0.043	0.1170	1.59	0.242	3.45	0.0240	0.509	0.341	0.715
					10/14/2013 12:55	0917-173_Nc	13_10_14_1255_54_371	1	1.49	1.043	-0.259	0.183	118	0.977	0.002	0.1090	1.51	0.236	3.46	0.0230	1.422	0.344	0.719
					10/14/2013 12:56	0917-173_Nc	13_10_14_1256_55_131	1	-1.45	0.936	-0.150	0.180	118	0.980	0.014	0.1170	1.67	0.235	3.45	0.0230	0.624	0.333	0.718
			Stop		10/14/2013 12:57	0917-173_Nc	13_10_14_1257_55_951	1	-0.68	0.972	-0.071	0.182	118	0.991	-0.033	0.125	1.53	0.234	3.45	0.0240	0.980	0.338	0.709
					10/14/2013 13:13	0917-173_Nc	13_10_14_1313_12_592	1	-3.144	1.950	4.07	0.107	2.57	0.305	0.165	2.13	-0.403	0.179	0.00900	0.0170	1.00	0.567	6.843
					10/14/2013 13:14	0917-173_Nc	13_10_14_1314_13_372	1	-3.345	1.911	3.80	0.107	2.16	0.305	0.055	2.13	-0.425	0.177	0.00900	0.0170	0.06	0.576	6.928
					10/14/2013 13:15	0917-173_Nc	13_10_14_1315_14_182	1	-2.10	1.866	5.30	0.105	2.16	0.293	-0.0110	2.16	-0.457	0.172	0.01000	0.0180	0.66	0.547	6.831
					10/14/2013 13:16	0917-173_Nc	13_10_14_1316_14_952	1	-2.45	1.87	6.37	0.110	2.30	0.293	0.0730	2.16	-0.35200	0.180	0.01100	0.0200	0.64	0.560	6.772
					10/14/2013 13:17	0917-173_Nc	13_10_14_1317_15_753	1	-3.53	1.92	7.75	0.113	2.46	0.285	0.0210	2.17	-0.4060	0.182	0.01	0.0210	0.48	0.563	6.563
					10/14/2013 13:18	0917-173_Nc	13_10_14_1318_16_493	1	-1.81	1.93	7.97	0.114	2.47	0.288	0.167	2.16	-0.53400	0.184	0.01	0.0230	1.33	0.575	6.501
					10/14/2013 13:19	0917-173_Nc	13_10_14_1319_17_313	1	-3.57	2.037	4.92	0.108	2.20	0.299	-0.024	2.14	-0.728	0.185	0.00600	0.0190	1.21	0.598	6.656
					10/14/2013 13:20	0917-173_Nc	13_10_14_1320_18_043	1	-2.731	1.930	3.79	0.103	2.13	0.305	0.101	2.16	-0.554	0.175	0.00900	0.0170	0.32	0.572	6.734
					10/14/2013 13:21	0917-173_Nc	13_10_14_1321_18_863	1	-2.423	1.993	4.22	0.111	2.11	0.301	0.200	2.16	-0.721	0.183	0.00800	0.0180	0.291	0.579	6.736
					10/14/2013 13:22	0917-173_Nc	13_10_14_1322_19_563	1	-2.835	1.899	2.57	0.107	1.98	0.309	0.156	2.15	-0.697	0.178	0.00300	0.0150	-0.11	0.567	6.812
					10/14/2013 13:23	0917-173_Nc	13_10_14_1323_20_333	1	-2.20	1.923	0.954	0.104	1.72	0.326	0.063	2.14	-0.9210	0.175	0.0030	0.0170	1.01	0.570	6.911
					10/14/2013 13:24	0917-173_Nc	13_10_14_1324_21_163	1	-4.050	1.879	0.820	0.109	1.79	0.340	0.110	2.13	-0.58500	0.178	0.0050	0.0180	0.26	0.565	6.713
					10/14/2013 13:25	0917-173_Nc	13_10_14_1325_21_853	1	-3.699	2.019	1.04	0.109	1.95	0.364	0.241	2.10	-0.519	0.185	0.0060	0.0190	-0.39	0.597	6.816
					10/14/2013 13:26	0917-173_Nc	13_10_14_1326_22_693	1	-5.45	2.052	1.32	0.112	2.01	0.378	0.239	2.08	-0.230	0.187	0.00100	0.0200	0.22	0.605	6.941
					10/14/2013 13:27	0917-173_Nc	13_10_14_1327_23_403	1	-4.74	2.100	1.63	0.112	2.20	0.379	0.225	2.09	-0.366	0.192	0.0090	0.0200	0.07	0.611	7.056
					10/14/2013 13:28	0917-173_Nc	13_10_14_1328_24_143	1	-2.04	2.022	1.49	0.110	2.10	0.366	0.207	2.06	-0.278	0.188	0.0110	0.0190	-0.12	0.604	7.121
					10/14/2013 13:29	0917-173_Nc	13_10_14_1329_24_954	1	-3.02	1.916	1.083	0.105	1.70	0.306	0.1990	2.16	-0.506	0.179	0.00100	0.0170	-0.10	0.573	7.908
					10/14/2013 13:30	0917-173_Nc	13_10_14_1330_25_774	1	-2.058	1.843	0.856	0.098	2.34	0.271	0.2750	2.20	-1.077	0.171	0.0130	0.01400	0.64	0.534	8.364
					10/14/2013 13:31	0917-173_Nc	13_10_14_1331_26_474	1	-1.71	1.710	0.702	0.104	20.5	0.303	0.104	2.19	-0.1530	0.171	0.513	0.01300	-0.21	0.521	6.598
					10/14/2013 13:32	0917-173_Nc	13_10_14_1332_27_274	1	-0.87	1.812	0.676	0.095	19.1	0.290	0.3580	2.20	-0.193	0.162	0.665	0.01300	0.57	0.510	5.853
					10/14/2013 13:33	0917-173_Nc	13_10_14_1333_28_094	1	-3.64	1.733	0.659	0.096	19.8	0.289	0.434	2.19	-0.1880	0.161	0.670	0.01300	0.78	0.503	5.772
					10/14/2013 13:34	0917-173_Nc	13_10_14_1334_28_844	1	-2.74	1.729	0.728	0.098	20.4	0.290	0.3580	2.20	-0.204	0.162	0.672	0.01200	0.419	0.500	5.619
					10/14/2013 13:35	0917-173_Nc	13_10_14_1335_29_594	1	-2.07	1.671	0.755	0.101	21.0	0.287	0.0790	2.19	-0.093	0.164	0.671	0.01200	0.27	0.514	5.46
					10/14/2013 13:36	0917-173_Nc	13_10_14_1336_30_204	1	-0.79	1.714	0.691	0.098	21.4	0.278	0.2870	2.21	0.004	0.162	0.668	0.01200	0.082	0.505	5.301
					10/14/2013 13:37	0917-173_Nc	13_10_14_1337_30_984	1	-1.030	1.597	0.730	0.098	20.6	0.285	0.25400	2.20	-0.154	0.159	0.636	0.01200	0.50	0.488	5.206
					10/14/2013 13:38	0917-173_Nc	13_10_14_1338_31_744	1	-1.92	1.670	0.727	0.095	20.8	0.299	0.471	2.21	0.007	0.155	0.635	0.01300	0.229	0.485	5.308
					10/14/2013 13:39	0917-173_Nc	13_10_14_1339_33_514	1	-0.69	1.662	0.620	0.099	21.0	0.307	0.328	2.17	-0.1750	0.162	0.633	0.01300	0.47	0.498	5.496
					10/14/2013 13:40	0917-173_Nc	13_10_14_1340_33_254	1	-2.72	1.769	0.699	0.098	20.2	0.298	0.1720	2.19	0.092	0.162	0.600	0.01400	0.13	0.511	5.516
					10/14/2013 13:41	0917-173_Nc	13_10_14_1341_34_055	1	-1.48	1.539	0.648	0.099	19.5	0.295	0.3670	2.19	0.160	0.159	0.577	0.01300	0.44	0.488	5.494
					10/14/2013 13:42	0917-173_Nc	13_10_14_1342_34_855	1	-1.67	1.792	0.408	0.100	19.5	0.301	0.1740	2.17	-0.424	0.165	0.577	0.01400	0.53	0.519	5.435
					10/14/2013 13:43	0917-173_Nc	13_10_14_1343_35_555	1	-2.14	1.761	0.416	0.097	19.6	0.300	0.16100	2.19	-0.374	0.162	0.575	0.01400	0.86	0.514	5.411
					10/14/2013 13:44	0917-173_Nc	13_10_14_1344_36_395	1	0.12	1.679	0.485	0.096	18.8	0.313	0.1870	2.16	-0.1230	0.159	0.552	0.0150	0.62	0.505	5.577
					10/14/2013 13:45	0917-173_Nc	13_10_14_1345_37_095	1	-2.29	1.763	0.702	0.102	18.5	0.319	0.178	2.18	-0.172	0.169	0.537	0.0150	-0.05	0.521	5.646
					10/14/2013 13:46	0917-173_Nc	13_10_14_1346_37_805	1	-2.95	1.879	0.691	0.095	18.6	0.319	0.0230	2.16	-0.4050	0.164	0.540	0.0150	0.047	0.535	5.641
					10/14/2013 13:47	0917-173_Nc	13_10_14_1347_38_655	1	-3.53	1.844	0.748	0.098	18.4	0.319	0.0290	2.16	-0.265	0.167	0.534	0.0150	1.12	0.542	5.683
					10/14/2013 13:48	0917-173_Nc	13_10_14_1348_39_415	1	-2.95	1.837	0.790	0.103	9.30	0.314	-0.20000	2.15	-0.251	0.171	0.232	0.0160	-0.16	0.550	6.136
					10/14/2013 13:49	0917-173_Nc	13_10_14_1349_40_155	1	-3.01	1.852	0.773	0.097	7.67	0.321	0.042	2.15	-0.4120	0.166	0.181	0.0160	-0.053	0.544	6.239
					10/14/2013 13:50	0917-173_Nc	13_10_14_1350_40_915	1	-2.51	1.880	0.735	0.098	7.48	0.325	-0.068	2.14	-0.398	0.168	0.176	0.0170	-0.512	0.539	6.337
					10/14/2013 13:51	0917-173_Nc	13_10_14_1351_41_695	1	-2.55	1.858	0.635	0.101	8.70	0.299	-0.105	2.15	-0.621	0.17	0.218	0.0150	0.00	0.550	6.236
					10/14/2013 13:52	0917-173_Nc	13_10_14_1352_42_406	1	-2.16	1.747	0.572	0.099	9.03	0.291	-0.132	2.15	-0.6080	0.16	0.229	0.0150	0.19	0.519	6.146
					10/14/2013 13:53	0917-173_Nc	13_10_14_1353_43_136	1	-3.16	1.752	0.446	0.098	9.13	0.290	-0.172	2.14	-0.534	0.16	0.228	0.0140	-0.321	0.523	6.086
Data	SPK	1	Start	A	10/14/2013 13:54	0917-173_Nc	13_10_14_1354_43_956	1	-2.711	1.766	0.557	0.100	8.90	0.283	0.037	2.15	-0.586	0.17	0.224	0.01400	0.23	0.533	5.97
					10/14/2013 13:55	0917-173_Nc	13_10_14_1355_44_666	1	-1.36	1.665	0.584	0.097	8.71	0.283	-0.120	2.13	-0.6080	0.16	0.230	0.01400	0.600	0.510	5.79
					10/14/2013 13:56	0917-173_Nc	13_10_14_1356_45_486	1	-3.069	1.727	0.488	0.093	8.45	0.273	0.060	2.14	-0.506	0.16	0.225	0.01300	-0.04	0.496	5.585
					10/14/2013 13:57	0917-173_Nc	13_10_14_1357_46_206	1	-3.092	1.699	0.578	0.094	8.50	0.266	0.105	2.14	-0.5580	0.16	0.225	0.01300	0.29	0.510	5.392
					10/14/2013 13:58	0917-173_Nc	13_10_14_1358_47_056	1	-2.421	1.705	0.736	0.094	8.49	0.276	0.082	2.13	-0.4960	0.16	0.224	0.01300	0.43	0.506	5.359
					10/14/2013 13:59	0917-173_Nc	13_10_14_1359_47_806	1	-2.609	1.753	0.744	0.092	8.33	0.288	-0.01700	2.13	-0.39100	0.16	0.224	0.01400	-0.43	0.505	5.353
			Stop		10/14/2013 14:00	0917-173_Nc	13_10_14_1400_48_546	1	-2.32	1.848	0.680	0.100	2.83	0.303	-0.197	2.10	-0.644	0.17	0.0340	0.0150	-0.527	0.539	5.468
					10/14/2013 14:01	0917-173_Nc	13_10_14_1401_49_266	1	-3.473	1.811	0.789	0.099	1.78	0.316	-0.112	2.10	-0.640	0.17	0.0100	0.0160	0.107	0.534	5.408
					10/14/2013 14:02	0917-173_Nc	13_10_14_1402_50_046	1	-2.23	1.897	0.829	0.100	1.73	0.312	-0.143	2.09	-0.624	0.17	0.0020	0.0160	-0.788	0.548	5.326
					10/14/2013 14:03	0917-173_Nc	13_10_14_1403_50_876	1	-2.36	1.912	0.732	0.101	1.65	0.316	0.009	2.09	-0.446	0.17	0.0070	0.0160	-0.24	0.552	5.279
					10/14/2013 14:04	0917-173_Nc	13_10_14_1404_51_627	1	-1.56	1.851	0.836	0.102	1.63	0.308	0.092	2.11	-0.416	0.17	0.0050	0.0160	-0.36	0.551	5.17
					10/14/2013 14:05	0917-173_Nc	13_10_14_1405_52_397	1	-3.525	1.958	0.716	0.102	1.54	0.308	0.101	2.09	-0.502	0.17	0.0110	0.0160	-0.05	0.566	5.097
Data	UNSPK	1	Start	A	10/14/2013 14:06	0917-173_Nc	13_10_14_1406_53_137	1	-2.89	1.883	0.786	0.099	1.53	0.312	-0.009	2.10	-0.536	0.17	0.0070	0.0160	-0.372	0.540	4.995
					10/14/2013 14:07	0917-173_Nc	13_10_14_1407_53_877	1	-3.97	1.920	0.946	0.106	1.37	0.309	0.145	2.11	-0.572	0.17	0.0030	0.0160	-0.43	0.567	4.899
					10/14/2013 14:08	0917-173_Nc	13_10_14_1408_54_687	1	-2.016	1.864	0.707	0.100	1.40	0.307	0.244	2.13	-0.6050	0.17	0.0050	0.0160	-0.11	0.557	4.851
					10/14/2013 14:09	0917-173_Nc	13_10_14_1409_55_387	1	-2.891	1.821	0.856	0.102	1.33	0.298	0.294	2.13	-0.564	0.17	0.0080	0.0150	-0.10	0.539	4.811
					10/14/2013 14:10	0917-173_Nc	13_10_14_1410_56_217	1	-4.436	1.837	0.716	0.103	1.35	0.289	0.106	2.13	-0.7280	0.17	0.0090	0.0150	0.06	0.546	4.799
					10/14/2013 14:11	0917-173_Nc	13_10_14_1411_56_937	1	-2.838	1.807	0.850	0.100	1.41	0.289	0.239	2.12	-0.539	0.17	0.0030	0.01500	-0.42	0.540	4.82
			Stop		10/14/2013 14:12	0917-173_Nc	13_10_14_1412_57_727	1	-2.105	1.814	0.767	0.103	1.42	0.296	0.089	2.13	-0.600	0.17	0.00200	0.0150	-0.377	0.538	4.887
					10/14/2013 14:39	0917-173_Nc	13_10_14_1439_49_359	1	-0.818	1.579	0.751	0.092	2.46	0.226	0.52	2.20	-0.819	0.150	-0.00200	0.01000	-0.412	0.474	5.623
					10/14/2013 14:40	0917-173_Nc	13_10_14_1440_50_130	1	-2.11600	1.712	0.969	0.094	2.73	0.266	0.35	2.19	-0.7840	0.156	0.00200	0.01300	-0.878	0.492	6.396
					10/14/2013 14:41	0917-173_Nc	13_10_14_1441_50_940	1	-2.718	1.727	0.88	0.098	2.70	0.271	0.32	2.18	-0.8010	0.163	0.00400	0.01300	-0.968	0.515	6.609
					10/14/2013 14:42	0917-173_Nc	13_10_14_1442_51_690	1	-2.537	1.788	0.972	0.098	2.90	0.272	0.52	2.19	-0.6940	0.165	0.00600	0.01400	-0.864	0.527	6.768
					10/14/2013 14:43	0917-173_Nc	13_10_14_1443_52_400	1	-2.191	1.803	0.812	0.100	2.95	0.293	0.40	2.16	-0.7440	0.166	0.00700	0.01400	-0.38	0.536	7.105
					10/14/2013 14:44	0917-173_Nc	13_10_14_1444_53_190	1	-1.696	1.747	0.506	0.104	3.20	0.309	0.48	2.12	-0.992	0.169	0.00800	0.0150	-0.57	0.526	7.411
					10/14/2013 14:45	0917-173_Nc	13_10_14_1445_53_900	1	-2.138	1.937	0.447	0.104	3.40	0.333	0.40	2.10	-0.998	0.176	0.0070	0.0160	-0.34	0.569	7.76
					10/14/2013 14:46	0917-173_Nc	13_10_14_1446_54_660	1	-3.026	1.962	0.771	0.108	3.68	0.346	0.54	2.08	-0.557	0.181	0.0030	0.0170	-0.94	0.583	8.068
					10/14/2013 14:47	0917-173_Nc	13_10_14_1447_55_500	1	-3.541	2.009	1.18	0.111	3.75	0.351	0.36	2.06	-0.819	0.185	0.00600	0.0170	-0.68	0.591	8.293
					10/14/2013 14:48	0917-173_Nc	13_10_14_1448_56_210	1	-5.535	1.959	1.138	0.105	3.71	0.344	0.28	2.08	-0.714	0.179	0.00400	0.0170	-0.93	0.565	8.431
					10/14/2013 14:49	0917-173_Nc	13_10_14_1449_56_940	1	-5.028	1.879	0.984	0.109	3.74	0.339	0.35	2.09	-0.811	0.179	0.00200	0.0170	-0.972	0.562	8.422
					10/14/2013 14:50	0917-173_Nc	13_10_14_1450_57_730	1	-3.3020	1.846	1.02	0.105	3.62	0.331	0.41	2.08	-0.8630	0.175	0.00200	0.0160	-0.869	0.547	8.409
					10/14/2013 14:51	0917-173_Nc	13_10_14_1451_58_450	1	-4.500	1.836	0.856	0.106	3.56	0.320	0.52	2.12	-0.8630	0.177	0.00100	0.0160	-1.05	0.554	8.322
					10/14/2013 14:52	0917-173_Nc	13_10_14_1452_59_191	1	-5.286	1.779	0.639	0.102	3.47	0.303	0.49	2.10	-0.830	0.170	0.00500	0.0150	-0.73	0.539	8.282
					10/14/2013 14:54	0917-173_Nc	13_10_14_1454_00_001	1	-2.735	1.752	0.610	0.098	3.52	0.301	0.37	2.12	-0.952	0.165	0.00400	0.01400	-1.08	0.520	8.33
					10/14/2013 14:55	0917-173_Nc	13_10_14_1455_00_711	1	-1.4610	1.749	0.475	0.100	3.40	0.283	0.48	2.15	-0.710	0.167	0.00300	0.01300	-1.4280	0.521	8.155
					10/14/2013 14:56	0917-173_Nc	13_10_14_1456_01_501	1	-3.147	1.818	0.407	0.097	3.25	0.269	0.35	2.15	-0.883	0.166	0.00000	0.01300	-0.99	0.532	7.799
					10/14/2013 14:57	0917-173_Nc	13_10_14_1457_02_111	1	-2.716	1.790	0.502	0.093	3.12	0.263	0.47	2.17	-0.7420	0.160	0.00	0.01300	-0.67	0.523	7.601
					10/14/2013 14:58	0917-173_Nc	13_10_14_1458_02_821	1	-3.4450	1.735	0.623	0.095	3.14	0.256	0.47	2.16	-0.6410	0.160	0.00100	0.01200	-0.69	0.511	7.523
					10/14/2013 14:59	0917-173_Nc	13_10_14_1459_03_641	1	-1.486	1.724	0.657	0.094	3.02	0.238	0.54	2.18	-0.7310	0.158	-0.00400	0.01200	-1.20	0.508	7.307
					10/14/2013 15:00	0917-173_Nc	13_10_14_1500_04_351	1	-2.713	1.682	0.706	0.094	3.01	0.244	0.44	2.17	-0.806	0.157	-0.01	0.01100	-1.019	0.493	7.206
					10/14/2013 15:01	0917-173_Nc	13_10_14_1501_06_171	1	-1.5060	1.706	0.704	0.096	3.21	0.257	0.28	2.17	-0.777	0.160	0.00300	0.01200	-0.58	0.513	7.211
					10/14/2013 15:02	0917-173_Nc	13_10_14_1502_05_881	1	-2.286	1.773	0.733	0.093	3.23	0.278	0.49	2.15	-0.625	0.159	-0.00200	0.01400	-1.582	0.512	7.287
					10/14/2013 15:03	0917-173_Nc	13_10_14_1503_06_601	1	-3.200	1.757	0.633	0.097	3.25	0.293	0.52	2.13	-0.8380	0.163	0.00200	0.01400	-0.70	0.518	7.426
					10/14/2013 15:04	0917-173_Nc	13_10_14_1504_07_392	1	-3.243	1.719	0.349	0.096	3.23	0.309	0.40	2.14	-1.0270	0.160	0.00000	0.0150	-0.45	0.509	7.546
					10/14/2013 15:05	0917-173_Nc	13_10_14_1505_08_162	1	-1.649	1.750	0.526	0.100	3.34	0.308	0.29	2.12	-0.9030	0.166	0.00600	0.0150	-1.111	0.532	7.699
					10/14/2013 15:06	0917-173_Nc	13_10_14_1506_08_922	1	-2.099	1.808	0.508	0.103	3.63	0.320	0.18	2.09	-0.939	0.172	0.00600	0.0150	-1.18	0.542	7.77
					10/14/2013 15:07	0917-173_Nc	13_10_14_1507_09_632	1	-3.234	1.865	0.714	0.099	3.46	0.326	0.05	2.10	-0.861	0.170	0.00300	0.0160	-1.015	0.543	7.808
					10/14/2013 15:08	0917-173_Nc	13_10_14_1508_10_372	1	-1.511	1.869	0.721	0.101	3.42	0.321	0.00	2.09	-0.827	0.172	0.00500	0.0160	-0.91	0.540	7.821
					10/14/2013 15:09	0917-173_Nc	13_10_14_1509_11_132	1	-4.046	1.747	0.582	0.097	3.30	0.317	0.01	2.12	-0.8410	0.165	0.00200	0.0150	-0.99	0.514	7.737
					10/14/2013 15:10	0917-173_Nc	13_10_14_1510_11_932	1	-3.639	1.853	0.557	0.100	3.35	0.302	0.22	2.11	-0.9170	0.170	0.00200	0.0150	-0.94	0.541	7.703
					10/14/2013 15:11	0917-173_Nc	13_10_14_1511_12_642	1	-2.804	1.829	0.526	0.103	3.50	0.309	0.31	2.12	-0.541	0.171	0.00300	0.0150	-1.312	0.535	7.755
					10/14/2013 15:12	0917-173_Nc	13_10_14_1512_13_392	1	-4.1760	1.965	0.697	0.102	3.55	0.312	-0.04	2.09	-0.562	0.175	0.00300	0.0150	-1.726	0.562	7.758
					10/14/2013 15:13	0917-173_Nc	13_10_14_1513_14_212	1	-3.053	1.893	0.551	0.103	3.37	0.301	0.18	2.13	-0.693	0.175	0.00400	0.0150	-1.320	0.544	7.664
					10/14/2013 15:14	0917-173_Nc	13_10_14_1514_14_902	1	-4.156	1.779	0.543	0.101	3.19	0.295	0.00	2.12	-0.7030	0.167	-0.00100	0.01400	-0.62	0.536	7.57
Data	Run	1	Start	A	10/14/2013 15:15	0917-173_Nc	13_10_14_1515_15_632	1	-4.020	1.731	0.660	0.100	3.34	0.279	-0.05	2.15	-0.978	0.166	-0.00400	0.01300	-0.83	0.514	7.419
					10/14/2013 15:16	0917-173_Nc	13_10_14_1516_16_443	1	-2.722	1.823	0.624	0.096	3.30	0.277	-0.03	2.14	-0.914	0.163	0.00200	0.01300	-0.96	0.521	7.413
					10/14/2013 15:17	0917-173_Nc	13_10_14_1517_17_163	1	-2.408	1.757	0.576	0.099	3.27	0.283	0.09	2.15	-0.8490	0.164	0.00400	0.01400	-0.63	0.516	7.44
					10/14/2013 15:18	0917-173_Nc	13_10_14_1518_17_873	1	-1.6000	1.769	0.542	0.102	3.20	0.281	-0.04	2.15	-0.562	0.168	0.00100	0.01300	-1.117	0.524	7.515
					10/14/2013 15:19	0917-173_Nc	13_10_14_1519_18_713	1	-2.872	1.740	0.650	0.093	3.01	0.268	0.00	2.16	-0.834	0.158	0.00400	0.01300	-0.98	0.513	7.409
					10/14/2013 15:20	0917-173_Nc	13_10_14_1520_19_373	1	-2.016	1.666	0.817	0.095	2.99	0.265	0.31	2.18	-0.897	0.158	0.00000	0.01300	-0.69	0.493	7.27
					10/14/2013 15:21	0917-173_Nc	13_10_14_1521_20_233	1	-1.83800	1.694	0.820	0.093	3.09	0.264	0.17	2.17	-1.009	0.155	0.00100	0.01300	-0.39	0.498	7.197
					10/14/2013 15:22	0917-173_Nc	13_10_14_1522_20_953	1	-0.092	1.698	0.97	0.099	3.30	0.273	0.11	2.17	-0.911	0.163	-0.00100	0.01300	-1.441	0.520	7.242
					10/14/2013 15:23	0917-173_Nc	13_10_14_1523_21_683	1	-4.517	1.781	0.863	0.095	3.25	0.276	0.39	2.17	-0.855	0.161	0.00300	0.01300	-0.85	0.522	7.37
					10/14/2013 15:24	0917-173_Nc	13_10_14_1524_22_413	1	-1.195	1.781	0.909	0.097	3.19	0.280	0.13	2.16	-0.759	0.164	-0.00100	0.01400	-1.098	0.519	7.363

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 15:25	0917-173_Nc	13_10_14_1525_23_153	1	-1.3800	1.799	0.762	0.102	3.21	0.292	0.14	2.14	-0.521	0.169	0.00900	0.01400	-1.419	0.531	7.436
					10/14/2013 15:26	0917-173_Nc	13_10_14_1526_23_953	1	-2.6020	1.765	0.765	0.100	3.17	0.291	0.17	2.15	-0.911	0.164	0.00400	0.01400	0.01	0.516	7.419
					10/14/2013 15:27	0917-173_Nc	13_10_14_1527_24_733	1	-2.0220	1.847	0.853	0.096	3.20	0.277	0.11	2.15	-0.8660	0.163	0.00500	0.01400	-0.81	0.530	7.345
					10/14/2013 15:28	0917-173_Nc	13_10_14_1528_25_404	1	-1.7080	1.683	0.822	0.095	3.03	0.275	0.28	2.16	-0.911	0.157	0.00600	0.01400	-0.926	0.492	7.228
					10/14/2013 15:29	0917-173_Nc	13_10_14_1529_26_234	1	-2.843	1.708	0.86	0.100	3.21	0.278	0.20	2.14	-0.710	0.162	-0.00100	0.01400	-1.105	0.514	7.258
					10/14/2013 15:30	0917-173_Nc	13_10_14_1530_26_944	1	-6.052	1.781	0.831	0.096	3.40	0.298	0.07	2.13	-0.99400	0.163	0.00600	0.0150	-0.73	0.516	7.465
					10/14/2013 15:31	0917-173_Nc	13_10_14_1531_27_714	1	-2.830	1.841	0.669	0.103	3.30	0.311	0.00	2.10	-1.077	0.171	0.00400	0.0150	-0.988	0.546	7.551
					10/14/2013 15:32	0917-173_Nc	13_10_14_1532_28_464	1	-4.2010	1.838	0.610	0.096	3.28	0.300	0.05	2.14	-1.1140	0.165	0.00500	0.0150	-0.5500	0.537	7.56
					10/14/2013 15:33	0917-173_Nc	13_10_14_1533_29_184	1	-6.269	1.821	0.664	0.098	3.26	0.289	0.03	2.14	-1.027	0.166	0.00300	0.01400	-1.03	0.536	7.53
					10/14/2013 15:34	0917-173_Nc	13_10_14_1534_29_994	1	-1.890	1.874	0.700	0.096	3.31	0.280	0.31	2.14	-0.689	0.167	0.00100	0.01400	-1.428	0.540	7.579
					10/14/2013 15:35	0917-173_Nc	13_10_14_1535_30_714	1	-2.160	1.765	0.720	0.095	3.28	0.285	0.00	2.13	-0.788	0.162	0.00200	0.01400	-1.10	0.516	7.683
					10/14/2013 15:36	0917-173_Nc	13_10_14_1536_31_454	1	-2.460	1.814	0.814	0.100	3.48	0.299	0.12	2.13	-0.790	0.168	0.00500	0.0140	-0.836	0.532	7.705
					10/14/2013 15:37	0917-173_Nc	13_10_14_1537_32_154	1	-4.59700	1.791	0.736	0.100	3.35	0.300	0.25	2.13	-0.9310	0.167	0.00200	0.0150	-0.58	0.527	7.754
					10/14/2013 15:38	0917-173_Nc	13_10_14_1538_32_914	1	-4.066	1.835	0.613	0.096	3.51	0.313	0.11	2.13	-0.686	0.164	0.00000	0.0150	-0.97	0.532	7.849
					10/14/2013 15:39	0917-173_Nc	13_10_14_1539_33_524	1	-1.403	1.832	0.618	0.102	3.58	0.318	0.20	2.12	-0.790	0.171	-0.00100	0.0160	-1.636	0.538	7.8
					10/14/2013 15:40	0917-173_Nc	13_10_14_1540_34_355	1	-4.142	1.776	0.668	0.099	3.37	0.309	0.22	2.14	-1.0010	0.167	0.00000	0.0150	-1.11	0.533	7.648
					10/14/2013 15:41	0917-173_Nc	13_10_14_1541_35_025	1	-3.930	1.837	0.669	0.097	3.28	0.304	0.04	2.14	-1.0060	0.166	0.00000	0.0150	-1.126	0.536	7.557
					10/14/2013 15:42	0917-173_Nc	13_10_14_1542_35_845	1	-1.017	1.814	0.676	0.095	3.25	0.285	0.08	2.16	-1.0280	0.162	0.00000	0.01400	-1.05	0.524	7.452
					10/14/2013 15:43	0917-173_Nc	13_10_14_1543_36_595	1	-4.0220	1.748	0.722	0.096	3.39	0.274	0.13	2.17	-1.156	0.160	0.00300	0.01300	-0.61	0.510	7.541
					10/14/2013 15:44	0917-173_Nc	13_10_14_1544_37_325	1	-3.818	1.802	0.825	0.097	3.52	0.273	0.17	2.14	-0.9560	0.163	-0.00200	0.01300	-0.936	0.521	7.565
					10/14/2013 15:45	0917-173_Nc	13_10_14_1545_38_135	1	-2.571	1.851	0.700	0.094	3.39	0.279	0.37	2.15	-0.97400	0.162	0.00900	0.01400	-0.99	0.528	7.581
					10/14/2013 15:46	0917-173_Nc	13_10_14_1546_38_875	1	-3.767	1.879	0.758	0.100	3.42	0.287	0.14	2.13	-0.877	0.171	0.00200	0.01400	-0.90	0.536	7.823
					10/14/2013 15:47	0917-173_Nc	13_10_14_1547_39_575	1	-3.9380	1.837	0.694	0.100	3.57	0.295	0.46	2.14	-0.708	0.170	0.00000	0.01400	-1.375	0.530	7.847
					10/14/2013 15:48	0917-173_Nc	13_10_14_1548_40_315	1	-3.440	1.872	0.682	0.100	3.48	0.304	0.32	2.11	-0.787	0.171	0.00100	0.0150	-1.228	0.553	7.945
					10/14/2013 15:49	0917-173_Nc	13_10_14_1549_41_135	1	-3.590	1.865	0.584	0.101	3.41	0.309	0.32	2.10	-0.754	0.171	0.00700	0.0150	-1.627	0.532	7.979
					10/14/2013 15:50	0917-173_Nc	13_10_14_1550_41_845	1	-1.739	1.821	0.730	0.100	3.08	0.298	0.35	2.15	-0.672	0.169	0.00200	0.0150	-1.22	0.537	7.814
					10/14/2013 15:51	0917-173_Nc	13_10_14_1551_42_616	1	-1.286	1.811	0.696	0.097	3.10	0.283	0.17	2.15	-0.9780	0.166	-0.00200	0.01400	-0.994	0.534	7.59
					10/14/2013 15:52	0917-173_Nc	13_10_14_1552_43_326	1	-2.618	1.802	0.752	0.096	3.21	0.280	0.34	2.15	-0.980	0.162	-0.00100	0.01300	-0.84	0.533	7.632
					10/14/2013 15:53	0917-173_Nc	13_10_14_1553_44_066	1	-3.0790	1.776	0.685	0.099	3.30	0.283	0.38	2.16	-0.781	0.166	0.00200	0.01400	-1.257	0.539	7.76
					10/14/2013 15:54	0917-173_Nc	13_10_14_1554_44_886	1	-2.319	1.814	0.786	0.100	3.25	0.299	0.30	2.11	-0.863	0.170	0.00200	0.0150	-1.09	0.542	7.815
					10/14/2013 15:55	0917-173_Nc	13_10_14_1555_45_656	1	-3.839	1.849	0.920	0.098	3.29	0.307	0.24	2.12	-0.804	0.168	0.00200	0.0150	-1.334	0.539	7.887
					10/14/2013 15:56	0917-173_Nc	13_10_14_1556_46_316	1	-6.7580	1.900	0.717	0.102	3.36	0.301	0.10	2.13	-1.029	0.173	0.00100	0.0150	-0.69	0.549	7.932
					10/14/2013 15:57	0917-173_Nc	13_10_14_1557_47_126	1	-0.511	1.779	0.629	0.102	3.30	0.294	0.26	2.12	-1.0410	0.170	-0.00200	0.01400	-0.76	0.530	7.986
					10/14/2013 15:58	0917-173_Nc	13_10_14_1558_47_826	1	-4.146	1.819	0.604	0.100	3.30	0.298	0.18	2.13	-0.814	0.168	0.00100	0.01400	-0.69	0.536	7.999
					10/14/2013 15:59	0917-173_Nc	13_10_14_1559_48_586	1	-2.953	1.869	0.662	0.104	3.32	0.313	0.31	2.12	-1.030	0.172	-0.00200	0.0150	-1.187	0.551	7.972
					10/14/2013 16:00	0917-173_Nc	13_10_14_1600_49_366	1	-3.0140	1.825	0.510	0.102	3.00	0.300	0.13	2.11	-1.1840	0.171	0.00200	0.0150	-0.84	0.536	7.782
					10/14/2013 16:01	0917-173_Nc	13_10_14_1601_50_106	1	-1.245	1.875	0.515	0.098	2.84	0.279	0.38	2.14	-0.899	0.168	0.00200	0.01300	-0.722	0.540	7.501
					10/14/2013 16:02	0917-173_Nc	13_10_14_1602_50_926	1	-3.578	1.631	0.465	0.095	2.75	0.257	0.36	2.18	-0.920	0.159	0.00000	0.01300	-1.09	0.495	7.255
					10/14/2013 16:03	0917-173_Nc	13_10_14_1603_51_667	1	-0.949	1.759	0.642	0.098	2.80	0.259	0.26	2.17	-0.799	0.162	0.00100	0.01300	-1.14	0.526	7.046
					10/14/2013 16:04	0917-173_Nc	13_10_14_1604_52_377	1	-1.851	1.809	0.711	0.096	2.73	0.248	0.24	2.18	-0.8400	0.164	-0.00100	0.01200	-1.030	0.535	6.87
					10/14/2013 16:05	0917-173_Nc	13_10_14_1605_53_187	1	-0.279	1.700	0.580	0.093	2.73	0.235	0.20	2.20	-0.9030	0.157	0.00100	0.01200	-0.62	0.504	6.699
					10/14/2013 16:06	0917-173_Nc	13_10_14_1606_53_907	1	-2.439	1.760	0.661	0.090	2.66	0.237	0.43	2.18	-0.566	0.155	0.00300	0.01100	-0.959	0.502	6.577
					10/14/2013 16:07	0917-173_Nc	13_10_14_1607_54_617	1	-1.954	1.722	0.567	0.093	2.91	0.238	0.36	2.20	-0.729	0.156	-0.00500	0.01100	-0.84	0.516	6.478
					10/14/2013 16:08	0917-173_Nc	13_10_14_1608_55_427	1	-2.626	1.739	0.671	0.098	3.00	0.251	0.39	2.18	-0.7290	0.161	0.00100	0.01200	-1.108	0.516	6.525
					10/14/2013 16:09	0917-173_Nc	13_10_14_1609_56_147	1	-2.335	1.622	0.868	0.092	2.85	0.265	0.34	2.18	-0.629	0.153	-0.00100	0.01300	-1.203	0.485	6.479
					10/14/2013 16:10	0917-173_Nc	13_10_14_1610_56_957	1	-2.331	1.759	1.04	0.094	2.65	0.264	0.34	2.20	-0.844	0.157	0.00	0.01300	-0.44	0.507	6.413
					10/14/2013 16:11	0917-173_Nc	13_10_14_1611_57_677	1	-2.8390	1.773	1.09	0.093	2.52	0.275	0.45	2.19	-0.702	0.157	0.00100	0.01400	-1.135	0.507	6.422
					10/14/2013 16:12	0917-173_Nc	13_10_14_1612_58_447	1	-2.6690	1.747	0.934	0.091	2.64	0.282	0.39	2.19	-0.8240	0.156	0.00400	0.01400	-1.01	0.506	6.465
					10/14/2013 16:13	0917-173_Nc	13_10_14_1613_59_217	1	-2.372	1.777	0.857	0.098	2.56	0.293	0.55	2.18	-1.066	0.165	0.00100	0.0150	-0.442	0.524	6.59
					10/14/2013 16:14	0917-173_Nc	13_10_14_1614_59_927	1	-5.232	1.873	0.784	0.100	2.67	0.294	0.59	2.20	-0.831	0.170	-0.00300	0.01500	-0.714	0.564	6.678
			Stop		10/14/2013 16:16	0917-173_Nc	13_10_14_1616_00_738	1	-2.507	1.747	0.728	0.093	4.10	0.284	0.62	2.18	-1.140	0.159	0.0710	0.01400	-0.04	0.504	6.773
					10/14/2013 16:17	0917-173_Nc	13_10_14_1617_01_458	1	-0.935	1.206	-0.277	0.090	2.94	0.0850	0.473	1.433	-3.18	0.157	0.0780	0.00400	-1.488	0.402	10.724
					10/14/2013 16:18	0917-173_Nc	13_10_14_1618_02_278	1	0.0940	1.091	-0.715	0.099	0.285	0.0470	0.147	0.535	-3.73	0.168	-0.00300	0.00200	-1.012	0.385	11.369
					10/14/2013 16:19	0917-173_Nc	13_10_14_1619_03_028	1	-1.1700	0.982	-0.244	0.072	0.255	0.0380	0.131	0.320	-1.721	0.121	0.0100	0.00200	-1.1110	0.332	6.063
					10/14/2013 16:20	0917-173_Nc	13_10_14_1620_03_738	1	0.6880	0.925	-0.184	0.062	0.035	0.0350	0.2260	0.210	-1.244	0.100	0.00	0.00200	-0.484	0.312	4.305
					10/14/2013 16:21	0917-173_Nc	13_10_14_1621_04_478	1	1.7370	1.027	-0.1850	0.064	0.126	0.0360	0.1530	0.158	-1.0430	0.106	-0.00700	0.00200	-0.768	0.318	4.202
					10/14/2013 16:22	0917-173_Nc	13_10_14_1622_05_198	1	3.727	1.007	0.070	0.060	0.222	0.0420	0.3480	0.731	-0.064	0.097	-0.00500	0.00200	-0.147	0.305	1.733
					10/14/2013 16:23	0917-173_Nc	13_10_14_1623_05_968	1	1.08800	1.000	0.154	0.062	0.0800	0.0500	0.5310	1.045	-0.010	0.099	0.00	0.00300	-0.62	0.315	1.089
					10/14/2013 16:24	0917-173_Nc	13_10_14_1624_06_688	1	2.588	1.133	-0.057	0.063	0.1020	0.0500	0.6750	0.999	0.108	0.106	-0.00300	0.00200	-0.60	0.323	0.801
					10/14/2013 16:25	0917-173_Nc	13_10_14_1625_07_458	1	3.1780	1.063	0.079	0.061	0.111	0.0490	0.6980	1.003	0.108	0.101	0.00000	0.00200	-0.074	0.323	0.78
					10/14/2013 16:26	0917-173_Nc	13_10_14_1626_08_178	1	1.098	1.049	0.086	0.063	0.077	0.0500	0.5510	1.006	0.180	0.101	0.00	0.00300	-0.245	0.316	0.741
					10/14/2013 16:27	0917-173_Nc	13_10_14_1627_09_038	1	3.486	1.136	0.028	0.065	0.0710	0.0490	0.6820	0.994	-0.067	0.106	-0.00100	0.00200	-0.66	0.344	0.693
					10/14/2013 16:28	0917-173_Nc	13_10_14_1628_09_749	1	0.960	1.012	0.093	0.062	0.200	0.0530	0.466	0.997	0.120	0.101	-0.00400	0.00200	-0.669	0.312	0.652
					10/14/2013 16:29	0917-173_Nc	13_10_14_1629_10_499	1	0.005	1.037	0.243	0.064	0.150	0.0500	0.386	0.999	0.0320	0.102	0.00	0.00200	-0.254	0.328	0.614
					10/14/2013 16:30	0917-173_Nc	13_10_14_1630_12_259	1	1.0600	0.972	0.005	0.062	0.0790	0.0530	0.7030	1.013	0.007	0.102	-0.00100	0.00300	-0.475	0.307	0.603
					10/14/2013 16:31	0917-173_Nc	13_10_14_1631_13_069	1	2.424	1.081	0.087	0.058	0.139	0.0530	0.6110	1.022	0.1200	0.098	-0.01000	0.00200	-0.240	0.320	0.569
					10/14/2013 16:32	0917-173_Nc	13_10_14_1632_13_779	1	2.126	1.022	0.150	0.062	0.139	0.0490	0.6580	1.032	0.0330	0.100	-0.00500	0.00300	-0.377	0.307	0.502
					10/14/2013 16:33	0917-173_Nc	13_10_14_1633_14_599	1	1.2640	1.269	0.433	0.067	1.03	0.1410	0.740	1.577	-0.117	0.112	0.00000	0.00700	-0.65	0.369	1.988
					10/14/2013 16:34	0917-173_Nc	13_10_14_1634_15_299	1	-0.224	1.656	0.563	0.087	1.86	0.285	0.533	2.22	-0.725	0.149	-0.00100	0.01300	-0.197	0.481	4.446
					10/14/2013 16:35	0917-173_Nc	13_10_14_1635_16_099	1	-2.521	1.845	0.495	0.095	1.89	0.312	0.44	2.15	-0.8340	0.162	0.00200	0.0150	-0.766	0.531	5.087
					10/14/2013 16:36	0917-173_Nc	13_10_14_1636_16_869	1	-3.921	1.823	0.610	0.096	1.85	0.290	0.55	2.18	-0.780	0.162	0.00200	0.01400	-0.678	0.526	5.162
					10/14/2013 16:37	0917-173_Nc	13_10_14_1637_17_579	1	-5.050	1.960	0.463	0.103	2.17	0.285	0.062	2.20	-0.695	0.171	-0.00600	0.01400	-0.34	0.557	5.214
					10/14/2013 16:38	0917-173_Nc	13_10_14_1638_18_389	1	-3.9760	1.713	0.419	0.100	1.82	0.269	0.52	2.22	-0.8410	0.163	-0.00500	0.01300	-0.601	0.523	5.119
					10/14/2013 16:39	0917-173_Nc	13_10_14_1639_19_090	1	-2.006	1.642	0.263	0.092	1.60	0.247	0.44	2.21	-0.976	0.153	0.00100	0.01200	-0.872	0.485	4.9
					10/14/2013 16:40	0917-173_Nc	13_10_14_1640_19_900	1	-2.381	1.690	0.3710	0.091	1.60	0.230	0.596	2.23	-0.645	0.151	-0.00300	0.01100	-0.947	0.498	4.753
					10/14/2013 16:41	0917-173_Nc	13_10_14_1641_20_660	1	-0.3240	1.575	0.420	0.088	1.65	0.227	0.534	2.22	-0.82800	0.147	0.00000	0.01000	-0.690	0.467	4.701
					10/14/2013 16:42	0917-173_Nc	13_10_14_1642_21_390	1	-1.081	1.717	0.486	0.094	1.62	0.240	0.429	2.23	-0.7200	0.156	-0.00600	0.01100	-0.979	0.515	4.745
					10/14/2013 16:43	0917-173_Nc	13_10_14_1643_22_100	1	-2.247	1.572	0.559	0.091	1.48	0.224	0.556	2.23	-0.819	0.149	-0.00500	0.01100	-0.02	0.472	4.647
					10/14/2013 16:44	0917-173_Nc	13_10_14_1644_22_910	1	-1.310	1.692	0.647	0.089	1.54	0.231	0.576	2.22	-0.681	0.149	0.00000	0.01100	-0.451	0.484	4.678
					10/14/2013 16:45	0917-173_Nc	13_10_14_1645_23_640	1	1.566	1.693	0.575	0.090	1.73	0.257	0.342	2.23	-0.770	0.151	-0.00400	0.01200	-0.712	0.494	4.856
					10/14/2013 16:46	0917-173_Nc	13_10_14_1646_24_340	1	-1.436	1.720	0.825	0.092	1.75	0.284	0.325	2.20	-0.5540	0.152	0.00200	0.01500	-1.0550	0.500	5.03
					10/14/2013 16:47	0917-173_Nc	13_10_14_1647_25_160	1	-2.732	1.909	0.700	0.097	1.86	0.304	0.409	2.17	-0.7790	0.165	-0.00300	0.0150	-0.859	0.548	5.38
					10/14/2013 16:48	0917-173_Nc	13_10_14_1648_25_860	1	-4.577	1.783	0.607	0.099	1.83	0.306	0.317	2.17	-0.989	0.165	0.00300	0.0150	-0.7930	0.523	5.514
Data	Run	2	Start	A	10/14/2013 16:49	0917-173_Nc	13_10_14_1649_26_670	1	-1.207	1.819	0.552	0.101	1.96	0.318	0.334	2.16	-0.853	0.166	0.00200	0.0160	-0.311	0.536	5.73
					10/14/2013 16:50	0917-173_Nc	13_10_14_1650_27_360	1	-2.714	1.859	0.594	0.103	1.95	0.330	0.41	2.14	-0.9480	0.171	0.00000	0.0160	-0.969	0.549	6.002
					10/14/2013 16:51	0917-173_Nc	13_10_14_1651_28_211	1	-3.421	1.940	0.923	0.104	1.94	0.334	0.58	2.15	-0.518	0.175	0.00300	0.0170	-0.654	0.571	6.158
					10/14/2013 16:52	0917-173_Nc	13_10_14_1652_28_891	1	-3.896	1.802	0.562	0.097	1.81	0.317	0.46	2.15	-0.862	0.164	0.00300	0.0150	-0.488	0.532	6.152
					10/14/2013 16:53	0917-173_Nc	13_10_14_1653_29_651	1	-2.187	1.745	0.472	0.098	1.70	0.283	0.555	2.20	-0.8090	0.163	-0.00600	0.01400	-0.72	0.530	5.985
					10/14/2013 16:54	0917-173_Nc	13_10_14_1654_30_471	1	-2.244	1.826	0.332	0.098	1.64	0.273	0.567	2.21	-0.914	0.164	0.00000	0.01300	-0.404	0.531	5.921
					10/14/2013 16:55	0917-173_Nc	13_10_14_1655_31_191	1	-4.435	1.769	0.590	0.098	1.71	0.274	0.605	2.22	-0.7930	0.163	0.00200	0.01400	-0.762	0.521	5.934
					10/14/2013 16:56	0917-173_Nc	13_10_14_1656_31_901	1	-2.9200	1.610	0.411	0.096	1.66	0.252	0.529	2.23	-0.8800	0.154	0.00000	0.01200	-0.6700	0.476	5.778
					10/14/2013 16:57	0917-173_Nc	13_10_14_1657_32_741	1	-2.3770	1.798	0.470	0.090	1.80	0.244	0.561	2.22	-0.812	0.155	-0.00500	0.01200	-0.17	0.506	5.778
					10/14/2013 16:58	0917-173_Nc	13_10_14_1658_33_491	1	-1.346	1.825	0.441	0.097	1.85	0.267	0.492	2.19	-0.963	0.162	-0.00200	0.01300	-0.49	0.537	5.911
					10/14/2013 16:59	0917-173_Nc	13_10_14_1659_34_201	1	-0.716	1.855	0.607	0.100	1.95	0.294	0.311	2.18	-0.603	0.167	-0.00200	0.01400	-1.166	0.538	6.034
					10/14/2013 17:00	0917-173_Nc	13_10_14_1700_34_961	1	-1.437	1.766	0.503	0.101	1.84	0.302	0.49	2.19	-0.8020	0.166	0.00200	0.0150	-1.2580	0.525	6.116
					10/14/2013 17:01	0917-173_Nc	13_10_14_1701_35_681	1	-4.44	1.826	0.441	0.098	1.86	0.304	0.42	2.17	-0.8460	0.165	-0.00200	0.0150	-0.398	0.543	6.205
					10/14/2013 17:02	0917-173_Nc	13_10_14_1702_36_361	1	-2.070	1.878	0.458	0.097	1.92	0.302	0.43	2.18	-0.943	0.165	0.00000	0.01400	-0.916	0.527	6.251
					10/14/2013 17:03	0917-173_Nc	13_10_14_1703_37_172	1	-2.853	1.834	0.411	0.101	1.74	0.288	0.522	2.20	-0.8880	0.168	0.00000	0.01400	-0.31	0.542	6.159
					10/14/2013 17:04	0917-173_Nc	13_10_14_1704_37_962	1	-2.04300	1.782	0.527	0.094	1.71	0.272	0.483	2.21	-0.719	0.160	0.00000	0.01300	-0.525	0.514	5.972
					10/14/2013 17:05	0917-173_Nc	13_10_14_1705_38_702	1	-2.276	1.712	0.713	0.096	1.93	0.268	0.420	2.21	-0.805	0.158	-0.00200	0.01300	-0.691	0.514	6.022
					10/14/2013 17:06	0917-173_Nc	13_10_14_1706_39_462	1	-2.868	1.780	0.525	0.100	1.89	0.271	0.52	2.19	-0.599	0.164	0.00000	0.01300	-0.9350	0.536	6.094
					10/14/2013 17:07	0917-173_Nc	13_10_14_1707_40_232	1	0.780	1.766	0.470	0.097	1.73	0.287	0.58	2.19	-0.863	0.160	-0.00300	0.01400	-0.327	0.518	6.062
					10/14/2013 17:08	0917-173_Nc	13_10_14_1708_41_042	1	-4.3950	1.846	0.662	0.101	1.79	0.299	0.543	2.18	-0.7360	0.168	0.00000	0.01500	-0.974	0.540	6.107
					10/14/2013 17:09	0917-173_Nc	13_10_14_1709_41_782	1	-1.100	1.794	0.639	0.104	1.78	0.293	0.407	2.19	-0.49300	0.169	-0.00200	0.01400	-1.0930	0.540	6.144
					10/14/2013 17:10	0917-173_Nc	13_10_14_1710_42_582	1	0.177	1.809	0.490	0.101	1.81	0.288	0.313	2.18	-0.7150	0.167	-0.00100	0.01400	-0.56	0.539	6.173
					10/14/2013 17:11	0917-173_Nc	13_10_14_1711_43_292	1	-2.7540	1.927	0.534	0.098	1.76	0.294	0.466	2.17	-0.6660	0.169	-0.00100	0.01400	0.09	0.557	6.226
					10/14/2013 17:12	0917-173_Nc	13_10_14_1712_42_992	1	-2.235	1.888	0.554	0.098	1.79	0.287	0.418	2.17	-0.622	0.167	0.00100	0.01400	-0.30	0.539	6.23
					10/14/2013 17:13	0917-173_Nc	13_10_14_1713_43_802	1	-2.120	1.865	0.511	0.102	1.72	0.286	0.436	2.17	-0.834	0.169	0.00100	0.01400	-0.490	0.553	6.259
					10/14/2013 17:14	0917-173_Nc	13_10_14_1714_44_502	1	-1.142	1.849	0.545	0.101	1.68	0.283	0.529	2.18	-0.729	0.169	-0.00100	0.01400	-0.313	0.544	6.265
					10/14/2013 17:15	0917-173_Nc	13_10_14_1715_45_343	1	-2.342	1.743	0.515	0.098	1.77	0.271	0.475	2.20	-0.8040	0.162	-0.00100	0.01300	-0.62	0.527	6.214
					10/14/2013 17:16	0917-173_Nc	13_10_14_1716_46_033	1	-2.8980	1.777	0.603	0.095	1.74	0.274	0.555	2.20	-0.720	0.160	-0.00200	0.01300	-0.51	0.521	6.249
					10/14/2013 17:17	0917-173_Nc	13_10_14_1717_46_833	1	-3.477	1.918	0.467	0.096	1.83	0.286	0.501	2.19	-0.742	0.168	-0.00200	0.01400	-0.748	0.545	6.283
					10/14/2013 17:18	0917-173_Nc	13_10_14_1718_47_563	1	-4.253	1.830	0.494	0.100	1.97	0.291	0.64	2.18	-0.955	0.168	0.00200	0.01400	-0.33	0.538	6.384
					10/14/2013 17:19	0917-173_Nc	13_10_14_1719_48_383	1	-2.792	1.765	0.578	0.098	1.79	0.290	0.373	2.19	-0.947	0.164	0.00300	0.01400	0.10	0.522	6.378
					10/14/2013 17:20	0917-173_Nc	13_10_14_1720_49_093	1	-2.996	1.824	0.535	0.098	1.78	0.299	0.562	2.17	-0.896	0.166	-0.00100	0.01500	-0.19	0.541	6.396
					10/14/2013 17:21	0917-173_Nc	13_10_14_1721_49_883	1	-2.825	1.799	0.555	0.100	1.82	0.286	0.502	2.20	-0.806	0.167	-0.00400	0.01400	-0.463	0.546	6.45
					10/14/2013 17:22	0917-173_Nc	13_10_14_1722_50_683	1	-3.388	1.751	0.624	0.098	1.74	0.278	0.455	2.19	-0.74800	0.163	-0.00400	0.01300	-0.535	0.519	6.409
					10/14/2013 17:23	0917-173_Nc	13_10_14_1723_51_453	1	-2.4570	1.780	0.497	0.097	1.71	0.269	0.472	2.20	-0.6670	0.161	-0.00400	0.01300	-0.473	0.513	6.309
					10/14/2013 17:24	0917-173_Nc	13_10_14_1724_52_163	1	-2.112	1.608	0.495	0.091	1.53	0.242	0.614	2.23	-0.744	0.149	-0.00200	0.01200	-0.72	0.476	6.066
					10/14/2013 17:25	0917-173_Nc	13_10_14_1725_52_963	1	-3.277	1.541	0.3330	0.085	1.55	0.229	0.535	2.23	-0.808	0.142	-0.00700	0.01100	-0.163	0.457	5.86
					10/14/2013 17:26	0917-173_Nc	13_10_14_1726_53_674	1	-1.807	1.666	0.266	0.090	1.61	0.233	0.518	2.21	-0.598	0.150	-0.00400	0.01100	-1.081	0.482	5.868
					10/14/2013 17:27	0917-173_Nc	13_10_14_1727_54_454	1	-3.7270	1.685	0.509	0.093	1.75	0.242	0.662	2.23	-0.705	0.153	-0.00400	0.01100	0.113	0.500	5.927
					10/14/2013 17:28	0917-173_Nc	13_10_14_1728_55_304	1	-2.121	1.627	0.520	0.093	1.67	0.251	0.473	2.22	-0.700	0.153	-0.00800	0.01200	-0.4210	0.494	5.969
					10/14/2013 17:29	0917-173_Nc	13_10_14_1729_56_064	1	-3.567	1.834	0.684	0.097	1.65	0.268	0.498	2.22	-0.38400	0.165	-0.00400	0.01300	-0.766	0.526	6.014
					10/14/2013 17:32	0917-173_Nc	13_10_14_1732_06_400	1	-1.578	1.695	0.760	0.092	1.78	0.270	0.712	2.21	-0.746	0.155	-0.00200	0.01300	0.143	0.493	6.063
					10/14/2013 17:33	0917-173_Nc	13_10_14_1733_07_210	1	-2.2820	1.722	0.776	0.098	1.92	0.292	0.242	2.17	-0.772	0.161	-0.00200	0.01400	-0.23	0.511	6.316
					10/14/2013 17:34	0917-173_Nc	13_10_14_1734_07_900	1	-3.173	1.909	0.659	0.098	1.96	0.320	0.535	2.16	-0.850	0.167	0.00200	0.0150	-0.08	0.548	6.531
					10/14/2013 17:35	0917-173_Nc	13_10_14_1735_08_740	1	-5.131	1.932	0.737	0.102	2.11	0.334	0.256	2.13	-0.787	0.172	0.00000	0.0160	-0.344	0.568	6.677
					10/14/2013 17:36	0917-173_Nc	13_10_14_1736_09_450	1	-2.717	1.787	0.659	0.104	2.11	0.331	0.335	2.14	-0.535	0.169	-0.0010	0.0160	-1.108	0.543	6.743
					10/14/2013 17:37	0917-173_Nc	13_10_14_1737_10_280	1	-2.805	1.903	0.968	0.102	2.08	0.331	0.53	2.15	-0.599	0.171	0.00200	0.0160	-0.416	0.556	6.774
					10/14/2013 17:38	0917-173_Nc	13_10_14_1738_11_030	1	-2.905	1.892	0.764	0.105	2.07	0.314	0.323	2.14	-0.712	0.175	-0.00100	0.0160	-0.800	0.557	6.798
					10/14/2013 17:39	0917-173_Nc	13_10_14_1739_11_730	1	-2.64	1.849	0.596	0.101	1.98	0.311	0.229	2.15	-0.880	0.169	-0.00400	0.0150	-0.35	0.551	6.802
					10/14/2013 17:40	0917-173_Nc	13_10_14_1740_12_560	1	-4.082	1.867	0.528	0.097	1.94	0.302	0.50	2.18	-0.545	0.166	0.00000	0.0150	-0.147	0.530	6.798
					10/14/2013 17:41	0917-173_Nc	13_10_14_1741_13_270	1	-2.219	1.432	0.211	0.087	1.91	0.163	0.706	1.885	-1.807	0.152	0.0040	0.00800	-1.041	0.443	8.963
					10/14/2013 17:42	0917-173_Nc	13_10_14_1742_14_040	1	-0.250	1.059	-0.4080	0.100	0.207	0.0490	0.424	0.799	-3.37	0.167	-0.00600	0.00300	-1.333	0.398	11.435
					10/14/2013 17:43	0917-173_Nc	13_10_14_1743_14_781	1	-2.0370	1.076	-0.601	0.099	-0.007	0.0450	0.029	0.374	-3.81	0.171	-0.00500	0.00200	-1.06	0.411	11.421
					10/14/2013 17:44	0917-173_Nc	13_10_14_1744_15_531	1	1.726	1.006	-0.288	0.089	0.586	0.0510	0.3450	0.698	-2.94	0.145	0.0060	0.00300	-0.57	0.350	9.549
					10/14/2013 17:45	0917-173_Nc	13_10_14_1745_16_341	1	0.971	0.994	0.0760	0.061	0.441	0.0380	0.439	0.538	-0.3010	0.098	0.00300	0.00200	-1.04	0.312	2.991
					10/14/2013 17:46	0917-173_Nc	13_10_14_1746_16_981	1	0.247	0.984	0.0700	0.056	0.200	0.0330	0.287	0.229	0.0010	0.090	0.00100	0.00200	-0.184	0.295	1.162
					10/14/2013 17:47	0917-173_Nc	13_10_14_1747_17_691	1	-0.327	0.946	0.113	0.060	0.125	0.0310	0.06800	0.149	0.191	0.094	0.00	0.00200	-0.58	0.299	0.899
					10/14/2013 17:48	0917-173_Nc	13_10_14_1748_18_511	1	1.223	1.042	-0.086	0.056	0.0650	0.0320	0.329	0.1260	-0.1250	0.093	-0.00600	0.00200	0.145	0.308	0.842
			Stop		10/14/2013 17:49	0917-173_Nc	13_10_14_1749_19_221	1	2.282	1.087	0.079	0.054	0.154	0.0320	0.263	0.1270	0.212	0.092	-0.00600	0.00200	-0.317	0.316	0.827
					10/14/2013 17:50	0917-173_Nc	13_10_14_1750_20_001	1	2.652	1.055	-0.0440	0.059	0.202	0.0450	0.5820	0.860	0.115	0.096	-0.01300	0.00200	-0.579	0.319	0.837
					10/14/2013 17:51	0917-173_Nc	13_10_14_1751_20_821	1	2.2470	1.060	0.0070	0.064	0.081	0.0510	0.63000	0.998	0.114	0.106	-0.00600	0.00200	-0.18	0.331	0.609
					10/14/2013 17:52	0917-173_Nc	13_10_14_1752_21_531	1	1.489	1.063	0.231	0.063	0.173	0.0480	0.5470	1.053	0.206	0.102	0.00	0.00200	-0.362	0.333	0.688
					10/14/2013 17:53	0917-173_Nc	13_10_14_1753_22_351	1	2.2420	1.214	0.256	0.065	0.659	0.1030	0.7640	1.446	-0.286	0.109	-0.01	0.00500	0.187	0.354	1.945
					10/14/2013 17:54	0917-173_Nc	13_10_14_1754_23_051	1	-1.2010	1.610	0.571	0.084	1.70	0.245	0.684	2.21	-0.506	0.142	0.00000	0.01200	-1.238	0.464	4.764
					10/14/2013 17:55	0917-173_Nc	13_10_14_1755_23_872	1	-0.66600	1.780	0.667	0.099	2.17	0.296	0.57	2.22	-0.643	0.164	-0.00500	0.01400	-0.962	0.517	6.056
					10/14/2013 17:56	0917-173_Nc	13_10_14_1756_24_582	1	-2.6460	1.651	0.518	0.100	2.15	0.299	0.43	2.18	-0.7680	0.164	0.00000	0.0150	-0.75	0.513	6.38

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 17:57	0917-173_Nc	13_10_14_1757_25_402	1	-3.602	1.947	0.626	0.095	2.14	0.297	0.36	2.18	-0.8370	0.166	0.00100	0.01400	-0.17	0.544	6.441
Data	Run	3	Start	A	10/14/2013 17:58	0917-173_Nc	13_10_14_1758_26_092	1	-3.1490	1.704	0.585	0.098	2.08	0.293	0.292	2.18	-0.714	0.161	-0.00200	0.01400	-0.40	0.516	6.39
					10/14/2013 17:59	0917-173_Nc	13_10_14_1759_26_902	1	-1.329	1.735	0.603	0.099	2.12	0.283	0.48	2.19	-0.783	0.161	0.00000	0.01400	-0.216	0.513	6.332
					10/14/2013 18:00	0917-173_Nc	13_10_14_1800_27_632	1	-1.974	1.818	0.479	0.101	2.12	0.279	0.50	2.21	-0.665	0.168	-0.00200	0.01400	-0.857	0.530	6.326
					10/14/2013 18:01	0917-173_Nc	13_10_14_1801_28_432	1	-1.807	1.768	0.3970	0.098	2.17	0.271	0.45	2.20	-0.585	0.162	0.00000	0.01300	-0.790	0.527	6.371
					10/14/2013 18:02	0917-173_Nc	13_10_14_1802_29_182	1	-1.111	1.859	0.423	0.099	2.20	0.286	0.40	2.18	-0.8900	0.167	0.00200	0.01400	-0.329	0.536	6.478
					10/14/2013 18:03	0917-173_Nc	13_10_14_1803_29_932	1	-2.0990	1.861	0.523	0.097	2.14	0.296	0.295	2.19	-0.8260	0.165	0.00000	0.01400	-0.60	0.538	6.519
					10/14/2013 18:04	0917-173_Nc	13_10_14_1804_30_752	1	-3.953	1.776	0.445	0.104	2.23	0.298	0.192	2.17	-0.6510	0.170	-0.00100	0.01400	-0.50	0.540	6.551
					10/14/2013 18:05	0917-173_Nc	13_10_14_1805_31_502	1	-2.7370	1.914	0.494	0.100	2.14	0.301	0.41	2.18	-0.739	0.169	-0.00600	0.0150	-0.873	0.558	6.433
					10/14/2013 18:06	0917-173_Nc	13_10_14_1806_32_222	1	-2.066	1.773	0.560	0.101	2.09	0.271	0.49	2.21	-0.639	0.164	0.00000	0.01300	-0.790	0.532	6.248
					10/14/2013 18:07	0917-173_Nc	13_10_14_1807_33_033	1	-2.395	1.730	0.470	0.094	1.93	0.255	0.357	2.22	-0.795	0.158	-0.00300	0.01200	-0.198	0.518	6.117
					10/14/2013 18:08	0917-173_Nc	13_10_14_1808_33_783	1	-1.635	1.709	0.531	0.096	2.03	0.252	0.457	2.24	-0.838	0.159	-0.00100	0.01200	-0.17	0.517	6.034
					10/14/2013 18:09	0917-173_Nc	13_10_14_1809_34_493	1	-3.0400	1.720	0.447	0.097	2.15	0.245	0.396	2.23	-0.632	0.162	-0.00700	0.01200	-0.533	0.533	5.995
					10/14/2013 18:10	0917-173_Nc	13_10_14_1810_35_313	1	-0.586	1.858	0.577	0.097	2.10	0.262	0.479	2.20	-0.670	0.164	-0.00200	0.01300	-0.052	0.527	6.008
					10/14/2013 18:11	0917-173_Nc	13_10_14_1811_36_053	1	-2.219	1.810	0.777	0.098	2.14	0.273	0.256	2.21	-0.6820	0.162	0.00200	0.01400	-0.652	0.520	6.093
					10/14/2013 18:12	0917-173_Nc	13_10_14_1812_36_863	1	-4.078	1.787	0.738	0.097	2.25	0.274	0.179	2.19	-0.6440	0.162	-0.00600	0.01300	-0.6600	0.530	6.106
					10/14/2013 18:13	0917-173_Nc	13_10_14_1813_37_653	1	-2.653	1.834	0.751	0.099	2.25	0.279	0.161	2.19	-0.670	0.166	-0.00400	0.01300	-0.6820	0.546	6.137
					10/14/2013 18:14	0917-173_Nc	13_10_14_1814_38_393	1	-4.422	1.794	0.734	0.101	2.36	0.298	0.291	2.18	-0.6080	0.167	-0.00100	0.01400	-0.468	0.544	6.299
					10/14/2013 18:15	0917-173_Nc	13_10_14_1815_39_133	1	-2.2920	1.897	0.626	0.100	2.42	0.309	0.33	2.16	-0.714	0.168	0.00000	0.0150	-0.28	0.543	6.365
					10/14/2013 18:16	0917-173_Nc	13_10_14_1816_39_933	1	-4.348	1.888	0.531	0.100	2.27	0.309	0.53	2.17	-0.809	0.169	-0.00400	0.0150	-0.844	0.543	6.347
					10/14/2013 18:17	0917-173_Nc	13_10_14_1817_40_663	1	-1.4690	1.779	0.649	0.101	2.23	0.303	0.377	2.18	-0.777	0.167	0.00000	0.0150	-0.13	0.538	6.242
					10/14/2013 18:18	0917-173_Nc	13_10_14_1818_41_463	1	-0.988	1.904	0.627	0.102	2.22	0.289	0.241	2.20	-0.7620	0.171	0.00100	0.01400	-0.726	0.549	6.169
					10/14/2013 18:19	0917-173_Nc	13_10_14_1819_42_244	1	-1.060	1.835	0.576	0.100	2.12	0.278	0.288	2.19	-0.6980	0.167	0.00000	0.01400	-0.589	0.541	6.114
					10/14/2013 18:20	0917-173_Nc	13_10_14_1820_42_954	1	-2.204	1.739	0.450	0.098	2.07	0.277	0.457	2.21	-0.6700	0.163	-0.00100	0.01300	-0.03	0.526	6.027
					10/14/2013 18:21	0917-173_Nc	13_10_14_1821_43_794	1	-3.956	1.707	0.468	0.099	1.97	0.269	0.342	2.22	-0.747	0.162	-0.00500	0.01300	-0.458	0.520	5.977
					10/14/2013 18:22	0917-173_Nc	13_10_14_1822_44_554	1	-2.870	1.808	0.542	0.100	2.17	0.268	0.286	2.21	-0.814	0.166	-0.00400	0.01300	-0.29	0.539	5.917
					10/14/2013 18:23	0917-173_Nc	13_10_14_1823_45_304	1	-6.2540	1.777	0.728	0.099	2.10	0.272	0.395	2.21	-0.503	0.165	-0.01000	0.01300	-0.31	0.538	5.899
					10/14/2013 18:24	0917-173_Nc	13_10_14_1824_46_064	1	-1.300	1.704	0.796	0.098	2.17	0.269	0.450	2.22	-0.5460	0.160	0.00000	0.01300	-0.417	0.511	5.784
					10/14/2013 18:25	0917-173_Nc	13_10_14_1825_46_864	1	-1.5830	1.749	0.642	0.093	2.23	0.261	0.498	2.22	-0.6540	0.157	-0.00300	0.01200	-0.152	0.505	5.666
					10/14/2013 18:26	0917-173_Nc	13_10_14_1826_47_634	1	-2.090	1.774	0.621	0.097	2.09	0.260	0.500	2.24	-0.73300	0.161	-0.00500	0.01200	-0.202	0.519	5.593
					10/14/2013 18:27	0917-173_Nc	13_10_14_1827_48_244	1	-2.919	1.821	0.564	0.098	2.01	0.266	0.495	2.23	-0.783	0.163	-0.00300	0.01200	-0.770	0.532	5.433
					10/14/2013 18:28	0917-173_Nc	13_10_14_1828_49_064	1	-2.1720	1.796	0.735	0.094	1.95	0.258	0.509	2.25	-0.353	0.158	-0.00600	0.01300	-0.5900	0.517	5.229
					10/14/2013 18:29	0917-173_Nc	13_10_14_1829_49_814	1	-2.0000	1.717	0.699	0.095	1.86	0.255	0.538	2.25	-0.698	0.158	-0.00400	0.01200	-1.102	0.524	5.109
					10/14/2013 18:30	0917-173_Nc	13_10_14_1830_50_525	1	-1.712	1.719	0.583	0.097	1.96	0.260	0.535	2.24	-0.6430	0.160	-0.00700	0.01300	-0.157	0.507	5.19
					10/14/2013 18:31	0917-173_Nc	13_10_14_1831_51_325	1	-3.629	1.730	0.742	0.100	2.11	0.277	0.322	2.20	-0.6260	0.162	0.00100	0.01400	-0.536	0.531	5.28
					10/14/2013 18:32	0917-173_Nc	13_10_14_1832_52_055	1	-1.487	1.825	0.861	0.101	2.13	0.300	0.463	2.20	-0.6180	0.167	-0.00500	0.0150	-0.450	0.544	5.407
					10/14/2013 18:33	0917-173_Nc	13_10_14_1833_52_925	1	-3.055	1.928	0.706	0.101	2.20	0.321	0.386	2.17	-0.594	0.170	0.00100	0.0160	-0.499	0.541	5.617
					10/14/2013 18:34	0917-173_Nc	13_10_14_1834_53_625	1	-2.008	1.829	0.653	0.104	2.35	0.326	0.136	2.18	-0.610	0.171	-0.00200	0.0160	-0.47	0.547	5.845
					10/14/2013 18:35	0917-173_Nc	13_10_14_1835_54_365	1	-0.921	1.916	0.669	0.101	2.46	0.329	0.40	2.16	-0.505	0.170	-0.00400	0.0160	-0.37	0.557	6.095
					10/14/2013 18:36	0917-173_Nc	13_10_14_1836_55_185	1	-2.859	1.954	0.740	0.108	2.48	0.335	0.331	2.15	-0.760	0.179	-0.00100	0.0160	-1.154	0.575	6.2
					10/14/2013 18:37	0917-173_Nc	13_10_14_1837_55_925	1	-2.521	1.873	0.840	0.109	2.46	0.335	0.26	2.15	-0.574	0.177	0.00100	0.0160	-0.759	0.568	6.309
					10/14/2013 18:38	0917-173_Nc	13_10_14_1838_56_745	1	-3.915	1.862	0.605	0.101	2.32	0.316	0.248	2.18	-0.649	0.169	-0.00400	0.0150	-0.385	0.545	6.305
					10/14/2013 18:39	0917-173_Nc	13_10_14_1839_57_545	1	-4.353	1.841	0.574	0.101	2.24	0.306	0.237	2.19	-0.622	0.167	0.00100	0.0150	-0.084	0.548	6.246
					10/14/2013 18:40	0917-173_Nc	13_10_14_1840_58_315	1	-3.121	1.774	0.428	0.104	2.15	0.279	0.368	2.22	-0.6590	0.170	-0.00200	0.01300	-0.203	0.531	6.123
					10/14/2013 18:41	0917-173_Nc	13_10_14_1841_59_045	1	-3.140	1.740	0.416	0.098	2.21	0.265	0.249	2.22	-0.821	0.163	-0.00800	0.01200	0.01	0.536	6.074
					10/14/2013 18:42	0917-173_Nc	13_10_14_1842_59_866	1	-2.3240	1.813	0.647	0.097	2.18	0.255	0.154	2.22	-0.474	0.164	-0.00100	0.01200	-1.217	0.528	5.94
					10/14/2013 18:44	0917-173_Nc	13_10_14_1844_00_576	1	-3.407	1.750	0.509	0.093	2.14	0.245	0.495	2.23	-0.5460	0.157	-0.00500	0.01100	-0.760	0.513	5.834
					10/14/2013 18:45	0917-173_Nc	13_10_14_1845_01_296	1	-2.084	1.752	0.475	0.097	2.11	0.250	0.413	2.23	-0.596	0.161	-0.00700	0.01200	-0.997	0.515	5.902
					10/14/2013 18:46	0917-173_Nc	13_10_14_1846_02_146	1	-3.399	1.785	0.453	0.099	2.11	0.257	0.529	2.22	-0.822	0.162	-0.00600	0.01200	-0.066	0.527	5.895
					10/14/2013 18:47	0917-173_Nc	13_10_14_1847_02_896	1	-3.7590	1.670	0.722	0.096	2.03	0.259	0.403	2.23	-0.617	0.156	-0.00500	0.01300	-0.900	0.508	5.934
					10/14/2013 18:48	0917-173_Nc	13_10_14_1848_03_616	1	-3.379	1.822	0.776	0.096	2.09	0.265	0.512	2.22	-0.711	0.162	-0.00400	0.01300	-0.844	0.526	6.004
					10/14/2013 18:49	0917-173_Nc	13_10_14_1849_04_376	1	-0.399	1.748	0.94	0.096	2.05	0.275	0.409	2.23	-0.7790	0.159	-0.00200	0.01400	-0.16	0.518	6.042
					10/14/2013 18:50	0917-173_Nc	13_10_14_1850_05_206	1	-2.040	1.832	1.01	0.096	2.01	0.273	0.568	2.22	-0.666	0.161	-0.00600	0.01300	-0.786	0.522	5.964
					10/14/2013 18:51	0917-173_Nc	13_10_14_1851_05_936	1	-0.4940	1.749	0.949	0.094	1.87	0.268	0.603	2.23	-0.807	0.158	0.00100	0.01300	-0.202	0.522	5.923
					10/14/2013 18:52	0917-173_Nc	13_10_14_1852_06_736	1	-2.510	1.713	0.968	0.092	2.00	0.270	0.542	2.25	-0.700	0.154	-0.00400	0.01300	-0.901	0.501	5.895
					10/14/2013 18:53	0917-173_Nc	13_10_14_1853_06_456	1	-1.728	1.811	0.860	0.096	1.92	0.268	0.497	2.23	-0.718	0.161	-0.00300	0.01300	-0.30	0.513	5.945
					10/14/2013 18:54	0917-173_Nc	13_10_14_1854_07_266	1	-4.687	1.790	0.87	0.100	2.00	0.269	0.741	2.24	-0.513	0.164	-0.00600	0.01300	-1.017	0.545	5.98
					10/14/2013 18:55	0917-173_Nc	13_10_14_1855_07_977	1	-1.317	1.758	0.883	0.097	1.98	0.286	0.675	2.22	-0.652	0.162	-0.00100	0.01400	-0.74	0.525	6.163
					10/14/2013 18:56	0917-173_Nc	13_10_14_1856_08_787	1	-1.267	1.803	0.781	0.099	2.16	0.302	0.348	2.21	-0.7900	0.164	-0.00400	0.01500	-0.406	0.533	6.337
					10/14/2013 18:57	0917-173_Nc	13_10_14_1857_09_477	1	-2.090	1.813	0.767	0.103	2.13	0.305	0.626	2.22	-0.706	0.170	-0.00300	0.01500	-0.479	0.537	6.37
			Stop		10/14/2013 18:58	0917-173_Nc	13_10_14_1858_10_317	1	-2.067	1.825	0.580	0.103	2.23	0.303	0.564	2.19	-0.7150	0.171	-0.00200	0.0150	-0.466	0.547	6.457
					10/14/2013 18:59	0917-173_Nc	13_10_14_1859_11_037	1	-2.642	1.908	0.564	0.102	2.22	0.310	0.485	2.19	-0.6720	0.173	-0.00300	0.0150	-0.563	0.559	6.474
					10/14/2013 19:00	0917-173_Nc	13_10_14_1900_11_837	1	-1.9050	1.805	0.486	0.101	2.05	0.276	0.475	2.19	-0.841	0.168	-0.00500	0.01300	-0.831	0.537	6.646
					10/14/2013 19:01	0917-173_Nc	13_10_14_1901_12_537	1	1.918	1.090	-0.297	0.093	0.506	0.0760	0.641	1.381	-3.021	0.160	-0.00600	0.00400	-1.306	0.395	10.604
					10/14/2013 19:02	0917-173_Nc	13_10_14_1902_13_297	1	-1.1000	1.050	-0.4640	0.103	0.138	0.0450	0.375	0.503	-3.64	0.174	-0.00200	0.00200	-1.313	0.409	11.271
					10/14/2013 19:23	0917-173_Nc	13_10_14_1923_47_489	1	-2.7	1.6	0.073	0.084	1.006	1.48	0.0190	0.1040	0.2880	0.140	0.059	0.602	-0.487	0.466	-1.827
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_06_009	1	0.6	1.7	0.0350	0.085	0.663	1.57	-0.1170	0.1110	0.101	0.144	0.058	0.636	0.383	0.479	-1.964
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_24_509	1	-0.3	1.5	-0.017	0.082	0.350	1.61	-0.0600	0.1070	0.003	0.136	0.053	0.651	-0.629	0.451	-2.041
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_43_109	1	-1.8	1.5	-0.020	0.084	0.12	1.64	0.133	0.1090	0.245	0.138	0.065	0.660	0.350	0.452	-2.025
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_01_599	1	-5.1	1.3	-0.001	0.084	-0.06	1.65	-0.219	0.0970	0.0740	0.129	0.060	0.667	0.417	0.421	-2.07
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_20_119	1	-1.0	1.4	0.1700	0.082	-0.18	1.66	0.157	0.1090	0.053	0.130	0.058	0.666	0.56	0.432	-2.045
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_38_729	1	1.2	1.4	-0.3200	0.084	-0.03	1.66	-0.0780	0.1050	0.218	0.133	0.055	0.664	-1.141	0.436	-2.078
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_57_229	1	0.6	1.6	-0.0180	0.083	-0.15	1.66	-0.1090	0.1010	0.143	0.141	0.059	0.667	-0.084	0.471	-2.077
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_15_809	1	1.0	1.4	-0.104	0.087	-0.15	1.66	-0.0340	0.1230	0.328	0.137	0.049	0.665	-1.59	0.468	-2.073
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_34_299	1	1.5	1.6	-0.028	0.089	-0.05	1.66	-0.034	0.1040	0.251	0.148	0.061	0.666	-1.51	0.497	-2.086
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_52_849	1	-3.9	1.4	0.04600	0.084	-0.26	1.66	-0.03300	0.1030	0.156	0.135	0.051	0.667	-1.067	0.454	-2.076
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_11_399	1	-3.8	1.5	0.0040	0.089	-0.19	1.66	-0.0950	0.1010	0.213	0.139	0.058	0.666	-0.45	0.454	-2.088
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_29_919	1	0.9	1.6	-0.153	0.085	-0.19	1.67	0.0790	0.1060	0.058	0.139	0.056	0.663	-0.365	0.459	-2.071
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_48_529	1	-0.8	1.7	-0.104	0.083	-0.34	1.67	0.1070	0.1070	0.0760	0.141	0.058	0.665	-1.19	0.486	-2.069
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_15_364	1	5.272	2.444	-0.44	0.146	-0.1150	0.0900	-0.1760	0.169	-0.094	0.234	0.00600	0.00500	-0.68	0.73	-0.014
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_21_414	1	0.3140	2.716	0.518	0.149	0.043	0.0870	0.165	0.184	0.47	0.248	0.00100	0.00600	1.551	0.81	-0.014
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_27_624	1	1.34	2.636	0.059	0.156	-0.1490	0.0880	-0.293	0.174	-0.423	0.251	-0.00400	0.00600	-0.290	0.78	-0.004
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_33_844	1	4.8830	2.700	-0.352	0.152	-0.211	0.093	0.415	0.195	-0.247	0.247	-0.01400	0.00800	0.114	0.85	-0.005
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_40_084	1	-1.740	2.417	0.292	0.132	0.253	0.0920	0.1900	0.179	0.010	0.218	0.00400	0.00600	1.08	0.73	0.052
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_46_324	1	-0.201	2.804	0.052	0.143	-0.114	0.0900	-0.1090	0.204	-0.190	0.242	0.00500	0.00700	-1.04	0.81	-0.006
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_52_344	1	4.131	2.553	-0.2220	0.147	0.1010	0.0930	-0.032	0.193	0.097	0.236	0.0050	0.00600	0.708	0.79	0.028
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_58_604	1	-1.17	2.643	-0.0390	0.148	-0.03300	0.0900	-0.1610	0.178	0.63	0.241	0.00400	0.00600	-1.67	0.81	-0.01
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_04_744	1	1.106	2.633	-0.314	0.153	-0.01	0.0910	-0.124	0.219	-0.153	0.246	-0.00500	0.00700	-1.65	0.81	0.004
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_10_954	1	5.907	2.639	0.162	0.141	0.0850	0.095	-0.005	0.201	-0.277	0.233	-0.01	0.00600	0.77	0.80	-0.006
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_17_134	1	6.649	2.531	0.218	0.142	-0.084	0.0900	-0.338	0.231	-0.019	0.232	-0.00100	0.00400	0.354	0.75	0.006
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_23_254	1	2.383	2.518	-0.2860	0.138	0.1010	0.095	0.1650	0.243	-0.060	0.223	0.00900	0.00500	1.00	0.74	0.043
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_29_424	1	-1.091	2.475	0.0980	0.159	0.1330	0.0880	-0.0740	0.269	-0.053	0.248	-0.01	0.00500	-0.79	0.83	0.005
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_35_674	1	-2.509	2.816	-0.320	0.158	0.091	0.096	0.218	0.253	-0.157	0.252	0.00	0.00600	1.206	0.82	0.055
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_41_864	1	7.0630	2.642	0.0830	0.160	0.195	0.0910	-0.002	0.285	-0.477	0.252	0.00800	0.00700	-0.418	0.85	0.071
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_48_034	1	-4.0460	2.666	0.286	0.153	-0.253	0.0900	0.006	0.293	0.096	0.246	-0.01600	0.00600	1.235	0.82	0.013
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_54_154	1	-4.99	2.617	-0.0420	0.152	0.304	0.0900	-0.093	0.300	-0.1800	0.241	-0.00600	0.00600	-1.395	0.80	0.085
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_00_404	1	1.953	2.743	0.0190	0.145	0.123	0.0880	0.187	0.318	0.0910	0.238	-0.01200	0.00500	-0.7280	0.81	-0.007
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_06_605	1	0.633	2.527	-0.183	0.143	0.178	0.0930	0.0610	0.328	-0.162	0.232	-0.01400	0.00500	1.22	0.78	0.022
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_12_795	1	-2.212	2.768	0.366	0.145	-0.142	0.0970	-0.298	0.381	0.261	0.241	-0.01900	0.00500	-0.329	0.80	0.022
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_18_965	1	-2.302	2.743	-0.0220	0.155	0.05800	0.0920	0.2650	0.409	-0.017	0.251	-0.00700	0.00600	0.848	0.83	0.034
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_25_075	1	2.72	2.789	0.205	0.147	-0.0020	0.095	0.3870	0.365	0.781	0.243	0.00100	0.00500	-1.55	0.79	0.055
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_31_265	1	2.423	2.749	0.132	0.151	0.232	0.0940	-0.513	0.378	-0.074	0.246	0.00100	0.00500	1.14	0.81	0.046
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_37_425	1	1.851	2.630	-0.214	0.156	-0.0660	0.0910	0.1180	0.384	-0.199	0.252	-0.00700	0.00600	1.08	0.82	0.016
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_43_715	1	3.614	2.464	0.074	0.160	-0.0290	0.0820	-0.049	0.387	-0.01	0.250	-0.00300	0.00600	-3.52	0.81	0.046
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_49_875	1	10.598	2.538	0.0490	0.154	0.0310	0.0970	0.571	0.400	0.13	0.242	-0.00700	0.00600	-0.671	0.79	0.125
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_55_975	1	2.391	2.525	-0.532	0.139	0.2770	0.094	0.3260	0.383	-0.548	0.229	-0.00200	0.00600	0.337	0.74	0.059
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_02_155	1	-2.234	2.923	0.044	0.157	0.0530	0.115	0.403	1.001	-0.655	0.260	-0.01200	0.00700	-0.06	0.87	-0.103
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_08_405	1	1.005	3.004	0.328	0.160	0.2510	0.181	-2.717	2.70	-0.74	0.263	-0.02600	0.00800	1.18	0.91	0.417
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_14_605	1	-3.917	3.031	0.090	0.175	0.0760	0.158	-2.48	1.45	-0.16	0.282	-0.0020	0.00700	-0.71	0.95	-0.418
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_20_695	1	-5.339	3.18	0.476	0.180	-0.282	0.146	-0.75	1.12	-0.35	0.29	-0.0050	0.00800	-0.65	0.98	-1.143
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_26_895	1	-0.9710	2.84	0.035	0.166	-0.0730	0.173	-0.09	2.30	0.14	0.27	0.0000	0.0080	-0.62	0.91	-2.073
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_33_125	1	-6.375	2.93	-0.452	0.167	-0.4090	0.194	2.72	3.1	0.40	0.27	0.0150	0.0090	-1.04	0.90	-3.067
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_39_295	1	-4.890	3.36	-0.009	0.185	-0.2490	0.251	5.98	4.1	0.10	0.30	0.0080	0.0100	-1.89	1.00	-3.918
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_45_485	1	-5.232	3.26	0.292	0.169	-0.123	0.294	7.8	5.1	0.49	0.29	-0.0010	0.0100	-4.66	0.98	-4.933
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_51_575	1	-4.043	3.42	0.309	0.187	-0.289	0.331	10.5	5.5	0.89	0.31	0.0390	0.0120	-2.06	1.02	-5.644
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_57_765	1	-5.89	3.23	0.3540	0.188	-0.467	0.310	9.5	5.4	1.22	0.31	0.0150	0.0130	-3.16	1.03	-5.217
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_03_955	1	-6.154	3.31	-0.087	0.186	-0.242	0.295	10.0	5.0	0.14	0.31	0.0280	0.0120	-3.36	1.05	-5.146
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_10_235	1	-3.011	3.07	0.182	0.180	-0.5510	0.272	8.3	4.5	0.35	0.29	0.0350	0.0110	-2.91	1.00	-4.953
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_16_435	1	-1.59	3.19	-0.090	0.183	-0.225	0.253	6.79	4.6	0.79	0.30	0.0120	0.0100	-1.61	0.99	-4.606
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_22_425	1	-2.10	3.37	0.183	0.170	-0.077	0.271	5.87	4.8	0.84	0.29	0.0220	0.0120	-5.08	0.97	-4.17
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_28_715	1	4.391	3.20	-0.0300	0.171	-0.4260	0.254	6.0	4.7	0.51	0.28	0.0210	0.0090	-3.15	0.94	-4.276
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_34_905	1	-8.2990	3.20	0.257	0.179	-0.037	0.226	5.63	4.3	0.28	0.29	0.0100	0.0110	-1.72	1.01	-4.005
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_41_095	1	-10.497	3.30	-0.323	0.163	-0.2370	0.219	4.35	4.0	0.17	0.29	0.0070	0.0100	-1.65	0.98	-3.526
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_47_295	1	-0.963	3.09	0.004	0.180	-0.2720	0.194	4.61	3.5	0.16	0.29	0.0020	0.0100	-2.86	0.94	-2.968
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_53_375	1	-8.766	3.00	-0.238	0.177	-0.1650	0.188	3.42	3.01	0.11	0.29	0.0020	0.0090	-1.36	0.94	-2.843
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_59_555	1	-2.65	3.24	-0.108	0.165	-0.095	0.170	2.95	2.43	-0.53	0.28	0.0020	0.0080	0.16	0.96	-2.268
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_05_845	1	-7.828	2.77	0.394	0.175	0.096	0.149	0.42	1.92	0.35	0.28	-0.0030	0.0070	-2.44	0.85	-1.836
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_12_035	1	-6.69	2.95	0.364	0.183	-0.2400	0.131	-0.20	1.98	0.03	0.29	0.0100	0.0070	-1.17	0.98	-1.528
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_18_215	1	-8.357	3.09	0.085	0.157	0.1700	0.132	-1.65	1.52	-0.09	0.27	-0.0130	0.0080	0.28	0.89	-1.115
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_24_285	1	-4.31	3.203	0.189	0.172	-0.02800	0.126	1.85	1.54	-0.34	0.29	0.0100	0.00700	0.29	0.95	-0.893
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_30_475	1	-2.255	3.17	-0.221	0.168	-0.130	0.128	-1.03	1.33	-0.72	0.28	-0.0080	0.00700	0.531	0.95	-0.634
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_36_655	1	-4.708	2.78	-0.094	0.161	0.017	0.134	-1.75	1.18	-0.49	0.26	-0.0250	0.00700	0.70	0.86	-0.425
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_42_915	1	-4.6700	3.001	-0.023	0.150	0.126	0.131	-1.89	1.18	-0.25	0.26	-0.0020	0.00600	-0.38	0.86	-0.267
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_49_085	1	-1.347	2.856	0.331	0.173	-0.153	0.136	-2.00	1.32	-0.35	0.28	-0.0260	0.00700	0.864	0.92	0.052
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_55_165	1	-1.773	2.939	0.232	0.174	0.219	0.148	-3.825	1.70	-0.19	0.28	-0.0070	0.00600	1.71	0.91	0.391
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_01_355	1	-0.499	3.056	-0.152	0.160	0.407	0.150	-2.64	1.88	0.07	0.27	-0.03600	0.00700	-1.28	0.90	0.497
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_07_635	1	-6.4680	2.898	0.196	0.170	-0.0040	0.154	-2.80	1.84	-0.539	0.27	-0.02900	0.00800	1.35	0.91	0.63
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_13_805	1	1.603	2.782	0.102	0.162	-0.286	0.159	-3.408	2.17	-0.07	0.26	-0.0030	0.00800	-0.84	0.88	0.755
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_19_995	1	-2.394	2.893	0.1480	0.161	0.0670	0.159	-3.151	2.32	-0.38	0.26	-0.0330	0.00700	-0.60	0.90	0.868
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_26_075	1	-9.942	2.839	-0.1870	0.151	0.0810	0.170	-3.102	2.63	-0.23	0.26	-0.0150	0.00800	1.08	0.86	1.027
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_32_285	1	3.074	2.833	0.2310	0.162	0.1540	0.167	-2.08	2.89	-0.27	0.26	-0.0220	0.00800	1.51	0.88	1.036
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_38_465	1	-1.325	2.843	0.103	0.159	-0.151	0.177	-4.043	2.92	-0.53	0.26	-0.02200	0.00800	0.427	0.89	1.248
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_44_745	1	0.304	2.949	0.615	0.164	-0.055	0.177	-2.867	3.17	-0.21	0.27	-0.0190	0.00700	-0.51100	0.89	1.346
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_50_775	1	-1.492	2.945	0.3470	0.162	0.2170	0.178	-3.616	3.35	-0.32	0.272	-0.0180	0.00900	-0.24	0.90	1.403
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_57_045	1	-0.43	2.921	0.391	0.158	0.3190	0.184	-2.733	3.31	-0.350	0.262	-0.02400	0.00700	2.295	0.87	1.429
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_03_195	1	-11.54	4.131	-0.334	0.219	0.028	0.190	2.229	1.14	-0.676	0.27	-0.0240	0.00700	-4.249	1.23	1.481
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_09_385	1	0.413	3.249	0.07600	0.160	0.2940	0.180	1.756	0.99	-0.781	0.277	-0.0080	0.00800	0.76	0.97	1.714
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_15_565	1	-7.5970	4.241	0.3850	0.163	0.372	0.200	1.079	0.90	0.769	0.383	-0.01900	0.00800	0.44	0.92	1.563
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_21_725	1	-8.531	3.901	0.368	0.168	0.2180	0.202	1.052	0.70	0.07	0.358	-0.02300	0.00600	0.619	0.95	1.781

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
									Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_27_905	1	-10.242	3.765	0.243	0.153	0.006	0.203	0.607	0.64	-0.866	0.256	-0.0200	0.01000	2.42	0.88	1.765
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_34_085	1	-13.567	3.934	0.733	0.159	0.292	0.207	1.110	0.62	0.797	0.351	-0.0160	0.00800	0.11	0.93	1.753
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_40_265	1	-9.776	3.629	0.246	0.168	0.161	0.210	0.674	0.65	0.338	0.336	-0.01500	0.00800	1.0760	0.88	1.755
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_46_545	1	-12.455	3.595	0.535	0.160	-0.517	0.151	1.100	0.71	0.057	0.336	-0.01800	0.00800	1.789	0.88	1.899
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_52_605	1	-3.97	3.616	-0.170	0.193	-0.28500	0.159	1.080	0.81	-0.148	0.319	-0.01800	0.00900	-1.47	1.08	-0.369
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_58_785	1	-12.900	3.607	-0.2410	0.217	-0.2570	0.156	1.053	0.94	-0.0610	0.344	-0.0230	0.00900	-1.25	1.11	-0.304
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_05_005	1	-1.140	3.628	-0.321	0.197	0.081	0.145	0.936	0.90	0.20	0.322	-0.02400	0.00900	-2.557	1.08	-0.248
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_11_245	1	-8.7930	3.348	-0.038	0.196	-0.14300	0.144	1.005	1.07	0.313	0.316	-0.03600	0.00800	-1.30	1.04	-0.245
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_17_425	1	-16.10	3.660	-0.081	0.188	-0.286	0.156	0.644	1.02	-0.048	0.320	-0.03200	0.00800	-3.09	1.08	-0.157
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_23_505	1	-8.24	3.598	0.04100	0.188	-0.314	0.145	0.470	1.05	-0.030	0.314	-0.00700	0.00900	-1.591	1.02	-0.181
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_29_645	1	-4.390	3.521	-0.144	0.189	-0.1570	0.154	0.617	1.09	0.136	0.313	-0.01700	0.00800	-0.58	1.06	-0.149
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_35_905	1	-4.406	3.388	0.209	0.194	-0.2060	0.154	0.61	1.14	-0.011	0.314	-0.03200	0.00900	-0.70	1.03	-0.064
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_42_075	1	-7.767	3.734	0.050	0.195	-0.0980	0.149	0.909	1.14	0.14	0.327	-0.02800	0.00800	-4.442	1.10	-0.082
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_48_245	1	-10.939	3.388	0.084	0.193	-0.2510	0.152	1.098	1.17	0.42	0.311	-0.01700	0.00900	-4.65	1.04	-0.075
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_54_325	1	-10.527	3.390	-0.155	0.191	-0.1760	0.156	1.155	1.19	-0.436	0.310	-0.02	0.00900	0.260	1.04	-0.108
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_00_595	1	-16.048	3.535	-0.154	0.197	-0.0120	0.146	1.171	1.13	-0.21	0.327	-0.00500	0.00900	-0.645	1.09	-0.129
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_06_775	1	-5.225	3.459	-0.394	0.182	-0.298	0.155	0.874	1.17	-0.424	0.306	-0.03400	0.00800	-2.138	1.01	-0.104
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_12_935	1	0.199	3.552	-0.138	0.191	-0.17400	0.156	1.131	1.31	-0.0740	0.315	-0.01800	0.00800	-1.9070	1.06	-0.049
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_19_205	1	-10.704	3.293	-0.070	0.196	-0.243	0.148	1.530	1.32	0.359	0.309	-0.02700	0.00800	-1.929	0.97	-0.004
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_25_285	1	-10.781	3.510	0.043	0.193	-0.155	0.149	0.17	1.26	-0.228	0.318	-0.02900	0.00800	-0.91	1.07	0.099
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_31_435	1	-2.57	3.272	0.175	0.179	-0.1160	0.155	1.366	1.38	-0.370	0.297	-0.03000	0.00800	-1.04	1.00	0.042
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_37_715	1	1.061	3.301	0.172	0.192	-0.143	0.151	1.221	1.45	-0.468	0.309	-0.03100	0.00800	-1.360	1.04	0.154
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_43_905	1	-9.983	3.252	-0.037	0.175	-0.109	0.152	0.728	1.51	0.380	0.287	-0.01700	0.00800	-1.20	0.95	0.073
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_50_095	1	-3.918	3.263	0.037	0.174	-0.366	0.150	0.683	1.56	0.57	0.288	-0.01800	0.00700	-2.87	0.97	0.219
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_56_175	1	-5.872	3.457	-0.00400	0.178	-0.0460	0.155	1.195	1.669	-0.689	0.296	-0.00500	0.00700	-1.28	1.00	0.237
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_02_365	1	-6.8110	3.349	-0.430	0.172	0.0960	0.141	0.57	1.731	-0.430	0.288	-0.02600	0.00700	1.007	0.99	0.133
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_08_595	1	-4.103	3.133	-0.077	0.175	0.0650	0.144	1.309	1.742	0.026	0.284	-0.02200	0.00900	-1.868	0.97	0.234
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_14_785	1	-2.87	3.103	-0.004	0.167	-0.1480	0.148	1.174	1.760	-0.216	0.271	-0.01100	0.00800	-1.666	0.93	0.252
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_20_855	1	-0.892	2.970	0.202	0.176	0.03800	0.155	0.942	1.799	0.444	0.279	-0.02000	0.00700	-0.507	0.89	0.224
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_27_035	1	-4.979	3.216	-0.240	0.183	-0.113	0.152	1.379	1.761	-0.212	0.298	-0.02200	0.00800	0.85	1.00	0.301
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_33_235	1	1.60	3.185	-0.480	0.167	-0.252	0.148	0.525	1.712	-0.3480	0.278	-0.02100	0.00800	-1.084	0.94	0.197
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_39_435	1	-9.332	3.063	0.149	0.189	0.137	0.146	1.153	1.741	0.151	0.299	-0.03	0.00800	-1.761	0.99	0.23
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_45_635	1	-0.0160	3.188	0.413	0.194	-0.329	0.151	0.450	1.730	-0.14	0.309	-0.01600	0.00800	-0.690	0.99	0.347
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_51_825	1	-3.33	3.494	-0.100	0.180	0.1460	0.158	1.022	1.705	-0.0410	0.301	-0.0080	0.00800	-1.108	1.00	0.279
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_58_005	1	-1.127	2.932	-0.0130	0.180	-0.261	0.159	0.952	1.719	-0.06	0.281	-0.02	0.00700	-1.305	0.95	0.221
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_04_185	1	-5.117	3.271	0.2200	0.174	-0.1100	0.148	0.832	1.729	-0.028	0.291	-0.02700	0.00800	-2.64	1.00	0.229
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_10_375	1	-7.46	3.283	0.0170	0.182	-0.1210	0.139	0.994	1.723	-0.448	0.301	-0.02200	0.00800	-0.88	0.98	0.264
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_16_615	1	-3.616	3.130	0.178	0.172	0.0240	0.147	1.346	1.760	-0.441	0.282	-0.00700	0.00700	0.064	0.98	0.313
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_22_685	1	-8.823	3.195	-0.0660	0.183	-0.239	0.152	1.326	1.739	0.117	0.300	-0.02900	0.00800	-1.06	1.02	0.284
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_28_855	1	-7.230	3.210	-0.2230	0.172	-0.1680	0.152	0.40	1.751	-0.35	0.287	-0.01200	0.00800	-0.19	0.96	0.275
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_35_135	1	-9.833	3.087	-0.00500	0.164	-0.114	0.157	0.683	1.745	-0.214	0.270	-0.01400	0.00800	-0.28	0.90	0.192
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_41_325	1	-9.164	3.233	0.143	0.170	-0.1660	0.147	1.051	1.808	-0.07	0.285	-0.02200	0.00700	-1.61	0.95	0.278
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_47_515	1	-9.117	3.390	0.1610	0.172	-0.070	0.155	0.501	1.694	0.13	0.290	-0.00200	0.00700	-2.027	0.98	0.314
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_53_595	1	-8.890	2.955	0.0350	0.166	-0.076	0.141	0.950	1.779	0.072	0.273	-0.02	0.00800	-0.75	0.90	0.328
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_59_795	1	-2.920	3.199	-0.126	0.176	0.006	0.152	0.429	1.817	-0.4210	0.287	-0.01700	0.00800	-0.91	0.96	0.304
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_05_975	1	-11.119	3.278	0.412	0.172	0.145	0.152	0.767	1.818	-0.236	0.287	-0.03400	0.00700	1.09	0.94	0.26
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_12_155	1	-7.183	3.182	-0.0470	0.177	-0.2340	0.147	0.959	1.838	0.043	0.288	-0.0340	0.00700	-1.78	0.96	0.288
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_18_405	1	-12.87	3.040	-0.1620	0.173	-0.203	0.145	0.920	1.852	0.337	0.285	-0.01000	0.00700	-1.83	0.98	0.313
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_24_465	1	-2.955	2.978	0.223	0.175	-0.121	0.159	0.877	1.843	0.247	0.282	-0.01800	0.00800	-2.03	0.93	0.324
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_30_645	1	-8.5910	3.262	0.165	0.172	-0.0380	0.148	1.151	1.791	-0.287	0.289	-0.01800	0.00700	-0.76	0.97	0.33
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_36_925	1	-2.028	2.950	0.1730	0.170	-0.1520	0.149	0.781	1.871	-0.05	0.273	-0.02800	0.00800	-1.42	0.85	0.296
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_43_035	1	-1.646	2.995	0.164	0.173	-0.02200	0.151	0.631	1.915	0.517	0.278	-0.01000	0.00700	-0.171	0.90	0.333
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_49_235	1	-6.887	2.893	-0.453	0.163	-0.0890	0.150	0.844	1.828	-0.32	0.264	-0.01700	0.00800	-0.996	0.88	0.334
Data	MDC	1	Start		10/14/2013 19:53	0917-173_Nc	13_10_14_1953_39_775	1	-4.0700	1.899	0.0260	0.106	-0.0930	0.1230	0.855	1.910	0.032	0.172	-0.02	0.00500	-1.615	0.574	0.362
					10/14/2013 19:54	0917-173_Nc	13_10_14_1954_40_496	1	-4.7720	1.912	0.111	0.106	-0.0580	0.1230	0.738	1.914	-0.0670	0.175	-0.02000	0.00500	-1.188	0.579	0.371
					10/14/2013 19:55	0917-173_Nc	13_10_14_1955_41_326	1	-3.3650	1.788	0.0170	0.104	-0.0610	0.1260	0.835	1.928	-0.241	0.168	-0.02	0.00500	-0.931	0.553	0.369
					10/14/2013 19:56	0917-173_Nc	13_10_14_1956_42_036	1	-3.270	2.033	-0.061	0.108	-0.128	0.1250	0.630	1.909	0.011	0.179	-0.02200	0.00500	-2.021	0.597	0.372
					10/14/2013 19:57	0917-173_Nc	13_10_14_1957_42_786	1	-4.047	1.904	0.1310	0.105	-0.0740	0.1220	0.740	1.929	-0.078	0.172	-0.02	0.00500	-1.288	0.580	0.419
					10/14/2013 19:58	0917-173_Nc	13_10_14_1958_43_596	1	-2.2440	1.869	0.0480	0.107	-0.0080	0.1230	0.809	1.901	-0.124	0.172	-0.02100	0.00500	-0.988	0.560	0.399
			Stop		10/14/2013 19:59	0917-173_Nc	13_10_14_1959_44_366	1	-2.609	1.855	0.070	0.106	0.0240	0.1220	0.786	1.917	-0.2060	0.172	-0.01800	0.00500	-0.7610	0.564	0.373
					10/15/2013 7:51	0917-173_Nc	13_10_15_0751_28_631	1	1.8	1.5	-0.167	0.082	0.02	1.53	-0.11100	0.0920	0.085	0.135	0.059	0.618	-0.548	0.430	-1.86
					10/15/2013 7:51	0917-173_Nc	13_10_15_0751_47_251	1	0.9	1.6	0.008	0.084	-0.18	1.60	0.1040	0.1020	0.151	0.141	0.054	0.644	-0.367	0.473	-1.97
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_05_741	1	0.1	1.6	0.1030	0.088	-0.29	1.63	0.149	0.1020	0.099	0.143	0.065	0.655	0.429	0.464	-1.994
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_24_331	1	1.1	1.5	-0.08900	0.080	-0.44	1.65	0.0910	0.1020	-0.063	0.131	0.059	0.661	0.44	0.426	-2.028
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_42_811	1	3.8	1.5	-0.088	0.086	-0.34	1.65	-0.11400	0.1020	-0.138	0.137	0.048	0.664	-0.03	0.474	-2.045
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_01_311	1	2.1	1.3	0.177	0.083	-0.30	1.66	-0.1390	0.1030	0.07800	0.130	0.063	0.667	-0.048	0.428	-2.019
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_19_911	1	2.0	1.5	0.074	0.088	-0.37	1.66	-0.169	0.1210	0.170	0.139	0.059	0.664	0.275	0.453	-2.018
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_38_392	1	-3.9	1.6	0.0050	0.081	-0.42	1.66	-0.1290	0.0980	0.044	0.138	0.062	0.661	-0.422	0.463	-2.048
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_56_902	1	-4.2	1.6	-0.103	0.086	-0.50	1.67	0.0020	0.1140	-0.022	0.139	0.054	0.665	1.42	0.450	-2.012
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_15_522	1	1.5	1.6	0.047	0.085	-0.42	1.67	0.1410	0.1060	0.0440	0.141	0.061	0.663	0.050	0.473	-2.036
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_34_022	1	1.0	1.6	-0.051	0.085	-0.45	1.66	-0.1770	0.0960	0.128	0.138	0.049	0.668	-0.640	0.462	-2.025
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_52_562	1	-0.5	1.5	0.009	0.085	-0.44	1.66	-0.354	0.1040	0.394	0.137	0.048	0.665	0.060	0.474	-2.03
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_11_052	1	0.2	1.5	-0.048	0.075	-0.44	1.67	0.058	0.1110	0.059	0.127	0.064	0.666	0.3360	0.423	-2.018
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_29_642	1	-3.2	1.4	-0.156	0.089	-0.44	1.66	0.097	0.1070	-0.017	0.138	0.055	0.668	0.145	0.437	-2.039
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_48_232	1	-1.4	1.6	-0.115	0.085	-0.50	1.66	-0.277	0.1040	-0.061	0.139	0.052	0.665	0.43	0.448	-2.043
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_06_712	1	-2.1	1.4	0.043	0.085	-0.33	1.66	-0.0350	0.1020	0.133	0.135	0.058	0.664	0.020	0.427	-2.045
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_25_332	1	-0.5	1.4	0.095	0.087	-0.49	1.67	-0.115	0.0940	0.245	0.137	0.061	0.665	0.821	0.437	-2.014
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_43_842	1	-0.6	1.6	-0.089	0.084	-0.47	1.66	0.110	0.1050	-0.005	0.139	0.058	0.663	1.335	0.458	-2.007
					10/15/2013 7:57	0917-173_Nc	13_10_15_0757_02_292	1	-0.5	1.4	-0.032	0.090	-0.51	1.66	-0.1750	0.0990	-0.139	0.141	0.053	0.663	0.49	0.450	-2.003
					10/15/2013 7:57	0917-173_Nc	13_10_15_0757_20_952	1	1.4	1.5	-0.069	0.087	-0.45	1.66	0.124	0.0990	0.265	0.138	0.057	0.664	-0.170	0.445	-2.015
					10/15/2013 9:06	0917-173_Nc	13_10_15_0906_30_678	1	2.032	1.117	0.031	0.070	1.79	0.0750	0.669	1.626	-0.759	0.115	0.00	0.00300	-0.41	0.359	5.073
					10/15/2013 9:07	0917-173_Nc	13_10_15_0907_30_378	1	-0.355	1.124	-0.013	0.067	2.12	0.0770	0.514	1.662	-0.578	0.114	-0.00300	0.00200	-1.019	0.351	5.548
					10/15/2013 9:08	0917-173_Nc	13_10_15_0908_31_128	1	1.323	1.155	0.046	0.068	1.96	0.0790	0.545	1.650	-0.521	0.115	-0.00700	0.00300	-0.77	0.369	5.181
					10/15/2013 9:09	0917-173_Nc	13_10_15_0909_31_938	1	2.849	1.143	0.144	0.065	1.94	0.0800	0.526	1.645	-0.465	0.110	-0.00100	0.00300	-0.849	0.352	4.839
					10/15/2013 9:10	0917-173_Nc	13_10_15_0910_32_668	1	1.893	1.087	0.16200	0.067	2.33	0.0810	0.500	1.658	-0.5990	0.113	-0.00200	0.00200	-0.325	0.342	5.527
Data	Run	4	Start	A	10/15/2013 9:11	0917-173_Nc	13_10_15_0911_33_428	1	-0.297	1.117	0.026	0.070	2.72	0.0860	0.551	1.672	-0.788	0.118	-0.00400	0.00300	0.18	0.362	6.376
					10/15/2013 9:12	0917-173_Nc	13_10_15_0912_34_178	1	2.267	1.224	0.089	0.072	2.50	0.0840	0.548	1.670	-0.6770	0.120	-0.00400	0.00300	-0.821	0.377	5.402
					10/15/2013 9:13	0917-173_Nc	13_10_15_0913_34_978	1	-2.199	1.136	0.033	0.066	2.56	0.0850	0.709	1.681	-0.447	0.118	0.00	0.00200	-1.11	0.349	5.394
					10/15/2013 9:14	0917-173_Nc	13_10_15_0914_35_708	1	-0.4960	1.076	0.054	0.068	2.42	0.0820	0.498	1.666	-0.634	0.112	0.00000	0.00200	-0.46	0.339	4.964
					10/15/2013 9:15	0917-173_Nc	13_10_15_0915_36_448	1	0.879	1.119	0.0620	0.063	2.43	0.0840	0.440	1.669	-0.452	0.112	-0.00600	0.00300	-0.87	0.330	4.892
					10/15/2013 9:16	0917-173_Nc	13_10_15_0916_37_198	1	1.8050	1.197	-0.039	0.073	2.69	0.0820	0.552	1.683	-0.589	0.120	0.00	0.00200	-0.50	0.374	5.58
					10/15/2013 9:17	0917-173_Nc	13_10_15_0917_37_999	1	0.6580	1.177	0.0700	0.066	2.62	0.0840	0.477	1.688	-0.504	0.113	-0.00300	0.00200	-0.846	0.343	5.639
					10/15/2013 9:18	0917-173_Nc	13_10_15_0918_38_749	1	-0.816	1.213	0.092	0.068	2.76	0.0840	0.574	1.675	-0.726	0.117	-0.00300	0.00300	-0.75	0.375	5.722
					10/15/2013 9:19	0917-173_Nc	13_10_15_0919_39_499	1	1.276	1.071	0.0340	0.063	2.82	0.0830	0.688	1.693	-0.521	0.110	-0.00300	0.00300	-0.681	0.328	5.676
					10/15/2013 9:20	0917-173_Nc	13_10_15_0920_40_209	1	-1.244	1.150	0.037	0.068	2.75	0.0830	0.7490	1.694	-0.596	0.117	-0.00700	0.00300	-0.56	0.348	5.495
					10/15/2013 9:21	0917-173_Nc	13_10_15_0921_41_019	1	1.579	1.251	0.0120	0.072	2.74	0.0860	0.507	1.691	-0.6130	0.122	-0.00200	0.00300	-0.565	0.372	5.337
					10/15/2013 9:22	0917-173_Nc	13_10_15_0922_41_779	1	0.3140	1.234	0.138	0.069	2.86	0.0840	0.574	1.700	-0.7880	0.121	-0.00500	0.00300	-0.10	0.369	6.155
					10/15/2013 9:23	0917-173_Nc	13_10_15_0923_42_539	1	1.0170	1.163	-0.0190	0.067	2.73	0.0840	0.380	1.692	-0.732	0.118	-0.00100	0.00300	-0.41	0.353	6.167
					10/15/2013 9:24	0917-173_Nc	13_10_15_0924_43_249	1	-1.223	1.059	0.116	0.070	2.42	0.0820	0.522	1.688	-0.78600	0.114	0.00000	0.00300	0.35	0.360	5.208
					10/15/2013 9:25	0917-173_Nc	13_10_15_0925_44_059	1	1.476	1.121	0.0140	0.068	2.47	0.0810	0.568	1.661	-0.598	0.115	0.00000	0.00200	-0.51	0.347	5.133
					10/15/2013 9:26	0917-173_Nc	13_10_15_0926_44_759	1	-0.829	1.134	-0.042	0.068	2.56	0.0810	0.556	1.686	-0.675	0.113	0.00	0.00300	-0.57	0.347	5.338
					10/15/2013 9:27	0917-173_Nc	13_10_15_0927_45_529	1	-1.624	1.166	-0.081	0.069	2.51	0.0850	0.623	1.669	-0.569	0.116	-0.00300	0.00300	-1.06	0.363	5.345
					10/15/2013 9:28	0917-173_Nc	13_10_15_0928_46_300	1	1.723	1.112	0.022	0.067	2.48	0.0810	0.457	1.681	-0.625	0.114	-0.00300	0.00300	-0.52	0.355	5.069
					10/15/2013 9:29	0917-173_Nc	13_10_15_0929_47_100	1	1.7280	1.153	-0.02	0.064	2.54	0.0820	0.543	1.662	-0.650	0.109	0.00000	0.00200	-0.12	0.349	4.991
					10/15/2013 9:30	0917-173_Nc	13_10_15_0930_47_900	1	-0.240	1.171	0.047	0.070	2.42	0.0800	0.438	1.670	-0.6360	0.116	-0.00400	0.00300	-0.101	0.360	4.704
					10/15/2013 9:31	0917-173_Nc	13_10_15_0931_48_670	1	1.250	1.024	0.110	0.069	2.73	0.0810	0.616	1.668	-0.668	0.111	0.00200	0.00300	-0.17	0.330	5.27
					10/15/2013 9:32	0917-173_Nc	13_10_15_0932_49_420	1	0.8500	1.154	-0.002	0.066	2.80	0.0840	0.567	1.677	-0.650	0.113	-0.00200	0.00300	-0.22	0.363	5.292
					10/15/2013 9:33	0917-173_Nc	13_10_15_0933_50_130	1	-0.315	1.103	0.141	0.066	2.90	0.0840	0.482	1.681	-0.764	0.109	-0.00700	0.00300	-0.54	0.333	5.239
					10/15/2013 9:34	0917-173_Nc	13_10_15_0934_50_930	1	3.0710	1.165	0.0000	0.067	2.56	0.0840	0.539	1.677	-0.609	0.114	-0.00500	0.00200	-0.660	0.350	4.416
					10/15/2013 9:35	0917-173_Nc	13_10_15_0935_51_710	1	-0.430	1.175	0.067	0.068	2.68	0.0830	0.510	1.675	-0.690	0.115	0.00100	0.00300	-0.38	0.357	4.553
					10/15/2013 9:36	0917-173_Nc	13_10_15_0936_52_510	1	-1.2160	1.073	0.102	0.066	2.49	0.0830	0.480	1.662	-0.496	0.110	-0.00300	0.00200	-0.35	0.355	4.287
					10/15/2013 9:37	0917-173_Nc	13_10_15_0937_53_310	1	0.520	1.109	0.045	0.063	2.42	0.0830	0.362	1.664	-0.520	0.107	-0.00100	0.00300	-0.73	0.340	4.103
					10/15/2013 9:38	0917-173_Nc	13_10_15_0938_54_040	1	0.581	1.102	-0.0520	0.0650	2.61	0.0830	0.470	1.666	-0.645	0.110	-0.00300	0.00200	-0.402	0.343	4.774
					10/15/2013 9:39	0917-173_Nc	13_10_15_0939_54_760	1	-0.5150	1.013	0.079	0.0620	2.66	0.0820	0.394	1.684	-0.706	0.103	-0.00600	0.00300	-0.152	0.323	4.93
					10/15/2013 9:40	0917-173_Nc	13_10_15_0940_55_571	1	-0.9070	1.160	0.064	0.066	2.45	0.0820	0.436	1.673	-0.492	0.112	-0.00200	0.00300	-0.75	0.352	4.502
					10/15/2013 9:41	0917-173_Nc	13_10_15_0941_56_301	1	0.995	1.177	0.1220	0.068	2.45	0.0810	0.558	1.680	-0.555	0.115	-0.00300	0.00300	-0.79	0.355	4.511
					10/15/2013 9:42	0917-173_Nc	13_10_15_0942_57_111	1	-0.680	1.144	-0.0250	0.067	2.65	0.0830	0.622	1.679	-0.710	0.110	-0.00800	0.00200	-0.12	0.345	4.586
					10/15/2013 9:43	0917-173_Nc	13_10_15_0943_57_921	1	1.4540	1.089	0.0800	0.066	2.54	0.0850	0.495	1.677	-0.758	0.109	-0.00100	0.00300	-0.30	0.328	4.462
					10/15/2013 9:44	0917-173_Nc	13_10_15_0944_58_691	1	0.472	1.009	0.0220	0.065	2.44	0.0800	0.506	1.669	-0.485	0.106	-0.00200	0.00200	-0.19	0.311	4.498
					10/15/2013 9:45	0917-173_Nc	13_10_15_0945_59_421	1	0.645	1.133	0.065	0.065	2.51	0.0810	0.6370	1.679	-0.376	0.111	-0.00200	0.00300	-0.65	0.351	4.433
					10/15/2013 9:47	0917-173_Nc	13_10_15_0947_00_071	1	0.998	1.144	0.0490	0.065	2.49	0.0810	0.608	1.666	-0.492	0.110	-0.00100	0.00300	-1.000	0.345	4.359
					10/15/2013 9:48	0917-173_Nc	13_10_15_0948_00_871	1	-0.3200	1.110	0.040	0.070	2.75	0.0850	0.457	1.674	-0.545	0.114	-0.00600	0.00300	-0.733	0.351	4.875
					10/15/2013 9:49	0917-173_Nc	13_10_15_0949_01_631	1	0.647	1.199	0.017	0.069	2.69	0.0830	0.564	1.693	-0.757	0.118	-0.01000	0.00200	-0.53	0.367	5.071
					10/15/2013 9:50	0917-173_Nc	13_10_15_0950_02_421	1	0.4850	1.101	-0.046	0.065	2.63	0.0820	0.529	1.693	-0.705	0.109	0.00	0.00300	-0.06	0.339	4.897
					10/15/2013 9:51	0917-173_Nc	13_10_15_0951_03_231	1	0.1600	1.140	0.042	0.069	2.62	0.0850	0.498	1.694	-0.532	0.118	-0.00300	0.00300	0.04	0.357	5.073
					10/15/2013 9:52	0917-173_Nc	13_10_15_0952_03_891	1	0.314	1.142	0.0020	0.063	2.90	0.0850	0.403	1.693	-0.6700	0.110	-0.00500	0.00200	-0.22	0.345	5.445
					10/15/2013 9:53	0917-173_Nc	13_10_15_0953_04_722	1	2.6700	1.184	0.0470	0.071	2.97	0.0840	0.448	1.710	-0.718	0.122	-0.00300	0.00300	-0.52	0.367	6.068
					10/15/2013 9:54	0917-173_Nc	13_10_15_0954_05_522	1	1.262	1.106	0.023	0.067	2.59	0.0880	0.494	1.698	-0.707	0.114	-0.00300	0.00300	-0.78	0.337	5.047
					10/15/2013 9:55	0917-173_Nc	13_10_15_0955_06_272	1	0.563	1.112	0.102	0.067	2.72	0.0830	0.482	1.704	-0.663	0.114	-0.00400	0.00300	-0.18	0.357	5.21
					10/15/2013 9:56	0917-173_Nc	13_10_15_0956_06_992	1	-1.074	1.117	0.201	0.067	2.53	0.0810	0.566	1.692	-0.470	0.116	-0.00800	0.00300	-0.80	0.349	4.763
					10/15/2013 9:57	0917-173_Nc	13_10_15_0957_07_812	1	-0.4080	1.170	0.031	0.069	2.68	0.0860	0.502	1.686	-0.586	0.117	-0.00600	0.00300	-1.102	0.359	5.179
					10/15/2013 9:58	0917-173_Nc	13_10_15_0958_08_512	1	0.2620	1.039	0.00300	0.066	2.75	0.0870	0.553	1.697	-0.805	0.109	-0.00500	0.00200	-0.52	0.320	5.566
					10/15/2013 9:59	0917-173_Nc	13_10_15_0959_09_312	1	1.302	1.132	-0.0470	0.066	2.97	0.0840	0.528	1.693	-0.698	0.115	-0.00500	0.00300	0.01	0.347	5.562
					10/15/2013 10:00	0917-173_Nc	13_10_15_1000_10_052	1	0.754	1.148	0.057	0.064	3.02	0.0890	0.578	1.709	-0.753	0.112	0.00	0.00300	-0.14	0.338	5.675
					10/15/2013 10:01	0917-173_Nc	13_10_15_1001_10_862	1	1.323	1.131	0.106	0.064	3.01	0.0870	0.594	1.720	-0.744	0.114	-0.00400	0.00300	-0.79	0.362	5.531
					10/15/2013 10:02	0917-173_Nc	13_10_15_1002_11_672	1	-0.916	1.151	-0.013	0.070	2.94	0.0880	0.451	1.707	-0.780	0.118	-0.00500	0.00300	-0.29	0.369	5.406
					10/15/2013 10:03	0917-173_Nc	13_10_15_1003_12_372	1	-0.494	1.152	0.061	0.071	2.82	0.0860	0.412	1.713	-0.755	0.118	-0.00400	0.00300	-0.601	0.357	5.181
					10/15/2013 10:04	0917-173_Nc	13_10_15_1004_13_182	1	2.115	1.131	0.0470	0.068	2.90	0.0880	0.466	1.699	-0.661	0.114	-0.00500	0.00200	-0.998	0.350	5.336
					10/15/2013 10:05	0917-173_Nc	13_10_15_1005_13_993	1	-1.633	1.163	0.0130	0.066	2.92	0.0890	0.366	1.697	-0.698	0.114	0.00000	0.00300	-0.44	0.358	5.142
					10/15/2013 10:06	0917-173_Nc	13_10_15_1006_14_753	1	0.306	1.163	-0.007	0.071	2.60	0.0840	0.503	1.694	-0.549	0.116	-0.00200	0.00300	-0.243	0.362	4.854
					10/15/2013 10:07	0917-173_Nc	13_10_15_1007_15_483	1	0.436	1.099	0.045	0.064	2.54	0.0850	0.591	1.694	-0.545	0.109	-0.00500	0.00200	-0.557	0.338	4.569
					10/15/2013 10:08	0917-173_Nc	13_10_15_1008_16_293	1	-1.4680	1.191	0.044	0.067	2.76	0.0840	0.590	1.684	-0.577	0.116	-0.00400	0.00300	-0.74	0.361	5.019
					10/15/2013 10:09	0917-173_Nc	13_10_15_1009_17_143	1	0.482	1.109	-0.1310	0.064	2.73	0.0830	0.543	1.692	-0.707	0.110	-0.00500	0.00300	-0.72	0.345	4.853
					10/15/2013 10:10	0917-173_Nc	13_10_15_1010_17_863	1	-0.936	1.160	-0.009	0.067	2.63	0.0830	0.534	1.664	-0.724	0.114	-0.00800	0.00300	-0.44	0.350	4.953
			Stop		10/15/2013 10:11	0917-173_Nc	13_10_15_1011_18_623	1	-0.489	1.033	-0.085	0.066	0.291	0.0390	0.1290	0.417	-1.3240	0.111	-0.00300	0.00200	-0.762	0.324	4.421
					10/15/2013 10:12	0917-173_Nc	13_10_15_1012_19_383	1	-1.763	0.896	-0.0740	0.064	0.076	0.0380	0.0430	0.1100	-1.472	0.103	-0.00300	0.00200	-0.35	0.300	4.198
					10/15/2013 10:13	0917-173_Nc	13_10_15_1013_20_163	1	0.394	0.993	-0.2950	0.067	0.0510	0.0340	-0.0040	0.0890	-1.584	0.109	-0.00300	0.00200	-0.528	0.304	4.174
					10/15/2013 10:14	0917-173_Nc	13_10_15_1014_20_973	1	-2.000	0.996	-0.018	0.064	0.111	0.0370	-0.1930	0.1640	-1.305	0.103	-0.00400	0.00200	-0.51	0.315	3.767
					10/15/2013 10:15	0917-173_Nc	13_10_15_1015_21_773	1	0.622	1.042	0.0730	0.058	0.216	0.0340	0.0360	0.1650	-0.229	0.096	0.00000	0.00200	-0.777	0.309	1.185

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 10:16	0917-173_Nc	13_10_15_1016_22_594	1	-0.573	1.046	-0.0130	0.057	0.136	0.0350	-0.0190	0.0840	-0.039	0.095	0.00	0.00200	-0.237	0.315	0.449
					10/15/2013 10:17	0917-173_Nc	13_10_15_1017_23_324	1	-0.7110	0.901	-0.0170	0.055	0.157	0.0340	0.0320	0.0730	0.134	0.088	-0.00600	0.00200	-0.873	0.284	0.383
					10/15/2013 10:18	0917-173_Nc	13_10_15_1018_24_144	1	0.999	1.062	0.0460	0.064	2.26	0.0650	0.299	1.141	-0.462	0.103	0.00100	0.00200	-0.395	0.336	3.909
					10/15/2013 10:19	0917-173_Nc	13_10_15_1019_23_844	1	1.193	1.225	0.020	0.0670	3.05	0.0910	0.402	1.688	-0.773	0.117	-0.00400	0.00300	-0.720	0.351	5.806
					10/15/2013 10:20	0917-173_Nc	13_10_15_1020_24_554	1	-1.6730	1.063	0.029	0.068	3.11	0.0910	0.201	1.720	-0.9340	0.114	-0.00700	0.00300	0.16	0.348	6.161
					10/15/2013 10:21	0917-173_Nc	13_10_15_1021_25_404	1	-1.4620	1.199	0.0780	0.067	3.16	0.0890	0.469	1.718	-0.761	0.118	-0.00300	0.00300	-0.51	0.362	6.674
Data	Run	5	Start	A	10/15/2013 10:22	0917-173_Nc	13_10_15_1022_26_154	1	-1.127	1.092	-0.008	0.070	3.04	0.0880	0.493	1.720	-0.903	0.118	-0.00200	0.00300	-0.56	0.342	5.824
					10/15/2013 10:23	0917-173_Nc	13_10_15_1023_26_864	1	1.475	1.077	0.052	0.065	3.12	0.0900	0.430	1.722	-0.660	0.112	-0.00200	0.00300	-0.44	0.332	5.944
					10/15/2013 10:24	0917-173_Nc	13_10_15_1024_27_684	1	-0.6640	1.166	0.195	0.065	3.10	0.0910	0.366	1.717	-0.741	0.113	-0.00200	0.00300	-1.10	0.342	5.739
					10/15/2013 10:25	0917-173_Nc	13_10_15_1025_28_404	1	0.031	1.154	0.102	0.071	2.97	0.0900	0.456	1.718	-0.660	0.120	-0.00800	0.00300	0.15	0.358	5.329
					10/15/2013 10:26	0917-173_Nc	13_10_15_1026_29_214	1	0.624	1.221	-0.047	0.064	2.79	0.0870	0.389	1.712	-0.545	0.111	-0.00400	0.00300	-0.578	0.345	5.098
					10/15/2013 10:27	0917-173_Nc	13_10_15_1027_30_044	1	0.156	1.079	0.067	0.064	2.67	0.0830	0.419	1.705	-0.683	0.109	-0.00300	0.00300	-0.65	0.317	4.943
					10/15/2013 10:28	0917-173_Nc	13_10_15_1028_30_805	1	-0.0030	1.154	0.1370	0.069	2.76	0.0860	0.418	1.699	-0.671	0.113	-0.00200	0.00300	-0.277	0.367	4.988
					10/15/2013 10:29	0917-173_Nc	13_10_15_1029_31_375	1	-0.055	1.175	0.1420	0.068	2.84	0.0880	0.439	1.710	-0.718	0.115	-0.00700	0.00300	-0.756	0.352	5.373
					10/15/2013 10:30	0917-173_Nc	13_10_15_1030_32_205	1	-1.157	1.150	0.123	0.073	2.95	0.0850	0.469	1.713	-0.677	0.121	-0.00400	0.00300	-0.77	0.367	5.465
					10/15/2013 10:31	0917-173_Nc	13_10_15_1031_32_965	1	-1.519	1.084	0.125	0.067	3.03	0.0880	0.287	1.714	-0.707	0.114	-0.00300	0.00300	-0.35	0.351	5.576
					10/15/2013 10:32	0917-173_Nc	13_10_15_1032_33_755	1	0.692	1.087	0.0850	0.063	3.11	0.0870	0.352	1.715	-0.704	0.111	-0.00900	0.00300	-0.58	0.333	5.769
					10/15/2013 10:33	0917-173_Nc	13_10_15_1033_34_495	1	0.166	1.097	0.043	0.073	3.27	0.0910	0.467	1.730	-0.669	0.122	-0.00200	0.00300	-0.47	0.352	6.169
					10/15/2013 10:34	0917-173_Nc	13_10_15_1034_35_205	1	-1.631	1.143	-0.0740	0.070	3.38	0.0920	0.279	1.736	-0.763	0.119	-0.00200	0.00300	-0.08	0.350	6.449
					10/15/2013 10:35	0917-173_Nc	13_10_15_1035_35_975	1	0.310	1.088	-0.048	0.072	3.38	0.0910	0.415	1.748	-0.819	0.119	-0.00500	0.00300	0.22	0.340	6.27
					10/15/2013 10:36	0917-173_Nc	13_10_15_1036_36_815	1	0.047	1.116	0.0590	0.065	3.40	0.0930	0.353	1.743	-0.8580	0.114	-0.00500	0.00300	0.16	0.340	6.296
					10/15/2013 10:37	0917-173_Nc	13_10_15_1037_37_575	1	1.31400	1.199	0.013	0.067	3.13	0.0900	0.438	1.735	-0.533	0.116	-0.00300	0.00300	-0.80	0.356	5.643
					10/15/2013 10:38	0917-173_Nc	13_10_15_1038_38_255	1	0.448	1.142	0.0380	0.068	3.19	0.0890	0.549	1.735	-0.802	0.115	-0.00500	0.00300	-0.69	0.356	5.811
					10/15/2013 10:39	0917-173_Nc	13_10_15_1039_39_115	1	-0.8700	1.161	0.042	0.066	3.32	0.0930	0.524	1.739	-0.864	0.119	-0.00100	0.00300	-0.35	0.350	6.198
					10/15/2013 10:40	0917-173_Nc	13_10_15_1040_39_786	1	0.465	1.205	0.093	0.068	3.26	0.0880	0.421	1.741	-0.796	0.119	-0.00700	0.00300	-0.85	0.362	6.185
					10/15/2013 10:41	0917-173_Nc	13_10_15_1041_40_576	1	0.595	1.145	-0.052	0.070	2.95	0.0900	0.471	1.733	-0.702	0.119	-0.00400	0.00300	-0.10	0.366	5.599
					10/15/2013 10:42	0917-173_Nc	13_10_15_1042_41_326	1	0.7580	1.197	0.034	0.068	2.83	0.0840	0.411	1.732	-0.664	0.116	0.00000	0.00300	-0.51	0.353	5.424
					10/15/2013 10:43	0917-173_Nc	13_10_15_1043_42_126	1	0.4420	1.081	0.080	0.070	2.76	0.0840	0.569	1.723	-0.7660	0.115	-0.00200	0.00300	-0.36	0.364	5.093
					10/15/2013 10:44	0917-173_Nc	13_10_15_1044_42_866	1	1.251	1.088	0.0620	0.066	2.60	0.0820	0.508	1.715	-0.641	0.110	-0.00400	0.00200	-0.908	0.331	4.593
					10/15/2013 10:45	0917-173_Nc	13_10_15_1045_43_686	1	-3.106	1.093	0.018	0.066	2.68	0.0880	0.519	1.721	-0.749	0.112	-0.00200	0.00300	-0.587	0.340	4.98
					10/15/2013 10:46	0917-173_Nc	13_10_15_1046_44_456	1	-0.137	1.063	0.062	0.069	2.64	0.0840	0.579	1.690	-0.570	0.115	-0.00400	0.00300	-0.604	0.358	4.902
					10/15/2013 10:47	0917-173_Nc	13_10_15_1047_45_156	1	0.481	1.135	0.01	0.066	2.51	0.0810	0.614	1.695	-0.640	0.111	-0.00600	0.00200	-0.68	0.344	4.565
					10/15/2013 10:48	0917-173_Nc	13_10_15_1048_45_966	1	0.727	1.117	-0.012	0.068	2.40	0.0810	0.503	1.680	-0.680	0.114	-0.00600	0.00200	-0.70	0.347	4.893
					10/15/2013 10:49	0917-173_Nc	13_10_15_1049_46_776	1	-0.020	1.069	0.050	0.063	2.29	0.0810	0.7700	1.691	-0.669	0.109	-0.00200	0.00300	-0.65	0.327	5.213
					10/15/2013 10:50	0917-173_Nc	13_10_15_1050_47_546	1	-1.4400	1.033	-0.0100	0.063	2.34	0.0840	0.360	1.676	-0.757	0.109	-0.00700	0.00200	-0.56	0.330	5.602
					10/15/2013 10:51	0917-173_Nc	13_10_15_1051_48_286	1	-0.376	1.091	0.088	0.069	2.36	0.0790	0.523	1.695	-0.801	0.116	-0.00500	0.00300	-0.29	0.341	6.084
					10/15/2013 10:52	0917-173_Nc	13_10_15_1052_49_107	1	0.358	1.219	0.143	0.065	2.02	0.0780	0.570	1.680	-0.707	0.114	-0.00300	0.00300	-0.47	0.356	5.957
					10/15/2013 10:53	0917-173_Nc	13_10_15_1053_49_787	1	1.177	1.088	-0.028	0.065	2.08	0.0810	0.488	1.673	-0.785	0.111	-0.00700	0.00200	-0.51	0.329	6.501
					10/15/2013 10:54	0917-173_Nc	13_10_15_1054_50_637	1	-2.184	1.122	-0.025	0.067	2.37	0.0830	0.582	1.695	-0.891	0.117	-0.00300	0.00300	-0.15	0.348	7.583
					10/15/2013 10:55	0917-173_Nc	13_10_15_1055_51_347	1	0.681	1.237	-0.0220	0.067	2.46	0.0860	0.533	1.704	-1.126	0.125	-0.00400	0.00300	-0.37	0.368	8.5
					10/15/2013 10:56	0917-173_Nc	13_10_15_1056_52_137	1	1.591	1.134	0.067	0.072	2.32	0.0820	0.520	1.713	-0.975	0.121	-0.00600	0.00300	-0.75	0.359	7.847
					10/15/2013 10:57	0917-173_Nc	13_10_15_1057_52_947	1	0.8880	1.190	0.0470	0.070	2.28	0.0850	0.557	1.705	-1.097	0.125	-0.00500	0.00300	0.19	0.378	8.385
					10/15/2013 10:58	0917-173_Nc	13_10_15_1058_53_697	1	-1.611	1.179	0.0860	0.068	2.51	0.0830	0.508	1.714	-1.057	0.123	-0.00900	0.00300	-0.43	0.354	8.651
					10/15/2013 10:59	0917-173_Nc	13_10_15_1059_54_417	1	0.3700	1.081	0.034	0.067	2.44	0.0820	0.595	1.722	-0.923	0.118	-0.00600	0.00200	-0.44	0.350	8.361
					10/15/2013 11:00	0917-173_Nc	13_10_15_1100_55_187	1	0.740	1.126	-0.153	0.063	2.65	0.0860	0.527	1.735	-1.1500	0.114	-0.00500	0.00300	-0.27	0.343	7.994
					10/15/2013 11:01	0917-173_Nc	13_10_15_1101_55_987	1	0.843	1.090	-0.0210	0.0640	2.70	0.0850	0.592	1.733	-0.952	0.115	-0.00300	0.00300	-0.54	0.322	7.798
					10/15/2013 11:02	0917-173_Nc	13_10_15_1102_56_697	1	-1.2200	1.129	-0.0530	0.068	2.61	0.0810	0.619	1.726	-0.797	0.118	0.00200	0.00300	-0.90	0.352	6.814
					10/15/2013 11:03	0917-173_Nc	13_10_15_1103_57_478	1	-1.250	1.123	0.053	0.070	2.85	0.0830	0.595	1.731	-0.980	0.121	-0.00200	0.00300	-0.63	0.348	7.244
					10/15/2013 11:04	0917-173_Nc	13_10_15_1104_58_198	1	2.745	1.132	-0.050	0.070	3.00	0.0880	0.396	1.746	-0.9470	0.123	-0.00400	0.00200	0.15	0.351	7.322
					10/15/2013 11:05	0917-173_Nc	13_10_15_1105_59_018	1	0.540	1.211	0.0150	0.068	2.68	0.0860	0.402	1.739	-1.017	0.123	-0.00200	0.00300	-0.36	0.361	6.759
					10/15/2013 11:06	0917-173_Nc	13_10_15_1106_59_828	1	-0.60100	1.081	-0.0230	0.065	2.46	0.0840	0.596	1.721	-0.753	0.108	-0.00400	0.00300	-0.23	0.334	5.533
					10/15/2013 11:08	0917-173_Nc	13_10_15_1108_00_548	1	2.124	1.164	-0.0090	0.064	2.31	0.0810	0.574	1.709	-0.658	0.112	-0.00400	0.00200	-0.70	0.344	5.282
					10/15/2013 11:09	0917-173_Nc	13_10_15_1109_01_358	1	-0.388	1.157	0.0140	0.063	2.24	0.0810	0.512	1.692	-0.727	0.109	-0.00400	0.00300	-0.69	0.341	4.798
					10/15/2013 11:10	0917-173_Nc	13_10_15_1110_02_068	1	-0.960	1.213	0.0270	0.070	2.17	0.0800	0.621	1.703	-0.568	0.115	-0.00600	0.00200	-0.695	0.361	4.573
					10/15/2013 11:11	0917-173_Nc	13_10_15_1111_02_698	1	-0.065	1.160	0.060	0.064	2.48	0.0800	0.647	1.699	-0.535	0.113	-0.00600	0.00200	-0.64	0.343	5.209
					10/15/2013 11:12	0917-173_Nc	13_10_15_1112_03_558	1	-1.197	1.119	0.148	0.068	2.49	0.0820	0.514	1.700	-0.668	0.112	-0.00300	0.00200	-0.22	0.347	5.3
					10/15/2013 11:13	0917-173_Nc	13_10_15_1113_04_308	1	-0.604	1.169	0.064	0.066	2.39	0.0810	0.500	1.700	-0.561	0.113	-0.00100	0.00300	-0.64	0.364	4.961
					10/15/2013 11:14	0917-173_Nc	13_10_15_1114_05_028	1	0.351	1.118	0.062	0.069	2.47	0.0790	0.418	1.692	-0.734	0.116	-0.00200	0.00200	-0.527	0.361	4.842
					10/15/2013 11:15	0917-173_Nc	13_10_15_1115_05_778	1	-0.9760	1.171	0.006	0.065	2.46	0.0820	0.662	1.692	-0.785	0.112	-0.00500	0.00300	-0.11	0.348	4.712
					10/15/2013 11:16	0917-173_Nc	13_10_15_1116_06_589	1	-0.07600	1.152	0.012	0.065	2.63	0.0820	0.711	1.712	-0.757	0.112	-0.00200	0.00300	-0.48	0.344	5.084
					10/15/2013 11:17	0917-173_Nc	13_10_15_1117_07_339	1	-1.266	1.088	-0.0340	0.067	2.80	0.0860	0.647	1.732	-0.621	0.114	-0.00400	0.00300	-0.955	0.345	5.552
					10/15/2013 11:18	0917-173_Nc	13_10_15_1118_08_079	1	0.740	1.077	0.098	0.070	2.84	0.0860	0.575	1.731	-0.595	0.115	-0.00500	0.00200	-0.75	0.360	5.869
					10/15/2013 11:19	0917-173_Nc	13_10_15_1119_08_799	1	1.384	1.059	0.0890	0.069	2.67	0.0850	0.506	1.717	-0.825	0.113	-0.00500	0.00300	0.06	0.353	5.193
					10/15/2013 11:20	0917-173_Nc	13_10_15_1120_09_639	1	-2.7670	1.124	0.0070	0.067	2.51	0.0850	0.638	1.729	-0.584	0.115	-0.00900	0.00300	-0.84	0.342	5.053
					10/15/2013 11:21	0917-173_Nc	13_10_15_1121_10_369	1	1.208	1.044	0.065	0.066	2.58	0.0820	0.587	1.718	-0.712	0.110	-0.00400	0.00300	-1.266	0.334	5.012
			Stop		10/15/2013 11:22	0917-173_Nc	13_10_15_1122_11_139	1	-0.081	1.134	-0.002	0.0620	1.69	0.0640	0.4870	1.325	-0.822	0.108	-0.00600	0.00200	-0.62	0.347	4.318
					10/15/2013 11:23	0917-173_Nc	13_10_15_1123_11_899	1	-0.120	0.949	-0.078	0.064	0.153	0.0340	0.0240	0.209	-1.387	0.103	0.00000	0.00200	-1.012	0.306	4.11
					10/15/2013 11:24	0917-173_Nc	13_10_15_1124_12_709	1	-1.0330	1.021	-0.0800	0.065	0.0230	0.0360	-0.092	0.1010	-1.501	0.108	0.00300	0.00200	-0.415	0.317	4.024
					10/15/2013 11:25	0917-173_Nc	13_10_15_1125_13_419	1	-2.080	0.992	-0.090	0.061	0.092	0.0340	-0.0190	0.0840	-1.336	0.103	-0.00200	0.00200	-0.778	0.306	3.98
					10/15/2013 11:26	0917-173_Nc	13_10_15_1126_14_229	1	-1.734	0.965	-0.0690	0.066	0.0610	0.0360	-0.0900	0.0800	-1.401	0.106	0.00	0.00200	-0.408	0.318	3.998
					10/15/2013 11:27	0917-173_Nc	13_10_15_1127_15_039	1	1.318	0.946	0.090	0.062	0.1170	0.0400	0.2870	0.554	-0.994	0.099	-0.00200	0.00200	-0.482	0.310	3.602
					10/15/2013 11:28	0917-173_Nc	13_10_15_1128_15_740	1	0.3580	1.201	0.0850	0.059	0.1530	0.0590	0.5110	1.309	-0.442	0.103	-0.00200	0.00200	-0.328	0.344	2.438
					10/15/2013 11:29	0917-173_Nc	13_10_15_1129_16_560	1	-0.7050	1.098	0.0570	0.064	0.215	0.0610	0.433	1.400	-0.303	0.110	-0.00100	0.00300	-0.65	0.334	5.254
					10/15/2013 11:30	0917-173_Nc	13_10_15_1130_17_280	1	-0.197	1.057	0.223	0.065	0.598	0.0650	0.634	1.435	-0.69	0.128	0.00000	0.00200	-0.79	0.328	12.261
					10/15/2013 11:31	0917-173_Nc	13_10_15_1131_18_090	1	-0.777	1.099	0.561	0.093	1.98	0.079	0.337	1.630	-1.87	0.287	-0.0040	0.00300	-1.25	0.355	42.447
					10/15/2013 11:32	0917-173_Nc	13_10_15_1132_18_840	1	3.38500	1.043	0.114	0.0650	0.377	0.0610	0.332	1.384	-0.57	0.117	-0.00400	0.00200	-1.26	0.329	8.795
					10/15/2013 11:33	0917-173_Nc	13_10_15_1133_19_640	1	0.893	1.012	0.169	0.064	0.1030	0.0590	0.6460	1.318	-0.113	0.101	-0.00500	0.00200	-0.979	0.330	1.612
					10/15/2013 11:34	0917-173_Nc	13_10_15_1134_20_440	1	0.4480	1.064	0.041	0.067	1.84	0.0760	0.430	1.576	-0.522	0.110	-0.00700	0.00200	-0.77	0.343	3.856
					10/15/2013 11:35	0917-173_Nc	13_10_15_1135_21_150	1	0.0150	1.177	0.171	0.066	2.73	0.0830	0.598	1.706	-0.622	0.114	-0.00500	0.00300	-0.39	0.368	5.095
					10/15/2013 11:36	0917-173_Nc	13_10_15_1136_21_900	1	1.6630	1.123	0.0310	0.070	2.88	0.0820	0.584	1.708	-0.799	0.119	-0.00700	0.00200	-0.68	0.363	5.621
					10/15/2013 11:37	0917-173_Nc	13_10_15_1137_22_650	1	-0.484	1.220	0.0510	0.0650	2.78	0.0830	0.450	1.709	-0.732	0.114	-0.00500	0.00300	-0.36	0.352	5.208
					10/15/2013 11:38	0917-173_Nc	13_10_15_1138_23_470	1	2.108	1.091	0.0080	0.070	2.74	0.0830	0.434	1.713	-0.576	0.115	-0.00600	0.00300	-0.30	0.352	4.963
					10/15/2013 11:39	0917-173_Nc	13_10_15_1139_24_240	1	0.3530	1.074	0.139	0.071	2.76	0.0830	0.517	1.706	-0.701	0.117	-0.00200	0.00200	-0.78	0.355	5.249
Data	Run	6	Start	A	10/15/2013 11:40	0917-173_Nc	13_10_15_1140_25_001	1	-0.691	1.202	0.069	0.065	2.78	0.0830	0.461	1.717	-0.593	0.115	-0.00400	0.00300	-1.38	0.353	5.511
					10/15/2013 11:41	0917-173_Nc	13_10_15_1141_25_741	1	-2.501	1.155	0.064	0.070	2.75	0.0840	0.558	1.703	-0.650	0.118	-0.00400	0.00200	-0.48	0.371	5.38
					10/15/2013 11:42	0917-173_Nc	13_10_15_1142_26_581	1	1.075	1.090	0.091	0.064	2.85	0.0840	0.614	1.712	-0.854	0.112	-0.00800	0.00300	-0.30	0.338	5.72
					10/15/2013 11:43	0917-173_Nc	13_10_15_1143_27_311	1	-0.816	1.134	-0.046	0.066	2.98	0.0840	0.475	1.719	-0.688	0.114	-0.00100	0.00300	-0.84	0.355	6.069
					10/15/2013 11:44	0917-173_Nc	13_10_15_1144_28_151	1	0.396	1.138	0.065	0.071	2.83	0.0850	0.7570	1.727	-0.746	0.119	-0.00700	0.00300	-0.55	0.355	5.7
					10/15/2013 11:45	0917-173_Nc	13_10_15_1145_28_901	1	0.159	1.136	0.112	0.069	2.99	0.0830	0.491	1.705	-0.743	0.116	-0.00500	0.00300	-0.955	0.353	6.256
					10/15/2013 11:46	0917-173_Nc	13_10_15_1146_29_691	1	-0.358	1.141	-0.0680	0.069	2.93	0.0850	0.503	1.723	-0.906	0.120	-0.00100	0.00200	-0.48	0.349	7.406
					10/15/2013 11:47	0917-173_Nc	13_10_15_1147_30_411	1	0.426	1.111	0.009	0.067	2.67	0.0830	0.637	1.718	-0.830	0.118	-0.00600	0.00300	-1.01	0.340	6.982
					10/15/2013 11:48	0917-173_Nc	13_10_15_1148_31_121	1	-0.404	1.129	0.179	0.073	2.79	0.0800	0.644	1.734	-0.821	0.124	-0.01100	0.00200	-0.66	0.367	7.811
					10/15/2013 11:49	0917-173_Nc	13_10_15_1149_31_961	1	0.632	1.184	0.076	0.069	2.77	0.0820	0.648	1.720	-1.009	0.124	-0.00200	0.00300	-0.37	0.364	7.496
					10/15/2013 11:50	0917-173_Nc	13_10_15_1150_32_751	1	-2.4280	1.120	0.134	0.070	2.67	0.0820	0.588	1.713	-0.836	0.120	-0.00300	0.00300	-1.14	0.356	7.111
					10/15/2013 11:51	0917-173_Nc	13_10_15_1151_33_422	1	0.295	1.225	-0.0800	0.068	2.70	0.0840	0.575	1.706	-0.966	0.122	-0.00300	0.00300	-0.42	0.360	7.837
					10/15/2013 11:52	0917-173_Nc	13_10_15_1152_34_122	1	1.626	1.106	0.001	0.068	3.03	0.0820	0.359	1.736	-0.978	0.122	-0.01200	0.00300	-0.72	0.344	8.053
					10/15/2013 11:53	0917-173_Nc	13_10_15_1153_34_872	1	2.400	1.182	0.070	0.070	3.08	0.0840	0.656	1.730	-0.808	0.125	-0.00600	0.00300	-1.23	0.350	7.778
					10/15/2013 11:54	0917-173_Nc	13_10_15_1154_35_682	1	0.4710	1.191	0.0030	0.069	2.98	0.0870	0.574	1.739	-0.973	0.123	-0.00200	0.00300	-0.44	0.360	7.947
					10/15/2013 11:55	0917-173_Nc	13_10_15_1155_36_432	1	0.0570	1.079	0.084	0.065	3.08	0.0840	0.621	1.733	-0.9290	0.119	-0.00400	0.00300	0.15	0.346	8.761
					10/15/2013 11:56	0917-173_Nc	13_10_15_1156_37_172	1	1.584	1.128	0.0670	0.070	2.93	0.0850	0.635	1.735	-0.892	0.124	-0.00100	0.00300	-0.34	0.348	8.603
					10/15/2013 11:57	0917-173_Nc	13_10_15_1157_37_932	1	-0.552	1.112	0.0580	0.070	3.06	0.0860	0.660	1.742	-0.985	0.125	-0.00300	0.00200	-0.41	0.362	9.147
					10/15/2013 11:58	0917-173_Nc	13_10_15_1158_38_682	1	-1.773	1.129	0.0280	0.071	3.31	0.0860	0.6770	1.748	-1.1190	0.129	-0.00500	0.00200	-0.43	0.346	10.325
					10/15/2013 11:59	0917-173_Nc	13_10_15_1159_39_342	1	0.532	1.170	-0.062	0.072	3.19	0.0870	0.677	1.759	-0.928	0.132	-0.00600	0.00300	-0.33	0.359	10.323
					10/15/2013 12:00	0917-173_Nc	13_10_15_1200_40_092	1	-1.326	1.131	0.0920	0.063	2.75	0.0840	0.602	1.738	-0.790	0.115	0.00	0.00300	-0.53	0.340	8.154
					10/15/2013 12:01	0917-173_Nc	13_10_15_1201_40_852	1	1.788	1.131	0.044	0.066	2.90	0.0860	0.625	1.741	-1.024	0.117	-0.00700	0.00300	-0.23	0.341	8.278
					10/15/2013 12:02	0917-173_Nc	13_10_15_1202_41_642	1	0.441	1.115	-0.0370	0.070	2.98	0.0830	0.587	1.727	-0.937	0.119	-0.00400	0.00300	-0.39	0.341	8.812
					10/15/2013 12:03	0917-173_Nc	13_10_15_1203_42_383	1	1.741	1.070	0.083	0.0670	2.98	0.0850	0.497	1.724	-0.843	0.118	-0.00600	0.00300	-0.44	0.338	8.57
					10/15/2013 12:04	0917-173_Nc	13_10_15_1204_43_183	1	0.28200	1.126	0.055	0.068	3.05	0.0860	0.521	1.730	-0.969	0.12	-0.00500	0.00300	-0.83	0.361	8.154
					10/15/2013 12:05	0917-173_Nc	13_10_15_1205_43_893	1	1.079	1.114	0.161	0.069	2.80	0.0850	0.560	1.729	-0.723	0.12	-0.00600	0.00300	-1.00	0.355	7.236
					10/15/2013 12:06	0917-173_Nc	13_10_15_1206_44_713	1	0.35000	1.071	0.067	0.064	2.78	0.0820	0.556	1.716	-0.872	0.11	-0.00400	0.00300	-0.16	0.325	6.838
					10/15/2013 12:07	0917-173_Nc	13_10_15_1207_45_493	1	1.274	1.034	0.048	0.0620	2.91	0.0830	0.704	1.726	-0.868	0.11	-0.00100	0.00300	-0.93	0.319	7.397
					10/15/2013 12:08	0917-173_Nc	13_10_15_1208_46_233	1	-1.0050	1.075	0.118	0.066	3.03	0.0820	0.535	1.730	-0.950	0.12	-0.00500	0.00200	-0.24	0.344	7.525
					10/15/2013 12:09	0917-173_Nc	13_10_15_1209_46_983	1	-0.153	1.090	-0.0310	0.061	2.76	0.0830	0.743	1.719	-0.941	0.11	-0.00300	0.00300	-1.00	0.333	6.649
					10/15/2013 12:10	0917-173_Nc	13_10_15_1210_47_703	1	-0.0720	1.073	0.040	0.064	2.80	0.0800	0.631	1.715	-0.723	0.11	-0.00100	0.00300	-0.65	0.339	6.229
					10/15/2013 12:11	0917-173_Nc	13_10_15_1211_48_473	1	1.650	1.033	0.0220	0.0600	2.82	0.0830	0.664	1.720	-0.751	0.11	-0.00100	0.00200	-0.74	0.312	6.99
					10/15/2013 12:12	0917-173_Nc	13_10_15_1212_49_233	1	-2.110	1.036	0.0570	0.064	2.74	0.0800	0.532	1.726	-0.732	0.11	0.00000	0.00300	-0.56	0.342	6.6
					10/15/2013 12:13	0917-173_Nc	13_10_15_1213_50_073	1	1.314	1.140	0.062	0.063	2.92	0.0820	0.602	1.730	-1.035	0.11	-0.00500	0.00300	0.30	0.334	6.788
					10/15/2013 12:14	0917-173_Nc	13_10_15_1214_50_783	1	-0.8810	1.117	0.061	0.063	2.96	0.0830	0.696	1.726	-0.938	0.11	0.00	0.00300	-0.74	0.335	7.218
					10/15/2013 12:15	0917-173_Nc	13_10_15_1215_51_544	1	1.514	1.105	0.079	0.062	2.84	0.0800	0.628	1.732	-0.751	0.11	-0.00500	0.00200	-0.94	0.338	6.888
					10/15/2013 12:16	0917-173_Nc	13_10_15_1216_52_314	1	-0.710	1.038	-0.0090	0.065	2.90	0.0810	0.598	1.717	-0.849	0.12	-0.00300	0.00300	-0.67	0.325	7.561
					10/15/2013 12:17	0917-173_Nc	13_10_15_1217_53_134	1	0.043	1.085	0.075	0.067	2.91	0.0820	0.590	1.725	-1.043	0.12	-0.00500	0.00300	-0.11	0.341	8.436
					10/15/2013 12:18	0917-173_Nc	13_10_15_1218_53_834	1	0.1870	1.100	0.105	0.0640	2.92	0.0820	0.514	1.731	-1.006	0.12	-0.00700	0.00300	-0.51	0.330	8.664
					10/15/2013 12:19	0917-173_Nc	13_10_15_1219_54_644	1	-2.878	1.042	0.073	0.065	2.85	0.0820	0.673	1.735	-1.009	0.11	-0.00300	0.00300	-0.53	0.334	8.708
					10/15/2013 12:20	0917-173_Nc	13_10_15_1220_55_414	1	-0.8070	1.053	-0.0780	0.066	2.92	0.0840	0.635	1.740	-1.032	0.12	-0.00400	0.00300	-0.25	0.332	9.502
					10/15/2013 12:21	0917-173_Nc	13_10_15_1221_56_164	1	-0.3020	1.162	0.039	0.069	2.67	0.0840	0.608	1.730	-1.007	0.12	-0.00100	0.00300	-0.77	0.349	8.4
					10/15/2013 12:22	0917-173_Nc	13_10_15_1222_56_874	1	1.0500	1.045	0.036	0.065	2.60	0.0830	0.588	1.732	-0.980	0.11	-0.00400	0.00200	-0.59	0.331	8.307
					10/15/2013 12:23	0917-173_Nc	13_10_15_1223_57_684	1	-1.0540	1.037	0.095	0.066	2.88	0.0840	0.526	1.732	-1.057	0.12	-0.00400	0.00300	-0.45	0.320	9.509
					10/15/2013 12:24	0917-173_Nc	13_10_15_1224_58_414	1	2.259	1.107	-0.05300	0.067	3.06	0.0880	0.715	1.746	-1.013	0.12	-0.00400	0.00300	-0.46	0.349	9.922
					10/15/2013 12:25	0917-173_Nc	13_10_15_1225_59_224	1	-0.686	1.017	0.009	0.068	2.95	0.0880	0.552	1.744	-1.047	0.12	-0.00400	0.00300	-0.92	0.327	9.408
					10/15/2013 12:27	0917-173_Nc	13_10_15_1227_00_014	1	0.602	1.189	0.0010	0.067	2.91	0.0860	0.600	1.764	-1.155	0.12	-0.00400	0.00300	-0.06	0.354	9.883
					10/15/2013 12:29	0917-173_Nc	13_10_15_1229_11_590	1	-0.695	1.145	0.0350	0.066	3.04	0.0870	0.640	1.762	-1.124	0.13	-0.00400	0.00300	-0.62	0.339	10.424
					10/15/2013 12:30	0917-173_Nc	13_10_15_1230_12_390	1	-1.6670	1.077	0.074	0.074	3.03	0.0890	0.703	1.756	-1.054	0.13	-0.00400	0.00300	-1.07	0.347	10.238
					10/15/2013 12:31	0917-173_Nc	13_10_15_1231_13_200	1	0.041	1.115	-0.08300	0.069	3.02	0.0880	0.489	1.759	-1.149	0.13	-0.00500	0.00300	-0.46	0.343	10.159
					10/15/2013 12:32	0917-173_Nc	13_10_15_1232_13_940	1	-0.663	1.064	0.028	0.069	2.89	0.0850	0.493	1.755	-1.220	0.13	-0.01000	0.00300	-0.46	0.342	10.509
					10/15/2013 12:33	0917-173_Nc	13_10_15_1233_14_750	1	3.2480	1.247	-0.0070	0.068	2.95	0.0860	0.509	1.743	-1.156	0.13	-0.00300	0.00300	-0.47	0.368	10.805
					10/15/2013 12:34	0917-173_Nc	13_10_15_1234_15_450	1	-0.368	1.043	0.081	0.070	2.94	0.0890	0.554	1.754	-1.023	0.13	-0.00600	0.00300	-0.62	0.340	10.871
					10/15/2013 12:35	0917-173_Nc	13_10_15_1235_16_170	1	0.534	1.205	-0.087	0.069	3.03	0.0880	0.617	1.779	-1.414	0.13	-0.00700	0.00300	-0.04	0.352	11.812
					10/15/2013 12:36	0917-173_Nc	13_10_15_1236_16_880	1	0.3180	1.147	0.028	0.069	3.02	0.0900	0.583	1.774	-1.145	0.133	-0.00500	0.00300	-0.20	0.349	11.498
					10/15/2013 12:37	0917-173_Nc	13_10_15_1237_17_630	1	1.020	1.050	0.034	0.070	2.97	0.0880	0.609	1.776	-1.083	0.132	-0.00300	0.00300	-0.68	0.347	11.877
					10/15/2013 12:38	0917-173_Nc	13_10_15_1238_18_480	1	0.6380	1.124	0.075	0.068	3.00	0.0880	0.601	1.762	-1.164	0.130	-0.00600	0.00300	-0.46	0.354	11.565
					10/15/2013 12:39	0917-173_Nc	13_10_15_1239_19_230	1	0.432	1.154	-0.0660	0.070	2.88	0.0890	0.549	1.776	-1.112	0.130	-0.00500	0.00300	-0.52	0.353	11.24
			Stop		10/15/2013 12:40	0917-173_Nc	13_10_15_1240_19_910	1	0.899	1.146	0.0710	0.071	2.92	0.0900	0.505	1.778	-1.068	0.137	-0.00500	0.00300	-0.83	0.363	10.928
					10/15/2013 12:41	0917-173_Nc	13_10_15_1241_20_701	1	-0.063	1.177	0.053	0.068	2.42	0.0790	0.663	1.697	-0.820	0.123	-0.00100	0.00300	-0.67	0.361	9.043
					10/15/2013 12:48	0917-173_Nc	13_10_15_1248_06_391	1	0.56	1.133	0.1480	0.138	3.45	0.093	0.337	1.703	-2.52	0.502	-0.0020	0.00400	-1.9	0.39	77.317
					10/15/2013 12:49	0917-173_Nc	13_10_15_1249_07_101	1	-0.564	1.199	0.1330	0.147	3.75	0.099	0.367	1.705	-2.62	0.569	-0.0040	0.00400	-2.7	0.42	89.342
					10/15/2013 12:50	0917-173_Nc	13_10_15_1250_07_921	1	-2.21	1.138	0.204	0.153	3.74	0.101	0.107	1.703	-2.55	0.585	-0.0040	0.00500	-2.8	0.42	90.852
					10/15/2013 12:51	0917-173_Nc	13_10_15_1251_08_741	1	-1.54	1.196	0.137	0.152	3.74	0.100	0.279	1.666	-2.82	0.586	-0.0030	0.00400	-2.6	0.42	91.395
					10/15/2013 12:52	0917-173_Nc	13_10_15_1252_09_461	1	-0.46	1.203	0.029	0.153	3.71	0.102	0.356	1.669	-2.65	0.581	-0.0020	0.00400	-2.7	0.43	90.572
					10/15/2013 12:53	0917-173_Nc	13_10_15_1253_10_282	1	1.737	1.113	0.019	0.110	2.35	0.086	0.205	1.602	-1.79	0.388	-0.0030	0.00300	-2.2	0.368	53.559

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 12:54	0917-173_Nc	13_10_15_1254_11_012	1	-1.412	1.042	0.072	0.066	0.240	0.0630	0.5040	1.352	-0.334	0.109	-0.00200	0.00200	-0.45	0.335	5.084
					10/15/2013 12:55	0917-173_Nc	13_10_15_1255_11_762	1	1.010	1.081	0.090	0.062	0.0910	0.0610	0.4910	1.313	-0.123	0.102	-0.00800	0.00300	-0.7160	0.335	1.987
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_08_205	1	1.0	1.4	-0.376	0.087	-0.42	1.57	-0.0930	0.1070	-0.116	0.137	0.066	0.633	0.1350	0.446	-1.974
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_26_705	1	-1.3	1.5	0.01800	0.085	-0.36	1.61	0.116	0.1100	0.110	0.139	0.058	0.647	-0.389	0.450	-2.018
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_45_395	1	-1.1	1.6	-0.138	0.088	-0.44	1.64	-0.186	0.1040	-0.010	0.145	0.076	0.656	0.20	0.485	-2.032
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_03_885	1	0.2	1.5	-0.303	0.083	-0.46	1.65	-0.0930	0.1030	0.054	0.136	0.054	0.661	-0.398	0.454	-2.068
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_22_355	1	-1.3	1.5	-0.205	0.086	-0.44	1.66	-0.2570	0.1080	-0.185	0.139	0.055	0.661	0.80	0.463	-2.083
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_41_005	1	0.8	1.5	-0.0870	0.083	-0.42	1.66	-0.1020	0.1110	-0.1620	0.135	0.073	0.661	0.151	0.448	-2.087
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_59_495	1	1.6	1.5	-0.0350	0.084	-0.44	1.66	-0.1050	0.1000	-0.038	0.137	0.061	0.663	-0.5180	0.457	-2.06
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_17_965	1	2.2	1.5	0.037	0.082	-0.49	1.66	-0.0890	0.1100	-0.051	0.135	0.067	0.659	-0.532	0.451	-2.092
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_36_575	1	-2.9	1.4	-0.166	0.089	-0.47	1.66	-0.1390	0.1040	0.006	0.138	0.062	0.662	0.2650	0.442	-2.097
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_55_075	1	4.0	1.5	0.1400	0.087	-0.50	1.66	0.148	0.1040	0.177	0.139	0.073	0.657	-1.688	0.459	-2.093
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_13_675	1	3.4	1.6	0.032	0.081	-0.48	1.66	-0.0300	0.1180	-0.19900	0.137	0.076	0.660	-0.056	0.454	-2.085
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_32_115	1	-1.0	1.5	0.232	0.086	-0.63	1.66	-0.2180	0.1100	-0.033	0.135	0.059	0.660	-0.749	0.453	-2.071
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_50_625	1	1.1	1.7	-0.0870	0.080	-0.59	1.66	-0.0590	0.1150	-0.301	0.136	0.063	0.660	0.08	0.467	-2.065
					10/15/2013 13:33	0917-173_Nc	13_10_15_1333_17_119	1	-0.073	1.133	-0.027	0.087	1.079	0.0870	0.4190	1.807	-2.625	0.232	-0.00700	0.00300	-0.41	0.370	32.764
					10/15/2013 13:34	0917-173_Nc	13_10_15_1334_17_799	1	1.402	1.199	-0.061	0.083	1.093	0.0880	0.4970	1.805	-2.482	0.223	-0.00600	0.00300	-0.49	0.357	32.813
					10/15/2013 13:35	0917-173_Nc	13_10_15_1335_18_609	1	0.258	1.225	-0.027	0.078	1.061	0.0880	0.5060	1.790	-2.461	0.228	-0.00200	0.00300	-0.85	0.349	32.367
					10/15/2013 13:36	0917-173_Nc	13_10_15_1336_19_359	1	1.896	1.202	0.015	0.082	1.063	0.0900	0.396	1.780	-2.658	0.240	-0.00900	0.00300	-0.64	0.366	34.447
					10/15/2013 13:37	0917-173_Nc	13_10_15_1337_20_129	1	-0.351	1.213	-0.090	0.084	1.008	0.0880	0.421	1.784	-2.739	0.241	-0.00100	0.00300	-0.35	0.361	34.468
					10/15/2013 13:38	0917-173_Nc	13_10_15_1338_20_929	1	-0.073	1.127	-0.340	0.096	0.359	0.0490	0.3410	0.798	-3.704	0.194	0.00	0.00200	-1.45	0.403	19.232
					10/15/2013 13:39	0917-173_Nc	13_10_15_1339_21_689	1	-0.267	1.018	-0.571	0.111	-0.0510	0.0480	-0.065	0.1530	-4.44	0.193	-0.01	0.00200	-1.82	0.433	12.66
					10/15/2013 13:40	0917-173_Nc	13_10_15_1340_22_460	1	0.074	1.005	-0.677	0.107	-0.0850	0.0470	0.0300	0.1070	-4.40	0.190	-0.00800	0.00200	-1.98	0.442	12.318
					10/15/2013 13:41	0917-173_Nc	13_10_15_1341_23_230	1	-0.246	1.044	-0.681	0.117	-0.0790	0.0470	0.0580	0.1000	-4.43	0.197	-0.00500	0.00200	-1.60	0.461	12.232
					10/15/2013 13:42	0917-173_Nc	13_10_15_1342_23_980	1	-0.551	1.005	-0.6210	0.113	-0.0770	0.0460	-0.114	0.0970	-4.48	0.194	-0.00500	0.00200	-0.75	0.446	12.159
					10/15/2013 13:43	0917-173_Nc	13_10_15_1343_24_780	1	0.028	1.008	-0.525	0.109	-0.0270	0.0450	0.0550	0.1260	-4.39	0.186	0.00000	0.00200	-0.96	0.432	12.61
					10/15/2013 13:44	0917-173_Nc	13_10_15_1344_25_530	1	2.347	1.110	-0.130	0.080	0.821	0.0730	0.459	1.574	-2.897	0.212	-0.00900	0.00300	-1.17	0.340	29.361
					10/15/2013 13:45	0917-173_Nc	13_10_15_1345_26_340	1	0.952	1.212	-0.026	0.085	1.008	0.0870	0.6090	1.793	-2.80	0.247	-0.00700	0.00300	-0.39	0.394	35.27
					10/15/2013 13:46	0917-173_Nc	13_10_15_1346_27_110	1	-0.611	1.178	-0.035	0.083	0.960	0.0860	0.5510	1.771	-2.75	0.251	-0.00300	0.00300	-0.71	0.354	36.785
					10/15/2013 13:47	0917-173_Nc	13_10_15_1347_27_820	1	1.486	1.181	0.017	0.082	1.052	0.0870	0.47400	1.779	-2.883	0.250	-0.00400	0.00400	-0.64	0.361	37.235
Data	Run	13	Start	A	10/15/2013 13:48	0917-173_Nc	13_10_15_1348_28_550	1	2.761	1.175	-0.064	0.089	1.032	0.0880	0.4600	1.773	-2.86	0.270	-0.00500	0.00300	-1.02	0.365	39.436
					10/15/2013 13:49	0917-173_Nc	13_10_15_1349_29_260	1	2.384	1.297	-0.066	0.091	1.064	0.0900	0.58500	1.775	-3.247	0.278	-0.00100	0.00300	-0.24	0.402	41.066
					10/15/2013 13:50	0917-173_Nc	13_10_15_1350_30_070	1	1.522	1.182	-0.038	0.088	1.137	0.0900	0.47	1.791	-2.900	0.263	-0.00900	0.00300	-0.36	0.360	38.873
					10/15/2013 13:51	0917-173_Nc	13_10_15_1351_30_870	1	0.921	1.199	0.017	0.088	1.132	0.0890	0.4100	1.780	-2.79	0.263	0.00000	0.00300	-1.35	0.381	38.249
					10/15/2013 13:52	0917-173_Nc	13_10_15_1352_31_591	1	0.202	1.254	0.010	0.090	1.115	0.0880	0.4830	1.781	-3.130	0.274	-0.00400	0.00300	-0.55	0.383	39.411
					10/15/2013 13:53	0917-173_Nc	13_10_15_1353_32_351	1	1.833	1.219	0.024	0.089	1.130	0.0890	0.5550	1.786	-3.265	0.276	-0.00800	0.00300	-0.51	0.377	40.529
					10/15/2013 13:54	0917-173_Nc	13_10_15_1354_33_161	1	0.796	1.254	0.074	0.090	1.159	0.0880	0.4050	1.788	-3.05	0.277	-0.00300	0.00300	-0.97	0.367	39.923
					10/15/2013 13:55	0917-173_Nc	13_10_15_1355_33_891	1	-1.421	1.193	-0.006	0.087	1.119	0.0910	0.40000	1.781	-3.005	0.257	-0.0100	0.00400	-0.22	0.377	37.687
					10/15/2013 13:56	0917-173_Nc	13_10_15_1356_34_631	1	0.700	1.177	-0.073	0.084	1.151	0.0850	0.271	1.777	-2.88	0.256	-0.00900	0.00300	-1.27	0.361	36.952
					10/15/2013 13:57	0917-173_Nc	13_10_15_1357_35_441	1	1.542	1.123	-0.154	0.084	1.085	0.0870	0.4740	1.768	-2.644	0.244	-0.00500	0.00300	-0.59	0.367	35.464
					10/15/2013 13:58	0917-173_Nc	13_10_15_1358_36_181	1	-1.121	1.191	-0.059	0.082	1.019	0.0860	0.5600	1.764	-2.705	0.235	-0.00700	0.00400	-0.26	0.370	34.498
					10/15/2013 13:59	0917-173_Nc	13_10_15_1359_36_931	1	0.902	1.256	0.059	0.084	0.971	0.0860	0.701	1.779	-2.761	0.246	-0.00500	0.00300	-0.55	0.380	34.161
					10/15/2013 14:00	0917-173_Nc	13_10_15_1400_37_771	1	-1.409	1.100	-0.10200	0.080	1.105	0.0870	0.601	1.764	-2.554	0.232	-0.00300	0.00300	-1.17	0.345	34.17
					10/15/2013 14:01	0917-173_Nc	13_10_15_1401_38_521	1	0.2830	1.316	0.120	0.079	1.061	0.0890	0.5690	1.777	-2.675	0.240	-0.00200	0.00300	-1.31	0.388	34.892
					10/15/2013 14:02	0917-173_Nc	13_10_15_1402_39_241	1	2.138	1.169	-0.039	0.085	1.144	0.0860	0.51000	1.790	-2.70	0.246	-0.00200	0.00300	-0.87	0.373	35.757
					10/15/2013 14:03	0917-173_Nc	13_10_15_1403_40_061	1	0.223	1.247	-0.020	0.079	1.114	0.0890	0.5740	1.774	-2.639	0.243	-0.00500	0.00400	-0.74	0.376	35.444
					10/15/2013 14:04	0917-173_Nc	13_10_15_1404_40_782	1	3.227	1.205	0.051	0.089	0.960	0.0880	0.4480	1.764	-2.741	0.251	-0.00100	0.00300	-0.94	0.383	35.675
					10/15/2013 14:05	0917-173_Nc	13_10_15_1405_41_592	1	0.845	1.243	-0.079	0.084	1.035	0.0880	0.5720	1.765	-2.701	0.240	-0.01000	0.00300	-0.32	0.384	35.237
					10/15/2013 14:06	0917-173_Nc	13_10_15_1406_42_382	1	0.760	1.185	0.106	0.080	0.964	0.0870	0.5480	1.754	-2.69	0.239	-0.00500	0.00300	-0.57	0.366	34.49
					10/15/2013 14:07	0917-173_Nc	13_10_15_1407_43_092	1	0.466	1.236	0.008	0.087	1.028	0.0850	0.4040	1.757	-2.739	0.248	-0.00500	0.00300	-0.14	0.392	35.459
					10/15/2013 14:08	0917-173_Nc	13_10_15_1408_43_852	1	2.009	1.140	-0.054	0.086	0.992	0.0850	0.5090	1.758	-2.57	0.229	-0.00500	0.00300	-0.48	0.360	32.705
					10/15/2013 14:09	0917-173_Nc	13_10_15_1409_44_632	1	3.785	1.213	-0.084	0.085	0.901	0.0860	0.5780	1.765	-2.324	0.227	-0.00100	0.00300	-0.62	0.371	31.716
					10/15/2013 14:10	0917-173_Nc	13_10_15_1410_45_332	1	-0.879	1.219	0.077	0.084	1.041	0.0870	0.4330	1.768	-2.720	0.248	-0.00300	0.00300	-0.26	0.381	36.079
					10/15/2013 14:11	0917-173_Nc	13_10_15_1411_46_132	1	1.196	1.166	-0.0500	0.090	1.129	0.0890	0.53200	1.768	-2.926	0.262	-0.00400	0.00300	-0.76	0.362	38.123
					10/15/2013 14:12	0917-173_Nc	13_10_15_1412_46_872	1	3.009	1.157	-0.034	0.087	1.146	0.0910	0.6040	1.773	-3.01	0.261	-0.00100	0.00300	-0.64	0.367	37.895
					10/15/2013 14:13	0917-173_Nc	13_10_15_1413_47_622	1	-0.941	1.179	-0.0710	0.090	1.080	0.0890	0.383	1.776	-3.216	0.271	-0.00300	0.00300	-0.47	0.367	39.501
					10/15/2013 14:14	0917-173_Nc	13_10_15_1414_48_312	1	1.418	1.240	-0.048	0.087	1.141	0.0920	0.232	1.780	-3.03	0.276	-0.00700	0.00300	-0.77	0.377	40.208
					10/15/2013 14:15	0917-173_Nc	13_10_15_1415_48_983	1	1.175	1.220	-0.034	0.085	1.092	0.0890	0.4500	1.775	-2.936	0.259	-0.00700	0.00400	-0.28	0.371	37.178
					10/15/2013 14:16	0917-173_Nc	13_10_15_1416_49_783	1	-0.410	1.239	-0.001	0.081	1.018	0.0870	0.49400	1.776	-2.481	0.235	-0.01000	0.00300	-0.70	0.374	33.488
					10/15/2013 14:17	0917-173_Nc	13_10_15_1417_50_483	1	3.795	1.266	-0.0520	0.087	1.098	0.0860	0.4900	1.775	-3.041	0.260	-0.00900	0.00300	-0.43	0.385	38.307
					10/15/2013 14:18	0917-173_Nc	13_10_15_1418_51_323	1	1.187	1.204	-0.1040	0.089	0.984	0.0920	0.4940	1.762	-3.217	0.275	-0.00800	0.00300	-0.2	0.366	40.264
					10/15/2013 14:19	0917-173_Nc	13_10_15_1419_52_043	1	0.509	1.133	-0.065	0.090	1.057	0.0900	0.5680	1.771	-3.16	0.284	-0.00600	0.00300	-0.2	0.361	41.688
					10/15/2013 14:20	0917-173_Nc	13_10_15_1420_52_853	1	0.959	1.180	-0.223	0.094	1.238	0.090	0.5070	1.765	-3.658	0.317	-0.00400	0.00300	-0.1	0.372	46.738
					10/15/2013 14:21	0917-173_Nc	13_10_15_1421_53_513	1	1.779	1.248	-0.154	0.098	1.225	0.089	0.393	1.773	-3.787	0.315	-0.00500	0.00300	-0.4	0.368	46.213
					10/15/2013 14:22	0917-173_Nc	13_10_15_1422_54_273	1	0.867	1.290	-0.081	0.094	1.266	0.0890	0.4630	1.761	-3.70	0.309	-0.00400	0.00300	-0.1	0.385	45.529
					10/15/2013 14:23	0917-173_Nc	13_10_15_1423_55_033	1	3.842	1.195	-0.104	0.102	1.218	0.0900	0.5260	1.775	-3.63	0.323	-0.00200	0.00300	-0.8	0.365	46.567
					10/15/2013 14:24	0917-173_Nc	13_10_15_1424_55_843	1	3.2670	1.207	-0.1800	0.097	1.183	0.0870	0.5450	1.785	-3.44	0.310	-0.00100	0.00300	-1.3	0.376	44.894
					10/15/2013 14:25	0917-173_Nc	13_10_15_1425_56_593	1	1.444	1.147	-0.2060	0.092	1.161	0.0940	0.5200	1.802	-3.770	0.306	-0.00700	0.00400	-0.1	0.365	44.857
					10/15/2013 14:26	0917-173_Nc	13_10_15_1426_57_343	1	0.6770	1.125	-0.151	0.094	1.117	0.0910	0.4680	1.794	-3.460	0.296	-0.0100	0.00400	0.4	0.356	43.785
					10/15/2013 14:27	0917-173_Nc	13_10_15_1427_58_154	1	0.882	1.207	-0.044	0.089	1.166	0.0910	0.46800	1.795	-3.187	0.277	-0.00300	0.00300	0.0	0.366	40.38
					10/15/2013 14:28	0917-173_Nc	13_10_15_1428_58_914	1	0.084	1.217	-0.081	0.096	1.203	0.0920	0.3700	1.797	-3.33	0.292	-0.00100	0.00300	-0.2	0.374	42.266
					10/15/2013 14:29	0917-173_Nc	13_10_15_1429_59_664	1	1.543	1.242	-0.058	0.104	1.192	0.0900	0.401	1.803	-3.22	0.309	-0.00400	0.00300	-0.78	0.389	42.903
					10/15/2013 14:31	0917-173_Nc	13_10_15_1431_00_464	1	0.628	1.253	-0.081	0.091	1.205	0.0910	0.373	1.810	-3.095	0.285	-0.01200	0.00300	-0.59	0.377	41.273
					10/15/2013 14:32	0917-173_Nc	13_10_15_1432_01_174	1	1.601	1.255	-0.083	0.091	1.159	0.0910	0.4490	1.816	-3.386	0.289	-0.01000	0.00300	-0.17	0.383	42.227
					10/15/2013 14:33	0917-173_Nc	13_10_15_1433_01_914	1	0.616	1.225	-0.0900	0.095	1.187	0.0940	0.428	1.823	-3.622	0.307	-0.00500	0.00400	-0.5	0.388	45.203
					10/15/2013 14:34	0917-173_Nc	13_10_15_1434_02_734	1	3.520	1.290	0.012	0.097	1.188	0.0910	0.5770	1.826	-3.398	0.303	-0.00300	0.00300	-0.45	0.389	43.821
					10/15/2013 14:35	0917-173_Nc	13_10_15_1435_03_494	1	1.819	1.257	-0.257	0.097	1.286	0.0950	0.471	1.825	-3.593	0.311	-0.00500	0.00400	-0.5	0.389	44.754
					10/15/2013 14:36	0917-173_Nc	13_10_15_1436_04_204	1	0.685	1.225	-0.19300	0.098	1.198	0.0940	0.316	1.821	-3.55	0.303	-0.00400	0.00300	-0.5	0.384	43.715
					10/15/2013 14:37	0917-173_Nc	13_10_15_1437_05_044	1	2.509	1.315	-0.033	0.099	1.083	0.0930	0.4140	1.826	-3.11	0.296	-0.00500	0.00300	-0.5	0.393	42.098
					10/15/2013 14:38	0917-173_Nc	13_10_15_1438_05_754	1	1.806	1.219	-0.1980	0.094	1.209	0.0920	0.5910	1.806	-3.285	0.293	-0.00700	0.00300	-0.5	0.379	42.244
					10/15/2013 14:39	0917-173_Nc	13_10_15_1439_06_504	1	0.887	1.252	-0.2470	0.096	1.249	0.0930	0.5050	1.800	-3.870	0.330	-0.00500	0.00300	-0.5	0.370	48.115
					10/15/2013 14:40	0917-173_Nc	13_10_15_1440_07_295	1	1.495	1.237	-0.275	0.104	1.332	0.095	0.384	1.804	-4.179	0.348	-0.00400	0.00300	0.4	0.381	50.867
					10/15/2013 14:41	0917-173_Nc	13_10_15_1441_08_065	1	2.1400	1.306	-0.157	0.095	1.161	0.0920	0.5180	1.816	-3.130	0.287	-0.00600	0.00300	-0.43	0.384	40.536
					10/15/2013 14:42	0917-173_Nc	13_10_15_1442_08_775	1	1.118	1.256	-0.025	0.090	1.093	0.0900	0.6020	1.799	-2.65	0.267	-0.0070	0.00300	-1.29	0.381	36.489
					10/15/2013 14:43	0917-173_Nc	13_10_15_1443_09_575	1	2.278	1.256	-0.124	0.093	1.452	0.0930	0.355	1.803	-3.16	0.299	-0.0050	0.00300	-0.83	0.385	42.946
					10/15/2013 14:44	0917-173_Nc	13_10_15_1444_10_335	1	1.810	1.252	-0.042	0.094	1.52	0.0910	0.4770	1.789	-3.073	0.287	-0.00800	0.00300	-0.3	0.395	41.105
					10/15/2013 14:45	0917-173_Nc	13_10_15_1445_11_105	1	1.171	1.176	-0.077	0.095	1.55	0.0880	0.6110	1.794	-2.995	0.275	-0.00400	0.00300	-0.19	0.377	40.326
					10/15/2013 14:46	0917-173_Nc	13_10_15_1446_11_845	1	1.871	1.251	-0.090	0.091	1.59	0.0900	0.4960	1.778	-3.004	0.275	-0.00100	0.00300	-0.13	0.377	39.599
					10/15/2013 14:47	0917-173_Nc	13_10_15_1447_12_565	1	2.1520	1.230	-0.3400	0.111	1.195	0.0810	0.5550	1.524	-4.5570	0.293	-0.00800	0.00300	-1.09	0.394	38.9
			Stop		10/15/2013 14:48	0917-173_Nc	13_10_15_1448_13_365	1	-3.000	1.351	-1.891	0.301	-0.1960	0.0980	-0.203	0.305	-13.00	0.511	-0.01300	0.00300	-3.74	0.97	36.938
					10/15/2013 14:49	0917-173_Nc	13_10_15_1449_14_125	1	-2.931	1.305	-2.075	0.310	-0.2470	0.1010	-0.299	0.198	-13.68	0.527	-0.01500	0.00400	-4.39	1.03	36.514
					10/15/2013 14:50	0917-173_Nc	13_10_15_1450_14_835	1	-0.400	1.206	-1.4220	0.209	-0.1430	0.0710	-0.189	0.144	-8.81	0.350	-0.01100	0.00300	-2.21	0.696	23.365
					10/15/2013 14:51	0917-173_Nc	13_10_15_1451_15_635	1	-0.697	1.031	-0.641	0.113	-0.0840	0.0470	-0.0410	0.0920	-4.38	0.193	-0.00600	0.00200	-1.14	0.429	12.564
					10/15/2013 14:52	0917-173_Nc	13_10_15_1452_16_326	1	1.455	1.024	-0.692	0.113	-0.0150	0.0460	-0.118	0.0960	-4.21	0.194	-0.00800	0.00200	-1.822	0.431	12.281
					10/15/2013 14:53	0917-173_Nc	13_10_15_1453_17_106	1	0.889	1.049	-0.5720	0.106	0.602	0.0460	0.225	0.601	-4.353	0.227	-0.00500	0.00200	-1.18	0.396	24.571
					10/15/2013 14:54	0917-173_Nc	13_10_15_1454_17_846	1	1.078	1.143	-0.3140	0.111	1.66	0.092	0.456	1.752	-4.479	0.366	-0.0060	0.00400	-0.8	0.37	53.134
					10/15/2013 14:55	0917-173_Nc	13_10_15_1455_18_566	1	1.542	1.028	-0.211	0.089	1.065	0.0610	0.4890	1.117	-3.210	0.234	-0.00500	0.00200	-0.51	0.336	29.35
					10/15/2013 14:56	0917-173_Nc	13_10_15_1456_19_316	1	1.7360	1.065	-0.0910	0.058	0.1710	0.0370	0.257	0.260	-0.4730	0.101	0.00000	0.00200	0.040	0.318	5.005
					10/15/2013 14:57	0917-173_Nc	13_10_15_1457_20_026	1	0.7100	0.980	0.0940	0.056	0.0010	0.0330	-0.0830	0.0820	0.045	0.091	0.00400	0.00200	-0.074	0.299	0.754
					10/15/2013 14:58	0917-173_Nc	13_10_15_1458_20_766	1	1.819	1.054	0.0400	0.059	0.1640	0.0360	0.1720	0.218	-0.215	0.098	0.00100	0.00200	-0.636	0.315	4.465
					10/15/2013 14:59	0917-173_Nc	13_10_15_1459_21_486	1	2.941	1.267	-0.100	0.094	1.48	0.0830	0.6730	1.702	-3.43	0.304	-0.00600	0.00300	-0.1	0.379	43.889
					10/15/2013 15:00	0917-173_Nc	13_10_15_1500_22_256	1	2.753	1.209	-0.1960	0.098	1.70	0.090	0.463	1.789	-3.82	0.335	-0.0110	0.00300	-0.6	0.374	49.182
					10/15/2013 15:01	0917-173_Nc	13_10_15_1501_22_966	1	2.277	1.248	-0.2210	0.105	1.65	0.093	0.493	1.794	-3.840	0.340	-0.00500	0.00300	-0.1	0.399	49.884
					10/15/2013 15:02	0917-173_Nc	13_10_15_1502_23_686	1	2.35	1.199	-0.153	0.103	1.73	0.095	0.449	1.785	-3.84	0.336	0.00000	0.00300	-0.4	0.383	48.992
					10/15/2013 15:03	0917-173_Nc	13_10_15_1503_24_507	1	1.148	1.249	-0.110	0.100	1.64	0.092	0.533	1.779	-3.47	0.328	-0.00500	0.00400	-0.5	0.366	47.602
					10/15/2013 15:04	0917-173_Nc	13_10_15_1504_25_227	1	1.658	1.281	0.049	0.098	1.61	0.0890	0.347	1.791	-3.10	0.310	-0.00800	0.00400	-0.6	0.383	44.895
					10/15/2013 15:05	0917-173_Nc	13_10_15_1505_25_977	1	2.072	1.171	-0.001	0.095	1.80	0.0910	0.534	1.786	-2.70	0.298	-0.0030	0.00400	-1.14	0.368	42.681
					10/15/2013 15:06	0917-173_Nc	13_10_15_1506_26_777	1	3.601	1.175	0.009	0.088	1.62	0.0900	0.6220	1.792	-2.34	0.272	-0.00100	0.00300	-0.79	0.376	39.102
					10/15/2013 15:07	0917-173_Nc	13_10_15_1507_27_487	1	1.555	1.198	-0.070	0.090	1.67	0.0940	0.341	1.798	-2.63	0.286	-0.00600	0.00300	-0.66	0.362	41.459
					10/15/2013 15:08	0917-173_Nc	13_10_15_1508_28_247	1	2.239	1.193	-0.101	0.096	1.73	0.0900	0.341	1.800	-2.97	0.308	-0.00600	0.00400	-0.6	0.361	45.108
					10/15/2013 15:09	0917-173_Nc	13_10_15_1509_29_047	1	-0.571	1.199	-0.1670	0.098	1.66	0.0880	0.466	1.783	-2.746	0.291	-0.00500	0.00300	-1.12	0.387	40.895
					10/15/2013 15:10	0917-173_Nc	13_10_15_1510_29_767	1	3.679	1.227	-0.050	0.090	1.52	0.0910	0.233	1.795	-2.54	0.260	-0.00300	0.00300	-0.52	0.388	36.984
					10/15/2013 15:11	0917-173_Nc	13_10_15_1511_30_507	1	0.287	1.163	-0.119	0.094	1.63	0.0900	0.368	1.805	-2.751	0.278	-0.0060	0.00300	-0.40	0.366	40.307
					10/15/2013 15:12	0917-173_Nc	13_10_15_1512_31_257	1	1.586	1.195	-0.133	0.085	1.51	0.0890	0.4530	1.805	-2.69	0.266	-0.00400	0.00300	-0.41	0.370	39.173
					10/15/2013 15:13	0917-173_Nc	13_10_15_1513_32_067	1	2.823	1.138	0.145	0.088	1.42	0.0910	0.5690	1.805	-2.41	0.273	-0.00400	0.00300	-0.82	0.345	38.629
					10/15/2013 15:14	0917-173_Nc	13_10_15_1514_32_827	1	1.540	1.289	-0.081	0.094	1.42	0.0890	0.3660	1.809	-2.50	0.274	-0.00400	0.00300	-0.90	0.389	38.115
					10/15/2013 15:15	0917-173_Nc	13_10_15_1515_33_558	1	1.690	1.131	-0.089	0.094	1.57	0.0920	0.430	1.822	-2.77	0.286	-0.00400	0.00300	-0.54	0.376	42.125
					10/15/2013 15:16	0917-173_Nc	13_10_15_1516_34_268	1	1.143	1.244	-0.099	0.093	1.55	0.0910	0.409	1.829	-2.83	0.297	-0.0110	0.00300	-0.5	0.371	43.474
					10/15/2013 15:17	0917-173_Nc	13_10_15_1517_35_018	1	1.416	1.342	-0.140	0.094	1.71	0.0940	0.360	1.830	-2.84	0.309	-0.00600	0.00300	-1.0	0.391	45.124
					10/15/2013 15:18	0917-173_Nc	13_10_15_1518_35_828	1	2.372	1.191	-0.133	0.101	1.74	0.0930	0.344	1.804	-3.04	0.312	-0.0110	0.00300	-0.6	0.376	45.864
					10/15/2013 15:19	0917-173_Nc	13_10_15_1519_36_558	1	1.945	1.230	-0.045	0.101	1.68	0.091	0.291	1.801	-3.28	0.323	-0.0100	0.00300	-0.4	0.370	47.447
					10/15/2013 15:20	0917-173_Nc	13_10_15_1520_37_258	1	1.824	1.204	-0.17700	0.101	1.63	0.092	0.304	1.791	-3.55	0.331	-0.00100	0.00300	-0.5	0.365	48.071
					10/15/2013 15:21	0917-173_Nc	13_10_15_1521_38_078	1	0.269	1.247	-0.159	0.097	1.62	0.0930	0.391	1.776	-3.01	0.301	-0.00700	0.00300	-0.1	0.383	44.427
					10/15/2013 15:22	0917-173_Nc	13_10_15_1522_38_848	1	3.309	1.200	-0.120	0.091	1.55	0.0900	0.5870	1.772	-2.49	0.281	-0.00800	0.00400	-0.35	0.369	40.963
					10/15/2013 15:23	0917-173_Nc	13_10_15_1523_39_558	1	2.257	1.177	-0.105	0.088	1.62	0.0880	0.350	1.772	-2.69	0.271	0.00000	0.00400	-0.4	0.367	40.709
					10/15/2013 15:24	0917-173_Nc	13_10_15_1524_40_308	1	-1.377	1.398	-0.131	0.093	1.61	0.0880	0.436	1.777	-2.68	0.293	-0.00800	0.00300	-0.27	0.405	41.929
					10/15/2013 15:25	0917-173_Nc	13_10_15_1525_41_068	1	1.779	1.266	-0.088	0.095	1.64	0.0920	0.440	1.781	-3.02	0.309	-0.00900	0.00300	-0.6	0.379	44.99
					10/15/2013 15:26	0917-173_Nc	13_10_15_1526_41_828	1	4.6670	1.262	-0.1760	0.097	1.70	0.0920	0.464	1.793	-2.76	0.298	-0.00800	0.00300	-0.3	0.388	44.136
					10/15/2013 15:27	0917-173_Nc	13_10_15_1527_42_579	1	2.270	1.223	0.060	0.093	1.60	0.0940	0.467	1.799	-2.65	0.291	-0.00500	0.00400	-0.4	0.393	42.029
					10/15/2013 15:28	0917-173_Nc	13_10_15_1528_43_389	1	1.658	1.214	-0.0690	0.095	1.55	0.0890	0.258	1.791	-2.78	0.294	-0.0060	0.00300	-0.70	0.388	42.076
					10/15/2013 15:29	0917-173_Nc	13_10_15_1529_44_109	1	4.227	1.246	-0.043	0.092	1.57	0.0890	0.425	1.789	-2.70	0.276	-0.00700	0.00300	-0.50	0.386	40.089
					10/15/2013 15:30	0917-173_Nc	13_10_15_1530_44_859	1	1.65	1.107	-0.026	0.094	1.50	0.0870	0.367	1.778	-2.64	0.266	-0.0090	0.00300	-0.85	0.368	39.014
					10/15/2013 15:31	0917-173_Nc	13_10_15_1531_45_589	1	1.784	1.192	-0.093	0.093	1.61	0.0880	0.493	1.776	-2.74	0.288	-0.00400	0.00400	-1.19	0.371	41.851
					10/15/2013 15:32	0917-173_Nc	13_10_15_1532_46_389	1	0.118	1.185	-0.076	0.091	1.52	0.0890	0.5250	1.774	-2.79	0.289	-0.00700	0.00300	-0.49	0.369	42.261
					10/15/2013 15:33	0917-173_Nc	13_10_15_1533_47_159	1	1.73	1.187	-0.154	0.100	1.52	0.0890	0.456	1.783	-3.17	0.308	-0.00600	0.00400	-0.6	0.372	45.165
					10/15/2013 15:34	0917-173_Nc	13_10_15_1534_47_909	1	0.647	1.172	-0.069	0.102	1.65	0.093	0.414	1.774	-3.35	0.330	-0.00700	0.00300	-1.1	0.360	48.609
					10/15/2013 15:35	0917-173_Nc	13_10_15_1535_48_669	1	2.691	1.322	-0.1350	0.094	1.68	0.0920	0.509	1.792	-3.17	0.315	-0.00800	0.00300	-0.99	0.389	46.025
					10/15/2013 15:36	0917-173_Nc	13_10_15_1536_49_389	1	1.574	1.248	-0.280	0.099	1.61	0.0910	0.428	1.799	-3.04	0.306	-0.00800	0.00400	-0.3	0.386	44.438
					10/15/2013 15:37	0917-173_Nc	13_10_15_1537_50_209	1	1.782	1.300	-0.073	0.092	1.58	0.0910	0.295	1.802	-2.96	0.306	-0.00600	0.00300	-0.91	0.378	44.069
					10/15/2013 15:38	0917-173_Nc	13_10_15_1538_50_819	1	3.417	1.269	-0.0270	0.094	1.58	0.0900	0.560	1.794	-2.92	0.300	-0.00500	0.00400	-0.83	0.391	43.555
					10/15/2013 15:39	0917-173_Nc	13_10_15_1539_51_530	1	1.066	1.242	0.0310	0.091	1.49	0.0920	0.314	1.807	-2.40	0.275	-0.00500	0.00300	-0.73	0.389	39.548
					10/15/2013 15:40	0917-173_Nc	13_10_15_1540_52_350	1	0.84	1.309	-0.0940	0.089	1.44	0.0880	0.4780	1.792	-2.18	0.254	-0.00900	0.00300	-0.56	0.396	35.626
					10/15/2013 15:41	0917-173_Nc	13_10_15_1541_53_060	1	0.751	1.292	-0.139	0.086	1.48	0.0890	0.379	1.791	-2.14	0.255	-0.00800	0.00300	-1.30	0.388	35.785
					10/15/2013 15:42	0917-173_Nc	13_10_15_1542_53_840	1	3.19	1.306	-0.022	0.088	1.53	0.0890	0.5670	1.796	-2.02	0.256	-0.00600	0.00300	-0.89	0.397	36.75
					10/15/2013 15:43	0917-173_Nc	13_10_15_1543_54_630	1	0.5650	1.228	0.039	0.082	1.44	0.0890	0.511	1.788	-1.92	0.245	-0.00700	0.00300	-1.24	0.367	36.2
					10/15/2013 15:44	0917-173_Nc	13_10_15_1544_55_400	1	2.414	1.257	0.021	0.086	1.41	0.0850	0.542	1.783	-1.87	0.246	-0.00500	0.00300	-0.87	0.369	34.987
					10/15/2013 15:45	0917-173_Nc	13_10_15_1545_56_160	1	1.5210	1.142	-0.053	0.061	0.509	0.0690	0.4770	1.499	-0.578	0.128	-0.00700	0.00300	-0.64	0.344	13.327
					10/15/2013 15:46	0917-173_Nc	13_10_15_1546_56_880	1	4.2090	1.107	-0.024	0.063	-0.0130	0.0580	0.5750	1.306	-0.007	0.105	-0.00200	0.00200	-0.1580	0.350	1.443
					10/15/2013 15:47	0917-173_Nc	13_10_15_1547_57_600	1	0.511	1.142	-0.0580	0.075	0.710	0.0700	0.684	1.582	-1.809	0.185	-0.00300	0.00300	-0.35	0.364	23.807

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 15:48	0917-173_Nc	13_10_15_1548_58_420	1	3.8450	1.215	0.110	0.084	0.963	0.0760	0.371	1.684	-2.48	0.251	-0.00600	0.00300	-0.89	0.360	35.829
					10/15/2013 15:49	0917-173_Nc	13_10_15_1549_59_170	1	1.000	1.200	-0.039	0.087	1.004	0.0780	0.554	1.676	-2.39	0.249	-0.00200	0.00300	-0.61	0.371	36.616
					10/15/2013 15:50	0917-173_Nc	13_10_15_1550_59_920	1	3.171	1.212	-0.032	0.081	1.029	0.0780	0.672	1.667	-2.575	0.246	-0.00400	0.00300	-0.22	0.365	36.296
					10/15/2013 15:52	0917-173_Nc	13_10_15_1552_00_631	1	2.254	1.153	-0.019	0.085	0.968	0.0790	0.498	1.651	-2.44	0.245	-0.00400	0.00300	-0.73	0.369	35.071
					10/15/2013 15:53	0917-173_Nc	13_10_15_1553_01_401	1	3.31	1.174	-0.011	0.063	0.1060	0.0630	0.463	1.349	-0.359	0.108	-0.00600	0.00300	-0.606	0.360	6.097
					10/15/2013 15:54	0917-173_Nc	13_10_15_1554_02_221	1	0.771	1.099	0.032	0.061	-0.0380	0.0570	0.470	1.299	-0.1760	0.099	-0.00300	0.00200	0.527	0.332	0.938
					10/15/2013 15:55	0917-173_Nc	13_10_15_1555_02_931	1	4.075	1.082	0.044	0.062	-0.0150	0.0600	0.5990	1.294	-0.002	0.101	-0.00100	0.00200	0.124	0.334	0.687
					10/15/2013 15:56	0917-173_Nc	13_10_15_1556_03_701	1	1.639	1.189	0.042	0.064	-0.0170	0.0590	0.6800	1.295	-0.181	0.107	-0.00500	0.00300	-0.736	0.357	0.602
					10/15/2013 15:57	0917-173_Nc	13_10_15_1557_04_531	1	1.600	1.129	0.047	0.0580	-0.0600	0.0590	0.7290	1.288	0.113	0.099	-0.00700	0.00200	-0.528	0.335	0.551
					10/15/2013 15:58	0917-173_Nc	13_10_15_1558_05_231	1	1.985	1.173	-0.002	0.063	0.0420	0.0580	0.6560	1.305	-0.057	0.107	-0.00600	0.00200	-0.427	0.351	0.524
					10/15/2013 15:59	0917-173_Nc	13_10_15_1559_06_001	1	2.4460	1.135	0.152	0.063	-0.0230	0.0590	0.6220	1.302	-0.118	0.105	-0.00200	0.00200	-0.368	0.353	0.542
					10/15/2013 16:00	0917-173_Nc	13_10_15_1600_06_721	1	0.826	1.120	0.008	0.061	-0.086	0.0580	0.538	1.320	-0.065	0.101	-0.00500	0.00200	-0.080	0.345	0.601
					10/15/2013 16:01	0917-173_Nc	13_10_15_1601_07_521	1	1.914	1.128	0.012	0.062	-0.096	0.0590	0.5980	1.302	-0.017	0.103	0.00	0.00300	-0.401	0.344	0.574
					10/15/2013 16:02	0917-173_Nc	13_10_15_1602_08_231	1	0.492	1.108	-0.080	0.062	0.03	0.0550	0.6800	1.302	0.001	0.103	-0.00300	0.00300	-0.74	0.338	0.52
					10/15/2013 16:03	0917-173_Nc	13_10_15_1603_08_982	1	3.508	1.182	0.040	0.059	-0.067	0.0600	0.555	1.303	-0.021	0.101	-0.01	0.00200	-0.99	0.339	0.454
					10/15/2013 16:04	0917-173_Nc	13_10_15_1604_09_802	1	1.4030	1.127	0.051	0.063	0.0410	0.0570	0.6580	1.301	-0.095	0.103	0.00	0.00200	-0.069	0.345	0.376
					10/15/2013 16:05	0917-173_Nc	13_10_15_1605_10_512	1	3.195	1.160	0.028	0.062	0.0020	0.0580	0.456	1.301	-0.028	0.103	-0.00200	0.00200	-0.863	0.348	0.649
					10/15/2013 16:06	0917-173_Nc	13_10_15_1606_11_262	1	2.0650	1.192	0.026	0.061	-0.036	0.0600	0.476	1.309	-0.030	0.103	-0.00400	0.00200	-0.208	0.359	0.87
					10/15/2013 16:07	0917-173_Nc	13_10_15_1607_12_092	1	2.563	1.119	0.084	0.062	-0.052	0.0590	0.540	1.293	-0.033	0.103	0.00	0.00300	-0.03	0.346	0.369
					10/15/2013 16:08	0917-173_Nc	13_10_15_1608_12_842	1	1.925	1.169	0.044	0.062	-0.053	0.0580	0.6720	1.302	-0.006	0.104	-0.00600	0.00200	0.037	0.358	0.419
					10/15/2013 16:09	0917-173_Nc	13_10_15_1609_13_572	1	1.8750	1.223	0.069	0.064	-0.052	0.0570	0.522	1.310	0.049	0.107	-0.01	0.00300	-0.151	0.363	0.451
					10/15/2013 16:10	0917-173_Nc	13_10_15_1610_14_332	1	4.115	1.013	0.170	0.061	-0.0520	0.0560	0.7130	1.305	-0.020	0.099	-0.01	0.00200	-0.503	0.331	0.441
					10/15/2013 16:11	0917-173_Nc	13_10_15_1611_15_062	1	3.673	1.094	0.056	0.061	-0.0170	0.0570	0.616	1.304	-0.050	0.100	0.00	0.00200	-0.436	0.332	0.457
					10/15/2013 16:12	0917-173_Nc	13_10_15_1612_15_872	1	2.119	1.186	0.045	0.065	-0.060	0.0590	0.7140	1.305	-0.0300	0.109	-0.00300	0.00300	0.2290	0.366	0.659
					10/15/2013 16:13	0917-173_Nc	13_10_15_1613_16_622	1	1.8590	1.247	-0.020	0.064	-0.0380	0.0580	0.593	1.313	0.131	0.107	0.00	0.00200	-0.443	0.364	0.84
					10/15/2013 16:14	0917-173_Nc	13_10_15_1614_17_342	1	4.330	1.092	-0.008	0.062	-0.0220	0.0610	0.673	1.324	0.024	0.101	-0.00100	0.00300	-0.6750	0.339	1.132
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_19_744	1	-1.2	1.5	0.143	0.090	-0.44	1.46	-0.213	0.1020	0.074	0.143	0.056	0.598	0.193	0.449	-1.839
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_38_254	1	1.3	1.5	-0.038	0.082	-0.43	1.57	0.073	0.1130	-0.028	0.135	0.056	0.630	-0.76	0.454	-1.959
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_56_754	1	-3.2	1.5	0.0210	0.083	-0.44	1.61	0.0080	0.1010	-0.036	0.135	0.057	0.647	-0.886	0.442	-2.03
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_15_384	1	-0.5	1.5	-0.0010	0.085	-0.60	1.63	-0.04400	0.1040	-0.055	0.135	0.054	0.655	-0.338	0.444	-2.007
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_33_854	1	-2.6	1.5	0.028	0.080	-0.44	1.65	-0.02700	0.0970	0.12600	0.134	0.062	0.659	-0.727	0.439	-2.072
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_52_344	1	-0.4	1.4	0.0470	0.083	-0.35	1.66	0.283	0.1070	-0.1500	0.131	0.060	0.656	-0.321	0.433	-2.096
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_10_944	1	0.3	1.5	0.208	0.081	-0.49	1.66	-0.113	0.1000	-0.249	0.133	0.063	0.660	-0.284	0.452	-2.072
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_29_464	1	-3.8	1.4	-0.031	0.080	-0.47	1.66	-0.0330	0.1170	-0.170	0.129	0.062	0.658	-0.517	0.428	-2.106
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_48_084	1	-0.6	1.5	0.2780	0.086	-0.52	1.66	0.0690	0.1130	0.328	0.139	0.064	0.665	0.532	0.440	-2.073
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_06_504	1	-0.4	1.6	0.19700	0.090	-0.53	1.66	0.0870	0.0980	0.102	0.145	0.050	0.659	-0.89	0.473	-2.085
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_25_004	1	-1.2	1.4	0.2560	0.082	-0.48	1.66	0.092	0.1090	0.133	0.133	0.067	0.664	-1.19	0.422	-2.076
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_43_654	1	-1.6	1.6	0.255	0.084	-0.42	1.66	-0.001	0.1090	0.266	0.141	0.054	0.660	-1.08	0.474	-2.101
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_02_124	1	-1.6	1.5	-0.02200	0.083	-0.55	1.66	-0.02000	0.1090	0.204	0.137	0.054	0.659	-0.443	0.448	-2.111
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_20_734	1	-3.7	1.4	-0.117	0.088	-0.45	1.66	-0.105	0.1000	-0.184	0.137	0.056	0.659	-0.0280	0.450	-2.082
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_39_234	1	-1.6	1.4	0.012	0.087	-0.54	1.66	-0.220	0.0990	0.2500	0.138	0.043	0.659	-0.44	0.448	-2.097
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_57_744	1	-4.1	1.5	0.032	0.086	-0.49	1.65	-0.033	0.1050	-0.174	0.140	0.051	0.663	0.3120	0.456	-2.085
					10/15/2013 17:05	0917-173_Nc	13_10_15_1705_46_267	1	-3.01	1.626	0.826	0.203	4.39	0.163	-0.280	2.21	-2.56	0.74	-0.0110	0.00500	-4.2	0.60	106.945
					10/15/2013 17:06	0917-173_Nc	13_10_15_1706_46_977	1	-2.40	1.576	0.861	0.205	4.36	0.162	-0.12	2.22	-2.34	0.75	-0.0060	0.00500	-4.3	0.59	109.648
					10/15/2013 17:07	0917-173_Nc	13_10_15_1707_47_767	1	-3.58	1.550	0.960	0.201	4.28	0.165	-0.14	2.22	-2.37	0.75	-0.0070	0.00600	-4.1	0.61	109.27
					10/15/2013 17:08	0917-173_Nc	13_10_15_1708_48_517	1	-3.28	1.705	0.798	0.203	4.39	0.167	-0.126	2.22	-2.49	0.76	-0.0110	0.00600	-4.1	0.61	111.3
					10/15/2013 17:09	0917-173_Nc	13_10_15_1709_49_367	1	-3.15	1.604	0.849	0.206	4.34	0.167	-0.12	2.23	-2.52	0.77	-0.0050	0.00600	-4.1	0.62	111.992
					10/15/2013 17:10	0917-173_Nc	13_10_15_1710_50_057	1	-2.49	1.559	0.753	0.215	4.41	0.170	-0.255	2.24	-2.77	0.81	-0.0050	0.00600	-4.2	0.62	116.813
					10/15/2013 17:11	0917-173_Nc	13_10_15_1711_50_897	1	-2.52	1.559	0.816	0.212	4.31	0.171	-0.351	2.22	-2.74	0.81	-0.0130	0.00600	-4.8	0.60	117.907
					10/15/2013 17:12	0917-173_Nc	13_10_15_1712_51_607	1	-2.73	1.654	0.767	0.218	4.19	0.168	-0.408	2.22	-2.57	0.83	-0.0100	0.00600	-4.7	0.64	119.528
					10/15/2013 17:13	0917-173_Nc	13_10_15_1713_52_367	1	-2.88	1.614	0.817	0.218	4.15	0.171	-0.578	2.22	-2.30	0.82	-0.0060	0.00500	-4.5	0.63	119.785
					10/15/2013 17:14	0917-173_Nc	13_10_15_1714_53_138	1	-1.50	1.508	0.847	0.218	3.98	0.168	-0.454	2.21	-2.10	0.82	-0.0060	0.00600	-5.4	0.63	119.4
					10/15/2013 17:15	0917-173_Nc	13_10_15_1715_53_758	1	-0.79	1.548	0.941	0.216	3.81	0.165	-0.200	2.22	-1.56	0.81	-0.0090	0.00500	-5.6	0.65	118.663
					10/15/2013 17:16	0917-173_Nc	13_10_15_1716_54_528	1	-2.11	1.695	1.018	0.210	3.76	0.165	-0.275	2.23	-1.21	0.80	-0.0090	0.00600	-5.6	0.64	117.083
					10/15/2013 17:17	0917-173_Nc	13_10_15_1717_55_258	1	-1.34	1.647	1.036	0.212	3.66	0.164	-0.405	2.21	-1.38	0.79	-0.0120	0.00600	-5.2	0.66	117.485
					10/15/2013 17:18	0917-173_Nc	13_10_15_1718_56_058	1	-3.77	1.655	0.928	0.209	3.62	0.163	-0.229	2.21	-1.35	0.79	-0.0040	0.00500	-6.3	0.66	116.814
					10/15/2013 17:19	0917-173_Nc	13_10_15_1719_56_858	1	-0.97	1.597	1.006	0.212	3.65	0.165	-0.153	2.22	-1.04	0.79	-0.0160	0.00600	-6.0	0.63	117.256
					10/15/2013 17:20	0917-173_Nc	13_10_15_1720_57_568	1	-2.16	1.568	0.945	0.204	3.70	0.162	-0.143	2.22	-1.34	0.76	-0.0070	0.00500	-5.4	0.64	112.508
					10/15/2013 17:21	0917-173_Nc	13_10_15_1721_58_318	1	-1.96	1.525	1.044	0.195	3.75	0.159	-0.063	2.22	-0.95	0.73	-0.0090	0.00500	-5.3	0.59	107.526
					10/15/2013 17:22	0917-173_Nc	13_10_15_1722_59_158	1	-1.60	1.598	0.874	0.202	3.63	0.159	-0.176	2.21	-1.24	0.74	-0.0010	0.00500	-5.0	0.63	109.361
					10/15/2013 17:23	0917-173_Nc	13_10_15_1723_59_868	1	-3.56	1.623	0.914	0.203	3.80	0.158	-0.164	2.21	-1.93	0.76	-0.0120	0.00500	-3.8	0.63	111.38
					10/15/2013 17:25	0917-173_Nc	13_10_15_1725_00_688	1	-2.33	1.524	0.818	0.208	3.83	0.164	-0.031	2.22	-2.14	0.77	-0.0060	0.00500	-4.1	0.62	113.325
					10/15/2013 17:26	0917-173_Nc	13_10_15_1726_01_458	1	-2.48	1.524	0.757	0.197	3.71	0.162	0.011	2.22	-2.03	0.75	-0.0020	0.00500	-4.7	0.58	109.759
					10/15/2013 17:27	0917-173_Nc	13_10_15_1727_02_149	1	-3.61	1.482	0.849	0.207	3.61	0.161	-0.150	2.20	-1.88	0.76	-0.0070	0.00600	-4.8	0.60	111.874
					10/15/2013 17:28	0917-173_Nc	13_10_15_1728_02_979	1	-0.84	1.585	0.882	0.192	3.52	0.158	-0.065	2.22	-1.73	0.72	-0.0100	0.00500	-3.9	0.59	106.661
					10/15/2013 17:30	0917-173_Nc	13_10_15_1730_15_740	1	-2.01	1.522	0.741	0.193	3.43	0.154	-0.028	2.21	-1.58	0.72	-0.0060	0.00500	-5.1	0.60	105.865
					10/15/2013 17:31	0917-173_Nc	13_10_15_1731_16_470	1	-1.84	1.553	0.807	0.193	3.42	0.155	-0.045	2.22	-1.42	0.72	-0.0020	0.00500	-4.6	0.60	106.391
					10/15/2013 17:32	0917-173_Nc	13_10_15_1732_17_210	1	-3.52	1.551	0.818	0.196	3.37	0.154	-0.200	2.22	-1.44	0.73	-0.0100	0.00500	-5.1	0.61	108.319
					10/15/2013 17:33	0917-173_Nc	13_10_15_1733_17_960	1	-1.98	1.483	0.758	0.198	3.35	0.157	0.025	2.24	-1.50	0.73	-0.0040	0.00500	-4.8	0.61	110.225
					10/15/2013 17:34	0917-173_Nc	13_10_15_1734_18_770	1	-2.98	1.592	0.753	0.195	3.32	0.158	0.201	2.24	-1.65	0.73	-0.0060	0.00500	-4.7	0.60	108.321
					10/15/2013 17:35	0917-173_Nc	13_10_15_1735_19_520	1	-1.17	1.697	0.879	0.195	3.35	0.156	-0.057	2.22	-1.32	0.72	-0.0090	0.00500	-4.3	0.62	106.975
Data	Run	7	Start	A	10/15/2013 17:36	0917-173_Nc	13_10_15_1736_20_230	1	-3.85	1.607	0.912	0.194	3.30	0.156	-0.034	2.21	-1.25	0.72	-0.0040	0.00500	-4.2	0.61	107.692
					10/15/2013 17:37	0917-173_Nc	13_10_15_1737_20_960	1	-0.46	1.669	0.954	0.195	3.06	0.151	0.036	2.23	-0.89	0.72	-0.0120	0.00600	-5.5	0.63	107.566
					10/15/2013 17:38	0917-173_Nc	13_10_15_1738_21_720	1	-0.74	1.602	0.893	0.196	3.05	0.153	0.011	2.23	-1.08	0.72	-0.0070	0.00600	-5.1	0.60	109.294
					10/15/2013 17:39	0917-173_Nc	13_10_15_1739_22_480	1	-1.61	1.785	0.901	0.209	3.01	0.156	-0.041	2.23	-0.86	0.76	-0.0120	0.00500	-5.7	0.66	113.072
					10/15/2013 17:40	0917-173_Nc	13_10_15_1740_23_240	1	-1.14	1.684	0.874	0.202	2.92	0.153	-0.168	2.22	-0.77	0.75	-0.0060	0.00600	-5.5	0.64	113.049
					10/15/2013 17:41	0917-173_Nc	13_10_15_1741_23_960	1	-1.87	1.679	0.760	0.202	2.80	0.153	-0.065	2.23	-0.78	0.75	-0.0090	0.00500	-5.8	0.64	112.928
					10/15/2013 17:42	0917-173_Nc	13_10_15_1742_24_741	1	-2.70	1.546	0.927	0.203	2.94	0.155	0.016	2.22	-0.52	0.74	-0.0050	0.00500	-6.1	0.62	112.741
					10/15/2013 17:43	0917-173_Nc	13_10_15_1743_25_431	1	-2.14	1.584	0.765	0.204	2.76	0.154	-0.084	2.22	-0.81	0.75	-0.0110	0.00500	-5.6	0.64	112.908
					10/15/2013 17:44	0917-173_Nc	13_10_15_1744_26_271	1	-1.33	1.594	0.801	0.201	2.81	0.151	-0.091	2.22	-0.88	0.75	-0.0100	0.00500	-5.9	0.64	112.686
					10/15/2013 17:45	0917-173_Nc	13_10_15_1745_27_041	1	-1.83	1.657	0.880	0.199	2.82	0.152	-0.033	2.21	-0.95	0.75	-0.0070	0.00500	-5.4	0.62	114.341
					10/15/2013 17:46	0917-173_Nc	13_10_15_1746_27_711	1	-1.99	1.662	0.915	0.202	2.73	0.154	0.025	2.24	-0.55	0.76	-0.0040	0.00500	-6.8	0.64	114.531
					10/15/2013 17:47	0917-173_Nc	13_10_15_1747_28_481	1	-3.48	1.492	0.832	0.205	2.79	0.153	-0.1590	2.23	-0.74	0.76	-0.0120	0.00500	-6.3	0.64	115.162
					10/15/2013 17:48	0917-173_Nc	13_10_15_1748_29_241	1	-1.01	1.573	0.942	0.202	2.80	0.153	-0.258	2.23	-0.65	0.76	-0.0090	0.00500	-6.1	0.64	116.201
					10/15/2013 17:49	0917-173_Nc	13_10_15_1749_30_061	1	-1.98	1.677	0.822	0.203	2.69	0.154	0.0880	2.23	-1.04	0.76	-0.0060	0.00500	-6.0	0.65	115.472
					10/15/2013 17:50	0917-173_Nc	13_10_15_1750_30_771	1	-1.60	1.639	0.840	0.207	2.59	0.150	-0.1630	2.23	-0.91	0.77	-0.0100	0.00600	-6.5	0.65	116.572
					10/15/2013 17:51	0917-173_Nc	13_10_15_1751_31_551	1	-1.03	1.596	0.909	0.206	2.59	0.153	-0.194	2.23	-0.72	0.78	-0.0050	0.00600	-6.4	0.65	117.452
					10/15/2013 17:52	0917-173_Nc	13_10_15_1752_32_281	1	-2.82	1.671	1.010	0.209	2.67	0.156	0.1200	2.22	-0.59	0.78	-0.0130	0.00600	-6.1	0.65	118.518
					10/15/2013 17:53	0917-173_Nc	13_10_15_1753_33_031	1	-0.93	1.602	0.909	0.208	2.54	0.153	-0.149	2.23	-0.71	0.78	-0.0090	0.00500	-6.2	0.64	117.545
					10/15/2013 17:54	0917-173_Nc	13_10_15_1754_33_752	1	-3.82	1.580	0.853	0.210	2.57	0.152	-0.146	2.23	-0.81	0.78	-0.0060	0.00500	-6.5	0.64	116.634
					10/15/2013 17:55	0917-173_Nc	13_10_15_1755_34_512	1	-3.45	1.524	0.792	0.207	2.51	0.153	-0.0360	2.23	-0.76	0.78	-0.0070	0.00600	-6.1	0.64	117.679
					10/15/2013 17:56	0917-173_Nc	13_10_15_1756_35_272	1	-1.89	1.577	0.911	0.208	2.55	0.153	0.0010	2.24	-0.67	0.78	-0.0090	0.00600	-6.2	0.65	117.748
					10/15/2013 17:57	0917-173_Nc	13_10_15_1757_36_032	1	-1.39	1.626	0.862	0.209	2.54	0.153	0.0060	2.23	-0.65	0.77	-0.0050	0.00600	-6.2	0.62	118.285
					10/15/2013 17:58	0917-173_Nc	13_10_15_1758_36_842	1	-1.92	1.663	0.909	0.211	2.51	0.153	-0.086	2.23	-0.78	0.78	-0.0100	0.00500	-5.9	0.67	118.278
					10/15/2013 17:59	0917-173_Nc	13_10_15_1759_37_412	1	-1.96	1.559	0.919	0.212	2.58	0.151	-0.225	2.22	-0.87	0.78	-0.0070	0.00500	-5.7	0.63	119.063
					10/15/2013 18:00	0917-173_Nc	13_10_15_1800_38_222	1	-2.77	1.665	0.935	0.213	2.54	0.154	0.02000	2.22	-0.95	0.79	-0.0050	0.00500	-6.4	0.65	118.891
					10/15/2013 18:01	0917-173_Nc	13_10_15_1801_38_972	1	0.29	1.637	0.874	0.204	2.64	0.153	-0.228	2.23	-1.14	0.79	-0.0040	0.00600	-6.3	0.65	119.431
					10/15/2013 18:02	0917-173_Nc	13_10_15_1802_39_732	1	-2.34	1.647	0.978	0.210	2.62	0.157	-0.0820	2.22	-0.96	0.79	-0.0070	0.00500	-6.1	0.66	119.826
					10/15/2013 18:03	0917-173_Nc	13_10_15_1803_40_492	1	-2.77	1.598	1.012	0.217	2.71	0.154	-0.0390	2.23	-0.75	0.80	-0.0060	0.00500	-6.1	0.65	120.54
					10/15/2013 18:04	0917-173_Nc	13_10_15_1804_41_282	1	-3.35	1.565	0.944	0.211	2.65	0.155	-0.0510	2.23	-0.61	0.79	-0.0120	0.00500	-6.8	0.66	120.291
					10/15/2013 18:05	0917-173_Nc	13_10_15_1805_42_053	1	-1.97	1.598	0.926	0.213	2.62	0.154	-0.0510	2.23	-0.52	0.79	-0.0040	0.00500	-6.1	0.66	120.542
					10/15/2013 18:06	0917-173_Nc	13_10_15_1806_42_763	1	-1.74	1.595	0.956	0.210	2.67	0.155	-0.0580	2.24	-0.49	0.78	-0.0060	0.00500	-5.9	0.65	118.172
					10/15/2013 18:07	0917-173_Nc	13_10_15_1807_43_543	1	-2.25	1.681	0.986	0.206	2.67	0.151	-0.00700	2.23	-0.50	0.75	-0.0080	0.00600	-6.5	0.65	114.185
					10/15/2013 18:08	0917-173_Nc	13_10_15_1808_44_293	1	0.23	1.616	1.020	0.192	2.79	0.151	0.0220	2.24	-0.24	0.70	-0.0060	0.00600	-5.5	0.62	106.613
					10/15/2013 18:09	0917-173_Nc	13_10_15_1809_45_103	1	-4.52	1.678	0.908	0.177	2.98	0.146	0.190	2.24	-0.09	0.65	-0.0080	0.00500	-5.1	0.63	98.594
					10/15/2013 18:10	0917-173_Nc	13_10_15_1810_45_773	1	-0.06	1.610	0.924	0.166	2.94	0.145	0.207	2.229	-0.21	0.59	-0.0100	0.00500	-5.6	0.58	88.334
					10/15/2013 18:11	0917-173_Nc	13_10_15_1811_46_533	1	-0.47	1.606	0.982	0.163	3.14	0.144	0.207	2.225	-0.35	0.55	-0.0100	0.00500	-4.3	0.58	83.278
					10/15/2013 18:12	0917-173_Nc	13_10_15_1812_47_343	1	-4.142	1.601	0.953	0.162	3.19	0.143	0.031	2.24	-0.31	0.57	-0.0060	0.00500	-4.8	0.57	84.743
					10/15/2013 18:13	0917-173_Nc	13_10_15_1813_48_113	1	-2.81	1.623	1.009	0.165	3.14	0.143	0.250	2.230	-0.30	0.59	-0.0100	0.00500	-4.7	0.58	87.104
					10/15/2013 18:14	0917-173_Nc	13_10_15_1814_48_813	1	-1.85	1.564	0.874	0.174	3.19	0.143	0.190	2.24	-0.31	0.61	-0.0070	0.00500	-4.9	0.57	92.723
					10/15/2013 18:15	0917-173_Nc	13_10_15_1815_49_633	1	0.35	1.695	0.779	0.177	3.12	0.144	0.257	2.24	-0.42	0.64	-0.0090	0.00500	-5.0	0.61	96.712
					10/15/2013 18:16	0917-173_Nc	13_10_15_1816_50_353	1	-3.40	1.618	0.921	0.184	3.25	0.147	0.270	2.24	-0.78	0.67	-0.0100	0.00500	-5.5	0.61	99.445
					10/15/2013 18:17	0917-173_Nc	13_10_15_1817_51_074	1	-2.29	1.699	0.973	0.185	3.25	0.150	0.069	2.23	-1.07	0.68	-0.0070	0.00500	-4.8	0.62	101.866
					10/15/2013 18:18	0917-173_Nc	13_10_15_1818_51_864	1	-3.76	1.670	0.913	0.190	3.33	0.153	0.020	2.22	-1.37	0.70	-0.0060	0.00500	-5.1	0.62	103.133
					10/15/2013 18:19	0917-173_Nc	13_10_15_1819_52_674	1	-0.36	1.596	0.904	0.193	3.30	0.151	-0.354	2.22	-1.40	0.70	-0.0130	0.00500	-4.7	0.63	104.693
					10/15/2013 18:20	0917-173_Nc	13_10_15_1820_53_414	1	-1.82	1.672	0.951	0.197	3.22	0.152	0.010	2.23	-1.33	0.71	-0.0100	0.00500	-4.6	0.63	105.913
					10/15/2013 18:21	0917-173_Nc	13_10_15_1821_54_174	1	-2.72	1.628	1.138	0.191	3.17	0.157	0.082	2.23	-1.17	0.71	-0.0060	0.00500	-5.4	0.60	106.568
					10/15/2013 18:22	0917-173_Nc	13_10_15_1822_54_894	1	-1.05	1.690	1.010	0.192	3.15	0.155	0.105	2.24	-1.12	0.73	-0.0020	0.00500	-5.8	0.63	108.55
					10/15/2013 18:23	0917-173_Nc	13_10_15_1823_55_724	1	-1.62	1.644	0.995	0.199	2.98	0.153	0.159	2.23	-1.10	0.74	-0.0070	0.00500	-5.4	0.63	110.675
					10/15/2013 18:24	0917-173_Nc	13_10_15_1824_56_494	1	-6.24	1.591	1.157	0.197	3.00	0.155	0.050	2.23	-0.73	0.74	-0.0110	0.00500	-5.4	0.64	111.885
					10/15/2013 18:25	0917-173_Nc	13_10_15_1825_57_204	1	-2.25	1.599	1.018	0.204	2.84	0.156	0.037	2.22	-0.66	0.75	-0.0060	0.00500	-6.3	0.64	113.669
					10/15/2013 18:26	0917-173_Nc	13_10_15_1826_57_954	1	-2.24	1.515	0.935	0.207	2.91	0.155	0.077	2.21	-0.86	0.76	-0.0090	0.00500	-5.6	0.62	115.309
					10/15/2013 18:27	0917-173_Nc	13_10_15_1827_58_704	1	-2.36	1.540	1.005	0.206	2.89	0.158	0.079	2.22	-1.15	0.77	-0.0080	0.00500	-5.7	0.65	115.586
					10/15/2013 18:28	0917-173_Nc	13_10_15_1828_59_474	1	-0.99	1.639	0.948	0.207	2.92	0.155	-0.048	2.21	-0.74	0.78	-0.0050	0.00600	-6.4	0.65	116.717
					10/15/2013 18:30	0917-173_Nc	13_10_15_1830_01_265	1	-1.71	1.670	0.953	0.209	2.88	0.157	-0.002	2.22	-0.96	0.78	-0.0070	0.00500	-5.3	0.67	117.482
					10/15/2013 18:31	0917-173_Nc	13_10_15_1831_02_065	1	-0.45	1.603	0.937	0.210	2.93	0.156	0.038	2.22	-0.87	0.79	-0.0050	0.00500	-6.7	0.65	118.451
					10/15/2013 18:32	0917-173_Nc	13_10_15_1832_02_795	1	-2.75	1.602	0.915	0.210	2.84	0.157	-0.088	2.22	-0.79	0.79	-0.0110	0.00600	-5.9	0.65	118.338
					10/15/2013 18:33	0917-173_Nc	13_10_15_1833_03_555	1	-3.70	1.686	0.880	0.207	2.86	0.159	-0.073	2.22	-0.90	0.79	-0.0070	0.00600	-5.9	0.69	119.383
					10/15/2013 18:34	0917-173_Nc	13_10_15_1834_04_365	1	-1.70	1.597	0.973	0.214	2.91	0.159	0.010	2.22	-0.82	0.79	-0.0070	0.00500	-5.9	0.66	118.515
					10/15/2013 18:35	0917-173_Nc	13_10_15_1835_05_115	1	-2.68	1.540	0.939	0.215	2.92	0.160	0.042	2.24	-0.93	0.80	-0.0080	0.00600	-5.8	0.67	119.674
			Stop		10/15/2013 18:36	0917-173_Nc	13_10_15_1836_05_865	1	-3.32	1.480	0.513	0.216	2.54	0.146	0.041	2.089	-2.70	0.76	-0.0050	0.00500	-5.9	0.64	109.906
					10/15/2013 18:37	0917-173_Nc	13_10_15_1837_06_585	1	-4.845	1.305	-1.655	0.294	0.123	0.0910	-0.202	0.640	-11.69	0.56	-0.01400	0.00300	-4.22	0.99	46.369
					10/15/2013 18:38	0917-173_Nc	13_10_15_1838_07_425	1	-5.632	1.358	-2.083	0.311	-0.092	0.0940	-0.285	0.228	-13.27	0.55	-0.01100	0.00300	-4.07	1.05	38.65
					10/15/2013 18:39	0917-173_Nc	13_10_15_1839_08_065	1	-4.92	1.362	-2.084	0.310	-0.203	0.0970	-0.248	0.209	-13.47	0.54	-0.00900	0.00300	-3.77	1.08	37.774
					10/15/2013 18:40	0917-173_Nc	13_10_15_1840_08_765	1	-5.97	1.344	-2.213	0.317	-0.2150	0.1000	-0.275	0.192	-13.47	0.54	-0.01200	0.00300	-3.88	1.08	37.428
					10/15/2013 18:41	0917-173_Nc	13_10_15_1841_09_505	1	-5.81	1.354	-2.009	0.317	-0.120	0.1030	-0.259	0.198	-13.31	0.54	-0.00800	0.00300	-3.90	1.10	37.175
					10/15/2013 18:42	0917-173_Nc	13_10_15_1842_10_276	1	-6.129	1.308	-2.075	0.311	-0.196	0.1010	-0.354	0.202	-13.43	0.54	-0.00800	0.00300	-4.40	1.08	37.12
					10/15/2013 18:43	0917-173_Nc	13_10_15_1843_11_086	1	-3.921	1.155	-1.539	0.237	-0.089	0.0760	-0.179	0.153	-9.79	0.41	-0.00800	0.00300	-3.96	0.811	26.995
					10/15/2013 18:44	0917-173_Nc	13_10_15_1844_11_866	1	-0.489	0.933	-0.249	0.069	0.081	0.0340	0.021	0.0840	-1.661	0.12	0.00	0.00200	-0.864	0.315	6.291
					10/15/2013 18:45	0917-173_Nc	13_10_15_1845_12_596	1	-0.178	0.980	-0.0110	0.051	0.0650	0.0310	0.095	0.0720	0.24000	0.09	0.00	0.00200	0.126	0.279	1.588
					10/15/2013 18:46	0917-173_Nc	13_10_15_1846_13_396	1	-2.221	1.252	0.573	0.127	2.06	0.094	0.515	1.449	-0.90	0.46	-0.0100	0.00400	-3.6	0.43	59.796
					10/15/2013 18:47	0917-173_Nc	13_10_15_1847_14_166	1	-3.44	1.676	0.900	0.199	3.14	0.154	0.114	2.21	-1.26	0.77	-0.0010	0.00600	-5.6	0.64	116.438
					10/15/2013 18:48	0917-173_Nc	13_10_15_1848_14_866	1	-1.61	1.601	0.937	0.211	3.16	0.158	0.034	2.20	-1.03	0.80	-0.0060	0.00600	-6.4	0.67	119.596
Data	Run	8	Start	A	10/15/2013 18:49	0917-173_Nc	13_10_15_1849_15_616	1	-4.45	1.561	0.950	0.207	3.01	0.158	-0.079	2.20	-0.94	0.79	-0.0030	0.00500	-5.6	0.67	119.683
					10/15/2013 18:50	0917-173_Nc	13_10_15_1850_16_406	1	-1.62	1.657	0.974	0.209	2.95	0.158	-0.401	2.19	-0.72	0.80	-0.0100	0.00600	-6.3	0.68	120.477
					10/15/2013 18:51	0917-173_Nc	13_10_15_1851_17_216	1	-2.93	1.572	0.905	0.216	2.96	0.159	0.029	2.20	-0.97	0.81	-0.0070	0.00600	-5.8	0.67	121.424
					10/15/2013 18:52	0917-173_Nc	13_10_15_1852_17_946	1	-2.70	1.527	0.907	0.215	3.09	0.161	-0.093	2.21	-0.91	0.81	-0.0060	0.00500	-6.4	0.67	122.027
					10/15/2013 18:53	0917-173_Nc	13_10_15_1853_18_657	1	-2.15	1.616	1.032	0.220	3.09	0.159	-0.160	2.19	-1.09	0.83	-0.0060	0.00500	-6.6	0.67	124.474
					10/15/2013 18:54	0917-173_Nc	13_10_15_1854_19_407	1	-1.40	1.576	1.051	0.224	3.08	0.164	-0.087	2.20	-1.66	0.86	-0.0110	0.00500	-6.0	0.64	127.782

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 18:55	0917-173_Nc	13_10_15_1855_20_197	1	-0.40	1.730	0.917	0.230	3.12	0.170	-0.222	2.20	-2.08	0.87	-0.0030	0.00600	-6.1	0.67	129.99
					10/15/2013 18:56	0917-173_Nc	13_10_15_1856_20_907	1	-3.73	1.552	0.870	0.235	3.24	0.171	-0.295	2.18	-2.76	0.90	-0.0080	0.00600	-5.3	0.67	133.371
					10/15/2013 18:57	0917-173_Nc	13_10_15_1857_21_717	1	-0.93	1.548	0.880	0.234	3.27	0.174	-0.410	2.19	-2.92	0.91	-0.0050	0.00600	-5.8	0.65	135.231
					10/15/2013 18:58	0917-173_Nc	13_10_15_1858_22_447	1	0.00	1.619	0.958	0.235	3.23	0.173	-0.232	2.20	-2.82	0.91	-0.0070	0.00600	-5.9	0.66	135.092
					10/15/2013 18:59	0917-173_Nc	13_10_15_1859_23_207	1	-4.26	1.623	1.100	0.240	3.26	0.175	-0.390	2.18	-2.44	0.92	-0.0110	0.00600	-5.8	0.67	135.035
					10/15/2013 19:00	0917-173_Nc	13_10_15_1900_23_947	1	-3.04	1.650	1.096	0.241	3.23	0.172	-0.550	2.20	-2.31	0.92	-0.0060	0.00600	-6.1	0.65	134.632
					10/15/2013 19:01	0917-173_Nc	13_10_15_1901_24_647	1	-3.49	1.647	1.179	0.239	3.34	0.174	-0.413	2.20	-2.38	0.92	-0.0050	0.00600	-6.2	0.68	135.324
					10/15/2013 19:02	0917-173_Nc	13_10_15_1902_25_427	1	-1.75	1.615	1.091	0.235	3.26	0.173	-0.405	2.19	-2.61	0.92	-0.0080	0.00700	-5.4	0.68	136.219
					10/15/2013 19:03	0917-173_Nc	13_10_15_1903_26_167	1	-2.46	1.596	1.001	0.247	3.32	0.178	-0.158	2.19	-2.62	0.93	-0.0070	0.00600	-6.4	0.67	137.442
					10/15/2013 19:04	0917-173_Nc	13_10_15_1904_26_967	1	-2.43	1.705	0.991	0.236	3.34	0.180	-0.524	2.18	-2.72	0.92	-0.0040	0.00600	-5.5	0.67	137.866
					10/15/2013 19:05	0917-173_Nc	13_10_15_1905_27_678	1	-1.24	1.539	1.077	0.242	3.30	0.181	-0.320	2.21	-2.52	0.92	-0.0020	0.00600	-6.3	0.66	136.366
					10/15/2013 19:06	0917-173_Nc	13_10_15_1906_28_368	1	-3.53	1.633	1.054	0.242	3.32	0.177	-0.589	2.19	-2.51	0.92	-0.0040	0.00600	-6.1	0.68	134.599
					10/15/2013 19:07	0917-173_Nc	13_10_15_1907_29_148	1	-1.59	1.632	0.879	0.239	3.32	0.178	-0.339	2.20	-2.34	0.90	-0.0090	0.00600	-5.8	0.67	133.8
					10/15/2013 19:08	0917-173_Nc	13_10_15_1908_29_878	1	-3.18	1.673	1.030	0.232	3.31	0.175	-0.385	2.19	-2.25	0.89	-0.0070	0.00600	-6.1	0.67	131.795
					10/15/2013 19:09	0917-173_Nc	13_10_15_1909_30_628	1	-2.75	1.604	0.957	0.225	3.24	0.175	-0.421	2.20	-1.94	0.87	-0.0100	0.00600	-6.1	0.66	129.394
					10/15/2013 19:10	0917-173_Nc	13_10_15_1910_31_398	1	-0.42	1.661	0.857	0.223	3.24	0.171	-0.256	2.20	-2.01	0.86	-0.0070	0.00600	-5.6	0.65	127.364
					10/15/2013 19:11	0917-173_Nc	13_10_15_1911_32_168	1	-1.80	1.577	0.949	0.222	3.19	0.169	-0.411	2.20	-1.71	0.84	-0.0050	0.00600	-5.7	0.66	125.647
					10/15/2013 19:12	0917-173_Nc	13_10_15_1912_32_878	1	-2.43	1.504	0.912	0.218	3.29	0.169	-0.468	2.20	-1.62	0.83	-0.0070	0.00500	-5.5	0.63	124.995
					10/15/2013 19:13	0917-173_Nc	13_10_15_1913_33_668	1	-2.43	1.548	0.910	0.222	3.21	0.168	-0.265	2.20	-1.76	0.84	-0.0010	0.00600	-5.5	0.65	125.846
					10/15/2013 19:14	0917-173_Nc	13_10_15_1914_34_358	1	0.09	1.641	1.055	0.224	3.32	0.170	-0.079	2.22	-1.59	0.85	-0.0080	0.00500	-5.2	0.66	126.748
					10/15/2013 19:15	0917-173_Nc	13_10_15_1915_35_158	1	-2.94	1.641	0.919	0.216	3.15	0.169	-0.251	2.19	-1.64	0.83	-0.0110	0.00600	-4.9	0.66	125.861
					10/15/2013 19:16	0917-173_Nc	13_10_15_1916_35_878	1	-0.90	1.620	1.061	0.224	3.15	0.170	-0.267	2.20	-1.35	0.84	0.0000	0.00600	-5.8	0.66	125.188
					10/15/2013 19:17	0917-173_Nc	13_10_15_1917_36_589	1	-3.70	1.665	0.970	0.215	3.10	0.168	-0.206	2.20	-1.33	0.82	-0.0050	0.00600	-5.8	0.67	123.83
					10/15/2013 19:18	0917-173_Nc	13_10_15_1918_37_339	1	-1.21	1.547	1.114	0.220	3.03	0.165	-0.175	2.19	-1.34	0.82	-0.0080	0.00600	-5.8	0.65	122.158
					10/15/2013 19:19	0917-173_Nc	13_10_15_1919_38_159	1	-1.50	1.619	0.898	0.214	3.03	0.162	-0.455	2.19	-0.91	0.80	-0.0060	0.00600	-6.4	0.66	119.804
					10/15/2013 19:20	0917-173_Nc	13_10_15_1920_38_909	1	-0.92	1.749	1.025	0.212	3.00	0.164	-0.213	2.20	-1.00	0.79	-0.0070	0.00600	-5.8	0.66	120.118
					10/15/2013 19:21	0917-173_Nc	13_10_15_1921_39_459	1	-3.13	1.662	0.872	0.213	2.98	0.163	-0.222	2.19	-1.04	0.80	-0.0080	0.00600	-6.2	0.64	120.66
					10/15/2013 19:22	0917-173_Nc	13_10_15_1922_40_209	1	-3.99	1.686	0.989	0.217	3.00	0.164	-0.039	2.19	-1.16	0.80	-0.0050	0.00600	-5.6	0.65	120.647
					10/15/2013 19:23	0917-173_Nc	13_10_15_1923_41_009	1	-4.19	1.576	0.918	0.212	3.00	0.163	-0.285	2.19	-1.15	0.81	-0.0050	0.00600	-5.5	0.66	120.997
					10/15/2013 19:24	0917-173_Nc	13_10_15_1924_41_719	1	-3.63	1.590	0.980	0.214	2.91	0.162	-0.314	2.19	-1.00	0.81	-0.0040	0.00500	-6.3	0.64	121.666
					10/15/2013 19:25	0917-173_Nc	13_10_15_1925_43_529	1	-0.02	1.533	0.761	0.214	2.86	0.165	-0.280	2.19	-1.17	0.80	-0.0060	0.00500	-6.0	0.63	121.711
					10/15/2013 19:26	0917-173_Nc	13_10_15_1926_43_249	1	-2.83	1.628	0.911	0.215	2.91	0.165	-0.164	2.20	-1.08	0.81	-0.0020	0.00500	-6.6	0.66	120.843
					10/15/2013 19:27	0917-173_Nc	13_10_15_1927_43_949	1	-3.53	1.625	0.851	0.220	2.97	0.165	-0.099	2.20	-1.34	0.81	-0.0040	0.00600	-6.3	0.62	121.412
					10/15/2013 19:28	0917-173_Nc	13_10_15_1928_44_689	1	-2.65	1.579	0.820	0.216	3.06	0.166	-0.244	2.19	-1.68	0.82	-0.0050	0.00600	-5.8	0.63	121.985
					10/15/2013 19:29	0917-173_Nc	13_10_15_1929_45_530	1	-0.12	1.583	0.694	0.220	3.08	0.170	-0.298	2.18	-2.03	0.82	-0.0060	0.00600	-5.0	0.64	122.744
					10/15/2013 19:30	0917-173_Nc	13_10_15_1930_46_270	1	-2.32	1.548	0.789	0.226	3.29	0.172	-0.217	2.19	-2.32	0.84	-0.0080	0.00600	-4.8	0.64	124.623
					10/15/2013 19:31	0917-173_Nc	13_10_15_1931_47_030	1	-1.46	1.645	0.800	0.227	3.38	0.176	-0.272	2.20	-2.19	0.84	-0.0080	0.00500	-5.5	0.66	125.314
					10/15/2013 19:32	0917-173_Nc	13_10_15_1932_47_740	1	-0.94	1.605	0.774	0.232	3.46	0.178	-0.32	2.19	-2.42	0.85	-0.0100	0.00600	-5.3	0.61	126.03
					10/15/2013 19:33	0917-173_Nc	13_10_15_1933_48_540	1	-2.02	1.651	0.720	0.226	3.51	0.182	-0.21	2.20	-2.62	0.85	-0.0070	0.00600	-5.0	0.64	125.95
					10/15/2013 19:34	0917-173_Nc	13_10_15_1934_49_250	1	-0.54	1.570	0.832	0.225	3.55	0.183	-0.22	2.20	-2.39	0.84	-0.0070	0.00600	-4.6	0.64	124.397
					10/15/2013 19:35	0917-173_Nc	13_10_15_1935_50_070	1	-2.24	1.645	0.6590	0.222	3.42	0.179	-0.550	2.20	-2.48	0.83	-0.0070	0.00500	-4.8	0.64	122.553
					10/15/2013 19:36	0917-173_Nc	13_10_15_1936_50_850	1	-1.70	1.580	0.843	0.215	3.39	0.172	-0.31	2.20	-2.08	0.81	-0.0100	0.00500	-4.8	0.62	119.34
					10/15/2013 19:37	0917-173_Nc	13_10_15_1937_51_560	1	-1.13	1.532	0.714	0.208	3.38	0.175	-0.302	2.20	-2.27	0.79	-0.0040	0.00500	-4.0	0.61	117.733
					10/15/2013 19:38	0917-173_Nc	13_10_15_1938_52_350	1	-0.91	1.588	0.796	0.206	3.28	0.166	-0.242	2.19	-2.14	0.78	-0.0100	0.00500	-4.9	0.61	116.433
					10/15/2013 19:39	0917-173_Nc	13_10_15_1939_53_120	1	-0.32	1.679	0.775	0.203	3.21	0.165	-0.081	2.21	-1.89	0.76	-0.0050	0.00500	-4.6	0.62	114.317
					10/15/2013 19:40	0917-173_Nc	13_10_15_1940_53_831	1	-1.88	1.519	0.839	0.204	3.21	0.162	-0.023	2.19	-1.76	0.75	-0.0090	0.00500	-4.8	0.58	112.735
					10/15/2013 19:41	0917-173_Nc	13_10_15_1941_54_551	1	-3.33	1.613	0.712	0.197	3.19	0.161	-0.188	2.20	-1.86	0.74	-0.0110	0.00500	-4.7	0.60	111.261
					10/15/2013 19:42	0917-173_Nc	13_10_15_1942_55_311	1	-1.87	1.715	0.836	0.198	3.13	0.161	-0.111	2.19	-1.80	0.74	-0.0070	0.00500	-4.6	0.63	110.254
					10/15/2013 19:43	0917-173_Nc	13_10_15_1943_56_131	1	0.41	1.646	0.788	0.196	3.16	0.165	-0.124	2.21	-1.88	0.74	-0.0120	0.00500	-4.5	0.61	110.896
					10/15/2013 19:44	0917-173_Nc	13_10_15_1944_56_911	1	0.00	1.631	0.847	0.202	3.14	0.161	0.023	2.19	-1.71	0.74	-0.0040	0.00500	-5.1	0.58	110.201
					10/15/2013 19:45	0917-173_Nc	13_10_15_1945_57_631	1	-1.25	1.595	0.970	0.205	3.07	0.160	-0.169	2.20	-1.59	0.73	-0.0080	0.00500	-4.3	0.60	108.9
					10/15/2013 19:46	0917-173_Nc	13_10_15_1946_58_371	1	-0.83	1.630	0.860	0.198	2.95	0.158	0.014	2.19	-1.54	0.72	-0.0100	0.00500	-3.9	0.60	108.422
					10/15/2013 19:47	0917-173_Nc	13_10_15_1947_59_161	1	0.88	1.639	0.890	0.191	2.99	0.156	-0.046	2.19	-1.38	0.72	-0.0100	0.00500	-4.7	0.59	108.048
			Stop		10/15/2013 19:48	0917-173_Nc	13_10_15_1948_59_901	1	-3.140	1.245	-1.053	0.258	0.848	0.0890	0.226	1.145	-9.11	0.55	-0.00900	0.00300	-3.70	0.80	57.557
					10/15/2013 19:50	0917-173_Nc	13_10_15_1950_00_701	1	-3.72	1.214	-1.977	0.303	-0.132	0.0930	-0.1020	0.247	-12.57	0.53	-0.01800	0.00300	-3.09	0.99	38.253
					10/15/2013 19:51	0917-173_Nc	13_10_15_1951_01_461	1	-3.32	1.410	-2.025	0.314	-0.122	0.0950	-0.270	0.202	-13.29	0.54	-0.0130	0.00300	-3.49	1.06	37.928
					10/15/2013 19:52	0917-173_Nc	13_10_15_1952_02_181	1	-5.259	1.377	-2.030	0.313	-0.2230	0.0990	-0.480	0.202	-13.23	0.53	-0.00900	0.00400	-3.85	1.04	37.713
					10/15/2013 19:53	0917-173_Nc	13_10_15_1953_02_942	1	-4.164	1.205	-1.728	0.255	-0.080	0.0860	-0.256	0.169	-10.81	0.43	-0.01000	0.00400	-2.90	0.84	30.178
					10/15/2013 19:54	0917-173_Nc	13_10_15_1954_03_702	1	-0.538	0.962	-0.257	0.073	0.0060	0.0320	-0.0520	0.0830	-2.042	0.12	-0.00200	0.00200	-0.05	0.323	7.186
					10/15/2013 19:55	0917-173_Nc	13_10_15_1955_04_512	1	0.639	0.946	0.015	0.061	0.090	0.0520	0.702	1.118	-0.022	0.10	-0.00300	0.00200	-0.689	0.315	2.877
					10/15/2013 19:56	0917-173_Nc	13_10_15_1956_05_172	1	1.224	1.040	-0.0040	0.061	0.155	0.0560	0.712	1.329	-0.040	0.10	-0.01000	0.00200	0.266	0.330	2.715
					10/15/2013 19:57	0917-173_Nc	13_10_15_1957_05_982	1	0.664	1.116	0.287	0.078	0.807	0.0760	0.7010	1.582	-0.39	0.20	-0.00400	0.00300	-1.42	0.358	21.585
					10/15/2013 19:58	0917-173_Nc	13_10_15_1958_06_702	1	-0.367	1.471	0.781	0.166	2.51	0.132	0.271	2.174	-1.26	0.59	-0.0090	0.00500	-4.3	0.53	88.723
					10/15/2013 19:59	0917-173_Nc	13_10_15_1959_07_442	1	-3.38	1.579	0.925	0.187	2.90	0.148	0.067	2.21	-1.06	0.68	-0.0080	0.00500	-5.1	0.58	103.534
Data	Run	9	Start	A	10/15/2013 20:00	0917-173_Nc	13_10_15_2000_08_262	1	-2.997	1.605	1.056	0.182	2.92	0.151	0.196	2.21	-1.14	0.68	-0.0040	0.00500	-4.8	0.59	102.395
					10/15/2013 20:01	0917-173_Nc	13_10_15_2001_09_022	1	-1.571	1.596	0.973	0.182	2.98	0.151	0.160	2.21	-1.03	0.67	-0.0080	0.00500	-4.7	0.59	101.467
					10/15/2013 20:02	0917-173_Nc	13_10_15_2002_09_792	1	-4.04	1.611	0.892	0.181	3.01	0.153	0.166	2.200	-1.27	0.66	-0.0100	0.00500	-4.1	0.57	100.512
					10/15/2013 20:03	0917-173_Nc	13_10_15_2003_10_502	1	-2.20	1.550	0.859	0.182	3.08	0.148	0.150	2.20	-1.25	0.66	-0.0070	0.00500	-4.5	0.58	99.466
					10/15/2013 20:04	0917-173_Nc	13_10_15_2004_11_152	1	-1.80	1.563	0.841	0.176	3.12	0.149	-0.106	2.20	-1.52	0.65	-0.0110	0.00500	-4.0	0.57	97.189
					10/15/2013 20:05	0917-173_Nc	13_10_15_2005_11_943	1	-0.78	1.486	1.024	0.177	3.15	0.149	0.126	2.21	-1.26	0.64	-0.0050	0.00500	-3.7	0.55	96.826
					10/15/2013 20:06	0917-173_Nc	13_10_15_2006_12_743	1	-2.524	1.638	0.945	0.179	3.10	0.149	-0.098	2.21	-1.36	0.65	-0.0070	0.00500	-4.2	0.60	96.972
					10/15/2013 20:07	0917-173_Nc	13_10_15_2007_13_463	1	-1.38	1.536	1.015	0.182	3.04	0.148	0.026	2.21	-1.45	0.66	-0.0090	0.00500	-4.5	0.58	99.732
					10/15/2013 20:08	0917-173_Nc	13_10_15_2008_14_173	1	-3.56	1.659	0.873	0.180	2.93	0.150	-0.095	2.20	-1.47	0.67	-0.0080	0.00500	-4.3	0.59	100.644
					10/15/2013 20:09	0917-173_Nc	13_10_15_2009_14_993	1	-4.566	1.521	0.955	0.186	3.02	0.149	0.041	2.21	-1.53	0.68	-0.0050	0.00500	-4.5	0.57	101.994
					10/15/2013 20:10	0917-173_Nc	13_10_15_2010_15_743	1	-1.11	1.544	0.955	0.186	2.89	0.151	-0.007	2.21	-1.57	0.68	-0.0060	0.00500	-4.7	0.58	101.659
					10/15/2013 20:11	0917-173_Nc	13_10_15_2011_16_563	1	-1.34	1.588	1.087	0.185	2.90	0.146	0.092	2.20	-1.48	0.67	-0.0060	0.00500	-4.4	0.59	100.409
					10/15/2013 20:12	0917-173_Nc	13_10_15_2012_17_303	1	0.06	1.606	1.001	0.185	2.89	0.147	0.052	2.22	-1.34	0.66	-0.0070	0.00500	-4.6	0.58	97.852
					10/15/2013 20:13	0917-173_Nc	13_10_15_2013_18_053	1	-2.67	1.583	0.941	0.177	2.81	0.148	-0.018	2.20	-1.42	0.65	-0.0090	0.00500	-4.6	0.59	96.483
					10/15/2013 20:14	0917-173_Nc	13_10_15_2014_18_853	1	-2.08	1.622	0.837	0.171	2.93	0.147	0.198	2.215	-1.34	0.63	-0.0040	0.00500	-4.2	0.59	95.472
					10/15/2013 20:15	0917-173_Nc	13_10_15_2015_19_553	1	-2.83	1.583	0.918	0.172	2.91	0.146	0.059	2.22	-1.20	0.62	-0.0070	0.00500	-4.7	0.57	93.724
					10/15/2013 20:16	0917-173_Nc	13_10_15_2016_20_383	1	-1.50	1.587	1.020	0.175	2.85	0.148	0.030	2.22	-0.85	0.62	-0.0100	0.00500	-4.9	0.57	92.568
					10/15/2013 20:17	0917-173_Nc	13_10_15_2017_21_104	1	-0.86	1.595	0.946	0.175	2.86	0.144	0.167	2.220	-1.01	0.63	-0.0090	0.00500	-4.4	0.59	94.877
					10/15/2013 20:18	0917-173_Nc	13_10_15_2018_21_884	1	-1.62	1.598	0.870	0.174	2.82	0.144	0.204	2.207	-1.33	0.65	-0.0090	0.00500	-4.2	0.58	97.437
					10/15/2013 20:19	0917-173_Nc	13_10_15_2019_22_634	1	-2.36	1.625	0.967	0.182	2.79	0.144	0.141	2.197	-1.25	0.67	-0.0090	0.00500	-4.8	0.59	99.944
					10/15/2013 20:20	0917-173_Nc	13_10_15_2020_23_404	1	-4.29	1.588	1.084	0.184	2.83	0.145	0.103	2.217	-1.35	0.68	-0.0120	0.00500	-4.4	0.59	102.703
					10/15/2013 20:21	0917-173_Nc	13_10_15_2021_24_064	1	-0.90	1.502	0.915	0.189	2.70	0.145	0.105	2.24	-1.65	0.68	-0.0050	0.00500	-4.5	0.58	101.55
					10/15/2013 20:22	0917-173_Nc	13_10_15_2022_24_884	1	-2.06	1.596	0.964	0.186	2.73	0.144	-0.052	2.224	-1.58	0.67	-0.0100	0.00500	-4.1	0.59	101.278
					10/15/2013 20:23	0917-173_Nc	13_10_15_2023_25_664	1	-2.30	1.631	1.017	0.182	2.71	0.146	-0.0050	2.209	-1.38	0.67	-0.0080	0.00500	-4.6	0.58	100.777
					10/15/2013 20:24	0917-173_Nc	13_10_15_2024_26_364	1	-1.18	1.614	1.031	0.184	2.71	0.146	0.195	2.217	-1.44	0.67	-0.0080	0.00600	-4.8	0.59	100.711
					10/15/2013 20:25	0917-173_Nc	13_10_15_2025_27_134	1	-1.59	1.653	0.922	0.182	2.67	0.142	0.050	2.22	-1.43	0.67	-0.0080	0.00500	-4.5	0.60	99.992
					10/15/2013 20:26	0917-173_Nc	13_10_15_2026_27_894	1	-3.22	1.689	0.963	0.179	2.58	0.142	0.243	2.215	-1.37	0.66	-0.0080	0.00500	-4.5	0.61	98.47
					10/15/2013 20:27	0917-173_Nc	13_10_15_2027_28_654	1	-1.14	1.610	0.976	0.174	2.62	0.147	0.291	2.232	-1.41	0.64	-0.0070	0.00500	-4.2	0.57	96.749
					10/15/2013 20:28	0917-173_Nc	13_10_15_2028_29_365	1	-1.02	1.567	1.018	0.170	2.68	0.144	0.144	2.209	-1.24	0.63	-0.0090	0.00500	-4.6	0.55	96.181
					10/15/2013 20:29	0917-173_Nc	13_10_15_2029_30_125	1	-2.44	1.541	0.799	0.176	2.66	0.144	-0.0860	2.212	-1.13	0.63	-0.0110	0.00500	-4.8	0.56	94.606
					10/15/2013 20:30	0917-173_Nc	13_10_15_2030_30_925	1	-4.08	1.577	0.927	0.172	2.68	0.140	0.090	2.224	-1.32	0.62	-0.0030	0.00500	-3.7	0.57	93.087
					10/15/2013 20:31	0917-173_Nc	13_10_15_2031_31_715	1	-2.26	1.614	0.966	0.170	2.68	0.142	0.142	2.223	-1.11	0.60	-0.0090	0.00500	-3.9	0.58	91.685
					10/15/2013 20:32	0917-173_Nc	13_10_15_2032_32_475	1	-1.98	1.590	0.836	0.163	2.84	0.143	0.290	2.232	-1.22	0.59	-0.0090	0.00500	-3.4	0.57	90.136
					10/15/2013 20:33	0917-173_Nc	13_10_15_2033_33_185	1	-0.76	1.651	0.797	0.171	2.82	0.139	0.211	2.232	-1.33	0.60	-0.0070	0.00500	-4.7	0.58	88.692
					10/15/2013 20:34	0917-173_Nc	13_10_15_2034_33_905	1	-0.79	1.591	0.749	0.166	2.76	0.140	0.159	2.206	-1.23	0.59	-0.0080	0.00500	-4.1	0.58	88.163
					10/15/2013 20:35	0917-173_Nc	13_10_15_2035_34_705	1	-4.22	1.640	0.817	0.169	2.76	0.141	0.379	2.225	-1.29	0.59	-0.0090	0.00500	-4.2	0.58	87.831
					10/15/2013 20:36	0917-173_Nc	13_10_15_2036_35_445	1	-1.93	1.512	0.804	0.167	2.87	0.138	0.201	2.218	-1.41	0.58	-0.0080	0.00500	-4.0	0.57	87.747
					10/15/2013 20:37	0917-173_Nc	13_10_15_2037_36_255	1	-1.54	1.567	0.778	0.166	2.81	0.140	0.176	2.212	-1.36	0.59	-0.0080	0.00500	-4.1	0.55	88.515
					10/15/2013 20:38	0917-173_Nc	13_10_15_2038_37_015	1	-1.37	1.583	0.843	0.162	2.84	0.140	0.195	2.213	-1.34	0.59	-0.0130	0.00500	-4.2	0.56	88.37
					10/15/2013 20:39	0917-173_Nc	13_10_15_2039_37_755	1	-2.82	1.656	0.865	0.161	2.87	0.139	0.133	2.215	-1.48	0.59	-0.0080	0.00500	-3.6	0.57	87.756
					10/15/2013 20:40	0917-173_Nc	13_10_15_2040_38_526	1	-4.065	1.623	0.890	0.162	2.92	0.140	0.136	2.210	-1.57	0.57	-0.0090	0.00500	-3.3	0.56	85.999
					10/15/2013 20:41	0917-173_Nc	13_10_15_2041_39_246	1	-1.27	1.700	0.900	0.161	3.09	0.138	0.139	2.22	-1.66	0.57	-0.0100	0.00500	-3.9	0.59	84.272
					10/15/2013 20:42	0917-173_Nc	13_10_15_2042_39_956	1	-2.638	1.625	0.944	0.161	3.14	0.140	0.143	2.22	-1.61	0.57	-0.0100	0.00500	-2.8	0.58	83.174
					10/15/2013 20:43	0917-173_Nc	13_10_15_2043_40_746	1	-2.416	1.591	0.841	0.158	3.30	0.140	0.207	2.22	-1.89	0.56	-0.0050	0.00500	-3.9	0.56	82.142
					10/15/2013 20:44	0917-173_Nc	13_10_15_2044_41_566	1	-2.37	1.499	0.765	0.162	3.32	0.139	0.361	2.22	-2.02	0.56	-0.0090	0.00500	-4.0	0.53	81.638
					10/15/2013 20:45	0917-173_Nc	13_10_15_2045_42_186	1	-2.90	1.592	0.732	0.159	3.40	0.141	0.101	2.22	-2.28	0.56	-0.0090	0.00500	-2.9	0.54	81.968
					10/15/2013 20:46	0917-173_Nc	13_10_15_2046_42_986	1	0.58	1.603	0.837	0.161	3.48	0.142	0.31	2.20	-2.32	0.56	-0.0130	0.00500	-3.5	0.54	81.403
					10/15/2013 20:47	0917-173_Nc	13_10_15_2047_43_726	1	-3.43	1.558	0.777	0.154	3.38	0.141	0.130	2.22	-2.09	0.55	-0.0060	0.00500	-2.8	0.53	81.722
					10/15/2013 20:48	0917-173_Nc	13_10_15_2048_44_446	1	-3.245	1.642	0.813	0.157	3.37	0.139	0.138	2.22	-2.11	0.56	-0.0080	0.00500	-2.6	0.55	81.827
					10/15/2013 20:49	0917-173_Nc	13_10_15_2049_45_236	1	-3.757	1.542	0.771	0.161	3.34	0.141	0.205	2.22	-2.27	0.55	-0.0050	0.00400	-2.3	0.54	80.95
					10/15/2013 20:50	0917-173_Nc	13_10_15_2050_45_976	1	-0.19	1.656	0.832	0.157	3.40	0.141	0.334	2.22	-2.09	0.55	-0.0120	0.00400	-2.9	0.56	80.334
					10/15/2013 20:51	0917-173_Nc	13_10_15_2051_46_746	1	-2.08	1.521	0.765	0.157	3.45	0.136	0.253	2.217	-2.09	0.54	-0.0100	0.00500	-3.0	0.52	79.482
					10/15/2013 20:52	0917-173_Nc	13_10_15_2052_47_447	1	-1.666	1.574	0.870	0.156	3.45	0.139	0.185	2.214	-2.08	0.55	-0.0120	0.00500	-2.9	0.53	79.134
					10/15/2013 20:53	0917-173_Nc	13_10_15_2053_48_167	1	-2.32	1.553	0.765	0.159	3.53	0.139	0.062	2.22	-1.96	0.54	-0.0070	0.00500	-2.9	0.55	78.234
					10/15/2013 20:54	0917-173_Nc	13_10_15_2054_48_927	1	-2.893	1.619	0.893	0.158	3.55	0.140	0.079	2.22	-1.93	0.53	-0.0070	0.00500	-3.4	0.54	77.114
					10/15/2013 20:55	0917-173_Nc	13_10_15_2055_49_707	1	-1.892	1.592	0.752	0.153	3.58	0.137	0.189	2.22	-2.14	0.52	-0.0070	0.00500	-2.7	0.54	75.341
					10/15/2013 20:56	0917-173_Nc	13_10_15_2056_50_477	1	-1.850	1.645	0.772	0.147	3.60	0.137	0.318	2.21	-1.74	0.51	-0.0090	0.00500	-3.3	0.54	74.165
					10/15/2013 20:57	0917-173_Nc	13_10_15_2057_51_217	1	-1.151	1.533	0.784	0.151	3.56	0.138	0.153	2.23	-1.96	0.52	-0.0100	0.00500	-3.6	0.50	73.992
					10/15/2013 20:58	0917-173_Nc	13_10_15_2058_52_037	1	-4.98	1.684	0.900	0.150	3.55	0.136	0.320	2.22	-1.97	0.51	-0.0160	0.00500	-2.5	0.55	73.481
					10/15/2013 20:59	0917-173_Nc	13_10_15_2059_52_747	1	-1.851	1.291	-0.4440	0.197	1.91	0.0960	0.461	1.577	-6.851	0.49	-0.01200	0.00300	-3.6	0.64	58.408
			Stop		10/15/2013 21:00	0917-173_Nc	13_10_15_2100_53_507	1	-4.47	1.437	-1.888	0.297	-0.034	0.0950	-0.272	0.332	-12.86	0.53	-0.00900	0.00400	-3.87	1.03	38.227
					10/15/2013 21:01	0917-173_Nc	13_10_15_2101_54_237	1	-1.745	1.092	-0.925	0.160	-0.032	0.0530	-0.0500	0.159	-6.63	0.29	-0.00600	0.00200	-1.55	0.584	19.435
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_01_112	1	-0.4	1.5	-0.1210	0.082	-0.66	1.49	-0.429	0.0980	-0.089	0.134	0.055	0.601	0.224	0.450	-1.878
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_19_662	1	0.1	1.6	-0.099	0.082	-0.45	1.59	-0.0880	0.0990	-0.04700	0.140	0.059	0.638	-0.083	0.470	-1.993
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_38_242	1	2.4	1.6	0.050	0.089	-0.52	1.62	-0.298	0.0970	-0.227	0.146	0.063	0.652	-0.1030	0.470	-2.034
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_56_802	1	1.1	1.6	0.064	0.082	-0.58	1.65	-0.224	0.0970	-0.319	0.138	0.057	0.660	1.50	0.448	-2.049
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_15_223	1	-3.3	1.5	0.0290	0.083	-0.52	1.66	0.0050	0.1090	-0.265	0.137	0.057	0.663	0.44	0.460	-2.085
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_33_823	1	0.8	1.4	0.066	0.082	-0.55	1.66	-0.254	0.1130	-0.400	0.133	0.053	0.666	0.768	0.425	-2.065
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_52_323	1	3.0	1.5	-0.076	0.086	-0.60	1.66	-0.163	0.1070	0.361	0.138	0.059	0.666	-0.679	0.460	-2.066
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_10_943	1	0.9	1.4	-0.0060	0.078	-0.56	1.66	-0.080	0.1080	0.068	0.128	0.051	0.662	-0.372	0.430	-2.052
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_29_463	1	0.4	1.6	0.1970	0.086	-0.48	1.67	-0.01000	0.1020	0.236	0.143	0.070	0.661	-0.661	0.472	-2.107
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_47_913	1	-2.5	1.5	0.091	0.086	-0.51	1.66	-0.1890	0.1060	-0.062	0.139	0.052	0.664	0.420	0.448	-2.086
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_06_603	1	2.8	1.5	-0.047	0.087	-0.59	1.66	-0.395	0.1090	-0.040	0.140	0.060	0.662	-0.25	0.446	-2.096
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_25_043	1	-1.7	1.5	-0.0760	0.085	-0.61	1.66	-0.478	0.0980	-0.1370	0.140	0.060	0.662	0.146	0.468	-2.061
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_43_553	1	0.0	1.6	0.1360	0.084	-0.51	1.66	-0.248	0.1080	-0.047	0.138	0.055	0.661	-0.08	0.466	-2.097
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_02_113	1	1.0	1.6	0.011	0.080	-0.61	1.66	0.0290	0.1030	-0.2410	0.133	0.058	0.662	0.425	0.444	-2.105
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_20_623	1	1.9	1.4	0.0110	0.084	-0.51	1.66	-0.307	0.1010	-0.103	0.133	0.061	0.663	0.071	0.439	-2.122
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_39_233	1	-1.8	1.5	-0.038	0.085	-0.53	1.66	-0.375	0.1050	-0.127	0.137	0.059	0.664	0.284	0.449	-2.098
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_57_753	1	0.3	1.3	0.0190	0.086	-0.56	1.66	-0.219	0.1090	-0.108	0.135	0.057	0.664	0.274	0.423	-2.096
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_45_404	1	2.9420	2.734	-0.095	0.143	0.025	0.0850	-0.112	0.149	0.248	0.239	-0.00600	0.00500	-0.56	0.82	0.029
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_51_574	1	-2.619	2.717	0.250	0.149	0.0920	0.093	0.04300	0.213	0.48	0.242	0.00500	0.00500	-2.05	0.79	-0.008
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_57_784	1	-2.736	2.542	-0.556	0.147	-0.0130	0.0900	0.626	0.502	-0.45	0.234	-0.01100	0.00500	0.31	0.77	0.076
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_04_024	1	5.936	2.562	0.157	0.153	-0.067	0.112	0.589	1.335	0.412	0.245	0.0060	0.00700	-1.33	0.80	0.081
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_10_174	1	3.894	2.733	0.014	0.147	0.03000	0.1170	0.690	1.887	-0.209	0.245	0.00100	0.00600	-0.65	0.83	0.214
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_16_234	1	0.44	2.840	0.126	0.156	-0.0470	0.130	0.223	2.004	-0.347	0.256	-0.01200	0.00700	1.130	0.85	0.287

Location Disc. # Start/Stop Instrument

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
				Label		Label		Label		Label		Label		Label		Label		
				1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_22_494	1	-0.911	2.810	0.250	0.162	-0.313	0.142	0.816	2.096	-0.193	0.260	0.00100	0.00800	-0.180	0.85	0.282
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_28_654	1	5.04	2.910	0.03	0.167	-0.1070	0.138	0.48	2.017	-0.478	0.269	-0.02700	0.00700	-0.63	0.87	0.277
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_34_894	1	-2.321	3.111	-0.089	0.163	-0.255	0.141	0.720	1.968	0.20	0.273	-0.01800	0.00700	-1.712	0.92	0.331
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_41_054	1	0.708	3.100	0.053	0.166	-0.2510	0.140	0.42	1.896	0.02200	0.275	-0.01700	0.00800	-0.848	0.95	0.257
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_47_144	1	-2.249	3.019	0.0070	0.174	-0.097	0.143	1.192	1.780	-0.2050	0.279	-0.01500	0.00800	-0.1670	0.92	0.235
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_53_364	1	-3.19	3.237	0.070	0.174	-0.250	0.141	1.001	1.723	-0.439	0.286	-0.02100	0.00700	-0.04	0.95	0.23
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_59_554	1	-0.175	3.136	-0.003	0.172	-0.0090	0.139	0.625	1.619	-0.051	0.284	-0.02	0.00700	0.016	0.94	0.107
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_05_784	1	-1.552	3.233	0.094	0.162	0.0580	0.143	0.56	1.524	-0.14	0.272	-0.00300	0.00800	-1.267	0.91	0.142
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_11_964	1	-0.527	3.038	-0.033	0.179	-0.391	0.133	0.745	1.47	-0.205	0.285	-0.00300	0.00700	-0.408	0.95	0.129
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_18_044	1	-0.691	3.592	-0.192	0.180	-0.283	0.148	0.695	1.33	-0.368	0.307	-0.01700	0.00800	-2.20	1.02	0.071
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_24_244	1	-2.44	3.072	-0.137	0.183	-0.1880	0.143	1.167	1.31	0.548	0.292	-0.02300	0.00800	-3.64	0.95	0.029
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_30_434	1	-5.348	3.147	-0.0980	0.175	-0.260	0.146	1.274	1.28	-0.078	0.287	-0.00500	0.00700	-2.33	0.96	-0.018
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_36_724	1	-1.948	3.564	0.349	0.185	-0.615	0.148	0.49	1.24	-0.41	0.308	-0.00800	0.00800	-3.30	1.04	0.03
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_42_884	1	-3.741	3.395	-0.422	0.167	-0.1340	0.152	1.380	1.37	0.04	0.288	-0.02200	0.00800	-1.26	0.96	0.076
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_49_014	1	-0.128	3.432	0.220	0.180	-0.242	0.141	1.424	1.43	0.312	0.300	-0.01100	0.00800	-2.246	1.02	0.147
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_55_204	1	5.26	3.222	-0.181	0.190	-0.1320	0.140	0.884	1.42	0.451	0.305	-0.0110	0.00800	-0.71	0.97	0.073
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_01_394	1	-4.143	3.232	0.2790	0.178	-0.1420	0.148	1.393	1.497	-0.046	0.293	-0.01300	0.00800	-1.83	0.99	0.147
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_07_574	1	-4.996	3.308	0.339	0.173	-0.0810	0.147	1.381	1.582	0.06	0.288	-0.00900	0.00700	-1.64	1.01	0.174
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_13_664	1	-0.999	3.256	0.091	0.175	-0.1350	0.142	1.019	1.514	-0.053	0.290	-0.01900	0.00800	-0.92	0.95	0.19
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_19_844	1	-4.833	3.574	0.201	0.176	-0.141	0.150	1.366	1.575	0.12	0.300	-0.02300	0.00800	-2.70	1.05	0.273
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_26_064	1	0.008	3.492	0.302	0.170	-0.220	0.141	1.283	1.536	-0.130	0.290	0.00900	0.00700	-2.52	0.98	0.262
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_32_244	1	-3.584	3.316	0.023	0.172	0.224	0.144	1.277	1.582	-0.328	0.286	-0.01200	0.00700	-1.96	0.95	0.217
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_38_444	1	1.07	3.040	-0.205	0.173	-0.175	0.141	1.062	1.557	0.53	0.282	-0.02400	0.00800	-4.61	0.93	0.256
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_44_534	1	-0.3960	3.287	0.107	0.181	-0.0940	0.139	0.773	1.594	0.27	0.297	-0.01400	0.00700	-1.467	0.97	0.245
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_50_814	1	-2.607	3.420	-0.035	0.169	-0.0790	0.150	0.771	1.608	0.22	0.287	-0.01900	0.00800	-1.278	0.98	0.338
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_56_934	1	-2.034	3.380	-0.049	0.176	-0.1920	0.147	0.665	1.541	0.315	0.293	-0.01900	0.00800	-1.13	1.00	0.292
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_03_164	1	-2.815	3.086	-0.363	0.162	0.169	0.137	1.597	1.464	-0.03	0.268	-0.00400	0.00800	-1.60	0.882	0.323
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_09_364	1	-4.841	3.217	-0.209	0.175	-0.1390	0.145	1.513	1.564	-0.34	0.29	-0.00200	0.00700	-1.07	0.99	0.311
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_15_454	1	-3.59	3.461	0.008	0.171	-0.0040	0.146	1.177	1.529	-0.065	0.294	-0.01200	0.00700	-1.139	1.02	0.357
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_21_724	1	-5.8060	3.140	-0.066	0.176	-0.173	0.147	1.231	1.529	-0.343	0.286	-0.01100	0.00700	-2.779	0.92	0.308
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_27_854	1	4.266	3.073	0.2390	0.180	-0.396	0.147	0.864	1.535	0.04	0.29	-0.01600	0.00800	0.25	0.98	0.32
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_34_044	1	-7.154	3.168	-0.228	0.184	-0.1020	0.145	0.704	1.539	-0.179	0.298	-0.00700	0.00800	-2.00	1.01	0.403
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_40_254	1	-1.553	3.279	-0.157	0.167	-0.215	0.143	0.657	1.526	0.257	0.282	-0.00700	0.00800	-1.593	0.98	0.352
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_46_344	1	-5.792	3.111	0.090	0.175	-0.1160	0.142	1.094	1.579	-0.243	0.285	-0.01100	0.00800	-1.00	0.91	0.414
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_52_544	1	-1.20	3.263	0.1210	0.176	-0.0380	0.149	0.882	1.692	-0.22	0.289	-0.00900	0.00700	-2.88	0.98	0.353
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_58_824	1	0.6930	2.949	-0.126	0.178	-0.173	0.141	0.819	1.816	0.15	0.280	-0.01500	0.00700	-2.11	0.90	0.355
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_05_014	1	-2.380	3.101	-0.480	0.164	-0.347	0.140	1.278	1.905	-0.07	0.274	-0.00700	0.00600	-1.743	0.94	0.463
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_11_214	1	-0.258	3.108	0.123	0.160	0.1130	0.141	1.083	1.933	0.00	0.270	-0.01900	0.00800	-2.56	0.89	0.449
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_17_304	1	6.120	2.786	-0.012	0.162	-0.373	0.144	1.058	1.986	0.40	0.262	-0.00600	0.00600	-3.89	0.88	0.451
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_23_504	1	-12.013	2.740	-0.335	0.161	-0.255	0.140	1.143	1.957	-0.591	0.261	0.00200	0.00700	0.47	0.84	0.471
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_29_674	1	1.07	2.725	0.305	0.170	-0.0260	0.145	1.078	2.049	-0.067	0.268	-0.00200	0.00700	-1.3130	0.83	0.481
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_35_864	1	4.523	3.028	0.33	0.153	-0.060	0.1370	0.892	2.060	0.073	0.257	-0.01300	0.00700	0.294	0.861	0.551
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_42_064	1	1.20	2.928	-0.033	0.157	-0.155	0.143	0.986	2.010	-0.383	0.257	-0.02700	0.00700	-1.37	0.86	0.655
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_48_164	1	-4.792	2.972	0.214	0.169	0.05300	0.144	1.311	1.990	-0.080	0.275	-0.01100	0.00700	0.299	0.90	0.499
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_54_354	1	-5.105	3.037	0.0020	0.158	0.0420	0.146	0.911	2.069	-0.14	0.264	-0.02600	0.00800	-1.73	0.86	0.535
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_00_544	1	-6.26	3.086	-0.095	0.163	-0.0210	0.144	1.425	1.887	0.51	0.276	-0.01100	0.00800	-1.43	0.93	0.56
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_06_824	1	-5.518	3.472	-0.209	0.172	-0.310	0.136	1.300	1.761	-0.055	0.293	-0.01400	0.00700	-1.0630	0.99	0.393
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_13_024	1	0.110	3.391	0.119	0.174	-0.280	0.145	1.100	1.705	-0.388	0.290	-0.02	0.00700	-0.629	0.99	0.386
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_19_124	1	-4.5420	3.198	-0.25	0.165	-0.14000	0.148	0.891	1.725	0.144	0.273	-0.03000	0.00800	-1.072	0.94	0.332
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_25_284	1	-2.552	3.262	-0.285	0.164	-0.246	0.151	1.114	1.744	0.075	0.277	-0.02	0.00800	-0.16	0.92	0.376
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_31_534	1	-1.26	3.253	-0.335	0.170	-0.2270	0.141	0.635	1.709	-0.1250	0.283	-0.02100	0.00700	-0.885	0.95	0.384
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_37_714	1	-0.662	3.207	-0.030	0.163	-0.400	0.147	1.309	1.642	-0.39	0.272	-0.00100	0.00900	-1.41	0.90	0.455
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_43_764	1	-1.688	3.301	-0.109	0.176	-0.1200	0.136	1.167	1.716	-0.211	0.290	-0.00700	0.00800	-1.118	0.98	0.451
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_50_014	1	-7.028	3.037	0.091	0.164	-0.150	0.153	1.093	1.757	0.062	0.267	-0.01400	0.00800	-1.559	0.89	0.404
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_56_204	1	-1.410	2.988	0.289	0.163	-0.0310	0.143	1.052	1.759	-0.11	0.265	-0.01100	0.00800	-1.068	0.849	0.399
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_02_384	1	2.09	3.224	-0.0820	0.167	-0.113	0.145	1.125	1.735	-0.4570	0.281	-0.00900	0.00700	0.00	0.96	0.463
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_08_564	1	-7.036	3.208	-0.1120	0.173	-0.246	0.143	1.365	1.657	-0.035	0.286	-0.02500	0.00800	-1.44	0.93	0.343
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_14_644	1	-9.005	3.253	0.052	0.163	0.0050	0.140	0.570	1.690	-0.3870	0.277	-0.01600	0.00700	-0.89	0.93	0.466
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_20_854	1	-4.854	3.171	-0.100	0.177	-0.407	0.149	0.922	1.697	0.133	0.288	-0.00700	0.00800	-0.85	0.93	0.42
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_27_034	1	-10.660	3.347	0.079	0.162	-0.134	0.147	0.805	1.789	0.2470	0.277	-0.01900	0.00800	-1.33	0.95	0.517
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_33_324	1	-5.081	3.239	-0.3300	0.170	0.093	0.150	1.425	1.741	-0.039	0.283	-0.0010	0.00700	-0.47	0.96	0.476
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_39_434	1	-7.049	3.293	0.090	0.165	-0.0030	0.146	1.9160	1.814	0.0570	0.280	-0.00600	0.00700	-1.4000	0.96	0.486
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_45_614	1	-5.495	3.394	-0.012	0.163	-0.191	0.147	0.792	1.780	0.185	0.283	-0.00700	0.00800	-2.38	0.97	0.475
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_51_794	1	0.237	2.912	-0.035	0.161	-0.155	0.150	0.787	1.774	-0.017	0.263	-0.02000	0.00700	-0.645	0.88	0.535
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_57_974	1	-2.700	3.099	0.1790	0.180	-0.079	0.1430	0.984	1.840	-0.491	0.285	-0.01500	0.00700	-1.043	0.93	0.496
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_04_164	1	-5.111	3.060	0.005	0.169	-0.113	0.146	1.005	1.762	-0.668	0.277	-0.01200	0.00700	-0.689	0.92	0.513
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_10_344	1	-5.798	3.275	0.068	0.164	-0.0770	0.142	0.908	1.778	-0.332	0.279	-0.01800	0.00700	-1.867	0.93	0.523
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_16_424	1	-6.883	2.933	-0.063	0.166	0.259	0.142	1.082	1.765	-0.606	0.269	-0.01700	0.00700	-0.14	0.92	0.549
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_22_644	1	-4.16	3.248	-0.218	0.177	0.0510	0.148	1.448	1.788	-0.458	0.291	-0.01800	0.00700	-0.43	0.98	0.47
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_28_894	1	-3.08	2.931	-0.503	0.169	-0.0600	0.150	0.716	1.832	0.102	0.270	-0.01000	0.00600	-1.03	0.91	0.544
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_35_104	1	-4.652	3.084	-0.0170	0.170	-0.214	0.152	1.137	1.838	0.31	0.276	-0.01	0.00700	-0.92	0.92	0.541
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_41_284	1	-0.830	3.297	0.155	0.167	-0.297	0.143	1.812	1.867	0.98	0.283	-0.01700	0.00800	-4.17	0.98	0.552
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_47_374	1	-4.593	3.089	0.150	0.165	-0.3640	0.143	1.301	1.852	0.275	0.275	-0.00700	0.00700	-3.66	0.92	0.521
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_53_604	1	-5.495	2.937	-0.113	0.166	-0.272	0.144	0.764	1.904	0.04	0.271	-0.00500	0.00600	-2.35	0.91	0.607
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_59_774	1	-0.93	2.969	0.229	0.169	-0.098	0.143	1.031	1.884	-0.027	0.275	-0.00300	0.00700	0.4680	0.90	0.585
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_05_954	1	-1.386	2.986	-0.076	0.166	-0.0410	0.144	1.199	1.843	-0.351	0.270	-0.01400	0.00700	-1.82	0.93	0.518
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_12_164	1	-4.737	3.223	-0.270	0.172	-0.321	0.143	0.566	1.867	-0.086	0.285	-0.03200	0.00800	1.65	0.93	0.601
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_18_254	1	0.476	3.086	-0.147	0.173	-0.116	0.140	1.052	1.844	-0.111	0.284	-0.02	0.00800	-2.363	0.93	0.561
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_24_434	1	-4.961	3.365	0.1550	0.160	-0.125	0.146	0.923	1.802	0.186	0.278	-0.01	0.00700	-1.256	0.95	0.553
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_30_714	1	4.41	2.991	-0.128	0.174	-0.173	0.142	1.288	1.850	-0.240	0.279	-0.00400	0.00700	-2.141	0.91	0.544
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_36_934	1	-0.897	3.017	-0.3950	0.169	0.059	0.150	0.746	1.920	-0.101	0.273	-0.01200	0.00700	-3.51	0.90	0.565
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_43_054	1	-11.07	3.367	-0.228	0.183	-0.0030	0.150	0.592	1.836	-0.317	0.302	-0.0370	0.00700	-0.259	1.05	0.637
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_49_204	1	-3.33	3.030	-0.221	0.166	-0.318	0.137	1.158	1.857	0.23	0.270	-0.01	0.00800	-2.36	0.94	0.481
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_55_384	1	3.99	3.183	-0.062	0.168	-0.262	0.144	1.023	1.890	-0.3110	0.277	-0.01100	0.00700	-0.68	0.93	0.59
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_01_574	1	0.153	3.447	0.1030	0.169	-0.449	0.136	0.62	1.867	0.05	0.287	-0.00600	0.00800	-2.92	0.98	0.613
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_07_744	1	1.70	2.974	0.313	0.172	-0.222	0.137	1.409	1.875	0.181	0.276	-0.00700	0.00700	-0.071	0.92	0.536
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_13_864	1	-4.397	3.104	0.0950	0.167	-0.0010	0.135	1.366	1.892	0.135	0.277	-0.0330	0.00600	-1.372	0.90	0.595
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_20_044	1	-1.91	2.920	0.094	0.169	-0.242	0.149	0.826	1.839	-0.281	0.272	-0.02100	0.00700	-2.78	0.89	0.581
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_26_224	1	-4.299	3.298	-0.134	0.173	-0.071	0.140	1.272	1.890	-0.276	0.286	-0.00400	0.00800	-0.967	0.98	0.578
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_32_514	1	-0.482	3.057	0.0570	0.178	0.0540	0.143	1.105	1.929	-0.259	0.283	-0.02200	0.00800	-0.94	0.95	0.62
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_38_704	1	-2.6450	3.188	0.076	0.162	0.08900	0.146	1.382	1.861	-1.128	0.273	-0.01500	0.00600	-0.252	0.94	0.623
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_44_744	1	0.133	3.217	-0.164	0.177	-0.0910	0.138	1.023	1.915	0.353	0.288	-0.00800	0.00600	-0.71	0.97	0.584
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_50_935	1	-1.57	3.230	-0.083	0.170	-0.1710	0.139	1.282	1.874	-0.26	0.286	-0.01500	0.00700	-1.63	0.97	0.578
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_57_195	1	-0.9570	3.106	0.125	0.163	0.253	0.151	1.464	1.863	-0.358	0.269	-0.01400	0.00700	-0.414	0.91	0.66
10/15/2013 21:40	0917-173_Nc	13_10_15_2140_35_345	1	-2.485	2.014	0.0030	0.101	-0.079	0.1250	1.278	1.891	0.037	0.172	-0.02	0.00500	-1.130	0.583	0.648
10/15/2013 21:41	0917-173_Nc	13_10_15_2141_36_035	1	-3.0520	1.873	-0.0050	0.103	-0.152	0.1230	1.645	1.877	-0.165	0.169	-0.01300	0.00500	-1.461	0.574	0.678
10/15/2013 21:42	0917-173_Nc	13_10_15_2142_36_795	1	-2.418	1.984	0.047	0.100	-0.0970	0.1220	1.341	1.869	0.043	0.170	-0.01400	0.00500	-1.319	0.581	0.71
10/15/2013 21:43	0917-173_Nc	13_10_15_2143_37_565	1	0.147	1.956	0.0650	0.104	-0.132	0.1180	1.362	1.884	-0.113	0.172	-0.02	0.00500	-0.816	0.581	0.728
10/15/2013 21:44	0917-173_Nc	13_10_15_2144_38_285	1	-2.150	1.979	0.0890	0.103	-0.0320	0.1220	1.443	1.877	-0.186	0.172	-0.01700	0.00500	-0.6690	0.582	0.748
10/15/2013 21:45	0917-173_Nc	13_10_15_2145_39_091	1	-1.506	1.924	0.002	0.104	-0.118	0.1230	1.226	1.859	-0.097	0.170	-0.01300	0.00500	-1.055	0.579	0.778
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_19_287	1	0.663	3.129	0.272	0.155	-0.118	0.137	1.652	2.011	0.28	0.262	-0.03400	0.00700	-3.15	0.88	0.783
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_25_447	1	-1.746	2.835	-0.006	0.168	0.0400	0.135	1.483	2.056	-0.158	0.267	-0.02600	0.00700	-0.296	0.88	0.751
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_31_687	1	0.701	2.904	-0.015	0.156	0.0520	0.1320	1.206	2.063	-0.28	0.254	-0.02700	0.00700	-1.36	0.86	0.723
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_37_897	1	-2.38	2.940	-0.194	0.157	-0.0550	0.1380	1.140	2.118	-0.20	0.261	-0.02000	0.00600	-1.282	0.89	0.717
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_44_007	1	-4.784	2.812	0.049	0.163	0.02700	0.1310	0.934	2.075	0.075	0.262	-0.00800	0.00700	-1.83	0.85	0.724
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_50_147	1	1.098	2.929	-0.140	0.154	0.0460	0.134	1.5010	2.123	-0.229	0.255	-0.00800	0.00800	0.104	0.84	0.726
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_56_407	1	-5.385	3.233	-0.220	0.147	0.0850	0.140	0.737	2.190	-0.39	0.261	-0.02400	0.00700	-1.37	0.89	0.702
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_02_587	1	-0.81	2.819	0.242	0.149	0.00900	0.1240	1.179	2.127	-0.204	0.250	-0.01	0.00700	-0.164	0.83	0.707
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_08_757	1	-5.955	2.860	0.325	0.152	-0.128	0.1360	1.152	2.131	-0.284	0.251	-0.01000	0.00700	0.890	0.84	0.708
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_14_867	1	0.18	3.080	-0.087	0.155	-0.090	0.1290	0.620	2.087	-0.359	0.258	0.00500	0.00600	0.097	0.87	0.648
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_21_057	1	-6.584	2.853	0.12	0.163	-0.1110	0.138	1.553	2.133	-0.108	0.260	-0.01500	0.00600	-0.102	0.85	0.685
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_27_247	1	-6.215	2.881	-0.085	0.151	-0.04200	0.1270	1.4030	2.114	-0.406	0.256	0.00200	0.00700	-0.92	0.88	0.663
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_33_507	1	-9.249	2.771	-0.0210	0.150	0.010	0.138	1.359	2.114	-0.2010	0.249	-0.0170	0.00600	-1.10	0.82	0.604
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_39_707	1	1.34	2.908	-0.13	0.148	-0.342	0.124	1.6360	2.118	-0.374	0.252	0.01100	0.00600	0.73	0.84	0.543
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_45_807	1	-3.417	2.817	-0.317	0.160	-0.0080	0.123	0.887	2.092	0.114	0.263	-0.01600	0.00600	-1.30	0.86	0.584
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_51_967	1	6.66	3.028	0.309	0.158	-0.1460	0.1170	0.536	2.054	-0.10	0.267	-0.00900	0.00600	-1.968	0.91	0.57
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_58_167	1	0.8680	2.867	-0.136	0.149	-0.0600	0.1180	1.028	2.069	0.149	0.249	0.00000	0.00600	-2.64	0.85	0.526
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_04_347	1	4.754	2.695	0.053	0.145	-0.0550	0.116	0.755	2.033	-0.209	0.241	-0.02000	0.00700	-2.56	0.82	0.483
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_10_547	1	-5.74	2.796	-0.1060	0.149	-0.105	0.1200	1.2000	2.001	0.317	0.250	-0.01100	0.00600	-0.84	0.85	0.418
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_16_637	1	-3.724	2.696	0.301	0.150	0.0010	0.1200	0.979	1.988	-0.500	0.249	-0.00200	0.00500	-1.609	0.84	0.48
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_22_817	1	-0.201	2.856	0.081	0.144	-0.144	0.1220	1.315	1.965	-0.509	0.244	-0.0200	0.00600	1.35	0.84	0.506
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_29_027	1	0.263	2.747	-0.023	0.152	0.1490	0.1220	0.883	1.941	-0.079	0.249	-0.01	0.00500	0.13	0.85	0.466
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_35_237	1	2.974	2.715	0.119	0.144	0.014	0.1110	1.186	1.904	-0.121	0.240	-0.00100	0.00500	-1.538	0.78	0.438
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_41_427	1	0.768	2.897	0.124	0.151	-0.0210	0.1110	1.43	1.898	-0.282	0.254	0.00000	0.00400	-2.07	0.86	0.423
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_47_587	1	7.518	2.734	0.121	0.146	-0.250	0.111	0.557	1.834	-0.369	0.246	-0.01	0.00500	-0.330	0.80	0.426
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_53_757	1	10.437	2.832	0.01	0.153	-0.006	0.1170	1.021	1.830	-0.453	0.254	-0.01300	0.00600	0.778	0.87	0.439
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_59_967	1	-1.05	2.980	-0.018	0.158	-0.080	0.1160	1.049	1.862	0.168	0.260	-0.01600	0.00600	-0.15	0.86	0.394
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_06_167	1	-7.17	2.896	0.316	0.163	0.066	0.1130	1.3720	1.901	0.446	0.264	-0.01400	0.00500	0.6360	0.91	0.388
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_12_367	1	-2.728	2.865	0.527	0.152	-0.0110	0.1100	1.126	1.872	0.008	0.252	0.00300	0.00600	0.6180	0.83	0.407
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_18_507	1	3.3040	2.726	-0.402	0.146	0.196	0.1060	1.067	1.845	0.14	0.241	-0.00900	0.00600	-1.93	0.83	0.416
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_24_717	1	-0.933	2.693	0.119	0.150	0.125	0.1160	1.2550	1.862	-0.605	0.246	0.00	0.00600	-0.91	0.83	0.422
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_30_827	1	8.9600	2.525	0.110	0.153	-0.183	0.1060	0.673	1.835	-0.07	0.242	-0.00100	0.00600	-3.03	0.79	0.348
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_37_127	1	1.46	2.687	-0.178	0.146	-0.118	0.1150	0.9400	1.883	-0.488	0.239	-0.00800	0.00700	-0.37	0.80	0.41
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_43_317	1	0.929	2.637	0.180	0.155	0.0580	0.122	0.329	1.882	-0.222	0.247	0.00700	0.00600	-1.38	0.78	0.41
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_49_337	1	5.831	2.399	0.098	0.153	-0.04200	0.118	1.3830	1.810	0.070	0.238	-0.00600	0.00500	0.84	0.81	0.424
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_55_607	1	7.047	2.774	0.190	0.155	0.1630	0.120	0.727	1.806	-0.22	0.254	-0.01600	0.00700	-1.38	0.84	0.422
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_01_797	1	7.328	2.805	0.000	0.155	0.222	0.1000	0.950	1.786	0.14	0.256	0.00700	0.00600	-3.02	0.86	0.342
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_08_017	1	-0.179	2.745	0.0900	0.152	0.1390	0.1000	1.163	1.812	0.000	0.244	-0.00600	0.00600	-2.04	0.80	0.413
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_14_017	1	1.6190	2.692	-0.214	0.143	0.1110	0.128	1.373	1.830	-0.213	0.238	-0.02100	0.00700	-0.354	0.79	0.373
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_20_217	1	-1.27	2.867	0.266	0.158	0.2000	0.1190	0.9090	1.835	0.138	0.255	0.01000	0.00600	-0.56	0.88	0.402
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_26_507	1	2.982	2.894	0.459	0.149	0.112	0.1130	1.563	1.818	0.44	0.251	0.00400	0.00600	-1.76	0.83	0.364
10/15/2013 21:52	0917-173_Nc	13_10_15_2152_06_718	1	0.117	1.251	0.171	0.0670	-0.106	0.0780	1.0850	1.816	0.06	0.112	-0.00600	0.00300	-1.215	0.362	0.415
10/15/2013 21:53	0917-173_Nc	13_10_15_2153_07_498	1	1.143	1.147	0.056	0.069	0.0270	0.0780	0.792	1.798	-0.051	0.111	0.00	0.00300	-0.453	0.382	0.439
10/15/2013 21:54	0917-173_Nc	13_10_15_2154_08_258	1	-0.238	1.149	0.071	0.066	-0.0290	0.0780	0.989	1.780	-0.057	0.107	-0.00500	0.00300	-0.1530	0.353	0.404
10/15/2013 21:55	0917-173_Nc	13_10_15_2155_09_028	1	1.557	1.143	0.068	0.063	0.01500	0.0750	1.0230	1.764	-0.082	0.103	-0.01000	0.00300	-1.22	0.350	0.412
10/15/2013 21:56	0917-173_Nc	13_10_15_2156_09_848	1	2.923	1.127	0.076	0.063	-0.03100	0.0740	1.1930	1.760	-0.131	0.104	-0.00800	0.00300	-0.5780	0.342	0.422
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_04_240	1	1.7	1.5	0.051	0.080	-0.38	1.41	0.192	0.0920	-0.110	0.130	0.062	0.576	0.2900	0.436	-1.749
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_22_760	1	0.7	1.4	-0.048	0.086	-0.39	1.54	0.184	0.0950	-0.031	0.135	0.064	0.618	0.0160	0.436	-1.91
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_41_360	1	1.4	1.4	-0.0440	0.077	-0.62	1.60	0.0340	0.0960	-0.013	0.125	0.065	0.642	-0.567	0.412	-1.958

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 8:35	0917-173_Nc	13_10_16_0835_59_860	1	-0.4	1.5	0.032	0.083	-0.49	1.63	-0.0610	0.0960	-0.377	0.134	0.064	0.652	1.372	0.450	-1.979
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_18_370	1	-2.2	1.5	0.0680	0.085	-0.53	1.64	0.0030	0.0960	-0.320	0.136	0.069	0.662	0.35	0.449	-2.027
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_36_990	1	-0.6	1.3	-0.088	0.092	-0.49	1.65	0.057	0.0910	-0.2190	0.139	0.066	0.658	0.537	0.442	-2.069
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_55_400	1	0.8	1.4	0.177	0.082	-0.55	1.65	-0.09600	0.0990	0.0720	0.131	0.059	0.661	-0.8010	0.444	-2.023
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_14_090	1	1.7	1.5	0.0950	0.079	-0.66	1.65	0.156	0.1060	0.284	0.132	0.070	0.657	-0.2140	0.430	-2.069
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_32_591	1	2.1	1.4	-0.0750	0.075	-0.55	1.66	-0.0100	0.1060	-0.234	0.122	0.064	0.662	0.3200	0.411	-2.042
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_51_001	1	-0.6	1.5	-0.001	0.088	-0.62	1.65	-0.0740	0.0950	-0.0830	0.141	0.073	0.665	0.87	0.476	-2.043
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_09_661	1	-2.2	1.5	-0.1040	0.083	-0.52	1.66	0.0660	0.0910	0.076	0.138	0.075	0.663	0.217	0.472	-2.05
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_28_111	1	-2.4	1.5	-0.122	0.088	-0.50	1.65	0.1360	0.0990	-0.142	0.141	0.070	0.659	0.047	0.459	-2.045
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_46_631	1	-0.1	1.7	-0.0710	0.076	-0.61	1.66	-0.1360	0.1060	0.263	0.133	0.074	0.664	-1.206	0.456	-2.043
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_05_251	1	2.2	1.4	-0.011	0.079	-0.46	1.66	0.0660	0.1010	0.000	0.129	0.071	0.661	-0.010	0.428	-2.059
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_23_781	1	-0.4	1.5	0.035	0.084	-0.55	1.66	0.121	0.1040	0.015	0.137	0.064	0.663	0.464	0.443	-2.016
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_42_371	1	-2.4	1.5	-0.020	0.082	-0.49	1.65	-0.142	0.1010	0.067	0.134	0.064	0.664	0.289	0.435	-2.005
					10/16/2013 8:40	0917-173_Nc	13_10_16_0840_00_791	1	0.5	1.6	0.061	0.081	-0.49	1.65	-0.1410	0.1060	-0.1700	0.136	0.061	0.665	0.490	0.466	-2.007
					10/16/2013 10:53	0917-173_Nc	13_10_16_1053_00_580	1	0.551	1.201	0.000	0.074	0.724	0.0810	0.429	1.756	-1.268	0.149	-0.00200	0.00500	0.04	0.366	16.446
Data	Run	10	Start	A	10/16/2013 10:54	0917-173_Nc	13_10_16_1054_01_360	1	-0.09	1.253	0.080	0.067	0.554	0.0760	0.326	1.743	-1.130	0.144	-0.00300	0.00600	-1.13	0.368	15.707
					10/16/2013 10:55	0917-173_Nc	13_10_16_1055_02_170	1	1.112	1.212	-0.085	0.079	0.647	0.0790	0.394	1.744	-1.582	0.178	-0.00900	0.00500	-0.77	0.381	21.29
					10/16/2013 10:56	0917-173_Nc	13_10_16_1056_02_880	1	-2.953	1.244	-0.042	0.078	0.724	0.0840	0.564	1.758	-1.808	0.188	-0.00500	0.00500	-0.73	0.379	23.836
					10/16/2013 10:57	0917-173_Nc	13_10_16_1057_03_610	1	-0.24	1.219	0.184	0.077	0.759	0.0800	0.536	1.758	-1.797	0.191	-0.00300	0.00600	-0.99	0.352	24.445
					10/16/2013 10:58	0917-173_Nc	13_10_16_1058_04_380	1	-2.570	1.235	-0.038	0.085	0.816	0.0810	0.552	1.759	-2.046	0.203	-0.00300	0.00500	-1.12	0.389	26.209
					10/16/2013 10:59	0917-173_Nc	13_10_16_1059_05_200	1	-2.95	1.207	-0.0360	0.079	0.815	0.0810	0.538	1.757	-1.73	0.184	-0.00300	0.00500	-1.32	0.363	23.742
					10/16/2013 11:00	0917-173_Nc	13_10_16_1100_06_010	1	-0.72	1.141	0.054	0.077	0.886	0.0790	0.600	1.751	-1.573	0.177	-0.00600	0.00600	-1.49	0.365	23.019
					10/16/2013 11:01	0917-173_Nc	13_10_16_1101_06_711	1	-0.285	1.259	-0.044	0.076	0.878	0.0810	0.361	1.732	-1.928	0.191	-0.00300	0.00500	-1.07	0.376	25.129
					10/16/2013 11:02	0917-173_Nc	13_10_16_1102_07_491	1	-0.82	1.322	-0.1160	0.081	0.787	0.0800	0.558	1.729	-2.02	0.201	-0.00100	0.00600	-1.39	0.389	26.538
					10/16/2013 11:03	0917-173_Nc	13_10_16_1103_08_231	1	-1.50	1.182	0.059	0.076	0.823	0.0770	0.502	1.736	-1.958	0.192	-0.00300	0.00500	-0.98	0.366	25.516
					10/16/2013 11:04	0917-173_Nc	13_10_16_1104_09_041	1	0.45	1.270	0.1140	0.078	0.802	0.0790	0.549	1.719	-1.814	0.194	-0.00700	0.00600	-0.93	0.387	24.884
					10/16/2013 11:05	0917-173_Nc	13_10_16_1105_09_761	1	-1.86	1.256	0.0060	0.077	0.832	0.0770	0.459	1.718	-1.998	0.194	0.00100	0.00500	-0.83	0.379	26.146
					10/16/2013 11:06	0917-173_Nc	13_10_16_1106_10_521	1	-0.894	1.240	0.106	0.077	0.822	0.0780	0.627	1.713	-2.199	0.202	0.00	0.00500	-0.11	0.386	27.025
					10/16/2013 11:07	0917-173_Nc	13_10_16_1107_11_331	1	-1.919	1.295	0.010	0.081	0.737	0.0780	0.536	1.718	-2.072	0.199	-0.00500	0.00500	-0.24	0.392	26.325
					10/16/2013 11:08	0917-173_Nc	13_10_16_1108_12_061	1	-1.846	1.249	0.066	0.073	0.818	0.0780	0.646	1.719	-1.798	0.180	-0.00700	0.00500	-0.79	0.355	23.06
					10/16/2013 11:09	0917-173_Nc	13_10_16_1109_12_911	1	-0.490	1.145	-0.0680	0.079	0.767	0.0810	0.502	1.727	-1.818	0.182	-0.00200	0.00600	-0.68	0.374	23.557
					10/16/2013 11:10	0917-173_Nc	13_10_16_1110_13_621	1	-0.47	1.263	-0.065	0.079	0.776	0.0790	0.441	1.747	-1.65	0.186	-0.00500	0.00500	-1.43	0.382	24.175
					10/16/2013 11:11	0917-173_Nc	13_10_16_1111_14_401	1	-3.55	1.295	-0.085	0.076	0.771	0.0810	0.556	1.760	-1.716	0.190	-0.00400	0.00500	-1.20	0.385	24.336
					10/16/2013 11:12	0917-173_Nc	13_10_16_1112_15_162	1	0.01	1.162	0.090	0.080	0.761	0.0820	0.479	1.773	-1.760	0.188	0.00000	0.00600	-0.59	0.353	25.069
					10/16/2013 11:13	0917-173_Nc	13_10_16_1113_15_972	1	1.54	1.255	-0.08000	0.080	0.814	0.0830	0.509	1.777	-1.955	0.197	-0.00100	0.00600	-1.11	0.385	26.142
					10/16/2013 11:14	0917-173_Nc	13_10_16_1114_16_712	1	-1.03	1.292	0.011	0.079	0.779	0.0830	0.387	1.797	-2.247	0.197	-0.00700	0.00500	0.01	0.374	25.74
					10/16/2013 11:15	0917-173_Nc	13_10_16_1115_17_532	1	0.75	1.314	-0.141	0.081	0.774	0.0830	0.703	1.785	-2.308	0.199	-0.00600	0.00500	-0.71	0.380	27.012
					10/16/2013 11:16	0917-173_Nc	13_10_16_1116_18_342	1	1.69	1.181	-0.0710	0.076	0.779	0.0830	0.409	1.783	-1.994	0.187	-0.00700	0.00500	-0.73	0.358	25.096
					10/16/2013 11:17	0917-173_Nc	13_10_16_1117_19_052	1	-0.496	1.246	0.0640	0.074	0.666	0.0810	0.511	1.786	-1.629	0.180	-0.00700	0.00600	-0.78	0.376	23.413
					10/16/2013 11:18	0917-173_Nc	13_10_16_1118_19_792	1	-1.135	1.144	-0.0490	0.080	0.752	0.0810	0.530	1.777	-1.863	0.182	-0.00700	0.00500	-0.87	0.365	23.131
					10/16/2013 11:19	0917-173_Nc	13_10_16_1119_20_502	1	-2.43	1.351	0.079	0.082	0.757	0.0820	0.599	1.788	-2.057	0.204	-0.00800	0.00500	-1.43	0.399	27.237
					10/16/2013 11:20	0917-173_Nc	13_10_16_1120_21_332	1	-0.83	1.204	-0.1490	0.075	0.765	0.0850	0.396	1.780	-1.97	0.196	-0.00300	0.00500	-1.00	0.351	26.578
					10/16/2013 11:21	0917-173_Nc	13_10_16_1121_22_052	1	-1.908	1.280	-0.103	0.080	0.695	0.0840	0.534	1.791	-2.204	0.205	-0.00700	0.00500	-0.69	0.393	27.01
					10/16/2013 11:22	0917-173_Nc	13_10_16_1122_22_852	1	0.29	1.219	0.092	0.079	0.770	0.0840	0.468	1.809	-2.198	0.205	-0.00400	0.00600	-0.83	0.360	28.316
					10/16/2013 11:23	0917-173_Nc	13_10_16_1123_23_562	1	-2.31	1.249	0.028	0.079	0.857	0.0840	0.460	1.798	-2.103	0.202	-0.00700	0.00600	-0.53	0.376	26.368
					10/16/2013 11:24	0917-173_Nc	13_10_16_1124_24_403	1	0.026	1.211	-0.015	0.077	0.790	0.0810	0.440	1.808	-1.736	0.178	-0.00500	0.00500	-0.43	0.376	23.148
					10/16/2013 11:25	0917-173_Nc	13_10_16_1125_25_123	1	-1.26	1.185	-0.010	0.074	0.703	0.0810	0.567	1.807	-1.794	0.184	-0.00500	0.00600	-0.69	0.355	25.226
					10/16/2013 11:26	0917-173_Nc	13_10_16_1126_25_883	1	-1.786	1.254	-0.0460	0.081	0.724	0.0780	0.508	1.798	-2.153	0.213	-0.00300	0.00500	-0.45	0.382	29.398
					10/16/2013 11:27	0917-173_Nc	13_10_16_1127_26_683	1	-0.28	1.350	-0.0750	0.087	0.727	0.0860	0.648	1.807	-2.78	0.255	-0.00900	0.00600	-1.41	0.387	36.09
					10/16/2013 11:28	0917-173_Nc	13_10_16_1128_27_423	1	-1.01	1.166	-0.0620	0.088	0.824	0.0830	0.399	1.803	-3.003	0.266	-0.00400	0.00500	-0.91	0.355	38.123
					10/16/2013 11:29	0917-173_Nc	13_10_16_1129_28_223	1	-1.894	1.245	-0.1570	0.090	0.866	0.0860	0.397	1.802	-3.290	0.278	0.00400	0.00500	-1.0	0.376	40.797
					10/16/2013 11:30	0917-173_Nc	13_10_16_1130_28_963	1	-3.270	1.282	-0.001	0.094	0.796	0.082	0.410	1.793	-3.06	0.288	-0.00200	0.00600	-1.18	0.394	41.422
					10/16/2013 11:31	0917-173_Nc	13_10_16_1131_29_793	1	-0.95	1.181	-0.0660	0.084	0.867	0.0830	0.366	1.798	-3.15	0.284	-0.00500	0.00500	-0.6	0.349	40.652
					10/16/2013 11:32	0917-173_Nc	13_10_16_1132_30_513	1	0.20	1.353	-0.041	0.094	0.847	0.0850	0.383	1.797	-3.089	0.289	-0.00400	0.00600	-0.2	0.401	40.986
					10/16/2013 11:33	0917-173_Nc	13_10_16_1133_31_273	1	-1.00	1.108	-0.130	0.088	0.876	0.0830	0.545	1.796	-2.63	0.245	-0.00700	0.00600	-0.68	0.355	34.656
					10/16/2013 11:34	0917-173_Nc	13_10_16_1134_32_083	1	-0.490	1.280	-0.044	0.083	0.836	0.0810	0.448	1.802	-2.505	0.227	-0.00700	0.00600	-0.83	0.387	30.811
					10/16/2013 11:35	0917-173_Nc	13_10_16_1135_32_843	1	-2.12	1.266	0.0090	0.081	0.877	0.0850	0.322	1.807	-2.40	0.231	-0.00300	0.00500	-1.45	0.373	32.717
					10/16/2013 11:36	0917-173_Nc	13_10_16_1136_33_654	1	-0.870	1.285	-0.103	0.088	0.811	0.0850	0.509	1.819	-2.501	0.245	-0.00200	0.00500	-0.72	0.385	32.928
					10/16/2013 11:37	0917-173_Nc	13_10_16_1137_34_364	1	-1.96	1.222	-0.108	0.085	0.896	0.0870	0.417	1.833	-2.650	0.237	-0.00300	0.00600	-0.96	0.361	33.266
					10/16/2013 11:38	0917-173_Nc	13_10_16_1138_35_174	1	-1.45	1.288	-0.164	0.083	0.772	0.0860	0.542	1.823	-2.414	0.240	-0.00300	0.00500	-1.07	0.383	33.01
					10/16/2013 11:39	0917-173_Nc	13_10_16_1139_35_894	1	-0.27	1.202	-0.076	0.090	0.831	0.0860	0.407	1.811	-2.467	0.239	-0.00800	0.00500	-0.95	0.374	32.359
					10/16/2013 11:40	0917-173_Nc	13_10_16_1140_36_704	1	-0.65	1.214	-0.0210	0.076	0.811	0.0830	0.356	1.810	-2.204	0.219	-0.00800	0.00500	-1.03	0.358	31.182
					10/16/2013 11:41	0917-173_Nc	13_10_16_1141_37_464	1	-0.878	1.219	-0.029	0.077	0.750	0.0840	0.589	1.805	-2.127	0.210	-0.00500	0.00600	-0.85	0.367	29.136
					10/16/2013 11:42	0917-173_Nc	13_10_16_1142_38_184	1	-1.406	1.228	-0.063	0.078	0.701	0.0840	0.375	1.792	-1.959	0.195	-0.00400	0.00500	-1.04	0.375	24.902
					10/16/2013 11:43	0917-173_Nc	13_10_16_1143_38_984	1	-0.533	1.172	-0.012	0.085	0.769	0.0820	0.442	1.808	-2.379	0.220	-0.00200	0.00500	-0.63	0.370	30.109
					10/16/2013 11:44	0917-173_Nc	13_10_16_1144_39_784	1	-3.883	1.279	-0.1020	0.087	0.885	0.0840	0.347	1.818	-2.578	0.239	-0.00200	0.00500	-0.49	0.377	32.893
					10/16/2013 11:45	0917-173_Nc	13_10_16_1145_40_504	1	-2.493	1.259	-0.0310	0.084	0.806	0.0850	0.268	1.808	-2.251	0.229	-0.00200	0.00500	-1.13	0.370	30.755
					10/16/2013 11:46	0917-173_Nc	13_10_16_1146_41_324	1	1.00	1.235	-0.086	0.079	0.859	0.0830	0.519	1.806	-2.30	0.215	0.00100	0.00500	-0.90	0.359	29.421
					10/16/2013 11:47	0917-173_Nc	13_10_16_1147_42_084	1	-0.42	1.247	-0.0820	0.081	0.887	0.0840	0.387	1.798	-2.220	0.212	-0.00700	0.00600	-0.82	0.376	29.635
					10/16/2013 11:48	0917-173_Nc	13_10_16_1148_42_895	1	-1.176	1.247	0.067	0.082	0.840	0.0840	0.434	1.804	-2.14	0.214	-0.00300	0.00600	-0.89	0.387	29.277
					10/16/2013 11:49	0917-173_Nc	13_10_16_1149_43_655	1	-1.44	1.183	-0.0380	0.083	0.876	0.0820	0.328	1.798	-2.268	0.221	-0.00300	0.00600	-0.88	0.372	30.488
					10/16/2013 11:50	0917-173_Nc	13_10_16_1150_44_365	1	-1.745	1.215	-0.023	0.081	0.887	0.0820	0.369	1.781	-2.45	0.225	0.00000	0.00600	-1.43	0.363	31.044
					10/16/2013 11:51	0917-173_Nc	13_10_16_1151_45_185	1	-1.19	1.178	-0.0410	0.085	0.869	0.0860	0.394	1.787	-2.241	0.223	-0.00700	0.00500	-1.28	0.364	30.036
					10/16/2013 11:52	0917-173_Nc	13_10_16_1152_45_905	1	-0.903	1.261	0.110	0.085	0.911	0.0850	0.425	1.784	-2.346	0.236	-0.01000	0.00600	-0.80	0.387	31.5
					10/16/2013 11:53	0917-173_Nc	13_10_16_1153_46_655	1	-0.85	1.166	-0.411	0.098	0.668	0.0710	0.277	1.457	-4.1240	0.248	-0.00600	0.00600	-1.55	0.379	31.654
			Stop		10/16/2013 11:54	0917-173_Nc	13_10_16_1154_47_485	1	-1.222	0.982	-0.810	0.111	-0.0530	0.0500	-0.117	0.217	-4.56	0.196	-0.00500	0.00600	-1.44	0.444	13.606
					10/16/2013 11:55	0917-173_Nc	13_10_16_1155_48_205	1	-3.345	0.992	-0.659	0.111	-0.1090	0.0510	-0.263	0.1070	-4.45	0.189	-0.00800	0.00600	-1.25	0.447	12.378
					10/16/2013 11:56	0917-173_Nc	13_10_16_1156_48_955	1	-2.961	1.053	-0.671	0.112	-0.09300	0.0480	-0.442	0.1080	-4.33	0.194	-0.00400	0.00600	-1.26	0.450	12.252
					10/16/2013 11:57	0917-173_Nc	13_10_16_1157_49_705	1	-2.64400	1.018	-0.6170	0.113	-0.0910	0.0480	-0.194	0.1000	-4.56	0.191	-0.00700	0.00600	-1.38	0.421	12.169
					10/16/2013 11:58	0917-173_Nc	13_10_16_1158_50_365	1	-2.981	1.034	-0.549	0.101	0.045	0.0430	-0.282	0.0790	-3.69	0.172	-0.00800	0.00600	-1.11	0.417	10.286
					10/16/2013 11:59	0917-173_Nc	13_10_16_1159_51_106	1	0.909	0.919	-0.008	0.057	0.0530	0.0350	-0.230	0.0750	-0.759	0.092	-0.00500	0.00500	0.23	0.304	2.161
					10/16/2013 12:00	0917-173_Nc	13_10_16_1200_51_926	1	-1.552	1.007	-0.0120	0.055	0.0170	0.0350	-0.1390	0.0710	-0.1110	0.091	-0.00300	0.00600	-0.309	0.304	0.393
					10/16/2013 12:01	0917-173_Nc	13_10_16_1201_52_646	1	0.000	1.010	-0.0140	0.054	-0.00500	0.0350	-0.0950	0.0610	0.0150	0.089	0.00	0.00600	-0.528	0.296	0.329
					10/16/2013 12:02	0917-173_Nc	13_10_16_1202_53_466	1	0.057	0.941	0.115	0.059	0.287	0.0390	0.069	0.427	-0.645	0.100	0.00200	0.00500	0.04	0.301	6.655
					10/16/2013 12:03	0917-173_Nc	13_10_16_1203_54_266	1	-0.91	1.242	-0.035	0.085	1.029	0.0800	0.427	1.747	-2.289	0.22	-0.00300	0.00600	-1.13	0.385	29.041
					10/16/2013 12:04	0917-173_Nc	13_10_16_1204_55_016	1	0.12	1.211	-0.063	0.088	1.057	0.0860	0.277	1.801	-2.551	0.24	-0.00100	0.00600	-0.44	0.372	31.927
					10/16/2013 12:05	0917-173_Nc	13_10_16_1205_55_716	1	-1.917	1.197	0.045	0.088	0.945	0.0870	0.218	1.793	-2.514	0.24	-0.00400	0.00500	-1.23	0.373	32.404
					10/16/2013 12:06	0917-173_Nc	13_10_16_1206_56_536	1	-1.00	1.238	-0.024	0.083	0.948	0.0840	0.245	1.790	-2.644	0.24	-0.01000	0.00500	-0.45	0.376	33.278
Data	Run	11	Start	A	10/16/2013 12:07	0917-173_Nc	13_10_16_1207_57_256	1	-2.40	1.256	-0.082	0.085	1.006	0.0840	0.344	1.784	-2.475	0.23	-0.00800	0.00600	-0.76	0.375	31.847
					10/16/2013 12:08	0917-173_Nc	13_10_16_1208_58_076	1	-1.13	1.290	-0.067	0.081	0.894	0.0850	0.277	1.772	-2.44	0.22	-0.00500	0.00600	-0.83	0.385	30.833
					10/16/2013 12:09	0917-173_Nc	13_10_16_1209_58_826	1	1.39	1.275	-0.1030	0.083	0.877	0.0830	0.381	1.773	-2.08	0.21	-0.00400	0.00500	-1.11	0.385	27.342
					10/16/2013 12:10	0917-173_Nc	13_10_16_1210_59_526	1	-0.138	1.233	0.0370	0.087	0.892	0.0850	0.338	1.780	-1.849	0.20	-0.00700	0.00500	-1.16	0.389	26.57
					10/16/2013 12:12	0917-173_Nc	13_10_16_1212_00_327	1	-1.68	1.190	-0.039	0.076	0.921	0.0860	0.224	1.772	-1.90	0.20	-0.00900	0.00600	-1.20	0.363	25.939
					10/16/2013 12:13	0917-173_Nc	13_10_16_1213_01_027	1	-0.99	1.348	0.0100	0.079	0.972	0.0870	0.275	1.779	-1.820	0.20	-0.00500	0.00500	-0.70	0.396	26.064
					10/16/2013 12:14	0917-173_Nc	13_10_16_1214_01_787	1	-3.37	1.348	0.108	0.080	0.931	0.0850	0.256	1.784	-1.703	0.20	-0.00700	0.00500	-1.10	0.399	25.909
					10/16/2013 12:15	0917-173_Nc	13_10_16_1215_02_607	1	-1.08	1.199	0.004	0.081	0.970	0.0820	0.057	1.805	-1.781	0.21	-0.00500	0.00600	-0.93	0.378	27.153
					10/16/2013 12:16	0917-173_Nc	13_10_16_1216_03_317	1	-2.070	1.259	-0.030	0.080	0.924	0.0860	0.196	1.799	-1.966	0.20	-0.00700	0.00600	-0.95	0.373	26.658
					10/16/2013 12:17	0917-173_Nc	13_10_16_1217_04_127	1	-1.38	1.263	0.038	0.081	1.115	0.0850	0.300	1.837	-2.209	0.21	-0.00500	0.00500	-0.75	0.377	28.441
					10/16/2013 12:18	0917-173_Nc	13_10_16_1218_04_847	1	-1.54	1.255	-0.0280	0.081	0.973	0.0880	0.253	1.847	-2.128	0.22	-0.00300	0.00500	-0.46	0.381	30.233
					10/16/2013 12:19	0917-173_Nc	13_10_16_1219_05_647	1	-0.67	1.180	0.0260	0.089	0.964	0.0890	0.301	1.848	-2.327	0.23	-0.00500	0.00500	-0.87	0.388	32.39
					10/16/2013 12:20	0917-173_Nc	13_10_16_1220_06_357	1	-0.588	1.231	0.048	0.083	0.919	0.0890	0.251	1.848	-2.284	0.23	0.00000	0.00600	-1.13	0.378	32.185
					10/16/2013 12:21	0917-173_Nc	13_10_16_1221_07_137	1	-1.46	1.184	-0.0310	0.079	0.926	0.0870	0.299	1.832	-2.20	0.22	-0.00600	0.00500	-1.38	0.359	31.619
					10/16/2013 12:22	0917-173_Nc	13_10_16_1222_07_907	1	-0.944	1.194	-0.200	0.088	0.893	0.0870	0.134	1.825	-2.322	0.23	-0.00600	0.00500	-1.31	0.381	31.993
					10/16/2013 12:23	0917-173_Nc	13_10_16_1223_08_667	1	-1.62	1.200	-0.04800	0.088	0.896	0.0850	0.239	1.801	-2.241	0.24	-0.00600	0.00600	-1.15	0.375	31.961
					10/16/2013 12:24	0917-173_Nc	13_10_16_1224_09_398	1	-0.37	1.234	-0.028	0.083	0.783	0.0850	0.442	1.807	-2.213	0.22	-0.00600	0.00600	-0.82	0.373	30.043
					10/16/2013 12:25	0917-173_Nc	13_10_16_1225_10_208	1	-2.53	1.236	-0.040	0.081	0.792	0.0870	0.242	1.816	-2.09	0.22	-0.00800	0.00600	-1.21	0.377	29.939
					10/16/2013 12:26	0917-173_Nc	13_10_16_1226_11_008	1	-1.76	1.283	-0.0230	0.079	0.987	0.0880	0.135	1.817	-2.106	0.21	-0.01000	0.00500	-0.07	0.375	29.098
					10/16/2013 12:27	0917-173_Nc	13_10_16_1227_11_718	1	-1.332	1.242	-0.0440	0.076	0.956	0.0840	0.041	1.822	-1.976	0.22	-0.00900	0.00600	-1.09	0.366	29.18
					10/16/2013 12:28	0917-173_Nc	13_10_16_1228_12_528	1	-1.669	1.203	-0.0310	0.084	0.897	0.0860	0.220	1.836	-1.99	0.23	-0.01000	0.00500	-1.45	0.379	30.353
					10/16/2013 12:29	0917-173_Nc	13_10_16_1229_13_248	1	-0.61	1.296	-0.1610	0.083	0.909	0.0880	0.195	1.829	-2.12	0.22	-0.00400	0.00600	-0.57	0.387	29.967
					10/16/2013 12:30	0917-173_Nc	13_10_16_1230_13_968	1	-0.43	1.216	0.0990	0.087	0.858	0.0860	0.334	1.846	-1.701	0.22	-0.00800	0.00600	-0.70	0.394	28.86
					10/16/2013 12:31	0917-173_Nc	13_10_16_1231_14_768	1	-1.095	1.323	-0.01500	0.080	0.856	0.0850	0.289	1.837	-1.848	0.21	-0.00600	0.00500	-1.26	0.395	27.121
					10/16/2013 12:32	0917-173_Nc	13_10_16_1232_15_588	1	-0.96	1.273	-0.196	0.086	0.877	0.0890	0.444	1.839	-2.168	0.21	-0.00600	0.00500	-0.48	0.395	28.627
					10/16/2013 12:33	0917-173_Nc	13_10_16_1233_16_308	1	-0.990	1.309	-0.039	0.087	0.931	0.0880	0.388	1.839	-2.02	0.22	-0.00800	0.00500	-0.91	0.411	29.618
					10/16/2013 12:34	0917-173_Nc	13_10_16_1234_17_108	1	-0.18	1.277	-0.03000	0.082	0.863	0.0860	0.224	1.829	-1.92	0.22	-0.00300	0.00600	-1.16	0.378	30.01
					10/16/2013 12:35	0917-173_Nc	13_10_16_1235_17_878	1	-1.88	1.264	-0.123	0.082	0.759	0.0860	0.318	1.849	-1.80	0.20	-0.00700	0.00500	-1.30	0.372	28.419
					10/16/2013 12:36	0917-173_Nc	13_10_16_1236_18_609	1	-0.816	1.253	0.016	0.074	0.540	0.0860	0.232	1.811	-1.207	0.16	-0.00500	0.00600	-0.56	0.380	17.797
					10/16/2013 12:37	0917-173_Nc	13_10_16_1237_19_339	1	-1.98	1.225	-0.055	0.075	0.688	0.0850	0.343	1.819	-1.744	0.18	-0.00300	0.00600	-0.76	0.370	22.445
					10/16/2013 12:38	0917-173_Nc	13_10_16_1238_20_129	1	-1.41	1.232	-0.0830	0.078	0.932	0.0870	0.312	1.821	-2.089	0.20	-0.00200	0.00600	-0.09	0.385	25.714
					10/16/2013 12:39	0917-173_Nc	13_10_16_1239_20_839	1	-1.390	1.221	0.066	0.080	0.894	0.0860	0.322	1.838	-1.797	0.21	-0.00300	0.00600	-1.20	0.383	26.597
					10/16/2013 12:40	0917-173_Nc	13_10_16_1240_21_539	1	-1.199	1.228	-0.077	0.079	0.957	0.0850	0.411	1.822	-1.91	0.20	-0.00400	0.00500	-1.29	0.362	27.499
					10/16/2013 12:41	0917-173_Nc	13_10_16_1241_22_279	1	-0.46	1.246	-0.0460	0.084	1.011	0.0860	0.354	1.816	-2.174	0.20	0.00100	0.00600	-0.60	0.374	27.89
					10/16/2013 12:42	0917-173_Nc	13_10_16_1242_23_099	1	-0.36	1.297	-0.0300	0.077	0.954	0.0860	0.388	1.825	-1.884	0.20	-0.00400	0.00500	-0.99	0.379	26.98
					10/16/2013 12:43	0917-173_Nc	13_10_16_1243_23_869	1	-1.01	1.263	0.066	0.084	0.923	0.0850	0.368	1.828	-1.703	0.19	-0.01000	0.00600	-0.13	0.384	24.235
					10/16/2013 12:44	0917-173_Nc	13_10_16_1244_24_589	1	-1.11	1.303	0.025	0.080	0.919	0.0850	0.378	1.821	-1.640	0.18	-0.01	0.00600	-0.79	0.399	23.45
					10/16/2013 12:45	0917-173_Nc	13_10_16_1245_25_399	1	0.04	1.231	0.002	0.081	0.808	0.0870	0.197	1.821	-1.745	0.19	-0.00300	0.00500	-0.59	0.392	24.766
					10/16/2013 12:46	0917-173_Nc	13_10_16_1246_26_109	1	0.961	1.226	0.02900	0.083	0.888	0.0860	0.357	1.832	-1.801	0.20	-0.00600	0.00600	-0.91	0.374	25.879
					10/16/2013 12:47	0917-173_Nc	13_10_16_1247_26_920	1	-0.165	1.258	-0.0590	0.078	0.988	0.0840	0.306	1.844	-1.981	0.19	-0.00500	0.00600	0.00	0.370	26.039
					10/16/2013 12:48	0917-173_Nc	13_10_16_1248_27_610	1	-1.66	1.270	0.052	0.085	0.856	0.0860	0.411	1.845	-1.816	0.21	-0.00500	0.00600	-0.81	0.388	26.495
					10/16/2013 12:49	0917-173_Nc	13_10_16_1249_28_360	1	-0.055	1.205	-0.078	0.083	0.840	0.0840	0.343	1.841	-2.049	0.21	-0.00400	0.00500	-0.82	0.379	28.095
					10/16/2013 12:50	0917-173_Nc	13_10_16_1250_29_180	1	0.045	1.252	-0.07600	0.085	0.976	0.0870	0.439	1.837	-2.09	0.22	-0.00300	0.00600	-1.62	0.377	30.15
					10/16/2013 12:51	0917-173_Nc	13_10_16_1251_29_900	1	-2.66	1.214	-0.089	0.078	0.906	0.0880	0.389	1.840	-2.24	0.22	-0.00700	0.00600	-0.89	0.369	30.653
					10/16/2013 12:52	0917-173_Nc	13_10_16_1252_30_690	1	-0.18	1.159	-0.007	0.084	0.923	0.0900	0.424	1.859	-1.944	0.21	-0.00700	0.00600	-1.04	0.366	28.698
					10/16/2013 12:53	0917-173_Nc	13_10_16_1253_31_410	1	-0.934	1.286	0.117	0.083	0.907	0.0900	0.222	1.847	-2.132	0.22	-0.01000	0.00500	-0.73	0.375	29.435
					10/16/2013 12:54	0917-173_Nc	13_10_16_1254_32_180	1	-1.86	1.218	-0.044	0.082	1.008	0.0880	0.356	1.875	-2.272	0.23	-0.00700	0.00500	-0.74	0.373	31.871
					10/16/2013 12:55	0917-173_Nc	13_10_16_1255_33_000	1	-3.52	1.254	0.017	0.093	1.042	0.0900	0.258	1.889	-2.37	0.25	-0.00400	0.00600	-1.09	0.378	34.57
					10/16/2013 12:56	0917-173_Nc	13_10_16_1256_33_730	1	-1.678	1.345	-0.048	0.086	1.085	0.0930	0.189	1.887	-2.566	0.25	-0.00500	0.00500	-0.42	0.390	34.684
					10/16/2013 12:57	0917-173_Nc	13_10_16_1257_34_470	1	-1.563	1.180	-0.105	0.085	1.047	0.0930	0.370	1.888	-2.47	0.24	-0.00800	0.00600	-0.82	0.362	33.34
					10/16/2013 12:58	0917-173_Nc	13_10_16_1258_35_290	1	-0.92	1.284	-0.0170	0.086	0.975	0.0900	0.338	1.867	-2.31	0.24	-0.00200	0.00500	-1.20	0.385	32.538
					10/16/2013 12:59	0917-173_Nc	13_10_16_1259_36_101	1	-0.599	1.328	-0.1680	0.086	1.097	0.0880	0.179	1.855	-2.698	0.25	-0.00600	0.00600	-0.69	0.387	35.099
					10/16/2013 13:00	0917-173_Nc	13_10_16_1300_36_841	1	-1.32	1.154	-0.0900	0.083	1.130	0.0880	0.414	1.848	-2.685	0.25	-0.00900	0.00600	-0.77	0.361	36.037
					10/16/2013 13:01	0917-173_Nc	13_10_16_1301_37_541	1	-0.709	1.247	-0.1120	0.085	1.128	0.0890	0.302	1.837	-2.777	0.26	-0.00600	0.00500	-1.18	0.367	37.563
					10/16/2013 13:02	0917-173_Nc	13_10_16_1302_38_371	1	-0.11	1.094	-0.089	0.079	1.042	0.0870	0.336	1.834	-2.52	0.24	-0.00900	0.00600	-0.97	0.338	35.273
					10/16/2013 13:03	0917-173_Nc	13_10_16_1303_39_101	1	-1.390	1.185	0.042	0.079	0.897	0.0850	0.420	1.835	-2.389	0.23	-0.00700	0.00500	-0.62	0.368	32.554
					10/16/2013 13:04	0917-173_Nc	13_10_16_1304_39_851	1	-2.01	1.239	-0.01600	0.086	0.917	0.0870	0.340	1.847	-2.432	0.23	-0.00600	0.00500	-0.35	0.375	32.312
					10/16/2013 13:05	0917-173_Nc	13_10_16_1305_40_591	1	-0.82	1.196	-0.1530	0.087	0.925	0.0880	0.254	1.831	-2.425	0.24	-0.01000	0.00600	-0.60	0.381	33.426
					10/16/2013 13:06	0917-173_Nc	13_10_16_1306_41_411	1	-1.67	1.207	-0.172	0.087	0.721	0.0710	0.302	1.482	-3.152	0.22	-0.00500	0.00500	-0.87	0.363	29.464
			Stop		10/16/2013 13:07	0917-173_Nc	13_10_16_1307_42_181	1	-1.973	0.996	-0.6110	0.106	0.0330	0.0440	-0.013	0.228	-4.48	0.18	-0.00500	0.00500	-1.53	0.409	13.131
					10/16/2013 13:08	0917-173_Nc	13_10_16_1308_42_881	1	-1.6120	1.008	-0.5680	0.107	-0.1340	0.0460	-0.249	0.1150	-4.51	0.18	-0.00400	0.00600	-1.74	0.412	12.142

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 13:09	0917-173_Nc	13_10_16_1309_43_691	1	-0.635	0.972	-0.693	0.104	-0.08600	0.0450	-0.140	0.0950	-4.37	0.18	-0.00700	0.00500	-1.14	0.403	12.015
					10/16/2013 13:10	0917-173_Nc	13_10_16_1310_44_401	1	-1.829	0.928	-0.4150	0.076	0.0140	0.0380	-0.234	0.0810	-2.634	0.13	0.00100	0.00500	-1.216	0.316	7.037
					10/16/2013 13:11	0917-173_Nc	13_10_16_1311_45_182	1	-1.679	0.925	-0.115	0.053	0.0070	0.0340	-0.172	0.0620	-0.424	0.08	-0.00100	0.00600	-0.265	0.278	1.121
					10/16/2013 13:12	0917-173_Nc	13_10_16_1312_45_992	1	-1.310	0.993	-0.009	0.055	0.342	0.0390	0.105	0.467	-0.709	0.11	0.00	0.00500	-0.74	0.291	9.937
					10/16/2013 13:13	0917-173_Nc	13_10_16_1313_46_712	1	-1.56	1.267	-0.010	0.089	1.208	0.0900	0.136	1.872	-2.941	0.28	-0.00700	0.00600	-0.5	0.373	42.161
					10/16/2013 13:15	0917-173_Nc	13_10_16_1315_58_340	1	-0.40	1.224	-0.08000	0.094	1.249	0.0940	0.232	1.894	-2.991	0.28	-0.00400	0.00500	-1.0	0.382	41.081
					10/16/2013 13:16	0917-173_Nc	13_10_16_1316_59_150	1	0.291	1.207	-0.026	0.088	1.133	0.0890	0.304	1.873	-2.834	0.25	-0.00900	0.00600	-0.62	0.383	36.202
					10/16/2013 13:17	0917-173_Nc	13_10_16_1317_59_820	1	0.26	1.135	0.0340	0.083	0.975	0.0880	0.261	1.837	-2.387	0.23	0.00000	0.00600	-0.57	0.366	31.968
					10/16/2013 13:19	0917-173_Nc	13_10_16_1319_00_620	1	-0.147	1.276	-0.0110	0.078	0.935	0.0850	0.485	1.823	-1.902	0.21	-0.00300	0.00500	-0.65	0.382	28.537
					10/16/2013 13:20	0917-173_Nc	13_10_16_1320_01_430	1	-0.74	1.264	-0.004	0.076	0.832	0.0840	0.475	1.804	-1.813	0.21	-0.00600	0.00600	-1.19	0.361	27.587
Data	Run	12	Start	A	10/16/2013 13:21	0917-173_Nc	13_10_16_1321_03_140	1	0.01	1.176	0.006	0.082	0.885	0.0840	0.365	1.804	-2.208	0.22	-0.00800	0.00600	-0.55	0.359	31.255
					10/16/2013 13:22	0917-173_Nc	13_10_16_1322_03_770	1	-0.14	1.286	0.030	0.076	0.863	0.0860	0.431	1.807	-1.87	0.21	-0.00200	0.00500	-0.85	0.369	27.822
					10/16/2013 13:23	0917-173_Nc	13_10_16_1323_04_590	1	-0.24	1.187	-0.0410	0.076	0.833	0.0830	0.478	1.811	-1.72	0.19	-0.00800	0.00500	-1.05	0.350	25.9
					10/16/2013 13:24	0917-173_Nc	13_10_16_1324_05_290	1	-3.11	1.241	-0.038	0.082	0.967	0.0870	0.454	1.817	-2.260	0.24	0.00100	0.00500	-0.68	0.385	32.991
					10/16/2013 13:25	0917-173_Nc	13_10_16_1325_06_110	1	-2.66	1.211	-0.070	0.087	1.053	0.0880	0.254	1.824	-2.79	0.26	-0.00600	0.00600	-1.19	0.364	38.246
					10/16/2013 13:26	0917-173_Nc	13_10_16_1326_06_890	1	-0.347	1.267	-0.127	0.090	1.117	0.0900	0.252	1.834	-3.165	0.28	-0.00700	0.00600	-0.58	0.371	40.046
					10/16/2013 13:27	0917-173_Nc	13_10_16_1327_07_651	1	0.39	1.333	0.020	0.087	1.129	0.0900	0.447	1.836	-2.70	0.26	-0.00600	0.00600	-0.80	0.386	38.064
					10/16/2013 13:28	0917-173_Nc	13_10_16_1328_08_371	1	0.30	1.339	0.029	0.091	1.179	0.0920	0.344	1.856	-2.528	0.26	-0.00700	0.00500	-0.76	0.390	37.73
					10/16/2013 13:29	0917-173_Nc	13_10_16_1329_09_101	1	0.52	1.319	0.0160	0.088	1.047	0.0920	0.502	1.883	-2.340	0.25	-0.00700	0.00500	-0.80	0.395	35.201
					10/16/2013 13:30	0917-173_Nc	13_10_16_1330_09_901	1	0.01	1.291	-0.0410	0.091	1.069	0.0940	0.388	1.899	-2.582	0.26	-0.00800	0.00600	-0.91	0.388	37.404
					10/16/2013 13:31	0917-173_Nc	13_10_16_1331_10_691	1	-1.71	1.310	-0.002	0.095	1.036	0.0920	0.333	1.903	-2.54	0.26	-0.00700	0.00600	-0.99	0.403	36.776
					10/16/2013 13:32	0917-173_Nc	13_10_16_1332_11_411	1	-0.42	1.252	-0.0840	0.091	1.085	0.0950	0.508	1.913	-2.63	0.26	-0.00400	0.00500	-0.97	0.384	38.527
					10/16/2013 13:33	0917-173_Nc	13_10_16_1333_12_131	1	-0.58	1.406	-0.1290	0.091	1.037	0.0940	0.095	1.905	-2.704	0.27	-0.00600	0.00600	-0.89	0.401	39.229
					10/16/2013 13:34	0917-173_Nc	13_10_16_1334_12_951	1	-0.547	1.299	-0.037	0.093	1.065	0.0950	0.241	1.896	-2.839	0.28	-0.00200	0.00500	-0.62	0.378	41.092
					10/16/2013 13:35	0917-173_Nc	13_10_16_1335_13_701	1	1.85	1.296	-0.03900	0.094	1.143	0.0940	0.322	1.880	-2.705	0.28	-0.00500	0.00500	-0.3	0.387	40.874
					10/16/2013 13:36	0917-173_Nc	13_10_16_1336_14_461	1	-0.40	1.350	-0.014	0.096	1.056	0.0930	0.226	1.874	-2.57	0.28	-0.00800	0.00600	-1.27	0.392	40.222
					10/16/2013 13:37	0917-173_Nc	13_10_16_1337_15_271	1	-1.268	1.281	0.027	0.093	1.151	0.0930	0.236	1.879	-2.66	0.28	-0.00400	0.00600	-1.02	0.388	40.723
					10/16/2013 13:38	0917-173_Nc	13_10_16_1338_15_941	1	0.02	1.275	-0.12400	0.095	1.214	0.0920	0.279	1.882	-2.987	0.29	-0.00300	0.00500	-0.4	0.389	42.538
					10/16/2013 13:39	0917-173_Nc	13_10_16_1339_16_752	1	1.84	1.217	-0.219	0.091	1.118	0.0920	0.412	1.858	-2.65	0.27	-0.00500	0.00600	-0.85	0.371	38.586
					10/16/2013 13:40	0917-173_Nc	13_10_16_1340_17_442	1	0.266	1.296	-0.1090	0.087	1.081	0.0940	0.427	1.858	-2.181	0.25	-0.00900	0.00600	-0.98	0.398	34.956
					10/16/2013 13:41	0917-173_Nc	13_10_16_1341_18_272	1	-2.10	1.278	0.035	0.085	0.993	0.0900	0.256	1.861	-2.13	0.24	-0.00300	0.00600	-0.95	0.386	33.874
					10/16/2013 13:42	0917-173_Nc	13_10_16_1342_18_982	1	-0.79	1.258	0.054	0.086	0.937	0.0910	0.354	1.846	-2.055	0.23	-0.01400	0.00600	-1.25	0.375	31.219
					10/16/2013 13:43	0917-173_Nc	13_10_16_1343_19_792	1	0.11	1.221	-0.0210	0.079	0.895	0.0870	0.317	1.848	-1.934	0.21	-0.00800	0.00500	-0.69	0.370	28.347
					10/16/2013 13:44	0917-173_Nc	13_10_16_1344_20_512	1	-2.384	1.253	0.055	0.080	0.823	0.0890	0.351	1.837	-1.653	0.20	-0.00500	0.00500	-0.41	0.389	26.095
					10/16/2013 13:45	0917-173_Nc	13_10_16_1345_21_252	1	-0.416	1.168	-0.0070	0.078	0.871	0.0910	0.332	1.861	-1.278	0.18	-0.00900	0.00600	-1.12	0.367	23.605
					10/16/2013 13:46	0917-173_Nc	13_10_16_1346_22_032	1	0.33	1.241	0.037	0.081	0.887	0.0920	0.281	1.880	-1.372	0.18	-0.00900	0.00600	-0.45	0.381	22.504
					10/16/2013 13:47	0917-173_Nc	13_10_16_1347_22_792	1	1.147	1.318	0.047	0.077	0.997	0.0910	0.466	1.900	-1.09	0.18	-0.01000	0.00500	-1.28	0.389	22.505
					10/16/2013 13:48	0917-173_Nc	13_10_16_1348_23_542	1	0.860	1.294	0.012	0.077	1.017	0.0930	0.461	1.918	-1.32	0.19	-0.00900	0.00600	-0.84	0.382	23.762
					10/16/2013 13:49	0917-173_Nc	13_10_16_1349_24_252	1	-1.01	1.302	0.044	0.078	0.958	0.0920	0.311	1.923	-1.369	0.19	-0.01400	0.00600	-0.37	0.392	24.06
					10/16/2013 13:50	0917-173_Nc	13_10_16_1350_25_052	1	0.71	1.343	-0.017	0.086	1.008	0.0960	0.398	1.924	-1.656	0.20	-0.01100	0.00600	-0.32	0.401	26.206
					10/16/2013 13:51	0917-173_Nc	13_10_16_1351_25_803	1	-1.99	1.296	0.115	0.078	0.955	0.0940	0.350	1.928	-1.37	0.19	-0.00700	0.00600	-1.02	0.374	26.308
					10/16/2013 13:52	0917-173_Nc	13_10_16_1352_26_603	1	-1.58	1.257	-0.0270	0.084	0.904	0.0920	0.438	1.904	-1.476	0.20	-0.01100	0.00600	-0.66	0.388	25.324
					10/16/2013 13:53	0917-173_Nc	13_10_16_1353_27_313	1	0.097	1.338	0.0580	0.079	1.006	0.0900	0.324	1.905	-1.446	0.19	-0.00500	0.00600	-1.07	0.383	23.588
					10/16/2013 13:54	0917-173_Nc	13_10_16_1354_28_013	1	0.487	1.310	0.014	0.078	1.025	0.0900	0.568	1.903	-1.32	0.18	-0.00900	0.00600	-1.06	0.392	22.729
					10/16/2013 13:55	0917-173_Nc	13_10_16_1355_28_823	1	-1.61	1.348	-0.03300	0.075	0.986	0.0940	0.389	1.903	-1.378	0.18	-0.01000	0.00500	-0.67	0.390	22.796
					10/16/2013 13:56	0917-173_Nc	13_10_16_1356_29_593	1	-0.28	1.254	-0.0160	0.079	1.039	0.0930	0.526	1.911	-1.358	0.18	-0.00800	0.00600	-0.46	0.382	23.132
					10/16/2013 13:57	0917-173_Nc	13_10_16_1357_30_333	1	0.43	1.283	0.051	0.083	0.987	0.0950	0.508	1.932	-1.436	0.19	-0.00900	0.00600	-0.48	0.382	24.453
					10/16/2013 13:58	0917-173_Nc	13_10_16_1358_31_053	1	0.598	1.255	-0.0060	0.079	1.095	0.0960	0.380	1.935	-1.530	0.19	-0.00700	0.00600	0.17	0.393	24.549
					10/16/2013 13:59	0917-173_Nc	13_10_16_1359_31_863	1	-1.99	1.436	0.067	0.079	1.002	0.0960	0.668	1.923	-1.384	0.19	-0.01400	0.00600	-0.53	0.409	23.863
					10/16/2013 14:00	0917-173_Nc	13_10_16_1400_32_603	1	0.05	1.352	0.085	0.081	0.877	0.0950	0.463	1.910	-1.125	0.18	-0.00800	0.00500	-0.62	0.405	21.413
					10/16/2013 14:01	0917-173_Nc	13_10_16_1401_33_323	1	-0.50	1.305	0.034	0.077	0.851	0.0930	0.452	1.883	-1.36	0.18	-0.00500	0.00600	-0.86	0.388	23.312
					10/16/2013 14:02	0917-173_Nc	13_10_16_1402_34_073	1	2.17	1.300	0.042	0.084	0.936	0.0900	0.543	1.867	-1.737	0.198	-0.00700	0.00500	-0.11	0.388	25.815
					10/16/2013 14:03	0917-173_Nc	13_10_16_1403_34_794	1	0.96	1.227	0.047	0.076	1.003	0.0890	0.420	1.862	-1.638	0.204	-0.00800	0.00600	-0.53	0.352	27.05
					10/16/2013 14:04	0917-173_Nc	13_10_16_1404_35_484	1	0.73	1.190	0.0210	0.084	0.972	0.0880	0.478	1.855	-1.730	0.213	-0.00600	0.00500	-1.11	0.359	28.254
					10/16/2013 14:05	0917-173_Nc	13_10_16_1405_36_184	1	-1.093	1.241	-0.0510	0.087	0.938	0.0900	0.494	1.855	-1.631	0.219	-0.00700	0.00500	-1.04	0.398	28.6
					10/16/2013 14:06	0917-173_Nc	13_10_16_1406_36_954	1	-1.73	1.268	0.002	0.086	0.955	0.0900	0.474	1.860	-1.838	0.216	-0.00600	0.00600	-0.89	0.387	28.669
					10/16/2013 14:07	0917-173_Nc	13_10_16_1407_37_704	1	0.94	1.355	0.012	0.087	0.942	0.0890	0.410	1.854	-1.77	0.216	-0.00600	0.00600	-0.59	0.396	29.034
					10/16/2013 14:08	0917-173_Nc	13_10_16_1408_38_404	1	0.368	1.247	-0.0130	0.082	0.896	0.0880	0.443	1.864	-1.633	0.211	-0.01000	0.00500	-0.38	0.384	28.354
					10/16/2013 14:09	0917-173_Nc	13_10_16_1409_39_214	1	0.47	1.287	0.055	0.083	0.936	0.0920	0.522	1.878	-1.65	0.205	-0.00600	0.00600	-0.61	0.389	26.6
					10/16/2013 14:10	0917-173_Nc	13_10_16_1410_39_914	1	0.24	1.331	0.036	0.078	0.897	0.0920	0.338	1.899	-1.43	0.190	-0.00300	0.00600	-0.62	0.389	26.175
					10/16/2013 14:11	0917-173_Nc	13_10_16_1411_40_714	1	-1.58	1.323	0.0260	0.085	0.923	0.0890	0.383	1.892	-1.64	0.207	-0.00400	0.00500	-0.72	0.398	27.404
					10/16/2013 14:12	0917-173_Nc	13_10_16_1412_41_424	1	-2.270	1.325	0.046	0.085	0.937	0.0940	0.508	1.911	-1.57	0.214	-0.01000	0.00500	-0.75	0.398	28.962
					10/16/2013 14:13	0917-173_Nc	13_10_16_1413_42_174	1	0.35	1.253	-0.062	0.084	0.940	0.0920	0.590	1.891	-1.61	0.223	-0.00500	0.00600	-1.12	0.380	30.227
					10/16/2013 14:14	0917-173_Nc	13_10_16_1414_42_985	1	-0.09	1.324	-0.135	0.086	0.844	0.0900	0.504	1.883	-1.853	0.215	-0.00700	0.00500	-0.50	0.401	29.81
					10/16/2013 14:15	0917-173_Nc	13_10_16_1415_43_685	1	-1.489	1.237	-0.060	0.085	0.902	0.0870	0.353	1.878	-1.69	0.225	-0.01000	0.00500	-1.35	0.378	30.138
					10/16/2013 14:16	0917-173_Nc	13_10_16_1416_44_515	1	-0.56	1.267	-0.0080	0.084	0.788	0.0890	0.439	1.861	-1.608	0.218	-0.00900	0.00600	-0.91	0.386	29.532
					10/16/2013 14:17	0917-173_Nc	13_10_16_1417_45_225	1	-0.37	1.304	0.001	0.086	0.753	0.0890	0.373	1.853	-1.53	0.213	-0.00800	0.00600	-1.23	0.395	28.424
					10/16/2013 14:18	0917-173_Nc	13_10_16_1418_45_945	1	-1.63	1.263	-0.0670	0.081	0.811	0.0870	0.315	1.871	-1.64	0.213	-0.00400	0.00500	-0.65	0.378	29.432
			Stop		10/16/2013 14:19	0917-173_Nc	13_10_16_1419_46_755	1	-1.67	1.374	-0.094	0.087	0.957	0.0920	0.517	1.892	-1.92	0.231	-0.00200	0.00600	-1.08	0.406	31.043
					10/16/2013 15:07	0917-173_Nc	13_10_16_1507_27_499	1	2.2	1.5	0.113	0.081	-0.35	1.08	-0.281	0.0960	0.119	0.131	0.043	0.454	-1.06	0.433	-1.311
					10/16/2013 15:07	0917-173_Nc	13_10_16_1507_46_029	1	2.5	1.5	0.12200	0.081	-0.47	1.34	0.0270	0.1110	-0.188	0.133	0.058	0.552	0.36	0.442	-1.657
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_04_639	1	1.1	1.5	-0.1390	0.085	-0.43	1.49	-0.1370	0.1080	-0.063	0.136	0.054	0.604	-0.2640	0.446	-1.847
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_23_129	1	0.9	1.6	0.1460	0.086	-0.43	1.56	-0.02900	0.1010	0.192	0.141	0.058	0.633	-0.001	0.474	-1.945
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_41_629	1	1.3	1.4	0.070	0.079	-0.39	1.61	0.0410	0.1100	-0.026	0.127	0.048	0.644	-1.237	0.421	-1.951
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_00_239	1	-0.2	1.5	0.161	0.085	-0.60	1.62	-0.0920	0.1050	0.024	0.139	0.057	0.652	0.003	0.458	-2.021
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_18_749	1	2.2	1.5	0.1600	0.081	-0.43	1.64	-0.104	0.1010	0.096	0.134	0.043	0.655	0.100	0.439	-2.02
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_37_259	1	-2.2	1.6	-0.0010	0.080	-0.50	1.65	-0.1010	0.1150	-0.413	0.136	0.053	0.656	-0.1530	0.443	-1.989
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_55_859	1	-0.7	1.3	0.003	0.084	-0.49	1.65	0.257	0.1100	0.041	0.131	0.049	0.661	1.039	0.415	-2.031
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_14_359	1	1.7	1.4	0.128	0.085	-0.61	1.65	-0.0590	0.0990	0.221	0.136	0.060	0.661	0.218	0.451	-2.045
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_32_979	1	-1.0	1.7	-0.0280	0.086	-0.25	1.65	0.0860	0.1000	0.1230	0.144	0.056	0.657	-0.594	0.490	-2.031
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_51_429	1	-0.5	1.5	0.246	0.085	-0.44	1.65	-0.306	0.0950	-0.026	0.137	0.062	0.663	-0.051	0.448	-2.025
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_09_939	1	1.6	1.5	-0.231	0.089	-0.44	1.65	-0.0300	0.0910	-0.133	0.143	0.043	0.658	0.33	0.467	-2.056
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_28_549	1	0.5	1.5	0.210	0.078	-0.56	1.65	0.207	0.1000	0.1110	0.129	0.064	0.659	0.271	0.444	-2.019
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_47_059	1	2.3	1.5	0.006	0.084	-0.48	1.66	0.1570	0.1150	0.195	0.139	0.066	0.662	-0.019	0.457	-2.049
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_05_669	1	-5.9	1.5	0.067	0.087	-0.53	1.65	0.0820	0.1100	-0.114	0.140	0.050	0.662	0.5490	0.463	-2.022
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_24_089	1	-0.9	1.6	-0.224	0.084	-0.51	1.65	0.0880	0.1100	0.264	0.138	0.054	0.659	-0.079	0.467	-2.041
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_42_599	1	0.0	1.5	-0.033	0.085	-0.59	1.66	0.0380	0.1110	-0.0360	0.138	0.045	0.659	-0.781	0.443	-2.042
					10/16/2013 15:13	0917-173_Nc	13_10_16_1513_01_239	1	-2.0	1.5	-0.092	0.090	-0.45	1.65	-0.0580	0.0980	-0.154	0.143	0.052	0.664	-0.076	0.461	-2.035
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_39_510	1	-10.418	3.229	0.006	0.189	-0.350	0.140	0.816	1.30	-0.221	0.31	-0.01	0.00800	-1.44	1.00	-0.133
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_45_660	1	-2.035	3.368	0.164	0.181	-0.121	0.148	0.849	1.33	-0.244	0.296	-0.01100	0.00700	0.44	1.00	-0.151
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_51_900	1	-3.279	3.465	-0.247	0.190	-0.077	0.144	0.934	1.29	-0.287	0.31	-0.01500	0.00800	-1.995	1.05	-0.099
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_58_140	1	-4.806	3.429	-0.098	0.185	-0.05900	0.146	0.993	1.26	-0.373	0.30	-0.01100	0.00800	-0.633	1.01	-0.057
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_04_280	1	-3.236	3.163	-0.138	0.198	-0.0940	0.147	0.735	1.27	-0.202	0.31	-0.01100	0.00800	0.36	1.02	-0.144
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_10_440	1	-3.771	3.125	-0.163	0.175	-0.1610	0.143	1.232	1.26	-0.161	0.28	-0.02200	0.00700	-2.12	0.96	-0.17
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_16_600	1	-1.105	3.279	0.180	0.179	-0.200	0.145	0.572	1.25	0.371	0.294	-0.02400	0.00800	-3.01	0.96	-0.077
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_22_760	1	-5.445	3.463	-0.331	0.190	-0.288	0.138	1.444	1.29	0.09	0.31	-0.01800	0.00800	-3.29	1.03	-0.057
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_29_030	1	-6.920	3.408	-0.040	0.183	-0.029	0.139	0.924	1.26	0.23	0.31	-0.01900	0.00700	-2.93	1.02	-0.128
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_35_200	1	-3.401	3.628	-0.404	0.191	0.095	0.144	1.5860	1.29	-0.030	0.32	-0.01200	0.00800	-0.468	1.06	-0.101
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_41_280	1	-1.487	3.172	-0.354	0.186	-0.1870	0.144	1.119	1.30	0.091	0.30	-0.02200	0.00800	-1.200	1.02	-0.108
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_47_500	1	-1.531	3.392	0.060	0.193	-0.197	0.148	1.720	1.33	-0.478	0.31	-0.02200	0.00600	-0.752	1.03	-0.111
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_53_690	1	-3.044	3.574	-0.030	0.189	-0.540	0.142	1.122	1.32	0.030	0.310	-0.01800	0.00800	-2.30	1.03	-0.088
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_59_901	1	-3.728	3.342	-0.285	0.192	-0.271	0.146	1.174	1.39	0.28	0.31	-0.01300	0.00700	-2.0540	1.03	-0.079
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_06_101	1	2.09	3.167	-0.270	0.191	-0.429	0.146	1.160	1.39	0.078	0.304	-0.00700	0.00700	-1.84	1.00	0.061
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_12_201	1	-6.355	3.151	-0.374	0.185	-0.1800	0.148	1.182	1.462	-0.188	0.294	0.0010	0.00800	-0.648	0.96	0.039
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_18_411	1	-5.943	3.402	-0.2540	0.179	-0.167	0.138	0.849	1.455	0.405	0.297	-0.00800	0.00700	-3.05	0.99	-0.006
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_24_601	1	1.47	3.382	0.271	0.180	-0.180	0.147	2.059	1.523	-0.220	0.298	-0.01800	0.00700	0.30	0.98	0.068
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_30_811	1	-9.52	3.075	-0.159	0.189	-0.176	0.145	0.696	1.598	-0.458	0.294	-0.01500	0.00800	-0.409	0.96	0.05
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_37_001	1	-0.916	3.122	-0.2340	0.177	-0.329	0.137	1.342	1.603	-0.114	0.284	-0.01500	0.00800	-0.820	0.96	0.15
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_43_091	1	-8.989	3.175	0.121	0.182	-0.0590	0.1440	1.605	1.662	-0.237	0.295	-0.01	0.00800	-0.89	1.00	0.113
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_49_291	1	-4.22	3.048	-0.1400	0.176	-0.152	0.141	1.387	1.674	-0.433	0.284	-0.01100	0.00800	-0.51	0.93	0.21
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_55_501	1	-2.622	3.022	-0.105	0.169	-0.182	0.148	1.063	1.730	-0.552	0.274	-0.00200	0.00800	0.456	0.92	0.191
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_01_701	1	1.42	2.884	-0.3960	0.172	-0.0020	0.135	1.369	1.784	0.3340	0.273	-0.01600	0.00800	-1.17	0.92	0.216
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_07_801	1	1.221	3.237	-0.217	0.175	-0.206	0.138	1.055	1.830	-0.190	0.287	-0.01200	0.00800	-0.37	0.97	0.181
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_14_001	1	-2.328	3.128	0.096	0.168	-0.211	0.140	1.207	1.792	-0.042	0.278	-0.02300	0.00600	-0.38	0.92	0.262
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_20_221	1	-5.314	3.083	0.147	0.175	-0.147	0.149	1.270	1.800	-0.2660	0.283	-0.00900	0.00700	-1.411	0.92	0.226
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_26_421	1	-1.392	3.153	-0.339	0.183	-0.095	0.140	1.395	1.863	-0.349	0.293	0.00400	0.00600	-1.27	0.97	0.295
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_32_621	1	-3.953	3.102	0.223	0.172	-0.197	0.135	0.905	1.928	-0.423	0.281	-0.01900	0.00600	-1.93	0.95	0.263
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_38_721	1	-2.236	3.152	-0.221	0.168	-0.169	0.151	0.749	1.854	0.029	0.277	-0.02800	0.00600	-0.698	0.94	0.293
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_44_921	1	-2.765	3.092	-0.136	0.176	0.104	0.145	0.978	1.921	-0.77	0.285	-0.01100	0.00700	2.16	0.96	0.308
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_51_121	1	0.570	2.964	0.050	0.155	0.0230	0.140	1.231	1.974	-0.154	0.258	-0.02000	0.00700	-1.12	0.876	0.289
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_57_331	1	-9.191	3.085	-0.101	0.165	0.0350	0.144	1.444	1.993	0.1300	0.276	-0.01800	0.00600	0.897	0.90	0.311
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_03_531	1	-4.814	3.053	-0.2860	0.167	-0.0460	0.143	0.623	2.011	0.01	0.275	-0.03200	0.00800	-2.423	0.90	0.3
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_09_641	1	4.1320	2.643	0.111	0.159	0.0600	0.139	0.937	2.026	0.108	0.255	-0.01800	0.00700	-2.70	0.79	0.378
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_15_841	1	-0.499	2.971	0.237	0.172	0.180	0.1320	1.175	1.994	-0.332	0.275	-0.01	0.00600	-0.452	0.91	0.333
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_21_961	1	-1.739	2.733	-0.300	0.167	-0.215	0.140	1.127	2.013	-0.1170	0.261	-0.01400	0.00700	0.26	0.88	0.312
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_28_171	1	-2.34	3.137	-0.1430	0.171	-0.0720	0.1310	1.048	2.033	0.019	0.282	-0.01700	0.00600	0.13	0.93	0.357
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_34_381	1	-8.930	3.039	-0.164	0.160	0.0730	0.138	1.050	2.023	-0.250	0.268	-0.03200	0.00800	0.856	0.91	0.328
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_40_481	1	-1.268	2.774	0.439	0.166	-0.295	0.143	0.932	2.008	0.086	0.262	-0.02300	0.00700	-0.30	0.86	0.356
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_46_691	1	0.398	2.947	-0.347	0.168	-0.307	0.135	0.898	2.065	-0.044	0.271	-0.01900	0.00700	0.33	0.90	0.211
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_52_891	1	-3.276	2.917	-0.285	0.167	-0.1190	0.1460	1.026	2.101	-0.700	0.265	-0.01	0.00600	0.383	0.86	0.304
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_59_101	1	1.6970	2.954	0.152	0.162	-0.441	0.135	1.275	2.029	-0.037	0.265	-0.01200	0.00700	-1.87	0.90	0.341
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_05_301	1	-5.8670	2.636	0.006	0.143	-0.117	0.1330	0.561	2.077	0.10	0.237	-0.02100	0.00600	-0.5020	0.78	0.334
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_11_411	1	-2.2520	2.941	-0.073	0.157	-0.012	0.1350	1.704	2.075	-0.550	0.261	-0.01100	0.00600	-0.11	0.86	0.331
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_17_611	1	-0.280	2.896	-0.117	0.150	0.0950	0.138	1.149	2.053	-0.628	0.251	-0.01	0.00500	-0.57	0.84	0.392
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_23_821	1	3.65	2.839	0.319	0.150	0.1570	0.138	0.702	2.010	0.07500	0.251	-0.01000	0.00700	0.24	0.82	0.332
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_30_021	1	2.768	2.913	-0.1300	0.164	-0.169	0.132	1.202	2.074	-0.340	0.264	-0.01700	0.00700	-0.88	0.87	0.382
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_36_221	1	4.208	3.039	-0.211	0.156	-0.266	0.132	0.977	2.058	0.11	0.263	0.00300	0.00700	-1.02	0.89	0.372
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_42_321	1	-0.712	2.998	-0.0540	0.151	-0.0300	0.1260	1.027	2.050	-0.189	0.255	-0.00300	0.00600	-1.507	0.86	0.313
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_48_521	1	-4.819	2.816	0.0830	0.152	0.0460	0.134	0.695	2.100	0.010	0.250	-0.01200	0.00700	0.62	0.83	0.338
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_54_721	1	2.465	2.934	0.2530	0.154	-0.117	0.133	0.672	2.091	0.329	0.257	-0.02	0.00600	-0.369	0.86	0.362
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_00_911	1	-6.536	2.660	-0.23	0.150	0.0960	0.134	0.911	2.089	0.109	0.244	-0.01100	0.00600	0.71	0.80	0.354
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_07_101	1	-3.058	2.775	-0.400	0.163	-0.198	0.128	0.751	2.087	-0.133	0.261	-0.00800	0.00500	0.718	0.83	0.312
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_13_191	1	-6.663	2.727	0.6110	0.144	-0.0060	0.131	1.085	2.060	0.238	0.243	0.00000	0.00700	-1.60	0.80	0.324
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_19_381	1	-0.504	2.731	0.270	0.158	0.0480	0.1280	1.090	2.051	0.03	0.254	-0.0180	0.00700	-1.337	0.81	0.342
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_25_571	1	1.695	3.000	0.146	0.147	-0.0020	0.129	0.564	2.030	0.194	0.254	-0.01500	0.00600	-0.60	0.84	0.237
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_31_771	1	3.136	2.703	-0.095	0.153	0.275	0.122	0.857	2.030	-0.073	0.246	0.00000	0.00600	-0.75	0.81	0.304
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_37_861	1	-3.45	2.827	0.026	0.145	-0.1620	0.1230	0.892	2.012	-0.253	0.244	-0.01500	0.00600	-0.540	0.81	0.265
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_44_051	1	-0.637	2.871	0.085	0.153	0.0190	0.134	0.742	2.020	0.0730	0.254	-0.00500	0.00600	0.329	0.86	0.376
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_50_351	1	2.450	2.886	0.002	0.161	0.0260	0.1230	1.236	2.039	-0.330	0.261	-0.01300	0.00700	1.63	0.86	0.283

Location **Disc.** **#** **Start/Stop** **Instrument**

				Label		**Label**		**Label**		**Label**		**Label**		**Label**		**Label**		
				1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/16/2013 15:30	0917-173_Nc	13_10_16_1530_56_551	1	5.788	2.610	0.082	0.161	0.0330	0.1190	0.988	2.033	-0.253	0.250	-0.01100	0.00600	0.09	0.80	0.308
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_02_751	1	-5.1160	2.791	0.141	0.138	-0.1000	0.1230	0.763	2.021	0.146	0.237	-0.01600	0.00600	1.34	0.779	0.292
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_08_851	1	1.033	2.904	-0.0470	0.156	-0.0230	0.1240	0.699	1.992	-0.014	0.258	-0.01100	0.00500	-0.963	0.85	0.269
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_15_041	1	2.1570	2.898	-0.1870	0.150	-0.06000	0.1230	0.972	1.989	-0.165	0.253	0.00700	0.00700	-0.707	0.86	0.315
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_21_231	1	4.514	2.771	-0.1720	0.151	-0.084	0.125	0.895	1.975	-0.368	0.243	-0.00600	0.00600	1.444	0.83	0.235
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_27_441	1	-0.117	2.740	0.136	0.155	-0.0040	0.119	1.212	2.006	-0.276	0.251	-0.01000	0.00600	0.45	0.82	0.249
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_33_631	1	3.6860	2.862	-0.270	0.147	0.1540	0.1140	1.3550	1.986	0.04	0.247	-0.00100	0.00600	-0.60	0.85	0.236
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_39_721	1	5.219	2.855	-0.033	0.153	-0.0290	0.128	1.080	1.954	-0.188	0.252	0.01400	0.00500	0.275	0.83	0.233
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_45_921	1	-1.45	2.667	-0.286	0.156	-0.156	0.1190	0.586	1.923	-0.333	0.247	-0.0020	0.00500	0.437	0.79	0.284
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_52_121	1	4.183	2.889	0.111	0.154	-0.060	0.1210	0.808	1.940	-0.151	0.256	-0.01300	0.00500	1.35	0.84	0.235
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_58_311	1	3.191	2.337	-0.131	0.146	0.146	0.1190	0.914	1.891	-0.548	0.228	0.00700	0.00600	-0.07	0.75	0.247
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_04_511	1	8.322	3.071	0.192	0.145	-0.177	0.113	1.0610	1.887	-0.160	0.252	-0.00900	0.00700	0.786	0.86	0.267
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_10_611	1	-1.006	2.742	0.2000	0.153	0.183	0.1150	0.767	1.913	0.310	0.250	-0.02000	0.00600	-2.35	0.85	0.225
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_16_801	1	-5.033	2.753	-0.133	0.145	0.0110	0.1190	0.996	1.869	-0.115	0.244	-0.01400	0.00500	-0.150	0.83	0.213
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_23_091	1	0.267	2.910	0.0140	0.149	0.032	0.1170	0.971	1.872	-0.670	0.251	0.00200	0.00500	-0.11	0.86	0.228
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_29_201	1	-2.487	2.939	0.168	0.155	0.204	0.1200	0.996	1.897	-0.250	0.261	-0.00600	0.00600	1.129	0.86	0.229
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_35_501	1	-0.039	2.664	0.083	0.153	-0.213	0.115	1.187	1.845	-0.490	0.247	-0.00100	0.00600	1.100	0.80	0.218
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_41_501	1	2.647	2.916	-0.1070	0.139	-0.169	0.1180	0.351	1.861	0.001	0.241	-0.01500	0.00500	0.85	0.82	0.226
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_47_691	1	0.6860	2.907	0.0930	0.147	0.265	0.1130	1.061	1.807	-0.466	0.247	-0.00900	0.00600	0.62	0.82	0.248
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_53_981	1	-4.093	3.058	0.1680	0.145	0.1770	0.1200	0.948	1.877	-0.154	0.251	0.00500	0.00500	0.16	0.88	0.259
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_00_181	1	2.293	2.956	0.002	0.154	0.260	0.1110	0.806	1.824	-0.036	0.253	0.00700	0.00600	0.440	0.85	0.252
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_06_381	1	8.35	2.535	-0.425	0.153	0.1520	0.1080	1.078	1.834	-1.273	0.245	-0.00900	0.00600	1.64	0.77	0.195
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_12_481	1	5.04	2.582	0.247	0.156	0.271	0.1170	0.873	1.816	-0.105	0.249	0.00900	0.00600	1.79	0.82	0.264
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_18_681	1	-5.211	2.672	0.17	0.152	0.250	0.1170	0.871	1.802	-0.030	0.248	-0.00400	0.00600	0.627	0.82	0.22
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_24_881	1	-2.849	2.862	0.421	0.151	-0.0160	0.1110	0.646	1.878	-0.324	0.250	-0.01700	0.00600	-0.3320	0.84	0.192
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_31_081	1	6.036	2.833	-0.5100	0.156	-0.278	0.139	0.886	1.993	-0.287	0.256	-0.00300	0.00700	-0.907	0.85	0.252
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_37_271	1	-7.940	2.988	0.187	0.166	-0.211	0.143	0.25	1.707	-0.222	0.272	-0.01200	0.00700	0.1800	0.91	0.088
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_43_371	1	-6.836	3.097	-0.097	0.160	-0.376	0.155	0.994	1.624	-0.556	0.270	0.0000	0.00800	0.53	0.876	-0.056
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_49_561	1	-1.62	3.345	-0.072	0.177	-0.270	0.153	1.333	1.615	-0.562	0.293	-0.03300	0.00700	-0.08	0.99	-0.092
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_55_761	1	1.765	2.989	-0.0490	0.189	-0.038	0.149	0.954	1.549	-0.30	0.297	-0.02800	0.00700	-1.40	0.94	-0.058
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_01_961	1	-4.91	3.287	-0.133	0.178	-0.397	0.144	1.814	1.610	-0.069	0.294	-0.02300	0.00600	-0.766	0.99	-0.04
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_08_051	1	-1.8580	3.298	0.164	0.182	-0.2440	0.143	1.457	1.709	0.3400	0.296	-0.01100	0.00800	0.112	0.99	0.038
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_14_241	1	-2.312	3.301	-0.131	0.179	-0.1650	0.142	1.169	1.641	-0.322	0.296	-0.01900	0.00700	-0.15	0.99	0.115
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_20_441	1	-4.684	3.205	-0.08	0.181	-0.183	0.139	0.705	1.670	0.051	0.296	-0.00900	0.00700	-0.16	0.96	0.069
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_26_631	1	5.6610	3.152	0.0630	0.180	-0.239	0.145	1.042	1.738	0.087	0.288	-0.01000	0.00700	-1.063	0.97	0.056
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_32_831	1	-0.622	3.414	0.181	0.166	-0.002	0.152	0.389	1.726	-0.143	0.284	-0.00900	0.00700	-0.671	0.97	0.107
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_38_921	1	-1.15	3.230	-0.484	0.181	-0.1010	0.147	1.082	1.744	0.022	0.297	-0.02	0.00700	-2.35	0.99	0.158
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_45_121	1	-5.521	3.193	0.0950	0.173	-0.226	0.145	0.22	1.795	0.16	0.288	-0.00300	0.00700	-1.198	0.93	0.12
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_51_321	1	-2.466	3.090	-0.38	0.175	-0.140	0.142	0.836	1.800	-0.45	0.280	-0.03000	0.00700	0.770	0.92	0.183
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_57_611	1	-1.147	2.792	-0.149	0.173	-0.312	0.143	0.741	1.841	-0.328	0.270	-0.00400	0.00700	-0.01	0.89	0.207
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_03_811	1	-1.870	3.042	0.1360	0.165	0.021	0.1340	0.858	1.908	0.0130	0.269	0.0050	0.00700	1.32	0.90	0.223
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_09_821	1	0.57	3.108	0.078	0.166	-0.128	0.151	0.763	1.905	-0.26	0.274	-0.00400	0.00600	-2.269	0.90	0.238
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_16_021	1	-2.21	3.049	0.0020	0.171	-0.020	0.139	0.777	1.933	0.023	0.276	-0.01900	0.00700	-0.98	0.92	0.251
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_22_221	1	-1.4540	2.869	0.003	0.161	-0.308	0.145	0.791	1.921	0.148	0.265	-0.01100	0.00700	0.58	0.89	0.257
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_28_421	1	-3.878	2.646	0.137	0.164	-0.239	0.146	0.19	1.958	-0.1220	0.258	-0.02000	0.00700	-1.81	0.85	0.26
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_34_611	1	-5.654	2.773	-0.61	0.166	-0.04800	0.1440	0.960	1.959	-0.724	0.265	-0.00700	0.00700	1.21	0.89	0.311
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_40_711	1	-2.66	3.030	0.305	0.164	-0.0740	0.1410	1.079	2.015	0.026	0.268	-0.01100	0.00600	0.173	0.90	0.264
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_46_901	1	-5.8140	3.155	-0.31	0.156	-0.2090	0.137	0.752	1.970	-0.668	0.266	-0.02100	0.00700	1.65	0.88	0.288
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_53_101	1	-3.97	3.335	0.228	0.180	-0.0260	0.147	0.751	1.994	-0.177	0.294	0.00400	0.00700	-0.267	0.97	0.281
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_59_391	1	-0.36	2.796	0.131	0.167	-0.0410	0.137	0.747	2.045	-0.060	0.267	-0.01200	0.00700	-0.003	0.87	0.279
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_05_581	1	-2.34	3.066	0.328	0.163	-0.0920	0.139	0.23	1.984	0.213	0.271	0.00	0.00700	0.338	0.92	0.259
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_11_681	1	2.785	2.952	-0.002	0.151	-0.06700	0.146	0.515	2.036	-0.236	0.253	-0.02500	0.00700	-0.05	0.86	0.25
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_17_881	1	-1.868	3.156	0.311	0.155	-0.213	0.149	0.835	1.986	0.355	0.261	-0.03100	0.00600	-0.830	0.89	0.27
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_24_081	1	-7.7500	3.032	-0.1560	0.168	-0.126	0.140	0.697	2.043	-0.408	0.272	-0.02400	0.00600	0.30	0.91	0.313
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_30_271	1	5.153	2.984	0.406	0.162	-0.056	0.1340	0.687	2.081	0.029	0.265	-0.02900	0.00700	-0.92	0.89	0.268
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_36_471	1	-1.934	3.027	0.077	0.159	-0.338	0.140	0.864	2.065	-0.017	0.264	-0.02	0.00700	-1.622	0.88	0.325
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_42_561	1	4.61	2.876	0.208	0.152	-0.117	0.139	1.142	2.034	0.215	0.252	-0.00700	0.00600	-1.7990	0.84	0.29
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_48_751	1	-1.33	2.913	-0.053	0.160	-0.0240	0.132	0.940	2.090	0.139	0.263	-0.01500	0.00700	-0.651	0.89	0.308
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_54_941	1	-9.64	2.819	-0.088	0.157	-0.172	0.133	1.244	2.094	-0.072	0.255	-0.02500	0.00700	0.766	0.83	0.309
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_01_141	1	4.011	2.649	-0.046	0.157	-0.169	0.1370	0.916	2.072	-0.052	0.251	-0.02000	0.00700	0.016	0.81	0.331
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_07_351	1	1.6220	3.066	-0.042	0.173	-0.0100	0.131	0.981	2.047	-0.293	0.280	-0.01400	0.00600	0.1710	0.93	0.348
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_13_431	1	-1.041	2.819	0.124	0.156	-0.2050	0.136	0.776	2.036	-0.28	0.254	-0.01600	0.00700	0.03	0.818	0.343
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_19_631	1	-1.870	2.919	0.262	0.164	-0.209	0.1300	0.888	2.058	0.139	0.266	-0.00200	0.00700	-0.148	0.92	0.243
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_25_841	1	-3.95	3.095	0.049	0.155	0.1950	0.132	0.749	2.082	-0.217	0.265	0.00300	0.00600	-1.221	0.88	0.316
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_32_041	1	2.124	2.872	-0.091	0.151	-0.204	0.135	0.957	2.077	-0.342	0.255	-0.00800	0.00700	1.353	0.832	0.299
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_38_151	1	-0.16	2.733	-0.051	0.163	0.213	0.131	1.046	2.075	-0.18	0.262	-0.01000	0.00600	-1.350	0.86	0.239
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_44_351	1	-1.757	2.907	-0.413	0.157	-0.1120	0.135	0.794	2.088	-0.3980	0.255	-0.01900	0.00600	-0.77	0.87	0.26
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_50_551	1	-5.3170	2.737	-0.001	0.149	-0.141	0.125	1.129	2.060	0.026	0.247	-0.01600	0.00700	-0.57	0.82	0.271
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_56_752	1	5.702	2.880	0.097	0.155	-0.114	0.130	0.738	2.062	0.25	0.258	-0.00900	0.00500	-1.95	0.88	0.268
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_02_952	1	-5.541	2.647	-0.123	0.146	-0.0130	0.1300	1.539	2.017	-0.069	0.239	-0.02100	0.00700	-1.415	0.798	0.253
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_09_052	1	-3.70	2.462	-0.110	0.149	-0.179	0.1250	0.832	2.031	-0.625	0.238	-0.02300	0.00700	1.18	0.79	0.198
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_15_252	1	-1.71	2.675	0.2450	0.163	-0.129	0.1310	0.729	2.083	-0.3320	0.256	-0.03100	0.00600	0.776	0.83	0.339
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_21_442	1	7.20	2.914	0.309	0.154	-0.1010	0.126	0.665	2.001	0.24	0.257	0.00600	0.00500	-3.30	0.86	0.265
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_27_642	1	-4.242	2.680	0.1230	0.159	-0.2290	0.1180	1.124	2.068	-0.411	0.255	-0.01200	0.00600	2.31	0.83	0.264
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_33_832	1	-0.13	2.652	-0.130	0.154	0.0810	0.1170	0.734	2.010	-0.017	0.251	-0.01500	0.00600	-1.364	0.85	0.334
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_39_922	1	0.019	2.799	-0.014	0.165	-0.093	0.1240	0.990	2.026	-0.029	0.262	-0.01	0.00500	-1.91	0.87	0.283
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_46_132	1	3.593	2.685	0.2180	0.143	-0.140	0.1200	0.700	2.028	0.239	0.237	-0.00400	0.00700	-1.638	0.760	0.211
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_52_322	1	1.049	2.757	-0.256	0.157	0.0130	0.1210	0.365	2.005	-0.321	0.257	-0.01000	0.00500	-1.13	0.83	0.249
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_58_522	1	-5.564	2.735	0.223	0.155	-0.133	0.1240	1.007	1.984	-0.46	0.250	-0.00600	0.00500	0.546	0.83	0.199
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_04_712	1	-2.759	2.607	-0.126	0.141	0.0120	0.134	0.849	1.972	-0.157	0.235	-0.01200	0.00600	-0.120	0.77	0.199
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_10_822	1	1.211	2.920	0.281	0.146	-0.0660	0.122	0.213	1.989	0.075	0.248	-0.01500	0.00600	0.47	0.793	0.256
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_17_012	1	-1.042	2.477	-0.150	0.158	-0.0700	0.1220	0.721	1.986	-0.167	0.247	-0.00700	0.00700	0.204	0.79	0.276
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_23_302	1	-3.759	2.911	-0.279	0.158	0.163	0.123	1.102	1.949	-0.464	0.259	0.00200	0.00600	-1.244	0.83	0.243
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_29_492	1	3.00	2.714	-0.047	0.149	-0.043	0.1210	0.705	1.917	-0.23300	0.242	-0.01	0.00600	-0.23	0.81	0.251
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_35_682	1	1.489	2.792	-0.189	0.157	-0.02600	0.1150	0.464	1.904	-0.253	0.255	0.00000	0.00500	-1.424	0.82	0.234
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_41_772	1	3.044	2.716	0.138	0.161	-0.0050	0.1170	0.930	1.929	-0.3990	0.256	-0.00900	0.00500	-1.194	0.85	0.241
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_47_962	1	3.726	2.777	-0.271	0.153	0.0870	0.1160	0.536	1.935	0.104	0.251	-0.00300	0.00500	-1.79	0.83	0.243
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_54_152	1	7.0530	2.627	0.162	0.155	-0.171	0.1180	0.604	1.904	-0.265	0.246	-0.00500	0.00600	-1.36	0.81	0.247
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_00_342	1	4.7780	2.886	0.319	0.163	0.1010	0.1210	1.3220	1.926	0.47	0.263	-0.01000	0.00600	-0.853	0.87	0.223
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_06_532	1	5.240	2.913	0.2540	0.158	-0.0760	0.1140	0.306	1.913	-0.1630	0.258	-0.00800	0.00600	0.949	0.89	0.229
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_12_632	1	-0.411	2.616	0.222	0.153	-0.139	0.1170	0.614	1.861	-0.60	0.245	0.00	0.00500	-0.12	0.80	0.189
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_18_832	1	-0.847	2.835	0.086	0.150	0.1060	0.1240	1.023	1.864	-0.61	0.251	-0.00700	0.00600	1.42	0.84	0.226
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_25_022	1	-3.395	2.771	0.230	0.147	0.343	0.1140	1.032	1.835	0.470	0.243	0.00500	0.00700	-1.12	0.79	0.235
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_31_212	1	-7.943	2.608	0.0270	0.151	-0.01000	0.1120	0.794	1.803	-0.151	0.245	-0.00300	0.00600	-0.23	0.83	0.158
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_37_502	1	1.086	2.597	0.1110	0.151	-0.0630	0.1080	1.152	1.850	-0.577	0.246	-0.01300	0.00600	1.379	0.79	0.19
10/16/2013 15:41	0917-173_Nc	13_10_16_1541_19_642	1	1.5800	1.273	0.1620	0.069	-0.0070	0.0840	0.903	1.863	-0.3470	0.115	-0.01	0.00300	-0.074	0.375	0.212
10/16/2013 15:42	0917-173_Nc	13_10_16_1542_20_432	1	0.479	1.173	0.093	0.072	0.0480	0.0830	1.011	1.864	-0.2330	0.114	-0.00700	0.00300	0.296	0.369	0.232
10/16/2013 15:43	0917-173_Nc	13_10_16_1543_21_152	1	1.132	1.197	0.047	0.067	0.0500	0.0840	0.912	1.861	-0.018	0.108	-0.00500	0.00300	-0.25600	0.360	0.215
10/16/2013 15:44	0917-173_Nc	13_10_16_1544_21_922	1	1.814	1.296	-0.0310	0.0650	0.01900	0.0850	0.856	1.871	-0.010	0.112	-0.01	0.00300	-0.181	0.372	0.231
10/16/2013 15:45	0917-173_Nc	13_10_16_1545_22_636	1	1.466	1.201	0.041	0.070	-0.102	0.0840	0.691	1.873	-0.2410	0.112	-0.00300	0.00300	-0.122	0.350	0.227
10/16/2013 15:46	0917-173_Nc	13_10_16_1546_23_436	1	0.156	1.348	0.039	0.0710	0.0050	0.0840	0.832	1.888	-0.0850	0.118	-0.00500	0.00300	0.216	0.384	0.225

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_14_091	1	-1.9	1.3	0.056	0.071	-0.26	1.37	0.0440	0.0990	-0.390	0.114	0.054	0.552	0.74	0.374	-1.713
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_32_611	1	-2.4	1.3	0.116	0.074	-0.25	1.42	0.1370	0.0860	-0.0390	0.121	0.043	0.569	1.39	0.388	-1.826
					10/14/2013 12:14	0917-173_Nc	13_10_14_1214_51_221	1	0.5	1.3	0.109	0.073	-0.36	1.44	0.044	0.1070	-0.244	0.118	0.047	0.575	-0.24	0.395	-1.821
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_09_721	1	-2.9	1.2	0.165	0.077	-0.49	1.46	-0.001	0.0980	-0.191	0.121	0.057	0.583	0.626	0.393	-1.872
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_28_311	1	-0.1	1.4	0.236	0.069	-0.41	1.46	0.103	0.0960	-0.0230	0.118	0.050	0.583	0.178	0.396	-1.871
					10/14/2013 12:15	0917-173_Nc	13_10_14_1215_46_821	1	-3.8	1.3	0.1320	0.077	-0.41	1.46	0.01100	0.0930	-0.198	0.123	0.054	0.584	0.352	0.392	-1.873
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_05_251	1	-0.4	1.3	-0.037	0.073	-0.45	1.46	-0.0090	0.0910	-0.324	0.120	0.043	0.582	1.06	0.383	-1.859
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_23_951	1	-1.8	1.4	-0.0780	0.075	-0.42	1.46	0.0520	0.1030	-0.04800	0.122	0.049	0.582	0.041	0.402	-1.861
					10/14/2013 12:16	0917-173_Nc	13_10_14_1216_42_401	1	-0.8	1.3	-0.030	0.072	-0.51	1.46	-0.186	0.0970	0.054	0.117	0.049	0.585	0.555	0.385	-1.881
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_01_001	1	-0.1	1.3	0.1900	0.068	-0.42	1.46	0.282	0.0870	-0.170	0.114	0.050	0.586	0.513	0.383	-1.847
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_19_511	1	-1.6	1.5	0.146	0.073	-0.45	1.46	-0.0600	0.0950	0.249	0.124	0.054	0.585	0.578	0.418	-1.865
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_38_051	1	-1.4	1.3	0.066	0.070	-0.34	1.47	0.149	0.0960	-0.133	0.115	0.059	0.584	1.32	0.403	-1.863
					10/14/2013 12:17	0917-173_Nc	13_10_14_1217_56_641	1	0.8	1.3	0.148	0.076	-0.46	1.46	0.151	0.0970	-0.104	0.123	0.055	0.587	1.29	0.398	-1.882
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_15_151	1	-2.7	1.4	0.0090	0.068	-0.49	1.47	-0.0510	0.0960	-0.0590	0.117	0.056	0.585	-0.68	0.386	-1.885
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_33_681	1	-1.1	1.3	0.164	0.070	-0.44	1.46	0.0080	0.0930	-0.154	0.116	0.046	0.585	0.797	0.380	-1.875
					10/14/2013 12:18	0917-173_Nc	13_10_14_1218_52_291	1	0.6	1.4	0.2280	0.071	-0.67	1.47	0.082	0.0900	-0.313	0.120	0.055	0.585	0.428	0.400	-1.89
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_10_741	1	3.9	1.3	-0.0260	0.069	-0.27	1.46	0.143	0.1050	-0.121	0.113	0.053	0.585	0.82	0.376	-1.874
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_29_331	1	1.7	1.3	0.118	0.074	-0.44	1.46	0.0230	0.1000	-0.047	0.120	0.049	0.586	0.4800	0.385	-1.899
					10/14/2013 12:19	0917-173_Nc	13_10_14_1219_47_881	1	0.6	1.3	0.1830	0.069	-0.50	1.47	0.026	0.1050	0.127	0.116	0.051	0.587	0.0530	0.392	-1.87
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_06_371	1	1.2	1.4	0.053	0.072	-0.48	1.47	-0.187	0.0950	-0.154	0.120	0.043	0.585	0.567	0.404	-1.918
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_24_991	1	-1.7	1.3	-0.054	0.073	-0.33	1.46	0.0250	0.0990	-0.003	0.120	0.053	0.583	0.65	0.405	-1.887
					10/14/2013 12:20	0917-173_Nc	13_10_14_1220_43_481	1	-1.1	1.3	0.031	0.069	-0.40	1.47	-0.295	0.0920	-0.056	0.113	0.054	0.586	0.88	0.381	-1.907
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_01_901	1	-3.4	1.4	0.113	0.070	-0.56	1.47	0.159	0.1070	0.134	0.121	0.056	0.590	-0.218	0.418	-1.889
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_20_611	1	-2.8	1.3	0.034	0.072	-0.43	1.47	0.0010	0.0870	-0.213	0.118	0.057	0.584	1.589	0.383	-1.893
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_39_101	1	0.3	1.4	0.1640	0.074	-0.39	1.47	0.122	0.0840	-0.191	0.122	0.044	0.584	-0.13	0.401	-1.906
					10/14/2013 12:21	0917-173_Nc	13_10_14_1221_57_711	1	-0.5	1.3	-0.037	0.074	-0.52	1.47	0.184	0.0950	-0.063	0.118	0.055	0.586	0.280	0.399	-1.869
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_16_192	1	-1.9	1.4	-0.031	0.074	-0.35	1.46	-0.0230	0.0950	-0.243	0.123	0.050	0.588	-0.08	0.412	-1.922
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_34_662	1	0.4	1.3	0.085	0.069	-0.51	1.46	0.0210	0.0860	-0.039	0.116	0.043	0.586	0.3980	0.392	-1.909
					10/14/2013 12:22	0917-173_Nc	13_10_14_1222_53_282	1	0.7	1.2	0.092	0.072	-0.44	1.46	0.1080	0.0920	-0.124	0.117	0.054	0.586	0.534	0.399	-1.885
					10/14/2013 12:23	0917-173_Nc	13_10_14_1223_11_782	1	-1.7	1.2	0.2290	0.072	-0.42	1.46	0.0850	0.1080	0.068	0.116	0.050	0.587	0.61	0.373	-1.905
					10/14/2013 12:44	0917-173_Nc	13_10_14_1244_45_810	1	1.49	0.879	-0.1660	0.143	94.9	0.780	-0.047	0.0950	1.216	0.189	3.01	0.0190	0.750	0.298	0.619
					10/14/2013 12:45	0917-173_Nc	13_10_14_1245_46_590	1	-0.08	0.843	-0.113	0.149	98.2	0.814	-0.095	0.0940	1.29	0.196	3.03	0.0200	0.601	0.299	0.647
					10/14/2013 12:46	0917-173_Nc	13_10_14_1246_47_390	1	0.67	0.923	-0.246	0.156	100.0	0.831	-0.001	0.0980	1.15	0.202	3.03	0.0200	0.425	0.307	0.639
					10/14/2013 12:47	0917-173_Nc	13_10_14_1247_48_200	1	0.58	0.816	-0.0230	0.153	100.8	0.836	-0.008	0.0980	1.29	0.201	3.03	0.0200	0.412	0.300	0.65
					10/14/2013 12:48	0917-173_Nc	13_10_14_1248_48_990	1	0.78	0.850	-0.211	0.151	101.5	0.837	0.1090	0.0990	1.41	0.197	3.03	0.0210	0.360	0.306	0.626
					10/14/2013 12:49	0917-173_Nc	13_10_14_1249_49_710	1	-0.19	0.861	-0.2160	0.1560	102	0.837	0.006	0.1050	1.28	0.201	3.03	0.0200	0.752	0.299	0.639
					10/14/2013 12:50	0917-173_Nc	13_10_14_1250_50_520	1	0.11	0.902	-0.158	0.162	103	0.846	0.008	0.0990	1.16	0.210	3.04	0.0200	1.549	0.315	0.635
Data	CYL	1	Start	A	10/14/2013 12:51	0917-173_Nc	13_10_14_1251_51_320	1	1.27	0.874	-0.305	0.156	103	0.858	0.052	0.1020	1.24	0.204	3.04	0.0200	0.713	0.306	0.626
					10/14/2013 12:52	0917-173_Nc	13_10_14_1252_52_020	1	0.38	0.852	-0.141	0.160	103	0.857	0.1240	0.1010	1.29	0.206	3.03	0.0220	0.458	0.299	0.652
					10/14/2013 12:53	0917-173_Nc	13_10_14_1253_52_871	1	0.65	0.895	-0.136	0.154	104	0.860	-0.005	0.105	1.32	0.202	3.04	0.0190	0.642	0.316	0.629
					10/14/2013 12:54	0917-173_Nc	13_10_14_1254_53_581	1	-0.75	0.905	-0.232	0.161	104	0.850	-0.038	0.1030	1.40	0.213	3.04	0.0210	0.448	0.300	0.629
					10/14/2013 12:55	0917-173_Nc	13_10_14_1255_54_371	1	1.31	0.917	-0.228	0.161	104	0.860	0.002	0.0960	1.32	0.208	3.04	0.0210	1.251	0.303	0.633
					10/14/2013 12:56	0917-173_Nc	13_10_14_1256_55_131	1	-1.28	0.823	-0.132	0.159	104	0.862	0.013	0.1030	1.47	0.207	3.04	0.0200	0.549	0.292	0.631
			Stop		10/14/2013 12:57	0917-173_Nc	13_10_14_1257_55_951	1	-0.59	0.855	-0.063	0.160	104	0.872	-0.029	0.110	1.35	0.206	3.03	0.0220	0.862	0.297	0.624
					10/14/2013 13:13	0917-173_Nc	13_10_14_1313_12_592	1	-2.765	1.715	3.58	0.094	2.26	0.268	0.145	1.88	-0.355	0.157	0.00800	0.0150	0.88	0.499	6.018
					10/14/2013 13:14	0917-173_Nc	13_10_14_1314_13_372	1	-2.941	1.680	3.34	0.094	1.90	0.268	0.049	1.87	-0.374	0.156	0.00800	0.0150	0.06	0.506	6.092
					10/14/2013 13:15	0917-173_Nc	13_10_14_1315_14_182	1	-1.85	1.641	4.66	0.092	1.90	0.258	-0.0100	1.90	-0.402	0.151	0.00800	0.0160	0.58	0.481	6.008
					10/14/2013 13:16	0917-173_Nc	13_10_14_1316_14_952	1	-2.16	1.64	5.61	0.097	2.02	0.257	0.0640	1.90	-0.30900	0.158	0.01000	0.0170	0.56	0.493	5.955
					10/14/2013 13:17	0917-173_Nc	13_10_14_1317_15_753	1	-3.10	1.69	6.82	0.099	2.16	0.251	0.0180	1.91	-0.3570	0.160	0.01	0.0180	0.42	0.495	5.772
					10/14/2013 13:18	0917-173_Nc	13_10_14_1318_16_493	1	-1.60	1.70	7.01	0.100	2.17	0.253	0.147	1.90	-0.46900	0.162	0.01	0.0200	1.17	0.506	5.717
					10/14/2013 13:19	0917-173_Nc	13_10_14_1319_17_313	1	-3.14	1.792	4.33	0.095	1.93	0.263	-0.021	1.89	-0.640	0.162	0.00500	0.0160	1.07	0.526	5.854
					10/14/2013 13:20	0917-173_Nc	13_10_14_1320_18_043	1	-2.402	1.697	3.33	0.090	1.87	0.268	0.089	1.90	-0.487	0.153	0.00800	0.0150	0.28	0.503	5.922
					10/14/2013 13:21	0917-173_Nc	13_10_14_1321_18_863	1	-2.131	1.753	3.71	0.098	1.86	0.265	0.176	1.90	-0.634	0.161	0.00700	0.0160	0.256	0.509	5.923
					10/14/2013 13:22	0917-173_Nc	13_10_14_1322_19_563	1	-2.493	1.670	2.26	0.094	1.74	0.272	0.137	1.89	-0.613	0.156	0.00300	0.0130	-0.09	0.499	5.991
					10/14/2013 13:23	0917-173_Nc	13_10_14_1323_20_333	1	-1.93	1.691	0.839	0.092	1.52	0.286	0.055	1.88	-0.8100	0.154	0.0030	0.0150	0.89	0.501	6.078
					10/14/2013 13:24	0917-173_Nc	13_10_14_1324_21_163	1	-3.561	1.653	0.721	0.096	1.58	0.299	0.097	1.87	-0.51500	0.156	0.0050	0.0160	0.23	0.497	5.903
					10/14/2013 13:25	0917-173_Nc	13_10_14_1325_21_853	1	-3.253	1.775	0.92	0.096	1.71	0.320	0.212	1.85	-0.456	0.163	0.0060	0.0170	-0.34	0.525	5.994
					10/14/2013 13:26	0917-173_Nc	13_10_14_1326_22_693	1	-4.79	1.804	1.16	0.098	1.77	0.332	0.210	1.83	-0.202	0.165	0.00100	0.0180	0.20	0.532	6.104
					10/14/2013 13:27	0917-173_Nc	13_10_14_1327_23_403	1	-4.17	1.847	1.44	0.099	1.93	0.333	0.198	1.84	-0.322	0.169	0.0080	0.0170	0.06	0.538	6.205
					10/14/2013 13:28	0917-173_Nc	13_10_14_1328_24_143	1	-1.79	1.778	1.31	0.097	1.84	0.322	0.182	1.82	-0.245	0.165	0.0090	0.0160	-0.10	0.531	6.263
					10/14/2013 13:29	0917-173_Nc	13_10_14_1329_24_954	1	-2.66	1.685	0.953	0.092	1.49	0.270	0.1750	1.90	-0.445	0.157	0.00100	0.0150	-0.08	0.504	6.955
					10/14/2013 13:30	0917-173_Nc	13_10_14_1330_25_774	1	-1.810	1.620	0.752	0.086	2.06	0.239	0.2410	1.93	-0.947	0.150	0.0110	0.01300	0.57	0.470	7.355
					10/14/2013 13:31	0917-173_Nc	13_10_14_1331_26_474	1	-1.50	1.503	0.617	0.091	18.1	0.266	0.092	1.93	-0.1350	0.150	0.451	0.01200	-0.19	0.458	5.803
					10/14/2013 13:32	0917-173_Nc	13_10_14_1332_27_274	1	-0.76	1.594	0.594	0.083	16.8	0.255	0.3150	1.93	-0.170	0.143	0.585	0.01100	0.50	0.448	5.147
					10/14/2013 13:33	0917-173_Nc	13_10_14_1333_28_094	1	-3.20	1.524	0.579	0.085	17.4	0.254	0.382	1.93	-0.1650	0.142	0.589	0.01100	0.68	0.442	5.076
					10/14/2013 13:34	0917-173_Nc	13_10_14_1334_28_844	1	-2.41	1.520	0.640	0.086	18.0	0.255	0.3140	1.93	-0.179	0.142	0.591	0.01100	0.369	0.440	4.942
					10/14/2013 13:35	0917-173_Nc	13_10_14_1335_29_594	1	-1.82	1.469	0.664	0.089	18.5	0.253	0.0690	1.92	-0.082	0.144	0.590	0.01100	0.24	0.452	4.802
					10/14/2013 13:36	0917-173_Nc	13_10_14_1336_30_204	1	-0.70	1.508	0.607	0.086	18.9	0.245	0.2530	1.94	0.004	0.143	0.588	0.01000	0.073	0.444	4.662
					10/14/2013 13:37	0917-173_Nc	13_10_14_1337_30_984	1	-0.906	1.405	0.642	0.086	18.1	0.250	0.22300	1.93	-0.135	0.140	0.560	0.01000	0.44	0.429	4.579
					10/14/2013 13:38	0917-173_Nc	13_10_14_1338_31_744	1	-1.69	1.469	0.639	0.084	18.3	0.263	0.414	1.94	0.006	0.137	0.558	0.01200	0.201	0.426	4.668
					10/14/2013 13:39	0917-173_Nc	13_10_14_1339_33_514	1	-0.61	1.461	0.545	0.087	18.5	0.270	0.288	1.91	-0.1540	0.142	0.556	0.01200	0.41	0.438	4.833
					10/14/2013 13:40	0917-173_Nc	13_10_14_1340_33_254	1	-2.40	1.556	0.615	0.086	17.8	0.262	0.1520	1.93	0.081	0.143	0.528	0.01200	0.11	0.449	4.851
					10/14/2013 13:41	0917-173_Nc	13_10_14_1341_34_055	1	-1.30	1.353	0.570	0.087	17.2	0.259	0.3230	1.92	0.141	0.140	0.508	0.01200	0.39	0.429	4.832
					10/14/2013 13:42	0917-173_Nc	13_10_14_1342_34_855	1	-1.47	1.576	0.358	0.088	17.2	0.265	0.1530	1.91	-0.373	0.145	0.507	0.01200	0.46	0.456	4.78
					10/14/2013 13:43	0917-173_Nc	13_10_14_1343_35_555	1	-1.89	1.549	0.366	0.085	17.2	0.264	0.14200	1.93	-0.329	0.143	0.506	0.01200	0.76	0.452	4.758
					10/14/2013 13:44	0917-173_Nc	13_10_14_1344_36_395	1	0.10	1.476	0.426	0.084	16.5	0.275	0.1640	1.90	-0.1080	0.140	0.485	0.0130	0.55	0.444	4.904
					10/14/2013 13:45	0917-173_Nc	13_10_14_1345_37_095	1	-2.01	1.550	0.617	0.090	16.3	0.280	0.157	1.91	-0.151	0.148	0.472	0.0130	-0.04	0.458	4.966
					10/14/2013 13:46	0917-173_Nc	13_10_14_1346_37_805	1	-2.59	1.652	0.608	0.084	16.4	0.280	0.0200	1.90	-0.3560	0.144	0.475	0.0140	0.042	0.471	4.961
					10/14/2013 13:47	0917-173_Nc	13_10_14_1347_38_655	1	-3.10	1.621	0.658	0.086	16.2	0.281	0.0250	1.90	-0.233	0.147	0.470	0.0130	0.99	0.476	4.997
					10/14/2013 13:48	0917-173_Nc	13_10_14_1348_39_415	1	-2.60	1.616	0.695	0.090	8.18	0.276	-0.17600	1.89	-0.221	0.150	0.204	0.0140	-0.14	0.483	5.396
					10/14/2013 13:49	0917-173_Nc	13_10_14_1349_40_155	1	-2.65	1.629	0.680	0.086	6.74	0.282	0.037	1.89	-0.3620	0.146	0.159	0.0140	-0.047	0.479	5.486
					10/14/2013 13:50	0917-173_Nc	13_10_14_1350_40_915	1	-2.20	1.653	0.646	0.087	6.58	0.285	-0.060	1.88	-0.350	0.147	0.155	0.0150	-0.450	0.474	5.573
					10/14/2013 13:51	0917-173_Nc	13_10_14_1351_41_695	1	-2.24	1.634	0.558	0.089	7.65	0.263	-0.092	1.89	-0.546	0.15	0.192	0.0130	0.00	0.483	5.484
					10/14/2013 13:52	0917-173_Nc	13_10_14_1352_42_406	1	-1.90	1.537	0.503	0.087	7.94	0.256	-0.116	1.89	-0.5350	0.14	0.202	0.0130	0.17	0.457	5.405
					10/14/2013 13:53	0917-173_Nc	13_10_14_1353_43_136	1	-2.78	1.541	0.392	0.086	8.03	0.255	-0.152	1.88	-0.470	0.14	0.201	0.0130	-0.282	0.460	5.352
Data	SPK	1	Start	A	10/14/2013 13:54	0917-173_Nc	13_10_14_1354_43_956	1	-2.384	1.553	0.490	0.088	7.83	0.249	0.033	1.89	-0.515	0.15	0.197	0.01300	0.20	0.469	5.25
					10/14/2013 13:55	0917-173_Nc	13_10_14_1355_44_666	1	-1.20	1.464	0.513	0.086	7.66	0.249	-0.106	1.87	-0.5350	0.14	0.202	0.01200	0.528	0.448	5.092
					10/14/2013 13:56	0917-173_Nc	13_10_14_1356_45_486	1	-2.699	1.519	0.429	0.082	7.43	0.240	0.052	1.88	-0.445	0.14	0.198	0.01200	-0.03	0.436	4.912
					10/14/2013 13:57	0917-173_Nc	13_10_14_1357_46_206	1	-2.719	1.494	0.508	0.082	7.47	0.234	0.092	1.88	-0.4910	0.14	0.198	0.01100	0.25	0.448	4.741
					10/14/2013 13:58	0917-173_Nc	13_10_14_1358_47_056	1	-2.129	1.500	0.647	0.083	7.46	0.243	0.072	1.87	-0.4360	0.14	0.197	0.01200	0.38	0.445	4.713
					10/14/2013 13:59	0917-173_Nc	13_10_14_1359_47_806	1	-2.295	1.541	0.654	0.081	7.32	0.253	-0.01500	1.87	-0.34400	0.14	0.197	0.01200	-0.37	0.444	4.707
			Stop		10/14/2013 14:00	0917-173_Nc	13_10_14_1400_48_546	1	-2.04	1.625	0.598	0.088	2.49	0.267	-0.173	1.84	-0.566	0.15	0.0300	0.0130	-0.464	0.474	4.809
					10/14/2013 14:01	0917-173_Nc	13_10_14_1401_49_266	1	-3.054	1.593	0.694	0.087	1.57	0.278	-0.099	1.85	-0.563	0.15	0.0090	0.0140	0.094	0.470	4.756
					10/14/2013 14:02	0917-173_Nc	13_10_14_1402_50_046	1	-1.96	1.668	0.729	0.088	1.52	0.275	-0.126	1.84	-0.549	0.15	0.0010	0.0140	-0.693	0.482	4.684
					10/14/2013 14:03	0917-173_Nc	13_10_14_1403_50_876	1	-2.07	1.682	0.644	0.089	1.45	0.278	0.008	1.84	-0.392	0.15	0.0060	0.0140	-0.21	0.486	4.642
					10/14/2013 14:04	0917-173_Nc	13_10_14_1404_51_627	1	-1.37	1.627	0.735	0.090	1.43	0.271	0.081	1.85	-0.366	0.15	0.0040	0.0140	-0.32	0.484	4.547
					10/14/2013 14:05	0917-173_Nc	13_10_14_1405_52_397	1	-3.100	1.722	0.630	0.089	1.36	0.271	0.089	1.83	-0.441	0.15	0.0090	0.0140	-0.04	0.498	4.482
Data	UNSPK	1	Start	A	10/14/2013 14:06	0917-173_Nc	13_10_14_1406_53_137	1	-2.54	1.656	0.692	0.087	1.34	0.275	-0.008	1.85	-0.471	0.15	0.0060	0.0140	-0.327	0.475	4.392
					10/14/2013 14:07	0917-173_Nc	13_10_14_1407_53_877	1	-3.49	1.689	0.832	0.093	1.20	0.271	0.128	1.85	-0.503	0.15	0.0030	0.0140	-0.38	0.499	4.308
					10/14/2013 14:08	0917-173_Nc	13_10_14_1408_54_687	1	-1.773	1.640	0.622	0.088	1.23	0.270	0.215	1.87	-0.5320	0.15	0.0040	0.0140	-0.09	0.490	4.266
					10/14/2013 14:09	0917-173_Nc	13_10_14_1409_55_387	1	-2.542	1.602	0.752	0.090	1.17	0.263	0.258	1.87	-0.496	0.15	0.0070	0.0130	-0.09	0.474	4.231
					10/14/2013 14:10	0917-173_Nc	13_10_14_1410_56_217	1	-3.901	1.615	0.629	0.091	1.19	0.254	0.093	1.88	-0.6400	0.15	0.0080	0.0130	0.05	0.480	4.221
					10/14/2013 14:11	0917-173_Nc	13_10_14_1411_56_937	1	-2.495	1.589	0.748	0.088	1.24	0.254	0.210	1.87	-0.474	0.15	0.0030	0.01300	-0.37	0.475	4.239
			Stop		10/14/2013 14:12	0917-173_Nc	13_10_14_1412_57_727	1	-1.851	1.595	0.675	0.090	1.25	0.260	0.079	1.88	-0.528	0.15	0.00200	0.0130	-0.332	0.473	4.298
					10/14/2013 14:39	0917-173_Nc	13_10_14_1439_49_359	1	-0.720	1.389	0.660	0.081	2.16	0.199	0.46	1.94	-0.720	0.132	-0.00200	0.00900	-0.362	0.417	4.945
					10/14/2013 14:40	0917-173_Nc	13_10_14_1440_50_130	1	-1.86100	1.506	0.853	0.083	2.40	0.234	0.31	1.93	-0.6900	0.137	0.00100	0.01200	-0.773	0.432	5.625
					10/14/2013 14:41	0917-173_Nc	13_10_14_1441_50_940	1	-2.391	1.519	0.77	0.086	2.37	0.238	0.28	1.92	-0.7040	0.143	0.00300	0.01200	-0.852	0.453	5.813
					10/14/2013 14:42	0917-173_Nc	13_10_14_1442_51_690	1	-2.231	1.572	0.854	0.086	2.55	0.239	0.46	1.93	-0.6100	0.145	0.00500	0.01200	-0.760	0.464	5.952
					10/14/2013 14:43	0917-173_Nc	13_10_14_1443_52_400	1	-1.927	1.586	0.714	0.088	2.59	0.258	0.35	1.90	-0.6540	0.146	0.00600	0.01300	-0.33	0.471	6.248
					10/14/2013 14:44	0917-173_Nc	13_10_14_1444_53_190	1	-1.492	1.536	0.445	0.092	2.82	0.272	0.42	1.87	-0.872	0.149	0.00700	0.0130	-0.50	0.462	6.518
					10/14/2013 14:45	0917-173_Nc	13_10_14_1445_53_900	1	-1.880	1.703	0.393	0.092	2.99	0.293	0.35	1.84	-0.877	0.155	0.0070	0.0140	-0.30	0.500	6.825
					10/14/2013 14:46	0917-173_Nc	13_10_14_1446_54_660	1	-2.661	1.725	0.678	0.095	3.23	0.305	0.48	1.83	-0.490	0.159	0.0030	0.0150	-0.82	0.513	7.096
					10/14/2013 14:47	0917-173_Nc	13_10_14_1447_55_500	1	-3.114	1.767	1.03	0.098	3.30	0.309	0.32	1.82	-0.720	0.163	0.00500	0.0150	-0.59	0.520	7.293
					10/14/2013 14:48	0917-173_Nc	13_10_14_1448_56_210	1	-4.867	1.723	1.001	0.093	3.26	0.303	0.24	1.83	-0.628	0.158	0.00400	0.0150	-0.82	0.497	7.414
					10/14/2013 14:49	0917-173_Nc	13_10_14_1449_56_940	1	-4.422	1.652	0.866	0.095	3.29	0.298	0.30	1.83	-0.714	0.157	0.00200	0.0150	-0.855	0.494	7.407
					10/14/2013 14:50	0917-173_Nc	13_10_14_1450_57_730	1	-2.9040	1.624	0.90	0.092	3.19	0.291	0.36	1.83	-0.7590	0.154	0.00200	0.0140	-0.765	0.481	7.395
					10/14/2013 14:51	0917-173_Nc	13_10_14_1451_58_450	1	-3.957	1.614	0.753	0.094	3.13	0.281	0.45	1.86	-0.7590	0.155	0.00100	0.0140	-0.93	0.487	7.319
					10/14/2013 14:52	0917-173_Nc	13_10_14_1452_59_191	1	-4.649	1.565	0.562	0.090	3.05	0.266	0.43	1.85	-0.730	0.149	0.00500	0.0130	-0.64	0.474	7.283
					10/14/2013 14:54	0917-173_Nc	13_10_14_1454_00_001	1	-2.405	1.541	0.536	0.086	3.10	0.265	0.33	1.86	-0.837	0.145	0.00400	0.01300	-0.95	0.457	7.326
					10/14/2013 14:55	0917-173_Nc	13_10_14_1455_00_711	1	-1.2850	1.538	0.418	0.088	2.99	0.249	0.42	1.89	-0.625	0.147	0.00300	0.01200	-1.2560	0.458	7.172
					10/14/2013 14:56	0917-173_Nc	13_10_14_1456_01_501	1	-2.768	1.599	0.358	0.086	2.86	0.236	0.31	1.89	-0.776	0.146	0.00000	0.01100	-0.87	0.467	6.859
					10/14/2013 14:57	0917-173_Nc	13_10_14_1457_02_111	1	-2.389	1.574	0.442	0.082	2.74	0.231	0.42	1.91	-0.6520	0.141	0.00	0.01100	-0.59	0.460	6.684
					10/14/2013 14:58	0917-173_Nc	13_10_14_1458_02_821	1	-3.0300	1.526	0.548	0.083	2.76	0.225	0.41	1.90	-0.5640	0.141	0.00100	0.01100	-0.60	0.449	6.616
					10/14/2013 14:59	0917-173_Nc	13_10_14_1459_03_641	1	-1.307	1.516	0.577	0.082	2.66	0.210	0.48	1.91	-0.6430	0.139	-0.00300	0.01000	-1.05	0.447	6.426
					10/14/2013 15:00	0917-173_Nc	13_10_14_1500_04_351	1	-2.386	1.480	0.621	0.082	2.64	0.215	0.39	1.91	-0.709	0.138	-0.01	0.01000	-0.897	0.434	6.337
					10/14/2013 15:01	0917-173_Nc	13_10_14_1501_06_171	1	-1.3240	1.500	0.619	0.085	2.82	0.226	0.25	1.91	-0.683	0.141	0.00200	0.01100	-0.51	0.451	6.341
					10/14/2013 15:02	0917-173_Nc	13_10_14_1502_05_881	1	-2.010	1.559	0.645	0.082	2.84	0.245	0.43	1.89	-0.550	0.140	-0.00100	0.01200	-1.391	0.450	6.408
					10/14/2013 15:03	0917-173_Nc	13_10_14_1503_06_601	1	-2.814	1.545	0.557	0.086	2.85	0.257	0.45	1.87	-0.7370	0.143	0.00200	0.01300	-0.61	0.456	6.53
					10/14/2013 15:04	0917-173_Nc	13_10_14_1504_07_392	1	-2.852	1.512	0.307	0.085	2.84	0.271	0.35	1.88	-0.9030	0.141	0.00000	0.0130	-0.40	0.448	6.636
					10/14/2013 15:05	0917-173_Nc	13_10_14_1505_08_162	1	-1.450	1.539	0.463	0.088	2.94	0.271	0.25	1.86	-0.7940	0.146	0.00500	0.0130	-0.977	0.468	6.771
					10/14/2013 15:06	0917-173_Nc	13_10_14_1506_08_922	1	-1.846	1.590	0.446	0.091	3.19	0.281	0.16	1.84	-0.826	0.151	0.00600	0.0130	-1.04	0.476	6.834
					10/14/2013 15:07	0917-173_Nc	13_10_14_1507_09_632	1	-2.844	1.640	0.628	0.087	3.04	0.287	0.04	1.85	-0.757	0.150	0.00200	0.0140	-0.892	0.477	6.867
					10/14/2013 15:08	0917-173_Nc	13_10_14_1508_10_372	1	-1.328	1.644	0.634	0.089	3.01	0.282	0.00	1.84	-0.727	0.151	0.00400	0.0140	-0.80	0.475	6.878
					10/14/2013 15:09	0917-173_Nc	13_10_14_1509_11_132	1	-3.558	1.537	0.512	0.085	2.90	0.278	0.01	1.86	-0.7400	0.145	0.00200	0.0140	-0.87	0.452	6.804
					10/14/2013 15:10	0917-173_Nc	13_10_14_1510_11_932	1	-3.200	1.630	0.490	0.088	2.94	0.266	0.20	1.85	-0.8070	0.149	0.00200	0.0130	-0.83	0.476	6.774
					10/14/2013 15:11	0917-173_Nc	13_10_14_1511_12_642	1	-2.466	1.608	0.463	0.091	3.08	0.272	0.28	1.86	-0.476	0.150	0.00200	0.0140	-1.154	0.471	6.82
					10/14/2013 15:12	0917-173_Nc	13_10_14_1512_13_392	1	-3.6720	1.728	0.613	0.090	3.12	0.275	-0.04	1.84	-0.494	0.154	0.00300	0.0130	-1.518	0.495	6.823
					10/14/2013 15:13	0917-173_Nc	13_10_14_1513_14_212	1	-2.685	1.665	0.485	0.091	2.96	0.265	0.16	1.87	-0.609	0.154	0.00300	0.0130	-1.161	0.479	6.74
					10/14/2013 15:14	0917-173_Nc	13_10_14_1514_14_902	1	-3.655	1.564	0.477	0.089	2.80	0.259	0.00	1.86	-0.6180	0.147	-0.00100	0.01300	-0.54	0.472	6.657
Data	Run	1	Start	A	10/14/2013 15:15	0917-173_Nc	13_10_14_1515_15_632	1	-3.535	1.522	0.581	0.088	2.93	0.245	-0.04	1.89	-0.860	0.146	-0.00400	0.01200	-0.73	0.452	6.524
					10/14/2013 15:16	0917-173_Nc	13_10_14_1516_16_443	1	-2.394	1.603	0.549	0.085	2.91	0.243	-0.03	1.88	-0.804	0.143	0.00200	0.01100	-0.84	0.458	6.519
					10/14/2013 15:17	0917-173_Nc	13_10_14_1517_17_163	1	-2.118	1.546	0.507	0.087	2.87	0.249	0.08	1.89	-0.7470	0.145	0.00300	0.01200	-0.55	0.454	6.543
					10/14/2013 15:18	0917-173_Nc	13_10_14_1518_17_873	1	-1.4070	1.556	0.477	0.090	2.81	0.247	-0.03	1.89	-0.494	0.148	0.00000	0.01200	-0.983	0.461	6.609
					10/14/2013 15:19	0917-173_Nc	13_10_14_1519_18_713	1	-2.526	1.530	0.572	0.081	2.65	0.236	0.00	1.90	-0.733	0.139	0.00300	0.01100	-0.86	0.451	6.516
					10/14/2013 15:20	0917-173_Nc	13_10_14_1520_19_373	1	-1.773	1.465	0.718	0.084	2.63	0.233	0.27	1.91	-0.789	0.139	0.00000	0.01200	-0.61	0.434	6.393
					10/14/2013 15:21	0917-173_Nc	13_10_14_1521_20_233	1	-1.61700	1.490	0.721	0.082	2.72	0.232	0.15	1.91	-0.888	0.137	0.00100	0.01100	-0.35	0.438	6.329
					10/14/2013 15:22	0917-173_Nc	13_10_14_1522_20_953	1	-0.081	1.494	0.85	0.087	2.90	0.240	0.09	1.90	-0.802	0.143	-0.00100	0.01200	-1.267	0.457	6.369
					10/14/2013 15:23	0917-173_Nc	13_10_14_1523_21_683	1	-3.972	1.566	0.759	0.084	2.86	0.243	0.34	1.91	-0.752	0.142	0.00300	0.01200	-0.75	0.459	6.481
					10/14/2013 15:24	0917-173_Nc	13_10_14_1524_22_413	1	-1.051	1.567	0.799	0.085	2.81	0.246	0.11	1.90	-0.668	0.144	-0.00100	0.01200	-0.966	0.456	6.475

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 15:25	0917-173_Nc	13_10_14_1525_23_153	1	-1.2140	1.582	0.671	0.090	2.83	0.256	0.13	1.88	-0.458	0.148	0.00800	0.01300	-1.248	0.467	6.539
					10/14/2013 15:26	0917-173_Nc	13_10_14_1526_23_953	1	-2.2880	1.552	0.673	0.088	2.79	0.256	0.15	1.89	-0.802	0.144	0.00400	0.01200	0.01	0.454	6.524
					10/14/2013 15:27	0917-173_Nc	13_10_14_1527_24_733	1	-1.7780	1.624	0.751	0.084	2.82	0.244	0.10	1.89	-0.7610	0.144	0.00400	0.01200	-0.71	0.466	6.46
					10/14/2013 15:28	0917-173_Nc	13_10_14_1528_25_404	1	-1.5020	1.480	0.723	0.083	2.67	0.242	0.25	1.90	-0.801	0.138	0.00500	0.01200	-0.814	0.432	6.356
					10/14/2013 15:29	0917-173_Nc	13_10_14_1529_26_234	1	-2.500	1.502	0.76	0.088	2.82	0.245	0.18	1.89	-0.624	0.142	-0.00100	0.01200	-0.972	0.452	6.382
					10/14/2013 15:30	0917-173_Nc	13_10_14_1530_26_944	1	-5.323	1.567	0.731	0.085	2.99	0.262	0.07	1.87	-0.87400	0.143	0.00500	0.0130	-0.64	0.454	6.565
					10/14/2013 15:31	0917-173_Nc	13_10_14_1531_27_714	1	-2.489	1.619	0.588	0.091	2.90	0.274	0.00	1.85	-0.947	0.150	0.00300	0.0140	-0.869	0.481	6.641
					10/14/2013 15:32	0917-173_Nc	13_10_14_1532_28_464	1	-3.6950	1.616	0.537	0.085	2.88	0.264	0.04	1.88	-0.9800	0.145	0.00500	0.0130	-0.4830	0.472	6.649
					10/14/2013 15:33	0917-173_Nc	13_10_14_1533_29_184	1	-5.513	1.602	0.584	0.086	2.87	0.254	0.03	1.88	-0.903	0.146	0.00300	0.01200	-0.91	0.472	6.622
					10/14/2013 15:34	0917-173_Nc	13_10_14_1534_29_994	1	-1.662	1.648	0.616	0.084	2.91	0.246	0.27	1.88	-0.606	0.147	0.00100	0.01200	-1.255	0.475	6.666
					10/14/2013 15:35	0917-173_Nc	13_10_14_1535_30_714	1	-1.900	1.552	0.634	0.083	2.88	0.251	0.00	1.87	-0.693	0.142	0.00200	0.01200	-0.97	0.453	6.756
					10/14/2013 15:36	0917-173_Nc	13_10_14_1536_31_454	1	-2.163	1.595	0.716	0.088	3.06	0.263	0.11	1.88	-0.695	0.148	0.00400	0.0130	-0.735	0.468	6.776
					10/14/2013 15:37	0917-173_Nc	13_10_14_1537_32_154	1	-4.04300	1.575	0.647	0.088	2.95	0.264	0.22	1.87	-0.8180	0.147	0.00200	0.0130	-0.51	0.464	6.819
					10/14/2013 15:38	0917-173_Nc	13_10_14_1538_32_914	1	-3.576	1.614	0.539	0.085	3.09	0.275	0.10	1.87	-0.603	0.145	0.00000	0.0130	-0.85	0.468	6.903
					10/14/2013 15:39	0917-173_Nc	13_10_14_1539_33_524	1	-1.234	1.611	0.544	0.090	3.15	0.280	0.17	1.87	-0.695	0.151	-0.00100	0.0140	-1.439	0.474	6.86
					10/14/2013 15:40	0917-173_Nc	13_10_14_1540_34_355	1	-3.643	1.562	0.588	0.087	2.96	0.272	0.19	1.88	-0.8800	0.147	0.00000	0.0130	-0.97	0.469	6.726
					10/14/2013 15:41	0917-173_Nc	13_10_14_1541_35_025	1	-3.456	1.616	0.588	0.085	2.88	0.267	0.04	1.88	-0.8850	0.146	0.00000	0.0130	-0.990	0.471	6.646
					10/14/2013 15:42	0917-173_Nc	13_10_14_1542_35_845	1	-0.895	1.595	0.595	0.084	2.86	0.251	0.07	1.90	-0.9040	0.143	0.00000	0.01200	-0.92	0.461	6.553
					10/14/2013 15:43	0917-173_Nc	13_10_14_1543_36_595	1	-3.5370	1.537	0.635	0.084	2.98	0.241	0.11	1.91	-1.017	0.141	0.00300	0.01200	-0.54	0.449	6.632
					10/14/2013 15:44	0917-173_Nc	13_10_14_1544_37_325	1	-3.357	1.585	0.726	0.086	3.09	0.240	0.15	1.89	-0.8400	0.143	-0.00200	0.01200	-0.823	0.458	6.653
					10/14/2013 15:45	0917-173_Nc	13_10_14_1545_38_135	1	-2.261	1.628	0.616	0.083	2.98	0.245	0.32	1.89	-0.85600	0.142	0.00800	0.01200	-0.87	0.464	6.667
					10/14/2013 15:46	0917-173_Nc	13_10_14_1546_38_875	1	-3.313	1.652	0.667	0.088	3.01	0.253	0.13	1.87	-0.771	0.150	0.00200	0.01200	-0.79	0.472	6.88
					10/14/2013 15:47	0917-173_Nc	13_10_14_1547_39_575	1	-3.4630	1.615	0.610	0.088	3.14	0.259	0.41	1.88	-0.623	0.149	0.00000	0.01300	-1.209	0.466	6.901
					10/14/2013 15:48	0917-173_Nc	13_10_14_1548_40_315	1	-3.025	1.646	0.600	0.088	3.06	0.267	0.28	1.86	-0.692	0.150	0.00100	0.0130	-1.080	0.486	6.987
					10/14/2013 15:49	0917-173_Nc	13_10_14_1549_41_135	1	-3.157	1.640	0.513	0.088	3.00	0.272	0.28	1.85	-0.663	0.150	0.00600	0.0130	-1.431	0.468	7.017
					10/14/2013 15:50	0917-173_Nc	13_10_14_1550_41_845	1	-1.529	1.602	0.642	0.088	2.71	0.262	0.30	1.89	-0.591	0.148	0.00200	0.0130	-1.08	0.472	6.872
					10/14/2013 15:51	0917-173_Nc	13_10_14_1551_42_616	1	-1.131	1.593	0.612	0.085	2.72	0.249	0.15	1.89	-0.8600	0.146	-0.00100	0.01200	-0.874	0.470	6.675
					10/14/2013 15:52	0917-173_Nc	13_10_14_1552_43_326	1	-2.302	1.585	0.661	0.084	2.82	0.246	0.30	1.89	-0.862	0.143	-0.00100	0.01200	-0.74	0.469	6.711
					10/14/2013 15:53	0917-173_Nc	13_10_14_1553_44_066	1	-2.7070	1.562	0.602	0.087	2.90	0.249	0.33	1.90	-0.687	0.146	0.00200	0.01200	-1.106	0.474	6.825
					10/14/2013 15:54	0917-173_Nc	13_10_14_1554_44_886	1	-2.039	1.595	0.691	0.088	2.86	0.263	0.27	1.85	-0.759	0.150	0.00200	0.0130	-0.96	0.477	6.873
					10/14/2013 15:55	0917-173_Nc	13_10_14_1555_45_656	1	-3.376	1.626	0.809	0.087	2.89	0.270	0.21	1.86	-0.707	0.148	0.00100	0.0130	-1.174	0.474	6.936
					10/14/2013 15:56	0917-173_Nc	13_10_14_1556_46_316	1	-5.9430	1.671	0.631	0.090	2.95	0.265	0.09	1.87	-0.905	0.152	0.00100	0.0130	-0.61	0.483	6.976
					10/14/2013 15:57	0917-173_Nc	13_10_14_1557_47_126	1	-0.449	1.564	0.553	0.090	2.90	0.259	0.23	1.87	-0.9160	0.149	-0.00200	0.01200	-0.67	0.466	7.023
					10/14/2013 15:58	0917-173_Nc	13_10_14_1558_47_826	1	-3.646	1.600	0.531	0.088	2.91	0.262	0.16	1.87	-0.716	0.147	0.00100	0.01300	-0.60	0.472	7.035
					10/14/2013 15:59	0917-173_Nc	13_10_14_1559_48_586	1	-2.597	1.644	0.582	0.092	2.92	0.275	0.27	1.86	-0.906	0.152	-0.00200	0.0130	-1.043	0.485	7.01
					10/14/2013 16:00	0917-173_Nc	13_10_14_1600_49_366	1	-2.6510	1.605	0.448	0.090	2.64	0.264	0.11	1.86	-1.0410	0.150	0.00100	0.0130	-0.74	0.471	6.844
					10/14/2013 16:01	0917-173_Nc	13_10_14_1601_50_106	1	-1.095	1.649	0.453	0.086	2.49	0.245	0.33	1.88	-0.790	0.147	0.00200	0.01200	-0.635	0.474	6.597
					10/14/2013 16:02	0917-173_Nc	13_10_14_1602_50_926	1	-3.147	1.434	0.409	0.084	2.42	0.226	0.32	1.92	-0.809	0.139	0.00000	0.01100	-0.96	0.436	6.38
					10/14/2013 16:03	0917-173_Nc	13_10_14_1603_51_667	1	-0.835	1.547	0.565	0.086	2.47	0.228	0.23	1.91	-0.703	0.143	0.00100	0.01100	-1.00	0.462	6.197
					10/14/2013 16:04	0917-173_Nc	13_10_14_1604_52_377	1	-1.628	1.591	0.625	0.085	2.40	0.218	0.22	1.92	-0.7380	0.144	-0.00100	0.01100	-0.906	0.471	6.042
					10/14/2013 16:05	0917-173_Nc	13_10_14_1605_53_187	1	-0.246	1.495	0.510	0.081	2.40	0.206	0.18	1.93	-0.7940	0.138	0.00100	0.01000	-0.54	0.443	5.891
					10/14/2013 16:06	0917-173_Nc	13_10_14_1606_53_907	1	-2.145	1.548	0.581	0.079	2.34	0.208	0.38	1.92	-0.498	0.136	0.00200	0.01000	-0.843	0.441	5.784
					10/14/2013 16:07	0917-173_Nc	13_10_14_1607_54_617	1	-1.718	1.514	0.498	0.082	2.56	0.209	0.31	1.94	-0.641	0.137	-0.00400	0.01000	-0.74	0.454	5.697
					10/14/2013 16:08	0917-173_Nc	13_10_14_1608_55_427	1	-2.309	1.529	0.590	0.086	2.64	0.221	0.35	1.92	-0.6420	0.142	0.00100	0.01100	-0.974	0.454	5.738
					10/14/2013 16:09	0917-173_Nc	13_10_14_1609_56_147	1	-2.053	1.426	0.764	0.081	2.50	0.233	0.30	1.91	-0.553	0.135	-0.00100	0.01100	-1.058	0.427	5.697
					10/14/2013 16:10	0917-173_Nc	13_10_14_1610_56_957	1	-2.050	1.547	0.91	0.082	2.33	0.232	0.30	1.94	-0.742	0.138	0.00	0.01100	-0.38	0.446	5.64
					10/14/2013 16:11	0917-173_Nc	13_10_14_1611_57_677	1	-2.4960	1.559	0.96	0.082	2.22	0.242	0.40	1.93	-0.617	0.138	0.00100	0.01200	-0.998	0.446	5.647
					10/14/2013 16:12	0917-173_Nc	13_10_14_1612_58_447	1	-2.3470	1.536	0.821	0.080	2.32	0.248	0.34	1.93	-0.7250	0.138	0.00400	0.01200	-0.89	0.445	5.685
					10/14/2013 16:13	0917-173_Nc	13_10_14_1613_59_217	1	-2.086	1.563	0.754	0.086	2.25	0.257	0.49	1.91	-0.937	0.145	0.00100	0.0130	-0.389	0.461	5.795
					10/14/2013 16:14	0917-173_Nc	13_10_14_1614_59_927	1	-4.601	1.647	0.690	0.088	2.35	0.259	0.52	1.93	-0.730	0.150	-0.00200	0.01300	-0.628	0.496	5.873
			Stop		10/14/2013 16:16	0917-173_Nc	13_10_14_1616_00_738	1	-2.205	1.536	0.640	0.082	3.60	0.250	0.55	1.92	-1.003	0.140	0.0630	0.01200	-0.03	0.444	5.957
					10/14/2013 16:17	0917-173_Nc	13_10_14_1617_01_458	1	-0.822	1.061	-0.244	0.079	2.59	0.0750	0.416	1.260	-2.80	0.138	0.0690	0.00300	-1.308	0.354	9.431
					10/14/2013 16:18	0917-173_Nc	13_10_14_1618_02_278	1	0.0820	0.960	-0.628	0.087	0.251	0.0410	0.129	0.470	-3.28	0.147	-0.00300	0.00200	-0.890	0.338	9.999
					10/14/2013 16:19	0917-173_Nc	13_10_14_1619_03_028	1	-1.0290	0.864	-0.214	0.064	0.224	0.0330	0.115	0.281	-1.513	0.106	0.0090	0.00200	-0.9770	0.292	5.332
					10/14/2013 16:20	0917-173_Nc	13_10_14_1620_03_738	1	0.6050	0.813	-0.162	0.055	0.031	0.0310	0.1980	0.185	-1.094	0.088	0.00	0.00200	-0.425	0.274	3.786
					10/14/2013 16:21	0917-173_Nc	13_10_14_1621_04_478	1	1.5270	0.903	-0.1620	0.056	0.111	0.0320	0.1350	0.139	-0.9170	0.093	-0.00600	0.00200	-0.675	0.280	3.696
					10/14/2013 16:22	0917-173_Nc	13_10_14_1622_05_198	1	3.277	0.886	0.061	0.052	0.195	0.0370	0.3060	0.643	-0.056	0.085	-0.00400	0.00200	-0.130	0.269	1.524
					10/14/2013 16:23	0917-173_Nc	13_10_14_1623_05_968	1	0.95600	0.879	0.135	0.055	0.0700	0.0440	0.4670	0.919	-0.009	0.087	0.00	0.00200	-0.55	0.277	0.958
					10/14/2013 16:24	0917-173_Nc	13_10_14_1624_06_688	1	2.276	0.996	-0.050	0.055	0.0900	0.0440	0.5930	0.879	0.095	0.093	-0.00300	0.00200	-0.53	0.284	0.704
					10/14/2013 16:25	0917-173_Nc	13_10_14_1625_07_458	1	2.7950	0.935	0.069	0.054	0.098	0.0430	0.6140	0.882	0.095	0.089	0.00000	0.00200	-0.065	0.284	0.686
					10/14/2013 16:26	0917-173_Nc	13_10_14_1626_08_178	1	0.965	0.923	0.075	0.055	0.068	0.0440	0.4850	0.885	0.158	0.089	0.00	0.00200	-0.216	0.278	0.651
					10/14/2013 16:27	0917-173_Nc	13_10_14_1627_09_038	1	3.066	0.999	0.025	0.057	0.0630	0.0430	0.6000	0.874	-0.059	0.093	-0.00100	0.00200	-0.58	0.302	0.609
					10/14/2013 16:28	0917-173_Nc	13_10_14_1628_09_749	1	0.845	0.890	0.082	0.055	0.176	0.0470	0.410	0.877	0.106	0.088	-0.00400	0.00200	-0.588	0.275	0.573
					10/14/2013 16:29	0917-173_Nc	13_10_14_1629_10_499	1	0.005	0.912	0.213	0.057	0.132	0.0440	0.339	0.879	0.0280	0.090	0.00	0.00200	-0.224	0.288	0.54
					10/14/2013 16:30	0917-173_Nc	13_10_14_1630_12_259	1	0.9320	0.855	0.005	0.055	0.0690	0.0460	0.6180	0.891	0.006	0.089	-0.00100	0.00200	-0.418	0.270	0.53
					10/14/2013 16:31	0917-173_Nc	13_10_14_1631_13_069	1	2.132	0.951	0.076	0.051	0.122	0.0470	0.5380	0.899	0.1060	0.087	-0.00900	0.00200	-0.211	0.281	0.5
					10/14/2013 16:32	0917-173_Nc	13_10_14_1632_13_779	1	1.869	0.899	0.132	0.055	0.122	0.0430	0.5790	0.907	0.0290	0.088	-0.00500	0.00200	-0.332	0.270	0.441
					10/14/2013 16:33	0917-173_Nc	13_10_14_1633_14_599	1	1.1120	1.116	0.380	0.059	0.90	0.1240	0.651	1.386	-0.103	0.099	0.00000	0.00600	-0.57	0.325	1.748
					10/14/2013 16:34	0917-173_Nc	13_10_14_1634_15_299	1	-0.197	1.457	0.495	0.077	1.63	0.251	0.468	1.95	-0.637	0.131	0.00000	0.01200	-0.173	0.423	3.91
					10/14/2013 16:35	0917-173_Nc	13_10_14_1635_16_099	1	-2.217	1.622	0.435	0.084	1.66	0.275	0.39	1.89	-0.7340	0.143	0.00100	0.0130	-0.674	0.467	4.473
					10/14/2013 16:36	0917-173_Nc	13_10_14_1636_16_869	1	-3.449	1.604	0.537	0.085	1.63	0.255	0.48	1.91	-0.686	0.143	0.00200	0.01200	-0.596	0.463	4.539
					10/14/2013 16:37	0917-173_Nc	13_10_14_1637_17_579	1	-4.441	1.724	0.408	0.090	1.91	0.251	0.054	1.93	-0.611	0.151	-0.00500	0.01300	-0.30	0.490	4.586
					10/14/2013 16:38	0917-173_Nc	13_10_14_1638_18_389	1	-3.4970	1.507	0.368	0.088	1.60	0.237	0.46	1.95	-0.7390	0.143	-0.00400	0.01200	-0.529	0.460	4.502
					10/14/2013 16:39	0917-173_Nc	13_10_14_1639_19_090	1	-1.764	1.444	0.232	0.081	1.41	0.218	0.38	1.95	-0.858	0.134	0.00100	0.01100	-0.767	0.427	4.309
					10/14/2013 16:40	0917-173_Nc	13_10_14_1640_19_900	1	-2.094	1.486	0.3260	0.080	1.41	0.203	0.524	1.96	-0.568	0.133	-0.00300	0.01000	-0.833	0.438	4.18
					10/14/2013 16:41	0917-173_Nc	13_10_14_1641_20_660	1	-0.2850	1.385	0.370	0.077	1.45	0.200	0.469	1.96	-0.72800	0.129	0.00000	0.00900	-0.607	0.410	4.135
					10/14/2013 16:42	0917-173_Nc	13_10_14_1642_21_390	1	-0.951	1.510	0.427	0.083	1.42	0.211	0.378	1.96	-0.6330	0.137	-0.00600	0.01000	-0.861	0.452	4.173
					10/14/2013 16:43	0917-173_Nc	13_10_14_1643_22_100	1	-1.976	1.383	0.491	0.080	1.30	0.197	0.489	1.96	-0.720	0.131	-0.00400	0.00900	-0.02	0.415	4.087
					10/14/2013 16:44	0917-173_Nc	13_10_14_1644_22_910	1	-1.152	1.488	0.569	0.078	1.35	0.204	0.506	1.95	-0.599	0.131	0.00000	0.01000	-0.397	0.426	4.114
					10/14/2013 16:45	0917-173_Nc	13_10_14_1645_23_640	1	1.377	1.489	0.505	0.079	1.52	0.226	0.301	1.96	-0.677	0.133	-0.00300	0.01100	-0.626	0.435	4.271
					10/14/2013 16:46	0917-173_Nc	13_10_14_1646_24_340	1	-1.263	1.513	0.726	0.081	1.54	0.250	0.286	1.94	-0.4870	0.134	0.00100	0.01300	-0.9280	0.439	4.423
					10/14/2013 16:47	0917-173_Nc	13_10_14_1647_25_160	1	-2.402	1.679	0.616	0.085	1.64	0.268	0.360	1.91	-0.6850	0.145	-0.00200	0.0130	-0.755	0.482	4.731
					10/14/2013 16:48	0917-173_Nc	13_10_14_1648_25_860	1	-4.026	1.568	0.534	0.087	1.61	0.269	0.279	1.91	-0.870	0.145	0.00200	0.0130	-0.6980	0.460	4.849
Data	Run	2	Start	A	10/14/2013 16:49	0917-173_Nc	13_10_14_1649_26_670	1	-1.062	1.599	0.485	0.088	1.72	0.280	0.294	1.90	-0.750	0.146	0.00100	0.0140	-0.273	0.472	5.04
					10/14/2013 16:50	0917-173_Nc	13_10_14_1650_27_360	1	-2.387	1.635	0.522	0.090	1.71	0.290	0.36	1.89	-0.8340	0.150	0.00000	0.0140	-0.852	0.483	5.278
					10/14/2013 16:51	0917-173_Nc	13_10_14_1651_28_211	1	-3.009	1.706	0.811	0.091	1.70	0.294	0.51	1.89	-0.456	0.154	0.00300	0.0150	-0.575	0.502	5.415
					10/14/2013 16:52	0917-173_Nc	13_10_14_1652_28_891	1	-3.426	1.585	0.494	0.086	1.59	0.278	0.40	1.89	-0.758	0.144	0.00300	0.0140	-0.429	0.468	5.411
					10/14/2013 16:53	0917-173_Nc	13_10_14_1653_29_651	1	-1.923	1.535	0.415	0.086	1.49	0.249	0.488	1.94	-0.7120	0.144	-0.00500	0.01200	-0.63	0.466	5.264
					10/14/2013 16:54	0917-173_Nc	13_10_14_1654_30_471	1	-1.974	1.606	0.292	0.086	1.44	0.240	0.498	1.94	-0.804	0.144	0.00000	0.01100	-0.356	0.467	5.207
					10/14/2013 16:55	0917-173_Nc	13_10_14_1655_31_191	1	-3.900	1.556	0.519	0.086	1.50	0.241	0.532	1.95	-0.6970	0.143	0.00200	0.01200	-0.670	0.458	5.219
					10/14/2013 16:56	0917-173_Nc	13_10_14_1656_31_901	1	-2.5680	1.416	0.362	0.084	1.46	0.222	0.465	1.96	-0.7740	0.135	0.00000	0.01100	-0.5890	0.419	5.082
					10/14/2013 16:57	0917-173_Nc	13_10_14_1657_32_741	1	-2.0900	1.581	0.414	0.079	1.58	0.215	0.493	1.96	-0.714	0.136	-0.00400	0.01000	-0.15	0.445	5.081
					10/14/2013 16:58	0917-173_Nc	13_10_14_1658_33_491	1	-1.183	1.605	0.388	0.086	1.63	0.235	0.433	1.93	-0.846	0.143	-0.00100	0.01100	-0.43	0.472	5.199
					10/14/2013 16:59	0917-173_Nc	13_10_14_1659_34_201	1	-0.630	1.632	0.534	0.088	1.71	0.258	0.273	1.92	-0.530	0.147	-0.00200	0.01200	-1.026	0.473	5.307
					10/14/2013 17:00	0917-173_Nc	13_10_14_1700_34_961	1	-1.264	1.553	0.443	0.089	1.61	0.266	0.43	1.93	-0.7060	0.146	0.00200	0.0130	-1.1060	0.462	5.378
					10/14/2013 17:01	0917-173_Nc	13_10_14_1701_35_681	1	-3.91	1.606	0.388	0.086	1.63	0.268	0.37	1.91	-0.7440	0.145	-0.00200	0.0130	-0.350	0.477	5.457
					10/14/2013 17:02	0917-173_Nc	13_10_14_1702_36_361	1	-1.820	1.652	0.403	0.085	1.69	0.266	0.38	1.91	-0.830	0.145	0.00000	0.01300	-0.806	0.464	5.498
					10/14/2013 17:03	0917-173_Nc	13_10_14_1703_37_172	1	-2.509	1.613	0.361	0.088	1.53	0.253	0.459	1.93	-0.7810	0.147	0.00000	0.01300	-0.28	0.477	5.417
					10/14/2013 17:04	0917-173_Nc	13_10_14_1704_37_962	1	-1.79700	1.567	0.463	0.082	1.50	0.239	0.425	1.94	-0.632	0.141	0.00000	0.01100	-0.462	0.452	5.252
					10/14/2013 17:05	0917-173_Nc	13_10_14_1705_38_702	1	-2.002	1.506	0.627	0.085	1.70	0.236	0.369	1.94	-0.708	0.139	-0.00200	0.01100	-0.608	0.452	5.296
					10/14/2013 17:06	0917-173_Nc	13_10_14_1706_39_462	1	-2.522	1.565	0.461	0.088	1.66	0.238	0.46	1.92	-0.527	0.144	0.00000	0.01100	-0.8220	0.472	5.359
					10/14/2013 17:07	0917-173_Nc	13_10_14_1707_40_232	1	0.686	1.553	0.414	0.085	1.52	0.252	0.51	1.93	-0.759	0.141	-0.00200	0.01200	-0.288	0.456	5.331
					10/14/2013 17:08	0917-173_Nc	13_10_14_1708_41_042	1	-3.8650	1.623	0.582	0.089	1.58	0.263	0.478	1.92	-0.6470	0.148	0.00000	0.01300	-0.856	0.475	5.371
					10/14/2013 17:09	0917-173_Nc	13_10_14_1709_41_782	1	-0.967	1.577	0.562	0.091	1.56	0.258	0.358	1.93	-0.43300	0.148	-0.00200	0.01200	-0.9610	0.475	5.403
					10/14/2013 17:10	0917-173_Nc	13_10_14_1710_42_582	1	0.156	1.591	0.431	0.089	1.59	0.253	0.275	1.92	-0.6290	0.147	-0.00100	0.01200	-0.49	0.474	5.429
					10/14/2013 17:11	0917-173_Nc	13_10_14_1711_43_292	1	-2.4220	1.695	0.469	0.086	1.55	0.258	0.410	1.91	-0.5860	0.148	-0.00100	0.01200	0.08	0.490	5.475
					10/14/2013 17:12	0917-173_Nc	13_10_14_1712_42_992	1	-1.966	1.660	0.487	0.086	1.58	0.252	0.367	1.91	-0.547	0.147	0.00000	0.01200	-0.26	0.474	5.479
					10/14/2013 17:13	0917-173_Nc	13_10_14_1713_43_802	1	-1.865	1.640	0.450	0.089	1.51	0.252	0.384	1.91	-0.734	0.149	0.00100	0.01200	-0.431	0.487	5.505
					10/14/2013 17:14	0917-173_Nc	13_10_14_1714_44_502	1	-1.004	1.626	0.479	0.089	1.47	0.249	0.465	1.92	-0.641	0.149	-0.00100	0.01200	-0.275	0.478	5.51
					10/14/2013 17:15	0917-173_Nc	13_10_14_1715_45_343	1	-2.060	1.533	0.453	0.086	1.56	0.238	0.418	1.93	-0.7070	0.143	-0.00100	0.01100	-0.55	0.463	5.465
					10/14/2013 17:16	0917-173_Nc	13_10_14_1716_46_033	1	-2.5480	1.563	0.530	0.083	1.53	0.241	0.488	1.93	-0.633	0.141	-0.00200	0.01100	-0.45	0.458	5.496
					10/14/2013 17:17	0917-173_Nc	13_10_14_1717_46_833	1	-3.058	1.687	0.411	0.085	1.61	0.251	0.441	1.92	-0.653	0.147	-0.00200	0.01200	-0.658	0.479	5.526
					10/14/2013 17:18	0917-173_Nc	13_10_14_1718_47_563	1	-3.740	1.609	0.435	0.088	1.73	0.256	0.56	1.92	-0.840	0.147	0.00200	0.01300	-0.29	0.474	5.614
					10/14/2013 17:19	0917-173_Nc	13_10_14_1719_48_383	1	-2.456	1.552	0.508	0.086	1.57	0.255	0.328	1.93	-0.833	0.144	0.00200	0.01300	0.08	0.459	5.609
					10/14/2013 17:20	0917-173_Nc	13_10_14_1720_49_093	1	-2.635	1.604	0.471	0.086	1.56	0.263	0.494	1.91	-0.788	0.146	-0.00100	0.01300	-0.17	0.475	5.625
					10/14/2013 17:21	0917-173_Nc	13_10_14_1721_49_883	1	-2.485	1.582	0.488	0.088	1.60	0.252	0.442	1.93	-0.709	0.146	-0.00300	0.01200	-0.408	0.480	5.672
					10/14/2013 17:22	0917-173_Nc	13_10_14_1722_50_683	1	-2.980	1.540	0.549	0.086	1.53	0.244	0.400	1.93	-0.65800	0.143	-0.00400	0.01200	-0.470	0.457	5.636
					10/14/2013 17:23	0917-173_Nc	13_10_14_1723_51_453	1	-2.1610	1.566	0.437	0.085	1.50	0.236	0.415	1.93	-0.5860	0.141	-0.00400	0.01100	-0.416	0.451	5.548
					10/14/2013 17:24	0917-173_Nc	13_10_14_1724_52_163	1	-1.857	1.414	0.435	0.080	1.35	0.213	0.540	1.96	-0.654	0.131	-0.00200	0.01000	-0.63	0.419	5.335
					10/14/2013 17:25	0917-173_Nc	13_10_14_1725_52_963	1	-2.882	1.355	0.2930	0.075	1.36	0.201	0.470	1.96	-0.711	0.125	-0.00600	0.01000	-0.143	0.402	5.154
					10/14/2013 17:26	0917-173_Nc	13_10_14_1726_53_674	1	-1.589	1.465	0.234	0.079	1.42	0.204	0.456	1.95	-0.526	0.132	-0.00300	0.01000	-0.951	0.424	5.16
					10/14/2013 17:27	0917-173_Nc	13_10_14_1727_54_454	1	-3.2780	1.482	0.448	0.082	1.54	0.213	0.582	1.96	-0.620	0.135	-0.00400	0.01000	0.100	0.440	5.213
					10/14/2013 17:28	0917-173_Nc	13_10_14_1728_55_304	1	-1.866	1.431	0.457	0.082	1.47	0.221	0.416	1.95	-0.616	0.135	-0.00700	0.01100	-0.3710	0.434	5.249
					10/14/2013 17:29	0917-173_Nc	13_10_14_1729_56_064	1	-3.137	1.613	0.601	0.085	1.45	0.235	0.438	1.95	-0.33800	0.145	-0.00300	0.01100	-0.674	0.462	5.289
					10/14/2013 17:32	0917-173_Nc	13_10_14_1732_06_400	1	-1.388	1.491	0.668	0.081	1.57	0.238	0.626	1.94	-0.656	0.136	-0.00200	0.01200	0.126	0.433	5.332
					10/14/2013 17:33	0917-173_Nc	13_10_14_1733_07_210	1	-2.0070	1.515	0.682	0.086	1.69	0.257	0.213	1.90	-0.679	0.142	-0.00200	0.01300	-0.20	0.449	5.555
					10/14/2013 17:34	0917-173_Nc	13_10_14_1734_07_900	1	-2.791	1.679	0.579	0.086	1.72	0.282	0.470	1.90	-0.747	0.147	0.00200	0.0140	-0.07	0.482	5.744
					10/14/2013 17:35	0917-173_Nc	13_10_14_1735_08_740	1	-4.512	1.699	0.648	0.090	1.85	0.293	0.225	1.87	-0.692	0.151	0.00000	0.0140	-0.303	0.500	5.872
					10/14/2013 17:36	0917-173_Nc	13_10_14_1736_09_450	1	-2.390	1.571	0.580	0.091	1.86	0.291	0.295	1.88	-0.471	0.149	0.0000	0.0140	-0.974	0.478	5.93
					10/14/2013 17:37	0917-173_Nc	13_10_14_1737_10_280	1	-2.466	1.673	0.852	0.090	1.83	0.291	0.46	1.89	-0.527	0.150	0.00100	0.0140	-0.366	0.489	5.957
					10/14/2013 17:38	0917-173_Nc	13_10_14_1738_11_030	1	-2.555	1.663	0.672	0.092	1.82	0.276	0.284	1.88	-0.626	0.154	-0.00100	0.0140	-0.704	0.490	5.978
					10/14/2013 17:39	0917-173_Nc	13_10_14_1739_11_730	1	-2.32	1.626	0.524	0.089	1.74	0.274	0.202	1.89	-0.774	0.148	-0.00400	0.0130	-0.31	0.485	5.982
					10/14/2013 17:40	0917-173_Nc	13_10_14_1740_12_560	1	-3.590	1.642	0.464	0.086	1.71	0.265	0.44	1.92	-0.479	0.146	0.00000	0.0130	-0.129	0.467	5.979
					10/14/2013 17:41	0917-173_Nc	13_10_14_1741_13_270	1	-1.952	1.259	0.186	0.077	1.68	0.143	0.621	1.658	-1.589	0.134	0.0040	0.00700	-0.916	0.390	7.882
					10/14/2013 17:42	0917-173_Nc	13_10_14_1742_14_040	1	-0.220	0.931	-0.3590	0.088	0.182	0.0430	0.373	0.703	-2.96	0.147	-0.00500	0.00200	-1.172	0.350	10.056
					10/14/2013 17:43	0917-173_Nc	13_10_14_1743_14_781	1	-1.7920	0.947	-0.529	0.087	-0.006	0.0400	0.025	0.329	-3.35	0.151	-0.00500	0.00200	-0.93	0.361	10.044
					10/14/2013 17:44	0917-173_Nc	13_10_14_1744_15_531	1	1.517	0.884	-0.253	0.078	0.515	0.0450	0.3030	0.614	-2.58	0.127	0.0050	0.00200	-0.50	0.307	8.397
					10/14/2013 17:45	0917-173_Nc	13_10_14_1745_16_341	1	0.854	0.874	0.0670	0.054	0.387	0.0330	0.386	0.473	-0.2650	0.086	0.00300	0.00200	-0.92	0.275	2.631
					10/14/2013 17:46	0917-173_Nc	13_10_14_1746_16_981	1	0.217	0.865	0.0620	0.050	0.176	0.0290	0.252	0.201	0.0000	0.079	0.00100	0.00200	-0.162	0.259	1.022
					10/14/2013 17:47	0917-173_Nc	13_10_14_1747_17_691	1	-0.287	0.832	0.099	0.053	0.110	0.0270	0.06000	0.131	0.168	0.083	0.00	0.00200	-0.51	0.263	0.79
					10/14/2013 17:48	0917-173_Nc	13_10_14_1748_18_511	1	1.076	0.917	-0.076	0.049	0.0570	0.0280	0.290	0.1110	-0.1100	0.081	-0.00600	0.00200	0.128	0.271	0.74
			Stop		10/14/2013 17:49	0917-173_Nc	13_10_14_1749_19_221	1	2.007	0.956	0.070	0.047	0.135	0.0280	0.232	0.1120	0.186	0.080	-0.00500	0.00200	-0.279	0.278	0.727
					10/14/2013 17:50	0917-173_Nc	13_10_14_1750_20_001	1	2.333	0.928	-0.0390	0.052	0.177	0.0400	0.5120	0.756	0.101	0.084	-0.01100	0.00200	-0.509	0.281	0.736
					10/14/2013 17:51	0917-173_Nc	13_10_14_1751_20_821	1	1.9760	0.932	0.0060	0.057	0.071	0.0450	0.55400	0.878	0.100	0.093	-0.00500	0.00200	-0.16	0.291	0.536
					10/14/2013 17:52	0917-173_Nc	13_10_14_1752_21_531	1	1.310	0.935	0.203	0.056	0.153	0.0420	0.4810	0.926	0.181	0.089	0.00	0.00200	-0.319	0.293	0.605
					10/14/2013 17:53	0917-173_Nc	13_10_14_1753_22_351	1	1.9710	1.067	0.226	0.057	0.580	0.0910	0.6720	1.271	-0.252	0.096	-0.01	0.00400	0.165	0.312	1.71
					10/14/2013 17:54	0917-173_Nc	13_10_14_1754_23_051	1	-1.0560	1.416	0.502	0.074	1.50	0.215	0.601	1.95	-0.445	0.125	0.00000	0.01000	-1.088	0.408	4.19
					10/14/2013 17:55	0917-173_Nc	13_10_14_1755_23_872	1	-0.58600	1.565	0.586	0.087	1.91	0.260	0.50	1.96	-0.565	0.144	-0.00500	0.01200	-0.846	0.454	5.326
					10/14/2013 17:56	0917-173_Nc	13_10_14_1756_24_582	1	-2.3270	1.452	0.456	0.088	1.89	0.263	0.38	1.92	-0.6760	0.144	0.00000	0.0130	-0.66	0.451	5.61

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 17:57	0917-173_Nc	13_10_14_1757_25_402	1	-3.168	1.712	0.551	0.083	1.88	0.261	0.32	1.92	-0.7360	0.146	0.00100	0.01300	-0.15	0.479	5.665
Data	Run	3	Start	A	10/14/2013 17:58	0917-173_Nc	13_10_14_1758_26_092	1	-2.7690	1.499	0.515	0.086	1.83	0.258	0.257	1.92	-0.628	0.142	-0.00200	0.01300	-0.35	0.454	5.62
					10/14/2013 17:59	0917-173_Nc	13_10_14_1759_26_902	1	-1.169	1.526	0.530	0.087	1.86	0.249	0.42	1.93	-0.688	0.142	0.00000	0.01200	-0.190	0.451	5.569
					10/14/2013 18:00	0917-173_Nc	13_10_14_1800_27_632	1	-1.736	1.599	0.421	0.088	1.86	0.245	0.44	1.94	-0.584	0.147	-0.00200	0.01200	-0.754	0.466	5.563
					10/14/2013 18:01	0917-173_Nc	13_10_14_1801_28_432	1	-1.590	1.555	0.3490	0.086	1.91	0.238	0.40	1.93	-0.514	0.143	0.00000	0.01200	-0.695	0.463	5.603
					10/14/2013 18:02	0917-173_Nc	13_10_14_1802_29_182	1	-0.977	1.635	0.372	0.087	1.93	0.251	0.35	1.91	-0.7830	0.147	0.00200	0.01200	-0.289	0.471	5.697
					10/14/2013 18:03	0917-173_Nc	13_10_14_1803_29_932	1	-1.8460	1.637	0.460	0.085	1.88	0.260	0.259	1.93	-0.7270	0.145	0.00000	0.01200	-0.53	0.473	5.733
					10/14/2013 18:04	0917-173_Nc	13_10_14_1804_30_752	1	-3.476	1.562	0.391	0.091	1.96	0.262	0.169	1.91	-0.5730	0.149	-0.00100	0.01300	-0.44	0.475	5.761
					10/14/2013 18:05	0917-173_Nc	13_10_14_1805_31_502	1	-2.4070	1.683	0.434	0.088	1.88	0.265	0.36	1.92	-0.650	0.149	-0.00600	0.0130	-0.768	0.491	5.658
					10/14/2013 18:06	0917-173_Nc	13_10_14_1806_32_222	1	-1.817	1.559	0.492	0.089	1.84	0.238	0.43	1.94	-0.562	0.144	0.00000	0.01100	-0.695	0.468	5.494
					10/14/2013 18:07	0917-173_Nc	13_10_14_1807_33_033	1	-2.106	1.522	0.413	0.083	1.70	0.224	0.314	1.95	-0.699	0.139	-0.00300	0.01100	-0.174	0.456	5.379
					10/14/2013 18:08	0917-173_Nc	13_10_14_1808_33_783	1	-1.438	1.503	0.467	0.084	1.78	0.221	0.402	1.97	-0.737	0.140	-0.00100	0.01000	-0.15	0.454	5.306
					10/14/2013 18:09	0917-173_Nc	13_10_14_1809_34_493	1	-2.6730	1.512	0.393	0.085	1.89	0.215	0.348	1.96	-0.556	0.142	-0.00600	0.01000	-0.469	0.469	5.272
					10/14/2013 18:10	0917-173_Nc	13_10_14_1810_35_313	1	-0.516	1.634	0.508	0.086	1.85	0.231	0.421	1.93	-0.589	0.144	-0.00200	0.01100	-0.046	0.464	5.284
					10/14/2013 18:11	0917-173_Nc	13_10_14_1811_36_053	1	-1.952	1.548	0.683	0.086	1.88	0.240	0.225	1.94	-0.6000	0.143	0.00200	0.01200	-0.574	0.458	5.358
					10/14/2013 18:12	0917-173_Nc	13_10_14_1812_36_863	1	-3.587	1.571	0.649	0.086	1.98	0.241	0.157	1.93	-0.5660	0.143	-0.00600	0.01200	-0.5810	0.466	5.37
					10/14/2013 18:13	0917-173_Nc	13_10_14_1813_37_653	1	-2.333	1.613	0.661	0.087	1.98	0.245	0.142	1.93	-0.589	0.146	-0.00400	0.01200	-0.6000	0.480	5.397
					10/14/2013 18:14	0917-173_Nc	13_10_14_1814_38_393	1	-3.888	1.578	0.645	0.089	2.08	0.262	0.256	1.92	-0.5350	0.147	-0.00100	0.01300	-0.411	0.478	5.54
					10/14/2013 18:15	0917-173_Nc	13_10_14_1815_39_133	1	-2.0160	1.668	0.551	0.088	2.13	0.272	0.29	1.90	-0.628	0.148	0.00000	0.0130	-0.25	0.477	5.598
					10/14/2013 18:16	0917-173_Nc	13_10_14_1816_39_933	1	-3.824	1.661	0.467	0.088	2.00	0.272	0.47	1.91	-0.712	0.148	-0.00300	0.0130	-0.743	0.477	5.582
					10/14/2013 18:17	0917-173_Nc	13_10_14_1817_40_663	1	-1.2920	1.565	0.571	0.088	1.96	0.266	0.331	1.92	-0.683	0.147	0.00000	0.0130	-0.11	0.474	5.49
					10/14/2013 18:18	0917-173_Nc	13_10_14_1818_41_463	1	-0.869	1.675	0.551	0.090	1.95	0.254	0.212	1.94	-0.6700	0.150	0.00100	0.01200	-0.639	0.483	5.426
					10/14/2013 18:19	0917-173_Nc	13_10_14_1819_42_244	1	-0.933	1.614	0.507	0.088	1.87	0.245	0.253	1.93	-0.6130	0.147	0.00000	0.01200	-0.518	0.476	5.377
					10/14/2013 18:20	0917-173_Nc	13_10_14_1820_42_954	1	-1.938	1.529	0.396	0.086	1.82	0.244	0.402	1.95	-0.5900	0.143	-0.00100	0.01200	-0.02	0.463	5.3
					10/14/2013 18:21	0917-173_Nc	13_10_14_1821_43_794	1	-3.479	1.501	0.412	0.087	1.74	0.236	0.301	1.95	-0.657	0.142	-0.00500	0.01100	-0.403	0.457	5.256
					10/14/2013 18:22	0917-173_Nc	13_10_14_1822_44_554	1	-2.524	1.590	0.477	0.088	1.91	0.236	0.252	1.95	-0.716	0.146	-0.00400	0.01100	-0.26	0.474	5.204
					10/14/2013 18:23	0917-173_Nc	13_10_14_1823_45_304	1	-5.5000	1.563	0.641	0.087	1.85	0.240	0.348	1.95	-0.442	0.145	-0.00900	0.01200	-0.28	0.473	5.188
					10/14/2013 18:24	0917-173_Nc	13_10_14_1824_46_064	1	-1.143	1.498	0.700	0.087	1.91	0.236	0.395	1.95	-0.4800	0.141	0.00000	0.01100	-0.367	0.450	5.086
					10/14/2013 18:25	0917-173_Nc	13_10_14_1825_46_864	1	-1.3920	1.538	0.564	0.082	1.96	0.230	0.438	1.95	-0.5750	0.138	-0.00300	0.01100	-0.134	0.444	4.983
					10/14/2013 18:26	0917-173_Nc	13_10_14_1826_47_634	1	-1.838	1.560	0.546	0.086	1.84	0.229	0.439	1.97	-0.64400	0.142	-0.00500	0.01100	-0.178	0.456	4.919
					10/14/2013 18:27	0917-173_Nc	13_10_14_1827_48_244	1	-2.567	1.602	0.496	0.086	1.77	0.234	0.435	1.96	-0.688	0.144	-0.00300	0.01100	-0.677	0.468	4.778
					10/14/2013 18:28	0917-173_Nc	13_10_14_1828_49_064	1	-1.9100	1.580	0.646	0.083	1.71	0.226	0.448	1.98	-0.310	0.139	-0.00600	0.01100	-0.5190	0.455	4.599
					10/14/2013 18:29	0917-173_Nc	13_10_14_1829_49_814	1	-1.7590	1.510	0.614	0.084	1.63	0.224	0.473	1.97	-0.614	0.139	-0.00300	0.01100	-0.969	0.461	4.493
					10/14/2013 18:30	0917-173_Nc	13_10_14_1830_50_525	1	-1.505	1.512	0.513	0.085	1.72	0.229	0.471	1.97	-0.5650	0.141	-0.00600	0.01100	-0.138	0.446	4.564
					10/14/2013 18:31	0917-173_Nc	13_10_14_1831_51_325	1	-3.191	1.521	0.652	0.088	1.85	0.244	0.283	1.94	-0.5510	0.143	0.00100	0.01200	-0.471	0.467	4.644
					10/14/2013 18:32	0917-173_Nc	13_10_14_1832_52_055	1	-1.308	1.605	0.757	0.089	1.88	0.264	0.407	1.93	-0.5430	0.147	-0.00400	0.0130	-0.396	0.478	4.755
					10/14/2013 18:33	0917-173_Nc	13_10_14_1833_52_925	1	-2.687	1.696	0.620	0.089	1.94	0.282	0.339	1.91	-0.522	0.150	0.00100	0.0140	-0.439	0.476	4.94
					10/14/2013 18:34	0917-173_Nc	13_10_14_1834_53_625	1	-1.766	1.609	0.574	0.092	2.07	0.286	0.120	1.91	-0.536	0.150	-0.00200	0.0140	-0.41	0.481	5.14
					10/14/2013 18:35	0917-173_Nc	13_10_14_1835_54_365	1	-0.810	1.685	0.589	0.089	2.17	0.289	0.35	1.90	-0.444	0.150	-0.00400	0.0140	-0.32	0.490	5.36
					10/14/2013 18:36	0917-173_Nc	13_10_14_1836_55_185	1	-2.514	1.718	0.651	0.095	2.18	0.295	0.291	1.89	-0.668	0.158	-0.00100	0.0140	-1.014	0.506	5.452
					10/14/2013 18:37	0917-173_Nc	13_10_14_1837_55_925	1	-2.217	1.647	0.738	0.096	2.16	0.295	0.23	1.89	-0.505	0.156	0.00100	0.0140	-0.668	0.499	5.548
					10/14/2013 18:38	0917-173_Nc	13_10_14_1838_56_745	1	-3.443	1.637	0.532	0.089	2.04	0.278	0.218	1.92	-0.571	0.148	-0.00300	0.0140	-0.339	0.479	5.544
					10/14/2013 18:39	0917-173_Nc	13_10_14_1839_57_545	1	-3.828	1.619	0.505	0.088	1.97	0.269	0.209	1.93	-0.547	0.147	0.00100	0.0130	-0.074	0.482	5.493
					10/14/2013 18:40	0917-173_Nc	13_10_14_1840_58_315	1	-2.745	1.560	0.376	0.091	1.90	0.246	0.323	1.96	-0.5800	0.149	-0.00100	0.01200	-0.179	0.467	5.385
					10/14/2013 18:41	0917-173_Nc	13_10_14_1841_59_045	1	-2.761	1.530	0.366	0.086	1.95	0.233	0.219	1.95	-0.722	0.143	-0.00700	0.01100	0.01	0.471	5.341
					10/14/2013 18:42	0917-173_Nc	13_10_14_1842_59_866	1	-2.0440	1.595	0.569	0.085	1.92	0.225	0.135	1.95	-0.417	0.144	-0.00100	0.01100	-1.070	0.464	5.224
					10/14/2013 18:44	0917-173_Nc	13_10_14_1844_00_576	1	-2.996	1.539	0.448	0.082	1.88	0.216	0.435	1.96	-0.4800	0.138	-0.00500	0.01000	-0.668	0.451	5.131
					10/14/2013 18:45	0917-173_Nc	13_10_14_1845_01_296	1	-1.833	1.541	0.418	0.085	1.85	0.220	0.363	1.96	-0.524	0.141	-0.00600	0.01000	-0.877	0.453	5.19
					10/14/2013 18:46	0917-173_Nc	13_10_14_1846_02_146	1	-2.990	1.570	0.399	0.087	1.86	0.226	0.465	1.96	-0.723	0.143	-0.00500	0.01100	-0.058	0.464	5.184
					10/14/2013 18:47	0917-173_Nc	13_10_14_1847_02_896	1	-3.3060	1.469	0.635	0.085	1.79	0.228	0.355	1.96	-0.543	0.137	-0.00500	0.01100	-0.791	0.447	5.219
					10/14/2013 18:48	0917-173_Nc	13_10_14_1848_03_616	1	-2.971	1.602	0.682	0.084	1.84	0.233	0.450	1.96	-0.625	0.142	-0.00400	0.01200	-0.742	0.462	5.28
					10/14/2013 18:49	0917-173_Nc	13_10_14_1849_04_376	1	-0.351	1.537	0.83	0.084	1.81	0.242	0.360	1.96	-0.6850	0.140	-0.00200	0.01200	-0.14	0.455	5.313
					10/14/2013 18:50	0917-173_Nc	13_10_14_1850_05_206	1	-1.794	1.611	0.89	0.085	1.77	0.240	0.500	1.95	-0.586	0.141	-0.00500	0.01200	-0.691	0.459	5.245
					10/14/2013 18:51	0917-173_Nc	13_10_14_1851_05_936	1	-0.4340	1.538	0.834	0.082	1.65	0.236	0.530	1.96	-0.710	0.139	0.00100	0.01200	-0.178	0.459	5.209
					10/14/2013 18:52	0917-173_Nc	13_10_14_1852_06_736	1	-2.208	1.507	0.851	0.081	1.76	0.237	0.476	1.97	-0.615	0.136	-0.00300	0.01200	-0.792	0.441	5.184
					10/14/2013 18:53	0917-173_Nc	13_10_14_1853_06_456	1	-1.520	1.593	0.756	0.085	1.69	0.236	0.437	1.96	-0.631	0.142	-0.00200	0.01100	-0.26	0.451	5.228
					10/14/2013 18:54	0917-173_Nc	13_10_14_1854_07_266	1	-4.122	1.574	0.76	0.088	1.76	0.236	0.652	1.97	-0.451	0.145	-0.00500	0.01100	-0.894	0.479	5.259
					10/14/2013 18:55	0917-173_Nc	13_10_14_1855_07_977	1	-1.158	1.546	0.776	0.086	1.74	0.251	0.594	1.96	-0.573	0.142	-0.00100	0.01200	-0.65	0.461	5.42
					10/14/2013 18:56	0917-173_Nc	13_10_14_1856_08_787	1	-1.114	1.586	0.687	0.087	1.90	0.266	0.306	1.94	-0.6950	0.144	-0.00300	0.01300	-0.357	0.469	5.573
					10/14/2013 18:57	0917-173_Nc	13_10_14_1857_09_477	1	-1.838	1.594	0.674	0.090	1.87	0.268	0.551	1.95	-0.621	0.149	-0.00300	0.01300	-0.422	0.472	5.602
			Stop		10/14/2013 18:58	0917-173_Nc	13_10_14_1858_10_317	1	-1.818	1.605	0.510	0.091	1.96	0.267	0.496	1.93	-0.6290	0.151	-0.00200	0.0130	-0.410	0.481	5.679
					10/14/2013 18:59	0917-173_Nc	13_10_14_1859_11_037	1	-2.324	1.678	0.496	0.090	1.95	0.272	0.427	1.92	-0.5910	0.152	-0.00300	0.0130	-0.495	0.491	5.694
					10/14/2013 19:00	0917-173_Nc	13_10_14_1900_11_837	1	-1.6750	1.587	0.428	0.089	1.80	0.243	0.417	1.92	-0.740	0.148	-0.00500	0.01200	-0.731	0.472	5.845
					10/14/2013 19:01	0917-173_Nc	13_10_14_1901_12_537	1	1.687	0.958	-0.261	0.082	0.445	0.0660	0.564	1.215	-2.657	0.141	-0.00600	0.00300	-1.148	0.348	9.326
					10/14/2013 19:02	0917-173_Nc	13_10_14_1902_13_297	1	-0.9680	0.923	-0.4080	0.091	0.121	0.0390	0.330	0.442	-3.20	0.153	-0.00200	0.00200	-1.155	0.360	9.912
					10/14/2013 19:23	0917-173_Nc	13_10_14_1923_47_489	1	-2.3	1.4	0.064	0.074	0.885	1.30	0.0170	0.0910	0.2530	0.123	0.052	0.529	-0.428	0.410	-1.607
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_06_009	1	0.5	1.5	0.0310	0.075	0.583	1.39	-0.1030	0.0980	0.088	0.127	0.051	0.559	0.336	0.422	-1.727
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_24_509	1	-0.2	1.3	-0.015	0.072	0.308	1.42	-0.0530	0.0940	0.002	0.120	0.046	0.573	-0.553	0.397	-1.795
					10/14/2013 19:24	0917-173_Nc	13_10_14_1924_43_109	1	-1.6	1.4	-0.017	0.074	0.11	1.44	0.117	0.0960	0.216	0.122	0.057	0.580	0.308	0.398	-1.781
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_01_599	1	-4.5	1.2	-0.001	0.074	-0.06	1.45	-0.192	0.0850	0.0650	0.113	0.053	0.586	0.366	0.371	-1.821
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_20_119	1	-0.9	1.2	0.1490	0.072	-0.16	1.46	0.138	0.0960	0.047	0.114	0.051	0.585	0.49	0.380	-1.799
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_38_729	1	1.1	1.2	-0.2810	0.073	-0.03	1.46	-0.0680	0.0920	0.192	0.117	0.048	0.584	-1.004	0.384	-1.827
					10/14/2013 19:25	0917-173_Nc	13_10_14_1925_57_229	1	0.6	1.4	-0.0160	0.073	-0.13	1.46	-0.0960	0.0890	0.126	0.124	0.052	0.587	-0.073	0.414	-1.826
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_15_809	1	0.9	1.2	-0.091	0.076	-0.13	1.46	-0.0300	0.1090	0.288	0.120	0.043	0.585	-1.40	0.412	-1.823
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_34_299	1	1.4	1.4	-0.024	0.078	-0.05	1.46	-0.030	0.0910	0.221	0.130	0.053	0.586	-1.33	0.437	-1.834
					10/14/2013 19:26	0917-173_Nc	13_10_14_1926_52_849	1	-3.5	1.3	0.04000	0.074	-0.23	1.46	-0.02900	0.0900	0.138	0.119	0.045	0.587	-0.939	0.399	-1.826
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_11_399	1	-3.3	1.3	0.0030	0.078	-0.17	1.46	-0.0840	0.0890	0.188	0.123	0.051	0.585	-0.40	0.399	-1.836
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_29_919	1	0.8	1.4	-0.134	0.075	-0.17	1.47	0.0690	0.0930	0.051	0.122	0.049	0.583	-0.321	0.404	-1.821
					10/14/2013 19:27	0917-173_Nc	13_10_14_1927_48_529	1	-0.7	1.5	-0.091	0.073	-0.30	1.47	0.0940	0.0940	0.0670	0.124	0.051	0.585	-1.05	0.428	-1.819
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_15_364	1	4.637	2.149	-0.38	0.128	-0.1010	0.0800	-0.1550	0.149	-0.083	0.206	0.00500	0.00400	-0.60	0.64	-0.012
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_21_414	1	0.2760	2.389	0.456	0.131	0.038	0.0770	0.145	0.162	0.42	0.218	0.00100	0.00500	1.364	0.71	-0.012
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_27_624	1	1.18	2.318	0.052	0.137	-0.1310	0.0780	-0.258	0.153	-0.372	0.220	-0.00400	0.00600	-0.255	0.68	-0.004
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_33_844	1	4.2950	2.374	-0.309	0.134	-0.186	0.082	0.365	0.172	-0.217	0.217	-0.01200	0.00700	0.100	0.75	-0.004
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_40_084	1	-1.530	2.126	0.257	0.116	0.222	0.0810	0.1670	0.157	0.009	0.192	0.00300	0.00500	0.95	0.64	0.046
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_46_324	1	-0.177	2.466	0.046	0.126	-0.100	0.0790	-0.0960	0.179	-0.167	0.213	0.00400	0.00600	-0.91	0.72	-0.006
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_52_344	1	3.633	2.245	-0.1950	0.129	0.0890	0.0820	-0.028	0.170	0.086	0.208	0.0040	0.00500	0.622	0.70	0.025
					10/14/2013 19:40	0917-173_Nc	13_10_14_1940_58_604	1	-1.03	2.325	-0.0340	0.131	-0.02900	0.0790	-0.1420	0.156	0.55	0.212	0.00400	0.00500	-1.47	0.71	-0.009
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_04_744	1	0.973	2.316	-0.276	0.134	-0.01	0.0800	-0.109	0.193	-0.134	0.217	-0.00400	0.00600	-1.45	0.71	0.004
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_10_954	1	5.195	2.321	0.142	0.124	0.0750	0.083	-0.004	0.177	-0.243	0.205	-0.01	0.00500	0.68	0.70	-0.005
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_17_134	1	5.847	2.226	0.192	0.125	-0.074	0.0790	-0.297	0.203	-0.017	0.204	0.00000	0.00400	0.311	0.66	0.005
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_23_254	1	2.096	2.214	-0.2520	0.121	0.0890	0.084	0.1450	0.213	-0.053	0.196	0.00800	0.00500	0.88	0.65	0.038
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_29_424	1	-0.960	2.177	0.0860	0.140	0.1170	0.0780	-0.0650	0.237	-0.047	0.218	-0.01	0.00500	-0.69	0.73	0.004
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_35_674	1	-2.207	2.476	-0.282	0.139	0.080	0.084	0.192	0.222	-0.138	0.222	0.00	0.00500	1.061	0.72	0.048
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_41_864	1	6.2110	2.323	0.0730	0.141	0.172	0.0800	-0.002	0.251	-0.419	0.222	0.00700	0.00600	-0.367	0.75	0.062
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_48_034	1	-3.5580	2.345	0.251	0.135	-0.223	0.0790	0.005	0.257	0.085	0.216	-0.01400	0.00500	1.086	0.72	0.011
					10/14/2013 19:41	0917-173_Nc	13_10_14_1941_54_154	1	-4.39	2.302	-0.0370	0.133	0.267	0.0790	-0.081	0.263	-0.1580	0.212	-0.00500	0.00500	-1.227	0.70	0.074
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_00_404	1	1.718	2.412	0.0170	0.128	0.108	0.0770	0.164	0.279	0.0800	0.209	-0.01000	0.00500	-0.6400	0.71	-0.006
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_06_605	1	0.556	2.222	-0.161	0.126	0.157	0.0820	0.0530	0.288	-0.142	0.204	-0.01200	0.00400	1.07	0.69	0.019
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_12_795	1	-1.945	2.434	0.322	0.128	-0.125	0.0850	-0.262	0.335	0.230	0.212	-0.01700	0.00500	-0.290	0.71	0.019
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_18_965	1	-2.024	2.412	-0.0190	0.136	0.05100	0.0810	0.2330	0.360	-0.015	0.221	-0.00600	0.00500	0.746	0.73	0.03
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_25_075	1	2.39	2.453	0.180	0.129	-0.0020	0.083	0.3400	0.321	0.687	0.214	0.00100	0.00500	-1.37	0.69	0.048
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_31_265	1	2.131	2.418	0.116	0.133	0.204	0.0820	-0.451	0.332	-0.065	0.217	0.00100	0.00500	1.00	0.71	0.04
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_37_425	1	1.628	2.313	-0.188	0.137	-0.0580	0.0800	0.1040	0.338	-0.175	0.221	-0.00600	0.00500	0.95	0.72	0.014
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_43_715	1	3.179	2.167	0.065	0.141	-0.0250	0.0720	-0.043	0.340	-0.01	0.220	-0.00200	0.00500	-3.10	0.71	0.04
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_49_875	1	9.321	2.232	0.0430	0.136	0.0280	0.0850	0.503	0.352	0.11	0.213	-0.00600	0.00500	-0.591	0.70	0.11
					10/14/2013 19:42	0917-173_Nc	13_10_14_1942_55_975	1	2.102	2.220	-0.468	0.122	0.2440	0.082	0.2870	0.337	-0.482	0.201	-0.00200	0.00500	0.296	0.65	0.052
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_02_155	1	-1.965	2.571	0.039	0.138	0.0460	0.102	0.355	0.880	-0.576	0.228	-0.01000	0.00600	-0.05	0.76	-0.091
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_08_405	1	0.884	2.642	0.288	0.140	0.2200	0.159	1.861	2.30	0.04	0.352	-0.02300	0.00700	1.04	0.80	0.367
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_14_605	1	-3.444	2.665	0.079	0.154	0.0670	0.139	-2.18	1.27	-0.14	0.248	-0.0020	0.00600	-0.63	0.83	-0.368
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_20_695	1	-4.695	2.80	0.419	0.159	-0.248	0.129	-0.66	0.98	-0.31	0.26	-0.0040	0.00700	-0.57	0.86	-1.005
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_26_895	1	-0.8540	2.49	0.031	0.146	-0.0640	0.152	-0.08	2.02	0.12	0.24	0.0000	0.0070	-0.54	0.80	-1.823
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_33_125	1	-5.607	2.57	-0.397	0.147	-0.3590	0.170	2.40	2.7	0.35	0.24	0.0130	0.0080	-0.91	0.80	-2.697
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_39_295	1	-4.300	2.95	-0.008	0.162	-0.2190	0.221	5.26	3.6	0.09	0.27	0.0070	0.0090	-1.67	0.88	-3.446
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_45_485	1	-4.601	2.86	0.257	0.149	-0.108	0.258	6.8	4.5	0.44	0.25	-0.0010	0.0090	-4.10	0.86	-4.339
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_51_575	1	-3.555	3.01	0.272	0.165	-0.254	0.291	9.3	4.8	0.79	0.27	0.0340	0.0100	-1.81	0.90	-4.963
					10/14/2013 19:43	0917-173_Nc	13_10_14_1943_57_765	1	-5.18	2.84	0.3120	0.166	-0.411	0.272	8.3	4.7	1.07	0.27	0.0140	0.0110	-2.78	0.90	-4.588
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_03_955	1	-5.412	2.91	-0.077	0.163	-0.213	0.260	8.8	4.4	0.12	0.27	0.0240	0.0100	-2.96	0.92	-4.526
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_10_235	1	-2.648	2.70	0.160	0.158	-0.4850	0.239	7.3	3.9	0.31	0.26	0.0310	0.0090	-2.56	0.88	-4.356
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_16_435	1	-1.39	2.80	-0.079	0.161	-0.198	0.222	5.97	4.0	0.69	0.26	0.0100	0.0090	-1.42	0.87	-4.05
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_22_425	1	-1.84	2.97	0.161	0.149	-0.067	0.239	5.16	4.2	0.74	0.26	0.0190	0.0100	-4.47	0.86	-3.668
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_28_715	1	3.861	2.81	-0.0270	0.151	-0.3750	0.223	5.2	4.1	0.45	0.25	0.0180	0.0080	-2.77	0.83	-3.761
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_34_905	1	-7.2990	2.81	0.226	0.157	-0.032	0.199	4.95	3.8	0.24	0.26	0.0090	0.0100	-1.51	0.89	-3.522
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_41_095	1	-9.231	2.91	-0.284	0.143	-0.2080	0.192	3.83	3.5	0.15	0.25	0.0060	0.0090	-1.45	0.86	-3.101
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_47_295	1	-0.847	2.72	0.003	0.158	-0.2390	0.171	4.05	3.0	0.14	0.25	0.0020	0.0090	-2.52	0.83	-2.61
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_53_375	1	-7.709	2.64	-0.209	0.156	-0.1450	0.166	3.01	2.65	0.10	0.25	0.0010	0.0080	-1.20	0.83	-2.5
					10/14/2013 19:44	0917-173_Nc	13_10_14_1944_59_555	1	-2.33	2.85	-0.095	0.145	-0.084	0.149	2.59	2.13	-0.47	0.25	0.0020	0.0070	0.14	0.85	-1.994
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_05_845	1	-6.884	2.43	0.347	0.154	0.084	0.131	0.37	1.69	0.31	0.25	-0.0020	0.0070	-2.14	0.75	-1.615
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_12_035	1	-5.88	2.59	0.320	0.161	-0.2110	0.116	-0.17	1.74	0.03	0.25	0.0090	0.0060	-1.02	0.86	-1.344
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_18_215	1	-7.349	2.72	0.075	0.138	0.1500	0.116	-1.45	1.34	-0.08	0.24	-0.0120	0.0070	0.24	0.79	-0.98
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_24_285	1	-3.79	2.817	0.166	0.151	-0.02500	0.111	1.63	1.35	-0.30	0.25	0.0090	0.00600	0.26	0.83	-0.785
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_30_475	1	-1.983	2.79	-0.195	0.148	-0.115	0.113	-0.90	1.17	-0.63	0.25	-0.0070	0.00600	0.467	0.83	-0.557
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_36_655	1	-4.141	2.45	-0.082	0.141	0.015	0.118	-1.54	1.04	-0.43	0.23	-0.0220	0.00600	0.62	0.76	-0.374
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_42_915	1	-4.1070	2.640	-0.021	0.132	0.111	0.115	-1.66	1.04	-0.22	0.23	-0.0020	0.00600	-0.33	0.76	-0.235
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_49_085	1	-1.185	2.512	0.292	0.153	-0.135	0.120	-1.76	1.16	-0.31	0.25	-0.0220	0.00600	0.760	0.81	0.046
					10/14/2013 19:45	0917-173_Nc	13_10_14_1945_55_165	1	-1.559	2.585	0.204	0.153	0.193	0.130	-3.364	1.49	-0.17	0.25	-0.0060	0.00500	1.50	0.80	0.344
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_01_355	1	-0.439	2.687	-0.134	0.140	0.358	0.132	-2.32	1.65	0.06	0.24	-0.03100	0.00600	-1.12	0.80	0.437
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_07_635	1	-5.6890	2.548	0.172	0.149	-0.0030	0.135	-2.47	1.62	-0.474	0.24	-0.02600	0.00700	1.19	0.80	0.554
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_13_805	1	1.410	2.446	0.090	0.143	-0.252	0.140	-2.997	1.91	-0.06	0.23	-0.0030	0.00700	-0.74	0.77	0.664
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_19_995	1	-2.105	2.544	0.1300	0.142	0.0590	0.140	-2.771	2.04	-0.33	0.23	-0.0290	0.00700	-0.53	0.79	0.764
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_26_075	1	-15.883	4.048	-0.4180	0.221	0.0710	0.149	1.786	2.24	0.55	0.37	-0.0130	0.00700	0.95	0.76	0.903
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_32_285	1	2.704	2.492	0.2030	0.142	0.1360	0.147	2.59	1.94	0.46	0.35	-0.0190	0.00700	1.33	0.77	0.911
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_38_465	1	-7.959	3.747	0.091	0.140	-0.596	0.150	0.779	1.86	0.20	0.34	-0.01900	0.00700	0.376	0.78	1.097
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_44_745	1	0.268	2.593	0.541	0.144	-0.500	0.153	1.758	1.52	0.48	0.35	-0.0160	0.00600	-4.21700	1.13	1.184
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_50_775	1	-7.805	3.605	0.3050	0.143	0.1910	0.156	1.051	1.29	0.31	0.327	-0.0160	0.00800	-3.84	1.11	1.233
					10/14/2013 19:46	0917-173_Nc	13_10_14_1946_57_045	1	-6.84	3.600	0.344	0.139	0.2810	0.162	1.688	1.22	0.333	0.337	-0.02100	0.00600	2.018	0.76	1.257
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_03_195	1	-10.15	3.633	-0.294	0.192	0.024	0.167	1.961	1.00	-0.595	0.24	-0.0210	0.00700	-3.737	1.08	1.302
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_09_385	1	0.363	2.857	0.06700	0.141	0.2590	0.158	1.544	0.87	-0.687	0.244	-0.0070	0.00700	0.67	0.85	1.507
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_15_565	1	-6.6810	3.730	0.1350	0.205	-0.071	0.137	0.949	0.79	0.676	0.337	-0.01600	0.00800	-3.11	1.14	-0.959
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_21_725	1	-7.503	3.431	0.123	0.194	-0.1950	0.133	0.925	0.62	0.06	0.315	-0.02000	0.00700	-2.593	1.07	-0.699

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_27_905	1	-9.007	3.311	0.023	0.190	-0.370	0.136	0.533	0.57	-0.223	0.306	-0.0180	0.00900	-1.02	1.03	-0.651
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_34_085	1	-11.931	3.459	0.449	0.183	-0.109	0.137	0.976	0.54	0.701	0.308	-0.0140	0.00800	-2.88	1.03	-0.599
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_40_265	1	-8.597	3.191	0.031	0.179	-0.219	0.144	0.593	0.57	0.297	0.295	-0.01300	0.00700	-1.8360	0.96	-0.538
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_46_545	1	-10.954	3.162	0.289	0.181	-0.455	0.133	0.967	0.62	0.050	0.295	-0.01600	0.00700	-1.172	0.96	-0.353
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_52_605	1	-3.49	3.180	-0.150	0.170	-0.25000	0.140	0.950	0.71	-0.131	0.281	-0.01600	0.00800	-1.29	0.95	-0.324
					10/14/2013 19:47	0917-173_Nc	13_10_14_1947_58_785	1	-11.344	3.172	-0.2120	0.191	-0.2260	0.137	0.926	0.82	-0.0540	0.303	-0.0200	0.00800	-1.10	0.98	-0.267
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_05_005	1	-1.003	3.191	-0.282	0.173	0.071	0.128	0.824	0.79	0.18	0.283	-0.02100	0.00800	-2.249	0.95	-0.218
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_11_245	1	-7.7330	2.944	-0.034	0.173	-0.12600	0.127	0.883	0.94	0.275	0.278	-0.03200	0.00700	-1.14	0.92	-0.215
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_17_425	1	-14.16	3.219	-0.071	0.165	-0.251	0.137	0.567	0.90	-0.043	0.281	-0.02800	0.00700	-2.72	0.95	-0.138
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_23_505	1	-7.25	3.164	0.03600	0.165	-0.276	0.128	0.413	0.92	-0.027	0.276	-0.00600	0.00800	-1.399	0.90	-0.159
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_29_645	1	-3.861	3.097	-0.127	0.166	-0.1380	0.136	0.543	0.95	0.120	0.275	-0.01500	0.00700	-0.51	0.93	-0.131
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_35_905	1	-3.874	2.979	0.184	0.171	-0.1810	0.135	0.54	1.00	-0.010	0.276	-0.02900	0.00800	-0.61	0.90	-0.056
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_42_075	1	-6.830	3.283	0.044	0.172	-0.0870	0.131	0.799	1.00	0.12	0.288	-0.02500	0.00700	-3.907	0.96	-0.072
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_48_245	1	-9.620	2.979	0.074	0.170	-0.2200	0.134	0.966	1.03	0.37	0.274	-0.01500	0.00800	-4.09	0.92	-0.066
					10/14/2013 19:48	0917-173_Nc	13_10_14_1948_54_325	1	-9.258	2.981	-0.136	0.168	-0.1550	0.137	1.016	1.05	-0.384	0.273	-0.02	0.00800	0.228	0.92	-0.095
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_00_595	1	-14.113	3.108	-0.135	0.173	-0.0110	0.128	1.030	1.00	-0.18	0.288	-0.00400	0.00800	-0.567	0.95	-0.114
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_06_775	1	-4.595	3.042	-0.347	0.160	-0.262	0.136	0.768	1.03	-0.373	0.269	-0.03000	0.00700	-1.880	0.89	-0.092
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_12_935	1	0.175	3.124	-0.121	0.168	-0.15300	0.137	0.995	1.15	-0.0650	0.277	-0.01600	0.00700	-1.6770	0.93	-0.043
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_19_205	1	-9.413	2.896	-0.061	0.173	-0.214	0.130	1.346	1.16	0.316	0.272	-0.02400	0.00700	-1.696	0.85	-0.004
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_25_285	1	-9.482	3.087	0.038	0.170	-0.136	0.131	0.15	1.11	-0.201	0.280	-0.02600	0.00700	-0.80	0.94	0.087
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_31_435	1	-2.26	2.877	0.154	0.158	-0.1020	0.136	1.201	1.21	-0.325	0.261	-0.02700	0.00700	-0.91	0.88	0.037
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_37_715	1	0.933	2.903	0.151	0.169	-0.126	0.133	1.074	1.28	-0.411	0.272	-0.02700	0.00700	-1.196	0.91	0.135
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_43_905	1	-8.779	2.860	-0.033	0.153	-0.095	0.134	0.640	1.33	0.334	0.253	-0.01500	0.00700	-1.05	0.84	0.064
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_50_095	1	-3.445	2.869	0.032	0.153	-0.322	0.132	0.601	1.37	0.50	0.253	-0.01600	0.00600	-2.52	0.85	0.192
					10/14/2013 19:49	0917-173_Nc	13_10_14_1949_56_175	1	-5.164	3.040	-0.00400	0.156	-0.0410	0.137	1.051	1.468	-0.606	0.261	-0.00400	0.00600	-1.13	0.88	0.209
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_02_365	1	-5.9900	2.946	-0.378	0.151	0.0840	0.124	0.50	1.522	-0.378	0.253	-0.02300	0.00600	0.886	0.87	0.117
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_08_595	1	-3.608	2.755	-0.068	0.154	0.0570	0.127	1.151	1.532	0.023	0.250	-0.02000	0.00800	-1.643	0.85	0.206
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_14_785	1	-2.52	2.729	-0.003	0.147	-0.1300	0.130	1.032	1.547	-0.190	0.239	-0.00900	0.00700	-1.465	0.81	0.221
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_20_855	1	-0.785	2.612	0.178	0.155	0.03300	0.136	0.829	1.582	0.391	0.246	-0.01700	0.00600	-0.446	0.78	0.197
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_27_035	1	-4.378	2.828	-0.211	0.161	-0.099	0.134	1.213	1.549	-0.186	0.262	-0.01900	0.00700	0.74	0.88	0.265
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_33_235	1	1.41	2.801	-0.422	0.147	-0.222	0.130	0.462	1.505	-0.3060	0.245	-0.01900	0.00700	-0.953	0.83	0.173
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_39_435	1	-8.207	2.694	0.131	0.166	0.121	0.128	1.014	1.531	0.133	0.263	-0.03	0.00700	-1.549	0.87	0.202
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_45_635	1	-0.0140	2.804	0.363	0.170	-0.290	0.133	0.396	1.522	-0.12	0.272	-0.01400	0.00700	-0.607	0.87	0.305
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_51_825	1	-2.93	3.072	-0.088	0.158	0.1280	0.139	0.898	1.500	-0.0360	0.265	-0.0070	0.00700	-0.975	0.88	0.246
					10/14/2013 19:50	0917-173_Nc	13_10_14_1950_58_005	1	-0.991	2.578	-0.0120	0.159	-0.229	0.140	0.837	1.512	-0.05	0.247	-0.02	0.00600	-1.148	0.83	0.194
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_04_185	1	-4.500	2.877	0.1930	0.153	-0.0970	0.130	0.732	1.520	-0.025	0.256	-0.02400	0.00700	-2.32	0.88	0.201
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_10_375	1	-6.56	2.887	0.0150	0.160	-0.1070	0.122	0.875	1.515	-0.394	0.264	-0.02000	0.00700	-0.78	0.87	0.232
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_16_615	1	-3.180	2.753	0.156	0.151	0.0210	0.129	1.183	1.548	-0.387	0.248	-0.00600	0.00600	0.056	0.87	0.275
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_22_685	1	-7.759	2.810	-0.0580	0.161	-0.210	0.134	1.166	1.529	0.103	0.264	-0.02600	0.00700	-0.93	0.89	0.25
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_28_855	1	-6.359	2.823	-0.1960	0.152	-0.1480	0.134	0.35	1.540	-0.31	0.252	-0.01100	0.00700	-0.16	0.84	0.242
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_35_135	1	-8.647	2.714	-0.00400	0.144	-0.100	0.138	0.600	1.535	-0.189	0.237	-0.01200	0.00700	-0.24	0.79	0.169
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_41_325	1	-8.059	2.843	0.126	0.150	-0.1460	0.130	0.925	1.590	-0.06	0.251	-0.02000	0.00600	-1.42	0.84	0.245
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_47_515	1	-8.018	2.981	0.1420	0.151	-0.061	0.136	0.440	1.490	0.11	0.255	-0.00100	0.00600	-1.782	0.87	0.276
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_53_595	1	-7.818	2.598	0.0300	0.146	-0.066	0.124	0.836	1.564	0.064	0.241	-0.02	0.00700	-0.66	0.79	0.289
					10/14/2013 19:51	0917-173_Nc	13_10_14_1951_59_795	1	-2.568	2.813	-0.111	0.155	0.005	0.134	0.377	1.598	-0.3700	0.252	-0.01500	0.00700	-0.80	0.85	0.267
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_05_975	1	-9.779	2.883	0.363	0.151	0.127	0.133	0.674	1.599	-0.208	0.252	-0.03000	0.00700	0.96	0.83	0.228
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_12_155	1	-6.317	2.798	-0.0420	0.156	-0.2060	0.129	0.843	1.617	0.038	0.253	-0.0300	0.00600	-1.57	0.85	0.254
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_18_405	1	-11.32	2.673	-0.1420	0.152	-0.178	0.127	0.809	1.629	0.297	0.251	-0.00900	0.00600	-1.61	0.86	0.276
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_24_465	1	-2.598	2.619	0.196	0.154	-0.106	0.140	0.771	1.621	0.217	0.248	-0.01600	0.00700	-1.78	0.82	0.285
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_30_645	1	-7.5550	2.868	0.145	0.151	-0.0340	0.131	1.012	1.575	-0.252	0.254	-0.01600	0.00600	-0.67	0.86	0.29
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_36_925	1	-1.783	2.594	0.1520	0.149	-0.1340	0.131	0.687	1.646	-0.05	0.241	-0.02500	0.00700	-1.25	0.75	0.261
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_43_035	1	-1.447	2.634	0.145	0.152	-0.01900	0.133	0.555	1.684	0.455	0.244	-0.00900	0.00600	-0.150	0.80	0.292
					10/14/2013 19:52	0917-173_Nc	13_10_14_1952_49_235	1	-6.056	2.544	-0.398	0.143	-0.0780	0.132	0.742	1.608	-0.28	0.232	-0.01500	0.00700	-0.876	0.78	0.293
Data	MDC	1	Start		10/14/2013 19:53	0917-173_Nc	13_10_14_1953_39_775	1	-3.5790	1.670	0.0230	0.093	-0.0820	0.1080	0.752	1.680	0.028	0.151	-0.02	0.00500	-1.421	0.505	0.318
					10/14/2013 19:54	0917-173_Nc	13_10_14_1954_40_496	1	-4.1970	1.682	0.098	0.094	-0.0510	0.1080	0.649	1.683	-0.0590	0.154	-0.01800	0.00400	-1.044	0.509	0.326
					10/14/2013 19:55	0917-173_Nc	13_10_14_1955_41_326	1	-2.9590	1.572	0.0150	0.091	-0.0530	0.1110	0.734	1.696	-0.212	0.148	-0.02	0.00500	-0.818	0.486	0.325
					10/14/2013 19:56	0917-173_Nc	13_10_14_1956_42_036	1	-2.876	1.788	-0.053	0.095	-0.112	0.1100	0.554	1.678	0.010	0.157	-0.01900	0.00500	-1.777	0.525	0.327
					10/14/2013 19:57	0917-173_Nc	13_10_14_1957_42_786	1	-3.559	1.674	0.1150	0.092	-0.0650	0.1070	0.651	1.697	-0.069	0.151	-0.02	0.00500	-1.132	0.510	0.368
					10/14/2013 19:58	0917-173_Nc	13_10_14_1958_43_596	1	-1.9740	1.644	0.0420	0.094	-0.0070	0.1080	0.712	1.672	-0.109	0.151	-0.01900	0.00500	-0.869	0.492	0.351
			Stop		10/14/2013 19:59	0917-173_Nc	13_10_14_1959_44_366	1	-2.295	1.632	0.062	0.093	0.0210	0.1070	0.691	1.685	-0.1810	0.151	-0.01600	0.00500	-0.6690	0.496	0.328
					10/15/2013 7:51	0917-173_Nc	13_10_15_0751_28_631	1	1.6	1.3	-0.147	0.073	0.02	1.34	-0.09800	0.0810	0.075	0.118	0.052	0.543	-0.482	0.378	-1.636
					10/15/2013 7:51	0917-173_Nc	13_10_15_0751_47_251	1	0.8	1.4	0.007	0.074	-0.15	1.41	0.0910	0.0890	0.133	0.124	0.048	0.567	-0.323	0.416	-1.733
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_05_741	1	0.1	1.4	0.0910	0.077	-0.26	1.44	0.131	0.0900	0.087	0.126	0.057	0.576	0.377	0.408	-1.753
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_24_331	1	1.0	1.3	-0.07800	0.070	-0.39	1.45	0.0800	0.0900	-0.055	0.116	0.052	0.581	0.39	0.374	-1.784
					10/15/2013 7:52	0917-173_Nc	13_10_15_0752_42_811	1	3.4	1.3	-0.077	0.075	-0.30	1.45	-0.10100	0.0900	-0.122	0.121	0.042	0.584	-0.03	0.417	-1.799
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_01_311	1	1.9	1.2	0.155	0.073	-0.26	1.46	-0.1220	0.0900	0.06800	0.115	0.056	0.587	-0.042	0.376	-1.775
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_19_911	1	1.8	1.3	0.065	0.077	-0.32	1.46	-0.148	0.1060	0.149	0.123	0.052	0.584	0.242	0.398	-1.775
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_38_392	1	-3.4	1.4	0.0040	0.071	-0.37	1.46	-0.1130	0.0860	0.039	0.121	0.054	0.582	-0.371	0.407	-1.801
					10/15/2013 7:53	0917-173_Nc	13_10_15_0753_56_902	1	-3.7	1.4	-0.091	0.075	-0.44	1.47	0.0020	0.1000	-0.020	0.122	0.047	0.585	1.24	0.396	-1.769
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_15_522	1	1.3	1.4	0.042	0.075	-0.37	1.47	0.1240	0.0930	0.0390	0.124	0.053	0.583	0.044	0.416	-1.791
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_34_022	1	0.9	1.4	-0.045	0.075	-0.40	1.46	-0.1550	0.0840	0.113	0.121	0.043	0.587	-0.563	0.407	-1.781
					10/15/2013 7:54	0917-173_Nc	13_10_15_0754_52_562	1	-0.4	1.3	0.008	0.075	-0.38	1.46	-0.311	0.0910	0.346	0.120	0.042	0.585	0.053	0.417	-1.785
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_11_052	1	0.2	1.3	-0.042	0.066	-0.38	1.47	0.051	0.0970	0.052	0.112	0.056	0.586	0.2960	0.372	-1.775
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_29_642	1	-2.8	1.2	-0.137	0.079	-0.39	1.46	0.086	0.0940	-0.015	0.122	0.049	0.587	0.128	0.384	-1.793
					10/15/2013 7:55	0917-173_Nc	13_10_15_0755_48_232	1	-1.2	1.4	-0.101	0.074	-0.44	1.46	-0.244	0.0910	-0.053	0.123	0.046	0.584	0.38	0.394	-1.797
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_06_712	1	-1.9	1.2	0.038	0.074	-0.29	1.46	-0.0300	0.0900	0.117	0.119	0.051	0.584	0.018	0.375	-1.799
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_25_332	1	-0.4	1.3	0.084	0.076	-0.44	1.47	-0.101	0.0820	0.215	0.120	0.054	0.585	0.722	0.384	-1.771
					10/15/2013 7:56	0917-173_Nc	13_10_15_0756_43_842	1	-0.5	1.4	-0.078	0.074	-0.41	1.46	0.097	0.0920	-0.004	0.122	0.051	0.583	1.174	0.403	-1.765
					10/15/2013 7:57	0917-173_Nc	13_10_15_0757_02_292	1	-0.4	1.3	-0.028	0.079	-0.44	1.46	-0.1540	0.0870	-0.123	0.124	0.047	0.583	0.43	0.396	-1.761
					10/15/2013 7:57	0917-173_Nc	13_10_15_0757_20_952	1	1.2	1.3	-0.061	0.077	-0.40	1.46	0.109	0.0870	0.233	0.121	0.050	0.584	-0.150	0.391	-1.772
					10/15/2013 9:06	0917-173_Nc	13_10_15_0906_30_678	1	1.787	0.983	0.027	0.061	1.58	0.0660	0.589	1.430	-0.668	0.101	0.00	0.00200	-0.36	0.316	4.462
					10/15/2013 9:07	0917-173_Nc	13_10_15_0907_30_378	1	-0.312	0.988	-0.012	0.059	1.86	0.0670	0.452	1.461	-0.508	0.100	-0.00200	0.00200	-0.896	0.309	4.879
					10/15/2013 9:08	0917-173_Nc	13_10_15_0908_31_128	1	1.163	1.016	0.040	0.060	1.72	0.0700	0.479	1.451	-0.458	0.101	-0.00600	0.00200	-0.68	0.324	4.557
					10/15/2013 9:09	0917-173_Nc	13_10_15_0909_31_938	1	2.505	1.005	0.127	0.057	1.71	0.0700	0.463	1.447	-0.409	0.097	-0.00100	0.00300	-0.747	0.310	4.255
					10/15/2013 9:10	0917-173_Nc	13_10_15_0910_32_668	1	1.665	0.956	0.14300	0.059	2.05	0.0710	0.440	1.458	-0.5270	0.099	-0.00200	0.00200	-0.285	0.301	4.861
Data	Run	4	Start	A	10/15/2013 9:11	0917-173_Nc	13_10_15_0911_33_428	1	-0.261	0.983	0.023	0.061	2.39	0.0750	0.485	1.470	-0.693	0.104	-0.00400	0.00300	0.16	0.318	5.607
					10/15/2013 9:12	0917-173_Nc	13_10_15_0912_34_178	1	1.994	1.076	0.078	0.064	2.19	0.0740	0.482	1.469	-0.5950	0.106	-0.00400	0.00200	-0.722	0.331	4.75
					10/15/2013 9:13	0917-173_Nc	13_10_15_0913_34_978	1	-1.934	0.999	0.029	0.058	2.25	0.0740	0.623	1.478	-0.393	0.103	0.00	0.00200	-0.98	0.307	4.744
					10/15/2013 9:14	0917-173_Nc	13_10_15_0914_35_708	1	-0.4360	0.946	0.048	0.060	2.13	0.0720	0.438	1.465	-0.558	0.098	0.00000	0.00200	-0.40	0.298	4.365
					10/15/2013 9:15	0917-173_Nc	13_10_15_0915_36_448	1	0.773	0.984	0.0550	0.056	2.13	0.0740	0.387	1.468	-0.398	0.099	-0.00500	0.00300	-0.77	0.290	4.302
					10/15/2013 9:16	0917-173_Nc	13_10_15_0916_37_198	1	1.5870	1.053	-0.034	0.064	2.36	0.0730	0.485	1.480	-0.518	0.106	0.00	0.00200	-0.44	0.329	4.907
					10/15/2013 9:17	0917-173_Nc	13_10_15_0917_37_999	1	0.5790	1.035	0.0610	0.058	2.31	0.0740	0.420	1.484	-0.444	0.100	-0.00300	0.00200	-0.744	0.302	4.959
					10/15/2013 9:18	0917-173_Nc	13_10_15_0918_38_749	1	-0.718	1.067	0.081	0.060	2.42	0.0740	0.505	1.473	-0.638	0.103	-0.00300	0.00200	-0.66	0.330	5.032
					10/15/2013 9:19	0917-173_Nc	13_10_15_0919_39_499	1	1.123	0.942	0.0290	0.055	2.48	0.0730	0.605	1.489	-0.458	0.097	-0.00300	0.00200	-0.599	0.288	4.992
					10/15/2013 9:20	0917-173_Nc	13_10_15_0920_40_209	1	-1.094	1.012	0.033	0.060	2.42	0.0730	0.6590	1.490	-0.524	0.103	-0.00600	0.00300	-0.49	0.306	4.832
					10/15/2013 9:21	0917-173_Nc	13_10_15_0921_41_019	1	1.389	1.100	0.0110	0.064	2.41	0.0760	0.446	1.487	-0.5390	0.107	-0.00200	0.00200	-0.497	0.327	4.694
					10/15/2013 9:22	0917-173_Nc	13_10_15_0922_41_779	1	0.2770	1.085	0.121	0.060	2.52	0.0740	0.505	1.495	-0.6930	0.107	-0.00400	0.00300	-0.09	0.325	5.413
					10/15/2013 9:23	0917-173_Nc	13_10_15_0923_42_539	1	0.8950	1.023	-0.0170	0.059	2.40	0.0740	0.335	1.488	-0.644	0.104	-0.00100	0.00200	-0.36	0.310	5.423
					10/15/2013 9:24	0917-173_Nc	13_10_15_0924_43_249	1	-1.075	0.931	0.102	0.061	2.13	0.0720	0.459	1.485	-0.69100	0.100	0.00000	0.00200	0.30	0.316	4.58
					10/15/2013 9:25	0917-173_Nc	13_10_15_0925_44_059	1	1.298	0.986	0.0120	0.060	2.17	0.0710	0.499	1.460	-0.526	0.101	0.00000	0.00200	-0.45	0.306	4.515
					10/15/2013 9:26	0917-173_Nc	13_10_15_0926_44_759	1	-0.729	0.997	-0.037	0.060	2.25	0.0710	0.489	1.483	-0.594	0.099	0.00	0.00200	-0.50	0.305	4.694
					10/15/2013 9:27	0917-173_Nc	13_10_15_0927_45_529	1	-1.428	1.026	-0.071	0.061	2.21	0.0750	0.548	1.468	-0.500	0.102	-0.00200	0.00200	-0.93	0.319	4.701
					10/15/2013 9:28	0917-173_Nc	13_10_15_0928_46_300	1	1.515	0.978	0.019	0.059	2.18	0.0720	0.402	1.478	-0.549	0.100	-0.00300	0.00200	-0.46	0.312	4.458
					10/15/2013 9:29	0917-173_Nc	13_10_15_0929_47_100	1	1.5190	1.014	-0.02	0.056	2.23	0.0720	0.478	1.462	-0.571	0.096	0.00000	0.00200	-0.11	0.307	4.389
					10/15/2013 9:30	0917-173_Nc	13_10_15_0930_47_900	1	-0.211	1.030	0.042	0.062	2.13	0.0700	0.386	1.469	-0.5600	0.102	-0.00400	0.00200	-0.089	0.317	4.137
					10/15/2013 9:31	0917-173_Nc	13_10_15_0931_48_670	1	1.099	0.901	0.097	0.060	2.40	0.0710	0.542	1.467	-0.588	0.098	0.00200	0.00300	-0.15	0.290	4.635
					10/15/2013 9:32	0917-173_Nc	13_10_15_0932_49_420	1	0.7470	1.015	-0.002	0.058	2.47	0.0740	0.499	1.475	-0.572	0.100	-0.00200	0.00200	-0.19	0.319	4.654
					10/15/2013 9:33	0917-173_Nc	13_10_15_0933_50_130	1	-0.277	0.970	0.124	0.058	2.55	0.0730	0.424	1.478	-0.672	0.096	-0.00600	0.00200	-0.47	0.292	4.607
					10/15/2013 9:34	0917-173_Nc	13_10_15_0934_50_930	1	2.7010	1.024	0.0000	0.059	2.25	0.0740	0.474	1.475	-0.535	0.100	-0.00400	0.00200	-0.580	0.307	3.884
					10/15/2013 9:35	0917-173_Nc	13_10_15_0935_51_710	1	-0.378	1.033	0.058	0.060	2.36	0.0730	0.448	1.473	-0.606	0.101	0.00100	0.00300	-0.33	0.314	4.004
					10/15/2013 9:36	0917-173_Nc	13_10_15_0936_52_510	1	-1.0700	0.943	0.090	0.058	2.19	0.0730	0.422	1.462	-0.437	0.096	-0.00200	0.00200	-0.31	0.312	3.77
					10/15/2013 9:37	0917-173_Nc	13_10_15_0937_53_310	1	0.457	0.975	0.039	0.056	2.13	0.0730	0.318	1.464	-0.457	0.094	-0.00100	0.00200	-0.64	0.299	3.608
					10/15/2013 9:38	0917-173_Nc	13_10_15_0938_54_040	1	0.511	0.969	-0.0460	0.0570	2.30	0.0730	0.413	1.465	-0.567	0.097	-0.00200	0.00200	-0.353	0.302	4.198
					10/15/2013 9:39	0917-173_Nc	13_10_15_0939_54_760	1	-0.4530	0.890	0.070	0.0540	2.34	0.0720	0.347	1.481	-0.621	0.090	-0.00600	0.00300	-0.134	0.284	4.335
					10/15/2013 9:40	0917-173_Nc	13_10_15_0940_55_571	1	-0.7980	1.021	0.057	0.058	2.16	0.0730	0.383	1.471	-0.433	0.099	-0.00200	0.00300	-0.66	0.310	3.959
					10/15/2013 9:41	0917-173_Nc	13_10_15_0941_56_301	1	0.875	1.035	0.1070	0.060	2.15	0.0710	0.491	1.477	-0.488	0.101	-0.00200	0.00200	-0.70	0.312	3.967
					10/15/2013 9:42	0917-173_Nc	13_10_15_0942_57_111	1	-0.598	1.006	-0.0220	0.059	2.33	0.0730	0.547	1.477	-0.624	0.097	-0.00700	0.00200	-0.10	0.303	4.033
					10/15/2013 9:43	0917-173_Nc	13_10_15_0943_57_921	1	1.2780	0.957	0.0710	0.058	2.24	0.0750	0.435	1.475	-0.667	0.096	-0.00100	0.00300	-0.27	0.288	3.924
					10/15/2013 9:44	0917-173_Nc	13_10_15_0944_58_691	1	0.415	0.887	0.0190	0.057	2.15	0.0710	0.445	1.467	-0.426	0.093	-0.00200	0.00200	-0.16	0.274	3.955
					10/15/2013 9:45	0917-173_Nc	13_10_15_0945_59_421	1	0.567	0.996	0.057	0.057	2.21	0.0710	0.5600	1.477	-0.331	0.098	-0.00200	0.00200	-0.57	0.308	3.898
					10/15/2013 9:47	0917-173_Nc	13_10_15_0947_00_071	1	0.878	1.006	0.0430	0.057	2.19	0.0710	0.535	1.465	-0.433	0.097	-0.00100	0.00200	-0.880	0.303	3.834
					10/15/2013 9:48	0917-173_Nc	13_10_15_0948_00_871	1	-0.2820	0.976	0.036	0.061	2.42	0.0740	0.402	1.473	-0.479	0.100	-0.00600	0.00200	-0.644	0.308	4.287
					10/15/2013 9:49	0917-173_Nc	13_10_15_0949_01_631	1	0.569	1.054	0.015	0.061	2.36	0.0730	0.496	1.488	-0.666	0.104	-0.00900	0.00200	-0.47	0.323	4.459
					10/15/2013 9:50	0917-173_Nc	13_10_15_0950_02_421	1	0.4260	0.968	-0.041	0.057	2.31	0.0720	0.465	1.489	-0.620	0.096	0.00	0.00200	-0.05	0.298	4.307
					10/15/2013 9:51	0917-173_Nc	13_10_15_0951_03_231	1	0.1410	1.002	0.037	0.061	2.30	0.0750	0.438	1.490	-0.468	0.104	-0.00300	0.00200	0.04	0.314	4.462
					10/15/2013 9:52	0917-173_Nc	13_10_15_0952_03_891	1	0.277	1.004	0.0020	0.055	2.55	0.0750	0.354	1.489	-0.5890	0.097	-0.00400	0.00200	-0.20	0.303	4.788
					10/15/2013 9:53	0917-173_Nc	13_10_15_0953_04_722	1	2.3480	1.041	0.0420	0.062	2.61	0.0740	0.394	1.504	-0.631	0.107	-0.00300	0.00200	-0.46	0.323	5.336
					10/15/2013 9:54	0917-173_Nc	13_10_15_0954_05_522	1	1.110	0.973	0.020	0.059	2.28	0.0770	0.435	1.493	-0.622	0.100	-0.00200	0.00200	-0.68	0.296	4.439
					10/15/2013 9:55	0917-173_Nc	13_10_15_0955_06_272	1	0.495	0.978	0.089	0.059	2.39	0.0730	0.424	1.498	-0.583	0.100	-0.00300	0.00200	-0.16	0.314	4.582
					10/15/2013 9:56	0917-173_Nc	13_10_15_0956_06_992	1	-0.945	0.983	0.177	0.059	2.23	0.0710	0.498	1.488	-0.414	0.102	-0.00700	0.00200	-0.70	0.307	4.188
					10/15/2013 9:57	0917-173_Nc	13_10_15_0957_07_812	1	-0.3590	1.029	0.027	0.061	2.36	0.0760	0.441	1.483	-0.516	0.103	-0.00500	0.00200	-0.969	0.315	4.555
					10/15/2013 9:58	0917-173_Nc	13_10_15_0958_08_512	1	0.2310	0.914	0.00300	0.058	2.42	0.0760	0.487	1.492	-0.708	0.096	-0.00400	0.00200	-0.45	0.281	4.895
					10/15/2013 9:59	0917-173_Nc	13_10_15_0959_09_312	1	1.145	0.995	-0.0410	0.058	2.61	0.0740	0.465	1.489	-0.614	0.101	-0.00400	0.00300	0.01	0.305	4.891
					10/15/2013 10:00	0917-173_Nc	13_10_15_1000_10_052	1	0.663	1.010	0.050	0.056	2.65	0.0790	0.508	1.503	-0.662	0.099	0.00	0.00300	-0.12	0.297	4.99
					10/15/2013 10:01	0917-173_Nc	13_10_15_1001_10_862	1	1.163	0.995	0.093	0.056	2.65	0.0770	0.522	1.513	-0.655	0.100	-0.00400	0.00200	-0.70	0.318	4.864
					10/15/2013 10:02	0917-173_Nc	13_10_15_1002_11_672	1	-0.805	1.012	-0.011	0.061	2.58	0.0780	0.396	1.501	-0.686	0.104	-0.00500	0.00300	-0.25	0.325	4.754
					10/15/2013 10:03	0917-173_Nc	13_10_15_1003_12_372	1	-0.435	1.013	0.054	0.062	2.48	0.0760	0.362	1.506	-0.664	0.104	-0.00400	0.00200	-0.528	0.314	4.556
					10/15/2013 10:04	0917-173_Nc	13_10_15_1004_13_182	1	1.860	0.995	0.0410	0.059	2.55	0.0770	0.410	1.494	-0.582	0.100	-0.00500	0.00200	-0.878	0.307	4.693
					10/15/2013 10:05	0917-173_Nc	13_10_15_1005_13_993	1	-1.437	1.023	0.0120	0.058	2.57	0.0790	0.322	1.492	-0.614	0.100	0.00000	0.00200	-0.38	0.314	4.522
					10/15/2013 10:06	0917-173_Nc	13_10_15_1006_14_753	1	0.269	1.023	-0.006	0.062	2.29	0.0740	0.443	1.490	-0.483	0.102	-0.00100	0.00200	-0.214	0.318	4.268
					10/15/2013 10:07	0917-173_Nc	13_10_15_1007_15_483	1	0.383	0.966	0.039	0.056	2.23	0.0750	0.520	1.490	-0.479	0.096	-0.00400	0.00200	-0.490	0.298	4.018
					10/15/2013 10:08	0917-173_Nc	13_10_15_1008_16_293	1	-1.2910	1.047	0.038	0.059	2.43	0.0740	0.519	1.481	-0.508	0.102	-0.00300	0.00200	-0.65	0.318	4.414
					10/15/2013 10:09	0917-173_Nc	13_10_15_1009_17_143	1	0.424	0.975	-0.1150	0.057	2.40	0.0730	0.477	1.488	-0.622	0.097	-0.00400	0.00200	-0.63	0.303	4.268
					10/15/2013 10:10	0917-173_Nc	13_10_15_1010_17_863	1	-0.823	1.020	-0.008	0.059	2.31	0.0730	0.470	1.463	-0.636	0.100	-0.00700	0.00200	-0.38	0.308	4.356
			Stop		10/15/2013 10:11	0917-173_Nc	13_10_15_1011_18_623	1	-0.430	0.908	-0.075	0.058	0.256	0.0340	0.1130	0.367	-1.1640	0.098	-0.00200	0.00200	-0.670	0.285	3.888
					10/15/2013 10:12	0917-173_Nc	13_10_15_1012_19_383	1	-1.550	0.788	-0.0650	0.056	0.067	0.0330	0.0380	0.0970	-1.295	0.090	-0.00300	0.00200	-0.31	0.264	3.692
					10/15/2013 10:13	0917-173_Nc	13_10_15_1013_20_163	1	0.346	0.873	-0.2590	0.059	0.0450	0.0300	-0.0040	0.0780	-1.393	0.096	-0.00200	0.00200	-0.464	0.268	3.67
					10/15/2013 10:14	0917-173_Nc	13_10_15_1014_20_973	1	-1.759	0.876	-0.016	0.056	0.097	0.0330	-0.1700	0.1450	-1.148	0.091	-0.00400	0.00100	-0.45	0.277	3.313
					10/15/2013 10:15	0917-173_Nc	13_10_15_1015_21_773	1	0.547	0.917	0.0640	0.051	0.190	0.0300	0.0320	0.1450	-0.201	0.084	0.00000	0.00200	-0.683	0.272	1.042

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 10:16	0917-173_Nc	13_10_15_1016_22_594	1	-0.504	0.920	-0.0120	0.050	0.120	0.0310	-0.0170	0.0730	-0.035	0.084	0.00	0.00200	-0.208	0.277	0.395
					10/15/2013 10:17	0917-173_Nc	13_10_15_1017_23_324	1	-0.6250	0.793	-0.0150	0.048	0.138	0.0300	0.0280	0.0640	0.118	0.077	-0.00500	0.00200	-0.767	0.250	0.337
					10/15/2013 10:18	0917-173_Nc	13_10_15_1018_24_144	1	0.879	0.934	0.0410	0.056	1.99	0.0570	0.263	1.004	-0.407	0.090	0.00100	0.00200	-0.348	0.296	3.438
					10/15/2013 10:19	0917-173_Nc	13_10_15_1019_23_844	1	1.049	1.077	0.017	0.0590	2.68	0.0800	0.354	1.484	-0.680	0.103	-0.00400	0.00200	-0.633	0.309	5.106
					10/15/2013 10:20	0917-173_Nc	13_10_15_1020_24_554	1	-1.4710	0.935	0.026	0.059	2.73	0.0800	0.177	1.513	-0.8220	0.100	-0.00600	0.00300	0.14	0.306	5.419
					10/15/2013 10:21	0917-173_Nc	13_10_15_1021_25_404	1	-1.2860	1.054	0.0680	0.059	2.78	0.0790	0.413	1.511	-0.670	0.103	-0.00200	0.00200	-0.45	0.318	5.869
Data	Run	5	Start	A	10/15/2013 10:22	0917-173_Nc	13_10_15_1022_26_154	1	-0.991	0.961	-0.007	0.062	2.67	0.0770	0.433	1.513	-0.794	0.104	-0.00100	0.00200	-0.49	0.300	5.122
					10/15/2013 10:23	0917-173_Nc	13_10_15_1023_26_864	1	1.297	0.947	0.046	0.057	2.74	0.0790	0.378	1.514	-0.581	0.099	-0.00200	0.00200	-0.39	0.292	5.228
					10/15/2013 10:24	0917-173_Nc	13_10_15_1024_27_684	1	-0.5840	1.026	0.172	0.057	2.72	0.0800	0.322	1.510	-0.652	0.100	-0.00200	0.00300	-0.97	0.301	5.047
					10/15/2013 10:25	0917-173_Nc	13_10_15_1025_28_404	1	0.028	1.015	0.090	0.063	2.61	0.0790	0.401	1.511	-0.580	0.105	-0.00700	0.00200	0.14	0.315	4.686
					10/15/2013 10:26	0917-173_Nc	13_10_15_1026_29_214	1	0.549	1.074	-0.042	0.057	2.45	0.0770	0.342	1.506	-0.480	0.097	-0.00300	0.00300	-0.509	0.303	4.484
					10/15/2013 10:27	0917-173_Nc	13_10_15_1027_30_044	1	0.137	0.949	0.059	0.056	2.35	0.0730	0.369	1.499	-0.600	0.096	-0.00200	0.00200	-0.57	0.278	4.347
					10/15/2013 10:28	0917-173_Nc	13_10_15_1028_30_805	1	-0.0030	1.015	0.1200	0.061	2.42	0.0760	0.368	1.494	-0.590	0.099	-0.00200	0.00200	-0.243	0.322	4.387
					10/15/2013 10:29	0917-173_Nc	13_10_15_1029_31_375	1	-0.049	1.034	0.1250	0.059	2.49	0.0770	0.386	1.504	-0.631	0.101	-0.00700	0.00200	-0.665	0.309	4.725
					10/15/2013 10:30	0917-173_Nc	13_10_15_1030_32_205	1	-1.018	1.012	0.108	0.064	2.60	0.0750	0.413	1.506	-0.595	0.106	-0.00300	0.00300	-0.68	0.322	4.806
					10/15/2013 10:31	0917-173_Nc	13_10_15_1031_32_965	1	-1.335	0.953	0.110	0.059	2.66	0.0770	0.252	1.507	-0.622	0.101	-0.00300	0.00300	-0.31	0.309	4.904
					10/15/2013 10:32	0917-173_Nc	13_10_15_1032_33_755	1	0.609	0.956	0.0750	0.055	2.74	0.0770	0.310	1.508	-0.619	0.097	-0.00800	0.00200	-0.51	0.292	5.074
					10/15/2013 10:33	0917-173_Nc	13_10_15_1033_34_495	1	0.146	0.965	0.038	0.064	2.87	0.0800	0.411	1.521	-0.589	0.107	-0.00100	0.00300	-0.41	0.310	5.425
					10/15/2013 10:34	0917-173_Nc	13_10_15_1034_35_205	1	-1.435	1.005	-0.0650	0.062	2.97	0.0810	0.246	1.527	-0.671	0.105	-0.00200	0.00300	-0.07	0.308	5.671
					10/15/2013 10:35	0917-173_Nc	13_10_15_1035_35_975	1	0.272	0.956	-0.042	0.063	2.97	0.0800	0.365	1.537	-0.720	0.105	-0.00400	0.00200	0.19	0.299	5.514
					10/15/2013 10:36	0917-173_Nc	13_10_15_1036_36_815	1	0.041	0.982	0.0520	0.057	2.99	0.0810	0.310	1.533	-0.7550	0.101	-0.00400	0.00200	0.14	0.299	5.537
					10/15/2013 10:37	0917-173_Nc	13_10_15_1037_37_575	1	1.15600	1.055	0.012	0.059	2.75	0.0790	0.385	1.526	-0.469	0.102	-0.00200	0.00300	-0.71	0.313	4.962
					10/15/2013 10:38	0917-173_Nc	13_10_15_1038_38_255	1	0.394	1.004	0.0330	0.060	2.80	0.0780	0.483	1.525	-0.705	0.101	-0.00400	0.00200	-0.61	0.313	5.11
					10/15/2013 10:39	0917-173_Nc	13_10_15_1039_39_115	1	-0.7650	1.021	0.037	0.058	2.92	0.0820	0.461	1.530	-0.760	0.104	0.00000	0.00300	-0.31	0.308	5.451
					10/15/2013 10:40	0917-173_Nc	13_10_15_1040_39_786	1	0.409	1.060	0.082	0.059	2.87	0.0780	0.370	1.531	-0.700	0.104	-0.00600	0.00200	-0.75	0.318	5.44
					10/15/2013 10:41	0917-173_Nc	13_10_15_1041_40_576	1	0.524	1.007	-0.046	0.062	2.59	0.0790	0.414	1.524	-0.617	0.105	-0.00400	0.00200	-0.09	0.322	4.924
					10/15/2013 10:42	0917-173_Nc	13_10_15_1042_41_326	1	0.6670	1.053	0.030	0.060	2.49	0.0740	0.361	1.523	-0.584	0.102	0.00000	0.00300	-0.45	0.310	4.77
					10/15/2013 10:43	0917-173_Nc	13_10_15_1043_42_126	1	0.3890	0.950	0.070	0.062	2.43	0.0740	0.500	1.515	-0.6730	0.101	-0.00200	0.00200	-0.31	0.320	4.479
					10/15/2013 10:44	0917-173_Nc	13_10_15_1044_42_866	1	1.100	0.957	0.0540	0.058	2.29	0.0720	0.447	1.508	-0.564	0.097	-0.00400	0.00200	-0.799	0.291	4.039
					10/15/2013 10:45	0917-173_Nc	13_10_15_1045_43_686	1	-2.732	0.961	0.016	0.058	2.36	0.0770	0.456	1.514	-0.659	0.099	-0.00200	0.00200	-0.516	0.299	4.379
					10/15/2013 10:46	0917-173_Nc	13_10_15_1046_44_456	1	-0.120	0.935	0.055	0.061	2.32	0.0740	0.509	1.486	-0.501	0.101	-0.00400	0.00200	-0.531	0.315	4.311
					10/15/2013 10:47	0917-173_Nc	13_10_15_1047_45_156	1	0.423	0.999	0.01	0.058	2.21	0.0710	0.540	1.490	-0.563	0.098	-0.00500	0.00200	-0.60	0.303	4.014
					10/15/2013 10:48	0917-173_Nc	13_10_15_1048_45_966	1	0.639	0.982	-0.011	0.059	2.11	0.0710	0.443	1.478	-0.598	0.100	-0.00500	0.00200	-0.61	0.305	4.303
					10/15/2013 10:49	0917-173_Nc	13_10_15_1049_46_776	1	-0.018	0.940	0.044	0.055	2.02	0.0710	0.6770	1.487	-0.588	0.096	-0.00100	0.00200	-0.57	0.288	4.584
					10/15/2013 10:50	0917-173_Nc	13_10_15_1050_47_546	1	-1.2660	0.909	-0.0090	0.056	2.06	0.0740	0.317	1.474	-0.666	0.096	-0.00600	0.00200	-0.49	0.290	4.926
					10/15/2013 10:51	0917-173_Nc	13_10_15_1051_48_286	1	-0.330	0.959	0.077	0.060	2.08	0.0700	0.460	1.491	-0.704	0.102	-0.00500	0.00200	-0.26	0.300	5.35
					10/15/2013 10:52	0917-173_Nc	13_10_15_1052_49_107	1	0.315	1.072	0.125	0.057	1.78	0.0690	0.501	1.477	-0.622	0.101	-0.00300	0.00300	-0.42	0.313	5.239
					10/15/2013 10:53	0917-173_Nc	13_10_15_1053_49_787	1	1.035	0.956	-0.025	0.057	1.83	0.0710	0.429	1.471	-0.691	0.098	-0.00600	0.00200	-0.44	0.290	5.717
					10/15/2013 10:54	0917-173_Nc	13_10_15_1054_50_637	1	-1.921	0.987	-0.022	0.059	2.08	0.0730	0.512	1.491	-0.783	0.103	-0.00300	0.00200	-0.13	0.306	6.669
					10/15/2013 10:55	0917-173_Nc	13_10_15_1055_51_347	1	0.599	1.088	-0.0200	0.059	2.16	0.0760	0.469	1.498	-0.990	0.110	-0.00300	0.00200	-0.33	0.324	7.476
					10/15/2013 10:56	0917-173_Nc	13_10_15_1056_52_137	1	1.400	0.998	0.059	0.063	2.04	0.0720	0.458	1.506	-0.857	0.106	-0.00500	0.00300	-0.66	0.315	6.901
					10/15/2013 10:57	0917-173_Nc	13_10_15_1057_52_947	1	0.7810	1.046	0.0420	0.062	2.00	0.0750	0.489	1.500	-0.965	0.110	-0.00500	0.00200	0.17	0.332	7.374
					10/15/2013 10:58	0917-173_Nc	13_10_15_1058_53_697	1	-1.417	1.037	0.0760	0.060	2.21	0.0730	0.447	1.508	-0.930	0.108	-0.00800	0.00200	-0.38	0.311	7.608
					10/15/2013 10:59	0917-173_Nc	13_10_15_1059_54_417	1	0.3250	0.951	0.030	0.059	2.14	0.0720	0.524	1.514	-0.812	0.104	-0.00500	0.00200	-0.39	0.308	7.353
					10/15/2013 11:00	0917-173_Nc	13_10_15_1100_55_187	1	0.651	0.990	-0.135	0.056	2.33	0.0760	0.464	1.526	-1.0110	0.101	-0.00400	0.00300	-0.24	0.302	7.03
					10/15/2013 11:01	0917-173_Nc	13_10_15_1101_55_987	1	0.742	0.958	-0.0190	0.0560	2.38	0.0750	0.520	1.524	-0.837	0.101	-0.00200	0.00300	-0.47	0.284	6.858
					10/15/2013 11:02	0917-173_Nc	13_10_15_1102_56_697	1	-1.0730	0.993	-0.0460	0.060	2.30	0.0710	0.545	1.518	-0.701	0.104	0.00200	0.00300	-0.79	0.310	5.992
					10/15/2013 11:03	0917-173_Nc	13_10_15_1103_57_478	1	-1.099	0.988	0.047	0.062	2.51	0.0730	0.524	1.523	-0.862	0.106	-0.00200	0.00200	-0.56	0.306	6.371
					10/15/2013 11:04	0917-173_Nc	13_10_15_1104_58_198	1	2.414	0.995	-0.044	0.062	2.64	0.0770	0.348	1.536	-0.8330	0.109	-0.00400	0.00200	0.13	0.309	6.439
					10/15/2013 11:05	0917-173_Nc	13_10_15_1105_59_018	1	0.475	1.065	0.0130	0.060	2.36	0.0760	0.353	1.529	-0.894	0.108	-0.00200	0.00200	-0.32	0.318	5.944
					10/15/2013 11:06	0917-173_Nc	13_10_15_1106_59_828	1	-0.52900	0.950	-0.0200	0.057	2.16	0.0740	0.524	1.513	-0.662	0.095	-0.00400	0.00200	-0.20	0.293	4.866
					10/15/2013 11:08	0917-173_Nc	13_10_15_1108_00_548	1	1.868	1.024	-0.0080	0.057	2.03	0.0710	0.505	1.503	-0.579	0.099	-0.00400	0.00200	-0.62	0.303	4.645
					10/15/2013 11:09	0917-173_Nc	13_10_15_1109_01_358	1	-0.341	1.017	0.0120	0.055	1.97	0.0710	0.451	1.488	-0.639	0.096	-0.00400	0.00200	-0.61	0.300	4.22
					10/15/2013 11:10	0917-173_Nc	13_10_15_1110_02_068	1	-0.844	1.066	0.0240	0.061	1.91	0.0710	0.546	1.498	-0.500	0.101	-0.00500	0.00200	-0.611	0.317	4.021
					10/15/2013 11:11	0917-173_Nc	13_10_15_1111_02_698	1	-0.057	1.020	0.053	0.057	2.18	0.0700	0.569	1.494	-0.470	0.099	-0.00500	0.00200	-0.56	0.302	4.581
					10/15/2013 11:12	0917-173_Nc	13_10_15_1112_03_558	1	-1.053	0.984	0.130	0.060	2.19	0.0720	0.452	1.495	-0.587	0.099	-0.00300	0.00300	-0.19	0.305	4.661
					10/15/2013 11:13	0917-173_Nc	13_10_15_1113_04_308	1	-0.531	1.028	0.056	0.058	2.10	0.0710	0.439	1.495	-0.494	0.100	-0.00100	0.00200	-0.56	0.320	4.363
					10/15/2013 11:14	0917-173_Nc	13_10_15_1114_05_028	1	0.309	0.984	0.054	0.061	2.17	0.0690	0.368	1.488	-0.645	0.102	-0.00200	0.00200	-0.463	0.318	4.258
					10/15/2013 11:15	0917-173_Nc	13_10_15_1115_05_778	1	-0.8580	1.030	0.005	0.057	2.17	0.0720	0.582	1.488	-0.690	0.098	-0.00400	0.00300	-0.10	0.306	4.144
					10/15/2013 11:16	0917-173_Nc	13_10_15_1116_06_589	1	-0.06700	1.013	0.011	0.058	2.31	0.0720	0.625	1.506	-0.666	0.099	-0.00100	0.00300	-0.42	0.302	4.471
					10/15/2013 11:17	0917-173_Nc	13_10_15_1117_07_339	1	-1.113	0.957	-0.0300	0.059	2.46	0.0760	0.569	1.523	-0.546	0.100	-0.00400	0.00300	-0.840	0.303	4.883
					10/15/2013 11:18	0917-173_Nc	13_10_15_1118_08_079	1	0.650	0.947	0.086	0.062	2.50	0.0750	0.506	1.522	-0.524	0.101	-0.00400	0.00200	-0.66	0.317	5.161
					10/15/2013 11:19	0917-173_Nc	13_10_15_1119_08_799	1	1.217	0.931	0.0780	0.061	2.35	0.0750	0.445	1.510	-0.725	0.100	-0.00400	0.00200	0.06	0.311	4.567
					10/15/2013 11:20	0917-173_Nc	13_10_15_1120_09_639	1	-2.4340	0.989	0.0060	0.059	2.21	0.0750	0.561	1.520	-0.513	0.101	-0.00800	0.00200	-0.74	0.301	4.443
					10/15/2013 11:21	0917-173_Nc	13_10_15_1121_10_369	1	1.062	0.918	0.057	0.058	2.26	0.0720	0.516	1.511	-0.626	0.097	-0.00400	0.00200	-1.113	0.293	4.408
			Stop		10/15/2013 11:22	0917-173_Nc	13_10_15_1122_11_139	1	-0.071	0.998	-0.002	0.0550	1.48	0.0570	0.4280	1.165	-0.723	0.095	-0.00500	0.00200	-0.55	0.305	3.798
					10/15/2013 11:23	0917-173_Nc	13_10_15_1123_11_899	1	-0.106	0.835	-0.068	0.056	0.135	0.0300	0.0210	0.184	-1.219	0.091	0.00000	0.00200	-0.890	0.269	3.615
					10/15/2013 11:24	0917-173_Nc	13_10_15_1124_12_709	1	-0.9080	0.898	-0.0700	0.057	0.0200	0.0320	-0.081	0.0890	-1.320	0.095	0.00300	0.00200	-0.365	0.279	3.539
					10/15/2013 11:25	0917-173_Nc	13_10_15_1125_13_419	1	-1.829	0.873	-0.079	0.054	0.081	0.0300	-0.0170	0.0740	-1.175	0.091	-0.00200	0.00200	-0.684	0.269	3.5
					10/15/2013 11:26	0917-173_Nc	13_10_15_1126_14_229	1	-1.525	0.848	-0.0610	0.058	0.0530	0.0320	-0.0790	0.0700	-1.232	0.093	0.00	0.00200	-0.359	0.280	3.516
					10/15/2013 11:27	0917-173_Nc	13_10_15_1127_15_039	1	1.159	0.832	0.079	0.054	0.1030	0.0360	0.2520	0.488	-0.874	0.087	-0.00200	0.00200	-0.424	0.273	3.168
					10/15/2013 11:28	0917-173_Nc	13_10_15_1128_15_740	1	0.3150	1.056	0.0750	0.052	0.1340	0.0520	0.4490	1.151	-0.389	0.090	-0.00100	0.00200	-0.289	0.303	2.144
					10/15/2013 11:29	0917-173_Nc	13_10_15_1129_16_560	1	-0.6200	0.966	0.0510	0.057	0.189	0.0540	0.381	1.231	-0.266	0.096	0.00000	0.00200	-0.57	0.294	4.621
					10/15/2013 11:30	0917-173_Nc	13_10_15_1130_17_280	1	-0.173	0.929	0.196	0.058	0.526	0.0570	0.557	1.262	-0.61	0.113	0.00000	0.00200	-0.69	0.288	10.783
					10/15/2013 11:31	0917-173_Nc	13_10_15_1131_18_090	1	-0.683	0.966	0.493	0.081	1.74	0.070	0.296	1.433	-1.65	0.252	-0.0040	0.00200	-1.10	0.312	37.329
					10/15/2013 11:32	0917-173_Nc	13_10_15_1132_18_840	1	2.97700	0.917	0.101	0.0580	0.332	0.0540	0.292	1.217	-0.50	0.103	-0.00400	0.00200	-1.11	0.289	7.734
					10/15/2013 11:33	0917-173_Nc	13_10_15_1133_19_640	1	0.785	0.890	0.149	0.056	0.0910	0.0510	0.5680	1.159	-0.099	0.089	-0.00400	0.00200	-0.861	0.290	1.418
					10/15/2013 11:34	0917-173_Nc	13_10_15_1134_20_440	1	0.3940	0.936	0.036	0.059	1.62	0.0670	0.379	1.386	-0.459	0.096	-0.00600	0.00200	-0.68	0.302	3.391
					10/15/2013 11:35	0917-173_Nc	13_10_15_1135_21_150	1	0.0130	1.035	0.151	0.058	2.40	0.0730	0.526	1.500	-0.547	0.100	-0.00500	0.00200	-0.34	0.323	4.481
					10/15/2013 11:36	0917-173_Nc	13_10_15_1136_21_900	1	1.4630	0.988	0.0270	0.062	2.53	0.0720	0.514	1.502	-0.703	0.105	-0.00600	0.00200	-0.60	0.319	4.943
					10/15/2013 11:37	0917-173_Nc	13_10_15_1137_22_650	1	-0.426	1.073	0.0450	0.0570	2.45	0.0730	0.396	1.503	-0.643	0.101	-0.00400	0.00200	-0.32	0.310	4.58
					10/15/2013 11:38	0917-173_Nc	13_10_15_1138_23_470	1	1.853	0.959	0.0070	0.062	2.41	0.0730	0.381	1.506	-0.507	0.101	-0.00500	0.00200	-0.26	0.310	4.364
					10/15/2013 11:39	0917-173_Nc	13_10_15_1139_24_240	1	0.3110	0.945	0.122	0.062	2.43	0.0730	0.455	1.501	-0.616	0.103	-0.00200	0.00300	-0.69	0.312	4.616
Data	Run	6	Start	A	10/15/2013 11:40	0917-173_Nc	13_10_15_1140_25_001	1	-0.607	1.057	0.061	0.058	2.45	0.0730	0.405	1.510	-0.521	0.101	-0.00400	0.00200	-1.22	0.311	4.846
					10/15/2013 11:41	0917-173_Nc	13_10_15_1141_25_741	1	-2.199	1.015	0.057	0.062	2.42	0.0740	0.491	1.498	-0.571	0.104	-0.00400	0.00200	-0.43	0.326	4.731
					10/15/2013 11:42	0917-173_Nc	13_10_15_1142_26_581	1	0.945	0.958	0.080	0.057	2.50	0.0740	0.540	1.506	-0.751	0.098	-0.00700	0.00200	-0.26	0.298	5.03
					10/15/2013 11:43	0917-173_Nc	13_10_15_1143_27_311	1	-0.718	0.997	-0.041	0.058	2.62	0.0740	0.418	1.512	-0.605	0.100	-0.00100	0.00200	-0.74	0.312	5.338
					10/15/2013 11:44	0917-173_Nc	13_10_15_1144_28_151	1	0.348	1.001	0.057	0.062	2.48	0.0740	0.6650	1.519	-0.656	0.104	-0.00600	0.00200	-0.48	0.312	5.013
					10/15/2013 11:45	0917-173_Nc	13_10_15_1145_28_901	1	0.140	0.999	0.098	0.061	2.63	0.0730	0.432	1.500	-0.653	0.102	-0.00400	0.00200	-0.840	0.310	5.502
					10/15/2013 11:46	0917-173_Nc	13_10_15_1146_29_691	1	-0.315	1.003	-0.0600	0.061	2.58	0.0750	0.443	1.515	-0.797	0.106	-0.00100	0.00200	-0.42	0.307	6.513
					10/15/2013 11:47	0917-173_Nc	13_10_15_1147_30_411	1	0.375	0.977	0.008	0.059	2.35	0.0730	0.560	1.511	-0.730	0.103	-0.00500	0.00200	-0.89	0.299	6.141
					10/15/2013 11:48	0917-173_Nc	13_10_15_1148_31_121	1	-0.356	0.992	0.158	0.064	2.45	0.0710	0.566	1.525	-0.722	0.109	-0.00900	0.00200	-0.58	0.323	6.869
					10/15/2013 11:49	0917-173_Nc	13_10_15_1149_31_961	1	0.556	1.041	0.067	0.061	2.43	0.0720	0.570	1.512	-0.887	0.109	-0.00200	0.00200	-0.32	0.320	6.592
					10/15/2013 11:50	0917-173_Nc	13_10_15_1150_32_751	1	-2.1350	0.985	0.118	0.061	2.35	0.0720	0.517	1.506	-0.735	0.106	-0.00300	0.00200	-1.00	0.313	6.254
					10/15/2013 11:51	0917-173_Nc	13_10_15_1151_33_422	1	0.259	1.078	-0.0700	0.059	2.37	0.0740	0.506	1.500	-0.850	0.107	-0.00300	0.00200	-0.37	0.317	6.892
					10/15/2013 11:52	0917-173_Nc	13_10_15_1152_34_122	1	1.430	0.973	0.001	0.060	2.67	0.0720	0.316	1.526	-0.860	0.108	-0.01100	0.00200	-0.63	0.303	7.082
					10/15/2013 11:53	0917-173_Nc	13_10_15_1153_34_872	1	2.111	1.040	0.062	0.062	2.71	0.0740	0.577	1.521	-0.711	0.110	-0.00500	0.00200	-1.08	0.307	6.84
					10/15/2013 11:54	0917-173_Nc	13_10_15_1154_35_682	1	0.4150	1.047	0.0020	0.061	2.62	0.0770	0.505	1.529	-0.856	0.108	-0.00200	0.00200	-0.39	0.317	6.989
					10/15/2013 11:55	0917-173_Nc	13_10_15_1155_36_432	1	0.0500	0.949	0.073	0.057	2.71	0.0740	0.546	1.524	-0.8170	0.105	-0.00300	0.00300	0.13	0.304	7.705
					10/15/2013 11:56	0917-173_Nc	13_10_15_1156_37_172	1	1.393	0.992	0.0590	0.062	2.58	0.0750	0.559	1.526	-0.784	0.109	-0.00100	0.00200	-0.30	0.306	7.566
					10/15/2013 11:57	0917-173_Nc	13_10_15_1157_37_932	1	-0.485	0.978	0.0510	0.062	2.69	0.0760	0.580	1.532	-0.866	0.110	-0.00300	0.00200	-0.36	0.318	8.044
					10/15/2013 11:58	0917-173_Nc	13_10_15_1158_38_682	1	-1.560	0.993	0.0250	0.062	2.91	0.0760	0.5950	1.537	-0.9840	0.114	-0.00400	0.00200	-0.37	0.304	9.08
					10/15/2013 11:59	0917-173_Nc	13_10_15_1159_39_342	1	0.468	1.029	-0.055	0.063	2.80	0.0760	0.596	1.546	-0.816	0.116	-0.00500	0.00300	-0.29	0.316	9.078
					10/15/2013 12:00	0917-173_Nc	13_10_15_1200_40_092	1	-1.166	0.994	0.0810	0.056	2.42	0.0740	0.529	1.529	-0.695	0.101	0.00	0.00300	-0.46	0.299	7.171
					10/15/2013 12:01	0917-173_Nc	13_10_15_1201_40_852	1	1.573	0.995	0.039	0.058	2.55	0.0760	0.550	1.531	-0.901	0.103	-0.00600	0.00300	-0.20	0.299	7.28
					10/15/2013 12:02	0917-173_Nc	13_10_15_1202_41_642	1	0.388	0.981	-0.0330	0.061	2.62	0.0730	0.516	1.518	-0.824	0.105	-0.00400	0.00300	-0.34	0.300	7.75
					10/15/2013 12:03	0917-173_Nc	13_10_15_1203_42_383	1	1.531	0.941	0.073	0.0590	2.62	0.0750	0.437	1.516	-0.741	0.104	-0.00600	0.00200	-0.38	0.297	7.537
					10/15/2013 12:04	0917-173_Nc	13_10_15_1204_43_183	1	0.24800	0.991	0.049	0.060	2.68	0.0760	0.458	1.521	-0.852	0.11	-0.00400	0.00300	-0.73	0.318	7.171
					10/15/2013 12:05	0917-173_Nc	13_10_15_1205_43_893	1	0.949	0.980	0.142	0.060	2.46	0.0750	0.492	1.521	-0.636	0.11	-0.00600	0.00200	-0.88	0.312	6.363
					10/15/2013 12:06	0917-173_Nc	13_10_15_1206_44_713	1	0.30700	0.941	0.059	0.056	2.45	0.0720	0.489	1.509	-0.767	0.10	-0.00400	0.00200	-0.14	0.286	6.014
					10/15/2013 12:07	0917-173_Nc	13_10_15_1207_45_493	1	1.120	0.909	0.042	0.0540	2.55	0.0730	0.619	1.518	-0.764	0.10	-0.00100	0.00200	-0.82	0.280	6.505
					10/15/2013 12:08	0917-173_Nc	13_10_15_1208_46_233	1	-0.8840	0.946	0.104	0.058	2.67	0.0720	0.471	1.522	-0.836	0.10	-0.00400	0.00200	-0.21	0.302	6.618
					10/15/2013 12:09	0917-173_Nc	13_10_15_1209_46_983	1	-0.134	0.958	-0.0280	0.054	2.43	0.0730	0.653	1.512	-0.828	0.10	-0.00300	0.00200	-0.88	0.293	5.847
					10/15/2013 12:10	0917-173_Nc	13_10_15_1210_47_703	1	-0.0630	0.944	0.035	0.056	2.46	0.0700	0.555	1.508	-0.636	0.10	-0.00100	0.00200	-0.57	0.298	5.478
					10/15/2013 12:11	0917-173_Nc	13_10_15_1211_48_473	1	1.451	0.909	0.0190	0.0530	2.48	0.0730	0.584	1.512	-0.660	0.10	-0.00100	0.00200	-0.65	0.274	6.147
					10/15/2013 12:12	0917-173_Nc	13_10_15_1212_49_233	1	-1.856	0.911	0.0500	0.056	2.41	0.0700	0.468	1.518	-0.643	0.10	0.00000	0.00200	-0.49	0.301	5.805
					10/15/2013 12:13	0917-173_Nc	13_10_15_1213_50_073	1	1.155	1.003	0.054	0.056	2.57	0.0720	0.529	1.522	-0.911	0.10	-0.00400	0.00300	0.26	0.294	5.97
					10/15/2013 12:14	0917-173_Nc	13_10_15_1214_50_783	1	-0.7750	0.983	0.054	0.055	2.61	0.0730	0.612	1.518	-0.825	0.10	0.00	0.00200	-0.65	0.294	6.348
					10/15/2013 12:15	0917-173_Nc	13_10_15_1215_51_544	1	1.332	0.971	0.069	0.054	2.50	0.0700	0.553	1.523	-0.660	0.10	-0.00400	0.00200	-0.83	0.297	6.057
					10/15/2013 12:16	0917-173_Nc	13_10_15_1216_52_314	1	-0.624	0.913	-0.0080	0.057	2.55	0.0720	0.526	1.510	-0.747	0.10	-0.00300	0.00200	-0.59	0.285	6.649
					10/15/2013 12:17	0917-173_Nc	13_10_15_1217_53_134	1	0.038	0.954	0.066	0.059	2.56	0.0720	0.519	1.517	-0.917	0.11	-0.00400	0.00200	-0.09	0.300	7.419
					10/15/2013 12:18	0917-173_Nc	13_10_15_1218_53_834	1	0.1640	0.967	0.092	0.0560	2.57	0.0720	0.452	1.522	-0.885	0.10	-0.00600	0.00200	-0.45	0.290	7.62
					10/15/2013 12:19	0917-173_Nc	13_10_15_1219_54_644	1	-2.531	0.916	0.064	0.057	2.51	0.0720	0.592	1.526	-0.887	0.10	-0.00300	0.00200	-0.46	0.293	7.658
					10/15/2013 12:20	0917-173_Nc	13_10_15_1220_55_414	1	-0.7100	0.926	-0.0690	0.058	2.57	0.0740	0.559	1.530	-0.908	0.11	-0.00400	0.00200	-0.22	0.292	8.356
					10/15/2013 12:21	0917-173_Nc	13_10_15_1221_56_164	1	-0.2660	1.022	0.034	0.061	2.35	0.0740	0.534	1.521	-0.885	0.11	-0.00100	0.00200	-0.67	0.307	7.387
					10/15/2013 12:22	0917-173_Nc	13_10_15_1222_56_874	1	0.9230	0.919	0.031	0.057	2.28	0.0730	0.517	1.523	-0.862	0.10	-0.00400	0.00200	-0.52	0.291	7.305
					10/15/2013 12:23	0917-173_Nc	13_10_15_1223_57_684	1	-0.9270	0.912	0.083	0.058	2.53	0.0740	0.463	1.523	-0.929	0.11	-0.00400	0.00200	-0.40	0.281	8.362
					10/15/2013 12:24	0917-173_Nc	13_10_15_1224_58_414	1	1.987	0.973	-0.04600	0.059	2.69	0.0770	0.629	1.535	-0.891	0.11	-0.00400	0.00200	-0.41	0.307	8.726
					10/15/2013 12:25	0917-173_Nc	13_10_15_1225_59_224	1	-0.604	0.894	0.008	0.060	2.59	0.0770	0.485	1.534	-0.921	0.11	-0.00300	0.00300	-0.81	0.287	8.273
					10/15/2013 12:27	0917-173_Nc	13_10_15_1227_00_014	1	0.529	1.046	0.0010	0.059	2.56	0.0760	0.528	1.551	-1.015	0.11	-0.00400	0.00200	-0.05	0.311	8.692
					10/15/2013 12:29	0917-173_Nc	13_10_15_1229_11_590	1	-0.611	1.007	0.0310	0.058	2.67	0.0770	0.563	1.550	-0.988	0.11	-0.00300	0.00200	-0.54	0.298	9.167
					10/15/2013 12:30	0917-173_Nc	13_10_15_1230_12_390	1	-1.4660	0.947	0.065	0.065	2.67	0.0780	0.618	1.545	-0.927	0.11	-0.00400	0.00200	-0.94	0.305	9.004
					10/15/2013 12:31	0917-173_Nc	13_10_15_1231_13_200	1	0.036	0.980	-0.07300	0.060	2.65	0.0770	0.430	1.547	-1.010	0.11	-0.00500	0.00200	-0.40	0.302	8.934
					10/15/2013 12:32	0917-173_Nc	13_10_15_1232_13_940	1	-0.583	0.936	0.024	0.061	2.54	0.0750	0.433	1.543	-1.073	0.11	-0.00800	0.00200	-0.40	0.301	9.242
					10/15/2013 12:33	0917-173_Nc	13_10_15_1233_14_750	1	2.8570	1.096	-0.0060	0.060	2.59	0.0760	0.448	1.532	-1.017	0.12	-0.00300	0.00300	-0.41	0.324	9.503
					10/15/2013 12:34	0917-173_Nc	13_10_15_1234_15_450	1	-0.323	0.917	0.071	0.062	2.58	0.0790	0.487	1.542	-0.900	0.11	-0.00500	0.00300	-0.54	0.299	9.56
					10/15/2013 12:35	0917-173_Nc	13_10_15_1235_16_170	1	0.469	1.060	-0.076	0.061	2.67	0.0770	0.543	1.564	-1.244	0.12	-0.00600	0.00200	-0.03	0.309	10.388
					10/15/2013 12:36	0917-173_Nc	13_10_15_1236_16_880	1	0.2800	1.009	0.024	0.061	2.65	0.0790	0.513	1.560	-1.007	0.117	-0.00500	0.00300	-0.18	0.307	10.112
					10/15/2013 12:37	0917-173_Nc	13_10_15_1237_17_630	1	0.897	0.923	0.030	0.062	2.61	0.0770	0.535	1.562	-0.953	0.116	-0.00200	0.00300	-0.60	0.305	10.445
					10/15/2013 12:38	0917-173_Nc	13_10_15_1238_18_480	1	0.5610	0.988	0.066	0.060	2.64	0.0780	0.529	1.550	-1.024	0.114	-0.00500	0.00300	-0.41	0.311	10.171
					10/15/2013 12:39	0917-173_Nc	13_10_15_1239_19_230	1	0.380	1.015	-0.0580	0.061	2.54	0.0780	0.483	1.562	-0.978	0.115	-0.00500	0.00300	-0.45	0.311	9.885
			Stop		10/15/2013 12:40	0917-173_Nc	13_10_15_1240_19_910	1	0.791	1.008	0.0630	0.063	2.56	0.0790	0.444	1.563	-0.939	0.120	-0.00500	0.00200	-0.73	0.319	9.611
					10/15/2013 12:41	0917-173_Nc	13_10_15_1241_20_701	1	-0.055	1.035	0.046	0.060	2.13	0.0690	0.583	1.493	-0.722	0.108	-0.00100	0.00200	-0.59	0.318	7.953
					10/15/2013 12:48	0917-173_Nc	13_10_15_1248_06_391	1	0.49	0.996	0.1300	0.121	3.03	0.082	0.296	1.497	-2.22	0.442	-0.0020	0.00300	-1.7	0.35	67.995
					10/15/2013 12:49	0917-173_Nc	13_10_15_1249_07_101	1	-0.496	1.055	0.1170	0.129	3.30	0.087	0.323	1.499	-2.30	0.501	-0.0030	0.00400	-2.4	0.37	78.57
					10/15/2013 12:50	0917-173_Nc	13_10_15_1250_07_921	1	-1.94	1.000	0.179	0.134	3.29	0.089	0.094	1.498	-2.24	0.514	-0.0030	0.00400	-2.5	0.37	79.898
					10/15/2013 12:51	0917-173_Nc	13_10_15_1251_08_741	1	-1.35	1.052	0.121	0.134	3.29	0.088	0.245	1.465	-2.48	0.516	-0.0020	0.00300	-2.3	0.37	80.376
					10/15/2013 12:52	0917-173_Nc	13_10_15_1252_09_461	1	-0.41	1.058	0.026	0.135	3.26	0.089	0.313	1.468	-2.33	0.511	-0.0020	0.00400	-2.4	0.38	79.652
					10/15/2013 12:53	0917-173_Nc	13_10_15_1253_10_282	1	1.528	0.979	0.017	0.097	2.07	0.075	0.180	1.408	-1.57	0.341	-0.0030	0.00300	-1.9	0.324	47.102

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 12:54	0917-173_Nc	13_10_15_1254_11_012	1	-1.242	0.917	0.063	0.058	0.211	0.0550	0.4440	1.189	-0.294	0.096	-0.00100	0.00200	-0.40	0.294	4.471
					10/15/2013 12:55	0917-173_Nc	13_10_15_1255_11_762	1	0.888	0.951	0.079	0.055	0.0800	0.0530	0.4310	1.155	-0.108	0.090	-0.00700	0.00300	-0.6300	0.295	1.747
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_08_205	1	0.9	1.2	-0.331	0.077	-0.37	1.38	-0.0820	0.0940	-0.102	0.121	0.058	0.557	0.1190	0.392	-1.736
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_26_705	1	-1.1	1.3	0.01500	0.075	-0.32	1.42	0.102	0.0960	0.097	0.122	0.051	0.569	-0.342	0.395	-1.775
					10/15/2013 13:11	0917-173_Nc	13_10_15_1311_45_395	1	-1.0	1.4	-0.122	0.077	-0.39	1.44	-0.164	0.0920	-0.009	0.128	0.066	0.577	0.17	0.427	-1.787
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_03_885	1	0.1	1.3	-0.267	0.073	-0.40	1.45	-0.0820	0.0900	0.047	0.120	0.047	0.581	-0.350	0.399	-1.819
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_22_355	1	-1.1	1.3	-0.180	0.075	-0.38	1.46	-0.2260	0.0950	-0.163	0.122	0.048	0.581	0.71	0.407	-1.832
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_41_005	1	0.7	1.3	-0.0760	0.073	-0.37	1.46	-0.0900	0.0980	-0.1420	0.119	0.064	0.581	0.133	0.394	-1.835
					10/15/2013 13:12	0917-173_Nc	13_10_15_1312_59_495	1	1.4	1.3	-0.0310	0.073	-0.39	1.46	-0.0920	0.0880	-0.033	0.120	0.053	0.583	-0.4560	0.402	-1.812
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_17_965	1	1.9	1.3	0.033	0.072	-0.43	1.46	-0.0780	0.0970	-0.044	0.119	0.059	0.580	-0.468	0.396	-1.84
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_36_575	1	-2.6	1.2	-0.146	0.078	-0.41	1.46	-0.1230	0.0920	0.005	0.121	0.055	0.583	0.2330	0.389	-1.844
					10/15/2013 13:13	0917-173_Nc	13_10_15_1313_55_075	1	3.5	1.3	0.1230	0.077	-0.44	1.46	0.130	0.0910	0.156	0.122	0.064	0.578	-1.485	0.403	-1.841
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_13_675	1	3.0	1.4	0.028	0.071	-0.42	1.46	-0.0260	0.1040	-0.17500	0.121	0.067	0.581	-0.049	0.399	-1.834
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_32_115	1	-0.9	1.3	0.204	0.075	-0.55	1.46	-0.1910	0.0960	-0.029	0.119	0.052	0.580	-0.659	0.398	-1.821
					10/15/2013 13:14	0917-173_Nc	13_10_15_1314_50_625	1	0.9	1.5	-0.0760	0.070	-0.52	1.46	-0.0520	0.1010	-0.264	0.119	0.055	0.580	0.07	0.411	-1.816
					10/15/2013 13:33	0917-173_Nc	13_10_15_1333_17_119	1	-0.064	0.997	-0.024	0.076	0.949	0.0760	0.3690	1.589	-2.308	0.204	-0.00600	0.00300	-0.36	0.326	28.813
					10/15/2013 13:34	0917-173_Nc	13_10_15_1334_17_799	1	1.233	1.055	-0.053	0.073	0.961	0.0780	0.4370	1.587	-2.183	0.196	-0.00500	0.00300	-0.43	0.314	28.857
					10/15/2013 13:35	0917-173_Nc	13_10_15_1335_18_609	1	0.227	1.077	-0.024	0.069	0.933	0.0780	0.4450	1.574	-2.164	0.201	-0.00200	0.00300	-0.74	0.307	28.465
					10/15/2013 13:36	0917-173_Nc	13_10_15_1336_19_359	1	1.667	1.057	0.013	0.072	0.935	0.0790	0.348	1.565	-2.337	0.211	-0.00800	0.00300	-0.56	0.322	30.294
					10/15/2013 13:37	0917-173_Nc	13_10_15_1337_20_129	1	-0.309	1.066	-0.079	0.074	0.887	0.0780	0.370	1.569	-2.409	0.212	-0.00100	0.00300	-0.31	0.318	30.313
					10/15/2013 13:38	0917-173_Nc	13_10_15_1338_20_929	1	-0.064	0.991	-0.299	0.084	0.316	0.0430	0.3000	0.702	-3.257	0.170	0.00	0.00200	-1.27	0.354	16.913
					10/15/2013 13:39	0917-173_Nc	13_10_15_1339_21_689	1	-0.235	0.895	-0.502	0.098	-0.0450	0.0420	-0.057	0.1340	-3.91	0.170	-0.01	0.00200	-1.60	0.381	11.133
					10/15/2013 13:40	0917-173_Nc	13_10_15_1340_22_460	1	0.065	0.884	-0.596	0.094	-0.0750	0.0410	0.0260	0.0940	-3.87	0.167	-0.00700	0.00200	-1.74	0.388	10.833
					10/15/2013 13:41	0917-173_Nc	13_10_15_1341_23_230	1	-0.217	0.918	-0.599	0.103	-0.0690	0.0410	0.0510	0.0880	-3.89	0.174	-0.00400	0.00200	-1.41	0.406	10.757
					10/15/2013 13:42	0917-173_Nc	13_10_15_1342_23_980	1	-0.485	0.883	-0.5460	0.099	-0.0670	0.0400	-0.101	0.0850	-3.94	0.171	-0.00400	0.00200	-0.66	0.392	10.693
					10/15/2013 13:43	0917-173_Nc	13_10_15_1343_24_780	1	0.025	0.886	-0.462	0.095	-0.0240	0.0400	0.0490	0.1110	-3.86	0.164	0.00000	0.00200	-0.84	0.380	11.09
					10/15/2013 13:44	0917-173_Nc	13_10_15_1344_25_530	1	2.064	0.976	-0.115	0.071	0.722	0.0640	0.403	1.384	-2.547	0.186	-0.00800	0.00300	-1.03	0.299	25.821
					10/15/2013 13:45	0917-173_Nc	13_10_15_1345_26_340	1	0.837	1.066	-0.023	0.075	0.887	0.0770	0.5360	1.577	-2.46	0.217	-0.00600	0.00200	-0.34	0.346	31.018
					10/15/2013 13:46	0917-173_Nc	13_10_15_1346_27_110	1	-0.538	1.036	-0.031	0.073	0.844	0.0760	0.4850	1.557	-2.42	0.221	-0.00300	0.00300	-0.62	0.311	32.35
					10/15/2013 13:47	0917-173_Nc	13_10_15_1347_27_820	1	1.306	1.039	0.015	0.072	0.925	0.0760	0.41700	1.564	-2.535	0.220	-0.00300	0.00300	-0.56	0.318	32.746
Data	Run	13	Start	A	10/15/2013 13:48	0917-173_Nc	13_10_15_1348_28_550	1	2.428	1.033	-0.056	0.078	0.907	0.0770	0.4050	1.559	-2.52	0.237	-0.00500	0.00300	-0.90	0.321	34.681
					10/15/2013 13:49	0917-173_Nc	13_10_15_1349_29_260	1	2.097	1.141	-0.058	0.080	0.935	0.0790	0.51500	1.561	-2.855	0.245	-0.00100	0.00200	-0.21	0.353	36.115
					10/15/2013 13:50	0917-173_Nc	13_10_15_1350_30_070	1	1.338	1.039	-0.034	0.077	1.000	0.0790	0.41	1.575	-2.550	0.231	-0.00800	0.00300	-0.32	0.317	34.186
					10/15/2013 13:51	0917-173_Nc	13_10_15_1351_30_870	1	0.810	1.055	0.015	0.078	0.995	0.0780	0.3600	1.566	-2.45	0.231	0.00000	0.00300	-1.19	0.335	33.638
					10/15/2013 13:52	0917-173_Nc	13_10_15_1352_31_591	1	0.177	1.103	0.008	0.079	0.980	0.0780	0.4250	1.566	-2.753	0.241	-0.00400	0.00300	-0.49	0.337	34.66
					10/15/2013 13:53	0917-173_Nc	13_10_15_1353_32_351	1	1.612	1.072	0.021	0.078	0.994	0.0780	0.4880	1.571	-2.872	0.242	-0.00700	0.00300	-0.45	0.332	35.643
					10/15/2013 13:54	0917-173_Nc	13_10_15_1354_33_161	1	0.700	1.103	0.065	0.079	1.020	0.0770	0.3570	1.573	-2.68	0.244	-0.00300	0.00300	-0.85	0.323	35.109
					10/15/2013 13:55	0917-173_Nc	13_10_15_1355_33_891	1	-1.250	1.049	-0.005	0.076	0.984	0.0800	0.35200	1.567	-2.643	0.226	-0.0090	0.00300	-0.20	0.331	33.143
					10/15/2013 13:56	0917-173_Nc	13_10_15_1356_34_631	1	0.616	1.035	-0.064	0.074	1.012	0.0750	0.238	1.563	-2.53	0.226	-0.00800	0.00300	-1.12	0.318	32.496
					10/15/2013 13:57	0917-173_Nc	13_10_15_1357_35_441	1	1.357	0.988	-0.135	0.073	0.954	0.0770	0.4170	1.555	-2.325	0.215	-0.00500	0.00300	-0.52	0.322	31.188
					10/15/2013 13:58	0917-173_Nc	13_10_15_1358_36_181	1	-0.986	1.047	-0.052	0.072	0.896	0.0760	0.4920	1.551	-2.378	0.207	-0.00600	0.00300	-0.23	0.325	30.338
					10/15/2013 13:59	0917-173_Nc	13_10_15_1359_36_931	1	-0.793	1.104	0.052	0.073	0.854	0.0760	0.617	1.564	-2.428	0.216	-0.00400	0.00300	-0.48	0.334	30.043
					10/15/2013 14:00	0917-173_Nc	13_10_15_1400_37_771	1	-1.240	0.968	-0.09000	0.070	0.972	0.0770	0.528	1.552	-2.246	0.204	-0.00300	0.00300	-1.03	0.303	30.051
					10/15/2013 14:01	0917-173_Nc	13_10_15_1401_38_521	1	0.2490	1.157	0.105	0.070	0.933	0.0780	0.5000	1.563	-2.353	0.211	-0.00200	0.00300	-1.15	0.341	30.685
					10/15/2013 14:02	0917-173_Nc	13_10_15_1402_39_241	1	1.880	1.028	-0.035	0.075	1.006	0.0760	0.44800	1.575	-2.38	0.216	-0.00200	0.00300	-0.76	0.328	31.446
					10/15/2013 14:03	0917-173_Nc	13_10_15_1403_40_061	1	0.196	1.097	-0.018	0.069	0.980	0.0780	0.5050	1.560	-2.321	0.214	-0.00400	0.00300	-0.65	0.331	31.17
					10/15/2013 14:04	0917-173_Nc	13_10_15_1404_40_782	1	2.838	1.060	0.044	0.078	0.844	0.0770	0.3940	1.552	-2.411	0.221	-0.00100	0.00300	-0.82	0.337	31.373
					10/15/2013 14:05	0917-173_Nc	13_10_15_1405_41_592	1	0.743	1.093	-0.070	0.074	0.910	0.0770	0.5030	1.552	-2.376	0.221	-0.00900	0.00300	-0.28	0.337	30.988
					10/15/2013 14:06	0917-173_Nc	13_10_15_1406_42_382	1	0.668	1.043	0.093	0.070	0.848	0.0760	0.4820	1.543	-2.37	0.210	-0.00500	0.00300	-0.50	0.322	30.332
					10/15/2013 14:07	0917-173_Nc	13_10_15_1407_43_092	1	0.410	1.087	0.007	0.077	0.904	0.0750	0.3550	1.545	-2.409	0.218	-0.00500	0.00300	-0.13	0.345	31.184
					10/15/2013 14:08	0917-173_Nc	13_10_15_1408_43_852	1	1.767	1.003	-0.047	0.076	0.872	0.0750	0.4480	1.546	-2.26	0.201	-0.00400	0.00300	-0.42	0.316	28.762
					10/15/2013 14:09	0917-173_Nc	13_10_15_1409_44_632	1	3.328	1.067	-0.074	0.075	0.792	0.0760	0.5080	1.553	-2.044	0.199	-0.00100	0.00300	-0.54	0.326	27.892
					10/15/2013 14:10	0917-173_Nc	13_10_15_1410_45_332	1	-0.773	1.072	0.068	0.074	0.916	0.0760	0.3810	1.555	-2.392	0.218	-0.00200	0.00300	-0.23	0.335	31.729
					10/15/2013 14:11	0917-173_Nc	13_10_15_1411_46_132	1	1.052	1.025	-0.0440	0.079	0.993	0.0780	0.46800	1.555	-2.574	0.230	-0.00300	0.00300	-0.67	0.319	33.527
					10/15/2013 14:12	0917-173_Nc	13_10_15_1412_46_872	1	2.646	1.017	-0.030	0.076	1.008	0.0800	0.5310	1.559	-2.65	0.230	-0.00100	0.00300	-0.56	0.323	33.326
					10/15/2013 14:13	0917-173_Nc	13_10_15_1413_47_622	1	-0.827	1.037	-0.0630	0.079	0.950	0.0780	0.337	1.562	-2.828	0.238	-0.00200	0.00200	-0.41	0.323	34.738
					10/15/2013 14:14	0917-173_Nc	13_10_15_1414_48_312	1	1.247	1.090	-0.042	0.077	1.003	0.0810	0.204	1.565	-2.66	0.243	-0.00600	0.00300	-0.68	0.331	35.36
					10/15/2013 14:15	0917-173_Nc	13_10_15_1415_48_983	1	1.033	1.073	-0.030	0.075	0.960	0.0780	0.3960	1.561	-2.582	0.228	-0.00600	0.00300	-0.25	0.326	32.696
					10/15/2013 14:16	0917-173_Nc	13_10_15_1416_49_783	1	-0.361	1.089	-0.001	0.071	0.895	0.0760	0.43500	1.562	-2.182	0.206	-0.00900	0.00300	-0.62	0.329	29.45
					10/15/2013 14:17	0917-173_Nc	13_10_15_1417_50_483	1	3.337	1.113	-0.0460	0.077	0.966	0.0760	0.4310	1.561	-2.674	0.229	-0.00800	0.00300	-0.38	0.339	33.688
					10/15/2013 14:18	0917-173_Nc	13_10_15_1418_51_323	1	1.044	1.059	-0.0910	0.078	0.865	0.0810	0.4340	1.549	-2.829	0.242	-0.00700	0.00300	-0.2	0.322	35.41
					10/15/2013 14:19	0917-173_Nc	13_10_15_1419_52_043	1	0.448	0.996	-0.058	0.079	0.930	0.0800	0.4990	1.558	-2.78	0.250	-0.00500	0.00300	-0.1	0.317	36.662
					10/15/2013 14:20	0917-173_Nc	13_10_15_1420_52_853	1	0.844	1.038	-0.196	0.082	1.089	0.079	0.4460	1.552	-3.217	0.279	-0.00400	0.00300	-0.1	0.327	41.103
					10/15/2013 14:21	0917-173_Nc	13_10_15_1421_53_513	1	1.564	1.097	-0.135	0.087	1.077	0.079	0.345	1.559	-3.330	0.277	-0.00400	0.00300	-0.4	0.324	40.641
					10/15/2013 14:22	0917-173_Nc	13_10_15_1422_54_273	1	0.762	1.135	-0.072	0.083	1.113	0.0790	0.4070	1.549	-3.25	0.272	-0.00400	0.00300	-0.1	0.339	40.04
					10/15/2013 14:23	0917-173_Nc	13_10_15_1423_55_033	1	3.379	1.051	-0.091	0.090	1.071	0.0790	0.4620	1.561	-3.19	0.284	-0.00200	0.00300	-0.7	0.321	40.953
					10/15/2013 14:24	0917-173_Nc	13_10_15_1424_55_843	1	2.8730	1.061	-0.1590	0.085	1.041	0.0770	0.4790	1.570	-3.02	0.273	-0.00100	0.00300	-1.1	0.330	39.482
					10/15/2013 14:25	0917-173_Nc	13_10_15_1425_56_593	1	1.270	1.009	-0.1810	0.081	1.021	0.0820	0.4570	1.585	-3.315	0.269	-0.00600	0.00300	-0.1	0.321	39.449
					10/15/2013 14:26	0917-173_Nc	13_10_15_1426_57_343	1	0.5960	0.989	-0.133	0.082	0.982	0.0800	0.4120	1.578	-3.043	0.260	-0.0090	0.00300	0.3	0.313	38.506
					10/15/2013 14:27	0917-173_Nc	13_10_15_1427_58_154	1	0.776	1.061	-0.038	0.078	1.025	0.0800	0.41100	1.579	-2.803	0.244	-0.00300	0.00300	0.0	0.322	35.511
					10/15/2013 14:28	0917-173_Nc	13_10_15_1428_58_914	1	0.074	1.070	-0.071	0.085	1.058	0.0810	0.3250	1.581	-2.92	0.257	-0.00100	0.00300	-0.2	0.329	37.17
					10/15/2013 14:29	0917-173_Nc	13_10_15_1429_59_664	1	1.357	1.092	-0.051	0.091	1.048	0.0800	0.353	1.586	-2.83	0.271	-0.00400	0.00300	-0.69	0.342	37.73
					10/15/2013 14:31	0917-173_Nc	13_10_15_1431_00_464	1	0.552	1.102	-0.071	0.080	1.060	0.0800	0.328	1.591	-2.722	0.251	-0.01100	0.00300	-0.52	0.332	36.297
					10/15/2013 14:32	0917-173_Nc	13_10_15_1432_01_174	1	1.408	1.103	-0.073	0.080	1.019	0.0800	0.3950	1.597	-2.978	0.254	-0.00900	0.00300	-0.15	0.337	37.136
					10/15/2013 14:33	0917-173_Nc	13_10_15_1433_01_914	1	0.542	1.078	-0.0790	0.084	1.044	0.0830	0.377	1.603	-3.185	0.269	-0.00500	0.00300	-0.5	0.342	39.753
					10/15/2013 14:34	0917-173_Nc	13_10_15_1434_02_734	1	3.096	1.135	0.011	0.086	1.045	0.0800	0.5080	1.606	-2.988	0.266	-0.00200	0.00300	-0.40	0.342	38.538
					10/15/2013 14:35	0917-173_Nc	13_10_15_1435_03_494	1	1.600	1.105	-0.226	0.086	1.131	0.0830	0.414	1.605	-3.159	0.273	-0.00400	0.00300	-0.4	0.342	39.358
					10/15/2013 14:36	0917-173_Nc	13_10_15_1436_04_204	1	0.603	1.077	-0.17000	0.087	1.054	0.0830	0.278	1.602	-3.12	0.266	-0.00400	0.00300	-0.4	0.337	38.445
					10/15/2013 14:37	0917-173_Nc	13_10_15_1437_05_044	1	2.207	1.156	-0.029	0.087	0.952	0.0820	0.3640	1.606	-2.73	0.260	-0.00400	0.00300	-0.4	0.346	37.022
					10/15/2013 14:38	0917-173_Nc	13_10_15_1438_05_754	1	1.589	1.072	-0.1740	0.082	1.063	0.0810	0.5200	1.589	-2.889	0.258	-0.00600	0.00300	-0.5	0.334	37.151
					10/15/2013 14:39	0917-173_Nc	13_10_15_1439_06_504	1	0.780	1.101	-0.2170	0.085	1.098	0.0820	0.4440	1.583	-3.403	0.290	-0.00400	0.00300	-0.4	0.326	42.313
					10/15/2013 14:40	0917-173_Nc	13_10_15_1440_07_295	1	1.315	1.088	-0.242	0.092	1.171	0.083	0.338	1.587	-3.851	0.306	-0.00300	0.00300	0.3	0.335	44.734
					10/15/2013 14:41	0917-173_Nc	13_10_15_1441_08_065	1	1.8820	1.148	-0.138	0.084	1.021	0.0810	0.4550	1.597	-2.753	0.252	-0.00500	0.00300	-0.38	0.337	35.649
					10/15/2013 14:42	0917-173_Nc	13_10_15_1442_08_775	1	0.984	1.105	-0.022	0.079	0.961	0.0800	0.5290	1.582	-2.33	0.235	-0.0060	0.00300	-1.14	0.335	32.089
					10/15/2013 14:43	0917-173_Nc	13_10_15_1443_09_575	1	2.004	1.105	-0.109	0.082	1.277	0.0820	0.312	1.585	-2.78	0.263	-0.0050	0.00300	-0.73	0.339	37.768
					10/15/2013 14:44	0917-173_Nc	13_10_15_1444_10_335	1	1.591	1.101	-0.037	0.082	1.34	0.0800	0.4190	1.573	-2.703	0.253	-0.00700	0.00300	-0.3	0.347	36.15
					10/15/2013 14:45	0917-173_Nc	13_10_15_1445_11_105	1	1.030	1.034	-0.067	0.084	1.36	0.0780	0.5380	1.578	-2.634	0.242	-0.00300	0.00300	-0.17	0.331	35.464
					10/15/2013 14:46	0917-173_Nc	13_10_15_1446_11_845	1	1.645	1.100	-0.079	0.080	1.40	0.0790	0.4360	1.564	-2.642	0.241	-0.00100	0.00300	-0.12	0.331	34.824
					10/15/2013 14:47	0917-173_Nc	13_10_15_1447_12_565	1	1.8930	1.081	-0.2990	0.098	1.051	0.0710	0.4880	1.341	-4.0080	0.258	-0.00700	0.00300	-0.96	0.347	34.21
			Stop		10/15/2013 14:48	0917-173_Nc	13_10_15_1448_13_365	1	-2.638	1.188	-1.663	0.265	-0.1730	0.0860	-0.178	0.268	-11.44	0.450	-0.01100	0.00300	-3.29	0.86	32.485
					10/15/2013 14:49	0917-173_Nc	13_10_15_1449_14_125	1	-2.578	1.148	-1.824	0.273	-0.2170	0.0890	-0.263	0.174	-12.03	0.463	-0.01400	0.00300	-3.86	0.90	32.112
					10/15/2013 14:50	0917-173_Nc	13_10_15_1450_14_835	1	-0.352	1.061	-1.2500	0.184	-0.1260	0.0620	-0.166	0.126	-7.75	0.308	-0.01000	0.00200	-1.95	0.613	20.548
					10/15/2013 14:51	0917-173_Nc	13_10_15_1451_15_635	1	-0.613	0.907	-0.564	0.100	-0.0740	0.0410	-0.0360	0.0810	-3.86	0.170	-0.00600	0.00200	-1.00	0.377	11.049
					10/15/2013 14:52	0917-173_Nc	13_10_15_1452_16_326	1	1.280	0.901	-0.608	0.100	-0.0130	0.0400	-0.104	0.0840	-3.71	0.171	-0.00700	0.00200	-1.602	0.379	10.801
					10/15/2013 14:53	0917-173_Nc	13_10_15_1453_17_106	1	0.782	0.923	-0.5030	0.093	0.529	0.0410	0.198	0.528	-3.828	0.199	-0.00500	0.00200	-1.04	0.348	21.609
					10/15/2013 14:54	0917-173_Nc	13_10_15_1454_17_846	1	0.948	1.005	-0.2770	0.098	1.46	0.081	0.401	1.541	-3.939	0.322	-0.0050	0.00300	-0.7	0.32	46.727
					10/15/2013 14:55	0917-173_Nc	13_10_15_1455_18_566	1	1.356	0.904	-0.186	0.079	0.936	0.0530	0.4300	0.983	-2.823	0.206	-0.00400	0.00200	-0.45	0.295	25.811
					10/15/2013 14:56	0917-173_Nc	13_10_15_1456_19_316	1	1.5270	0.937	-0.0800	0.051	0.1500	0.0330	0.226	0.228	-0.4160	0.089	0.00000	0.00200	0.035	0.280	4.402
					10/15/2013 14:57	0917-173_Nc	13_10_15_1457_20_026	1	0.6240	0.862	0.0820	0.049	0.0010	0.0290	-0.0730	0.0730	0.040	0.080	0.00300	0.00200	-0.065	0.263	0.663
					10/15/2013 14:58	0917-173_Nc	13_10_15_1458_20_766	1	1.600	0.927	0.0350	0.052	0.1440	0.0320	0.1510	0.192	-0.189	0.087	0.00100	0.00200	-0.560	0.277	3.926
					10/15/2013 14:59	0917-173_Nc	13_10_15_1459_21_486	1	2.587	1.114	-0.088	0.083	1.30	0.0730	0.5920	1.496	-3.02	0.267	-0.00500	0.00300	-0.1	0.334	38.597
					10/15/2013 15:00	0917-173_Nc	13_10_15_1500_22_256	1	2.421	1.063	-0.1730	0.086	1.50	0.079	0.407	1.573	-3.36	0.295	-0.0100	0.00300	-0.6	0.329	43.253
					10/15/2013 15:01	0917-173_Nc	13_10_15_1501_22_966	1	2.003	1.097	-0.1950	0.092	1.45	0.082	0.433	1.578	-3.377	0.299	-0.00500	0.00300	-0.1	0.351	43.87
					10/15/2013 15:02	0917-173_Nc	13_10_15_1502_23_686	1	2.07	1.054	-0.135	0.090	1.52	0.084	0.395	1.570	-3.38	0.295	0.00000	0.00300	-0.3	0.337	43.085
					10/15/2013 15:03	0917-173_Nc	13_10_15_1503_24_507	1	1.009	1.098	-0.097	0.088	1.44	0.081	0.469	1.565	-3.06	0.289	-0.00400	0.00300	-0.5	0.322	41.863
					10/15/2013 15:04	0917-173_Nc	13_10_15_1504_25_227	1	1.458	1.127	0.043	0.086	1.42	0.0780	0.305	1.575	-2.73	0.273	-0.00700	0.00300	-0.6	0.337	39.483
					10/15/2013 15:05	0917-173_Nc	13_10_15_1505_25_977	1	1.822	1.030	-0.001	0.084	1.58	0.0800	0.470	1.570	-2.38	0.262	-0.0030	0.00300	-1.00	0.323	37.535
					10/15/2013 15:06	0917-173_Nc	13_10_15_1506_26_777	1	3.167	1.033	0.008	0.077	1.42	0.0800	0.5470	1.576	-2.06	0.240	-0.00100	0.00300	-0.69	0.331	34.387
					10/15/2013 15:07	0917-173_Nc	13_10_15_1507_27_487	1	1.368	1.054	-0.062	0.079	1.47	0.0820	0.300	1.581	-2.31	0.252	-0.00500	0.00300	-0.58	0.318	36.461
					10/15/2013 15:08	0917-173_Nc	13_10_15_1508_28_247	1	1.969	1.050	-0.089	0.084	1.52	0.0790	0.300	1.583	-2.61	0.270	-0.00500	0.00300	-0.6	0.317	39.669
					10/15/2013 15:09	0917-173_Nc	13_10_15_1509_29_047	1	-0.502	1.054	-0.1470	0.086	1.46	0.0770	0.410	1.568	-2.415	0.256	-0.00400	0.00300	-0.98	0.340	35.965
					10/15/2013 15:10	0917-173_Nc	13_10_15_1510_29_767	1	3.235	1.079	-0.044	0.079	1.34	0.0800	0.205	1.579	-2.24	0.228	-0.00300	0.00300	-0.46	0.341	32.525
					10/15/2013 15:11	0917-173_Nc	13_10_15_1511_30_507	1	0.253	1.022	-0.105	0.082	1.43	0.0790	0.324	1.587	-2.419	0.245	-0.0060	0.00300	-0.35	0.322	35.447
					10/15/2013 15:12	0917-173_Nc	13_10_15_1512_31_257	1	1.394	1.051	-0.117	0.074	1.32	0.0780	0.3990	1.587	-2.37	0.234	-0.00300	0.00300	-0.36	0.326	34.45
					10/15/2013 15:13	0917-173_Nc	13_10_15_1513_32_067	1	2.483	1.001	0.127	0.077	1.25	0.0800	0.5010	1.587	-2.12	0.240	-0.00400	0.00300	-0.72	0.304	33.972
					10/15/2013 15:14	0917-173_Nc	13_10_15_1514_32_827	1	1.355	1.133	-0.071	0.082	1.25	0.0780	0.3210	1.591	-2.20	0.241	-0.00300	0.00300	-0.79	0.342	33.52
					10/15/2013 15:15	0917-173_Nc	13_10_15_1515_33_558	1	1.486	0.995	-0.078	0.082	1.38	0.0810	0.378	1.602	-2.44	0.252	-0.00400	0.00300	-0.48	0.330	37.046
					10/15/2013 15:16	0917-173_Nc	13_10_15_1516_34_268	1	1.006	1.094	-0.087	0.082	1.36	0.0800	0.359	1.608	-2.49	0.261	-0.0100	0.00300	-0.5	0.326	38.233
					10/15/2013 15:17	0917-173_Nc	13_10_15_1517_35_018	1	1.245	1.180	-0.123	0.083	1.50	0.0820	0.316	1.609	-2.49	0.272	-0.00500	0.00300	-0.9	0.343	39.683
					10/15/2013 15:18	0917-173_Nc	13_10_15_1518_35_828	1	2.086	1.047	-0.117	0.089	1.53	0.0820	0.303	1.587	-2.68	0.275	-0.0100	0.00300	-0.5	0.331	40.334
					10/15/2013 15:19	0917-173_Nc	13_10_15_1519_36_558	1	1.710	1.082	-0.039	0.089	1.48	0.080	0.256	1.584	-2.89	0.284	-0.0090	0.00300	-0.4	0.325	41.726
					10/15/2013 15:20	0917-173_Nc	13_10_15_1520_37_258	1	1.604	1.059	-0.15600	0.089	1.43	0.081	0.267	1.575	-3.12	0.291	-0.00100	0.00300	-0.4	0.321	42.275
					10/15/2013 15:21	0917-173_Nc	13_10_15_1521_38_078	1	0.237	1.096	-0.140	0.085	1.42	0.0820	0.343	1.562	-2.65	0.265	-0.00600	0.00300	-0.1	0.337	39.07
					10/15/2013 15:22	0917-173_Nc	13_10_15_1522_38_848	1	2.910	1.055	-0.106	0.080	1.36	0.0790	0.5160	1.558	-2.19	0.248	-0.00700	0.00300	-0.30	0.324	36.025
					10/15/2013 15:23	0917-173_Nc	13_10_15_1523_39_558	1	1.985	1.035	-0.092	0.077	1.43	0.0770	0.308	1.558	-2.36	0.238	0.00000	0.00300	-0.3	0.323	35.801
					10/15/2013 15:24	0917-173_Nc	13_10_15_1524_40_308	1	-1.211	1.230	-0.115	0.082	1.42	0.0780	0.384	1.563	-2.36	0.258	-0.00700	0.00300	-0.24	0.356	36.873
					10/15/2013 15:25	0917-173_Nc	13_10_15_1525_41_068	1	1.565	1.113	-0.077	0.083	1.45	0.0810	0.387	1.566	-2.65	0.272	-0.00800	0.00300	-0.5	0.333	39.565
					10/15/2013 15:26	0917-173_Nc	13_10_15_1526_41_828	1	4.1050	1.110	-0.1550	0.086	1.49	0.0810	0.408	1.577	-2.43	0.262	-0.00700	0.00300	-0.3	0.341	38.814
					10/15/2013 15:27	0917-173_Nc	13_10_15_1527_42_579	1	1.996	1.075	0.053	0.082	1.41	0.0820	0.411	1.582	-2.33	0.256	-0.00400	0.00300	-0.4	0.345	36.962
					10/15/2013 15:28	0917-173_Nc	13_10_15_1528_43_389	1	1.458	1.067	-0.0600	0.084	1.36	0.0780	0.227	1.575	-2.44	0.259	-0.0050	0.00300	-0.62	0.342	37.003
					10/15/2013 15:29	0917-173_Nc	13_10_15_1529_44_109	1	3.717	1.096	-0.038	0.081	1.38	0.0780	0.374	1.573	-2.37	0.243	-0.00600	0.00300	-0.44	0.340	35.255
					10/15/2013 15:30	0917-173_Nc	13_10_15_1530_44_859	1	1.45	0.974	-0.023	0.083	1.32	0.0760	0.323	1.563	-2.32	0.234	-0.0080	0.00300	-0.75	0.323	34.311
					10/15/2013 15:31	0917-173_Nc	13_10_15_1531_45_589	1	1.569	1.048	-0.082	0.082	1.42	0.0770	0.433	1.562	-2.41	0.253	-0.00300	0.00300	-1.04	0.326	36.805
					10/15/2013 15:32	0917-173_Nc	13_10_15_1532_46_389	1	0.103	1.042	-0.067	0.080	1.34	0.0790	0.4620	1.560	-2.45	0.254	-0.00600	0.00300	-0.43	0.324	37.166
					10/15/2013 15:33	0917-173_Nc	13_10_15_1533_47_159	1	1.52	1.044	-0.135	0.088	1.34	0.0780	0.401	1.568	-2.79	0.271	-0.00500	0.00300	-0.5	0.327	39.72
					10/15/2013 15:34	0917-173_Nc	13_10_15_1534_47_909	1	0.569	1.031	-0.061	0.089	1.45	0.082	0.364	1.560	-2.94	0.290	-0.00700	0.00300	-1.0	0.317	42.749
					10/15/2013 15:35	0917-173_Nc	13_10_15_1535_48_669	1	2.367	1.162	-0.1190	0.083	1.48	0.0810	0.448	1.576	-2.79	0.277	-0.00700	0.00300	-0.87	0.342	40.476
					10/15/2013 15:36	0917-173_Nc	13_10_15_1536_49_389	1	1.384	1.097	-0.246	0.087	1.42	0.0800	0.376	1.582	-2.68	0.269	-0.00700	0.00300	-0.3	0.339	39.08
					10/15/2013 15:37	0917-173_Nc	13_10_15_1537_50_209	1	1.567	1.144	-0.064	0.081	1.39	0.0800	0.260	1.584	-2.60	0.269	-0.00500	0.00300	-0.80	0.332	38.756
					10/15/2013 15:38	0917-173_Nc	13_10_15_1538_50_819	1	3.005	1.116	-0.0240	0.083	1.39	0.0790	0.492	1.577	-2.56	0.263	-0.00500	0.00300	-0.73	0.343	38.304
					10/15/2013 15:39	0917-173_Nc	13_10_15_1539_51_530	1	0.938	1.092	0.0270	0.080	1.31	0.0810	0.277	1.589	-2.11	0.242	-0.00400	0.00300	-0.65	0.342	34.78
					10/15/2013 15:40	0917-173_Nc	13_10_15_1540_52_350	1	0.74	1.151	-0.0820	0.078	1.27	0.0780	0.4200	1.576	-1.92	0.224	-0.00800	0.00300	-0.49	0.348	31.33
					10/15/2013 15:41	0917-173_Nc	13_10_15_1541_53_060	1	0.661	1.137	-0.122	0.075	1.30	0.0780	0.333	1.575	-1.88	0.224	-0.00700	0.00300	-1.14	0.342	31.47
					10/15/2013 15:42	0917-173_Nc	13_10_15_1542_53_840	1	2.81	1.149	-0.020	0.078	1.35	0.0780	0.4990	1.580	-1.77	0.225	-0.00600	0.00300	-0.78	0.349	32.319
					10/15/2013 15:43	0917-173_Nc	13_10_15_1543_54_630	1	0.4970	1.080	0.034	0.072	1.26	0.0780	0.449	1.573	-1.69	0.216	-0.00600	0.00300	-1.09	0.322	31.835
					10/15/2013 15:44	0917-173_Nc	13_10_15_1544_55_400	1	2.123	1.106	0.018	0.075	1.24	0.0740	0.477	1.568	-1.64	0.217	-0.00500	0.00200	-0.77	0.325	30.769
					10/15/2013 15:45	0917-173_Nc	13_10_15_1545_56_160	1	1.3370	1.004	-0.047	0.054	0.448	0.0610	0.4200	1.318	-0.508	0.112	-0.00600	0.00200	-0.57	0.302	11.72
					10/15/2013 15:46	0917-173_Nc	13_10_15_1546_56_880	1	3.7020	0.974	-0.021	0.055	-0.0110	0.0510	0.5050	1.149	-0.006	0.092	-0.00200	0.00200	-0.1390	0.308	1.269
					10/15/2013 15:47	0917-173_Nc	13_10_15_1547_57_600	1	0.449	1.004	-0.0510	0.066	0.624	0.0620	0.602	1.391	-1.591	0.162	-0.00300	0.00200	-0.31	0.320	20.937

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 15:48	0917-173_Nc	13_10_15_1548_58_420	1	3.3810	1.068	0.097	0.074	0.847	0.0670	0.326	1.481	-2.18	0.221	-0.00500	0.00300	-0.78	0.316	31.509
					10/15/2013 15:49	0917-173_Nc	13_10_15_1549_59_170	1	0.879	1.055	-0.034	0.077	0.883	0.0690	0.488	1.474	-2.10	0.219	-0.00200	0.00200	-0.53	0.327	32.201
					10/15/2013 15:50	0917-173_Nc	13_10_15_1550_59_920	1	2.789	1.066	-0.028	0.071	0.905	0.0680	0.591	1.466	-2.265	0.217	-0.00400	0.00300	-0.19	0.321	31.92
					10/15/2013 15:52	0917-173_Nc	13_10_15_1552_00_631	1	1.982	1.014	-0.017	0.075	0.851	0.0690	0.438	1.452	-2.15	0.215	-0.00400	0.00300	-0.64	0.324	30.843
					10/15/2013 15:53	0917-173_Nc	13_10_15_1553_01_401	1	2.91	1.032	-0.010	0.055	0.0930	0.0550	0.407	1.186	-0.316	0.095	-0.00500	0.00200	-0.533	0.316	5.362
					10/15/2013 15:54	0917-173_Nc	13_10_15_1554_02_221	1	0.678	0.967	0.028	0.054	-0.0330	0.0500	0.414	1.142	-0.1550	0.087	-0.00300	0.00200	0.463	0.292	0.825
					10/15/2013 15:55	0917-173_Nc	13_10_15_1555_02_931	1	3.583	0.951	0.038	0.054	-0.0130	0.0530	0.5270	1.138	-0.002	0.089	-0.00100	0.00200	0.109	0.294	0.605
					10/15/2013 15:56	0917-173_Nc	13_10_15_1556_03_701	1	1.441	1.045	0.037	0.056	-0.0150	0.0510	0.5980	1.139	-0.159	0.094	-0.00400	0.00200	-0.648	0.314	0.529
					10/15/2013 15:57	0917-173_Nc	13_10_15_1557_04_531	1	1.407	0.993	0.042	0.0510	-0.0530	0.0510	0.6410	1.133	0.100	0.087	-0.00600	0.00200	-0.464	0.295	0.485
					10/15/2013 15:58	0917-173_Nc	13_10_15_1558_05_231	1	1.746	1.032	-0.001	0.056	0.0370	0.0510	0.5770	1.147	-0.050	0.094	-0.00500	0.00200	-0.375	0.308	0.461
					10/15/2013 15:59	0917-173_Nc	13_10_15_1559_06_001	1	2.1510	0.998	0.134	0.056	-0.0200	0.0520	0.5470	1.145	-0.104	0.093	-0.00100	0.00200	-0.323	0.311	0.477
					10/15/2013 16:00	0917-173_Nc	13_10_15_1600_06_721	1	0.726	0.985	0.007	0.053	-0.076	0.0510	0.473	1.161	-0.057	0.089	-0.00400	0.00200	-0.070	0.304	0.528
					10/15/2013 16:01	0917-173_Nc	13_10_15_1601_07_521	1	1.683	0.992	0.011	0.055	-0.084	0.0520	0.5260	1.145	-0.015	0.090	0.00	0.00200	-0.352	0.303	0.505
					10/15/2013 16:02	0917-173_Nc	13_10_15_1602_08_231	1	0.433	0.975	-0.070	0.055	0.03	0.0480	0.5980	1.145	0.001	0.091	-0.00300	0.00300	-0.65	0.297	0.458
					10/15/2013 16:03	0917-173_Nc	13_10_15_1603_08_982	1	3.085	1.040	0.035	0.052	-0.059	0.0530	0.488	1.146	-0.019	0.089	-0.01	0.00200	-0.87	0.298	0.399
					10/15/2013 16:04	0917-173_Nc	13_10_15_1604_09_802	1	1.2340	0.991	0.045	0.055	0.0360	0.0500	0.5780	1.144	-0.084	0.091	0.00	0.00200	-0.060	0.303	0.331
					10/15/2013 16:05	0917-173_Nc	13_10_15_1605_10_512	1	2.809	1.020	0.025	0.055	0.0020	0.0510	0.401	1.144	-0.025	0.091	-0.00200	0.00200	-0.759	0.306	0.571
					10/15/2013 16:06	0917-173_Nc	13_10_15_1606_11_262	1	1.8160	1.049	0.023	0.054	-0.032	0.0530	0.418	1.151	-0.026	0.091	-0.00400	0.00200	-0.183	0.315	0.765
					10/15/2013 16:07	0917-173_Nc	13_10_15_1607_12_092	1	2.254	0.984	0.074	0.055	-0.046	0.0520	0.475	1.137	-0.029	0.090	0.00	0.00200	-0.02	0.304	0.324
					10/15/2013 16:08	0917-173_Nc	13_10_15_1608_12_842	1	1.693	1.028	0.039	0.055	-0.047	0.0510	0.5910	1.145	-0.006	0.092	-0.00500	0.00200	0.033	0.315	0.368
					10/15/2013 16:09	0917-173_Nc	13_10_15_1609_13_572	1	1.6490	1.076	0.060	0.056	-0.046	0.0500	0.459	1.152	0.043	0.094	0.00	0.00200	-0.133	0.319	0.397
					10/15/2013 16:10	0917-173_Nc	13_10_15_1610_14_332	1	3.619	0.891	0.149	0.054	-0.0460	0.0500	0.6270	1.148	-0.018	0.087	-0.01	0.00200	-0.443	0.291	0.387
					10/15/2013 16:11	0917-173_Nc	13_10_15_1611_15_062	1	3.230	0.962	0.049	0.054	-0.0150	0.0500	0.542	1.147	-0.044	0.088	0.00	0.00200	-0.384	0.292	0.402
					10/15/2013 16:12	0917-173_Nc	13_10_15_1612_15_872	1	1.863	1.043	0.040	0.057	-0.052	0.0520	0.6280	1.147	-0.0270	0.096	-0.00300	0.00200	0.2010	0.322	0.58
					10/15/2013 16:13	0917-173_Nc	13_10_15_1613_16_622	1	1.6350	1.097	-0.017	0.056	-0.0330	0.0510	0.522	1.155	0.115	0.094	0.00	0.00200	-0.389	0.320	0.739
					10/15/2013 16:14	0917-173_Nc	13_10_15_1614_17_342	1	3.808	0.960	-0.007	0.054	-0.0190	0.0540	0.592	1.164	0.021	0.089	-0.00100	0.00200	-0.5940	0.298	0.995
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_19_744	1	-1.0	1.3	0.126	0.079	-0.39	1.29	-0.187	0.0900	0.065	0.126	0.049	0.526	0.170	0.395	-1.617
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_38_254	1	1.2	1.3	-0.034	0.072	-0.38	1.38	0.064	0.1000	-0.025	0.119	0.049	0.554	-0.67	0.399	-1.723
					10/15/2013 16:27	0917-173_Nc	13_10_15_1627_56_754	1	-2.8	1.3	0.0190	0.073	-0.39	1.42	0.0070	0.0890	-0.031	0.118	0.050	0.569	-0.779	0.389	-1.785
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_15_384	1	-0.4	1.3	-0.0010	0.075	-0.52	1.43	-0.03900	0.0920	-0.048	0.118	0.048	0.576	-0.297	0.390	-1.765
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_33_854	1	-2.3	1.3	0.025	0.070	-0.39	1.45	-0.02400	0.0860	0.11100	0.117	0.054	0.580	-0.640	0.386	-1.822
					10/15/2013 16:28	0917-173_Nc	13_10_15_1628_52_344	1	-0.3	1.3	0.0420	0.073	-0.31	1.46	0.249	0.0940	-0.1320	0.115	0.052	0.577	-0.282	0.381	-1.843
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_10_944	1	0.3	1.3	0.183	0.071	-0.43	1.46	-0.099	0.0880	-0.219	0.117	0.055	0.580	-0.250	0.397	-1.822
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_29_464	1	-3.3	1.2	-0.027	0.070	-0.42	1.46	-0.0290	0.1020	-0.150	0.113	0.054	0.579	-0.454	0.377	-1.852
					10/15/2013 16:29	0917-173_Nc	13_10_15_1629_48_084	1	-0.6	1.3	0.2440	0.076	-0.46	1.46	0.0610	0.0990	0.289	0.122	0.056	0.584	0.468	0.387	-1.823
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_06_504	1	-0.3	1.4	0.17300	0.079	-0.46	1.46	0.0760	0.0860	0.090	0.127	0.044	0.580	-0.78	0.416	-1.833
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_25_004	1	-1.1	1.3	0.2250	0.072	-0.42	1.46	0.081	0.0960	0.117	0.117	0.059	0.584	-1.04	0.371	-1.826
					10/15/2013 16:30	0917-173_Nc	13_10_15_1630_43_654	1	-1.4	1.4	0.225	0.074	-0.37	1.46	-0.001	0.0960	0.234	0.124	0.047	0.581	-0.95	0.417	-1.848
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_02_124	1	-1.4	1.3	-0.02000	0.073	-0.48	1.46	-0.01800	0.0960	0.179	0.120	0.047	0.580	-0.390	0.394	-1.857
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_20_734	1	-3.3	1.2	-0.102	0.077	-0.40	1.46	-0.092	0.0880	-0.161	0.121	0.050	0.580	-0.0250	0.396	-1.831
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_39_234	1	-1.4	1.3	0.011	0.076	-0.47	1.46	-0.193	0.0870	0.2200	0.122	0.038	0.579	-0.39	0.394	-1.844
					10/15/2013 16:31	0917-173_Nc	13_10_15_1631_57_744	1	-3.6	1.3	0.028	0.075	-0.43	1.45	-0.029	0.0920	-0.153	0.123	0.045	0.583	0.2750	0.401	-1.833
					10/15/2013 17:05	0917-173_Nc	13_10_15_1705_46_267	1	-2.65	1.430	0.726	0.179	3.86	0.143	-0.246	1.95	-2.25	0.65	-0.0100	0.00400	-3.7	0.53	94.051
					10/15/2013 17:06	0917-173_Nc	13_10_15_1706_46_977	1	-2.11	1.386	0.758	0.180	3.84	0.142	-0.10	1.96	-2.06	0.66	-0.0050	0.00400	-3.7	0.52	96.428
					10/15/2013 17:07	0917-173_Nc	13_10_15_1707_47_767	1	-3.15	1.363	0.844	0.177	3.76	0.145	-0.13	1.95	-2.08	0.66	-0.0060	0.00500	-3.6	0.54	96.096
					10/15/2013 17:08	0917-173_Nc	13_10_15_1708_48_517	1	-2.88	1.500	0.702	0.179	3.86	0.147	-0.111	1.95	-2.19	0.67	-0.0100	0.00500	-3.6	0.54	97.88
					10/15/2013 17:09	0917-173_Nc	13_10_15_1709_49_367	1	-2.77	1.411	0.746	0.181	3.82	0.147	-0.10	1.97	-2.21	0.68	-0.0050	0.00500	-3.6	0.54	98.49
					10/15/2013 17:10	0917-173_Nc	13_10_15_1710_50_057	1	-2.19	1.371	0.663	0.189	3.88	0.150	-0.224	1.97	-2.44	0.71	-0.0040	0.00500	-3.7	0.55	102.729
					10/15/2013 17:11	0917-173_Nc	13_10_15_1711_50_897	1	-2.21	1.371	0.718	0.186	3.79	0.151	-0.308	1.95	-2.41	0.71	-0.0120	0.00500	-4.3	0.53	103.691
					10/15/2013 17:12	0917-173_Nc	13_10_15_1712_51_607	1	-2.40	1.454	0.674	0.191	3.68	0.147	-0.359	1.95	-2.26	0.73	-0.0090	0.00500	-4.2	0.57	105.117
					10/15/2013 17:13	0917-173_Nc	13_10_15_1713_52_367	1	-2.53	1.419	0.719	0.192	3.65	0.150	-0.508	1.96	-2.02	0.72	-0.0050	0.00500	-3.9	0.55	105.343
					10/15/2013 17:14	0917-173_Nc	13_10_15_1714_53_138	1	-1.32	1.326	0.745	0.191	3.50	0.147	-0.400	1.94	-1.85	0.72	-0.0060	0.00500	-4.7	0.55	105.004
					10/15/2013 17:15	0917-173_Nc	13_10_15_1715_53_758	1	-0.70	1.362	0.828	0.190	3.35	0.145	-0.176	1.95	-1.38	0.71	-0.0080	0.00500	-4.9	0.57	104.356
					10/15/2013 17:16	0917-173_Nc	13_10_15_1716_54_528	1	-1.86	1.491	0.895	0.184	3.31	0.145	-0.242	1.96	-1.06	0.70	-0.0070	0.00500	-5.0	0.56	102.967
					10/15/2013 17:17	0917-173_Nc	13_10_15_1717_55_258	1	-1.18	1.448	0.911	0.186	3.22	0.144	-0.356	1.94	-1.22	0.70	-0.0100	0.00500	-4.6	0.58	103.32
					10/15/2013 17:18	0917-173_Nc	13_10_15_1718_56_058	1	-3.32	1.456	0.816	0.184	3.18	0.144	-0.201	1.95	-1.19	0.69	-0.0030	0.00500	-5.6	0.58	102.73
					10/15/2013 17:19	0917-173_Nc	13_10_15_1719_56_858	1	-0.85	1.405	0.885	0.186	3.21	0.145	-0.135	1.95	-0.91	0.70	-0.0140	0.00500	-5.3	0.55	103.119
					10/15/2013 17:20	0917-173_Nc	13_10_15_1720_57_568	1	-1.90	1.379	0.831	0.179	3.25	0.143	-0.125	1.95	-1.17	0.67	-0.0070	0.00500	-4.8	0.56	98.944
					10/15/2013 17:21	0917-173_Nc	13_10_15_1721_58_318	1	-1.72	1.341	0.918	0.172	3.30	0.140	-0.055	1.96	-0.83	0.64	-0.0080	0.00400	-4.6	0.52	94.562
					10/15/2013 17:22	0917-173_Nc	13_10_15_1722_59_158	1	-1.40	1.405	0.769	0.178	3.19	0.140	-0.154	1.95	-1.09	0.65	-0.0010	0.00400	-4.4	0.55	96.176
					10/15/2013 17:23	0917-173_Nc	13_10_15_1723_59_868	1	-3.13	1.427	0.804	0.178	3.34	0.139	-0.144	1.95	-1.70	0.67	-0.0110	0.00500	-3.4	0.55	97.951
					10/15/2013 17:25	0917-173_Nc	13_10_15_1725_00_688	1	-2.05	1.340	0.719	0.183	3.37	0.144	-0.028	1.95	-1.88	0.68	-0.0050	0.00500	-3.6	0.54	99.662
					10/15/2013 17:26	0917-173_Nc	13_10_15_1726_01_458	1	-2.18	1.340	0.666	0.173	3.27	0.143	0.009	1.95	-1.79	0.66	-0.0020	0.00500	-4.1	0.51	96.525
					10/15/2013 17:27	0917-173_Nc	13_10_15_1727_02_149	1	-3.17	1.303	0.746	0.182	3.18	0.141	-0.132	1.94	-1.65	0.67	-0.0070	0.00500	-4.2	0.53	98.385
					10/15/2013 17:28	0917-173_Nc	13_10_15_1728_02_979	1	-0.74	1.394	0.775	0.169	3.09	0.139	-0.057	1.96	-1.52	0.63	-0.0090	0.00500	-3.4	0.52	93.801
					10/15/2013 17:30	0917-173_Nc	13_10_15_1730_15_740	1	-1.77	1.338	0.652	0.170	3.02	0.136	-0.025	1.95	-1.39	0.63	-0.0060	0.00400	-4.5	0.53	93.101
					10/15/2013 17:31	0917-173_Nc	13_10_15_1731_16_470	1	-1.62	1.366	0.710	0.170	3.01	0.137	-0.040	1.95	-1.25	0.63	-0.0010	0.00500	-4.0	0.53	93.564
					10/15/2013 17:32	0917-173_Nc	13_10_15_1732_17_210	1	-3.10	1.364	0.720	0.173	2.97	0.135	-0.176	1.95	-1.26	0.64	-0.0090	0.00500	-4.5	0.53	95.26
					10/15/2013 17:33	0917-173_Nc	13_10_15_1733_17_960	1	-1.74	1.304	0.666	0.175	2.95	0.138	0.022	1.97	-1.32	0.65	-0.0040	0.00400	-4.2	0.54	96.936
					10/15/2013 17:34	0917-173_Nc	13_10_15_1734_18_770	1	-2.62	1.400	0.662	0.172	2.92	0.139	0.177	1.97	-1.45	0.65	-0.0060	0.00500	-4.1	0.53	95.261
					10/15/2013 17:35	0917-173_Nc	13_10_15_1735_19_520	1	-1.03	1.493	0.773	0.171	2.95	0.137	-0.050	1.95	-1.16	0.63	-0.0080	0.00400	-3.8	0.54	94.077
Data	Run	7	Start	A	10/15/2013 17:36	0917-173_Nc	13_10_15_1736_20_230	1	-3.38	1.413	0.802	0.170	2.91	0.138	-0.030	1.95	-1.10	0.63	-0.0030	0.00500	-3.7	0.54	94.708
					10/15/2013 17:37	0917-173_Nc	13_10_15_1737_20_960	1	-0.40	1.468	0.839	0.171	2.70	0.133	0.032	1.96	-0.78	0.63	-0.0110	0.00500	-4.8	0.55	94.597
					10/15/2013 17:38	0917-173_Nc	13_10_15_1738_21_720	1	-0.65	1.409	0.786	0.172	2.68	0.135	0.010	1.97	-0.95	0.63	-0.0070	0.00500	-4.5	0.53	96.116
					10/15/2013 17:39	0917-173_Nc	13_10_15_1739_22_480	1	-1.42	1.570	0.792	0.183	2.64	0.137	-0.036	1.96	-0.76	0.67	-0.0110	0.00500	-5.0	0.58	99.439
					10/15/2013 17:40	0917-173_Nc	13_10_15_1740_23_240	1	-1.00	1.481	0.769	0.177	2.57	0.135	-0.148	1.96	-0.68	0.66	-0.0050	0.00500	-4.9	0.57	99.419
					10/15/2013 17:41	0917-173_Nc	13_10_15_1741_23_960	1	-1.64	1.477	0.668	0.178	2.46	0.135	-0.057	1.96	-0.68	0.66	-0.0080	0.00500	-5.1	0.56	99.313
					10/15/2013 17:42	0917-173_Nc	13_10_15_1742_24_741	1	-2.37	1.359	0.815	0.179	2.59	0.136	0.014	1.95	-0.46	0.65	-0.0050	0.00400	-5.4	0.55	99.148
					10/15/2013 17:43	0917-173_Nc	13_10_15_1743_25_431	1	-1.88	1.393	0.673	0.180	2.43	0.136	-0.074	1.95	-0.71	0.66	-0.0090	0.00500	-5.0	0.57	99.295
					10/15/2013 17:44	0917-173_Nc	13_10_15_1744_26_271	1	-1.17	1.402	0.705	0.177	2.47	0.133	-0.080	1.95	-0.78	0.66	-0.0090	0.00500	-5.2	0.56	99.1
					10/15/2013 17:45	0917-173_Nc	13_10_15_1745_27_041	1	-1.61	1.457	0.774	0.175	2.48	0.134	-0.029	1.95	-0.83	0.66	-0.0060	0.00500	-4.7	0.55	100.555
					10/15/2013 17:46	0917-173_Nc	13_10_15_1746_27_711	1	-1.75	1.462	0.804	0.178	2.40	0.136	0.022	1.97	-0.49	0.67	-0.0040	0.00500	-6.0	0.56	100.722
					10/15/2013 17:47	0917-173_Nc	13_10_15_1747_28_481	1	-3.06	1.312	0.732	0.181	2.45	0.134	-0.1400	1.96	-0.65	0.67	-0.0100	0.00500	-5.6	0.56	101.277
					10/15/2013 17:48	0917-173_Nc	13_10_15_1748_29_241	1	-0.89	1.383	0.829	0.177	2.46	0.134	-0.227	1.96	-0.57	0.67	-0.0080	0.00500	-5.4	0.57	102.191
					10/15/2013 17:49	0917-173_Nc	13_10_15_1749_30_061	1	-1.74	1.475	0.723	0.178	2.37	0.135	0.0780	1.96	-0.91	0.67	-0.0050	0.00500	-5.3	0.57	101.55
					10/15/2013 17:50	0917-173_Nc	13_10_15_1750_30_771	1	-1.41	1.442	0.739	0.182	2.28	0.132	-0.1430	1.96	-0.80	0.67	-0.0090	0.00500	-5.7	0.57	102.517
					10/15/2013 17:51	0917-173_Nc	13_10_15_1751_31_551	1	-0.90	1.403	0.799	0.181	2.28	0.134	-0.171	1.96	-0.63	0.68	-0.0040	0.00500	-5.6	0.57	103.291
					10/15/2013 17:52	0917-173_Nc	13_10_15_1752_32_281	1	-2.48	1.469	0.888	0.184	2.35	0.137	0.1050	1.96	-0.51	0.68	-0.0110	0.00500	-5.4	0.58	104.228
					10/15/2013 17:53	0917-173_Nc	13_10_15_1753_33_031	1	-0.82	1.409	0.799	0.183	2.24	0.135	-0.131	1.96	-0.63	0.68	-0.0080	0.00400	-5.5	0.56	103.373
					10/15/2013 17:54	0917-173_Nc	13_10_15_1754_33_752	1	-3.36	1.389	0.750	0.184	2.26	0.133	-0.128	1.96	-0.71	0.68	-0.0050	0.00500	-5.7	0.57	102.572
					10/15/2013 17:55	0917-173_Nc	13_10_15_1755_34_512	1	-3.04	1.340	0.696	0.182	2.21	0.134	-0.0320	1.96	-0.67	0.68	-0.0060	0.00500	-5.4	0.56	103.49
					10/15/2013 17:56	0917-173_Nc	13_10_15_1756_35_272	1	-1.66	1.387	0.802	0.183	2.24	0.135	0.0010	1.97	-0.59	0.69	-0.0080	0.00500	-5.5	0.57	103.551
					10/15/2013 17:57	0917-173_Nc	13_10_15_1757_36_032	1	-1.22	1.430	0.758	0.183	2.24	0.135	0.0050	1.96	-0.57	0.68	-0.0050	0.00500	-5.5	0.55	104.024
					10/15/2013 17:58	0917-173_Nc	13_10_15_1758_36_842	1	-1.69	1.463	0.800	0.186	2.21	0.135	-0.075	1.96	-0.69	0.69	-0.0090	0.00500	-5.1	0.59	104.017
					10/15/2013 17:59	0917-173_Nc	13_10_15_1759_37_412	1	-1.72	1.371	0.809	0.186	2.27	0.133	-0.198	1.95	-0.76	0.69	-0.0060	0.00500	-5.0	0.56	104.708
					10/15/2013 18:00	0917-173_Nc	13_10_15_1800_38_222	1	-2.43	1.465	0.822	0.187	2.24	0.135	0.01700	1.96	-0.84	0.69	-0.0050	0.00400	-5.6	0.57	104.557
					10/15/2013 18:01	0917-173_Nc	13_10_15_1801_38_972	1	0.25	1.440	0.769	0.179	2.32	0.135	-0.200	1.96	-1.01	0.70	-0.0030	0.00500	-5.5	0.57	105.031
					10/15/2013 18:02	0917-173_Nc	13_10_15_1802_39_732	1	-2.06	1.448	0.860	0.185	2.31	0.138	-0.0720	1.95	-0.85	0.69	-0.0060	0.00400	-5.4	0.58	105.379
					10/15/2013 18:03	0917-173_Nc	13_10_15_1803_40_492	1	-2.44	1.405	0.890	0.191	2.38	0.135	-0.0350	1.96	-0.66	0.70	-0.0050	0.00500	-5.4	0.57	106.007
					10/15/2013 18:04	0917-173_Nc	13_10_15_1804_41_282	1	-2.94	1.376	0.830	0.185	2.33	0.137	-0.0450	1.96	-0.53	0.70	-0.0100	0.00500	-6.0	0.58	105.788
					10/15/2013 18:05	0917-173_Nc	13_10_15_1805_42_053	1	-1.74	1.405	0.815	0.188	2.30	0.136	-0.0450	1.96	-0.46	0.70	-0.0030	0.00500	-5.4	0.58	106.009
					10/15/2013 18:06	0917-173_Nc	13_10_15_1806_42_763	1	-1.53	1.403	0.841	0.185	2.35	0.136	-0.0510	1.97	-0.43	0.69	-0.0050	0.00400	-5.2	0.57	103.924
					10/15/2013 18:07	0917-173_Nc	13_10_15_1807_43_543	1	-1.98	1.478	0.867	0.181	2.35	0.133	-0.00700	1.96	-0.44	0.66	-0.0070	0.00500	-5.7	0.57	100.418
					10/15/2013 18:08	0917-173_Nc	13_10_15_1808_44_293	1	0.20	1.421	0.897	0.169	2.45	0.133	0.0190	1.97	-0.21	0.62	-0.0050	0.00500	-4.9	0.55	93.759
					10/15/2013 18:09	0917-173_Nc	13_10_15_1809_45_103	1	-3.97	1.476	0.798	0.156	2.62	0.128	0.167	1.97	-0.08	0.57	-0.0070	0.00500	-4.5	0.55	86.707
					10/15/2013 18:10	0917-173_Nc	13_10_15_1810_45_773	1	-0.05	1.415	0.813	0.146	2.59	0.127	0.182	1.960	-0.18	0.52	-0.0090	0.00400	-5.0	0.51	77.683
					10/15/2013 18:11	0917-173_Nc	13_10_15_1811_46_533	1	-0.42	1.413	0.864	0.143	2.76	0.127	0.182	1.957	-0.31	0.49	-0.0090	0.00400	-3.8	0.51	73.238
					10/15/2013 18:12	0917-173_Nc	13_10_15_1812_47_343	1	-3.643	1.408	0.838	0.142	2.80	0.126	0.027	1.97	-0.27	0.50	-0.0060	0.00400	-4.3	0.50	74.526
					10/15/2013 18:13	0917-173_Nc	13_10_15_1813_48_113	1	-2.47	1.427	0.888	0.145	2.76	0.126	0.220	1.961	-0.26	0.51	-0.0090	0.00400	-4.1	0.51	76.603
					10/15/2013 18:14	0917-173_Nc	13_10_15_1814_48_813	1	-1.63	1.375	0.769	0.153	2.81	0.126	0.167	1.97	-0.28	0.54	-0.0060	0.00400	-4.3	0.50	81.544
					10/15/2013 18:15	0917-173_Nc	13_10_15_1815_49_633	1	0.31	1.490	0.685	0.155	2.75	0.127	0.226	1.97	-0.37	0.57	-0.0080	0.00500	-4.4	0.54	85.051
					10/15/2013 18:16	0917-173_Nc	13_10_15_1816_50_353	1	-2.99	1.423	0.810	0.162	2.86	0.129	0.237	1.97	-0.69	0.58	-0.0090	0.00400	-4.9	0.54	87.455
					10/15/2013 18:17	0917-173_Nc	13_10_15_1817_51_074	1	-2.02	1.494	0.856	0.163	2.86	0.132	0.061	1.96	-0.94	0.60	-0.0070	0.00400	-4.2	0.55	89.584
					10/15/2013 18:18	0917-173_Nc	13_10_15_1818_51_864	1	-3.31	1.469	0.803	0.167	2.93	0.135	0.017	1.95	-1.21	0.61	-0.0050	0.00500	-4.5	0.55	90.699
					10/15/2013 18:19	0917-173_Nc	13_10_15_1819_52_674	1	-0.31	1.403	0.795	0.170	2.90	0.133	-0.312	1.95	-1.23	0.61	-0.0110	0.00400	-4.1	0.55	92.07
					10/15/2013 18:20	0917-173_Nc	13_10_15_1820_53_414	1	-1.60	1.471	0.836	0.173	2.83	0.134	0.009	1.96	-1.17	0.63	-0.0090	0.00500	-4.0	0.55	93.143
					10/15/2013 18:21	0917-173_Nc	13_10_15_1821_54_174	1	-2.39	1.432	1.001	0.168	2.79	0.138	0.072	1.96	-1.03	0.63	-0.0050	0.00500	-4.8	0.53	93.719
					10/15/2013 18:22	0917-173_Nc	13_10_15_1822_54_894	1	-0.93	1.487	0.889	0.169	2.77	0.136	0.093	1.97	-0.99	0.64	-0.0020	0.00500	-5.1	0.56	95.462
					10/15/2013 18:23	0917-173_Nc	13_10_15_1823_55_724	1	-1.43	1.446	0.875	0.175	2.62	0.135	0.140	1.96	-0.97	0.65	-0.0060	0.00500	-4.8	0.56	97.331
					10/15/2013 18:24	0917-173_Nc	13_10_15_1824_56_494	1	-5.49	1.399	1.017	0.173	2.64	0.136	0.044	1.96	-0.65	0.65	-0.0090	0.00500	-4.8	0.56	98.395
					10/15/2013 18:25	0917-173_Nc	13_10_15_1825_57_204	1	-1.98	1.406	0.896	0.180	2.50	0.137	0.032	1.96	-0.58	0.66	-0.0050	0.00400	-5.6	0.57	99.964
					10/15/2013 18:26	0917-173_Nc	13_10_15_1826_57_954	1	-1.97	1.333	0.822	0.182	2.56	0.136	0.068	1.95	-0.76	0.67	-0.0080	0.00500	-5.0	0.55	101.406
					10/15/2013 18:27	0917-173_Nc	13_10_15_1827_58_704	1	-2.08	1.354	0.884	0.181	2.54	0.139	0.069	1.95	-1.01	0.68	-0.0070	0.00500	-5.0	0.58	101.651
					10/15/2013 18:28	0917-173_Nc	13_10_15_1828_59_474	1	-0.87	1.442	0.833	0.182	2.57	0.136	-0.042	1.95	-0.65	0.69	-0.0050	0.00500	-5.7	0.57	102.645
					10/15/2013 18:30	0917-173_Nc	13_10_15_1830_01_265	1	-1.51	1.469	0.838	0.184	2.53	0.138	-0.002	1.95	-0.84	0.69	-0.0060	0.00500	-4.7	0.59	103.317
					10/15/2013 18:31	0917-173_Nc	13_10_15_1831_02_065	1	-0.40	1.410	0.824	0.184	2.57	0.137	0.033	1.95	-0.76	0.69	-0.0050	0.00500	-5.9	0.57	104.169
					10/15/2013 18:32	0917-173_Nc	13_10_15_1832_02_795	1	-2.42	1.409	0.805	0.184	2.50	0.138	-0.077	1.95	-0.69	0.69	-0.0100	0.00500	-5.2	0.57	104.07
					10/15/2013 18:33	0917-173_Nc	13_10_15_1833_03_555	1	-3.26	1.483	0.774	0.182	2.51	0.139	-0.064	1.95	-0.79	0.69	-0.0060	0.00500	-5.2	0.60	104.989
					10/15/2013 18:34	0917-173_Nc	13_10_15_1834_04_365	1	-1.49	1.405	0.856	0.188	2.56	0.139	0.009	1.95	-0.72	0.70	-0.0070	0.00500	-5.2	0.58	104.226
					10/15/2013 18:35	0917-173_Nc	13_10_15_1835_05_115	1	-2.36	1.355	0.825	0.189	2.57	0.141	0.037	1.97	-0.82	0.70	-0.0070	0.00500	-5.1	0.59	105.246
			Stop		10/15/2013 18:36	0917-173_Nc	13_10_15_1836_05_865	1	-2.92	1.302	0.452	0.190	2.24	0.128	0.036	1.837	-2.37	0.67	-0.0050	0.00500	-5.2	0.57	96.655
					10/15/2013 18:37	0917-173_Nc	13_10_15_1837_06_585	1	-4.261	1.148	-1.455	0.258	0.108	0.0800	-0.178	0.562	-10.28	0.49	-0.01200	0.00300	-3.71	0.87	40.778
					10/15/2013 18:38	0917-173_Nc	13_10_15_1838_07_425	1	-4.953	1.195	-1.832	0.274	-0.081	0.0820	-0.251	0.200	-11.67	0.48	-0.00900	0.00300	-3.58	0.93	33.99
					10/15/2013 18:39	0917-173_Nc	13_10_15_1839_08_065	1	-4.33	1.198	-1.833	0.272	-0.178	0.0850	-0.219	0.183	-11.85	0.48	-0.00800	0.00300	-3.32	0.95	33.22
					10/15/2013 18:40	0917-173_Nc	13_10_15_1840_08_765	1	-5.25	1.182	-1.946	0.279	-0.1890	0.0880	-0.242	0.169	-11.84	0.48	-0.01100	0.00300	-3.41	0.95	32.915
					10/15/2013 18:41	0917-173_Nc	13_10_15_1841_09_505	1	-5.11	1.191	-1.767	0.279	-0.106	0.0900	-0.228	0.174	-11.71	0.48	-0.00700	0.00300	-3.43	0.97	32.693
					10/15/2013 18:42	0917-173_Nc	13_10_15_1842_10_276	1	-5.390	1.150	-1.825	0.273	-0.172	0.0890	-0.311	0.178	-11.81	0.47	-0.00700	0.00300	-3.87	0.95	32.644
					10/15/2013 18:43	0917-173_Nc	13_10_15_1843_11_086	1	-3.448	1.016	-1.353	0.208	-0.078	0.0660	-0.157	0.134	-8.61	0.36	-0.00700	0.00200	-3.48	0.713	23.74
					10/15/2013 18:44	0917-173_Nc	13_10_15_1844_11_866	1	-0.430	0.821	-0.219	0.060	0.071	0.0300	0.018	0.0740	-1.461	0.11	0.00	0.00200	-0.760	0.277	5.532
					10/15/2013 18:45	0917-173_Nc	13_10_15_1845_12_596	1	-0.157	0.862	-0.0100	0.045	0.0570	0.0270	0.084	0.0630	0.21100	0.08	0.00	0.00200	0.111	0.245	1.397
					10/15/2013 18:46	0917-173_Nc	13_10_15_1846_13_396	1	-1.953	1.101	0.504	0.112	1.81	0.083	0.453	1.275	-0.79	0.41	-0.0080	0.00300	-3.1	0.38	52.586
					10/15/2013 18:47	0917-173_Nc	13_10_15_1847_14_166	1	-3.03	1.474	0.792	0.175	2.76	0.136	0.100	1.94	-1.11	0.68	-0.0010	0.00500	-5.0	0.56	102.399
					10/15/2013 18:48	0917-173_Nc	13_10_15_1848_14_866	1	-1.42	1.408	0.824	0.186	2.78	0.139	0.030	1.93	-0.91	0.70	-0.0060	0.00500	-5.7	0.59	105.176
Data	Run	8	Start	A	10/15/2013 18:49	0917-173_Nc	13_10_15_1849_15_616	1	-3.91	1.373	0.835	0.182	2.65	0.139	-0.070	1.94	-0.83	0.70	-0.0030	0.00500	-4.9	0.59	105.254
					10/15/2013 18:50	0917-173_Nc	13_10_15_1850_16_406	1	-1.42	1.457	0.856	0.184	2.60	0.139	-0.353	1.92	-0.64	0.71	-0.0090	0.00500	-5.6	0.60	105.951
					10/15/2013 18:51	0917-173_Nc	13_10_15_1851_17_216	1	-2.58	1.383	0.796	0.190	2.60	0.140	0.026	1.94	-0.86	0.71	-0.0060	0.00500	-5.1	0.59	106.785
					10/15/2013 18:52	0917-173_Nc	13_10_15_1852_17_946	1	-2.38	1.343	0.798	0.189	2.72	0.141	-0.082	1.94	-0.80	0.71	-0.0060	0.00500	-5.6	0.59	107.315
					10/15/2013 18:53	0917-173_Nc	13_10_15_1853_18_657	1	-1.89	1.421	0.907	0.193	2.72	0.140	-0.141	1.92	-0.96	0.73	-0.0060	0.00500	-5.8	0.59	109.466
					10/15/2013 18:54	0917-173_Nc	13_10_15_1854_19_407	1	-1.23	1.386	0.924	0.197	2.70	0.144	-0.077	1.93	-1.46	0.75	-0.0100	0.00500	-5.3	0.57	112.375

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 18:55	0917-173_Nc	13_10_15_1855_20_197	1	-0.35	1.522	0.806	0.202	2.75	0.150	-0.196	1.94	-1.83	0.77	-0.0030	0.00500	-5.4	0.59	114.317
					10/15/2013 18:56	0917-173_Nc	13_10_15_1856_20_907	1	-3.28	1.364	0.765	0.207	2.85	0.150	-0.259	1.92	-2.43	0.79	-0.0070	0.00500	-4.7	0.59	117.291
					10/15/2013 18:57	0917-173_Nc	13_10_15_1857_21_717	1	-0.82	1.362	0.774	0.206	2.87	0.153	-0.361	1.93	-2.57	0.80	-0.0050	0.00500	-5.1	0.57	118.927
					10/15/2013 18:58	0917-173_Nc	13_10_15_1858_22_447	1	0.00	1.424	0.842	0.206	2.84	0.152	-0.204	1.94	-2.48	0.80	-0.0060	0.00500	-5.2	0.58	118.804
					10/15/2013 18:59	0917-173_Nc	13_10_15_1859_23_207	1	-3.75	1.427	0.967	0.211	2.86	0.154	-0.343	1.92	-2.14	0.81	-0.0100	0.00500	-5.1	0.59	118.754
					10/15/2013 19:00	0917-173_Nc	13_10_15_1900_23_947	1	-2.68	1.451	0.964	0.212	2.84	0.152	-0.484	1.93	-2.03	0.81	-0.0060	0.00500	-5.4	0.58	118.4
					10/15/2013 19:01	0917-173_Nc	13_10_15_1901_24_647	1	-3.07	1.448	1.037	0.210	2.94	0.153	-0.363	1.93	-2.09	0.81	-0.0050	0.00500	-5.5	0.60	119.008
					10/15/2013 19:02	0917-173_Nc	13_10_15_1902_25_427	1	-1.54	1.421	0.959	0.207	2.87	0.152	-0.356	1.93	-2.30	0.81	-0.0070	0.00600	-4.8	0.60	119.796
					10/15/2013 19:03	0917-173_Nc	13_10_15_1903_26_167	1	-2.16	1.404	0.880	0.217	2.92	0.157	-0.139	1.92	-2.30	0.82	-0.0060	0.00500	-5.6	0.59	120.871
					10/15/2013 19:04	0917-173_Nc	13_10_15_1904_26_967	1	-2.13	1.500	0.872	0.208	2.94	0.158	-0.461	1.92	-2.39	0.81	-0.0030	0.00500	-4.9	0.59	121.244
					10/15/2013 19:05	0917-173_Nc	13_10_15_1905_27_678	1	-1.09	1.353	0.947	0.213	2.90	0.159	-0.282	1.94	-2.22	0.81	-0.0020	0.00500	-5.5	0.58	119.924
					10/15/2013 19:06	0917-173_Nc	13_10_15_1906_28_368	1	-3.11	1.436	0.927	0.213	2.92	0.156	-0.518	1.93	-2.21	0.81	-0.0030	0.00500	-5.4	0.60	118.371
					10/15/2013 19:07	0917-173_Nc	13_10_15_1907_29_148	1	-1.40	1.435	0.773	0.210	2.92	0.156	-0.298	1.94	-2.06	0.79	-0.0080	0.00500	-5.1	0.59	117.668
					10/15/2013 19:08	0917-173_Nc	13_10_15_1908_29_878	1	-2.80	1.471	0.906	0.204	2.91	0.154	-0.338	1.92	-1.98	0.78	-0.0060	0.00500	-5.3	0.59	115.905
					10/15/2013 19:09	0917-173_Nc	13_10_15_1909_30_628	1	-2.42	1.410	0.842	0.198	2.85	0.154	-0.370	1.93	-1.71	0.76	-0.0080	0.00500	-5.4	0.58	113.794
					10/15/2013 19:10	0917-173_Nc	13_10_15_1910_31_398	1	-0.37	1.461	0.754	0.196	2.85	0.150	-0.225	1.94	-1.77	0.75	-0.0060	0.00500	-5.0	0.57	112.008
					10/15/2013 19:11	0917-173_Nc	13_10_15_1911_32_168	1	-1.59	1.386	0.834	0.195	2.81	0.149	-0.361	1.93	-1.50	0.74	-0.0050	0.00500	-5.0	0.58	110.498
					10/15/2013 19:12	0917-173_Nc	13_10_15_1912_32_878	1	-2.14	1.323	0.802	0.192	2.90	0.149	-0.411	1.93	-1.42	0.73	-0.0060	0.00500	-4.8	0.56	109.925
					10/15/2013 19:13	0917-173_Nc	13_10_15_1913_33_668	1	-2.14	1.361	0.801	0.195	2.83	0.147	-0.233	1.93	-1.55	0.74	-0.0010	0.00500	-4.9	0.57	110.673
					10/15/2013 19:14	0917-173_Nc	13_10_15_1914_34_358	1	0.08	1.443	0.928	0.197	2.92	0.150	-0.069	1.95	-1.40	0.74	-0.0070	0.00500	-4.6	0.58	111.467
					10/15/2013 19:15	0917-173_Nc	13_10_15_1915_35_158	1	-2.58	1.443	0.809	0.190	2.77	0.148	-0.221	1.93	-1.44	0.73	-0.0090	0.00500	-4.3	0.58	110.686
					10/15/2013 19:16	0917-173_Nc	13_10_15_1916_35_878	1	-0.79	1.425	0.933	0.197	2.77	0.150	-0.235	1.93	-1.18	0.74	0.0000	0.00500	-5.1	0.58	110.095
					10/15/2013 19:17	0917-173_Nc	13_10_15_1917_36_589	1	-3.26	1.464	0.853	0.189	2.73	0.148	-0.181	1.93	-1.17	0.72	-0.0040	0.00500	-5.1	0.59	108.901
					10/15/2013 19:18	0917-173_Nc	13_10_15_1918_37_339	1	-1.06	1.360	0.979	0.193	2.67	0.145	-0.154	1.93	-1.18	0.72	-0.0070	0.00500	-5.1	0.57	107.43
					10/15/2013 19:19	0917-173_Nc	13_10_15_1919_38_159	1	-1.32	1.424	0.790	0.188	2.67	0.143	-0.400	1.92	-0.80	0.70	-0.0050	0.00500	-5.7	0.58	105.36
					10/15/2013 19:20	0917-173_Nc	13_10_15_1920_38_909	1	-0.81	1.538	0.901	0.186	2.64	0.144	-0.188	1.94	-0.88	0.70	-0.0060	0.00500	-5.1	0.58	105.636
					10/15/2013 19:21	0917-173_Nc	13_10_15_1921_39_459	1	-2.75	1.462	0.767	0.187	2.62	0.143	-0.195	1.93	-0.92	0.70	-0.0070	0.00500	-5.4	0.57	106.112
					10/15/2013 19:22	0917-173_Nc	13_10_15_1922_40_209	1	-3.51	1.483	0.870	0.190	2.64	0.145	-0.035	1.93	-1.02	0.70	-0.0040	0.00500	-4.9	0.58	106.101
					10/15/2013 19:23	0917-173_Nc	13_10_15_1923_41_009	1	-3.68	1.386	0.808	0.187	2.64	0.144	-0.250	1.93	-1.01	0.71	-0.0040	0.00500	-4.9	0.58	106.409
					10/15/2013 19:24	0917-173_Nc	13_10_15_1924_41_719	1	-3.19	1.398	0.862	0.188	2.56	0.142	-0.276	1.93	-0.88	0.71	-0.0040	0.00500	-5.5	0.56	106.997
					10/15/2013 19:25	0917-173_Nc	13_10_15_1925_43_529	1	-0.02	1.348	0.669	0.188	2.51	0.145	-0.247	1.93	-1.03	0.71	-0.0050	0.00500	-5.3	0.55	107.037
					10/15/2013 19:26	0917-173_Nc	13_10_15_1926_43_249	1	-2.49	1.432	0.801	0.189	2.56	0.145	-0.144	1.94	-0.95	0.71	-0.0020	0.00500	-5.8	0.58	106.274
					10/15/2013 19:27	0917-173_Nc	13_10_15_1927_43_949	1	-3.10	1.429	0.748	0.194	2.61	0.145	-0.087	1.94	-1.18	0.71	-0.0030	0.00500	-5.6	0.55	106.774
					10/15/2013 19:28	0917-173_Nc	13_10_15_1928_44_689	1	-2.33	1.389	0.722	0.190	2.69	0.146	-0.214	1.93	-1.48	0.72	-0.0050	0.00500	-5.1	0.55	107.278
					10/15/2013 19:29	0917-173_Nc	13_10_15_1929_45_530	1	-0.10	1.392	0.610	0.193	2.71	0.150	-0.262	1.92	-1.78	0.72	-0.0050	0.00500	-4.4	0.56	107.945
					10/15/2013 19:30	0917-173_Nc	13_10_15_1930_46_270	1	-2.04	1.361	0.694	0.198	2.90	0.152	-0.191	1.93	-2.04	0.74	-0.0070	0.00500	-4.2	0.56	109.597
					10/15/2013 19:31	0917-173_Nc	13_10_15_1931_47_030	1	-1.28	1.447	0.703	0.200	2.97	0.154	-0.239	1.93	-1.93	0.74	-0.0070	0.00500	-4.8	0.58	110.205
					10/15/2013 19:32	0917-173_Nc	13_10_15_1932_47_740	1	-0.83	1.411	0.681	0.204	3.05	0.157	-0.28	1.93	-2.12	0.75	-0.0090	0.00500	-4.6	0.54	110.835
					10/15/2013 19:33	0917-173_Nc	13_10_15_1933_48_540	1	-1.78	1.452	0.633	0.199	3.08	0.160	-0.19	1.93	-2.31	0.75	-0.0060	0.00500	-4.4	0.56	110.765
					10/15/2013 19:34	0917-173_Nc	13_10_15_1934_49_250	1	-0.47	1.381	0.731	0.198	3.12	0.161	-0.19	1.94	-2.10	0.74	-0.0060	0.00500	-4.1	0.56	109.399
					10/15/2013 19:35	0917-173_Nc	13_10_15_1935_50_070	1	-1.97	1.447	0.5800	0.195	3.01	0.158	-0.484	1.94	-2.18	0.73	-0.0060	0.00500	-4.2	0.56	107.777
					10/15/2013 19:36	0917-173_Nc	13_10_15_1936_50_850	1	-1.49	1.389	0.741	0.189	2.98	0.151	-0.27	1.93	-1.83	0.71	-0.0080	0.00500	-4.3	0.55	104.952
					10/15/2013 19:37	0917-173_Nc	13_10_15_1937_51_560	1	-1.00	1.348	0.628	0.183	2.97	0.154	-0.266	1.93	-2.00	0.69	-0.0040	0.00500	-3.6	0.54	103.538
					10/15/2013 19:38	0917-173_Nc	13_10_15_1938_52_350	1	-0.80	1.396	0.700	0.181	2.88	0.146	-0.213	1.93	-1.88	0.69	-0.0080	0.00500	-4.3	0.54	102.395
					10/15/2013 19:39	0917-173_Nc	13_10_15_1939_53_120	1	-0.28	1.476	0.681	0.179	2.82	0.145	-0.072	1.94	-1.66	0.67	-0.0040	0.00500	-4.0	0.54	100.534
					10/15/2013 19:40	0917-173_Nc	13_10_15_1940_53_831	1	-1.65	1.336	0.738	0.179	2.82	0.143	-0.020	1.93	-1.55	0.66	-0.0080	0.00500	-4.2	0.51	99.142
					10/15/2013 19:41	0917-173_Nc	13_10_15_1941_54_551	1	-2.93	1.419	0.626	0.173	2.81	0.141	-0.165	1.94	-1.63	0.65	-0.0100	0.00500	-4.2	0.53	97.846
					10/15/2013 19:42	0917-173_Nc	13_10_15_1942_55_311	1	-1.65	1.508	0.735	0.174	2.76	0.141	-0.097	1.93	-1.58	0.65	-0.0060	0.00500	-3.9	0.55	96.961
					10/15/2013 19:43	0917-173_Nc	13_10_15_1943_56_131	1	0.36	1.447	0.693	0.173	2.78	0.145	-0.109	1.94	-1.65	0.65	-0.0100	0.00500	-3.9	0.53	97.525
					10/15/2013 19:44	0917-173_Nc	13_10_15_1944_56_911	1	0.00	1.435	0.745	0.178	2.76	0.142	0.020	1.92	-1.51	0.65	-0.0040	0.00400	-4.5	0.51	96.915
					10/15/2013 19:45	0917-173_Nc	13_10_15_1945_57_631	1	-1.10	1.402	0.853	0.180	2.70	0.141	-0.149	1.94	-1.40	0.64	-0.0070	0.00500	-3.8	0.53	95.77
					10/15/2013 19:46	0917-173_Nc	13_10_15_1946_58_371	1	-0.73	1.434	0.756	0.175	2.59	0.139	0.013	1.93	-1.36	0.63	-0.0080	0.00500	-3.5	0.53	95.35
					10/15/2013 19:47	0917-173_Nc	13_10_15_1947_59_161	1	0.78	1.441	0.783	0.168	2.63	0.137	-0.041	1.93	-1.21	0.63	-0.0090	0.00400	-4.2	0.52	95.021
			Stop		10/15/2013 19:48	0917-173_Nc	13_10_15_1948_59_901	1	-2.762	1.095	-0.926	0.227	0.746	0.0790	0.199	1.007	-8.01	0.48	-0.00800	0.00300	-3.26	0.70	50.617
					10/15/2013 19:50	0917-173_Nc	13_10_15_1950_00_701	1	-3.27	1.067	-1.738	0.267	-0.116	0.0820	-0.0900	0.217	-11.06	0.46	-0.01600	0.00200	-2.72	0.87	33.641
					10/15/2013 19:51	0917-173_Nc	13_10_15_1951_01_461	1	-2.92	1.240	-1.781	0.276	-0.108	0.0840	-0.238	0.177	-11.69	0.47	-0.0120	0.00300	-3.07	0.94	33.355
					10/15/2013 19:52	0917-173_Nc	13_10_15_1952_02_181	1	-4.625	1.211	-1.785	0.275	-0.1960	0.0870	-0.423	0.178	-11.64	0.47	-0.00800	0.00300	-3.38	0.92	33.166
					10/15/2013 19:53	0917-173_Nc	13_10_15_1953_02_942	1	-3.662	1.059	-1.520	0.224	-0.070	0.0750	-0.225	0.149	-9.50	0.38	-0.00900	0.00300	-2.55	0.74	26.54
					10/15/2013 19:54	0917-173_Nc	13_10_15_1954_03_702	1	-0.474	0.846	-0.226	0.064	0.0050	0.0280	-0.0450	0.0730	-1.796	0.11	-0.00200	0.00200	-0.04	0.284	6.32
					10/15/2013 19:55	0917-173_Nc	13_10_15_1955_04_512	1	0.562	0.832	0.013	0.054	0.079	0.0450	0.617	0.983	-0.019	0.09	-0.00300	0.00200	-0.606	0.277	2.531
					10/15/2013 19:56	0917-173_Nc	13_10_15_1956_05_172	1	1.077	0.915	-0.0030	0.053	0.136	0.0490	0.626	1.169	-0.035	0.09	-0.00800	0.00200	0.234	0.290	2.387
					10/15/2013 19:57	0917-173_Nc	13_10_15_1957_05_982	1	0.584	0.981	0.253	0.068	0.710	0.0670	0.6160	1.391	-0.34	0.17	-0.00300	0.00300	-1.25	0.315	18.983
					10/15/2013 19:58	0917-173_Nc	13_10_15_1958_06_702	1	-0.323	1.293	0.687	0.146	2.20	0.116	0.238	1.912	-1.10	0.52	-0.0080	0.00400	-3.7	0.47	78.026
					10/15/2013 19:59	0917-173_Nc	13_10_15_1959_07_442	1	-2.97	1.388	0.814	0.164	2.55	0.130	0.059	1.94	-0.93	0.59	-0.0070	0.00500	-4.4	0.51	91.052
Data	Run	9	Start	A	10/15/2013 20:00	0917-173_Nc	13_10_15_2000_08_262	1	-2.636	1.411	0.929	0.160	2.57	0.133	0.172	1.94	-1.00	0.60	-0.0040	0.00500	-4.2	0.52	90.05
					10/15/2013 20:01	0917-173_Nc	13_10_15_2001_09_022	1	-1.382	1.404	0.855	0.160	2.62	0.133	0.140	1.95	-0.91	0.59	-0.0070	0.00400	-4.1	0.51	89.234
					10/15/2013 20:02	0917-173_Nc	13_10_15_2002_09_792	1	-3.55	1.416	0.785	0.159	2.64	0.134	0.146	1.935	-1.12	0.58	-0.0090	0.00400	-3.6	0.50	88.394
					10/15/2013 20:03	0917-173_Nc	13_10_15_2003_10_502	1	-1.94	1.363	0.756	0.160	2.71	0.131	0.132	1.94	-1.10	0.58	-0.0070	0.00500	-3.9	0.51	87.474
					10/15/2013 20:04	0917-173_Nc	13_10_15_2004_11_152	1	-1.58	1.375	0.740	0.155	2.74	0.131	-0.093	1.94	-1.34	0.57	-0.0100	0.00500	-3.6	0.50	85.471
					10/15/2013 20:05	0917-173_Nc	13_10_15_2005_11_943	1	-0.68	1.307	0.900	0.156	2.77	0.131	0.111	1.95	-1.11	0.56	-0.0040	0.00500	-3.3	0.49	85.152
					10/15/2013 20:06	0917-173_Nc	13_10_15_2006_12_743	1	-2.220	1.441	0.831	0.157	2.73	0.131	-0.087	1.94	-1.19	0.57	-0.0060	0.00500	-3.7	0.53	85.28
					10/15/2013 20:07	0917-173_Nc	13_10_15_2007_13_463	1	-1.21	1.351	0.893	0.160	2.67	0.130	0.023	1.95	-1.27	0.58	-0.0080	0.00500	-4.0	0.51	87.707
					10/15/2013 20:08	0917-173_Nc	13_10_15_2008_14_173	1	-3.13	1.459	0.768	0.159	2.58	0.132	-0.083	1.93	-1.29	0.59	-0.0070	0.00400	-3.8	0.52	88.51
					10/15/2013 20:09	0917-173_Nc	13_10_15_2009_14_993	1	-4.016	1.338	0.839	0.164	2.65	0.131	0.036	1.94	-1.34	0.60	-0.0040	0.00400	-3.9	0.50	89.697
					10/15/2013 20:10	0917-173_Nc	13_10_15_2010_15_743	1	-0.97	1.358	0.839	0.164	2.54	0.133	-0.006	1.95	-1.39	0.59	-0.0050	0.00400	-4.2	0.51	89.402
					10/15/2013 20:11	0917-173_Nc	13_10_15_2011_16_563	1	-1.18	1.396	0.956	0.163	2.55	0.129	0.081	1.94	-1.30	0.59	-0.0050	0.00400	-3.9	0.52	88.303
					10/15/2013 20:12	0917-173_Nc	13_10_15_2012_17_303	1	0.05	1.413	0.880	0.162	2.54	0.130	0.046	1.96	-1.18	0.58	-0.0060	0.00500	-4.0	0.51	86.054
					10/15/2013 20:13	0917-173_Nc	13_10_15_2013_18_053	1	-2.34	1.392	0.828	0.156	2.47	0.130	-0.016	1.94	-1.25	0.57	-0.0080	0.00400	-4.0	0.52	84.851
					10/15/2013 20:14	0917-173_Nc	13_10_15_2014_18_853	1	-1.83	1.427	0.736	0.151	2.58	0.130	0.174	1.948	-1.18	0.55	-0.0030	0.00500	-3.7	0.52	83.961
					10/15/2013 20:15	0917-173_Nc	13_10_15_2015_19_553	1	-2.49	1.392	0.808	0.151	2.56	0.128	0.052	1.95	-1.05	0.55	-0.0060	0.00500	-4.2	0.50	82.424
					10/15/2013 20:16	0917-173_Nc	13_10_15_2016_20_383	1	-1.32	1.395	0.897	0.154	2.50	0.130	0.026	1.95	-0.74	0.54	-0.0090	0.00400	-4.3	0.50	81.407
					10/15/2013 20:17	0917-173_Nc	13_10_15_2017_21_104	1	-0.76	1.403	0.832	0.154	2.51	0.127	0.147	1.952	-0.89	0.55	-0.0080	0.00400	-3.8	0.52	83.438
					10/15/2013 20:18	0917-173_Nc	13_10_15_2018_21_884	1	-1.42	1.405	0.765	0.153	2.48	0.127	0.180	1.941	-1.17	0.57	-0.0080	0.00400	-3.7	0.51	85.689
					10/15/2013 20:19	0917-173_Nc	13_10_15_2019_22_634	1	-2.08	1.429	0.850	0.160	2.45	0.127	0.124	1.932	-1.10	0.59	-0.0080	0.00500	-4.2	0.52	87.894
					10/15/2013 20:20	0917-173_Nc	13_10_15_2020_23_404	1	-3.77	1.397	0.954	0.162	2.49	0.127	0.090	1.949	-1.19	0.60	-0.0110	0.00500	-3.8	0.52	90.32
					10/15/2013 20:21	0917-173_Nc	13_10_15_2021_24_064	1	-0.79	1.321	0.805	0.166	2.37	0.128	0.092	1.97	-1.46	0.59	-0.0040	0.00500	-3.9	0.51	89.306
					10/15/2013 20:22	0917-173_Nc	13_10_15_2022_24_884	1	-1.81	1.404	0.848	0.163	2.40	0.126	-0.046	1.956	-1.39	0.59	-0.0090	0.00400	-3.6	0.52	89.067
					10/15/2013 20:23	0917-173_Nc	13_10_15_2023_25_664	1	-2.03	1.435	0.895	0.160	2.38	0.128	-0.0050	1.942	-1.22	0.59	-0.0070	0.00500	-4.1	0.51	88.627
					10/15/2013 20:24	0917-173_Nc	13_10_15_2024_26_364	1	-1.04	1.419	0.907	0.162	2.38	0.128	0.171	1.950	-1.27	0.59	-0.0070	0.00500	-4.2	0.52	88.569
					10/15/2013 20:25	0917-173_Nc	13_10_15_2025_27_134	1	-1.40	1.453	0.811	0.160	2.35	0.125	0.044	1.96	-1.26	0.59	-0.0070	0.00400	-4.0	0.52	87.936
					10/15/2013 20:26	0917-173_Nc	13_10_15_2026_27_894	1	-2.83	1.486	0.847	0.157	2.27	0.125	0.213	1.948	-1.21	0.58	-0.0070	0.00400	-4.0	0.53	86.598
					10/15/2013 20:27	0917-173_Nc	13_10_15_2027_28_654	1	-1.01	1.416	0.859	0.153	2.31	0.129	0.256	1.963	-1.24	0.56	-0.0060	0.00400	-3.7	0.50	85.084
					10/15/2013 20:28	0917-173_Nc	13_10_15_2028_29_365	1	-0.89	1.378	0.895	0.150	2.36	0.127	0.127	1.943	-1.09	0.56	-0.0080	0.00400	-4.0	0.48	84.585
					10/15/2013 20:29	0917-173_Nc	13_10_15_2029_30_125	1	-2.15	1.355	0.702	0.155	2.34	0.126	-0.0760	1.946	-0.99	0.55	-0.0090	0.00500	-4.2	0.49	83.199
					10/15/2013 20:30	0917-173_Nc	13_10_15_2030_30_925	1	-3.59	1.387	0.815	0.151	2.36	0.123	0.079	1.955	-1.17	0.54	-0.0020	0.00400	-3.2	0.50	81.863
					10/15/2013 20:31	0917-173_Nc	13_10_15_2031_31_715	1	-1.99	1.419	0.849	0.149	2.36	0.125	0.125	1.955	-0.98	0.53	-0.0080	0.00500	-3.4	0.51	80.631
					10/15/2013 20:32	0917-173_Nc	13_10_15_2032_32_475	1	-1.75	1.398	0.736	0.143	2.50	0.125	0.255	1.963	-1.07	0.52	-0.0080	0.00400	-3.0	0.50	79.269
					10/15/2013 20:33	0917-173_Nc	13_10_15_2033_33_185	1	-0.67	1.452	0.701	0.151	2.48	0.123	0.185	1.963	-1.17	0.53	-0.0060	0.00500	-4.1	0.51	77.999
					10/15/2013 20:34	0917-173_Nc	13_10_15_2034_33_905	1	-0.69	1.399	0.659	0.146	2.42	0.124	0.140	1.940	-1.08	0.52	-0.0070	0.00400	-3.6	0.51	77.533
					10/15/2013 20:35	0917-173_Nc	13_10_15_2035_34_705	1	-3.71	1.443	0.718	0.148	2.43	0.124	0.334	1.957	-1.14	0.52	-0.0080	0.00500	-3.7	0.51	77.241
					10/15/2013 20:36	0917-173_Nc	13_10_15_2036_35_445	1	-1.70	1.330	0.707	0.147	2.53	0.121	0.177	1.951	-1.24	0.51	-0.0070	0.00400	-3.5	0.50	77.168
					10/15/2013 20:37	0917-173_Nc	13_10_15_2037_36_255	1	-1.35	1.378	0.684	0.146	2.47	0.123	0.155	1.946	-1.19	0.52	-0.0070	0.00500	-3.6	0.49	77.843
					10/15/2013 20:38	0917-173_Nc	13_10_15_2038_37_015	1	-1.21	1.392	0.741	0.142	2.49	0.124	0.171	1.946	-1.18	0.52	-0.0110	0.00400	-3.7	0.49	77.715
					10/15/2013 20:39	0917-173_Nc	13_10_15_2039_37_755	1	-2.48	1.456	0.760	0.141	2.52	0.122	0.117	1.948	-1.30	0.52	-0.0070	0.00500	-3.2	0.50	77.175
					10/15/2013 20:40	0917-173_Nc	13_10_15_2040_38_526	1	-3.575	1.427	0.783	0.143	2.57	0.123	0.119	1.944	-1.38	0.51	-0.0080	0.00400	-2.9	0.49	75.63
					10/15/2013 20:41	0917-173_Nc	13_10_15_2041_39_246	1	-1.11	1.495	0.792	0.142	2.72	0.121	0.122	1.95	-1.46	0.50	-0.0090	0.00400	-3.5	0.51	74.112
					10/15/2013 20:42	0917-173_Nc	13_10_15_2042_39_956	1	-2.320	1.429	0.830	0.142	2.76	0.123	0.126	1.95	-1.42	0.50	-0.0090	0.00400	-2.5	0.51	73.146
					10/15/2013 20:43	0917-173_Nc	13_10_15_2043_40_746	1	-2.125	1.399	0.740	0.139	2.90	0.123	0.182	1.96	-1.66	0.49	-0.0040	0.00400	-3.5	0.49	72.239
					10/15/2013 20:44	0917-173_Nc	13_10_15_2044_41_566	1	-2.08	1.319	0.672	0.142	2.92	0.122	0.318	1.95	-1.78	0.49	-0.0080	0.00400	-3.5	0.46	71.795
					10/15/2013 20:45	0917-173_Nc	13_10_15_2045_42_186	1	-2.55	1.400	0.644	0.140	2.99	0.124	0.089	1.95	-2.00	0.49	-0.0070	0.00400	-2.6	0.47	72.085
					10/15/2013 20:46	0917-173_Nc	13_10_15_2046_42_986	1	0.51	1.409	0.736	0.142	3.06	0.125	0.27	1.94	-2.04	0.49	-0.0110	0.00400	-3.0	0.47	71.588
					10/15/2013 20:47	0917-173_Nc	13_10_15_2047_43_726	1	-3.02	1.370	0.683	0.136	2.97	0.124	0.114	1.95	-1.84	0.48	-0.0050	0.00400	-2.5	0.46	71.868
					10/15/2013 20:48	0917-173_Nc	13_10_15_2048_44_446	1	-2.854	1.444	0.715	0.138	2.97	0.122	0.121	1.95	-1.85	0.49	-0.0070	0.00500	-2.3	0.48	71.962
					10/15/2013 20:49	0917-173_Nc	13_10_15_2049_45_236	1	-3.304	1.356	0.678	0.142	2.94	0.124	0.181	1.95	-1.99	0.49	-0.0040	0.00400	-2.0	0.47	71.19
					10/15/2013 20:50	0917-173_Nc	13_10_15_2050_45_976	1	-0.16	1.457	0.732	0.138	2.99	0.124	0.293	1.96	-1.84	0.49	-0.0100	0.00400	-2.5	0.49	70.648
					10/15/2013 20:51	0917-173_Nc	13_10_15_2051_46_746	1	-1.83	1.338	0.673	0.138	3.03	0.119	0.222	1.949	-1.84	0.48	-0.0090	0.00400	-2.6	0.46	69.899
					10/15/2013 20:52	0917-173_Nc	13_10_15_2052_47_447	1	-1.465	1.384	0.765	0.138	3.04	0.123	0.162	1.947	-1.83	0.48	-0.0110	0.00400	-2.5	0.47	69.593
					10/15/2013 20:53	0917-173_Nc	13_10_15_2053_48_167	1	-2.04	1.365	0.672	0.140	3.10	0.122	0.054	1.95	-1.73	0.47	-0.0060	0.00500	-2.5	0.48	68.802
					10/15/2013 20:54	0917-173_Nc	13_10_15_2054_48_927	1	-2.545	1.424	0.785	0.139	3.12	0.123	0.070	1.95	-1.70	0.47	-0.0060	0.00500	-3.0	0.48	67.817
					10/15/2013 20:55	0917-173_Nc	13_10_15_2055_49_707	1	-1.664	1.400	0.662	0.135	3.15	0.120	0.166	1.95	-1.88	0.46	-0.0060	0.00400	-2.4	0.47	66.257
					10/15/2013 20:56	0917-173_Nc	13_10_15_2056_50_477	1	-1.627	1.446	0.679	0.129	3.16	0.120	0.279	1.95	-1.53	0.45	-0.0080	0.00400	-2.9	0.48	65.224
					10/15/2013 20:57	0917-173_Nc	13_10_15_2057_51_217	1	-1.012	1.348	0.690	0.132	3.13	0.122	0.135	1.96	-1.73	0.45	-0.0090	0.00500	-3.2	0.44	65.071
					10/15/2013 20:58	0917-173_Nc	13_10_15_2058_52_037	1	-4.38	1.481	0.792	0.132	3.12	0.120	0.282	1.95	-1.73	0.44	-0.0140	0.00400	-2.2	0.48	64.622
					10/15/2013 20:59	0917-173_Nc	13_10_15_2059_52_747	1	-1.628	1.136	-0.3910	0.173	1.68	0.0840	0.406	1.387	-6.025	0.43	-0.01000	0.00300	-3.2	0.56	51.366
			Stop		10/15/2013 21:00	0917-173_Nc	13_10_15_2100_53_507	1	-3.93	1.263	-1.660	0.261	-0.030	0.0830	-0.239	0.292	-11.31	0.46	-0.00800	0.00300	-3.41	0.91	33.618
					10/15/2013 21:01	0917-173_Nc	13_10_15_2101_54_237	1	-1.534	0.961	-0.814	0.141	-0.028	0.0470	-0.0440	0.140	-5.83	0.25	-0.00600	0.00200	-1.36	0.514	17.092
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_01_112	1	-0.3	1.3	-0.1070	0.072	-0.58	1.31	-0.377	0.0860	-0.078	0.118	0.048	0.529	0.197	0.396	-1.652
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_19_662	1	0.1	1.4	-0.087	0.072	-0.40	1.40	-0.0780	0.0870	-0.04200	0.123	0.052	0.561	-0.073	0.413	-1.753
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_38_242	1	2.1	1.4	0.044	0.078	-0.46	1.43	-0.262	0.0860	-0.200	0.128	0.056	0.573	-0.0900	0.413	-1.789
					10/15/2013 21:15	0917-173_Nc	13_10_15_2115_56_802	1	1.0	1.4	0.057	0.072	-0.51	1.45	-0.197	0.0850	-0.280	0.121	0.050	0.580	1.32	0.394	-1.802
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_15_223	1	-2.9	1.4	0.0250	0.073	-0.45	1.46	0.0050	0.0960	-0.233	0.120	0.050	0.583	0.39	0.405	-1.834
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_33_823	1	0.7	1.2	0.058	0.072	-0.48	1.46	-0.224	0.0990	-0.352	0.117	0.047	0.586	0.675	0.374	-1.816
					10/15/2013 21:16	0917-173_Nc	13_10_15_2116_52_323	1	2.6	1.3	-0.067	0.076	-0.52	1.46	-0.143	0.0940	0.318	0.122	0.052	0.585	-0.597	0.405	-1.817
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_10_943	1	0.8	1.2	-0.0050	0.068	-0.49	1.46	-0.071	0.0950	0.060	0.112	0.045	0.582	-0.327	0.378	-1.805
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_29_463	1	0.3	1.4	0.1730	0.075	-0.43	1.47	-0.00900	0.0900	0.207	0.125	0.062	0.582	-0.581	0.415	-1.853
					10/15/2013 21:17	0917-173_Nc	13_10_15_2117_47_913	1	-2.2	1.3	0.080	0.076	-0.45	1.46	-0.1670	0.0930	-0.055	0.122	0.045	0.584	0.369	0.394	-1.834
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_06_603	1	2.5	1.4	-0.042	0.076	-0.52	1.46	-0.347	0.0960	-0.035	0.123	0.053	0.582	-0.22	0.392	-1.844
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_25_043	1	-1.5	1.3	-0.0670	0.075	-0.53	1.46	-0.420	0.0860	-0.1210	0.123	0.052	0.582	0.128	0.412	-1.813
					10/15/2013 21:18	0917-173_Nc	13_10_15_2118_43_553	1	0.0	1.4	0.1200	0.074	-0.45	1.46	-0.218	0.0950	-0.041	0.122	0.049	0.581	-0.07	0.410	-1.844
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_02_113	1	0.9	1.4	0.009	0.071	-0.54	1.46	0.0250	0.0900	-0.2120	0.117	0.051	0.582	0.374	0.390	-1.851
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_20_623	1	1.7	1.2	0.0100	0.074	-0.45	1.46	-0.270	0.0890	-0.091	0.117	0.054	0.583	0.062	0.386	-1.866
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_39_233	1	-1.6	1.4	-0.034	0.074	-0.46	1.46	-0.329	0.0930	-0.112	0.120	0.052	0.584	0.250	0.395	-1.845
					10/15/2013 21:19	0917-173_Nc	13_10_15_2119_57_753	1	0.2	1.2	0.0170	0.076	-0.49	1.46	-0.192	0.0960	-0.095	0.119	0.050	0.584	0.241	0.372	-1.844
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_45_404	1	2.5870	2.404	-0.084	0.126	0.022	0.0750	-0.098	0.131	0.218	0.210	-0.00600	0.00400	-0.50	0.72	0.025
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_51_574	1	-2.303	2.389	0.220	0.131	0.0810	0.082	0.03800	0.187	0.42	0.213	0.00400	0.00500	-1.80	0.70	-0.007
					10/15/2013 21:29	0917-173_Nc	13_10_15_2129_57_784	1	-2.406	2.236	-0.489	0.129	-0.0110	0.0790	0.550	0.442	-0.39	0.206	-0.01000	0.00400	0.27	0.68	0.067
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_04_024	1	5.220	2.253	0.138	0.135	-0.059	0.099	0.518	1.174	0.362	0.215	0.0050	0.00600	-1.17	0.71	0.071
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_10_174	1	3.424	2.404	0.012	0.129	0.02600	0.1030	0.607	1.659	-0.184	0.215	0.00100	0.00600	-0.57	0.73	0.188
					10/15/2013 21:30	0917-173_Nc	13_10_15_2130_16_234	1	0.38	2.497	0.111	0.137	-0.0420	0.115	0.196	1.762	-0.305	0.225	-0.01000	0.00600	0.994	0.75	0.252

Location **Disc.** **#** **Start/Stop** **Instrument**

				Label		**Label**		**Label**		**Label**		**Label**		**Label**		**Label**		
				1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_22_494	1	-0.801	2.472	0.220	0.143	-0.275	0.125	0.718	1.843	-0.170	0.229	0.00100	0.00700	-0.158	0.74	0.248
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_28_654	1	4.43	2.559	0.03	0.146	-0.0940	0.121	0.42	1.773	-0.421	0.237	-0.02400	0.00700	-0.55	0.76	0.244
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_34_894	1	-2.041	2.736	-0.078	0.143	-0.224	0.124	0.633	1.730	0.18	0.240	-0.01600	0.00600	-1.506	0.81	0.291
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_41_054	1	0.622	2.726	0.046	0.146	-0.2200	0.123	0.37	1.667	0.01900	0.242	-0.01500	0.00700	-0.746	0.83	0.226
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_47_144	1	-1.978	2.655	0.0060	0.153	-0.085	0.126	1.049	1.566	-0.1810	0.245	-0.01300	0.00700	-0.1470	0.81	0.207
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_53_364	1	-2.80	2.847	0.061	0.153	-0.220	0.124	0.880	1.515	-0.386	0.252	-0.01800	0.00600	-0.04	0.83	0.203
10/15/2013 21:30	0917-173_Nc	13_10_15_2130_59_554	1	-0.154	2.758	-0.003	0.151	-0.0080	0.122	0.549	1.424	-0.045	0.249	-0.02	0.00600	0.014	0.82	0.094
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_05_784	1	-1.365	2.843	0.083	0.142	0.0510	0.126	0.50	1.340	-0.13	0.239	-0.00300	0.00700	-1.114	0.80	0.125
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_11_964	1	-0.464	2.672	-0.029	0.158	-0.344	0.117	0.655	1.30	-0.180	0.251	-0.00300	0.00600	-0.359	0.84	0.114
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_18_044	1	-0.607	3.159	-0.169	0.158	-0.249	0.130	0.611	1.17	-0.323	0.270	-0.01500	0.00700	-1.94	0.89	0.063
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_24_244	1	-2.15	2.701	-0.121	0.161	-0.1650	0.126	1.026	1.15	0.482	0.257	-0.02000	0.00700	-3.20	0.84	0.026
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_30_434	1	-4.703	2.768	-0.0860	0.154	-0.229	0.129	1.120	1.12	-0.069	0.252	-0.00500	0.00600	-2.05	0.85	-0.016
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_36_724	1	-1.713	3.135	0.307	0.163	-0.541	0.130	0.43	1.09	-0.36	0.271	-0.00700	0.00700	-2.90	0.91	0.026
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_42_884	1	-3.290	2.986	-0.371	0.147	-0.1180	0.134	1.214	1.20	0.04	0.253	-0.01900	0.00700	-1.11	0.85	0.067
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_49_014	1	-0.112	3.019	0.194	0.159	-0.213	0.124	1.252	1.25	0.274	0.264	-0.01000	0.00700	-1.975	0.90	0.129
10/15/2013 21:31	0917-173_Nc	13_10_15_2131_55_204	1	4.62	2.833	-0.159	0.167	-0.1160	0.123	0.778	1.25	0.396	0.268	-0.0100	0.00700	-0.62	0.85	0.064
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_01_394	1	-3.643	2.843	0.2460	0.156	-0.1250	0.130	1.225	1.317	-0.041	0.257	-0.01100	0.00700	-1.61	0.87	0.129
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_07_574	1	-4.394	2.909	0.298	0.152	-0.0710	0.129	1.215	1.391	0.05	0.253	-0.00800	0.00600	-1.44	0.89	0.153
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_13_664	1	-0.878	2.864	0.080	0.154	-0.1180	0.125	0.896	1.332	-0.047	0.255	-0.01700	0.00700	-0.81	0.84	0.167
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_19_844	1	-4.250	3.143	0.177	0.155	-0.124	0.132	1.201	1.385	0.11	0.264	-0.02000	0.00700	-2.38	0.92	0.24
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_26_064	1	0.007	3.071	0.266	0.150	-0.194	0.124	1.128	1.351	-0.114	0.255	0.00800	0.00700	-2.21	0.86	0.231
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_32_244	1	-3.152	2.916	0.020	0.152	0.197	0.127	1.123	1.392	-0.288	0.252	-0.01100	0.00600	-1.73	0.84	0.191
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_38_444	1	0.94	2.674	-0.181	0.152	-0.154	0.124	0.934	1.369	0.47	0.248	-0.02100	0.00700	-4.05	0.82	0.225
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_44_534	1	-0.3480	2.891	0.094	0.159	-0.0820	0.122	0.680	1.401	0.24	0.262	-0.01200	0.00600	-1.290	0.85	0.216
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_50_814	1	-2.293	3.008	-0.031	0.149	-0.0690	0.132	0.678	1.414	0.20	0.252	-0.01600	0.00700	-1.124	0.86	0.297
10/15/2013 21:32	0917-173_Nc	13_10_15_2132_56_934	1	-1.789	2.972	-0.043	0.155	-0.1690	0.129	0.585	1.355	0.277	0.258	-0.01700	0.00700	-1.00	0.88	0.257
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_03_164	1	-2.476	2.714	-0.319	0.142	0.149	0.121	1.405	1.287	-0.03	0.236	-0.00300	0.00700	-1.40	0.775	0.284
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_09_364	1	-4.258	2.830	-0.183	0.154	-0.1220	0.128	1.330	1.376	-0.30	0.25	-0.00100	0.00600	-0.94	0.87	0.274
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_15_454	1	-3.16	3.043	0.007	0.150	-0.0040	0.128	1.035	1.345	-0.057	0.258	-0.01100	0.00600	-1.002	0.90	0.314
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_21_724	1	-5.1060	2.761	-0.058	0.154	-0.153	0.130	1.083	1.344	-0.302	0.252	-0.01000	0.00600	-2.444	0.81	0.271
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_27_854	1	3.752	2.703	0.2100	0.158	-0.348	0.129	0.760	1.350	0.03	0.25	-0.01400	0.00700	0.22	0.86	0.282
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_34_044	1	-6.292	2.786	-0.201	0.162	-0.0900	0.128	0.619	1.353	-0.158	0.262	-0.00600	0.00700	-1.76	0.89	0.354
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_40_254	1	-1.366	2.884	-0.138	0.147	-0.189	0.126	0.578	1.342	0.226	0.248	-0.00600	0.00700	-1.401	0.86	0.31
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_46_344	1	-5.094	2.736	0.079	0.154	-0.1020	0.124	0.962	1.388	-0.214	0.251	-0.00900	0.00700	-0.88	0.80	0.364
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_52_544	1	-1.06	2.870	0.1070	0.155	-0.0330	0.131	0.775	1.488	-0.19	0.254	-0.00800	0.00600	-2.54	0.86	0.31
10/15/2013 21:33	0917-173_Nc	13_10_15_2133_58_824	1	0.6100	2.593	-0.111	0.157	-0.153	0.124	0.720	1.597	0.13	0.246	-0.01300	0.00700	-1.86	0.79	0.312
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_05_014	1	-2.093	2.727	-0.422	0.144	-0.305	0.123	1.124	1.675	-0.06	0.241	-0.00600	0.00500	-1.533	0.83	0.407
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_11_214	1	-0.227	2.734	0.108	0.141	0.0990	0.124	0.952	1.700	0.00	0.237	-0.01700	0.00700	-2.26	0.78	0.395
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_17_304	1	5.382	2.450	-0.011	0.142	-0.328	0.127	0.930	1.747	0.35	0.231	-0.00600	0.00600	-3.43	0.78	0.397
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_23_504	1	-10.565	2.409	-0.294	0.142	-0.224	0.123	1.006	1.721	-0.519	0.229	0.00200	0.00600	0.41	0.74	0.414
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_29_674	1	0.94	2.397	0.268	0.149	-0.0230	0.128	0.948	1.802	-0.059	0.236	-0.00200	0.00700	-1.1540	0.73	0.423
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_35_864	1	3.978	2.663	0.29	0.135	-0.053	0.1200	0.784	1.811	0.064	0.226	-0.01100	0.00600	0.259	0.757	0.484
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_42_064	1	1.06	2.575	-0.029	0.138	-0.136	0.126	0.867	1.768	-0.337	0.226	-0.02400	0.00600	-1.20	0.75	0.576
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_48_164	1	-4.215	2.614	0.188	0.149	0.04600	0.126	1.153	1.750	-0.070	0.242	-0.01000	0.00600	0.263	0.79	0.439
10/15/2013 21:34	0917-173_Nc	13_10_15_2134_54_354	1	-4.489	2.671	0.0020	0.139	0.0370	0.128	0.801	1.819	-0.12	0.232	-0.02300	0.00700	-1.52	0.75	0.47
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_00_544	1	-5.50	2.714	-0.083	0.144	-0.0180	0.127	1.254	1.659	0.45	0.243	-0.01000	0.00700	-1.26	0.82	0.492
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_06_824	1	-4.853	3.054	-0.184	0.152	-0.272	0.120	1.143	1.549	-0.048	0.257	-0.01300	0.00600	-0.9350	0.87	0.346
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_13_024	1	0.097	2.982	0.104	0.153	-0.246	0.128	0.968	1.500	-0.341	0.255	-0.02	0.00600	-0.554	0.87	0.339
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_19_124	1	-3.9940	2.812	-0.22	0.145	-0.12300	0.130	0.784	1.517	0.126	0.240	-0.02600	0.00700	-0.943	0.83	0.292
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_25_284	1	-2.244	2.869	-0.251	0.144	-0.216	0.133	0.980	1.533	0.066	0.244	-0.01	0.00700	-0.14	0.81	0.331
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_31_534	1	-1.10	2.861	-0.295	0.149	-0.1990	0.124	0.559	1.503	-0.1100	0.249	-0.01900	0.00600	-0.779	0.84	0.338
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_37_714	1	-0.582	2.820	-0.026	0.144	-0.352	0.129	1.151	1.444	-0.34	0.239	-0.00100	0.00700	-1.24	0.79	0.4
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_43_764	1	-1.485	2.903	-0.096	0.155	-0.1060	0.120	1.026	1.509	-0.185	0.255	-0.00600	0.00700	-0.983	0.86	0.396
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_50_014	1	-6.181	2.670	0.080	0.144	-0.132	0.135	0.961	1.545	0.055	0.235	-0.01200	0.00700	-1.371	0.79	0.356
10/15/2013 21:35	0917-173_Nc	13_10_15_2135_56_204	1	-1.240	2.627	0.254	0.143	-0.0270	0.126	0.925	1.547	-0.10	0.233	-0.01000	0.00700	-0.939	0.747	0.351
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_02_384	1	1.83	2.835	-0.0720	0.146	-0.099	0.128	0.989	1.526	-0.4020	0.247	-0.00800	0.00600	0.00	0.84	0.407
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_08_564	1	-6.188	2.821	-0.0980	0.152	-0.216	0.126	1.201	1.457	-0.031	0.252	-0.02200	0.00700	-1.26	0.82	0.302
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_14_644	1	-7.920	2.860	0.046	0.143	0.0050	0.123	0.501	1.486	-0.3400	0.243	-0.01400	0.00600	-0.78	0.82	0.41
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_20_854	1	-4.269	2.789	-0.088	0.156	-0.358	0.131	0.811	1.492	0.117	0.254	-0.00600	0.00700	-0.74	0.82	0.369
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_27_034	1	-9.375	2.943	0.070	0.142	-0.118	0.129	0.708	1.573	0.2170	0.244	-0.01700	0.00700	-1.17	0.83	0.455
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_33_324	1	-4.469	2.849	-0.2900	0.149	0.082	0.132	1.254	1.531	-0.034	0.249	-0.0010	0.00600	-0.41	0.85	0.419
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_39_434	1	-6.199	2.896	0.079	0.145	-0.0030	0.128	1.6850	1.595	0.0500	0.246	-0.00500	0.00600	-1.2310	0.85	0.427
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_45_614	1	-4.833	2.984	-0.010	0.143	-0.168	0.130	0.696	1.565	0.162	0.249	-0.00600	0.00700	-2.09	0.85	0.418
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_51_794	1	0.209	2.561	-0.031	0.142	-0.136	0.132	0.692	1.560	-0.015	0.231	-0.01700	0.00700	-0.568	0.78	0.47
10/15/2013 21:36	0917-173_Nc	13_10_15_2136_57_974	1	-2.374	2.725	0.1580	0.158	-0.070	0.1260	0.865	1.618	-0.432	0.251	-0.01300	0.00600	-0.918	0.81	0.436
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_04_164	1	-4.495	2.691	0.004	0.149	-0.099	0.128	0.883	1.550	-0.587	0.244	-0.01100	0.00700	-0.606	0.81	0.451
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_10_344	1	-5.099	2.881	0.060	0.144	-0.0680	0.125	0.798	1.564	-0.292	0.245	-0.01600	0.00600	-1.642	0.82	0.46
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_16_424	1	-6.053	2.579	-0.056	0.146	0.228	0.125	0.952	1.552	-0.533	0.236	-0.01500	0.00600	-0.13	0.81	0.483
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_22_644	1	-3.66	2.856	-0.191	0.156	0.0450	0.130	1.273	1.572	-0.403	0.256	-0.01600	0.00600	-0.38	0.86	0.414
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_28_894	1	-2.71	2.578	-0.443	0.149	-0.0530	0.132	0.630	1.611	0.090	0.237	-0.00900	0.00600	-0.91	0.80	0.479
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_35_104	1	-4.091	2.712	-0.0150	0.149	-0.188	0.134	0.999	1.616	0.27	0.243	-0.01	0.00600	-0.81	0.81	0.475
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_41_284	1	-0.730	2.900	0.136	0.147	-0.261	0.126	1.594	1.642	0.86	0.249	-0.01500	0.00700	-3.66	0.86	0.486
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_47_374	1	-4.039	2.716	0.132	0.145	-0.3200	0.126	1.144	1.629	0.242	0.242	-0.00600	0.00600	-3.21	0.81	0.459
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_53_604	1	-4.832	2.583	-0.099	0.146	-0.239	0.126	0.672	1.675	0.04	0.239	-0.00400	0.00600	-2.06	0.80	0.534
10/15/2013 21:37	0917-173_Nc	13_10_15_2137_59_774	1	-0.82	2.611	0.201	0.149	-0.087	0.126	0.906	1.657	-0.024	0.242	-0.00200	0.00600	0.4120	0.80	0.514
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_05_954	1	-1.219	2.626	-0.067	0.146	-0.0360	0.127	1.055	1.620	-0.308	0.238	-0.01200	0.00600	-1.60	0.82	0.456
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_12_164	1	-4.166	2.834	-0.237	0.151	-0.282	0.126	0.497	1.642	-0.075	0.250	-0.02800	0.00700	1.45	0.82	0.529
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_18_254	1	0.418	2.714	-0.129	0.152	-0.102	0.123	0.925	1.622	-0.098	0.249	-0.02	0.00700	-2.078	0.82	0.494
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_24_434	1	-4.363	2.959	0.1370	0.141	-0.110	0.128	0.811	1.585	0.163	0.245	-0.01	0.00600	-1.105	0.83	0.486
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_30_714	1	3.87	2.631	-0.113	0.153	-0.152	0.125	1.133	1.627	-0.211	0.246	-0.00400	0.00700	-1.883	0.80	0.479
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_36_934	1	-0.789	2.654	-0.3480	0.149	0.052	0.132	0.656	1.688	-0.089	0.240	-0.01000	0.00600	-3.09	0.79	0.497
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_43_054	1	-9.74	2.961	-0.201	0.161	-0.0030	0.132	0.520	1.615	-0.279	0.266	-0.0330	0.00600	-0.228	0.92	0.56
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_49_204	1	-2.93	2.664	-0.194	0.146	-0.280	0.121	1.019	1.633	0.20	0.238	-0.01	0.00700	-2.07	0.82	0.423
10/15/2013 21:38	0917-173_Nc	13_10_15_2138_55_384	1	3.51	2.799	-0.054	0.148	-0.231	0.127	0.899	1.662	-0.2740	0.244	-0.00900	0.00600	-0.60	0.82	0.519
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_01_574	1	0.135	3.032	0.0900	0.148	-0.395	0.120	0.55	1.642	0.04	0.253	-0.00500	0.00700	-2.57	0.86	0.539
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_07_744	1	1.50	2.616	0.275	0.151	-0.195	0.120	1.239	1.649	0.160	0.243	-0.00600	0.00600	-0.063	0.81	0.472
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_13_864	1	-3.867	2.730	0.0840	0.147	-0.0010	0.119	1.201	1.664	0.118	0.243	-0.0290	0.00600	-1.207	0.79	0.523
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_20_044	1	-1.68	2.568	0.082	0.149	-0.213	0.131	0.726	1.618	-0.247	0.239	-0.01900	0.00600	-2.45	0.78	0.511
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_26_224	1	-3.781	2.900	-0.118	0.152	-0.062	0.123	1.118	1.663	-0.243	0.251	-0.00300	0.00700	-0.850	0.87	0.508
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_32_514	1	-0.424	2.689	0.0500	0.156	0.0480	0.126	0.972	1.697	-0.228	0.249	-0.02000	0.00700	-0.83	0.83	0.545
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_38_704	1	-2.3260	2.804	0.067	0.143	0.07800	0.128	1.215	1.636	-0.992	0.240	-0.01400	0.00500	-0.222	0.83	0.548
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_44_744	1	0.117	2.829	-0.144	0.156	-0.0800	0.122	0.900	1.684	0.310	0.253	-0.00700	0.00500	-0.63	0.85	0.514
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_50_935	1	-1.38	2.841	-0.073	0.150	-0.1500	0.122	1.127	1.648	-0.23	0.251	-0.01400	0.00600	-1.43	0.85	0.509
10/15/2013 21:39	0917-173_Nc	13_10_15_2139_57_195	1	-0.8410	2.731	0.110	0.143	0.223	0.133	1.288	1.638	-0.315	0.237	-0.01200	0.00600	-0.364	0.80	0.58
10/15/2013 21:40	0917-173_Nc	13_10_15_2140_35_345	1	-2.185	1.771	0.0030	0.089	-0.070	0.1100	1.124	1.663	0.033	0.151	-0.02	0.00500	-0.994	0.513	0.57
10/15/2013 21:41	0917-173_Nc	13_10_15_2141_36_035	1	-2.6840	1.648	-0.0050	0.090	-0.133	0.1080	1.446	1.650	-0.145	0.149	-0.01100	0.00400	-1.285	0.504	0.596
10/15/2013 21:42	0917-173_Nc	13_10_15_2142_36_795	1	-2.127	1.745	0.041	0.088	-0.0850	0.1080	1.179	1.644	0.038	0.149	-0.01300	0.00500	-1.160	0.511	0.625
10/15/2013 21:43	0917-173_Nc	13_10_15_2143_37_565	1	0.129	1.720	0.0570	0.091	-0.116	0.1040	1.198	1.657	-0.100	0.151	-0.01	0.00500	-0.717	0.511	0.64
10/15/2013 21:44	0917-173_Nc	13_10_15_2144_38_285	1	-1.891	1.740	0.0780	0.091	-0.0280	0.1070	1.269	1.651	-0.164	0.152	-0.01500	0.00400	-0.5890	0.512	0.658
10/15/2013 21:45	0917-173_Nc	13_10_15_2145_39_091	1	-1.324	1.692	0.002	0.091	-0.104	0.1080	1.078	1.635	-0.085	0.150	-0.01200	0.00500	-0.928	0.509	0.684
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_19_287	1	0.583	2.752	0.240	0.137	-0.104	0.121	1.453	1.769	0.25	0.231	-0.03000	0.00600	-2.77	0.77	0.689
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_25_447	1	-1.535	2.493	-0.005	0.148	0.0350	0.118	1.304	1.808	-0.139	0.235	-0.02300	0.00600	-0.260	0.77	0.66
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_31_687	1	0.617	2.554	-0.013	0.137	0.0450	0.1160	1.060	1.814	-0.24	0.223	-0.02400	0.00600	-1.19	0.75	0.636
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_37_897	1	-2.09	2.585	-0.171	0.138	-0.0490	0.1210	1.003	1.863	-0.18	0.230	-0.01800	0.00500	-1.128	0.78	0.631
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_44_007	1	-4.208	2.473	0.044	0.144	0.02400	0.1150	0.821	1.825	0.066	0.230	-0.00700	0.00600	-1.61	0.75	0.637
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_50_147	1	0.966	2.576	-0.123	0.135	0.0400	0.117	1.3200	1.867	-0.202	0.224	-0.00700	0.00700	0.091	0.74	0.639
10/15/2013 21:47	0917-173_Nc	13_10_15_2147_56_407	1	-4.736	2.843	-0.194	0.129	0.0750	0.123	0.648	1.926	-0.35	0.229	-0.02100	0.00600	-1.21	0.78	0.618
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_02_587	1	-0.71	2.479	0.213	0.131	0.00800	0.1090	1.037	1.871	-0.180	0.220	-0.01	0.00600	-0.145	0.73	0.622
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_08_757	1	-5.237	2.515	0.286	0.133	-0.113	0.1200	1.013	1.874	-0.249	0.221	-0.00900	0.00600	0.782	0.74	0.622
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_14_867	1	0.16	2.709	-0.076	0.136	-0.079	0.1140	0.545	1.835	-0.316	0.227	0.00500	0.00500	0.085	0.77	0.57
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_21_057	1	-5.790	2.509	0.10	0.143	-0.0980	0.122	1.366	1.876	-0.095	0.229	-0.01300	0.00500	-0.090	0.75	0.602
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_27_247	1	-5.465	2.534	-0.075	0.133	-0.03700	0.1110	1.2340	1.860	-0.357	0.225	0.00200	0.00600	-0.81	0.77	0.583
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_33_507	1	-8.134	2.437	-0.0180	0.132	0.009	0.122	1.195	1.859	-0.1770	0.219	-0.0150	0.00600	-0.97	0.72	0.531
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_39_707	1	1.18	2.558	-0.11	0.130	-0.301	0.109	1.4390	1.863	-0.329	0.222	0.01000	0.00600	0.64	0.74	0.478
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_45_807	1	-3.005	2.478	-0.279	0.141	-0.0070	0.108	0.780	1.840	0.101	0.231	-0.01400	0.00500	-1.15	0.76	0.514
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_51_967	1	5.86	2.663	0.272	0.139	-0.1290	0.1030	0.471	1.807	-0.09	0.234	-0.00800	0.00600	-1.730	0.80	0.501
10/15/2013 21:48	0917-173_Nc	13_10_15_2148_58_167	1	0.7640	2.521	-0.120	0.131	-0.0530	0.1040	0.904	1.820	0.131	0.219	0.00000	0.00600	-2.32	0.75	0.462
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_04_347	1	4.181	2.370	0.047	0.128	-0.0490	0.102	0.664	1.788	-0.184	0.212	-0.01800	0.00600	-2.25	0.72	0.425
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_10_547	1	-5.05	2.459	-0.0930	0.131	-0.093	0.1060	1.0550	1.760	0.279	0.220	-0.01000	0.00500	-0.74	0.75	0.367
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_16_637	1	-3.275	2.371	0.265	0.132	0.0010	0.1050	0.861	1.749	-0.440	0.219	-0.00100	0.00400	-1.415	0.74	0.422
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_22_817	1	-0.177	2.512	0.071	0.127	-0.127	0.1070	1.157	1.728	-0.448	0.215	-0.0170	0.00500	1.19	0.74	0.445
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_29_027	1	0.231	2.416	-0.020	0.133	0.1310	0.1070	0.776	1.707	-0.069	0.219	-0.01	0.00500	0.12	0.75	0.41
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_35_237	1	2.616	2.388	0.104	0.126	0.012	0.0970	1.043	1.674	-0.107	0.211	-0.00100	0.00500	-1.353	0.68	0.385
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_41_427	1	0.675	2.548	0.109	0.133	-0.0180	0.0980	1.26	1.669	-0.248	0.223	0.00000	0.00300	-1.82	0.76	0.372
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_47_587	1	6.611	2.404	0.107	0.129	-0.219	0.097	0.490	1.613	-0.325	0.216	-0.01	0.00500	-0.290	0.70	0.374
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_53_757	1	9.178	2.491	0.01	0.134	-0.005	0.1030	0.898	1.609	-0.398	0.223	-0.01200	0.00500	0.685	0.76	0.387
10/15/2013 21:49	0917-173_Nc	13_10_15_2149_59_967	1	-0.92	2.621	-0.016	0.139	-0.070	0.1020	0.922	1.638	0.147	0.228	-0.01400	0.00500	-0.14	0.76	0.346
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_06_167	1	-6.31	2.546	0.278	0.144	0.058	0.1000	1.2060	1.671	0.392	0.232	-0.01300	0.00500	0.5600	0.80	0.341
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_12_367	1	-2.399	2.520	0.464	0.134	-0.0100	0.0970	0.990	1.646	0.007	0.221	0.00300	0.00500	0.5440	0.73	0.358
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_18_507	1	2.9060	2.398	-0.354	0.128	0.172	0.0940	0.938	1.622	0.13	0.212	-0.00800	0.00500	-1.69	0.73	0.366
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_24_717	1	-0.820	2.368	0.104	0.132	0.110	0.1020	1.1040	1.637	-0.532	0.216	0.00	0.00600	-0.80	0.73	0.371
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_30_827	1	7.8800	2.220	0.097	0.135	-0.161	0.0940	0.592	1.613	-0.06	0.213	0.00000	0.00600	-2.66	0.70	0.306
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_37_127	1	1.29	2.363	-0.156	0.128	-0.104	0.1010	0.8260	1.656	-0.429	0.210	-0.00700	0.00600	-0.32	0.70	0.36
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_43_317	1	0.817	2.319	0.159	0.137	0.0510	0.107	0.289	1.655	-0.195	0.218	0.00600	0.00500	-1.22	0.69	0.36
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_49_337	1	5.128	2.109	0.087	0.134	-0.03700	0.104	1.2170	1.592	0.062	0.209	-0.00500	0.00500	0.74	0.72	0.373
10/15/2013 21:50	0917-173_Nc	13_10_15_2150_55_607	1	6.198	2.440	0.167	0.137	0.1430	0.106	0.639	1.588	-0.19	0.223	-0.01400	0.00600	-1.22	0.74	0.371
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_01_797	1	6.444	2.467	0.000	0.137	0.196	0.0880	0.836	1.571	0.12	0.225	0.00600	0.00500	-2.66	0.76	0.301
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_08_017	1	-0.157	2.414	0.0790	0.134	0.1230	0.0880	1.022	1.594	0.000	0.215	-0.00500	0.00500	-1.80	0.70	0.363
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_14_017	1	1.4240	2.367	-0.188	0.125	0.0980	0.113	1.208	1.609	-0.188	0.210	-0.01900	0.00600	-0.312	0.69	0.328
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_20_217	1	-1.12	2.521	0.234	0.139	0.1760	0.1040	0.7990	1.613	0.121	0.225	0.00900	0.00500	-0.49	0.78	0.354
10/15/2013 21:51	0917-173_Nc	13_10_15_2151_26_507	1	2.623	2.545	0.403	0.131	0.098	0.0990	1.375	1.599	0.39	0.221	0.00400	0.00600	-1.55	0.73	0.32
10/15/2013 21:52	0917-173_Nc	13_10_15_2152_06_718	1	0.103	1.100	0.151	0.0590	-0.093	0.0690	0.9540	1.597	0.05	0.098	-0.00500	0.00200	-1.068	0.319	0.365
10/15/2013 21:53	0917-173_Nc	13_10_15_2153_07_498	1	1.005	1.009	0.050	0.061	0.0240	0.0690	0.696	1.581	-0.045	0.097	0.00	0.00300	-0.398	0.336	0.386
10/15/2013 21:54	0917-173_Nc	13_10_15_2154_08_258	1	-0.209	1.010	0.062	0.058	-0.0250	0.0680	0.870	1.566	-0.050	0.094	-0.00400	0.00200	-0.1340	0.310	0.356
10/15/2013 21:55	0917-173_Nc	13_10_15_2155_09_028	1	1.370	1.005	0.060	0.056	0.01300	0.0660	0.8990	1.552	-0.072	0.091	-0.00900	0.00300	-1.07	0.307	0.362
10/15/2013 21:56	0917-173_Nc	13_10_15_2156_09_848	1	2.571	0.991	0.067	0.056	-0.02700	0.0650	1.0490	1.548	-0.115	0.091	-0.00700	0.00300	-0.5080	0.301	0.371
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_04_240	1	1.5	1.3	0.045	0.070	-0.33	1.24	0.169	0.0810	-0.096	0.115	0.054	0.506	0.2550	0.383	-1.538
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_22_760	1	0.6	1.2	-0.042	0.075	-0.35	1.35	0.162	0.0840	-0.027	0.119	0.056	0.543	0.0140	0.384	-1.68
10/16/2013 8:35	0917-173_Nc	13_10_16_0835_41_360	1	1.2	1.2	-0.0390	0.068	-0.55	1.40	0.0300	0.0840	-0.011	0.110	0.058	0.565	-0.498	0.362	-1.722

Location	Disc.	#	Start/Stop	Instrument	Date	Method	Filename	DF	Label 1-Analyte Acrolein (ppm)	SEC (ppm)	Label 2-Analyte Formaldehyde (ppm)	SEC (ppm)	Label 3-Analyte/Spike Methanol (ppm)	SEC (ppm)	Label 4-Analyte Phenol (ppm)	SEC (ppm)	Label 5-Analyte Propionaldehyde (ppm)	SEC (ppm)	Label Tracer Sulfur_Hexaflouride (ppm)	SEC (ppm)	Label 6-Analyte acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 8:35	0917-173_Nc	13_10_16_0835_59_860	1	-0.4	1.3	0.028	0.073	-0.43	1.43	-0.0530	0.0840	-0.331	0.118	0.056	0.573	1.207	0.396	-1.74
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_18_370	1	-1.9	1.3	0.0600	0.074	-0.47	1.44	0.0020	0.0850	-0.281	0.120	0.061	0.583	0.31	0.395	-1.783
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_36_990	1	-0.5	1.2	-0.077	0.081	-0.44	1.45	0.050	0.0800	-0.1930	0.123	0.058	0.579	0.473	0.389	-1.82
					10/16/2013 8:36	0917-173_Nc	13_10_16_0836_55_400	1	0.7	1.2	0.155	0.072	-0.48	1.45	-0.08500	0.0870	0.0640	0.115	0.052	0.581	-0.7050	0.390	-1.779
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_14_090	1	1.5	1.3	0.0830	0.070	-0.58	1.45	0.137	0.0930	0.249	0.116	0.062	0.578	-0.1880	0.378	-1.82
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_32_591	1	1.9	1.2	-0.0660	0.066	-0.48	1.46	-0.0090	0.0930	-0.206	0.107	0.056	0.582	0.2810	0.362	-1.796
					10/16/2013 8:37	0917-173_Nc	13_10_16_0837_51_001	1	-0.5	1.3	0.000	0.077	-0.54	1.45	-0.0650	0.0830	-0.0730	0.124	0.064	0.585	0.77	0.419	-1.797
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_09_661	1	-1.9	1.4	-0.0920	0.073	-0.45	1.46	0.0580	0.0800	0.067	0.121	0.066	0.583	0.191	0.415	-1.803
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_28_111	1	-2.1	1.3	-0.108	0.078	-0.44	1.45	0.1200	0.0870	-0.124	0.124	0.061	0.580	0.041	0.404	-1.798
					10/16/2013 8:38	0917-173_Nc	13_10_16_0838_46_631	1	-0.1	1.5	-0.0620	0.067	-0.54	1.46	-0.1200	0.0930	0.232	0.117	0.065	0.584	-1.061	0.401	-1.797
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_05_251	1	2.0	1.3	-0.010	0.069	-0.41	1.46	0.0580	0.0890	0.000	0.113	0.063	0.581	-0.009	0.376	-1.81
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_23_781	1	-0.4	1.3	0.031	0.074	-0.48	1.46	0.106	0.0910	0.013	0.120	0.057	0.583	0.408	0.389	-1.773
					10/16/2013 8:39	0917-173_Nc	13_10_16_0839_42_371	1	-2.1	1.3	-0.018	0.072	-0.43	1.45	-0.125	0.0890	0.059	0.118	0.057	0.584	0.254	0.382	-1.764
					10/16/2013 8:40	0917-173_Nc	13_10_16_0840_00_791	1	0.5	1.4	0.054	0.071	-0.43	1.45	-0.1240	0.0930	-0.1500	0.119	0.053	0.585	0.431	0.410	-1.765
					10/16/2013 10:53	0917-173_Nc	13_10_16_1053_00_580	1	0.484	1.056	0.000	0.065	0.637	0.0710	0.377	1.544	-1.115	0.131	-0.00200	0.00500	0.03	0.322	14.463
Data	Run	10	Start	A	10/16/2013 10:54	0917-173_Nc	13_10_16_1054_01_360	1	-0.08	1.102	0.070	0.059	0.487	0.0660	0.287	1.533	-0.993	0.127	-0.00300	0.00500	-0.99	0.323	13.813
					10/16/2013 10:55	0917-173_Nc	13_10_16_1055_02_170	1	0.978	1.066	-0.075	0.069	0.569	0.0690	0.347	1.534	-1.391	0.156	-0.00800	0.00500	-0.68	0.335	18.723
					10/16/2013 10:56	0917-173_Nc	13_10_16_1056_02_880	1	-2.597	1.094	-0.037	0.068	0.637	0.0740	0.496	1.546	-1.590	0.165	-0.00500	0.00400	-0.64	0.333	20.962
					10/16/2013 10:57	0917-173_Nc	13_10_16_1057_03_610	1	-0.21	1.072	0.161	0.068	0.668	0.0700	0.471	1.546	-1.581	0.168	-0.00300	0.00500	-0.87	0.310	21.498
					10/16/2013 10:58	0917-173_Nc	13_10_16_1058_04_380	1	-2.260	1.086	-0.033	0.074	0.718	0.0710	0.485	1.547	-1.800	0.178	-0.00300	0.00400	-0.99	0.342	23.049
					10/16/2013 10:59	0917-173_Nc	13_10_16_1059_05_200	1	-2.59	1.061	-0.0310	0.070	0.717	0.0710	0.474	1.545	-1.52	0.162	-0.00300	0.00500	-1.16	0.319	20.879
					10/16/2013 11:00	0917-173_Nc	13_10_16_1100_06_010	1	-0.63	1.004	0.048	0.067	0.779	0.0690	0.528	1.540	-1.383	0.155	-0.00500	0.00500	-1.31	0.321	20.243
					10/16/2013 11:01	0917-173_Nc	13_10_16_1101_06_711	1	-0.250	1.107	-0.039	0.067	0.772	0.0710	0.318	1.523	-1.696	0.168	-0.00300	0.00400	-0.94	0.331	22.099
					10/16/2013 11:02	0917-173_Nc	13_10_16_1102_07_491	1	-0.72	1.163	-0.1020	0.071	0.692	0.0710	0.491	1.520	-1.77	0.177	-0.00100	0.00500	-1.22	0.342	23.339
					10/16/2013 11:03	0917-173_Nc	13_10_16_1103_08_231	1	-1.32	1.040	0.052	0.067	0.724	0.0680	0.441	1.527	-1.722	0.169	-0.00300	0.00500	-0.86	0.322	22.44
					10/16/2013 11:04	0917-173_Nc	13_10_16_1104_09_041	1	0.40	1.117	0.1000	0.069	0.705	0.0700	0.483	1.512	-1.595	0.170	-0.00600	0.00500	-0.82	0.340	21.884
					10/16/2013 11:05	0917-173_Nc	13_10_16_1105_09_761	1	-1.63	1.105	0.0050	0.068	0.732	0.0680	0.404	1.511	-1.757	0.171	0.00100	0.00400	-0.73	0.334	22.993
					10/16/2013 11:06	0917-173_Nc	13_10_16_1106_10_521	1	-0.786	1.090	0.093	0.068	0.723	0.0690	0.551	1.507	-1.934	0.177	0.00	0.00400	-0.10	0.340	23.767
					10/16/2013 11:07	0917-173_Nc	13_10_16_1107_11_331	1	-1.688	1.139	0.009	0.071	0.648	0.0690	0.471	1.511	-1.822	0.175	-0.00500	0.00500	-0.21	0.344	23.151
					10/16/2013 11:08	0917-173_Nc	13_10_16_1108_12_061	1	-1.624	1.099	0.058	0.064	0.720	0.0690	0.568	1.512	-1.581	0.158	-0.00600	0.00500	-0.69	0.312	20.28
					10/16/2013 11:09	0917-173_Nc	13_10_16_1109_12_911	1	-0.431	1.007	-0.0600	0.069	0.674	0.0710	0.442	1.519	-1.598	0.160	-0.00200	0.00500	-0.60	0.329	20.717
					10/16/2013 11:10	0917-173_Nc	13_10_16_1110_13_621	1	-0.42	1.111	-0.057	0.070	0.683	0.0690	0.387	1.536	-1.45	0.163	-0.00400	0.00500	-1.25	0.336	21.26
					10/16/2013 11:11	0917-173_Nc	13_10_16_1111_14_401	1	-3.12	1.139	-0.075	0.067	0.678	0.0710	0.489	1.548	-1.509	0.167	-0.00400	0.00400	-1.05	0.339	21.401
					10/16/2013 11:12	0917-173_Nc	13_10_16_1112_15_162	1	0.01	1.022	0.079	0.071	0.669	0.0720	0.421	1.559	-1.548	0.166	0.00000	0.00500	-0.52	0.310	22.047
					10/16/2013 11:13	0917-173_Nc	13_10_16_1113_15_972	1	1.36	1.103	-0.07100	0.070	0.715	0.0730	0.448	1.563	-1.719	0.173	-0.00100	0.00500	-0.98	0.339	22.99
					10/16/2013 11:14	0917-173_Nc	13_10_16_1114_16_712	1	-0.91	1.136	0.010	0.070	0.685	0.0730	0.340	1.580	-1.976	0.173	-0.00700	0.00400	0.01	0.328	22.637
					10/16/2013 11:15	0917-173_Nc	13_10_16_1115_17_532	1	0.66	1.155	-0.124	0.071	0.681	0.0730	0.618	1.570	-2.030	0.175	-0.00500	0.00400	-0.63	0.334	23.755
					10/16/2013 11:16	0917-173_Nc	13_10_16_1116_18_342	1	1.49	1.039	-0.0630	0.067	0.685	0.0730	0.359	1.568	-1.754	0.165	-0.00600	0.00500	-0.64	0.315	22.07
					10/16/2013 11:17	0917-173_Nc	13_10_16_1117_19_052	1	-0.436	1.096	0.0560	0.065	0.586	0.0710	0.449	1.571	-1.433	0.159	-0.00600	0.00500	-0.68	0.330	20.59
					10/16/2013 11:18	0917-173_Nc	13_10_16_1118_19_792	1	-0.998	1.006	-0.0430	0.070	0.661	0.0720	0.466	1.563	-1.639	0.160	-0.00700	0.00500	-0.76	0.321	20.342
					10/16/2013 11:19	0917-173_Nc	13_10_16_1119_20_502	1	-2.14	1.188	0.069	0.072	0.666	0.0720	0.527	1.572	-1.809	0.179	-0.00700	0.00500	-1.25	0.351	23.953
					10/16/2013 11:20	0917-173_Nc	13_10_16_1120_21_332	1	-0.73	1.059	-0.1310	0.066	0.673	0.0750	0.349	1.565	-1.73	0.172	-0.00300	0.00500	-0.88	0.309	23.373
					10/16/2013 11:21	0917-173_Nc	13_10_16_1121_22_052	1	-1.678	1.126	-0.091	0.071	0.612	0.0740	0.469	1.575	-1.938	0.180	-0.00600	0.00500	-0.61	0.346	23.753
					10/16/2013 11:22	0917-173_Nc	13_10_16_1122_22_852	1	0.25	1.072	0.081	0.070	0.677	0.0740	0.412	1.591	-1.933	0.180	-0.00300	0.00500	-0.73	0.317	24.902
					10/16/2013 11:23	0917-173_Nc	13_10_16_1123_23_562	1	-2.03	1.098	0.025	0.069	0.753	0.0740	0.405	1.581	-1.849	0.178	-0.00600	0.00500	-0.47	0.330	23.189
					10/16/2013 11:24	0917-173_Nc	13_10_16_1124_24_403	1	0.023	1.065	-0.014	0.068	0.695	0.0720	0.387	1.590	-1.527	0.156	-0.00400	0.00500	-0.38	0.331	20.357
					10/16/2013 11:25	0917-173_Nc	13_10_16_1125_25_123	1	-1.11	1.042	-0.009	0.065	0.618	0.0710	0.499	1.589	-1.577	0.162	-0.00400	0.00500	-0.60	0.313	22.185
					10/16/2013 11:26	0917-173_Nc	13_10_16_1126_25_883	1	-1.571	1.102	-0.0400	0.072	0.637	0.0680	0.447	1.581	-1.893	0.188	-0.00300	0.00400	-0.40	0.336	25.854
					10/16/2013 11:27	0917-173_Nc	13_10_16_1127_26_683	1	-0.25	1.187	-0.0660	0.076	0.639	0.0760	0.570	1.589	-2.45	0.225	-0.00800	0.00500	-1.24	0.340	31.739
					10/16/2013 11:28	0917-173_Nc	13_10_16_1128_27_423	1	-0.89	1.025	-0.0540	0.077	0.725	0.0730	0.350	1.586	-2.641	0.234	-0.00400	0.00500	-0.80	0.312	33.526
					10/16/2013 11:29	0917-173_Nc	13_10_16_1129_28_223	1	-1.665	1.095	-0.1380	0.079	0.762	0.0750	0.349	1.585	-2.893	0.245	0.00300	0.00400	-0.9	0.331	35.878
					10/16/2013 11:30	0917-173_Nc	13_10_16_1130_28_963	1	-2.875	1.128	-0.001	0.083	0.700	0.073	0.361	1.577	-2.69	0.254	-0.00200	0.00500	-1.03	0.347	36.428
					10/16/2013 11:31	0917-173_Nc	13_10_16_1131_29_793	1	-0.83	1.039	-0.0580	0.074	0.762	0.0730	0.322	1.581	-2.77	0.250	-0.00400	0.00400	-0.5	0.307	35.751
					10/16/2013 11:32	0917-173_Nc	13_10_16_1132_30_513	1	0.18	1.190	-0.036	0.083	0.745	0.0750	0.337	1.580	-2.717	0.254	-0.00300	0.00500	-0.2	0.352	36.044
					10/16/2013 11:33	0917-173_Nc	13_10_16_1133_31_273	1	-0.88	0.974	-0.114	0.078	0.770	0.0730	0.479	1.579	-2.32	0.215	-0.00600	0.00500	-0.60	0.312	30.478
					10/16/2013 11:34	0917-173_Nc	13_10_16_1134_32_083	1	-0.431	1.125	-0.039	0.073	0.735	0.0710	0.394	1.585	-2.203	0.200	-0.00600	0.00500	-0.73	0.341	27.096
					10/16/2013 11:35	0917-173_Nc	13_10_16_1135_32_843	1	-1.86	1.113	0.0080	0.072	0.771	0.0750	0.283	1.589	-2.11	0.203	-0.00200	0.00500	-1.28	0.328	28.773
					10/16/2013 11:36	0917-173_Nc	13_10_16_1136_33_654	1	-0.765	1.130	-0.091	0.078	0.713	0.0750	0.448	1.600	-2.199	0.216	-0.00200	0.00500	-0.64	0.338	28.958
					10/16/2013 11:37	0917-173_Nc	13_10_16_1137_34_364	1	-1.72	1.075	-0.095	0.075	0.788	0.0770	0.366	1.612	-2.331	0.208	-0.00300	0.00500	-0.84	0.317	29.255
					10/16/2013 11:38	0917-173_Nc	13_10_16_1138_35_174	1	-1.27	1.132	-0.144	0.073	0.679	0.0750	0.477	1.603	-2.123	0.211	-0.00300	0.00500	-0.94	0.337	29.03
					10/16/2013 11:39	0917-173_Nc	13_10_16_1139_35_894	1	-0.23	1.057	-0.067	0.080	0.731	0.0760	0.358	1.592	-2.170	0.210	-0.00700	0.00500	-0.84	0.329	28.458
					10/16/2013 11:40	0917-173_Nc	13_10_16_1140_36_704	1	-0.57	1.068	-0.0180	0.067	0.713	0.0730	0.313	1.591	-1.938	0.192	-0.00700	0.00500	-0.90	0.315	27.422
					10/16/2013 11:41	0917-173_Nc	13_10_16_1141_37_464	1	-0.772	1.072	-0.026	0.068	0.659	0.0740	0.518	1.588	-1.871	0.185	-0.00400	0.00500	-0.75	0.323	25.623
					10/16/2013 11:42	0917-173_Nc	13_10_16_1142_38_184	1	-1.237	1.080	-0.055	0.069	0.616	0.0740	0.329	1.576	-1.723	0.171	-0.00300	0.00400	-0.91	0.330	21.9
					10/16/2013 11:43	0917-173_Nc	13_10_16_1143_38_984	1	-0.469	1.031	-0.010	0.075	0.676	0.0720	0.389	1.590	-2.093	0.193	-0.00200	0.00400	-0.55	0.325	26.479
					10/16/2013 11:44	0917-173_Nc	13_10_16_1144_39_784	1	-3.414	1.125	-0.0900	0.076	0.778	0.0740	0.305	1.599	-2.267	0.210	-0.00200	0.00500	-0.43	0.332	28.927
					10/16/2013 11:45	0917-173_Nc	13_10_16_1145_40_504	1	-2.192	1.107	-0.0270	0.074	0.709	0.0750	0.236	1.590	-1.979	0.202	-0.00200	0.00500	-1.00	0.325	27.047
					10/16/2013 11:46	0917-173_Nc	13_10_16_1146_41_324	1	0.88	1.086	-0.076	0.069	0.755	0.0730	0.457	1.588	-2.03	0.189	0.00100	0.00500	-0.79	0.316	25.873
					10/16/2013 11:47	0917-173_Nc	13_10_16_1147_42_084	1	-0.37	1.097	-0.0720	0.071	0.780	0.0740	0.340	1.581	-1.953	0.187	-0.00600	0.00500	-0.72	0.330	26.062
					10/16/2013 11:48	0917-173_Nc	13_10_16_1148_42_895	1	-1.034	1.097	0.059	0.072	0.739	0.0740	0.382	1.587	-1.88	0.188	-0.00300	0.00500	-0.79	0.340	25.747
					10/16/2013 11:49	0917-173_Nc	13_10_16_1149_43_655	1	-1.27	1.040	-0.0330	0.073	0.770	0.0720	0.288	1.581	-1.995	0.194	-0.00200	0.00500	-0.78	0.328	26.812
					10/16/2013 11:50	0917-173_Nc	13_10_16_1150_44_365	1	-1.534	1.068	-0.021	0.071	0.780	0.0730	0.325	1.567	-2.15	0.198	0.00000	0.00500	-1.26	0.320	27.301
					10/16/2013 11:51	0917-173_Nc	13_10_16_1151_45_185	1	-1.05	1.036	-0.0360	0.075	0.764	0.0750	0.347	1.572	-1.970	0.196	-0.00600	0.00500	-1.12	0.320	26.415
					10/16/2013 11:52	0917-173_Nc	13_10_16_1152_45_905	1	-0.794	1.109	0.097	0.075	0.801	0.0750	0.373	1.569	-2.063	0.207	-0.00900	0.00500	-0.70	0.340	27.702
					10/16/2013 11:53	0917-173_Nc	13_10_16_1153_46_655	1	-0.75	1.025	-0.362	0.086	0.587	0.0630	0.244	1.282	-3.6270	0.218	-0.00500	0.00500	-1.36	0.334	27.838
			Stop		10/16/2013 11:54	0917-173_Nc	13_10_16_1154_47_485	1	-1.075	0.863	-0.712	0.097	-0.0470	0.0440	-0.103	0.191	-4.01	0.173	-0.00400	0.00500	-1.27	0.391	11.965
					10/16/2013 11:55	0917-173_Nc	13_10_16_1155_48_205	1	-2.942	0.873	-0.580	0.097	-0.0960	0.0450	-0.232	0.0940	-3.91	0.166	-0.00700	0.00500	-1.10	0.393	10.886
					10/16/2013 11:56	0917-173_Nc	13_10_16_1156_48_955	1	-2.604	0.926	-0.590	0.098	-0.08200	0.0420	-0.389	0.0950	-3.81	0.171	-0.00400	0.00500	-1.11	0.396	10.775
					10/16/2013 11:57	0917-173_Nc	13_10_16_1157_49_705	1	-2.32500	0.895	-0.5430	0.099	-0.0800	0.0420	-0.171	0.0880	-4.01	0.168	-0.00600	0.00600	-1.22	0.371	10.702
					10/16/2013 11:58	0917-173_Nc	13_10_16_1158_50_365	1	-2.622	0.910	-0.482	0.089	0.040	0.0380	-0.248	0.0690	-3.25	0.152	-0.00700	0.00500	-0.98	0.366	9.046
					10/16/2013 11:59	0917-173_Nc	13_10_16_1159_51_106	1	0.800	0.808	-0.007	0.050	0.0460	0.0310	-0.202	0.0660	-0.667	0.081	-0.00400	0.00500	0.20	0.267	1.901
					10/16/2013 12:00	0917-173_Nc	13_10_16_1200_51_926	1	-1.365	0.886	-0.0110	0.048	0.0150	0.0300	-0.1220	0.0620	-0.0970	0.080	-0.00200	0.00500	-0.272	0.267	0.346
					10/16/2013 12:01	0917-173_Nc	13_10_16_1201_52_646	1	0.000	0.888	-0.0130	0.047	-0.00500	0.0310	-0.0830	0.0540	0.0130	0.078	0.00	0.00500	-0.464	0.260	0.289
					10/16/2013 12:02	0917-173_Nc	13_10_16_1202_53_466	1	0.050	0.828	0.101	0.052	0.252	0.0350	0.061	0.375	-0.567	0.088	0.00200	0.00500	0.04	0.265	5.853
					10/16/2013 12:03	0917-173_Nc	13_10_16_1203_54_266	1	-0.80	1.092	-0.031	0.075	0.905	0.0710	0.376	1.536	-2.013	0.19	-0.00300	0.00500	-0.99	0.338	25.54
					10/16/2013 12:04	0917-173_Nc	13_10_16_1204_55_016	1	0.11	1.065	-0.055	0.078	0.929	0.0760	0.243	1.584	-2.243	0.21	-0.00100	0.00500	-0.39	0.327	28.078
					10/16/2013 12:05	0917-173_Nc	13_10_16_1205_55_716	1	-1.686	1.053	0.039	0.077	0.831	0.0760	0.192	1.577	-2.211	0.21	-0.00400	0.00500	-1.08	0.328	28.497
					10/16/2013 12:06	0917-173_Nc	13_10_16_1206_56_536	1	-0.88	1.089	-0.021	0.073	0.834	0.0740	0.215	1.574	-2.325	0.21	-0.00900	0.00400	-0.39	0.331	29.266
Data	Run	11	Start	A	10/16/2013 12:07	0917-173_Nc	13_10_16_1207_57_256	1	-2.11	1.104	-0.072	0.075	0.885	0.0740	0.302	1.569	-2.177	0.20	-0.00700	0.00500	-0.67	0.330	28.007
					10/16/2013 12:08	0917-173_Nc	13_10_16_1208_58_076	1	-0.99	1.135	-0.059	0.072	0.786	0.0750	0.244	1.558	-2.15	0.20	-0.00400	0.00500	-0.73	0.338	27.116
					10/16/2013 12:09	0917-173_Nc	13_10_16_1209_58_826	1	1.22	1.121	-0.0910	0.073	0.771	0.0730	0.335	1.559	-1.83	0.19	-0.00400	0.00500	-0.98	0.339	24.046
					10/16/2013 12:10	0917-173_Nc	13_10_16_1210_59_526	1	-0.122	1.084	0.0320	0.076	0.784	0.0750	0.297	1.565	-1.626	0.18	-0.00600	0.00500	-1.02	0.342	23.366
					10/16/2013 12:12	0917-173_Nc	13_10_16_1212_00_327	1	-1.48	1.047	-0.034	0.067	0.810	0.0750	0.197	1.558	-1.67	0.17	-0.00800	0.00500	-1.05	0.319	22.812
					10/16/2013 12:13	0917-173_Nc	13_10_16_1213_01_027	1	-0.87	1.185	0.0090	0.070	0.855	0.0770	0.242	1.565	-1.601	0.18	-0.00400	0.00500	-0.61	0.348	22.922
					10/16/2013 12:14	0917-173_Nc	13_10_16_1214_01_787	1	-2.97	1.186	0.095	0.070	0.819	0.0740	0.225	1.569	-1.498	0.18	-0.00600	0.00500	-0.97	0.351	22.785
					10/16/2013 12:15	0917-173_Nc	13_10_16_1215_02_607	1	-0.95	1.054	0.003	0.072	0.853	0.0720	0.050	1.588	-1.566	0.18	-0.00400	0.00500	-0.82	0.333	23.879
					10/16/2013 12:16	0917-173_Nc	13_10_16_1216_03_317	1	-1.820	1.107	-0.027	0.071	0.813	0.0760	0.172	1.582	-1.729	0.18	-0.00600	0.00500	-0.83	0.328	23.444
					10/16/2013 12:17	0917-173_Nc	13_10_16_1217_04_127	1	-1.21	1.111	0.034	0.072	0.980	0.0750	0.264	1.615	-1.943	0.18	-0.00500	0.00500	-0.66	0.332	25.012
					10/16/2013 12:18	0917-173_Nc	13_10_16_1218_04_847	1	-1.36	1.104	-0.0250	0.071	0.856	0.0770	0.223	1.624	-1.872	0.20	-0.00300	0.00500	-0.41	0.335	26.588
					10/16/2013 12:19	0917-173_Nc	13_10_16_1219_05_647	1	-0.59	1.038	0.0230	0.078	0.847	0.0780	0.264	1.625	-2.047	0.21	-0.00400	0.00500	-0.77	0.342	28.485
					10/16/2013 12:20	0917-173_Nc	13_10_16_1220_06_357	1	-0.517	1.083	0.043	0.073	0.808	0.0780	0.220	1.625	-2.008	0.21	0.00000	0.00500	-0.99	0.332	28.304
					10/16/2013 12:21	0917-173_Nc	13_10_16_1221_07_137	1	-1.28	1.041	-0.0280	0.070	0.815	0.0760	0.263	1.611	-1.93	0.20	-0.00500	0.00500	-1.22	0.316	27.807
					10/16/2013 12:22	0917-173_Nc	13_10_16_1222_07_907	1	-0.830	1.050	-0.176	0.078	0.785	0.0770	0.118	1.605	-2.042	0.20	-0.00500	0.00500	-1.15	0.335	28.136
					10/16/2013 12:23	0917-173_Nc	13_10_16_1223_08_667	1	-1.43	1.055	-0.04300	0.077	0.788	0.0750	0.210	1.584	-1.971	0.21	-0.00500	0.00500	-1.01	0.330	28.108
					10/16/2013 12:24	0917-173_Nc	13_10_16_1224_09_398	1	-0.32	1.085	-0.025	0.073	0.689	0.0750	0.389	1.589	-1.946	0.19	-0.00500	0.00500	-0.72	0.328	26.421
					10/16/2013 12:25	0917-173_Nc	13_10_16_1225_10_208	1	-2.23	1.087	-0.036	0.071	0.697	0.0770	0.213	1.597	-1.84	0.19	-0.00700	0.00500	-1.06	0.332	26.329
					10/16/2013 12:26	0917-173_Nc	13_10_16_1226_11_008	1	-1.55	1.128	-0.0200	0.070	0.868	0.0770	0.118	1.598	-1.852	0.19	-0.00800	0.00500	-0.07	0.330	25.59
					10/16/2013 12:27	0917-173_Nc	13_10_16_1227_11_718	1	-1.172	1.092	-0.0380	0.067	0.841	0.0740	0.036	1.602	-1.737	0.19	-0.00800	0.00500	-0.96	0.322	25.662
					10/16/2013 12:28	0917-173_Nc	13_10_16_1228_12_528	1	-1.468	1.058	-0.0270	0.074	0.789	0.0750	0.194	1.615	-1.75	0.20	-0.00900	0.00500	-1.28	0.334	26.694
					10/16/2013 12:29	0917-173_Nc	13_10_16_1229_13_248	1	-0.54	1.140	-0.1410	0.073	0.800	0.0770	0.172	1.608	-1.86	0.19	-0.00400	0.00500	-0.50	0.340	26.354
					10/16/2013 12:30	0917-173_Nc	13_10_16_1230_13_968	1	-0.38	1.069	0.0870	0.077	0.755	0.0760	0.294	1.623	-1.496	0.19	-0.00700	0.00500	-0.61	0.346	25.381
					10/16/2013 12:31	0917-173_Nc	13_10_16_1231_14_768	1	-0.963	1.164	-0.01300	0.071	0.753	0.0750	0.255	1.615	-1.625	0.18	-0.00500	0.00500	-1.10	0.347	23.851
					10/16/2013 12:32	0917-173_Nc	13_10_16_1232_15_588	1	-0.84	1.120	-0.172	0.076	0.771	0.0780	0.391	1.618	-1.907	0.19	-0.00500	0.00500	-0.42	0.348	25.176
					10/16/2013 12:33	0917-173_Nc	13_10_16_1233_16_308	1	-0.871	1.151	-0.034	0.076	0.819	0.0770	0.341	1.617	-1.78	0.19	-0.00700	0.00500	-0.80	0.362	26.047
					10/16/2013 12:34	0917-173_Nc	13_10_16_1234_17_108	1	-0.16	1.123	-0.02700	0.072	0.759	0.0750	0.197	1.608	-1.69	0.19	-0.00300	0.00500	-1.02	0.333	26.392
					10/16/2013 12:35	0917-173_Nc	13_10_16_1235_17_878	1	-1.65	1.112	-0.108	0.072	0.667	0.0760	0.279	1.626	-1.58	0.18	-0.00600	0.00500	-1.15	0.327	24.993
					10/16/2013 12:36	0917-173_Nc	13_10_16_1236_18_609	1	-0.718	1.102	0.014	0.065	0.475	0.0750	0.204	1.592	-1.062	0.14	-0.00500	0.00500	-0.49	0.334	15.651
					10/16/2013 12:37	0917-173_Nc	13_10_16_1237_19_339	1	-1.74	1.077	-0.048	0.066	0.605	0.0750	0.302	1.600	-1.534	0.16	-0.00200	0.00500	-0.67	0.326	19.739
					10/16/2013 12:38	0917-173_Nc	13_10_16_1238_20_129	1	-1.24	1.084	-0.0730	0.069	0.820	0.0770	0.274	1.601	-1.837	0.18	-0.00200	0.00500	-0.08	0.338	22.613
					10/16/2013 12:39	0917-173_Nc	13_10_16_1239_20_839	1	-1.223	1.073	0.058	0.071	0.787	0.0750	0.283	1.616	-1.580	0.18	-0.00200	0.00500	-1.06	0.337	23.39
					10/16/2013 12:40	0917-173_Nc	13_10_16_1240_21_539	1	-1.054	1.080	-0.067	0.069	0.842	0.0740	0.361	1.603	-1.68	0.18	-0.00400	0.00500	-1.14	0.319	24.184
					10/16/2013 12:41	0917-173_Nc	13_10_16_1241_22_279	1	-0.41	1.095	-0.0410	0.074	0.889	0.0760	0.312	1.597	-1.912	0.18	0.00100	0.00500	-0.53	0.329	24.528
					10/16/2013 12:42	0917-173_Nc	13_10_16_1242_23_099	1	-0.31	1.141	-0.0270	0.068	0.839	0.0760	0.341	1.605	-1.657	0.18	-0.00400	0.00500	-0.87	0.333	23.727
					10/16/2013 12:43	0917-173_Nc	13_10_16_1243_23_869	1	-0.89	1.110	0.058	0.074	0.812	0.0740	0.324	1.608	-1.498	0.17	-0.00800	0.00500	-0.11	0.338	21.313
					10/16/2013 12:44	0917-173_Nc	13_10_16_1244_24_589	1	-0.97	1.146	0.022	0.070	0.808	0.0750	0.333	1.601	-1.442	0.16	0.00	0.00500	-0.70	0.351	20.623
					10/16/2013 12:45	0917-173_Nc	13_10_16_1245_25_399	1	0.03	1.083	0.002	0.071	0.710	0.0760	0.173	1.601	-1.535	0.17	-0.00200	0.00500	-0.52	0.344	21.78
					10/16/2013 12:46	0917-173_Nc	13_10_16_1246_26_109	1	0.845	1.079	0.02500	0.073	0.781	0.0760	0.314	1.611	-1.584	0.18	-0.00600	0.00500	-0.80	0.329	22.759
					10/16/2013 12:47	0917-173_Nc	13_10_16_1247_26_920	1	-0.145	1.107	-0.0520	0.068	0.869	0.0740	0.269	1.621	-1.742	0.17	-0.00400	0.00500	0.00	0.326	22.899
					10/16/2013 12:48	0917-173_Nc	13_10_16_1248_27_610	1	-1.46	1.117	0.046	0.075	0.752	0.0760	0.361	1.622	-1.597	0.18	-0.00400	0.00500	-0.72	0.341	23.301
					10/16/2013 12:49	0917-173_Nc	13_10_16_1249_28_360	1	-0.049	1.059	-0.068	0.073	0.739	0.0740	0.302	1.619	-1.802	0.18	-0.00300	0.00500	-0.72	0.333	24.707
					10/16/2013 12:50	0917-173_Nc	13_10_16_1250_29_180	1	0.040	1.101	-0.06700	0.075	0.859	0.0770	0.386	1.615	-1.84	0.19	-0.00300	0.00500	-1.43	0.332	26.515
					10/16/2013 12:51	0917-173_Nc	13_10_16_1251_29_900	1	-2.34	1.067	-0.078	0.069	0.797	0.0770	0.342	1.618	-1.97	0.19	-0.00700	0.00500	-0.79	0.325	26.957
					10/16/2013 12:52	0917-173_Nc	13_10_16_1252_30_690	1	-0.16	1.019	-0.006	0.074	0.812	0.0800	0.373	1.635	-1.710	0.19	-0.00700	0.00500	-0.91	0.322	25.238
					10/16/2013 12:53	0917-173_Nc	13_10_16_1253_31_410	1	-0.821	1.131	0.103	0.073	0.798	0.0790	0.195	1.624	-1.875	0.19	-0.00800	0.00500	-0.64	0.330	25.886
					10/16/2013 12:54	0917-173_Nc	13_10_16_1254_32_180	1	-1.63	1.071	-0.039	0.072	0.887	0.0770	0.313	1.649	-1.998	0.20	-0.00600	0.00500	-0.65	0.328	28.029
					10/16/2013 12:55	0917-173_Nc	13_10_16_1255_33_000	1	-3.09	1.103	0.015	0.081	0.917	0.0790	0.227	1.662	-2.09	0.22	-0.00400	0.00500	-0.96	0.333	30.402
					10/16/2013 12:56	0917-173_Nc	13_10_16_1256_33_730	1	-1.476	1.183	-0.042	0.076	0.954	0.0820	0.166	1.659	-2.257	0.22	-0.00500	0.00500	-0.37	0.343	30.502
					10/16/2013 12:57	0917-173_Nc	13_10_16_1257_34_470	1	-1.374	1.038	-0.092	0.075	0.921	0.0820	0.326	1.660	-2.17	0.21	-0.00700	0.00500	-0.72	0.319	29.32
					10/16/2013 12:58	0917-173_Nc	13_10_16_1258_35_290	1	-0.81	1.129	-0.0150	0.076	0.857	0.0790	0.297	1.642	-2.03	0.21	-0.00100	0.00500	-1.05	0.338	28.615
					10/16/2013 12:59	0917-173_Nc	13_10_16_1259_36_101	1	-0.527	1.168	-0.1480	0.075	0.965	0.0770	0.157	1.632	-2.373	0.22	-0.00500	0.00500	-0.61	0.341	30.867
					10/16/2013 13:00	0917-173_Nc	13_10_16_1300_36_841	1	-1.16	1.015	-0.0790	0.073	0.994	0.0770	0.364	1.625	-2.361	0.22	-0.00800	0.00500	-0.68	0.318	31.692
					10/16/2013 13:01	0917-173_Nc	13_10_16_1301_37_541	1	-0.623	1.097	-0.0990	0.075	0.992	0.0790	0.265	1.616	-2.442	0.23	-0.00500	0.00500	-1.03	0.323	33.034
					10/16/2013 13:02	0917-173_Nc	13_10_16_1302_38_371	1	-0.10	0.962	-0.078	0.070	0.917	0.0760	0.295	1.613	-2.21	0.21	-0.00800	0.00500	-0.86	0.297	31.02
					10/16/2013 13:03	0917-173_Nc	13_10_16_1303_39_101	1	-1.223	1.042	0.037	0.069	0.789	0.0750	0.369	1.614	-2.101	0.20	-0.00600	0.00500	-0.54	0.324	28.629
					10/16/2013 13:04	0917-173_Nc	13_10_16_1304_39_851	1	-1.76	1.090	-0.01400	0.075	0.807	0.0760	0.299	1.624	-2.138	0.20	-0.00500	0.00500	-0.31	0.330	28.416
					10/16/2013 13:05	0917-173_Nc	13_10_16_1305_40_591	1	-0.72	1.052	-0.1340	0.076	0.814	0.0770	0.223	1.610	-2.133	0.21	-0.00900	0.00500	-0.53	0.335	29.396
					10/16/2013 13:06	0917-173_Nc	13_10_16_1306_41_411	1	-1.47	1.061	-0.151	0.076	0.634	0.0630	0.266	1.304	-2.772	0.19	-0.00400	0.00500	-0.76	0.319	25.911
			Stop		10/16/2013 13:07	0917-173_Nc	13_10_16_1307_42_181	1	-1.735	0.876	-0.5370	0.093	0.0290	0.0390	-0.011	0.201	-3.94	0.16	-0.00500	0.00500	-1.34	0.360	11.548
					10/16/2013 13:08	0917-173_Nc	13_10_16_1308_42_881	1	-1.4170	0.886	-0.4990	0.094	-0.1180	0.0400	-0.219	0.1020	-3.96	0.16	-0.00300	0.00500	-1.53	0.363	10.678

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 13:09	0917-173_Nc	13_10_16_1309_43_691	1	-0.558	0.854	-0.609	0.091	-0.07500	0.0390	-0.123	0.0840	-3.84	0.16	-0.00600	0.00500	-1.00	0.355	10.566
					10/16/2013 13:10	0917-173_Nc	13_10_16_1310_44_401	1	-1.608	0.816	-0.3650	0.067	0.0120	0.0340	-0.206	0.0710	-2.317	0.11	0.00100	0.00500	-1.069	0.278	6.189
					10/16/2013 13:11	0917-173_Nc	13_10_16_1311_45_182	1	-1.476	0.813	-0.101	0.046	0.0060	0.0300	-0.152	0.0550	-0.373	0.07	-0.00100	0.00500	-0.233	0.245	0.986
					10/16/2013 13:12	0917-173_Nc	13_10_16_1312_45_992	1	-1.152	0.873	-0.008	0.049	0.301	0.0350	0.092	0.411	-0.623	0.10	0.00	0.00400	-0.65	0.256	8.739
					10/16/2013 13:13	0917-173_Nc	13_10_16_1313_46_712	1	-1.37	1.114	-0.009	0.078	1.062	0.0790	0.120	1.646	-2.586	0.25	-0.00600	0.00500	-0.5	0.328	37.078
					10/16/2013 13:15	0917-173_Nc	13_10_16_1315_58_340	1	-0.35	1.077	-0.07000	0.083	1.099	0.0830	0.204	1.665	-2.631	0.25	-0.00400	0.00500	-0.9	0.336	36.128
					10/16/2013 13:16	0917-173_Nc	13_10_16_1316_59_150	1	0.256	1.061	-0.023	0.077	0.997	0.0780	0.268	1.647	-2.492	0.22	-0.00800	0.00500	-0.54	0.337	31.837
					10/16/2013 13:17	0917-173_Nc	13_10_16_1317_59_820	1	0.23	0.998	0.0300	0.073	0.857	0.0770	0.230	1.616	-2.100	0.20	0.00000	0.00500	-0.50	0.322	28.114
					10/16/2013 13:19	0917-173_Nc	13_10_16_1319_00_620	1	-0.129	1.122	-0.0090	0.068	0.822	0.0750	0.427	1.604	-1.672	0.19	-0.00300	0.00500	-0.57	0.336	25.096
					10/16/2013 13:20	0917-173_Nc	13_10_16_1320_01_430	1	-0.65	1.112	-0.003	0.067	0.732	0.0740	0.418	1.587	-1.594	0.18	-0.00500	0.00500	-1.05	0.318	24.261
Data	Run	12	Start	A	10/16/2013 13:21	0917-173_Nc	13_10_16_1321_03_140	1	0.01	1.035	0.005	0.072	0.779	0.0740	0.321	1.586	-1.942	0.19	-0.00700	0.00500	-0.49	0.316	27.486
					10/16/2013 13:22	0917-173_Nc	13_10_16_1322_03_770	1	-0.12	1.131	0.027	0.067	0.759	0.0760	0.379	1.589	-1.64	0.18	-0.00200	0.00500	-0.75	0.324	24.468
					10/16/2013 13:23	0917-173_Nc	13_10_16_1323_04_590	1	-0.21	1.044	-0.0360	0.067	0.732	0.0730	0.421	1.592	-1.51	0.17	-0.00700	0.00500	-0.93	0.308	22.777
					10/16/2013 13:24	0917-173_Nc	13_10_16_1324_05_290	1	-2.73	1.091	-0.034	0.072	0.851	0.0770	0.399	1.598	-1.988	0.21	0.00000	0.00500	-0.60	0.338	29.013
					10/16/2013 13:25	0917-173_Nc	13_10_16_1325_06_110	1	-2.34	1.065	-0.061	0.076	0.926	0.0780	0.223	1.604	-2.45	0.23	-0.00500	0.00500	-1.04	0.320	33.634
					10/16/2013 13:26	0917-173_Nc	13_10_16_1326_06_890	1	-0.305	1.114	-0.112	0.080	0.982	0.0790	0.221	1.613	-2.783	0.24	-0.00600	0.00500	-0.51	0.327	35.217
					10/16/2013 13:27	0917-173_Nc	13_10_16_1327_07_651	1	0.34	1.172	0.018	0.076	0.993	0.0790	0.393	1.615	-2.38	0.23	-0.00500	0.00500	-0.70	0.339	33.475
					10/16/2013 13:28	0917-173_Nc	13_10_16_1328_08_371	1	0.26	1.178	0.025	0.080	1.037	0.0810	0.303	1.633	-2.223	0.23	-0.00600	0.00500	-0.66	0.343	33.181
					10/16/2013 13:29	0917-173_Nc	13_10_16_1329_09_101	1	0.46	1.160	0.0140	0.077	0.920	0.0810	0.441	1.656	-2.058	0.22	-0.00600	0.00500	-0.70	0.347	30.957
					10/16/2013 13:30	0917-173_Nc	13_10_16_1330_09_901	1	0.01	1.135	-0.0360	0.080	0.940	0.0830	0.342	1.670	-2.271	0.23	-0.00700	0.00500	-0.80	0.341	32.894
					10/16/2013 13:31	0917-173_Nc	13_10_16_1331_10_691	1	-1.51	1.152	-0.002	0.083	0.911	0.0810	0.292	1.674	-2.23	0.23	-0.00600	0.00500	-0.87	0.355	32.342
					10/16/2013 13:32	0917-173_Nc	13_10_16_1332_11_411	1	-0.37	1.101	-0.0740	0.080	0.954	0.0840	0.446	1.682	-2.32	0.23	-0.00400	0.00500	-0.86	0.338	33.882
					10/16/2013 13:33	0917-173_Nc	13_10_16_1333_12_131	1	-0.51	1.237	-0.1140	0.080	0.912	0.0820	0.084	1.676	-2.378	0.24	-0.00500	0.00500	-0.78	0.353	34.499
					10/16/2013 13:34	0917-173_Nc	13_10_16_1334_12_951	1	-0.481	1.143	-0.033	0.082	0.937	0.0840	0.212	1.667	-2.497	0.25	-0.00200	0.00500	-0.54	0.332	36.138
					10/16/2013 13:35	0917-173_Nc	13_10_16_1335_13_701	1	1.63	1.140	-0.03400	0.082	1.005	0.0830	0.283	1.653	-2.379	0.25	-0.00400	0.00400	-0.3	0.340	35.946
					10/16/2013 13:36	0917-173_Nc	13_10_16_1336_14_461	1	-0.36	1.188	-0.013	0.085	0.929	0.0820	0.199	1.648	-2.26	0.25	-0.00700	0.00500	-1.12	0.345	35.373
					10/16/2013 13:37	0917-173_Nc	13_10_16_1337_15_271	1	-1.115	1.127	0.024	0.081	1.013	0.0820	0.208	1.652	-2.34	0.25	-0.00400	0.00500	-0.89	0.341	35.813
					10/16/2013 13:38	0917-173_Nc	13_10_16_1338_15_941	1	0.02	1.121	-0.10900	0.084	1.067	0.0810	0.245	1.655	-2.627	0.26	-0.00300	0.00500	-0.4	0.342	37.409
					10/16/2013 13:39	0917-173_Nc	13_10_16_1339_16_752	1	1.61	1.070	-0.192	0.080	0.951	0.0810	0.362	1.634	-2.33	0.23	-0.00400	0.00500	-0.75	0.327	33.934
					10/16/2013 13:40	0917-173_Nc	13_10_16_1340_17_442	1	0.234	1.140	-0.0960	0.076	0.950	0.0830	0.375	1.634	-1.918	0.22	-0.00800	0.00500	-0.86	0.350	30.741
					10/16/2013 13:41	0917-173_Nc	13_10_16_1341_18_272	1	-1.84	1.124	0.031	0.075	0.874	0.0790	0.225	1.636	-1.88	0.22	-0.00300	0.00500	-0.84	0.340	29.79
					10/16/2013 13:42	0917-173_Nc	13_10_16_1342_18_982	1	-0.70	1.106	0.048	0.076	0.824	0.0800	0.312	1.624	-1.808	0.20	-0.01200	0.00500	-1.10	0.330	27.455
					10/16/2013 13:43	0917-173_Nc	13_10_16_1343_19_792	1	0.10	1.074	-0.0190	0.070	0.787	0.0760	0.278	1.625	-1.700	0.18	-0.00700	0.00500	-0.61	0.326	24.93
					10/16/2013 13:44	0917-173_Nc	13_10_16_1344_20_512	1	-2.097	1.102	0.049	0.071	0.724	0.0790	0.309	1.615	-1.454	0.17	-0.00500	0.00400	-0.36	0.342	22.949
					10/16/2013 13:45	0917-173_Nc	13_10_16_1345_21_252	1	-0.366	1.027	-0.004	0.069	0.766	0.0800	0.292	1.637	-1.124	0.16	-0.00800	0.00500	-0.98	0.323	20.759
					10/16/2013 13:46	0917-173_Nc	13_10_16_1346_22_032	1	0.29	1.092	0.032	0.071	0.780	0.0810	0.247	1.653	-1.207	0.16	-0.00800	0.00600	-0.39	0.335	19.791
					10/16/2013 13:47	0917-173_Nc	13_10_16_1347_22_792	1	1.009	1.159	0.041	0.068	0.877	0.0800	0.409	1.671	-0.96	0.16	-0.00900	0.00500	-1.13	0.342	19.792
					10/16/2013 13:48	0917-173_Nc	13_10_16_1348_23_542	1	0.756	1.138	0.011	0.067	0.894	0.0820	0.406	1.686	-1.16	0.16	-0.00800	0.00500	-0.74	0.336	20.898
					10/16/2013 13:49	0917-173_Nc	13_10_16_1349_24_252	1	-0.89	1.145	0.038	0.068	0.842	0.0810	0.273	1.692	-1.204	0.16	-0.01200	0.00500	-0.32	0.345	21.16
					10/16/2013 13:50	0917-173_Nc	13_10_16_1350_25_052	1	0.62	1.181	-0.015	0.076	0.886	0.0840	0.350	1.692	-1.456	0.18	-0.00900	0.00500	-0.28	0.353	23.047
					10/16/2013 13:51	0917-173_Nc	13_10_16_1351_25_803	1	-1.75	1.140	0.101	0.069	0.840	0.0820	0.308	1.695	-1.21	0.17	-0.00600	0.00500	-0.89	0.329	23.136
					10/16/2013 13:52	0917-173_Nc	13_10_16_1352_26_603	1	-1.39	1.105	-0.0230	0.074	0.795	0.0810	0.385	1.675	-1.298	0.18	-0.01000	0.00500	-0.58	0.341	22.271
					10/16/2013 13:53	0917-173_Nc	13_10_16_1353_27_313	1	0.085	1.177	0.0510	0.069	0.885	0.0790	0.285	1.675	-1.272	0.17	-0.00400	0.00500	-0.94	0.337	20.744
					10/16/2013 13:54	0917-173_Nc	13_10_16_1354_28_013	1	0.428	1.152	0.012	0.069	0.902	0.0790	0.499	1.674	-1.16	0.16	-0.00800	0.00500	-0.93	0.345	19.989
					10/16/2013 13:55	0917-173_Nc	13_10_16_1355_28_823	1	-1.41	1.186	-0.02900	0.066	0.868	0.0830	0.342	1.673	-1.212	0.16	-0.00900	0.00500	-0.59	0.343	20.048
					10/16/2013 13:56	0917-173_Nc	13_10_16_1356_29_593	1	-0.24	1.103	-0.0140	0.070	0.913	0.0820	0.463	1.681	-1.194	0.16	-0.00700	0.00500	-0.41	0.336	20.343
					10/16/2013 13:57	0917-173_Nc	13_10_16_1357_30_333	1	0.38	1.129	0.045	0.073	0.868	0.0830	0.446	1.699	-1.263	0.17	-0.00800	0.00500	-0.43	0.336	21.505
					10/16/2013 13:58	0917-173_Nc	13_10_16_1358_31_053	1	0.526	1.104	-0.0050	0.070	0.963	0.0840	0.334	1.702	-1.346	0.17	-0.00600	0.00500	0.15	0.346	21.589
					10/16/2013 13:59	0917-173_Nc	13_10_16_1359_31_863	1	-1.75	1.263	0.059	0.070	0.881	0.0840	0.588	1.692	-1.217	0.16	-0.01200	0.00500	-0.47	0.359	20.986
					10/16/2013 14:00	0917-173_Nc	13_10_16_1400_32_603	1	0.05	1.189	0.075	0.071	0.772	0.0830	0.407	1.680	-0.990	0.16	-0.00700	0.00500	-0.55	0.356	18.831
					10/16/2013 14:01	0917-173_Nc	13_10_16_1401_33_323	1	-0.44	1.147	0.030	0.068	0.749	0.0820	0.397	1.656	-1.20	0.16	-0.00400	0.00500	-0.75	0.341	20.501
					10/16/2013 14:02	0917-173_Nc	13_10_16_1402_34_073	1	1.90	1.143	0.037	0.074	0.823	0.0790	0.477	1.642	-1.528	0.174	-0.00600	0.00500	-0.10	0.342	22.703
					10/16/2013 14:03	0917-173_Nc	13_10_16_1403_34_794	1	0.85	1.079	0.041	0.067	0.882	0.0790	0.369	1.637	-1.441	0.179	-0.00700	0.00500	-0.46	0.309	23.788
					10/16/2013 14:04	0917-173_Nc	13_10_16_1404_35_484	1	0.64	1.046	0.0180	0.074	0.855	0.0780	0.420	1.632	-1.521	0.187	-0.00500	0.00500	-0.98	0.316	24.847
					10/16/2013 14:05	0917-173_Nc	13_10_16_1405_36_184	1	-0.961	1.091	-0.0450	0.076	0.825	0.0790	0.434	1.631	-1.434	0.192	-0.00600	0.00500	-0.91	0.350	25.152
					10/16/2013 14:06	0917-173_Nc	13_10_16_1406_36_954	1	-1.52	1.115	0.002	0.075	0.840	0.0790	0.417	1.636	-1.616	0.190	-0.00500	0.00500	-0.78	0.341	25.212
					10/16/2013 14:07	0917-173_Nc	13_10_16_1407_37_704	1	0.83	1.192	0.011	0.077	0.828	0.0790	0.361	1.631	-1.55	0.190	-0.00500	0.00500	-0.52	0.349	25.534
					10/16/2013 14:08	0917-173_Nc	13_10_16_1408_38_404	1	0.324	1.097	-0.0110	0.072	0.788	0.0780	0.390	1.639	-1.436	0.185	-0.00900	0.00500	-0.34	0.338	24.935
					10/16/2013 14:09	0917-173_Nc	13_10_16_1409_39_214	1	0.41	1.132	0.048	0.073	0.824	0.0800	0.459	1.651	-1.45	0.180	-0.00500	0.00500	-0.54	0.342	23.393
					10/16/2013 14:10	0917-173_Nc	13_10_16_1410_39_914	1	0.21	1.171	0.032	0.069	0.789	0.0810	0.297	1.670	-1.26	0.167	-0.00300	0.00500	-0.55	0.343	23.019
					10/16/2013 14:11	0917-173_Nc	13_10_16_1411_40_714	1	-1.39	1.163	0.0230	0.074	0.812	0.0780	0.337	1.664	-1.44	0.182	-0.00400	0.00500	-0.63	0.350	24.1
					10/16/2013 14:12	0917-173_Nc	13_10_16_1412_41_424	1	-1.996	1.165	0.041	0.075	0.824	0.0820	0.447	1.681	-1.38	0.188	-0.00800	0.00500	-0.66	0.350	25.47
					10/16/2013 14:13	0917-173_Nc	13_10_16_1413_42_174	1	0.31	1.102	-0.054	0.074	0.826	0.0810	0.519	1.663	-1.42	0.196	-0.00500	0.00500	-0.99	0.334	26.583
					10/16/2013 14:14	0917-173_Nc	13_10_16_1414_42_985	1	-0.08	1.164	-0.119	0.076	0.743	0.0790	0.443	1.656	-1.630	0.189	-0.00600	0.00500	-0.44	0.352	26.216
					10/16/2013 14:15	0917-173_Nc	13_10_16_1415_43_685	1	-1.310	1.088	-0.053	0.074	0.793	0.0770	0.311	1.652	-1.49	0.198	-0.00900	0.00400	-1.18	0.332	26.504
					10/16/2013 14:16	0917-173_Nc	13_10_16_1416_44_515	1	-0.49	1.115	-0.0070	0.074	0.693	0.0790	0.386	1.636	-1.414	0.192	-0.00800	0.00500	-0.80	0.339	25.971
					10/16/2013 14:17	0917-173_Nc	13_10_16_1417_45_225	1	-0.32	1.147	0.001	0.075	0.662	0.0780	0.328	1.629	-1.34	0.187	-0.00700	0.00500	-1.08	0.347	24.997
					10/16/2013 14:18	0917-173_Nc	13_10_16_1418_45_945	1	-1.43	1.111	-0.0590	0.071	0.713	0.0770	0.277	1.646	-1.45	0.187	-0.00400	0.00500	-0.57	0.332	25.884
			Stop		10/16/2013 14:19	0917-173_Nc	13_10_16_1419_46_755	1	-1.47	1.208	-0.083	0.077	0.841	0.0810	0.455	1.663	-1.69	0.203	-0.00200	0.00500	-0.95	0.357	27.3
					10/16/2013 15:07	0917-173_Nc	13_10_16_1507_27_499	1	2.0	1.3	0.100	0.071	-0.31	0.95	-0.247	0.0840	0.105	0.116	0.038	0.399	-0.93	0.381	-1.153
					10/16/2013 15:07	0917-173_Nc	13_10_16_1507_46_029	1	2.2	1.3	0.10700	0.071	-0.41	1.18	0.0240	0.0970	-0.166	0.117	0.051	0.485	0.32	0.389	-1.458
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_04_639	1	1.0	1.3	-0.1230	0.075	-0.38	1.31	-0.1200	0.0950	-0.055	0.120	0.048	0.531	-0.2320	0.393	-1.625
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_23_129	1	0.8	1.4	0.1280	0.076	-0.38	1.38	-0.02600	0.0890	0.169	0.124	0.051	0.557	-0.001	0.417	-1.71
					10/16/2013 15:08	0917-173_Nc	13_10_16_1508_41_629	1	1.1	1.2	0.061	0.070	-0.34	1.41	0.0360	0.0960	-0.023	0.112	0.043	0.566	-1.088	0.370	-1.716
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_00_239	1	-0.2	1.3	0.141	0.075	-0.53	1.43	-0.0810	0.0930	0.021	0.122	0.050	0.573	0.002	0.402	-1.777
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_18_749	1	1.9	1.3	0.1410	0.071	-0.38	1.44	-0.091	0.0880	0.085	0.118	0.038	0.576	0.088	0.386	-1.777
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_37_259	1	-1.9	1.4	-0.0010	0.071	-0.44	1.45	-0.0880	0.1010	-0.363	0.119	0.046	0.577	-0.1340	0.390	-1.749
					10/16/2013 15:09	0917-173_Nc	13_10_16_1509_55_859	1	-0.6	1.2	0.003	0.073	-0.44	1.45	0.226	0.0970	0.036	0.115	0.043	0.582	0.914	0.365	-1.786
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_14_359	1	1.5	1.3	0.112	0.075	-0.54	1.45	-0.0520	0.0870	0.194	0.120	0.053	0.581	0.192	0.397	-1.798
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_32_979	1	-0.9	1.5	-0.0240	0.076	-0.22	1.45	0.0760	0.0880	0.1080	0.127	0.049	0.578	-0.523	0.431	-1.786
					10/16/2013 15:10	0917-173_Nc	13_10_16_1510_51_429	1	-0.4	1.3	0.216	0.075	-0.39	1.45	-0.269	0.0830	-0.023	0.120	0.055	0.583	-0.045	0.394	-1.781
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_09_939	1	1.4	1.3	-0.203	0.078	-0.39	1.45	-0.0270	0.0800	-0.117	0.125	0.038	0.578	0.29	0.411	-1.809
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_28_549	1	0.4	1.3	0.184	0.069	-0.49	1.45	0.182	0.0880	0.0980	0.114	0.056	0.580	0.238	0.390	-1.776
					10/16/2013 15:11	0917-173_Nc	13_10_16_1511_47_059	1	2.0	1.3	0.005	0.074	-0.42	1.46	0.1380	0.1010	0.171	0.122	0.058	0.583	-0.017	0.402	-1.802
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_05_669	1	-5.1	1.3	0.059	0.077	-0.47	1.46	0.0730	0.0970	-0.100	0.123	0.044	0.582	0.4830	0.407	-1.778
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_24_089	1	-0.8	1.4	-0.197	0.073	-0.45	1.45	0.0770	0.0960	0.232	0.121	0.047	0.579	-0.070	0.411	-1.795
					10/16/2013 15:12	0917-173_Nc	13_10_16_1512_42_599	1	0.0	1.3	-0.029	0.075	-0.52	1.46	0.0340	0.0980	-0.0320	0.122	0.040	0.579	-0.686	0.389	-1.796
					10/16/2013 15:13	0917-173_Nc	13_10_16_1513_01_239	1	-1.8	1.3	-0.081	0.079	-0.39	1.45	-0.0510	0.0860	-0.135	0.126	0.045	0.584	-0.067	0.405	-1.79
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_39_510	1	-9.162	2.840	0.005	0.166	-0.307	0.123	0.718	1.15	-0.194	0.27	-0.01	0.00700	-1.26	0.88	-0.117
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_45_660	1	-1.790	2.962	0.144	0.159	-0.106	0.130	0.747	1.17	-0.215	0.260	-0.01000	0.00600	0.39	0.88	-0.132
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_51_900	1	-2.884	3.047	-0.217	0.167	-0.068	0.127	0.821	1.13	-0.252	0.27	-0.01400	0.00700	-1.755	0.92	-0.087
					10/16/2013 15:24	0917-173_Nc	13_10_16_1524_58_140	1	-4.227	3.015	-0.086	0.163	-0.05200	0.128	0.873	1.11	-0.328	0.27	-0.01000	0.00700	-0.557	0.89	-0.05
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_04_280	1	-2.846	2.782	-0.122	0.174	-0.0830	0.129	0.646	1.11	-0.178	0.27	-0.01000	0.00700	0.32	0.90	-0.127
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_10_440	1	-3.317	2.748	-0.143	0.154	-0.1420	0.126	1.083	1.11	-0.142	0.25	-0.01900	0.00600	-1.87	0.84	-0.149
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_16_600	1	-0.971	2.884	0.159	0.157	-0.176	0.128	0.503	1.10	0.327	0.259	-0.02100	0.00700	-2.65	0.84	-0.068
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_22_760	1	-4.788	3.046	-0.291	0.167	-0.254	0.121	1.270	1.14	0.08	0.28	-0.01600	0.00700	-2.89	0.91	-0.05
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_29_030	1	-6.086	2.997	-0.035	0.161	-0.026	0.122	0.812	1.10	0.20	0.27	-0.01700	0.00600	-2.57	0.90	-0.113
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_35_200	1	-2.991	3.190	-0.355	0.168	0.084	0.127	1.3950	1.13	-0.027	0.28	-0.01000	0.00700	-0.412	0.93	-0.089
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_41_280	1	-1.308	2.790	-0.312	0.163	-0.1640	0.127	0.984	1.14	0.080	0.26	-0.01900	0.00700	-1.055	0.89	-0.095
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_47_500	1	-1.347	2.983	0.053	0.170	-0.173	0.131	1.512	1.17	-0.421	0.27	-0.02000	0.00600	-0.661	0.90	-0.097
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_53_690	1	-2.677	3.143	-0.026	0.167	-0.475	0.125	0.987	1.16	0.027	0.273	-0.01600	0.00700	-2.02	0.91	-0.077
					10/16/2013 15:25	0917-173_Nc	13_10_16_1525_59_901	1	-3.278	2.939	-0.251	0.169	-0.238	0.128	1.032	1.22	0.25	0.27	-0.01100	0.00600	-1.8070	0.91	-0.07
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_06_101	1	1.84	2.785	-0.237	0.168	-0.377	0.128	1.021	1.22	0.068	0.267	-0.00600	0.00700	-1.62	0.88	0.054
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_12_201	1	-5.589	2.772	-0.329	0.163	-0.1580	0.131	1.039	1.286	-0.166	0.258	0.0010	0.00700	-0.570	0.84	0.034
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_18_411	1	-5.226	2.992	-0.2230	0.157	-0.147	0.122	0.747	1.280	0.357	0.261	-0.00700	0.00700	-2.68	0.87	-0.005
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_24_601	1	1.29	2.974	0.239	0.158	-0.158	0.129	1.811	1.339	-0.194	0.262	-0.01600	0.00600	0.27	0.86	0.06
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_30_811	1	-8.37	2.704	-0.139	0.166	-0.154	0.127	0.612	1.406	-0.403	0.259	-0.01300	0.00700	-0.360	0.84	0.044
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_37_001	1	-0.806	2.746	-0.2060	0.155	-0.290	0.121	1.180	1.410	-0.100	0.250	-0.01300	0.00700	-0.721	0.84	0.132
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_43_091	1	-7.905	2.792	0.106	0.160	-0.0520	0.1270	1.411	1.462	-0.209	0.260	-0.01	0.00700	-0.78	0.88	0.1
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_49_291	1	-3.71	2.680	-0.1230	0.155	-0.134	0.124	1.220	1.472	-0.381	0.250	-0.00900	0.00700	-0.45	0.81	0.185
					10/16/2013 15:26	0917-173_Nc	13_10_16_1526_55_501	1	-2.306	2.657	-0.092	0.149	-0.160	0.130	0.935	1.522	-0.485	0.241	-0.00200	0.00700	0.401	0.81	0.168
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_01_701	1	1.25	2.536	-0.3480	0.151	-0.0010	0.119	1.204	1.569	0.2930	0.240	-0.01400	0.00700	-1.03	0.81	0.19
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_07_801	1	1.074	2.847	-0.191	0.154	-0.181	0.121	0.928	1.610	-0.167	0.252	-0.01000	0.00700	-0.33	0.85	0.159
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_14_001	1	-2.048	2.751	0.084	0.148	-0.186	0.123	1.061	1.576	-0.037	0.245	-0.02000	0.00600	-0.33	0.81	0.231
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_20_221	1	-4.673	2.711	0.130	0.154	-0.129	0.131	1.117	1.583	-0.2340	0.249	-0.00800	0.00600	-1.241	0.81	0.199
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_26_421	1	-1.224	2.773	-0.298	0.161	-0.083	0.123	1.227	1.638	-0.307	0.258	0.00400	0.00600	-1.11	0.85	0.259
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_32_621	1	-3.476	2.728	0.196	0.151	-0.173	0.119	0.796	1.696	-0.372	0.247	-0.01700	0.00600	-1.70	0.83	0.231
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_38_721	1	-1.967	2.772	-0.194	0.148	-0.148	0.132	0.659	1.630	0.026	0.244	-0.02500	0.00600	-0.614	0.83	0.258
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_44_921	1	-2.431	2.719	-0.120	0.155	0.091	0.128	0.860	1.689	-0.68	0.251	-0.01000	0.00600	1.90	0.85	0.271
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_51_121	1	0.502	2.606	0.044	0.136	0.0200	0.123	1.083	1.736	-0.136	0.227	-0.01800	0.00600	-0.99	0.770	0.254
					10/16/2013 15:27	0917-173_Nc	13_10_16_1527_57_331	1	-8.083	2.713	-0.088	0.145	0.0300	0.126	1.270	1.753	0.1140	0.243	-0.01600	0.00600	0.789	0.79	0.274
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_03_531	1	-4.234	2.685	-0.2520	0.147	-0.0410	0.126	0.548	1.768	0.01	0.242	-0.02800	0.00700	-2.131	0.79	0.264
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_09_641	1	3.6340	2.325	0.098	0.140	0.0520	0.122	0.824	1.782	0.095	0.224	-0.01600	0.00600	-2.37	0.70	0.332
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_15_841	1	-0.439	2.613	0.209	0.152	0.158	0.1160	1.033	1.753	-0.292	0.242	-0.01	0.00500	-0.397	0.80	0.293
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_21_961	1	-1.530	2.404	-0.263	0.147	-0.189	0.123	0.991	1.770	-0.1030	0.229	-0.01200	0.00600	0.22	0.77	0.274
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_28_171	1	-2.06	2.759	-0.1260	0.150	-0.0640	0.1150	0.922	1.788	0.016	0.248	-0.01500	0.00600	0.11	0.82	0.314
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_34_381	1	-7.853	2.673	-0.144	0.141	0.0650	0.121	0.923	1.779	-0.220	0.236	-0.02800	0.00700	0.753	0.80	0.289
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_40_481	1	-1.115	2.439	0.386	0.146	-0.260	0.126	0.819	1.766	0.075	0.230	-0.02100	0.00600	-0.26	0.75	0.313
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_46_691	1	-0.350	2.592	-0.305	0.148	-0.270	0.118	0.789	1.816	-0.039	0.238	-0.01700	0.00600	0.29	0.79	0.186
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_52_891	1	-2.881	2.565	-0.250	0.147	-0.1040	0.1290	0.902	1.848	-0.616	0.233	-0.01	0.00500	0.337	0.76	0.267
					10/16/2013 15:28	0917-173_Nc	13_10_16_1528_59_101	1	1.4920	2.597	0.134	0.143	-0.388	0.119	1.122	1.785	-0.032	0.233	-0.01100	0.00600	-1.64	0.79	0.3
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_05_301	1	-5.1600	2.318	0.005	0.125	-0.103	0.1170	0.494	1.827	0.08	0.209	-0.01800	0.00500	-0.4420	0.69	0.294
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_11_411	1	-1.9810	2.586	-0.064	0.138	-0.011	0.1180	1.499	1.825	-0.483	0.229	-0.01000	0.00600	-0.09	0.75	0.291
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_17_611	1	-0.247	2.547	-0.103	0.132	0.0840	0.121	1.011	1.806	-0.552	0.221	-0.01	0.00400	-0.50	0.74	0.345
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_23_821	1	3.21	2.496	0.280	0.132	0.1380	0.122	0.617	1.767	0.06600	0.220	-0.00800	0.00600	0.21	0.72	0.292
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_30_021	1	2.434	2.562	-0.1140	0.144	-0.148	0.116	1.057	1.824	-0.299	0.232	-0.01500	0.00600	-0.77	0.77	0.336
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_36_221	1	3.701	2.672	-0.185	0.137	-0.234	0.116	0.860	1.810	0.09	0.231	0.00300	0.00600	-0.90	0.78	0.327
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_42_321	1	-0.626	2.637	-0.0480	0.133	-0.0260	0.1110	0.903	1.803	-0.166	0.224	-0.00200	0.00500	-1.325	0.76	0.275
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_48_521	1	-4.238	2.477	0.0730	0.134	0.0410	0.118	0.611	1.847	0.009	0.220	-0.01000	0.00600	0.55	0.73	0.297
					10/16/2013 15:29	0917-173_Nc	13_10_16_1529_54_721	1	2.168	2.580	0.2220	0.136	-0.102	0.117	0.591	1.839	0.290	0.226	-0.02	0.00500	-0.324	0.75	0.318
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_00_911	1	-5.748	2.340	-0.20	0.132	0.0840	0.118	0.801	1.837	0.096	0.215	-0.01000	0.00500	0.62	0.71	0.311
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_07_101	1	-2.689	2.441	-0.351	0.143	-0.174	0.113	0.660	1.835	-0.117	0.229	-0.00700	0.00500	0.631	0.73	0.274
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_13_191	1	-5.860	2.398	0.5370	0.127	-0.0050	0.115	0.954	1.812	0.209	0.214	0.00000	0.00600	-1.40	0.71	0.285
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_19_381	1	-0.444	2.401	0.238	0.139	0.0420	0.1120	0.959	1.804	0.03	0.223	-0.0160	0.00600	-1.176	0.72	0.301
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_25_571	1	1.491	2.638	0.129	0.130	-0.0020	0.113	0.496	1.785	0.171	0.223	-0.01300	0.00500	-0.53	0.74	0.208
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_31_771	1	2.758	2.377	-0.083	0.135	0.242	0.108	0.753	1.785	-0.064	0.217	0.00000	0.00500	-0.66	0.72	0.267
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_37_861	1	-3.03	2.486	0.023	0.128	-0.1430	0.1080	0.784	1.770	-0.222	0.215	-0.01300	0.00500	-0.475	0.72	0.233
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_44_051	1	-0.560	2.525	0.075	0.134	0.0170	0.118	0.653	1.777	0.0640	0.223	-0.00400	0.00600	0.289	0.76	0.33
					10/16/2013 15:30	0917-173_Nc	13_10_16_1530_50_351	1	2.155	2.538	0.002	0.142	0.0230	0.1080	1.087	1.793	-0.290	0.230	-0.01100	0.00600	1.43	0.75	0.249

Location	Disc.	#	Start/Stop	Instrument				Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp

Date	Method	Filename	DF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/16/2013 15:30	0917-173_Nc	13_10_16_1530_56_551	1	5.090	2.295	0.072	0.141	0.0290	0.1050	0.869	1.788	-0.222	0.220	-0.00900	0.00500	0.08	0.70	0.271
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_02_751	1	-4.4990	2.454	0.124	0.121	-0.0880	0.1080	0.671	1.778	0.128	0.208	-0.01400	0.00500	1.18	0.685	0.256
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_08_851	1	0.909	2.554	-0.0420	0.137	-0.0200	0.1090	0.615	1.752	-0.012	0.227	-0.00900	0.00400	-0.847	0.75	0.236
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_15_041	1	1.8970	2.549	-0.1640	0.132	-0.05300	0.1080	0.855	1.749	-0.145	0.222	0.00600	0.00600	-0.622	0.75	0.277
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_21_231	1	3.970	2.437	-0.1520	0.133	-0.074	0.110	0.787	1.737	-0.324	0.214	-0.00500	0.00500	1.270	0.73	0.207
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_27_441	1	-0.103	2.410	0.120	0.137	-0.0030	0.105	1.066	1.765	-0.243	0.221	-0.00900	0.00500	0.40	0.72	0.219
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_33_631	1	3.2410	2.517	-0.237	0.129	0.1350	0.1000	1.1920	1.746	0.04	0.217	-0.00100	0.00500	-0.53	0.75	0.207
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_39_721	1	4.590	2.510	-0.029	0.134	-0.0260	0.112	0.950	1.719	-0.166	0.222	0.01200	0.00400	0.242	0.73	0.205
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_45_921	1	-1.28	2.345	-0.252	0.137	-0.137	0.1040	0.515	1.691	-0.293	0.217	-0.0010	0.00500	0.384	0.70	0.249
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_52_121	1	3.679	2.540	0.098	0.135	-0.052	0.1060	0.710	1.707	-0.133	0.225	-0.01100	0.00500	1.19	0.74	0.206
10/16/2013 15:31	0917-173_Nc	13_10_16_1531_58_311	1	2.806	2.055	-0.115	0.129	0.128	0.1050	0.804	1.663	-0.482	0.200	0.00600	0.00500	-0.06	0.66	0.217
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_04_511	1	7.319	2.701	0.169	0.127	-0.155	0.100	0.9330	1.659	-0.141	0.221	-0.00800	0.00600	0.691	0.75	0.235
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_10_611	1	-0.884	2.411	0.1760	0.135	0.161	0.1010	0.675	1.682	0.272	0.220	-0.01800	0.00500	-2.07	0.75	0.198
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_16_801	1	-4.426	2.421	-0.117	0.127	0.0100	0.1050	0.876	1.643	-0.101	0.215	-0.01200	0.00400	-0.132	0.73	0.187
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_23_091	1	0.234	2.559	0.0130	0.131	0.028	0.1030	0.854	1.646	-0.589	0.221	0.00100	0.00500	-0.10	0.76	0.201
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_29_201	1	-2.187	2.585	0.148	0.136	0.180	0.1050	0.876	1.668	-0.220	0.229	-0.00500	0.00500	0.993	0.75	0.201
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_35_501	1	-0.034	2.343	0.073	0.135	-0.187	0.101	1.044	1.623	-0.431	0.217	-0.00100	0.00500	0.967	0.70	0.192
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_41_501	1	2.328	2.565	-0.0940	0.122	-0.148	0.1040	0.309	1.636	0.001	0.212	-0.01400	0.00400	0.75	0.72	0.199
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_47_691	1	0.6030	2.557	0.0820	0.130	0.233	0.0990	0.933	1.589	-0.410	0.217	-0.00800	0.00500	0.55	0.72	0.218
10/16/2013 15:32	0917-173_Nc	13_10_16_1532_53_981	1	-3.600	2.689	0.1470	0.128	0.1560	0.1050	0.833	1.650	-0.136	0.221	0.00400	0.00400	0.14	0.78	0.228
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_00_181	1	2.017	2.600	0.001	0.135	0.229	0.0970	0.709	1.604	-0.032	0.222	0.00600	0.00500	0.387	0.75	0.221
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_06_381	1	7.34	2.229	-0.374	0.134	0.1340	0.0950	0.948	1.613	-1.119	0.216	-0.00800	0.00500	1.44	0.68	0.171
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_12_481	1	4.43	2.271	0.217	0.137	0.239	0.1030	0.768	1.597	-0.092	0.219	0.00800	0.00500	1.58	0.72	0.232
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_18_681	1	-4.582	2.350	0.15	0.133	0.220	0.1030	0.766	1.584	-0.027	0.218	-0.00300	0.00500	0.552	0.72	0.193
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_24_881	1	-2.505	2.517	0.370	0.133	-0.0140	0.0980	0.568	1.651	-0.285	0.220	-0.01500	0.00500	-0.2920	0.74	0.168
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_31_081	1	5.308	2.492	-0.4490	0.137	-0.244	0.122	0.780	1.753	-0.253	0.226	-0.00200	0.00700	-0.797	0.75	0.222
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_37_271	1	-6.983	2.628	0.165	0.146	-0.186	0.126	0.22	1.502	-0.196	0.239	-0.01100	0.00600	0.1580	0.80	0.077
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_43_371	1	-6.011	2.723	-0.085	0.141	-0.331	0.136	0.874	1.428	-0.489	0.237	0.0000	0.00700	0.46	0.770	-0.049
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_49_561	1	-1.42	2.942	-0.063	0.155	-0.237	0.134	1.173	1.420	-0.494	0.258	-0.02900	0.00700	-0.07	0.87	-0.081
10/16/2013 15:33	0917-173_Nc	13_10_16_1533_55_761	1	1.552	2.629	-0.0440	0.166	-0.033	0.131	0.839	1.362	-0.26	0.262	-0.02400	0.00600	-1.23	0.83	-0.051
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_01_961	1	-4.32	2.891	-0.117	0.156	-0.349	0.127	1.595	1.416	-0.060	0.259	-0.02100	0.00600	-0.673	0.87	-0.035
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_08_051	1	-1.6340	2.900	0.144	0.160	-0.2150	0.126	1.281	1.503	0.2990	0.260	-0.01000	0.00700	0.098	0.87	0.033
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_14_241	1	-2.033	2.903	-0.115	0.158	-0.1450	0.125	1.028	1.443	-0.283	0.261	-0.01600	0.00600	-0.13	0.87	0.101
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_20_441	1	-4.119	2.819	-0.07	0.160	-0.161	0.122	0.620	1.468	0.045	0.260	-0.00800	0.00600	-0.14	0.85	0.061
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_26_631	1	4.9780	2.772	0.0550	0.158	-0.210	0.128	0.917	1.528	0.077	0.254	-0.00900	0.00600	-0.935	0.86	0.049
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_32_831	1	-0.547	3.002	0.159	0.146	-0.002	0.134	0.342	1.518	-0.126	0.250	-0.00800	0.00600	-0.590	0.85	0.094
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_38_921	1	-1.01	2.841	-0.426	0.160	-0.0890	0.129	0.951	1.534	0.019	0.262	-0.02	0.00700	-2.07	0.87	0.139
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_45_121	1	-4.856	2.808	0.0830	0.152	-0.199	0.128	0.20	1.579	0.14	0.254	-0.00200	0.00700	-1.054	0.82	0.105
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_51_321	1	-2.169	2.717	-0.34	0.154	-0.123	0.125	0.735	1.583	-0.40	0.246	-0.02600	0.00600	0.677	0.81	0.161
10/16/2013 15:34	0917-173_Nc	13_10_16_1534_57_611	1	-1.008	2.456	-0.131	0.152	-0.275	0.126	0.652	1.619	-0.289	0.237	-0.00400	0.00600	-0.01	0.79	0.182
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_03_811	1	-1.645	2.675	0.1200	0.145	0.019	0.1180	0.755	1.678	0.0120	0.237	0.0040	0.00600	1.16	0.79	0.196
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_09_821	1	0.50	2.733	0.068	0.146	-0.112	0.133	0.671	1.675	-0.22	0.241	-0.00400	0.00600	-1.995	0.80	0.21
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_16_021	1	-1.94	2.681	0.0020	0.151	-0.017	0.122	0.683	1.700	0.020	0.243	-0.01700	0.00600	-0.86	0.81	0.221
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_22_221	1	-1.2780	2.523	0.003	0.141	-0.271	0.128	0.696	1.690	0.130	0.233	-0.01000	0.00600	0.51	0.78	0.226
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_28_421	1	-3.410	2.327	0.120	0.144	-0.210	0.129	0.16	1.722	-0.1070	0.227	-0.01800	0.00600	-1.59	0.75	0.229
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_34_611	1	-4.973	2.439	-0.54	0.146	-0.04200	0.1270	0.845	1.723	-0.636	0.233	-0.00600	0.00600	1.06	0.78	0.273
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_40_711	1	-2.34	2.665	0.269	0.144	-0.0650	0.1240	0.949	1.772	0.023	0.236	-0.01000	0.00500	0.152	0.79	0.232
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_46_901	1	-5.1130	2.774	-0.28	0.137	-0.1830	0.120	0.662	1.732	-0.587	0.234	-0.01900	0.00600	1.45	0.78	0.254
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_53_101	1	-3.49	2.933	0.201	0.158	-0.0230	0.130	0.660	1.754	-0.155	0.258	0.00300	0.00600	-0.235	0.85	0.247
10/16/2013 15:35	0917-173_Nc	13_10_16_1535_59_391	1	-0.31	2.459	0.115	0.147	-0.0360	0.120	0.657	1.799	-0.053	0.235	-0.01100	0.00600	-0.002	0.77	0.246
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_05_581	1	-2.06	2.696	0.289	0.144	-0.0810	0.122	0.20	1.745	0.188	0.238	0.00	0.00600	0.298	0.81	0.228
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_11_681	1	2.450	2.596	-0.002	0.133	-0.05900	0.129	0.453	1.790	-0.207	0.223	-0.02200	0.00600	-0.04	0.76	0.22
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_17_881	1	-1.643	2.776	0.274	0.136	-0.188	0.131	0.735	1.747	0.312	0.229	-0.02700	0.00500	-0.730	0.78	0.238
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_24_081	1	-6.8160	2.666	-0.1370	0.147	-0.111	0.123	0.613	1.797	-0.358	0.239	-0.02100	0.00500	0.26	0.80	0.275
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_30_271	1	4.532	2.625	0.357	0.143	-0.049	0.1170	0.604	1.830	0.025	0.233	-0.02500	0.00600	-0.81	0.78	0.235
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_36_471	1	-1.701	2.662	0.068	0.140	-0.297	0.123	0.760	1.816	-0.015	0.232	-0.01	0.00600	-1.427	0.77	0.286
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_42_561	1	4.05	2.530	0.183	0.133	-0.103	0.122	1.004	1.789	0.189	0.221	-0.00600	0.00500	-1.5820	0.74	0.255
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_48_751	1	-1.17	2.562	-0.047	0.140	-0.0210	0.116	0.826	1.838	0.123	0.231	-0.01300	0.00600	-0.573	0.79	0.271
10/16/2013 15:36	0917-173_Nc	13_10_16_1536_54_941	1	-8.48	2.479	-0.077	0.138	-0.151	0.117	1.094	1.842	-0.063	0.224	-0.02200	0.00600	0.674	0.73	0.272
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_01_141	1	3.527	2.330	-0.040	0.138	-0.149	0.1210	0.806	1.822	-0.046	0.221	-0.01800	0.00600	0.014	0.71	0.291
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_07_351	1	1.4260	2.696	-0.037	0.152	-0.0090	0.115	0.863	1.801	-0.257	0.246	-0.01200	0.00500	0.1510	0.82	0.306
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_13_431	1	-0.916	2.479	0.109	0.137	-0.1800	0.120	0.682	1.791	-0.25	0.223	-0.01400	0.00600	0.03	0.720	0.301
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_19_631	1	-1.645	2.567	0.231	0.145	-0.184	0.1140	0.781	1.810	0.122	0.234	-0.00200	0.00600	-0.130	0.81	0.214
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_25_841	1	-3.47	2.721	0.043	0.136	0.1710	0.116	0.658	1.831	-0.191	0.233	0.00300	0.00500	-1.074	0.78	0.278
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_32_041	1	1.868	2.525	-0.080	0.133	-0.180	0.119	0.842	1.827	-0.301	0.224	-0.00700	0.00600	1.190	0.732	0.263
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_38_151	1	-0.14	2.404	-0.045	0.143	0.187	0.115	0.920	1.824	-0.16	0.230	-0.00900	0.00500	-1.187	0.76	0.21
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_44_351	1	-1.545	2.557	-0.363	0.138	-0.0980	0.119	0.698	1.836	-0.3500	0.224	-0.01700	0.00500	-0.68	0.77	0.229
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_50_551	1	-4.6760	2.407	-0.001	0.131	-0.124	0.110	0.993	1.811	0.022	0.217	-0.01400	0.00600	-0.50	0.72	0.239
10/16/2013 15:37	0917-173_Nc	13_10_16_1537_56_752	1	5.015	2.533	0.086	0.136	-0.100	0.114	0.649	1.814	0.22	0.227	-0.00800	0.00500	-1.71	0.77	0.236
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_02_952	1	-4.873	2.328	-0.108	0.128	-0.0110	0.1140	1.353	1.774	-0.061	0.210	-0.01800	0.00600	-1.244	0.702	0.223
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_09_052	1	-3.25	2.165	-0.097	0.131	-0.158	0.1100	0.732	1.786	-0.550	0.210	-0.02000	0.00600	1.04	0.69	0.174
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_15_252	1	-1.51	2.353	0.2150	0.144	-0.114	0.1150	0.641	1.832	-0.2920	0.225	-0.02700	0.00600	0.683	0.73	0.298
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_21_442	1	6.33	2.562	0.272	0.135	-0.0890	0.110	0.585	1.760	0.21	0.226	0.00600	0.00500	-2.90	0.76	0.233
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_27_642	1	-3.731	2.357	0.1080	0.140	-0.2010	0.1040	0.989	1.819	-0.361	0.224	-0.01000	0.00500	2.03	0.73	0.232
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_33_832	1	-0.12	2.333	-0.115	0.136	0.0710	0.1030	0.646	1.768	-0.015	0.221	-0.01400	0.00500	-1.199	0.75	0.294
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_39_922	1	0.016	2.461	-0.012	0.145	-0.082	0.1090	0.871	1.781	-0.025	0.230	0.00	0.00500	-1.68	0.76	0.249
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_46_132	1	3.159	2.361	0.1920	0.126	-0.123	0.1060	0.615	1.784	0.210	0.208	-0.00300	0.00600	-1.441	0.668	0.186
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_52_322	1	0.922	2.424	-0.225	0.138	0.0120	0.1060	0.321	1.763	-0.282	0.226	-0.00900	0.00400	-1.00	0.73	0.219
10/16/2013 15:38	0917-173_Nc	13_10_16_1538_58_522	1	-4.893	2.405	0.196	0.136	-0.117	0.1090	0.885	1.745	-0.41	0.220	-0.00500	0.00500	0.480	0.73	0.175
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_04_712	1	-2.426	2.292	-0.110	0.124	0.0100	0.118	0.747	1.734	-0.138	0.207	-0.01000	0.00500	-0.106	0.68	0.175
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_10_822	1	1.065	2.568	0.247	0.128	-0.0580	0.107	0.188	1.749	0.066	0.218	-0.01300	0.00500	0.41	0.698	0.226
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_17_012	1	-0.916	2.178	-0.131	0.139	-0.0620	0.1070	0.634	1.747	-0.146	0.217	-0.00600	0.00600	0.179	0.70	0.243
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_23_302	1	-3.306	2.560	-0.245	0.139	0.144	0.108	0.969	1.714	-0.408	0.228	0.00200	0.00500	-1.094	0.73	0.214
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_29_492	1	2.64	2.386	-0.041	0.131	-0.038	0.1060	0.620	1.686	-0.20500	0.212	-0.01	0.00500	-0.20	0.71	0.221
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_35_682	1	1.310	2.455	-0.166	0.138	-0.02300	0.1020	0.408	1.675	-0.223	0.224	0.00000	0.00500	-1.252	0.72	0.206
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_41_772	1	2.677	2.389	0.122	0.142	-0.0040	0.1030	0.818	1.696	-0.3510	0.225	-0.00800	0.00400	-1.050	0.74	0.212
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_47_962	1	3.276	2.442	-0.238	0.134	0.0770	0.1020	0.472	1.702	0.091	0.220	-0.00200	0.00500	-1.58	0.73	0.214
10/16/2013 15:39	0917-173_Nc	13_10_16_1539_54_152	1	6.2030	2.310	0.143	0.136	-0.150	0.1040	0.531	1.675	-0.233	0.217	-0.00500	0.00500	-1.19	0.72	0.217
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_00_342	1	4.2020	2.538	0.280	0.143	0.0880	0.1060	1.1620	1.694	0.41	0.232	-0.00900	0.00500	-0.750	0.77	0.196
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_06_532	1	4.608	2.561	0.2230	0.139	-0.0670	0.1000	0.269	1.682	-0.1430	0.227	-0.00700	0.00500	0.835	0.78	0.201
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_12_632	1	-0.362	2.300	0.195	0.135	-0.122	0.1030	0.540	1.636	-0.53	0.215	0.00	0.00500	-0.11	0.70	0.166
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_18_832	1	-0.745	2.493	0.075	0.131	0.0930	0.1090	0.900	1.639	-0.53	0.221	-0.00600	0.00500	1.25	0.74	0.199
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_25_022	1	-2.986	2.437	0.202	0.129	0.301	0.1000	0.908	1.614	0.413	0.214	0.00400	0.00600	-0.98	0.70	0.207
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_31_212	1	-6.985	2.293	0.0240	0.132	-0.00900	0.0980	0.698	1.586	-0.133	0.216	-0.00300	0.00600	-0.20	0.73	0.139
10/16/2013 15:40	0917-173_Nc	13_10_16_1540_37_502	1	0.955	2.284	0.0980	0.133	-0.0560	0.0950	1.013	1.627	-0.508	0.216	-0.01100	0.00500	1.213	0.69	0.167
10/16/2013 15:41	0917-173_Nc	13_10_16_1541_19_642	1	1.3890	1.120	0.1430	0.061	-0.0070	0.0740	0.794	1.638	-0.3050	0.101	-0.01	0.00300	-0.065	0.329	0.186
10/16/2013 15:42	0917-173_Nc	13_10_16_1542_20_432	1	0.421	1.032	0.082	0.064	0.0420	0.0730	0.889	1.639	-0.2050	0.100	-0.00600	0.00200	0.260	0.324	0.204
10/16/2013 15:43	0917-173_Nc	13_10_16_1543_21_152	1	0.996	1.053	0.041	0.059	0.0440	0.0740	0.802	1.637	-0.016	0.095	-0.00500	0.00300	-0.22500	0.317	0.189
10/16/2013 15:44	0917-173_Nc	13_10_16_1544_21_922	1	1.595	1.140	-0.0280	0.0570	0.01700	0.0750	0.753	1.646	-0.009	0.098	-0.01	0.00300	-0.159	0.328	0.203
10/16/2013 15:45	0917-173_Nc	13_10_16_1545_22_636	1	1.289	1.057	0.036	0.062	-0.090	0.0740	0.607	1.647	-0.2120	0.099	-0.00300	0.00300	-0.107	0.307	0.2
10/16/2013 15:46	0917-173_Nc	13_10_16_1546_23_436	1	0.137	1.185	0.034	0.0620	0.0050	0.0740	0.732	1.660	-0.0740	0.104	-0.00500	0.00300	0.190	0.338	0.197

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 12:14	0917-173_No	13_10_14_1214_14_091	1	-1.9	1.3	0.058	0.073	-0.27	1.42	0.0450	0.1030	-0.404	0.118	0.056	0.572	0.76	0.387	-1.776
					10/14/2013 12:14	0917-173_No	13_10_14_1214_32_611	1	-2.5	1.3	0.120	0.077	-0.26	1.47	0.1420	0.0890	-0.0410	0.126	0.045	0.590	1.44	0.402	-1.894
					10/14/2013 12:14	0917-173_No	13_10_14_1214_51_221	1	0.5	1.4	0.113	0.076	-0.37	1.49	0.045	0.1110	-0.253	0.123	0.049	0.596	-0.25	0.410	-1.888
					10/14/2013 12:15	0917-173_No	13_10_14_1215_09_721	1	-3.0	1.3	0.171	0.079	-0.51	1.51	-0.001	0.1020	-0.198	0.125	0.060	0.604	0.649	0.408	-1.94
					10/14/2013 12:15	0917-173_No	13_10_14_1215_28_311	1	-0.1	1.4	0.244	0.071	-0.42	1.51	0.107	0.1000	-0.0240	0.123	0.052	0.605	0.184	0.411	-1.94
					10/14/2013 12:15	0917-173_No	13_10_14_1215_46_821	1	-3.9	1.4	0.1370	0.080	-0.42	1.52	0.01100	0.0970	-0.205	0.128	0.056	0.606	0.365	0.406	-1.942
					10/14/2013 12:16	0917-173_No	13_10_14_1216_05_251	1	-0.4	1.4	-0.039	0.076	-0.46	1.51	-0.0090	0.0940	-0.336	0.124	0.044	0.603	1.10	0.397	-1.928
					10/14/2013 12:16	0917-173_No	13_10_14_1216_23_951	1	-1.9	1.4	-0.0810	0.077	-0.44	1.51	0.0540	0.1060	-0.04900	0.127	0.051	0.603	0.042	0.417	-1.93
					10/14/2013 12:16	0917-173_No	13_10_14_1216_42_401	1	-0.9	1.3	-0.031	0.075	-0.52	1.52	-0.193	0.1000	0.056	0.122	0.050	0.606	0.576	0.399	-1.95
					10/14/2013 12:17	0917-173_No	13_10_14_1217_01_001	1	-0.1	1.4	0.1970	0.070	-0.44	1.52	0.292	0.0900	-0.176	0.118	0.052	0.607	0.532	0.397	-1.915
					10/14/2013 12:17	0917-173_No	13_10_14_1217_19_511	1	-1.7	1.5	0.151	0.076	-0.47	1.51	-0.0620	0.0980	0.258	0.128	0.056	0.607	0.599	0.434	-1.933
					10/14/2013 12:17	0917-173_No	13_10_14_1217_38_051	1	-1.5	1.3	0.069	0.072	-0.35	1.52	0.154	0.1000	-0.138	0.119	0.061	0.606	1.37	0.418	-1.931
					10/14/2013 12:17	0917-173_No	13_10_14_1217_56_641	1	0.8	1.4	0.153	0.078	-0.48	1.51	0.156	0.1010	-0.107	0.127	0.057	0.609	1.33	0.412	-1.952
					10/14/2013 12:18	0917-173_No	13_10_14_1218_15_151	1	-2.8	1.4	0.0090	0.070	-0.50	1.52	-0.0530	0.1000	-0.0610	0.121	0.058	0.606	-0.71	0.400	-1.955
					10/14/2013 12:18	0917-173_No	13_10_14_1218_33_681	1	-1.2	1.3	0.170	0.072	-0.45	1.52	0.0080	0.0960	-0.159	0.120	0.048	0.606	0.826	0.394	-1.944
					10/14/2013 12:18	0917-173_No	13_10_14_1218_52_291	1	0.6	1.4	0.2370	0.073	-0.70	1.53	0.085	0.0930	-0.324	0.124	0.057	0.606	0.444	0.415	-1.959
					10/14/2013 12:19	0917-173_No	13_10_14_1219_10_741	1	4.1	1.3	-0.0270	0.072	-0.28	1.51	0.148	0.1090	-0.125	0.118	0.054	0.607	0.85	0.390	-1.942
					10/14/2013 12:19	0917-173_No	13_10_14_1219_29_331	1	1.8	1.4	0.122	0.077	-0.46	1.52	0.0230	0.1040	-0.049	0.125	0.051	0.608	0.4980	0.399	-1.969
					10/14/2013 12:19	0917-173_No	13_10_14_1219_47_881	1	0.6	1.4	0.1890	0.072	-0.52	1.52	0.027	0.1090	0.131	0.120	0.052	0.608	0.0550	0.407	-1.938
					10/14/2013 12:20	0917-173_No	13_10_14_1220_06_371	1	1.2	1.4	0.055	0.075	-0.50	1.52	-0.194	0.0990	-0.160	0.124	0.045	0.606	0.587	0.419	-1.989
					10/14/2013 12:20	0917-173_No	13_10_14_1220_24_991	1	-1.8	1.4	-0.056	0.075	-0.34	1.52	0.0260	0.1020	-0.003	0.124	0.055	0.604	0.68	0.420	-1.957
					10/14/2013 12:20	0917-173_No	13_10_14_1220_43_481	1	-1.2	1.3	0.032	0.072	-0.42	1.52	-0.306	0.0950	-0.058	0.117	0.056	0.607	0.91	0.395	-1.978
					10/14/2013 12:21	0917-173_No	13_10_14_1221_01_901	1	-3.6	1.5	0.117	0.073	-0.58	1.52	0.165	0.1110	0.139	0.125	0.058	0.612	-0.226	0.433	-1.959
					10/14/2013 12:21	0917-173_No	13_10_14_1221_20_611	1	-2.9	1.3	0.035	0.075	-0.45	1.52	0.0010	0.0900	-0.221	0.122	0.059	0.606	1.648	0.397	-1.963
					10/14/2013 12:21	0917-173_No	13_10_14_1221_39_101	1	0.3	1.4	0.1700	0.077	-0.40	1.52	0.127	0.0870	-0.198	0.127	0.046	0.605	-0.13	0.416	-1.977
					10/14/2013 12:21	0917-173_No	13_10_14_1221_57_711	1	-0.5	1.3	-0.039	0.076	-0.54	1.52	0.190	0.0990	-0.065	0.123	0.057	0.607	0.290	0.413	-1.938
					10/14/2013 12:22	0917-173_No	13_10_14_1222_16_192	1	-1.9	1.5	-0.032	0.076	-0.36	1.52	-0.0240	0.0990	-0.252	0.128	0.052	0.610	-0.08	0.427	-1.993
					10/14/2013 12:22	0917-173_No	13_10_14_1222_34_662	1	0.5	1.4	0.088	0.072	-0.53	1.51	0.0220	0.0890	-0.040	0.120	0.045	0.607	0.4120	0.406	-1.979
					10/14/2013 12:22	0917-173_No	13_10_14_1222_53_282	1	0.7	1.3	0.095	0.075	-0.46	1.51	0.1120	0.0950	-0.128	0.121	0.056	0.607	0.553	0.413	-1.954
					10/14/2013 12:23	0917-173_No	13_10_14_1223_11_782	1	-1.8	1.3	0.2370	0.074	-0.44	1.51	0.0880	0.1120	0.070	0.121	0.052	0.608	0.63	0.386	-1.975
					10/14/2013 12:44	0917-173_No	13_10_14_1244_45_810	1	1.55	0.911	-0.1720	0.149	98.4	0.808	-0.049	0.0980	1.261	0.196	3.12	0.0200	0.778	0.309	0.642
					10/14/2013 12:45	0917-173_No	13_10_14_1245_46_590	1	-0.08	0.874	-0.117	0.155	101.8	0.844	-0.098	0.0970	1.33	0.204	3.14	0.0200	0.623	0.310	0.671
					10/14/2013 12:46	0917-173_No	13_10_14_1246_47_390	1	0.70	0.957	-0.255	0.162	103.7	0.861	-0.001	0.1020	1.20	0.209	3.15	0.0210	0.440	0.318	0.663
					10/14/2013 12:47	0917-173_No	13_10_14_1247_48_200	1	0.60	0.846	-0.0230	0.159	104.5	0.867	-0.008	0.1020	1.34	0.208	3.14	0.0210	0.427	0.311	0.674
					10/14/2013 12:48	0917-173_No	13_10_14_1248_48_990	1	0.80	0.882	-0.219	0.157	105.2	0.868	0.1120	0.1030	1.46	0.205	3.14	0.0220	0.374	0.317	0.649
					10/14/2013 12:49	0917-173_No	13_10_14_1249_49_710	1	-0.20	0.893	-0.2240	0.1620	106	0.868	0.007	0.1090	1.33	0.209	3.15	0.0210	0.780	0.309	0.662
					10/14/2013 12:50	0917-173_No	13_10_14_1250_50_520	1	0.12	0.936	-0.164	0.168	106	0.877	0.008	0.1030	1.21	0.218	3.15	0.0210	1.606	0.327	0.658
Data	CYL	1	Start	A	10/14/2013 12:51	0917-173_No	13_10_14_1251_51_320	1	1.32	0.906	-0.316	0.162	107	0.889	0.054	0.1060	1.29	0.211	3.15	0.0210	0.739	0.317	0.649
					10/14/2013 12:52	0917-173_No	13_10_14_1252_52_020	1	0.40	0.883	-0.147	0.165	107	0.889	0.1280	0.1050	1.34	0.214	3.14	0.0220	0.475	0.310	0.676
					10/14/2013 12:53	0917-173_No	13_10_14_1253_52_871	1	0.68	0.928	-0.141	0.160	107	0.891	-0.005	0.109	1.37	0.209	3.15	0.0200	0.665	0.328	0.653
					10/14/2013 12:54	0917-173_No	13_10_14_1254_53_581	1	-0.78	0.938	-0.240	0.167	108	0.882	-0.039	0.1070	1.45	0.221	3.15	0.0220	0.464	0.311	0.652
					10/14/2013 12:55	0917-173_No	13_10_14_1255_54_371	1	1.36	0.951	-0.236	0.167	108	0.891	0.002	0.1000	1.37	0.216	3.16	0.0210	1.297	0.314	0.656
					10/14/2013 12:56	0917-173_No	13_10_14_1256_55_131	1	-1.32	0.854	-0.137	0.165	108	0.894	0.013	0.1070	1.53	0.214	3.15	0.0210	0.569	0.303	0.655
			Stop		10/14/2013 12:57	0917-173_No	13_10_14_1257_55_951	1	-0.62	0.886	-0.065	0.166	108	0.904	-0.030	0.114	1.40	0.214	3.14	0.0220	0.894	0.308	0.646
					10/14/2013 13:13	0917-173_No	13_10_14_1313_12_592	1	-2.867	1.778	3.71	0.098	2.34	0.278	0.150	1.94	-0.368	0.163	0.00800	0.0150	0.91	0.517	6.239
					10/14/2013 13:14	0917-173_No	13_10_14_1314_13_372	1	-3.050	1.742	3.46	0.098	1.97	0.278	0.050	1.94	-0.388	0.162	0.00800	0.0150	0.06	0.525	6.316
					10/14/2013 13:15	0917-173_No	13_10_14_1315_14_182	1	-1.92	1.701	4.83	0.096	1.97	0.267	-0.0100	1.97	-0.417	0.157	0.00900	0.0170	0.60	0.499	6.229
					10/14/2013 13:16	0917-173_No	13_10_14_1316_14_952	1	-2.23	1.70	5.81	0.101	2.10	0.267	0.0660	1.97	-0.32100	0.164	0.01000	0.0180	0.58	0.511	6.174
					10/14/2013 13:17	0917-173_No	13_10_14_1317_15_753	1	-3.22	1.75	7.07	0.103	2.24	0.260	0.0190	1.98	-0.3700	0.166	0.01	0.0190	0.44	0.513	5.984
					10/14/2013 13:18	0917-173_No	13_10_14_1318_16_493	1	-1.65	1.76	7.27	0.104	2.25	0.262	0.153	1.97	-0.48700	0.168	0.01	0.0210	1.22	0.524	5.927
					10/14/2013 13:19	0917-173_No	13_10_14_1319_17_313	1	-3.25	1.857	4.49	0.099	2.00	0.273	-0.022	1.96	-0.664	0.168	0.00500	0.0170	1.11	0.545	6.069
					10/14/2013 13:20	0917-173_No	13_10_14_1320_18_043	1	-2.490	1.760	3.46	0.094	1.94	0.278	0.092	1.97	-0.505	0.159	0.00800	0.0160	0.29	0.522	6.14
					10/14/2013 13:21	0917-173_No	13_10_14_1321_18_863	1	-2.209	1.818	3.85	0.102	1.92	0.275	0.182	1.97	-0.657	0.167	0.00700	0.0160	0.265	0.528	6.141
					10/14/2013 13:22	0917-173_No	13_10_14_1322_19_563	1	-2.585	1.732	2.34	0.097	1.80	0.282	0.142	1.96	-0.636	0.162	0.00300	0.0140	-0.10	0.517	6.211
					10/14/2013 13:23	0917-173_No	13_10_14_1323_20_333	1	-2.00	1.753	0.870	0.095	1.57	0.297	0.057	1.95	-0.8400	0.160	0.0030	0.0160	0.93	0.520	6.301
					10/14/2013 13:24	0917-173_No	13_10_14_1324_21_163	1	-3.692	1.713	0.748	0.099	1.63	0.310	0.100	1.94	-0.53400	0.162	0.0050	0.0160	0.23	0.515	6.12
					10/14/2013 13:25	0917-173_No	13_10_14_1325_21_853	1	-3.373	1.841	0.95	0.100	1.78	0.332	0.220	1.91	-0.473	0.169	0.0060	0.0170	-0.35	0.544	6.215
					10/14/2013 13:26	0917-173_No	13_10_14_1326_22_693	1	-4.97	1.871	1.20	0.102	1.84	0.344	0.218	1.90	-0.209	0.171	0.00100	0.0180	0.20	0.551	6.328
					10/14/2013 13:27	0917-173_No	13_10_14_1327_23_403	1	-4.32	1.915	1.49	0.103	2.01	0.345	0.206	1.90	-0.334	0.175	0.0090	0.0180	0.07	0.557	6.433
					10/14/2013 13:28	0917-173_No	13_10_14_1328_24_143	1	-1.86	1.843	1.36	0.100	1.91	0.334	0.189	1.88	-0.254	0.171	0.0100	0.0170	-0.11	0.551	6.493
					10/14/2013 13:29	0917-173_No	13_10_14_1329_24_954	1	-2.76	1.747	0.988	0.096	1.55	0.279	0.1810	1.97	-0.462	0.163	0.00100	0.0150	-0.09	0.523	7.21
					10/14/2013 13:30	0917-173_No	13_10_14_1330_25_774	1	-1.876	1.680	0.780	0.089	2.14	0.247	0.2500	2.01	-0.982	0.156	0.0120	0.01300	0.59	0.487	7.626
					10/14/2013 13:31	0917-173_No	13_10_14_1331_26_474	1	-1.56	1.559	0.640	0.095	18.7	0.276	0.095	2.00	-0.1400	0.156	0.468	0.01200	-0.20	0.475	6.016
					10/14/2013 13:32	0917-173_No	13_10_14_1332_27_274	1	-0.79	1.652	0.616	0.087	17.5	0.265	0.3260	2.01	-0.176	0.148	0.606	0.01200	0.52	0.465	5.336
					10/14/2013 13:33	0917-173_No	13_10_14_1333_28_094	1	-3.32	1.580	0.600	0.088	18.0	0.264	0.396	2.00	-0.1710	0.147	0.611	0.01200	0.71	0.459	5.263
					10/14/2013 13:34	0917-173_No	13_10_14_1334_28_844	1	-2.50	1.576	0.664	0.089	18.6	0.264	0.3260	2.01	-0.186	0.148	0.612	0.01100	0.382	0.456	5.123
					10/14/2013 13:35	0917-173_No	13_10_14_1335_29_594	1	-1.89	1.523	0.689	0.092	19.1	0.262	0.0720	1.99	-0.085	0.149	0.612	0.01100	0.25	0.468	4.978
					10/14/2013 13:36	0917-173_No	13_10_14_1336_30_204	1	-0.72	1.563	0.630	0.089	19.5	0.254	0.2620	2.01	0.004	0.148	0.609	0.01100	0.075	0.460	4.833
					10/14/2013 13:37	0917-173_No	13_10_14_1337_30_984	1	-0.940	1.456	0.665	0.090	18.8	0.259	0.23100	2.01	-0.140	0.145	0.580	0.01100	0.45	0.445	4.747
					10/14/2013 13:38	0917-173_No	13_10_14_1338_31_744	1	-1.75	1.523	0.663	0.087	19.0	0.272	0.430	2.01	0.006	0.142	0.579	0.01200	0.209	0.442	4.84
					10/14/2013 13:39	0917-173_No	13_10_14_1339_33_514	1	-0.63	1.515	0.565	0.090	19.1	0.280	0.299	1.98	-0.1590	0.147	0.577	0.01200	0.43	0.454	5.011
					10/14/2013 13:40	0917-173_No	13_10_14_1340_33_254	1	-2.48	1.613	0.637	0.089	18.4	0.272	0.1570	2.00	0.084	0.148	0.547	0.01200	0.12	0.466	5.029
					10/14/2013 13:41	0917-173_No	13_10_14_1341_34_055	1	-1.35	1.403	0.591	0.090	17.8	0.269	0.3340	1.99	0.146	0.145	0.526	0.01200	0.40	0.445	5.009
					10/14/2013 13:42	0917-173_No	13_10_14_1342_34_855	1	-1.52	1.634	0.372	0.091	17.8	0.274	0.1590	1.98	-0.386	0.150	0.526	0.01200	0.48	0.473	4.955
					10/14/2013 13:43	0917-173_No	13_10_14_1343_35_555	1	-1.96	1.606	0.379	0.088	17.9	0.273	0.14700	2.00	-0.341	0.148	0.524	0.01300	0.78	0.469	4.933
					10/14/2013 13:44	0917-173_No	13_10_14_1344_36_395	1	0.11	1.531	0.442	0.087	17.1	0.285	0.1700	1.97	-0.1120	0.145	0.503	0.0140	0.57	0.461	5.085
					10/14/2013 13:45	0917-173_No	13_10_14_1345_37_095	1	-2.09	1.607	0.640	0.093	16.9	0.290	0.162	1.98	-0.156	0.154	0.490	0.0140	-0.04	0.475	5.148
					10/14/2013 13:46	0917-173_No	13_10_14_1346_37_805	1	-2.69	1.713	0.630	0.087	17.0	0.291	0.0210	1.97	-0.3690	0.149	0.492	0.0140	0.043	0.488	5.144
					10/14/2013 13:47	0917-173_No	13_10_14_1347_38_655	1	-3.22	1.681	0.682	0.090	16.8	0.291	0.0260	1.97	-0.242	0.152	0.487	0.0140	1.02	0.494	5.181
					10/14/2013 13:48	0917-173_No	13_10_14_1348_39_415	1	-2.69	1.675	0.720	0.093	8.48	0.286	-0.18200	1.96	-0.229	0.156	0.212	0.0140	-0.15	0.501	5.595
					10/14/2013 13:49	0917-173_No	13_10_14_1349_40_155	1	-2.74	1.689	0.704	0.089	6.99	0.292	0.039	1.96	-0.3750	0.152	0.165	0.0150	-0.049	0.496	5.688
					10/14/2013 13:50	0917-173_No	13_10_14_1350_40_915	1	-2.29	1.714	0.670	0.090	6.82	0.296	-0.062	1.95	-0.363	0.153	0.160	0.0150	-0.467	0.491	5.778
					10/14/2013 13:51	0917-173_No	13_10_14_1351_41_695	1	-2.32	1.694	0.579	0.092	7.93	0.272	-0.096	1.96	-0.566	0.15	0.199	0.0140	0.00	0.501	5.686
					10/14/2013 13:52	0917-173_No	13_10_14_1352_42_406	1	-1.97	1.593	0.521	0.090	8.23	0.265	-0.120	1.96	-0.5540	0.15	0.209	0.0130	0.17	0.473	5.604
					10/14/2013 13:53	0917-173_No	13_10_14_1353_43_136	1	-2.88	1.597	0.407	0.089	8.32	0.264	-0.157	1.95	-0.487	0.15	0.208	0.0130	-0.293	0.477	5.549
Data	SPK	1	Start	A	10/14/2013 13:54	0917-173_No	13_10_14_1354_43_956	1	-2.471	1.611	0.508	0.091	8.12	0.258	0.034	1.96	-0.534	0.15	0.204	0.01300	0.21	0.486	5.443
					10/14/2013 13:55	0917-173_No	13_10_14_1355_44_666	1	-1.24	1.518	0.532	0.089	7.94	0.258	-0.110	1.94	-0.5550	0.15	0.209	0.01300	0.547	0.465	5.279
					10/14/2013 13:56	0917-173_No	13_10_14_1356_45_486	1	-2.798	1.575	0.445	0.085	7.70	0.249	0.054	1.95	-0.462	0.14	0.205	0.01200	-0.04	0.452	5.093
					10/14/2013 13:57	0917-173_No	13_10_14_1357_46_206	1	-2.819	1.549	0.527	0.085	7.75	0.243	0.096	1.95	-0.5090	0.14	0.205	0.01100	0.26	0.465	4.916
					10/14/2013 13:58	0917-173_No	13_10_14_1358_47_056	1	-2.207	1.555	0.671	0.086	7.74	0.252	0.075	1.94	-0.4520	0.15	0.204	0.01200	0.39	0.462	4.886
					10/14/2013 13:59	0917-173_No	13_10_14_1359_47_806	1	-2.379	1.598	0.678	0.084	7.59	0.262	-0.01500	1.94	-0.35700	0.14	0.204	0.01300	-0.39	0.461	4.88
			Stop		10/14/2013 14:00	0917-173_No	13_10_14_1400_48_546	1	-2.12	1.685	0.620	0.091	2.58	0.277	-0.179	1.91	-0.587	0.15	0.0310	0.0140	-0.481	0.491	4.986
					10/14/2013 14:01	0917-173_No	13_10_14_1401_49_266	1	-3.167	1.651	0.719	0.090	1.63	0.288	-0.102	1.92	-0.584	0.15	0.0090	0.0150	0.098	0.487	4.931
					10/14/2013 14:02	0917-173_No	13_10_14_1402_50_046	1	-2.03	1.730	0.756	0.091	1.58	0.285	-0.130	1.91	-0.569	0.15	0.0010	0.0150	-0.719	0.500	4.856
					10/14/2013 14:03	0917-173_No	13_10_14_1403_50_876	1	-2.15	1.743	0.667	0.092	1.51	0.288	0.008	1.91	-0.406	0.16	0.0070	0.0150	-0.22	0.503	4.813
					10/14/2013 14:04	0917-173_No	13_10_14_1404_51_627	1	-1.42	1.687	0.762	0.093	1.48	0.280	0.084	1.92	-0.380	0.15	0.0050	0.0140	-0.33	0.502	4.714
					10/14/2013 14:05	0917-173_No	13_10_14_1405_52_397	1	-3.214	1.785	0.653	0.093	1.40	0.280	0.092	1.90	-0.457	0.16	0.0100	0.0150	-0.04	0.516	4.647
Data	UNSPK	1	Start	A	10/14/2013 14:06	0917-173_No	13_10_14_1406_53_137	1	-2.64	1.717	0.717	0.091	1.39	0.285	-0.008	1.91	-0.489	0.15	0.0060	0.0150	-0.339	0.493	4.554
					10/14/2013 14:07	0917-173_No	13_10_14_1407_53_877	1	-3.62	1.751	0.863	0.096	1.25	0.281	0.132	1.92	-0.521	0.16	0.0030	0.0140	-0.39	0.517	4.467
					10/14/2013 14:08	0917-173_No	13_10_14_1408_54_687	1	-1.838	1.700	0.645	0.091	1.28	0.280	0.223	1.94	-0.5510	0.15	0.0040	0.0150	-0.10	0.508	4.423
					10/14/2013 14:09	0917-173_No	13_10_14_1409_55_387	1	-2.636	1.661	0.780	0.093	1.22	0.272	0.268	1.94	-0.514	0.15	0.0070	0.0140	-0.09	0.492	4.386
					10/14/2013 14:10	0917-173_No	13_10_14_1410_56_217	1	-4.045	1.675	0.652	0.094	1.23	0.263	0.096	1.95	-0.6640	0.16	0.0090	0.0140	0.06	0.498	4.376
					10/14/2013 14:11	0917-173_No	13_10_14_1411_56_937	1	-2.587	1.648	0.775	0.092	1.29	0.263	0.218	1.94	-0.491	0.15	0.0030	0.01300	-0.38	0.492	4.395
			Stop		10/14/2013 14:12	0917-173_No	13_10_14_1412_57_727	1	-1.919	1.654	0.699	0.093	1.30	0.270	0.082	1.94	-0.547	0.15	0.00200	0.0140	-0.344	0.491	4.456
					10/14/2013 14:39	0917-173_No	13_10_14_1439_49_359	1	-0.746	1.440	0.685	0.084	2.24	0.206	0.48	2.01	-0.747	0.137	-0.00200	0.00900	-0.376	0.432	5.127
					10/14/2013 14:40	0917-173_No	13_10_14_1440_50_130	1	-1.92900	1.561	0.884	0.086	2.49	0.242	0.32	2.00	-0.7150	0.142	0.00100	0.01200	-0.801	0.448	5.831
					10/14/2013 14:41	0917-173_No	13_10_14_1441_50_940	1	-2.479	1.575	0.80	0.089	2.46	0.247	0.29	1.99	-0.7300	0.149	0.00400	0.01200	-0.883	0.470	6.026
					10/14/2013 14:42	0917-173_No	13_10_14_1442_51_690	1	-2.313	1.630	0.886	0.089	2.64	0.248	0.48	2.00	-0.6320	0.150	0.00500	0.01200	-0.788	0.481	6.171
					10/14/2013 14:43	0917-173_No	13_10_14_1443_52_400	1	-1.998	1.644	0.741	0.091	2.69	0.267	0.36	1.97	-0.6780	0.151	0.00700	0.01300	-0.35	0.488	6.478
					10/14/2013 14:44	0917-173_No	13_10_14_1444_53_190	1	-1.547	1.593	0.461	0.095	2.92	0.282	0.44	1.94	-0.905	0.154	0.00700	0.0140	-0.52	0.479	6.757
					10/14/2013 14:45	0917-173_No	13_10_14_1445_53_900	1	-1.949	1.766	0.407	0.095	3.10	0.304	0.37	1.91	-0.910	0.160	0.0070	0.0150	-0.31	0.519	7.076
					10/14/2013 14:46	0917-173_No	13_10_14_1446_54_660	1	-2.759	1.789	0.703	0.098	3.35	0.316	0.50	1.90	-0.508	0.165	0.0030	0.0150	-0.85	0.532	7.356
					10/14/2013 14:47	0917-173_No	13_10_14_1447_55_500	1	-3.228	1.831	1.07	0.101	3.42	0.320	0.33	1.88	-0.746	0.169	0.00600	0.0160	-0.62	0.539	7.562
					10/14/2013 14:48	0917-173_No	13_10_14_1448_56_210	1	-5.046	1.786	1.038	0.096	3.38	0.314	0.25	1.89	-0.651	0.163	0.00400	0.0150	-0.85	0.515	7.687
					10/14/2013 14:49	0917-173_No	13_10_14_1449_56_940	1	-4.585	1.713	0.897	0.099	3.41	0.309	0.31	1.90	-0.740	0.163	0.00200	0.0150	-0.887	0.512	7.679
					10/14/2013 14:50	0917-173_No	13_10_14_1450_57_730	1	-3.0110	1.684	0.93	0.095	3.30	0.302	0.38	1.90	-0.7870	0.159	0.00200	0.0150	-0.793	0.498	7.667
					10/14/2013 14:51	0917-173_No	13_10_14_1451_58_450	1	-4.103	1.674	0.781	0.097	3.25	0.291	0.47	1.93	-0.7870	0.161	0.00100	0.0140	-0.96	0.505	7.588
					10/14/2013 14:52	0917-173_No	13_10_14_1452_59_191	1	-4.820	1.622	0.583	0.093	3.16	0.276	0.45	1.91	-0.757	0.155	0.00500	0.0130	-0.66	0.492	7.551
					10/14/2013 14:54	0917-173_No	13_10_14_1454_00_001	1	-2.493	1.597	0.556	0.090	3.21	0.275	0.34	1.93	-0.868	0.151	0.00400	0.01300	-0.99	0.474	7.595
					10/14/2013 14:55	0917-173_No	13_10_14_1455_00_711	1	-1.3320	1.595	0.433	0.092	3.10	0.258	0.44	1.96	-0.648	0.153	0.00300	0.01200	-1.3020	0.475	7.436
					10/14/2013 14:56	0917-173_No	13_10_14_1456_01_501	1	-2.870	1.658	0.372	0.089	2.97	0.245	0.32	1.96	-0.805	0.152	0.00000	0.01200	-0.90	0.485	7.111
					10/14/2013 14:57	0917-173_No	13_10_14_1457_02_111	1	-2.477	1.632	0.458	0.085	2.84	0.240	0.43	1.98	-0.6760	0.146	0.00	0.01200	-0.61	0.477	6.93
					10/14/2013 14:58	0917-173_No	13_10_14_1458_02_821	1	-3.1410	1.582	0.568	0.086	2.86	0.234	0.43	1.97	-0.5850	0.146	0.00100	0.01100	-0.63	0.466	6.859
					10/14/2013 14:59	0917-173_No	13_10_14_1459_03_641	1	-1.355	1.572	0.599	0.085	2.75	0.217	0.50	1.98	-0.6670	0.144	-0.00300	0.01100	-1.09	0.463	6.662
					10/14/2013 15:00	0917-173_No	13_10_14_1500_04_351	1	-2.473	1.534	0.644	0.085	2.74	0.223	0.40	1.98	-0.735	0.144	-0.01	0.01000	-0.930	0.450	6.57
					10/14/2013 15:01	0917-173_No	13_10_14_1501_06_171	1	-1.3730	1.555	0.642	0.088	2.92	0.234	0.26	1.98	-0.708	0.146	0.00200	0.01100	-0.53	0.468	6.574
					10/14/2013 15:02	0917-173_No	13_10_14_1502_05_881	1	-2.084	1.617	0.669	0.085	2.94	0.254	0.45	1.96	-0.570	0.145	-0.00100	0.01200	-1.442	0.467	6.644
					10/14/2013 15:03	0917-173_No	13_10_14_1503_06_601	1	-2.918	1.602	0.578	0.089	2.96	0.267	0.47	1.94	-0.7640	0.148	0.00200	0.01300	-0.64	0.473	6.771
					10/14/2013 15:04	0917-173_No	13_10_14_1504_07_392	1	-2.957	1.568	0.318	0.088	2.95	0.281	0.37	1.95	-0.9360	0.146	0.00000	0.0140	-0.41	0.464	6.88
					10/14/2013 15:05	0917-173_No	13_10_14_1505_08_162	1	-1.503	1.596	0.480	0.091	3.05	0.281	0.26	1.93	-0.8230	0.151	0.00600	0.0130	-1.013	0.485	7.02
					10/14/2013 15:06	0917-173_No	13_10_14_1506_08_922	1	-1.913	1.648	0.463	0.094	3.31	0.291	0.17	1.91	-0.856	0.157	0.00600	0.0140	-1.08	0.494	7.085
					10/14/2013 15:07	0917-173_No	13_10_14_1507_09_632	1	-2.948	1.701	0.651	0.091	3.15	0.297	0.04	1.92	-0.785	0.155	0.00300	0.0140	-0.925	0.495	7.119
					10/14/2013 15:08	0917-173_No	13_10_14_1508_10_372	1	-1.377	1.704	0.658	0.092	3.12	0.293	0.00	1.91	-0.754	0.157	0.00500	0.0150	-0.83	0.493	7.13
					10/14/2013 15:09	0917-173_No	13_10_14_1509_11_132	1	-3.689	1.593	0.531	0.088	3.01	0.289	0.01	1.93	-0.7670	0.150	0.00200	0.0140	-0.90	0.469	7.055
					10/14/2013 15:10	0917-173_No	13_10_14_1510_11_932	1	-3.318	1.690	0.508	0.091	3.05	0.276	0.20	1.92	-0.8360	0.155	0.00200	0.0140	-0.86	0.493	7.023
					10/14/2013 15:11	0917-173_No	13_10_14_1511_12_642	1	-2.557	1.667	0.480	0.094	3.19	0.282	0.29	1.93	-0.493	0.156	0.00300	0.0140	-1.197	0.488	7.07
					10/14/2013 15:12	0917-173_No	13_10_14_1512_13_392	1	-3.8070	1.792	0.635	0.093	3.23	0.285	-0.04	1.91	-0.513	0.160	0.00300	0.0140	-1.573	0.513	7.074
					10/14/2013 15:13	0917-173_No	13_10_14_1513_14_212	1	-2.784	1.726	0.503	0.094	3.07	0.274	0.16	1.94	-0.632	0.159	0.00300	0.0130	-1.204	0.496	6.987
					10/14/2013 15:14	0917-173_No	13_10_14_1514_14_902	1	-3.789	1.622	0.495	0.092	2.90	0.269	0.00	1.93	-0.6410	0.152	-0.00100	0.01300	-0.56	0.489	6.902
Data	Run	1	Start	A	10/14/2013 15:15	0917-173_No	13_10_14_1515_15_632	1	-3.665	1.578	0.602	0.092	3.04	0.254	-0.04	1.96	-0.892	0.151	-0.00400	0.01200	-0.75	0.469	6.764
					10/14/2013 15:16	0917-173_No	13_10_14_1516_16_443	1	-2.482	1.662	0.569	0.088	3.01	0.252	-0.03	1.95	-0.833	0.148	0.00200	0.01200	-0.87	0.475	6.759
					10/14/2013 15:17	0917-173_No	13_10_14_1517_17_163	1	-2.196	1.602	0.525	0.091	2.98	0.258	0.08	1.96	-0.7740	0.150	0.00300	0.01300	-0.57	0.470	6.783
					10/14/2013 15:18	0917-173_No	13_10_14_1518_17_873	1	-1.4590	1.613	0.494	0.093	2.92	0.256	-0.03	1.96	-0.513	0.153	0.00000	0.01200	-1.019	0.477	6.852
					10/14/2013 15:19	0917-173_No	13_10_14_1519_18_713	1	-2.619	1.586	0.593	0.084	2.75	0.245	0.00	1.97	-0.760	0.144	0.00300	0.01200	-0.89	0.467	6.755
					10/14/2013 15:20	0917-173_No	13_10_14_1520_19_373	1	-1.838	1.519	0.745	0.087	2.73	0.242	0.28	1.98	-0.818	0.144	0.00000	0.01200	-0.63	0.450	6.628
					10/14/2013 15:21	0917-173_No	13_10_14_1521_20_233	1	-1.67600	1.544	0.748	0.085	2.82	0.241	0.16	1.98	-0.920	0.142	0.00100	0.01200	-0.36	0.454	6.562
					10/14/2013 15:22	0917-173_No	13_10_14_1522_20_953	1	-0.084	1.548	0.88	0.091	3.01	0.249	0.10	1.97	-0.831	0.148	-0.00100	0.01200	-1.313	0.474	6.603
					10/14/2013 15:23	0917-173_No	13_10_14_1523_21_683	1	-4.118	1.624	0.786	0.087	2.96	0.251	0.35	1.98	-0.780	0.147	0.00300	0.01200	-0.77	0.476	6.719
					10/14/2013 15:24	0917-173_No	13_10_14_1524_22_413	1	-1.090	1.624	0.829	0.088	2.91	0.255	0.12	1.97	-0.692	0.150	-0.00100	0.01300	-1.001	0.473	6.713

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 15:25	0917-173_No13_10_14_1525_23_153		1	-1.2580	1.640	0.695	0.093	2.93	0.266	0.13	1.95	-0.475	0.154	0.00800	0.01300	-1.294	0.484	6.78
					10/14/2013 15:26	0917-173_No13_10_14_1526_23_953		1	-2.3720	1.610	0.698	0.091	2.89	0.266	0.15	1.96	-0.831	0.149	0.00400	0.01300	0.01	0.471	6.764
					10/14/2013 15:27	0917-173_No13_10_14_1527_24_733		1	-1.8430	1.684	0.778	0.088	2.92	0.253	0.10	1.96	-0.7890	0.149	0.00400	0.01300	-0.74	0.483	6.697
					10/14/2013 15:28	0917-173_No13_10_14_1528_25_404		1	-1.5580	1.535	0.749	0.087	2.76	0.250	0.25	1.97	-0.831	0.143	0.00500	0.01300	-0.844	0.448	6.59
					10/14/2013 15:29	0917-173_No13_10_14_1529_26_234		1	-2.592	1.558	0.78	0.091	2.93	0.254	0.19	1.96	-0.647	0.147	-0.00100	0.01300	-1.007	0.469	6.617
					10/14/2013 15:30	0917-173_No13_10_14_1530_26_944		1	-5.518	1.624	0.758	0.088	3.10	0.272	0.07	1.94	-0.90700	0.148	0.00500	0.0130	-0.67	0.470	6.806
					10/14/2013 15:31	0917-173_No13_10_14_1531_27_714		1	-2.581	1.679	0.610	0.094	3.01	0.284	0.00	1.92	-0.982	0.156	0.00400	0.0140	-0.901	0.498	6.885
					10/14/2013 15:32	0917-173_No13_10_14_1532_28_464		1	-3.8300	1.676	0.557	0.088	2.99	0.273	0.04	1.95	-1.0160	0.151	0.00500	0.0130	-0.5010	0.490	6.893
					10/14/2013 15:33	0917-173_No13_10_14_1533_29_184		1	-5.716	1.661	0.606	0.089	2.97	0.263	0.03	1.95	-0.937	0.151	0.00300	0.01300	-0.94	0.489	6.865
					10/14/2013 15:34	0917-173_No13_10_14_1534_29_994		1	-1.723	1.708	0.638	0.087	3.02	0.255	0.28	1.95	-0.628	0.152	0.00100	0.01300	-1.302	0.493	6.911
					10/14/2013 15:35	0917-173_No13_10_14_1535_30_714		1	-1.969	1.609	0.657	0.086	2.99	0.260	0.00	1.94	-0.718	0.147	0.00200	0.01300	-1.00	0.470	7.005
					10/14/2013 15:36	0917-173_No13_10_14_1536_31_454		1	-2.243	1.654	0.742	0.091	3.17	0.273	0.11	1.95	-0.720	0.153	0.00400	0.0130	-0.762	0.485	7.025
					10/14/2013 15:37	0917-173_No13_10_14_1537_32_154		1	-4.19200	1.633	0.671	0.091	3.06	0.273	0.22	1.94	-0.8490	0.153	0.00200	0.0130	-0.53	0.481	7.069
					10/14/2013 15:38	0917-173_No13_10_14_1538_32_914		1	-3.708	1.673	0.559	0.088	3.20	0.285	0.10	1.94	-0.625	0.150	0.00000	0.0140	-0.88	0.485	7.157
					10/14/2013 15:39	0917-173_No13_10_14_1539_33_524		1	-1.280	1.671	0.564	0.093	3.26	0.290	0.18	1.94	-0.720	0.156	-0.00100	0.0140	-1.492	0.491	7.112
					10/14/2013 15:40	0917-173_No13_10_14_1540_34_355		1	-3.777	1.620	0.609	0.090	3.07	0.282	0.20	1.95	-0.9120	0.152	0.00000	0.0130	-1.01	0.486	6.973
					10/14/2013 15:41	0917-173_No13_10_14_1541_35_025		1	-3.583	1.675	0.610	0.088	2.99	0.277	0.04	1.95	-0.9170	0.151	0.00000	0.0140	-1.026	0.489	6.89
					10/14/2013 15:42	0917-173_No13_10_14_1542_35_845		1	-0.928	1.654	0.616	0.087	2.96	0.260	0.07	1.97	-0.9380	0.148	0.00000	0.01300	-0.96	0.477	6.794
					10/14/2013 15:43	0917-173_No13_10_14_1543_36_595		1	-3.6670	1.593	0.658	0.087	3.09	0.250	0.12	1.98	-1.054	0.146	0.00300	0.01200	-0.56	0.465	6.875
					10/14/2013 15:44	0917-173_No13_10_14_1544_37_325		1	-3.481	1.643	0.752	0.089	3.21	0.249	0.16	1.96	-0.8710	0.149	-0.00200	0.01200	-0.854	0.475	6.898
					10/14/2013 15:45	0917-173_No13_10_14_1545_38_135		1	-2.344	1.688	0.639	0.086	3.09	0.254	0.33	1.96	-0.88800	0.147	0.00800	0.01200	-0.90	0.481	6.912
					10/14/2013 15:46	0917-173_No13_10_14_1546_38_875		1	-3.435	1.713	0.691	0.091	3.12	0.262	0.13	1.94	-0.799	0.156	0.00200	0.01200	-0.82	0.489	7.133
					10/14/2013 15:47	0917-173_No13_10_14_1547_39_575		1	-3.5910	1.675	0.633	0.091	3.25	0.269	0.42	1.95	-0.646	0.155	0.00000	0.01300	-1.254	0.484	7.155
					10/14/2013 15:48	0917-173_No13_10_14_1548_40_315		1	-3.137	1.707	0.622	0.091	3.17	0.277	0.29	1.92	-0.718	0.156	0.00100	0.0140	-1.119	0.504	7.244
					10/14/2013 15:49	0917-173_No13_10_14_1549_41_135		1	-3.273	1.700	0.532	0.092	3.11	0.282	0.29	1.92	-0.687	0.156	0.00600	0.0140	-1.483	0.485	7.275
					10/14/2013 15:50	0917-173_No13_10_14_1550_41_845		1	-1.585	1.661	0.666	0.091	2.81	0.272	0.32	1.96	-0.613	0.154	0.00200	0.0130	-1.12	0.490	7.125
					10/14/2013 15:51	0917-173_No13_10_14_1551_42_616		1	-1.172	1.651	0.635	0.089	2.82	0.258	0.15	1.96	-0.8910	0.151	-0.00100	0.01200	-0.907	0.487	6.92
					10/14/2013 15:52	0917-173_No13_10_14_1552_43_326		1	-2.387	1.643	0.639	0.087	2.93	0.255	0.31	1.96	-0.894	0.148	-0.00100	0.01200	-0.77	0.486	6.958
					10/14/2013 15:53	0917-173_No13_10_14_1553_44_066		1	-2.8070	1.620	0.624	0.090	3.00	0.258	0.34	1.97	-0.712	0.152	0.00200	0.01300	-1.146	0.492	7.076
					10/14/2013 15:54	0917-173_No13_10_14_1554_44_886		1	-2.114	1.654	0.717	0.091	2.96	0.273	0.28	1.92	-0.786	0.155	0.00200	0.0130	-0.99	0.494	7.125
					10/14/2013 15:55	0917-173_No13_10_14_1555_45_656		1	-3.500	1.685	0.839	0.090	3.00	0.280	0.22	1.93	-0.733	0.153	0.00100	0.0140	-1.217	0.491	7.192
					10/14/2013 15:56	0917-173_No13_10_14_1556_46_316		1	-6.1610	1.733	0.654	0.093	3.06	0.275	0.09	1.94	-0.938	0.158	0.00100	0.0140	-0.63	0.501	7.232
					10/14/2013 15:57	0917-173_No13_10_14_1557_47_126		1	-0.466	1.622	0.574	0.093	3.01	0.268	0.24	1.93	-0.9500	0.155	-0.00200	0.01300	-0.70	0.483	7.281
					10/14/2013 15:58	0917-173_No13_10_14_1558_47_826		1	-3.780	1.659	0.551	0.092	3.01	0.272	0.16	1.94	-0.742	0.153	0.00100	0.01300	-0.62	0.489	7.294
					10/14/2013 15:59	0917-173_No13_10_14_1559_48_586		1	-2.693	1.704	0.604	0.095	3.02	0.285	0.28	1.93	-0.939	0.157	-0.00200	0.0140	-1.082	0.502	7.268
					10/14/2013 16:00	0917-173_No13_10_14_1600_49_366		1	-2.7480	1.664	0.465	0.093	2.74	0.273	0.11	1.93	-1.0800	0.156	0.00200	0.0130	-0.77	0.488	7.095
					10/14/2013 16:01	0917-173_No13_10_14_1601_50_106		1	-1.135	1.710	0.469	0.090	2.59	0.254	0.35	1.95	-0.819	0.153	0.00200	0.01200	-0.658	0.492	6.839
					10/14/2013 16:02	0917-173_No13_10_14_1602_50_926		1	-3.263	1.487	0.424	0.087	2.51	0.235	0.33	1.99	-0.839	0.145	0.00000	0.01200	-1.00	0.452	6.615
					10/14/2013 16:03	0917-173_No13_10_14_1603_51_667		1	-0.866	1.604	0.586	0.089	2.56	0.236	0.24	1.98	-0.729	0.148	0.00100	0.01100	-1.04	0.479	6.424
					10/14/2013 16:04	0917-173_No13_10_14_1604_52_377		1	-1.688	1.650	0.648	0.088	2.49	0.226	0.22	1.99	-0.7660	0.149	-0.00100	0.01100	-0.939	0.488	6.264
					10/14/2013 16:05	0917-173_No13_10_14_1605_53_187		1	-0.255	1.550	0.529	0.084	2.49	0.214	0.18	2.00	-0.8230	0.143	0.00100	0.01100	-0.56	0.459	6.108
					10/14/2013 16:06	0917-173_No13_10_14_1606_53_907		1	-2.224	1.605	0.603	0.082	2.43	0.216	0.40	1.99	-0.516	0.141	0.00300	0.01000	-0.874	0.457	5.996
					10/14/2013 16:07	0917-173_No13_10_14_1607_54_617		1	-1.782	1.570	0.517	0.085	2.65	0.217	0.33	2.01	-0.664	0.142	-0.00500	0.01000	-0.77	0.470	5.907
					10/14/2013 16:08	0917-173_No13_10_14_1608_55_427		1	-2.394	1.585	0.611	0.089	2.74	0.229	0.36	1.99	-0.6650	0.147	0.00100	0.01100	-1.010	0.470	5.949
					10/14/2013 16:09	0917-173_No13_10_14_1609_56_147		1	-2.129	1.479	0.792	0.084	2.60	0.241	0.31	1.98	-0.573	0.140	-0.00100	0.01200	-1.097	0.442	5.907
					10/14/2013 16:10	0917-173_No13_10_14_1610_56_957		1	-2.125	1.603	0.95	0.085	2.42	0.241	0.31	2.01	-0.769	0.143	0.00	0.01200	-0.40	0.462	5.847
					10/14/2013 16:11	0917-173_No13_10_14_1611_57_677		1	-2.5880	1.617	1.00	0.085	2.30	0.251	0.41	2.00	-0.640	0.143	0.00100	0.01200	-1.035	0.463	5.855
					10/14/2013 16:12	0917-173_No13_10_14_1612_58_447		1	-2.4340	1.592	0.851	0.083	2.40	0.257	0.36	2.00	-0.7510	0.143	0.00400	0.01300	-0.92	0.462	5.894
					10/14/2013 16:13	0917-173_No13_10_14_1613_59_217		1	-2.163	1.620	0.782	0.090	2.34	0.267	0.50	1.98	-0.972	0.150	0.00100	0.0130	-0.403	0.478	6.008
					10/14/2013 16:14	0917-173_No13_10_14_1614_59_927		1	-4.770	1.707	0.715	0.091	2.43	0.268	0.54	2.00	-0.757	0.155	-0.00200	0.01300	-0.651	0.515	6.088
			Stop		10/14/2013 16:16	0917-173_No13_10_14_1616_00_738		1	-2.286	1.593	0.664	0.085	3.73	0.259	0.57	1.99	-1.040	0.145	0.0650	0.01300	-0.03	0.460	6.176
					10/14/2013 16:17	0917-173_No13_10_14_1617_01_458		1	-0.852	1.100	-0.253	0.082	2.68	0.0770	0.431	1.307	-2.90	0.143	0.0710	0.00400	-1.357	0.367	9.778
					10/14/2013 16:18	0917-173_No13_10_14_1618_02_278		1	0.0850	0.995	-0.651	0.090	0.260	0.0430	0.134	0.488	-3.40	0.153	-0.00300	0.00200	-0.922	0.351	10.366
					10/14/2013 16:19	0917-173_No13_10_14_1619_03_028		1	-1.0670	0.896	-0.222	0.066	0.233	0.0340	0.119	0.292	-1.569	0.110	0.0090	0.00200	-1.0130	0.303	5.528
					10/14/2013 16:20	0917-173_No13_10_14_1620_03_738		1	0.6280	0.843	-0.168	0.057	0.032	0.0320	0.2060	0.191	-1.134	0.092	0.00	0.00200	-0.441	0.284	3.925
					10/14/2013 16:21	0917-173_No13_10_14_1621_04_478		1	1.5840	0.936	-0.1680	0.058	0.115	0.0330	0.1400	0.144	-0.9510	0.097	-0.00600	0.00200	-0.700	0.290	3.831
					10/14/2013 16:22	0917-173_No13_10_14_1622_05_198		1	3.398	0.918	0.064	0.054	0.203	0.0380	0.3170	0.667	-0.058	0.088	-0.00500	0.00200	-0.134	0.278	1.58
					10/14/2013 16:23	0917-173_No13_10_14_1623_05_968		1	0.99200	0.911	0.140	0.057	0.0730	0.0460	0.4840	0.953	-0.010	0.091	0.00	0.00200	-0.57	0.287	0.993
					10/14/2013 16:24	0917-173_No13_10_14_1624_06_688		1	2.360	1.033	-0.052	0.057	0.0930	0.0460	0.6150	0.911	0.099	0.097	-0.00300	0.00200	-0.55	0.295	0.73
					10/14/2013 16:25	0917-173_No13_10_14_1625_07_458		1	2.8980	0.969	0.072	0.056	0.101	0.0450	0.6360	0.915	0.098	0.092	0.00000	0.00200	-0.068	0.294	0.711
					10/14/2013 16:26	0917-173_No13_10_14_1626_08_178		1	1.001	0.957	0.078	0.057	0.070	0.0450	0.5030	0.917	0.164	0.092	0.00	0.00200	-0.224	0.288	0.675
					10/14/2013 16:27	0917-173_No13_10_14_1627_09_038		1	3.179	1.035	0.026	0.059	0.0650	0.0450	0.6220	0.906	-0.061	0.097	-0.00100	0.00200	-0.60	0.313	0.632
					10/14/2013 16:28	0917-173_No13_10_14_1628_09_749		1	0.876	0.923	0.085	0.057	0.183	0.0480	0.425	0.909	0.110	0.092	-0.00400	0.00200	-0.610	0.285	0.595
					10/14/2013 16:29	0917-173_No13_10_14_1629_10_499		1	0.005	0.946	0.221	0.059	0.136	0.0450	0.352	0.911	0.0290	0.093	0.00	0.00200	-0.232	0.299	0.56
					10/14/2013 16:30	0917-173_No13_10_14_1630_12_259		1	0.9670	0.887	0.005	0.057	0.0720	0.0480	0.6410	0.924	0.007	0.093	-0.00100	0.00200	-0.433	0.280	0.549
					10/14/2013 16:31	0917-173_No13_10_14_1631_13_069		1	2.210	0.986	0.079	0.053	0.127	0.0490	0.5570	0.932	0.1090	0.090	-0.00900	0.00200	-0.219	0.292	0.518
					10/14/2013 16:32	0917-173_No13_10_14_1632_13_779		1	1.938	0.932	0.137	0.057	0.127	0.0450	0.6000	0.940	0.0300	0.091	-0.00500	0.00300	-0.344	0.280	0.457
					10/14/2013 16:33	0917-173_No13_10_14_1633_14_599		1	1.1530	1.157	0.394	0.061	0.94	0.1290	0.674	1.437	-0.107	0.102	0.00000	0.00600	-0.60	0.336	1.813
					10/14/2013 16:34	0917-173_No13_10_14_1634_15_299		1	-0.204	1.510	0.513	0.080	1.69	0.260	0.486	2.02	-0.661	0.136	0.00000	0.01200	-0.180	0.438	4.054
					10/14/2013 16:35	0917-173_No13_10_14_1635_16_099		1	-2.299	1.682	0.451	0.087	1.72	0.285	0.40	1.96	-0.7610	0.148	0.00100	0.0140	-0.699	0.484	4.638
					10/14/2013 16:36	0917-173_No13_10_14_1636_16_869		1	-3.575	1.662	0.557	0.088	1.69	0.264	0.50	1.98	-0.711	0.148	0.00200	0.01300	-0.618	0.480	4.706
					10/14/2013 16:37	0917-173_No13_10_14_1637_17_579		1	-4.604	1.787	0.422	0.094	1.98	0.260	0.056	2.00	-0.633	0.156	-0.00500	0.01300	-0.31	0.508	4.754
					10/14/2013 16:38	0917-173_No13_10_14_1638_18_389		1	-3.6250	1.562	0.382	0.091	1.66	0.245	0.47	2.02	-0.7670	0.148	-0.00400	0.01200	-0.548	0.477	4.667
					10/14/2013 16:39	0917-173_No13_10_14_1639_19_090		1	-1.829	1.497	0.240	0.084	1.46	0.226	0.40	2.02	-0.890	0.139	0.00100	0.01100	-0.795	0.442	4.467
					10/14/2013 16:40	0917-173_No13_10_14_1640_19_900		1	-2.170	1.541	0.3380	0.083	1.46	0.210	0.543	2.03	-0.588	0.138	-0.00300	0.01000	-0.864	0.454	4.334
					10/14/2013 16:41	0917-173_No13_10_14_1641_20_660		1	-0.2960	1.436	0.383	0.080	1.50	0.207	0.487	2.03	-0.75400	0.134	0.00000	0.01000	-0.629	0.425	4.287
					10/14/2013 16:42	0917-173_No13_10_14_1642_21_390		1	-0.986	1.566	0.443	0.086	1.48	0.219	0.391	2.03	-0.6560	0.142	-0.00600	0.01000	-0.893	0.469	4.326
					10/14/2013 16:43	0917-173_No13_10_14_1643_22_100		1	-2.049	1.434	0.509	0.083	1.35	0.204	0.507	2.03	-0.747	0.136	-0.00500	0.01000	-0.02	0.430	4.237
					10/14/2013 16:44	0917-173_No13_10_14_1644_22_910		1	-1.194	1.542	0.590	0.081	1.40	0.211	0.525	2.02	-0.621	0.135	0.00000	0.01000	-0.411	0.442	4.265
					10/14/2013 16:45	0917-173_No13_10_14_1645_23_640		1	1.428	1.543	0.524	0.082	1.58	0.234	0.312	2.03	-0.702	0.138	-0.00300	0.01100	-0.649	0.451	4.428
					10/14/2013 16:46	0917-173_No13_10_14_1646_24_340		1	-1.309	1.568	0.753	0.084	1.59	0.259	0.297	2.01	-0.5050	0.139	0.00200	0.01300	-0.9620	0.456	4.586
					10/14/2013 16:47	0917-173_No13_10_14_1647_25_160		1	-2.491	1.740	0.638	0.088	1.70	0.278	0.373	1.98	-0.7100	0.150	-0.00200	0.0140	-0.783	0.500	4.905
					10/14/2013 16:48	0917-173_No13_10_14_1648_25_860		1	-4.174	1.626	0.553	0.091	1.67	0.279	0.289	1.98	-0.902	0.150	0.00200	0.0140	-0.7230	0.476	5.028
Data	Run	2	Start	A	10/14/2013 16:49	0917-173_No13_10_14_1649_26_670		1	-1.101	1.658	0.503	0.092	1.79	0.290	0.305	1.97	-0.777	0.151	0.00100	0.0140	-0.283	0.489	5.225
					10/14/2013 16:50	0917-173_No13_10_14_1650_27_360		1	-2.475	1.695	0.541	0.094	1.77	0.301	0.37	1.96	-0.8650	0.156	0.00000	0.0150	-0.883	0.501	5.472
					10/14/2013 16:51	0917-173_No13_10_14_1651_28_211		1	-3.120	1.769	0.841	0.094	1.76	0.304	0.52	1.96	-0.472	0.159	0.00300	0.0150	-0.596	0.521	5.614
					10/14/2013 16:52	0917-173_No13_10_14_1652_28_891		1	-3.552	1.643	0.512	0.089	1.65	0.289	0.42	1.96	-0.786	0.150	0.00300	0.0140	-0.445	0.485	5.609
					10/14/2013 16:53	0917-173_No13_10_14_1653_29_651		1	-1.994	1.591	0.430	0.089	1.55	0.258	0.506	2.01	-0.7380	0.149	-0.00500	0.01200	-0.66	0.483	5.457
					10/14/2013 16:54	0917-173_No13_10_14_1654_30_471		1	-2.046	1.665	0.303	0.089	1.50	0.249	0.517	2.01	-0.834	0.149	0.00000	0.01200	-0.369	0.484	5.398
					10/14/2013 16:55	0917-173_No13_10_14_1655_31_191		1	-4.044	1.613	0.538	0.089	1.56	0.249	0.552	2.02	-0.7230	0.149	0.00200	0.01200	-0.695	0.475	5.411
					10/14/2013 16:56	0917-173_No13_10_14_1656_31_901		1	-2.6620	1.468	0.375	0.087	1.52	0.230	0.483	2.03	-0.8020	0.140	0.00000	0.01100	-0.6100	0.434	5.268
					10/14/2013 16:57	0917-173_No13_10_14_1657_32_741		1	-2.1670	1.639	0.429	0.082	1.64	0.222	0.511	2.03	-0.740	0.141	-0.00400	0.01100	-0.15	0.461	5.268
					10/14/2013 16:58	0917-173_No13_10_14_1658_33_491		1	-1.227	1.664	0.402	0.089	1.69	0.243	0.449	2.00	-0.878	0.148	-0.00200	0.01200	-0.45	0.490	5.39
					10/14/2013 16:59	0917-173_No13_10_14_1659_34_201		1	-0.653	1.691	0.553	0.091	1.78	0.268	0.283	1.99	-0.550	0.153	-0.00200	0.01300	-1.063	0.491	5.502
					10/14/2013 17:00	0917-173_No13_10_14_1700_34_961		1	-1.310	1.611	0.459	0.092	1.67	0.276	0.45	2.00	-0.7320	0.151	0.00200	0.0140	-1.1470	0.479	5.576
					10/14/2013 17:01	0917-173_No13_10_14_1701_35_681		1	-4.05	1.665	0.402	0.089	1.69	0.278	0.38	1.98	-0.7710	0.150	-0.00200	0.0140	-0.363	0.495	5.657
					10/14/2013 17:02	0917-173_No13_10_14_1702_36_361		1	-1.887	1.713	0.418	0.088	1.75	0.275	0.40	1.99	-0.860	0.151	0.00000	0.01300	-0.835	0.481	5.7
					10/14/2013 17:03	0917-173_No13_10_14_1703_37_172		1	-2.601	1.672	0.374	0.092	1.59	0.262	0.476	2.00	-0.8100	0.153	0.00000	0.01300	-0.29	0.495	5.616
					10/14/2013 17:04	0917-173_No13_10_14_1704_37_962		1	-1.86300	1.624	0.480	0.085	1.56	0.248	0.440	2.01	-0.655	0.146	0.00000	0.01200	-0.479	0.468	5.445
					10/14/2013 17:05	0917-173_No13_10_14_1705_38_702		1	-2.075	1.561	0.650	0.088	1.76	0.244	0.383	2.02	-0.734	0.144	-0.00200	0.01200	-0.630	0.468	5.49
					10/14/2013 17:06	0917-173_No13_10_14_1706_39_462		1	-2.615	1.623	0.478	0.091	1.72	0.247	0.47	1.99	-0.546	0.150	0.00000	0.01200	-0.8520	0.489	5.556
					10/14/2013 17:07	0917-173_No13_10_14_1707_40_232		1	0.711	1.610	0.429	0.088	1.57	0.262	0.53	2.00	-0.787	0.146	-0.00300	0.01200	-0.298	0.472	5.527
					10/14/2013 17:08	0917-173_No13_10_14_1708_41_042		1	-4.0070	1.683	0.604	0.092	1.64	0.273	0.495	1.99	-0.6710	0.153	0.00000	0.01300	-0.888	0.492	5.568
					10/14/2013 17:09	0917-173_No13_10_14_1709_41_782		1	-1.003	1.635	0.583	0.094	1.62	0.267	0.371	2.00	-0.44900	0.154	-0.00200	0.01300	-0.9970	0.492	5.602
					10/14/2013 17:10	0917-173_No13_10_14_1710_42_582		1	0.162	1.650	0.447	0.092	1.65	0.262	0.285	1.99	-0.6520	0.153	-0.00100	0.01300	-0.51	0.492	5.628
					10/14/2013 17:11	0917-173_No13_10_14_1711_43_292		1	-2.5110	1.757	0.487	0.089	1.61	0.268	0.425	1.98	-0.6080	0.154	-0.00100	0.01300	0.09	0.508	5.676
					10/14/2013 17:12	0917-173_No13_10_14_1712_42_992		1	-2.038	1.721	0.505	0.090	1.63	0.261	0.381	1.98	-0.567	0.153	0.00000	0.01300	-0.27	0.491	5.681
					10/14/2013 17:13	0917-173_No13_10_14_1713_43_802		1	-1.933	1.701	0.466	0.093	1.57	0.261	0.398	1.98	-0.761	0.154	0.00100	0.01300	-0.446	0.505	5.707
					10/14/2013 17:14	0917-173_No13_10_14_1714_44_502		1	-1.041	1.686	0.497	0.092	1.53	0.258	0.483	1.99	-0.664	0.154	-0.00100	0.01300	-0.286	0.496	5.713
					10/14/2013 17:15	0917-173_No13_10_14_1715_45_343		1	-2.135	1.590	0.470	0.089	1.61	0.247	0.433	2.00	-0.7330	0.148	-0.00100	0.01200	-0.57	0.480	5.666
					10/14/2013 17:16	0917-173_No13_10_14_1716_46_033		1	-2.6420	1.620	0.549	0.086	1.59	0.250	0.506	2.00	-0.657	0.146	-0.00200	0.01200	-0.47	0.475	5.698
					10/14/2013 17:17	0917-173_No13_10_14_1717_46_833		1	-3.170	1.749	0.426	0.088	1.66	0.260	0.457	1.99	-0.677	0.153	-0.00200	0.01300	-0.682	0.496	5.729
					10/14/2013 17:18	0917-173_No13_10_14_1718_47_563		1	-3.878	1.669	0.451	0.091	1.79	0.265	0.58	1.99	-0.871	0.153	0.00200	0.01300	-0.30	0.491	5.821
					10/14/2013 17:19	0917-173_No13_10_14_1719_48_383		1	-2.546	1.609	0.527	0.089	1.63	0.264	0.340	2.00	-0.864	0.149	0.00300	0.01300	0.09	0.476	5.815
					10/14/2013 17:20	0917-173_No13_10_14_1720_49_093		1	-2.732	1.663	0.488	0.089	1.62	0.272	0.513	1.98	-0.817	0.152	-0.00100	0.01300	-0.17	0.493	5.832
					10/14/2013 17:21	0917-173_No13_10_14_1721_49_883		1	-2.576	1.640	0.506	0.091	1.66	0.261	0.458	2.01	-0.735	0.152	-0.00400	0.01300	-0.423	0.497	5.881
					10/14/2013 17:22	0917-173_No13_10_14_1722_50_683		1	-3.089	1.597	0.569	0.089	1.59	0.253	0.415	2.00	-0.68200	0.149	-0.00400	0.01200	-0.488	0.474	5.844
					10/14/2013 17:23	0917-173_No13_10_14_1723_51_453		1	-2.2400	1.623	0.453	0.088	1.56	0.245	0.431	2.01	-0.6080	0.146	-0.00400	0.01200	-0.431	0.468	5.752
					10/14/2013 17:24	0917-173_No13_10_14_1724_52_163		1	-1.926	1.466	0.451	0.083	1.40	0.221	0.560	2.03	-0.678	0.136	-0.00200	0.01100	-0.66	0.434	5.531
					10/14/2013 17:25	0917-173_No13_10_14_1725_52_963		1	-2.988	1.405	0.3040	0.078	1.41	0.209	0.487	2.03	-0.737	0.130	-0.00700	0.01000	-0.149	0.417	5.343
					10/14/2013 17:26	0917-173_No13_10_14_1726_53_674		1	-1.648	1.519	0.242	0.082	1.47	0.212	0.472	2.02	-0.545	0.137	-0.00300	0.01000	-0.986	0.440	5.35
					10/14/2013 17:27	0917-173_No13_10_14_1727_54_454		1	-3.3980	1.537	0.464	0.085	1.60	0.221	0.604	2.03	-0.643	0.140	-0.00400	0.01000	0.103	0.456	5.404
					10/14/2013 17:28	0917-173_No13_10_14_1728_55_304		1	-1.934	1.483	0.474	0.085	1.52	0.229	0.432	2.02	-0.639	0.139	-0.00700	0.01100	-0.3840	0.450	5.442
					10/14/2013 17:29	0917-173_No13_10_14_1729_56_064		1	-3.252	1.672	0.624	0.088	1.51	0.244	0.454	2.02	-0.35000	0.150	-0.00300	0.01200	-0.699	0.479	5.483
					10/14/2013 17:32	0917-173_No13_10_14_1732_06_400		1	-1.439	1.545	0.693	0.084	1.63	0.246	0.649	2.02	-0.680	0.141	-0.00200	0.01200	0.131	0.449	5.528
					10/14/2013 17:33	0917-173_No13_10_14_1733_07_210		1	-2.0810	1.570	0.707	0.089	1.75	0.266	0.221	1.97	-0.704	0.147	-0.00200	0.01300	-0.21	0.466	5.759
					10/14/2013 17:34	0917-173_No13_10_14_1734_07_900		1	-2.893	1.740	0.600	0.089	1.78	0.292	0.488	1.97	-0.775	0.153	0.00200	0.0140	-0.08	0.499	5.955
					10/14/2013 17:35	0917-173_No13_10_14_1735_08_740		1	-4.678	1.762	0.672	0.093	1.92	0.304	0.233	1.94	-0.717	0.157	0.00000	0.0150	-0.314	0.518	6.088
					10/14/2013 17:36	0917-173_No13_10_14_1736_09_450		1	-2.477	1.629	0.601	0.095	1.93	0.302	0.305	1.95	-0.488	0.154	0.0000	0.0140	-1.010	0.495	6.148
					10/14/2013 17:37	0917-173_No13_10_14_1737_10_280		1	-2.557	1.735	0.883	0.093	1.90	0.302	0.48	1.96	-0.546	0.156	0.00100	0.0150	-0.379	0.507	6.176
					10/14/2013 17:38	0917-173_No13_10_14_1738_11_030		1	-2.648	1.725	0.697	0.095	1.89	0.286	0.295	1.95	-0.649	0.159	-0.00100	0.0140	-0.729	0.508	6.198
					10/14/2013 17:39	0917-173_No13_10_14_1739_11_730		1	-2.41	1.686	0.543	0.092	1.80	0.284	0.209	1.96	-0.802	0.154	-0.00400	0.0140	-0.32	0.502	6.202
					10/14/2013 17:40	0917-173_No13_10_14_1740_12_560		1	-3.722	1.703	0.481	0.089	1.77	0.275	0.46	1.99	-0.497	0.151	0.00000	0.0140	-0.134	0.484	6.199
					10/14/2013 17:41	0917-173_No13_10_14_1741_13_270		1	-2.023	1.306	0.193	0.079	1.74	0.148	0.644	1.719	-1.648	0.139	0.0040	0.00700	-0.949	0.404	8.172
					10/14/2013 17:42	0917-173_No13_10_14_1742_14_040		1	-0.228	0.966	-0.3720	0.091	0.189	0.0450	0.387	0.728	-3.07	0.152	-0.00500	0.00200	-1.215	0.362	10.426
					10/14/2013 17:43	0917-173_No13_10_14_1743_14_781		1	-1.8580	0.981	-0.548	0.090	-0.007	0.0410	0.026	0.341	-3.47	0.156	-0.00500	0.00200	-0.97	0.375	10.413
					10/14/2013 17:44	0917-173_No13_10_14_1744_15_531		1	1.573	0.917	-0.263	0.081	0.534	0.0470	0.3150	0.637	-2.68	0.132	0.0050	0.00200	-0.52	0.319	8.706
					10/14/2013 17:45	0917-173_No13_10_14_1745_16_341		1	0.885	0.906	0.0700	0.056	0.402	0.0350	0.401	0.490	-0.2750	0.090	0.00300	0.00200	-0.95	0.285	2.728
					10/14/2013 17:46	0917-173_No13_10_14_1746_16_981		1	0.225	0.897	0.0640	0.051	0.182	0.0310	0.261	0.208	0.0010	0.082	0.00100	0.00200	-0.168	0.269	1.059
					10/14/2013 17:47	0917-173_No13_10_14_1747_17_691		1	-0.298	0.862	0.103	0.055	0.114	0.0280	0.06200	0.136	0.174	0.086	0.00	0.00200	-0.53	0.272	0.819
					10/14/2013 17:48	0917-173_No13_10_14_1748_18_511		1	1.115	0.950	-0.079	0.051	0.0590	0.0290	0.300	0.1150	-0.1140	0.084	-0.00600	0.00200	0.132	0.280	0.768
			Stop		10/14/2013 17:49	0917-173_No13_10_14_1749_19_221		1	2.081	0.991	0.072	0.049	0.140	0.0290	0.240	0.1160	0.193	0.083	-0.00600	0.00200	-0.289	0.288	0.754
					10/14/2013 17:50	0917-173_No13_10_14_1750_20_001		1	2.418	0.962	-0.0410	0.054	0.184	0.0410	0.5310	0.784	0.105	0.088	-0.01200	0.00200	-0.528	0.291	0.763
					10/14/2013 17:51	0917-173_No13_10_14_1751_20_821		1	2.0480	0.966	0.0060	0.059	0.074	0.0460	0.57500	0.910	0.104	0.096	-0.00600	0.00200	-0.17	0.302	0.556
					10/14/2013 17:52	0917-173_No13_10_14_1752_21_531		1	1.358	0.969	0.211	0.058	0.158	0.0440	0.4980	0.960	0.188	0.093	0.00	0.00200	-0.330	0.304	0.627
					10/14/2013 17:53	0917-173_No13_10_14_1753_22_351		1	2.0440	1.106	0.234	0.059	0.601	0.0940	0.6960	1.318	-0.261	0.099	-0.01	0.00400	0.171	0.323	1.773
					10/14/2013 17:54	0917-173_No13_10_14_1754_23_051		1	-1.0950	1.468	0.520	0.077	1.55	0.223	0.623	2.02	-0.461	0.129	0.00000	0.01100	-1.128	0.423	4.344
					10/14/2013 17:55	0917-173_No13_10_14_1755_23_872		1	-0.60700	1.623	0.608	0.090	1.98	0.270	0.52	2.03	-0.586	0.149	-0.00500	0.01300	-0.877	0.471	5.522
					10/14/2013 17:56	0917-173_No13_10_14_1756_24_582		1	-2.4130	1.505	0.473	0.092	1.96	0.273	0.39	1.99	-0.7010	0.150	0.00000	0.0130	-0.69	0.468	5.817

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 17:57	0917-173_No	13_10_14_1757_25_402	1	-3.284	1.775	0.571	0.086	1.95	0.271	0.33	1.99	-0.7630	0.151	0.00100	0.01300	-0.16	0.496	5.873
Data	Run	3	Start	A	10/14/2013 17:58	0917-173_No	13_10_14_1758_26_092	1	-2.8710	1.554	0.534	0.090	1.90	0.268	0.266	1.99	-0.651	0.147	-0.00200	0.01300	-0.36	0.471	5.826
					10/14/2013 17:59	0917-173_No	13_10_14_1759_26_902	1	-1.212	1.582	0.550	0.090	1.93	0.258	0.43	2.00	-0.714	0.147	0.00000	0.01200	-0.197	0.468	5.773
					10/14/2013 18:00	0917-173_No	13_10_14_1800_27_632	1	-1.800	1.658	0.436	0.092	1.93	0.254	0.46	2.02	-0.606	0.153	-0.00200	0.01200	-0.781	0.484	5.768
					10/14/2013 18:01	0917-173_No	13_10_14_1801_28_432	1	-1.648	1.612	0.3620	0.089	1.98	0.247	0.41	2.00	-0.533	0.148	0.00000	0.01200	-0.720	0.480	5.809
					10/14/2013 18:02	0917-173_No	13_10_14_1802_29_182	1	-1.013	1.695	0.385	0.091	2.00	0.260	0.36	1.98	-0.8120	0.152	0.00200	0.01200	-0.300	0.488	5.907
					10/14/2013 18:03	0917-173_No	13_10_14_1803_29_932	1	-1.9140	1.697	0.477	0.088	1.95	0.270	0.269	2.00	-0.7540	0.151	0.00000	0.01300	-0.55	0.490	5.944
					10/14/2013 18:04	0917-173_No	13_10_14_1804_30_752	1	-3.604	1.619	0.406	0.095	2.03	0.272	0.175	1.98	-0.5940	0.155	-0.00100	0.01300	-0.45	0.493	5.973
					10/14/2013 18:05	0917-173_No	13_10_14_1805_31_502	1	-2.4960	1.745	0.450	0.091	1.95	0.275	0.37	1.99	-0.673	0.154	-0.00600	0.0130	-0.796	0.509	5.866
					10/14/2013 18:06	0917-173_No	13_10_14_1806_32_222	1	-1.884	1.616	0.510	0.092	1.90	0.247	0.44	2.01	-0.582	0.150	0.00000	0.01200	-0.721	0.485	5.696
					10/14/2013 18:07	0917-173_No	13_10_14_1807_33_033	1	-2.183	1.578	0.428	0.086	1.76	0.233	0.326	2.02	-0.725	0.144	-0.00300	0.01100	-0.180	0.472	5.577
					10/14/2013 18:08	0917-173_No	13_10_14_1808_33_783	1	-1.491	1.559	0.484	0.087	1.85	0.230	0.416	2.04	-0.764	0.145	-0.00100	0.01100	-0.15	0.471	5.501
					10/14/2013 18:09	0917-173_No	13_10_14_1809_34_493	1	-2.7720	1.568	0.408	0.089	1.96	0.223	0.361	2.03	-0.576	0.148	-0.00700	0.01100	-0.486	0.486	5.466
					10/14/2013 18:10	0917-173_No	13_10_14_1810_35_313	1	-0.535	1.694	0.526	0.089	1.92	0.239	0.437	2.01	-0.611	0.149	-0.00200	0.01200	-0.048	0.481	5.478
					10/14/2013 18:11	0917-173_No	13_10_14_1811_36_053	1	-2.024	1.605	0.708	0.089	1.95	0.249	0.234	2.02	-0.6220	0.148	0.00200	0.01200	-0.595	0.474	5.555
					10/14/2013 18:12	0917-173_No	13_10_14_1812_36_863	1	-3.719	1.629	0.673	0.089	2.05	0.249	0.163	2.00	-0.5870	0.148	-0.00600	0.01200	-0.6020	0.483	5.567
					10/14/2013 18:13	0917-173_No	13_10_14_1813_37_653	1	-2.419	1.673	0.685	0.090	2.05	0.254	0.147	2.00	-0.610	0.151	-0.00400	0.01200	-0.6220	0.498	5.595
					10/14/2013 18:14	0917-173_No	13_10_14_1814_38_393	1	-4.031	1.636	0.669	0.092	2.15	0.271	0.266	1.99	-0.5550	0.153	-0.00100	0.01300	-0.426	0.496	5.743
					10/14/2013 18:15	0917-173_No	13_10_14_1815_39_133	1	-2.0900	1.730	0.571	0.091	2.21	0.282	0.30	1.97	-0.651	0.154	0.00000	0.0140	-0.26	0.495	5.803
					10/14/2013 18:16	0917-173_No	13_10_14_1816_39_933	1	-3.965	1.722	0.484	0.092	2.07	0.282	0.48	1.98	-0.738	0.154	-0.00300	0.0140	-0.770	0.495	5.787
					10/14/2013 18:17	0917-173_No	13_10_14_1817_40_663	1	-1.3390	1.622	0.592	0.092	2.03	0.276	0.344	1.99	-0.708	0.152	0.00000	0.0130	-0.12	0.491	5.691
					10/14/2013 18:18	0917-173_No	13_10_14_1818_41_463	1	-0.901	1.736	0.571	0.093	2.02	0.264	0.220	2.01	-0.6950	0.156	0.00100	0.01300	-0.662	0.501	5.625
					10/14/2013 18:19	0917-173_No	13_10_14_1819_42_244	1	-0.967	1.674	0.525	0.091	1.93	0.254	0.263	2.00	-0.6360	0.153	0.00000	0.01200	-0.537	0.493	5.575
					10/14/2013 18:20	0917-173_No	13_10_14_1820_42_954	1	-2.009	1.586	0.411	0.089	1.89	0.253	0.416	2.02	-0.6110	0.148	-0.00100	0.01200	-0.03	0.480	5.495
					10/14/2013 18:21	0917-173_No	13_10_14_1821_43_794	1	-3.607	1.557	0.427	0.090	1.80	0.245	0.312	2.03	-0.682	0.148	-0.00500	0.01200	-0.418	0.474	5.45
					10/14/2013 18:22	0917-173_No	13_10_14_1822_44_554	1	-2.617	1.648	0.494	0.091	1.98	0.245	0.261	2.02	-0.743	0.152	-0.00400	0.01200	-0.27	0.492	5.395
					10/14/2013 18:23	0917-173_No	13_10_14_1823_45_304	1	-5.7020	1.620	0.664	0.090	1.92	0.248	0.361	2.02	-0.459	0.150	-0.00900	0.01200	-0.29	0.490	5.379
					10/14/2013 18:24	0917-173_No	13_10_14_1824_46_064	1	-1.185	1.553	0.726	0.090	1.98	0.245	0.410	2.03	-0.4980	0.146	0.00000	0.01200	-0.380	0.466	5.273
					10/14/2013 18:25	0917-173_No	13_10_14_1825_46_864	1	-1.4430	1.595	0.585	0.085	2.03	0.238	0.454	2.03	-0.5970	0.143	-0.00300	0.01100	-0.139	0.461	5.166
					10/14/2013 18:26	0917-173_No	13_10_14_1826_47_634	1	-1.906	1.618	0.566	0.089	1.91	0.237	0.456	2.04	-0.66800	0.147	-0.00500	0.01100	-0.184	0.473	5.1
					10/14/2013 18:27	0917-173_No	13_10_14_1827_48_244	1	-2.661	1.661	0.514	0.089	1.83	0.242	0.451	2.03	-0.714	0.149	-0.00300	0.01100	-0.702	0.485	4.954
					10/14/2013 18:28	0917-173_No	13_10_14_1828_49_064	1	-1.9800	1.638	0.670	0.086	1.78	0.235	0.464	2.05	-0.321	0.144	-0.00600	0.01100	-0.5380	0.472	4.768
					10/14/2013 18:29	0917-173_No	13_10_14_1829_49_814	1	-1.8240	1.565	0.637	0.087	1.69	0.232	0.491	2.05	-0.636	0.144	-0.00300	0.01100	-1.004	0.478	4.659
					10/14/2013 18:30	0917-173_No	13_10_14_1830_50_525	1	-1.561	1.567	0.531	0.088	1.79	0.237	0.488	2.04	-0.5860	0.146	-0.00600	0.01200	-0.143	0.462	4.732
					10/14/2013 18:31	0917-173_No	13_10_14_1831_51_325	1	-3.308	1.577	0.676	0.091	1.92	0.253	0.293	2.01	-0.5710	0.148	0.00100	0.01200	-0.488	0.484	4.815
					10/14/2013 18:32	0917-173_No	13_10_14_1832_52_055	1	-1.356	1.664	0.785	0.092	1.95	0.273	0.422	2.01	-0.5630	0.152	-0.00400	0.0130	-0.411	0.496	4.93
					10/14/2013 18:33	0917-173_No	13_10_14_1833_52_925	1	-2.786	1.758	0.643	0.092	2.01	0.293	0.352	1.98	-0.541	0.155	0.00100	0.0150	-0.455	0.493	5.122
					10/14/2013 18:34	0917-173_No	13_10_14_1834_53_625	1	-1.831	1.668	0.595	0.095	2.14	0.297	0.124	1.98	-0.556	0.156	-0.00200	0.0150	-0.43	0.499	5.329
					10/14/2013 18:35	0917-173_No	13_10_14_1835_54_365	1	-0.840	1.747	0.610	0.093	2.25	0.300	0.36	1.97	-0.460	0.155	-0.00400	0.0150	-0.34	0.508	5.557
					10/14/2013 18:36	0917-173_No	13_10_14_1836_55_185	1	-2.606	1.781	0.675	0.098	2.26	0.306	0.302	1.96	-0.693	0.163	-0.00100	0.0150	-1.052	0.524	5.653
					10/14/2013 18:37	0917-173_No	13_10_14_1837_55_925	1	-2.299	1.708	0.765	0.100	2.24	0.305	0.24	1.96	-0.523	0.162	0.00100	0.0150	-0.692	0.518	5.752
					10/14/2013 18:38	0917-173_No	13_10_14_1838_56_745	1	-3.569	1.697	0.552	0.092	2.12	0.288	0.227	1.99	-0.592	0.154	-0.00300	0.0140	-0.351	0.497	5.748
					10/14/2013 18:39	0917-173_No	13_10_14_1839_57_545	1	-3.969	1.679	0.523	0.092	2.04	0.279	0.216	2.00	-0.567	0.153	0.00100	0.0130	-0.077	0.499	5.695
					10/14/2013 18:40	0917-173_No	13_10_14_1840_58_315	1	-2.846	1.618	0.390	0.095	1.96	0.255	0.335	2.03	-0.6010	0.155	-0.00200	0.01200	-0.185	0.484	5.583
					10/14/2013 18:41	0917-173_No	13_10_14_1841_59_045	1	-2.863	1.586	0.379	0.089	2.02	0.242	0.227	2.03	-0.749	0.148	-0.00700	0.01100	0.01	0.489	5.538
					10/14/2013 18:42	0917-173_No	13_10_14_1842_59_866	1	-2.1190	1.653	0.590	0.088	1.99	0.233	0.140	2.03	-0.433	0.149	-0.00100	0.01100	-1.110	0.481	5.416
					10/14/2013 18:44	0917-173_No	13_10_14_1844_00_576	1	-3.106	1.596	0.465	0.085	1.95	0.223	0.451	2.03	-0.4980	0.143	-0.00500	0.01000	-0.693	0.468	5.319
					10/14/2013 18:45	0917-173_No	13_10_14_1845_01_296	1	-1.900	1.598	0.433	0.088	1.92	0.228	0.376	2.03	-0.544	0.146	-0.00600	0.01100	-0.909	0.470	5.381
					10/14/2013 18:46	0917-173_No	13_10_14_1846_02_146	1	-3.099	1.627	0.413	0.090	1.92	0.234	0.482	2.03	-0.749	0.148	-0.00600	0.01100	-0.060	0.481	5.375
					10/14/2013 18:47	0917-173_No	13_10_14_1847_02_896	1	-3.4280	1.523	0.658	0.088	1.86	0.236	0.368	2.03	-0.563	0.142	-0.00500	0.01100	-0.820	0.463	5.41
					10/14/2013 18:48	0917-173_No	13_10_14_1848_03_616	1	-3.081	1.661	0.707	0.088	1.91	0.241	0.466	2.03	-0.648	0.148	-0.00400	0.01200	-0.770	0.479	5.474
					10/14/2013 18:49	0917-173_No	13_10_14_1849_04_376	1	-0.364	1.594	0.86	0.088	1.87	0.251	0.373	2.03	-0.7100	0.145	-0.00200	0.01200	-0.15	0.472	5.508
					10/14/2013 18:50	0917-173_No	13_10_14_1850_05_206	1	-1.860	1.671	0.93	0.088	1.83	0.249	0.518	2.03	-0.607	0.146	-0.00600	0.01200	-0.717	0.476	5.438
					10/14/2013 18:51	0917-173_No	13_10_14_1851_05_936	1	-0.4500	1.595	0.865	0.086	1.71	0.244	0.550	2.03	-0.736	0.144	0.00100	0.01200	-0.184	0.476	5.401
					10/14/2013 18:52	0917-173_No	13_10_14_1852_06_736	1	-2.289	1.562	0.882	0.084	1.82	0.246	0.494	2.05	-0.638	0.141	-0.00300	0.01200	-0.821	0.457	5.375
					10/14/2013 18:53	0917-173_No	13_10_14_1853_06_456	1	-1.576	1.651	0.784	0.088	1.75	0.245	0.453	2.04	-0.654	0.147	-0.00300	0.01200	-0.27	0.468	5.42
					10/14/2013 18:54	0917-173_No	13_10_14_1854_07_266	1	-4.273	1.632	0.79	0.091	1.82	0.245	0.676	2.04	-0.467	0.150	-0.00600	0.01200	-0.927	0.497	5.452
					10/14/2013 18:55	0917-173_No	13_10_14_1855_07_977	1	-1.201	1.603	0.805	0.089	1.80	0.261	0.616	2.03	-0.595	0.147	-0.00100	0.01300	-0.68	0.478	5.62
					10/14/2013 18:56	0917-173_No	13_10_14_1856_08_787	1	-1.155	1.644	0.712	0.090	1.97	0.275	0.317	2.01	-0.7200	0.150	-0.00300	0.01300	-0.370	0.486	5.778
					10/14/2013 18:57	0917-173_No	13_10_14_1857_09_477	1	-1.905	1.653	0.699	0.094	1.94	0.278	0.571	2.02	-0.644	0.155	-0.00300	0.01300	-0.437	0.490	5.808
			Stop		10/14/2013 18:58	0917-173_No	13_10_14_1858_10_317	1	-1.884	1.664	0.529	0.094	2.04	0.277	0.514	2.00	-0.6520	0.156	-0.00200	0.0130	-0.425	0.499	5.887
					10/14/2013 18:59	0917-173_No	13_10_14_1859_11_037	1	-2.409	1.739	0.514	0.093	2.02	0.282	0.442	1.99	-0.6130	0.158	-0.00300	0.0130	-0.514	0.509	5.903
					10/14/2013 19:00	0917-173_No	13_10_14_1900_11_837	1	-1.7370	1.646	0.443	0.092	1.87	0.252	0.433	2.00	-0.767	0.153	-0.00500	0.01200	-0.758	0.490	6.06
					10/14/2013 19:01	0917-173_No	13_10_14_1901_12_537	1	1.749	0.994	-0.271	0.085	0.461	0.0690	0.585	1.259	-2.755	0.146	-0.00600	0.00300	-1.191	0.360	9.668
					10/14/2013 19:02	0917-173_No	13_10_14_1902_13_297	1	-1.0030	0.957	-0.4230	0.094	0.126	0.0410	0.342	0.459	-3.32	0.159	-0.00200	0.00200	-1.197	0.373	10.277
					10/14/2013 19:23	0917-173_No	13_10_14_1923_47_489	1	-2.4	1.5	0.066	0.077	0.917	1.35	0.0170	0.0940	0.2630	0.127	0.053	0.549	-0.444	0.425	-1.666
					10/14/2013 19:24	0917-173_No	13_10_14_1924_06_009	1	0.5	1.5	0.0320	0.078	0.604	1.44	-0.1070	0.1010	0.092	0.131	0.053	0.580	0.349	0.437	-1.79
					10/14/2013 19:24	0917-173_No	13_10_14_1924_24_509	1	-0.3	1.4	-0.015	0.075	0.320	1.47	-0.0550	0.0980	0.003	0.124	0.048	0.594	-0.573	0.412	-1.861
					10/14/2013 19:24	0917-173_No	13_10_14_1924_43_109	1	-1.6	1.4	-0.018	0.076	0.11	1.50	0.121	0.0990	0.223	0.126	0.059	0.602	0.319	0.412	-1.846
					10/14/2013 19:25	0917-173_No	13_10_14_1925_01_599	1	-4.7	1.2	-0.001	0.076	-0.06	1.50	-0.199	0.0880	0.0670	0.117	0.055	0.608	0.380	0.384	-1.887
					10/14/2013 19:25	0917-173_No	13_10_14_1925_20_119	1	-0.9	1.3	0.1550	0.075	-0.16	1.52	0.143	0.1000	0.049	0.119	0.053	0.607	0.51	0.394	-1.865
					10/14/2013 19:25	0917-173_No	13_10_14_1925_38_729	1	1.1	1.3	-0.2910	0.076	-0.03	1.51	-0.0710	0.0950	0.199	0.122	0.050	0.606	-1.041	0.398	-1.894
					10/14/2013 19:25	0917-173_No	13_10_14_1925_57_229	1	0.6	1.5	-0.0170	0.076	-0.13	1.52	-0.1000	0.0920	0.131	0.128	0.053	0.609	-0.076	0.430	-1.894
					10/14/2013 19:26	0917-173_No	13_10_14_1926_15_809	1	0.9	1.3	-0.095	0.079	-0.14	1.51	-0.0310	0.1130	0.299	0.125	0.045	0.607	-1.45	0.427	-1.89
					10/14/2013 19:26	0917-173_No	13_10_14_1926_34_299	1	1.4	1.5	-0.025	0.081	-0.05	1.52	-0.031	0.0950	0.229	0.135	0.055	0.608	-1.37	0.453	-1.902
					10/14/2013 19:26	0917-173_No	13_10_14_1926_52_849	1	-3.6	1.3	0.04200	0.077	-0.24	1.51	-0.03000	0.0940	0.143	0.123	0.047	0.608	-0.973	0.414	-1.893
					10/14/2013 19:27	0917-173_No	13_10_14_1927_11_399	1	-3.4	1.4	0.0030	0.081	-0.17	1.51	-0.0870	0.0920	0.195	0.127	0.053	0.607	-0.41	0.414	-1.904
					10/14/2013 19:27	0917-173_No	13_10_14_1927_29_919	1	0.8	1.4	-0.139	0.077	-0.18	1.52	0.0720	0.0970	0.053	0.127	0.051	0.605	-0.333	0.419	-1.888
					10/14/2013 19:27	0917-173_No	13_10_14_1927_48_529	1	-0.7	1.5	-0.094	0.075	-0.31	1.52	0.0970	0.0980	0.0690	0.128	0.053	0.606	-1.09	0.444	-1.886
					10/14/2013 19:40	0917-173_No	13_10_14_1940_15_364	1	4.807	2.228	-0.40	0.133	-0.1050	0.0820	-0.1610	0.154	-0.086	0.213	0.00600	0.00400	-0.62	0.67	-0.013
					10/14/2013 19:40	0917-173_No	13_10_14_1940_21_414	1	0.2860	2.477	0.472	0.136	0.040	0.0790	0.150	0.168	0.43	0.226	0.00100	0.00500	1.414	0.74	-0.013
					10/14/2013 19:40	0917-173_No	13_10_14_1940_27_624	1	1.22	2.404	0.054	0.142	-0.1360	0.0810	-0.268	0.159	-0.386	0.228	-0.00400	0.00600	-0.264	0.71	-0.004
					10/14/2013 19:40	0917-173_No	13_10_14_1940_33_844	1	4.4520	2.462	-0.321	0.139	-0.192	0.085	0.378	0.178	-0.225	0.225	-0.01200	0.00700	0.104	0.78	-0.004
					10/14/2013 19:40	0917-173_No	13_10_14_1940_40_084	1	-1.586	2.204	0.266	0.121	0.231	0.0840	0.1730	0.163	0.009	0.199	0.00300	0.00500	0.99	0.67	0.047
					10/14/2013 19:40	0917-173_No	13_10_14_1940_46_324	1	-0.184	2.556	0.048	0.130	-0.104	0.0820	-0.0990	0.186	-0.173	0.221	0.00400	0.00600	-0.94	0.74	-0.006
					10/14/2013 19:40	0917-173_No	13_10_14_1940_52_344	1	3.767	2.328	-0.2020	0.134	0.0920	0.0850	-0.029	0.176	0.089	0.215	0.0050	0.00500	0.645	0.72	0.026
					10/14/2013 19:40	0917-173_No	13_10_14_1940_58_604	1	-1.07	2.410	-0.0350	0.135	-0.03000	0.0820	-0.1470	0.162	0.58	0.220	0.00400	0.00500	-1.53	0.74	-0.01
					10/14/2013 19:41	0917-173_No	13_10_14_1941_04_744	1	1.008	2.401	-0.286	0.139	-0.01	0.0830	-0.114	0.200	-0.139	0.224	-0.00500	0.00600	-1.50	0.74	0.004
					10/14/2013 19:41	0917-173_No	13_10_14_1941_10_954	1	5.386	2.407	0.147	0.129	0.0780	0.086	-0.004	0.184	-0.252	0.212	-0.01	0.00500	0.70	0.73	-0.005
					10/14/2013 19:41	0917-173_No	13_10_14_1941_17_134	1	6.062	2.307	0.199	0.129	-0.077	0.0820	-0.308	0.210	-0.018	0.212	-0.00100	0.00400	0.323	0.68	0.006
					10/14/2013 19:41	0917-173_No	13_10_14_1941_23_254	1	2.173	2.296	-0.2610	0.125	0.0920	0.087	0.1500	0.221	-0.055	0.204	0.00800	0.00500	0.91	0.67	0.039
					10/14/2013 19:41	0917-173_No	13_10_14_1941_29_424	1	-0.995	2.257	0.0890	0.145	0.1210	0.0800	-0.0670	0.245	-0.048	0.227	-0.01	0.00500	-0.72	0.75	0.005
					10/14/2013 19:41	0917-173_No	13_10_14_1941_35_674	1	-2.288	2.567	-0.292	0.144	0.083	0.087	0.199	0.231	-0.143	0.230	0.00	0.00500	1.100	0.75	0.05
					10/14/2013 19:41	0917-173_No	13_10_14_1941_41_864	1	6.4400	2.409	0.0760	0.146	0.178	0.0830	-0.002	0.260	-0.435	0.230	0.00700	0.00600	-0.381	0.78	0.065
					10/14/2013 19:41	0917-173_No	13_10_14_1941_48_034	1	-3.6890	2.431	0.261	0.140	-0.231	0.0820	0.006	0.267	0.088	0.224	-0.01500	0.00500	1.126	0.75	0.012
					10/14/2013 19:41	0917-173_No	13_10_14_1941_54_154	1	-4.55	2.386	-0.0380	0.138	0.277	0.0820	-0.084	0.273	-0.1640	0.220	-0.00500	0.00500	-1.272	0.73	0.077
					10/14/2013 19:42	0917-173_No	13_10_14_1942_00_404	1	1.781	2.501	0.0170	0.132	0.112	0.0800	0.170	0.290	0.0830	0.217	-0.01100	0.00500	-0.6640	0.73	-0.007
					10/14/2013 19:42	0917-173_No	13_10_14_1942_06_605	1	0.577	2.304	-0.167	0.131	0.163	0.0850	0.0550	0.299	-0.147	0.212	-0.01300	0.00500	1.11	0.71	0.02
					10/14/2013 19:42	0917-173_No	13_10_14_1942_12_795	1	-2.017	2.524	0.334	0.132	-0.130	0.0880	-0.272	0.348	0.238	0.219	-0.01700	0.00500	-0.300	0.73	0.02
					10/14/2013 19:42	0917-173_No	13_10_14_1942_18_965	1	-2.098	2.501	-0.0200	0.141	0.05200	0.0840	0.2410	0.373	-0.015	0.229	-0.00600	0.00500	0.773	0.75	0.031
					10/14/2013 19:42	0917-173_No	13_10_14_1942_25_075	1	2.48	2.543	0.187	0.134	-0.0020	0.086	0.3530	0.333	0.712	0.221	0.00100	0.00500	-1.42	0.72	0.05
					10/14/2013 19:42	0917-173_No	13_10_14_1942_31_265	1	2.210	2.506	0.121	0.138	0.211	0.0850	-0.467	0.344	-0.067	0.225	0.00100	0.00500	1.04	0.73	0.042
					10/14/2013 19:42	0917-173_No	13_10_14_1942_37_425	1	1.688	2.398	-0.195	0.142	-0.0600	0.0830	0.1080	0.350	-0.182	0.229	-0.00600	0.00500	0.99	0.75	0.014
					10/14/2013 19:42	0917-173_No	13_10_14_1942_43_715	1	3.295	2.247	0.068	0.146	-0.0260	0.0750	-0.044	0.353	-0.01	0.228	-0.00300	0.00600	-3.21	0.74	0.042
					10/14/2013 19:42	0917-173_No	13_10_14_1942_49_875	1	9.663	2.314	0.0450	0.141	0.0290	0.0880	0.521	0.365	0.12	0.221	-0.00700	0.00600	-0.612	0.72	0.114
					10/14/2013 19:42	0917-173_No	13_10_14_1942_55_975	1	2.180	2.302	-0.485	0.127	0.2530	0.085	0.2970	0.349	-0.500	0.209	-0.00200	0.00500	0.307	0.68	0.054
					10/14/2013 19:43	0917-173_No	13_10_14_1943_02_155	1	-2.037	2.665	0.040	0.143	0.0480	0.105	0.368	0.913	-0.598	0.237	-0.01100	0.00600	-0.05	0.79	-0.094
					10/14/2013 19:43	0917-173_No	13_10_14_1943_08_405	1	0.916	2.739	0.299	0.145	0.2290	0.165	1.929	2.38	0.04	0.365	-0.02400	0.00700	1.08	0.83	0.381
					10/14/2013 19:43	0917-173_No	13_10_14_1943_14_605	1	-3.571	2.763	0.082	0.160	0.0700	0.144	-2.26	1.32	-0.15	0.257	-0.0020	0.00700	-0.65	0.86	-0.381
					10/14/2013 19:43	0917-173_No	13_10_14_1943_20_695	1	-4.868	2.90	0.434	0.164	-0.257	0.133	-0.68	1.02	-0.32	0.27	-0.0040	0.00800	-0.59	0.90	-1.042
					10/14/2013 19:43	0917-173_No	13_10_14_1943_26_895	1	-0.8860	2.59	0.032	0.151	-0.0660	0.158	-0.08	2.09	0.13	0.24	0.0000	0.0070	-0.56	0.83	-1.89
					10/14/2013 19:43	0917-173_No	13_10_14_1943_33_125	1	-5.813	2.67	-0.412	0.152	-0.3730	0.177	2.48	2.8	0.36	0.25	0.0130	0.0080	-0.95	0.83	-2.797
					10/14/2013 19:43	0917-173_No	13_10_14_1943_39_295	1	-4.458	3.06	-0.008	0.168	-0.2270	0.229	5.45	3.7	0.09	0.28	0.0070	0.0090	-1.73	0.92	-3.573
					10/14/2013 19:43	0917-173_No	13_10_14_1943_45_485	1	-4.770	2.97	0.266	0.154	-0.112	0.268	7.1	4.7	0.45	0.26	-0.0010	0.0100	-4.25	0.89	-4.498
					10/14/2013 19:43	0917-173_No	13_10_14_1943_51_575	1	-3.686	3.12	0.282	0.171	-0.264	0.301	9.6	5.0	0.81	0.28	0.0350	0.0110	-1.88	0.93	-5.146
					10/14/2013 19:43	0917-173_No	13_10_14_1943_57_765	1	-5.37	2.95	0.3230	0.172	-0.426	0.282	8.6	4.9	1.11	0.28	0.0140	0.0110	-2.88	0.94	-4.757
					10/14/2013 19:44	0917-173_No	13_10_14_1944_03_955	1	-5.611	3.02	-0.079	0.169	-0.221	0.269	9.1	4.6	0.12	0.28	0.0250	0.0110	-3.06	0.96	-4.692
					10/14/2013 19:44	0917-173_No	13_10_14_1944_10_235	1	-2.745	2.80	0.166	0.164	-0.5020	0.248	7.6	4.1	0.32	0.27	0.0320	0.0100	-2.66	0.91	-4.516
					10/14/2013 19:44	0917-173_No	13_10_14_1944_16_435	1	-1.45	2.90	-0.082	0.167	-0.205	0.231	6.19	4.1	0.72	0.27	0.0110	0.0090	-1.47	0.90	-4.199
					10/14/2013 19:44	0917-173_No	13_10_14_1944_22_425	1	-1.91	3.08	0.167	0.155	-0.070	0.247	5.35	4.4	0.76	0.27	0.0200	0.0110	-4.63	0.89	-3.802
					10/14/2013 19:44	0917-173_No	13_10_14_1944_28_715	1	4.003	2.92	-0.0280	0.156	-0.3890	0.232	5.4	4.3	0.46	0.26	0.0190	0.0080	-2.87	0.86	-3.899
					10/14/2013 19:44	0917-173_No	13_10_14_1944_34_905	1	-7.5670	2.92	0.235	0.163	-0.034	0.206	5.13	3.9	0.25	0.27	0.0090	0.0100	-1.57	0.92	-3.652
					10/14/2013 19:44	0917-173_No	13_10_14_1944_41_095	1	-9.570	3.01	-0.294	0.149	-0.2160	0.199	3.97	3.7	0.16	0.26	0.0060	0.0090	-1.50	0.89	-3.215
					10/14/2013 19:44	0917-173_No	13_10_14_1944_47_295	1	-0.878	2.82	0.003	0.164	-0.2480	0.177	4.20	3.1	0.15	0.26	0.0020	0.0090	-2.61	0.86	-2.706
					10/14/2013 19:44	0917-173_No	13_10_14_1944_53_375	1	-7.992	2.74	-0.217	0.162	-0.1510	0.172	3.12	2.75	0.10	0.26	0.0010	0.0080	-1.24	0.86	-2.592
					10/14/2013 19:44	0917-173_No	13_10_14_1944_59_555	1	-2.42	2.96	-0.099	0.151	-0.087	0.155	2.69	2.21	-0.48	0.26	0.0020	0.0080	0.15	0.88	-2.068
					10/14/2013 19:45	0917-173_No	13_10_14_1945_05_845	1	-7.137	2.52	0.360	0.160	0.087	0.136	0.39	1.75	0.32	0.26	-0.0030	0.0070	-2.22	0.77	-1.674
					10/14/2013 19:45	0917-173_No	13_10_14_1945_12_035	1	-6.10	2.69	0.332	0.166	-0.2190	0.120	-0.18	1.81	0.03	0.26	0.0100	0.0060	-1.06	0.89	-1.393
					10/14/2013 19:45	0917-173_No	13_10_14_1945_18_215	1	-7.619	2.82	0.078	0.143	0.1550	0.120	-1.50	1.39	-0.08	0.25	-0.0120	0.0070	0.25	0.82	-1.016
					10/14/2013 19:45	0917-173_No	13_10_14_1945_24_285	1	-3.93	2.921	0.172	0.157	-0.02500	0.115	1.69	1.40	-0.31	0.26	0.0090	0.00600	0.27	0.86	-0.814
					10/14/2013 19:45	0917-173_No	13_10_14_1945_30_475	1	-2.056	2.89	-0.202	0.154	-0.119	0.117	-0.94	1.21	-0.66	0.26	-0.0070	0.00700	0.484	0.86	-0.578
					10/14/2013 19:45	0917-173_No	13_10_14_1945_36_655	1	-4.293	2.54	-0.086	0.146	0.015	0.122	-1.60	1.07	-0.45	0.24	-0.0230	0.00600	0.64	0.79	-0.387
					10/14/2013 19:45	0917-173_No	13_10_14_1945_42_915	1	-4.2570	2.737	-0.021	0.137	0.115	0.120	-1.72	1.07	-0.23	0.23	-0.0020	0.00600	-0.34	0.79	-0.244
					10/14/2013 19:45	0917-173_No	13_10_14_1945_49_085	1	-1.228	2.604	0.302	0.158	-0.140	0.124	-1.83	1.21	-0.32	0.26	-0.0230	0.00600	0.788	0.84	0.048
					10/14/2013 19:45	0917-173_No	13_10_14_1945_55_165	1	-1.616	2.680	0.212	0.158	0.200	0.134	-3.488	1.55	-0.18	0.26	-0.0060	0.00600	1.56	0.83	0.357
					10/14/2013 19:46	0917-173_No	13_10_14_1946_01_355	1	-0.455	2.786	-0.139	0.146	0.371	0.137	-2.41	1.71	0.06	0.24	-0.03200	0.00600	-1.16	0.82	0.453
					10/14/2013 19:46	0917-173_No	13_10_14_1946_07_635	1	-5.8980	2.642	0.179	0.155	-0.0040	0.140	-2.56	1.68	-0.491	0.25	-0.02700	0.00700	1.23	0.83	0.574
					10/14/2013 19:46	0917-173_No	13_10_14_1946_13_805	1	1.461	2.536	0.093	0.148	-0.261	0.145	-3.108	1.98	-0.07	0.24	-0.0030	0.00700	-0.77	0.80	0.689
					10/14/2013 19:46	0917-173_No	13_10_14_1946_19_995	1	-2.182	2.638	0.1350	0.147	0.0610	0.145	-2.873	2.11	-0.35	0.24	-0.0310	0.00700	-0.55	0.82	0.792
					10/14/2013 19:46	0917-173_No	13_10_14_1946_26_075	1	-9.065	2.588	-0.1710	0.138	0.0740	0.155	-2.828	2.40	-0.21	0.23	-0.0130	0.00700	0.99	0.79	0.936
					10/14/2013 19:46	0917-173_No	13_10_14_1946_32_285	1	2.803	2.583	0.2110	0.148	0.1410	0.152	-1.89	2.63	-0.24	0.24	-0.0200	0.00700	1.38	0.80	0.944
					10/14/2013 19:46	0917-173_No	13_10_14_1946_38_465	1	-8.251	3.884	0.094	0.145	-0.618	0.156	0.808	1.93	0.20	0.36	-0.02000	0.00700	0.389	0.81	1.137
					10/14/2013 19:46	0917-173_No	13_10_14_1946_44_745	1	0.277	2.688	0.561	0.149	-0.519	0.159	1.823	1.58	0.50	0.36	-0.0170	0.00600	-4.37200	1.18	1.227
					10/14/2013 19:46	0917-173_No	13_10_14_1946_50_775	1	-8.092	3.738	0.3170	0.148	0.1980	0.162	1.089	1.34	0.33	0.339	-0.0170	0.00800	-3.98	1.15	1.279
					10/14/2013 19:46	0917-173_No	13_10_14_1946_57_045	1	-7.09	3.732	0.356	0.144	0.2910	0.168	1.750	1.26	0.345	0.349	-0.02200	0.00700	2.092	0.79	1.303
					10/14/2013 19:47	0917-173_No	13_10_14_1947_03_195	1	-10.52	3.766	-0.304	0.199	0.025	0.173	2.033	1.04	-0.617	0.25	-0.0220	0.00700	-3.874	1.12	1.35
					10/14/2013 19:47	0917-173_No	13_10_14_1947_09_385	1	0.377	2.962	0.06900	0.146	0.2680	0.164	1.601	0.91	-0.712	0.253	-0.0070	0.00700	0.69	0.88	1.562
					10/14/2013 19:47	0917-173_No	13_10_14_1947_15_565	1	-6.9270	3.867	0.3510	0.148	0.339	0.183	0.984	0.82	0.701	0.349	-0.01700	0.00700	0.40	0.84	1.426
					10/14/2013 19:47	0917-173_No	13_10_14_1947_21_725	1	-7.779	3.557	0.335	0.153	0.1980	0.184	0.959	0.64	0.06	0.327	-0.02100	0.00600	0.565	0.87	1.624

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/14/2013 19:47	0917-173_No	13_10_14_1947_27_905	1	-9.338	3.433	0.023	0.197	-0.383	0.141	0.553	0.59	-0.231	0.317	-0.0180	0.00900	-1.06	1.07	-0.675
					10/14/2013 19:47	0917-173_No	13_10_14_1947_34_085	1	-12.370	3.587	0.466	0.190	-0.113	0.142	1.012	0.56	0.726	0.320	-0.0140	0.00800	-2.98	1.07	-0.621
					10/14/2013 19:47	0917-173_No	13_10_14_1947_40_265	1	-8.913	3.308	0.032	0.185	-0.227	0.150	0.614	0.59	0.308	0.306	-0.01400	0.00800	-1.9030	1.00	-0.558
					10/14/2013 19:47	0917-173_No	13_10_14_1947_46_545	1	-11.356	3.278	0.299	0.188	-0.471	0.138	1.003	0.64	0.052	0.306	-0.01700	0.00700	-1.215	1.00	-0.366
					10/14/2013 19:47	0917-173_No	13_10_14_1947_52_605	1	-3.62	3.297	-0.155	0.176	-0.26000	0.145	0.985	0.74	-0.135	0.291	-0.01600	0.00800	-1.34	0.98	-0.336
					10/14/2013 19:47	0917-173_No	13_10_14_1947_58_785	1	-11.761	3.289	-0.2200	0.198	-0.2340	0.142	0.960	0.85	-0.0560	0.314	-0.0210	0.00800	-1.14	1.01	-0.277
					10/14/2013 19:48	0917-173_No	13_10_14_1948_05_005	1	-1.040	3.308	-0.293	0.180	0.074	0.133	0.854	0.82	0.18	0.293	-0.02200	0.00800	-2.332	0.98	-0.226
					10/14/2013 19:48	0917-173_No	13_10_14_1948_11_245	1	-8.0170	3.053	-0.035	0.179	-0.13100	0.131	0.916	0.98	0.286	0.288	-0.03300	0.00800	-1.18	0.95	-0.223
					10/14/2013 19:48	0917-173_No	13_10_14_1948_17_425	1	-14.68	3.337	-0.073	0.172	-0.260	0.142	0.587	0.93	-0.044	0.292	-0.02900	0.00700	-2.82	0.99	-0.143
					10/14/2013 19:48	0917-173_No	13_10_14_1948_23_505	1	-7.51	3.280	0.03700	0.171	-0.286	0.132	0.428	0.95	-0.028	0.286	-0.00600	0.00800	-1.451	0.93	-0.165
					10/14/2013 19:48	0917-173_No	13_10_14_1948_29_645	1	-4.003	3.211	-0.132	0.172	-0.1430	0.141	0.563	0.99	0.124	0.285	-0.01500	0.00700	-0.53	0.97	-0.136
					10/14/2013 19:48	0917-173_No	13_10_14_1948_35_905	1	-4.017	3.089	0.190	0.177	-0.1880	0.140	0.56	1.04	-0.010	0.286	-0.03000	0.00800	-0.64	0.94	-0.058
					10/14/2013 19:48	0917-173_No	13_10_14_1948_42_075	1	-7.082	3.404	0.046	0.178	-0.0900	0.136	0.828	1.04	0.13	0.298	-0.02600	0.00700	-4.050	1.00	-0.075
					10/14/2013 19:48	0917-173_No	13_10_14_1948_48_245	1	-9.974	3.089	0.077	0.176	-0.2280	0.139	1.001	1.06	0.38	0.284	-0.01500	0.00800	-4.24	0.95	-0.068
					10/14/2013 19:48	0917-173_No	13_10_14_1948_54_325	1	-9.599	3.091	-0.141	0.174	-0.1610	0.142	1.053	1.09	-0.398	0.283	-0.02	0.00800	0.237	0.95	-0.098
					10/14/2013 19:49	0917-173_No	13_10_14_1949_00_595	1	-14.632	3.223	-0.140	0.179	-0.0110	0.133	1.068	1.03	-0.19	0.298	-0.00500	0.00800	-0.588	0.99	-0.118
					10/14/2013 19:49	0917-173_No	13_10_14_1949_06_775	1	-4.764	3.154	-0.359	0.166	-0.271	0.141	0.797	1.07	-0.386	0.279	-0.03100	0.00700	-1.949	0.92	-0.095
					10/14/2013 19:49	0917-173_No	13_10_14_1949_12_935	1	0.182	3.238	-0.125	0.175	-0.15800	0.142	1.032	1.19	-0.0680	0.287	-0.01700	0.00700	-1.7390	0.97	-0.045
					10/14/2013 19:49	0917-173_No	13_10_14_1949_19_205	1	-9.759	3.003	-0.064	0.179	-0.222	0.135	1.395	1.20	0.327	0.282	-0.02500	0.00700	-1.759	0.88	-0.004
					10/14/2013 19:49	0917-173_No	13_10_14_1949_25_285	1	-9.830	3.200	0.039	0.176	-0.141	0.136	0.16	1.15	-0.208	0.290	-0.02700	0.00700	-0.83	0.97	0.091
					10/14/2013 19:49	0917-173_No	13_10_14_1949_31_435	1	-2.34	2.983	0.160	0.164	-0.1060	0.141	1.246	1.26	-0.337	0.271	-0.02800	0.00700	-0.95	0.91	0.039
					10/14/2013 19:49	0917-173_No	13_10_14_1949_37_715	1	0.968	3.010	0.157	0.175	-0.130	0.137	1.113	1.32	-0.427	0.282	-0.02800	0.00800	-1.240	0.95	0.14
					10/14/2013 19:49	0917-173_No	13_10_14_1949_43_905	1	-9.102	2.965	-0.034	0.159	-0.099	0.138	0.664	1.38	0.346	0.262	-0.01600	0.00800	-1.09	0.87	0.066
					10/14/2013 19:49	0917-173_No	13_10_14_1949_50_095	1	-3.572	2.975	0.033	0.159	-0.333	0.136	0.623	1.42	0.52	0.263	-0.01700	0.00600	-2.61	0.88	0.199
					10/14/2013 19:49	0917-173_No	13_10_14_1949_56_175	1	-5.354	3.152	-0.00400	0.162	-0.0420	0.142	1.089	1.522	-0.628	0.270	-0.00400	0.00600	-1.17	0.91	0.217
					10/14/2013 19:50	0917-173_No	13_10_14_1950_02_365	1	-6.2100	3.054	-0.392	0.156	0.0870	0.128	0.52	1.578	-0.392	0.262	-0.02300	0.00600	0.919	0.90	0.121
					10/14/2013 19:50	0917-173_No	13_10_14_1950_08_595	1	-3.741	2.856	-0.070	0.160	0.0590	0.131	1.193	1.588	0.024	0.259	-0.02000	0.00800	-1.703	0.88	0.214
					10/14/2013 19:50	0917-173_No	13_10_14_1950_14_785	1	-2.62	2.830	-0.003	0.152	-0.1350	0.135	1.070	1.604	-0.197	0.248	-0.01000	0.00700	-1.519	0.84	0.229
					10/14/2013 19:50	0917-173_No	13_10_14_1950_20_855	1	-0.814	2.708	0.184	0.161	0.03500	0.141	0.859	1.640	0.405	0.255	-0.01800	0.00600	-0.462	0.81	0.205
					10/14/2013 19:50	0917-173_No	13_10_14_1950_27_035	1	-4.539	2.932	-0.218	0.167	-0.103	0.139	1.257	1.605	-0.193	0.271	-0.02000	0.00700	0.77	0.91	0.275
					10/14/2013 19:50	0917-173_No	13_10_14_1950_33_235	1	1.46	2.904	-0.438	0.152	-0.230	0.135	0.479	1.561	-0.3180	0.254	-0.01900	0.00700	-0.988	0.86	0.18
					10/14/2013 19:50	0917-173_No	13_10_14_1950_39_435	1	-8.509	2.793	0.136	0.172	0.125	0.133	1.051	1.587	0.137	0.273	-0.03	0.00800	-1.605	0.90	0.21
					10/14/2013 19:50	0917-173_No	13_10_14_1950_45_635	1	-0.0150	2.907	0.376	0.177	-0.300	0.138	0.411	1.577	-0.13	0.282	-0.01500	0.00700	-0.629	0.90	0.316
					10/14/2013 19:50	0917-173_No	13_10_14_1950_51_825	1	-3.04	3.185	-0.091	0.164	0.1330	0.144	0.931	1.555	-0.0370	0.274	-0.0070	0.00700	-1.010	0.92	0.255
					10/14/2013 19:50	0917-173_No	13_10_14_1950_58_005	1	-1.028	2.673	-0.0120	0.164	-0.238	0.145	0.868	1.567	-0.06	0.256	-0.02	0.00600	-1.190	0.86	0.201
					10/14/2013 19:51	0917-173_No	13_10_14_1951_04_185	1	-4.665	2.983	0.2000	0.159	-0.1000	0.135	0.759	1.576	-0.026	0.265	-0.02500	0.00700	-2.40	0.91	0.209
					10/14/2013 19:51	0917-173_No	13_10_14_1951_10_375	1	-6.81	2.993	0.0160	0.166	-0.1110	0.127	0.907	1.571	-0.408	0.274	-0.02000	0.00700	-0.81	0.90	0.241
					10/14/2013 19:51	0917-173_No	13_10_14_1951_16_615	1	-3.297	2.854	0.162	0.157	0.0220	0.134	1.227	1.605	-0.402	0.257	-0.00600	0.00600	0.058	0.90	0.286
					10/14/2013 19:51	0917-173_No	13_10_14_1951_22_685	1	-8.045	2.913	-0.0600	0.167	-0.218	0.139	1.209	1.585	0.107	0.274	-0.02700	0.00700	-0.96	0.93	0.259
					10/14/2013 19:51	0917-173_No	13_10_14_1951_28_855	1	-6.592	2.926	-0.2030	0.157	-0.1530	0.139	0.37	1.596	-0.32	0.262	-0.01100	0.00700	-0.17	0.87	0.251
					10/14/2013 19:51	0917-173_No	13_10_14_1951_35_135	1	-8.965	2.814	-0.00400	0.150	-0.104	0.143	0.622	1.591	-0.196	0.246	-0.01300	0.00800	-0.25	0.82	0.175
					10/14/2013 19:51	0917-173_No	13_10_14_1951_41_325	1	-8.356	2.947	0.130	0.155	-0.1510	0.134	0.959	1.649	-0.06	0.260	-0.02000	0.00600	-1.47	0.87	0.254
					10/14/2013 19:51	0917-173_No	13_10_14_1951_47_515	1	-8.313	3.091	0.1470	0.157	-0.064	0.141	0.457	1.545	0.11	0.265	-0.00100	0.00600	-1.848	0.90	0.286
					10/14/2013 19:51	0917-173_No	13_10_14_1951_53_595	1	-8.105	2.694	0.0320	0.151	-0.069	0.129	0.866	1.622	0.066	0.249	-0.02	0.00700	-0.69	0.82	0.299
					10/14/2013 19:51	0917-173_No	13_10_14_1951_59_795	1	-2.662	2.916	-0.115	0.161	0.005	0.139	0.391	1.656	-0.3840	0.262	-0.01600	0.00700	-0.83	0.88	0.277
					10/14/2013 19:52	0917-173_No	13_10_14_1952_05_975	1	-10.138	2.989	0.376	0.157	0.132	0.138	0.699	1.657	-0.215	0.261	-0.03100	0.00700	1.00	0.86	0.237
					10/14/2013 19:52	0917-173_No	13_10_14_1952_12_155	1	-6.549	2.901	-0.0430	0.162	-0.2140	0.134	0.874	1.676	0.039	0.262	-0.0310	0.00700	-1.63	0.88	0.263
					10/14/2013 19:52	0917-173_No	13_10_14_1952_18_405	1	-11.74	2.771	-0.1470	0.158	-0.185	0.132	0.839	1.688	0.308	0.260	-0.00900	0.00600	-1.66	0.89	0.286
					10/14/2013 19:52	0917-173_No	13_10_14_1952_24_465	1	-2.694	2.715	0.204	0.160	-0.110	0.145	0.799	1.681	0.225	0.257	-0.01700	0.00700	-1.85	0.85	0.295
					10/14/2013 19:52	0917-173_No	13_10_14_1952_30_645	1	-7.8330	2.974	0.150	0.157	-0.0350	0.135	1.049	1.633	-0.262	0.263	-0.01700	0.00600	-0.69	0.89	0.301
					10/14/2013 19:52	0917-173_No	13_10_14_1952_36_925	1	-1.849	2.690	0.1580	0.155	-0.1390	0.136	0.712	1.706	-0.05	0.249	-0.02600	0.00700	-1.29	0.77	0.27
					10/14/2013 19:52	0917-173_No	13_10_14_1952_43_035	1	-1.501	2.730	0.150	0.157	-0.02000	0.138	0.576	1.746	0.472	0.253	-0.00900	0.00600	-0.155	0.82	0.303
					10/14/2013 19:52	0917-173_No	13_10_14_1952_49_235	1	-6.279	2.638	-0.413	0.148	-0.0810	0.137	0.770	1.667	-0.29	0.241	-0.01600	0.00700	-0.908	0.80	0.304
Data	MDC	1	Start		10/14/2013 19:53	0917-173_No	13_10_14_1953_39_775	1	-3.7100	1.731	0.0240	0.097	-0.0850	0.1120	0.780	1.741	0.029	0.157	-0.02	0.00500	-1.473	0.523	0.33
					10/14/2013 19:54	0917-173_No	13_10_14_1954_40_496	1	-4.3510	1.744	0.101	0.097	-0.0520	0.1120	0.673	1.745	-0.0610	0.159	-0.01800	0.00500	-1.083	0.528	0.338
					10/14/2013 19:55	0917-173_No	13_10_14_1955_41_326	1	-3.0680	1.630	0.0160	0.095	-0.0550	0.1150	0.761	1.758	-0.220	0.153	-0.02	0.00500	-0.849	0.504	0.337
					10/14/2013 19:56	0917-173_No	13_10_14_1956_42_036	1	-2.982	1.854	-0.055	0.099	-0.117	0.1140	0.575	1.740	0.010	0.163	-0.02000	0.00500	-1.842	0.544	0.339
					10/14/2013 19:57	0917-173_No	13_10_14_1957_42_786	1	-3.690	1.736	0.1190	0.096	-0.0670	0.1110	0.674	1.759	-0.072	0.157	-0.02	0.00500	-1.174	0.529	0.382
					10/14/2013 19:58	0917-173_No	13_10_14_1958_43_596	1	-2.0460	1.705	0.0440	0.098	-0.0070	0.1120	0.738	1.733	-0.113	0.157	-0.01900	0.00500	-0.901	0.510	0.364
			Stop		10/14/2013 19:59	0917-173_No	13_10_14_1959_44_366	1	-2.379	1.692	0.064	0.097	0.0220	0.1110	0.716	1.747	-0.1870	0.156	-0.01600	0.00500	-0.6940	0.514	0.34
					10/15/2013 7:51	0917-173_No	13_10_15_0751_28_631	1	1.7	1.3	-0.152	0.075	0.02	1.39	-0.10100	0.0840	0.078	0.123	0.054	0.563	-0.500	0.392	-1.696
					10/15/2013 7:51	0917-173_No	13_10_15_0751_47_251	1	0.8	1.4	0.007	0.077	-0.16	1.46	0.0950	0.0930	0.137	0.129	0.049	0.587	-0.335	0.431	-1.797
					10/15/2013 7:52	0917-173_No	13_10_15_0752_05_741	1	0.1	1.4	0.0940	0.080	-0.27	1.49	0.136	0.0930	0.090	0.131	0.059	0.598	0.391	0.423	-1.818
					10/15/2013 7:52	0917-173_No	13_10_15_0752_24_331	1	1.0	1.3	-0.08100	0.073	-0.40	1.51	0.0830	0.0930	-0.057	0.120	0.054	0.603	0.40	0.388	-1.849
					10/15/2013 7:52	0917-173_No	13_10_15_0752_42_811	1	3.5	1.4	-0.080	0.078	-0.31	1.51	-0.10400	0.0930	-0.126	0.125	0.044	0.605	-0.03	0.432	-1.865
					10/15/2013 7:53	0917-173_No	13_10_15_0753_01_311	1	1.9	1.2	0.161	0.075	-0.27	1.52	-0.1270	0.0940	0.07100	0.119	0.058	0.608	-0.044	0.390	-1.84
					10/15/2013 7:53	0917-173_No	13_10_15_0753_19_911	1	1.9	1.3	0.067	0.080	-0.33	1.52	-0.154	0.1100	0.155	0.127	0.054	0.606	0.251	0.413	-1.84
					10/15/2013 7:53	0917-173_No	13_10_15_0753_38_392	1	-3.5	1.5	0.0040	0.074	-0.38	1.51	-0.1170	0.0900	0.041	0.126	0.056	0.603	-0.385	0.422	-1.868
					10/15/2013 7:53	0917-173_No	13_10_15_0753_56_902	1	-3.9	1.4	-0.094	0.078	-0.46	1.52	0.0020	0.1040	-0.020	0.126	0.049	0.606	1.29	0.410	-1.834
					10/15/2013 7:54	0917-173_No	13_10_15_0754_15_522	1	1.3	1.4	0.043	0.078	-0.38	1.52	0.1280	0.0970	0.0400	0.128	0.055	0.605	0.046	0.431	-1.857
					10/15/2013 7:54	0917-173_No	13_10_15_0754_34_022	1	1.0	1.5	-0.046	0.077	-0.41	1.51	-0.1610	0.0870	0.117	0.126	0.045	0.609	-0.584	0.421	-1.846
					10/15/2013 7:54	0917-173_No	13_10_15_0754_52_562	1	-0.4	1.4	0.008	0.078	-0.40	1.51	-0.323	0.0940	0.359	0.125	0.043	0.606	0.055	0.432	-1.85
					10/15/2013 7:55	0917-173_No	13_10_15_0755_11_052	1	0.2	1.4	-0.044	0.068	-0.40	1.52	0.053	0.1010	0.054	0.116	0.059	0.607	0.3070	0.386	-1.84
					10/15/2013 7:55	0917-173_No	13_10_15_0755_29_642	1	-3.0	1.3	-0.142	0.082	-0.40	1.51	0.089	0.0970	-0.016	0.126	0.051	0.609	0.132	0.399	-1.859
					10/15/2013 7:55	0917-173_No	13_10_15_0755_48_232	1	-1.3	1.4	-0.105	0.077	-0.46	1.51	-0.253	0.0950	-0.055	0.127	0.047	0.606	0.40	0.408	-1.863
					10/15/2013 7:56	0917-173_No	13_10_15_0756_06_712	1	-1.9	1.3	0.039	0.077	-0.30	1.51	-0.0310	0.0930	0.121	0.123	0.053	0.606	0.018	0.389	-1.865
					10/15/2013 7:56	0917-173_No	13_10_15_0756_25_332	1	-0.4	1.3	0.087	0.079	-0.45	1.52	-0.105	0.0850	0.223	0.125	0.056	0.607	0.749	0.398	-1.836
					10/15/2013 7:56	0917-173_No	13_10_15_0756_43_842	1	-0.5	1.5	-0.081	0.076	-0.43	1.52	0.100	0.0960	-0.004	0.126	0.052	0.605	1.217	0.418	-1.83
					10/15/2013 7:57	0917-173_No	13_10_15_0757_02_292	1	-0.4	1.3	-0.029	0.082	-0.46	1.51	-0.1600	0.0900	-0.127	0.129	0.049	0.605	0.45	0.410	-1.826
					10/15/2013 7:57	0917-173_No	13_10_15_0757_20_952	1	1.3	1.3	-0.063	0.080	-0.41	1.52	0.113	0.0910	0.241	0.126	0.052	0.605	-0.155	0.405	-1.838
					10/15/2013 9:06	0917-173_No	13_10_15_0906_30_678	1	1.853	1.019	0.028	0.064	1.63	0.0690	0.610	1.483	-0.692	0.105	0.00	0.00200	-0.37	0.328	4.626
					10/15/2013 9:07	0917-173_No	13_10_15_0907_30_378	1	-0.323	1.024	-0.012	0.061	1.93	0.0700	0.468	1.515	-0.527	0.104	-0.00200	0.00200	-0.929	0.320	5.058
					10/15/2013 9:08	0917-173_No	13_10_15_0908_31_128	1	1.206	1.053	0.042	0.062	1.79	0.0720	0.497	1.504	-0.475	0.105	-0.00600	0.00200	-0.70	0.336	4.724
					10/15/2013 9:09	0917-173_No	13_10_15_0909_31_938	1	2.597	1.042	0.131	0.059	1.77	0.0730	0.480	1.500	-0.424	0.100	-0.00100	0.00300	-0.774	0.321	4.412
					10/15/2013 9:10	0917-173_No	13_10_15_0910_32_668	1	1.726	0.991	0.14800	0.061	2.13	0.0740	0.456	1.512	-0.5460	0.103	-0.00200	0.00200	-0.296	0.312	5.04
Data	Run	4	Start	A	10/15/2013 9:11	0917-173_No	13_10_15_0911_33_428	1	-0.271	1.019	0.023	0.063	2.48	0.0780	0.502	1.524	-0.718	0.107	-0.00400	0.00300	0.16	0.330	5.813
					10/15/2013 9:12	0917-173_No	13_10_15_0912_34_178	1	2.067	1.116	0.081	0.066	2.28	0.0760	0.499	1.523	-0.6170	0.110	-0.00400	0.00300	-0.748	0.343	4.925
					10/15/2013 9:13	0917-173_No	13_10_15_0913_34_978	1	-2.005	1.036	0.030	0.060	2.33	0.0770	0.646	1.533	-0.407	0.107	0.00	0.00200	-1.01	0.318	4.918
					10/15/2013 9:14	0917-173_No	13_10_15_0914_35_708	1	-0.4520	0.981	0.050	0.062	2.21	0.0750	0.454	1.519	-0.578	0.102	0.00000	0.00200	-0.42	0.309	4.526
					10/15/2013 9:15	0917-173_No	13_10_15_0915_36_448	1	0.801	1.020	0.0570	0.058	2.21	0.0760	0.402	1.522	-0.413	0.102	-0.00500	0.00300	-0.80	0.301	4.46
					10/15/2013 9:16	0917-173_No	13_10_15_0916_37_198	1	1.6460	1.091	-0.036	0.067	2.45	0.0750	0.503	1.535	-0.537	0.110	0.00	0.00200	-0.46	0.341	5.088
					10/15/2013 9:17	0917-173_No	13_10_15_0917_37_999	1	0.6000	1.073	0.0640	0.061	2.39	0.0770	0.435	1.539	-0.460	0.103	-0.00300	0.00200	-0.771	0.313	5.142
					10/15/2013 9:18	0917-173_No	13_10_15_0918_38_749	1	-0.744	1.106	0.084	0.062	2.51	0.0770	0.523	1.527	-0.662	0.107	-0.00300	0.00200	-0.69	0.342	5.217
					10/15/2013 9:19	0917-173_No	13_10_15_0919_39_499	1	1.164	0.976	0.0310	0.057	2.57	0.0760	0.627	1.543	-0.475	0.100	-0.00300	0.00300	-0.621	0.299	5.175
					10/15/2013 9:20	0917-173_No	13_10_15_0920_40_209	1	-1.134	1.049	0.034	0.062	2.51	0.0760	0.6830	1.545	-0.543	0.106	-0.00600	0.00300	-0.51	0.318	5.01
					10/15/2013 9:21	0917-173_No	13_10_15_0921_41_019	1	1.440	1.140	0.0110	0.066	2.49	0.0790	0.463	1.542	-0.5590	0.111	-0.00200	0.00200	-0.515	0.339	4.866
					10/15/2013 9:22	0917-173_No	13_10_15_0922_41_779	1	0.2870	1.125	0.126	0.063	2.61	0.0770	0.524	1.550	-0.7190	0.110	-0.00400	0.00300	-0.09	0.337	5.612
					10/15/2013 9:23	0917-173_No	13_10_15_0923_42_539	1	0.9280	1.061	-0.0180	0.061	2.49	0.0770	0.347	1.543	-0.668	0.107	-0.00100	0.00200	-0.37	0.322	5.623
					10/15/2013 9:24	0917-173_No	13_10_15_0924_43_249	1	-1.115	0.966	0.106	0.063	2.20	0.0750	0.476	1.539	-0.71600	0.103	0.00000	0.00300	0.32	0.328	4.749
					10/15/2013 9:25	0917-173_No	13_10_15_0925_44_059	1	1.346	1.022	0.0120	0.062	2.25	0.0740	0.518	1.514	-0.545	0.105	0.00000	0.00200	-0.47	0.317	4.68
					10/15/2013 9:26	0917-173_No	13_10_15_0926_44_759	1	-0.756	1.034	-0.038	0.062	2.33	0.0740	0.507	1.537	-0.616	0.103	0.00	0.00300	-0.52	0.316	4.867
					10/15/2013 9:27	0917-173_No	13_10_15_0927_45_529	1	-1.481	1.064	-0.074	0.063	2.29	0.0770	0.568	1.522	-0.519	0.106	-0.00200	0.00300	-0.97	0.331	4.874
					10/15/2013 9:28	0917-173_No	13_10_15_0928_46_300	1	1.571	1.013	0.020	0.061	2.26	0.0740	0.416	1.533	-0.569	0.104	-0.00300	0.00200	-0.48	0.324	4.622
					10/15/2013 9:29	0917-173_No	13_10_15_0929_47_100	1	1.5750	1.051	-0.02	0.058	2.31	0.0750	0.495	1.515	-0.592	0.099	0.00000	0.00200	-0.11	0.318	4.55
					10/15/2013 9:30	0917-173_No	13_10_15_0930_47_900	1	-0.219	1.068	0.043	0.064	2.21	0.0730	0.400	1.523	-0.5800	0.106	-0.00400	0.00200	-0.092	0.329	4.289
					10/15/2013 9:31	0917-173_No	13_10_15_0931_48_670	1	1.140	0.934	0.100	0.063	2.49	0.0740	0.562	1.521	-0.609	0.101	0.00200	0.00300	-0.16	0.301	4.805
					10/15/2013 9:32	0917-173_No	13_10_15_0932_49_420	1	0.7750	1.052	-0.002	0.061	2.56	0.0760	0.517	1.529	-0.593	0.103	-0.00200	0.00300	-0.20	0.331	4.825
					10/15/2013 9:33	0917-173_No	13_10_15_0933_50_130	1	-0.288	1.005	0.128	0.060	2.65	0.0760	0.439	1.533	-0.696	0.100	-0.00600	0.00300	-0.49	0.303	4.776
					10/15/2013 9:34	0917-173_No	13_10_15_0934_50_930	1	2.8000	1.062	0.0000	0.061	2.33	0.0770	0.492	1.529	-0.555	0.104	-0.00500	0.00200	-0.602	0.319	4.026
					10/15/2013 9:35	0917-173_No	13_10_15_0935_51_710	1	-0.392	1.071	0.061	0.062	2.44	0.0750	0.465	1.527	-0.629	0.105	0.00100	0.00300	-0.34	0.326	4.152
					10/15/2013 9:36	0917-173_No	13_10_15_0936_52_510	1	-1.1090	0.978	0.093	0.060	2.27	0.0750	0.437	1.515	-0.453	0.100	-0.00200	0.00200	-0.32	0.324	3.909
					10/15/2013 9:37	0917-173_No	13_10_15_0937_53_310	1	0.474	1.011	0.041	0.058	2.21	0.0760	0.330	1.517	-0.474	0.098	-0.00100	0.00300	-0.67	0.310	3.741
					10/15/2013 9:38	0917-173_No	13_10_15_0938_54_040	1	0.529	1.005	-0.0470	0.0590	2.38	0.0760	0.428	1.519	-0.588	0.100	-0.00200	0.00200	-0.366	0.313	4.352
					10/15/2013 9:39	0917-173_No	13_10_15_0939_54_760	1	-0.4700	0.923	0.072	0.0560	2.43	0.0750	0.360	1.536	-0.643	0.094	-0.00600	0.00300	-0.139	0.295	4.495
					10/15/2013 9:40	0917-173_No	13_10_15_0940_55_571	1	-0.8270	1.058	0.059	0.060	2.24	0.0750	0.397	1.525	-0.449	0.103	-0.00200	0.00300	-0.68	0.321	4.104
					10/15/2013 9:41	0917-173_No	13_10_15_0941_56_301	1	0.907	1.073	0.1110	0.062	2.23	0.0740	0.509	1.532	-0.506	0.105	-0.00200	0.00200	-0.72	0.324	4.113
					10/15/2013 9:42	0917-173_No	13_10_15_0942_57_111	1	-0.620	1.043	-0.0230	0.061	2.41	0.0760	0.568	1.531	-0.647	0.101	-0.00700	0.00200	-0.11	0.315	4.182
					10/15/2013 9:43	0917-173_No	13_10_15_0943_57_921	1	1.3250	0.993	0.0730	0.061	2.32	0.0780	0.451	1.529	-0.691	0.100	-0.00100	0.00300	-0.28	0.299	4.068
					10/15/2013 9:44	0917-173_No	13_10_15_0944_58_691	1	0.430	0.920	0.0200	0.059	2.23	0.0730	0.461	1.521	-0.442	0.097	-0.00200	0.00200	-0.17	0.284	4.101
					10/15/2013 9:45	0917-173_No	13_10_15_0945_59_421	1	0.588	1.033	0.059	0.059	2.29	0.0740	0.5800	1.531	-0.343	0.102	-0.00200	0.00200	-0.59	0.320	4.042
					10/15/2013 9:47	0917-173_No	13_10_15_0947_00_071	1	0.910	1.043	0.0440	0.059	2.27	0.0740	0.554	1.519	-0.449	0.100	-0.00100	0.00300	-0.912	0.314	3.975
					10/15/2013 9:48	0917-173_No	13_10_15_0948_00_871	1	-0.2920	1.012	0.037	0.063	2.51	0.0770	0.417	1.527	-0.497	0.104	-0.00600	0.00300	-0.668	0.320	4.445
					10/15/2013 9:49	0917-173_No	13_10_15_0949_01_631	1	0.590	1.093	0.016	0.063	2.45	0.0760	0.514	1.543	-0.690	0.108	-0.01000	0.00200	-0.48	0.335	4.623
					10/15/2013 9:50	0917-173_No	13_10_15_0950_02_421	1	0.4420	1.003	-0.042	0.059	2.39	0.0750	0.482	1.543	-0.642	0.099	0.00	0.00200	-0.05	0.309	4.465
					10/15/2013 9:51	0917-173_No	13_10_15_0951_03_231	1	0.1460	1.039	0.038	0.063	2.39	0.0770	0.454	1.544	-0.485	0.108	-0.00300	0.00200	0.04	0.325	4.626
					10/15/2013 9:52	0917-173_No	13_10_15_0952_03_891	1	0.287	1.041	0.0020	0.057	2.64	0.0780	0.367	1.544	-0.6110	0.101	-0.00400	0.00200	-0.20	0.314	4.964
					10/15/2013 9:53	0917-173_No	13_10_15_0953_04_722	1	2.4350	1.079	0.0430	0.065	2.71	0.0770	0.408	1.559	-0.654	0.111	-0.00300	0.00200	-0.48	0.335	5.533
					10/15/2013 9:54	0917-173_No	13_10_15_0954_05_522	1	1.151	1.009	0.021	0.061	2.36	0.0800	0.451	1.548	-0.645	0.104	-0.00200	0.00200	-0.71	0.307	4.602
					10/15/2013 9:55	0917-173_No	13_10_15_0955_06_272	1	0.513	1.014	0.093	0.061	2.48	0.0760	0.439	1.554	-0.604	0.104	-0.00400	0.00300	-0.16	0.325	4.75
					10/15/2013 9:56	0917-173_No	13_10_15_0956_06_992	1	-0.979	1.019	0.183	0.061	2.31	0.0740	0.516	1.542	-0.429	0.106	-0.00700	0.00300	-0.73	0.319	4.342
					10/15/2013 9:57	0917-173_No	13_10_15_0957_07_812	1	-0.3720	1.067	0.028	0.063	2.45	0.0790	0.457	1.537	-0.535	0.106	-0.00500	0.00200	-1.005	0.327	4.722
					10/15/2013 9:58	0917-173_No	13_10_15_0958_08_512	1	0.2390	0.948	0.00300	0.060	2.51	0.0790	0.505	1.547	-0.734	0.099	-0.00400	0.00200	-0.47	0.291	5.075
					10/15/2013 9:59	0917-173_No	13_10_15_0959_09_312	1	1.187	1.032	-0.0430	0.060	2.70	0.0760	0.482	1.543	-0.636	0.105	-0.00500	0.00300	0.01	0.317	5.071
					10/15/2013 10:00	0917-173_No	13_10_15_1000_10_052	1	0.688	1.047	0.052	0.059	2.75	0.0810	0.527	1.558	-0.686	0.102	0.00	0.00300	-0.12	0.308	5.174
					10/15/2013 10:01	0917-173_No	13_10_15_1001_10_862	1	1.206	1.031	0.097	0.059	2.75	0.0800	0.541	1.568	-0.679	0.104	-0.00400	0.00300	-0.72	0.330	5.043
					10/15/2013 10:02	0917-173_No	13_10_15_1002_11_672	1	-0.835	1.049	-0.012	0.064	2.68	0.0810	0.411	1.557	-0.711	0.107	-0.00500	0.00300	-0.26	0.337	4.929
					10/15/2013 10:03	0917-173_No	13_10_15_1003_12_372	1	-0.451	1.051	0.056	0.064	2.57	0.0790	0.375	1.562	-0.688	0.107	-0.00400	0.00300	-0.548	0.326	4.724
					10/15/2013 10:04	0917-173_No	13_10_15_1004_13_182	1	1.928	1.032	0.0430	0.062	2.64	0.0800	0.425	1.549	-0.603	0.104	-0.00500	0.00200	-0.910	0.319	4.865
					10/15/2013 10:05	0917-173_No	13_10_15_1005_13_993	1	-1.489	1.060	0.0120	0.060	2.66	0.0820	0.334	1.547	-0.636	0.104	0.00000	0.00200	-0.40	0.326	4.688
					10/15/2013 10:06	0917-173_No	13_10_15_1006_14_753	1	0.279	1.061	-0.006	0.065	2.37	0.0760	0.459	1.545	-0.501	0.106	-0.00100	0.00200	-0.222	0.330	4.425
					10/15/2013 10:07	0917-173_No	13_10_15_1007_15_483	1	0.397	1.002	0.041	0.059	2.31	0.0780	0.539	1.544	-0.497	0.099	-0.00500	0.00200	-0.508	0.309	4.166
					10/15/2013 10:08	0917-173_No	13_10_15_1008_16_293	1	-1.3380	1.086	0.040	0.061	2.52	0.0760	0.538	1.536	-0.526	0.105	-0.00300	0.00300	-0.67	0.329	4.576
					10/15/2013 10:09	0917-173_No	13_10_15_1009_17_143	1	0.439	1.011	-0.1190	0.059	2.49	0.0750	0.495	1.543	-0.645	0.100	-0.00400	0.00200	-0.66	0.314	4.425
					10/15/2013 10:10	0917-173_No	13_10_15_1010_17_863	1	-0.854	1.058	-0.008	0.061	2.40	0.0760	0.487	1.517	-0.660	0.104	-0.00700	0.00200	-0.40	0.319	4.516
			Stop		10/15/2013 10:11	0917-173_No	13_10_15_1011_18_623	1	-0.446	0.942	-0.077	0.060	0.265	0.0350	0.1170	0.380	-1.2070	0.101	-0.00200	0.00200	-0.695	0.295	4.031
					10/15/2013 10:12	0917-173_No	13_10_15_1012_19_383	1	-1.607	0.817	-0.0670	0.058	0.069	0.0350	0.0390	0.1010	-1.343	0.094	-0.00300	0.00200	-0.32	0.273	3.828
					10/15/2013 10:13	0917-173_No	13_10_15_1013_20_163	1	0.359	0.905	-0.2690	0.061	0.0460	0.0310	-0.0040	0.0810	-1.444	0.099	-0.00300	0.00200	-0.481	0.277	3.805
					10/15/2013 10:14	0917-173_No	13_10_15_1014_20_973	1	-1.824	0.908	-0.016	0.058	0.101	0.0340	-0.1760	0.1500	-1.190	0.094	-0.00400	0.00100	-0.47	0.287	3.434
					10/15/2013 10:15	0917-173_No	13_10_15_1015_21_773	1	0.567	0.950	0.0660	0.053	0.197	0.0310	0.0330	0.1510	-0.209	0.087	0.00000	0.00200	-0.709	0.281	1.081

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 10:16	0917-173_No	13_10_15_1016_22_594	1	-0.522	0.954	-0.0120	0.052	0.124	0.0320	-0.0170	0.0760	-0.036	0.087	0.00	0.00200	-0.216	0.287	0.409
					10/15/2013 10:17	0917-173_No	13_10_15_1017_23_324	1	-0.6480	0.822	-0.0150	0.050	0.143	0.0310	0.0290	0.0670	0.122	0.080	-0.00500	0.00200	-0.796	0.259	0.349
					10/15/2013 10:18	0917-173_No	13_10_15_1018_24_144	1	0.911	0.968	0.0420	0.058	2.06	0.0590	0.272	1.040	-0.422	0.094	0.00100	0.00200	-0.361	0.307	3.564
					10/15/2013 10:19	0917-173_No	13_10_15_1019_23_844	1	1.088	1.117	0.018	0.0610	2.78	0.0830	0.367	1.539	-0.705	0.107	-0.00400	0.00200	-0.657	0.320	5.294
					10/15/2013 10:20	0917-173_No	13_10_15_1020_24_554	1	-1.5250	0.969	0.027	0.062	2.83	0.0830	0.183	1.569	-0.8520	0.103	-0.00600	0.00300	0.14	0.317	5.618
					10/15/2013 10:21	0917-173_No	13_10_15_1021_25_404	1	-1.3330	1.093	0.0710	0.061	2.88	0.0820	0.428	1.566	-0.694	0.107	-0.00300	0.00200	-0.47	0.330	6.085
Data	Run	5	Start	A	10/15/2013 10:22	0917-173_No	13_10_15_1022_26_154	1	-1.028	0.996	-0.007	0.064	2.77	0.0800	0.449	1.568	-0.823	0.108	-0.00100	0.00200	-0.51	0.311	5.31
					10/15/2013 10:23	0917-173_No	13_10_15_1023_26_864	1	1.345	0.982	0.047	0.060	2.84	0.0820	0.392	1.570	-0.602	0.102	-0.00200	0.00300	-0.40	0.303	5.42
					10/15/2013 10:24	0917-173_No	13_10_15_1024_27_684	1	-0.6050	1.063	0.178	0.059	2.82	0.0830	0.334	1.565	-0.676	0.103	-0.00200	0.00300	-1.00	0.312	5.233
					10/15/2013 10:25	0917-173_No	13_10_15_1025_28_404	1	0.029	1.053	0.093	0.065	2.71	0.0820	0.416	1.567	-0.601	0.109	-0.00700	0.00300	0.14	0.326	4.859
					10/15/2013 10:26	0917-173_No	13_10_15_1026_29_214	1	0.569	1.113	-0.043	0.059	2.54	0.0800	0.355	1.561	-0.497	0.101	-0.00300	0.00300	-0.527	0.314	4.649
					10/15/2013 10:27	0917-173_No	13_10_15_1027_30_044	1	0.142	0.984	0.061	0.058	2.43	0.0760	0.382	1.554	-0.622	0.099	-0.00300	0.00300	-0.59	0.289	4.507
					10/15/2013 10:28	0917-173_No	13_10_15_1028_30_805	1	-0.0030	1.052	0.1250	0.063	2.51	0.0780	0.382	1.549	-0.612	0.103	-0.00200	0.00300	-0.252	0.334	4.548
					10/15/2013 10:29	0917-173_No	13_10_15_1029_31_375	1	-0.051	1.072	0.1300	0.062	2.59	0.0800	0.400	1.559	-0.654	0.105	-0.00700	0.00200	-0.689	0.321	4.899
					10/15/2013 10:30	0917-173_No	13_10_15_1030_32_205	1	-1.055	1.049	0.112	0.066	2.69	0.0780	0.428	1.562	-0.617	0.110	-0.00300	0.00300	-0.70	0.334	4.983
					10/15/2013 10:31	0917-173_No	13_10_15_1031_32_965	1	-1.385	0.988	0.114	0.061	2.76	0.0800	0.262	1.563	-0.645	0.104	-0.00300	0.00300	-0.32	0.320	5.084
					10/15/2013 10:32	0917-173_No	13_10_15_1032_33_755	1	0.631	0.991	0.0780	0.057	2.84	0.0800	0.321	1.564	-0.642	0.101	-0.00800	0.00300	-0.53	0.303	5.26
					10/15/2013 10:33	0917-173_No	13_10_15_1033_34_495	1	0.151	1.000	0.039	0.067	2.98	0.0830	0.426	1.577	-0.610	0.111	-0.00100	0.00300	-0.43	0.321	5.625
					10/15/2013 10:34	0917-173_No	13_10_15_1034_35_205	1	-1.488	1.042	-0.0680	0.064	3.08	0.0840	0.255	1.583	-0.695	0.109	-0.00200	0.00300	-0.07	0.319	5.88
					10/15/2013 10:35	0917-173_No	13_10_15_1035_35_975	1	0.282	0.992	-0.044	0.066	3.08	0.0830	0.378	1.594	-0.746	0.109	-0.00500	0.00200	0.20	0.310	5.717
					10/15/2013 10:36	0917-173_No	13_10_15_1036_36_815	1	0.043	1.018	0.0540	0.059	3.10	0.0840	0.322	1.589	-0.7830	0.106	-0.00400	0.00300	0.14	0.310	5.74
					10/15/2013 10:37	0917-173_No	13_10_15_1037_37_575	1	1.19800	1.093	0.012	0.061	2.85	0.0820	0.399	1.582	-0.486	0.105	-0.00200	0.00300	-0.73	0.324	5.145
					10/15/2013 10:38	0917-173_No	13_10_15_1038_38_255	1	0.408	1.041	0.0350	0.062	2.91	0.0810	0.500	1.582	-0.731	0.105	-0.00400	0.00200	-0.63	0.324	5.298
					10/15/2013 10:39	0917-173_No	13_10_15_1039_39_115	1	-0.7930	1.059	0.038	0.060	3.03	0.0850	0.478	1.586	-0.788	0.108	0.00000	0.00300	-0.32	0.319	5.651
					10/15/2013 10:40	0917-173_No	13_10_15_1040_39_786	1	0.424	1.098	0.085	0.062	2.97	0.0800	0.383	1.588	-0.726	0.108	-0.00600	0.00300	-0.77	0.330	5.64
					10/15/2013 10:41	0917-173_No	13_10_15_1041_40_576	1	0.543	1.044	-0.048	0.064	2.69	0.0820	0.430	1.580	-0.640	0.108	-0.00400	0.00300	-0.09	0.334	5.105
					10/15/2013 10:42	0917-173_No	13_10_15_1042_41_326	1	0.6910	1.091	0.031	0.062	2.58	0.0760	0.375	1.579	-0.605	0.105	0.00000	0.00300	-0.47	0.322	4.946
					10/15/2013 10:43	0917-173_No	13_10_15_1043_42_126	1	0.4030	0.985	0.073	0.064	2.52	0.0770	0.519	1.571	-0.6980	0.105	-0.00200	0.00200	-0.33	0.332	4.644
					10/15/2013 10:44	0917-173_No	13_10_15_1044_42_866	1	1.141	0.992	0.0560	0.060	2.37	0.0750	0.463	1.564	-0.584	0.100	-0.00400	0.00200	-0.828	0.302	4.188
					10/15/2013 10:45	0917-173_No	13_10_15_1045_43_686	1	-2.832	0.997	0.016	0.060	2.45	0.0800	0.473	1.569	-0.683	0.102	-0.00200	0.00200	-0.535	0.310	4.54
					10/15/2013 10:46	0917-173_No	13_10_15_1046_44_456	1	-0.125	0.969	0.057	0.063	2.40	0.0770	0.528	1.541	-0.519	0.105	-0.00400	0.00200	-0.551	0.326	4.469
					10/15/2013 10:47	0917-173_No	13_10_15_1047_45_156	1	0.439	1.035	0.01	0.060	2.29	0.0740	0.560	1.545	-0.584	0.102	-0.00600	0.00200	-0.62	0.314	4.162
					10/15/2013 10:48	0917-173_No	13_10_15_1048_45_966	1	0.663	1.018	-0.011	0.062	2.19	0.0740	0.459	1.532	-0.620	0.104	-0.00600	0.00200	-0.63	0.316	4.462
					10/15/2013 10:49	0917-173_No	13_10_15_1049_46_776	1	-0.019	0.975	0.046	0.058	2.09	0.0740	0.7020	1.542	-0.610	0.099	-0.00100	0.00300	-0.60	0.298	4.753
					10/15/2013 10:50	0917-173_No	13_10_15_1050_47_546	1	-1.3130	0.942	-0.0090	0.058	2.13	0.0760	0.328	1.528	-0.690	0.100	-0.00600	0.00200	-0.51	0.301	5.108
					10/15/2013 10:51	0917-173_No	13_10_15_1051_48_286	1	-0.342	0.995	0.080	0.063	2.15	0.0720	0.477	1.546	-0.730	0.106	-0.00500	0.00200	-0.27	0.311	5.547
					10/15/2013 10:52	0917-173_No	13_10_15_1052_49_107	1	0.327	1.112	0.130	0.059	1.84	0.0710	0.520	1.531	-0.645	0.104	-0.00300	0.00200	-0.43	0.324	5.432
					10/15/2013 10:53	0917-173_No	13_10_15_1053_49_787	1	1.073	0.992	-0.026	0.059	1.90	0.0740	0.445	1.525	-0.716	0.101	-0.00700	0.00200	-0.46	0.300	5.928
					10/15/2013 10:54	0917-173_No	13_10_15_1054_50_637	1	-1.991	1.023	-0.023	0.061	2.16	0.0760	0.531	1.545	-0.812	0.106	-0.00300	0.00200	-0.14	0.317	6.914
					10/15/2013 10:55	0917-173_No	13_10_15_1055_51_347	1	0.621	1.128	-0.0200	0.061	2.24	0.0790	0.486	1.554	-1.027	0.114	-0.00300	0.00300	-0.34	0.336	7.75
					10/15/2013 10:56	0917-173_No	13_10_15_1056_52_137	1	1.451	1.034	0.061	0.065	2.11	0.0740	0.474	1.562	-0.889	0.110	-0.00500	0.00300	-0.69	0.327	7.155
					10/15/2013 10:57	0917-173_No	13_10_15_1057_52_947	1	0.8090	1.085	0.0430	0.064	2.08	0.0780	0.507	1.555	-1.000	0.114	-0.00500	0.00200	0.17	0.345	7.645
					10/15/2013 10:58	0917-173_No	13_10_15_1058_53_697	1	-1.469	1.075	0.0780	0.062	2.29	0.0760	0.463	1.563	-0.964	0.112	-0.00800	0.00200	-0.39	0.322	7.887
					10/15/2013 10:59	0917-173_No	13_10_15_1059_54_417	1	0.3370	0.986	0.031	0.061	2.22	0.0750	0.543	1.570	-0.842	0.108	-0.00500	0.00200	-0.40	0.319	7.623
					10/15/2013 11:00	0917-173_No	13_10_15_1100_55_187	1	0.675	1.026	-0.140	0.058	2.42	0.0790	0.481	1.582	-1.0480	0.104	-0.00400	0.00200	-0.25	0.313	7.289
					10/15/2013 11:01	0917-173_No	13_10_15_1101_55_987	1	0.769	0.993	-0.0190	0.0580	2.46	0.0780	0.540	1.580	-0.868	0.105	-0.00200	0.00300	-0.49	0.294	7.11
					10/15/2013 11:02	0917-173_No	13_10_15_1102_56_697	1	-1.1130	1.030	-0.0480	0.062	2.38	0.0740	0.565	1.573	-0.726	0.108	0.00200	0.00300	-0.82	0.321	6.212
					10/15/2013 11:03	0917-173_No	13_10_15_1103_57_478	1	-1.139	1.024	0.048	0.064	2.60	0.0760	0.543	1.579	-0.894	0.110	-0.00200	0.00300	-0.58	0.318	6.605
					10/15/2013 11:04	0917-173_No	13_10_15_1104_58_198	1	2.503	1.032	-0.046	0.064	2.74	0.0800	0.361	1.592	-0.8630	0.113	-0.00400	0.00200	0.13	0.320	6.676
					10/15/2013 11:05	0917-173_No	13_10_15_1105_59_018	1	0.493	1.105	0.0130	0.062	2.44	0.0780	0.366	1.585	-0.927	0.112	-0.00200	0.00200	-0.33	0.329	6.163
					10/15/2013 11:06	0917-173_No	13_10_15_1106_59_828	1	-0.54800	0.985	-0.0210	0.059	2.24	0.0770	0.543	1.569	-0.686	0.098	-0.00400	0.00200	-0.21	0.304	5.045
					10/15/2013 11:08	0917-173_No	13_10_15_1108_00_548	1	1.936	1.061	-0.0080	0.059	2.11	0.0740	0.524	1.558	-0.600	0.103	-0.00400	0.00200	-0.64	0.314	4.816
					10/15/2013 11:09	0917-173_No	13_10_15_1109_01_358	1	-0.354	1.055	0.0130	0.057	2.04	0.0740	0.467	1.543	-0.663	0.099	-0.00400	0.00200	-0.63	0.311	4.375
					10/15/2013 11:10	0917-173_No	13_10_15_1110_02_068	1	-0.875	1.106	0.0240	0.064	1.98	0.0730	0.566	1.553	-0.518	0.105	-0.00500	0.00200	-0.633	0.329	4.169
					10/15/2013 11:11	0917-173_No	13_10_15_1111_02_698	1	-0.059	1.057	0.055	0.059	2.26	0.0730	0.590	1.549	-0.487	0.103	-0.00500	0.00200	-0.58	0.313	4.75
					10/15/2013 11:12	0917-173_No	13_10_15_1112_03_558	1	-1.092	1.020	0.135	0.062	2.27	0.0750	0.469	1.550	-0.609	0.102	-0.00300	0.00200	-0.20	0.316	4.832
					10/15/2013 11:13	0917-173_No	13_10_15_1113_04_308	1	-0.551	1.065	0.058	0.060	2.18	0.0730	0.455	1.550	-0.512	0.103	-0.00100	0.00200	-0.58	0.332	4.524
					10/15/2013 11:14	0917-173_No	13_10_15_1114_05_028	1	0.320	1.020	0.056	0.063	2.25	0.0720	0.381	1.542	-0.669	0.106	-0.00200	0.00200	-0.480	0.329	4.415
					10/15/2013 11:15	0917-173_No	13_10_15_1115_05_778	1	-0.8900	1.068	0.005	0.059	2.25	0.0750	0.603	1.543	-0.716	0.102	-0.00400	0.00200	-0.10	0.317	4.296
					10/15/2013 11:16	0917-173_No	13_10_15_1116_06_589	1	-0.06900	1.051	0.011	0.060	2.39	0.0750	0.648	1.561	-0.690	0.102	-0.00200	0.00200	-0.44	0.313	4.636
					10/15/2013 11:17	0917-173_No	13_10_15_1117_07_339	1	-1.154	0.992	-0.0310	0.061	2.55	0.0780	0.590	1.579	-0.566	0.104	-0.00400	0.00300	-0.871	0.314	5.062
					10/15/2013 11:18	0917-173_No	13_10_15_1118_08_079	1	0.674	0.982	0.090	0.064	2.59	0.0780	0.524	1.578	-0.543	0.105	-0.00400	0.00200	-0.68	0.328	5.351
					10/15/2013 11:19	0917-173_No	13_10_15_1119_08_799	1	1.262	0.966	0.0810	0.063	2.43	0.0780	0.461	1.566	-0.752	0.103	-0.00400	0.00300	0.06	0.322	4.735
					10/15/2013 11:20	0917-173_No	13_10_15_1120_09_639	1	-2.5230	1.025	0.0060	0.061	2.29	0.0780	0.582	1.576	-0.532	0.105	-0.00900	0.00300	-0.77	0.312	4.607
					10/15/2013 11:21	0917-173_No	13_10_15_1121_10_369	1	1.101	0.952	0.060	0.060	2.35	0.0750	0.535	1.566	-0.649	0.100	-0.00400	0.00200	-1.154	0.304	4.57
			Stop		10/15/2013 11:22	0917-173_No	13_10_15_1122_11_139	1	-0.074	1.034	-0.002	0.0570	1.54	0.0590	0.4440	1.208	-0.749	0.099	-0.00500	0.00200	-0.57	0.317	3.937
					10/15/2013 11:23	0917-173_No	13_10_15_1123_11_899	1	-0.110	0.866	-0.071	0.058	0.140	0.0310	0.0220	0.191	-1.264	0.094	0.00000	0.00200	-0.922	0.279	3.747
					10/15/2013 11:24	0917-173_No	13_10_15_1124_12_709	1	-0.9420	0.931	-0.0730	0.059	0.0210	0.0330	-0.084	0.0920	-1.368	0.099	0.00300	0.00200	-0.378	0.289	3.669
					10/15/2013 11:25	0917-173_No	13_10_15_1125_13_419	1	-1.896	0.905	-0.082	0.056	0.084	0.0310	-0.0180	0.0770	-1.218	0.094	-0.00200	0.00200	-0.710	0.279	3.629
					10/15/2013 11:26	0917-173_No	13_10_15_1126_14_229	1	-1.581	0.880	-0.0630	0.060	0.0550	0.0330	-0.0820	0.0730	-1.277	0.096	0.00	0.00200	-0.372	0.290	3.645
					10/15/2013 11:27	0917-173_No	13_10_15_1127_15_039	1	1.201	0.863	0.082	0.056	0.1070	0.0370	0.2620	0.505	-0.906	0.091	-0.00200	0.00200	-0.439	0.283	3.284
					10/15/2013 11:28	0917-173_No	13_10_15_1128_15_740	1	0.3260	1.095	0.0780	0.054	0.1390	0.0540	0.4660	1.193	-0.403	0.093	-0.00100	0.00200	-0.299	0.314	2.223
					10/15/2013 11:29	0917-173_No	13_10_15_1129_16_560	1	-0.6430	1.001	0.0520	0.059	0.196	0.0560	0.395	1.277	-0.276	0.100	0.00000	0.00200	-0.59	0.305	4.791
					10/15/2013 11:30	0917-173_No	13_10_15_1130_17_280	1	-0.179	0.964	0.204	0.060	0.545	0.0590	0.578	1.308	-0.63	0.117	0.00000	0.00200	-0.72	0.299	11.179
					10/15/2013 11:31	0917-173_No	13_10_15_1131_18_090	1	-0.708	1.002	0.511	0.084	1.81	0.072	0.307	1.486	-1.71	0.261	-0.0040	0.00200	-1.14	0.323	38.701
					10/15/2013 11:32	0917-173_No	13_10_15_1132_18_840	1	3.08600	0.951	0.104	0.0600	0.344	0.0560	0.303	1.261	-0.52	0.106	-0.00400	0.00200	-1.15	0.300	8.019
					10/15/2013 11:33	0917-173_No	13_10_15_1133_19_640	1	0.814	0.922	0.154	0.058	0.0940	0.0530	0.5890	1.201	-0.103	0.092	-0.00400	0.00200	-0.892	0.301	1.47
					10/15/2013 11:34	0917-173_No	13_10_15_1134_20_440	1	0.4080	0.970	0.037	0.061	1.68	0.0690	0.393	1.437	-0.476	0.100	-0.00600	0.00200	-0.70	0.313	3.516
					10/15/2013 11:35	0917-173_No	13_10_15_1135_21_150	1	0.0140	1.073	0.156	0.061	2.49	0.0760	0.545	1.555	-0.567	0.104	-0.00500	0.00200	-0.35	0.335	4.645
					10/15/2013 11:36	0917-173_No	13_10_15_1136_21_900	1	1.5160	1.024	0.0280	0.064	2.63	0.0750	0.532	1.557	-0.729	0.109	-0.00600	0.00200	-0.62	0.331	5.125
					10/15/2013 11:37	0917-173_No	13_10_15_1137_22_650	1	-0.442	1.112	0.0460	0.0590	2.54	0.0760	0.411	1.558	-0.667	0.104	-0.00400	0.00200	-0.33	0.321	4.749
					10/15/2013 11:38	0917-173_No	13_10_15_1138_23_470	1	1.922	0.994	0.0080	0.064	2.50	0.0760	0.395	1.562	-0.525	0.105	-0.00600	0.00200	-0.27	0.321	4.525
					10/15/2013 11:39	0917-173_No	13_10_15_1139_24_240	1	0.3220	0.979	0.127	0.065	2.52	0.0760	0.471	1.556	-0.639	0.107	-0.00200	0.00300	-0.71	0.324	4.786
Data	Run	6	Start	A	10/15/2013 11:40	0917-173_No	13_10_15_1140_25_001	1	-0.630	1.096	0.063	0.060	2.54	0.0760	0.420	1.566	-0.540	0.105	-0.00400	0.00200	-1.26	0.322	5.024
					10/15/2013 11:41	0917-173_No	13_10_15_1141_25_741	1	-2.280	1.053	0.059	0.064	2.51	0.0760	0.509	1.553	-0.592	0.107	-0.00400	0.00200	-0.44	0.338	4.905
					10/15/2013 11:42	0917-173_No	13_10_15_1142_26_581	1	0.980	0.994	0.083	0.059	2.59	0.0760	0.559	1.561	-0.778	0.102	-0.00700	0.00200	-0.27	0.309	5.215
					10/15/2013 11:43	0917-173_No	13_10_15_1143_27_311	1	-0.744	1.034	-0.042	0.060	2.72	0.0770	0.433	1.567	-0.627	0.104	-0.00100	0.00200	-0.77	0.324	5.534
					10/15/2013 11:44	0917-173_No	13_10_15_1144_28_151	1	0.361	1.037	0.059	0.065	2.58	0.0770	0.6900	1.574	-0.680	0.108	-0.00600	0.00200	-0.50	0.324	5.197
					10/15/2013 11:45	0917-173_No	13_10_15_1145_28_901	1	0.145	1.036	0.102	0.063	2.73	0.0750	0.447	1.555	-0.677	0.106	-0.00400	0.00200	-0.871	0.321	5.704
					10/15/2013 11:46	0917-173_No	13_10_15_1146_29_691	1	-0.326	1.040	-0.0620	0.063	2.67	0.0770	0.459	1.571	-0.826	0.110	-0.00100	0.00200	-0.44	0.319	6.752
					10/15/2013 11:47	0917-173_No	13_10_15_1147_30_411	1	0.389	1.013	0.009	0.061	2.43	0.0760	0.580	1.566	-0.757	0.107	-0.00500	0.00200	-0.92	0.310	6.366
					10/15/2013 11:48	0917-173_No	13_10_15_1148_31_121	1	-0.369	1.029	0.163	0.066	2.54	0.0730	0.587	1.581	-0.748	0.113	-0.01000	0.00200	-0.60	0.335	7.122
					10/15/2013 11:49	0917-173_No	13_10_15_1149_31_961	1	0.576	1.080	0.069	0.063	2.52	0.0750	0.591	1.568	-0.920	0.113	-0.00200	0.00200	-0.33	0.332	6.834
					10/15/2013 11:50	0917-173_No	13_10_15_1150_32_751	1	-2.2140	1.022	0.122	0.063	2.44	0.0750	0.536	1.562	-0.762	0.110	-0.00300	0.00200	-1.04	0.325	6.484
					10/15/2013 11:51	0917-173_No	13_10_15_1151_33_422	1	0.269	1.117	-0.0730	0.062	2.46	0.0770	0.525	1.555	-0.881	0.111	-0.00300	0.00300	-0.38	0.328	7.145
					10/15/2013 11:52	0917-173_No	13_10_15_1152_34_122	1	1.483	1.008	0.001	0.062	2.76	0.0750	0.327	1.583	-0.892	0.112	-0.01100	0.00300	-0.66	0.314	7.342
					10/15/2013 11:53	0917-173_No	13_10_15_1153_34_872	1	2.188	1.078	0.064	0.064	2.81	0.0760	0.598	1.577	-0.737	0.114	-0.00500	0.00300	-1.12	0.319	7.092
					10/15/2013 11:54	0917-173_No	13_10_15_1154_35_682	1	0.4300	1.086	0.0020	0.063	2.72	0.0790	0.523	1.585	-0.887	0.112	-0.00200	0.00300	-0.40	0.328	7.246
					10/15/2013 11:55	0917-173_No	13_10_15_1155_36_432	1	0.0520	0.984	0.076	0.059	2.81	0.0770	0.566	1.580	-0.8470	0.109	-0.00400	0.00300	0.13	0.315	7.988
					10/15/2013 11:56	0917-173_No	13_10_15_1156_37_172	1	1.444	1.029	0.0610	0.064	2.67	0.0780	0.579	1.582	-0.813	0.113	-0.00100	0.00200	-0.31	0.317	7.844
					10/15/2013 11:57	0917-173_No	13_10_15_1157_37_932	1	-0.503	1.014	0.0530	0.064	2.79	0.0780	0.602	1.588	-0.898	0.114	-0.00300	0.00200	-0.37	0.330	8.34
					10/15/2013 11:58	0917-173_No	13_10_15_1158_38_682	1	-1.617	1.030	0.0260	0.064	3.02	0.0780	0.6170	1.594	-1.0200	0.118	-0.00500	0.00200	-0.39	0.315	9.414
					10/15/2013 11:59	0917-173_No	13_10_15_1159_39_342	1	0.485	1.067	-0.057	0.066	2.90	0.0790	0.618	1.603	-0.846	0.120	-0.00600	0.00300	-0.30	0.327	9.412
					10/15/2013 12:00	0917-173_No	13_10_15_1200_40_092	1	-1.209	1.031	0.0840	0.058	2.50	0.0760	0.549	1.585	-0.720	0.105	0.00	0.00300	-0.48	0.310	7.434
					10/15/2013 12:01	0917-173_No	13_10_15_1201_40_852	1	1.630	1.032	0.040	0.060	2.65	0.0780	0.570	1.588	-0.934	0.106	-0.00600	0.00300	-0.21	0.310	7.548
					10/15/2013 12:02	0917-173_No	13_10_15_1202_41_642	1	0.402	1.017	-0.0340	0.064	2.72	0.0760	0.535	1.574	-0.855	0.109	-0.00400	0.00300	-0.36	0.311	8.035
					10/15/2013 12:03	0917-173_No	13_10_15_1203_42_383	1	1.587	0.976	0.076	0.0610	2.72	0.0770	0.453	1.572	-0.768	0.108	-0.00600	0.00200	-0.40	0.308	7.814
					10/15/2013 12:04	0917-173_No	13_10_15_1204_43_183	1	0.25800	1.027	0.051	0.062	2.78	0.0780	0.475	1.577	-0.884	0.11	-0.00400	0.00300	-0.75	0.329	7.435
					10/15/2013 12:05	0917-173_No	13_10_15_1205_43_893	1	0.984	1.016	0.147	0.063	2.55	0.0780	0.511	1.577	-0.659	0.11	-0.00600	0.00200	-0.91	0.323	6.597
					10/15/2013 12:06	0917-173_No	13_10_15_1206_44_713	1	0.31900	0.976	0.061	0.058	2.54	0.0750	0.507	1.564	-0.795	0.10	-0.00400	0.00300	-0.15	0.296	6.235
					10/15/2013 12:07	0917-173_No	13_10_15_1207_45_493	1	1.161	0.943	0.044	0.0560	2.65	0.0750	0.642	1.574	-0.792	0.10	-0.00100	0.00200	-0.85	0.291	6.744
					10/15/2013 12:08	0917-173_No	13_10_15_1208_46_233	1	-0.9160	0.981	0.108	0.060	2.76	0.0740	0.488	1.577	-0.866	0.11	-0.00400	0.00200	-0.22	0.314	6.861
					10/15/2013 12:09	0917-173_No	13_10_15_1209_46_983	1	-0.139	0.994	-0.0290	0.056	2.52	0.0750	0.677	1.567	-0.858	0.10	-0.00300	0.00300	-0.91	0.303	6.062
					10/15/2013 12:10	0917-173_No	13_10_15_1210_47_703	1	-0.0650	0.979	0.036	0.058	2.55	0.0730	0.576	1.563	-0.659	0.10	-0.00100	0.00200	-0.59	0.309	5.68
					10/15/2013 12:11	0917-173_No	13_10_15_1211_48_473	1	1.504	0.942	0.0200	0.0550	2.57	0.0760	0.605	1.568	-0.685	0.10	-0.00100	0.00200	-0.67	0.284	6.373
					10/15/2013 12:12	0917-173_No	13_10_15_1212_49_233	1	-1.924	0.944	0.0520	0.058	2.50	0.0730	0.485	1.574	-0.667	0.10	0.00000	0.00200	-0.51	0.312	6.018
					10/15/2013 12:13	0917-173_No	13_10_15_1213_50_073	1	1.198	1.040	0.056	0.058	2.66	0.0750	0.549	1.577	-0.944	0.10	-0.00500	0.00300	0.27	0.304	6.189
					10/15/2013 12:14	0917-173_No	13_10_15_1214_50_783	1	-0.8040	1.019	0.056	0.058	2.70	0.0760	0.635	1.573	-0.855	0.10	0.00	0.00200	-0.67	0.305	6.581
					10/15/2013 12:15	0917-173_No	13_10_15_1215_51_544	1	1.381	1.007	0.072	0.056	2.59	0.0730	0.573	1.579	-0.684	0.10	-0.00400	0.00200	-0.86	0.308	6.28
					10/15/2013 12:16	0917-173_No	13_10_15_1216_52_314	1	-0.647	0.947	-0.0080	0.059	2.64	0.0740	0.545	1.566	-0.774	0.11	-0.00300	0.00200	-0.61	0.296	6.893
					10/15/2013 12:17	0917-173_No	13_10_15_1217_53_134	1	0.039	0.989	0.069	0.061	2.65	0.0750	0.538	1.573	-0.951	0.11	-0.00400	0.00200	-0.10	0.311	7.692
					10/15/2013 12:18	0917-173_No	13_10_15_1218_53_834	1	0.1700	1.003	0.095	0.0580	2.66	0.0750	0.469	1.578	-0.917	0.11	-0.00600	0.00200	-0.47	0.301	7.9
					10/15/2013 12:19	0917-173_No	13_10_15_1219_54_644	1	-2.624	0.950	0.067	0.059	2.60	0.0750	0.614	1.582	-0.920	0.10	-0.00300	0.00200	-0.48	0.304	7.939
					10/15/2013 12:20	0917-173_No	13_10_15_1220_55_414	1	-0.7360	0.960	-0.0710	0.061	2.66	0.0770	0.579	1.587	-0.941	0.11	-0.00400	0.00200	-0.23	0.303	8.663
					10/15/2013 12:21	0917-173_No	13_10_15_1221_56_164	1	-0.2760	1.060	0.035	0.063	2.43	0.0760	0.554	1.577	-0.918	0.11	-0.00100	0.00200	-0.70	0.318	7.659
					10/15/2013 12:22	0917-173_No	13_10_15_1222_56_874	1	0.9570	0.953	0.033	0.059	2.37	0.0760	0.536	1.579	-0.893	0.10	-0.00400	0.00200	-0.54	0.302	7.574
					10/15/2013 12:23	0917-173_No	13_10_15_1223_57_684	1	-0.9610	0.945	0.086	0.060	2.63	0.0760	0.480	1.579	-0.963	0.11	-0.00400	0.00300	-0.41	0.292	8.67
					10/15/2013 12:24	0917-173_No	13_10_15_1224_58_414	1	2.060	1.009	-0.04800	0.061	2.79	0.0800	0.652	1.592	-0.924	0.11	-0.00400	0.00200	-0.42	0.318	9.047
					10/15/2013 12:25	0917-173_No	13_10_15_1225_59_224	1	-0.626	0.927	0.008	0.062	2.69	0.0800	0.503	1.590	-0.955	0.11	-0.00300	0.00300	-0.84	0.298	8.578
					10/15/2013 12:27	0917-173_No	13_10_15_1227_00_014	1	0.549	1.084	0.0010	0.061	2.65	0.0780	0.547	1.608	-1.053	0.11	-0.00400	0.00200	-0.05	0.323	9.011
					10/15/2013 12:29	0917-173_No	13_10_15_1229_11_590	1	-0.634	1.044	0.0320	0.060	2.77	0.0800	0.584	1.606	-1.025	0.12	-0.00400	0.00200	-0.56	0.309	9.505
					10/15/2013 12:30	0917-173_No	13_10_15_1230_12_390	1	-1.5200	0.982	0.067	0.067	2.77	0.0810	0.641	1.601	-0.961	0.12	-0.00400	0.00200	-0.97	0.316	9.335
					10/15/2013 12:31	0917-173_No	13_10_15_1231_13_200	1	0.038	1.016	-0.07600	0.063	2.75	0.0800	0.446	1.604	-1.047	0.11	-0.00500	0.00300	-0.42	0.313	9.263
					10/15/2013 12:32	0917-173_No	13_10_15_1232_13_940	1	-0.604	0.970	0.025	0.063	2.63	0.0780	0.449	1.600	-1.113	0.12	-0.00900	0.00200	-0.42	0.312	9.582
					10/15/2013 12:33	0917-173_No	13_10_15_1233_14_750	1	2.9620	1.137	-0.0060	0.062	2.69	0.0790	0.464	1.589	-1.054	0.12	-0.00300	0.00300	-0.43	0.335	9.852
					10/15/2013 12:34	0917-173_No	13_10_15_1234_15_450	1	-0.335	0.951	0.074	0.064	2.68	0.0810	0.505	1.599	-0.933	0.12	-0.00500	0.00300	-0.56	0.310	9.912
					10/15/2013 12:35	0917-173_No	13_10_15_1235_16_170	1	0.487	1.098	-0.079	0.063	2.77	0.0800	0.563	1.622	-1.290	0.12	-0.00700	0.00200	-0.03	0.321	10.77
					10/15/2013 12:36	0917-173_No	13_10_15_1236_16_880	1	0.2900	1.046	0.025	0.063	2.75	0.0820	0.532	1.618	-1.044	0.122	-0.00500	0.00300	-0.19	0.318	10.483
					10/15/2013 12:37	0917-173_No	13_10_15_1237_17_630	1	0.930	0.957	0.031	0.064	2.71	0.0800	0.555	1.619	-0.988	0.121	-0.00300	0.00300	-0.62	0.317	10.829
					10/15/2013 12:38	0917-173_No	13_10_15_1238_18_480	1	0.5820	1.025	0.069	0.062	2.73	0.0800	0.548	1.607	-1.062	0.118	-0.00600	0.00300	-0.42	0.323	10.545
					10/15/2013 12:39	0917-173_No	13_10_15_1239_19_230	1	0.394	1.052	-0.0600	0.064	2.63	0.0810	0.500	1.619	-1.014	0.119	-0.00500	0.00300	-0.47	0.322	10.249
			Stop		10/15/2013 12:40	0917-173_No	13_10_15_1240_19_910	1	0.820	1.045	0.0650	0.065	2.66	0.0820	0.460	1.621	-0.974	0.125	-0.00500	0.00200	-0.76	0.331	9.964
					10/15/2013 12:41	0917-173_No	13_10_15_1241_20_701	1	-0.057	1.073	0.048	0.062	2.21	0.0720	0.605	1.548	-0.748	0.112	-0.00100	0.00200	-0.61	0.329	8.245
					10/15/2013 12:48	0917-173_No	13_10_15_1248_06_391	1	0.51	1.033	0.1350	0.126	3.14	0.085	0.307	1.552	-2.30	0.458	-0.0020	0.00400	-1.7	0.36	70.495
					10/15/2013 12:49	0917-173_No	13_10_15_1249_07_101	1	-0.515	1.093	0.1210	0.134	3.42	0.090	0.335	1.554	-2.39	0.519	-0.0040	0.00400	-2.5	0.39	81.459
					10/15/2013 12:50	0917-173_No	13_10_15_1250_07_921	1	-2.01	1.037	0.186	0.139	3.41	0.092	0.098	1.553	-2.33	0.533	-0.0040	0.00400	-2.6	0.38	82.836
					10/15/2013 12:51	0917-173_No	13_10_15_1251_08_741	1	-1.40	1.091	0.125	0.139	3.41	0.091	0.254	1.519	-2.57	0.535	-0.0020	0.00400	-2.4	0.38	83.331
					10/15/2013 12:52	0917-173_No	13_10_15_1252_09_461	1	-0.42	1.096	0.027	0.139	3.38	0.093	0.324	1.522	-2.42	0.530	-0.0020	0.00400	-2.4	0.40	82.581
					10/15/2013 12:53	0917-173_No	13_10_15_1253_10_282	1	1.584	1.015	0.017	0.101	2.15	0.078	0.187	1.460	-1.63	0.353	-0.0030	0.00300	-2.0	0.336	48.833

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 12:54	0917-173_No	13_10_15_1254_11_012	1	-1.287	0.950	0.065	0.060	0.219	0.0570	0.4600	1.233	-0.305	0.100	-0.00100	0.00200	-0.41	0.305	4.636
					10/15/2013 12:55	0917-173_No	13_10_15_1255_11_762	1	0.920	0.985	0.082	0.057	0.0830	0.0550	0.4470	1.197	-0.112	0.093	-0.00700	0.00300	-0.6530	0.306	1.811
					10/15/2013 13:11	0917-173_No	13_10_15_1311_08_205	1	0.9	1.3	-0.343	0.079	-0.38	1.43	-0.0850	0.0980	-0.105	0.125	0.060	0.577	0.1240	0.407	-1.799
					10/15/2013 13:11	0917-173_No	13_10_15_1311_26_705	1	-1.2	1.4	0.01600	0.078	-0.33	1.47	0.106	0.1000	0.100	0.127	0.053	0.590	-0.354	0.410	-1.84
					10/15/2013 13:11	0917-173_No	13_10_15_1311_45_395	1	-1.0	1.5	-0.126	0.080	-0.40	1.49	-0.170	0.0950	-0.009	0.133	0.069	0.598	0.18	0.442	-1.853
					10/15/2013 13:12	0917-173_No	13_10_15_1312_03_885	1	0.1	1.4	-0.276	0.075	-0.42	1.50	-0.0850	0.0940	0.049	0.124	0.049	0.602	-0.363	0.414	-1.885
					10/15/2013 13:12	0917-173_No	13_10_15_1312_22_355	1	-1.2	1.4	-0.187	0.078	-0.40	1.52	-0.2340	0.0980	-0.169	0.126	0.050	0.603	0.73	0.422	-1.899
					10/15/2013 13:12	0917-173_No	13_10_15_1312_41_005	1	0.7	1.4	-0.0790	0.075	-0.39	1.51	-0.0930	0.1010	-0.1470	0.123	0.066	0.602	0.137	0.409	-1.903
					10/15/2013 13:12	0917-173_No	13_10_15_1312_59_495	1	1.5	1.4	-0.0320	0.076	-0.41	1.51	-0.0960	0.0910	-0.034	0.125	0.055	0.604	-0.4730	0.416	-1.878
					10/15/2013 13:13	0917-173_No	13_10_15_1313_17_965	1	2.0	1.4	0.034	0.075	-0.44	1.52	-0.0810	0.1010	-0.046	0.123	0.061	0.601	-0.485	0.411	-1.907
					10/15/2013 13:13	0917-173_No	13_10_15_1313_36_575	1	-2.7	1.3	-0.152	0.081	-0.43	1.51	-0.1270	0.0950	0.005	0.125	0.057	0.604	0.2420	0.403	-1.912
					10/15/2013 13:13	0917-173_No	13_10_15_1313_55_075	1	3.6	1.4	0.1270	0.079	-0.45	1.51	0.135	0.0950	0.162	0.127	0.066	0.599	-1.539	0.418	-1.908
					10/15/2013 13:14	0917-173_No	13_10_15_1314_13_675	1	3.1	1.5	0.029	0.074	-0.44	1.51	-0.0270	0.1080	-0.18100	0.125	0.069	0.602	-0.051	0.414	-1.901
					10/15/2013 13:14	0917-173_No	13_10_15_1314_32_115	1	-0.9	1.3	0.212	0.078	-0.57	1.51	-0.1980	0.1000	-0.030	0.123	0.054	0.602	-0.683	0.413	-1.888
					10/15/2013 13:14	0917-173_No	13_10_15_1314_50_625	1	1.0	1.5	-0.0790	0.073	-0.54	1.51	-0.0540	0.1050	-0.274	0.124	0.057	0.602	0.08	0.426	-1.883
					10/15/2013 13:33	0917-173_No	13_10_15_1333_17_119	1	-0.066	1.033	-0.025	0.079	0.984	0.0790	0.3820	1.647	-2.393	0.212	-0.00700	0.00300	-0.37	0.338	29.873
					10/15/2013 13:34	0917-173_No	13_10_15_1334_17_799	1	1.278	1.093	-0.055	0.076	0.996	0.0810	0.4530	1.645	-2.263	0.203	-0.00500	0.00300	-0.45	0.326	29.918
					10/15/2013 13:35	0917-173_No	13_10_15_1335_18_609	1	0.235	1.116	-0.024	0.071	0.967	0.0810	0.4620	1.632	-2.244	0.208	-0.00200	0.00300	-0.77	0.318	29.511
					10/15/2013 13:36	0917-173_No	13_10_15_1336_19_359	1	1.729	1.096	0.014	0.075	0.970	0.0820	0.361	1.623	-2.423	0.219	-0.00800	0.00300	-0.58	0.334	31.407
					10/15/2013 13:37	0917-173_No	13_10_15_1337_20_129	1	-0.320	1.106	-0.082	0.077	0.919	0.0810	0.383	1.627	-2.497	0.220	-0.00100	0.00300	-0.32	0.329	31.427
					10/15/2013 13:38	0917-173_No	13_10_15_1338_20_929	1	-0.067	1.027	-0.310	0.087	0.328	0.0450	0.3110	0.728	-3.377	0.177	0.00	0.00200	-1.32	0.368	17.535
					10/15/2013 13:39	0917-173_No	13_10_15_1339_21_689	1	-0.244	0.928	-0.521	0.101	-0.0470	0.0430	-0.059	0.1390	-4.05	0.176	-0.01	0.00200	-1.66	0.395	11.543
					10/15/2013 13:40	0917-173_No	13_10_15_1340_22_460	1	0.067	0.916	-0.618	0.098	-0.0780	0.0430	0.0270	0.0970	-4.01	0.173	-0.00700	0.00200	-1.81	0.403	11.231
					10/15/2013 13:41	0917-173_No	13_10_15_1341_23_230	1	-0.225	0.952	-0.621	0.106	-0.0720	0.0430	0.0530	0.0910	-4.04	0.180	-0.00400	0.00200	-1.46	0.420	11.152
					10/15/2013 13:42	0917-173_No	13_10_15_1342_23_980	1	-0.503	0.916	-0.5660	0.103	-0.0700	0.0420	-0.104	0.0890	-4.08	0.177	-0.00400	0.00200	-0.69	0.406	11.086
					10/15/2013 13:43	0917-173_No	13_10_15_1343_24_780	1	0.026	0.919	-0.479	0.099	-0.0250	0.0410	0.0500	0.1150	-4.00	0.170	0.00000	0.00200	-0.87	0.394	11.498
					10/15/2013 13:44	0917-173_No	13_10_15_1344_25_530	1	2.140	1.012	-0.119	0.073	0.748	0.0670	0.418	1.435	-2.641	0.193	-0.00800	0.00300	-1.06	0.310	26.771
					10/15/2013 13:45	0917-173_No	13_10_15_1345_26_340	1	0.868	1.105	-0.023	0.078	0.919	0.0790	0.5560	1.635	-2.55	0.225	-0.00700	0.00200	-0.36	0.359	32.158
					10/15/2013 13:46	0917-173_No	13_10_15_1346_27_110	1	-0.557	1.074	-0.032	0.076	0.875	0.0780	0.5030	1.614	-2.51	0.229	-0.00300	0.00300	-0.65	0.323	33.539
					10/15/2013 13:47	0917-173_No	13_10_15_1347_27_820	1	1.354	1.077	0.016	0.074	0.959	0.0790	0.43200	1.622	-2.629	0.228	-0.00300	0.00300	-0.58	0.329	33.949
Data	Run	13	Start	A	10/15/2013 13:48	0917-173_No	13_10_15_1348_28_550	1	2.517	1.071	-0.058	0.081	0.941	0.0800	0.4190	1.616	-2.61	0.246	-0.00500	0.00300	-0.93	0.333	35.956
					10/15/2013 13:49	0917-173_No	13_10_15_1349_29_260	1	2.174	1.183	-0.060	0.083	0.970	0.0820	0.53400	1.618	-2.960	0.254	-0.00100	0.00300	-0.22	0.366	37.443
					10/15/2013 13:50	0917-173_No	13_10_15_1350_30_070	1	1.387	1.078	-0.035	0.080	1.036	0.0820	0.43	1.633	-2.644	0.239	-0.00800	0.00300	-0.33	0.328	35.443
					10/15/2013 13:51	0917-173_No	13_10_15_1351_30_870	1	0.840	1.093	0.015	0.081	1.032	0.0810	0.3730	1.623	-2.54	0.240	0.00000	0.00300	-1.23	0.348	34.874
					10/15/2013 13:52	0917-173_No	13_10_15_1352_31_591	1	0.184	1.144	0.009	0.082	1.017	0.0810	0.4410	1.624	-2.854	0.250	-0.00400	0.00300	-0.51	0.349	35.934
					10/15/2013 13:53	0917-173_No	13_10_15_1353_32_351	1	1.671	1.111	0.022	0.081	1.031	0.0810	0.5060	1.628	-2.977	0.251	-0.00700	0.00300	-0.46	0.344	36.953
					10/15/2013 13:54	0917-173_No	13_10_15_1354_33_161	1	0.726	1.143	0.067	0.082	1.057	0.0800	0.3700	1.631	-2.78	0.253	-0.00300	0.00300	-0.88	0.335	36.4
					10/15/2013 13:55	0917-173_No	13_10_15_1355_33_891	1	-1.296	1.088	-0.006	0.079	1.020	0.0830	0.36400	1.624	-2.740	0.234	-0.0100	0.00300	-0.20	0.344	34.362
					10/15/2013 13:56	0917-173_No	13_10_15_1356_34_631	1	0.638	1.073	-0.066	0.077	1.050	0.0780	0.247	1.620	-2.62	0.234	-0.00800	0.00300	-1.16	0.329	33.691
					10/15/2013 13:57	0917-173_No	13_10_15_1357_35_441	1	1.406	1.024	-0.140	0.076	0.989	0.0790	0.4320	1.612	-2.410	0.223	-0.00500	0.00300	-0.54	0.334	32.335
					10/15/2013 13:58	0917-173_No	13_10_15_1358_36_181	1	-1.022	1.086	-0.054	0.075	0.929	0.0790	0.5110	1.608	-2.466	0.214	-0.00600	0.00300	-0.23	0.337	31.454
					10/15/2013 13:59	0917-173_No	13_10_15_1359_36_931	1	0.823	1.145	0.054	0.076	0.886	0.0780	0.639	1.622	-2.518	0.224	-0.00400	0.00300	-0.50	0.346	31.147
					10/15/2013 14:00	0917-173_No	13_10_15_1400_37_771	1	-1.285	1.003	-0.09300	0.073	1.007	0.0790	0.548	1.609	-2.329	0.212	-0.00300	0.00300	-1.07	0.315	31.155
					10/15/2013 14:01	0917-173_No	13_10_15_1401_38_521	1	0.2580	1.199	0.109	0.072	0.968	0.0810	0.5190	1.620	-2.439	0.219	-0.00200	0.00300	-1.19	0.353	31.813
					10/15/2013 14:02	0917-173_No	13_10_15_1402_39_241	1	1.950	1.066	-0.036	0.078	1.043	0.0780	0.46500	1.632	-2.46	0.224	-0.00200	0.00300	-0.79	0.340	32.602
					10/15/2013 14:03	0917-173_No	13_10_15_1403_40_061	1	0.204	1.137	-0.018	0.072	1.016	0.0810	0.5230	1.617	-2.406	0.222	-0.00500	0.00300	-0.67	0.343	32.316
					10/15/2013 14:04	0917-173_No	13_10_15_1404_40_782	1	2.942	1.099	0.046	0.081	0.875	0.0800	0.4090	1.609	-2.499	0.229	-0.00100	0.00300	-0.85	0.349	32.527
					10/15/2013 14:05	0917-173_No	13_10_15_1405_41_592	1	0.771	1.133	-0.072	0.077	0.943	0.0800	0.5210	1.609	-2.463	0.218	-0.00900	0.00300	-0.29	0.350	32.127
					10/15/2013 14:06	0917-173_No	13_10_15_1406_42_382	1	0.693	1.081	0.097	0.073	0.879	0.0790	0.5000	1.599	-2.46	0.218	-0.00500	0.00300	-0.52	0.334	31.447
					10/15/2013 14:07	0917-173_No	13_10_15_1407_43_092	1	0.425	1.127	0.008	0.080	0.938	0.0780	0.3680	1.602	-2.497	0.226	-0.00500	0.00300	-0.13	0.358	32.33
					10/15/2013 14:08	0917-173_No	13_10_15_1408_43_852	1	1.832	1.040	-0.049	0.079	0.904	0.0770	0.4640	1.603	-2.35	0.209	-0.00400	0.00300	-0.44	0.328	29.82
					10/15/2013 14:09	0917-173_No	13_10_15_1409_44_632	1	3.451	1.106	-0.077	0.078	0.821	0.0780	0.5270	1.610	-2.119	0.207	-0.00100	0.00300	-0.56	0.338	28.918
					10/15/2013 14:10	0917-173_No	13_10_15_1410_45_332	1	-0.801	1.111	0.071	0.077	0.949	0.0790	0.3950	1.612	-2.480	0.226	-0.00200	0.00300	-0.24	0.347	32.895
					10/15/2013 14:11	0917-173_No	13_10_15_1411_46_132	1	1.090	1.063	-0.0450	0.082	1.030	0.0810	0.48500	1.612	-2.668	0.239	-0.00300	0.00300	-0.69	0.330	34.759
					10/15/2013 14:12	0917-173_No	13_10_15_1412_46_872	1	2.743	1.054	-0.031	0.079	1.045	0.0830	0.5510	1.617	-2.74	0.238	-0.00100	0.00300	-0.58	0.335	34.552
					10/15/2013 14:13	0917-173_No	13_10_15_1413_47_622	1	-0.858	1.075	-0.0650	0.082	0.985	0.0810	0.350	1.619	-2.932	0.247	-0.00300	0.00200	-0.43	0.335	36.015
					10/15/2013 14:14	0917-173_No	13_10_15_1414_48_312	1	1.293	1.130	-0.044	0.080	1.040	0.0830	0.212	1.623	-2.76	0.252	-0.00600	0.00300	-0.71	0.343	36.66
					10/15/2013 14:15	0917-173_No	13_10_15_1415_48_983	1	1.071	1.113	-0.031	0.078	0.995	0.0810	0.4100	1.619	-2.677	0.236	-0.00600	0.00300	-0.25	0.338	33.898
					10/15/2013 14:16	0917-173_No	13_10_15_1416_49_783	1	-0.374	1.129	-0.001	0.074	0.928	0.0790	0.45100	1.619	-2.262	0.214	-0.00900	0.00300	-0.64	0.341	30.533
					10/15/2013 14:17	0917-173_No	13_10_15_1417_50_483	1	3.460	1.154	-0.0470	0.080	1.001	0.0780	0.4470	1.619	-2.773	0.237	-0.00800	0.00300	-0.40	0.351	34.927
					10/15/2013 14:18	0917-173_No	13_10_15_1418_51_323	1	1.083	1.098	-0.0940	0.081	0.897	0.0840	0.4500	1.606	-2.933	0.251	-0.00700	0.00300	-0.2	0.334	36.711
					10/15/2013 14:19	0917-173_No	13_10_15_1419_52_043	1	0.464	1.033	-0.060	0.082	0.964	0.0820	0.5180	1.615	-2.88	0.259	-0.00500	0.00300	-0.1	0.329	38.01
					10/15/2013 14:20	0917-173_No	13_10_15_1420_52_853	1	0.875	1.076	-0.203	0.085	1.129	0.082	0.4630	1.609	-3.335	0.289	-0.00400	0.00300	-0.1	0.339	42.614
					10/15/2013 14:21	0917-173_No	13_10_15_1421_53_513	1	1.622	1.137	-0.140	0.090	1.117	0.082	0.358	1.616	-3.453	0.287	-0.00400	0.00300	-0.4	0.335	42.135
					10/15/2013 14:22	0917-173_No	13_10_15_1422_54_273	1	0.790	1.177	-0.074	0.086	1.154	0.0820	0.4220	1.606	-3.37	0.282	-0.00400	0.00300	-0.1	0.351	41.512
					10/15/2013 14:23	0917-173_No	13_10_15_1423_55_033	1	3.503	1.090	-0.095	0.093	1.110	0.0820	0.4790	1.618	-3.31	0.294	-0.00200	0.00300	-0.7	0.333	42.458
					10/15/2013 14:24	0917-173_No	13_10_15_1424_55_843	1	2.9780	1.100	-0.1650	0.088	1.079	0.0790	0.4970	1.627	-3.13	0.283	-0.00100	0.00300	-1.2	0.342	40.933
					10/15/2013 14:25	0917-173_No	13_10_15_1425_56_593	1	1.317	1.046	-0.1880	0.084	1.058	0.0850	0.4740	1.643	-3.437	0.279	-0.00600	0.00300	-0.1	0.333	40.899
					10/15/2013 14:26	0917-173_No	13_10_15_1426_57_343	1	0.6180	1.026	-0.138	0.085	1.018	0.0830	0.4270	1.636	-3.155	0.270	-0.0090	0.00300	0.3	0.325	39.922
					10/15/2013 14:27	0917-173_No	13_10_15_1427_58_154	1	0.805	1.100	-0.040	0.081	1.063	0.0830	0.42600	1.637	-2.906	0.253	-0.00300	0.00300	0.0	0.334	36.817
					10/15/2013 14:28	0917-173_No	13_10_15_1428_58_914	1	0.077	1.109	-0.074	0.088	1.097	0.0840	0.3370	1.639	-3.03	0.266	-0.00100	0.00300	-0.2	0.341	38.537
					10/15/2013 14:29	0917-173_No	13_10_15_1429_59_664	1	1.407	1.132	-0.053	0.095	1.087	0.0820	0.366	1.644	-2.93	0.281	-0.00400	0.00300	-0.71	0.355	39.117
					10/15/2013 14:31	0917-173_No	13_10_15_1431_00_464	1	0.573	1.142	-0.074	0.083	1.099	0.0830	0.340	1.650	-2.822	0.260	-0.01100	0.00300	-0.54	0.344	37.631
					10/15/2013 14:32	0917-173_No	13_10_15_1432_01_174	1	1.459	1.144	-0.075	0.083	1.057	0.0830	0.4090	1.656	-3.087	0.263	-0.00900	0.00300	-0.16	0.349	38.501
					10/15/2013 14:33	0917-173_No	13_10_15_1433_01_914	1	0.562	1.117	-0.0820	0.087	1.082	0.0860	0.391	1.662	-3.302	0.280	-0.00500	0.00300	-0.5	0.354	41.215
					10/15/2013 14:34	0917-173_No	13_10_15_1434_02_734	1	3.210	1.176	0.011	0.089	1.083	0.0830	0.5260	1.665	-3.098	0.276	-0.00300	0.00300	-0.41	0.355	39.954
					10/15/2013 14:35	0917-173_No	13_10_15_1435_03_494	1	1.659	1.146	-0.234	0.089	1.173	0.0860	0.429	1.664	-3.276	0.283	-0.00400	0.00300	-0.4	0.355	40.806
					10/15/2013 14:36	0917-173_No	13_10_15_1436_04_204	1	0.625	1.117	-0.17600	0.090	1.093	0.0860	0.288	1.661	-3.24	0.276	-0.00400	0.00300	-0.4	0.350	39.858
					10/15/2013 14:37	0917-173_No	13_10_15_1437_05_044	1	2.288	1.199	-0.030	0.090	0.987	0.0850	0.3780	1.665	-2.84	0.270	-0.00400	0.00300	-0.5	0.359	38.383
					10/15/2013 14:38	0917-173_No	13_10_15_1438_05_754	1	1.647	1.111	-0.1800	0.085	1.102	0.0840	0.5390	1.647	-2.995	0.267	-0.00700	0.00300	-0.5	0.346	38.517
					10/15/2013 14:39	0917-173_No	13_10_15_1439_06_504	1	0.809	1.141	-0.2250	0.088	1.138	0.0850	0.4600	1.641	-3.528	0.300	-0.00400	0.00300	-0.5	0.338	43.869
					10/15/2013 14:40	0917-173_No	13_10_15_1440_07_295	1	1.363	1.128	-0.251	0.095	1.214	0.087	0.350	1.645	-3.993	0.317	-0.00400	0.00300	0.3	0.347	46.379
					10/15/2013 14:41	0917-173_No	13_10_15_1441_08_065	1	1.9510	1.191	-0.143	0.087	1.059	0.0840	0.4720	1.655	-2.854	0.261	-0.00500	0.00300	-0.40	0.350	36.959
					10/15/2013 14:42	0917-173_No	13_10_15_1442_08_775	1	1.020	1.146	-0.022	0.082	0.997	0.0830	0.5490	1.640	-2.42	0.244	-0.0060	0.00300	-1.18	0.347	33.269
					10/15/2013 14:43	0917-173_No	13_10_15_1443_09_575	1	2.077	1.146	-0.113	0.085	1.324	0.0850	0.324	1.643	-2.88	0.272	-0.0050	0.00300	-0.75	0.351	39.157
					10/15/2013 14:44	0917-173_No	13_10_15_1444_10_335	1	1.650	1.142	-0.038	0.085	1.39	0.0830	0.4350	1.631	-2.802	0.262	-0.00700	0.00300	-0.3	0.360	37.479
					10/15/2013 14:45	0917-173_No	13_10_15_1445_11_105	1	1.068	1.072	-0.070	0.087	1.41	0.0810	0.5580	1.636	-2.731	0.250	-0.00300	0.00300	-0.17	0.343	36.768
					10/15/2013 14:46	0917-173_No	13_10_15_1446_11_845	1	1.706	1.141	-0.082	0.083	1.45	0.0820	0.4520	1.621	-2.739	0.250	-0.00100	0.00300	-0.12	0.344	36.105
					10/15/2013 14:47	0917-173_No	13_10_15_1447_12_565	1	1.9620	1.121	-0.3100	0.101	1.090	0.0740	0.5060	1.390	-4.1550	0.267	-0.00700	0.00300	-1.00	0.360	35.467
			Stop		10/15/2013 14:48	0917-173_No	13_10_15_1448_13_365	1	-2.735	1.231	-1.724	0.275	-0.1790	0.0900	-0.185	0.278	-11.86	0.466	-0.01100	0.00300	-3.41	0.89	33.679
					10/15/2013 14:49	0917-173_No	13_10_15_1449_14_125	1	-2.672	1.190	-1.892	0.283	-0.2250	0.0920	-0.273	0.181	-12.48	0.480	-0.01400	0.00300	-4.00	0.94	33.292
					10/15/2013 14:50	0917-173_No	13_10_15_1450_14_835	1	-0.365	1.100	-1.2960	0.190	-0.1300	0.0650	-0.172	0.131	-8.03	0.319	-0.01000	0.00200	-2.02	0.635	21.303
					10/15/2013 14:51	0917-173_No	13_10_15_1451_15_635	1	-0.636	0.940	-0.585	0.103	-0.0770	0.0430	-0.0370	0.0840	-4.00	0.176	-0.00600	0.00200	-1.04	0.391	11.455
					10/15/2013 14:52	0917-173_No	13_10_15_1452_16_326	1	1.327	0.934	-0.631	0.103	-0.0130	0.0420	-0.107	0.0870	-3.84	0.177	-0.00800	0.00200	-1.661	0.393	11.198
					10/15/2013 14:53	0917-173_No	13_10_15_1453_17_106	1	0.811	0.957	-0.5220	0.097	0.549	0.0420	0.205	0.548	-3.969	0.207	-0.00500	0.00200	-1.07	0.361	22.403
					10/15/2013 14:54	0917-173_No	13_10_15_1454_17_846	1	0.983	1.042	-0.2870	0.101	1.51	0.084	0.416	1.598	-4.084	0.334	-0.0060	0.00400	-0.7	0.33	48.445
					10/15/2013 14:55	0917-173_No	13_10_15_1455_18_566	1	1.406	0.937	-0.193	0.081	0.971	0.0550	0.4460	1.019	-2.927	0.213	-0.00500	0.00200	-0.46	0.306	26.76
					10/15/2013 14:56	0917-173_No	13_10_15_1456_19_316	1	1.5830	0.971	-0.0830	0.053	0.1560	0.0340	0.234	0.237	-0.4310	0.092	0.00000	0.00200	0.036	0.290	4.564
					10/15/2013 14:57	0917-173_No	13_10_15_1457_20_026	1	0.6470	0.894	0.0850	0.051	0.0010	0.0300	-0.0750	0.0750	0.041	0.083	0.00400	0.00200	-0.068	0.272	0.688
					10/15/2013 14:58	0917-173_No	13_10_15_1458_20_766	1	1.658	0.961	0.0370	0.054	0.1490	0.0330	0.1560	0.199	-0.196	0.090	0.00100	0.00200	-0.580	0.288	4.071
					10/15/2013 14:59	0917-173_No	13_10_15_1459_21_486	1	2.682	1.155	-0.091	0.086	1.35	0.0760	0.6130	1.551	-3.13	0.277	-0.00500	0.00300	-0.1	0.346	40.016
					10/15/2013 15:00	0917-173_No	13_10_15_1500_22_256	1	2.511	1.103	-0.1790	0.089	1.55	0.082	0.422	1.631	-3.48	0.306	-0.0100	0.00300	-0.6	0.341	44.843
					10/15/2013 15:01	0917-173_No	13_10_15_1501_22_966	1	2.076	1.138	-0.2020	0.095	1.51	0.085	0.449	1.636	-3.501	0.310	-0.00500	0.00300	-0.1	0.364	45.482
					10/15/2013 15:02	0917-173_No	13_10_15_1502_23_686	1	2.14	1.093	-0.140	0.094	1.58	0.087	0.409	1.627	-3.50	0.306	0.00000	0.00300	-0.3	0.349	44.669
					10/15/2013 15:03	0917-173_No	13_10_15_1503_24_507	1	1.046	1.139	-0.101	0.091	1.50	0.084	0.486	1.622	-3.17	0.299	-0.00400	0.00300	-0.5	0.334	43.402
					10/15/2013 15:04	0917-173_No	13_10_15_1504_25_227	1	1.512	1.168	0.045	0.089	1.47	0.0810	0.316	1.633	-2.83	0.283	-0.00700	0.00300	-0.6	0.349	40.934
					10/15/2013 15:05	0917-173_No	13_10_15_1505_25_977	1	1.889	1.068	-0.001	0.087	1.64	0.0830	0.487	1.628	-2.46	0.272	-0.0030	0.00300	-1.04	0.335	38.915
					10/15/2013 15:06	0917-173_No	13_10_15_1506_26_777	1	3.283	1.071	0.008	0.080	1.48	0.0830	0.5670	1.634	-2.13	0.248	-0.00100	0.00300	-0.72	0.343	35.651
					10/15/2013 15:07	0917-173_No	13_10_15_1507_27_487	1	1.418	1.092	-0.064	0.082	1.52	0.0850	0.311	1.639	-2.40	0.261	-0.00500	0.00300	-0.60	0.330	37.801
					10/15/2013 15:08	0917-173_No	13_10_15_1508_28_247	1	2.042	1.088	-0.092	0.087	1.58	0.0820	0.311	1.641	-2.70	0.280	-0.00600	0.00300	-0.6	0.329	41.127
					10/15/2013 15:09	0917-173_No	13_10_15_1509_29_047	1	-0.521	1.093	-0.1520	0.089	1.52	0.0800	0.425	1.626	-2.504	0.266	-0.00400	0.00300	-1.02	0.353	37.287
					10/15/2013 15:10	0917-173_No	13_10_15_1510_29_767	1	3.354	1.119	-0.046	0.082	1.39	0.0830	0.212	1.637	-2.32	0.237	-0.00300	0.00300	-0.48	0.354	33.721
					10/15/2013 15:11	0917-173_No	13_10_15_1511_30_507	1	0.262	1.060	-0.108	0.085	1.49	0.0820	0.335	1.646	-2.508	0.254	-0.0060	0.00300	-0.36	0.334	36.75
					10/15/2013 15:12	0917-173_No	13_10_15_1512_31_257	1	1.446	1.089	-0.122	0.077	1.37	0.0810	0.4130	1.646	-2.46	0.243	-0.00300	0.00300	-0.37	0.338	35.717
					10/15/2013 15:13	0917-173_No	13_10_15_1513_32_067	1	2.574	1.038	0.132	0.080	1.29	0.0830	0.5190	1.646	-2.19	0.249	-0.00400	0.00300	-0.75	0.315	35.221
					10/15/2013 15:14	0917-173_No	13_10_15_1514_32_827	1	1.405	1.175	-0.074	0.085	1.30	0.0810	0.3330	1.649	-2.28	0.250	-0.00300	0.00300	-0.82	0.355	34.752
					10/15/2013 15:15	0917-173_No	13_10_15_1515_33_558	1	1.541	1.031	-0.081	0.086	1.43	0.0840	0.392	1.661	-2.53	0.261	-0.00400	0.00300	-0.50	0.342	38.408
					10/15/2013 15:16	0917-173_No	13_10_15_1516_34_268	1	1.042	1.134	-0.090	0.085	1.41	0.0830	0.373	1.668	-2.58	0.271	-0.0100	0.00300	-0.5	0.338	39.639
					10/15/2013 15:17	0917-173_No	13_10_15_1517_35_018	1	1.291	1.224	-0.128	0.086	1.56	0.0850	0.328	1.669	-2.58	0.282	-0.00500	0.00300	-0.9	0.356	41.142
					10/15/2013 15:18	0917-173_No	13_10_15_1518_35_828	1	2.163	1.086	-0.122	0.092	1.59	0.0850	0.314	1.645	-2.77	0.285	-0.0100	0.00300	-0.5	0.343	41.817
					10/15/2013 15:19	0917-173_No	13_10_15_1519_36_558	1	1.773	1.121	-0.041	0.092	1.53	0.083	0.266	1.642	-2.99	0.294	-0.0090	0.00300	-0.4	0.337	43.26
					10/15/2013 15:20	0917-173_No	13_10_15_1520_37_258	1	1.663	1.098	-0.16100	0.092	1.48	0.084	0.277	1.633	-3.24	0.302	-0.00100	0.00300	-0.5	0.333	43.83
					10/15/2013 15:21	0917-173_No	13_10_15_1521_38_078	1	0.245	1.137	-0.145	0.088	1.47	0.0850	0.356	1.619	-2.75	0.275	-0.00600	0.00300	-0.1	0.349	40.507
					10/15/2013 15:22	0917-173_No	13_10_15_1522_38_848	1	3.017	1.094	-0.110	0.083	1.41	0.0820	0.5350	1.615	-2.27	0.257	-0.00800	0.00300	-0.32	0.336	37.349
					10/15/2013 15:23	0917-173_No	13_10_15_1523_39_558	1	2.058	1.073	-0.096	0.080	1.48	0.0800	0.319	1.615	-2.45	0.247	0.00000	0.00300	-0.3	0.335	37.117
					10/15/2013 15:24	0917-173_No	13_10_15_1524_40_308	1	-1.255	1.275	-0.120	0.085	1.47	0.0800	0.398	1.620	-2.44	0.267	-0.00700	0.00300	-0.25	0.369	38.229
					10/15/2013 15:25	0917-173_No	13_10_15_1525_41_068	1	1.622	1.154	-0.080	0.087	1.50	0.0840	0.401	1.624	-2.75	0.282	-0.00800	0.00300	-0.5	0.345	41.02
					10/15/2013 15:26	0917-173_No	13_10_15_1526_41_828	1	4.2550	1.150	-0.1610	0.089	1.55	0.0840	0.423	1.635	-2.52	0.272	-0.00800	0.00300	-0.3	0.354	40.241
					10/15/2013 15:27	0917-173_No	13_10_15_1527_42_579	1	2.069	1.115	0.055	0.085	1.46	0.0860	0.426	1.640	-2.42	0.265	-0.00400	0.00300	-0.4	0.358	38.321
					10/15/2013 15:28	0917-173_No	13_10_15_1528_43_389	1	1.512	1.107	-0.0630	0.087	1.41	0.0810	0.235	1.633	-2.53	0.268	-0.0050	0.00300	-0.64	0.354	38.364
					10/15/2013 15:29	0917-173_No	13_10_15_1529_44_109	1	3.854	1.136	-0.039	0.084	1.43	0.0810	0.388	1.631	-2.46	0.252	-0.00700	0.00300	-0.46	0.352	36.551
					10/15/2013 15:30	0917-173_No	13_10_15_1530_44_859	1	1.50	1.010	-0.024	0.086	1.37	0.0790	0.334	1.621	-2.41	0.243	-0.0080	0.00300	-0.78	0.335	35.572
					10/15/2013 15:31	0917-173_No	13_10_15_1531_45_589	1	1.627	1.086	-0.085	0.085	1.47	0.0800	0.449	1.619	-2.50	0.262	-0.00400	0.00300	-1.08	0.338	38.158
					10/15/2013 15:32	0917-173_No	13_10_15_1532_46_389	1	0.107	1.080	-0.069	0.083	1.39	0.0820	0.4790	1.617	-2.54	0.263	-0.00700	0.00300	-0.45	0.336	38.532
					10/15/2013 15:33	0917-173_No	13_10_15_1533_47_159	1	1.57	1.082	-0.140	0.091	1.39	0.0810	0.416	1.626	-2.89	0.281	-0.00500	0.00300	-0.6	0.339	41.18
					10/15/2013 15:34	0917-173_No	13_10_15_1534_47_909	1	0.590	1.068	-0.063	0.093	1.50	0.085	0.377	1.618	-3.05	0.301	-0.00700	0.00300	-1.0	0.328	44.32
					10/15/2013 15:35	0917-173_No	13_10_15_1535_48_669	1	2.454	1.205	-0.1230	0.086	1.53	0.0840	0.464	1.634	-2.89	0.287	-0.00700	0.00300	-0.90	0.354	41.964
					10/15/2013 15:36	0917-173_No	13_10_15_1536_49_389	1	1.435	1.138	-0.256	0.091	1.47	0.0830	0.390	1.640	-2.78	0.279	-0.00700	0.00300	-0.3	0.352	40.517
					10/15/2013 15:37	0917-173_No	13_10_15_1537_50_209	1	1.625	1.186	-0.067	0.084	1.44	0.0830	0.269	1.643	-2.70	0.279	-0.00600	0.00300	-0.83	0.344	40.18
					10/15/2013 15:38	0917-173_No	13_10_15_1538_50_819	1	3.115	1.157	-0.0240	0.086	1.44	0.0820	0.510	1.635	-2.66	0.273	-0.00500	0.00300	-0.75	0.356	39.712
					10/15/2013 15:39	0917-173_No	13_10_15_1539_51_530	1	0.972	1.133	0.0280	0.083	1.35	0.0840	0.287	1.647	-2.19	0.251	-0.00400	0.00300	-0.67	0.355	36.059
					10/15/2013 15:40	0917-173_No	13_10_15_1540_52_350	1	0.76	1.193	-0.0850	0.081	1.31	0.0810	0.4360	1.634	-1.99	0.232	-0.00800	0.00300	-0.51	0.361	32.482
					10/15/2013 15:41	0917-173_No	13_10_15_1541_53_060	1	0.685	1.178	-0.127	0.078	1.35	0.0810	0.346	1.633	-1.95	0.233	-0.00700	0.00300	-1.18	0.354	32.627
					10/15/2013 15:42	0917-173_No	13_10_15_1542_53_840	1	2.91	1.191	-0.020	0.081	1.40	0.0810	0.5170	1.638	-1.84	0.233	-0.00600	0.00300	-0.81	0.362	33.507
					10/15/2013 15:43	0917-173_No	13_10_15_1543_54_630	1	0.5150	1.120	0.036	0.075	1.31	0.0810	0.466	1.630	-1.75	0.223	-0.00600	0.00300	-1.13	0.334	33.005
					10/15/2013 15:44	0917-173_No	13_10_15_1544_55_400	1	2.201	1.146	0.019	0.078	1.29	0.0770	0.494	1.626	-1.71	0.225	-0.00500	0.00300	-0.80	0.337	31.9
					10/15/2013 15:45	0917-173_No	13_10_15_1545_56_160	1	1.3860	1.041	-0.049	0.056	0.465	0.0630	0.4350	1.367	-0.527	0.116	-0.00600	0.00200	-0.59	0.314	12.151
					10/15/2013 15:46	0917-173_No	13_10_15_1546_56_880	1	3.8380	1.009	-0.022	0.058	-0.0120	0.0530	0.5240	1.191	-0.007	0.095	-0.00200	0.00200	-0.1440	0.319	1.316
					10/15/2013 15:47	0917-173_No	13_10_15_1547_57_600	1	0.466	1.041	-0.0530	0.068	0.647	0.0640	0.624	1.442	-1.650	0.168	-0.00300	0.00300	-0.32	0.332	21.706

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 15:48	0917-173_No	13_10_15_1548_58_420	1	3.5050	1.108	0.100	0.076	0.878	0.0700	0.338	1.535	-2.26	0.229	-0.00600	0.00300	-0.81	0.328	32.667
					10/15/2013 15:49	0917-173_No	13_10_15_1549_59_170	1	0.912	1.094	-0.035	0.080	0.915	0.0710	0.506	1.528	-2.18	0.227	-0.00200	0.00300	-0.55	0.339	33.385
					10/15/2013 15:50	0917-173_No	13_10_15_1550_59_920	1	2.891	1.106	-0.029	0.074	0.939	0.0710	0.612	1.520	-2.348	0.225	-0.00400	0.00300	-0.20	0.333	33.093
					10/15/2013 15:52	0917-173_No	13_10_15_1552_00_631	1	2.055	1.051	-0.018	0.077	0.882	0.0720	0.454	1.505	-2.22	0.223	-0.00400	0.00300	-0.66	0.336	31.977
					10/15/2013 15:53	0917-173_No	13_10_15_1553_01_401	1	3.02	1.070	-0.010	0.057	0.0970	0.0570	0.422	1.230	-0.328	0.099	-0.00500	0.00200	-0.553	0.328	5.559
					10/15/2013 15:54	0917-173_No	13_10_15_1554_02_221	1	0.703	1.002	0.029	0.056	-0.0340	0.0520	0.429	1.184	-0.1610	0.091	-0.00300	0.00200	0.480	0.303	0.855
					10/15/2013 15:55	0917-173_No	13_10_15_1555_02_931	1	3.715	0.986	0.040	0.056	-0.0130	0.0550	0.5460	1.180	-0.002	0.092	-0.00100	0.00200	0.113	0.305	0.627
					10/15/2013 15:56	0917-173_No	13_10_15_1556_03_701	1	1.494	1.084	0.038	0.058	-0.0150	0.0530	0.6200	1.181	-0.165	0.098	-0.00500	0.00200	-0.671	0.325	0.549
					10/15/2013 15:57	0917-173_No	13_10_15_1557_04_531	1	1.458	1.030	0.043	0.0530	-0.0550	0.0530	0.6650	1.175	0.103	0.091	-0.00600	0.00200	-0.481	0.306	0.503
					10/15/2013 15:58	0917-173_No	13_10_15_1558_05_231	1	1.810	1.070	-0.001	0.058	0.0380	0.0530	0.5980	1.190	-0.052	0.097	-0.00600	0.00200	-0.389	0.320	0.478
					10/15/2013 15:59	0917-173_No	13_10_15_1559_06_001	1	2.2300	1.035	0.139	0.058	-0.0210	0.0540	0.5670	1.187	-0.108	0.096	-0.00100	0.00200	-0.335	0.322	0.494
					10/15/2013 16:00	0917-173_No	13_10_15_1600_06_721	1	0.753	1.022	0.007	0.055	-0.078	0.0530	0.490	1.204	-0.059	0.092	-0.00500	0.00200	-0.073	0.315	0.548
					10/15/2013 16:01	0917-173_No	13_10_15_1601_07_521	1	1.745	1.028	0.011	0.057	-0.088	0.0540	0.5450	1.187	-0.015	0.094	0.00	0.00200	-0.365	0.314	0.523
					10/15/2013 16:02	0917-173_No	13_10_15_1602_08_231	1	0.449	1.011	-0.073	0.057	0.03	0.0500	0.6200	1.187	0.001	0.094	-0.00300	0.00300	-0.67	0.308	0.474
					10/15/2013 16:03	0917-173_No	13_10_15_1603_08_982	1	3.198	1.078	0.036	0.053	-0.061	0.0550	0.506	1.188	-0.019	0.092	-0.01	0.00200	-0.91	0.309	0.414
					10/15/2013 16:04	0917-173_No	13_10_15_1604_09_802	1	1.2790	1.028	0.047	0.057	0.0380	0.0520	0.6000	1.186	-0.087	0.094	0.00	0.00200	-0.063	0.314	0.343
					10/15/2013 16:05	0917-173_No	13_10_15_1605_10_512	1	2.913	1.057	0.026	0.057	0.0020	0.0530	0.415	1.186	-0.026	0.094	-0.00200	0.00200	-0.787	0.317	0.592
					10/15/2013 16:06	0917-173_No	13_10_15_1606_11_262	1	1.8830	1.087	0.023	0.056	-0.033	0.0550	0.434	1.194	-0.027	0.094	-0.00400	0.00200	-0.189	0.327	0.793
					10/15/2013 16:07	0917-173_No	13_10_15_1607_12_092	1	2.337	1.020	0.076	0.057	-0.048	0.0540	0.492	1.179	-0.030	0.094	0.00	0.00200	-0.02	0.315	0.336
					10/15/2013 16:08	0917-173_No	13_10_15_1608_12_842	1	1.755	1.066	0.041	0.057	-0.048	0.0530	0.6130	1.187	-0.006	0.095	-0.00600	0.00200	0.034	0.326	0.382
					10/15/2013 16:09	0917-173_No	13_10_15_1609_13_572	1	1.7090	1.116	0.063	0.058	-0.047	0.0520	0.476	1.195	0.044	0.098	0.00	0.00200	-0.137	0.331	0.411
					10/15/2013 16:10	0917-173_No	13_10_15_1610_14_332	1	3.752	0.924	0.155	0.056	-0.0470	0.0510	0.6500	1.190	-0.018	0.091	-0.01	0.00200	-0.459	0.302	0.402
					10/15/2013 16:11	0917-173_No	13_10_15_1611_15_062	1	3.349	0.998	0.051	0.056	-0.0160	0.0520	0.562	1.189	-0.046	0.092	0.00	0.00200	-0.398	0.302	0.417
					10/15/2013 16:12	0917-173_No	13_10_15_1612_15_872	1	1.932	1.081	0.041	0.059	-0.054	0.0540	0.6510	1.190	-0.0280	0.100	-0.00300	0.00200	0.2090	0.334	0.601
					10/15/2013 16:13	0917-173_No	13_10_15_1613_16_622	1	1.6950	1.137	-0.018	0.058	-0.0350	0.0530	0.541	1.197	0.120	0.097	0.00	0.00200	-0.403	0.332	0.766
					10/15/2013 16:14	0917-173_No	13_10_15_1614_17_342	1	3.948	0.995	-0.007	0.056	-0.0200	0.0560	0.614	1.207	0.022	0.092	-0.00100	0.00200	-0.6150	0.309	1.032
					10/15/2013 16:27	0917-173_No	13_10_15_1627_19_744	1	-1.1	1.4	0.130	0.082	-0.41	1.34	-0.194	0.0930	0.068	0.130	0.051	0.545	0.176	0.410	-1.677
					10/15/2013 16:27	0917-173_No	13_10_15_1627_38_254	1	1.2	1.4	-0.035	0.075	-0.39	1.43	0.067	0.1030	-0.026	0.123	0.051	0.575	-0.70	0.414	-1.786
					10/15/2013 16:27	0917-173_No	13_10_15_1627_56_754	1	-2.9	1.3	0.0200	0.075	-0.40	1.47	0.0080	0.0920	-0.033	0.123	0.052	0.590	-0.807	0.403	-1.851
					10/15/2013 16:28	0917-173_No	13_10_15_1628_15_384	1	-0.4	1.3	-0.0010	0.078	-0.54	1.49	-0.04000	0.0950	-0.050	0.123	0.049	0.598	-0.308	0.405	-1.83
					10/15/2013 16:28	0917-173_No	13_10_15_1628_33_854	1	-2.4	1.4	0.026	0.073	-0.41	1.50	-0.02500	0.0890	0.11500	0.122	0.056	0.601	-0.663	0.401	-1.889
					10/15/2013 16:28	0917-173_No	13_10_15_1628_52_344	1	-0.4	1.3	0.0430	0.076	-0.32	1.51	0.258	0.0970	-0.1370	0.120	0.054	0.598	-0.293	0.395	-1.911
					10/15/2013 16:29	0917-173_No	13_10_15_1629_10_944	1	0.3	1.4	0.190	0.074	-0.44	1.51	-0.103	0.0910	-0.227	0.121	0.057	0.601	-0.259	0.412	-1.889
					10/15/2013 16:29	0917-173_No	13_10_15_1629_29_464	1	-3.4	1.3	-0.028	0.073	-0.43	1.51	-0.0300	0.1060	-0.155	0.118	0.056	0.600	-0.471	0.390	-1.92
					10/15/2013 16:29	0917-173_No	13_10_15_1629_48_084	1	-0.6	1.4	0.2530	0.079	-0.47	1.51	0.0630	0.1030	0.299	0.127	0.058	0.606	0.485	0.401	-1.89
					10/15/2013 16:30	0917-173_No	13_10_15_1630_06_504	1	-0.3	1.4	0.18000	0.082	-0.48	1.51	0.0790	0.0900	0.093	0.132	0.046	0.601	-0.81	0.431	-1.901
					10/15/2013 16:30	0917-173_No	13_10_15_1630_25_004	1	-1.1	1.3	0.2330	0.075	-0.44	1.51	0.084	0.0990	0.121	0.121	0.061	0.606	-1.08	0.385	-1.893
					10/15/2013 16:30	0917-173_No	13_10_15_1630_43_654	1	-1.4	1.4	0.233	0.077	-0.38	1.51	-0.001	0.0990	0.242	0.129	0.049	0.602	-0.98	0.432	-1.916
					10/15/2013 16:31	0917-173_No	13_10_15_1631_02_124	1	-1.4	1.3	-0.02000	0.075	-0.50	1.51	-0.01900	0.0990	0.186	0.125	0.049	0.601	-0.404	0.409	-1.925
					10/15/2013 16:31	0917-173_No	13_10_15_1631_20_734	1	-3.4	1.3	-0.106	0.080	-0.41	1.51	-0.096	0.0910	-0.167	0.125	0.051	0.601	-0.0260	0.410	-1.899
					10/15/2013 16:31	0917-173_No	13_10_15_1631_39_234	1	-1.4	1.3	0.011	0.079	-0.49	1.51	-0.200	0.0900	0.2280	0.126	0.039	0.601	-0.40	0.409	-1.912
					10/15/2013 16:31	0917-173_No	13_10_15_1631_57_744	1	-3.7	1.4	0.029	0.078	-0.44	1.51	-0.031	0.0950	-0.159	0.127	0.047	0.605	0.2850	0.416	-1.901
					10/15/2013 17:05	0917-173_No	13_10_15_1705_46_267	1	-2.75	1.483	0.753	0.186	4.00	0.149	-0.255	2.02	-2.33	0.67	-0.0100	0.00500	-3.8	0.55	97.509
					10/15/2013 17:06	0917-173_No	13_10_15_1706_46_977	1	-2.18	1.437	0.785	0.187	3.98	0.148	-0.11	2.03	-2.13	0.69	-0.0050	0.00400	-3.9	0.54	99.973
					10/15/2013 17:07	0917-173_No	13_10_15_1707_47_767	1	-3.26	1.413	0.875	0.183	3.90	0.151	-0.13	2.02	-2.16	0.69	-0.0060	0.00500	-3.7	0.56	99.628
					10/15/2013 17:08	0917-173_No	13_10_15_1708_48_517	1	-2.99	1.555	0.728	0.185	4.00	0.153	-0.115	2.03	-2.27	0.69	-0.0100	0.00500	-3.8	0.56	101.479
					10/15/2013 17:09	0917-173_No	13_10_15_1709_49_367	1	-2.87	1.463	0.774	0.188	3.96	0.152	-0.11	2.04	-2.30	0.70	-0.0050	0.00500	-3.7	0.56	102.111
					10/15/2013 17:10	0917-173_No	13_10_15_1710_50_057	1	-2.27	1.421	0.687	0.196	4.02	0.155	-0.233	2.04	-2.53	0.74	-0.0050	0.00500	-3.9	0.57	106.506
					10/15/2013 17:11	0917-173_No	13_10_15_1711_50_897	1	-2.29	1.422	0.744	0.193	3.93	0.156	-0.320	2.02	-2.50	0.74	-0.0120	0.00500	-4.4	0.55	107.504
					10/15/2013 17:12	0917-173_No	13_10_15_1712_51_607	1	-2.49	1.508	0.699	0.198	3.82	0.153	-0.372	2.03	-2.34	0.75	-0.0090	0.00500	-4.3	0.59	108.982
					10/15/2013 17:13	0917-173_No	13_10_15_1713_52_367	1	-2.63	1.471	0.745	0.199	3.78	0.156	-0.527	2.03	-2.09	0.75	-0.0050	0.00500	-4.1	0.58	109.216
					10/15/2013 17:14	0917-173_No	13_10_15_1714_53_138	1	-1.37	1.375	0.772	0.198	3.63	0.153	-0.414	2.01	-1.91	0.75	-0.0060	0.00500	-4.9	0.57	108.865
					10/15/2013 17:15	0917-173_No	13_10_15_1715_53_758	1	-0.72	1.412	0.858	0.197	3.48	0.151	-0.182	2.02	-1.43	0.74	-0.0090	0.00500	-5.1	0.59	108.193
					10/15/2013 17:16	0917-173_No	13_10_15_1716_54_528	1	-1.92	1.545	0.928	0.191	3.43	0.150	-0.251	2.04	-1.10	0.73	-0.0080	0.00500	-5.1	0.58	106.752
					10/15/2013 17:17	0917-173_No	13_10_15_1717_55_258	1	-1.22	1.502	0.945	0.193	3.34	0.150	-0.370	2.01	-1.26	0.72	-0.0110	0.00500	-4.7	0.61	107.119
					10/15/2013 17:18	0917-173_No	13_10_15_1718_56_058	1	-3.44	1.509	0.846	0.191	3.30	0.149	-0.209	2.02	-1.23	0.72	-0.0040	0.00500	-5.8	0.60	106.507
					10/15/2013 17:19	0917-173_No	13_10_15_1719_56_858	1	-0.88	1.456	0.917	0.193	3.33	0.151	-0.139	2.02	-0.95	0.72	-0.0140	0.00500	-5.5	0.57	106.91
					10/15/2013 17:20	0917-173_No	13_10_15_1720_57_568	1	-1.97	1.429	0.861	0.186	3.37	0.148	-0.130	2.02	-1.22	0.69	-0.0070	0.00500	-4.9	0.58	102.581
					10/15/2013 17:21	0917-173_No	13_10_15_1721_58_318	1	-1.79	1.390	0.952	0.178	3.42	0.145	-0.057	2.03	-0.87	0.66	-0.0080	0.00400	-4.8	0.54	98.038
					10/15/2013 17:22	0917-173_No	13_10_15_1722_59_158	1	-1.46	1.457	0.797	0.184	3.31	0.145	-0.160	2.02	-1.13	0.67	-0.0010	0.00500	-4.6	0.57	99.712
					10/15/2013 17:23	0917-173_No	13_10_15_1723_59_868	1	-3.24	1.480	0.834	0.185	3.46	0.144	-0.149	2.02	-1.76	0.69	-0.0110	0.00500	-3.5	0.57	101.553
					10/15/2013 17:25	0917-173_No	13_10_15_1725_00_688	1	-2.13	1.389	0.745	0.190	3.49	0.150	-0.029	2.03	-1.95	0.70	-0.0060	0.00500	-3.7	0.56	103.326
					10/15/2013 17:26	0917-173_No	13_10_15_1726_01_458	1	-2.26	1.389	0.690	0.180	3.39	0.148	0.010	2.02	-1.85	0.69	-0.0020	0.00500	-4.3	0.53	100.074
					10/15/2013 17:27	0917-173_No	13_10_15_1727_02_149	1	-3.29	1.351	0.774	0.189	3.30	0.146	-0.137	2.01	-1.71	0.70	-0.0070	0.00500	-4.4	0.55	102.002
					10/15/2013 17:28	0917-173_No	13_10_15_1728_02_979	1	-0.76	1.445	0.804	0.175	3.21	0.144	-0.059	2.03	-1.57	0.66	-0.0100	0.00500	-3.5	0.54	97.25
					10/15/2013 17:30	0917-173_No	13_10_15_1730_15_740	1	-1.83	1.387	0.676	0.176	3.13	0.141	-0.026	2.02	-1.44	0.66	-0.0060	0.00500	-4.7	0.55	96.524
					10/15/2013 17:31	0917-173_No	13_10_15_1731_16_470	1	-1.68	1.416	0.736	0.176	3.12	0.142	-0.041	2.02	-1.30	0.66	-0.0010	0.00500	-4.2	0.55	97.004
					10/15/2013 17:32	0917-173_No	13_10_15_1732_17_210	1	-3.21	1.414	0.746	0.179	3.08	0.140	-0.183	2.02	-1.31	0.66	-0.0090	0.00500	-4.6	0.55	98.762
					10/15/2013 17:33	0917-173_No	13_10_15_1733_17_960	1	-1.80	1.352	0.691	0.181	3.06	0.143	0.023	2.04	-1.37	0.67	-0.0040	0.00400	-4.3	0.56	100.499
					10/15/2013 17:34	0917-173_No	13_10_15_1734_18_770	1	-2.71	1.451	0.687	0.178	3.03	0.144	0.183	2.04	-1.50	0.67	-0.0060	0.00500	-4.3	0.55	98.763
					10/15/2013 17:35	0917-173_No	13_10_15_1735_19_520	1	-1.07	1.547	0.801	0.178	3.06	0.142	-0.052	2.02	-1.20	0.65	-0.0090	0.00500	-3.9	0.56	97.536
Data	Run	7	Start	A	10/15/2013 17:36	0917-173_No	13_10_15_1736_20_230	1	-3.51	1.465	0.832	0.177	3.01	0.143	-0.031	2.02	-1.14	0.65	-0.0030	0.00500	-3.8	0.56	98.19
					10/15/2013 17:37	0917-173_No	13_10_15_1737_20_960	1	-0.42	1.522	0.870	0.178	2.79	0.138	0.033	2.03	-0.81	0.66	-0.0110	0.00500	-5.0	0.57	98.075
					10/15/2013 17:38	0917-173_No	13_10_15_1738_21_720	1	-0.68	1.461	0.814	0.179	2.78	0.140	0.010	2.04	-0.98	0.66	-0.0070	0.00500	-4.7	0.55	99.65
					10/15/2013 17:39	0917-173_No	13_10_15_1739_22_480	1	-1.47	1.627	0.822	0.190	2.74	0.142	-0.037	2.03	-0.78	0.69	-0.0110	0.00500	-5.2	0.60	103.095
					10/15/2013 17:40	0917-173_No	13_10_15_1740_23_240	1	-1.04	1.535	0.797	0.184	2.67	0.139	-0.153	2.03	-0.70	0.69	-0.0050	0.00500	-5.0	0.59	103.074
					10/15/2013 17:41	0917-173_No	13_10_15_1741_23_960	1	-1.70	1.531	0.693	0.184	2.55	0.140	-0.059	2.04	-0.71	0.68	-0.0080	0.00500	-5.2	0.58	102.964
					10/15/2013 17:42	0917-173_No	13_10_15_1742_24_741	1	-2.46	1.409	0.845	0.186	2.68	0.141	0.014	2.03	-0.47	0.68	-0.0050	0.00500	-5.6	0.57	102.794
					10/15/2013 17:43	0917-173_No	13_10_15_1743_25_431	1	-1.95	1.444	0.698	0.186	2.52	0.141	-0.077	2.02	-0.74	0.68	-0.0100	0.00500	-5.1	0.59	102.946
					10/15/2013 17:44	0917-173_No	13_10_15_1744_26_271	1	-1.21	1.453	0.731	0.183	2.56	0.138	-0.083	2.03	-0.81	0.68	-0.0090	0.00500	-5.4	0.58	102.743
					10/15/2013 17:45	0917-173_No	13_10_15_1745_27_041	1	-1.67	1.511	0.802	0.182	2.57	0.139	-0.030	2.02	-0.86	0.69	-0.0070	0.00500	-4.9	0.57	104.252
					10/15/2013 17:46	0917-173_No	13_10_15_1746_27_711	1	-1.82	1.515	0.834	0.184	2.49	0.141	0.023	2.04	-0.51	0.69	-0.0040	0.00500	-6.2	0.58	104.425
					10/15/2013 17:47	0917-173_No	13_10_15_1747_28_481	1	-3.17	1.360	0.758	0.187	2.54	0.139	-0.1450	2.03	-0.67	0.69	-0.0110	0.00500	-5.8	0.58	105
					10/15/2013 17:48	0917-173_No	13_10_15_1748_29_241	1	-0.92	1.434	0.859	0.184	2.55	0.139	-0.236	2.03	-0.59	0.69	-0.0080	0.00500	-5.6	0.59	105.948
					10/15/2013 17:49	0917-173_No	13_10_15_1749_30_061	1	-1.80	1.529	0.750	0.185	2.45	0.140	0.0800	2.04	-0.94	0.70	-0.0060	0.00500	-5.5	0.59	105.283
					10/15/2013 17:50	0917-173_No	13_10_15_1750_30_771	1	-1.46	1.495	0.766	0.189	2.37	0.137	-0.1480	2.03	-0.83	0.70	-0.0090	0.00500	-5.9	0.59	106.286
					10/15/2013 17:51	0917-173_No	13_10_15_1751_31_551	1	-0.94	1.455	0.829	0.188	2.36	0.139	-0.177	2.03	-0.65	0.71	-0.0040	0.00500	-5.8	0.59	107.088
					10/15/2013 17:52	0917-173_No	13_10_15_1752_32_281	1	-2.57	1.523	0.920	0.191	2.43	0.142	0.1090	2.03	-0.53	0.71	-0.0120	0.00500	-5.6	0.60	108.06
					10/15/2013 17:53	0917-173_No	13_10_15_1753_33_031	1	-0.85	1.460	0.829	0.190	2.32	0.140	-0.136	2.03	-0.65	0.71	-0.0080	0.00500	-5.7	0.58	107.173
					10/15/2013 17:54	0917-173_No	13_10_15_1754_33_752	1	-3.48	1.440	0.778	0.191	2.34	0.138	-0.133	2.03	-0.74	0.71	-0.0050	0.00500	-5.9	0.59	106.343
					10/15/2013 17:55	0917-173_No	13_10_15_1755_34_512	1	-3.15	1.389	0.722	0.189	2.29	0.139	-0.0330	2.03	-0.69	0.71	-0.0060	0.00500	-5.6	0.58	107.295
					10/15/2013 17:56	0917-173_No	13_10_15_1756_35_272	1	-1.72	1.438	0.831	0.189	2.33	0.140	0.0010	2.04	-0.61	0.71	-0.0080	0.00500	-5.7	0.59	107.358
					10/15/2013 17:57	0917-173_No	13_10_15_1757_36_032	1	-1.27	1.483	0.786	0.190	2.32	0.140	0.0050	2.04	-0.59	0.71	-0.0050	0.00500	-5.7	0.57	107.848
					10/15/2013 17:58	0917-173_No	13_10_15_1758_36_842	1	-1.76	1.517	0.829	0.193	2.29	0.140	-0.078	2.03	-0.71	0.71	-0.0090	0.00500	-5.3	0.61	107.842
					10/15/2013 17:59	0917-173_No	13_10_15_1759_37_412	1	-1.78	1.422	0.838	0.193	2.35	0.138	-0.206	2.02	-0.79	0.71	-0.0060	0.00500	-5.2	0.58	108.558
					10/15/2013 18:00	0917-173_No	13_10_15_1800_38_222	1	-2.52	1.518	0.852	0.194	2.32	0.140	0.01800	2.03	-0.87	0.72	-0.0050	0.00500	-5.8	0.59	108.401
					10/15/2013 18:01	0917-173_No	13_10_15_1801_38_972	1	0.26	1.492	0.797	0.186	2.41	0.140	-0.208	2.03	-1.04	0.72	-0.0040	0.00500	-5.7	0.59	108.893
					10/15/2013 18:02	0917-173_No	13_10_15_1802_39_732	1	-2.13	1.501	0.892	0.191	2.39	0.143	-0.0740	2.02	-0.88	0.72	-0.0060	0.00500	-5.6	0.60	109.253
					10/15/2013 18:03	0917-173_No	13_10_15_1803_40_492	1	-2.53	1.457	0.923	0.198	2.47	0.140	-0.0360	2.04	-0.69	0.73	-0.0060	0.00500	-5.6	0.60	109.904
					10/15/2013 18:04	0917-173_No	13_10_15_1804_41_282	1	-3.05	1.427	0.860	0.192	2.42	0.142	-0.0460	2.04	-0.55	0.72	-0.0110	0.00500	-6.2	0.60	109.677
					10/15/2013 18:05	0917-173_No	13_10_15_1805_42_053	1	-1.80	1.457	0.845	0.195	2.39	0.141	-0.0460	2.03	-0.48	0.72	-0.0040	0.00500	-5.6	0.61	109.906
					10/15/2013 18:06	0917-173_No	13_10_15_1806_42_763	1	-1.59	1.455	0.872	0.191	2.43	0.141	-0.0530	2.05	-0.44	0.71	-0.0060	0.00500	-5.4	0.59	107.745
					10/15/2013 18:07	0917-173_No	13_10_15_1807_43_543	1	-2.05	1.533	0.899	0.188	2.44	0.138	-0.00700	2.03	-0.45	0.69	-0.0070	0.00500	-5.9	0.59	104.11
					10/15/2013 18:08	0917-173_No	13_10_15_1808_44_293	1	0.21	1.473	0.930	0.175	2.54	0.138	0.0200	2.04	-0.21	0.64	-0.0050	0.00500	-5.1	0.57	97.206
					10/15/2013 18:09	0917-173_No	13_10_15_1809_45_103	1	-4.12	1.530	0.827	0.162	2.72	0.133	0.174	2.04	-0.08	0.59	-0.0080	0.00500	-4.7	0.57	89.894
					10/15/2013 18:10	0917-173_No	13_10_15_1810_45_773	1	-0.06	1.467	0.843	0.152	2.68	0.132	0.189	2.032	-0.19	0.54	-0.0090	0.00400	-5.1	0.53	80.539
					10/15/2013 18:11	0917-173_No	13_10_15_1811_46_533	1	-0.43	1.465	0.896	0.149	2.86	0.131	0.188	2.029	-0.32	0.51	-0.0090	0.00400	-3.9	0.53	75.93
					10/15/2013 18:12	0917-173_No	13_10_15_1812_47_343	1	-3.777	1.460	0.869	0.148	2.91	0.131	0.028	2.05	-0.28	0.52	-0.0060	0.00500	-4.4	0.52	77.266
					10/15/2013 18:13	0917-173_No	13_10_15_1813_48_113	1	-2.56	1.479	0.920	0.150	2.86	0.131	0.228	2.033	-0.27	0.53	-0.0090	0.00500	-4.3	0.53	79.419
					10/15/2013 18:14	0917-173_No	13_10_15_1814_48_813	1	-1.69	1.426	0.797	0.159	2.91	0.130	0.173	2.05	-0.29	0.56	-0.0070	0.00500	-4.5	0.52	84.542
					10/15/2013 18:15	0917-173_No	13_10_15_1815_49_633	1	0.32	1.545	0.710	0.161	2.85	0.132	0.235	2.04	-0.38	0.59	-0.0080	0.00500	-4.6	0.56	88.178
					10/15/2013 18:16	0917-173_No	13_10_15_1816_50_353	1	-3.10	1.475	0.840	0.168	2.96	0.134	0.246	2.04	-0.71	0.61	-0.0090	0.00500	-5.1	0.56	90.671
					10/15/2013 18:17	0917-173_No	13_10_15_1817_51_074	1	-2.09	1.549	0.887	0.169	2.96	0.137	0.063	2.03	-0.98	0.62	-0.0070	0.00400	-4.4	0.57	92.878
					10/15/2013 18:18	0917-173_No	13_10_15_1818_51_864	1	-3.43	1.523	0.832	0.174	3.03	0.140	0.018	2.02	-1.25	0.64	-0.0050	0.00500	-4.6	0.57	94.033
					10/15/2013 18:19	0917-173_No	13_10_15_1819_52_674	1	-0.32	1.455	0.824	0.176	3.01	0.138	-0.323	2.02	-1.28	0.64	-0.0110	0.00400	-4.3	0.57	95.455
					10/15/2013 18:20	0917-173_No	13_10_15_1820_53_414	1	-1.66	1.525	0.867	0.180	2.94	0.139	0.009	2.04	-1.21	0.65	-0.0090	0.00500	-4.2	0.57	96.567
					10/15/2013 18:21	0917-173_No	13_10_15_1821_54_174	1	-2.48	1.485	1.038	0.174	2.89	0.143	0.075	2.04	-1.07	0.65	-0.0050	0.00500	-4.9	0.55	97.165
					10/15/2013 18:22	0917-173_No	13_10_15_1822_54_894	1	-0.96	1.541	0.921	0.175	2.87	0.141	0.096	2.04	-1.03	0.67	-0.0020	0.00500	-5.2	0.58	98.972
					10/15/2013 18:23	0917-173_No	13_10_15_1823_55_724	1	-1.48	1.499	0.907	0.182	2.71	0.140	0.145	2.03	-1.01	0.67	-0.0060	0.00500	-4.9	0.58	100.91
					10/15/2013 18:24	0917-173_No	13_10_15_1824_56_494	1	-5.69	1.450	1.055	0.179	2.74	0.141	0.045	2.04	-0.67	0.68	-0.0100	0.00500	-4.9	0.58	102.013
					10/15/2013 18:25	0917-173_No	13_10_15_1825_57_204	1	-2.05	1.458	0.929	0.186	2.59	0.142	0.034	2.03	-0.61	0.69	-0.0060	0.00500	-5.8	0.59	103.639
					10/15/2013 18:26	0917-173_No	13_10_15_1826_57_954	1	-2.05	1.382	0.853	0.189	2.66	0.141	0.070	2.02	-0.79	0.69	-0.0090	0.00500	-5.1	0.57	105.135
					10/15/2013 18:27	0917-173_No	13_10_15_1827_58_704	1	-2.15	1.404	0.916	0.188	2.63	0.144	0.072	2.02	-1.05	0.70	-0.0070	0.00500	-5.2	0.60	105.388
					10/15/2013 18:28	0917-173_No	13_10_15_1828_59_474	1	-0.90	1.495	0.864	0.189	2.66	0.141	-0.043	2.02	-0.67	0.71	-0.0050	0.00500	-5.9	0.59	106.419
					10/15/2013 18:30	0917-173_No	13_10_15_1830_01_265	1	-1.56	1.523	0.869	0.191	2.62	0.144	-0.002	2.02	-0.87	0.72	-0.0060	0.00500	-4.9	0.61	107.115
					10/15/2013 18:31	0917-173_No	13_10_15_1831_02_065	1	-0.41	1.462	0.855	0.191	2.67	0.142	0.035	2.03	-0.79	0.72	-0.0050	0.00500	-6.1	0.59	107.999
					10/15/2013 18:32	0917-173_No	13_10_15_1832_02_795	1	-2.51	1.461	0.834	0.191	2.59	0.143	-0.080	2.03	-0.72	0.72	-0.0100	0.00500	-5.4	0.59	107.897
					10/15/2013 18:33	0917-173_No	13_10_15_1833_03_555	1	-3.38	1.538	0.802	0.189	2.60	0.145	-0.066	2.02	-0.82	0.72	-0.0060	0.00500	-5.4	0.63	108.849
					10/15/2013 18:34	0917-173_No	13_10_15_1834_04_365	1	-1.55	1.456	0.887	0.195	2.66	0.145	0.009	2.02	-0.75	0.72	-0.0070	0.00500	-5.4	0.60	108.058
					10/15/2013 18:35	0917-173_No	13_10_15_1835_05_115	1	-2.45	1.404	0.856	0.196	2.67	0.146	0.038	2.04	-0.85	0.73	-0.0070	0.00500	-5.3	0.61	109.115
			Stop		10/15/2013 18:36	0917-173_No	13_10_15_1836_05_865	1	-3.02	1.349	0.468	0.197	2.32	0.133	0.037	1.905	-2.46	0.69	-0.0050	0.00500	-5.4	0.59	100.208
					10/15/2013 18:37	0917-173_No	13_10_15_1837_06_585	1	-4.418	1.190	-1.509	0.268	0.112	0.0830	-0.184	0.583	-10.66	0.51	-0.01300	0.00300	-3.85	0.90	42.278
					10/15/2013 18:38	0917-173_No	13_10_15_1838_07_425	1	-5.135	1.238	-1.899	0.284	-0.084	0.0850	-0.260	0.208	-12.09	0.50	-0.01000	0.00300	-3.72	0.96	35.239
					10/15/2013 18:39	0917-173_No	13_10_15_1839_08_065	1	-4.48	1.242	-1.900	0.282	-0.185	0.0890	-0.227	0.190	-12.28	0.49	-0.00900	0.00300	-3.44	0.98	34.441
					10/15/2013 18:40	0917-173_No	13_10_15_1840_08_765	1	-5.45	1.225	-2.018	0.289	-0.1960	0.0910	-0.251	0.175	-12.28	0.50	-0.01100	0.00300	-3.53	0.98	34.125
					10/15/2013 18:41	0917-173_No	13_10_15_1841_09_505	1	-5.30	1.234	-1.832	0.289	-0.109	0.0940	-0.237	0.180	-12.14	0.50	-0.00700	0.00300	-3.56	1.00	33.895
					10/15/2013 18:42	0917-173_No	13_10_15_1842_10_276	1	-5.588	1.193	-1.892	0.284	-0.178	0.0920	-0.323	0.184	-12.24	0.49	-0.00800	0.00300	-4.01	0.99	33.844
					10/15/2013 18:43	0917-173_No	13_10_15_1843_11_086	1	-3.575	1.053	-1.403	0.216	-0.081	0.0690	-0.163	0.139	-8.93	0.37	-0.00800	0.00200	-3.61	0.739	24.613
					10/15/2013 18:44	0917-173_No	13_10_15_1844_11_866	1	-0.446	0.851	-0.227	0.063	0.074	0.0310	0.019	0.0760	-1.514	0.11	0.00	0.00200	-0.788	0.287	5.736
					10/15/2013 18:45	0917-173_No	13_10_15_1845_12_596	1	-0.163	0.894	-0.0100	0.047	0.0590	0.0280	0.087	0.0650	0.21900	0.08	0.00	0.00200	0.115	0.254	1.448
					10/15/2013 18:46	0917-173_No	13_10_15_1846_13_396	1	-2.025	1.142	0.522	0.116	1.87	0.086	0.469	1.321	-0.82	0.42	-0.0090	0.00300	-3.3	0.39	54.52
					10/15/2013 18:47	0917-173_No	13_10_15_1847_14_166	1	-3.14	1.528	0.821	0.182	2.86	0.141	0.104	2.02	-1.15	0.70	-0.0010	0.00500	-5.1	0.58	106.164
					10/15/2013 18:48	0917-173_No	13_10_15_1848_14_866	1	-1.47	1.459	0.854	0.193	2.88	0.144	0.031	2.00	-0.94	0.73	-0.0060	0.00500	-5.9	0.61	109.043
Data	Run	8	Start	A	10/15/2013 18:49	0917-173_No	13_10_15_1849_15_616	1	-4.06	1.423	0.866	0.189	2.74	0.144	-0.072	2.01	-0.86	0.72	-0.0030	0.00500	-5.1	0.61	109.123
					10/15/2013 18:50	0917-173_No	13_10_15_1850_16_406	1	-1.47	1.510	0.888	0.191	2.69	0.144	-0.366	1.99	-0.66	0.73	-0.0090	0.00500	-5.8	0.62	109.846
					10/15/2013 18:51	0917-173_No	13_10_15_1851_17_216	1	-2.67	1.433	0.826	0.197	2.70	0.145	0.027	2.01	-0.89	0.74	-0.0060	0.00500	-5.3	0.61	110.711
					10/15/2013 18:52	0917-173_No	13_10_15_1852_17_946	1	-2.46	1.392	0.827	0.196	2.82	0.147	-0.085	2.01	-0.83	0.74	-0.0060	0.00500	-5.8	0.61	111.26
					10/15/2013 18:53	0917-173_No	13_10_15_1853_18_657	1	-1.96	1.473	0.940	0.200	2.82	0.145	-0.146	1.99	-1.00	0.76	-0.0060	0.00500	-6.0	0.61	113.491
					10/15/2013 18:54	0917-173_No	13_10_15_1854_19_407	1	-1.28	1.437	0.958	0.204	2.80	0.149	-0.079	2.00	-1.51	0.78	-0.0100	0.00500	-5.5	0.59	116.507

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/15/2013 18:55	0917-173_No	13_10_15_1855_20_197	1	-0.36	1.578	0.836	0.210	2.85	0.155	-0.203	2.01	-1.89	0.80	-0.0030	0.00600	-5.6	0.61	118.52
					10/15/2013 18:56	0917-173_No	13_10_15_1856_20_907	1	-3.40	1.415	0.793	0.214	2.95	0.155	-0.269	1.99	-2.52	0.82	-0.0080	0.00500	-4.9	0.61	121.603
					10/15/2013 18:57	0917-173_No	13_10_15_1857_21_717	1	-0.85	1.412	0.803	0.213	2.98	0.159	-0.374	2.00	-2.66	0.83	-0.0050	0.00500	-5.3	0.59	123.299
					10/15/2013 18:58	0917-173_No	13_10_15_1858_22_447	1	0.00	1.476	0.873	0.214	2.94	0.158	-0.212	2.01	-2.57	0.83	-0.0060	0.00500	-5.4	0.60	123.172
					10/15/2013 18:59	0917-173_No	13_10_15_1859_23_207	1	-3.89	1.480	1.003	0.219	2.97	0.160	-0.355	1.99	-2.22	0.83	-0.0100	0.00600	-5.3	0.61	123.12
					10/15/2013 19:00	0917-173_No	13_10_15_1900_23_947	1	-2.78	1.504	0.999	0.220	2.95	0.157	-0.502	2.01	-2.10	0.84	-0.0060	0.00500	-5.6	0.60	122.753
					10/15/2013 19:01	0917-173_No	13_10_15_1901_24_647	1	-3.18	1.501	1.075	0.218	3.05	0.159	-0.377	2.00	-2.17	0.84	-0.0050	0.00600	-5.7	0.62	123.383
					10/15/2013 19:02	0917-173_No	13_10_15_1902_25_427	1	-1.59	1.473	0.995	0.214	2.97	0.157	-0.369	2.00	-2.38	0.84	-0.0070	0.00600	-4.9	0.62	124.2
					10/15/2013 19:03	0917-173_No	13_10_15_1903_26_167	1	-2.24	1.455	0.913	0.225	3.03	0.162	-0.144	1.99	-2.39	0.85	-0.0060	0.00500	-5.8	0.61	125.314
					10/15/2013 19:04	0917-173_No	13_10_15_1904_26_967	1	-2.21	1.555	0.904	0.216	3.05	0.164	-0.478	1.99	-2.48	0.84	-0.0030	0.00500	-5.1	0.62	125.701
					10/15/2013 19:05	0917-173_No	13_10_15_1905_27_678	1	-1.13	1.403	0.982	0.220	3.01	0.165	-0.292	2.01	-2.30	0.84	-0.0020	0.00500	-5.7	0.60	124.333
					10/15/2013 19:06	0917-173_No	13_10_15_1906_28_368	1	-3.22	1.489	0.961	0.221	3.02	0.162	-0.537	2.00	-2.29	0.84	-0.0030	0.00500	-5.6	0.62	122.723
					10/15/2013 19:07	0917-173_No	13_10_15_1907_29_148	1	-1.45	1.488	0.801	0.218	3.02	0.162	-0.309	2.01	-2.13	0.82	-0.0080	0.00500	-5.3	0.61	121.994
					10/15/2013 19:08	0917-173_No	13_10_15_1908_29_878	1	-2.90	1.525	0.939	0.211	3.02	0.159	-0.351	1.99	-2.05	0.81	-0.0060	0.00600	-5.5	0.61	120.166
					10/15/2013 19:09	0917-173_No	13_10_15_1909_30_628	1	-2.51	1.462	0.873	0.205	2.95	0.160	-0.384	2.00	-1.77	0.79	-0.0090	0.00500	-5.5	0.60	117.977
					10/15/2013 19:10	0917-173_No	13_10_15_1910_31_398	1	-0.38	1.514	0.782	0.203	2.96	0.156	-0.233	2.01	-1.83	0.78	-0.0070	0.00500	-5.1	0.59	116.126
					10/15/2013 19:11	0917-173_No	13_10_15_1911_32_168	1	-1.64	1.437	0.865	0.203	2.91	0.154	-0.375	2.00	-1.56	0.76	-0.0050	0.00500	-5.2	0.60	114.561
					10/15/2013 19:12	0917-173_No	13_10_15_1912_32_878	1	-2.21	1.372	0.832	0.199	3.00	0.154	-0.426	2.00	-1.47	0.76	-0.0060	0.00500	-5.0	0.58	113.966
					10/15/2013 19:13	0917-173_No	13_10_15_1913_33_668	1	-2.21	1.411	0.830	0.202	2.93	0.153	-0.242	2.00	-1.61	0.76	-0.0010	0.00500	-5.0	0.59	114.742
					10/15/2013 19:14	0917-173_No	13_10_15_1914_34_358	1	0.08	1.496	0.962	0.204	3.02	0.155	-0.072	2.02	-1.45	0.77	-0.0070	0.00500	-4.8	0.60	115.565
					10/15/2013 19:15	0917-173_No	13_10_15_1915_35_158	1	-2.68	1.496	0.838	0.197	2.87	0.154	-0.229	2.00	-1.49	0.76	-0.0100	0.00500	-4.4	0.60	114.755
					10/15/2013 19:16	0917-173_No	13_10_15_1916_35_878	1	-0.82	1.477	0.967	0.205	2.87	0.155	-0.243	2.00	-1.23	0.76	0.0000	0.00500	-5.3	0.60	114.142
					10/15/2013 19:17	0917-173_No	13_10_15_1917_36_589	1	-3.38	1.518	0.884	0.196	2.83	0.153	-0.188	2.01	-1.22	0.75	-0.0040	0.00500	-5.3	0.61	112.904
					10/15/2013 19:18	0917-173_No	13_10_15_1918_37_339	1	-1.10	1.410	1.015	0.200	2.77	0.150	-0.159	2.00	-1.22	0.75	-0.0070	0.00500	-5.2	0.59	111.379
					10/15/2013 19:19	0917-173_No	13_10_15_1919_38_159	1	-1.37	1.476	0.819	0.195	2.77	0.148	-0.414	2.00	-0.83	0.73	-0.0060	0.00500	-5.9	0.60	109.233
					10/15/2013 19:20	0917-173_No	13_10_15_1920_38_909	1	-0.84	1.594	0.934	0.193	2.74	0.150	-0.195	2.01	-0.91	0.72	-0.0060	0.00500	-5.3	0.60	109.52
					10/15/2013 19:21	0917-173_No	13_10_15_1921_39_459	1	-2.85	1.515	0.795	0.194	2.72	0.148	-0.202	2.00	-0.95	0.73	-0.0070	0.00500	-5.6	0.59	110.013
					10/15/2013 19:22	0917-173_No	13_10_15_1922_40_209	1	-3.64	1.537	0.902	0.197	2.74	0.150	-0.036	2.00	-1.06	0.73	-0.0040	0.00500	-5.1	0.60	110.002
					10/15/2013 19:23	0917-173_No	13_10_15_1923_41_009	1	-3.82	1.437	0.837	0.193	2.74	0.149	-0.259	2.00	-1.04	0.73	-0.0050	0.00500	-5.1	0.61	110.321
					10/15/2013 19:24	0917-173_No	13_10_15_1924_41_719	1	-3.31	1.450	0.894	0.195	2.65	0.147	-0.287	2.00	-0.92	0.74	-0.0040	0.00500	-5.7	0.58	110.931
					10/15/2013 19:25	0917-173_No	13_10_15_1925_43_529	1	-0.02	1.398	0.694	0.195	2.60	0.150	-0.256	2.00	-1.07	0.73	-0.0050	0.00500	-5.5	0.57	110.972
					10/15/2013 19:26	0917-173_No	13_10_15_1926_43_249	1	-2.58	1.484	0.830	0.196	2.65	0.151	-0.149	2.01	-0.98	0.73	-0.0020	0.00500	-6.0	0.60	110.181
					10/15/2013 19:27	0917-173_No	13_10_15_1927_43_949	1	-3.22	1.482	0.776	0.201	2.71	0.151	-0.090	2.01	-1.22	0.74	-0.0040	0.00500	-5.8	0.57	110.699
					10/15/2013 19:28	0917-173_No	13_10_15_1928_44_689	1	-2.41	1.440	0.748	0.197	2.79	0.152	-0.222	2.00	-1.53	0.75	-0.0050	0.00500	-5.3	0.57	111.222
					10/15/2013 19:29	0917-173_No	13_10_15_1929_45_530	1	-0.11	1.444	0.633	0.201	2.81	0.155	-0.272	1.99	-1.85	0.75	-0.0050	0.00500	-4.6	0.59	111.914
					10/15/2013 19:30	0917-173_No	13_10_15_1930_46_270	1	-2.12	1.412	0.720	0.206	3.00	0.157	-0.198	2.00	-2.11	0.76	-0.0070	0.00500	-4.4	0.58	113.627
					10/15/2013 19:31	0917-173_No	13_10_15_1931_47_030	1	-1.33	1.500	0.729	0.207	3.08	0.160	-0.248	2.00	-2.00	0.77	-0.0070	0.00500	-5.0	0.60	114.257
					10/15/2013 19:32	0917-173_No	13_10_15_1932_47_740	1	-0.86	1.463	0.706	0.212	3.16	0.163	-0.29	2.00	-2.20	0.78	-0.0100	0.00500	-4.8	0.56	114.909
					10/15/2013 19:33	0917-173_No	13_10_15_1933_48_540	1	-1.84	1.506	0.657	0.206	3.20	0.166	-0.19	2.01	-2.39	0.78	-0.0070	0.00500	-4.6	0.58	114.837
					10/15/2013 19:34	0917-173_No	13_10_15_1934_49_250	1	-0.49	1.432	0.758	0.206	3.24	0.166	-0.20	2.01	-2.18	0.76	-0.0070	0.00500	-4.2	0.58	113.421
					10/15/2013 19:35	0917-173_No	13_10_15_1935_50_070	1	-2.04	1.500	0.6010	0.202	3.12	0.164	-0.502	2.01	-2.26	0.76	-0.0070	0.00500	-4.3	0.58	111.74
					10/15/2013 19:36	0917-173_No	13_10_15_1936_50_850	1	-1.55	1.441	0.768	0.196	3.09	0.156	-0.28	2.00	-1.89	0.73	-0.0090	0.00500	-4.4	0.57	108.81
					10/15/2013 19:37	0917-173_No	13_10_15_1937_51_560	1	-1.03	1.397	0.651	0.190	3.08	0.160	-0.275	2.00	-2.07	0.72	-0.0040	0.00500	-3.7	0.56	107.345
					10/15/2013 19:38	0917-173_No	13_10_15_1938_52_350	1	-0.83	1.447	0.726	0.188	2.99	0.151	-0.221	2.00	-1.95	0.71	-0.0090	0.00500	-4.5	0.56	106.159
					10/15/2013 19:39	0917-173_No	13_10_15_1939_53_120	1	-0.29	1.531	0.706	0.185	2.92	0.150	-0.074	2.01	-1.72	0.69	-0.0040	0.00500	-4.2	0.56	104.23
					10/15/2013 19:40	0917-173_No	13_10_15_1940_53_831	1	-1.71	1.385	0.765	0.186	2.92	0.148	-0.021	2.00	-1.60	0.69	-0.0080	0.00500	-4.3	0.53	102.787
					10/15/2013 19:41	0917-173_No	13_10_15_1941_54_551	1	-3.03	1.471	0.649	0.180	2.91	0.147	-0.172	2.01	-1.69	0.68	-0.0100	0.00500	-4.3	0.55	101.444
					10/15/2013 19:42	0917-173_No	13_10_15_1942_55_311	1	-1.71	1.564	0.762	0.180	2.86	0.147	-0.101	2.00	-1.64	0.67	-0.0060	0.00500	-4.0	0.57	100.526
					10/15/2013 19:43	0917-173_No	13_10_15_1943_56_131	1	0.38	1.500	0.719	0.179	2.88	0.150	-0.113	2.01	-1.71	0.67	-0.0110	0.00500	-4.1	0.55	101.111
					10/15/2013 19:44	0917-173_No	13_10_15_1944_56_911	1	0.00	1.487	0.773	0.184	2.87	0.147	0.021	1.99	-1.56	0.68	-0.0040	0.00500	-4.6	0.53	100.478
					10/15/2013 19:45	0917-173_No	13_10_15_1945_57_631	1	-1.14	1.454	0.885	0.187	2.80	0.146	-0.155	2.01	-1.45	0.66	-0.0070	0.00500	-3.9	0.55	99.291
					10/15/2013 19:46	0917-173_No	13_10_15_1946_58_371	1	-0.75	1.486	0.784	0.181	2.69	0.144	0.013	2.00	-1.41	0.66	-0.0090	0.00500	-3.6	0.55	98.855
					10/15/2013 19:47	0917-173_No	13_10_15_1947_59_161	1	0.81	1.494	0.812	0.175	2.72	0.142	-0.042	2.00	-1.26	0.65	-0.0090	0.00400	-4.3	0.54	98.514
			Stop		10/15/2013 19:48	0917-173_No	13_10_15_1948_59_901	1	-2.863	1.135	-0.960	0.235	0.773	0.0820	0.206	1.044	-8.30	0.50	-0.00800	0.00300	-3.38	0.73	52.478
					10/15/2013 19:50	0917-173_No	13_10_15_1950_00_701	1	-3.39	1.107	-1.802	0.277	-0.120	0.0850	-0.0930	0.225	-11.46	0.48	-0.01600	0.00300	-2.82	0.91	34.878
					10/15/2013 19:51	0917-173_No	13_10_15_1951_01_461	1	-3.02	1.286	-1.846	0.286	-0.112	0.0870	-0.246	0.184	-12.12	0.49	-0.0120	0.00300	-3.18	0.97	34.581
					10/15/2013 19:52	0917-173_No	13_10_15_1952_02_181	1	-4.795	1.256	-1.851	0.286	-0.2030	0.0900	-0.438	0.184	-12.07	0.49	-0.00800	0.00300	-3.51	0.95	34.385
					10/15/2013 19:53	0917-173_No	13_10_15_1953_02_942	1	-3.797	1.098	-1.576	0.233	-0.073	0.0780	-0.234	0.154	-9.85	0.40	-0.00900	0.00300	-2.64	0.77	27.516
					10/15/2013 19:54	0917-173_No	13_10_15_1954_03_702	1	-0.491	0.877	-0.235	0.066	0.0050	0.0290	-0.0470	0.0760	-1.862	0.11	-0.00200	0.00200	-0.04	0.295	6.552
					10/15/2013 19:55	0917-173_No	13_10_15_1955_04_512	1	0.582	0.863	0.014	0.056	0.082	0.0470	0.640	1.019	-0.020	0.09	-0.00300	0.00200	-0.628	0.288	2.624
					10/15/2013 19:56	0917-173_No	13_10_15_1956_05_172	1	1.116	0.948	-0.0030	0.055	0.141	0.0510	0.649	1.212	-0.036	0.09	-0.00900	0.00200	0.243	0.301	2.475
					10/15/2013 19:57	0917-173_No	13_10_15_1957_05_982	1	0.606	1.017	0.262	0.071	0.736	0.0690	0.6390	1.442	-0.36	0.18	-0.00300	0.00300	-1.29	0.326	19.681
					10/15/2013 19:58	0917-173_No	13_10_15_1958_06_702	1	-0.334	1.341	0.712	0.151	2.29	0.120	0.247	1.982	-1.15	0.54	-0.0080	0.00400	-3.9	0.48	80.894
					10/15/2013 19:59	0917-173_No	13_10_15_1959_07_442	1	-3.08	1.439	0.844	0.170	2.64	0.135	0.061	2.01	-0.96	0.62	-0.0080	0.00500	-4.6	0.53	94.399
Data	Run	9	Start	A	10/15/2013 20:00	0917-173_No	13_10_15_2000_08_262	1	-2.733	1.463	0.963	0.166	2.67	0.138	0.179	2.01	-1.04	0.62	-0.0040	0.00500	-4.4	0.54	93.36
					10/15/2013 20:01	0917-173_No	13_10_15_2001_09_022	1	-1.433	1.456	0.887	0.166	2.71	0.138	0.146	2.02	-0.94	0.61	-0.0070	0.00500	-4.3	0.53	92.514
					10/15/2013 20:02	0917-173_No	13_10_15_2002_09_792	1	-3.68	1.468	0.814	0.165	2.74	0.139	0.151	2.006	-1.16	0.61	-0.0090	0.00500	-3.7	0.52	91.644
					10/15/2013 20:03	0917-173_No	13_10_15_2003_10_502	1	-2.01	1.413	0.784	0.166	2.81	0.135	0.137	2.01	-1.14	0.60	-0.0070	0.00500	-4.1	0.52	90.69
					10/15/2013 20:04	0917-173_No	13_10_15_2004_11_152	1	-1.64	1.425	0.767	0.161	2.85	0.136	-0.096	2.01	-1.39	0.59	-0.0100	0.00500	-3.7	0.52	88.614
					10/15/2013 20:05	0917-173_No	13_10_15_2005_11_943	1	-0.71	1.355	0.933	0.162	2.87	0.136	0.115	2.02	-1.15	0.58	-0.0040	0.00500	-3.4	0.51	88.283
					10/15/2013 20:06	0917-173_No	13_10_15_2006_12_743	1	-2.302	1.494	0.861	0.163	2.83	0.135	-0.090	2.01	-1.24	0.59	-0.0060	0.00500	-3.9	0.55	88.415
					10/15/2013 20:07	0917-173_No	13_10_15_2007_13_463	1	-1.26	1.401	0.926	0.166	2.77	0.135	0.024	2.02	-1.32	0.60	-0.0080	0.00500	-4.1	0.53	90.932
					10/15/2013 20:08	0917-173_No	13_10_15_2008_14_173	1	-3.24	1.512	0.796	0.164	2.67	0.137	-0.086	2.00	-1.34	0.61	-0.0070	0.00400	-3.9	0.54	91.764
					10/15/2013 20:09	0917-173_No	13_10_15_2009_14_993	1	-4.163	1.387	0.870	0.170	2.75	0.136	0.037	2.01	-1.39	0.62	-0.0040	0.00500	-4.1	0.52	92.995
					10/15/2013 20:10	0917-173_No	13_10_15_2010_15_743	1	-1.01	1.408	0.870	0.170	2.64	0.138	-0.006	2.02	-1.44	0.62	-0.0050	0.00500	-4.3	0.53	92.689
					10/15/2013 20:11	0917-173_No	13_10_15_2011_16_563	1	-1.22	1.448	0.991	0.169	2.64	0.134	0.084	2.01	-1.35	0.61	-0.0050	0.00400	-4.0	0.54	91.549
					10/15/2013 20:12	0917-173_No	13_10_15_2012_17_303	1	0.05	1.464	0.913	0.168	2.64	0.134	0.048	2.03	-1.22	0.60	-0.0060	0.00500	-4.2	0.52	89.218
					10/15/2013 20:13	0917-173_No	13_10_15_2013_18_053	1	-2.43	1.444	0.858	0.162	2.57	0.135	-0.016	2.01	-1.30	0.59	-0.0080	0.00400	-4.2	0.54	87.97
					10/15/2013 20:14	0917-173_No	13_10_15_2014_18_853	1	-1.90	1.479	0.763	0.156	2.67	0.134	0.180	2.019	-1.22	0.57	-0.0030	0.00500	-3.9	0.54	87.048
					10/15/2013 20:15	0917-173_No	13_10_15_2015_19_553	1	-2.58	1.444	0.837	0.156	2.66	0.133	0.054	2.02	-1.09	0.57	-0.0060	0.00500	-4.3	0.52	85.454
					10/15/2013 20:16	0917-173_No	13_10_15_2016_20_383	1	-1.37	1.447	0.930	0.160	2.60	0.135	0.027	2.02	-0.77	0.56	-0.0090	0.00500	-4.5	0.52	84.4
					10/15/2013 20:17	0917-173_No	13_10_15_2017_21_104	1	-0.79	1.454	0.863	0.159	2.60	0.132	0.153	2.024	-0.92	0.57	-0.0080	0.00500	-4.0	0.54	86.506
					10/15/2013 20:18	0917-173_No	13_10_15_2018_21_884	1	-1.48	1.457	0.793	0.159	2.57	0.132	0.186	2.013	-1.21	0.59	-0.0080	0.00500	-3.8	0.53	88.84
					10/15/2013 20:19	0917-173_No	13_10_15_2019_22_634	1	-2.15	1.481	0.881	0.166	2.54	0.131	0.128	2.003	-1.14	0.61	-0.0090	0.00500	-4.4	0.53	91.125
					10/15/2013 20:20	0917-173_No	13_10_15_2020_23_404	1	-3.91	1.448	0.989	0.168	2.58	0.132	0.094	2.021	-1.23	0.62	-0.0110	0.00500	-4.0	0.54	93.641
					10/15/2013 20:21	0917-173_No	13_10_15_2021_24_064	1	-0.82	1.370	0.835	0.172	2.46	0.132	0.096	2.04	-1.51	0.62	-0.0040	0.00500	-4.1	0.52	92.589
					10/15/2013 20:22	0917-173_No	13_10_15_2022_24_884	1	-1.88	1.455	0.879	0.169	2.49	0.131	-0.047	2.028	-1.44	0.61	-0.0090	0.00500	-3.7	0.54	92.342
					10/15/2013 20:23	0917-173_No	13_10_15_2023_25_664	1	-2.10	1.487	0.928	0.166	2.47	0.133	-0.0050	2.014	-1.26	0.61	-0.0070	0.00500	-4.2	0.53	91.885
					10/15/2013 20:24	0917-173_No	13_10_15_2024_26_364	1	-1.08	1.472	0.940	0.168	2.47	0.133	0.177	2.022	-1.31	0.61	-0.0070	0.00500	-4.4	0.54	91.825
					10/15/2013 20:25	0917-173_No	13_10_15_2025_27_134	1	-1.45	1.507	0.840	0.166	2.44	0.130	0.045	2.03	-1.31	0.61	-0.0070	0.00400	-4.1	0.54	91.169
					10/15/2013 20:26	0917-173_No	13_10_15_2026_27_894	1	-2.93	1.540	0.878	0.163	2.35	0.130	0.221	2.020	-1.25	0.60	-0.0070	0.00400	-4.1	0.55	89.782
					10/15/2013 20:27	0917-173_No	13_10_15_2027_28_654	1	-1.04	1.468	0.890	0.159	2.39	0.134	0.265	2.035	-1.29	0.58	-0.0060	0.00400	-3.8	0.52	88.213
					10/15/2013 20:28	0917-173_No	13_10_15_2028_29_365	1	-0.93	1.429	0.928	0.155	2.44	0.132	0.131	2.014	-1.13	0.58	-0.0080	0.00400	-4.2	0.50	87.695
					10/15/2013 20:29	0917-173_No	13_10_15_2029_30_125	1	-2.23	1.405	0.728	0.161	2.43	0.131	-0.0790	2.017	-1.03	0.57	-0.0100	0.00500	-4.4	0.51	86.258
					10/15/2013 20:30	0917-173_No	13_10_15_2030_30_925	1	-3.72	1.438	0.845	0.157	2.44	0.127	0.082	2.027	-1.21	0.56	-0.0020	0.00500	-3.3	0.52	84.873
					10/15/2013 20:31	0917-173_No	13_10_15_2031_31_715	1	-2.06	1.472	0.880	0.155	2.44	0.130	0.130	2.027	-1.01	0.55	-0.0080	0.00500	-3.5	0.53	83.595
					10/15/2013 20:32	0917-173_No	13_10_15_2032_32_475	1	-1.81	1.449	0.763	0.148	2.59	0.130	0.264	2.035	-1.11	0.54	-0.0080	0.00500	-3.1	0.52	82.183
					10/15/2013 20:33	0917-173_No	13_10_15_2033_33_185	1	-0.69	1.506	0.727	0.156	2.57	0.127	0.192	2.035	-1.21	0.55	-0.0060	0.00500	-4.3	0.53	80.867
					10/15/2013 20:34	0917-173_No	13_10_15_2034_33_905	1	-0.72	1.451	0.683	0.151	2.51	0.128	0.145	2.012	-1.12	0.54	-0.0070	0.00400	-3.7	0.53	80.384
					10/15/2013 20:35	0917-173_No	13_10_15_2035_34_705	1	-3.85	1.496	0.745	0.154	2.52	0.129	0.346	2.029	-1.18	0.54	-0.0080	0.00500	-3.9	0.53	80.081
					10/15/2013 20:36	0917-173_No	13_10_15_2036_35_445	1	-1.76	1.379	0.733	0.152	2.62	0.126	0.183	2.023	-1.29	0.53	-0.0070	0.00400	-3.7	0.52	80.004
					10/15/2013 20:37	0917-173_No	13_10_15_2037_36_255	1	-1.40	1.429	0.709	0.151	2.56	0.127	0.161	2.017	-1.24	0.54	-0.0080	0.00500	-3.7	0.50	80.705
					10/15/2013 20:38	0917-173_No	13_10_15_2038_37_015	1	-1.25	1.444	0.769	0.148	2.59	0.128	0.178	2.017	-1.22	0.53	-0.0110	0.00400	-3.9	0.51	80.573
					10/15/2013 20:39	0917-173_No	13_10_15_2039_37_755	1	-2.57	1.510	0.788	0.146	2.61	0.127	0.121	2.020	-1.35	0.54	-0.0070	0.00500	-3.3	0.52	80.013
					10/15/2013 20:40	0917-173_No	13_10_15_2040_38_526	1	-3.706	1.480	0.811	0.148	2.66	0.127	0.124	2.015	-1.44	0.52	-0.0080	0.00400	-3.0	0.51	78.41
					10/15/2013 20:41	0917-173_No	13_10_15_2041_39_246	1	-1.16	1.550	0.821	0.147	2.82	0.125	0.126	2.02	-1.51	0.52	-0.0090	0.00500	-3.6	0.53	76.836
					10/15/2013 20:42	0917-173_No	13_10_15_2042_39_956	1	-2.405	1.482	0.861	0.147	2.87	0.128	0.130	2.03	-1.47	0.52	-0.0090	0.00400	-2.6	0.53	75.835
					10/15/2013 20:43	0917-173_No	13_10_15_2043_40_746	1	-2.203	1.450	0.767	0.144	3.01	0.127	0.188	2.03	-1.72	0.51	-0.0050	0.00500	-3.6	0.51	74.895
					10/15/2013 20:44	0917-173_No	13_10_15_2044_41_566	1	-2.16	1.367	0.697	0.147	3.03	0.127	0.329	2.03	-1.84	0.51	-0.0080	0.00400	-3.6	0.48	74.435
					10/15/2013 20:45	0917-173_No	13_10_15_2045_42_186	1	-2.64	1.451	0.668	0.145	3.10	0.129	0.092	2.03	-2.08	0.51	-0.0080	0.00400	-2.6	0.49	74.735
					10/15/2013 20:46	0917-173_No	13_10_15_2046_42_986	1	0.53	1.461	0.763	0.147	3.17	0.129	0.28	2.01	-2.12	0.51	-0.0120	0.00500	-3.2	0.49	74.22
					10/15/2013 20:47	0917-173_No	13_10_15_2047_43_726	1	-3.13	1.420	0.708	0.141	3.08	0.129	0.118	2.02	-1.91	0.50	-0.0050	0.00400	-2.6	0.48	74.511
					10/15/2013 20:48	0917-173_No	13_10_15_2048_44_446	1	-2.959	1.497	0.741	0.143	3.07	0.127	0.126	2.02	-1.92	0.51	-0.0070	0.00500	-2.4	0.50	74.607
					10/15/2013 20:49	0917-173_No	13_10_15_2049_45_236	1	-3.426	1.406	0.703	0.147	3.04	0.129	0.187	2.02	-2.07	0.51	-0.0050	0.00400	-2.1	0.49	73.808
					10/15/2013 20:50	0917-173_No	13_10_15_2050_45_976	1	-0.17	1.510	0.759	0.143	3.10	0.129	0.304	2.03	-1.91	0.51	-0.0100	0.00400	-2.6	0.51	73.246
					10/15/2013 20:51	0917-173_No	13_10_15_2051_46_746	1	-1.90	1.387	0.697	0.143	3.14	0.124	0.231	2.021	-1.91	0.50	-0.0090	0.00400	-2.7	0.48	72.469
					10/15/2013 20:52	0917-173_No	13_10_15_2052_47_447	1	-1.519	1.435	0.793	0.143	3.15	0.127	0.168	2.018	-1.90	0.50	-0.0110	0.00500	-2.6	0.49	72.152
					10/15/2013 20:53	0917-173_No	13_10_15_2053_48_167	1	-2.12	1.416	0.697	0.145	3.22	0.126	0.056	2.02	-1.79	0.49	-0.0070	0.00500	-2.6	0.50	71.331
					10/15/2013 20:54	0917-173_No	13_10_15_2054_48_927	1	-2.638	1.476	0.814	0.144	3.24	0.128	0.072	2.02	-1.76	0.49	-0.0060	0.00500	-3.1	0.49	70.31
					10/15/2013 20:55	0917-173_No	13_10_15_2055_49_707	1	-1.725	1.451	0.686	0.140	3.26	0.125	0.172	2.03	-1.95	0.47	-0.0070	0.00400	-2.5	0.49	68.694
					10/15/2013 20:56	0917-173_No	13_10_15_2056_50_477	1	-1.687	1.500	0.704	0.134	3.28	0.125	0.290	2.02	-1.59	0.47	-0.0080	0.00400	-3.0	0.50	67.621
					10/15/2013 20:57	0917-173_No	13_10_15_2057_51_217	1	-1.049	1.398	0.715	0.137	3.24	0.126	0.139	2.03	-1.79	0.47	-0.0090	0.00500	-3.3	0.46	67.463
					10/15/2013 20:58	0917-173_No	13_10_15_2058_52_037	1	-4.54	1.535	0.821	0.137	3.23	0.124	0.292	2.02	-1.80	0.46	-0.0140	0.00400	-2.3	0.50	66.998
					10/15/2013 20:59	0917-173_No	13_10_15_2059_52_747	1	-1.688	1.178	-0.4050	0.180	1.74	0.0870	0.421	1.438	-6.246	0.44	-0.01100	0.00300	-3.3	0.59	53.254
			Stop		10/15/2013 21:00	0917-173_No	13_10_15_2100_53_507	1	-4.08	1.310	-1.721	0.271	-0.031	0.0860	-0.248	0.303	-11.72	0.48	-0.00800	0.00300	-3.53	0.94	34.854
					10/15/2013 21:01	0917-173_No	13_10_15_2101_54_237	1	-1.591	0.996	-0.844	0.146	-0.029	0.0490	-0.0460	0.145	-6.05	0.26	-0.00600	0.00200	-1.41	0.532	17.72
					10/15/2013 21:15	0917-173_No	13_10_15_2115_01_112	1	-0.3	1.3	-0.1110	0.075	-0.61	1.36	-0.391	0.0900	-0.081	0.122	0.050	0.548	0.204	0.410	-1.713
					10/15/2013 21:15	0917-173_No	13_10_15_2115_19_662	1	0.1	1.5	-0.090	0.075	-0.41	1.45	-0.0810	0.0900	-0.04300	0.127	0.054	0.581	-0.076	0.429	-1.817
					10/15/2013 21:15	0917-173_No	13_10_15_2115_38_242	1	2.2	1.4	0.046	0.081	-0.47	1.48	-0.271	0.0890	-0.207	0.133	0.058	0.594	-0.0940	0.428	-1.854
					10/15/2013 21:15	0917-173_No	13_10_15_2115_56_802	1	1.0	1.4	0.059	0.075	-0.53	1.51	-0.204	0.0880	-0.291	0.126	0.052	0.602	1.37	0.409	-1.868
					10/15/2013 21:16	0917-173_No	13_10_15_2116_15_223	1	-3.0	1.4	0.0260	0.076	-0.47	1.52	0.0050	0.1000	-0.241	0.125	0.052	0.604	0.41	0.420	-1.901
					10/15/2013 21:16	0917-173_No	13_10_15_2116_33_823	1	0.8	1.3	0.061	0.075	-0.50	1.51	-0.232	0.1030	-0.365	0.121	0.048	0.607	0.700	0.388	-1.882
					10/15/2013 21:16	0917-173_No	13_10_15_2116_52_323	1	2.7	1.3	-0.070	0.079	-0.54	1.51	-0.149	0.0970	0.330	0.126	0.054	0.607	-0.619	0.420	-1.884
					10/15/2013 21:17	0917-173_No	13_10_15_2117_10_943	1	0.8	1.3	-0.0050	0.071	-0.51	1.51	-0.073	0.0990	0.062	0.116	0.047	0.603	-0.339	0.392	-1.871
					10/15/2013 21:17	0917-173_No	13_10_15_2117_29_463	1	0.3	1.5	0.1800	0.078	-0.44	1.52	-0.00900	0.0930	0.215	0.130	0.064	0.603	-0.603	0.430	-1.921
					10/15/2013 21:17	0917-173_No	13_10_15_2117_47_913	1	-2.3	1.4	0.083	0.079	-0.47	1.51	-0.1730	0.0960	-0.057	0.127	0.047	0.605	0.383	0.408	-1.902
					10/15/2013 21:18	0917-173_No	13_10_15_2118_06_603	1	2.6	1.4	-0.043	0.079	-0.54	1.52	-0.360	0.1000	-0.036	0.128	0.055	0.604	-0.23	0.406	-1.911
					10/15/2013 21:18	0917-173_No	13_10_15_2118_25_043	1	-1.6	1.4	-0.0690	0.077	-0.55	1.52	-0.436	0.0900	-0.1250	0.127	0.054	0.603	0.133	0.427	-1.879
					10/15/2013 21:18	0917-173_No	13_10_15_2118_43_553	1	0.0	1.4	0.1240	0.077	-0.46	1.51	-0.226	0.0990	-0.043	0.126	0.050	0.603	-0.07	0.425	-1.912
					10/15/2013 21:19	0917-173_No	13_10_15_2119_02_113	1	0.9	1.4	0.010	0.073	-0.56	1.51	0.0260	0.0940	-0.2200	0.121	0.053	0.603	0.387	0.405	-1.919
					10/15/2013 21:19	0917-173_No	13_10_15_2119_20_623	1	1.7	1.2	0.0100	0.076	-0.47	1.52	-0.280	0.0920	-0.094	0.121	0.055	0.604	0.065	0.400	-1.935
					10/15/2013 21:19	0917-173_No	13_10_15_2119_39_233	1	-1.6	1.4	-0.035	0.077	-0.48	1.52	-0.342	0.0960	-0.116	0.124	0.054	0.606	0.259	0.409	-1.912
					10/15/2013 21:19	0917-173_No	13_10_15_2119_57_753	1	0.2	1.2	0.0170	0.079	-0.51	1.51	-0.200	0.1000	-0.099	0.123	0.052	0.605	0.250	0.386	-1.911
					10/15/2013 21:29	0917-173_No	13_10_15_2129_45_404	1	2.6830	2.493	-0.087	0.130	0.023	0.0780	-0.102	0.136	0.226	0.218	-0.00600	0.00500	-0.51	0.75	0.026
					10/15/2013 21:29	0917-173_No	13_10_15_2129_51_574	1	-2.388	2.477	0.228	0.136	0.0830	0.085	0.03900	0.194	0.44	0.221	0.00400	0.00500	-1.87	0.72	-0.007
					10/15/2013 21:29	0917-173_No	13_10_15_2129_57_784	1	-2.495	2.318	-0.507	0.134	-0.0110	0.0820	0.571	0.458	-0.41	0.214	-0.01000	0.00400	0.28	0.70	0.07
					10/15/2013 21:30	0917-173_No	13_10_15_2130_04_024	1	5.412	2.336	0.143	0.140	-0.061	0.103	0.537	1.217	0.376	0.223	0.0050	0.00700	-1.21	0.73	0.074
					10/15/2013 21:30	0917-173_No	13_10_15_2130_10_174	1	3.550	2.492	0.013	0.134	0.02700	0.1070	0.630	1.720	-0.191	0.223	0.00100	0.00600	-0.59	0.75	0.195
					10/15/2013 21:30	0917-173_No	13_10_15_2130_16_234	1	0.40	2.589	0.115	0.142	-0.0430	0.119	0.203	1.827	-0.316	0.233	-0.01100	0.00600	1.031	0.78	0.262

Location Disc. # Start/Stop Instrument — Label 1-Analyte | Label 2-Analyte | Label 3-Analyte/Spike | Label 4-Analyte | Label 5-Analyte | Label Tracer | Label 6-Analyte

Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
10/15/2013 21:30	0917-173_No	13_10_15_2130_22_494	1	-0.831	2.562	0.228	0.148	-0.286	0.129	0.744	1.911	-0.176	0.237	-0.00100	0.00700	-0.164	0.77	0.257
10/15/2013 21:30	0917-173_No	13_10_15_2130_28_654	1	4.59	2.654	0.03	0.152	-0.0980	0.125	0.44	1.839	-0.436	0.246	-0.02500	0.00700	-0.57	0.79	0.253
10/15/2013 21:30	0917-173_No	13_10_15_2130_34_894	1	-2.116	2.836	-0.081	0.148	-0.232	0.128	0.656	1.794	0.18	0.249	-0.01600	0.00600	-1.561	0.84	0.302
10/15/2013 21:30	0917-173_No	13_10_15_2130_41_054	1	0.645	2.826	0.048	0.151	-0.2280	0.128	0.39	1.728	0.02000	0.251	-0.01500	0.00800	-0.773	0.86	0.234
10/15/2013 21:30	0917-173_No	13_10_15_2130_47_144	1	-2.050	2.753	0.0060	0.158	-0.088	0.130	1.087	1.623	-0.1870	0.254	-0.01400	0.00800	-0.1520	0.84	0.214
10/15/2013 21:30	0917-173_No	13_10_15_2130_53_364	1	-2.91	2.952	0.064	0.158	-0.228	0.129	0.913	1.571	-0.400	0.261	-0.01900	0.00600	-0.04	0.86	0.21
10/15/2013 21:30	0917-173_No	13_10_15_2130_59_554	1	-0.160	2.859	-0.003	0.157	-0.0080	0.126	0.569	1.476	-0.046	0.259	-0.02	0.00700	0.014	0.86	0.097
10/15/2013 21:31	0917-173_No	13_10_15_2131_05_784	1	-1.415	2.948	0.086	0.147	0.0520	0.131	0.51	1.389	-0.13	0.248	-0.00300	0.00700	-1.155	0.83	0.129
10/15/2013 21:31	0917-173_No	13_10_15_2131_11_964	1	-0.481	2.770	-0.030	0.164	-0.357	0.121	0.679	1.34	-0.186	0.260	-0.00300	0.00700	-0.372	0.87	0.118
10/15/2013 21:31	0917-173_No	13_10_15_2131_18_044	1	-0.630	3.275	-0.175	0.164	-0.258	0.135	0.634	1.21	-0.335	0.280	-0.01600	0.00800	-2.01	0.93	0.065
10/15/2013 21:31	0917-173_No	13_10_15_2131_24_244	1	-2.23	2.801	-0.125	0.167	-0.1720	0.131	1.064	1.19	0.500	0.266	-0.02100	0.00800	-3.32	0.87	0.027
10/15/2013 21:31	0917-173_No	13_10_15_2131_30_434	1	-4.876	2.869	-0.0900	0.160	-0.237	0.133	1.161	1.16	-0.071	0.261	-0.00500	0.00600	-2.12	0.88	-0.017
10/15/2013 21:31	0917-173_No	13_10_15_2131_36_724	1	-1.776	3.250	0.318	0.169	-0.561	0.135	0.45	1.13	-0.37	0.281	-0.00700	0.00800	-3.01	0.95	0.027
10/15/2013 21:31	0917-173_No	13_10_15_2131_42_884	1	-3.411	3.096	-0.385	0.152	-0.1230	0.139	1.258	1.25	0.04	0.263	-0.02000	0.00800	-1.15	0.88	0.069
10/15/2013 21:31	0917-173_No	13_10_15_2131_49_014	1	-0.117	3.129	0.201	0.165	-0.221	0.129	1.298	1.30	0.284	0.274	-0.01000	0.00700	-2.048	0.93	0.134
10/15/2013 21:31	0917-173_No	13_10_15_2131_55_204	1	4.79	2.937	-0.165	0.173	-0.1210	0.128	0.806	1.29	0.411	0.278	-0.0100	0.00700	-0.64	0.88	0.066
10/15/2013 21:32	0917-173_No	13_10_15_2132_01_394	1	-3.777	2.947	0.2550	0.162	-0.1290	0.135	1.270	1.365	-0.042	0.267	-0.01200	0.00700	-1.67	0.90	0.134
10/15/2013 21:32	0917-173_No	13_10_15_2132_07_574	1	-4.555	3.016	0.309	0.157	-0.0730	0.134	1.259	1.442	0.05	0.262	-0.00800	0.00700	-1.49	0.92	0.158
10/15/2013 21:32	0917-173_No	13_10_15_2132_13_664	1	-0.911	2.969	0.083	0.159	-0.1230	0.129	0.929	1.381	-0.048	0.265	-0.01700	0.00700	-0.84	0.87	0.173
10/15/2013 21:32	0917-173_No	13_10_15_2132_19_844	1	-4.406	3.258	0.183	0.161	-0.128	0.137	1.245	1.436	0.11	0.274	-0.02100	0.00700	-2.47	0.95	0.249
10/15/2013 21:32	0917-173_No	13_10_15_2132_26_064	1	0.007	3.184	0.275	0.155	-0.201	0.129	1.170	1.401	-0.119	0.264	0.00800	0.00700	-2.29	0.90	0.239
10/15/2013 21:32	0917-173_No	13_10_15_2132_32_244	1	-3.267	3.024	0.021	0.157	0.204	0.131	1.165	1.443	-0.299	0.261	-0.01100	0.00600	-1.79	0.87	0.198
10/15/2013 21:32	0917-173_No	13_10_15_2132_38_444	1	0.98	2.772	-0.187	0.158	-0.160	0.129	0.969	1.419	0.49	0.257	-0.02200	0.00700	-4.20	0.85	0.233
10/15/2013 21:32	0917-173_No	13_10_15_2132_44_534	1	-0.3610	2.997	0.098	0.165	-0.0850	0.127	0.705	1.453	0.25	0.271	-0.01200	0.00600	-1.337	0.88	0.224
10/15/2013 21:32	0917-173_No	13_10_15_2132_50_814	1	-2.377	3.119	-0.032	0.155	-0.0720	0.137	0.703	1.466	0.20	0.261	-0.01700	0.00700	-1.166	0.90	0.308
10/15/2013 21:32	0917-173_No	13_10_15_2132_56_934	1	-1.855	3.081	-0.045	0.161	-0.1750	0.134	0.606	1.405	0.287	0.267	-0.01700	0.00700	-1.03	0.91	0.266
10/15/2013 21:33	0917-173_No	13_10_15_2133_03_164	1	-2.567	2.814	-0.331	0.148	0.154	0.125	1.456	1.335	-0.03	0.244	-0.00300	0.00700	-1.45	0.804	0.294
10/15/2013 21:33	0917-173_No	13_10_15_2133_09_364	1	-4.414	2.934	-0.190	0.160	-0.1260	0.132	1.379	1.426	-0.31	0.26	-0.00100	0.00600	-0.98	0.90	0.284
10/15/2013 21:33	0917-173_No	13_10_15_2133_15_454	1	-3.28	3.155	0.007	0.156	-0.0040	0.133	1.073	1.394	-0.059	0.268	-0.01100	0.00700	-1.039	0.93	0.326
10/15/2013 21:33	0917-173_No	13_10_15_2133_21_724	1	-5.2940	2.863	-0.060	0.160	-0.158	0.134	1.123	1.394	-0.313	0.261	-0.01000	0.00700	-2.534	0.84	0.281
10/15/2013 21:33	0917-173_No	13_10_15_2133_27_854	1	3.890	2.802	0.2180	0.164	-0.361	0.134	0.787	1.399	0.03	0.26	-0.01400	0.00800	0.23	0.90	0.292
10/15/2013 21:33	0917-173_No	13_10_15_2133_34_044	1	-6.523	2.888	-0.208	0.168	-0.0930	0.133	0.642	1.403	-0.163	0.272	-0.00700	0.00800	-1.82	0.92	0.367
10/15/2013 21:33	0917-173_No	13_10_15_2133_40_254	1	-1.416	2.990	-0.143	0.152	-0.196	0.131	0.599	1.392	0.234	0.257	-0.00600	0.00700	-1.453	0.89	0.321
10/15/2013 21:33	0917-173_No	13_10_15_2133_46_344	1	-5.281	2.836	0.082	0.159	-0.1050	0.129	0.998	1.439	-0.222	0.260	-0.01000	0.00700	-0.91	0.83	0.377
10/15/2013 21:33	0917-173_No	13_10_15_2133_52_544	1	-1.09	2.975	0.1110	0.160	-0.0340	0.136	0.804	1.543	-0.20	0.263	-0.00900	0.00700	-2.63	0.89	0.322
10/15/2013 21:33	0917-173_No	13_10_15_2133_58_824	1	0.6320	2.689	-0.115	0.163	-0.158	0.129	0.747	1.656	0.13	0.255	-0.01400	0.00700	-1.93	0.82	0.324
10/15/2013 21:34	0917-173_No	13_10_15_2134_05_014	1	-2.170	2.827	-0.438	0.149	-0.316	0.128	1.165	1.737	-0.06	0.250	-0.00600	0.00500	-1.589	0.86	0.422
10/15/2013 21:34	0917-173_No	13_10_15_2134_11_214	1	-0.236	2.834	0.112	0.146	0.1030	0.129	0.987	1.762	0.00	0.246	-0.01700	0.00700	-2.34	0.81	0.409
10/15/2013 21:34	0917-173_No	13_10_15_2134_17_304	1	5.580	2.540	-0.011	0.147	-0.340	0.132	0.965	1.811	0.37	0.239	-0.00600	0.00600	-3.55	0.80	0.411
10/15/2013 21:34	0917-173_No	13_10_15_2134_23_504	1	-10.953	2.498	-0.305	0.147	-0.232	0.128	1.043	1.784	-0.539	0.238	0.00200	0.00600	0.43	0.77	0.429
10/15/2013 21:34	0917-173_No	13_10_15_2134_29_674	1	0.97	2.485	0.278	0.155	-0.0240	0.133	0.983	1.868	-0.061	0.244	-0.00200	0.00700	-1.1970	0.75	0.439
10/15/2013 21:34	0917-173_No	13_10_15_2134_35_864	1	4.124	2.761	0.30	0.140	-0.055	0.1250	0.813	1.878	0.067	0.234	-0.01200	0.00700	0.268	0.785	0.502
10/15/2013 21:34	0917-173_No	13_10_15_2134_42_064	1	1.10	2.670	-0.030	0.143	-0.141	0.131	0.899	1.833	-0.349	0.234	-0.02500	0.00600	-1.24	0.78	0.597
10/15/2013 21:34	0917-173_No	13_10_15_2134_48_164	1	-4.370	2.710	0.195	0.154	0.04800	0.131	1.195	1.814	-0.073	0.250	-0.01000	0.00700	0.272	0.82	0.455
10/15/2013 21:34	0917-173_No	13_10_15_2134_54_354	1	-4.654	2.769	0.0020	0.144	0.0390	0.133	0.830	1.886	-0.13	0.241	-0.02400	0.00700	-1.58	0.78	0.488
10/15/2013 21:35	0917-173_No	13_10_15_2135_00_544	1	-5.71	2.814	-0.086	0.149	-0.0190	0.131	1.300	1.720	0.46	0.252	-0.01000	0.00700	-1.30	0.85	0.511
10/15/2013 21:35	0917-173_No	13_10_15_2135_06_824	1	-5.031	3.166	-0.190	0.157	-0.282	0.124	1.185	1.606	-0.050	0.267	-0.01300	0.00600	-0.9700	0.90	0.358
10/15/2013 21:35	0917-173_No	13_10_15_2135_13_024	1	0.100	3.092	0.108	0.159	-0.255	0.132	1.003	1.555	-0.354	0.265	-0.02	0.00600	-0.574	0.90	0.352
10/15/2013 21:35	0917-173_No	13_10_15_2135_19_124	1	-4.1410	2.916	-0.23	0.150	-0.12800	0.135	0.812	1.573	0.131	0.248	-0.02700	0.00700	-0.977	0.86	0.303
10/15/2013 21:35	0917-173_No	13_10_15_2135_25_284	1	-2.327	2.975	-0.260	0.150	-0.224	0.138	1.016	1.590	0.069	0.253	-0.02	0.00700	-0.15	0.84	0.343
10/15/2013 21:35	0917-173_No	13_10_15_2135_31_534	1	-1.14	2.966	-0.306	0.155	-0.2070	0.129	0.579	1.558	-0.1140	0.258	-0.01900	0.00700	-0.807	0.87	0.35
10/15/2013 21:35	0917-173_No	13_10_15_2135_37_714	1	-0.604	2.924	-0.027	0.149	-0.365	0.134	1.193	1.497	-0.35	0.248	-0.00100	0.00800	-1.28	0.82	0.415
10/15/2013 21:35	0917-173_No	13_10_15_2135_43_764	1	-1.539	3.010	-0.100	0.161	-0.1100	0.124	1.064	1.565	-0.192	0.264	-0.00600	0.00700	-1.019	0.89	0.411
10/15/2013 21:35	0917-173_No	13_10_15_2135_50_014	1	-6.408	2.769	0.083	0.150	-0.137	0.140	0.996	1.602	0.057	0.243	-0.01200	0.00700	-1.421	0.82	0.369
10/15/2013 21:35	0917-173_No	13_10_15_2135_56_204	1	-1.285	2.724	0.263	0.149	-0.0280	0.131	0.959	1.604	-0.10	0.242	-0.01000	0.00700	-0.973	0.774	0.364
10/15/2013 21:36	0917-173_No	13_10_15_2136_02_384	1	1.90	2.939	-0.0750	0.152	-0.103	0.132	1.026	1.582	-0.4170	0.256	-0.00800	0.00600	0.00	0.87	0.422
10/15/2013 21:36	0917-173_No	13_10_15_2136_08_564	1	-6.415	2.924	-0.1020	0.157	-0.224	0.130	1.245	1.511	-0.032	0.261	-0.02300	0.00700	-1.31	0.85	0.313
10/15/2013 21:36	0917-173_No	13_10_15_2136_14_644	1	-8.211	2.966	0.047	0.149	0.0050	0.128	0.520	1.540	-0.3530	0.252	-0.01500	0.00600	-0.81	0.85	0.425
10/15/2013 21:36	0917-173_No	13_10_15_2136_20_854	1	-4.426	2.892	-0.091	0.161	-0.371	0.136	0.840	1.547	0.121	0.263	-0.00700	0.00700	-0.77	0.85	0.383
10/15/2013 21:36	0917-173_No	13_10_15_2136_27_034	1	-9.720	3.051	0.072	0.147	-0.122	0.134	0.734	1.631	0.2250	0.253	-0.01800	0.00700	-1.22	0.86	0.471
10/15/2013 21:36	0917-173_No	13_10_15_2136_33_324	1	-4.633	2.953	-0.3000	0.155	0.085	0.137	1.300	1.588	-0.035	0.258	-0.0010	0.00600	-0.42	0.88	0.434
10/15/2013 21:36	0917-173_No	13_10_15_2136_39_434	1	-6.427	3.003	0.082	0.150	-0.0030	0.133	1.7470	1.654	0.0520	0.255	-0.00500	0.00600	-1.2760	0.88	0.443
10/15/2013 21:36	0917-173_No	13_10_15_2136_45_614	1	-5.010	3.094	-0.011	0.149	-0.174	0.134	0.722	1.623	0.168	0.258	-0.00700	0.00700	-2.17	0.88	0.433
10/15/2013 21:36	0917-173_No	13_10_15_2136_51_794	1	0.216	2.655	-0.032	0.147	-0.141	0.136	0.718	1.618	-0.015	0.240	-0.01800	0.00700	-0.589	0.80	0.487
10/15/2013 21:36	0917-173_No	13_10_15_2136_57_974	1	-2.462	2.825	0.1630	0.164	-0.072	0.1310	0.897	1.677	-0.448	0.260	-0.01400	0.00700	-0.951	0.84	0.452
10/15/2013 21:37	0917-173_No	13_10_15_2137_04_164	1	-4.660	2.790	0.004	0.154	-0.103	0.133	0.916	1.607	-0.609	0.253	-0.01100	0.00700	-0.628	0.84	0.468
10/15/2013 21:37	0917-173_No	13_10_15_2137_10_344	1	-5.286	2.986	0.062	0.149	-0.0700	0.130	0.828	1.621	-0.303	0.254	-0.01600	0.00600	-1.703	0.85	0.476
10/15/2013 21:37	0917-173_No	13_10_15_2137_16_424	1	-6.276	2.674	-0.058	0.151	0.236	0.130	0.987	1.609	-0.552	0.245	-0.01500	0.00600	-0.13	0.84	0.501
10/15/2013 21:37	0917-173_No	13_10_15_2137_22_644	1	-3.79	2.961	-0.199	0.161	0.0460	0.135	1.320	1.630	-0.418	0.265	-0.01600	0.00600	-0.39	0.89	0.429
10/15/2013 21:37	0917-173_No	13_10_15_2137_28_894	1	-2.81	2.672	-0.459	0.154	-0.0550	0.137	0.653	1.671	0.093	0.246	-0.01000	0.00600	-0.94	0.83	0.496
10/15/2013 21:37	0917-173_No	13_10_15_2137_35_104	1	-4.242	2.812	-0.0150	0.155	-0.195	0.139	1.036	1.676	0.28	0.252	-0.01	0.00600	-0.84	0.84	0.493
10/15/2013 21:37	0917-173_No	13_10_15_2137_41_284	1	-0.757	3.006	0.141	0.153	-0.271	0.131	1.652	1.702	0.90	0.258	-0.01500	0.00700	-3.80	0.89	0.504
10/15/2013 21:37	0917-173_No	13_10_15_2137_47_374	1	-4.188	2.816	0.137	0.150	-0.3320	0.130	1.186	1.689	0.251	0.251	-0.00600	0.00700	-3.33	0.84	0.475
10/15/2013 21:37	0917-173_No	13_10_15_2137_53_604	1	-5.010	2.678	-0.103	0.152	-0.248	0.131	0.697	1.736	0.04	0.248	-0.00500	0.00600	-2.14	0.83	0.553
10/15/2013 21:37	0917-173_No	13_10_15_2137_59_774	1	-0.85	2.707	0.209	0.155	-0.090	0.130	0.940	1.718	-0.025	0.251	-0.00300	0.00600	0.4270	0.82	0.533
10/15/2013 21:38	0917-173_No	13_10_15_2138_05_954	1	-1.263	2.723	-0.070	0.151	-0.0380	0.131	1.093	1.680	-0.320	0.246	-0.01300	0.00600	-1.66	0.85	0.472
10/15/2013 21:38	0917-173_No	13_10_15_2138_12_164	1	-4.319	2.939	-0.246	0.157	-0.292	0.130	0.516	1.702	-0.078	0.260	-0.02900	0.00700	1.51	0.85	0.548
10/15/2013 21:38	0917-173_No	13_10_15_2138_18_254	1	0.434	2.813	-0.134	0.157	-0.106	0.128	0.959	1.681	-0.101	0.259	-0.02	0.00800	-2.155	0.85	0.512
10/15/2013 21:38	0917-173_No	13_10_15_2138_24_434	1	-4.524	3.068	0.1420	0.146	-0.114	0.133	0.841	1.643	0.169	0.254	-0.01	0.00600	-1.145	0.87	0.504
10/15/2013 21:38	0917-173_No	13_10_15_2138_30_714	1	4.02	2.727	-0.117	0.158	-0.158	0.130	1.175	1.687	-0.219	0.255	-0.00400	0.00700	-1.952	0.83	0.496
10/15/2013 21:38	0917-173_No	13_10_15_2138_36_934	1	-0.818	2.751	-0.3610	0.154	0.054	0.137	0.681	1.750	-0.092	0.249	-0.01100	0.00700	-3.20	0.82	0.515
10/15/2013 21:38	0917-173_No	13_10_15_2138_43_054	1	-10.09	3.070	-0.208	0.167	-0.0030	0.137	0.539	1.674	-0.289	0.275	-0.0340	0.00600	-0.236	0.95	0.581
10/15/2013 21:38	0917-173_No	13_10_15_2138_49_204	1	-3.04	2.762	-0.201	0.151	-0.290	0.125	1.056	1.693	0.21	0.246	-0.01	0.00800	-2.15	0.85	0.439
10/15/2013 21:38	0917-173_No	13_10_15_2138_55_384	1	3.63	2.902	-0.056	0.153	-0.239	0.131	0.932	1.723	-0.2840	0.253	-0.01000	0.00600	-0.62	0.85	0.538
10/15/2013 21:39	0917-173_No	13_10_15_2139_01_574	1	0.140	3.143	0.0940	0.154	-0.409	0.124	0.57	1.702	0.04	0.262	-0.00600	0.00700	-2.66	0.89	0.559
10/15/2013 21:39	0917-173_No	13_10_15_2139_07_744	1	1.55	2.712	0.285	0.157	-0.203	0.125	1.284	1.709	0.165	0.252	-0.00600	0.00600	-0.065	0.84	0.489
10/15/2013 21:39	0917-173_No	13_10_15_2139_13_864	1	-4.009	2.830	0.0870	0.152	-0.0010	0.123	1.245	1.725	0.123	0.252	-0.0300	0.00600	-1.251	0.82	0.542
10/15/2013 21:39	0917-173_No	13_10_15_2139_20_044	1	-1.74	2.662	0.085	0.155	-0.220	0.135	0.753	1.677	-0.256	0.248	-0.01900	0.00600	-2.54	0.81	0.529
10/15/2013 21:39	0917-173_No	13_10_15_2139_26_224	1	-3.920	3.007	-0.122	0.157	-0.065	0.128	1.159	1.724	-0.252	0.260	-0.00300	0.00700	-0.881	0.90	0.527
10/15/2013 21:39	0917-173_No	13_10_15_2139_32_514	1	-0.440	2.788	0.0520	0.162	0.0490	0.131	1.008	1.759	-0.236	0.258	-0.02000	0.00700	-0.86	0.86	0.565
10/15/2013 21:39	0917-173_No	13_10_15_2139_38_704	1	-2.4120	2.907	0.069	0.148	0.08100	0.133	1.260	1.697	-1.028	0.249	-0.01400	0.00600	-0.230	0.86	0.568
10/15/2013 21:39	0917-173_No	13_10_15_2139_44_744	1	0.121	2.933	-0.149	0.161	-0.0830	0.126	0.933	1.746	0.322	0.263	-0.00800	0.00600	-0.65	0.88	0.533
10/15/2013 21:39	0917-173_No	13_10_15_2139_50_935	1	-1.44	2.945	-0.076	0.155	-0.1560	0.127	1.169	1.709	-0.24	0.261	-0.01400	0.00600	-1.49	0.88	0.527
10/15/2013 21:39	0917-173_No	13_10_15_2139_57_195	1	-0.8720	2.832	0.114	0.149	0.231	0.138	1.335	1.698	-0.327	0.245	-0.01300	0.00600	-0.378	0.83	0.602
10/15/2013 21:40	0917-173_No	13_10_15_2140_35_345	1	-2.265	1.836	0.0030	0.092	-0.072	0.1140	1.165	1.724	0.034	0.156	-0.02	0.00500	-1.030	0.531	0.591
10/15/2013 21:41	0917-173_No	13_10_15_2141_36_035	1	-2.7830	1.708	-0.0050	0.094	-0.138	0.1120	1.500	1.711	-0.151	0.154	-0.01200	0.00400	-1.332	0.523	0.618
10/15/2013 21:42	0917-173_No	13_10_15_2142_36_795	1	-2.205	1.809	0.043	0.092	-0.0890	0.1120	1.222	1.704	0.039	0.155	-0.01300	0.00500	-1.202	0.530	0.648
10/15/2013 21:43	0917-173_No	13_10_15_2143_37_565	1	0.134	1.783	0.0590	0.095	-0.120	0.1080	1.242	1.718	-0.103	0.157	-0.02	0.00500	-0.744	0.530	0.664
10/15/2013 21:44	0917-173_No	13_10_15_2144_38_285	1	-1.961	1.804	0.0810	0.094	-0.0290	0.1110	1.315	1.711	-0.170	0.157	-0.01500	0.00500	-0.6100	0.531	0.682
10/15/2013 21:45	0917-173_No	13_10_15_2145_39_091	1	-1.373	1.755	0.002	0.094	-0.107	0.1120	1.117	1.695	-0.088	0.155	-0.01200	0.00500	-0.962	0.528	0.709
10/15/2013 21:47	0917-173_No	13_10_15_2147_19_287	1	0.604	2.853	0.248	0.142	-0.107	0.125	1.506	1.834	0.26	0.239	-0.03100	0.00600	-2.88	0.80	0.714
10/15/2013 21:47	0917-173_No	13_10_15_2147_25_447	1	-1.592	2.585	-0.006	0.153	0.0360	0.123	1.352	1.875	-0.144	0.244	-0.02400	0.00600	-0.270	0.80	0.685
10/15/2013 21:47	0917-173_No	13_10_15_2147_31_687	1	0.639	2.648	-0.014	0.142	0.0470	0.1200	1.099	1.881	-0.25	0.232	-0.02500	0.00700	-1.24	0.78	0.659
10/15/2013 21:47	0917-173_No	13_10_15_2147_37_897	1	-2.17	2.680	-0.177	0.143	-0.0510	0.1260	1.040	1.931	-0.18	0.238	-0.01800	0.00500	-1.169	0.81	0.654
10/15/2013 21:47	0917-173_No	13_10_15_2147_44_007	1	-4.362	2.564	0.045	0.149	0.02500	0.1190	0.851	1.892	0.069	0.239	-0.00700	0.00700	-1.66	0.78	0.66
10/15/2013 21:47	0917-173_No	13_10_15_2147_50_147	1	1.002	2.670	-0.128	0.140	0.0420	0.122	1.3680	1.936	-0.209	0.232	-0.00700	0.00700	0.095	0.77	0.662
10/15/2013 21:47	0917-173_No	13_10_15_2147_56_407	1	-4.910	2.948	-0.201	0.134	0.0770	0.128	0.672	1.997	-0.36	0.238	-0.02200	0.00600	-1.25	0.81	0.64
10/15/2013 21:48	0917-173_No	13_10_15_2148_02_587	1	-0.73	2.570	0.220	0.136	0.00800	0.1130	1.075	1.940	-0.186	0.228	-0.01	0.00600	-0.150	0.76	0.645
10/15/2013 21:48	0917-173_No	13_10_15_2148_08_757	1	-5.430	2.607	0.297	0.138	-0.117	0.1240	1.051	1.943	-0.259	0.229	-0.00900	0.00700	0.811	0.76	0.645
10/15/2013 21:48	0917-173_No	13_10_15_2148_14_867	1	0.17	2.809	-0.079	0.141	-0.082	0.1180	0.565	1.903	-0.328	0.235	0.00500	0.00600	0.088	0.80	0.591
10/15/2013 21:48	0917-173_No	13_10_15_2148_21_057	1	-6.003	2.602	0.11	0.149	-0.1020	0.126	1.416	1.945	-0.099	0.237	-0.01300	0.00500	-0.093	0.78	0.624
10/15/2013 21:48	0917-173_No	13_10_15_2148_27_247	1	-5.666	2.627	-0.078	0.138	-0.03800	0.1150	1.2790	1.928	-0.370	0.233	0.00200	0.00600	-0.84	0.80	0.604
10/15/2013 21:48	0917-173_No	13_10_15_2148_33_507	1	-8.433	2.527	-0.0190	0.137	0.009	0.126	1.239	1.928	-0.1830	0.227	-0.0160	0.00600	-1.00	0.75	0.55
10/15/2013 21:48	0917-173_No	13_10_15_2148_39_707	1	1.22	2.652	-0.11	0.135	-0.312	0.113	1.4920	1.931	-0.341	0.230	0.01000	0.00600	0.66	0.77	0.495
10/15/2013 21:48	0917-173_No	13_10_15_2148_45_807	1	-3.116	2.569	-0.289	0.146	-0.0070	0.112	0.809	1.908	0.104	0.240	-0.01500	0.00500	-1.19	0.79	0.533
10/15/2013 21:48	0917-173_No	13_10_15_2148_51_967	1	6.08	2.761	0.282	0.144	-0.1330	0.1070	0.488	1.873	-0.10	0.243	-0.00800	0.00600	-1.794	0.83	0.519
10/15/2013 21:48	0917-173_No	13_10_15_2148_58_167	1	0.7920	2.614	-0.124	0.136	-0.0550	0.1080	0.937	1.887	0.135	0.227	0.00000	0.00600	-2.41	0.78	0.479
10/15/2013 21:49	0917-173_No	13_10_15_2149_04_347	1	4.334	2.457	0.049	0.133	-0.0500	0.106	0.688	1.853	-0.191	0.220	-0.01800	0.00600	-2.34	0.75	0.44
10/15/2013 21:49	0917-173_No	13_10_15_2149_10_547	1	-5.23	2.550	-0.0960	0.136	-0.096	0.1090	1.0940	1.824	0.289	0.228	-0.01000	0.00500	-0.77	0.78	0.381
10/15/2013 21:49	0917-173_No	13_10_15_2149_16_637	1	-3.395	2.458	0.274	0.137	0.0010	0.1090	0.893	1.813	-0.456	0.227	-0.00100	0.00500	-1.467	0.76	0.438
10/15/2013 21:49	0917-173_No	13_10_15_2149_22_817	1	-0.183	2.604	0.074	0.132	-0.132	0.1110	1.199	1.792	-0.464	0.222	-0.0180	0.00500	1.23	0.77	0.462
10/15/2013 21:49	0917-173_No	13_10_15_2149_29_027	1	0.239	2.505	-0.021	0.138	0.1360	0.1110	0.805	1.770	-0.072	0.227	-0.01	0.00500	0.12	0.78	0.425
10/15/2013 21:49	0917-173_No	13_10_15_2149_35_237	1	2.712	2.475	0.108	0.131	0.013	0.1010	1.081	1.736	-0.111	0.219	-0.00100	0.00500	-1.402	0.71	0.4
10/15/2013 21:49	0917-173_No	13_10_15_2149_41_427	1	0.700	2.641	0.113	0.138	-0.0190	0.1010	1.31	1.730	-0.257	0.231	0.00000	0.00400	-1.89	0.79	0.386
10/15/2013 21:49	0917-173_No	13_10_15_2149_47_587	1	6.855	2.493	0.111	0.133	-0.228	0.101	0.508	1.672	-0.336	0.224	-0.01	0.00500	-0.301	0.73	0.388
10/15/2013 21:49	0917-173_No	13_10_15_2149_53_757	1	9.516	2.582	0.01	0.139	-0.006	0.1070	0.931	1.668	-0.413	0.231	-0.01200	0.00500	0.710	0.79	0.401
10/15/2013 21:49	0917-173_No	13_10_15_2149_59_967	1	-0.95	2.717	-0.016	0.144	-0.073	0.1060	0.956	1.698	0.153	0.237	-0.01400	0.00600	-0.14	0.79	0.359
10/15/2013 21:50	0917-173_No	13_10_15_2150_06_167	1	-6.54	2.640	0.288	0.149	0.061	0.1030	1.2510	1.733	0.406	0.240	-0.01300	0.00500	0.5800	0.83	0.354
10/15/2013 21:50	0917-173_No	13_10_15_2150_12_367	1	-2.487	2.612	0.481	0.139	-0.0100	0.1010	1.027	1.706	0.007	0.229	0.00300	0.00500	0.5640	0.76	0.371
10/15/2013 21:50	0917-173_No	13_10_15_2150_18_507	1	3.0130	2.486	-0.367	0.133	0.178	0.0970	0.973	1.682	0.13	0.220	-0.00800	0.00500	-1.76	0.76	0.379
10/15/2013 21:50	0917-173_No	13_10_15_2150_24_717	1	-0.850	2.455	0.108	0.137	0.114	0.1050	1.1440	1.698	-0.552	0.224	0.00	0.00600	-0.83	0.76	0.385
10/15/2013 21:50	0917-173_No	13_10_15_2150_30_827	1	8.1690	2.302	0.101	0.140	-0.167	0.0970	0.614	1.673	-0.07	0.221	0.00000	0.00600	-2.76	0.72	0.317
10/15/2013 21:50	0917-173_No	13_10_15_2150_37_127	1	1.34	2.450	-0.162	0.133	-0.108	0.1050	0.8570	1.717	-0.445	0.218	-0.00700	0.00600	-0.33	0.73	0.374
10/15/2013 21:50	0917-173_No	13_10_15_2150_43_317	1	0.847	2.404	0.164	0.142	0.0530	0.111	0.300	1.716	-0.203	0.226	0.00600	0.00500	-1.26	0.71	0.373
10/15/2013 21:50	0917-173_No	13_10_15_2150_49_337	1	5.316	2.187	0.090	0.139	-0.03800	0.108	1.2610	1.650	0.064	0.217	-0.00500	0.00500	0.76	0.74	0.387
10/15/2013 21:50	0917-173_No	13_10_15_2150_55_607	1	6.425	2.530	0.173	0.142	0.1480	0.110	0.663	1.647	-0.20	0.231	-0.01500	0.00600	-1.26	0.76	0.385
10/15/2013 21:51	0917-173_No	13_10_15_2151_01_797	1	6.681	2.558	0.000	0.142	0.203	0.0920	0.866	1.629	0.12	0.233	0.00600	0.00500	-2.76	0.79	0.312
10/15/2013 21:51	0917-173_No	13_10_15_2151_08_017	1	-0.163	2.503	0.0820	0.139	0.1270	0.0920	1.060	1.652	0.000	0.223	-0.00600	0.00500	-1.86	0.73	0.377
10/15/2013 21:51	0917-173_No	13_10_15_2151_14_017	1	1.4770	2.454	-0.195	0.130	0.1010	0.117	1.252	1.669	-0.194	0.217	-0.02000	0.00600	-0.323	0.72	0.34
10/15/2013 21:51	0917-173_No	13_10_15_2151_20_217	1	-1.16	2.614	0.242	0.144	0.1820	0.1080	0.8290	1.673	0.126	0.233	0.00900	0.00500	-0.51	0.81	0.367
10/15/2013 21:51	0917-173_No	13_10_15_2151_26_507	1	2.719	2.638	0.418	0.136	0.102	0.1030	1.425	1.658	0.40	0.229	0.00400	0.00600	-1.61	0.75	0.332
10/15/2013 21:52	0917-173_No	13_10_15_2152_06_718	1	0.106	1.141	0.156	0.0610	-0.097	0.0710	0.9890	1.656	0.05	0.102	-0.00600	0.00300	-1.107	0.330	0.378
10/15/2013 21:53	0917-173_No	13_10_15_2153_07_498	1	1.042	1.046	0.051	0.063	0.0240	0.0710	0.722	1.639	-0.046	0.101	0.00	0.00300	-0.413	0.349	0.4
10/15/2013 21:54	0917-173_No	13_10_15_2154_08_258	1	-0.217	1.048	0.065	0.060	-0.0260	0.0710	0.902	1.623	-0.052	0.098	-0.00400	0.00200	-0.1390	0.322	0.369
10/15/2013 21:55	0917-173_No	13_10_15_2155_09_028	1	1.420	1.042	0.062	0.058	0.01400	0.0680	0.9320	1.609	-0.075	0.094	-0.00900	0.00300	-1.11	0.319	0.376
10/15/2013 21:56	0917-173_No	13_10_15_2156_09_848	1	2.665	1.028	0.070	0.058	-0.02800	0.0670	1.0880	1.605	-0.120	0.095	-0.00700	0.00300	-0.5270	0.312	0.385
10/16/2013 8:35	0917-173_No	13_10_16_0835_04_240	1	1.6	1.3	0.047	0.073	-0.34	1.29	0.175	0.0840	-0.100	0.119	0.056	0.525	0.2640	0.397	-1.594
10/16/2013 8:35	0917-173_No	13_10_16_0835_22_760	1	0.6	1.3	-0.043	0.078	-0.36	1.40	0.168	0.0870	-0.028	0.124	0.058	0.563	0.0150	0.398	-1.741
10/16/2013 8:35	0917-173_No	13_10_16_0835_41_360	1	1.2	1.2	-0.0400	0.070	-0.57	1.45	0.0310	0.0880	-0.012	0.114	0.060	0.585	-0.517	0.376	-1.786

Location	Disc.	#	Start/Stop	Instrument					Label		Label		Label		Label		Label		Label		Label		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 8:35	0917-173_No	13_10_16_0835_59_860	1	-0.4	1.4	0.029	0.076	-0.44	1.48	-0.0550	0.0870	-0.344	0.122	0.059	0.594	1.251	0.410	-1.804
					10/16/2013 8:36	0917-173_No	13_10_16_0836_18_370	1	-2.0	1.3	0.0620	0.077	-0.49	1.49	0.0020	0.0880	-0.291	0.124	0.063	0.604	0.32	0.410	-1.849
					10/16/2013 8:36	0917-173_No	13_10_16_0836_36_990	1	-0.5	1.2	-0.080	0.083	-0.45	1.50	0.052	0.0830	-0.2000	0.127	0.060	0.600	0.490	0.403	-1.886
					10/16/2013 8:36	0917-173_No	13_10_16_0836_55_400	1	0.7	1.3	0.161	0.074	-0.50	1.51	-0.08800	0.0910	0.0660	0.119	0.054	0.603	-0.7310	0.405	-1.844
					10/16/2013 8:37	0917-173_No	13_10_16_0837_14_090	1	1.5	1.4	0.0870	0.072	-0.60	1.50	0.142	0.0960	0.259	0.120	0.064	0.599	-0.1950	0.392	-1.886
					10/16/2013 8:37	0917-173_No	13_10_16_0837_32_591	1	1.9	1.3	-0.0680	0.068	-0.50	1.52	-0.0090	0.0970	-0.214	0.111	0.058	0.603	0.2920	0.375	-1.862
					10/16/2013 8:37	0917-173_No	13_10_16_0837_51_001	1	-0.5	1.4	0.000	0.080	-0.56	1.51	-0.0670	0.0860	-0.0760	0.129	0.066	0.607	0.80	0.434	-1.863
					10/16/2013 8:38	0917-173_No	13_10_16_0838_09_661	1	-2.0	1.4	-0.0950	0.076	-0.47	1.51	0.0600	0.0830	0.069	0.126	0.069	0.605	0.198	0.430	-1.869
					10/16/2013 8:38	0917-173_No	13_10_16_0838_28_111	1	-2.2	1.4	-0.112	0.080	-0.46	1.51	0.1240	0.0900	-0.129	0.128	0.063	0.601	0.043	0.419	-1.864
					10/16/2013 8:38	0917-173_No	13_10_16_0838_46_631	1	-0.1	1.6	-0.0640	0.069	-0.56	1.52	-0.1240	0.0960	0.240	0.121	0.068	0.605	-1.100	0.416	-1.863
					10/16/2013 8:39	0917-173_No	13_10_16_0839_05_251	1	2.0	1.3	-0.010	0.072	-0.42	1.51	0.0600	0.0920	0.000	0.118	0.065	0.602	-0.009	0.390	-1.877
					10/16/2013 8:39	0917-173_No	13_10_16_0839_23_781	1	-0.4	1.4	0.032	0.077	-0.50	1.52	0.110	0.0950	0.013	0.125	0.059	0.604	0.423	0.404	-1.838
					10/16/2013 8:39	0917-173_No	13_10_16_0839_42_371	1	-2.2	1.3	-0.019	0.075	-0.45	1.51	-0.130	0.0920	0.061	0.122	0.059	0.606	0.263	0.396	-1.829
					10/16/2013 8:40	0917-173_No	13_10_16_0840_00_791	1	0.5	1.4	0.056	0.074	-0.45	1.51	-0.1280	0.0970	-0.1550	0.124	0.055	0.606	0.447	0.425	-1.83
					10/16/2013 10:53	0917-173_No	13_10_16_1053_00_580	1	0.502	1.095	0.000	0.067	0.660	0.0730	0.391	1.601	-1.156	0.136	-0.00200	0.00500	0.03	0.333	14.995
Data	Run	10	Start	A	10/16/2013 10:54	0917-173_No	13_10_16_1054_01_360	1	-0.08	1.142	0.073	0.061	0.505	0.0690	0.297	1.589	-1.030	0.131	-0.00300	0.00500	-1.03	0.335	14.321
					10/16/2013 10:55	0917-173_No	13_10_16_1055_02_170	1	1.014	1.105	-0.078	0.072	0.590	0.0720	0.359	1.590	-1.442	0.162	-0.00800	0.00500	-0.70	0.348	19.412
					10/16/2013 10:56	0917-173_No	13_10_16_1056_02_880	1	-2.692	1.134	-0.038	0.071	0.660	0.0760	0.514	1.603	-1.648	0.171	-0.00500	0.00500	-0.67	0.346	21.733
					10/16/2013 10:57	0917-173_No	13_10_16_1057_03_610	1	-0.22	1.111	0.167	0.071	0.692	0.0730	0.489	1.603	-1.639	0.174	-0.00300	0.00500	-0.90	0.321	22.288
					10/16/2013 10:58	0917-173_No	13_10_16_1058_04_380	1	-2.343	1.126	-0.035	0.077	0.744	0.0740	0.503	1.604	-1.866	0.185	-0.00300	0.00400	-1.02	0.355	23.896
					10/16/2013 10:59	0917-173_No	13_10_16_1059_05_200	1	-2.69	1.100	-0.0320	0.072	0.744	0.0740	0.491	1.602	-1.58	0.168	-0.00300	0.00500	-1.21	0.331	21.647
					10/16/2013 11:00	0917-173_No	13_10_16_1100_06_010	1	-0.66	1.040	0.050	0.070	0.808	0.0720	0.547	1.597	-1.434	0.161	-0.00500	0.00500	-1.36	0.333	20.988
					10/16/2013 11:01	0917-173_No	13_10_16_1101_06_711	1	-0.259	1.148	-0.040	0.070	0.801	0.0730	0.330	1.579	-1.758	0.174	-0.00300	0.00400	-0.97	0.343	22.912
					10/16/2013 11:02	0917-173_No	13_10_16_1102_07_491	1	-0.74	1.206	-0.1050	0.074	0.718	0.0730	0.509	1.576	-1.84	0.183	-0.00100	0.00500	-1.26	0.355	24.197
					10/16/2013 11:03	0917-173_No	13_10_16_1103_08_231	1	-1.36	1.078	0.054	0.070	0.750	0.0700	0.458	1.583	-1.785	0.175	-0.00300	0.00500	-0.90	0.334	23.265
					10/16/2013 11:04	0917-173_No	13_10_16_1104_09_041	1	0.41	1.158	0.1040	0.071	0.731	0.0720	0.500	1.567	-1.654	0.177	-0.00700	0.00500	-0.85	0.353	22.689
					10/16/2013 11:05	0917-173_No	13_10_16_1105_09_761	1	-1.69	1.145	0.0060	0.070	0.759	0.0700	0.418	1.566	-1.822	0.177	0.00100	0.00400	-0.76	0.346	23.839
					10/16/2013 11:06	0917-173_No	13_10_16_1106_10_521	1	-0.815	1.130	0.096	0.070	0.750	0.0710	0.572	1.562	-2.005	0.184	0.00	0.00500	-0.10	0.352	24.641
					10/16/2013 11:07	0917-173_No	13_10_16_1107_11_331	1	-1.750	1.180	0.009	0.074	0.672	0.0720	0.489	1.567	-1.889	0.182	-0.00500	0.00500	-0.22	0.357	24.003
					10/16/2013 11:08	0917-173_No	13_10_16_1108_12_061	1	-1.683	1.139	0.060	0.066	0.746	0.0710	0.589	1.567	-1.640	0.164	-0.00600	0.00500	-0.72	0.324	21.025
					10/16/2013 11:09	0917-173_No	13_10_16_1109_12_911	1	-0.447	1.044	-0.0620	0.072	0.699	0.0740	0.458	1.575	-1.657	0.166	-0.00200	0.00500	-0.62	0.341	21.479
					10/16/2013 11:10	0917-173_No	13_10_16_1110_13_621	1	-0.43	1.152	-0.059	0.072	0.708	0.0720	0.402	1.593	-1.50	0.169	-0.00500	0.00500	-1.30	0.348	22.042
					10/16/2013 11:11	0917-173_No	13_10_16_1111_14_401	1	-3.23	1.180	-0.078	0.069	0.703	0.0740	0.507	1.605	-1.564	0.173	-0.00400	0.00500	-1.09	0.351	22.188
					10/16/2013 11:12	0917-173_No	13_10_16_1112_15_162	1	0.01	1.060	0.082	0.073	0.693	0.0750	0.437	1.616	-1.605	0.172	0.00000	0.00500	-0.54	0.322	22.857
					10/16/2013 11:13	0917-173_No	13_10_16_1113_15_972	1	1.41	1.144	-0.07300	0.073	0.742	0.0760	0.464	1.620	-1.782	0.180	-0.00100	0.00500	-1.02	0.351	23.835
					10/16/2013 11:14	0917-173_No	13_10_16_1114_16_712	1	-0.94	1.178	0.010	0.072	0.710	0.0760	0.353	1.638	-2.049	0.180	-0.00700	0.00500	0.01	0.341	23.469
					10/16/2013 11:15	0917-173_No	13_10_16_1115_17_532	1	0.69	1.198	-0.129	0.074	0.706	0.0760	0.641	1.628	-2.105	0.182	-0.00600	0.00500	-0.65	0.346	24.628
					10/16/2013 11:16	0917-173_No	13_10_16_1116_18_342	1	1.54	1.077	-0.0650	0.070	0.710	0.0760	0.373	1.625	-1.818	0.171	-0.00600	0.00500	-0.66	0.326	22.881
					10/16/2013 11:17	0917-173_No	13_10_16_1117_19_052	1	-0.452	1.136	0.0580	0.068	0.607	0.0740	0.466	1.629	-1.485	0.164	-0.00700	0.00500	-0.71	0.342	21.347
					10/16/2013 11:18	0917-173_No	13_10_16_1118_19_792	1	-1.035	1.043	-0.0450	0.073	0.685	0.0740	0.484	1.620	-1.699	0.166	-0.00700	0.00500	-0.79	0.333	21.09
					10/16/2013 11:19	0917-173_No	13_10_16_1119_20_502	1	-2.21	1.232	0.072	0.075	0.690	0.0750	0.546	1.630	-1.876	0.186	-0.00700	0.00500	-1.30	0.364	24.834
					10/16/2013 11:20	0917-173_No	13_10_16_1120_21_332	1	-0.76	1.098	-0.1360	0.069	0.698	0.0780	0.361	1.623	-1.80	0.179	-0.00300	0.00500	-0.91	0.320	24.233
					10/16/2013 11:21	0917-173_No	13_10_16_1121_22_052	1	-1.740	1.167	-0.094	0.073	0.634	0.0770	0.486	1.633	-2.010	0.187	-0.00600	0.00500	-0.63	0.359	24.627
					10/16/2013 11:22	0917-173_No	13_10_16_1122_22_852	1	0.26	1.112	0.084	0.072	0.702	0.0770	0.427	1.649	-2.004	0.187	-0.00300	0.00500	-0.76	0.329	25.817
					10/16/2013 11:23	0917-173_No	13_10_16_1123_23_562	1	-2.10	1.139	0.026	0.072	0.781	0.0770	0.420	1.640	-1.917	0.184	-0.00600	0.00500	-0.49	0.342	24.041
					10/16/2013 11:24	0917-173_No	13_10_16_1124_24_403	1	0.024	1.104	-0.014	0.071	0.721	0.0740	0.401	1.649	-1.583	0.162	-0.00400	0.00500	-0.39	0.343	21.105
					10/16/2013 11:25	0917-173_No	13_10_16_1125_25_123	1	-1.15	1.081	-0.009	0.068	0.641	0.0740	0.517	1.648	-1.635	0.168	-0.00400	0.00500	-0.63	0.324	23
					10/16/2013 11:26	0917-173_No	13_10_16_1126_25_883	1	-1.629	1.143	-0.0420	0.074	0.660	0.0710	0.463	1.640	-1.963	0.195	-0.00300	0.00500	-0.41	0.348	26.804
					10/16/2013 11:27	0917-173_No	13_10_16_1127_26_683	1	-0.25	1.231	-0.0690	0.079	0.663	0.0780	0.591	1.648	-2.54	0.233	-0.00800	0.00500	-1.28	0.353	32.905
					10/16/2013 11:28	0917-173_No	13_10_16_1128_27_423	1	-0.92	1.063	-0.0560	0.080	0.752	0.0760	0.363	1.644	-2.738	0.242	-0.00400	0.00500	-0.83	0.324	34.759
					10/16/2013 11:29	0917-173_No	13_10_16_1129_28_223	1	-1.726	1.135	-0.1430	0.082	0.790	0.0780	0.362	1.643	-3.000	0.254	0.00300	0.00500	-0.9	0.343	37.197
					10/16/2013 11:30	0917-173_No	13_10_16_1130_28_963	1	-2.981	1.169	-0.001	0.086	0.726	0.075	0.374	1.635	-2.79	0.263	-0.00200	0.00500	-1.07	0.359	37.767
					10/16/2013 11:31	0917-173_No	13_10_16_1131_29_793	1	-0.86	1.077	-0.0600	0.076	0.790	0.0760	0.334	1.639	-2.87	0.259	-0.00400	0.00500	-0.6	0.318	37.065
					10/16/2013 11:32	0917-173_No	13_10_16_1132_30_513	1	0.19	1.234	-0.038	0.086	0.772	0.0780	0.349	1.638	-2.817	0.263	-0.00300	0.00500	-0.2	0.365	37.369
					10/16/2013 11:33	0917-173_No	13_10_16_1133_31_273	1	-0.91	1.010	-0.119	0.081	0.799	0.0750	0.497	1.638	-2.40	0.223	-0.00700	0.00500	-0.62	0.323	31.598
					10/16/2013 11:34	0917-173_No	13_10_16_1134_32_083	1	-0.447	1.167	-0.040	0.075	0.762	0.0740	0.409	1.643	-2.284	0.207	-0.00600	0.00500	-0.76	0.353	28.092
					10/16/2013 11:35	0917-173_No	13_10_16_1135_32_843	1	-1.93	1.154	0.0090	0.074	0.800	0.0770	0.293	1.648	-2.19	0.210	-0.00200	0.00500	-1.32	0.340	29.83
					10/16/2013 11:36	0917-173_No	13_10_16_1136_33_654	1	-0.794	1.171	-0.094	0.080	0.739	0.0770	0.464	1.658	-2.280	0.223	-0.00200	0.00500	-0.66	0.351	30.022
					10/16/2013 11:37	0917-173_No	13_10_16_1137_34_364	1	-1.78	1.115	-0.098	0.077	0.817	0.0800	0.380	1.671	-2.416	0.216	-0.00300	0.00500	-0.87	0.329	30.331
					10/16/2013 11:38	0917-173_No	13_10_16_1138_35_174	1	-1.32	1.174	-0.149	0.076	0.704	0.0780	0.494	1.662	-2.201	0.219	-0.00300	0.00500	-0.97	0.349	30.098
					10/16/2013 11:39	0917-173_No	13_10_16_1139_35_894	1	-0.24	1.096	-0.069	0.082	0.757	0.0780	0.371	1.651	-2.249	0.218	-0.00700	0.00500	-0.87	0.341	29.504
					10/16/2013 11:40	0917-173_No	13_10_16_1140_36_704	1	-0.60	1.107	-0.0190	0.070	0.739	0.0760	0.324	1.650	-2.009	0.199	-0.00700	0.00500	-0.94	0.327	28.43
					10/16/2013 11:41	0917-173_No	13_10_16_1141_37_464	1	-0.801	1.112	-0.027	0.071	0.684	0.0770	0.537	1.646	-1.940	0.192	-0.00500	0.00500	-0.78	0.335	26.565
					10/16/2013 11:42	0917-173_No	13_10_16_1142_38_184	1	-1.282	1.120	-0.057	0.071	0.639	0.0770	0.342	1.634	-1.786	0.178	-0.00300	0.00500	-0.95	0.342	22.705
					10/16/2013 11:43	0917-173_No	13_10_16_1143_38_984	1	-0.486	1.069	-0.011	0.078	0.701	0.0740	0.403	1.649	-2.170	0.200	-0.00200	0.00500	-0.57	0.337	27.453
					10/16/2013 11:44	0917-173_No	13_10_16_1144_39_784	1	-3.540	1.166	-0.0930	0.079	0.807	0.0760	0.316	1.658	-2.350	0.218	-0.00200	0.00500	-0.45	0.344	29.991
					10/16/2013 11:45	0917-173_No	13_10_16_1145_40_504	1	-2.273	1.148	-0.0280	0.076	0.735	0.0780	0.244	1.648	-2.052	0.209	-0.00200	0.00500	-1.03	0.337	28.041
					10/16/2013 11:46	0917-173_No	13_10_16_1146_41_324	1	0.92	1.126	-0.078	0.072	0.783	0.0750	0.473	1.647	-2.10	0.196	0.00100	0.00500	-0.82	0.328	26.825
					10/16/2013 11:47	0917-173_No	13_10_16_1147_42_084	1	-0.38	1.137	-0.0750	0.074	0.808	0.0770	0.353	1.639	-2.024	0.193	-0.00600	0.00500	-0.75	0.342	27.02
					10/16/2013 11:48	0917-173_No	13_10_16_1148_42_895	1	-1.072	1.137	0.061	0.075	0.766	0.0770	0.396	1.645	-1.95	0.195	-0.00300	0.00500	-0.81	0.353	26.693
					10/16/2013 11:49	0917-173_No	13_10_16_1149_43_655	1	-1.32	1.078	-0.0350	0.076	0.798	0.0750	0.299	1.640	-2.068	0.201	-0.00200	0.00500	-0.81	0.340	27.797
					10/16/2013 11:50	0917-173_No	13_10_16_1150_44_365	1	-1.591	1.107	-0.021	0.074	0.809	0.0750	0.337	1.624	-2.23	0.205	0.00000	0.00500	-1.31	0.331	28.305
					10/16/2013 11:51	0917-173_No	13_10_16_1151_45_185	1	-1.08	1.074	-0.0380	0.078	0.792	0.0780	0.359	1.630	-2.043	0.204	-0.00600	0.00500	-1.17	0.332	27.386
					10/16/2013 11:52	0917-173_No	13_10_16_1152_45_905	1	-0.823	1.150	0.100	0.077	0.831	0.0780	0.387	1.627	-2.139	0.215	-0.01000	0.00500	-0.73	0.353	28.721
					10/16/2013 11:53	0917-173_No	13_10_16_1153_46_655	1	-0.78	1.063	-0.375	0.089	0.609	0.0650	0.252	1.329	-3.7600	0.226	-0.00500	0.00500	-1.41	0.346	28.861
			Stop		10/16/2013 11:54	0917-173_No	13_10_16_1154_47_485	1	-1.114	0.895	-0.738	0.101	-0.0480	0.0460	-0.107	0.198	-4.16	0.179	-0.00400	0.00500	-1.31	0.405	12.405
					10/16/2013 11:55	0917-173_No	13_10_16_1155_48_205	1	-3.050	0.905	-0.601	0.101	-0.1000	0.0460	-0.240	0.0980	-4.06	0.172	-0.00700	0.00600	-1.14	0.408	11.286
					10/16/2013 11:56	0917-173_No	13_10_16_1156_48_955	1	-2.700	0.960	-0.612	0.102	-0.08500	0.0440	-0.403	0.0980	-3.95	0.177	-0.00400	0.00500	-1.15	0.410	11.171
					10/16/2013 11:57	0917-173_No	13_10_16_1157_49_705	1	-2.41100	0.928	-0.5630	0.103	-0.0830	0.0440	-0.177	0.0920	-4.15	0.174	-0.00600	0.00600	-1.26	0.384	11.095
					10/16/2013 11:58	0917-173_No	13_10_16_1158_50_365	1	-2.718	0.943	-0.500	0.092	0.041	0.0390	-0.257	0.0720	-3.36	0.157	-0.00700	0.00500	-1.01	0.380	9.378
					10/16/2013 11:59	0917-173_No	13_10_16_1159_51_106	1	0.829	0.837	-0.007	0.052	0.0480	0.0320	-0.209	0.0680	-0.692	0.084	-0.00500	0.00500	0.21	0.277	1.97
					10/16/2013 12:00	0917-173_No	13_10_16_1200_51_926	1	-1.415	0.918	-0.0110	0.050	0.0150	0.0310	-0.1260	0.0650	-0.1010	0.083	-0.00300	0.00500	-0.282	0.277	0.359
					10/16/2013 12:01	0917-173_No	13_10_16_1201_52_646	1	0.000	0.921	-0.0130	0.049	-0.00500	0.0320	-0.0860	0.0560	0.0140	0.081	0.00	0.00500	-0.481	0.270	0.3
					10/16/2013 12:02	0917-173_No	13_10_16_1202_53_466	1	0.052	0.858	0.105	0.054	0.262	0.0360	0.063	0.389	-0.588	0.092	0.00200	0.00500	0.04	0.274	6.068
					10/16/2013 12:03	0917-173_No	13_10_16_1203_54_266	1	-0.83	1.132	-0.032	0.077	0.938	0.0730	0.390	1.592	-2.087	0.20	-0.00300	0.00500	-1.03	0.351	26.479
					10/16/2013 12:04	0917-173_No	13_10_16_1204_55_016	1	0.11	1.104	-0.057	0.080	0.964	0.0790	0.252	1.642	-2.326	0.21	-0.00100	0.00500	-0.40	0.339	29.11
					10/16/2013 12:05	0917-173_No	13_10_16_1205_55_716	1	-1.748	1.091	0.041	0.080	0.862	0.0790	0.199	1.635	-2.292	0.22	-0.00400	0.00500	-1.12	0.340	29.545
					10/16/2013 12:06	0917-173_No	13_10_16_1206_56_536	1	-0.91	1.129	-0.022	0.076	0.865	0.0760	0.223	1.632	-2.411	0.22	-0.00900	0.00400	-0.41	0.343	30.342
Data	Run	11	Start	A	10/16/2013 12:07	0917-173_No	13_10_16_1207_57_256	1	-2.19	1.145	-0.075	0.078	0.917	0.0770	0.313	1.626	-2.257	0.21	-0.00700	0.00500	-0.69	0.342	29.037
					10/16/2013 12:08	0917-173_No	13_10_16_1208_58_076	1	-1.03	1.177	-0.061	0.074	0.815	0.0780	0.253	1.616	-2.23	0.20	-0.00400	0.00500	-0.76	0.351	28.112
					10/16/2013 12:09	0917-173_No	13_10_16_1209_58_826	1	1.26	1.162	-0.0940	0.076	0.800	0.0760	0.348	1.617	-1.89	0.19	-0.00400	0.00500	-1.01	0.351	24.93
					10/16/2013 12:10	0917-173_No	13_10_16_1210_59_526	1	-0.126	1.124	0.0330	0.079	0.813	0.0770	0.308	1.623	-1.686	0.19	-0.00600	0.00500	-1.05	0.354	24.225
					10/16/2013 12:12	0917-173_No	13_10_16_1212_00_327	1	-1.53	1.085	-0.036	0.069	0.840	0.0780	0.205	1.615	-1.73	0.18	-0.00800	0.00500	-1.09	0.331	23.65
					10/16/2013 12:13	0917-173_No	13_10_16_1213_01_027	1	-0.90	1.229	0.0090	0.072	0.886	0.0800	0.250	1.622	-1.660	0.18	-0.00400	0.00500	-0.64	0.361	23.764
					10/16/2013 12:14	0917-173_No	13_10_16_1214_01_787	1	-3.07	1.229	0.099	0.073	0.849	0.0770	0.233	1.627	-1.553	0.18	-0.00700	0.00500	-1.00	0.364	23.623
					10/16/2013 12:15	0917-173_No	13_10_16_1215_02_607	1	-0.99	1.093	0.004	0.074	0.884	0.0750	0.052	1.646	-1.624	0.19	-0.00400	0.00500	-0.85	0.345	24.757
					10/16/2013 12:16	0917-173_No	13_10_16_1216_03_317	1	-1.887	1.148	-0.028	0.073	0.843	0.0780	0.178	1.640	-1.793	0.18	-0.00600	0.00500	-0.86	0.340	24.305
					10/16/2013 12:17	0917-173_No	13_10_16_1217_04_127	1	-1.26	1.152	0.035	0.074	1.016	0.0770	0.274	1.675	-2.014	0.19	-0.00500	0.00500	-0.68	0.344	25.932
					10/16/2013 12:18	0917-173_No	13_10_16_1218_04_847	1	-1.41	1.144	-0.0260	0.074	0.888	0.0800	0.231	1.684	-1.940	0.20	-0.00300	0.00500	-0.42	0.348	27.565
					10/16/2013 12:19	0917-173_No	13_10_16_1219_05_647	1	-0.61	1.076	0.0230	0.081	0.878	0.0810	0.274	1.685	-2.122	0.21	-0.00400	0.00500	-0.80	0.354	29.532
					10/16/2013 12:20	0917-173_No	13_10_16_1220_06_357	1	-0.536	1.123	0.044	0.076	0.838	0.0810	0.228	1.685	-2.082	0.21	0.00000	0.00500	-1.03	0.345	29.345
					10/16/2013 12:21	0917-173_No	13_10_16_1221_07_137	1	-1.33	1.079	-0.0290	0.072	0.844	0.0790	0.272	1.670	-2.00	0.20	-0.00500	0.00500	-1.26	0.328	28.829
					10/16/2013 12:22	0917-173_No	13_10_16_1222_07_907	1	-0.861	1.088	-0.182	0.081	0.814	0.0790	0.122	1.664	-2.117	0.21	-0.00500	0.00500	-1.19	0.348	29.171
					10/16/2013 12:23	0917-173_No	13_10_16_1223_08_667	1	-1.48	1.094	-0.04400	0.080	0.817	0.0770	0.218	1.642	-2.043	0.21	-0.00600	0.00500	-1.05	0.342	29.141
					10/16/2013 12:24	0917-173_No	13_10_16_1224_09_398	1	-0.33	1.125	-0.026	0.076	0.714	0.0780	0.403	1.648	-2.018	0.20	-0.00500	0.00600	-0.75	0.340	27.392
					10/16/2013 12:25	0917-173_No	13_10_16_1225_10_208	1	-2.31	1.127	-0.037	0.073	0.722	0.0800	0.221	1.656	-1.91	0.20	-0.00700	0.00500	-1.10	0.344	27.297
					10/16/2013 12:26	0917-173_No	13_10_16_1226_11_008	1	-1.60	1.170	-0.0210	0.072	0.900	0.0800	0.123	1.656	-1.920	0.19	-0.00900	0.00500	-0.07	0.342	26.53
					10/16/2013 12:27	0917-173_No	13_10_16_1227_11_718	1	-1.215	1.132	-0.0400	0.069	0.872	0.0770	0.038	1.661	-1.801	0.20	-0.00800	0.00600	-1.00	0.334	26.605
					10/16/2013 12:28	0917-173_No	13_10_16_1228_12_528	1	-1.522	1.097	-0.0280	0.077	0.818	0.0780	0.201	1.674	-1.81	0.21	-0.00900	0.00500	-1.32	0.346	27.675
					10/16/2013 12:29	0917-173_No	13_10_16_1229_13_248	1	-0.56	1.181	-0.1470	0.076	0.829	0.0800	0.178	1.668	-1.93	0.20	-0.00400	0.00500	-0.52	0.353	27.323
					10/16/2013 12:30	0917-173_No	13_10_16_1230_13_968	1	-0.39	1.108	0.0910	0.080	0.782	0.0780	0.305	1.683	-1.551	0.20	-0.00700	0.00500	-0.64	0.359	26.314
					10/16/2013 12:31	0917-173_No	13_10_16_1231_14_768	1	-0.999	1.206	-0.01400	0.073	0.780	0.0780	0.264	1.675	-1.685	0.19	-0.00500	0.00500	-1.14	0.360	24.728
					10/16/2013 12:32	0917-173_No	13_10_16_1232_15_588	1	-0.87	1.161	-0.179	0.078	0.799	0.0810	0.405	1.677	-1.977	0.19	-0.00500	0.00500	-0.44	0.360	26.101
					10/16/2013 12:33	0917-173_No	13_10_16_1233_16_308	1	-0.903	1.194	-0.035	0.079	0.849	0.0800	0.353	1.677	-1.84	0.20	-0.00800	0.00500	-0.83	0.375	27.005
					10/16/2013 12:34	0917-173_No	13_10_16_1234_17_108	1	-0.17	1.164	-0.02800	0.074	0.787	0.0780	0.204	1.667	-1.75	0.20	-0.00300	0.00500	-1.06	0.345	27.362
					10/16/2013 12:35	0917-173_No	13_10_16_1235_17_878	1	-1.71	1.153	-0.112	0.075	0.692	0.0780	0.290	1.685	-1.64	0.19	-0.00600	0.00500	-1.19	0.339	25.912
					10/16/2013 12:36	0917-173_No	13_10_16_1236_18_609	1	-0.744	1.143	0.015	0.068	0.493	0.0780	0.211	1.651	-1.101	0.15	-0.00500	0.00500	-0.51	0.346	16.226
					10/16/2013 12:37	0917-173_No	13_10_16_1237_19_339	1	-1.80	1.117	-0.050	0.069	0.627	0.0780	0.313	1.659	-1.590	0.16	-0.00300	0.00500	-0.69	0.338	20.464
					10/16/2013 12:38	0917-173_No	13_10_16_1238_20_129	1	-1.29	1.124	-0.0760	0.071	0.850	0.0790	0.284	1.660	-1.905	0.18	-0.00200	0.00500	-0.08	0.351	23.445
					10/16/2013 12:39	0917-173_No	13_10_16_1239_20_839	1	-1.268	1.113	0.060	0.073	0.815	0.0780	0.294	1.676	-1.638	0.19	-0.00200	0.00500	-1.09	0.350	24.25
					10/16/2013 12:40	0917-173_No	13_10_16_1240_21_539	1	-1.093	1.120	-0.070	0.072	0.873	0.0770	0.374	1.662	-1.74	0.19	-0.00400	0.00500	-1.18	0.330	25.073
					10/16/2013 12:41	0917-173_No	13_10_16_1241_22_279	1	-0.42	1.136	-0.0420	0.077	0.921	0.0780	0.323	1.656	-1.982	0.19	0.00100	0.00500	-0.55	0.341	25.429
					10/16/2013 12:42	0917-173_No	13_10_16_1242_23_099	1	-0.33	1.183	-0.0280	0.070	0.870	0.0790	0.354	1.664	-1.718	0.18	-0.00400	0.00500	-0.91	0.345	24.6
					10/16/2013 12:43	0917-173_No	13_10_16_1243_23_869	1	-0.92	1.151	0.061	0.077	0.842	0.0770	0.336	1.667	-1.553	0.17	-0.00900	0.00500	-0.12	0.350	22.097
					10/16/2013 12:44	0917-173_No	13_10_16_1244_24_589	1	-1.01	1.188	0.023	0.073	0.838	0.0780	0.345	1.660	-1.496	0.17	0.00	0.00600	-0.72	0.364	21.381
					10/16/2013 12:45	0917-173_No	13_10_16_1245_25_399	1	0.04	1.123	0.002	0.074	0.736	0.0790	0.180	1.660	-1.591	0.18	-0.00300	0.00500	-0.54	0.357	22.581
					10/16/2013 12:46	0917-173_No	13_10_16_1246_26_109	1	0.876	1.118	0.02600	0.076	0.810	0.0790	0.326	1.670	-1.642	0.18	-0.00600	0.00500	-0.83	0.341	23.595
					10/16/2013 12:47	0917-173_No	13_10_16_1247_26_920	1	-0.150	1.147	-0.0540	0.071	0.901	0.0770	0.279	1.681	-1.806	0.18	-0.00500	0.00500	0.00	0.338	23.741
					10/16/2013 12:48	0917-173_No	13_10_16_1248_27_610	1	-1.51	1.158	0.047	0.077	0.780	0.0780	0.375	1.682	-1.656	0.19	-0.00400	0.00500	-0.74	0.353	24.157
					10/16/2013 12:49	0917-173_No	13_10_16_1249_28_360	1	-0.051	1.098	-0.071	0.075	0.766	0.0760	0.313	1.679	-1.868	0.19	-0.00300	0.00500	-0.75	0.345	25.616
					10/16/2013 12:50	0917-173_No	13_10_16_1250_29_180	1	0.041	1.141	-0.07000	0.078	0.890	0.0800	0.400	1.675	-1.91	0.20	-0.00300	0.00500	-1.48	0.344	27.49
					10/16/2013 12:51	0917-173_No	13_10_16_1251_29_900	1	-2.43	1.107	-0.081	0.072	0.826	0.0800	0.354	1.678	-2.04	0.20	-0.00700	0.00500	-0.81	0.337	27.948
					10/16/2013 12:52	0917-173_No	13_10_16_1252_30_690	1	-0.16	1.057	-0.006	0.077	0.841	0.0820	0.387	1.695	-1.773	0.19	-0.00700	0.00600	-0.94	0.334	26.166
					10/16/2013 12:53	0917-173_No	13_10_16_1253_31_410	1	-0.852	1.172	0.107	0.076	0.827	0.0820	0.202	1.684	-1.944	0.20	-0.00900	0.00500	-0.67	0.342	26.838
					10/16/2013 12:54	0917-173_No	13_10_16_1254_32_180	1	-1.69	1.111	-0.041	0.075	0.919	0.0800	0.324	1.709	-2.072	0.21	-0.00600	0.00500	-0.67	0.340	29.059
					10/16/2013 12:55	0917-173_No	13_10_16_1255_33_000	1	-3.21	1.143	0.015	0.084	0.950	0.0820	0.235	1.723	-2.16	0.23	-0.00400	0.00500	-0.99	0.345	31.52
					10/16/2013 12:56	0917-173_No	13_10_16_1256_33_730	1	-1.530	1.226	-0.044	0.079	0.989	0.0850	0.172	1.720	-2.340	0.23	-0.00500	0.00500	-0.39	0.355	31.623
					10/16/2013 12:57	0917-173_No	13_10_16_1257_34_470	1	-1.425	1.076	-0.095	0.078	0.955	0.0850	0.338	1.721	-2.25	0.21	-0.00700	0.00500	-0.75	0.330	30.398
					10/16/2013 12:58	0917-173_No	13_10_16_1258_35_290	1	-0.84	1.171	-0.0150	0.079	0.889	0.0820	0.308	1.702	-2.11	0.22	-0.00100	0.00500	-1.09	0.351	29.667
					10/16/2013 12:59	0917-173_No	13_10_16_1259_36_101	1	-0.546	1.211	-0.1530	0.078	1.000	0.0800	0.163	1.692	-2.460	0.23	-0.00500	0.00500	-0.63	0.353	32.002
					10/16/2013 13:00	0917-173_No	13_10_16_1300_36_841	1	-1.21	1.052	-0.0820	0.076	1.030	0.0800	0.378	1.685	-2.448	0.23	-0.00800	0.00500	-0.70	0.329	32.857
					10/16/2013 13:01	0917-173_No	13_10_16_1301_37_541	1	-0.646	1.137	-0.1020	0.078	1.028	0.0820	0.275	1.675	-2.532	0.24	-0.00500	0.00500	-1.07	0.335	34.249
					10/16/2013 13:02	0917-173_No	13_10_16_1302_38_371	1	-0.10	0.998	-0.081	0.072	0.950	0.0790	0.306	1.672	-2.30	0.22	-0.00800	0.00500	-0.89	0.308	32.161
					10/16/2013 13:03	0917-173_No	13_10_16_1303_39_101	1	-1.268	1.080	0.038	0.072	0.818	0.0780	0.383	1.673	-2.178	0.21	-0.00600	0.00500	-0.56	0.336	29.682
					10/16/2013 13:04	0917-173_No	13_10_16_1304_39_851	1	-1.83	1.130	-0.01500	0.078	0.836	0.0790	0.310	1.684	-2.217	0.21	-0.00500	0.00500	-0.32	0.342	29.461
					10/16/2013 13:05	0917-173_No	13_10_16_1305_40_591	1	-0.75	1.090	-0.1390	0.079	0.844	0.0800	0.231	1.669	-2.211	0.22	-0.00900	0.00500	-0.55	0.347	30.477
					10/16/2013 13:06	0917-173_No	13_10_16_1306_41_411	1	-1.53	1.100	-0.157	0.079	0.657	0.0650	0.275	1.352	-2.874	0.20	-0.00400	0.00500	-0.79	0.331	26.864
			Stop		10/16/2013 13:07	0917-173_No	13_10_16_1307_42_181	1	-1.799	0.908	-0.5570	0.096	0.0300	0.0400	-0.012	0.208	-4.08	0.17	-0.00500	0.00500	-1.39	0.373	11.973
					10/16/2013 13:08	0917-173_No	13_10_16_1308_42_881	1	-1.4690	0.919	-0.5170	0.098	-0.1220	0.0410	-0.227	0.1050	-4.11	0.17	-0.00300	0.00600	-1.58	0.376	11.071

Location	Disc.	#	Start/Stop	Instrument					Label 1-Analyte		Label 2-Analyte		Label 3-Analyte/Spike		Label 4-Analyte		Label 5-Analyte		Label Tracer		Label 6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 13:09	0917-173_No	13_10_16_1309_43_691	1	-0.579	0.886	-0.632	0.095	-0.07800	0.0410	-0.127	0.0870	-3.99	0.16	-0.00600	0.00500	-1.04	0.368	10.954
					10/16/2013 13:10	0917-173_No	13_10_16_1310_44_401	1	-1.667	0.846	-0.3790	0.070	0.0130	0.0350	-0.214	0.0740	-2.402	0.11	0.00100	0.00500	-1.109	0.288	6.416
					10/16/2013 13:11	0917-173_No	13_10_16_1311_45_182	1	-1.531	0.843	-0.105	0.048	0.0060	0.0310	-0.157	0.0570	-0.386	0.08	-0.00100	0.00500	-0.242	0.254	1.022
					10/16/2013 13:12	0917-173_No	13_10_16_1312_45_992	1	-1.194	0.906	-0.008	0.050	0.312	0.0360	0.096	0.426	-0.646	0.10	0.00	0.00500	-0.67	0.266	9.06
					10/16/2013 13:13	0917-173_No	13_10_16_1313_46_712	1	-1.42	1.155	-0.009	0.081	1.101	0.0820	0.124	1.706	-2.681	0.26	-0.00600	0.00500	-0.5	0.340	38.441
					10/16/2013 13:15	0917-173_No	13_10_16_1315_58_340	1	-0.37	1.116	-0.07300	0.086	1.139	0.0860	0.212	1.726	-2.727	0.26	-0.00400	0.00500	-0.9	0.348	37.456
					10/16/2013 13:16	0917-173_No	13_10_16_1316_59_150	1	0.265	1.100	-0.024	0.080	1.033	0.0810	0.277	1.708	-2.584	0.23	-0.00800	0.00500	-0.56	0.349	33.008
					10/16/2013 13:17	0917-173_No	13_10_16_1317_59_820	1	0.24	1.035	0.0310	0.076	0.889	0.0800	0.238	1.675	-2.177	0.21	0.00000	0.00500	-0.52	0.334	29.148
					10/16/2013 13:19	0917-173_No	13_10_16_1319_00_620	1	-0.134	1.163	-0.0100	0.071	0.853	0.0780	0.442	1.662	-1.734	0.19	-0.00300	0.00500	-0.59	0.348	26.019
					10/16/2013 13:20	0917-173_No	13_10_16_1320_01_430	1	-0.67	1.153	-0.004	0.069	0.759	0.0770	0.433	1.645	-1.653	0.19	-0.00600	0.00500	-1.09	0.330	25.153
Data	Run	12	Start	A	10/16/2013 13:21	0917-173_No	13_10_16_1321_03_140	1	0.01	1.073	0.005	0.075	0.807	0.0770	0.333	1.645	-2.013	0.20	-0.00800	0.00600	-0.51	0.327	28.497
					10/16/2013 13:22	0917-173_No	13_10_16_1322_03_770	1	-0.13	1.172	0.028	0.070	0.787	0.0790	0.393	1.648	-1.70	0.19	-0.00200	0.00500	-0.78	0.336	25.367
					10/16/2013 13:23	0917-173_No	13_10_16_1323_04_590	1	-0.22	1.082	-0.0370	0.069	0.759	0.0760	0.436	1.651	-1.57	0.18	-0.00800	0.00500	-0.96	0.319	23.615
					10/16/2013 13:24	0917-173_No	13_10_16_1324_05_290	1	-2.83	1.131	-0.035	0.074	0.882	0.0790	0.414	1.657	-2.061	0.21	0.00000	0.00500	-0.62	0.351	30.08
					10/16/2013 13:25	0917-173_No	13_10_16_1325_06_110	1	-2.43	1.104	-0.063	0.079	0.960	0.0810	0.232	1.663	-2.54	0.24	-0.00500	0.00600	-1.08	0.331	34.871
					10/16/2013 13:26	0917-173_No	13_10_16_1326_06_890	1	-0.316	1.155	-0.116	0.082	1.018	0.0820	0.230	1.672	-2.885	0.25	-0.00700	0.00500	-0.53	0.339	36.512
					10/16/2013 13:27	0917-173_No	13_10_16_1327_07_651	1	0.35	1.215	0.018	0.079	1.029	0.0820	0.408	1.674	-2.47	0.24	-0.00600	0.00500	-0.73	0.352	34.706
					10/16/2013 13:28	0917-173_No	13_10_16_1328_08_371	1	0.27	1.221	0.026	0.083	1.075	0.0840	0.314	1.693	-2.305	0.24	-0.00600	0.00500	-0.69	0.355	34.401
					10/16/2013 13:29	0917-173_No	13_10_16_1329_09_101	1	0.47	1.202	0.0140	0.080	0.954	0.0840	0.457	1.716	-2.133	0.23	-0.00600	0.00500	-0.73	0.360	32.095
					10/16/2013 13:30	0917-173_No	13_10_16_1330_09_901	1	0.01	1.177	-0.0380	0.083	0.975	0.0860	0.354	1.732	-2.354	0.24	-0.00800	0.00500	-0.83	0.354	34.103
					10/16/2013 13:31	0917-173_No	13_10_16_1331_10_691	1	-1.56	1.194	-0.002	0.086	0.944	0.0840	0.303	1.735	-2.31	0.24	-0.00600	0.00600	-0.90	0.368	33.531
					10/16/2013 13:32	0917-173_No	13_10_16_1332_11_411	1	-0.38	1.141	-0.0770	0.083	0.989	0.0870	0.463	1.744	-2.40	0.24	-0.00400	0.00500	-0.89	0.350	35.128
					10/16/2013 13:33	0917-173_No	13_10_16_1333_12_131	1	-0.53	1.282	-0.1180	0.083	0.945	0.0850	0.087	1.737	-2.465	0.25	-0.00500	0.00500	-0.81	0.366	35.767
					10/16/2013 13:34	0917-173_No	13_10_16_1334_12_951	1	-0.499	1.185	-0.034	0.085	0.971	0.0870	0.220	1.728	-2.588	0.26	-0.00200	0.00500	-0.56	0.345	37.467
					10/16/2013 13:35	0917-173_No	13_10_16_1335_13_701	1	1.69	1.182	-0.03500	0.085	1.042	0.0860	0.293	1.714	-2.466	0.26	-0.00400	0.00500	-0.3	0.353	37.268
					10/16/2013 13:36	0917-173_No	13_10_16_1336_14_461	1	-0.37	1.231	-0.013	0.088	0.963	0.0850	0.206	1.709	-2.34	0.25	-0.00800	0.00500	-1.16	0.357	36.673
					10/16/2013 13:37	0917-173_No	13_10_16_1337_15_271	1	-1.156	1.168	0.025	0.084	1.050	0.0850	0.216	1.713	-2.43	0.26	-0.00400	0.00500	-0.93	0.354	37.13
					10/16/2013 13:38	0917-173_No	13_10_16_1338_15_941	1	0.02	1.162	-0.11300	0.087	1.107	0.0840	0.254	1.716	-2.724	0.27	-0.00300	0.00500	-0.4	0.355	38.784
					10/16/2013 13:39	0917-173_No	13_10_16_1339_16_752	1	1.67	1.110	-0.199	0.083	0.986	0.0840	0.376	1.694	-2.42	0.24	-0.00400	0.00500	-0.78	0.339	35.181
					10/16/2013 13:40	0917-173_No	13_10_16_1340_17_442	1	0.243	1.182	-0.1000	0.079	0.985	0.0860	0.389	1.694	-1.989	0.23	-0.00800	0.00500	-0.90	0.363	31.872
					10/16/2013 13:41	0917-173_No	13_10_16_1341_18_272	1	-1.91	1.166	0.032	0.077	0.906	0.0820	0.233	1.696	-1.95	0.22	-0.00300	0.00500	-0.87	0.352	30.885
					10/16/2013 13:42	0917-173_No	13_10_16_1342_18_982	1	-0.72	1.147	0.050	0.079	0.854	0.0830	0.323	1.683	-1.874	0.21	-0.01300	0.00500	-1.14	0.342	28.464
					10/16/2013 13:43	0917-173_No	13_10_16_1343_19_792	1	0.10	1.114	-0.0190	0.072	0.816	0.0790	0.289	1.685	-1.763	0.19	-0.00700	0.00500	-0.63	0.337	25.846
					10/16/2013 13:44	0917-173_No	13_10_16_1344_20_512	1	-2.174	1.143	0.050	0.073	0.750	0.0810	0.320	1.675	-1.507	0.18	-0.00500	0.00400	-0.37	0.354	23.793
					10/16/2013 13:45	0917-173_No	13_10_16_1345_21_252	1	-0.380	1.065	-0.004	0.071	0.794	0.0830	0.302	1.697	-1.165	0.17	-0.00800	0.00500	-1.02	0.334	21.522
					10/16/2013 13:46	0917-173_No	13_10_16_1346_22_032	1	0.30	1.132	0.033	0.073	0.809	0.0840	0.257	1.714	-1.251	0.17	-0.00800	0.00600	-0.41	0.348	20.519
					10/16/2013 13:47	0917-173_No	13_10_16_1347_22_792	1	1.046	1.201	0.043	0.070	0.909	0.0830	0.424	1.733	-0.99	0.17	-0.00900	0.00500	-1.17	0.354	20.519
					10/16/2013 13:48	0917-173_No	13_10_16_1348_23_542	1	0.784	1.180	0.011	0.070	0.927	0.0850	0.420	1.748	-1.21	0.17	-0.00900	0.00500	-0.77	0.349	21.666
					10/16/2013 13:49	0917-173_No	13_10_16_1349_24_252	1	-0.92	1.187	0.040	0.071	0.873	0.0840	0.283	1.754	-1.248	0.17	-0.01300	0.00500	-0.33	0.357	21.937
					10/16/2013 13:50	0917-173_No	13_10_16_1350_25_052	1	0.65	1.225	-0.015	0.079	0.919	0.0880	0.363	1.755	-1.510	0.19	-0.01000	0.00500	-0.29	0.366	23.894
					10/16/2013 13:51	0917-173_No	13_10_16_1351_25_803	1	-1.82	1.181	0.105	0.071	0.871	0.0850	0.319	1.758	-1.25	0.18	-0.00600	0.00500	-0.93	0.341	23.987
					10/16/2013 13:52	0917-173_No	13_10_16_1352_26_603	1	-1.44	1.146	-0.0240	0.077	0.824	0.0840	0.399	1.736	-1.346	0.19	-0.01000	0.00500	-0.60	0.354	23.09
					10/16/2013 13:53	0917-173_No	13_10_16_1353_27_313	1	0.089	1.220	0.0530	0.072	0.917	0.0820	0.295	1.737	-1.319	0.17	-0.00400	0.00500	-0.97	0.349	21.507
					10/16/2013 13:54	0917-173_No	13_10_16_1354_28_013	1	0.444	1.194	0.012	0.071	0.935	0.0820	0.518	1.735	-1.20	0.17	-0.00800	0.00500	-0.96	0.358	20.724
					10/16/2013 13:55	0917-173_No	13_10_16_1355_28_823	1	-1.47	1.229	-0.03000	0.068	0.899	0.0860	0.355	1.735	-1.257	0.17	-0.00900	0.00500	-0.61	0.356	20.785
					10/16/2013 13:56	0917-173_No	13_10_16_1356_29_593	1	-0.25	1.144	-0.0150	0.072	0.947	0.0850	0.480	1.742	-1.238	0.17	-0.00800	0.00500	-0.42	0.348	21.091
					10/16/2013 13:57	0917-173_No	13_10_16_1357_30_333	1	0.40	1.170	0.047	0.075	0.900	0.0860	0.463	1.762	-1.309	0.18	-0.00800	0.00600	-0.44	0.348	22.295
					10/16/2013 13:58	0917-173_No	13_10_16_1358_31_053	1	0.545	1.144	-0.0060	0.072	0.998	0.0870	0.346	1.764	-1.395	0.17	-0.00600	0.00500	0.15	0.358	22.383
					10/16/2013 13:59	0917-173_No	13_10_16_1359_31_863	1	-1.81	1.309	0.061	0.072	0.914	0.0870	0.609	1.754	-1.262	0.17	-0.01200	0.00500	-0.49	0.373	21.757
					10/16/2013 14:00	0917-173_No	13_10_16_1400_32_603	1	0.05	1.233	0.077	0.074	0.800	0.0870	0.422	1.741	-1.026	0.16	-0.00700	0.00500	-0.57	0.369	19.524
					10/16/2013 14:01	0917-173_No	13_10_16_1401_33_323	1	-0.46	1.190	0.031	0.071	0.776	0.0850	0.412	1.717	-1.24	0.17	-0.00400	0.00500	-0.78	0.354	21.255
					10/16/2013 14:02	0917-173_No	13_10_16_1402_34_073	1	1.97	1.185	0.038	0.077	0.853	0.0820	0.495	1.703	-1.584	0.180	-0.00700	0.00500	-0.10	0.354	23.537
					10/16/2013 14:03	0917-173_No	13_10_16_1403_34_794	1	0.88	1.119	0.043	0.070	0.915	0.0810	0.383	1.697	-1.494	0.186	-0.00800	0.00500	-0.48	0.321	24.663
					10/16/2013 14:04	0917-173_No	13_10_16_1404_35_484	1	0.66	1.085	0.0190	0.077	0.886	0.0800	0.436	1.692	-1.577	0.194	-0.00600	0.00500	-1.01	0.327	25.761
					10/16/2013 14:05	0917-173_No	13_10_16_1405_36_184	1	-0.997	1.132	-0.0460	0.079	0.856	0.0820	0.450	1.691	-1.487	0.199	-0.00600	0.00500	-0.94	0.363	26.077
					10/16/2013 14:06	0917-173_No	13_10_16_1406_36_954	1	-1.58	1.156	0.002	0.078	0.871	0.0820	0.432	1.696	-1.676	0.197	-0.00500	0.00500	-0.81	0.353	26.139
					10/16/2013 14:07	0917-173_No	13_10_16_1407_37_704	1	0.86	1.236	0.011	0.080	0.859	0.0810	0.374	1.691	-1.61	0.197	-0.00600	0.00500	-0.54	0.361	26.473
					10/16/2013 14:08	0917-173_No	13_10_16_1408_38_404	1	0.335	1.137	-0.0120	0.074	0.817	0.0800	0.404	1.700	-1.489	0.192	-0.00900	0.00500	-0.35	0.350	25.852
					10/16/2013 14:09	0917-173_No	13_10_16_1409_39_214	1	0.43	1.173	0.050	0.076	0.854	0.0830	0.476	1.712	-1.50	0.187	-0.00500	0.00500	-0.56	0.355	24.253
					10/16/2013 14:10	0917-173_No	13_10_16_1410_39_914	1	0.22	1.214	0.033	0.072	0.818	0.0840	0.308	1.732	-1.30	0.173	-0.00300	0.00500	-0.57	0.355	23.866
					10/16/2013 14:11	0917-173_No	13_10_16_1411_40_714	1	-1.44	1.206	0.0240	0.077	0.841	0.0810	0.349	1.725	-1.50	0.188	-0.00400	0.00500	-0.65	0.363	24.986
					10/16/2013 14:12	0917-173_No	13_10_16_1412_41_424	1	-2.070	1.208	0.042	0.078	0.855	0.0850	0.463	1.743	-1.43	0.195	-0.00900	0.00500	-0.69	0.363	26.406
					10/16/2013 14:13	0917-173_No	13_10_16_1413_42_174	1	0.32	1.143	-0.056	0.077	0.857	0.0840	0.538	1.724	-1.47	0.203	-0.00500	0.00500	-1.02	0.347	27.56
					10/16/2013 14:14	0917-173_No	13_10_16_1414_42_985	1	-0.08	1.207	-0.123	0.078	0.770	0.0820	0.460	1.717	-1.689	0.196	-0.00700	0.00500	-0.45	0.365	27.18
					10/16/2013 14:15	0917-173_No	13_10_16_1415_43_685	1	-1.358	1.128	-0.055	0.077	0.822	0.0800	0.322	1.713	-1.54	0.205	-0.00900	0.00500	-1.23	0.344	27.479
					10/16/2013 14:16	0917-173_No	13_10_16_1416_44_515	1	-0.51	1.156	-0.0070	0.077	0.718	0.0810	0.400	1.697	-1.466	0.199	-0.00900	0.00500	-0.83	0.352	26.926
					10/16/2013 14:17	0917-173_No	13_10_16_1417_45_225	1	-0.34	1.189	0.001	0.078	0.686	0.0810	0.340	1.689	-1.39	0.194	-0.00700	0.00500	-1.12	0.360	25.916
					10/16/2013 14:18	0917-173_No	13_10_16_1418_45_945	1	-1.49	1.152	-0.0610	0.074	0.739	0.0790	0.287	1.706	-1.50	0.194	-0.00400	0.00500	-0.59	0.345	26.835
			Stop		10/16/2013 14:19	0917-173_No	13_10_16_1419_46_755	1	-1.52	1.253	-0.086	0.079	0.872	0.0840	0.472	1.725	-1.75	0.211	-0.00200	0.00500	-0.98	0.370	28.304
					10/16/2013 15:07	0917-173_No	13_10_16_1507_27_499	1	2.0	1.4	0.103	0.074	-0.32	0.98	-0.256	0.0870	0.109	0.120	0.039	0.414	-0.96	0.395	-1.196
					10/16/2013 15:07	0917-173_No	13_10_16_1507_46_029	1	2.3	1.4	0.11100	0.073	-0.43	1.22	0.0250	0.1010	-0.172	0.121	0.053	0.503	0.33	0.403	-1.511
					10/16/2013 15:08	0917-173_No	13_10_16_1508_04_639	1	1.0	1.4	-0.1270	0.077	-0.39	1.36	-0.1250	0.0990	-0.057	0.124	0.050	0.550	-0.2400	0.407	-1.684
					10/16/2013 15:08	0917-173_No	13_10_16_1508_23_129	1	0.8	1.5	0.1330	0.079	-0.39	1.43	-0.02700	0.0920	0.175	0.129	0.053	0.577	-0.001	0.432	-1.773
					10/16/2013 15:08	0917-173_No	13_10_16_1508_41_629	1	1.2	1.3	0.063	0.072	-0.35	1.47	0.0370	0.1000	-0.024	0.116	0.044	0.587	-1.128	0.384	-1.779
					10/16/2013 15:09	0917-173_No	13_10_16_1509_00_239	1	-0.2	1.4	0.147	0.077	-0.54	1.48	-0.0840	0.0960	0.022	0.127	0.052	0.594	0.002	0.417	-1.842
					10/16/2013 15:09	0917-173_No	13_10_16_1509_18_749	1	2.0	1.4	0.1460	0.074	-0.39	1.50	-0.095	0.0920	0.088	0.122	0.039	0.597	0.091	0.400	-1.842
					10/16/2013 15:09	0917-173_No	13_10_16_1509_37_259	1	-2.0	1.4	-0.0010	0.073	-0.46	1.50	-0.0920	0.1050	-0.377	0.124	0.048	0.598	-0.1390	0.404	-1.814
					10/16/2013 15:09	0917-173_No	13_10_16_1509_55_859	1	-0.6	1.2	0.003	0.076	-0.45	1.50	0.234	0.1000	0.037	0.119	0.045	0.603	0.947	0.379	-1.852
					10/16/2013 15:10	0917-173_No	13_10_16_1510_14_359	1	1.5	1.3	0.116	0.078	-0.56	1.50	-0.0540	0.0900	0.201	0.124	0.054	0.602	0.199	0.412	-1.864
					10/16/2013 15:10	0917-173_No	13_10_16_1510_32_979	1	-0.9	1.5	-0.0250	0.079	-0.23	1.50	0.0780	0.0910	0.1120	0.131	0.051	0.599	-0.542	0.447	-1.852
					10/16/2013 15:10	0917-173_No	13_10_16_1510_51_429	1	-0.5	1.3	0.224	0.078	-0.40	1.51	-0.279	0.0860	-0.024	0.125	0.057	0.605	-0.047	0.409	-1.847
					10/16/2013 15:11	0917-173_No	13_10_16_1511_09_939	1	1.5	1.3	-0.211	0.081	-0.40	1.50	-0.0280	0.0830	-0.122	0.130	0.039	0.600	0.30	0.426	-1.875
					10/16/2013 15:11	0917-173_No	13_10_16_1511_28_549	1	0.5	1.4	0.191	0.071	-0.51	1.51	0.188	0.0910	0.1010	0.118	0.058	0.601	0.247	0.405	-1.841
					10/16/2013 15:11	0917-173_No	13_10_16_1511_47_059	1	2.1	1.4	0.006	0.077	-0.44	1.51	0.1440	0.1050	0.177	0.126	0.060	0.604	-0.017	0.416	-1.868
					10/16/2013 15:12	0917-173_No	13_10_16_1512_05_669	1	-5.3	1.4	0.061	0.079	-0.49	1.51	0.0750	0.1010	-0.104	0.128	0.046	0.604	0.5000	0.422	-1.844
					10/16/2013 15:12	0917-173_No	13_10_16_1512_24_089	1	-0.8	1.5	-0.204	0.076	-0.46	1.51	0.0800	0.1000	0.241	0.126	0.049	0.600	-0.072	0.426	-1.861
					10/16/2013 15:12	0917-173_No	13_10_16_1512_42_599	1	0.0	1.3	-0.030	0.078	-0.54	1.51	0.0350	0.1010	-0.0330	0.126	0.041	0.601	-0.712	0.404	-1.862
					10/16/2013 15:13	0917-173_No	13_10_16_1513_01_239	1	-1.9	1.4	-0.084	0.082	-0.41	1.50	-0.0530	0.0890	-0.140	0.130	0.047	0.605	-0.069	0.420	-1.855
					10/16/2013 15:24	0917-173_No	13_10_16_1524_39_510	1	-9.498	2.944	0.005	0.172	-0.319	0.127	0.744	1.19	-0.201	0.28	-0.01	0.00700	-1.31	0.91	-0.121
					10/16/2013 15:24	0917-173_No	13_10_16_1524_45_660	1	-1.855	3.070	0.149	0.165	-0.110	0.135	0.774	1.21	-0.223	0.270	-0.01000	0.00600	0.41	0.91	-0.137
					10/16/2013 15:24	0917-173_No	13_10_16_1524_51_900	1	-2.990	3.159	-0.225	0.174	-0.070	0.131	0.852	1.17	-0.261	0.28	-0.01400	0.00700	-1.819	0.96	-0.09
					10/16/2013 15:24	0917-173_No	13_10_16_1524_58_140	1	-4.382	3.126	-0.090	0.169	-0.05400	0.133	0.906	1.15	-0.340	0.28	-0.01000	0.00700	-0.578	0.92	-0.052
					10/16/2013 15:25	0917-173_No	13_10_16_1525_04_280	1	-2.950	2.884	-0.126	0.180	-0.0860	0.134	0.670	1.15	-0.185	0.28	-0.01000	0.00700	0.33	0.93	-0.131
					10/16/2013 15:25	0917-173_No	13_10_16_1525_10_440	1	-3.439	2.849	-0.149	0.160	-0.1470	0.131	1.123	1.15	-0.147	0.26	-0.02000	0.00600	-1.94	0.87	-0.155
					10/16/2013 15:25	0917-173_No	13_10_16_1525_16_600	1	-1.007	2.990	0.164	0.163	-0.182	0.132	0.521	1.14	0.339	0.268	-0.02200	0.00800	-2.75	0.87	-0.07
					10/16/2013 15:25	0917-173_No	13_10_16_1525_22_760	1	-4.964	3.158	-0.302	0.173	-0.263	0.126	1.317	1.18	0.08	0.29	-0.01600	0.00700	-3.00	0.94	-0.052
					10/16/2013 15:25	0917-173_No	13_10_16_1525_29_030	1	-6.310	3.107	-0.036	0.167	-0.027	0.127	0.842	1.14	0.21	0.28	-0.01700	0.00700	-2.67	0.93	-0.117
					10/16/2013 15:25	0917-173_No	13_10_16_1525_35_200	1	-3.101	3.307	-0.368	0.174	0.087	0.131	1.4460	1.17	-0.027	0.29	-0.01100	0.00700	-0.427	0.97	-0.092
					10/16/2013 15:25	0917-173_No	13_10_16_1525_41_280	1	-1.356	2.893	-0.323	0.169	-0.1700	0.132	1.020	1.18	0.083	0.27	-0.02000	0.00700	-1.094	0.93	-0.098
					10/16/2013 15:25	0917-173_No	13_10_16_1525_47_500	1	-1.396	3.093	0.055	0.176	-0.180	0.135	1.568	1.21	-0.436	0.28	-0.02000	0.00600	-0.686	0.94	-0.101
					10/16/2013 15:25	0917-173_No	13_10_16_1525_53_690	1	-2.776	3.259	-0.027	0.173	-0.492	0.129	1.023	1.20	0.028	0.283	-0.01600	0.00700	-2.09	0.94	-0.08
					10/16/2013 15:25	0917-173_No	13_10_16_1525_59_901	1	-3.399	3.047	-0.260	0.175	-0.247	0.133	1.070	1.27	0.26	0.28	-0.01200	0.00600	-1.8730	0.94	-0.072
					10/16/2013 15:26	0917-173_No	13_10_16_1526_06_101	1	1.91	2.887	-0.246	0.174	-0.391	0.133	1.058	1.27	0.071	0.277	-0.00600	0.00700	-1.68	0.91	0.056
					10/16/2013 15:26	0917-173_No	13_10_16_1526_12_201	1	-5.794	2.873	-0.341	0.169	-0.1640	0.135	1.077	1.333	-0.172	0.268	0.0010	0.00700	-0.591	0.87	0.035
					10/16/2013 15:26	0917-173_No	13_10_16_1526_18_411	1	-5.418	3.102	-0.2320	0.163	-0.153	0.126	0.774	1.327	0.370	0.271	-0.00800	0.00700	-2.78	0.90	-0.005
					10/16/2013 15:26	0917-173_No	13_10_16_1526_24_601	1	1.34	3.084	0.247	0.164	-0.164	0.134	1.878	1.388	-0.201	0.271	-0.01600	0.00700	0.27	0.89	0.062
					10/16/2013 15:26	0917-173_No	13_10_16_1526_30_811	1	-8.68	2.803	-0.145	0.172	-0.160	0.132	0.635	1.457	-0.417	0.268	-0.01300	0.00700	-0.373	0.87	0.046
					10/16/2013 15:26	0917-173_No	13_10_16_1526_37_001	1	-0.835	2.847	-0.2140	0.161	-0.300	0.125	1.223	1.462	-0.104	0.259	-0.01400	0.00700	-0.747	0.87	0.137
					10/16/2013 15:26	0917-173_No	13_10_16_1526_43_091	1	-8.195	2.895	0.110	0.166	-0.0540	0.1320	1.463	1.516	-0.216	0.269	-0.01	0.00700	-0.81	0.91	0.103
					10/16/2013 15:26	0917-173_No	13_10_16_1526_49_291	1	-3.85	2.779	-0.1280	0.161	-0.139	0.129	1.265	1.526	-0.395	0.259	-0.01000	0.00700	-0.46	0.84	0.192
					10/16/2013 15:26	0917-173_No	13_10_16_1526_55_501	1	-2.391	2.755	-0.095	0.154	-0.166	0.135	0.969	1.578	-0.503	0.250	-0.00200	0.00700	0.416	0.83	0.174
					10/16/2013 15:27	0917-173_No	13_10_16_1527_01_701	1	1.30	2.630	-0.3610	0.157	-0.0010	0.124	1.249	1.627	0.3040	0.249	-0.01400	0.00700	-1.07	0.84	0.197
					10/16/2013 15:27	0917-173_No	13_10_16_1527_07_801	1	1.113	2.951	-0.198	0.160	-0.188	0.125	0.962	1.669	-0.174	0.262	-0.01100	0.00700	-0.34	0.89	0.165
					10/16/2013 15:27	0917-173_No	13_10_16_1527_14_001	1	-2.123	2.852	0.087	0.153	-0.193	0.128	1.100	1.634	-0.038	0.254	-0.02100	0.00600	-0.35	0.84	0.239
					10/16/2013 15:27	0917-173_No	13_10_16_1527_20_221	1	-4.845	2.811	0.134	0.159	-0.134	0.136	1.158	1.641	-0.2420	0.258	-0.00800	0.00600	-1.287	0.84	0.206
					10/16/2013 15:27	0917-173_No	13_10_16_1527_26_421	1	-1.269	2.875	-0.309	0.167	-0.086	0.127	1.272	1.698	-0.318	0.267	0.00400	0.00600	-1.15	0.88	0.269
					10/16/2013 15:27	0917-173_No	13_10_16_1527_32_621	1	-3.604	2.828	0.203	0.157	-0.180	0.123	0.825	1.758	-0.385	0.256	-0.01700	0.00600	-1.76	0.86	0.24
					10/16/2013 15:27	0917-173_No	13_10_16_1527_38_721	1	-2.039	2.873	-0.201	0.153	-0.154	0.137	0.683	1.690	0.027	0.253	-0.02600	0.00600	-0.637	0.86	0.267
					10/16/2013 15:27	0917-173_No	13_10_16_1527_44_921	1	-2.521	2.819	-0.124	0.161	0.095	0.133	0.892	1.751	-0.70	0.260	-0.01000	0.00600	1.97	0.88	0.281
					10/16/2013 15:27	0917-173_No	13_10_16_1527_51_121	1	0.520	2.702	0.046	0.141	0.0210	0.128	1.123	1.800	-0.141	0.235	-0.01800	0.00600	-1.02	0.798	0.263
					10/16/2013 15:27	0917-173_No	13_10_16_1527_57_331	1	-8.380	2.813	-0.092	0.150	0.0310	0.131	1.316	1.817	0.1180	0.252	-0.01600	0.00600	0.818	0.82	0.284
					10/16/2013 15:28	0917-173_No	13_10_16_1528_03_531	1	-4.390	2.784	-0.2610	0.152	-0.0420	0.130	0.568	1.833	0.01	0.251	-0.02900	0.00700	-2.209	0.82	0.274
					10/16/2013 15:28	0917-173_No	13_10_16_1528_09_641	1	3.7670	2.410	0.101	0.145	0.0540	0.127	0.854	1.847	0.099	0.233	-0.01700	0.00600	-2.46	0.72	0.345
					10/16/2013 15:28	0917-173_No	13_10_16_1528_15_841	1	-0.455	2.709	0.216	0.157	0.164	0.1200	1.071	1.818	-0.303	0.251	-0.01	0.00500	-0.412	0.83	0.304
					10/16/2013 15:28	0917-173_No	13_10_16_1528_21_961	1	-1.586	2.492	-0.273	0.153	-0.196	0.128	1.028	1.836	-0.1070	0.238	-0.01200	0.00700	0.23	0.80	0.285
					10/16/2013 15:28	0917-173_No	13_10_16_1528_28_171	1	-2.13	2.860	-0.1310	0.156	-0.0660	0.1200	0.956	1.853	0.017	0.257	-0.01500	0.00600	0.12	0.85	0.325
					10/16/2013 15:28	0917-173_No	13_10_16_1528_34_381	1	-8.142	2.771	-0.149	0.146	0.0670	0.126	0.957	1.845	-0.228	0.244	-0.02900	0.00700	0.780	0.83	0.3
					10/16/2013 15:28	0917-173_No	13_10_16_1528_40_481	1	-1.156	2.529	0.400	0.151	-0.269	0.131	0.849	1.831	0.078	0.239	-0.02100	0.00600	-0.27	0.78	0.325
					10/16/2013 15:28	0917-173_No	13_10_16_1528_46_691	1	0.363	2.687	-0.316	0.153	-0.280	0.123	0.818	1.883	-0.040	0.247	-0.01700	0.00600	0.30	0.82	0.193
					10/16/2013 15:28	0917-173_No	13_10_16_1528_52_891	1	-2.987	2.660	-0.260	0.152	-0.1080	0.1330	0.935	1.916	-0.639	0.242	-0.01	0.00500	0.349	0.78	0.277
					10/16/2013 15:28	0917-173_No	13_10_16_1528_59_101	1	1.5470	2.693	0.139	0.148	-0.402	0.123	1.163	1.850	-0.033	0.242	-0.01100	0.00600	-1.70	0.82	0.311
					10/16/2013 15:29	0917-173_No	13_10_16_1529_05_301	1	-5.3500	2.403	0.005	0.130	-0.106	0.1220	0.512	1.894	0.09	0.216	-0.01900	0.00500	-0.4580	0.71	0.305
					10/16/2013 15:29	0917-173_No	13_10_16_1529_11_411	1	-2.0540	2.681	-0.067	0.143	-0.011	0.1230	1.554	1.892	-0.501	0.238	-0.01000	0.00600	-0.10	0.78	0.302
					10/16/2013 15:29	0917-173_No	13_10_16_1529_17_611	1	-0.256	2.640	-0.107	0.137	0.0870	0.125	1.048	1.872	-0.572	0.229	-0.01	0.00400	-0.52	0.76	0.358
					10/16/2013 15:29	0917-173_No	13_10_16_1529_23_821	1	3.32	2.588	0.290	0.137	0.1430	0.126	0.640	1.832	0.06800	0.228	-0.00900	0.00600	0.22	0.75	0.303
					10/16/2013 15:29	0917-173_No	13_10_16_1529_30_021	1	2.523	2.656	-0.1180	0.150	-0.154	0.120	1.096	1.891	-0.310	0.241	-0.01500	0.00600	-0.80	0.79	0.348
					10/16/2013 15:29	0917-173_No	13_10_16_1529_36_221	1	3.837	2.770	-0.192	0.142	-0.242	0.121	0.891	1.876	0.10	0.240	0.00300	0.00600	-0.93	0.81	0.339
					10/16/2013 15:29	0917-173_No	13_10_16_1529_42_321	1	-0.649	2.734	-0.0490	0.138	-0.0270	0.1150	0.936	1.869	-0.172	0.232	-0.00200	0.00600	-1.374	0.79	0.285
					10/16/2013 15:29	0917-173_No	13_10_16_1529_48_521	1	-4.394	2.568	0.0750	0.138	0.0420	0.122	0.634	1.914	0.009	0.228	-0.01100	0.00700	0.57	0.75	0.308
					10/16/2013 15:29	0917-173_No	13_10_16_1529_54_721	1	2.247	2.675	0.2300	0.141	-0.106	0.122	0.613	1.906	0.300	0.234	-0.02	0.00500	-0.336	0.78	0.33
					10/16/2013 15:30	0917-173_No	13_10_16_1530_00_911	1	-5.959	2.426	-0.21	0.136	0.0880	0.122	0.831	1.905	0.099	0.223	-0.01000	0.00600	0.65	0.73	0.323
					10/16/2013 15:30	0917-173_No	13_10_16_1530_07_101	1	-2.788	2.531	-0.364	0.148	-0.180	0.117	0.684	1.903	-0.121	0.238	-0.00700	0.00500	0.654	0.76	0.285
					10/16/2013 15:30	0917-173_No	13_10_16_1530_13_191	1	-6.075	2.486	0.5570	0.131	-0.0050	0.119	0.990	1.879	0.217	0.222	0.00000	0.00600	-1.45	0.73	0.296
					10/16/2013 15:30	0917-173_No	13_10_16_1530_19_381	1	-0.460	2.490	0.246	0.144	0.0430	0.1170	0.994	1.870	0.03	0.231	-0.0170	0.00700	-1.219	0.74	0.312
					10/16/2013 15:30	0917-173_No	13_10_16_1530_25_571	1	1.546	2.735	0.133	0.134	-0.0020	0.117	0.514	1.851	0.177	0.231	-0.01300	0.00500	-0.55	0.77	0.216
					10/16/2013 15:30	0917-173_No	13_10_16_1530_31_771	1	2.859	2.464	-0.086	0.140	0.251	0.111	0.781	1.851	-0.066	0.225	0.00000	0.00600	-0.68	0.74	0.277
					10/16/2013 15:30	0917-173_No	13_10_16_1530_37_861	1	-3.14	2.577	0.024	0.132	-0.1480	0.1120	0.813	1.835	-0.231	0.223	-0.01400	0.00600	-0.492	0.74	0.242
					10/16/2013 15:30	0917-173_No	13_10_16_1530_44_051	1	-0.580	2.617	0.077	0.139	0.0170	0.122	0.677	1.842	0.0670	0.231	-0.00400	0.00600	0.300	0.78	0.342
					10/16/2013 15:30	0917-173_No	13_10_16_1530_50_351	1	2.234	2.632	0.002	0.147	0.0240	0.1120	1.127	1.859	-0.300	0.238	-0.01200	0.00600	1.49	0.78	0.258

Location	Disc.	#	Start/Stop	Instrument					**Label**		**Label**		**Label**		**Label**		**Label**		**Label**		**Label**		
									1-Analyte		2-Analyte		3-Analyte/Spike		4-Analyte		5-Analyte		Tracer		6-Analyte		
					Date	Method	Filename	DSF	Acrolein (ppm)	SEC (ppm)	Formaldehyde (ppm)	SEC (ppm)	Methanol (ppm)	SEC (ppm)	Phenol (ppm)	SEC (ppm)	Propionaldehyde (ppm)	SEC (ppm)	Sulfur_Hexaflouride (ppm)	SEC (ppm)	acetaldehyde (ppm)	SEC (ppm)	pinene (pp
					10/16/2013 15:30	0917-173_No	13_10_16_1530_56_551	1	5.277	2.380	0.074	0.147	0.0300	0.1090	0.901	1.854	-0.230	0.228	-0.01000	0.00500	0.08	0.73	0.281
					10/16/2013 15:31	0917-173_No	13_10_16_1531_02_751	1	-4.6650	2.545	0.129	0.126	-0.0920	0.1120	0.696	1.843	0.133	0.216	-0.01400	0.00600	1.22	0.710	0.266
					10/16/2013 15:31	0917-173_No	13_10_16_1531_08_851	1	0.942	2.648	-0.0430	0.142	-0.0210	0.1130	0.637	1.816	-0.013	0.235	-0.01000	0.00400	-0.878	0.77	0.245
					10/16/2013 15:31	0917-173_No	13_10_16_1531_15_041	1	1.9670	2.643	-0.1700	0.136	-0.05500	0.1120	0.887	1.814	-0.150	0.231	0.00600	0.00600	-0.645	0.78	0.287
					10/16/2013 15:31	0917-173_No	13_10_16_1531_21_231	1	4.116	2.526	-0.1570	0.137	-0.076	0.114	0.816	1.800	-0.336	0.222	-0.00500	0.00600	1.316	0.76	0.215
					10/16/2013 15:31	0917-173_No	13_10_16_1531_27_441	1	-0.106	2.499	0.124	0.142	-0.0030	0.109	1.105	1.829	-0.252	0.229	-0.00900	0.00500	0.41	0.75	0.227
					10/16/2013 15:31	0917-173_No	13_10_16_1531_33_631	1	3.3610	2.609	-0.246	0.134	0.1400	0.1040	1.2360	1.811	0.04	0.225	-0.00100	0.00500	-0.54	0.77	0.215
					10/16/2013 15:31	0917-173_No	13_10_16_1531_39_721	1	4.758	2.603	-0.030	0.139	-0.0270	0.116	0.985	1.782	-0.172	0.230	0.01300	0.00500	0.251	0.76	0.213
					10/16/2013 15:31	0917-173_No	13_10_16_1531_45_921	1	-1.32	2.432	-0.261	0.142	-0.142	0.1080	0.534	1.754	-0.304	0.225	-0.0010	0.00500	0.398	0.72	0.259
					10/16/2013 15:31	0917-173_No	13_10_16_1531_52_121	1	3.814	2.634	0.101	0.140	-0.054	0.1100	0.736	1.769	-0.138	0.234	-0.01100	0.00500	1.23	0.77	0.214
					10/16/2013 15:31	0917-173_No	13_10_16_1531_58_311	1	2.909	2.131	-0.119	0.133	0.133	0.1090	0.833	1.724	-0.500	0.208	0.00600	0.00500	-0.06	0.69	0.225
					10/16/2013 15:32	0917-173_No	13_10_16_1532_04_511	1	7.588	2.800	0.175	0.132	-0.161	0.103	0.9670	1.720	-0.146	0.230	-0.00800	0.00600	0.717	0.78	0.243
					10/16/2013 15:32	0917-173_No	13_10_16_1532_10_611	1	-0.917	2.500	0.1820	0.139	0.166	0.1040	0.700	1.744	0.282	0.228	-0.01800	0.00500	-2.14	0.77	0.205
					10/16/2013 15:32	0917-173_No	13_10_16_1532_16_801	1	-4.589	2.510	-0.121	0.132	0.0100	0.1080	0.908	1.704	-0.105	0.222	-0.01200	0.00400	-0.137	0.75	0.194
					10/16/2013 15:32	0917-173_No	13_10_16_1532_23_091	1	0.243	2.653	0.0130	0.136	0.029	0.1060	0.886	1.707	-0.611	0.229	0.00100	0.00500	-0.10	0.79	0.208
					10/16/2013 15:32	0917-173_No	13_10_16_1532_29_201	1	-2.267	2.680	0.154	0.141	0.186	0.1090	0.908	1.729	-0.228	0.238	-0.00500	0.00600	1.029	0.78	0.209
					10/16/2013 15:32	0917-173_No	13_10_16_1532_35_501	1	-0.035	2.429	0.076	0.140	-0.194	0.105	1.083	1.683	-0.447	0.225	-0.00100	0.00600	1.003	0.73	0.199
					10/16/2013 15:32	0917-173_No	13_10_16_1532_41_501	1	2.414	2.659	-0.0980	0.126	-0.154	0.1080	0.320	1.696	0.001	0.220	-0.01400	0.00500	0.78	0.75	0.206
					10/16/2013 15:32	0917-173_No	13_10_16_1532_47_691	1	0.6260	2.651	0.0850	0.134	0.242	0.1030	0.968	1.647	-0.425	0.225	-0.00800	0.00500	0.57	0.75	0.226
					10/16/2013 15:32	0917-173_No	13_10_16_1532_53_981	1	-3.732	2.788	0.1530	0.132	0.1610	0.1090	0.864	1.711	-0.141	0.229	0.00500	0.00500	0.14	0.80	0.236
					10/16/2013 15:33	0917-173_No	13_10_16_1533_00_181	1	2.091	2.695	0.001	0.140	0.237	0.1010	0.735	1.663	-0.033	0.230	0.00600	0.00600	0.401	0.77	0.229
					10/16/2013 15:33	0917-173_No	13_10_16_1533_06_381	1	7.61	2.311	-0.388	0.139	0.1390	0.0990	0.983	1.672	-1.161	0.224	-0.00900	0.00500	1.50	0.71	0.178
					10/16/2013 15:33	0917-173_No	13_10_16_1533_12_481	1	4.60	2.354	0.225	0.142	0.247	0.1060	0.796	1.655	-0.095	0.227	0.00900	0.00500	1.64	0.75	0.241
					10/16/2013 15:33	0917-173_No	13_10_16_1533_18_681	1	-4.751	2.436	0.16	0.138	0.228	0.1070	0.795	1.643	-0.028	0.226	-0.00300	0.00500	0.572	0.75	0.2
					10/16/2013 15:33	0917-173_No	13_10_16_1533_24_881	1	-2.597	2.610	0.384	0.138	-0.0150	0.1010	0.589	1.712	-0.296	0.228	-0.01500	0.00500	-0.3030	0.77	0.175
					10/16/2013 15:33	0917-173_No	13_10_16_1533_31_081	1	5.503	2.583	-0.4650	0.142	-0.253	0.127	0.808	1.818	-0.262	0.234	-0.00200	0.00700	-0.827	0.78	0.23
					10/16/2013 15:33	0917-173_No	13_10_16_1533_37_271	1	-7.240	2.724	0.171	0.151	-0.193	0.131	0.22	1.557	-0.203	0.248	-0.01100	0.00700	0.1640	0.83	0.08
					10/16/2013 15:33	0917-173_No	13_10_16_1533_43_371	1	-6.232	2.823	-0.088	0.146	-0.343	0.141	0.906	1.480	-0.507	0.246	0.0000	0.00700	0.48	0.798	-0.051
					10/16/2013 15:33	0917-173_No	13_10_16_1533_49_561	1	-1.47	3.050	-0.066	0.161	-0.246	0.139	1.216	1.473	-0.512	0.267	-0.03100	0.00700	-0.07	0.90	-0.084
					10/16/2013 15:33	0917-173_No	13_10_16_1533_55_761	1	1.609	2.726	-0.0450	0.172	-0.035	0.136	0.870	1.413	-0.27	0.271	-0.02500	0.00600	-1.28	0.86	-0.053
					10/16/2013 15:34	0917-173_No	13_10_16_1534_01_961	1	-4.48	2.997	-0.122	0.162	-0.362	0.132	1.654	1.468	-0.062	0.268	-0.02100	0.00600	-0.698	0.90	-0.037
					10/16/2013 15:34	0917-173_No	13_10_16_1534_08_051	1	-1.6940	3.007	0.150	0.166	-0.2230	0.131	1.329	1.558	0.3100	0.269	-0.01000	0.00700	0.102	0.90	0.034
					10/16/2013 15:34	0917-173_No	13_10_16_1534_14_241	1	-2.108	3.010	-0.119	0.164	-0.1500	0.129	1.066	1.496	-0.294	0.270	-0.01700	0.00600	-0.13	0.90	0.105
					10/16/2013 15:34	0917-173_No	13_10_16_1534_20_441	1	-4.271	2.922	-0.07	0.165	-0.167	0.127	0.643	1.522	0.047	0.270	-0.00800	0.00600	-0.15	0.88	0.063
					10/16/2013 15:34	0917-173_No	13_10_16_1534_26_631	1	5.1610	2.874	0.0570	0.164	-0.218	0.132	0.950	1.584	0.079	0.263	-0.00900	0.00600	-0.969	0.89	0.051
					10/16/2013 15:34	0917-173_No	13_10_16_1534_32_831	1	-0.567	3.113	0.165	0.151	-0.002	0.138	0.354	1.573	-0.131	0.259	-0.00800	0.00600	-0.611	0.88	0.098
					10/16/2013 15:34	0917-173_No	13_10_16_1534_38_921	1	-1.05	2.945	-0.441	0.165	-0.0920	0.134	0.986	1.590	0.020	0.271	-0.02	0.00700	-2.15	0.90	0.144
					10/16/2013 15:34	0917-173_No	13_10_16_1534_45_121	1	-5.034	2.911	0.0860	0.158	-0.206	0.132	0.20	1.637	0.15	0.263	-0.00300	0.00700	-1.092	0.85	0.109
					10/16/2013 15:34	0917-173_No	13_10_16_1534_51_321	1	-2.249	2.817	-0.35	0.159	-0.127	0.129	0.762	1.641	-0.41	0.255	-0.02700	0.00600	0.702	0.83	0.167
					10/16/2013 15:34	0917-173_No	13_10_16_1534_57_611	1	-1.046	2.546	-0.136	0.157	-0.285	0.130	0.676	1.679	-0.299	0.246	-0.00400	0.00600	-0.01	0.81	0.189
					10/16/2013 15:35	0917-173_No	13_10_16_1535_03_811	1	-1.705	2.774	0.1240	0.150	0.019	0.1220	0.782	1.740	0.0120	0.245	0.0040	0.00600	1.20	0.82	0.204
					10/16/2013 15:35	0917-173_No	13_10_16_1535_09_821	1	0.52	2.833	0.071	0.152	-0.117	0.138	0.695	1.737	-0.23	0.250	-0.00400	0.00600	-2.069	0.82	0.217
					10/16/2013 15:35	0917-173_No	13_10_16_1535_16_021	1	-2.01	2.780	0.0020	0.156	-0.018	0.127	0.708	1.763	0.021	0.252	-0.01700	0.00600	-0.89	0.84	0.229
					10/16/2013 15:35	0917-173_No	13_10_16_1535_22_221	1	-1.3250	2.616	0.003	0.147	-0.281	0.132	0.722	1.752	0.135	0.241	-0.01000	0.00600	0.53	0.81	0.235
					10/16/2013 15:35	0917-173_No	13_10_16_1535_28_421	1	-3.536	2.412	0.125	0.149	-0.218	0.133	0.17	1.785	-0.1110	0.236	-0.01800	0.00700	-1.65	0.78	0.237
					10/16/2013 15:35	0917-173_No	13_10_16_1535_34_611	1	-5.155	2.529	-0.56	0.151	-0.04400	0.1310	0.876	1.786	-0.660	0.241	-0.00700	0.00600	1.10	0.81	0.283
					10/16/2013 15:35	0917-173_No	13_10_16_1535_40_711	1	-2.43	2.763	0.279	0.149	-0.0670	0.1290	0.984	1.837	0.023	0.244	-0.01000	0.00600	0.157	0.82	0.241
					10/16/2013 15:35	0917-173_No	13_10_16_1535_46_901	1	-5.3010	2.876	-0.29	0.142	-0.1900	0.125	0.686	1.796	-0.609	0.243	-0.02000	0.00600	1.50	0.81	0.263
					10/16/2013 15:35	0917-173_No	13_10_16_1535_53_101	1	-3.62	3.041	0.208	0.164	-0.0240	0.134	0.685	1.818	-0.161	0.268	0.00300	0.00600	-0.244	0.88	0.257
					10/16/2013 15:35	0917-173_No	13_10_16_1535_59_391	1	-0.33	2.550	0.120	0.152	-0.0370	0.125	0.682	1.865	-0.055	0.243	-0.01100	0.00600	-0.002	0.79	0.255
					10/16/2013 15:36	0917-173_No	13_10_16_1536_05_581	1	-2.14	2.795	0.299	0.149	-0.0840	0.127	0.21	1.809	0.195	0.247	0.00	0.00600	0.309	0.84	0.236
					10/16/2013 15:36	0917-173_No	13_10_16_1536_11_681	1	2.540	2.692	-0.002	0.138	-0.06100	0.133	0.470	1.856	-0.215	0.231	-0.02200	0.00600	-0.04	0.79	0.228
					10/16/2013 15:36	0917-173_No	13_10_16_1536_17_881	1	-1.703	2.878	0.284	0.141	-0.194	0.136	0.762	1.811	0.324	0.238	-0.02800	0.00600	-0.756	0.81	0.247
					10/16/2013 15:36	0917-173_No	13_10_16_1536_24_081	1	-7.0660	2.765	-0.1420	0.153	-0.115	0.128	0.635	1.863	-0.372	0.248	-0.02200	0.00500	0.27	0.83	0.285
					10/16/2013 15:36	0917-173_No	13_10_16_1536_30_271	1	4.698	2.721	0.370	0.148	-0.051	0.1220	0.626	1.897	0.026	0.242	-0.02600	0.00600	-0.84	0.81	0.244
					10/16/2013 15:36	0917-173_No	13_10_16_1536_36_471	1	-1.763	2.760	0.070	0.145	-0.308	0.128	0.788	1.883	-0.016	0.240	-0.02	0.00600	-1.479	0.80	0.297
					10/16/2013 15:36	0917-173_No	13_10_16_1536_42_561	1	4.20	2.623	0.190	0.138	-0.107	0.127	1.041	1.855	0.196	0.230	-0.00600	0.00600	-1.6400	0.77	0.265
					10/16/2013 15:36	0917-173_No	13_10_16_1536_48_751	1	-1.21	2.656	-0.049	0.146	-0.0220	0.120	0.857	1.906	0.127	0.240	-0.01300	0.00600	-0.594	0.82	0.281
					10/16/2013 15:36	0917-173_No	13_10_16_1536_54_941	1	-8.79	2.570	-0.080	0.143	-0.157	0.122	1.134	1.909	-0.065	0.232	-0.02300	0.00600	0.698	0.76	0.282
					10/16/2013 15:37	0917-173_No	13_10_16_1537_01_141	1	3.657	2.416	-0.042	0.143	-0.154	0.1250	0.836	1.889	-0.047	0.229	-0.01900	0.00700	0.015	0.74	0.302
					10/16/2013 15:37	0917-173_No	13_10_16_1537_07_351	1	1.4790	2.795	-0.038	0.158	-0.0090	0.119	0.895	1.867	-0.267	0.255	-0.01300	0.00600	0.1560	0.85	0.317
					10/16/2013 15:37	0917-173_No	13_10_16_1537_13_431	1	-0.949	2.571	0.113	0.142	-0.1870	0.124	0.707	1.857	-0.26	0.231	-0.01500	0.00600	0.03	0.746	0.312
					10/16/2013 15:37	0917-173_No	13_10_16_1537_19_631	1	-1.705	2.661	0.239	0.150	-0.190	0.1180	0.810	1.877	0.127	0.243	-0.00200	0.00700	-0.135	0.84	0.222
					10/16/2013 15:37	0917-173_No	13_10_16_1537_25_841	1	-3.60	2.821	0.045	0.141	0.1780	0.120	0.683	1.898	-0.198	0.242	0.00300	0.00500	-1.113	0.81	0.288
					10/16/2013 15:37	0917-173_No	13_10_16_1537_32_041	1	1.937	2.618	-0.083	0.138	-0.186	0.123	0.873	1.894	-0.312	0.233	-0.00700	0.00600	1.234	0.759	0.272
					10/16/2013 15:37	0917-173_No	13_10_16_1537_38_151	1	-0.14	2.492	-0.046	0.149	0.194	0.119	0.953	1.892	-0.16	0.239	-0.00900	0.00500	-1.231	0.79	0.218
					10/16/2013 15:37	0917-173_No	13_10_16_1537_44_351	1	-1.602	2.651	-0.377	0.143	-0.1020	0.123	0.724	1.904	-0.3630	0.233	-0.01700	0.00500	-0.71	0.80	0.237
					10/16/2013 15:37	0917-173_No	13_10_16_1537_50_551	1	-4.8480	2.496	-0.001	0.136	-0.129	0.114	1.030	1.878	0.023	0.225	-0.01500	0.00600	-0.52	0.75	0.247
					10/16/2013 15:37	0917-173_No	13_10_16_1537_56_752	1	5.199	2.626	0.089	0.141	-0.104	0.119	0.673	1.880	0.22	0.235	-0.00800	0.00500	-1.78	0.80	0.244
					10/16/2013 15:38	0917-173_No	13_10_16_1538_02_952	1	-5.052	2.413	-0.112	0.133	-0.0120	0.1190	1.403	1.839	-0.063	0.218	-0.01900	0.00600	-1.290	0.728	0.231
					10/16/2013 15:38	0917-173_No	13_10_16_1538_09_052	1	-3.37	2.245	-0.100	0.136	-0.164	0.1140	0.759	1.852	-0.570	0.217	-0.02100	0.00700	1.08	0.72	0.18
					10/16/2013 15:38	0917-173_No	13_10_16_1538_15_252	1	-1.56	2.439	0.2230	0.149	-0.118	0.1190	0.665	1.899	-0.3030	0.233	-0.02800	0.00600	0.708	0.75	0.309
					10/16/2013 15:38	0917-173_No	13_10_16_1538_21_442	1	6.57	2.657	0.282	0.140	-0.0920	0.114	0.606	1.825	0.22	0.234	0.00600	0.00500	-3.01	0.79	0.241
					10/16/2013 15:38	0917-173_No	13_10_16_1538_27_642	1	-3.868	2.444	0.1120	0.145	-0.2090	0.1070	1.025	1.886	-0.375	0.232	-0.01100	0.00600	2.10	0.76	0.24
					10/16/2013 15:38	0917-173_No	13_10_16_1538_33_832	1	-0.12	2.418	-0.119	0.141	0.0740	0.1060	0.670	1.833	-0.016	0.229	-0.01400	0.00500	-1.243	0.77	0.304
					10/16/2013 15:38	0917-173_No	13_10_16_1538_39_922	1	0.017	2.552	-0.013	0.150	-0.085	0.1130	0.903	1.847	-0.026	0.239	0.00	0.00500	-1.74	0.79	0.258
					10/16/2013 15:38	0917-173_No	13_10_16_1538_46_132	1	3.276	2.448	0.1990	0.130	-0.128	0.1100	0.638	1.849	0.218	0.216	-0.00300	0.00600	-1.494	0.693	0.192
					10/16/2013 15:38	0917-173_No	13_10_16_1538_52_322	1	0.956	2.514	-0.233	0.143	0.0120	0.1100	0.333	1.828	-0.293	0.234	-0.00900	0.00400	-1.03	0.76	0.227
					10/16/2013 15:38	0917-173_No	13_10_16_1538_58_522	1	-5.073	2.493	0.203	0.141	-0.122	0.1130	0.918	1.809	-0.42	0.228	-0.00600	0.00500	0.498	0.76	0.182
					10/16/2013 15:39	0917-173_No	13_10_16_1539_04_712	1	-2.516	2.377	-0.115	0.129	0.0110	0.122	0.774	1.798	-0.143	0.215	-0.01100	0.00600	-0.110	0.70	0.182
					10/16/2013 15:39	0917-173_No	13_10_16_1539_10_822	1	1.104	2.663	0.256	0.133	-0.0600	0.111	0.194	1.813	0.068	0.226	-0.01300	0.00500	0.42	0.723	0.234
					10/16/2013 15:39	0917-173_No	13_10_16_1539_17_012	1	-0.950	2.258	-0.136	0.144	-0.0640	0.1110	0.658	1.811	-0.152	0.225	-0.00600	0.00700	0.186	0.72	0.252
					10/16/2013 15:39	0917-173_No	13_10_16_1539_23_302	1	-3.428	2.654	-0.254	0.144	0.149	0.112	1.005	1.777	-0.423	0.236	0.00200	0.00500	-1.134	0.76	0.222
					10/16/2013 15:39	0917-173_No	13_10_16_1539_29_492	1	2.74	2.474	-0.043	0.136	-0.039	0.1100	0.643	1.748	-0.21300	0.220	-0.01	0.00600	-0.21	0.74	0.229
					10/16/2013 15:39	0917-173_No	13_10_16_1539_35_682	1	1.358	2.546	-0.173	0.143	-0.02300	0.1050	0.423	1.736	-0.231	0.232	0.00000	0.00500	-1.298	0.75	0.214
					10/16/2013 15:39	0917-173_No	13_10_16_1539_41_772	1	2.776	2.477	0.126	0.147	-0.0040	0.1070	0.848	1.759	-0.3640	0.234	-0.00800	0.00400	-1.089	0.77	0.22
					10/16/2013 15:39	0917-173_No	13_10_16_1539_47_962	1	3.397	2.532	-0.247	0.139	0.0790	0.1060	0.489	1.765	0.095	0.228	-0.00200	0.00500	-1.64	0.76	0.222
					10/16/2013 15:39	0917-173_No	13_10_16_1539_54_152	1	6.4310	2.395	0.148	0.141	-0.156	0.1080	0.550	1.736	-0.241	0.225	-0.00500	0.00500	-1.24	0.74	0.225
					10/16/2013 15:40	0917-173_No	13_10_16_1540_00_342	1	4.3560	2.631	0.291	0.149	0.0920	0.1100	1.2050	1.756	0.43	0.240	-0.00900	0.00600	-0.778	0.80	0.204
					10/16/2013 15:40	0917-173_No	13_10_16_1540_06_532	1	4.778	2.656	0.2320	0.144	-0.0690	0.1040	0.279	1.744	-0.1480	0.236	-0.00700	0.00500	0.865	0.81	0.209
					10/16/2013 15:40	0917-173_No	13_10_16_1540_12_632	1	-0.375	2.385	0.203	0.140	-0.127	0.1070	0.560	1.696	-0.55	0.223	0.00	0.00500	-0.11	0.73	0.172
					10/16/2013 15:40	0917-173_No	13_10_16_1540_18_832	1	-0.772	2.584	0.078	0.136	0.0970	0.1130	0.933	1.699	-0.55	0.229	-0.00600	0.00500	1.29	0.76	0.206
					10/16/2013 15:40	0917-173_No	13_10_16_1540_25_022	1	-3.096	2.526	0.209	0.134	0.312	0.1040	0.941	1.673	0.429	0.222	0.00400	0.00600	-1.02	0.72	0.214
					10/16/2013 15:40	0917-173_No	13_10_16_1540_31_212	1	-7.242	2.378	0.0250	0.137	-0.00900	0.1020	0.724	1.644	-0.138	0.224	-0.00300	0.00600	-0.21	0.75	0.144
					10/16/2013 15:40	0917-173_No	13_10_16_1540_37_502	1	0.990	2.368	0.1020	0.138	-0.0580	0.0980	1.050	1.686	-0.526	0.224	-0.01200	0.00500	1.257	0.72	0.174
					10/16/2013 15:41	0917-173_No	13_10_16_1541_19_642	1	1.4400	1.161	0.1480	0.063	-0.0070	0.0770	0.824	1.698	-0.3160	0.105	-0.01	0.00300	-0.067	0.342	0.193
					10/16/2013 15:42	0917-173_No	13_10_16_1542_20_432	1	0.437	1.070	0.085	0.066	0.0440	0.0750	0.922	1.699	-0.2120	0.104	-0.00600	0.00200	0.270	0.336	0.211
					10/16/2013 15:43	0917-173_No	13_10_16_1543_21_152	1	1.032	1.092	0.042	0.061	0.0450	0.0770	0.832	1.697	-0.016	0.099	-0.00500	0.00300	-0.23300	0.328	0.196
					10/16/2013 15:44	0917-173_No	13_10_16_1544_21_922	1	1.654	1.182	-0.0290	0.0600	0.01700	0.0780	0.781	1.706	-0.009	0.102	-0.01	0.00300	-0.165	0.340	0.21
					10/16/2013 15:45	0917-173_No	13_10_16_1545_22_636	1	1.336	1.095	0.038	0.064	-0.093	0.0770	0.630	1.708	-0.2200	0.102	-0.00300	0.00300	-0.111	0.319	0.207
					10/16/2013 15:46	0917-173_No	13_10_16_1546_23_436	1	0.142	1.229	0.035	0.0640	0.0050	0.0760	0.759	1.721	-0.0770	0.108	-0.00500	0.00300	0.197	0.350	0.205

Location	Disc	#	Inst	Start row	stop row
Data	CYL	1	A	43	49
Data	SPK	1	A	91	97
Data	UNSPK	1	A	103	109
Data	Run	1	A	145	205
Data	Run	2	A	238	296
Data	Run	3	A	305	364
Data	MDC	1		506	512
Data	Run	4	A	538	597
Data	Run	5	A	608	667
Data	Run	6	A	685	743
Data	Run	13	A	781	840
Data	Run	7	A	971	1030
Data	Run	8	A	1043	1102
Data	Run	9	A	1113	1173
Data	Run	10	A	1362	1422
Data	Run	11	A	1435	1494
Data	Run	12	A	1506	1564

APPENDIX D

Method 320 Log Sheet

FTIR Log - Enviva Amory

Date	Time	Filename	Method	Pressure	Notes	Run ID
14-Oct	1207	13.10.14.1207.07.590	CTS	14.62	Background	
	1214	13.10.14.1214.07.635	CTS	14.75	CTS (pathlength = 8.693 m)	
	1237	13.10.14.1237.34.593	0913-177A	14.61	Background	
	1244	13.10.14.1244.42.467	0913-177A	14.74	Methanol Direct (Response = 102.3 ppm/ 2.86 ppm)	
	1345-1400	13.10.14.1313.07.480	0913-177A	12.48	Methanol Spike	
	1400	13.10.14.1313.07.480	0913-177A	12.48	Native Sampling (Dryer)	
	1421	13.10.14.1421.39.358	0913-177A	14.76	Background	
	1515	**13.10.14.1439.35.902**	**0913-177A**	**12.44**	**Sampling Dryer Stack - Run 1 (1515-1615)**	**1**
	1649	**13.10.14.1439.35.902**	**0913-177A**	**12.45**	**Sampling Dryer Stack - Run 2 (1649-1749)**	**2**
	1758	**13.10.14.1439.35.902**	**0913-177A**	**12.43**	**Sampling Dryer Stack - Run 3 (1758-1858)**	**3**
	1919	13.10.14.1919.11.369	CTS	14.75	Background	
	1923	13.10.14.1923.43.600	CTS	14.77	CTS (pathlength = 8.69 m)	
	1935	13.10.14.1935.06.334	0913-177A	14.77	Background	
	1953	**13.10.14.1953.35.0678**	0913-177A	**14.67**	**Water Spectra (Dryer)**	
15-Oct	748	13.10.15.0747.33.901	CTS	14.84	Background	
	751	13.10.15.751.24.798	CTS	14.82	CTS (pathlength = 8.659 m)	
	801	13.10.15.0801.49.212	0913-177A	14.75	Background	
	911	**13.10.15.0906.12.604**	**0913-177A**	**14.19**	**Sampling GHM- Run 1 (0911-1011)**	**4**
	1022	**13.10.15.0906.12.604**	**0913-177A**	**14.12**	**Sampling GHM- Run 2 (1022-1122)**	**5**
	1140	**13.10.15.0906.12.604**	**0913-177A**	**14.15**	**Sampling GHM- Run 1 (1140-1240)**	**6**
	1303	13.10.15.1303.31.934	CTS	14.53	Background	
	1311	13.10.15.1311.04.345	CTS	14.62	CTS (pathlength = 8.705222 m)	
	1321	13.10.15.1321.30.008	0913-177A	14.62	Background	
	1348	**13.10.15.1332.44.520**	**0913-177A**	**14.23**	**Sampling DHM - Run 1 (1348-1448)**	**7**
	1623	13.10.15.1623.38.363	CTS	14.49	Background	
	1627	13.10.15.1627.16.305	CTS	14.6	CTS (pathlength = 8.7387 m)	
	1639	13.10.15.1639.08.005	0913-177A	14.59	Background	
	1736	**13.10.15.1705.34.481**	**0913-177A**	**13.73**	**Sampling Aspirator - Run 1 (1736-1836)**	**8**
	1849	**13.10.15.1705.34.481**	**0913-177A**	**13.64**	**Sampling Aspirator - Run 2 (1849-1949)**	**9**
	2000	**13.10.15.1705.34.481**	**0913-177A**	**13.72**	**Sampling Aspirator - Run 3 (2000-2100)**	**10**
	2111	13.10.15.2111.32.062	CTS	14.78	Background	
	2115	13.10.15.2115.01.112	CTS	14.70	CTS (pathlength = 8.673 m)	
	2126	13.10.15.2125.43.313	0913-177A	14.75	Background	
	2140	**13.10.15.2140.31.123**	0913-177A	**14.57**	**Water Spectra (Aspirator)**	
	2152	**13.10.15.2152.01.616**	0913-177A	**14.58**	**Water Spectra (GHM)**	
16-Oct	831	13.10.16.0831.24.910	CTS	14.68	Background	
	834	13.10.16.0834.58.007	CTS	14.81	CTS (pathlength = 8.614 m)	
	848	13.10.16.0848.20.179	0913-177A	14.70	Background	
	1054	**13.10.16.1052.55.014**	**0913-177A**	**14.16**	**Sampling DHM - Run 2 (1054-1154)**	**11**
	1207	**13.10.16.1052.55.015**	**0913-177A**	**14.02**	**Sampling DHM - Run 3 (1207-1307)**	**12**
	1321	**13.10.16.1052.55.016**	**0913-177A**	**14.03**	**Sampling DHM - Run 4 (1321-1421)**	**13**
	1506	13.10.16.1503.27.589	CTS	14.70	Background	
	1507	13.10.16.1507.23.086	CTS	14.77	CTS (pathlength = 8.624 m)	
	1519	13.10.16.1519.05.95	0913-177A	14.75	Background	
	1541	**13.10.16.1541.15.467**	0913-177A	**14.65**	**Water Spectra (DHM)**	

FTIR compu

Spiking and CTS Record

Date	Time	Direct Cylinder Spike		System Spiked Gas		Native Conc.		SF6 Recovery	Methanol Recovery	
		(ppm methanol)	(ppm SF6)	(ppm methanol)	(ppm SF6)	(ppm methanol)	(ppm SF6)			
14-Oct	1245	102.30	2.86	9.000	0.224	2.017	0.012769	7.4%	**94.5%**	**91.71 ppm std**

Date	Time	CTS Scan (pathlength)	SEC (ppm)	Cell Pressure (psi)	Cell Temp (deg C)	Deviation from Previous	Deviation from Average
14-Oct	1215	8.693	0.133	14.75	121	NA	-0.2%
	1923	8.685	0.133	14.77	121	0.1%	-0.1%
15-Oct	750	8.659	0.132	14.19	121	0.3%	0.2%
	1311	8.705	0.134	14.62	121	-0.5%	-0.4%
	1627	8.739	0.133	14.6	121	-0.4%	-0.7%
	2115	8.673	0.132	14.6	121	0.8%	0.0%
16-Oct	0830	8.614	0.134	14.81	121	0.7%	0.7%
	1510	8.624	0.132	14.77	121	-0.1%	0.6%
	Average	8.674	0.133			Maximum Deviation	-0.7%

APPENDIX E

Example Calculations

EXAMPLE CALCULATIONS

Run Number: Dryer – Run 1

Stack Gas Temperature, °R

$$T_s = 460 + ts$$

$$T_s = 460 + 199.6 = 659.6\ °R$$

Volume of Dry Gas Sampled at Standard Conditions, Dry Standard Cubic Feet

$$V_{mstd} = [17.64][\gamma][V_m]\left[\frac{\left(P_{bar} + \frac{\Delta H}{13.6}\right)}{T_m + 460}\right]$$

$$V_{mstd} = [17.64][0.9828][30.692]\left[\frac{\left(29.80 + \frac{1.00}{13.6}\right)}{543.8}\right]$$

$$V_{mstd} = 28.834\ ft^3$$

Volume of Water Sampled, SCF

$$V_{wstd} = 0.04715\ [\text{Weight of Condensed Moisture}]$$

$$V_{wstd} = 0.04715\ [83.8]$$

$$V_{wstd} = 3.951\ ft^3$$

Fraction of Water Vapor in Sample Gas Stream

$$\%H_2O = \left[\frac{V_{wstd}}{V_{mstd} + V_{wstd}}\right] \times 100$$

$$\%H_2O = \left[\frac{3.951}{28.834 + 3.951}\right] \times 100$$

$$\%H_2O = 12.05$$

Dry Mole Fraction of Flue Gas

M_{fd} = 1-%H2O/100

M_{fd} = 1-[12.05/100]

M_{fd} = 0.879

Molecular Weight of Sample Gas, Dry

$M_d = 0.44[\%CO_2]+0.32[\%O_2]+0.28[100-\%O_2-\%CO_2]$

$M_d = 0.44[2.0]+0.32[19.0]+0.28[100-19.0-2.0]$

M_d = 29.08 pounds/pound-mole

Molecular Weight of Sample Gas, Actual Conditions

$M_s = [M_d \text{ x } M_{fd}]+[0.18 \text{ x } \%H_2O]$

M_s = [29.08 x 0.879]+[0.18 x 12.05]

M_s = 27.74 pounds/pound-mole

Average Stack Gas Velocity, Feet/second

$$\text{vs} = K_p C_p \left(\sqrt{(\Delta p)}\right)_{avg} \left[\sqrt{\frac{T_s + 460}{P_s M_s}}\right]$$

$$\text{vs} = (85.49)(0.84)\left(\sqrt{(2.104)}\right)\left[\sqrt{\frac{659.6}{(29.61)(27.74)}}\right]$$

vs = 93.35 feet/second

Wet Volumetric Flue Gas Flow Rate at Stack Conditions, Cubic Feet per Minute

Q_{aw} = 60 x vs x A

Q_{aw} = 60 x 70.18 x 12.57

Q_{aw} = 70,382 Actual Cubic Feet per Minute

Dry Volumetric Flue Gas Flow Rate at Standard Conditions, Cubic Feet per Minute

$$Q_{sd} = 60 \times Mfd \times vs \times A \times \left[\frac{528}{ts + 460}\right]\left[\frac{Ps}{29.92}\right]$$

$$Q_{sd} = 60 \times 0.879 \times 93.35 \times 12.57 \left[\frac{528}{659.6}\right]\left[\frac{29.61}{29.92}\right]$$

Q_{sd} = 49,036 Dry Standard Cubic Feet per Minute

Average THC Dry Basis Concentration as Propane

C_{THCD} = (C_{THCW})/ (M_{fd})

Where: C_{THCd} = dry basis concentration of THC in ppm
M_{fd} = dry mole fraction from Method 4 concurrent run

C_{THCD} = 29.6 / 0.879 = 33.6 ppm THC as propane

Average THC Dry Basis Concentration as Carbon

C_{THCD} = (C_{THCW}) x (3) / (M_{fd})

Where: C_{THCd} = dry basis concentration of THC in ppm
M_{fd} = dry mole fraction from Method 4 concurrent run

C_{THCD} = (29.6) x (3) / 0.879 = 100.8 ppm THC as Carbon

VOC Emission Rate in Pounds Per Hour

E_{VOC} = (C_{VOC}) (Q_{SD}) (60 min/hr) (C_F)

Where: Q_{SD} = measured flow rate in stack in dscfm
C_F = Conversion factor in lb/scf – ppm
C_F = 3.117×10^{-8} for Carbon

E_{VOC} = (100.8) (49,036) (60 min/hr) (3.117×10^{-8}) = 9.24 lb/hr as Carbon

APPENDIX F

Gas Cylinder Certification Sheets

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
919-544-3773 Fax: 919-544-3774
www.airgas.com

Part Number:	E02AI99E15A00A6	Reference Number:	122-124323950-1
Cylinder Number:	CC410934	Cylinder Volume:	146 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22012	Valve Outlet:	590
Gas Code:	APPVD	Analysis Date:	Jul 02, 2012

Expiration Date: Jul 02, 2015

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig.i.e. 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
PROPANE	28.00 PPM	27.99 PPM	G1	+/- 1% NIST Traceable
Air	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	080610	CC263046	49.62PPM PROPANE/AIR	May 14, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Jun 19, 2012

Triad Data Available Upon Request

Notes:ANW PN: 781077

C.A

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Tel: (610) 317-1608 Fax:(610) 758 8382

DocNumber: 000003740

~~PGVP ID:~~

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC *
901 BRIDGE ST
FUQUAY VARINA NC 275260

Praxair Order Number: 13003732
Customer P. O. Number: 10429
Customer Reference Number:

Fill Date: 4/7/2010
Part Number: EV AIPR50ME-AS
Lot Number: 917009747
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	4/12/2018	NIST Traceable
Cylinder Number:	CC283143	Analytical Uncertainty:
50.0 ppm	PROPANE	± 1 %
Balance	AIR	

Certifcation Information: Certification Date: 4/12/2010 Term: 96 Months Expiration Date: 4/12/2018

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1. Do Not Use this Standard if Pressure is less than 150 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: PROPANE

Requested Concentration: 50 ppm
Certified Concentration: 50.0 ppm
Instrument Used: VARIAN 3300 INST 023 (PROPANE)
Analytical Method: FID
Last Multipoint Calibration: 3/16/2010

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC182336
Ref. Std. Conc: 50.3 PPM
Ref. Std. Traceable to SRM #: 1668b
SRM Sample #: 82-J-49
SRM Cylinder #: XF003734B

First Analysis Data: Date: 4/12/2010

Z: 0	R: 50.39	C:	49.84	Conc:	49.777		
R: 50.36	Z: 0	C:	50.21	Conc:	50.147		
Z: 0	C: 50.2	R:	50.34	Conc:	50.137		
UOM: PPM		Mean Test Assay:		50.02 PPM			

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc:	0
R: 0	Z: 0	C: 0	Conc:	0
Z: 0	C: 0	R: 0	Conc:	0
UOM: PPM		Mean Test Assay:		0 PPM

Analyzed by: Megha Patel for
John Ppbish

Certified by: for
Robin Morgan

Airgas

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
(919)544-3773 Fax: (919)544-3774
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02AI99E15A3227	Reference Number:	122-124370084-1
Cylinder Number:	SG9164792BAL	Cylinder Volume:	146.2 CF
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22013	Valve Outlet:	590
Gas Code:	PPN	Certification Date:	Apr 17, 2013

Expiration Date: Apr 17, 2021

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	86.00 PPM	86.13 PPM	G1	+/- 1% NIST Traceable	04/17/2013
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	09061735	CC304058	97.82 PPM PROPANE/AIR	+/- 0.5%	Oct 02, 2013

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Mar 20, 2013

Triad Data Available Upon Request

Notes:

Approved for Release

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Telephone: (610) 317-1608
Facsimile: (610) 758-8382

DocNumber: 000007981

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC *
901 BRIDGE ST
FUQUAY VARINA NC 275260

Praxair Order Number: 15303079
Customer P. O. Number: 11036
Customer Reference Number:

Fill Date: 12/8/2010
Part Number: AI PR260ZE-AS
Lot Number: 917034266
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	12/13/2013		NIST Traceable
Cylinder Number:	CC109519		Analytical Uncertainty:
258.1	ppm	PROPANE	± 1 %
	Balance	AIR	

Certifcation Information: *Certification Date:* 12/13/2010 *Term:* 36 Months *Expiration Date:* 12/13/2013

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1

Do Not Use this Standard if Pressure is less than 150 PSIG

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. Component: PROPANE

Requested Concentration:	260 ppm
Certified Concentration:	258.1 ppm
Instrument Used:	VARIAN 3300 INST 023 (PROPANE)
Analytical Method:	FID
Last Multipoint Calibration:	11/19/2010

Reference Standard Type:	GMIS
Ref. Std. Cylinder # :	CC138736
Ref. Std. Conc:	499.9 PPM
Ref. Std. Traceable to SRM # :	1669b
SRM Sample # :	81-H-14
SRM Cylinder # :	XF004157b

First Analysis Data: Date: 12/13/2010

Z: 0	R: 501.2	C: 258.6	Conc:	258.07
R: 501.4	Z: 0	C: 258.5	Conc:	257.97
Z: 0	C: 258.7	R: 500.2	Conc:	258.17
UOM: PPM			Mean Test Assay:	258.07 PPM

Second Analysis Data: Date:

Z: 0	R: 0	C: 0	Conc:	0
R: 0	Z: 0	C: 0	Conc:	0
Z: 0	C: 0	R: 0	Conc:	0
UOM: PPM			Mean Test Assay:	0 PPM

Analyzed by: John Pribish 12/28/10

Certified by: Ashley Davila Ashley Davila

PRAXAIR

Praxair Distribution Mid-Atlantic
145 Shimersville Rd.
Bethlehem, PA 18015
Telephone: (610) 317-1608
Facsimile: (610) 758-8382

DocNumber: 000009995

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

CHEROKEE INSTRUMENTS INC *
901 BRIDGE ST
FUQUAY VARINA NC 275260

Praxair Order Number: 16230993
Customer P. O. Number: 11207
Customer Reference Number:

Fill Date: 3/17/2011
Part Number: EV AIPR500ME-AS
Lot Number: 917117666
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**3/21/2014**		NIST Traceable
Cylinder Number:	**SA20675**		Analytical Uncertainty:
507.1	**ppm**	**PROPANE**	**± 1 %**
	Balance	**AIR**	

Certifcation Information: Certification Date: 3/21/2011 Term: 36 Months Expiration Date: 3/21/2014

This cylinder was certified according to the 1997 EPA Traceability Protocol, Document #EPA-600/R-97/121, using Procedure G1

Do Not Use this Standard if Pressure is less than 150 PSIG

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1 . **Component:** PROPANE

Requested Concentration:	500 ppm
Certified Concentration:	507.1 ppm
Instrument Used:	VARIAN 3300 INST 023 (PROPANE)
Analytical Method:	FID
Last Multipoint Calibration:	3/16/2011

Reference Standard Type:	GMIS
Ref. Std. Cylinder # :	CC103865
Ref. Std. Conc:	749.3 PPM
Ref. Std. Traceable to SRM # :	2646a
SRM Sample # :	103-C-23
SRM Cylinder # :	XF000820B

First Analysis Data: **Date:** 3/21/2011

Z:	0	R:	749.9	C:	508.2	Conc:	507.86		
R:	749.1	Z:	0	C:	507.2	Conc:	506.86		
Z:	0	C:	506.8	R:	750.4	Conc:	506.46		

UOM: PPM **Mean Test Assay:** 507.06 PPM

Second Analysis Data: **Date:**

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: PPM **Mean Test Assay:** 0 PPM

Analyzed by: 04/01/11
John Pribish

Certified by: MK 4/1/11
Michelle Kostik

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
919-544-3773 Fax: 919-544-3774
www.airgas.com

Part Number:	E02AI99E15A0333	Reference Number:	122-124344171-1
Cylinder Number:	CC148274	Cylinder Volume:	146 Cu.Ft.
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22012	Valve Outlet:	590
Gas Code:	APPVD	Analysis Date:	Nov 05, 2012

Expiration Date: Nov 05, 2020

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
PROPANE	850.0 PPM	836.9 PPM	G1	+/- 1% NIST Traceable
Air	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	110609	CC343416	1000.3PPM PROPANE/NITROGEN	Mar 04, 2017

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Oct 11, 2012

Triad Data Available Upon Request

Notes:ANW PN: 781018

C. A

Approved for Release

AIR L... 'DE Air Liquide America Specialty Gases LLC Scott™

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

6141 EASTON ROAD, BLDG 1, PLUMSTEADVILLE, PA 18949-0310 Phone: 800-331-4953 Fax: 215-766-7226

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Document # : 46628943-001
Item No.: MM301080-T-30AL
P.O. No.: 06081203

Cylinder Number: ALM018055
Cylinder Size: 30AL
Certification Date: 21Jun2012
Expiration Date: 21Jun2014
Lot Number: PLU0109851

Customer

ENTHALPY ANAYTICAL, INC.
06081203
800-1 CAPITOLA DRIVE
DURHAM, NC 27703
US

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
METHANOL	105.	PPM	5
SULFUR HEXAFLUORIDE	3.0	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: D Ashnoff
DAVID ASHNOFF

DATE: 6-21-2012

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: CERTIFIED STANDARD-SPEC

Airgas Specialty Gases
1075 Cinclare Drive
Port Allen, LA 70767
225.388.0900
FAX: 225.388.0959
www.airgas.com

Part Number: X03NI99C15A1FX5
Cylinder Number: CC90659
Laboratory: ASG - Port Allen - LA
Analysis Date: Sep 30, 2013
Lot Number: 83-124390037-1A

Reference Number: 83-124390037-1A
Cylinder Volume: 144.4 CF
Cylinder Pressure: 2015 PSIG
Valve Outlet: 350S

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration (Mole %)	Analytical Uncertainty
SULFUR HEXAFLUORIDE	3.000 PPM	3.127 PPM	+/- 5%
METHANOL	100.0 PPM	91.71 PPM	+/- 2%
NITROGEN	Balance		

Notes:

Bridget Demorse
Approved for Release

Airgas

Airgas Specialty Gases
630 United Drive
Durham, NC 27713
(919)544-3773 Fax: (919)544-3774
www.airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X02NI99C15A1268	Reference Number:	122-124373993-1
Cylinder Number:	CC432538	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
Analysis Date:	May 08, 2013	Valve Outlet:	350
Lot Number:	122-124373993-1		

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration (Mole %)	Analytical Uncertainty
ETHYLENE	100.0 PPM	99.88 PPM	+/- 2%
NITROGEN	Balance		

Notes:

Approved for Release

APPENDIX F

Equipment Calibration Sheets

APEX INSTRUMENTS METHOD 5 POST-TEST CONSOLE CALIBRATION
USING CALIBRATED CRITICAL ORIFICES
3-POINT ENGLISH UNITS

Meter Console Information	
Console Model Number	522
Console Serial Number	909033
DGM Model Number	RW 110
DGM Serial Number	961167

Calibration Conditions			
Date	Time	10/23/13	1030
Barometric Pressure		29.46	in Hg
Theoretical Critical Vacuum[1]		13.91	in Hg
Calibration Technician		TTB	

Factors/Conversions		
Std Temp	528	^oR
Std Press	29.92	in Hg
K_1	17.647	oR/in Hg

[1]For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.

[2]The Critical Orifice Coefficient, K', must be entered in English units, $(ft^{3*o}R^{1/2})$/(in.Hg*min).

Calibration Data										
Run Time	Metering Console					Critical Orifice				
Elapsed	DGM Orifice ΔH	Volume Initial	Volume Final	Outlet Temp Initial	Outlet Temp Final	Serial Number	Coefficient	Amb Temp Initial	Amb Temp Final	Actual Vacuum
(Θ)	(P_m)	(V_{mi})	(V_{mf})	(t_{mi})	(t_{mf})	FO55	K'	(t_{amb})	(t_{amb})	
min	in H_2O	cubic feet	cubic feet	^oF	^oF	FO55	see above2	^oF	^oF	in Hg
16.0	1.20	637.000	646.659	62	63	FO55	0.4594	63	65	19.00
13.0	1.20	647.000	654.859	64	64	FO55	0.4594	65	65	19.00
13.0	1.20	655.100	662.965	64	65	FO55	0.4594	65	66	19.00

Results								
Standardized Data				Dry Gas Meter				
				Calibration Factor		Flowrate	ΔH @	
Dry Gas Meter		Critical Orifice		Value	Variation	Std & Corr	0.75 SCFM	Variation
$(V_{m(std)})$	$(Q_{m(std)})$	$(Vcr_{(std)})$	$(Q_{cr(std)})$	(Y)	(ΔY)	$(Q_{m(std)(corr)})$	(ΔH@)	(ΔΔH@)
cubic feet	cfm	cubic feet	cfm			cfm	in H2O	
9.639	0.602	9.460	0.591	0.981	0.000	0.591	1.934	0.001
7.821	0.602	7.679	0.591	0.982	0.000	0.591	1.933	-0.001
7.819	0.601	7.675	0.590	0.982	0.000	0.590	1.933	-0.001
Pretest Gamma	0.9828	**% Deviation**	0.1	0.982	Y Average		1.933	ΔH@ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR Title 40, Part 60, Appendix A-3, Method 5, 16.2.3

Signature _______ Todd Brozell   Date _________ 10/23/2013

Air Control Techniques, P.C.

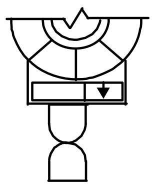
Type S Pitot Tube Inspection and Stack Thermocouple Calibration

GENERAL INFORMATION

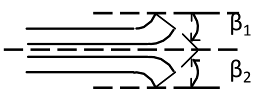
Probe ID	4H	Personnel	DLS
Date	9/21/2011	Coefficient Value	0.84

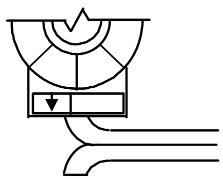
PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no

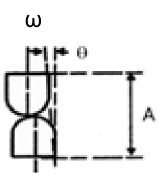


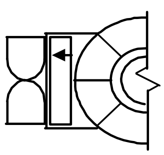
α_1	1.4	≤ ±10°
α_2	0.4	≤ ±10°





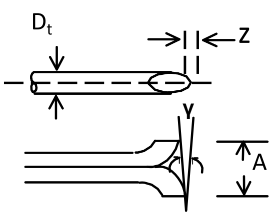
β_1	1.9	≤ ±5°
β_2	1.2	≤ ±5°

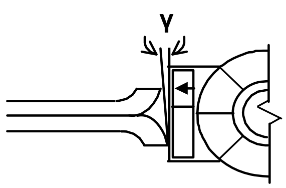




γ	2.9	
θ	0.2	
$z = A \tan(\gamma)$	0.049	≤ ±⅛"
$\omega = A \tan(\theta)$	0.003	≤ ±1/32"
D_t	0.375	

(3/16" < D_t < ⅜" Recommended)





A	0.9375
P_A / P_B	1.29

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type	Hg Thermometer	Ref. ID	Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	43	45	2
Ambient	75	75	0
Hot water	193	194	1
		Maximum Temp. Difference, °F	2

Air Control Techniques, P.C.

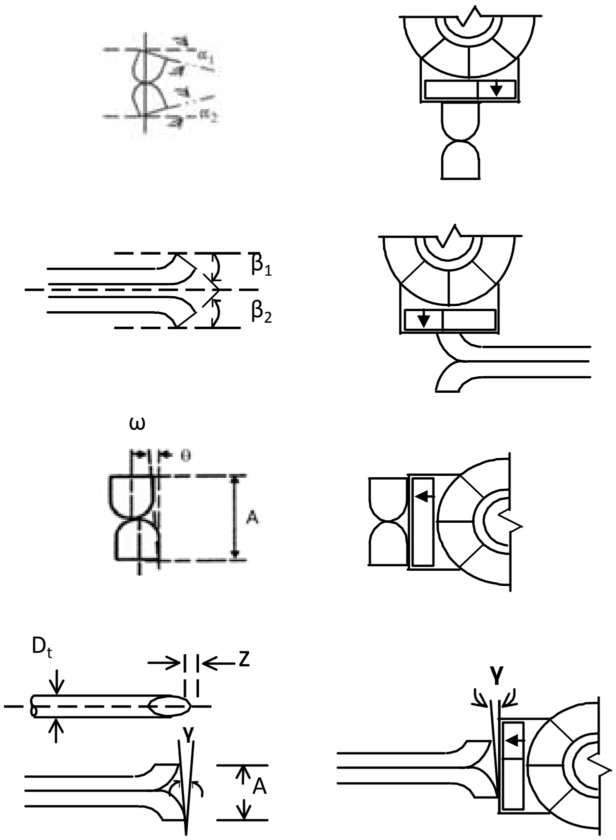
Type S Pitot Tube Inspection and Stack Thermocouple Calibration

GENERAL INFORMATION

Probe ID	6H	Personnel	DLS
Date	9/21/2011	Coefficient Value	0.84

PITOT TUBE INSPECTION

Pitot Tube assembly level? (yes/no)	yes
Pitot Tube obstruction? (yes/no)	no
Pitot Tube openings damaged? (yes/no)	no



α_1	1.4	≤ ±10°
α_2	0.4	≤ ±10°
β_1	1.9	≤ ±5°
β_2	1.2	≤ ±5°
γ	2.9	
θ	0.2	
z = A tan (γ)	0.049	≤ ±⅛"
ω = A tan (θ)	0.003	≤ ±¹⁄₃₂"
D_t	0.375	

(3/16" < D_t < ⅜" Recommended)

A	0.9375
P_A	
P_B	1.29

(1.05 < P/D_t < 1.50 Recommended)

STACK THERMOCOUPLE CALIBRATION

Ref. Type: Hg Thermometer — Ref. ID: Hg-1

Source	Ref., °F	Stack TC, °F	Abs. Diff.,° F
Ice bath	43	45	2
Ambient	75	75	0
Hot water	193	192	1
		Maximum Temp. Difference, °F	2