SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

PARTICULATE MATTER (FILTERABLE, PM_{10}, $PM_{2.5}$, AND CONDENSABLE), NITROGEN OXIDES, CARBON MONOXIDE, VOLATILE ORGANIC COMPOUNDS, HYDROGEN CHLORIDE, AND HAPS EMISSIONS TEST REPORT

FOR

DRAX BIOMASS INC.

Amite Bioenergy
Gloster, Mississippi
Report ID 2021.0118

Test Date: July 13 through 17, 2021
Date of Issue: September 3, 2021

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REPORT CERTIFICATION

SEAS Project No.: 2021.0118

Drax Biomass, Incorporation
Amite BioEnergy LLC
Regenerative Thermal Oxidizer
And
Regenerative Catalytic Oxidizer

Sanders Engineering and Analytical Services, Inc. (SEAS) is fully accredited and recognized by the Louisiana Environmental Laboratory Accreditation Program to be certified under Certificate Number 04016. The Louisiana Department of Environmental Quality has issued Agency Interest No. 88080 to SEAS under the Louisiana Administrative Code, Title 33, Part I, Subpart 3, Laboratory Accreditation.

I certify that I have reviewed the information contained within this report and based on information and belief formed after reasonable inquiry, the statements and information are authentic, accurate, and complete to the best of my knowledge.

Signature: E- Jones Date: 9/3/21

Eric Jones
Operations Manager/Technical Director
Sanders Engineering & Analytical Services, Inc.

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1. INTRODUCTION

Sanders Engineering & Analytical Services, Inc. (SEAS) conducted initial performance testing for Drax Biomass on the Regenerative Thermal Oxidizer (AA-201) and the Regenerative Catalytic Oxidizer (AA-301) at the Amite BioEnergy, LLC facility located in Gloster, Mississippi. Particulate matter (filterable, PM_{10}, $PM_{2.5}$, and condensable), nitrogen oxides, carbon monoxide, volatile organic compounds, hydrogen chloride, and HAPS (methanol, phenol, formaldehyde, acetaldehyde, acrolein, and propionaldehyde) emissions testing was performed on each unit. The testing was performed July 13, 14, 15, 16, and 17, 2021 in accordance with the applicable U.S. EPA procedures specified at **40 CFR, 51, Appendix M and Part 60, Appendix A**, **Methods 1, 2, 3a, 4, 5/202**, **7e, 10, 25a, 26, 26a, and 201a,** as well as **NCASI Method ISS/FP-A105.01.** Further discussions of the test methods are included later in the report.

The purpose of the testing was to demonstrate compliance with the rules and regulations of the U. S. Environmental Protection Agency, and to meet the necessary requirements contained in the permit to operate issued by the Mississippi Department of Environmental Quality. The tests were conducted by Mr. Spencer Edwards, Mr. Richard Reynolds, Mr. Lucas Carson, Mr. Matthew Schmidt, Mr. Caleb Harper, Mr. Jeffery Howard, and Mr. Josh Miller of Sanders Engineering & Analytical Services, Inc., and were coordinated with Mr. Jamaria Warren of Drax Biomass. The Mississippi Department of Environmental Quality was notified so a representative could be present to observe the testing.

2. DESCRIPTION OF SAMPLING PROGRAM

The sampling program consisted of volumetric flow rate, oxygen, carbon dioxide, nitrogen oxides, carbon monoxide, filterable particulate, PM_{10}, $PM_{2.5}$, condensable particulate, volatile organic compounds, hydrogen chloride, and HAPS (methanol, phenol, formaldehyde, acetaldehyde, acrolein, and propionaldehyde) emissions testing in compliance with US EPA methods.

2.1. Volumetric Flow Rate Testing

The quantitative determination of flow rate was made in accordance with **40 CFR, Part 60, Appendix A, Method 2**. This test procedure generally requires the insertion of a pitot tube into the stack at a series of points. The data from the pitot tube was recorded on the field data sheet. The diameter of the stack at the test ports was measured, the area calculated, and the product of area times velocity gave flow rate (cubic feet per minute or other denominations). Calibrations of the volumetric flow rate testing equipment are included in Appendix A. A detailed description of the testing procedures and schematic of the sampling train is presented in Section 4.

2.2. Moisture Testing

The quantitative determination of moisture was made in accordance with **40 CFR, Part 60, Appendix A, Method 4**. This test procedure generally requires the insertion of a stainless-steel probe into the stack. A sample of greater than twenty-one cubic feet is pulled through a set of impingers for the condensation of water from the stack gases. The quantity of gas sampled is measured by a calibrated dry gas meter. A detailed description of the testing procedures and schematic of the sampling train is presented in Section 5. The completed field data are presented in Appendix B and C.

2.1. Particulate Testing

2.1.1. Total Filterable and Condensable Particulate Testing

The particulate sample was extracted from the stack isokinetically through a stainless-steel nozzle and probe onto a pre-weighed glass fiber filter. The sample was taken at a series of points across the stack. Each point represented an equal area of stack. The isokinetic sampling rate and volumetric flow rate were monitored by an S-type pitot tube attached to the probe. A detailed description of the testing procedures and schematic of the sampling train are presented in Section 6.

The condensable particulate matter passes through the particle sizing device and is captured in a series of impingers and secondary Teflon membrane filter. The impingers are rinsed with water, acetone, and hexane to obtain organic and inorganic condensable fractions. All condensable matter is considered PM 2.5. The field data are presented in Appendix B and C.

2.1.2. PM10 and PM2.5 Particulate Testing

To measure PM10 and PM2.5, a sample of gas is extracted at a predetermined constant flow rate through an in-stack sizing device. The sizing device separates particles with nominal aerodynamic diameters of PM10 and PM2.5. In order to minimize variations in the isokinetic sampling conditions, well-defined sampling limits are established. Once a sample is obtained, the uncombined water is removed from the particulate. Gravimetric analysis is used to determine the particulate mass for each size fraction. A detailed description of the testing procedures and schematic of the sampling train are presented in Section 7.

2.2. Oxygen, Carbon Dioxide, Nitrogen Oxides, and Carbon Monoxide Testing

Oxygen, carbon dioxide, nitrogen oxides, and carbon monoxide testing was accomplished by withdrawing a sample of the stack gas through a stainless steel probe, a moisture removal system, and into an instrument specifically designed for the measurement of the pollutant of interest. The instrument responded linearly to concentrations of each pollutant. The output of the instrument is a continuous analog voltage which is digitized and input into a PC based data acquisition system. The PC data acquisition system polls the instruments 1000 times per second. The computer averages these readings into one-second averages during calibrations and one minute averages at other times. These averages are written to the hard disk each minute to ensure no data loss due to power failure or other inadvertent occurrence. The computer stores in memory all calibration and stack gas analyses during each run. The averages for each calibration and for each independent run were averaged for the time of the runs. A description of the testing procedure is included in Section 8. The gas certifications are presented in Appendix D.

2.3. Volatile Organic Compounds Testing

Volatile organic compounds testing was accomplished by withdrawing a sample of the stack gas through a heated stainless steel probe, into heated pump and transported through Teflon tubing, all maintained at greater than 230 degrees Fahrenheit, into an instrument specifically designed for the measurement of volatile organic compounds. This instrument responded linearly to concentrations of volatile organic compounds. The output of this instrument is a continuous analog voltage that is digitized and input into a PC-based data acquisition system. The PC data acquisition system polls the instrument 1000 times per second. The computer averages these readings into one-second averages during calibrations and one-minute averages at other times. These averages are written to the hard disk each minute to ensure no data loss due to power failure or other inadvertent occurrence. The computer stores in memory all calibration and stack gas analyses during each run. The averages for each calibration and for each independent run were averaged and reported. A description of the testing procedures is included in Section 9. The gas certifications are included in Appendix D.

2.4. Hydrogen Chloride Testing

The quantitative determination of hydrogen chloride was made in accordance with **40 CFR, Part 60, Appendix A, Method 26 and 26a**. The quantitative determination of hydrogen chloride requires the insertion of a glass sample probe into the gas stream. Stack gases are extracted into a series of chilled impingers containing weak sulfuric acid as the absorbent media. Upon leaving the impinger, the gases pass through a silica gel absorption tube for collection of any remaining moisture before entering the gas metering system. The collected sample is analyzed by ion chromatography. A detailed description of the testing procedures and schematic of the sampling train is presented in Sections 9 and 10. The laboratory analyses and audit results are included in Appendix F.

2.5. Hazardous Air Pollutants Testing

The quantitative determination of HAPS as methanol, phenol, formaldehyde, acetaldehyde, acrolein, and propionaldehyde was made in accordance with **NCASI Method ISS/FP-A105.01**. Stack gases are extracted at a constant rate through a series of chilled impingers containing o-benzylhydroxylamine (BHA) solution. The impingers are rinsed with hexane, and the collected sample is analyzed by gas chromatography equipped with nitrogen phosphorous detector and flame ionization detector. A description of the testing procedures is included in Section 11. The laboratory analysis is included in Appendix E.

3. SUMMARY AND DISCUSSION OF RESULTS

Due to the amount of sampling equipment needed to complete testing for all required parameters, the testing was broken into two scenarios for both the RTO and RCO. A total of three sixty-minute runs was completed for each required pollutant. An overview of the testing matrix is provided below.

Test Condition	Test Date	Source	Parameters
1	July 13 & 14	WESP Outlet/RTO Inlet	VOCs, flow, & moisture
		RTO Outlet	HAPs, NOx, CO, VOCs, flow, & moisture
2	July 15	RTO Outlet	HCl, total filterable & condensable PM
3	July 16	RCO Inlet	VOCs
		RCO Outlet	HCl, HAPs, NOx, CO, VOCs, flow, & moisture
4	July 17	RCO Outlet	PM_{10}, $PM_{2.5}$, total filterable, & condensable PM

The initial test plan called for conducting flow, moisture and VOC testing at the inlet to the WESP, but after arrival to the facility, it was discovered that the inlet duct work contains a water quench system and is not an acceptable test location. Therefore, the inlet VOC concentration needed for DRE calculation on RTO was measured at the WESP outlet. This location does not meet the minimum flow disturbance requirements of Method 1, and due to the high moisture content, a directional probe could not be used to determine if the location met the acceptance criteria. A cyclonic flow check was performed by Method 2 and did not indicate any issues with the sample location, so the RTO inlet testing was conducted at the WESP outlet. Because of the moisture content and presence of water droplets in the gas stream, the PM_{10} and $PM_{2.5}$ particle sampling could not be performed, and the results of the filterable PM testing were used as a surrogate for PM_{10}. A heated dilution system was also used on the inlet and outlet of the RTO at a ratio of approximately 10:1 for VOC sampling to alleviate any issues with the FID analyzer due to the high moisture content of the stack gas.

Similarly, the initial test plan on the RCO was to conduct flow, moisture and VOC testing on the inlet location for DRE calculation. However, there was not an acceptable sample location available to conduct the flow rate testing. So only the inlet VOC concentration was determined, and the flow rate measured on the RCO outlet was used to calculate an inlet mass rate.

There were no additional problems experienced during the performance of the testing. The summary of results for the testing performed on the Regenerative Thermal Oxidizer and the Regenerative Catalytic Oxidizer are presented in Tables I through XI. The field data used to calculate the emissions are presented in Appendices B and C for the Regenerative Thermal Oxidizer and the Regenerative Catalytic Oxidizer, respectively.

TABLE I. NITROGEN OXIDES, CARBON MONOXIDE, AND VOLATILE ORGANIC COMPOUNDS EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

TEST	Test Date	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Dry Cubic Feet per Minute)	Oxygen Concentration (Percent-dry)	Carbon Dioxide Concentration (Percent-dry)	Nitrogen Oxides Concentration (ppm-dry)	Nitrogen Oxides Emissions (Lbs/hour)	Nitrogen Oxides Emissions (Tons/Year)	Carbon Monoxide Concentration (ppm-dry)	Carbon Monoxide Emissions (Lbs/hour)	Carbon Monoxide Emissions (Tons/Year)
RUN 1	**7/13/21**	14:55	15:55	76,096	11.3	8.9	30.3	16.5	72.3	187.4	62.3	272.7
RUN 2	**7/14/21**	12:10	13:10	80,674	12.6	8.2	38.1	22.0	96.4	93.5	32.9	144.2
RUN 3	**7/14/21**	14:20	15:20	80,722	12.8	8.0	40.0	23.1	101.3	97.5	34.4	150.5
Average				**79,164**	**12.2**	**8.3**	**36.1**	**20.6**	**90.0**	**126.1**	**43.2**	**189.1**
Allowable									**245.0***			**245.0***

TEST	Test Date	Start Time Military	Stop Time Military	Water Vapor in Stack Gas (Percent)	Volatile Organic Compounds Concentration (as propane) (ppm-wet)	Volatile Organic Compounds Emissions (as propane) (ppm-dry)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)	Inlet Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Descruction Efficiency (Percent)
RUN 1	**7/13/21**	14:55	15:55	48.2	11.6	22.5	11.8	51.5	235.2	95.0%
RUN 2	**7/14/21**	12:10	13:10	45.0	8.9	16.1	8.9	39.1	176.9	95.0%
RUN 3	**7/14/21**	14:20	15:20	44.3	10.2	18.4	10.2	44.7	229.3	95.5%
Average				**45.8**	**10.2**	**19.0**	**10.3**	**45.1**	**213.8**	**95.2%**
Allowable								**245.0***		**95%**

*** The 245.0 ton/year emissions standard for NOx, CO, and VOC is a facility wide limitation.**

TABLE II. VOLATILE ORGANIC COMPOUNDS EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
WET ELECTROSTATIC PRECIPITATOR - OUTLET
GLOSTER, MISSISSIPPI

TEST	Test Date	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Dry Cubic Feet per Minute)	Water Vapor in Stack Gas (Percent)	Volatile Organic Compounds Concentration (as propane) (ppm-wet)	Volatile Organic Compounds Concentration (as propane) (ppm-dry)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)
RUN 1	**7/13/21**	14:55	15:55	79,525	43.6	242.6	430.3	235.2	1,030.0
RUN 2	**7/14/21**	12:10	13:10	77,900	42.5	190.1	330.4	176.9	774.9
RUN 3	**7/14/21**	14:20	15:20	82,751	42.1	233.4	403.2	229.3	1,004.3
Average				**80,059**	**42.7**	**222.0**	**388.0**	**213.8**	**936.4**

TABLE III. HAPs EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		Run 1 Sample	Run 1 Duplicate	Run 2 Low Spike	Run 2 Sample	Run 3 High Spike	Run 3 Sample	Average
Date	Month/Day/Year	7/13/2021	7/13/2021	7/14/2021	7/14/2021	7/14/2021	7/14/2021	
Sampling Time -Start	Military	1455	1455	1210	1210	1420	1420	
Sampling Time -Stop	Military	1555	1555	1310	1310	1520	1520	
Sampling Time	Minutes	60	60	60	60	60	60	
Barometric Pressure	in Hg.	29.60	29.60	29.80	29.80	29.80	29.80	
Stack Gas Flow rate	Standard Dry Cubic Ft/Min	76,096	76,096	80,674	80,674	80,722	80,722	
Meter Correction Factor	dimensionless	1.016	0.979	1.016	0.979	1.016	0.979	
Volume of Gas Metered	Dry liters	30.015	30.053	30.121	30.072	30.038	30.061	
Average Meter Temperature	Degrees F	112	116	98	101	106	109	
Average Orifice Pressure (DH)	Inches Water	0.41	0.41	0.41	0.41	0.41	0.41	
Volume of Gas Sampled	Standard Dry Liters	27.896	26.692	28.891	27.616	28.366	27.218	**Average**
			Methanol					
Molecular Weight	Lb/Lb-Mole	32.04	32.04	32.04	32.04	32.04	32.04	32.04
Mass Spiked on Tube	Micrograms	[redacted]		80.7	[redacted]	403	[redacted]	242
Total Mass Collected on Tube	Micrograms	146	141	212	134	535	159	221
Concentration in Stack Gas	mg/dscm	5.234	5.282	[redacted]	4.852	[redacted]	5.842	5.317
Concentration in Stack Gas	ppm	3.93	3.96		3.64		4.38	3.99
Mass Emission Rate	Pounds per Hour	1.49	1.51		1.47		1.77	1.58
Mass Emission Rate	Tons per Year	6.53	6.59		6.42		7.74	6.91
Duplicate Difference / Spike Recovery	Percent	0.9		89.0		91.6		
			Phenol					
Molecular Weight	Lb/Lb-Mole	94.11	94.11	94.11	94.11	94.11	94.11	94.11
Mass Spiked on Tube	Micrograms	[redacted]		74.4	[redacted]	1,214	[redacted]	644
Total Mass Collected on Tube	Micrograms	*67.0*	*65.6*	66.7	*62.0*	1,148	*59.3*	245
Concentration in Stack Gas	mg/dscm	*2.402*	*2.458*	[redacted]	*2.245*	[redacted]	*2.179*	2.285
Concentration in Stack Gas	ppm	*0.61*	*0.63*		*0.57*		*0.56*	0.58
Mass Emission Rate	Pounds per Hour	*0.68*	*0.70*		*0.68*		*0.66*	*0.68*
Mass Emission Rate	Tons per Year	*3.00*	*3.07*		*2.97*		*2.89*	*2.96*
Duplicate Difference / Spike Recovery	Percent	ND		89.7		94.6		
			Acetaldehyde					
Molecular Weight	Lb/Lb-Mole	44.10	44.10	44.10	44.10	44.10	44.10	44.10
Mass of Spiked on Tube	Micrograms	[redacted]		78.8	[redacted]	630	[redacted]	354
Total Mass Collected on Tube	Micrograms	37.3	34.2	114	29.9	599	31.7	141
Concentration in Stack Gas	mg/dscm	1.337	1.281	[redacted]	1.083	[redacted]	1.165	1.186
Concentration in Stack Gas	ppm	0.73	0.70		0.59		0.63	0.65
Mass Emission Rate	Pounds per Hour	0.38	0.37		0.33		0.35	0.35
Mass Emission Rate	Tons per Year	1.67	1.60		1.43		1.54	1.54
Duplicate Difference / Spike Recovery	Percent	4.3		105.0		89.8		
			Acrolein					
Molecular Weight	Lb/Lb-Mole	56.06	56.06	56.06	56.06	56.06	56.06	56.06
Mass Spiked on Tube	Micrograms	[redacted]		74.8	[redacted]	732	[redacted]	403
Total Mass Collected on Tube	Micrograms	14.7	12.4	74.1	13.4	527	14.2	109
Concentration in Stack Gas	mg/dscm	0.527	0.465	[redacted]	0.485	[redacted]	0.522	0.501
Concentration in Stack Gas	ppm	0.23	0.20		0.21		0.22	0.21
Mass Emission Rate	Pounds per Hour	0.15	0.13		0.15		0.16	0.15
Mass Emission Rate	Tons per Year	0.66	0.58		0.64		0.69	0.65
Duplicate Difference / Spike Recovery	Percent	12.6		80.3		70.0		
			Formaldehyde					
Molecular Weight	Lb/Lb-Mole	30.03	30.03	30.03	30.03	30.03	30.03	30.03
Mass Spiked on Tube	Micrograms	[redacted]		79.8	[redacted]	399	[redacted]	239
Total Mass Collected on Tube	Micrograms	83.7	74.8	172	80.1	410	83.9	151
Concentration in Stack Gas	mg/dscm	3.000	2.802	[redacted]	2.900	[redacted]	3.083	2.961
Concentration in Stack Gas	ppm	2.40	2.24		2.32		2.47	2.37
Mass Emission Rate	Pounds per Hour	0.86	0.80		0.88		0.93	0.88
Mass Emission Rate	Tons per Year	3.75	3.50		3.84		4.08	3.85
Duplicate Difference / Spike Recovery	Percent	6.8		110.5		80.8		
			Propionaldehyde					
Molecular Weight	Lb/Lb-Mole	58.08	58.08	58.08	58.08	58.08	58.08	58.08
Mass Spiked on Tube	Micrograms	[redacted]		80.4	[redacted]	804	[redacted]	442
Total Mass Collected on Tube	Micrograms	9.37	9.03	86.4	8.04	685	9.39	135
Concentration in Stack Gas	mg/dscm	0.336	0.338	[redacted]	0.291	[redacted]	0.345	0.324
Concentration in Stack Gas	ppm	0.14	0.14		0.12		0.14	0.13
Mass Emission Rate	Pounds per Hour	0.10	0.10		0.09		0.10	0.10
Mass Emission Rate	Tons per Year	0.42	0.42		0.39		0.46	0.42
Duplicate Difference / Spike Recovery	Percent	0.7		97.0		84.0		
			Total HAPS's					
Mass Emission Rate	Pounds per Hour	3.66	3.60	[redacted]	3.58	[redacted]	3.97	3.73
Mass Emission Rate	Tons per Year	16.02	15.76		15.69		17.39	16.33

Substituted Detection Limit

TABLE IV. FILTERABLE AND CONDENSABLE PARTICULATE TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		RUN 1	RUN 2	RUN 3
Date	Month/Day/Year	7/15/2021	7/15/2021	7/15/2021
Sampling Time -Start	Military	0826	1119	1337
Sampling Time -Stop	Military	1014	1233	1706
Number of Ports	dimensionless	4	4	4
Number of Points per Port	dimensionless	6	6	6
Stack Static Pressure	Inches Water	-0.60	-0.60	-0.60
Barometric Pressure	Inches Mercury	29.78	29.78	29.78
Standard Orifice Pressure $DH_@$	Inches Water	1.861	1.861	1.861
Meter Correction Factor	dimensionless	1.005	1.005	1.005
Oxygen Concentration	Mole Percent O2	13.1	13.7	13.9
Carbon Dioxide Concentration	Mole Percent CO2	5.0	4.5	5.0
Volume of Gas Metered	Actual Cubic Feet	44.519	40.869	44.203
Volume of Water Collected	Milliliters	749.3	642.2	651.6
Sampling Time	Minutes	60	60	60
Nozzle Diameter	Inches	0.273	0.273	0.273
Area of Stack	Square Feet	45.913	45.913	45.913
Avg. Sqr. Root Velocity Pressure	Inches Water	1.071	0.995	1.053
Average Orifice Pressure (DH)	Inches Water	1.89	1.64	1.85
Average Stack Temperature	Degrees F	260	279	271
Average Meter Temperature	Degrees F	75	78	81
Weight of Condensable Organic Solids	Milligrams	7.5	4.7	10.3
Weight of Condensable Inorganic Solids	Milligrams	4.3	2.5	4.0
Weight of Filterable Solids	Milligrams	8.9	2.5	2.6
Weight of Blank Condensable Organic Solids	Milligrams	1.7	1.7	1.7
Weight of Blank Condensable Inorganic Solids	Milligrams	0.5	0.5	0.5
Total Blank Correction Condensable Solids	Milligrams	2.0	2.0	2.0

Calculations

Standard Temperature (° F) =	68	RUN 1	RUN 2	RUN 3	AVERAGE
Standard Pressure (inches of Hg) =	29.92				
Volume of Gas Sampled	Standard Dry Cubic Feet	44.116	40.264	43.370	42.583
Molecular Wt. of Stack Gas (dry)	LB/LB-MOLE	29.32	29.27	29.36	29.32
Water vapor in Stack Gas	Percent	44.4	42.9	41.4	42.9
Average Stack Gas Velocity	Feet per second	76.7	72.1	75.5	74.8
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	211,369	198,516	207,893	205,926
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	85,657	80,522	87,464	84,548
Isokinetic Rate	Percent	97.0	94.1	93.4	94.8
Post Test Meter Correction Check	dimensionless	1.02	1.04	1.02	1.03
Percent Difference	Average 5% Allowed	1.4	3.4	1.6	2.1
Particulate Emission Rate (Total Condensable)	Grains per Standard Dry Cubic Foot	0.00343	0.00199	0.00438	0.00327
Particulate Emission Rate (Filterable)	Grains per Standard Dry Cubic Foot	0.00311	0.00096	0.00093	0.00167
Particulate Emission Rate (Total)	Grains per Standard Dry Cubic Foot	0.00654	0.00295	0.00530	0.00493
Particulate Emission Rate (Total Condensable)	Pounds per Hour	2.52	1.38	3.28	2.39
Particulate Emission Rate (Filterable)	Pounds per Hour	2.29	0.66	0.69	1.21
Particulate Emission Rate (Total)	Pounds per Hour	4.80	2.04	3.97	3.60
Particulate Emission Rate (Total Condensable)	Tons per Year	11.02	6.03	14.37	10.47
Particulate Emission Rate (Filterable)	Tons per Year	10.01	2.90	3.04	5.32
Allowable					***245.0****
Particulate Emission Rate (Total)	Tons per Year	21.04	8.92	17.41	15.79
Allowable					***245.0****

*** The 245.0 tons/year emission standard is a facility wide limitiation.**

TABLE V. HYDROGEN CHLORIDE EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		**RUN 1**	**RUN 2**	**RUN 3**
Date	Month/Day/Year	7/15/2021	7/15/2021	7/15/2021
Sampling Time -Start	Military	0826	1119	1337
Sampling Time -Stop	Military	1014	1233	1706
Number of Ports	dimensionless	4	4	4
Number of Points per Port	dimensionless	6	6	6
Stack Static Pressure	Inches Water	-0.60	-0.60	-0.60
Barometric Pressure	Inches Mercury	29.78	29.78	29.78
Standard Orifice Pressure DH@	Inches Water	1.844	1.844	1.844
Meter Correction Factor	dimensionless	1.006	1.006	1.006
Oxygen Concentration	Mole Percent O2	13.1	13.7	13.9
Carbon Dioxide Concentration	Mole Percent CO2	5.0	4.5	5.0
Volume of Gas Metered	Actual Cubic Feet	47.560	49.770	50.663
Volume of Water Collected	Milliliters	809.4	815.5	682.9
Sampling Time	Minutes	60.0	60.0	60.0
Nozzle Diameter	Inches	0.284	0.284	0.284
Area of Stack	Square Feet	45.913	45.913	45.913
Avg. Sqr. Root Velocity Pressure	Inches Water	1.067	1.084	1.086
Average Orifice Pressure (DH)	Inches Water	2.10	2.28	2.33
Average Stack Temperature	Degrees F	258	265	257
Average Meter Temperature	Degrees F	76	77	72

Calculations

		RUN 1	**RUN 2**	**RUN 3**	**AVERAGE**
Standard Temperature (° F) =	68				
Standard Pressure (inches of Hg) =	29.92				
Volume of Gas Sampled	Standard Dry Cubic Feet	47.153	49.260	50.613	49.009
Molecular Wt. of Stack Gas (dry)	LB/LB-MOLE	29.32	29.27	29.36	29.32
Water vapor in Stack Gas	Percent	44.7	43.8	38.8	42.4
Average Stack Gas Velocity	Feet per second	76.4	77.9	76.7	77.0
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	210,536	214,662	211,167	212,121
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	85,061	87,272	94,494	88,942
Isokinetic Rate	Percent	96.4	98.2	93.2	95.9
Post Test Meter Correction Check	dimensionless	1.01	1.01	1.00	1.01
Percent Difference	Allowed 5% Average	0.5	0.4	-0.9	0.0
Mass of Hydrogen Chloride Collected	Micrograms	686	317	374	459
Hydrogen Chloride Concentration	Micrograms per Standard Dry Cubic Meter	514	227	261	334
Hydrogen Chloride Concentration	Parts per million	0.34	0.15	0.17	0.22
Hydrogen Chloride Emission Rate	Pounds per Hour	0.16	0.07	0.09	0.11
Hydrogen Chloride Emission Rate	Tons per Year	0.72	0.33	0.40	0.48

TABLE VI. NITROGEN OXIDES, CARBON MONOXIDE, AND VOLATILE ORGANIC COMPOUNDS EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
Friday, July 16, 2021

TEST	Start Time Military	Stop Time Military	Stack Gas Flow Rate (Standard Dry Cubic Feet per Minute)	Oxygen Concentration (Percent-dry)	Carbon Dioxide Concentration (Percent-dry)	Nitrogen Oxides Concentration (ppm-dry)	Nitrogen Oxides Emissions (Lbs/hour)	Nitrogen Oxides Emissions (Tons/Year)	Carbon Monoxide Concentration (ppm-dry)	Carbon Monoxide Emissions (Lbs/hour)	Carbon Monoxide Emissions (Tons/Year)
RUN 1	12:07	13:07	208,933	20.7	0.0	0.6	0.88	3.84	11.5	10.5	46.02
RUN 2	14:08	15:08	207,816	20.7	0.0	0.6	0.88	3.86	12.6	11.5	50.25
RUN 3	18:32	19:32	211,150	20.7	0.0	0.5	0.73	3.20	12.6	11.6	50.94
Average			**209,300**	**20.7**	**0.0**	**0.6**	**0.8**	**3.63**	**12.3**	**11.2**	**49.07**
Allowable								**245.0***			**245.0***

TEST	Start Time Military	Stop Time Military	Water Vapor in Stack Gas (Percent)	Volatile Organic Compounds Concentration (as propane) (ppm-wet)	Volatile Organic Compounds Concentration (as propane) (ppm-dry)	Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Emissions (Tons/Year)	Inlet Volatile Organic Compounds Emissions (Lbs/hour)	Volatile Organic Compounds Descruction Efficiency (Percent)
RUN 1	12:07	13:07	4.6	5.1	5.4	7.7	33.70	322.5	97.6%
RUN 2	14:08	15:08	5.7	5.2	5.5	7.8	34.37	287.7	97.3%
RUN 3	18:32	19:32	4.6	5.1	5.3	7.8	33.97	223.5	96.5%
Average			**5.0**	**5.1**	**5.4**	**7.8**	**34.01**	**277.9**	**97.1%**
Allowable							**245.0***		**95%**

*** The 245.0 ton/year emissions standard for NOx, CO, and VOC is a facility wide limitation.**

TABLE VII. VOLATILE ORGANIC COMPOUNDS EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - INLET
Friday, July 16, 2021

TEST	**Start Time** Military	**Stop Time** Military	**Stack Gas Flow Rate** (Standard Dry Cubic Feet per Minute)	**Water Vapor in Stack Gas** (Percent)	**Volatile Organic Compounds Concentration** (as propane) (ppm-wet)	**Volatile Organic Compounds Concentration** (as propane) (ppm-dry)	**Volatile Organic Compounds Emissions** (Lbs/hour)	**Volatile Organic Compounds Emissions** (Tons/Year)
RUN 1	12:07	13:07	208,933	4.6	214.2	224.6	322.5	1,412.4
RUN 2	14:08	15:08	207,816	5.7	189.9	201.4	287.7	1,259.9
RUN 3	18:32	19:32	211,150	4.6	146.9	154.0	223.5	978.8
Average			**209,300**	**5.0**	**183.7**	**193.3**	**277.9**	**1,217.0**

TABLE VIII. HAPs EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		Run 1 Sample	Run 1 Duplicate	Run 2 Low Spike	Run 2 Sample	Run 3 High Spike	Run 3 Sample	Average
Date	Month/Day/Year	7/16/2021	7/16/2021	7/16/2021	7/16/2021	7/16/2021	7/16/2021	
Sampling Time -Start	Military	1207	1207	1408	1408	1832	1832	
Sampling Time -Stop	Military	1307	1307	1508	1508	1932	1932	
Sampling Time	Minutes	60	60	60	60	60	60	
Barometric Pressure	in Hg.	29.66	29.66	29.66	29.66	29.66	29.66	
Stack Gas Flow rate	Standard Dry Cubic Ft/Min	208,933	208,933	207,816	207,816	211,150	211,150	
Meter Correction Factor	dimensionless	1.016	0.979	1.016	0.979	1.016	0.979	
Volume of Gas Metered	Dry liters	30.095	30.093	30.206	30.084	30.045	30.112	
Average Meter Temperature	Degrees F	100	101	102	106	73	75	
Average Orifice Pressure (DH)	Inches Water	0.41	0.41	0.41	0.41	0.41	0.41	
Volume of Gas Sampled	Standard Dry Liters	28.594	27.514	28.623	27.287	30.016	28.893	**Average**
				Methanol				
Molecular Weight	Lb/Lb-Mole	32.04	32.04	32.04	32.04	32.04	32.04	32.04
Mass Spiked on Tube	Micrograms	[redacted]		80.7	[redacted]	403	[redacted]	242
Total Mass Collected on Tube	Micrograms	92.0	86.8	154	89.5	485	107	169
Concentration in Stack Gas	mg/dscm	3.217	3.155	[redacted]	3.280	[redacted]	3.703	3.390
Concentration in Stack Gas	ppm	2.41	2.37		2.46		2.78	2.54
Mass Emission Rate	Pounds per Hour	2.52	2.47		2.55		2.93	2.66
Mass Emission Rate	Tons per Year	11.03	10.81		11.18		12.83	11.64
Duplicate Difference / Spike Recovery	Percent	2.0		74.5		92.8		
				Phenol				
Molecular Weight	Lb/Lb-Mole	94.11	94.11	94.11	94.11	94.11	94.11	94.11
Mass Spiked on Tube	Micrograms	[redacted]		74.4	[redacted]	1,214	[redacted]	644
Total Mass Collected on Tube	Micrograms	*58.8*	*55.7*	62.8	*49.8*	1,106	*48.0*	230
Concentration in Stack Gas	mg/dscm	*2.056*	*2.024*	[redacted]	*1.825*	[redacted]	*1.661*	1.842
Concentration in Stack Gas	ppm	*0.53*	*0.52*		*0.47*		*0.42*	0.47
Mass Emission Rate	Pounds per Hour	*1.61*	*1.58*		*1.42*		*1.31*	*1.44*
Mass Emission Rate	Tons per Year	*7.05*	*6.94*		*6.22*		*5.75*	*6.32*
Duplicate Difference / Spike Recovery	Percent	ND		84.4		91.1		
				Acetaldehyde				
Molecular Weight	Lb/Lb-Mole	44.10	44.10	44.10	44.10	44.10	44.10	44.10
Mass of Spiked on Tube	Micrograms	[redacted]		78.8	[redacted]	630	[redacted]	354
Total Mass Collected on Tube	Micrograms	8.52	8.53	82.3	8.61	637	8.62	126
Concentration in Stack Gas	mg/dscm	0.298	0.310	[redacted]	0.316	[redacted]	0.298	0.306
Concentration in Stack Gas	ppm	0.16	0.17		0.17		0.16	0.17
Mass Emission Rate	Pounds per Hour	0.23	0.24		0.25		0.24	0.24
Mass Emission Rate	Tons per Year	1.02	1.06		1.08		1.03	1.05
Duplicate Difference / Spike Recovery	Percent	4.0		93.0		99.7		
				Acrolein				
Molecular Weight	Lb/Lb-Mole	56.06	56.06	56.06	56.06	56.06	56.06	56.06
Mass Spiked on Tube	Micrograms	[redacted]		74.8	[redacted]	732	[redacted]	403
Total Mass Collected on Tube	Micrograms	2.40	*2.3*	59.8	*2.3*	686	4.78	126
Concentration in Stack Gas	mg/dscm	0.084	*0.084*	[redacted]	*0.082*	[redacted]	0.165	0.111
Concentration in Stack Gas	ppm	0.04	*0.04*		*0.04*		0.07	0.05
Mass Emission Rate	Pounds per Hour	0.07	*0.07*		*0.06*		0.13	0.09
Mass Emission Rate	Tons per Year	0.29	*0.29*		*0.28*		0.57	0.38
Duplicate Difference / Spike Recovery	Percent	0.4		79.9		93.0		
				Formaldehyde				
Molecular Weight	Lb/Lb-Mole	30.03	30.03	30.03	30.03	30.03	30.03	30.03
Mass Spiked on Tube	Micrograms	[redacted]		79.8	[redacted]	399	[redacted]	239
Total Mass Collected on Tube	Micrograms	9.33	7.70	82.7	8.62	403	8.08	87
Concentration in Stack Gas	mg/dscm	0.326	0.280	[redacted]	0.316	[redacted]	0.280	0.300
Concentration in Stack Gas	ppm	0.26	0.22		0.25		0.22	0.24
Mass Emission Rate	Pounds per Hour	0.26	0.22		0.25		0.22	0.23
Mass Emission Rate	Tons per Year	1.12	0.96		1.08		0.97	1.03
Duplicate Difference / Spike Recovery	Percent	15.3		92.3		98.9		
				Propionaldehyde				
Molecular Weight	Lb/Lb-Mole	58.08	58.08	58.08	58.08	58.08	58.08	58.08
Mass Spiked on Tube	Micrograms	[redacted]		80.4	[redacted]	804	[redacted]	442
Total Mass Collected on Tube	Micrograms	7.44	7.48	82.8	7.21	816	9.52	155
Concentration in Stack Gas	mg/dscm	0.260	0.272	[redacted]	0.264	[redacted]	0.329	0.287
Concentration in Stack Gas	ppm	0.11	0.11		0.11		0.14	0.12
Mass Emission Rate	Pounds per Hour	0.20	0.21		0.21		0.26	0.22
Mass Emission Rate	Tons per Year	0.89	0.93		0.90		1.14	0.98
Duplicate Difference / Spike Recovery	Percent	4.4		93.6		100.3		
				Total HAPS's				
Mass Emission Rate	Pounds per Hour	4.89	4.79	[redacted]	4.74	[redacted]	5.09	4.89
Mass Emission Rate	Tons per Year	21.40	20.99		20.74		22.30	21.41

Substituted Detection Limit

TABLE IX. HYDROGEN CHLORIDE EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		**RUN 1**	**RUN 2**	**RUN 3**
Date	Month/Day/Year	7/16/2021	7/16/2021	7/16/2021
Sampling Time -Start	Military	1207	1408	1832
Sampling Time -Stop	Military	1307	1508	1932
Number of Ports	dimensionless	1	1	1
Number of Points per Port	dimensionless	1	1	1
Stack Static Pressure	Inches Water	-0.40	-0.40	-0.40
Barometric Pressure	Inches Mercury	29.66	29.66	29.66
Standard Orifice Pressure DH@	Inches Water	1.861	1.861	1.861
Meter Correction Factor	dimensionless	1.005	1.005	1.005
Oxygen Concentration	Mole Percent O2	20.7	20.7	20.7
Carbon Dioxide Concentration	Mole Percent CO2	0.0	0.0	0.0
Volume of Gas Metered	Actual Cubic Feet	39.841	40.062	40.861
Volume of Water Collected	Milliliters	38.9	48.0	40.6
Sampling Time	Minutes	60.0	60.0	60.0
Area of Stack	Square Feet	86.590	86.590	86.590
Avg. Sqr. Root Velocity Pressure	Inches Water	0.811	0.815	0.816
Average Orifice Pressure (DH)	Inches Water	1.5	1.5	1.5
Average Stack Temperature	Degrees F	160	162	156
Average Meter Temperature	Degrees F	99	107	82

Calculations

Standard Temperature (° F) =	68	**RUN 1**	**RUN 2**	**RUN 3**	**AVERAGE**
Standard Pressure (inches of Hg) =	29.92				
Volume of Gas Sampled	Standard Dry Cubic Feet	37.640	37.293	39.792	38.242
Molecular Wt. of Stack Gas (dry)	LB/LB-MOLE	28.83	28.83	28.83	28.83
Water vapor in Stack Gas	Percent	4.6	5.7	4.6	5.0
Average Stack Gas Velocity	Feet per second	50.0	50.5	50.1	50.2
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	260,004	262,190	260,543	260,913
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	208,933	207,816	211,150	209,300
Post Test Meter Correction Check	dimensionless	1.05	1.05	1.01	1.04
Percent Difference	Allowed 5% Average	4.4	4.6	0.3	3.1
Mass of Hydrogen Chloride Collected	Micrograms	102	70.9	48.1	74
Hydrogen Chloride Concentration	Micrograms per Standard Dry Cubic Meter	95.7	67.1	42.7	68.5
Hydrogen Chloride Concentration	Parts per million	0.06	0.04	0.03	0.05
Hydrogen Chloride Emission Rate	Pounds per Hour	0.07	0.05	0.03	0.05
Hydrogen Chloride Emission Rate	Tons per Year	0.33	0.00	0.00	0.11

TABLE X. FILTERABLE AND CONDENSABLE PARTICULATE TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		**RUN 1**	**RUN 2**	**RUN 3**
Date	Month/Day/Year	7/17/2021	7/17/2021	7/17/2021
Sampling Time -Start	Military	1050	1436	1928
Sampling Time -Stop	Military	1323	1639	2119
Number of Ports	dimensionless	4	4	4
Number of Points per Port	dimensionless	6	6	6
Stack Static Pressure	Inches Water	-0.40	-0.40	-0.40
Barometric Pressure	Inches Mercury	29.65	29.65	29.65
Standard Orifice Pressure $DH_@$	Inches Water	1.861	1.861	1.861
Meter Correction Factor	dimensionless	1.005	1.005	1.005
Oxygen Concentration	Mole Percent O2	20.9	20.9	20.9
Carbon Dioxide Concentration	Mole Percent CO2	0.0	0.0	0.0
Volume of Gas Metered	Actual Cubic Feet	58.202	59.871	59.893
Volume of Water Collected	Milliliters	58.9	75.2	62.1
Sampling Time	Minutes	60.0	60.00	60.00
Nozzle Diameter	Inches	0.275	0.275	0.275
Area of Stack	Square Feet	86.590	86.590	86.590
Avg. Sqr. Root Velocity Pressure	Inches Water	0.756	0.761	0.787
Average Orifice Pressure (DH)	Inches Water	2.96	3.09	3.20
Average Stack Temperature	Degrees F	167	167	159
Average Meter Temperature	Degrees F	95	107	82
Weight of Condensable Organic Solids	Milligrams	1.8	2.2	1.7
Weight of Condensable Inorganic Solids	Milligrams	2.0	1.5	0.6
Weight of Filterable Solids	Milligrams	3.5	4.1	2.8
Weight of Blank Condensable Organic Solids	Milligrams	2.0	2.0	2.0
Weight of Blank Condensable Inorganic Solids	Milligrams	1.0	1.0	1.0
Total Blank Correction Condensable Solids	Milligrams	2.0	2.0	2.0

Calculations

		RUN 1	**RUN 2**	**RUN 3**	**AVERAGE**
Standard Temperature (° F) =	68				
Standard Pressure (inches of Hg) =	29.92				
Volume of Gas Sampled	Standard Dry Cubic Feet	55.599	55.904	58.551	56.684
Molecular Wt. of Stack Gas (dry)	LB/LB-MOLE	28.84	28.84	28.84	28.84
Water vapor in Stack Gas	Percent	4.7	6.0	4.8	5.2
Average Stack Gas Velocity	Feet per second	46.9	47.3	48.5	47.6
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	243,707	245,971	252,147	247,275
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	193,584	192,769	202,812	196,388
Isokinetic Rate	Percent	100.5	101.5	101.0	101.0
Post Test Meter Correction Check	dimensionless	1.00	1.01	1.00	1.00
Percent Difference	Average 5% Allowed	-0.2	0.3	-0.2	0.0
Particulate Emission Rate (Total Condensable)	Grains per Standard Dry Cubic Foot	0.00050	0.00047	0.00008	0.00035
Particulate Emission Rate (Filterable)	Grains per Standard Dry Cubic Foot	0.00097	0.00113	0.00074	0.00095
Particulate Emission Rate (Total)	Grains per Standard Dry Cubic Foot	0.00147	0.00160	0.00082	0.00130
Particulate Emission Rate (Total Condensable)	Pounds per Hour	0.83	0.78	0.14	0.58
Particulate Emission Rate (Filterable)	Pounds per Hour	1.61	1.87	1.28	1.59
Particulate Emission Rate (Total)	Pounds per Hour	2.44	2.65	1.42	2.17
Particulate Emission Rate (Total Condensable)	Tons per Year	3.63	3.40	0.60	2.54
Particulate Emission Rate (Filterable)	Tons per Year	7.06	8.19	5.62	6.96
Allowable					***245.0****
Particulate Emission Rate (Total)	Tons per Year	10.69	11.59	6.22	9.50

TABLE XI. PM_{10}, $PM_{2.5}$, AND CONDENSABLE PARTICULATE EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		**RUN 1**	**RUN 2**	**RUN 3**
Date	Month/Day/Year	7/17/2021	7/17/2021	7/17/2021
Sampling Time -Start	Military	1041	1433	1928
Sampling Time -Stop	Military	1328	1640	2121
Number of Ports	dimensionless	4	4	4
Number of Points per Port	dimensionless	3	3	3
Stack Static Pressure	Inches Water	-0.40	-0.40	-0.40
Barometric Pressure	Inches Mercury	29.65	29.65	29.65
Standard Orifice Pressure $DH_@$	Inches Water	1.844	1.844	1.844
Meter Correction Factor	dimensionless	1.006	1.006	1.006
Oxygen Concentration	Mole Percent O2	20.9	20.9	20.9
Carbon Dioxide Concentration	Mole Percent CO2	0.0	0.0	0.0
Volume of Gas Metered	Actual Cubic Feet	28.190	23.647	23.787
Volume of Water Collected	Milliliters	40.3	28.8	29.6
Sampling Time	Minutes	71.0	60.5	63.5
Nozzle Diameter	Inches	0.190	0.170	0.170
Area of Stack	Square Feet	86.590	86.590	86.590
Avg. Sqr. Root Velocity Pressure	Inches Water	0.762	0.786	0.801
Average Orifice Pressure (DH)	Inches Water	0.464	0.448	0.445
Average Stack Temperature	Degrees F	164	163	162
Average Meter Temperature	Degrees F	90	104	76
Weight of <2.5 Filterable Solids	Milligrams	0.0	0.2	0.0
Weight of <2.5 Cyclone Solids	Milligrams	0.1	0.3	0.3
Weight of <10 and >2.5 Solids Collected	Milligrams	0.7	0.3	0.6
Weight of >PM10 Solids Collected	Milligrams	1.9	0.5	1.2

Calculations

		RUN 1	**RUN 2**	**RUN 3**	**AVERAGE**
Standard Temperature (° F) =	68				
Standard Pressure (inches of Hg) =	29.92				
Volume of Gas Sampled	Standard Dry Cubic Feet	26.989	22.113	23.393	24.165
Molecular Wt. of Stack Gas (dry)	LB/LB-MOLE	28.84	28.84	28.84	28.84
Water vapor in Stack Gas	Percent	6.6	5.8	5.6	6.0
Average Stack Gas Velocity	Feet per second	48.6	50.0	50.9	49.8
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	252,290	259,691	264,522	258,834
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	197,604	205,313	209,842	204,253
Isokinetic Rate	Percent	84.6	97.8	96.4	92.9
Post Test Meter Correction Check	dimensionless	0.97	0.98	1.00	0.99
Percent Difference	Average 5% Allowed	-3.2	-2.2	-0.8	-2.0
Q_s Sampling Rate	ACFM	0.4853	0.4623	0.4643	0.4706
Reynolds Number	Nre	2778	2648	2668	2698
Stack Gas Viscosity (μ_{cyc})	Micropoise	201.67	202.31	202.20	202.06
Actual Particle Cut Diameter for Cyclone I	Microns	**10.58**	**10.96**	**10.92**	**10.82**
Re-Calculated Cunningham Correction Factor Using 2.5 micron Particle Size	C	1.072	1.073	1.073	1.073
D50 = Particle Siz Dia for Ne<3162 for Cyclone IV	D_{50}	2.36	2.50	2.48	2.45
D50 = Particle Siz Dia for Ne>3162 for Cyclone IV	Microns (PM2.5)	2.25	2.34	2.33	2.30
Effective Cut Diameter PM 2.5	Microns (PM2.5)	**2.36**	**2.50**	**2.48**	2.45

TABLE XI. PM_{10}, $PM_{2.5}$, AND CONDENSABLE PARTICULATE EMISSIONS TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Calculations

		RUN 1	RUN 2	RUN 3	AVERAGE
Standard Temperature (° F) =	68				
Standard Pressure (inches of Hg) =	29.92				
Re-Estimated Cunningham Correction Factor	Cr	1.077	1.073	1.073	1.074
D50-1 = Recalculated Particle Cut Dia for Ne<3162 for Cyclone IV	Microns (PM2.5)	2.35	2.50	2.48	2.44
D50-1 = Recalculated Particle Cut Dia for Ne>3162 for Cyclone IV	Microns (PM2.5)	2.24	2.34	2.33	2.30
Effective Cut Diameter PM 2.5	Microns (PM2.5)	**2.35**	**2.50**	**2.48**	2.44
Blockage Factor		0.00176	0.00176	0.00176	0.00176
Ratio (Z) D50-1/D50	Allowable 0.99 - 1.01	**0.998**	**1.000**	**1.000**	**0.999**
Particulate Concentration (Total Condensable)*	Grains per Standard Dry Cubic Foot	0.00050	0.00047	0.00008	0.00035
Particulate Concentration (< $PM_{2.5}$)	Grains per Standard Dry Cubic Foot	0.00056	0.00082	0.00028	0.00055
Particulate Concentration (<PM_{10} and >$PM_{2.5}$)	Grains per Standard Dry Cubic Foot	0.00040	0.00021	0.00040	0.00034
Particulate Concentration (< PM_{10})	Grains per Standard Dry Cubic Foot	0.00096	0.00103	0.00067	0.00089
Particulate Emission Rate (Filterable)	Grains per Standard Dry Cubic Foot	0.00154	0.00091	0.00139	0.00128
Particulate Concentration (Total)	Grains per Standard Dry Cubic Foot	0.00204	0.00138	0.00146	0.00163
Particulate Emission Rate (Total Condensable)	Pounds per Hour	0.85	0.83	0.14	0.60
Particulate Emission Rate (< $PM_{2.5}$)	Pounds per Hour	0.94	1.44	0.50	0.96
Particulate Emission Rate (<PM_{10} and >$PM_{2.5}$)	Pounds per Hour	0.68	0.37	0.71	0.59
Particulate Emission Rate (< PM_{10})	Pounds per Hour	1.62	1.81	1.21	1.55
Particulate Emission Rate (Filterable)	Pounds per Hour	2.61	1.60	2.49	2.23
Particulate Emission Rate (Total)	Pounds per Hour	3.46	2.42	2.63	2.84
Particulate Emission Rate (Total Condensable)	Tons per Year	3.71	3.62	0.62	2.65
Particulate Emission Rate (< $PM_{2.5}$)	Tons per Year	4.13	6.31	2.18	4.21
Particulate Emission Rate (<PM_{10} and >$PM_{2.5}$)	Tons per Year	2.97	1.61	3.12	2.57
Particulate Emission Rate (< PM_{10})	Tons per Year	7.10	7.92	5.30	6.77
Allowable					***245.0****
Particulate Emission Rate (Filterable)	Tons per Year	11.45	6.99	10.91	9.79
Particulate Emission Rate (Total)	Tons per Year	15.16	10.61	11.54	12.44

The condensable concentration was obtained from the M5/202 sample train results shown in Table X.
*** The 245.0 tons/year emission standard is a facility wide limitiation.**

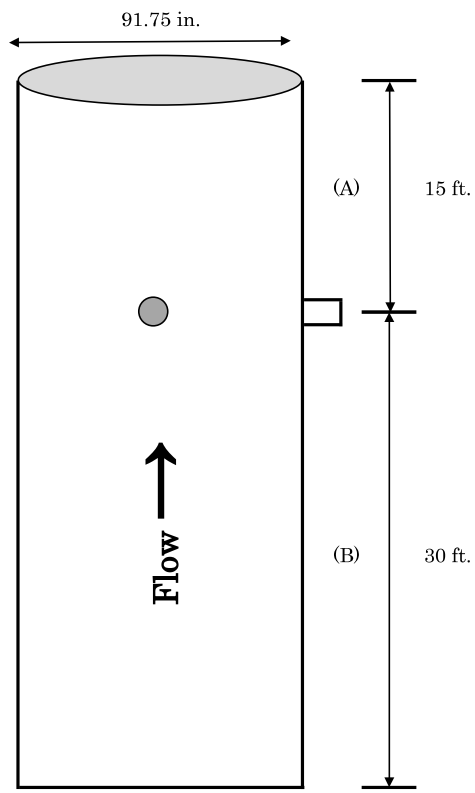
Figure 1. Regenerative Thermal Oxidizer Outlet Sample Point Locations
Vertical Stack Layout & Traverse Point Location

Company: Amite Bioenergy **Plant:** Gloster, Mississippi

Source: Regenerative Thermal Oxidizer - Outlet **Date:** 7/13/2021

Type of traverse:	Particulate
Stack Diameter, in.:	91.75
Stack Area, Ft^2:	45.9134
Port Type:	Nipple
Port Diameter, inches:	6
Length of Port, inches:	6
Number of Ports:	4
Number of Points per Port:	6
Total Number of Traverse Points:	24

Flow Disturbance	Feet	# of Duct Diameters
Upstream from Flow Disturbance (A):	15.0	2.0
Downstream from Flow Disturbance (B):	30.0	3.9
Direction of Stack Gas Flow:	Up	



Traverse Point No.	Distance from Stack Wall (Inches)	Distance from Outer Port (Inches)
1	1.93	7.93
2	6.15	12.15
3	10.83	16.83
4	16.24	22.24
5	22.94	28.94
6	32.66	38.66

Additional Information:

Figure 2. Regenerative Thermal Oxidizer Inlet Sample Point Location
Horizontal Stack Layout & Traverse Point Location

Company: Amite Bioenergy **Plant:** Gloster, Mississippi

Source: Regenerative Thermal Oxidizer - Inlet **Date:** 7/13/2021

Type of traverse: Velocity

Stack Diameter, in.: 93.5

Stack Area, Ft^2: 47.6816

Port Type: Nipple

Port Diameter, inches: 3

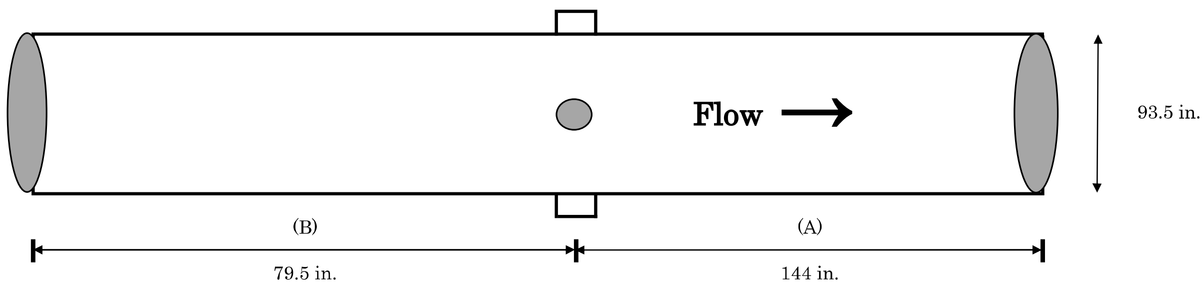
Length of Port, inches: 7

Number of Ports: 2

Number of Points per Port: 8

Total Number of Traverse Points: 16

Flow Disturbance	Inches	# of Duct Diameters
Upstream from Flow Disturbance (A):	144.0	1.5
Downstream from Flow Disturbance (B):	79.5	0.9



Traverse Point No.	Distance from Stack Wall (Inches)	Distance from Outer Port (Inches)
1	2.99	9.99
2	9.82	16.82
3	18.14	25.14
4	30.11	37.11
5	63.30	70.30
6	75.36	82.36
7	83.68	90.68
8	90.51	97.51

Additional Information:

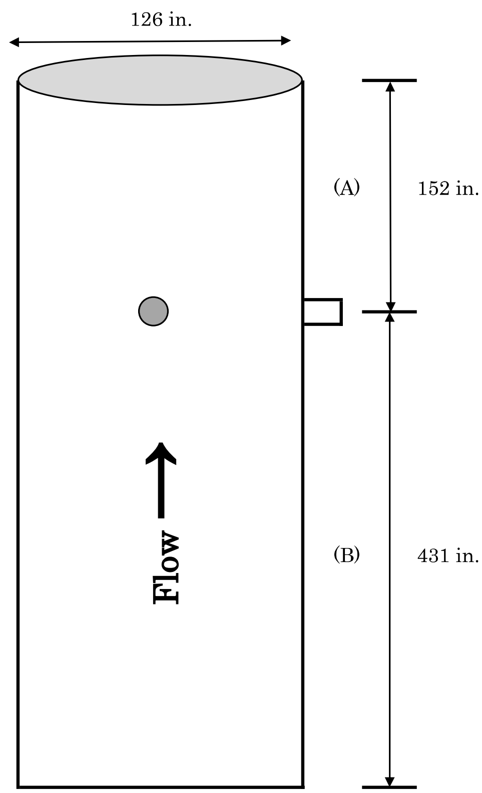
Figure 3. Regenerative Catalytica Oxidizer Top Sample Point Locations Vertical Stack Layout & Traverse Point Location

Company: Amite Bioenergy **Plant:** Gloster, Mississippi

Source: Regenerative Catalytic Oxidizer **Date:** 7/16/2021

Type of traverse:	Particulate	**Port Type:**	Nipple
Stack Diameter, in.:	126.0	**Port Diameter, inches:**	6
Stack Area, Ft^2:	86.5901	**Length of Port, inches:**	20.5
		Number of Ports:	4
		Number of Points per Port:	4
		Total Number of Traverse Points:	16

Flow Disturbance	Inches	# of Duct Diameters
Upstream from Flow Disturbance (A):	152.0	1.2
Downstream from Flow Disturbance (B):	431.0	3.4
Direction of Stack Gas Flow:	Up	



Traverse Point No.	Distance from Stack Wall (Inches)	Distance from Outer Port (Inches)
1	4.03	24.53
2	13.23	33.73
3	24.44	44.94
4	40.57	61.07

Additional Information:

Figure 4. Regenerative Catalytica Oxidizer Bottom Sample Point Locations
Vertical Stack Layout & Traverse Point Location

Company: Amite Bioenergy

Plant: Gloster, Mississippi

Source: Regenerative Catalytic Oxidizer

Date: 7/16/2021

Type of traverse: Particulate

Stack Diameter, in.: 126.0

Stack Area, Ft^2: 86.5901

Flow Disturbance	Inches	# of Duct Diameters
Upstream from Flow Disturbance (A):	177.0	1.4
Downstream from Flow Disturbance (B):	403.0	3.2
Direction of Stack Gas Flow:	Up	

Port Type: Nipple

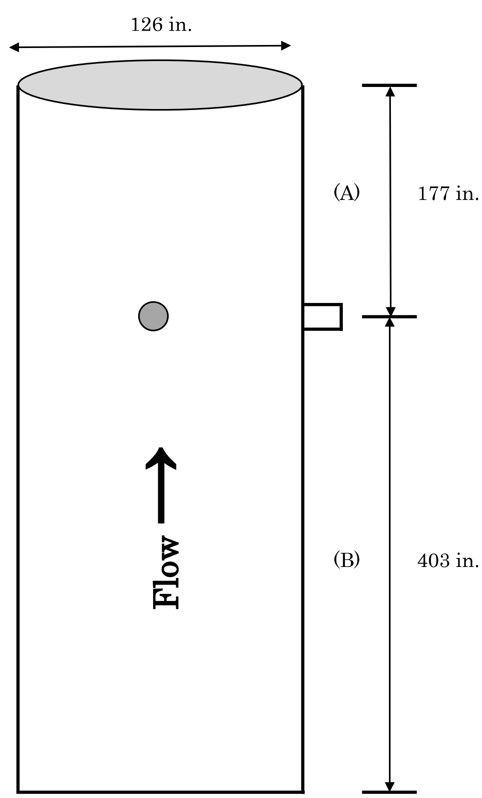
Port Diameter, inches: 6

Length of Port, inches: 21.5

Number of Ports: 4

Number of Points per Port: 3

Total Number of Traverse Points: 12



Traverse Point No.	Distance from Stack Wall (Inches)	Distance from Outer Port (Inches)
1	5.54	27.04
2	18.40	39.90
3	36.92	58.42

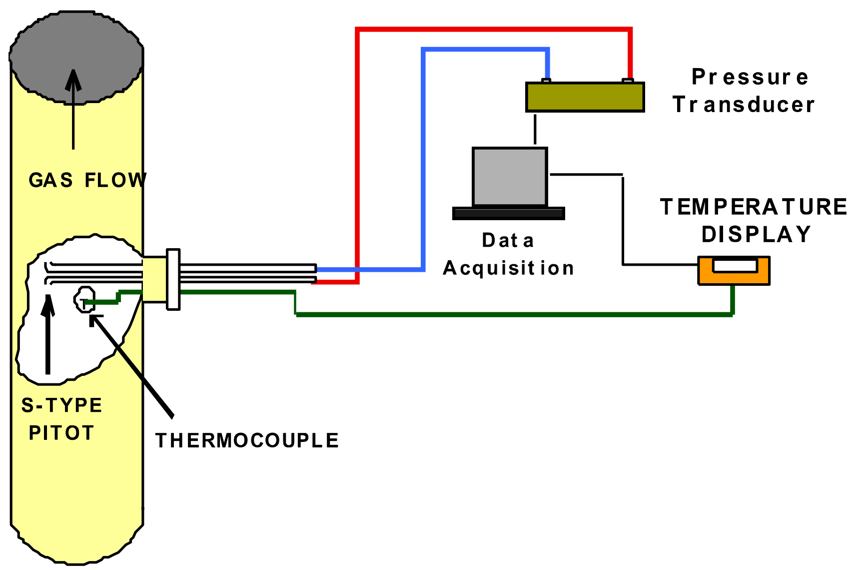
Additional Information:

4. VOLUMETRIC FLOW RATE SAMPLING PROCEDURE

The quantitative determination of flow rate is made in accordance with **40 CFR, Part 60, Appendix A, Methods 2**. This test procedure generally requires the insertion of an s-type pitot tube into the stack at a series of points. A brief description of this procedure is as follows:

The sampling train is assembled, as shown in the attached drawing, and leak checked by pressurizing the pitot tubes separately to a pressure of at least 3/4 scale on the magnehelic gauge being used. This pressure should remain constant for a period of fifteen seconds.

Figure 5. Volumetric Flow Rate Sampling Train



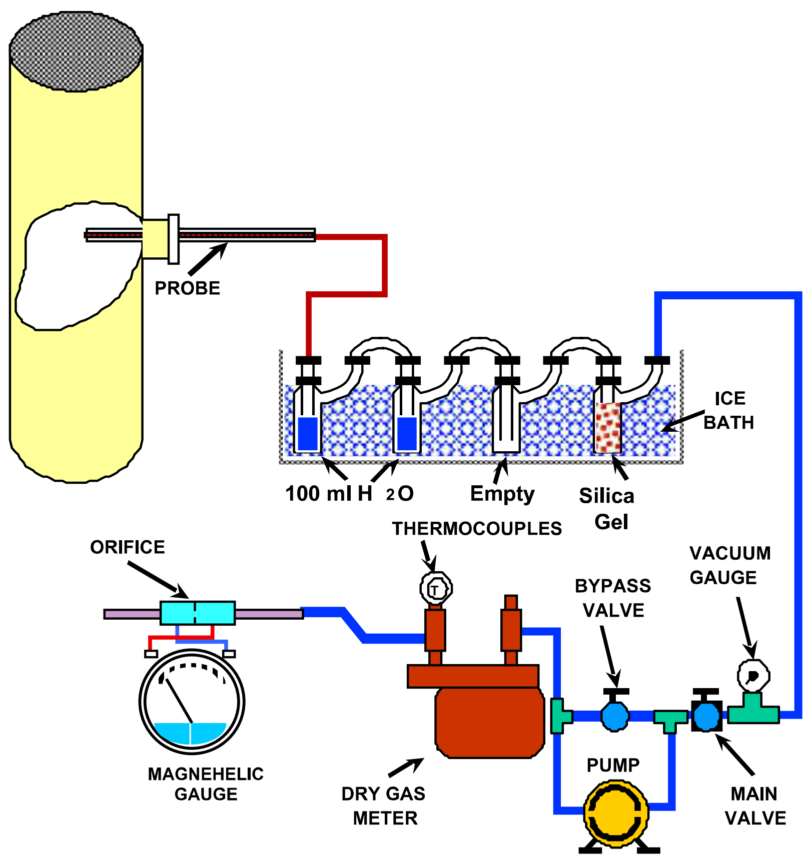
The inside dimensions of the stack liner are measured and recorded. The pitot is marked for the number of traverse points according to EPA Method 1. The sampling is commenced by placing the pitot tips at the first traverse point and recording the velocity pressure and temperature. The pitot is moved to the next point and reading taken. This continues until all points are sampled. After each test run, the S-type pitot tube is inspected to ensure that it continues to meet the geometric specifications of construction necessary to maintain its calibration. The stack gas moisture is measured according to EPA Method 4 and the stack gas molecular weight is measured according to EPA Method 3 or 3a.

5. MOISTURE SAMPLING PROCEDURE

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 4**. A brief description of this procedure is as follows:

The test procedure requires the insertion of a stainless-steel probe connected to a series of impingers into the stack. The first two impingers are partially filled with 100 milliliters of deionized water. The next impinger is left empty to act as a moisture trap. Preweighed 6 to 16-mesh indication silica gel is added to the last impinger. The sampling equipment is assembled as shown in the attached drawing. The system is leak checked by plugging the inlet to the probe and pulling a 15-inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute is considered acceptable.

Figure 6. Moisture Sampling Train



The inside dimensions of the stack liner are measured and recorded. The required number of measurement points is marked on the probe for easy visibility. Crushed ice is placed around the impingers. The probe tip is placed on the first traverse point with the tip pointing directly into the gas stream. The pump is started, and the flow is adjusted to a sampling rate of approximately 0.75 cubic feet per minute or a delta H of 1.5 inches of water. The probe is repositioned to the next traverse point if needed and readings recorded. This is performed for each point until the run is completed. Readings are taken at each point or at five-minute intervals and recorded on the field data sheet. At the conclusion of each run the pump is turned off, final readings are recorded, and final system leak checks are performed.

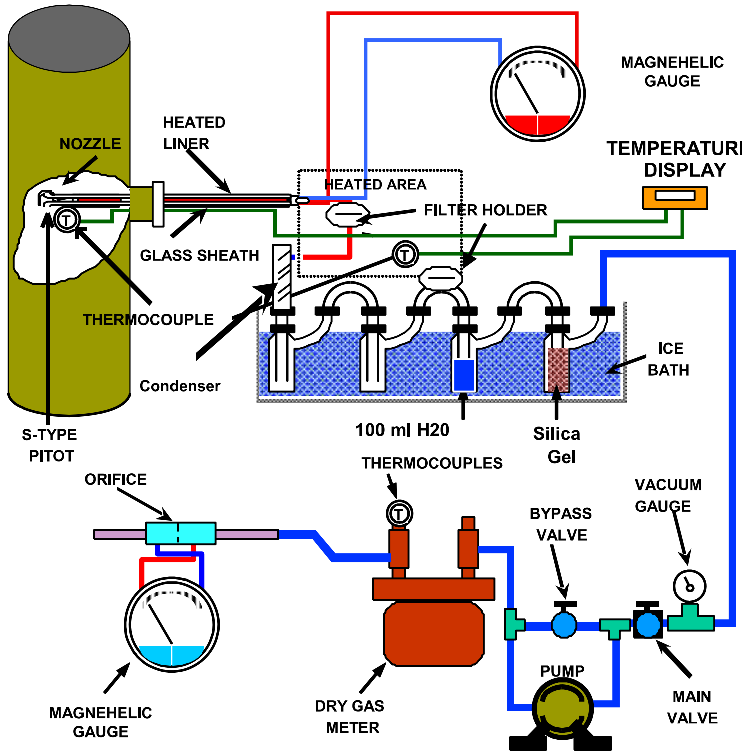
Care is exercised in moving the collection train to the sample recovery area to minimize the loss of collected sample, or the gain of extraneous water. The volume of water in the impingers is measured, the silica gel impinger is weighed, and these data are recorded on the field data sheet.

6. FILTERABLE AND CONDENSABLE PARTICULATE SAMPLING PROCEDURE (EPA Method 5/202)

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 5 and 40 CFR, Part 51, Appendix M, Method 202**. A brief description of this procedure is as follows:

All sampling train glassware was cleaned prior to the test with soap and water, and rinsed using water, acetone, and hexane after which it was heated to 300 degrees Celsius for a minimum of 6 hours. The filterable particulate sample was extracted from the stack isokinetically through a glass nozzle and glass lined probe onto a pre-weighed glass fiber filter, all maintained at 248° Fahrenheit (± 25 °F). The condensable particulate matter then passed through a glass coil condenser, a dropout impinger, and a modified Smith-Greenburg impinger. A Teflon filter in a glass holder was added after the second impinger to catch any carry-over of condensable particulate matter from the condenser and impingers. The first two impingers were empty and, along with the condenser, kept below 85° Fahrenheit during the testing. The secondary filter was controlled between 65° and 85° Fahrenheit. The third impinger was partially filled with 100 milliliters of deionized water. Preweighed 6 to 16 mesh indication silica gel was

Figure 7. Filterable and Condensable Particulate Sampling Train



added to the last impinger. The sampling equipment was assembled as shown in the attached drawing. The system was leak checked by plugging the inlet to the nozzle and pulling a 15 inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute is considered acceptable.

The inside dimensions of the stack liner were measured and recorded. The required number of sampling points were determined and marked on the probe for easy visibility. The range of velocity pressure, the percent moisture, and the temperature of the effluent gases were determined. From this data, the correct nozzle size and the nomograph multiplication factor were determined.

The probe and hotbox heaters were adjusted to provide a temperature of 248 degrees Fahrenheit (± 25). Crushed ice was placed around the impingers. The nozzle was placed on the first traverse point with the tip pointing directly into the gas stream. The pump was started immediately, and the flow adjusted to isokinetic sampling conditions. After the required time interval had elapsed, the probe was repositioned to the next traverse point and isokinetic sampling was re-established. This was performed for each point until the run was completed. Readings were taken at each point and recorded on the field data sheet. At the conclusion of each run, the pump was turned off, final readings were recorded, and final system leak checks were performed.

6.1. Particulate Sample Recovery

Care was exercised in moving the collection train to the sample recovery area to minimize the loss of collected sample, or the gain of extraneous particulate matter. The heated filter was carefully removed from the fritted glass support and placed in a clean separate sample container. The nozzle, probe and front half of the filter were washed with acetone. The volume of water in the first two impingers was measured by weight and quantitatively transferred to a clean amber glass sample bottle. The third impinger and silica gel impinger were weighed and recorded on the field data sheet for moisture determination. The condenser, each of the first two impingers, and connecting glassware were washed twice with water.

The rinse water was recovered and added to the inorganic sample bottle with the impinger contents, and the liquid level marked on the bottle. A 200-milliliter sample of the deionized water was placed into a separate clean amber glass sample bottle and taken back to the laboratory for analysis. Following the water rinses, the condenser, each of the first two impingers, and the connecting glassware were then rinsed once with acetone and twice with hexane. The organic rinse products were saved in a clean amber glass sample bottle and the level of the liquid was marked on the container. A 200 ml sample of hexane and acetone was placed in a separate amber glass sample bottle and taken to the laboratory for analysis.

6.2. Particulate Analytical Procedures

The filter and any loose particulate matter were transferred from the sample container to a clean, tared weighing dish. The filter was placed in a desiccator for at least 24 hours and then weighed to the nearest 0.1 milligram until a constant weight was obtained. The original weight of the filter was deducted, and the weight gain was recorded to the nearest 0.1 milligram. The wash solutions were transferred to clean, tared beakers. The solutions were evaporated to dryness, desiccated to a constant weight, and the weight gain was recorded to the nearest 0.1 milligram.

The condensable particulate matter filter was folded and inserted into a 50-milliliter extraction tube, covered with water, and was placed into a sonication bath for a minimum of two minutes. This was repeated three times. The contents of the tube were added to the inorganic sample container after each two-minute interval. Following the water sonication, the filter was then covered with hexane and placed into a sonication bath for a minimum of two minutes and repeated three times. The contents of the tube were added to the organic sample container after each two-minute interval. The organic fraction of the impinger water wash was extracted from the aqueous phase using 30 milliliters of hexane and a separatory funnel while ensuring that no water was collected in the organic phase. This extraction was repeated three times. The hexane wash solution was transferred to a clean, tared weighing dish, and the solution was evaporated to dryness at room temperature, desiccated for a minimum of 24 hours, and weighed to a constant weight (+/- .50mg) at six-hour intervals. The weight gain was recorded to the nearest 0.1 milligram.

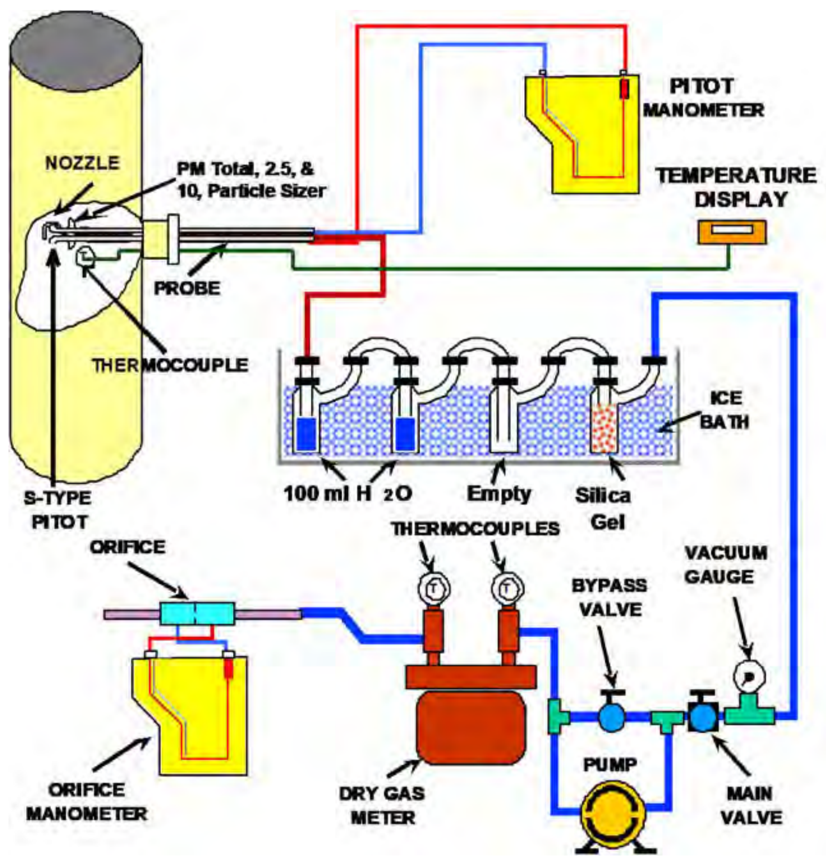
The inorganic aqueous fraction was transferred to a clean, tared weighing dish, evaporated on a hot plate at less than 105 degrees Celsius to a volume of approximately 20 milliliters. evaporated to dryness at ambient temperature, desiccated for a minimum of 24 hours, and weighed to a constant weight (+/- .50mg) at six-hour intervals. The weight gain was recorded to the nearest 0.1 milligram.

7. PM2.5 AND PM10 SAMPLING PROCEDURE (EPA Method 201a)

The sampling procedure utilized is that specified in **40 <u>CFR</u>, Part 51, Appendix M, Method 201a**. A brief description of this procedure is as follows:

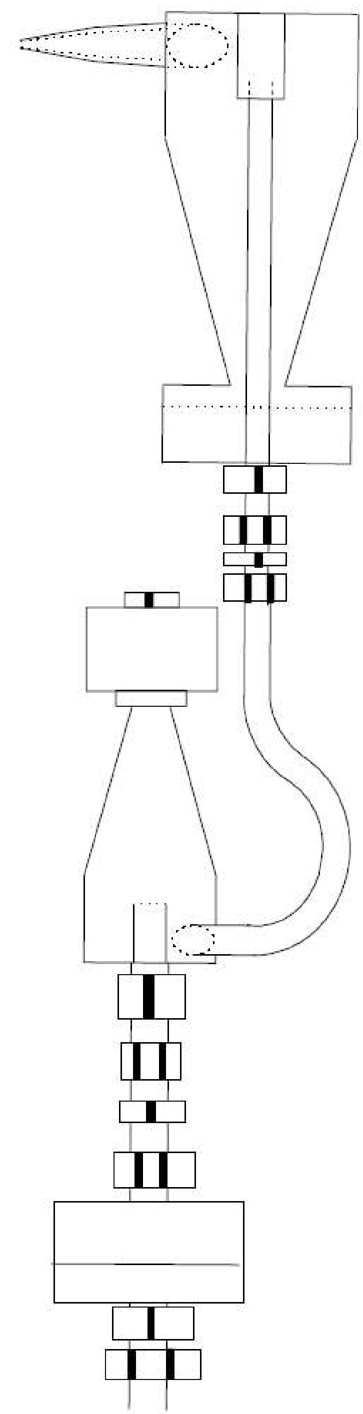
The first two impingers were partially filled with 100 milliliters of deionized water. The third impinger was left empty to act as a moisture trap. Preweighed 6 to 16 mesh indication silica gel was added to the fourth impinger. The sampling equipment was assembled as shown in the attached drawing. The system was leak checked by plugging the inlet to the nozzle and pulling a 15 inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute was considered acceptable.

Figure 8. PM_{10} and $PM_{2.5}$ Sampling Train



The inside dimensions of the stack liner were measured and recorded. The required number of sampling points was marked on the traverse probe for easy visibility. A velocity traverse was performed. At each traverse point the velocity and stack temperature were recorded. The percent moisture of the effluent gas, along with the oxygen and carbon dioxide concentrations, were determined. From this data, a nozzle size was selected by using the appropriate equations in the method that best bracket the minimum and maximum velocity pressure reading for the stack. The dwell time for each point was calculated and rounded to the nearest 15 seconds and the orifice head was calculated for average stack temperature and for two other temperatures (±50 degrees Fahrenheit of average stack temperature).

Combined Cyclone Sampling Head



Crushed ice was placed around the impingers. The nozzle and particle separation devise was placed on the first traverse point with the tip pointing directly into the gas stream. The pump was started and the flow was adjusted to predetermined sampling conditions. After the required time interval had elapsed, the nozzle and particle separation devise was repositioned to the next traverse point. This was performed for each point until the run was completed. Readings were taken at each point and recorded on the field data sheet. At the conclusion of each run, the pump was turned off, final readings were recorded, and final system leak checks were performed.

7.1. Particulate Sample Recovery

Care was exercised in moving the collection train to the sample recovery area to minimize the loss of collected sample, or the gain of extraneous particulate matter. The volume of water in the impingers was measured and the silica gel impinger was weighed and recorded on the field data sheet. The particulate matter from all surfaces from the cyclone exit to the front half of the in-stack filter was quantitatively recovered with reagent grade acetone into four clean sample container. A brush was used to loosen any adhering particulate matter and subsequent washings were placed into the containers. A sample of the acetone used in the washing was saved for a blank laboratory analysis.

7.2. Particulate Analytical Procedures

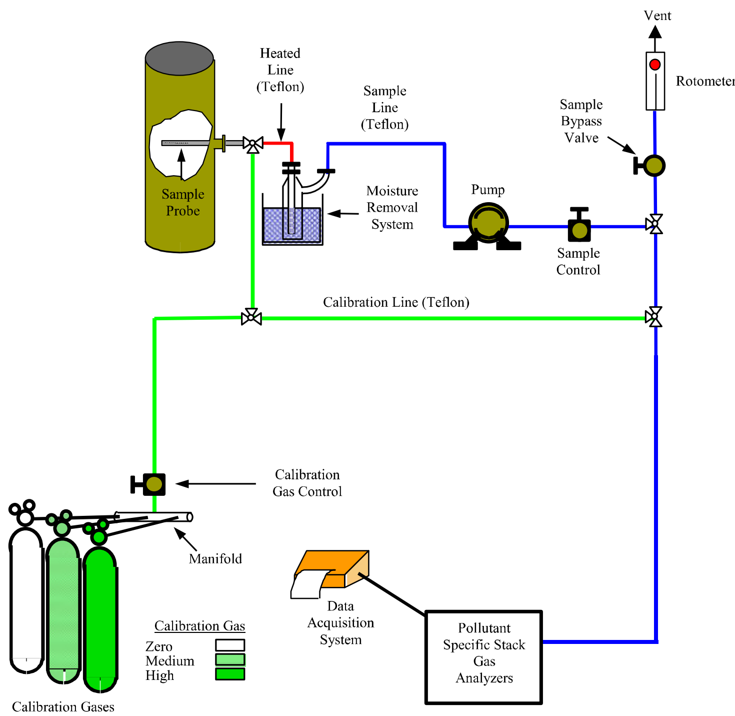
The particulate matter was transferred from the sample containers to a clean, tared weighing dish. The filter was placed in a desiccator for at least 24 hours and then weighed to the nearest 0.1 milligram until a constant weight was obtained. The original weight of the filter was deducted, and the weight gain was recorded to the nearest 0.1 milligram.

The wash solutions were transferred to a clean, tared beaker. The solution was evaporated to dryness, desiccated to a constant weight, and the weight gain was recorded to the nearest 0.1 milligram.

8. OXYGEN, CARBON DIOXIDE, NITROGEN OXIDES, AND CARBON MONOXIDE SAMPLING PROCEDURE (EPA Methods 3a, 7e, and 10)

The sampling procedures utilized are those specified in **40 <u>CFR</u>, Part 60, Appendix A, Methods 3a, 7e, and 10** as modified by the governing regulatory agency. A brief description of this procedure is as follows:

Figure 9. Oxygen, Nitrogen Oxides, and Carbon Monoxide Sampling Train



The sample is removed from the stack through a heated stainless-steel probe and passed through a three-way valve, heated filter, and condenser moisture removal system. Teflon line is used to transport the sample through a pump and a flow control valve. From this point the sample is routed into a manifold with a bypass valve, then to an analyzer sample flow control valve and on to an analyzer specific for the pollutant of interest. Each analyzer produces a voltage analogue output proportional to the concentration of pollutant present in the gas. A schematic of the sampling train is presented in the attached drawing.

Each instrument is allowed to warm up for at least 30 minutes before it was initially calibrated. Zero air is introduced directly to each instrument to establish a baseline and check the zero reading of the instrument, nitrogen will be used for an oxygen baseline. A high range calibration gas is then introduced directly to each instrument. The instrument is allowed to fully respond to the calibration gas. Each analyzer is adjusted, if needed, to the correct value. A linear calibration curve is calculated from this data and stored on computer. Next, a mid-range calibration gas is introduced directly to each instrument. The percent error between each measured value and the corresponding calibration value is calculated. If any of the readings indicated a difference of more than $\pm$2% of the span, the analyzer is recalibrated.

The high or mid gas and zero gas are then introduced to the system at the three-way valve before the condenser. The response value for each of these gases is recorded. If these measured values differ significantly from the calibration values, the sampling system is checked and repaired until the system check meets EPA specifications.

To begin sampling, the three-way valve is switched to allow the instrument to sample the stack gas. Twice the system response time is allowed to elapse before the data recorder is marked for the beginning of the run. After the required sampling time, the data recorder is marked for the end of the run. After the third run the three-way valve is switched to allow introduction of the zero and calibration gas to the system. From these data the calibration bias and drift are calculated. If the bias values are greater than $\pm$5% of the span, or the drift is greater than three percent of the span, the previous runs are invalidated. To begin the next set of runs, the three-way valve is switched to allow sampling of the stack gas, and the next run is started. This procedure is repeated until all runs are completed.

8.1. Sample Recovery and Analysis

After the tests are completed, the data is reduced to give an average concentration in parts per million for each run. This average concentration is then corrected for the analyzer zero and span bias and drift using the equation:

$$C\ gas = \frac{(C - Co)\quad Cma}{(Cm - Co)}$$

Where:

C gas = Effluent gas Concentration, dry basis, ppm.

C = Average gas concentration indicated by the gas analyzer, dry basis, ppm.

Co = Average of Initial and final system calibration responses for the zero gas, ppm.

Cm = Average of initial and final calibration responses for the upscale calibration gas, ppm.

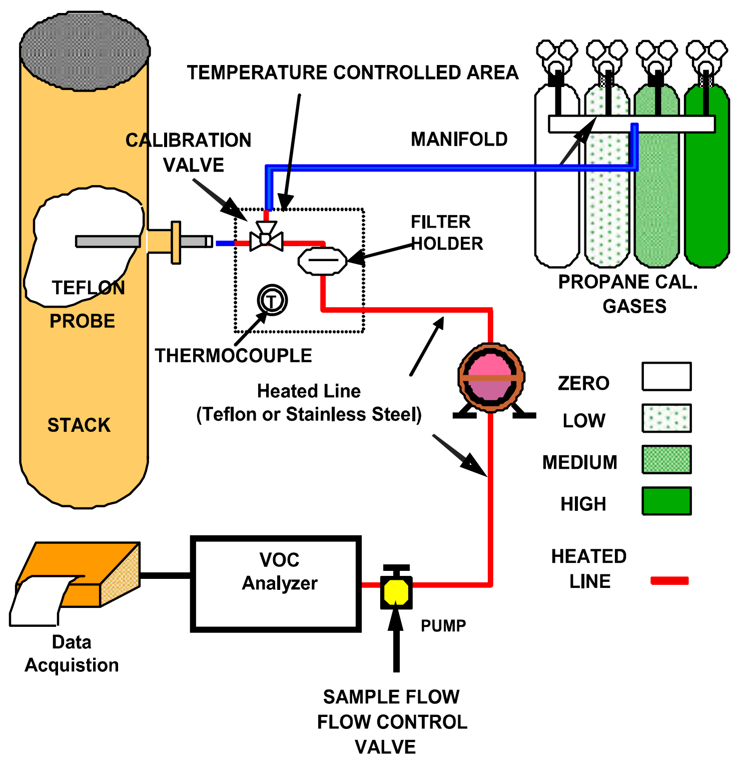
Cma = Actual concentration of the scale calibration gas, ppm.

9. VOLATILE ORGANIC COMPOUNDS SAMPLING PROCEDURE (EPA Method 25a)

Volatile organic compounds analysis is performed per **40 CFR, Part 60, Appendix A, Method 25a**.

The sample is drawn through a stainless-steel probe and a three-way calibration valve into a stainless-steel filter holder. Teflon line is used to transport the sample gas to a sample pump, equipped with a sample flow control valve, into a manifold with a bypass valve, and into a volatile organic compounds flame ionization analyzer. All sample train components are heated to a temperature greater than 230 degrees F. The sample train is presented in the attached figure.

Figure 10. Volatile Organic Compounds Sampling Train



The instrument is allowed to warm up for at least 30 minutes before it is initially calibrated. A high range propane calibration gas is introduced to the instrument at the three-way valve. The instrument is allowed to fully respond to the calibration gas and the analyzer is adjusted to the correct value. Zero air is used as zero gas to check the zero reading of the instrument and is adjusted to the correct value. Next, the middle and low propane gases are introduced to the system at the three-way valve. The response value for each of these gases is recorded. If any of the readings indicate a difference of more than ±5 percent of the cylinder value, the analyzer is recalibrated.

To begin sampling the three-way valve is switched to allow the instrument to sample the stack gas. Twice the system response time is allowed to elapse before the chart is marked for the beginning of the run. At the end of each run the three-way valve is switched to allow introduction of the calibration gas closest in value to the stack gas concentration. Zero air is introduced to the system. The zero and calibration drift are recorded. If the drift values are greater than $\pm$3 percent of the span the run is invalidated and a new run is performed following corrections to the measurement system. Alternatively, the test measurement system is recalibrated and the results are reported using both sets of calibration data. The three-way valve is switched to allow sampling of the stack gas and the next run is begun. This procedure is repeated until all runs are completed.

9.1. Sample Recovery and Analysis

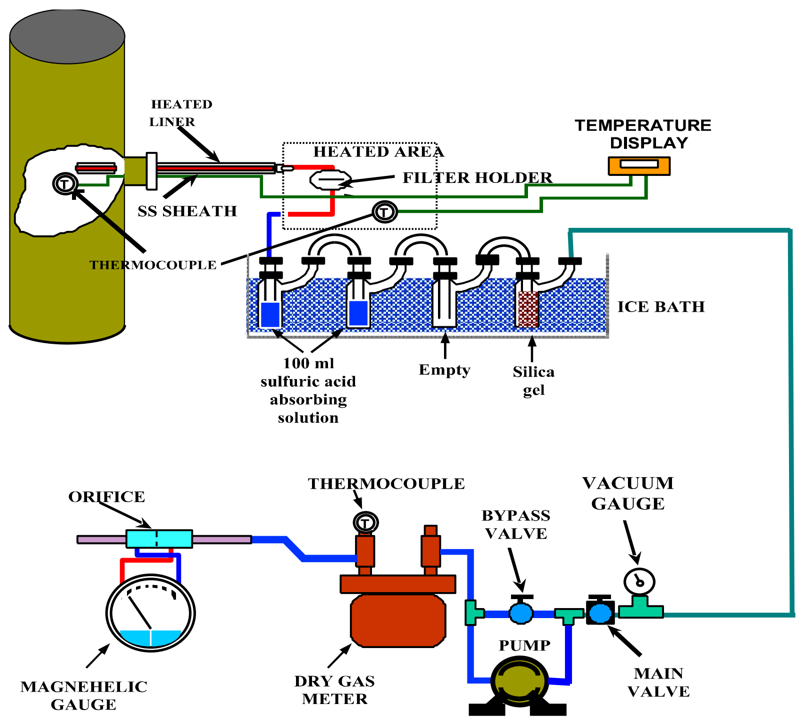
After the tests are completed the data is reduced to give an average volatile organic compound concentration in parts per million for each run.

10. NON-ISOKINETIC HYDROGEN CHLORIDE SAMPLING PROCEDURE (Method 26)

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 26** as modified by Method 26a. A brief description of these procedures is as follows:

Gaseous and particulate pollutants are withdrawn at a constant rate from a single point from the source and collected on a Teflon filter and in absorbing solution. A minimum of 0.75 dry standard cubic meters is collected. The filter removes any particulate matter including any halide salts, and the acidic absorbing solution collects the gaseous hydrogen chloride.

Figure 11. Non-Isokinetic Hydrogen Chloride Sampling Train



The sampling train is assembled in the following manner: The sample is drawn through a glass lined probe, borosilicate glass filter holder with Teflon frit and filter, into two impingers partially filled with 100 milliliters of 0.1 N H_2SO_4, and into a third empty impinger followed by a fourth impinger containing preweighed 6 to 16 mesh indication silica gel. The system is leak checked by plugging the inlet to the probe and pulling a 15-inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute is considered acceptable.

The probe and hotbox heaters are adjusted to provide a temperature of 248-

273 degrees Fahrenheit. Crushed ice is placed around the impingers. The probe is placed at the selected sample point. The pump is started immediately, and the flow adjusted to approximately 0.75 cubic feet per minute. Readings are taken every five minutes and recorded on the field data sheet. At the conclusion of each run, the pump is turned off, final readings recorded, and final system leak checks are performed. If there is any visible moisture on the filter, conditioned ambient air will be pulled through the sample train to allow the liquid to vaporize and be collected in the absorbing solution. A slip stream of the conditioned stack gas will be collected in a sample bag and analyzed per Method 3a.

10.1. Hydrogen Chloride Sample Recovery

The first two impingers were quantitatively transferred to a leak-free sample storage container. The water rinse of these impingers and connecting glassware, including the back portion of the filter holder (and flexible tubing, if used), were added to the storage container. Rinse water and acidic absorbing solution blanks were collected and analyzed with the samples.

10.2. Hydrogen Chloride Analytical Procedures

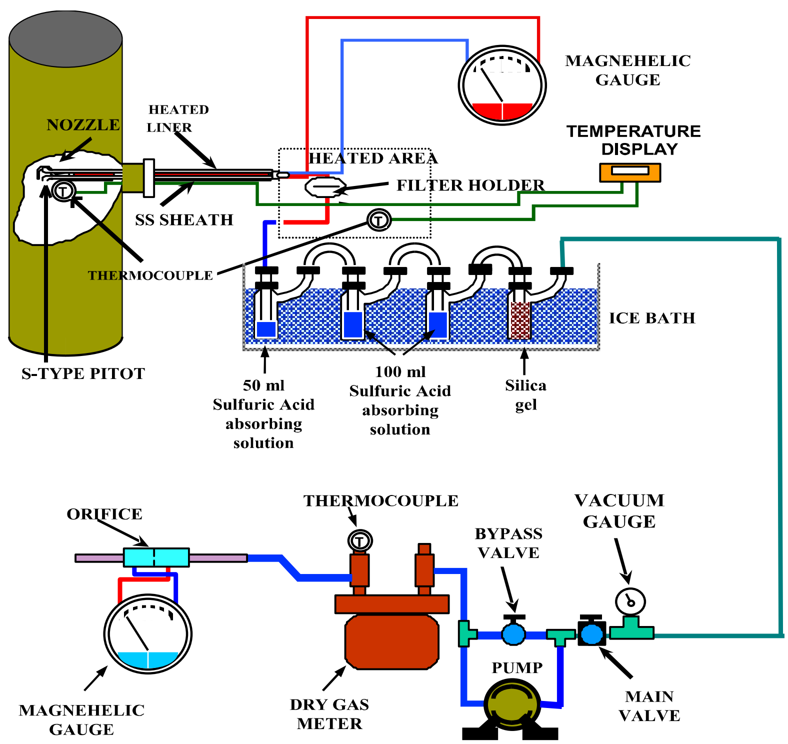
The hydrogen chloride samples and blanks will be sent to Enthalpy Analytical, Inc. and analyzed by ion chromatography (IC).

11. ISOKINETIC HYDROGEN CHLORIDE SAMPLING PROCEDURE (Method 26a)

The sampling procedure utilized is that specified in **40 CFR, Part 60, Appendix A, Method 26a**. A brief description of this procedure is as follows:

Gaseous and particulate pollutants are withdrawn isokinetically from the source and collected on a filter and in absorbing solutions. The filter collects the particulate matter including any halide salts, while the acidic absorbing solution collects the gaseous hydrogen chloride. The following components are used in the sample collection: a borosilicate glass nozzle, probe and filter holder with a Teflon coated glass fiber filter. The first impinger is a knockout impinger partially filled with 50 milliliters 0.1N H_2SO_4. Impingers two and three are Greenburg-Smith design, and the last impinge contains preweighed 6 to 16 mesh indication silica gel. The sampling equipment is assembled as shown in the attached figure. The system is leak checked by plugging the inlet to the nozzle and pulling a 15-inch mercury vacuum. A leakage rate not in excess of 0.02 cubic feet per minute is considered acceptable.

Figure 12. Isokinetic Hydrogen Chloride Sampling Train



The inside dimensions of the stack liner are measured and recorded. The required number of sampling points are marked on the probe for easy visibility.

The range of velocity pressure, the percent moisture, and the temperature of the effluent gases is determined. From this data, the correct nozzle size and the nomograph multiplication factor are determined.

The probe and hotbox heaters are adjusted to provide a temperature of 248 degrees Fahrenheit (+ 25). Crushed ice is placed around the impingers. The nozzle is placed on the first traverse point with the tip pointing directly into the gas stream. The pump is started immediately, and the flow is adjusted to isokinetic sampling conditions. After the required time interval has elapsed, the probe is repositioned to the next traverse point and isokinetic sampling is re-established. This is performed for each point until the run is completed. Readings are taken at each point and recorded on the field data sheet. At the conclusion of each run, the pump is turned off, final readings are recorded, and final system leak checks are performed. Following sampling of emissions containing liquid droplets, any hydrogen chloride in the cyclone or on the filter are vaporized to hydrogen chloride gas and collected in the impingers by pulling conditioned ambient air through the sampling train.

11.1. Hydrogen Chloride Sample Recovery

The volume of liquid in the impingers is measured, the silica gel impinger is weighed, and these data are recorded on the field data sheet. The contents of the first three impingers are quantitatively transferred to a leak-free sample storage container. Each of the absorbing impingers and connecting glassware, including the back portion of the filter holder (and flexible tubing, if used), are rinsed with distilled water and the rinse is added to the storage container. Rinse water and acidic absorbing solution blanks are collected and analyzed with the samples.

11.2. Hydrogen Chloride Analytical Procedures

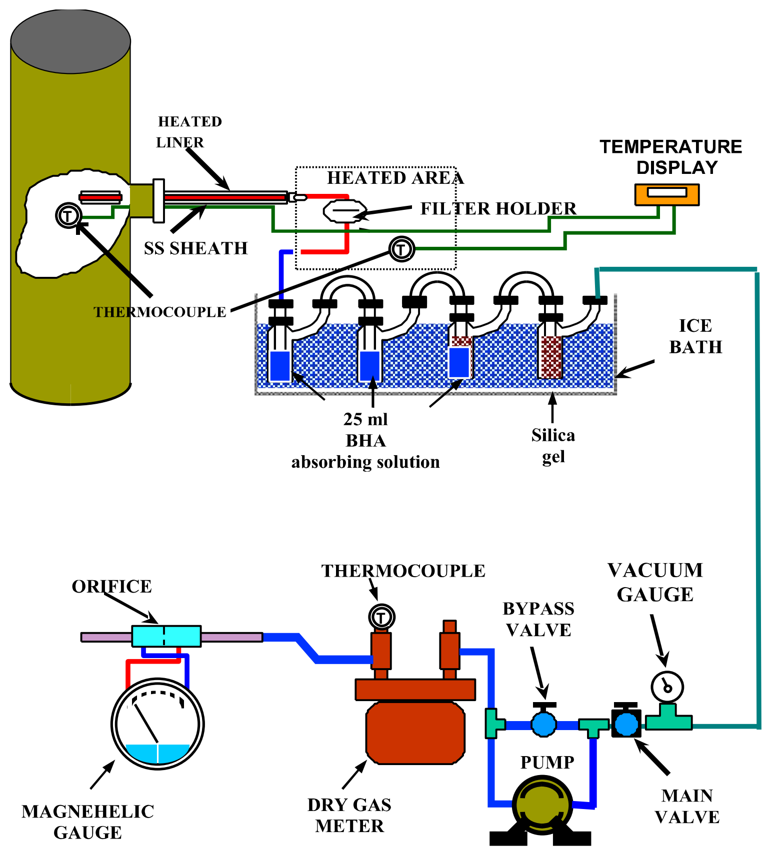
The hydrogen chloride is solubilized in the acidic solution and converted to chloride. The chloride ions in the solution are measured by ion chromatography (IC). All of the samples and blanks are analyzed by Enthalpy Analytical, Inc.

12. METHANOL, PHENOL, ACETALDEHYDE, ACROLEIN, FORMALDEHYDE, AND PROPIONALDEHYDE SAMPLING PROCEDURE

The HAPs sampling procedure utilized is that specified by **NCASI Method ISS/FP-A 105.01.** A brief description of this procedure is as follows:

The premise of the test method is that sample gas is extracted from the stack and passes through three chilled aqueous midget impingers containing a solution of o-benzylhydroxylamine (BHA). The carbonyl group of aldehyde compounds reacts with the amine group of BHA forming aldehyde oximes and splitting off water. The alcohols are simply captured by the water and unaffected by the BHA. The aldehyde oximes have limited water solubility and form an emulsion in the bubbling impingers.

Figure 13. HAPs Sampling Train



The sampling train is assembled as per the attached schematic. The heated stainless-steel or Teflon probe, is connected to a heated filter holder containing a glass fiber filter. Teflon tubing is used to connect the filter to the Teflon impingers containing 25 milliliters of BHA solution. A silica gel impinger is added at the end to catch any remaining moisture. PVC vacuum tubing is used as vacuum line to connect the adsorption system to a metering system. If desired, an optional dry impinger may be added in front to catch water droplets.

The sampling train is leaked checked by plugging the probe inlet and pulling a 15-inch Hg vacuum. A leakage rate not in excess of four percent of the average flow is considered acceptable. The probe and hotbox heaters are adjusted to provide a temperature of 250 (± 25) degrees Fahrenheit, and crushed ice is placed around the impingers.

To begin sampling, the probe tip is inserted in the stack, and the pump and timer are started simultaneously. The flow rate is set to approximately 500cc/min. and maintained during the sampling run. During sampling the system vacuum, flow rate, volume sampled through the dry gas meter, and dry gas meter temperature readings are taken at intervals of five minutes and recorded on the data sheet. After the required sampling time has elapsed, the pump and timer are stopped simultaneously. The final readings are recorded, and the probe is removed from the stack. A final leak rate is determined by the above mentioned procedure. The acceptable leak rate is less than four percent of the average flow rate. If the leak check is outside the acceptable range the run is voided and a new run is performed.

After the completion of each run, the collection train is moved to the sample recovery area. The contents of each impinger are placed into original storage container. The impinger and connecting tubes from the back of the heated filter are rinsed with distilled water and hexane, and these washing are added to the correct storage container. The storage container is then placed on ice or refrigerated at approximately 4 degrees Celsius.

The samples, along with any method required spikes or duplicate samples, will be sent to Enthalpy Analytical for analysis.

13. QUALITY ASSURANCE

In order to ensure the accuracy of all the data collected in the field and at the laboratory, SEAS has instituted a comprehensive quality assurance and quality control program. New or repaired items requiring calibration are calibrated before their initial use in the field. Equipment with calibration that may change with use is calibrated before and after each use. When an item is found to be out of calibration, the unit is either discarded or repaired, and then recalibrated before being returned to service. All equipment is periodically recalibrated in full regardless of the results of the regular inspections or its present calibration status. Calibrations are performed in a manner consistent with the EPA reference methods recommended in the "Quality Assurance Handbook for Air Pollution Measurement Systems" published by the US Environmental Protection Agency. To the maximum degree possible all calibrations are traceable to the National Institute of Standards & Technology (NIST). SEAS is a LELAP certified laboratory.

In order to ensure that the test will be performed in a timely manner without undue delays, SEAS sampling vans are equipped with duplicate sampling devices for almost every device needed to perform the test. If a particular device is broken or does not pass inspection, a second device is available immediately at the site for use. Any device which appears to be outside calibration, or in need of repair is tagged in the field and repaired, calibrated, or discarded immediately upon return to the laboratory.

13.1. Calibrations

Certain pieces of equipment need to be calibrated before and after each test. Those items include the pitot tubes, the differential pressure gauges, the dry gas meter, and the nozzles used for the particulate testing. The following is a brief description of the calibration procedures for each of these important devices.

13.1.1. Pitot Tubes

All pitot tubes are the S-type as required by EPA Reference Method 2 (40 CFR, Part 60, Appendix A, Method 2). This method contains certain geometric standards for the construction of S-type pitot tubes. All of SEAS pitot tubes are constructed according to these standards. According to the EPA any pitot tube constructed to these standards will have a coefficient of 0.84 $\pm$ 0.02. This coefficient should not change unless the pitot is physically damaged. Each pitot tube is checked before going to the field to make sure it meets the geometry as specified. Any pitot tube which does not meet the specifications is not used in the test.

13.1.2. Differential Pressure Gauges

SEAS uses several different types of pressure gauges including oil tube manometers, water tube manometers, magnehelics, and current output electronic load cells. Each of these devices are inspected before taken to the field and are inspected for leaks during each test. The magnehelics and load cells are tested against an incline manometer water gauge to ensure accuracy.

13.1.3. Temperature Sensors

All temperature sensors used in SEAS sampling program are either mercury in-glass thermometers or type K thermocouples. These thermocouples are physical devices which produce a voltage proportional to the temperature. The thermocouple reading device is calibrated before and after each series of tests to ensure accuracy of $\pm$ 2 percent. The calibration of the thermocouple is accomplished by NIST traceable calibrated reference thermocouple potentiometer system.

13.1.4. Nozzles

The inside diameter of each nozzle is measured to the nearest 0.001 inches prior to its initial use. Upon arriving in the field each nozzle is again measured with a micrometer on three different points on the diameter to ensure its original measurement and that the nozzle is perfectly round. If the difference between the maximum and minimum diameters measured does not exceed 0.003 inches, the nozzle is acceptable; otherwise, this nozzle is discarded and another is selected. At the end of each test the nozzles are again remeasured on three different points on the diameter to ensure that during the test the nozzle has not become dented or deformed.

13.1.5. Dry Gas Meter

The dry gas meter is initially calibrated against a spirometer transfer standard. During the initial calibration, a five point calibration curve is made at a minimum of one-half inch water column orifice pressure up to four inches water column orifice pressure. After each test, the dry gas meter calibration factor is checked by performing three repetitions at a representative flow rate experienced during the test. If the final calibration does not agree with the initial calibration within five percent the calibration which yields the lowest volume of sample pulled is used in the calculations. The dry gas meter is repaired and a new initial five point calibration is performed.

13.1.6. Orifice

The flow meter orifice is used to establish isokinetic sampling rates during the test. The orifice is calibrated with the dry gas meter at the same time under the same conditions. The orifice is calibrated over a wide range of flow rates and the arithmetic mean of the orifice calibration is used for sampling purposes. The orifice is recalibrated every time the gas meter is recertified.

APPENDIX A QUALITY CONTROL OF TESTING EQUIPMENT

Sanders Engineering & Analytical Services, Inc.
Initial Isokinetic Meter Box Calibration
Critical Orifice Calibration Method

Calibrated By: TA **Meter Box #:** S-202 **Date:** 1/12/2021

	Unit	Orifice #: RUN 1	IU-40 RUN 2	Orifice #: RUN 1	IU-48 RUN 2	Orifice #: RUN 1	IU-55 RUN 2	Orifice #: RUN 1	IU-63 RUN 2	Orifice #: RUN 1	IU-73 RUN 2	Average
Meter **DH**	In. H_2O	0.31	0.31	0.69	0.69	1.15	1.15	1.91	1.92	3.70	3.70	
Initial **Gas Volume**	Ft.^{3}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Final **Gas Volume**	Ft.^{3}	5.345	5.149	5.053	5.055	5.071	5.110	5.079	5.129	5.127	5.086	
Initial **Temp. Out**	°F	65	66	67	68	69	69	70	70	70	70	
Final **Temp. Out**	°F	66	67	68	68	67	70	70	70	70	70	
Vacuum	In. Hg	18.5	18.5	18.0	18.0	17.0	17.0	17.0	17.0	17.0	17.0	
Initial Ambient **Temp. (Orific Inlet)**	°F	65	66	67	68	67	67	67	67	67	67	
Final Ambient **Temp. (Orific Inlet)**	°F	66	67	68	68	67	67	67	67	67	67	
Barometric Pressure	In. Hg	29.90	29.90	30.02	30.02	30.02	30.02	30.02	30.02	30.02	30.02	
Time	sec	1037	1012	668	669	513	521	395	399	297	294	
K'		0.2356	0.2356	0.3461	0.3461	0.4574	0.4574	0.5997	0.5997	0.8169	0.8169	
CALCULATIONS												
Total Meter Gas Volume	Actual Ft.^{3}	5.345	5.149	5.053	5.055	5.071	5.110	5.079	5.129	5.127	5.086	
Time	Minutes	17.283	16.867	11.133	11.150	8.550	8.683	6.583	6.650	4.950	4.900	
Volume through the Meter	*SDCF without Y*	5.371	5.164	5.083	5.080	5.102	5.127	5.100	5.151	5.171	5.130	
Volume through the Orifice	*SDCF*	5.311	5.178	5.036	5.042	5.114	5.194	5.163	5.215	5.288	5.234	
Calculated Y	*Dimensionless*	**0.989**	**1.003**	**0.991**	**0.992**	**1.002**	**1.013**	**1.012**	**1.012**	**1.023**	**1.020**	**1.006**
Difference Allowable 0.02		-0.017	-0.003	-0.015	-0.013	-0.003	0.007	0.006	0.007	0.017	0.015	
Calculated DH@		**1.858**	**1.858**	**1.913**	**1.913**	**1.826**	**1.821**	**1.764**	**1.773**	**1.858**	**1.858**	**1.844**
Difference Allowable 0.2		0.014	0.014	0.069	0.069	-0.018	-0.023	-0.080	-0.071	0.014	0.014	

Magnehelic Calibrations

Reading	*Reference* Calibration Standard inches of water	*Sample* Delta P Magnehelic inches of water	*Percent Error*
1	0.50	0.51	*2.0*
2	1.00	1.00	*0.0*
3	1.50	1.48	*-1.3*

Allowed Error = ±5% of Reading

Reference Gauge: OGM-0001

Thermocouple Calibrations

Reading	*Reference* Calibration Standard Degrees F.	*Sample* Thermocouple Reader Degrees F.	*Percent Error*
1	50	50	*0.0*
2	250	248	*-0.3*
3	500	498	*-0.2*

Allowed Error = ±1.5% of Absolute Temperature (Degrees Rankine)

Absolute Temperature = Temperature in Degrees Fahrenheit. + 460

Reference Gauge: B.85.39.1149

Sanders Engineering & Analytical Services, Inc.
Temperature and Magnehelic
Final Calibration Check

Calibrated By:	CRH	**Date:**	8/12/2021

Magnehelic ID:	S-202		
Magnehelic Calibrations			
	Calibration	**Delta P Magnehelic**	
Reading	**Standard** inches of water	**Sample** inches of water	*Percent Error*
1	0.50	0.50	*0.0*
2	0.70	0.70	*0.0*
3	1.00	1.00	*0.0*

Allowed Error = ±5% of Reading

Reference Gauge: OGM-0001

Thermocouple ID:	S-202		
Thermocouple Calibrations			
	Calibration	**Thermocouple Reader**	
Reading	**Standard** Degrees F.	**Sample** Degrees F.	*Percent Error*
1	40	37	*-0.6*
2	200	197	*-0.5*
3	300	297	*-0.4*

Allowed Error = ±1.5% of Absolute Temperature (Degrees Rankine)

Absolute Temperature = Temperature in Degrees Fahrenheit. + 460

Reference Gauge: B 85 39 1149

Sanders Engineering & Analytical Services, Inc.
Initial Isokinetic Meter Box Calibration
Critical Orifice Calibration Method

Calibrated By: MS **Meter Box #:** S-208 **Date:** 2/18/2021

	Unit	Orifice #: RUN 1	VK-40 RUN 2	Orifice #: RUN 1	VK-48 RUN 2	Orifice #: RUN 1	VK-55 RUN 2	Orifice #: RUN 1	VK-63 RUN 2	Orifice #: RUN 1	VK-73 RUN 2	
Meter **DH**	In. H_2O	0.32	0.32	0.70	0.69	1.12	1.12	1.85	1.85	3.48	3.48	
Initial **Gas Volume**	Ft.^{3}	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Final **Gas Volume**	Ft.^{3}	5.132	5.105	5.103	5.104	5.102	5.103	5.105	5.103	5.108	5.106	
Initial **Temp. Out**	°F	73	74	72	73	72	72	72	72	72	72	
Final **Temp. Out**	°F	74	74	73	73	72	72	72	72	72	72	
Vacuum	In. Hg	20.0	20.5	18.5	19.0	17.5	17.5	15.5	15.5	12.5	12.5	
Initial Ambient **Temp. (Orific Inlet)**	°F	71	70	72	69	70	70	71	71	72	71	
Final Ambient **Temp. (Orific Inlet)**	°F	70	70	69	70	70	70	71	74	71	70	
Barometric Pressure	In. Hg	29.78	29.78	29.78	29.78	29.78	29.78	29.78	29.78	29.78	29.78	
Time	sec	992	986	674	673	523	523	405	405	298	298	
K'		0.2352	0.2352	0.3472	0.3472	0.4508	0.4508	0.5864	0.5864	0.8062	0.8062	
CALCULATIONS												
Total Meter Gas Volume	Actual Ft.^{3}	5.132	5.105	5.103	5.104	5.102	5.103	5.105	5.103	5.108	5.106	
Time	Minutes	16.533	16.433	11.233	11.217	8.717	8.717	6.750	6.750	4.967	4.967	
Volume through the Meter	*SDCF without Y*	5.059	5.028	5.045	5.041	5.054	5.055	5.066	5.064	5.089	5.087	
Volume through the Orifice	*SDCF*	5.028	5.000	5.043	5.040	5.083	5.083	5.115	5.108	5.172	5.177	**Average**
Calculated Y	*Dimensionless*	**0.994**	**0.994**	**1.000**	**1.000**	**1.006**	**1.006**	**1.010**	**1.009**	**1.016**	**1.018**	**1.005**
Difference Allowable 0.02		-0.011	-0.011	-0.006	-0.005	0.001	0.000	0.005	0.004	0.011	0.013	
Calculated DH@		**1.922**	**1.918**	**1.936**	**1.903**	**1.842**	**1.842**	**1.808**	**1.813**	**1.815**	**1.812**	**1.861**
Difference Allowable 0.2		0.061	0.057	0.075	0.042	-0.019	-0.019	-0.053	-0.048	-0.046	-0.049	

Magnehelic Calibrations

Reading	*Reference* Calibration Standard inches of water	*Sample* Delta P Magnehelic inches of water	*Sample* Delta P Magnehelic *Percent Error*
1	0.50	0.49	*-2.0*
2	1.25	1.22	*-2.4*
3	1.75	1.73	*-1.1*

Allowed Error = ±5% of Reading

Reference Gauge: OGM-0001

Thermocouple Calibrations

Reading	*Reference* Calibration Standard Degrees F.	*Sample* Thermocouple Reader Degrees F.	*Sample* Thermocouple Reader *Percent Error*
1	80	81	*0.2*
2	200	200	*0.0*
3	450	449	*-0.1*

Allowed Error = ±1.5% of Absolute Temperature (Degrees Rankine)

Absolute Temperature = Temperature in Degrees Fahrenheit. + 460

Reference Gauge: B 85.39.1149

Final Calibration Check

Calibrated By: RJR / MS	**Date:** 8/13/2021

Magnehelic ID: M-305

Magnehelic Calibrations			
	Calibration Standard	**Delta P Magnehelic**	
Reading	inches water	inches water	*Percent Error*
1	0.25	0.25	0.0
2	0.50	0.48	-4.0
3	0.75	0.75	0.0

Allowed Error = 5% of Reading

Reference Gauge: OGM-0001

Thermocouple ID: S-208

Thermocouple Calibrations			
	Calibration Standard		
Reading	Degrees F.	Degrees F.	*Percent Error*
1	45	49	-0.8
2	150	148	0.3
3	350	348	0.2

Allowed Error = 1.5% of Absolute Temperature (Degrees Rankin);

Absolute Temperature = Temperature in Degrees Fahrenheit. + 460

Reference Gauge: B 85.39.1149

Sanders Engineering & Analytical Services, Inc.
Initial Low Flow Meter Box Calibration
Critical Orifice Calibration Method

Calibrated By: JWH Date: 3/31/2021 Meter Box #: 30B-005
Barometric Pressure : 29.83 Sample Side: A

		ORIFICE # 3		ORIFICE # 6		ORIFICE # 11		
Field Meter	**Unit**	**RUN 1**	**RUN 2**	**RUN 1**	**RUN 2**	**RUN 1**	**RUN 2**	
Initial Gas Volume	L	0.000	0.000	0.000	0.000	0.000	0.000	
Final Gas Volume	L	2.513	2.515	9.897	9.909	18.758	18.736	
Initial Temp. Out	°F	71.0	72.0	75.0	76.0	77.0	78.0	
Final Temp. Out	°F	72.0	74.0	76.0	77.0	78.0	78.0	
Reference Meter **ID**		DC-Lite	DC-Lite	Defender510	Defender510	Defender510	Defender510	
Y	*Dimensionless*	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Gas Flowrate	L	0.253	0.257	0.986	0.986	1.868	1.880	
Final Gas Flowrate	L	0.257	0.257	0.986	0.988	1.880	1.876	
Average Flowrate	L	0.255	0.257	0.986	0.987	1.874	1.878	
Time	Min	10.000	10.000	10.000	10.000	10.000	10.000	
Initial Ambient Temp.	°F	70.0	69.0	69.0	70.0	71.0	69.0	
Final Ambient Temp.	°F	69.0	69.0	70.0	70.0	69.0	70.0	
Volume through Field Meter	Actual L	2.513	2.515	9.897	9.909	18.758	18.736	
Volume through Field Meter	SDL	2.488	2.483	9.725	9.719	18.364	18.325	
Volume through Reference Meter	Actual L	2.550	2.570	9.860	9.870	18.740	18.780	
Volume through Reference Meter	SDL	2.534	2.556	9.799	9.799	18.606	18.663	**Average**
Calculated Y	*Dimensionless*	**1.019**	**1.030**	**1.008**	**1.008**	**1.013**	**1.018**	**1.016**

Thermocouple Calibrations

	Reference Calibration Standard	*Sample* Thermocouple Reader	
Reading	Degrees F.	Degrees F.	*Percent Error*
1	50	47	*-0.6*
2	250	248	*-0.3*
3	500	496	*-0.4*

Allowed Error = 1.5% of Absolute Temperature (Degrees Rankin);

Absolute Temperature = Temperature in Degrees Fahrenheit. + 460

Reference Gauge: B.85.39.1149

Sanders Engineering & Analytical Services, Inc.
Post-Test Low Flow Meter Box Calibration
Critical Orifice Calibration Method

Calibrated By: MS	**Date:**	**7/23/2021**	**Meter Box #:**	**30B-005**
Barometric Pressure : 29.97	**Initial Y:** 1.016		**Sample Side:**	**A**
			ORIFICE #	**0.482 L**
Field Meter	**Unit**	**RUN 1**	**RUN 2**	**RUN 3**
Initial Gas Volume	L	0.000	0.000	0.000
Final Gas Volume	L	4.599	4.651	4.695
Initial Temp. Out	°F	72.00	75.00	77.00
Final Temp. Out	°F	74.00	76.00	78.00
Reference Meter **ID**	Defender 510			
Y	*Dimensionless*	1.000	1.000	1.000
Initial Gas Flowrate	L	0.470	0.470	0.473
Final Gas Flowrate	L	0.470	0.473	0.472
Average Flowrate	L	0.470	0.472	0.473
Time	Min	10.000	10.000	10.000
Initial Ambient Temp.	°F	72.00	69.00	74.00
Final Ambient Temp.	°F	70.00	72.00	73.00
Volume through Field Meter	Actual L	4.599	4.651	4.695
Volume through Field Meter	SDL	4.562	4.592	4.618
Volume through Reference Meter	Actual L	4.700	4.715	4.725
Volume through Reference Meter	SDL	4.679	4.699	4.682
Calculated Y	*Dimensionless*	**1.026**	**1.023**	**1.014**
Average Final Y	*Dimensionless*		**1.021**	
Y - Percent Difference from Initial			**0.5**	

Thermocouple Calibrations

Reading	***Reference*** **Calibration Standard** Degrees F.	***Sample*** **Thermocouple Reader** Degrees F.	*Percent Error*
1	30	32	*0.4*
2	150	148	*-0.3*
3	300	297	*-0.4*

Allowed Error = 1.5% of Absolute Temperature (Degrees Rankin);

Absolute Temperature = Temperature in Degrees Fahrenheit. + 460

Reference Gauge: B 85.39.1149

Sanders Engineering & Analytical Services, Inc.
Initial Low Flow Meter Box Calibration
Critical Orifice Calibration Method

Calibrated By: JWH **Date:** 3/31/2021 **Meter Box #:** 30B-005
Barometric Pressure : 29.83 **Sample Side:** B

		ORIFICE # 3		ORIFICE # 6		ORIFICE # 11		
Field Meter	**Unit**	**RUN 1**	**RUN 2**	**RUN 1**	**RUN 2**	**RUN 1**	**RUN 2**	
Initial Gas Volume	L	0.000	0.000	0.000	0.000	0.000	0.000	
Final Gas Volume	L	2.629	2.643	10.102	10.139	19.453	19.498	
Initial Temp. Out	°F	75.0	76.0	77.0	78.0	79.0	80.0	
Final Temp. Out	°F	76.0	77.0	78.0	79.0	80.0	80.0	
Reference Meter **ID**		DC-Lite	DC-Lite	Defender510	Defender510	Defender510	Defender510	
Y	*Dimensionless*	1.000	1.000	1.000	1.000	1.000	1.000	
Initial Gas Flowrate	L	0.256	0.257	0.971	0.974	1.869	1.873	
Final Gas Flowrate	L	0.257	0.256	0.974	0.964	1.873	1.876	
Average Flowrate	L	0.257	0.257	0.973	0.969	1.871	1.875	
Time	Min	10.000	10.000	10.000	10.000	10.000	10.000	
Initial Ambient Temp.	°F	71.0	69.0	69.0	71.0	70.0	72.0	
Final Ambient Temp.	°F	69.0	71.0	70.0	68.0	70.0	70.0	
Volume through Field Meter	Actual L	2.629	2.643	10.102	10.139	19.453	19.498	
Volume through Field Meter	SDL	2.583	2.592	9.890	9.907	18.973	19.000	
Volume through Reference Meter	Actual L	2.565	2.565	9.725	9.690	18.710	18.745	
Volume through Reference Meter	SDL	2.547	2.547	9.664	9.630	18.576	18.576	**Average**
Calculated Y	*Dimensionless*	**0.986**	**0.982**	**0.977**	**0.972**	**0.979**	**0.978**	**0.979**

Thermocouple Calibrations

	Reference Calibration Standard	*Sample* Thermocouple Reader	
Reading	Degrees F.	Degrees F.	*Percent Error*
1	50	47	*-0.6*
2	250	248	*-0.3*
3	500	496	*-0.4*

Allowed Error = 1.5% of Absolute Temperature (Degrees Rankin);
Absolute Temperature = Temperature in Degrees Fahrenheit. + 460
Reference Gauge: B.85.39.1149

Sanders Engineering & Analytical Services, Inc.
Post-Test Low Flow Meter Box Calibration
Critical Orifice Calibration Method

Calibrated By: MS	**Date:**	**7/23/2021**	**Meter Box #:**	**30B-005**
Barometric Pressure : 29.97	**Initial Y:** 0.979		**Sample Side:**	**B**
			ORIFICE #	**0.451 L**
Field Meter	**Unit**	**RUN 1**	**RUN 2**	**RUN 3**
Initial Gas Volume	L	0.000	0.000	0.000
Final Gas Volume	L	5.216	5.355	5.268
Initial Temp. Out	°F	72.00	79.00	82.00
Final Temp. Out	°F	79.00	82.00	84.00
Reference Meter **ID**	Defender 510			
Y	*Dimensionless*	1.000	1.000	1.000
Initial Gas Flowrate	L	0.511	0.512	0.510
Final Gas Flowrate	L	0.512	0.510	0.508
Average Flowrate	L	0.512	0.511	0.509
Time	Min	10.000	10.000	10.000
Initial Ambient Temp.	°F	72.00	70.00	74.00
Final Ambient Temp.	°F	69.00	74.00	74.00
Volume through Field Meter	Actual L	5.216	5.355	5.268
Volume through Field Meter	SDL	5.149	5.238	5.129
Volume through Reference Meter	Actual L	5.115	5.110	5.090
Volume through Reference Meter	SDL	5.097	5.078	5.039
Calculated Y	*Dimensionless*	**0.990**	**0.969**	**0.982**
Average Final Y	*Dimensionless*		**0.981**	
Y - Percent Difference from Initial			**0.2**	

Thermocouple Calibrations

Reading	***Reference* Calibration Standard** Degrees F.	***Sample* Thermocouple Reader** Degrees F.	*Percent Error*
1	30	31	*0.2*
2	150	146	*-0.7*
3	300	299	*-0.1*

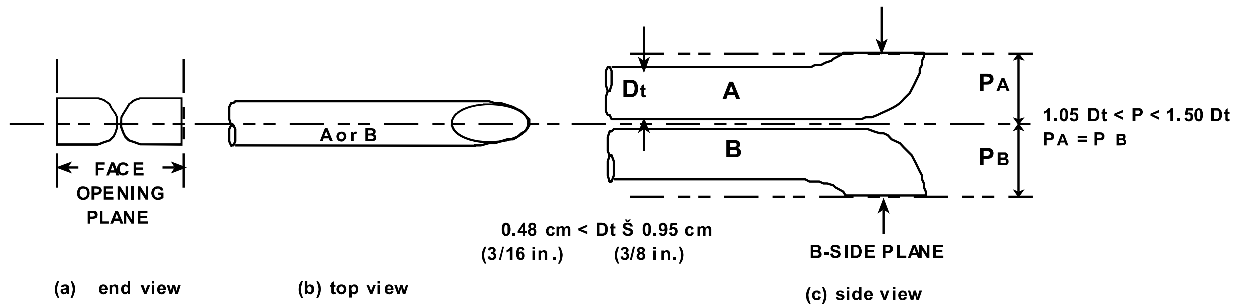
Allowed Error = 1.5% of Absolute Temperature (Degrees Rankin);

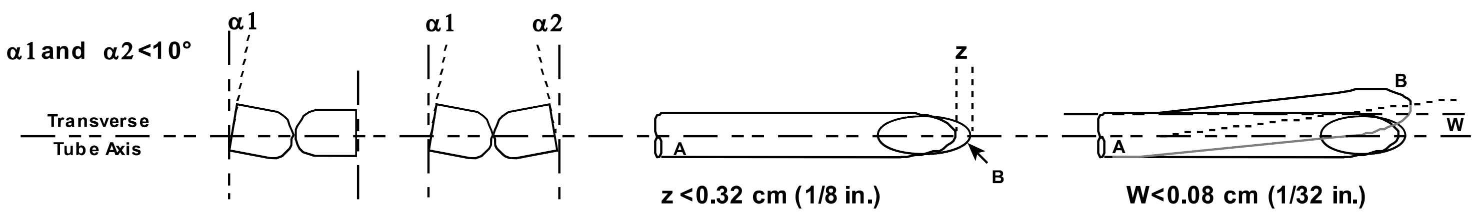
Absolute Temperature = Temperature in Degrees Fahrenheit. + 460

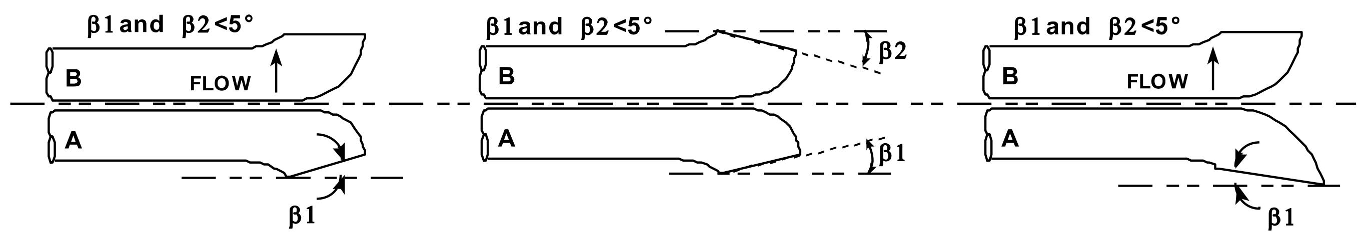
Reference Gauge: B 85.39.1149

Type S pitot tube construction details:

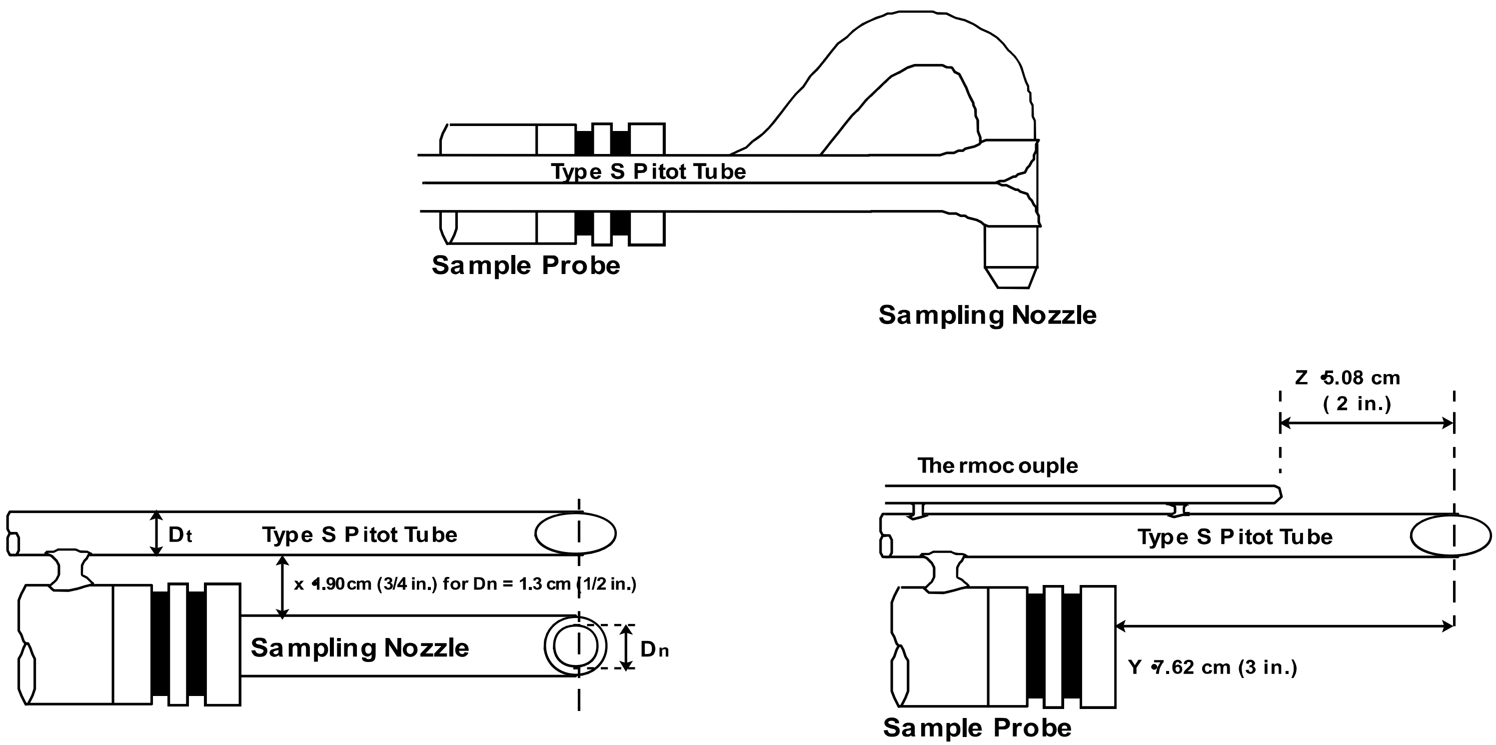
a) end view; face opening planes perpendicular to transverse axis.
b) top view; face opening planes parallel to longitudinal axis.
c) side view; both legs of equal length and centerlines coincident, when viewed from both sides.







Sampling Nozzle, Thermocouple, and Probe Configuration



Magnehelic Calibration - 2021

Ser. No.	M-101			102-C			M-104		
Span (in H2O)	**0.25**	**2**	**10**	**0.25**	**2**	**25**	**0.25**	**2**	**10**
Reference Reading @ 0% Span (in H2O)	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00
Device Reading (in H2O)	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00
% Difference (Allowed = 0.05)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference Reading @ 50% Span (in H2O)	0.130	1.00	5.10	0.130	1.00	12.63	0.120	0.98	4.80
Device Reading (in H2O)	0.125	1.00	5.00	0.125	1.00	12.50	0.125	1.00	5.00
% Difference (Allowed = 0.05)	0.04	0.00	0.02	0.04	0.00	0.01	0.04	0.02	0.04
Reference Reading @ 90% Span (in H2O)	0.230	1.80	9.30	0.230	1.75	23.00	0.23	1.80	8.80
Device Reading (in H2O)	0.225	1.80	9.00	0.225	1.80	22.50	0.225	1.80	9.00
% Difference (Allowed = 0.05)	0.02	0.00	0.03	0.02	0.03	0.02	0.02	0.00	0.02
Calibrated by: Initials / Date	RLC / 1-13-21			RLC / 1-13-21			RLC / 1-13-21		

Ser. No.	M-105			M-301			M-302		
Span (in H2O)	**0.25**	**2**	**25**	**0.5**	**5**	**25**	**0.5**	**5**	**25**
Reference Reading @ 0% Span (in H2O)	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00
Device Reading (in H2O)	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00
% Difference (Allowed = 0.05)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference Reading @ 50% Span (in H2O)	0.125	0.98	12.50	0.250	2.40	12.70	0.250	2.40	12.63
Device Reading (in H2O)	0.125	1.00	12.50	0.250	2.50	12.50	0.250	2.50	12.50
% Difference (Allowed = 0.05)	0.00	0.02	0.00	0.00	0.04	0.02	0.00	0.04	0.01
Reference Reading @ 90% Span (in H2O)	0.230	1.80	22.38	0.45	4.40	22.88	0.460	4.40	22.63
Device Reading (in H2O)	0.225	1.80	22.50	0.450	4.50	22.50	0.450	4.50	22.50
% Difference (Allowed = 0.05)	0.02	0.00	0.01	0.00	0.02	0.02	0.02	0.02	0.01
Calibrated by: Initials / Date	RLC / 1-13-21			RLC / 1-13-21			RLC / 1-13-21		

Ser. No.	M-303			M-304			M-305		
Span (in H2O)	**0.5**	**5**	**25**	**0.5**	**5**	**25**	**0.5**	**4**	**25**
Reference Reading @ 0% Span (in H2O)	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00
Device Reading (in H2O)	0.000	0.00	0.00	0.000	0.00	0.00	0.000	0.00	0.00
% Difference (Allowed = 0.05)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reference Reading @ 50% Span (in H2O)	0.250	2.40	12.30	0.250	2.50	12.13	0.240	1.95	12.40
Device Reading (in H2O)	0.250	2.50	12.50	0.250	2.50	12.50	0.250	2.00	12.50
% Difference (Allowed = 0.05)	0.00	0.04	0.02	0.00	0.00	0.03	0.04	0.03	0.01
Reference Reading @ 90% Span (in H2O)	0.440	4.40	21.80	0.43	4.40	23.13	0.440	3.55	22.40
Device Reading (in H2O)	0.450	4.50	22.50	0.450	4.50	22.50	0.450	3.60	22.50
% Difference (Allowed = 0.05)	0.02	0.02	0.03	0.05	0.02	0.03	0.02	0.01	0.00
Calibrated by: Initials / Date	RLC / 1-13-21			RLC / 1-13-21			RLC / 1-13-21		

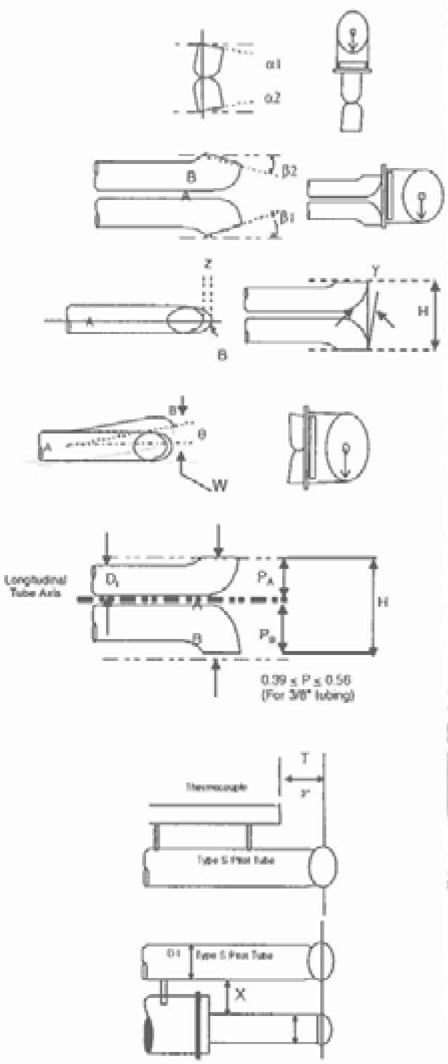
Ser. No.	M-308			x452		
Span (in H2O)	**0.25**	**2**	**25**	**0.5**	**4**	**25**
Reference Reading @ 0% Span (in H2O)	0.000	0.00	0.00	0.00	0.00	0.00
Device Reading (in H2O)	0.000	0.00	0.00	0.00	0.00	0.00
% Difference (Allowed = 0.05)	0.00	0.00	0.00	0.00	0.00	0.00
Reference Reading @ 50% Span (in H2O)	0.125	0.95	12.40	0.260	1.90	12.40
Device Reading (in H2O)	0.125	1.00	12.50	0.250	2.00	12.50
% Difference (Allowed = 0.05)	0.00	0.05	0.01	0.04	0.05	0.01
Reference Reading @ 90% Span (in H2O)	0.220	1.80	22.13	0.460	3.50	22.40
Device Reading (in H2O)	0.225	1.80	22.50	0.450	3.60	22.50
% Difference (Allowed = 0.05)	0.02	0.00	0.02	0.02	0.03	0.00
Calibrated by: Initials / Date	RLC / 1-13-21			RLC / 1-13-21		

Sanders Engineering & Analytical Service, Inc
Pitot Tube Calibration

Flow probe

Angle Gauge
Micrometer Serial Number

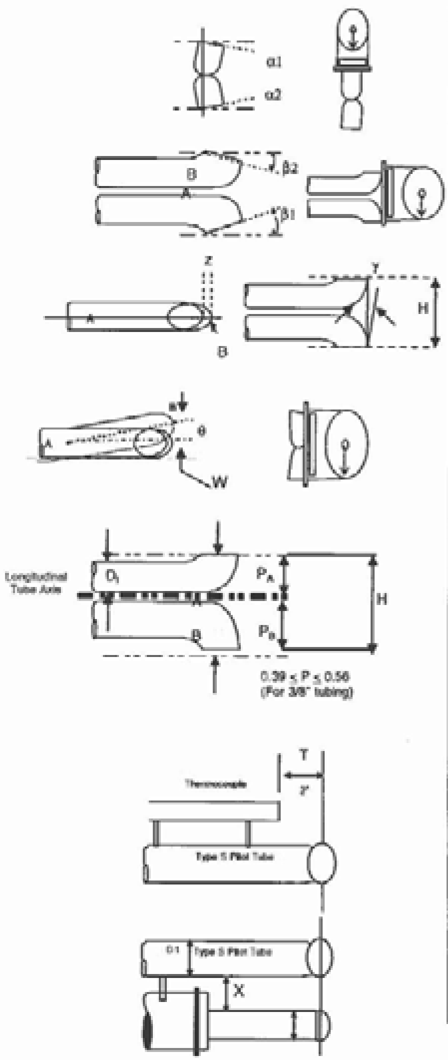
	Type S Pitot Tube Inspection Form for 3/8" Tube			
	Pitot Tube #: 172			
	Initials MS			
	Date: 7-23-21			
	Allowable Range	Post Test		
		Value	Check	
α1	<10°	1.6	OK	
α2	<10°	0.9	OK	
β1	<5°	0.2	OK	
β2	<5°	0.8	OK	
γ	6.3° Max	1.4	OK	
Z= H tan γ	<.125"		OK	
θ	1.6° Max	0.3	OK	
W= H tan θ	<.0313"		OK	
P_A	0.56" max	0.51	OK	Measure to 0.01"
P_B	0.56" max	0.51	OK	Measure to 0.01"
H	1.125" Max	1.020	OK	
T	>2"	2.20	OK	
X	X ≥ 0.75" for Dn of 0.5"	—	OK	



Sanders Engineering & Analytical Service, Inc
Pitot Tube Calibration Flow probe

Angle Gauge
Micrometer Serial Number

Type S Pitot Tube Inspection Form
for 3/8" Tube
Pitot Tube #: 308
Initials MS
Date: 7-23-21

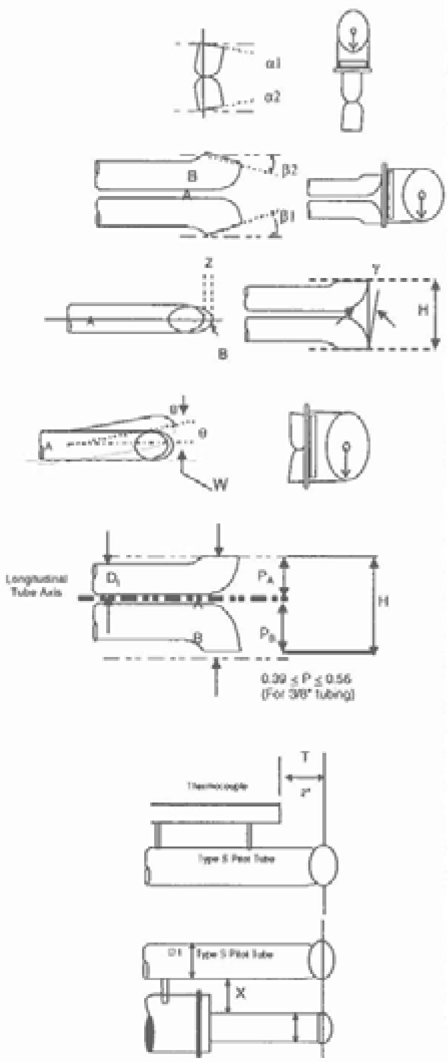


	Allowable Range	Post Test Value	Post Test Check	
α1	<10°	1.7	OK	
α2	<10°	2.1	OK	
β1	<5°	0.5	OK	
β2	<5°	1.7	OK	
γ	6.3° Max	0.4	OK	
Z= H tan γ	<.125"		OK	
θ	1.6° Max	0.1	OK	
W= H tan θ	<.0313"		OK	
P_A	0.56" max	0.50	OK	Measure to 0.01"
P_B	0.56" max	0.50	OK	Measure to 0.01"
H	1.125" Max	1.005	OK	
T	>2"	5.60	OK	
X	X ≥ 0.75" for Dn of 0.5"	—	OK	

Sanders Engineering & Analytical Service, Inc
Pitot Tube Calibration

Angle Gauge
Micrometer Serial Number

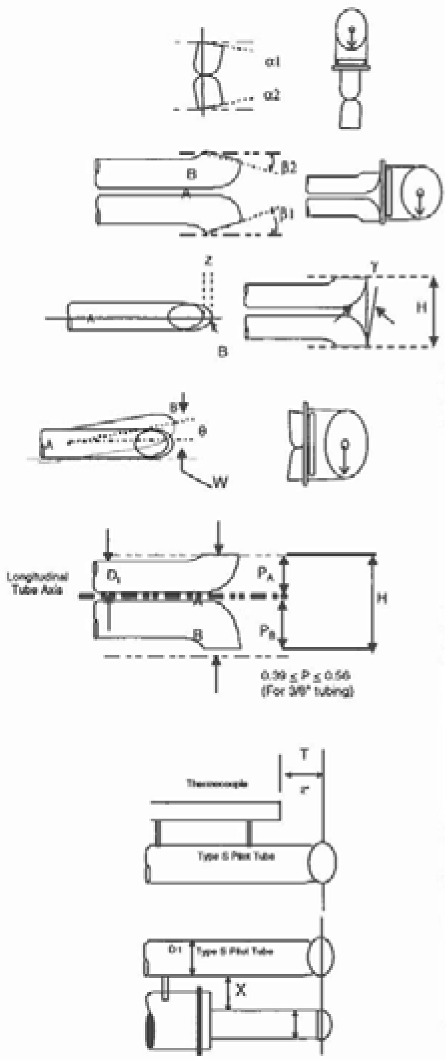
Type S Pitot Tube Inspection Form for 3/8" Tube	
Pitot Tube #: 310	
Initials MS	
Date: 7-23-21	



	Allowable Range	Post Test Value	Post Test Check	
α1	<10°	0.3	OK	
α2	<10°	1.1	OK	
β1	<5°	1.3	OK	
β2	<5°	0.0	OK	
γ	6.3° Max	1.1	OK	
Z= H tan γ	<.125"		OK	
θ	1.6° Max	0.5	OK	
W= H tan θ	<.0313"		OK	
P_A	0.56" max	0.50	OK	Measure to 0.01"
P_B	0.56" max	0.50	OK	Measure to 0.01"
H	1.125" Max	0.991	OK	
T	>2"	3.00	OK	
X	X ≥ 0.75" for Dn of 0.5"	1.08	OK	

Sanders Engineering & Analytical Service, Inc
Pitot Tube Calibration

Angle Gauge
Micrometer Serial Number



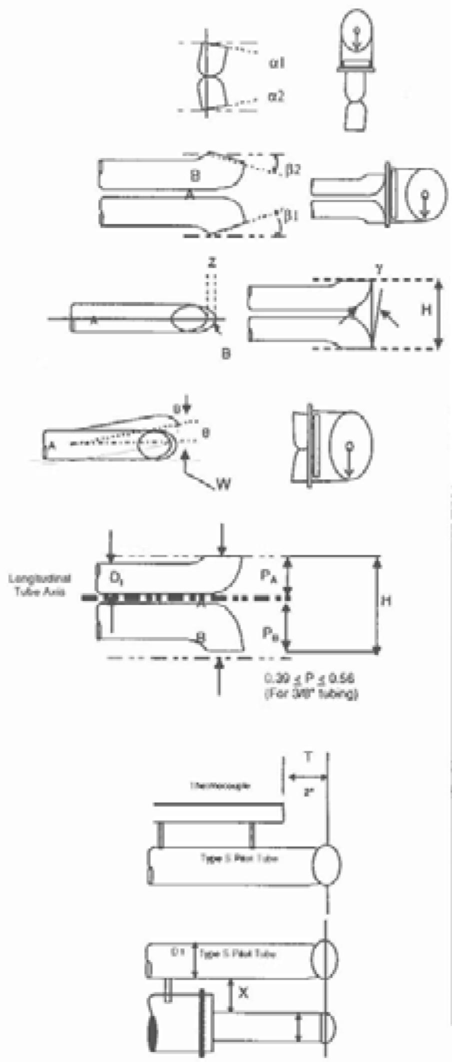
Type S Pitot Tube Inspection Form for 3/8" Tube
Pitot Tube #: 335
Initials MS
Date: 7-23-21

	Allowable Range	Post Test Value	Post Test Check	
α1	<10°	1.6	OK	
α2	<10°	2.5	OK	
β1	<5°	0.8	OK	
β2	<5°	0.8	OK	
γ	6.3° Max	1.5	OK	
Z= H tan γ	<.125"		OK	
θ	1.6° Max	0.6	OK	
W= H tan θ	<.0313"		OK	
P_A	0.56" max	0.58	OK	Measure to 0.01"
P_B	0.56" max	0.50	OK	Measure to 0.01"
H	1.125" Max	1.003	OK	
T	>2"	3.36	OK	
X	X ≥ 0.75" for Dn of 0.5"	0.91	OK	

Sanders Engineering & Analytical Service, Inc
Pitot Tube Calibration

Angle Gauge
Micrometer Serial Number

Type S Pitot Tube Inspection Form for 3/8" Tube	
Pitot Tube #: 156	
Initials MS	
Date: 7-23-21	



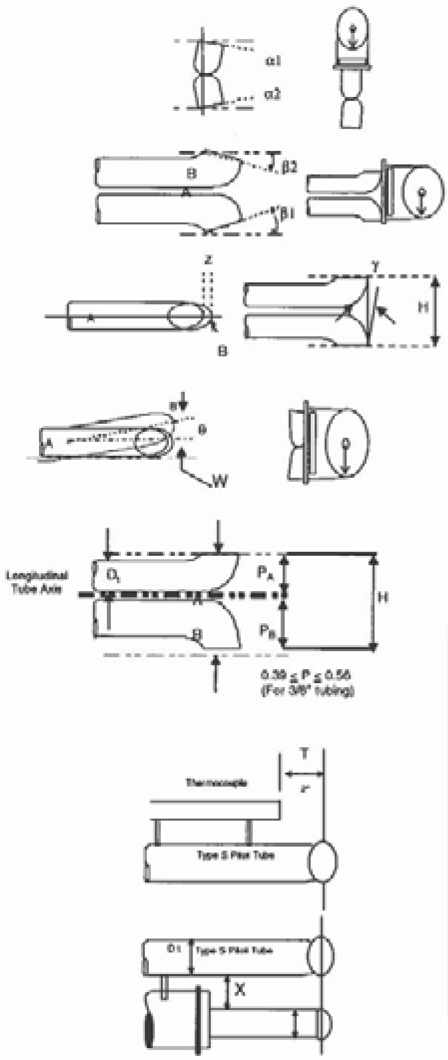
	Allowable Range	Post Test Value	Post Test Check	
$\alpha 1$	<10°	1.3	OK	
$\alpha 2$	<10°	2.2	OK	
$\beta 1$	<5°	0.3	OK	
$\beta 2$	<5°	0.5	OK	
γ	6.3° Max	0.5	OK	
Z= H tan γ	≤.125"		OK	
θ	1.6° Max	0.2	OK	
W= H tan θ	≤.0313"		OK	
P_A	0.56" max	0.51	OK	Measure to 0.01"
P_B	0.56" max	0.51	OK	Measure to 0.01"
H	1.125" Max	1.022	OK	
T	>2"	2.42	OK	
X	X ≥ 0.75" for Dn of 0.5"	1.30	OK	

Sanders Engineering & Analytical Service, Inc

Pitot Tube Calibration Particle size probe

Angle Gauge
Micrometer Serial Number

Type S Pitot Tube Inspection Form for 3/8" Tube	
Pitot Tube #: 371	
Initials MS	
Date: 7-22-21	



	Allowable Range	Post Test Value	Post Test Check	
α1	<10°	3.2	OK	
α2	<10°	0.2	OK	
β1	<5°	0.2	OK	
β2	<5°	2.4	OK	
γ	6.3° Max	0.9	OK	
Z= H tan γ	<.125"		OK	
θ	1.6° Max	0.1	OK	
W= H tan θ	<.0313"		OK	
P_A	0.56" max	0.49	OK	Measure to 0.01"
P_B	0.56" max	0.49	OK	Measure to 0.01"
H	1.125" Max	0.986	OK	
T	>2"	3.86	OK	
X	X ≥ 0.75" for Dn of 0.5"	1.44	OK	

APPENDIX B REGENERATIVE THERMAL OXIZIDER FIELD DATA

VOLUMETRIC FLOW RATE TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		RUN 1	RUN 2	RUN 3
Date	Month/Day/Year	7/13/2021	7/14/2021	7/14/2021
Sampling Time -Start	Military	1455	1210	1420
Sampling Time -Stop	Military	1555	1310	1520
Number of Ports	dimensionless	4	4	4
Number of Points per Port	dimensionless	4	4	4
Stack Static Pressure	Inches Water	-0.60	-0.60	-0.60
Barometric Pressure	Inches Mercury	29.60	29.80	29.80
Standard Orifice Pressure DH@	Inches Water	1.861	1.861	1.861
Meter Correction Factor	dimensionless	1.005	1.005	1.005
Oxygen Concentration	Mole Percent O2	11.3	12.6	12.8
Carbon Dioxide Concentration	Mole Percent CO2	8.9	8.2	8.0
Volume of Gas Metered	Actual Cubic Feet	41.404	40.388	39.927
Volume of Water Collected	Milliliters	762.9	663.8	635.1
Sampling Time	Minutes	60.0	60.0	60.0
Area of Stack	Square Feet	45.913	45.913	45.913
Avg. Sqr. Root Velocity Pressure	Inches Water	1.028	1.030	1.023
Average Orifice Pressure (DH)	Inches Water	1.5	1.5	1.5
Average Stack Temperature	Degrees F	269	270	274
Average Meter Temperature	Degrees F	106	100	105

Calculations

		RUN 1	RUN 2	RUN 3	AVERAGE
Standard Temperature (° F) =	68				
Standard Pressure (inches of Hg) =	29.92				
Volume of Gas Sampled	Standard Dry Cubic Feet	38.515	38.236	37.516	38.089
Molecular Wt. of Stack Gas (dry)	LB/LB-MOLE	29.87	29.81	29.79	29.82
Water vapor in Stack Gas	Percent	48.2	45.0	44.3	45.8
Average Stack Gas Velocity	Feet per second	74.6	74.0	73.6	74.0
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	205,413	203,721	202,711	203,948
Stack Gas Flow Rate	Standard Wet Cubic Feet Per Minute	147,029	146,584	145,031	146,215
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	76,096	80,674	80,722	79,164
Post Test Meter Correction Check	dimensionless	1.00	1.02	1.03	1.02
Percent Difference	Allowed 5% Average	-0.5	1.2	2.8	1.1

VOLUMETRIC FLOW RATE TEST RESULTS
AMITE BIOENERGY, LLC
WET ELECTROSTATIC PRECIPITATOR - OUTLET
GLOSTER, MISSISSIPPI

Title of Run		RUN 1	RUN 2	RUN 3
Date	Month/Day/Year	7/13/2021	7/14/2021	7/14/2021
Sampling Time -Start	Military	1455	1210	1420
Sampling Time -Stop	Military	1555	1310	1520
Number of Ports	dimensionless	2	2	2
Number of Points per Port	dimensionless	8	8	8
Stack Static Pressure	Inches Water	-3.50	-3.50	-3.50
Barometric Pressure	Inches Mercury	29.60	29.80	29.80
Standard Orifice Pressure DH@	Inches Water	1.844	1.844	1.844
Meter Correction Factor	dimensionless	1.006	1.006	1.006
Oxygen Concentration	Mole Percent O2	9.0	12.0	13.0
Carbon Dioxide Concentration	Mole Percent CO2	4.5	4.0	4.0
Volume of Gas Metered	Actual Cubic Feet	41.769	41.485	41.571
Volume of Water Collected	Milliliters	697.6	673.0	685.5
Sampling Time	Minutes	60.0	60.0	60.0
Area of Stack	Square Feet	47.682	47.682	47.682
Avg. Sqr. Root Velocity Pressure	Inches Water	0.890	0.853	0.902
Average Orifice Pressure (DH)	Inches Water	1.5	1.5	1.5
Average Stack Temperature	Degrees F	173	172	171
Average Meter Temperature	Degrees F	104	99	103

Calculations

		RUN 1	RUN 2	RUN 3	AVERAGE
Standard Temperature (° F) =	68				
Standard Pressure (inches of Hg) =	29.92				
Volume of Gas Sampled	Standard Dry Cubic Feet	39.083	39.405	39.206	39.232
Molecular Wt. of Stack Gas (dry)	LB/LB-MOLE	29.08	29.12	29.16	29.12
Water vapor in Stack Gas	Percent	43.6 Saturated	42.5 Saturated	42.1 Saturated	42.7
Average Stack Gas Velocity	Feet per second	60.2	57.4	60.5	59.4
Stack Gas Flow Rate	Actual Cubic Feet Per Minute	172,340	164,115	173,151	169,869
Stack Gas Flow Rate	Standard Wet Cubic Feet Per Minute	141,034	135,406	142,946	139,795
Stack Gas Flow Rate	Standard Dry Cubic Feet Per Minute	79,525	77,900	82,751	80,059
Post Test Meter Correction Check	dimensionless	1.01	1.01	1.01	1.01
Percent Difference	Allowed 5% Average	0.1	-0.1	0.0	0.0

OXYGEN TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Tuesday, July 13, 2021

Analyzer Calibration Data

Analyzer Span (Percent) =		21	**Analyzer ID:**	CitiCell	**Serial #:**	06.35108053.058
DAQ Channel:	1	**Calibration Cylinder ID**	**Cylinder Concentration (Percent)**	**Analyzer Response (Percent)**	**Difference (Percent)**	**Calibration Error, % of Span (Allowable 2%)**
Response Time:	240					
Trailer No.:	T104					
Zero Gas		UHP N2	0.0	0.0	0.0	0.0
High Range Gas		Purified Air	20.9	20.9	0.0	0.0
Mid Range Gas		EB0122479	10.03	10.0	0.0	-0.1

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (Percent)	System Zero (Percent)	System Upscale (Percent)	Upscale Calibration Gas Cylinder Concentration (Percent)
		Initial System		0.6	10.1	
14:55	15:55	RUN 1	11.4	0.2	10.2	10.03

System Zero Bias and Drift			**System Upscale Bias and Drift**			**Test Results**	**RUN #**
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	**Final System Zero Cal. BIAS Response % of Span (Allowed 5%)**	**Zero Drift % of Span (Allowed 3%)**	**Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)**	**Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)**	**Upscale Drift % of Span (Allowed 3%)**	**Oxygen Concentration (Percent-Dry)**	
2.9	0.7	-2.2	0.5	0.7	0.2	**11.3**	RUN 1

OXYGEN TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Wednesday, July 14, 2021

Analyzer Calibration Data

Analyzer Span (Percent) =	21		Analyzer ID:	CitiCell	Serial #:	06.35108053.058
DAQ Channel:	1	Calibration Cylinder ID	Cylinder Concentration (Percent)	Analyzer Response (Percent)	Difference (Percent)	Calibration Error, % of Span (Allowable 2%)
Response Time:	240					
Trailer No.:	T104					
	Zero Gas	UHP N2	0.0	0.0	0.0	0.0
	High Range Gas	Purified Air	20.9	20.9	0.0	0.0
	Mid Range Gas	EB0122479	10.03	10.0	0.0	0.0

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (Percent)	System Zero (Percent)	System Upscale (Percent)	Upscale Calibration Gas Cylinder Concentration (Percent)
		Initial System		0.0	10.1	
12:10	13:10	RUN 2	12.7	0.1	10.2	10.03
14:20	15:20	RUN 3	12.9	0.2	10.1	10.03

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Oxygen Concentration (Percent-Dry)	
0.1	0.5	0.4	0.3	0.6	0.2	**12.6**	RUN 2
0.5	1.0	0.5	0.6	0.4	-0.1	**12.8**	RUN 3

CARBON DIOXIDE TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Tuesday, July 13, 2021

Analyzer Calibration Data

Analyzer Span (Percent) =		11	Analyzer ID:	Teledyne T803	Serial #:	95
DAQ Channel:	4	Calibration Cylinder ID	Cylinder Concentration (Percent)	Analyzer Response (Percent)	Difference (Percent)	Calibration Error, % of Span (Allowable 2%)
Response Time:	150					
Trailer No.:	T104					
	Zero Gas	UHP N2	0.00	0.0	0.0	0.0
	High Range Gas	CC507534	11.08	11.1	0.0	0.0
	Mid Range Gas	CC114656	6.09	6.0	-0.1	-0.5

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (Percent)	System Zero (Percent)	System Upscale (Percent)	Upscale Calibration Gas Cylinder Concentration (Percent)
		Initial System		0.0	11.2	
14:55	15:55	RUN 1	8.9	0.1	11.2	11.08

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Carbon Dioxide Concentration (Percent-Dry)	
0.0	0.9	0.9	0.7	0.8	0.1	**8.9**	RUN 1

CARBON DIOXIDE TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Wednesday, July 14, 2021

Analyzer Calibration Data

Analyzer Span (Percent) =		11.08	Analyzer ID:	Teledyne T803	Serial #:	95
DAQ Channel:	4	Calibration Cylinder ID	Cylinder Concentration (Percent)	Analyzer Response (Percent)	Difference (Percent)	Calibration Error, % of Span (Allowable 2%)
Response Time:	150					
Trailer No.:	T104					
Zero Gas		UHP N2	0.00	0.0	0.0	0.0
High Range Gas		CC507534	11.08	11.1	0.0	0.0
Mid Range Gas		CC114656	6.09	6.0	-0.1	-0.6

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (Percent)	System Zero (Percent)	System Upscale (Percent)	Upscale Calibration Gas Cylinder Concentration (Percent)
		Initial System		0.0	11.0	
12:10	13:10	RUN 2	8.1	0.0	11.0	11.08
14:20	15:20	RUN 3	7.9	0.0	11.0	11.08

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Carbon Dioxide Concentration (Percent-Dry)	
0.0	0.1	0.1	-0.9	-0.8	0.1	**8.2**	RUN 2
0.1	0.0	-0.1	-0.8	-0.5	0.3	**8.0**	RUN 3

NITROGEN OXIDES TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Tuesday, July 13, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	126	**Analyzer ID:** THERMO 42i		**Serial #:** 1170600013	
DAQ Channel: 2 **Response Time:** 150 **Trailer No.:** T104	**Calibration Cylinder ID**	**Cylinder Concentration (PPM)**	**Analyzer Response (PPM)**	**Difference (PPM)**	**Calibration Error, % of Span (Allowable 2%)**
Zero Gas	UHP N2	0.0	0.0	0.0	0.0
High Range Gas	CC114656	125.6	125.6	0.0	0.0
Mid Range Gas	CC507534	55.04	55.4	0.4	0.3
Convertor Test	CC515716	46.35	44.7	Allowed >90%	96.5

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	**Stop Time**	**Run #**	**Analyzer Stack Gas Uncorrected Concentration (PPM)**	**System Zero (PPM)**	**System Upscale (PPM)**	**Upscale Calibration Gas Cylinder Concentration (PPM)**
		Initial System		0.3	53.7	
14:55	15:55	RUN 1	29.8	0.5	54.2	55.0

System Zero Bias and Drift			**System Upscale Bias and Drift**			**Test Results**	**RUN #**
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	**Final System Zero Cal. BIAS Response % of Span (Allowed 5%)**	**Zero Drift % of Span (Allowed 3%)**	**Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)**	**Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)**	**Upscale Drift % of Span (Allowed 3%)**	**Nitrogen Oxides Concentration (PPM-Dry)**	
0.2	0.4	0.2	-1.4	-1.0	0.4	**30.3**	RUN 1

NITROGEN OXIDES TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Wednesday, July 14, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	126	Analyzer ID: THERMO 42i		Serial #: 1170600013	
DAQ Channel: 2 Response Time: 150 Trailer No.: T104	Calibration Cylinder ID	Cylinder Concentration (PPM)	Analyzer Response (PPM)	Difference (PPM)	Calibration Error, % of Span (Allowable 2%)
Zero Gas	UHP N2	0.0	0.0	0.0	0.0
High Range Gas	CC114656	125.6	125.6	0.0	0.0
Mid Range Gas	CC507534	55.04	55.6	0.6	0.5
Convertor Test	CC515716	46.35	44.3	Allowed >90%	95.7

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		1.2	54.3	
12:10	13:10	RUN 2	37.8	0.5	54.4	55.04
14:20	15:20	RUN 3	39.9	0.6	55.2	55.04

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Nitrogen Oxides Concentration (PPM-Dry)	
1.0	0.4	-0.6	-1.1	-1.0	0.1	**38.1**	RUN 2
0.4	0.5	0.1	-1.0	-0.3	0.7	**40.0**	RUN 3

CARBON MONOXIDE TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Tuesday, July 13, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	245	**Analyzer ID:** THERMO 48i		**Serial #:** 1170600014	
DAQ Channel: 3 **Response Time:** 150 **Trailer No.:** T105	**Calibration Cylinder ID**	**Cylinder Concentration (PPM)**	**Analyzer Response (PPM)**	**Difference (PPM)**	**Calibration Error, % of Span (Allowable 2%)**
Zero Gas	UHP N2	0.0	0.0	0.0	0.0
High Range Gas	CC21118	244.6	244.6	0.0	0.0
Mid Range Gas	CC114656	128.7	125.1	-3.6	-1.5
Low Range Gas	CC507534	52.86	50.0	-2.9	-1.2

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	**Stop Time**	**Run #**	**Analyzer Stack Gas Uncorrected Concentration (PPM)**	**System Zero (PPM)**	**System Upscale (PPM)**	**Upscale Calibration Gas Cylinder Concentration (PPM)**
		Initial System		1.1	128.9	
14:55	15:55	RUN 1	182.2	0.8	122.0	128.7

System Zero Bias and Drift			**System Upscale Bias and Drift**			**Test Results**	**RUN #**
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	**Final System Zero Cal. BIAS Response % of Span (Allowed 5%)**	**Zero Drift % of Span (Allowed 3%)**	**Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)**	**Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)**	**Upscale Drift % of Span (Allowed 3%)**	**Carbon Monoxide Concentration (PPM-Dry)**	
0.5	0.3	-0.1	1.5	-1.3	-2.8	**187.4**	RUN 1

CARBON MONOXIDE TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Wednesday, July 14, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	245	Analyzer ID: THERMO 48i		Serial #: 1170600014	
DAQ Channel: 3 Response Time: 150 Trailer No.: T105	Calibration Cylinder ID	Cylinder Concentration (PPM)	Analyzer Response (PPM)	Difference (PPM)	Calibration Error, % of Span (Allowable 2%)
Zero Gas	UHP N2	0.0	0.0	0.0	0.0
High Range Gas	CC21118	244.6	244.6	0.0	0.0
Mid Range Gas	CC114656	128.7	125.8	-2.9	-1.2
Low Range Gas	CC507534	52.86	53.0	0.1	0.1

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		1.4	125.3	
12:10	13:10	RUN 2	90.7	0.8	123.5	128.7
14:20	15:20	RUN 3	95.9	1.2	129.0	128.7

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Carbon Monoxide Concentration (PPM-Dry)	
0.6	0.3	-0.2	-0.2	-0.9	-0.8	**93.5**	RUN 2
0.3	0.5	0.1	-0.9	1.3	2.3	**97.5**	RUN 3

VOLATILE ORGANIC COMPOUNDS TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Tuesday, July 13, 2021

Analyzer Calibration Data

Analyzer Span (PPM) = 101		**Analyzer ID:** THERMO 51iHT		**Serial #:** 14064655	
DAQ Channel: 7 **Response Time:** 180 **Trailer No.:** T104	**Calibration Cylinder ID**	**Cylinder Concentration (PPM)**	**Analyzer Response (PPM)**	**Difference (PPM)**	**Calibration Error, % of Value Allowed 5%**
Zero Gas	EB0122479	0.00	0.0	0.0	0.0
High Range Gas	CC334462	90.92	90.9	0.0	0.0
Mid Range Gas	CC459201	50.33	51.7	-1.4	-2.7
Low Range Gas	XC025792B	30.13	28.9	1.3	4.1

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	**Stop Time**	**Run #**	**Analyzer Stack Gas Uncorrected Concentration (PPM)**	**System Zero (PPM)**	**System Upscale (PPM)**	**Upscale Calibration Gas Cylinder Concentration (PPM)**
		Initial System		-0.8	28.9	
14:55	15:55	RUN 1	11.6	1.3	29.3	30.13

Drift		**Test Results**	**RUN #**
Zero Drift % of Span (Allowed 3%)	**Upscale Drift % of Span (Allowed 3%)**	**Volatile Organic Compounds Concentration (PPM-Wet)**	
-2.1	-0.4	**11.6**	RUN 1

VOLATILE ORGANIC COMPOUNDS TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Wednesday, July 14, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =		101	Analyzer ID: THERMO 51iHT		Serial #: 14064655	
DAQ Channel:	7	Calibration Cylinder ID	Cylinder Concentration (PPM)	Analyzer Response (PPM)	Difference (PPM)	Calibration Error, % of Value Allowed 5%
Response Time:	180					
Trailer No.:	T104					
Zero Gas		EB0122479	0.00	0.0	0.0	0.0
High Range Gas		CC334462	90.92	90.9	0.0	0.0
Mid Range Gas		CC459201	50.33	51.7	-1.4	-2.7
Low Range Gas		XC025792B	30.13	29.6	0.5	1.8

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		-0.6	29.6	
12:10	13:10	RUN 2	8.9	-0.4	27.5	30.13
14:20	15:20	RUN 3	10.2	1.1	29.4	30.13

Drift		Test Results	RUN #
Zero Drift % of Span (Allowed 3%)	Upscale Drift % of Span (Allowed 3%)	Volatile Organic Compounds Concentration (PPM-Wet)	
-0.2	2.0	**8.9**	RUN 2
-1.5	-1.8	**10.2**	RUN 3

VOLATILE ORGANIC COMPOUNDS TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
WET ELECTROSTATIC PRECIPITATOR - OUTLET
Tuesday, July 13, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	1,000	Analyzer ID: THERMO 51iHT		Serial #: 1005440237	
DAQ Channel: 6 Response Time: 120 Trailer No.: T104	Calibration Cylinder ID	Cylinder Concentration (PPM)	Analyzer Response (PPM)	Difference (PPM)	Calibration Error, % of Value Allowed 5%
Zero Gas	EB0122479	0.00	0.0	0.0	0.0
High Range Gas	CC334462	90.92	90.9	0.0	0.0
Mid Range Gas	CC459201	50.33	51.5	-1.2	-2.4
Low Range Gas	XC025792B	30.13	30.5	-0.3	-1.1
High Range 2 Mid Gas	CC258171	522.3	545.8	-23.5	-4.5

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		1.1	546.6	
14:55	15:55	RUN 1	242.6	3.5	531.2	522.3

Drift		Test Results	RUN #
Zero Drift % of Span (Allowed 3%)	Upscale Drift % of Span (Allowed 3%)	Volatile Organic Compounds Concentration (PPM-Wet)	
-0.2	1.5	**242.6**	RUN 1

VOLATILE ORGANIC COMPOUNDS TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
WET ELECTROSTATIC PRECIPITATOR - OUTLET
Wednesday, July 14, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	1,000	Analyzer ID:	THERMO 51iHT	Serial #:	1005440237
DAQ Channel: 6 Response Time: 120 Trailer No.: T104	Calibration Cylinder ID	Cylinder Concentration (PPM)	Analyzer Response (PPM)	Difference (PPM)	Calibration Error, % of Value Allowed 5%
Zero Gas	EB0122479	0.00	0.0	0.0	0.0
High Range Gas	CC334462	90.92	90.9	0.0	0.0
Mid Range Gas	CC459201	50.33	51.7	-1.3	-2.6
Low Range Gas	XC025792B	30.13	29.2	0.9	3.0
High Range 2 Mid Gas	CC258171	522.3	530.0	-7.7	-1.5

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		-0.9	527.5	
12:10	13:10	RUN 2	190.1	4.3	509.2	522.3
14:20	15:20	RUN 3	233.4	2.3	520.9	522.3

Drift		Test Results	RUN #
Zero Drift % of Span (Allowed 3%)	Upscale Drift % of Span (Allowed 3%)	Volatile Organic Compounds Concentration (PPM-Wet)	
-0.5	1.8	**190.1**	RUN 2
0.2	-1.2	**233.4**	RUN 3

OXYGEN TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Thursday, July 15, 2021

Analyzer Calibration Data

Analyzer Span (Percent) =		21	Analyzer ID:	CitiCell	Serial #:	06.35108053.058
DAQ Channel:	1		Cylinder	Analyzer		Calibration
Response Time:	240	Calibration	Concentration	Response	Difference	Error, % of Span
Trailer No.:	T104	Cylinder ID	(Percent)	(Percent)	(Percent)	(Allowable 2%)
Zero Gas		UHP N2	0.0	0.0	0.0	0.0
High Range Gas		Purified Air	20.9	20.9	0.0	0.0
Mid Range Gas		EB0122479	10.03	10.0	0.0	0.0

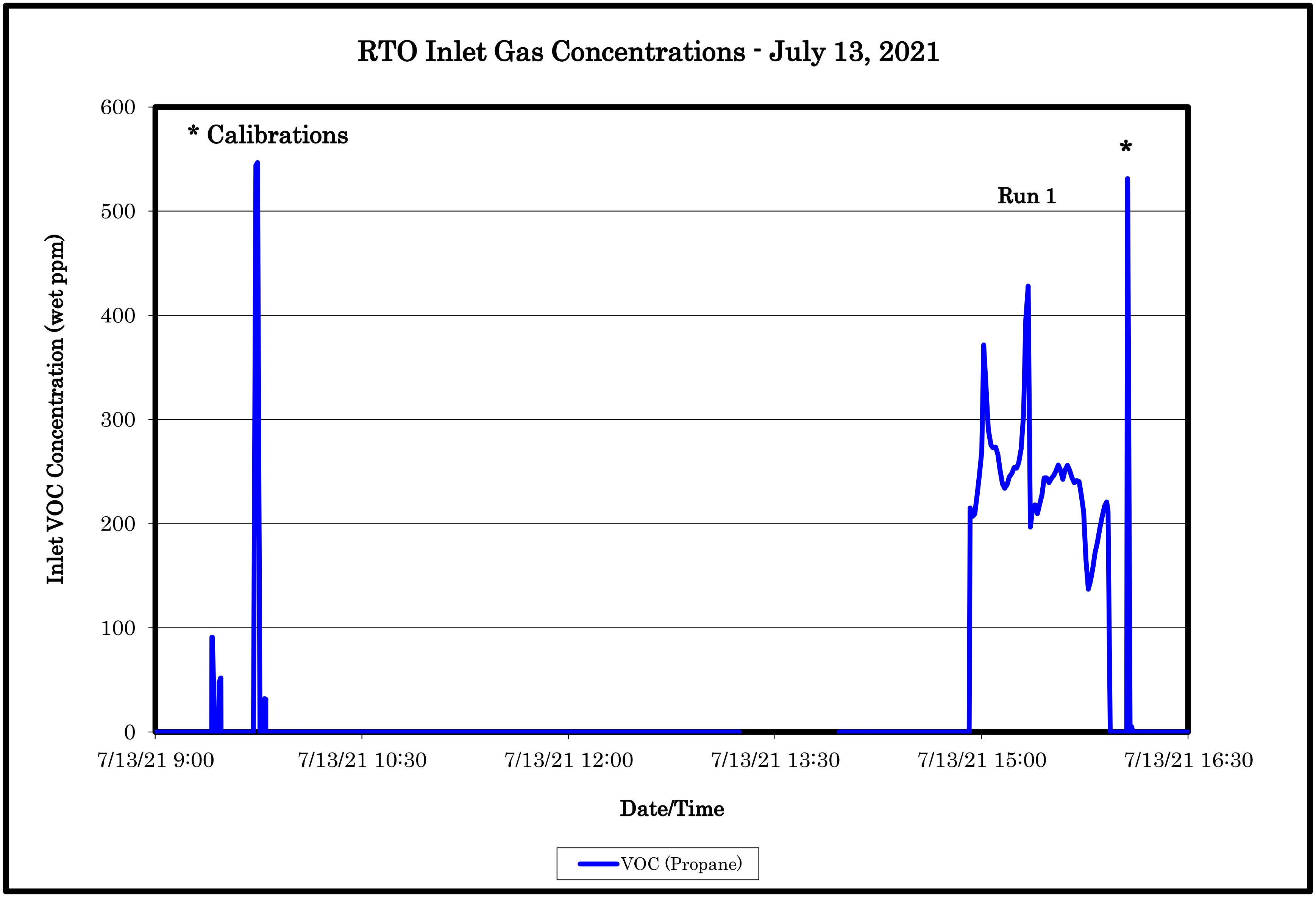
Test Results and Analyzer Calibration Bias and Drift Data

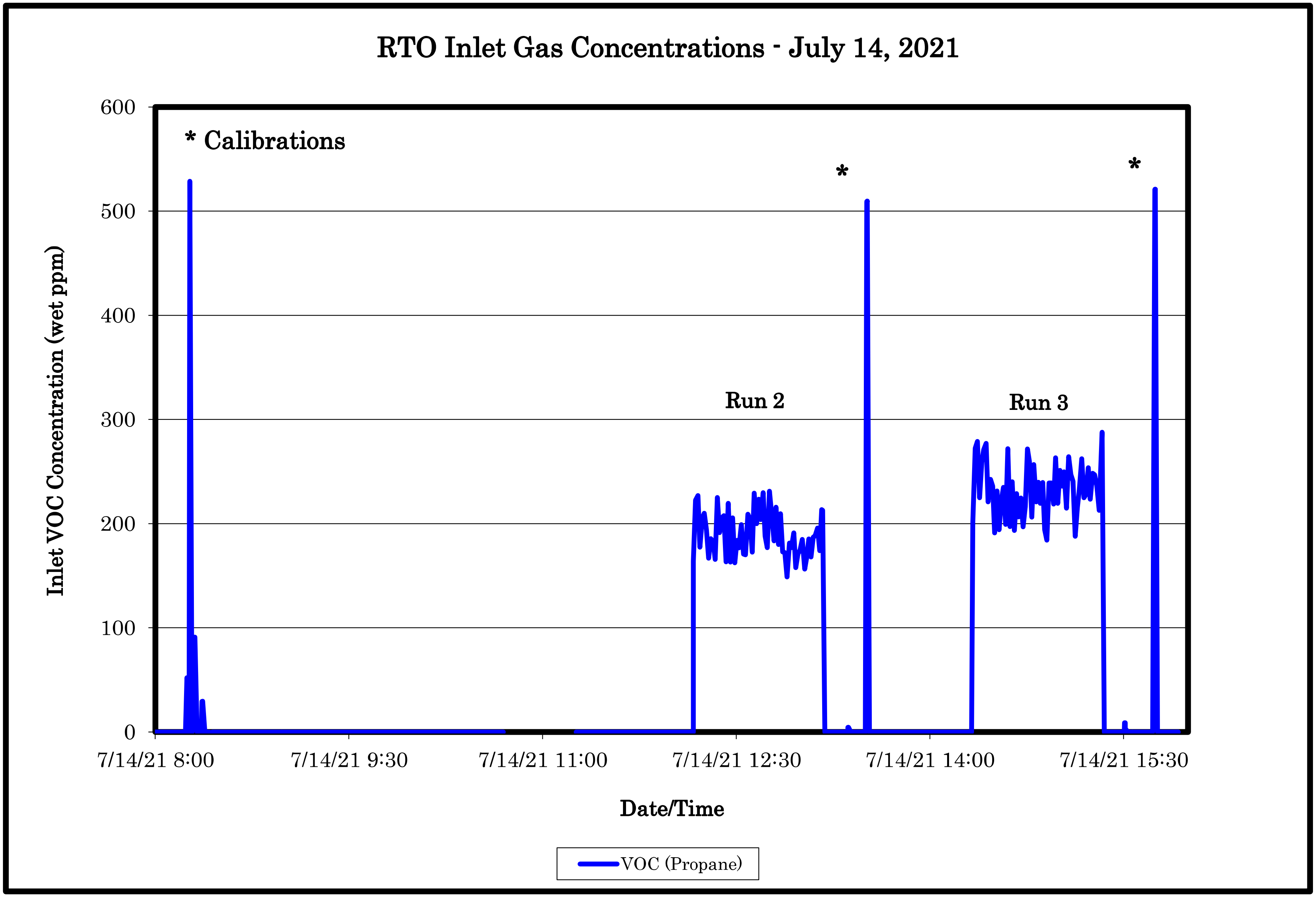
Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (Percent)	System Zero (Percent)	System Upscale (Percent)	Upscale Calibration Gas Cylinder Concentration (Percent)
		Initial System		0.0	10.0	
8:26	9:37	RUN 1a	12.9	0.1	10.1	10.03
10:04	10:14	RUN 1b	13.8	0.1	10.1	10.03
11:20	12:40	RUN 2	13.7	0.0	10.0	10.03
13:38	14:24	RUN 3a	14.3	0.1	10.0	10.03
16:39	17:07	RUN 3b	13.2	0.1	10.0	10.03

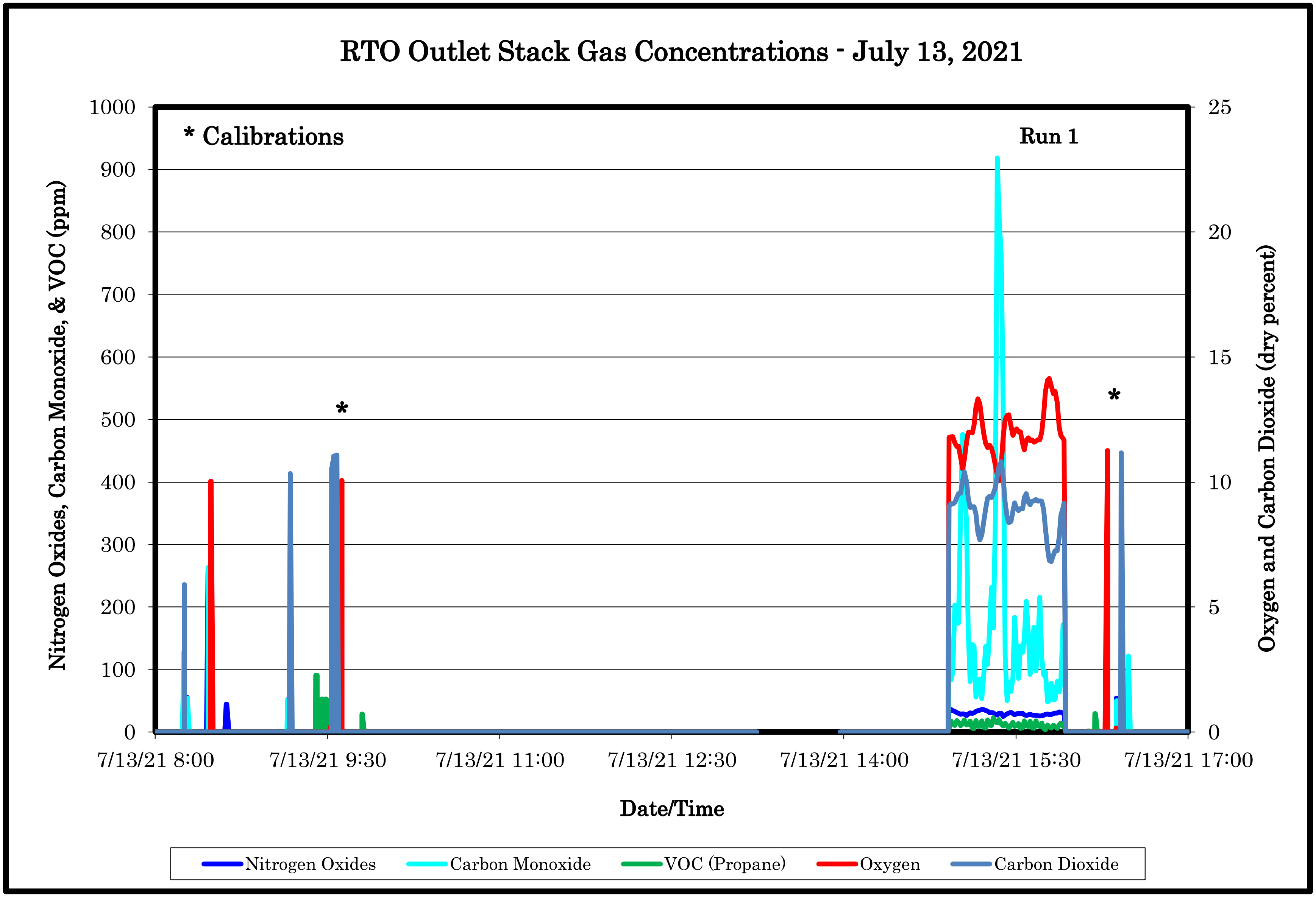
System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Oxygen Concentration (Percent-Dry)	
0.0	0.5	0.6	-0.2	0.1	0.3	**13.0**	RUN 1a
0.5	0.2	-0.3	0.1	0.1	0.0	**13.8**	RUN 1b
					Run 1 time weighted average	**13.1**	RUN 1
0.2	0.0	-0.2	0.1	0.0	-0.1	**13.7**	RUN 2
0.0	0.4	0.4	0.0	0.0	0.0	**14.3**	RUN 3a
0.4	0.4	0.0	0.0	0.0	0.0	**13.2**	RUN 3b
					Run 3 time weighted average	**13.9**	RUN 3

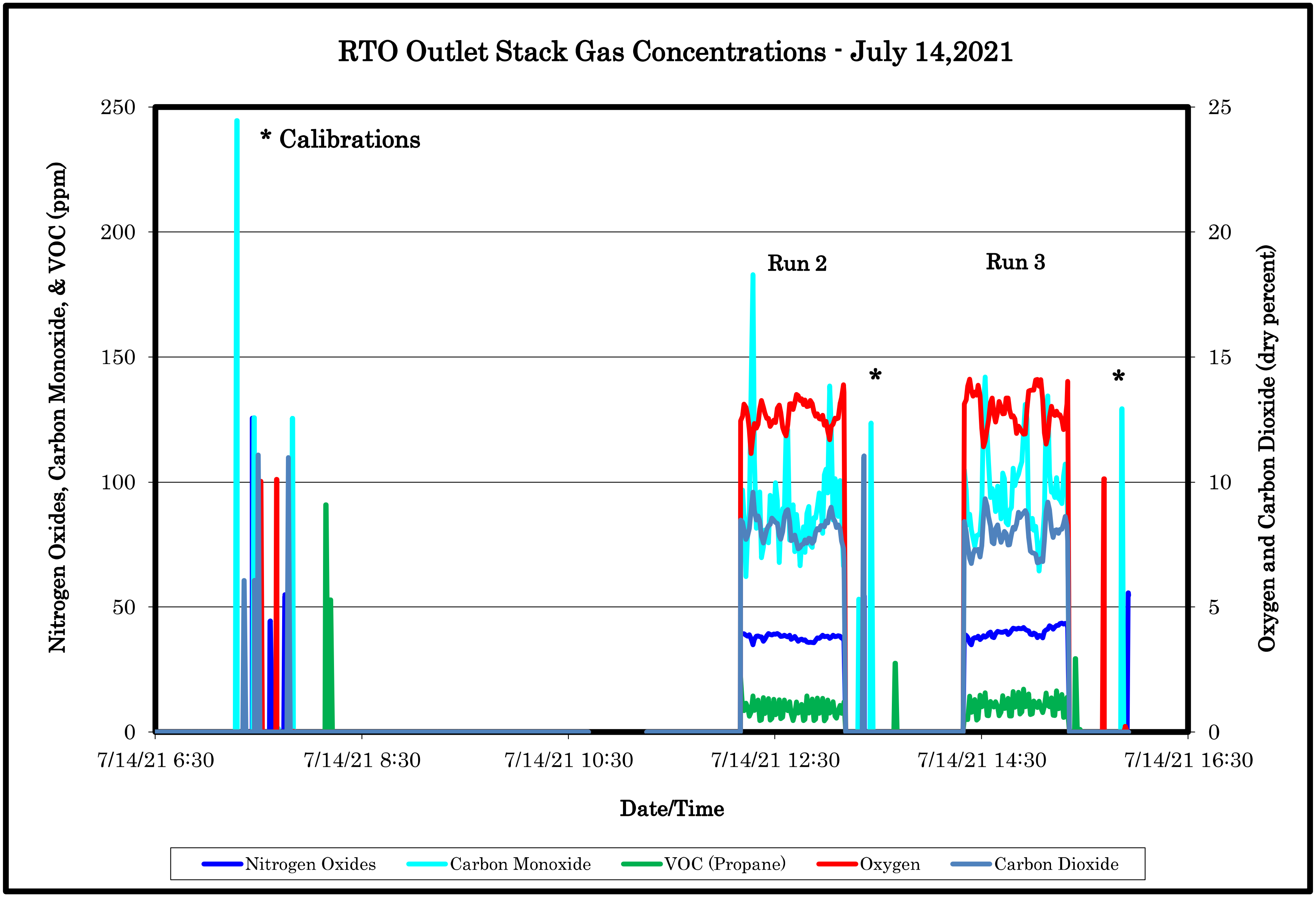
STRATIFICATION TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE THERMAL OXIDIZER - OUTLET
Tuesday, July 13, 2021

TEST	Start Time	Stop Time	Oxygen		Carbon Dioxide		Nitrogen Oxides			Carbon Monoxide		
	Military	Military	Concentration (percent)	Concentration Difference (% O2)	Concentration (percent)	Concentration Difference (%CO2)	Concentration (ppm)	Concentration Difference (ppm)	Stratification (Percent)	Concentration (ppm)	Concentration Difference (ppm)	Stratification (Percent)
Stratification-1	13:35	13:40	12.70	0.39	8.07	0.25	42.20	0.05	0.1%	32.40	0.22	0.7%
Stratification-2	13:40	13:45	12.74	0.35	8.17	0.35	43.60	1.45	3.4%	39.80	7.62	23.7%
Stratification-3	13:45	13:50	13.10	0.01	7.77	0.05	42.31	0.16	0.4%	37.80	5.62	17.5%
Stratification-4	13:50	13:55	12.90	0.19	7.94	0.12	41.78	0.37	0.9%	33.95	1.77	5.5%
Stratification-5	13:55	14:00	13.20	0.11	7.75	0.07	41.86	0.29	0.7%	30.64	1.54	4.8%
Stratification-6	14:00	14:05	13.20	0.11	7.58	0.24	42.10	0.05	0.1%	32.17	0.01	0.0%
Stratification-7	14:05	14:10	12.80	0.29	8.07	0.25	43.84	1.69	4.0%	31.60	0.58	1.8%
Stratification-8	14:10	14:15	13.10	0.01	7.95	0.13	42.46	0.31	0.7%	31.92	0.27	0.8%
Stratification-9	14:15	14:20	13.50	0.41	7.33	0.49	40.52	1.63	3.9%	26.85	5.33	16.6%
Stratification-10	14:20	14:25	13.20	0.11	7.77	0.05	41.86	0.29	0.7%	26.28	5.90	18.3%
Stratification-11	14:25	14:30	13.20	0.11	7.82	0.00	41.60	0.55	1.3%	32.64	0.46	1.4%
Stratification-12	14:30	14:35	13.40	0.31	7.59	0.23	41.70	0.45	1.1%	30.14	2.04	6.3%
Average			13.09	0.20	7.82	0.19	42.15	0.61	1.4%	32.18	2.61	8.1%
Maximum Value				**0.39**		**0.35**		**1.45**	**3.4%**		**7.62**	**23.7%**
Concentration Difference				**0.39**		**0.35**		**1.45**	**3.4%**		**7.62**	**23.7%**
Number of Points to Sample = 1												


RTO Inlet Gas Concentrations - July 13, 2021
* Calibrations
*
Run 1
Inlet VOC Concentration (wet ppm)
600
500
400
300
200
100
0
7/13/21 9:00
7/13/21 10:30
7/13/21 12:00
7/13/21 13:30
7/13/21 15:00
7/13/21 16:30
Date/Time
VOC (Propane)


RTO Inlet Gas Concentrations - July 14, 2021
* Calibrations
*
*
Run 2
Run 3
Inlet VOC Concentration (wet ppm)
600
500
400
300
200
100
0
7/14/21 8:00
7/14/21 9:30
7/14/21 11:00
7/14/21 12:30
7/14/21 14:00
7/14/21 15:30
Date/Time
VOC (Propane)

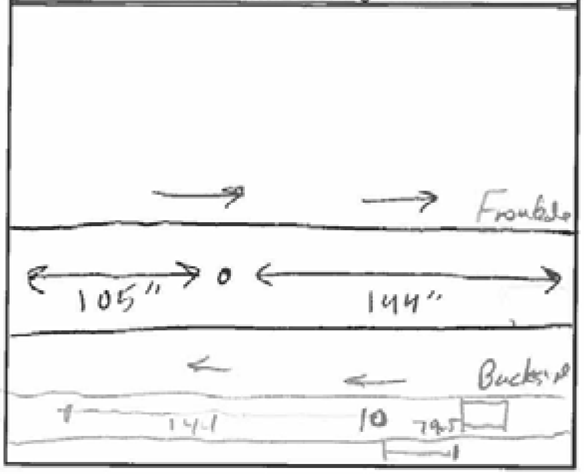

RTO Outlet Stack Gas Concentrations - July 13, 2021
* Calibrations
Run 1
*
*
Nitrogen Oxides, Carbon Monoxide, & VOC (ppm)
1000
900
800
700
600
500
400
300
200
100
0
Oxygen and Carbon Dioxide (dry percent)
25
20
15
10
5
0
7/13/21 8:00
7/13/21 9:30
7/13/21 11:00
7/13/21 12:30
7/13/21 14:00
7/13/21 15:30
7/13/21 17:00
Date/Time
Nitrogen Oxides
Carbon Monoxide
VOC (Propane)
Oxygen
Carbon Dioxide


RTO Outlet Stack Gas Concentrations - July 14,2021
* Calibrations
Run 2
Run 3
*
*
Nitrogen Oxides, Carbon Monoxide, & VOC (ppm)
Oxygen and Carbon Dioxide (dry percent)
250
200
150
100
50
0
25
20
15
10
5
0
7/14/21 6:30
7/14/21 8:30
7/14/21 10:30
7/14/21 12:30
7/14/21 14:30
7/14/21 16:30
Date/Time
Nitrogen Oxides
Carbon Monoxide
VOC (Propane)
Oxygen
Carbon Dioxide

Method 1 and Stack Configuration Data Sheet

COMPANY Drax DATE 7-12-21
PLANT Amite City/State
UNIT RTO inlet Location Stack

Stack location & configuration

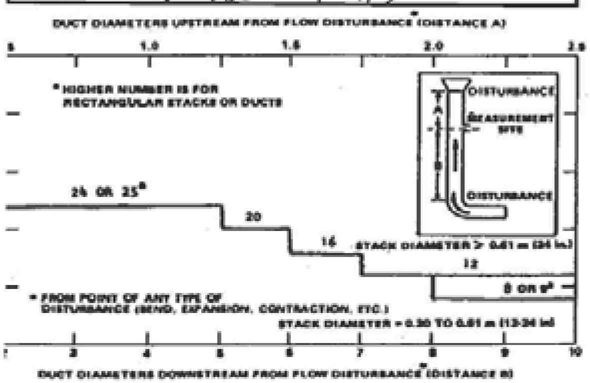


Circular Stacks
Distance from back wall to port ext. (A) (in.) 100.5
Port Ext. (B) (in.) 7
Duct Diameter (A-B)in. 93.5
Points per Port
Port dia. 3 in. Threaded of Flanged

Rectangular Stacks
Distance from back wall to port ext. (A) (in.)
Port Ext. (B) (in.)
Duct Depth (A-B) (in.)
Duct Width (in.)
Number of Ports
Points per Port
Port dia. in.Threaded of Flanged

Flow Disturbances

	Feet	No. Of Duct Diameters
Upstream A	8.75	~1.1
Downstream B	12	~1.5



Test Point Locations

Traverse Point	Distance from Port Ext. (in.)	Velocity Head (in.water)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Helpful Hints / Comments

Form-DS104 REV 9-28-17

Sanders Engineering & Analytical Services, Inc.
Cyclonic Flow Check

Company: Drax
Plant: Amite
Unit: RTO Inlet
Comments
Leak Check (pre test)

Time:
Operator: RJR
Date: 7-13-21
(post test)

Port # Point#	Angle Of Deviation
1-1	2
2	2
3	5
4	2
5	0
6	0
7	0
8	0
2-1	5
2	2
3	0
4	0
5	0
6	2
7	2
8	2

Port # Point#	Angle Of Deviation

Average Angle Of Deviation: ______ Degrees
(Allowable: 20 Degrees)

Form-DS103 REV 9-28-17

Sanders Engineering & Analytical Services, Inc.

Moisture - EPA Method 4

COMPANY Drax DATE 4-13-21 BOX No. 5202 DHa 1.844 Y 1.006

PLANT Amite OPERATOR RLC UNIT RTO (inlet)

BALANCE No. BB001 STD. WT. ID 7967 BALANCE RESPONSE (gm) 2000.1

Run # 1

METER READING	LEAK CHECK Pre	LEAK CHECK Post
41.769		
0.000	15	10
41.769	.009	.005

VOLUME OF LIQUID WATER COLLECTED ml. - gr.

Imp 1	Imp 2	Imp 3	Imp 4
1904.9	899.1	763.6	2337.6
1261.9	857.1	759.7	2329.9
643	42	3.9	8.7
		Total	699.6

Pressure STATIC	Pressure BAROMETRIC	Gas Analysis	
-2.60	29.60	O_2 %	9.0
		CO_2 %	4.5
		CO %	

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp
1455	0.000	1.5	103	39
1500	3.6	↓	102	41
05	6.9		102	42
10	10.8		102	43
15	13.9		103	44
20	17.3		104	45
25	20.8		104	45
30	24.2		104	46
35	27.8		104	47
40	31.3		105	48
45	34.7		105	48
50	38.3		106	49
1555	41.769			

Run # 2

4-14-21

METER READING	LEAK CHECK Pre	LEAK CHECK Post
0.000	15	
	.006	

VOLUME OF LIQUID WATER COLLECTED ml. - gr.

Imp 1	Imp 2	Imp 3	Imp 4
1285.8	895.6	759.6	2337.3
		Total	

Pressure STATIC	Pressure BAROMETRIC	Gas Analysis	
-3.50	29.80	O_2 %	
		CO_2 %	
		CO %	

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp
1042	0.000	1.5	84	40
47	3.4	↓	84	41
52	6.8		86	42
59	10.3		87	43
1102	13.7		89	44
07	17.1		91	45
12	20.6		91	46

Run

METER READING	LEAK CHECK Pre	LEAK CHECK Post

VOLUME OF LIQUID WATER COLLECTED ml. - gr.

Imp 1	Imp 2	Imp 3	Imp 4
		Total	

Pressure STATIC	Pressure BAROMETRIC	Gas Analysis	
		O_2 %	
		CO_2 %	
		CO %	

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp

Comments:

Form DS-105 REV 9-28-17

Sanders Engineering & Analytical Services, Inc.

Moisture - EPA Method 4

COMPANY Drax DATE 7-14-21 BOX No. 5202 DHa 1.844 Y 1.006

PLANT Amite OPERATOR RLC UNIT RTO (inlet)

BALANCE No. BB004 STD. WT. ID 7967 BALANCE RESPONSE (gm) 2000.1

	Run # 2			Run # 3			Run #		
	METER READING	LEAK CHECK Pre	LEAK CHECK Post	METER READING	LEAK CHECK Pre	LEAK CHECK Post	METER READING	LEAK CHECK Pre	LEAK CHECK Post
Final / Vac	41.485	15	10	41.571	15	10			
Initial / In. Hg	0.000	15	10	0.000	15	10			
Net / Rate	41.485	.003	.002	41.571	.005	.002			

VOLUME OF LIQUID WATER COLLECTED ml. - gr.

	Run 2 Imp 1	Run 2 Imp 2	Run 2 Imp 3	Run 2 Imp 4	Run 3 Imp 1	Run 3 Imp 2	Run 3 Imp 3	Run 3 Imp 4	Imp 1	Imp 2	Imp 3	Imp 4
Final	1886.5	858.0	993.0	2353.1	1891.2	871.2	763.1	2310.6				
Initial	1267.1	831.6	980.3	2343.6	1268.0	828.6	760.2	2294.1				
Net	619.4	26.4	12.7	14.5	621.2	42.6	3.2	16.5				
Total				673.0				685.5				

	Run 2	Run 3	Run
Pressure STATIC (In. H_2O)	-3.50	-3.50	
Pressure BAROMETRIC (In. Hg)	29.80	29.80	
Gas Analysis O_2 %	12.0	13.0	
Gas Analysis CO_2 %	5.0	4.0	
Gas Analysis CO %			

Run # 2

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp
1210	0.000	1.5	93	41
15	3.8	↓	93	42
20	6.9		94	43
25	10.3		96	44
30	13.8		97	45
35	17.3		98	45
40	20.9		101	47
45	24.2		101	49
50	27.6		102	51
55	31.0		102	52
1300	34.5		103	53
05	38.0		104	55
1310	41.485		104	58

Run # 3

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp
1420	0.000	1.5	98	45
25	3.4	↓	98	45
30	6.8		99	46
35	10.3		101	47
40	13.6		102	47
45	17.2		103	48
50	20.7		104	48
55	24.1		104	49
1500	27.7		105	50
05	31.1		105	51
10	34.5		106	52
15	38.0		107	53
1520	41.571		107	55

Run #

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp

Comments:

Form DS-105 REV 9-28-17

Velocity & Temperature Field Data Sheet

Company: Drax Plant: Amite Unit: RTO(inlet) Date: 7-13-21

Run:	1		2					
Duct Dimensions:	7-13-21		7-14-21					
Start/Finish Time:	1503 / 1524		1048 / 1110		/		/	
% O_2:	9.0	% CO_2: 4.5		% CO_2:		% CO_2:		% CO_2:
% H2O: Dry Bulb (°F)		Wet Bulb		Wet Bulb		Wet Bulb		Wet Bulb
Pbar:	29.60	Static: -3.50	29.60	Static: -3.50		Static:		Static:
Team Members:	RLC/RR		RLC/RR					
Post Leak check	✓		✓					

Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F
1-1	.29	171	1-1	.26	172						
2	.23	171	2	.21	171						
3	.20	172	3	.22	174						
4	.77	173	4	.25	174						
5	1.50	174	5	1.20	175						
6	1.50	174	6	1.50	176						
7	1.50	173	7	1.40	176						
8	1.40	173	8	1.50	176						
2-1	.44	173	2-1	~~1.30~~	~~303~~						
2	.45	173	RLC 2	.48	174						
3	.37	172	3	.36	173						
4	.47	173	4	.35	173						
5	1.50	173	5	.33	174						
6	1.30	173	6	1.20	175						
7	1.20	172	7	1.50	175						
8	1.30	173	8	1.40	174						
				1.40	174						

Form DS-108 REV 9-28-17

Velocity & Temperature Field Data Sheet

Company: Drax Plant: Amite Unit: RTO (inlet) Date: 7-14-21

Run	2			3								
Duct Dimensions												
Start/Finish Time	1217 / 1223			1435 / 1454			/			/		
% O_2	12.0	% CO_2	7.0	13.0	% CO_2	4.0		% CO_2			% CO_2	
% H2O: Dry Bulb (°F)	—	Wet Bulb	—	—	Wet Bulb	—		Wet Bulb			Wet Bulb	
Pbar	29.80	Static	-3.50	29.80	Static	-3.50		Static			Static	
Team Members	RLC/RR			RLC/RR								
Post Leak check	✓			✓								

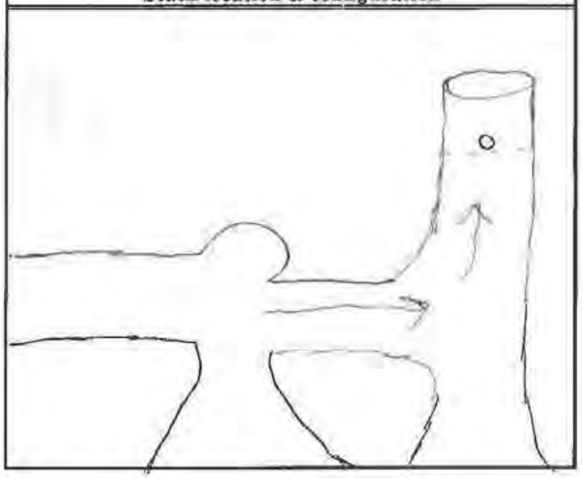
Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F
1-1	.30	170	1-1	.34	169						
2	.23	170	2	.22	170						
3	.19	170	3	.25	171						
4	.28	172	4	1.20	172						
5	1.10	172	5	.70	171						
6	1.40	172	6	1.25	172						
7	1.30	172	7	1.60	171						
8	1.50	172	8	1.50	171						
2-1	.24	172	2-1	.60	173						
2	.44	172	2	.48	173						
3	.44	172	3	.45	172						
4	.42	172	4	.42	172						
5	.65	172	5	.70	172						
6	1.60	173	6	1.50	172						
7	1.60	173	7	1.55	171						
8	1.60	173	8	1.55	171						

Form DS-108 REV 9-28-17

Method 1 and Stack Configuration Data Sheet

COMPANY Drax DATE 7-12-21
PLANT Amite City/State Gloster, MS
UNIT RTO Outlet Location Stack

Stack location & configuration

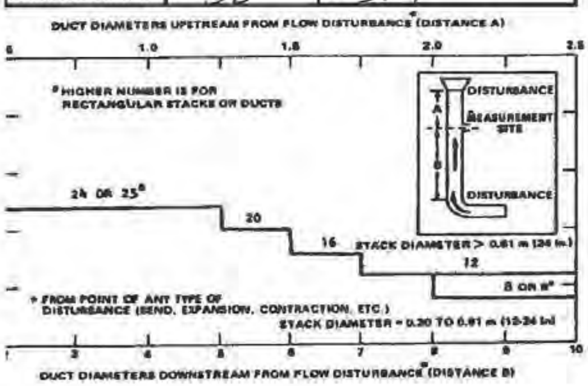


Circular Stacks	
Distance from back wall to port ext. (A) (in.)	97.75
Port Ext. (B) (in.)	6
Duct Diameter (A-B)in.	91.75
Points per Port	4
Port dia. 6.5 in. Threaded of Flanged	

Rectangular Stacks	
Distance from back wall to port ext. (A) (in.)	
Port Ext. (B) (in.)	
Duct Depth (A-B) (in.)	
Duct Width (in.)	
Number of Ports	
Points per Port	
Port dia. ____ in.Threaded of Flanged	

Flow Disturbances

	Feet	No. Of Duct Diameters
Upstream A	15	~1.8
Downstream B	30	~3.4



Test Point Locations

Traverse Point	Distance from Port Ext. (in.)	Velocity Head (in.water)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

Helpful Hints / Comments

Form-DS104 REV 9-28-17

Sanders Engineering & Analytical Services, Inc.

Moisture - EPA Method 4

COMPANY Drax DATE 7-13-21 BOX No. S208 DHa 1.861 Y 1.005

PLANT Amite OPERATOR KLC UNIT RTO (outlet)

BALANCE No. 138006 STD. WT. ID 7964 BALANCE RESPONSE (gm) 2000.2

Run # 1

METER READING	LEAK CHECK Pre	LEAK CHECK Post
41.404	15	10
0.000	.005	.003
41.404		

VOLUME OF LIQUID WATER COLLECTED ml. - gr.

Imp 1	Imp 2	Imp 3	Imp 4
1888.8	886	710.6	2315.7
1200.9	841.7	698.3	2597.3
689.9	44.3	12.3	184
		Total	962.9

STATIC	BAROMETRIC	Gas Analysis	
-.60	29.60	O_2 %	inst.
		CO_2 %	inst.
		CO %	

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp
1455	0.000	1.5	106	42
1500	3.6	↓	105	43
05	6.8		105	44
10	10.3		105	45
15	13.8		106	46
20	17.2		106	47
25	20.6		107	48
30	24.1		107	49
35	27.5		107	50
40	31.1		107	50
45	34.4		108	51
50	37.9		108	52
1555	41.404			

Run # 2

METER READING	LEAK CHECK Pre	LEAK CHECK Post
	15	
0.000	.005	

VOLUME OF LIQUID WATER COLLECTED ml. - gr.

Imp 1	Imp 2	Imp 3	Imp 4
1200.1	841.7	698.6	2315.7
		Total	

STATIC	BAROMETRIC	Gas Analysis	
-.60	29.80	O_2 %	inst.
		CO_2 %	inst.
		CO %	

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp
1142	0.000	1.6	87	41
47	3.4	↓	88	42
52	6.7		89	43
57	10.0		90	44
1102	13.4		91	44
07	16.8		93	46
12	20.2		93	47

Run #

METER READING	LEAK CHECK Pre	LEAK CHECK Post

VOLUME OF LIQUID WATER COLLECTED ml. - gr.

Imp 1	Imp 2	Imp 3	Imp 4
		Total	

STATIC	BAROMETRIC	Gas Analysis	
		O_2 %	
		CO_2 %	
		CO %	

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp. Temp

Comments:

Form DS-105 REV 9-28-17

Sanders Engineering & Analytical Services, Inc.

Moisture · EPA Method 4

COMPANY Drax DATE 7-14-21 BOX No. 1203 DH@ 1.811 / 1.005

PLANT Amite OPERATOR RLC UNIT RTO (outlet)

BALANCE No. BC006 STD. WT. ID 3967 BALANCE RESPONSE (gm) 2000.2

	Run # 2	Run # 3	Run #
Meter Reading	40.388 / 0.000 / 40.388	39.927 / 0.000 / 39.927	
Leak Check Pre	15 / .006	15 / .008	
Leak Check Post	10 / .003	10 / .004	

1838.2 873.8 721.3 2358.1 RLC

Volume of Liquid Water Collected ml · gr.

Run	Imp 1	Imp 2	Imp 3	Imp 4
Run 2	1861.6	881.1	720.9	2352.4
	1228.2	858.2	719.3	2346.5
	633.4	22.9	1.6	5.9
			Total	663.8
Run 3	~~1840.2~~	~~874.2~~	~~721.4~~	~~2353.4~~
	1229.9	859.5	718.7	2352.4
	610.5	16.3	2.6	~~1.0~~ 5.7
			Total	635.1
Run				
			Total	

	Static	Barometric	O_2 %	CO_2 %	CO %
Run 2	-.60	29.80	inst.	inst.	
Run 3	-.60	29.80	inst.	inst.	
Run					

Run 2

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp Temp
1210	0.000	1.5	95	43
15	3.6	↓	95	44
20	6.6		96	45
25	10.0		97	46
30	13.3		98	47
35	16.8		100	48
40	20.1		101	48
45	23.5		102	49
50	26.9		103	50
55	30.2		103	53
1300	33.6		104	55
05	39.0		105	56
1310	40.388		105	57

Run 3

Time	Gas Meter Volume Cu. Ft.	DH In. H_2O	Meter Temp	Imp Temp
1420	0.000	1.5	101	44
25	3.3	↓	101	44
30	6.6		102	45
35	10.0		103	45
40	13.2		104	46
45	16.5		104	46
50	19.8		105	47
55	23.1		105	48
1500	26.7		106	49
05	29.8		106	50
10	33.2		107	52
15	36.5		107	53
1520	39.927		108	54

Comments:

Form DS-105 REV 9-28-17

Velocity & Temperature Field Data Sheet

Company: Drax Plant: Amite Unit: RTO (Outlet) Date: 7-13-21

Run	1			2			2 (Pre)			3		
Duct Dimensions	7-13-21			7-13-21			7-14-21					
Start/Finish Time	1455 / 1501			1559 / 1604			1054 / 1059			/		
% O_2	inst.	% CO_2	inst.	inst.	% CO_2	inst.	inst.	% CO_2	inst.		% CO_2	
% H2O Dry Bulb (°F)	/	Wet Bulb	/	/	Wet Bulb	/	/	Wet Bulb	/		Wet Bulb	
Pbar	29.60	Static	-.60	29.60	Static	-.60	29.84	Static	-.60		Static	
Team Members	RLC/CH			RLC/CH			RLC/CH					
Post Leak check	✓			✓			✓					

Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F
1-1	1.10	236	1-1	1.25	245	1-1	1.20	290			
2	.95	242	2	.95	270	2	1.10	299			
3	1.00	242	3	1.00	291	3	.95	241			
4	1.10	249	4	1.05	283	4	1.00	240			
2-1	1.00	314	2-1	.85	230	2-1	.80	228			
2	1.10	328	2	.80	228	2	.85	232			
3	1.30	300	3	1.05	228	3	1.15	259			
4	1.30	315	4	1.25	233	4	1.20	268			
3-1	.85	249	3-1	.80	260	3-1	.85	275			
2	.80	264	2	.85	279	2	.90	288			
3	1.15	268	3	1.20	287	3	1.10	253			
4	1.30	266	4	1.30	297	4	1.15	241			
4-1	1.25	300	4-1	1.10	330	4-1	1.30	303			
2	1.25	337	2	1.00	300	2	1.15	238			
3	1.10	324	3	1.00	232	3	1.05	259			
4	1.05	229	4	.95	223	4	1.05	264			

Form DS-108 REV 9-28-17

Velocity & Temperature Field Data Sheet

Company: Drax Plant: Amite Unit: RTO (outlet) Date: 7-14-21

Run	3			4								
Duct Dimensions												
Start/Finish Time	1311 / 1316			1521 / 1529			/			/		
% O_2	inst.	% CO_2	inst.	inst.	% CO_2	inst.		% CO_2			% CO_2	
% H2O: Dry Bulb (°F)	—	Wet Bulb	—	—	Wet Bulb	—		Wet Bulb			Wet Bulb	
Pbar	29.80	Static	-.60	29.80	Static	-.60		Static			Static	
Team Members	RLC/CH			RLC/CH								
Post Leak check	✓			✓								

Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F
1-1	1.30	303	1-1	.80	256						
2	1.35	292	2	.95	298						
3	1.05	250	3	1.05	316						
4	1.00	258	4	1.10	224						
2-1	1.20	256	2-1	1.15	302						
2	1.20	274	2	1.00	305						
3	1.05	304	3	.95	250						
4	1.05	314	4	1.00	267						
3-1	.95	305	3-1	.85	268						
2	.95	311	2	.90	280						
3	1.10	280	3	1.20	262						
4	1.25	262	4	1.30	267						
4-1	.80	233	4-1	.80	226						
2	.80	241	2	.80	232						
3	1.00	269	3	1.15	276						
4	1.25	299	4	1.40	303						

Form DS-108 REV 9-28-17

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

2255 Schillinger Rd N, Semmes, AL 36575 Phone: (251) 633-4120

SAMPLE COLLECTION DATA SHEET

Company: Drax		Unit: RTO		Run #: 1	
Pollutant:		Date: 7-13-21		Tester: MS	
Meter Box ID:	3013-005	A Meter Factor (Y):	1.016		
Barometric (in. Hg):	30.18		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	15	15	
Oxygen %:		Leak Rate (Lpm):	0.005	0.006	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1455	0.000	111	40	500	4
1500	2.4	111	40		4
1505	5.2	111	40		4
1510	7.9	111	40		4
1515	10.1	111	40		4
1520	12.5	111	40		4
1525	15.0	112	40		4
1530	17.4	112	40		3
1535	20.0	112	40		3
1540	22.4	112	40		3
1545	25.0	112	40		3
1550	27.5	113	40		3
1555	30.015				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Duplicate

Company: Drax		Unit: RTO		Run #: 1	
Pollutant:		Date: 7-13-21		Tester: MS	
Meter Box ID:	3013-005	B Meter Factor (Y):	0.979		
Barometric (in. Hg):	30.18		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	17	15	
Oxygen %:		Leak Rate (Lpm):	0.008	0.005	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1455	0.000	114	40	500	1
1500	2.4	114	40		1
1505	5.1	114	40		2
1510	7.4	114	40		2
1515	10.1	115	40		2
1520	12.4	116	40		2
1525	15.0	117	40		2
1530	17.4	117	40		2
1535	20.0	118	40		2
1540	22.5	118	40		2
1545	24.9	119	40		2
1550	27.5	120	40		2
1555	30.053				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Low Flow Meter Box Sample Data Sheet, Rev. 1

Effective Date: May 17, 2019
Approved by: JEJ

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

2255 Schillinger Rd N, Semmes, AL 36575 Phone: (251) 633-4120

SAMPLE COLLECTION DATA SHEET

Spike Low

Company: Drax		Unit: RTO		Run #: 2	
Pollutant:		Date: 7-14-21		Tester: MS	
Meter Box ID:	308-005	A Meter Factor (Y):	1.016		
Barometric (in. Hg):	30.22		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	16	15	
Oxygen %:		Leak Rate (Lpm):	0.006	0.002	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1210	0.000	95	41	500	1
1215	2.5	95	41		1
1220	4.9	96	41		1
1225	7.5	96	41		1
1230	9.9	97	41		1
1235	12.5	97	41		1
1240	14.9	98	41		1
1245	17.4	98	41		1
1250	20.0	99	41		1
1255	22.5	99	41		2
1300	25.0	100	41		2
1305	27.4	101	41		2
1310	30.121				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				

Final Volume with Wash (ml):	
Condensate Sample Label ID:	
Tube Sample Label ID:	

unspike low

Company: Drax		Unit: RTO		Run #: 2	
Pollutant:		Date: 7-14-21		Tester: MS	
Meter Box ID:	303-005	B Meter Factor (Y):	0.979		
Barometric (in. Hg):	30.22		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	16	15	
Oxygen %:		Leak Rate (Lpm):	0.004	0.005	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1210	0.000	97	41	500	1
1215	2.5	97	41		1
1220	5.0	98	41		1
1225	7.4	99	41		1
1230	9.9	100	41		1
1235	12.6	101	41		1
1240	14.9	102	41		1
1245	17.5	102	41		1
1250	20.0	103	41		1
1255	22.5	104	41		1
1300	24.9	105	41		1
1305	27.5	106	41		1
1310	30.072				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				

Final Volume with Wash (ml):	
Condensate Sample Label ID:	
Tube Sample Label ID:	

Low Flow Meter Box Sample Data Sheet, Rev. 1

Effective Date: May 17, 2019
Approved by: JEJ

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

2255 Schillinger Rd N, Semmes, AL 36575 Phone: (251) 633-4120

SAMPLE COLLECTION DATA SHEET

High Spike

Company: Drax		Unit: RTO		Run #: 3	
Pollutant:		Date: 7-14-21		Tester: MS	
Meter Box ID:	30B-005	A Meter Factor (Y):		1.016	
Barometric (in. Hg):	30.22		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	15	16	
Oxygen %:		Leak Rate (Lpm):	0.008	0.006	
Carbon Dioxide %:		Tube ID:			
Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1420	0.000	105	40	500	3
1425	2.6	105	40		3
1430	5.1	105	40		3
1435	7.4	105	40		3
1440	10.1	106	40		3
1445	12.4	106	40		3
1450	15.0	106	40		3
1455	17.5	106	40		3
1500	19.9	106	40		3
1505	22.4	107	40		3
1510	25.0	109	40		3
1515	27.5	110	40		3
1520	30.038				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Unspike

Company: Drax		Unit: RTO		Run #: 3	
Pollutant:		Date: 7-14-21		Tester: MS	
Meter Box ID:	30B-005	G Meter Factor (Y):		0.979	
Barometric (in. Hg):	30.22		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	18	15	
Oxygen %:		Leak Rate (Lpm):	0.002	0.003	
Carbon Dioxide %:		Tube ID:			
Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1420	0.000	107	40	500	1
1425	2.5	107	40		1
1430	5.0	107	40		1
1435	7.4	107	40		1
1440	9.9	108	40		1
1445	12.5	108	40		1
1450	15.0	108	40		1
1455	17.4	109	40		1
1500	20.0	110	40		1
1505	22.5	112	40		1
1510	25.0	113	40		1
1515	27.5	114	40		1
1520	30.061				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Low Flow Meter Box Sample Data Sheet, Rev. 1

Effective Date: May 17, 2019
Approved by: JEJ

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: Amite	
Unit: RTO (outlet)		Date: 7-15-21	
Run No. 1	Test Method: 5/202	Ambient Conditions	Concentrations
Operator: RLC		Barometric (in. Hg): 29.78	Oxygen (%): 18.54
State Representative:		Static (in. H2O): -.60	Carbon Dioxide (%): 5.0

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	520P	Meter Correction Factor, Y:	1.005	Vacuum (in. Hg):	15	10	Final	44.519
Mag Box ID:	—	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.004	.002	Initial	0.000
Pyrite ID:	F105	Pitot tube coefficient, Cp:	.84	Pitot (Yes/No):	✓	✓	Net	44.519
Probe ID:	6142	Nozzle diameter, Dn (in):	.273	Nozzle (Yes/No):	✓	✓	Comments: 0935 - Pause 1003 - Start back	
Pitot ID:	310	Balance response, (gm):	2000.1	Filters				
Nozzle ID:	10P 4A	Std. weight ID:	7967	Filter No. 1 ID:	12653			
Balance Box ID:	BB006	K Factor		Filter No. 2 ID:				

	Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H_2O) Desired	Orifice Pressure Differential (ΔH, in H_2O) Actual	Temperature °F Stack	Temperature °F Probe	Temperature °F Filter	Temperature °F CPM Filter	Temperature °F Impinger	Temperature °F Gas Meter	Vacuum (in. Hg)
	1-1	0826	0.000	.85		1.38	270	270	251	71	40	72	0
	2		1.5	.90		1.46	270	270	249	73	41	73	0
	3	31	3.2	.90		1.46	269	270	250	75	42	73	0
	4		4.8	.95		1.55	264	270	252	76	44	73	0
	5	36	6.5	1.20		1.95	249	266	249	76	45	73	0
	6		8.4	1.15		1.87	225	271	249	77	45	73	0
	2-1	0845	10.285	1.20		1.95	298	270	251	77	46	74	0
	2		12.1	1.10		1.79	275	268	255	76	47	75	0
	3	50	13.9	1.10		1.81	259	270	263	77	47	75	0
	4		15.7	1.15		1.89	263	271	266	78	48	75	0
	5	55	17.6	1.46		2.30	236	270	266	76	49	75	0
	6		19.7	1.45		2.38	291	271	263	75	49	76	1
	3-1	0910	21.833	1.15		1.89	227	271	267	75	50	76	0
	2		23.7	1.10		1.81	275	270	265	77	50	76	0
	3	15	25.5	1.25		2.05	262	268	261	76	51	76	0
	4		27.5	1.25		2.05	236	261	263	75	51	77	0
	5	20	29.4	1.30		2.14	226	270	265	74	52	77	0
	6		31.4	1.40		2.30	320	270	268	72	52	78	1
	4-1	0930	33.426	1.00		1.64	261	270	254	75	53	78	0
	2		35.2	1.00		1.64	227	268	269	75	53	78	0
RLC	3	1004 ~~35~~	36.8	1.15		1.88	273	258	261	74	56	76	0
	4		38.7	1.25		2.05	311	264	262	75	56	77	1
	5	0940	40.6	1.20		1.97	266	267	260	77	57	77	1
	6		42.5	1.25		2.05	246	270	263	77	57	78	1
	END	1014	44.519										

Form SS-101 REV. 9-28-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax			Plant: Amite		
Unit: RTO (outlet)			Date: 7-15-21		
Run No. 2	Test Method: 5/202		Ambient Conditions		Concentrations
Operator: RLC			Barometric (in. Hg): 29.78		Oxygen (%): 10.57
State Representative:			Static (in. H2O): -.60		Carbon Dioxide (%): 4.5

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	5208	Meter Correction Factor, Y:	1.005	Vacuum (in Hg):	15	12	Final	40.869
Mag Box ID:	—	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.006	.003	Initial	0.000
Pyrite ID:	F105	Pitot tube coefficient, Cp:	.84	Pitot (Yes/No):	✓	✓	Net	40.869
Probe ID:	6142	Nozzle diameter, Dn (in):	.293	Nozzle (Yes/No):	✓	✓	Comments:	
Pitot ID:	2, 0	Balance response, (gm):	200.01	Filters				
Nozzle ID:	1 NPVA	Std. weight ID:	7917	Filter No. 1 ID:	12649			
Balance Box ID:	AA006	K Factor		Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm,ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	1119	0.000	.95		1.56	270	249	249	69	42	75	6
2		1.7	1.05		1.73	294	251	257	69	43	75	7
3	24	3.4	.90		1.48	263	234	252	72	44	75	6
4		5.1	1.10		1.81	256	256	249	72	45	76	7
5	29	6.9	1.15		1.89	235	261	248	73	46	76	8
6		8.8	1.20		1.97	323	263	249	73	46	76	9
2-1	1141	10.669	.85		1.40	331	268	251	71	47	77	5
2		12.2	.85		1.40	271	267	252	71	47	77	5
3	46	13.8	.90		1.48	228	271	260	75	48	77	5
4		15.4	1.05		1.73	274	271	255	75	48	77	6
5	51	17.1	1.15		1.89	328	267	257	76	49	78	8
6		18.9	1.15		1.89	285	271	257	75	50	78	8
3-1	1200	20.828	.85		1.40	230	264	251	73	51	78	4
2		22.4	.90		1.48	304	270	253	74	51	78	5
3	05	24.0	1.00		1.64	279	271	259	75	52	79	6
4		25.7	1.00		1.64	243	271	262	75	53	79	6
5	10	27.8	1.00		1.64	233	271	258	76	53	79	6
6		29.3	1.00		1.68	229	267	251	77	54	80	6
4-1	1218	30.753	.85		1.41	274	261	257	77	54	80	5
2		32.3	.85		1.41	291	266	248	78	55	80	5
3	23	33.9	.95		1.57	228	261	248	78	57	80	6
4		35.6	1.00		1.66	318	266	258	78	58	81	7
5	28	37.3	1.00		1.66	311	266	260	77	59	81	7
6		39.0	1.15		1.91	300	269	258	77	60	81	9
END	1233	40.869										

Form DS-101 REV. 9-28-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax				Plant: Amite			
Unit: RTO (outlet)				Date: 7-15-21			
Run No. 3		Test Method: 5/202		Ambient Conditions		Concentrations	
Operator: RLC				Barometric (in. Hg): 29.78		Oxygen (%): inst.	
State Representative:				Static (in. H2O): -.60		Carbon Dioxide (%): 5.0	
Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading
Meter Box ID:	5208	Meter Correction Factor, Y:	1.005	Vacuum (in Hg):	15	10	Final: 44.203
Mag Box ID:	—	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.004	.003	Initial: 0.000
Pyrite ID:	F105	Pitot tube coefficient, Cp:	.84	Pitot (Yes/No):	✓	✓	Net: 44.203
Probe ID:	6142	Nozzle diameter, Dn (in):	.243	Nozzle (Yes/No):	✓	✓	Comments: 1424 - Pause 1638 - Start back
Pitot ID:	310	Balance response, (gm):	2041.1	Filters			
Nozzle ID:	1084A	Std. weight ID:	7969	Filter No. 1 ID:			
Balance Box ID:	BB004	K Factor:		Filter No. 2 ID:			

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H_2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	1337	0.000	.85		1.41	309	252	259	70	40	79	0
2		1.6	.85		1.41	247	262	260	71	41	79	0
3	42	3.2	.95		1.57	238	249	269	71	43	80	0
4		4.8	1.00		1.66	227	250	265	73	44	80	0
5	47	6.6	1.00		1.66	321	254	260	73	45	80	0
6		8.3	1.15		1.91	284	255	255	73	45	80	0
2-1	1358	10.258	.85		1.41	241	250	250	74	45	81	0
2		11.8	1.00		1.66	224	259	261	74	46	81	0
3	1403	13.6	1.10		1.82	316	261	249	74	46	81	0
4		15.4	1.25		2.07	310	263	251	75	47	81	0
5	08	17.4	1.25		2.07	245	267	259	75	47	82	0
6		19.3	1.30		2.16	238	264	260	75	48	83	1
3-1	1420	21.390	.95		1.57	237	255	249	76	48	83	0
2		23.1	1.25		2.07	260	261	248	77	49	83	1
3	1639 ~~25~~ RLC	25.1	1.05		1.74	302	256	290	75	50	80	0
4		26.9	1.10		1.82	267	268	269	75	51	80	1
5	44	28.7	1.30		2.16	239	266	274	76	52	80	1
6		30.6	1.30		2.16	307	267	271	77	53	80	1
4-1	1651	32.681	1.00		1.66	301	264	256	77	54	80	0
2		34.4	1.25		2.07	261	268	253	78	54	80	1
3	56	36.3	1.20		1.99	233	270	257	78	55	81	1
4		38.3	1.35		2.24	316	270	260	79	56	81	1
5	1701	40.3	1.35		2.24	292	268	261	79	57	81	1
6		42.3	1.10		1.82	278	270	258	80	58	82	0
End	1706	44.203										

Form DS-101 REV. 9-29-17

Sanders Engineering & Analytical Services, Inc.
Sample Recovery Field Data Sheet

Company: Drax
Unit: RTO (outlet)
Plant: Amite
Location:

Run No. 1
Date 7-15-21
Method 5/202
Filter No. 12653
Analyst RLC/SE
Glassware Case ID GS-001

Volume of Liquid Collected	Impinger 1	2	3	4	5	6	Imp. Total	7	Total
Contents								Silica Gel	
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams	
Final	1009.6	663.1	770.6					1088.1 ~~[illegible]~~	RLC
Initial	360.5	618.6	747.2					1015.8	
Net	649.1	44.5	23.4					72.3	789.3
Color									
Condition									

Notes:

Purge: Time	Filter Temp	Silica Gel Temp	Nitrogen Flow (lpm)
1033	76	40	14.0
38	76	—	14.0
43	76	—	14
48	76	—	14
53	76	—	14
58	76	—	14
1103	76	—	14
.08	96	—	14
13	76	—	14
18	76	—	14
23	76	—	14
28	76		14
33	76	—	14

Run No. 2
Date 7-15-21
Method 5/202
Filter No. 1264A
Analyst RLC/SE
Glassware Case ID GS-001

Volume of Liquid Collected	Impinger 1	2	3	4	5	6	Imp. Total	7	Total
Contents								Silica Gel	
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams	
Final	974.7	662.5	724.8					974.5	
Initial	292.4	645.7	697.5					958.8	
Net	682.3	16.8	27.3					15.7	642.2
Color									
Condition									

Notes:

Purge: Time	CPM Temp	Silica Gel Temp	Nitrogen Flow (lpm)
1315	75	—	14
25	75	—	14
35	75	—	14
45	75	—	14
55	75	—	14
1405	75	—	14
15	75	—	14

Run No.
Date
Method
Filter No.
Analyst
Glassware Case ID

Volume of Liquid Collected	Impinger 1	2	3	4	5	6	Imp. Total	7	Total
Contents								Silica Gel	
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams	
Final	905.1	648.6	789.9					1071.8	
Initial	360.5	618.6	770.6			1014.1	[illegible]	~~[illegible]~~.1	
Net	544.6	30	19.3					57.7	651.6
Color									
Condition									

Notes:

Purge: Time	CPM Temp	Silica Gel Temp	Nitrogen Flow (lpm)

Reagent 1 ________ Lot / Solution No. ________
Reagent 2 ________ Lot / Solution No. ________
Reagent 3 ________ Lot / Solution No. ________
Reagent 4 ________ Lot / Solution No. ________

Form DS-102 REV. 9-28-17

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: Drax Amite

UNIT #: RTO DATE OF TEST: 7-15-21 TYPE OF TEST: ☑ M-5 ☐ M-17 ☐ OTHER

SAMPLE #	RELINQUISHED BY:	RECEIVED BY:	TIME:	DATE:	REASON FOR CHANGE
21-417	JWH	JWH	0815	7-17-21	Analysis
21-420	|	|	|	|	|
21-423	|	|	|	|	|

Location ______ Location ______

RUN # 1	FILTER # 12653	BEAKER H4 WASH (ML) 65	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg	358.9	65 197.3	FINAL WEIGHT mg		
INITIAL WEIGHT mg	359.0	65,188.3	INITIAL WEIGHT mg		
DIFFERENCE mg	-0.1	9.0	DIFFERENCE mg		
	CORRECTED TOTAL WEIGHT	8.9		CORRECTED TOTAL WEIGHT	
RUN # 2	FILTER # 12649	BEAKER H6 WASH (ML) 55	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg	360.9	65,647.5	FINAL WEIGHT mg		
INITIAL WEIGHT mg	360.5	65,645.4	INITIAL WEIGHT mg		
DIFFERENCE mg	0.4	2.1	DIFFERENCE mg		
	CORRECTED TOTAL WEIGHT	2.5		CORRECTED TOTAL WEIGHT	
RUN # 3	FILTER # 12650	BEAKER W9 WASH (ML) 60	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg	362.2	64 923.8	FINAL WEIGHT mg		
INITIAL WEIGHT mg	361.5	64,921.9	INITIAL WEIGHT mg		
DIFFERENCE mg	0.7	1.9	DIFFERENCE mg		
	CORRECTED TOTAL WEIGHT mg	2.6		CORRECTED TOTAL WEIGHT mg	

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC

LABORATORY ANALYSIS - CONDENSABLE PARTICULATE MATTER

Samples Provided by: Drax Biomass

Test Location: Amite Co, MS (Gloster)

Test Source: RTO

Test Date: 7-15-21

Test Method: 5/202

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 1500		
Run #: 1	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-416	1. 7-9-21/0935	51,895.4	RLC	1. 7-22-21 / 1500	51,900.3	TCA
Tin/Beaker ID: 6-3	2. 7-14-21/0816	51,895.6	RLC	2. 7-23-21 /0815	51,899.9	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg: 4.3					
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0820		
Run #: 1	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-415	1. 7-9-21/0935	6,380.6	RLC	1. 7-22-21/1500	6,388.4	TCA
Tin/Beaker ID: W-3	2. 7-14-21/0816	6,380.8	RLC	2. 7-23-21/0815	6,388.3	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg: ~~4.356~~ 7.5					

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 1500		
Run #: 2	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-419	1. 7-9-21/0935	51,735.0	RLC	1. 7-22-21/1500	51,737.2	TCA
Tin/Beaker ID: 6-4	2. 7-14-21/0816	51,734.7	RLC	2. 7-23-21/0815	~~51,737.2~~	TCA
	3.			3.	51,737.2	TCA
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg: 2.5					
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0820		
Run #: 2	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-418	1. 7-9-21/0935	6,389.4	RLC	1. 7-22-21 /1500	6,394.8	TCA
Tin/Beaker ID: W-1	2. 7-14-21/0816	6,389.8	RLC	2. 7-23-21 /0815	6,394.5	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg: 4.7					

Date/Time	Lab Amb Temp (°F)	Lab Rel. Humidity (%)	Date/Time	Lab Amb. Temp (°F)	Lab Rel. Humidity (%)
7-9-21/0935	71.8	4.9			
7-14-21/0816	72.0	3.4			
7-22-21 /1500	71.9	TA ~~6.0~~ 48.1			
7-23-21 / 0812	72.2	TA 6.0 48.1			

[1] Tin/beaker must be desicated for a minimum of 24 hours before obtaining an initial or final weight.

[2] After completing the 24 hour desication period, weigh the tin/beaker at intervals of at least 6 hours until two consecutive weights agree within 0.5 mg. The second consecutive weight will be the mass used to calculate the amount of particulate collected.

[3] Document the laboratory temperature and humidity at each weighing interval.

Condensable Lab Analysis Form, Rev 2

Effective Date: Jan. 22, 2019
Approved by: JEJ

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC
LABORATORY ANALYSIS - CONDENSABLE PARTICULATE MATTER

Samples Provided by: Drax Biomass
Test Location: Amite Co, MS (Gloster)
Test Source: RTO
Test Date: 7-15-21
Test Method: 5/202

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 1500		
Run #: 3	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-1122	1. 7-9-21/0935	51,650.5	RLC	1. 7-22-21 / 1500	51,654.6	TCA
Tin/ Beaker ID: 6-5	2. 7-14-21/0816	51,650.6	RLC	2. 7-23-21 / 0815	51,654.6	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg: 4.0					
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0820		
Run #: 3	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-1121	1. 7-9-21/0935	6,392.6	RLC	1. 7-22-21 / 1500	6,402.9	TCA
Tin/ Beaker ID: H-12	2. 7-14-21/0816	6,392.2	RLC	2. 7-23-21 / 0815	6,402.5	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg: 10.3					

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 1500		
Run #: Blank	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-425	1. 7-9-21/0935	52,181.2	RLC	1. 7-22-21 / 1500	52,181.3	TCA
Tin/ Beaker ID: 6-6	2. 7-14-21/0816	52,181.0	RLC	2. 7-23-21 / 0815	52,181.5	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg: 0.5					
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0820		
Run #: Blank	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID: 21-1124	1. 7-9-21/0935	6,357.7	RLC	1. 7-22-21 / 1500	6,360.2	TCA
Tin/ Beaker ID: H-1	2. 7-14-21/0816	6,358.1	RLC	2. 7-23-21 / 0815	6,359.8	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg: 1.7					

Date/Time	Lab Amb. Temp (°F)	Lab Rel. Humidity (%)	Date/Time	Lab Amb. Temp (°F)	Lab Rel. Humidity (%)
7-9-21/0935	71.8	11.9			
7-14-21/0816	72.0	3.7			
7-22-21 / 1500	71.9	TA ~~6.0~~ 49.1			
7-23-21 / 0912	72.2	TA ~~6.0~~ 49.1			

[1] Tin/beaker must be desicated for a minimum of 24 hours before obtaining an initial or final weight.
[2] After completing the 24 hour desication period, weigh the tin/beaker at intervals of at least 6 hours until two consecutive weights agree within 0.5 mg. The second consecutive weight will be the mass used to calculate the amount of particulate collected.
[3] Document the laboratory temperature and humidity at each weighing interval.

Condensable Lab Analysis Form Rev 2

Effective Date: Jan. 22, 2019
Approved by: JEJ

Sanders Engineering & Analytical Services, Inc.

Company: Drax				Plant: Amite			
Unit: RTO				Date: 7-15-21			
Run No. 1		Test Method: 26A		Ambient Conditions		Concentrations	
Operator: MS				Barometric (in. Hg): 29.78		Oxygen (%): Inst.	
State Representative:				Static (in. H2O): -0.6		Carbon Dioxide (%): 9.0	
Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading
Meter Box ID:	S-202	Meter Correction Factor, Y:	1.006	Vacuum (in Hg):	15	16	Final: 47.560
Mag Box ID:	S-202	Meter Box, ΔH@ (in H2O):	1.844	Leak Rate (cfm):	0.006	0.003	Initial: 0.000
Pyrite ID:	F-105	Pitot tube coefficient, Cp:	0.84	Pitot (Yes/No):	yes	yes	Net: 47.560
Probe ID:	110	Nozzle diameter, (in):	0.284	Nozzle (Yes/No):	yes	yes	Comments:
Pitot ID:	335	Balance response, (gm):	2000.0	Filters			
Nozzle ID:	G-209	Std. weight ID:	7967	Filter No. 1 ID:	—		
Balance Box ID:	BB004	K Factor:	1.8354	Filter No. 2 ID:			

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm,ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	826	0.000	1.15		2.10	257	258	266	—	46	75	1
2		2.0	1.15		2.00	259	258	268		50	75	1
3	831	3.9	1.10		2.00	265	259	270		53	76	1
4		5.8	1.25		2.30	260	256	270		54	75	2
5	836	7.9	1.35		2.45	237	256	268		55	76	2
6		10.1	1.35		2.45	277	260	269		58	76	2
2-1	845	12.244	1.20		2.20	273	259	248		60	76	1
2		14.0	1.20		2.20	242	260	260		60	77	1
3	850	16.2	1.19		2.10	265	259	265		61	77	1
4		18.2	1.19		2.10	260	258	266		61	76	1
5	855	20.2	1.30		2.40	236	261	270		61	77	1
6		22.4	1.35		2.45	244	260	269		62	75	1
3-1	910	24.525	0.90		1.65	238	250	251		55	76	1
2		26.3	0.90		1.65	287	251	266		51	76	1
3	915	28.1	0.85		1.55	310	251	268		52	77	1
4		29.9	0.80		1.45	265	252	264		54	76	1
5	920	31.5	1.00		1.85	231	257	263		57	76	1
6		33.4	1.20		2.20	229	259	262		58	76	2
MG5R 4-1	930	35.418	1.05		1.90	264	251	251		59	76	2
2	1003 start back	37.3	0.80		1.50	229	255	260		59	76	1
3	MS ~~1003~~	39.0	1.20		2.20	223	262	263		62	76	1
4	1004	41.0	1.35		2.50	306	261	265		63	76	2
5	1009	43.2	1.40		2.60	284	262	267		63	76	3
6		45.3	1.35		2.50	267	263	266		64	76	3
End	1014	47.560										

Form DS-101 REV. 2-28-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax				Plant: Amite			
Unit: RTO				Date: 7-15-21			
Run No. 2		Test Method: 26 A		Ambient Conditions		Concentrations	
Operator: MS				Barometric (in. Hg): 29.78		Oxygen (%): Inst.	
State Representative:				Static (in. H2O): -0.6		Carbon Dioxide (%): 4.5	
Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading
Meter Box ID:	5-202	Meter Correction Factor, Y:	1.006	Vacuum (in Hg):	17	15	Final: 49.770
Mag Box ID:	5-202	Meter Box, ΔH@ (in H2O):	1.844	Leak Rate (cfm):	0.001	0.008	Initial: 0.000
Pyrite ID:	F-105	Pitot tube coefficient, Cp:	0.84	Pitot (Yes/No):	yes	yes	Net: 49.770
Probe ID:	110	Nozzle diameter, Dn (in):	0.784	Nozzle (Yes/No):	yes	yes	Comments:
Pitot ID:	335	Balance response, (gm):	2000.9	Filters			
Nozzle ID:	G-109	Std. weight ID:	7467	Filter No. 1 ID:	—		
Balance Box ID:	BB004	K Factor:	1.8562	Filter No. 2 ID:			

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	1119	0.000	1.20		2.20	235	256	263	—	50	77	3
2		2.0	1.15		2.15	311	257	264		48	77	3
3	1124	4.0	1.25		2.30	301	261	270		44	77	3
4		6.1	1.35		2.50	251	257	270		46	77	3
5	1129	8.2	1.30		2.40	239	263	268		47	77	3
6		10.5	1.25		2.55	223	260	266		51	77	3
2-1	1141	12.561	1.20		2.40	268	265	268		56	78	2
2		14.6	1.15		2.25	295	263	267		56	78	3
3	1146	16.7	1.15		2.25	253	265	265		55	78	3
4		18.8	1.10		2.20	233	263	266		57	78	3
5	1151	20.7	1.20		2.35	296	264	263		58	78	3
6		22.9	1.40		2.75	318	265	267		58	78	4
3-1	1201	25.146	1.10		2.15	233	263	252		60	75	3
2		27.2	1.00		1.95	321	261	261		60	75	3
3	1206	29.1	1.20		2.35	283	261	267		61	76	3
4		31.2	1.10		2.15	262	258	262		61	76	3
5	1211	33.2	1.20		2.35	232	251	261		62	76	3
6		35.3	1.30		2.60	225	251	266		62	76	4
4-1	1218	37.544	1.05		2.05	312	256	250		64	75	3
2		39.5	1.00		1.95	261	257	258		64	76	3
3	1223	41.4	1.05		2.10	230	256	260		65	77	3
4		43.5	1.30		2.55	225	259	266		65	80	4
5	1228	45.9	1.10		2.15	256	257	269		65	80	4
6		47.7	1.15		2.25	304	258	267		65	80	4
End	1233	49.770										

Form DS-101 REV. 9-28-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax			Plant: Amite		
Unit: RTO			Date: 7-15-21		
Run No. 3	Test Method: 26a		Ambient Conditions		Concentrations
Operator: RSS			Barometric (in. Hg): 29.78		Oxygen (%): Inst.
State Representative:			Static (in. H2O): -0.6		Carbon Dioxide (%): 50

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	S-202	Meter Correction Factor, Y:	1.006	Vacuum (in Hg):	15	15	Final	50.663
Mag Box ID:	S-202	Meter Box, ΔH@ (in H2O):	1.844	Leak Rate (cfm):	0.003	0.000	Initial	0.000
Pyrite ID:	F105	Pitot tube coefficient, Cp:	0.84	Pitot (Yes/No):	✓	✓	Net	50.663
Probe ID:	110	Nozzle diameter, Dn (in):	0.284	Nozzle (Yes/No):	✓	✓	Comments:	
Pitot ID:	335	Balance response, (gm):	2000.0	Filters				
Nozzle ID:	G109	Std. weight ID:	7967	Filter No. 1 ID:	——			
Balance Box ID:	BB004	K Factor:		Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H_2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	13:37	0.000	1.10		2.17	225	260	270		49	74	3
2		2.2	1.20		2.39	311	260	271		49	74	3
3	13:44	4.2	1.20		2.39	236	259	271		50	77	3
4		6.2	1.15		2.27	228	258	270		50	77	3
5	13:47	8.4	1.20		2.37	296	259	268		50	71	3
6		10.7	1.15		2.27	290	258	268		51	75	3
2-1	13:58	12.7	1.25		2.49	279	257	265		51	75	3
2		14.9	1.00		1.97	258	252	251		51	72	3
3	14:03	16.5	1.10		2.17	242	257	264		51	72	3
4		18.6	1.10		2.17	277	252	270		51	72	3
5	14:08	20.5	1.10		2.17	242	266	272		52	72	3
6		22.7	1.15		2.27	227	269	271		52	72	3
3-1	14:20	25.0	0.95		1.87	238	262	271		52	72	3
2		27.0	1.10		2.17	190	260	270		52	72	3
3	16:33	28.7	1.15		2.27	290	261	269		53	72	3
4		31.1	1.25		2.47	280	261	257		52	72	3
5		32.9	1.20		2.37	242	262	258		52	72	3
6		35.3	1.35		2.67	222	264	258		53	71	3
4-1	16:51	37.6	1.20		2.37	275	264	257		53	71	3
2		40.0	1.25		2.47	274	264	259		54	71	3
3	16:56	41.7	1.25		2.47	234	270	264		54	71	3
4		43.8	1.35		2.67	289	270	265		54	71	3
5	17:01	45.8	1.35		2.67	286	270	265		54	71	3
6		47.9	1.25		2.47	240	269	257		55	71	3
	17:06	50.663										

Form SD-101 REV. 9-28-17

Sanders Engineering & Analytical Services, Inc.
Sample Recovery Field Data Sheet

Company: Drax
Unit: RTO

Plant: Amite
Location: Amite, MS

Run No. 1
Date 7-15-21
Method 26a
Filter No. —
Analyst MS
Glassware Case ID GS002

	Volume of Liquid Collected									Purge			
	Impinger										Filter	Silica Gel	Nitrogen
H_2SO_4	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	853.7	951.8	942.4					1088.7					
Initial	626.1	729.2	722.3					952.6					
Net	227.6	225.6	220.1				673.3	136.1	809.4				
Color													
Condition													
Notes:													

Run No. 2
Date 7-15-21
Method 26a
Filter No. —
Analyst MS
Glassware Case ID GS002

	Volume of Liquid Collected									Purge			
	Impinger										CPM	Silica Gel	Nitrogen
H_2SO_4	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	1002.0	881.4	723.8	517.2				961.9 ~~1002.0~~					
Initial	632.6	614.3	590.0	492.3				941.6 ~~946.2~~	MS 7-15-21				
Net	369.4	267.1	133.8	24.9			795.2	20.3	815.5				
Color													
Condition													
Notes:													

Run No. 3
Date 7-15-21
Method 26a
Filter No. —
Analyst KJR
Glassware Case ID GS002

	Volume of Liquid Collected									Purge			
	Impinger										CPM	Silica Gel	Nitrogen
H_2SO_4	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	912.5	921	870.4	525.8 ~~981.7~~				981.7					
Initial	623.2	726.7	723.0	497.9	gr			957.4					
Net	289.3	194.3	147.4	[illegible]	27.6		658.6	24.3	682.9				
Color													
Condition													
Notes:													

Reagent 1 H_2SO_4 Lot / Solution No. 210630 RJR
Reagent 2 ______ Lot / Solution No. ______
Reagent 3 ______ Lot / Solution No. ______
Reagent 4 ______ Lot / Solution No. ______

Form DS-102 REV. 9-20-17

APPENDIX C REGENERATIVE CATALYTIC OXIZIDER FIELD DATA

OXYGEN TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
Friday, July 16, 2021

Analyzer Calibration Data

Analyzer Span (Percent) =	21		Analyzer ID: CitiCell		Serial #:	06.35108053.058
DAQ Channel:	1		Cylinder	Analyzer		Calibration
Response Time:	240	Calibration	Concentration	Response	Difference	Error, % of Span
Trailer No.:	T104	Cylinder ID	(Percent)	(Percent)	(Percent)	(Allowable 2%)
Zero Gas		UHP N2	0.0	0.0	0.0	0.0
High Range Gas		Purified Air	20.9	20.9	0.0	0.0
Mid Range Gas		EB0122479	10.03	10.0	0.0	0.0

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (Percent)	System Zero (Percent)	System Upscale (Percent)	Upscale Calibration Gas Cylinder Concentration (Percent)
		Initial System		0.0	10.0	
12:07	13:07	RUN 1	20.8	0.1	10.2	10.03
14:08	15:08	RUN 2	20.8	0.1	10.1	10.03
18:32	19:32	RUN 3	20.8	0.1	10.1	10.03

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Oxygen Concentration (Percent-Dry)	
-0.1	0.5	0.7	-0.1	0.6	0.7	**20.7**	RUN 1
0.5	0.5	0.0	0.6	0.3	-0.2	**20.7**	RUN 2
0.5	0.7	0.1	0.3	0.3	0.0	**20.7**	RUN 3

CARBON DIOXIDE TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
Friday, July 16, 2021

Analyzer Calibration Data

Analyzer Span (Percent) =		11	Analyzer ID:	Teledyne T803	Serial #:	95
DAQ Channel:	4	Calibration Cylinder ID	Cylinder Concentration (Percent)	Analyzer Response (Percent)	Difference (Percent)	Calibration Error, % of Span (Allowable 2%)
Response Time:	150					
Trailer No.:	T104					
	Zero Gas	UHP N2	0.00	0.0	0.0	0.0
	High Range Gas	CC507534	11.08	11.1	0.0	0.0
	Mid Range Gas	CC114656	6.09	6.1	0.0	-0.1

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (Percent)	System Zero (Percent)	System Upscale (Percent)	Upscale Calibration Gas Cylinder Concentration (Percent)
		Initial System		0.0	11.0	
12:07	13:07	RUN 1	0.0	0.0	11.1	11.08
14:08	15:08	RUN 2	0.0	0.0	11.1	11.08
18:32	19:32	RUN 3	0.0	0.0	10.8	11.08

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Carbon Dioxide Concentration (Percent-Dry)	
0.0	0.0	0.0	-0.4	-0.1	0.4	**0.0**	RUN 1
0.0	0.0	0.0	-0.1	-0.1	0.0	**0.0**	RUN 2
0.0	0.0	0.0	-0.1	-2.1	-2.0	**0.0**	RUN 3

NITROGEN OXIDES TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
Friday, July 16, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	126	Analyzer ID: THERMO 42i		Serial #: 1170600013	
DAQ Channel: 2 Response Time: 150 Trailer No.: T104	Calibration Cylinder ID	Cylinder Concentration (PPM)	Analyzer Response (PPM)	Difference (PPM)	Calibration Error, % of Span (Allowable 2%)
Zero Gas	UHP N2	0.0	0.0	0.0	0.0
High Range Gas	CC114656	125.6	125.6	0.0	0.0
Mid Range Gas	CC507534	55.04	55.6	0.5	0.4
Convertor Test	CC515716	46.35	46.7	Allowed >90%	100.7

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		0.1	55.4	
12:07	13:07	RUN 1	0.7	0.1	54.0	55.04
14:08	15:08	RUN 2	0.7	0.1	54.2	55.04
18:32	19:32	RUN 3	0.5	0.0	54.2	55.04

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Nitrogen Oxides Concentration (PPM-Dry)	
0.1	0.1	0.0	-0.1	-1.3	-1.2	**0.6**	RUN 1
0.1	0.1	0.0	-1.3	-1.1	0.2	**0.6**	RUN 2
0.1	0.0	-0.1	-1.1	-1.1	0.0	**0.5**	RUN 3

CARBON MONOXIDE TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
Friday, July 16, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =		129	Analyzer ID: THERMO 48i		Serial #: 1170600014	
DAQ Channel:	3		Cylinder	Analyzer		Calibration
Response Time:	150	Calibration	Concentration	Response	Difference	Error, % of Span
Trailer No.:	T105	Cylinder ID	(PPM)	(PPM)	(PPM)	(Allowable 2%)
Zero Gas		UHP N2	0.0	0.0	0.0	0.0
High Range Gas		CC114656	128.7	128.7	0.0	0.0
Mid Range Gas		CC507534	52.86	53.7	0.9	0.7

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		0.9	53.7	
12:07	13:07	RUN 1	12.1	0.6	52.0	52.9
14:08	15:08	RUN 2	12.9	0.5	52.1	52.9
18:32	19:32	RUN 3	13.1	0.9	52.8	52.9

System Zero Bias and Drift			System Upscale Bias and Drift			Test Results	RUN #
Initial System Zero Cal. BIAS Response % of Span (Allowed 5%)	Final System Zero Cal. BIAS Response % of Span (Allowed 5%)	Zero Drift % of Span (Allowed 3%)	Initial System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Final System Upscale Cal. BIAS Response % of Span (Allowed 5%)	Upscale Drift % of Span (Allowed 3%)	Carbon Monoxide Concentration (PPM-Dry)	
0.7	0.5	-0.2	0.0	-1.3	-1.3	**11.5**	RUN 1
0.5	0.4	-0.1	-1.3	-1.2	0.1	**12.6**	RUN 2
0.4	0.7	0.3	-1.2	-0.7	0.5	**12.6**	RUN 3

VOLATILE ORGANIC COMPOUNDS TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
Friday, July 16, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	101		Analyzer ID: THERMO 51iHT		Serial #: 14064655	
DAQ Channel:	7	Calibration Cylinder ID	Cylinder Concentration (PPM)	Analyzer Response (PPM)	Difference (PPM)	Calibration Error, % of Value Allowed 5%
Response Time:	180					
Trailer No.:	T104					
	Zero Gas	EB0122479	0.00	0.0	0.00	0.00
	High Range Gas	CC334462	90.92	90.9	0.00	0.00
	Mid Range Gas	CC459201	50.33	51.5	-1.15	-2.28
	Low Range Gas	XC025792B	30.13	30.9	-0.73	-2.42

Test Results and Analyzer Calibration Bias and Drift Data

Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		0.2	30.9	
12:07	13:07	RUN 1	5.1	-0.1	29.2	30.13
14:08	15:08	RUN 2	5.2	0.0	30.2	30.13
18:32	19:32	RUN 3	5.1	0.6	30.8	30.13

Drift		Test Results	RUN #
Zero Drift % of Span (Allowed 3%)	Upscale Drift % of Span (Allowed 3%)	Volatile Organic Compounds Concentration (PPM-Wet)	
0.4	1.7	**5.1**	RUN 1
-0.2	-1.0	**5.2**	RUN 2
-0.5	-0.7	**5.1**	RUN 3

VOLATILE ORGANIC COMPOUNDS TESTING QUALITY ASSURANCE
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - INLET
Friday, July 16, 2021

Analyzer Calibration Data

Analyzer Span (PPM) =	1,000	Analyzer ID:	THERMO 51iHT	Serial #:	1005440237
DAQ Channel: 6		Cylinder	Analyzer		Calibration
Response Time: 120	Calibration	Concentration	Response	Difference	Error, % of Value
Trailer No.: T104	Cylinder ID	(PPM)	(PPM)	(PPM)	Allowed 5%
Zero Gas	EB0122479	0.00	0.0	0.00	0.00
High Range Gas	CC334462	90.92	90.9	0.00	0.00
Mid Range Gas	CC459201	50.33	50.0	0.37	0.74
Low Range Gas	XC025792B	30.13	31.1	-0.97	-3.22
High Range 2 Mid Gas	CC258171	522.3	530.3	-8.0	-1.52

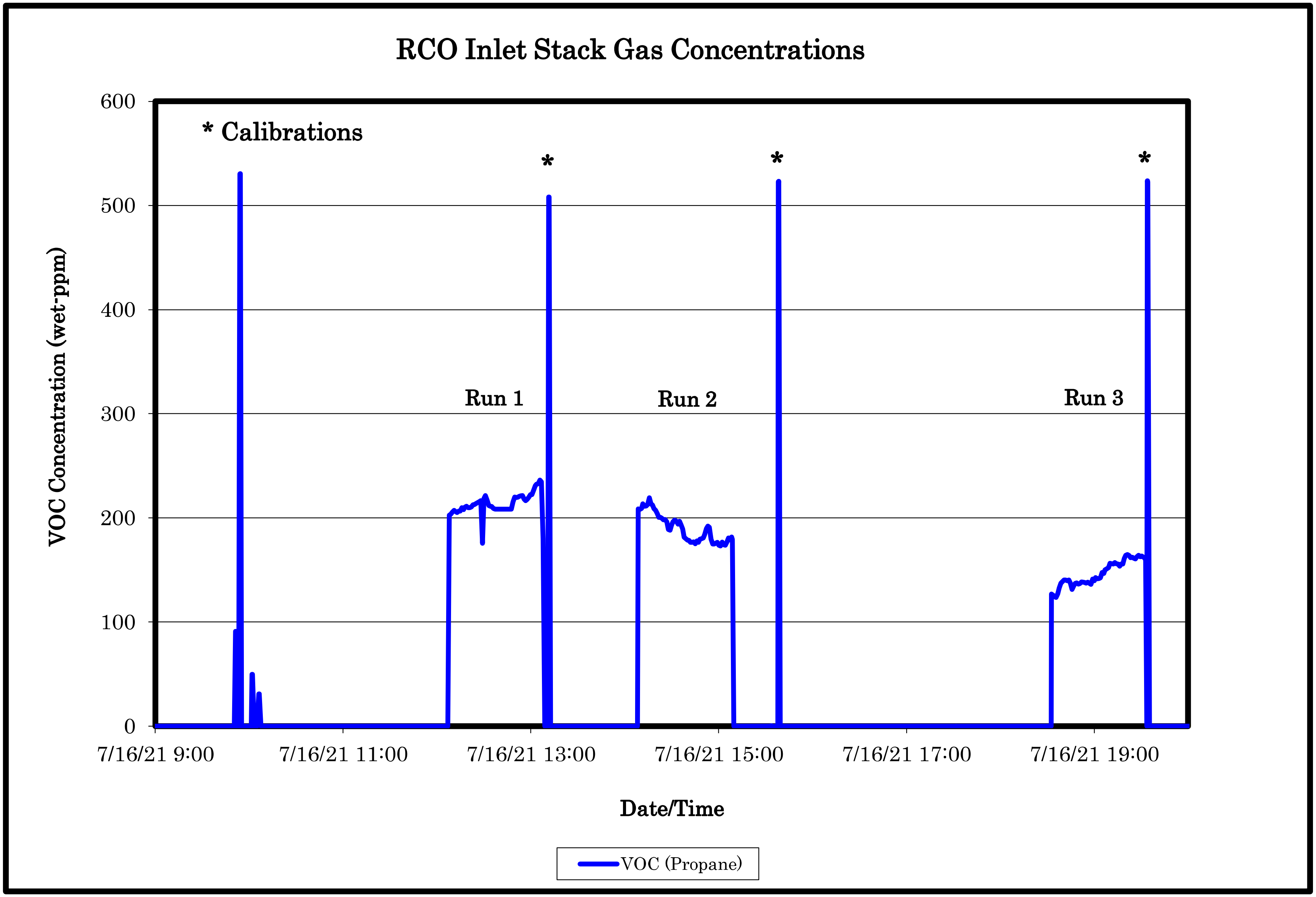
Test Results and Analyzer Calibration Bias and Drift Data

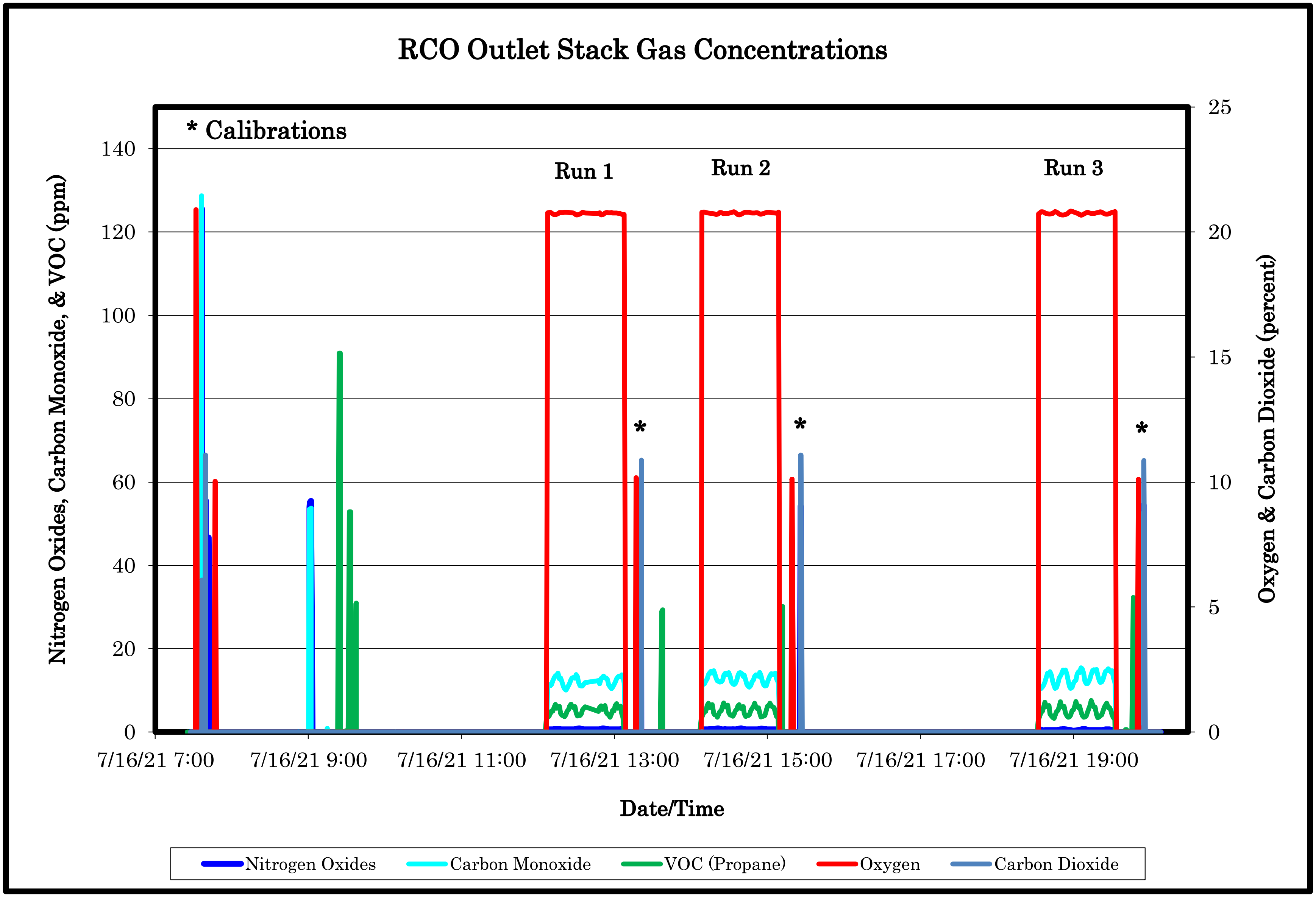
Start Time	Stop Time	Run #	Analyzer Stack Gas Uncorrected Concentration (PPM)	System Zero (PPM)	System Upscale (PPM)	Upscale Calibration Gas Cylinder Concentration (PPM)
		Initial System		-1.3	523.2	
12:07	13:07	RUN 1	214.2	-1.8	508.0	522.3
14:08	15:08	RUN 2	189.9	0.4	522.9	522.3
18:32	19:32	RUN 3	146.9	-6.5	522.4	522.3

Drift		Test Results	RUN #
Zero Drift % of Span (Allowed 3%)	Upscale Drift % of Span (Allowed 3%)	Volatile Organic Compounds Concentration (PPM-Wet)	
0.1	1.5	**214.2**	RUN 1
-0.2	-1.5	**189.9**	RUN 2
0.7	0.0	**146.9**	RUN 3

STRATIFICATION TEST RESULTS
AMITE BIOENERGY, LLC
REGENERATIVE CATALYTIC OXIDIZER - OUTLET
Friday, July 16, 2021

TEST	Start Time	Stop Time	Oxygen		Carbon Dioxide		Nitrogen Oxides		
	Military	Military	Concentration (percent)	Concentration Difference (% O2)	Concentration (percent)	Concentration Difference (%CO2)	Concentration (ppm)	Concentration Difference (ppm)	Stratification (Percent)
Stratification-1	10:20	10:25	20.8	0.0	0.0	0.0	0.59	0.02	3.0%
Stratification-2	10:25	10:30	20.7	0.1	0.0	0.0	0.67	0.07	11.4%
Stratification-3	10:30	10:35	20.8	0.0	0.0	0.0	0.54	0.06	10.6%
Stratification-4	10:35	10:40	20.8	0.0	0.0	0.0	0.49	0.12	19.3%
Stratification-5	10:40	10:45	20.7	0.1	0.0	0.0	0.61	0.01	1.4%
Stratification-6	10:45	10:50	20.8	0.0	0.0	0.0	0.58	0.02	3.6%
Stratification-7	10:50	10:55	20.8	0.0	0.0	0.0	0.62	0.01	2.0%
Stratification-8	10:55	11:00	20.8	0.0	0.0	0.0	0.56	0.04	6.5%
Stratification-9	11:00	11:05	20.7	0.1	0.0	0.0	0.68	0.08	12.9%
Stratification-10	11:05	11:10	20.8	0.0	0.0	0.0	0.63	0.03	4.5%
Stratification-11	11:10	11:15	20.8	0.0	0.0	0.0	0.61	0.01	1.6%
Stratification-12	11:15	11:20	20.7	0.1	0.0	0.0	0.66	0.06	9.2%
Average			20.8	0.0	0.0	0.0	0.60	0.04	7.2%
Maximum Value				**0.1**		**0.0**		**0.07**	**11.4%**
Concentration Difference				**0.1**		**0.0**		**0.07**	**11.4%**
Number of Points to Sample = 1									


RCO Inlet Stack Gas Concentrations
* Calibrations
*
*
*
Run 1
Run 2
Run 3
600
500
400
300
200
100
0
VOC Concentration (wet-ppm)
7/16/21 9:00
7/16/21 11:00
7/16/21 13:00
7/16/21 15:00
7/16/21 17:00
7/16/21 19:00
Date/Time
VOC (Propane)


RCO Outlet Stack Gas Concentrations
* Calibrations
Run 1
Run 2
Run 3
*
*
*
Nitrogen Oxides, Carbon Monoxide, & VOC (ppm)
0
20
40
60
80
100
120
140
Oxygen & Carbon Dioxide (percent)
0
5
10
15
20
25
7/16/21 7:00
7/16/21 9:00
7/16/21 11:00
7/16/21 13:00
7/16/21 15:00
7/16/21 17:00
7/16/21 19:00
Date/Time
Nitrogen Oxides
Carbon Monoxide
VOC (Propane)
Oxygen
Carbon Dioxide

Sanders Engineering & Analytical Services, Inc.
Cyclonic Flow Check

Company: Drax
Plant: Amit
Unit: RCO
Comments: Not cyclonic
Leak Check (pre test) ✓

Time: 930
Operator: RJr
Date: 7-17-21
(post test) ✓

Port # Point#	Angle Of Deviation
1-1	2
2	2
3	4
4	4
5	5
6	5
2-1	5
2	4
3	4
4	3
5	2
6	2
3-1	5
2	5
3	2
4	2
5	1
6	0
4-1	0
2	2
3	1
4	2
5	2
6	0

Port # Point#	Angle Of Deviation

Average Angle Of Deviation: 2.7 Degrees
(Allowable: 20 Degrees)

Form-DS103 REV 9-28-17

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

2255 Schillinger Rd N, Semmes, AL 36575 Phone: (251) 633-4120

SAMPLE COLLECTION DATA SHEET Duplicate

Company: Drax		Unit: RCO		Run #: 1	
Pollutant:		Date: 7-16-21		Tester: MS	
Meter Box ID:	308-005	A Meter Factor (Y):	1.016		
Barometric (in. Hg):	29.66		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	23	16	
Oxygen %:		Leak Rate (Lpm):	0.005	0.003	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1207	0.000	96	42	500	3
1212	2.4	97	42		3
1217	5.0	97	42		3
1222	7.5	99	42		3
1227	10.0	99	42		3
1232	12.5	100	42		3
1237	14.9	101	42		3
1242	17.5	101	42		3
1247	20.0	102	42		3
1252	22.5	103	42		3
1257	25.0	104	42		3
1302	27.5	104	42		3
1307	30.095				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Company: Drax		Unit: ACO		Run #: 1	
Pollutant:		Date: 7-16-21		Tester: ~~0.994~~ MS	
Meter Box ID:	308-005	B Meter Factor (Y):	0.979		
Barometric (in. Hg):	29.66		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	20	15	
Oxygen %:		Leak Rate (Lpm):	0.002	0.001	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1207	0.000	96	42	500	1
1212	2.4	96	42		1
1217	5.0	97	42		1
1222	7.5	98	42		1
1227	9.9	99	42		1
1232	12.5	101	42		1
1237	15.1	102	42		1
1242	17.5	102	42		1
1247	20.0	104	42		1
1252	22.4	105	42		1
1257	25.1	106	42		1
1302	27.4	106	42		1
1307	30.093				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Low Flow Meter Box Sample Data Sheet, Rev. 1

Effective Date: May 17, 2019
Approved by: JEJ

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: Amite	
Unit: ECO (outlet)		Date: 7-16-21	
Run No. 1	Test Method: 26	Ambient Conditions	Concentrations
Operator: RLC		Barometric (in. Hg): 29.66	Oxygen (%): inst.
State Representative:		Static (in. H2O): -.40	Carbon Dioxide (%): inst.

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	5208	Meter Correction Factor, Y:	1.005	Vacuum (in Hg):	15	7	Final	39.841
Mag Box ID:	—	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.004	.002	Initial	0.000
Pyrite ID:	inbt.	Pitot tube coefficient, Cp:	.84	Pitot (Yes/No):	—	—	Net	39.841
Probe ID:	—	Nozzle diameter, Dn (in):	—	Nozzle (Yes/No):	—	—	Comments:	
Pitot ID:	—	Balance response (gm):	2000.7	Filters				
Nozzle ID:	—	Std. weight ID:	7967	Filter No. 1 ID:	—			
Balance Box ID:	BB006	K Factor:	—	Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm,ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H_2O) Desired	Orifice Pressure Differential (ΔH, in H_2O) Actual	Temperature °F Stack	Probe	Filter	~~CPM~~ Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	1217	0.000			1.5	172	270	249		41	95	1
2	12	3.3			↓	171	266	252		42	95	1
3	17	6.6				171	267	252		43	95	1
4	22	10.0				170	269	251		44	97	1
5	27	13.0				171	269	252		44	97	1
6	32	16.3				171	270	251		45	98	1
7	37	19.7				172	261	255		46	99	1
8	42	23.0				171	269	249		46	100	1
9	47	26.4				170	271	250		47	101	1
10	52	29.8				170	263	251		48	102	1
11	57	33.1				171	261	254		49	103	1
12	1302	36.5				170	261	255		50	104	1
End	07	39.841										

Form DG-101 REV. 9-29-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax				Plant: Amite			
Unit: RCO (outlet)				Date: 7-16-21			
Run No. 2		Test Method: 26		Ambient Conditions		Concentrations	
Operator: RLC				Barometric (in. Hg): 29.66		Oxygen (%): insf.	
State Representative:				Static (in. H2O): -.40		Carbon Dioxide (%): insf.	
Equipment Identification		Calibration	Checks	Pre	Post	Gas Meter Reading	
Meter Box ID: 5208		Meter Correction Factor, Y: 1.015	Vacuum (in Hg):	15	10	Final	40.062
Mag Box ID: /		Meter Box, ΔH@ (in H2O): 1.861	Leak Rate (cfm):	.004	.002	Initial	0.000
Pyrite ID: /		Pitot tube coefficient, Cp: /	Pitot (Yes/No):	/	/	Net	40.062
Probe ID: /		Nozzle diameter, Dn (in): /	Nozzle (Yes/No):	/	/	Comments:	
Pitot ID: /		Balance response (gm): 2000.2	Filters				
Nozzle ID: /		Std. weight ID: 9967	Filter No. 1 ID:	—			
Balance Box ID: BB006		K Factor:	Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm,ft3)	~~Velocity Head (ΔP in H2O)~~	Orifice Pressure Differential (ΔH, in H_2O) Desired	Orifice Pressure Differential (ΔH, in H_2O) Actual	Temperature °F Stack	Temperature °F Probe	Temperature °F Filter	Temperature °F ~~CPM Filter~~	Temperature °F Impinger	Temperature °F Gas Meter	Vacuum (in. Hg)
F1	1408	0.000			1.5	170	270	250		44	103	2
2	13	3.3			↓	171	271	250		45	103	2
3	18	6.7				171	260	250		46	104	2
4	23	10.0				171	267	248		46	105	2
5	28	13.3				170	263	250		47	106	2
6	33	16.6				169	265	254		48	107	2
7	38	19.9				170	267	251		48	109	2
8	43	23.3				171	261	252		49	110	2
9	48	26.6				171	260	254		50	110	2
10	53	30.0				170	261	259		51	110	2
11	58	33.3				171	260	251		53	110	2
12	1503	36.6				172	261	253		54	109	2
End	1508	40.062										

Form DS-101 REV. 9-29-17

Sanders Engineering & Analytical Services, Inc.

Company:	Drax	Plant:	Amite
Unit:	RCO (Outlet)	Date:	7-16-21
Run No.	3	Test Method:	26
Operator:	RLC	Ambient Conditions	Concentrations
		Barometric (in. Hg): 29.66	Oxygen (%): Inst.
State Representative:		Static (in. H2O): -.40	Carbon Dioxide (%): Inst.

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	5208	Meter Correction Factor, Y:	1.005	Vacuum (in Hg):	15	5	Final	40.861
Mag Box ID:	/	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.006	.002	Initial	0.000
Pyrite ID:	/	Pitot tube coefficient, Cp:	[illegible]	Pitot (Yes/No):	/	/	Net	40.861
Probe ID:	/	Nozzle diameter, Dn (in):	/	Nozzle (Yes/No):	/	/	Comments:	
Pitot ID:	/	Balance response, (gm):	2000.2	Filters				
Nozzle ID:	/	Std. weight ID:	7967	Filter No. 1 ID:	—			
Balance Box ID:	BB006	K Factor:		Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H_2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	1832	0.000	/		1.5	170	270	253	/	41	78	0
2	37	3.6			↓	171	271	250		42	78	0
3	42	6.7				171	267	249		43	79	0
4	47	10.1				170	271	249		45	79	0
5	52	13.5				171	267	251		46	80	0
6	57	16.9				169	270	253		46	81	0
7	1902	20.6				168	269	254		47	83	0
8	07	23.6				164	267	249		48	84	0
9	12	27.0				170	265	250		49	85	0
10	17	30.5				171	261	254		51	86	0
11	22	33.8				170	270	250		51	86	0
12	27	37.3				169	268	250		52	84	0
End	1932	40.861										

Form DS-101 REV. 9-28-17

Sanders Engineering & Analytical Services, Inc.
Sample Recovery Field Data Sheet

Company: Drax Plant: Amite
Unit: RCO (Outlet) Location:

Run No. 1 Method 26 Analyst RLC
Date 7-16-21 Filter No. – Glassware Case ID GS-002

	Volume of Liquid Collected									Purge			
	Impinger										Filter	Silica Gel	Nitrogen
	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	755.4	629.1						993.5					
Initial	728.7	621.8						988.6					
Net	26.7	7.3						4.9	38.9				
Color													
Condition													
Notes:													

Run No. 2 Method 26 Analyst RLC
Date 7-16-21 Filter No. – Glassware Case ID GS-002

	Volume of Liquid Collected									Purge			
	Impinger										CPM	Silica Gel	Nitrogen
	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	758.9	627.3						1004.0					
Initial	729.3	619.4						993.5					
Net	29.6	7.9					37.5	10.5	48				
Color													
Condition													
Notes:													

Run No. 3 Method 26 Analyst RLC
Date 7-16-21 Filter No. – Glassware Case ID GS-002

	Volume of Liquid Collected									Purge			
	Impinger										CPM	Silica Gel	Nitrogen
	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final				751.1	630.3			1012					
Initial	~~728.8~~ ~~621.5~~	~~1004.0~~	~~631.7~~	729.7	620.1			1004.0					
Net				22.4	10.2			8.0	40.6				
Color													
Condition													
Notes:													

Reagent 1 1N H_2SO_4 Lot / Solution No. 210630R3R2 Reagent 3 ____ Lot / Solution No. ____
Reagent 2 DI H_2O Lot / Solution No. ____ Reagent 4 ____ Lot / Solution No. ____

Form DS-100 REV. 9-28-17

Velocity & Temperature Field Data Sheet

Company: Drax Plant: Amite Unit: RCO (outlet) Date: 7-16-21

Run	1			2			3			4		
Duct Dimensions										SDH 7/16/21		
Start/Finish Time	1141 / 1149			1313 / 1318			1515 / 1520			1937 / 1947		
% O_2	inst.	% CO_2	inst.	inst.	% CO_2	inst.	inst.	% CO_2	inst.	inst.	% CO_2	inst.
% H2O/ Dry Bulb (°F)	—	Wet Bulb	—	—	Wet Bulb	—	—	Wet Bulb	—	—	Wet Bulb	—
Pbar	29.66	Static	-.40	29.66	Static	-.40	29.66	Static	-.40	29.66	Static	-.40
Team Members	RLC/CH			RLC/CH			RLC/CH			RLC/CH		
Post Leak check	✓			✓			✓					

Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F
1-1	.60	169	1-1	.65	169	1-1	.55	171	1-1	.60	162
2	.70	166	2	.70	171	2	.70	169	2	.73	160
3	.70	161	3	.80	170	3	.65	170	3	.82	159
4	.75	137	4	.75	170	4	.70	151	4	.63	135
2-1	.50	173	2-1	.60	171	2-1	.60	171	2-1	.55	158
2	.60	171	2	.75	170	2	.70	170	2	.70	154
3	.60	171	3	.80	145	3	.65	169	3	.85	166
4	.55	124	4	.70	168	4	.50	118	4	.78	121
3-1	.65	170	3-1	.50	170	3-1	.65	171	3-1	.53	165
2	.75	173	2	.60	171	2	.60	173	2	.63	157
3	.85	172	3	.65	170	3	.70	169	3	.60	160
4	.80	118	4	.60	124	4	.85	152	4	.53	118
4-1	.55	168	4-1	.50	171	4-1	.80	171	4-1	.53	155
2	.65	171	2	.60	170	2	.75	170	2	.65	157
3	.75	173	3	.70	171	3	.70	164	3	.75	158
4	.70	117	4	.75	120	4	.70	118	4	.72	128

Form DS-108 REV 9-28-17

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

2255 Schillinger Rd N, Semmes, AL 36575 Phone: (251) 633-4120

SAMPLE COLLECTION DATA SHEET

Low Spike

Company: Drax		Unit: RCO		Run #: 2	
Pollutant:		Date: 7-16-21		Tester: MS	
Meter Box ID:	308-005	A Meter Factor (Y):	1.016		
Barometric (in. Hg):	29.66		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	24	15	
Oxygen %:		Leak Rate (Lpm):	0.009	0.003	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1408	0.000	101	40	MS ~~5000~~ 500	3
1413	2.6	101	40	500	3
1418	5.0	101	40		3
1423	7.6	101	40		3
1428	10.0	101	40		3
1433	12.4	102	40		3
1438	15.1	103	40		3
1443	17.4	103	40		3
1448	20.1	103	40		3
1453	22.4	103	40		3
1458	25.1	101	40		3
1503	27.5	101	40		3
1508	30.206				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Unspike

Company: Drax		Unit: RCO		Run #: 2	
Pollutant:		Date: 7-16-21		Tester: MS	
Meter Box ID:	308-005	B Meter Factor (Y):	0.979		
Barometric (in. Hg):	29.66		Pre	Post	
Static (in. H2O):		Vacuum (in. Hg):	20	15	
Oxygen %:		Leak Rate (Lpm):	0.004	0.001	
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1408	0.000	104	40	500	1
1413	2.6	104	40		1
1418	5.1	104	40		1
1423	7.5	105	40		1
1428	10.1	105	40		1
1433	12.5	106	40		1
1438	15.0	107	40		1
1443	17.6	107	40		1
1448	20.1	107	40		1
1453	22.3	106	40		1
1458	25.0	106	40		1
1503	27.6	105	40		1
1508	30.084				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Low Flow Meter Box Sample Data Sheet, Rev. 1

Effective Date: May 17, 2019
Approved by: JEJ

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC.

2255 Schillinger Rd N, Semmes, AL 36575 Phone: (251) 633-4120

SAMPLE COLLECTION DATA SHEET

High Spike

Company: Drax		Unit: RCO		Run #: 3	
Pollutant:		Date: 7-16-21		Tester: MS	
Meter Box ID:	30B-005	A Meter Factor (Y):		1.016	
Barometric (in. Hg):	29.66			Pre	Post
Static (in. H2O):		Vacuum (in. Hg):		18	16
Oxygen %:		Leak Rate (Lpm):		0.007	0.003
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1832	0.000	70	37	500	1
1837	2.4	70	37		1
1842	5.1	70	37		1
1847	7.5	71	37		1
1852	10.0	72	37		1
1857	12.5	72	37		1
1902	15.0	73	37		1
1907	17.5	74	37		1
1912	19.9	74	37		1
1917	22.5	75	37		1
1922	25.0	76	37		1
1927	27.5	77	37		1
1932	30.045				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Unspike

Company: Drax		Unit: RCO		Run #: 3	
Pollutant:		Date: 7-16-21		Tester: MS	
Meter Box ID:	30B-005	B Meter Factor (Y):		0.979	
Barometric (in. Hg):	29.66			Pre	Post
Static (in. H2O):		Vacuum (in. Hg):		17	15
Oxygen %:		Leak Rate (Lpm):		0.004	0.002
Carbon Dioxide %:		Tube ID:			

Time	DGM Reading (Liters)	DGM Temp (Deg. F)	Impinger Temp (Deg. F)	Sample Flowrate (ml/min)	Vac (in. Hg)
1832	0.000	70	37	500	1
1837	2.5	70	37		1
1842	5.2	71	37		1
1847	7.5	72	37		1
1852	10.0	73	37		1
1857	12.5	74	37		1
1902	15.0	75	37		1
1907	17.4	76	37		1
1912	19.9	77	37		1
1917	22.6	78	37		1
1922	25.0	79	37		1
1927	27.6	80	37		1
1932	30.112				

Volume of Liquid Collected

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Final:				
Initial:				
Net:				
Final Volume with Wash (ml):				
Condensate Sample Label ID:				
Tube Sample Label ID:				

Low Flow Meter Box Sample Data Sheet, Rev. 1

Effective Date: May 17, 2019
Approved by: JEJ

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: Amite	
Unit: RCO		Date: 7.17.21	
Run No. 1	Test Method: 202	Ambient Conditions 29.65	Concentrations
Operator: JEM (JEM)		Barometric (in. Hg): ~~29.64~~	Oxygen (%): 20.9
State Representative:		Static (in. H2O): -.40	Carbon Dioxide (%): 00.0

JEM 7.17.21

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	S-208	Meter Correction Factor, Y:	1.005	Vacuum (in Hg):	15	10	Final	58.202
Mag Box ID:	S-208	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.003	.002	Initial	0.000
Pyrite ID:	F-105	Pitot tube coefficient, Cp:	.84	Pitot (Yes/No):	✓	✓	Net	58.202
Probe ID:	1438	Nozzle diameter, Dn (in):	~~.247~~	Nozzle (Yes/No):	✓	✓	Comments: Nozzle = .275	
Pitot ID:	166	Balance response, (gm):	2000.1	~~.245~~ .275	Filters		Nozzle ID = 109-4B	
Nozzle ID:	~~109-4A~~ 109-3A	Std. weight ID:	E973	Filter No. 1 ID:	12287			
Balance Box ID:	DB001	K Factor:	5.1715	Filter No. 2 ID:				

JEM 7.17.21 JEM 7.17.21 JEM 7.17.21

	Traverse Point No.	Time 24 hr (1050)	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
0	1-1	~~1044~~	0.000	.55		2.84	165	249	250	81	45	89	3
	2		2.3	.55		2.84	165	250	252	80	47	89	3
5	3	55	4.6	.60		3.10	167	249	251	78	49	91	4
	4		7.2	.65		3.38	163	248	250	77	50	91	4
10	5	1100	9.6	.73		3.76	170	249	252	79	50	91	5
	6		12.9	.72		3.73	166	252	250	79	51	91	5
15	2-1	1124	15.129	.55		2.87	164	248	249	83	50	94	2
	2		17.5	.55		2.87	164	249	251	82	50	94	2
20	3	29	19.8	.55		2.88	163	250	249	81	51	95	2
	4		22.2	.57		2.99	161	248	250	82	51	95	3
25	5	34	24.4	.67		3.50	166	249	253	83	51	95	4
JEM 7.17.21	6		27.1	~~.58~~		3.06	161	252	254	82	50	97	3
30	3-1	1204	29.570	.55		2.87	167	248	249	83	52	97	3
	2		31.9	.55		2.89	165	248	253	82	52	97	3
35	3	09	34.5	.59		3.08	165	249	255	81	51	97	4
	4		36.7	.57		2.96	172	251	253	81	52	97	4
40	5	14	39.5	.57		2.99	165	250	255	82	52	97	3
	6		41.9	.56		2.91	171	249	251	81	52	97	3
45	4-1	1308	44.221	.50		2.61	165	248	252	80	50	95	3
	2		46.4	.50		2.57	175	252	254	81	50	95	3
50	3	13	48.7	.52		2.70	171	251	249	76	51	96	3
	4		51.2	.53		2.76	168	253	251	74	51	96	3
55	5	18	53.5	.53		2.25	172	249	250	74	51	96	3
	6		55.9	.51		2.64	171	248	249	73	52	96	3
60	END	1323	58.202										

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M.i ~~36.8752~~ 4.7

0.7772
0.7687

3.27 166 2.9604 90.33 0.7582
3.1967 164.5 166.7 92.67
3.0844 157.1 94.5 94.1

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: Amite, MS	
Unit: RCO		Date: 7-17-21	
Run No. 2	Test Method: 202	Ambient Conditions	Concentrations
Operator: JEM (DAM)		Barometric (in. Hg): 29.65	Oxygen (%): 20.9
State Representative:		Static (in. H2O): -.40	Carbon Dioxide (%): 00.0

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	5.208	Meter Correction Factor, Y:	1.005	Vacuum (in Hg):	15	10	Final	59.871
Mag Box ID:	5.208	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.004	.002	Initial	0.000
Pyrite ID:	F105	Pitot tube coefficient, Cp:	.84	Pitot (Yes/No):	✓	✓	Net	59.871
Probe ID:	143	Nozzle diameter, Dn (in):	.275	Nozzle (Yes/No):	✓	✓	Comments:	
Pitot ID:	166	Balance response, (gm):	2000.1	Filters				
Nozzle ID:	10943	Std. weight ID:	7973	Filter No. 1 ID:	12605			
Balance Box ID:	BB001	K Factor:	5.2647	Filter No. 2 ID:				

	Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm,ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in Hg) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
0	1-1	1436	0.000	.52		2.74	164	248	251	80	52	98	2
	2		2.3	.54		2.86	160	254	252	81	51	98	2
5	3	41	4.5	.53		2.82	158	253	251	77	51	98	2
	4		7.2	.55		2.89	165	250	255	73	50	99	2
10	5	46	9.6	.57		2.99	167	251	249	70	50	99	3
JEM 7.17.21	6		11.9	.56		2.93	167	249	248	71	51	99	3
15	2-1	1521	14.258	.55	2.92	~~2.29~~	168	248	249	79	53	106	4
	2		16.5	.57		3.04	164	249	251	80	53	106	4
JEM 7.17.21 20	3	26	18.5 ~~21.3~~	.58		3.09	166	253	255	79	52	106	5
	4		21.8	.58		3.09	166	249	251	79	52	108	5
25	5	31	23.9	.65		3.45	170	248	253	78	52	108	5
	6		26.9	.68		3.61	171	250	255	79	53	108	5
JEM 7.17.21 30	3-1	1554	29.460	.55		2.96	167	248	251	81	55	113	5
	2		33.0	.55		2.97	165	251	252	80	54	113	5
35	3	59	34.2	.54		2.93	162	249	254	76	49	113	5
	4		36.8	.54		2.90	168	252	255	73	46	113	5
40	5	1604	39.1	.57		3.05	170	249	248	73	46	113	5
	6		41.7	.60		3.22	169	253	251	72	47	113	5
45	4-1	1624	44.273	.55		2.94	169	248	249	77	52	112	4
	2		46.8	.57		3.06	167	234	253	78	52	112	4
50	3	29	49.3	.55		2.92	175	250	251	75	53	112	4
	4		51.8	.67		3.58	171	249	252	75	53	112	4
55	5	34	54.3	.70		3.72	172	252	249	68	47	110	4
	6		57.0	.65		3.45	172	248	251	66	46	110	4
60	END	1639	59.871										

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0.7348 2.87 163.3 [illegible].17 0.5800 78.5
0.7566 3.04 165.5 167.2 102.75
0.7534 3.03 165.9 107.96 106.17

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: ~~7.17.21~~ Amite	JEM 7.17.21
Unit: RCO		Date: 7.17.21	
Run No. 3	Test Method: 202	Ambient Conditions	Concentrations
Operator: JEM (JEM)		Barometric (in. Hg): 29.65	Oxygen (%): 20.9
State Representative:		Static (in. H2O): -.40	Carbon Dioxide (%): 00.0

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	S.208	Meter Correction Factor, Y:	1.005	Vacuum (in Hg):	15	10	Final	59.893
Mag Box ID:	S.208	Meter Box, ΔH@ (in H2O):	1.861	Leak Rate (cfm):	.005	.003	Initial	0.000
Pyrite ID:	F105	Pitot tube coefficient, Cp:	.84	Pitot (Yes/No):	✓	✓	Net	59.893
Probe ID:	14 3	Nozzle diameter, Dn (in):	.275	Nozzle (Yes/No):	✓	✓	Comments:	
Pitot ID:	166	Balance response, (gm):	2000.1	Filters				
Nozzle ID:	1094B	Std. weight ID:	7173	Filter No. 1 ID:	j2630			
Balance Box ID:	88001	K Factor:	5.1087	Filter No. 2 ID:				

JEM 7.17.21

	Traverse Point No.	Time 24 hr (1928)	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1	1-1	~~1928~~	0.000	.55		2.83	153	248	249	78	52	76	2
	2		2.3	.55		2.83	154	251	250	77	50	76	2
5	3	33	4.6	.60		3.06	160	253	250	76	51	77	2
	4		7.0	.57		2.89	164	255	249	77	51	78	1
10	5	38	9.4	.59		3.01	160	253	255	77	52	78	1
	6		11.9	.59		3.01	159	251	252	76	52	78	1
15	2-1	2010	14.317	.55		2.81	162	249	253	75	50	80	2
	2		16.6	.57		2.92	160	252	255	76	50	80	2
20	3	15	19.1	.72		3.69	160	251	250	77	51	80	2
	4		21.6	.75		3.88	155	255	245	76	51	81	2
25	5	20	24.6	.75		3.88	155	250	251	74	52	81	2
	6		27.0	.70		3.60	161	249	252	74	52	82	3
30	3-1	2039	29.773	.57		2.95	157	248	250	75	50	83	3
	2		32.2	.55		2.85	160	249	252	75	51	83	3
35	3	44	34.5	.63		3.23	162	250	253	74	51	83	3
	4		37.1	.59		3.04	160	251	249	75	52	84	3
40	5	49	39.5	.59		3.04	162	249	250	75	52	85	3
	6		42.0	.61		3.15	162	248	252	76	52	85	3
45	4-1	2104	44.430	.57		2.97	159	249	250	75	50	87	3
	2		46.9	.57		2.96	160	250	252	75	50	87	3
50	3	09	49.2	.62		3.24	157	248	249	75	51	87	3
	4		52.3	.65		3.39	157	249	250	76	52	87	3
55	5	14	54.4	.72		3.75	158	250	254	77	52	87	4
	6		57.1	.75		3.91	157	252	253	77	53	87	5
60	END	2119	59.893										
				0.7582		3.03	158.3					~~78~~ 77.16	
				0.7817		3.10	160					80.55	

Form DS-101 REV. 9-29-17

Sanders Engineering & Analytical Services, Inc.
Sample Recovery Field Data Sheet

Company: Drax
Unit: RCO

Plant: Amite, MS
Location: Amite, MS

Run No. 1 | Date 7.17.21 | Method 202 | Filter No. 18287 | Analyst Jeffery | Glassware Case ID

	Impinger 1	2	3	4	5	6	Imp. Total	7	Total	Purge Time	Filter Temp	Silica Gel Temp	Nitrogen Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	387.9	646.8	763.5					100.1					
Initial	361.4	646.8	745.4					985.8 ~~[illegible]~~ 1					
Net	26.5	0.0	18.1				44.6	14.3	58.9				
Color	Clear	Clear	Clear					Blue					
Condition	Cold	Cold	Cold					Cold					

Notes:

Run No. 2 | Date 7.17.21 | Method 202 | Filter No. 12605 | Analyst Jeffery | Glassware Case ID

	Impinger 1	2	3	4	5	6	Imp. Total	7	Total	Purge Time	CPM Temp	Silica Gel Temp	Nitrogen Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	452.4	597.8	705.7 ~~452.9~~					940.4					
Initial	393.2	596.8	705.7					927.4					
Net	59.2	1	0				60.2	15.0	75.2				
Color	Clear	Clear	Clear					Blue					
Condition	Cold	Cold	Cold					Cold					

Notes:

Run No. 3 | Date 7.17.21 | Method 202 | Filter No. 12630 | Analyst Matt | Glassware Case ID

Jeff 7.17.21

	Impinger 1	2	3	4	5	6	Imp. Total	7	Total	Purge Time	CPM Temp	Silica Gel Temp	Nitrogen Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	~~362.5~~	649.7	768.4	393.6				1024.4					
Initial	~~395.6~~	647.8	755.0	362.5				1008.7					
Net		1.9	13.4	31.1			46.4	15.7	62.1				
Color		Clear	Clear	Clear				Blue					
Condition		Cold	Cold	Cold				Cold					

Notes:

Reagent 1 ______ Lot / Solution No. ______ Jeff 7.17.21 Reagent 3 ______ Lot / Solution No. ______
Reagent 2 ______ Lot / Solution No. ______ Reagent 4 ______ Lot / Solution No. ______

Form DS-102 REV. 9-28-17

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: Drax Amite

UNIT #: RCO DATE OF TEST 9-17-21 TYPE OF TEST: ☑ M-5 ☐ M-17 ☐ OTHER ____

SAMPLE #	RELINQUISHED BY:	RECEIVED BY:	TIME:	DATE:	REASON FOR CHANGE
21-431	JWH	JWH	0815	7-17-21	Analysis
21-434					
21-437	|	|	|	|	|

Location ____ Location ____

RUN # 1	FILTER # 12287	BEAKER H-3 WASH (ML) 50	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg	316.0	64,546.2	FINAL WEIGHT mg		
INITIAL WEIGHT mg	315.9	64,542.8	INITIAL WEIGHT mg		
DIFFERENCE mg	0.1	3.4	DIFFERENCE mg		
	CORRECTED TOTAL WEIGHT	3.5		CORRECTED TOTAL WEIGHT	
RUN # 2	FILTER # 12605	BEAKER H-18 WASH (ML) 45	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg	358.9	66,630.0	FINAL WEIGHT mg		
INITIAL WEIGHT mg	359.1	66,625.7	INITIAL WEIGHT mg		
DIFFERENCE mg	-0.2	4.3	DIFFERENCE mg		
	CORRECTED TOTAL WEIGHT	4.1		CORRECTED TOTAL WEIGHT	
RUN # 3	FILTER # 12630	BEAKER S-26 WASH (ML) 50	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg	362.0	70,135.8	FINAL WEIGHT mg		
INITIAL WEIGHT mg	361.9	70,133.1	INITIAL WEIGHT mg		
DIFFERENCE mg	0.1	2.7	DIFFERENCE mg		
	CORRECTED TOTAL WEIGHT mg	2.8		CORRECTED TOTAL WEIGHT mg	

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC
LABORATORY ANALYSIS - CONDENSABLE PARTICULATE MATTER

Samples Provided by: Drax Biomass
Test Location: Amite Co, MS (Gloster) Test Date: 7-17-21
Test Source: RCO Test Method: 5/202

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 1500		
Run #: 1	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	52,242.5	RLC	1. 7-22-21 / 1500	52,244.3	TCA
Tin/ Beaker ID: 6-7	2. 7-14-21/0816	52,242.4	RLC	2. 7-23-21 / 0915	52,244.4	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg: 2.0					
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0830		
Run #: 1	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	6,399.3	RLC	1. 7-22-21 / 1500	6,401.2	TCA
Tin/ Beaker ID: 11-5	2. 7-14-21/0816	6,399.5	RLC	2. 7-23-21 / 0815	6,401.3	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg: 1.8					

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 1500		
Run #: 2	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	51,916.7	RLC	1. 7-22-21 / 1500	51,917.8	TCA
Tin/ Beaker ID: 6-8	2. 7-14-21/0816	51,916.3	RLC	2. 7-23-21 / 0915	51,917.8	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg: 1.5					
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0820		
Run #: 2	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	6,373.8	RLC	1. 7-22-21 / 1500	6,375.5	TCA
Tin/ Beaker ID: 11-2	2. 7-14-21/0816	6,373.7	RLC	2. 7-23-21 / 0815	6,375.9	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg: 2.2					

Date/Time	Lab Amb. Temp (°F)	Lab Rel. Humidity (%)	Date/Time	Lab Amb. Temp (°F)	Lab Rel. Humidity (%)
7-9-21/0435	71.8	4.9			
7-14-21/~~0835~~	72.0	3.7			
RLC 0816					
7-22-21 / 1500	71.9	TA ~~6.0~~ 48.1			
7-23-21 / 0812	72.2	TA ~~6.0~~ 48.1			

[1] Tin/beaker must be desicated for a minimum of 24 hours before obtaining an initial or final weight.
[2] After completing the 24 hour desication period, weigh the tin/beaker at intervals of at least 6 hours until two consecutive weights agree within 0.5 mg. The second consecutive weight will be the mass used to calculate the amount of particulate collected.
[3] Document the laboratory temperature and humidity at each weighing interval.

Condensable Lab Analysis Form Rev 2

Effective Date: Jan. 22, 2019
Approved by: JEJ

SANDERS ENGINEERING & ANALYTICAL SERVICES, INC

LABORATORY ANALYSIS · CONDENSABLE PARTICULATE MATTER

Samples Provided by: Drax Biomass

Test Location: Amite Co, MS (Gloster) Test Date: 7-14-21

Test Source: RCO Test Method: 5/202

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 1500		
Run #: 3	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	52,037.7	RLC	1. 7-22-21 /1500	52,038.4	TCA
Tin/ Beaker ID: 6-9	2. 7-14-21/0816	52,037.7	RLC	2. 7-23-21 / 0815	52,038.3	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg:			0.6		
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0820		
Run #: 3	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	6,399.1	RLC	1. 7-22-21 /1500	6,401.6	TCA
Tin/ Beaker ID: H-3	2. 7-14-21/0816	6,399.6	RLC	2. 7-23-21 /0815	6,401.3	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg:			1.7		

Sample Information	Initial Weighing			Final Weighing		
Inorganic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-21-21 - 1500		
Run #: Blank	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	6,396.1	RLC	1. 7-22-21 /1500	6,397.6	TCA
Tin/ Beaker ID: L-23	2. 7-14-21/0816	6,396.3	RLC	2. 7-23-21 /0815	6,397.3	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of inorganic particulate collected, mg:			1.0		
Organic Catch	Date/Time into desicator: 7-8-21/0900			Date/Time into desicator: 7-20-21/0820		
Run #: Blank	Date/Time	Initial Weight (mg)	Analyst	Date/Time	Final Weight (mg)	Analyst
Sample ID:	1. 7-9-21/0935	6,388.0	RLC	1. 7-22-21 /1500	6,390.0	TCA
Tin/ Beaker ID: H-10	2. 7-14-21/0816	6,388.0	RLC	2. 7-23-21 /0815	6,390.0	TCA
	3.			3.		
Sample Volume (mL):	4.			4.		
	Weight of organic particulate collected, mg:			2.0		

Date/Time	Lab Amb. Temp (°F)	Lab Rel. Humidity (%)	Date/Time	Lab Amb. Temp (°F)	Lab Rel. Humidity (%)
7-9-21/0935	71.8	4.9			
7-14-21/0816	72.0	3.7			
7-22-21 / 1500	71.9	TA 6-10 49.1			
7-23-21 / 0812	72.2	6/0 49.1			

[1] Tin/beaker must be desicated for a minimum of 24 hours before obtaining an initial or final weight

[2] After completing the 24 hour desication period, weigh the tin/beaker at intervals of at least 6 hours until two consecutive weights agree within 0.5 mg. The second consecutive weight will be the mass used to calculate the amount of particulate collected

[3] Document the laboratory temperature and humidity at each weighing interval.

Condensable Lab Analysis Form Rev 2

Effective Date: Jan 22 2019
Approved by: JEJ

Velocity & Temperature Field Data Sheet

Company: Drax Plant: Amite Unit: RCO Date: 7-17-21

Run:	Pre-Flow Particle	Pre-Flow Particle	Pre-Flow Particle	
Duct Dimensions:	Sizer 1	Sizer 2	Sizer 3	
Start/Finish Time:	923 / 928	1400 / 1408	1920 / 1925	/
% O_2: / % CO_2:	/	/	/	/
% H2O: Dry Bulb (°F) / Wet Bulb:	/	/	/	/
Pbar: / Static:	29.65 / -0.40	29.65 / -0.40	29.65 / -0.40	/
Team Members:	MS, CH	MS, CH	MS, CH	
Post Leak check:	✓	✓	✓	

Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F	Point/ Port	DP	Stack Temp °F
1-1	0.40	161	1-1	0.50	160	1-1	0.50	160			
2	0.50	162	2	0.50	162	2	0.60	165			
3	0.45	152	3	0.50	164	3	0.55	164			
2-1	0.45	153	2-1	0.65	164	2-1	0.50	157			
2	0.60	155	2	0.75	166	2	0.70	159			
3	0.70	157	3	0.80	164	3	0.75	167			
3-1	0.40	157	3-1	0.60	167	3-1	0.55	164			
2	0.50	161	2	0.70	159	2	0.60	166			
3	0.50	151	3	0.60	157	3	0.65	164			
4-1	0.25	159	4-1	0.55	164	4-1	0.55	164			
2	0.25	157	2	0.80	165	2	0.75	162			
3	0.30	156	3	0.80	160	3	0.75	160			

Form DS-108 REV 9-28-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: Amite	
Unit: RCO		Date: 7-17-21	
Run No. 1	Test Method: 2019	Ambient Conditions	Concentrations
Operator: MS		Barometric (in. Hg): 29.65	Oxygen (%): Ambient
State Representative:		Static (in. H2O): − 0.40	Carbon Dioxide (%): Ambient

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	S-202	Meter Correction Factor, Y:	1.006	Vacuum (in Hg):	20	—	Final	28.190
Mag Box ID:	S-202	Meter Box, ΔH@ (in H2O):	1.849	Leak Rate (cfm):	0.006	—	Initial	0.000
Pyrite ID:	F-105	Pitot tube coefficient, Cp:	0.84	Pitot (Yes/No):	yes	yes	Net	28.190
Probe ID:	38E	5 Nozzle diameter, (in.):	~~0.198~~ MS 7-17 0.209	Nozzle (Yes/No):	yes	yes	Comments:	
A6331 Pitot ID:	~~374~~ MS	Balance response, (gm):	2000.0	Filters				
Nozzle ID:	5 7-17	Std. weight ID:	2967	Filter No. 1 ID:	6274			
Balance Box ID:	BB004	K Factor:	—	Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	1041	0.000	0.45		0.464	164	—	—	—	55	87	0
2	1059	1.9	0.50		0.464	167				56	87	0
3	1100	4.2	0.50		0.464	167				58	88	0
2-1	1124	6.456	0.55		0.464	164				58	90	1
2	1130	8.8	0.65		0.464	160				59	90	1
3	1137	11.4	0.70		0.464	157				60	90	0
3-1	1209	14.094	0.55		0.464	164				60	92	1
2	1210	16.3	0.55		0.464	161				61	92	0
3	1216	18.4	0.60		0.464	163				61	92	0
4-1	1309	20.660	0.55		0.464	165				62	92	2
2	1315	29.8	0.70		0.464	164				62	92	1
3	1322	25.5	0.70		0.464	166				63	93	1
End	1328	28.190										

Rebegin start 1050

Form DS-101 REV. 8-28-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: Amite	
Unit: RCO		Date: 7-17-21	
Run No. 2	Test Method: 201A	Ambient Conditions	Concentrations
Operator: MS		Barometric (in. Hg): 29.65	Oxygen (%): Ambient
State Representative:		Static (in. H2O): -0.40	Carbon Dioxide (%): Ambient

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	S-202	Meter Correction Factor, Y:	1.006	Vacuum (in Hg):	22	—	Final	23.647
Mag Box ID:	S-202	Meter Box, ΔH@ (in H2O):	1.844	Leak Rate (cfm):	0.009	—	Initial	0.000
Pyrlin ID:	F-105	Pitot tube coefficient, Cp:	~~0.84~~ 0.859	Pitot (Yes/No):	yes	yes	Net	23.647
Probe ID:	382	4 Nozzle diameter, Dn (in): 0.170	~~MS 7-17~~	Nozzle (Yes/No):	yes	yes	Comments:	
N653K Pitot ID:	~~397~~	MS 7-17 Balance response, (gm):	2000.0	Filters				
Nozzle ID:	4	Std. weight ID:	7967	Filter No. 1 ID:	6279			
Balance Box ID:	GB004	K Factor:	—	Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Orifice Pressure Differential (ΔH, in H2O) Actual	Temperature °F Stack	Temperature °F Probe	Temperature °F Filter	Temperature °F CPM Filter	Temperature °F Impinger	Temperature °F Gas Meter	Vacuum (in. Hg)
1-1	1433	0.000	0.50		0.448	164	—	—	—	60	96	2
2	1438	1.8	0.60		0.448	158				58	97	2
3	1443	3.8	0.55		0.448	158				57	97	2
2-1	1519	5.676	0.50		0.448	160				55	~~105~~ 103	2
2	1524	7.3	0.70		0.448	162				55	103	2
3	1529	9.4	0.75		0.448	155				55	105	2
3-1	1553	11.481	0.55		0.448	167				57	106	2
2	1558	13.3	0.60		0.448	162				58	109	2
3	1603	15.3	0.65		0.448	164				58	109	2
4-1	1624	17.330	0.55		0.448	167				59	107	2
2	1629	19.2	0.75		0.448	170				59	106	2
3	1634	21.4	0.75		0.448	168				60	104	2
End	1640	23.647										

Form DS-101 REV. 9-28-17

Sanders Engineering & Analytical Services, Inc.

Company: Drax		Plant: Amite	
Unit: RCO		Date: 5-17-21	
Run No. 3	Test Method: 201a	Ambient Conditions	Concentrations
Operator: MS		Barometric (in. Hg): 29.65	Oxygen (%): Ambient
State Representative:		Static (in. H2O): -0.40	Carbon Dioxide (%): Ambient

Equipment Identification		Calibration		Checks	Pre	Post	Gas Meter Reading	
Meter Box ID:	S-202	Meter Correction Factor, Y:	1.046	Vacuum (in Hg):	15	—	Final	23.787
Mag Box ID:	S-282	Meter Box, ΔH@ (in H2O):	1.844	Leak Rate (cfm):	0.003	✓	Initial	0.000
Pyrite ID:	F-105	Pitot tube coefficient, Cp:	~~0.84~~ 0.859	Pitot (Yes/No):	yes	yes	Net	23.787
Probe ID:	382	4 Nozzle diameter, In:	~~.178~~ MS 7-12	Nozzle (Yes/No):	yes	yes	Comments:	
A6334 Pitot ID:	~~374~~ MS 7-17	Balance response, (gm):	2000.0	Filters				
Nozzle ID:	4	Std. weight ID:	7967	Filter No. 1 ID:	6280			
Balance Box ID:	B8004	K Factor:	—	Filter No. 2 ID:				

Traverse Point No.	Time 24 hr	Gas Meter Reading (Vm, ft3)	Velocity Head (ΔP in H2O)	Orifice Pressure Differential (ΔH, in H2O) Desired	Actual	Temperature °F Stack	Probe	Filter	CPM Filter	Impinger	Gas Meter	Vacuum (in. Hg)
1-1	1928	0.000	0.55		0.445	160	—	—	—	48	73	0
2	1933	1.996	0.60		0.445	164				50	74	0
3	1938	3.9	0.68		0.445	165				51	74	0
2-1	2010	5.769	0.60		0.445	164				52	75	1
2	2016	7.6	0.75		0.445	161				54	75	0
3	2021	9.8	0.80		0.445	163				54	75	0
3-1	2038	12.147	0.50		0.445	160				55	77	0
2	2043	13.9	MS ~~0.50~~ 0.55		0.445	160				55	77	0
3	2048	15.8	0.65		0.445	161				56	77	0
4-1	2104	17.801	0.60		0.445	163				56	77	0
2	2109	19.7	0.75		0.445	161				56	78	0
3	2115	21.5	0.80		0.445	160				57	78	0
End	2121	23.787										

Form DS-101 REV. 9-28-17

Sanders Engineering & Analytical Services, Inc.
Sample Recovery Field Data Sheet

Company: Drax Plant: Amite
Unit: RCO Location: Amite, MS

Run No. 1 Method 201a Analyst MS
Date 7-17-21 Filter No. 6274 Glassware Case ID —

Volume of Liquid Collected										Purge			
	Impinger										Filter	Silica Gel	Nitrogen
	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	1263.5	861.6	719.0					2296.5					
Initial	1233.4	860.0	718.8					2288.1					
Net	30.1	1.6	0.2				31.9	8.4	40.3				
Color													
Condition													

Notes:

Run No. 2 Method 201a Analyst MS
Date 7-17-21 Filter No. 6279 Glassware Case ID —

Volume of Liquid Collected										Purge			
	Impinger										CPM	Silica Gel	Nitrogen
	~~1~~	1	2	3	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final		1288.7	862.1	719.8				2298.8					
Initial		1263.5	861.6	719.0				2296.5					
Net		25.2	0.5	0.8			26.5	2.3	28.8				
Color													
Condition													

Notes:

Run No. 3 Method 201a Analyst MS
Date 7-17-21 Filter No. 6280 Glassware Case ID —

Volume of Liquid Collected										Purge			
	Impinger										CPM	Silica Gel	Nitrogen
	1	2	3	4	5	6	Imp. Total	7	Total	Time	Temp	Temp	Flow (lpm)
Contents								Silica Gel					
Units (circle one)	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml	grams / ml		grams					
Final	1314.0	863.5	720.4					2301.1					
Initial	1288.7	862.1	719.8					2298.8					
Net	25.3	1.4	0.6				27.3	2.3	29.6				
Color													
Condition													

Notes:

Reagent 1 ______ Lot / Solution No. ______ Reagent 3 ______ Lot / Solution No. ______
Reagent 2 ______ Lot / Solution No. ______ Reagent 4 ______ Lot / Solution No. ______

Form DS-109 REV. 9-26-17

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: Drax Amite

UNIT #: RCO DATE OF TEST: 7-17-21 TYPE OF TEST: ☐ M-5 ☐ M-17 ☑ OTHER 201a

SAMPLE #	RELINQUISHED BY:	RECEIVED BY:	TIME:	DATE:	REASON FOR CHANGE
21-440	JWH	JWH	0815	7-19-21	Analysis
21-441					
21-442					
21-443					
21-444					
21-445					

Location Location

RUN # 1 >10	FILTER #	BEAKER S-1	RUN # 2 >10	FILTER #	BEAKER S-5
		WASH (ML) 35			WASH (ML) 40
FINAL WEIGHT mg		68,052.2	FINAL WEIGHT mg		69,986.1
INITIAL WEIGHT mg		68,050.3	INITIAL WEIGHT mg		69,985.6
DIFFERENCE mg		1.9	DIFFERENCE mg		0.5
CORRECTED TOTAL WEIGHT			CORRECTED TOTAL WEIGHT		
RUN # 1 10-2.5	FILTER #	BEAKER S-2	RUN # 2 10-2.5	FILTER #	BEAKER S-11
		WASH (ML) 30			WASH (ML) 40
FINAL WEIGHT mg		67,669.7	FINAL WEIGHT mg		69,385.8
INITIAL WEIGHT mg		67,669.0	INITIAL WEIGHT mg		69,385.5
DIFFERENCE mg		0.7	DIFFERENCE mg		0.3
CORRECTED TOTAL WEIGHT			CORRECTED TOTAL WEIGHT		
RUN # 1 <2.5	FILTER # 6274	BEAKER W-3	RUN # 2 <2.5	FILTER # 6279	BEAKER H-17
		WASH (ML) 30			WASH (ML) 30
FINAL WEIGHT mg	111.6	64,811.9	FINAL WEIGHT mg	113.0	66,729.6
INITIAL WEIGHT mg	112.0	64,811.8	INITIAL WEIGHT mg	112.8	66,729.3
DIFFERENCE mg	-0.4	0.1	DIFFERENCE mg	0.2	0.3
CORRECTED TOTAL WEIGHT mg		-0.3	CORRECTED TOTAL WEIGHT mg		0.5

LABORATORY ANALYSIS & CHAIN OF CUSTODY

COMPANY/PLANT: ______

UNIT #: RCO DATE OF TEST: 7-17-21 TYPE OF TEST: ☐ M-5 ☐ M-17 ☑ OTHER 201a

SAMPLE #	RELINQUISHED BY:	RECEIVED BY:	TIME:	DATE:	REASON FOR CHANGE
21-446	JWH	JWH	0815	7-19-21	Analysis
21-447					
21-448					

Location ______ Location ______

RUN # 3 >10	FILTER #	BEAKER S-22 WASH (ML) 55	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg		67789.4	FINAL WEIGHT mg		
INITIAL WEIGHT mg		67,788.2	INITIAL WEIGHT mg		
DIFFERENCE mg		1.2	DIFFERENCE mg		
CORRECTED TOTAL WEIGHT			CORRECTED TOTAL WEIGHT		
RUN # 3 10-2.5	FILTER #	BEAKER H-33 WASH (ML) 45	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg		65,934.9	FINAL WEIGHT mg		
INITIAL WEIGHT mg		65,934.3	INITIAL WEIGHT mg		
DIFFERENCE mg		0.6	DIFFERENCE mg		
CORRECTED TOTAL WEIGHT			CORRECTED TOTAL WEIGHT		
RUN # 3 <2.5	FILTER # 6280	BEAKER 66 WASH (ML) 30	RUN #	FILTER #	BEAKER WASH (ML)
FINAL WEIGHT mg	111.1	67,173.8	FINAL WEIGHT mg		
INITIAL WEIGHT mg	111.6	67,173.5	INITIAL WEIGHT mg		
DIFFERENCE mg	-0.5	0.3	DIFFERENCE mg		
CORRECTED TOTAL WEIGHT mg		0.2	CORRECTED TOTAL WEIGHT mg		

APPENDIX D GAS CERTIFICATIONS

Airgas.
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02NI90E15A0228	Reference Number:	122-401541733-1
Cylinder Number:	EB0122429	Cylinder Volume:	145.2 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22019	Valve Outlet:	590
Gas Code:	O2,BALN	Certification Date:	Jul 08, 2019

Expiration Date: Jul 08, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
OXYGEN	10.00 %	10.03 %	G1	+/- 0.4% NIST Traceable	07/08/2019
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	09060212	CC262381	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 05, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba MPA510 O2 41499150042	Paramagnetic	Jun 13, 2019

Triad Data Available Upon Request

Approved for Release

Page 1 of 122-401541733-1

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02AI99E15A0565	Reference Number:	122-401377832-1
Cylinder Number:	CC334462	Cylinder Volume:	146.2 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
Gas Code:	PPN,BALA	Certification Date:	Dec 19, 2018

Expiration Date: Dec 19, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	90.00 PPM	90.92 PPM	G1	+/- 0.8% NIST Traceable	12/19/2018
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	16060313	CC471402	99.7 PPM PROPANE/AIR	+/- 0.5	Nov 16, 2021

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Dec 13, 2018

Triad Data Available Upon Request

Approved for Release

Page 1 of 122-401377832-1

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02AI99E15A0456	Reference Number:	122-401377833-1
Cylinder Number:	CC459201	Cylinder Volume:	146.2 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
Gas Code:	PPN,BALA	Certification Date:	Dec 17, 2018

Expiration Date: Dec 17, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	50.00 PPM	50.33 PPM	G1	+/- 0.8% NIST Traceable	12/17/2018
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	00010630	ALM025189	49.8 PPM PROPANE/AIR	+/- 0.6%	Apr 24, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Dec 13, 2018

Triad Data Available Upon Request

Approved for Release

Page 1 of 122-401377833-1

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02AI99E15A0705	Reference Number:	122-401904072-1
Cylinder Number:	XC025792B	Cylinder Volume:	146.2 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22020	Valve Outlet:	590
Gas Code:	PPN,BALA	Certification Date:	Sep 15, 2020

Expiration Date: Sep 15, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	30.00 PPM	30.13 PPM	G1	+/- 0.5% NIST Traceable	09/15/2020
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	18060309	6162666Y	29.99 PPM PROPANE/AIR	+/- 0.4%	Jun 14, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Sep 02, 2020

Triad Data Available Upon Request

Approved for Release

Page 1 of 122-401904072-1

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02AI99E15A6H73	Reference Number:	122-401377831-1
Cylinder Number:	CC258171	Cylinder Volume:	146.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22018	Valve Outlet:	590
Gas Code:	PPN,BALA	Certification Date:	Dec 19, 2018

Expiration Date: Dec 19, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	525.0 PPM	522.3 PPM	G1	+/- 0.8% NIST Traceable	12/19/2018
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12010925	ND46385	487 PPM PROPANE/AIR	+/- 0.6%	Apr 24, 2024

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Dec 13, 2018

Triad Data Available Upon Request

Approved for Release

Page 1 of 122-401377831-1

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E05NI88E15A0032	Reference Number:	122-401836242-1
Cylinder Number:	CC21118	Cylinder Volume:	150.5 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22020	Valve Outlet:	660
Gas Code:	CO2,CO,NO,NOX,SO2,BALN	Certification Date:	Jun 26, 2020

Expiration Date: Jun 26, 2028

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	250.0 PPM	258.9 PPM	G1	+/- 0.6% NIST Traceable	06/19/2020, 06/26/2020
CARBON MONOXIDE	250.0 PPM	244.6 PPM	G1	+/- 0.3% NIST Traceable	06/19/2020
NITRIC OXIDE	250.0 PPM	258.9 PPM	G1	+/- 0.6% NIST Traceable	06/19/2020, 06/26/2020
SULFUR DIOXIDE	250.0 PPM	254.4 PPM	G1	+/- 0.7% NIST Traceable	06/19/2020, 06/26/2020
CARBON DIOXIDE	11.00 %	11.17 %	G1	+/- 0.8% NIST Traceable	06/19/2020
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13010207	KAL003102	246.9 PPM CARBON MONOXIDE/NITROGEN	+/- 0.2%	Oct 16, 2024
PRM	12386	D685025	9.91 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Feb 20, 2020
NTRM	18060106	KAL003429	249.9 PPM NITRIC OXIDE/NITROGEN	+/- 0.4%	Nov 08, 2023
GMIS	401203436103	CC513857	4.632 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.1%	May 02, 2022
NTRM	15060658	CC450671	248.1 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.6%	Dec 17, 2020
NTRM	13060735	CC414568	16.939 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 14, 2025

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801549 CO2	FTIR	May 28, 2020
Horiba VIA510 CO RS2EGL6K	Nondispersive Infrared (NDIR)	May 28, 2020
Nicolet 6700 AHR0801549 NO	FTIR	Jun 24, 2020
Nicolet 6700 AHR0801549 NO	FTIR	Jun 24, 2020
Nicolet 6700 AHR0801549 SO2	FTIR	Jun 24, 2020

Triad Data Available Upon Request

Approved for Release

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Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E05NI93E15A0001	Reference Number:	122-402120558-1
Cylinder Number:	CC114656	Cylinder Volume:	147.5 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	660
Gas Code:	CO,CO2,NO,NOX,SO2,BALN	Certification Date:	Jun 04, 2021

Expiration Date: Jun 04, 2029

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	125.0 PPM	125.6 PPM	G1	+/- 1.3% NIST Traceable	05/28/2021, 06/04/2021
CARBON MONOXIDE	125.0 PPM	128.7 PPM	G1	+/- 0.3% NIST Traceable	05/28/2021
NITRIC OXIDE	125.0 PPM	125.6 PPM	G1	+/- 1.3% NIST Traceable	05/28/2021, 06/04/2021
SULFUR DIOXIDE	125.0 PPM	122.9 PPM	G1	+/- 0.9% NIST Traceable	05/28/2021, 06/04/2021
CARBON DIOXIDE	6.000 %	6.093 %	G1	+/- 0.6% NIST Traceable	05/28/2021
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13010207	KAL003102	246.9 PPM CARBON MONOXIDE/NITROGEN	+/- 0.2%	Oct 16, 2024
PRM	12386	D685025	9.91 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Feb 20, 2020
NTRM	20061033	CC733319	98.61 PPM NITRIC OXIDE/NITROGEN	+/- 0.9%	Oct 06, 2026
GMIS	401423838102	CC505581	4.348 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.1	Feb 18, 2023
NTRM	17060417	CC484956	98.32 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.8%	Dec 07, 2022
NTRM	08010516	K019119	4.954 % CARBON DIOXIDE/NITROGEN	+/- 0.5%	Dec 14, 2023

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801549 CO2	FTIR	May 26, 2021
Horiba VIA510 CO RS2EGL6K	Nondispersive Infrared (NDIR)	May 26, 2021
Nicolet 6700 AHR0801549 NO	FTIR	May 26, 2021
Nicolet 6700 AHR0801549 NO	FTIR	May 26, 2021
Nicolet 6700 AHR0801549 SO2	FTIR	May 26, 2021

Triad Data Available Upon Request

Approved for Release

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Airgas.
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E05NI88E15A0PY4	Reference Number:	122-401679854-1
Cylinder Number:	CC 507534	Cylinder Volume:	150.5 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22019	Valve Outlet:	660
Gas Code:	CO,CO2,NO,NOX,SO2,BALN	Certification Date:	Dec 24, 2019

Expiration Date: Dec 24, 2027

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NOX	55.00 PPM	55.04 PPM	G1	+/- 1.4% NIST Traceable	12/17/2019, 12/24/2019
CARBON MONOXIDE	55.00 PPM	52.88 PPM	G1	+/- 0.8% NIST Traceable	12/17/2019
NITRIC OXIDE	55.00 PPM	55.02 PPM	G1	+/- 1.4% NIST Traceable	12/17/2019, 12/24/2019
SULFUR DIOXIDE	55.00 PPM	55.36 PPM	G1	+/- 1.0% NIST Traceable	12/17/2019, 12/24/2019
CARBON DIOXIDE	11.00 %	11.08 %	G1	+/- 1.0% NIST Traceable	12/17/2019
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	09010213	KAL004779	98.48 PPM CARBON MONOXIDE/NITROGEN	+/- 0.5%	Oct 16, 2024
PRM	PRM	D562879	10.01 PPM NITROGEN DIOXIDE/AIR	+/- 1.9%	Aug 17, 2018
NTRM	17060211	CC481902	100.3 PPM NITRIC OXIDE/NITROGEN	+/- 1.0%	Jul 23, 2023
GMIS	124206889114	CC322698	4.432 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Aug 15, 2021
NTRM	14010329	KAL004427	49.08 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.9%	Apr 17, 2024
NTRM	13060439	CC414732	7.489 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 14, 2025

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 CO2	FTIR	Dec 04, 2019
Horiba VIA510 CO 1G46EA07	Nondispersive Infrared (NDIR)	Dec 04, 2019
Nicolet 6700 AHR0801333 NO	FTIR	Dec 04, 2019
Nicolet 6700 AHR0801333 NO2	FTIR	Dec 04, 2019
Nicolet 6700 AHR0801333 SO2	FTIR	Dec 04, 2019

Triad Data Available Upon Request

Approved for Release

Page 1 of 122-401679854-1

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
630 United Drive
Durham, NC 27713
Airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02AI99E15W0005	Reference Number:	122-401607088-1
Cylinder Number:	CC515716	Cylinder Volume:	146.2 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22019	Valve Outlet:	660
Gas Code:	NO2,BALA	Certification Date:	Oct 07, 2019

Expiration Date: Oct 07, 2022

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
NITROGEN DIOXIDE	45.00 PPM	46.35 PPM	G1	+/- 2.0% NIST Traceable	09/30/2019, 10/07/2019
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	415201406	CC345246	49.66 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.8%	Aug 28, 2022
PRM	12388	D685030	59.5 PPM NITROGEN DIOXIDE/AIR	+/- 1.7%	Feb 20, 2020

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
MKS FTIR NO2 018176583	FTIR	Sep 12, 2019

Triad Data Available Upon Request

Approved for Release

Page 1 of 122-401607088-1

APPENDIX E LABORATORY ANALYSES

Sanders Engineering & Analytical Services, Inc.

2255 Schillinger Rd. North
Semmes, AL 36575

Drax – Amite County
RTO & RCO
Gloster, MS

Analytical Report
(0721-063)

NCASI Method A105.01
Methanol, Phenol (GC/FID)
Acetaldehyde, Acrolein, Formaldehyde, Propionaldehyde (GC/NPD)

EPA Method 26A
Hydrogen chloride

Enthalpy Analytical, LLC
Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com
800-1 Capitola Drive Durham, NC 27713-4385

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s)

This analytical report was prepared in Portable Document Format (.PDF) and contains 170 pages.

AMCross

Digitally signed by Alexa Cross
DN: dc=com, dc=montrose-env, dc=meg, ou=meg, ou=Sites, ou=053-Durham, ou=Users, cn=Alexa Cross, email=alexa.cross@enthalpy.com
Date: 2021.08.06 10:23:08 -04'00'

Report Issued: 8/6/21

ENTHALPY ANALYTICAL

EA Job# 0721-063 Page 2 of 170

Summary of Results

ENTHALPY
ANALYTICAL

EA Job# 0721-063 Page 3 of 170

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/FID)
Site: Drax - Amite County (Gloster, MS)

Summary

Sample ID	Compound / Catch Weight (ug) Methanol	Phenol
(21-450) RTO Run 1	146	67.0 ND
(21-451) RTO Run 1 DUP	141	65.6 ND
(21-452) RTO Run 2	134	62.0 ND
(21-453) RTO Run 2 Low SPK	212	66.7
(21-454) RTO Run 3	159	59.3 ND
(21-455) RTO Run 3 High SPK	535	1,148
(21-456) RTO Run 2 Low Field SPK	162	107
(21-457) RTO Run 3 High Field SPK	466	1,088
(21-458) RCO Run 1	92.0	58.8 ND
(21-459) RCO Run 1 DUP	86.8	55.7 ND
(21-460) RCO Run 2	89.5	49.8 ND
(21-461) RCO Run 2 Low SPK	154	62.8 J
(21-462) RCO Run 3	107	48.0 ND
(21-463) RCO Run 3 High SPK	485	1,106
(21-464) RCO Run 2 Low Field SPK	124	48.9
(21-465) RCO Run 3 High Field SPK	482	1,012
(21-466) Train Spike	187	368
(21-467) Train Field Spike	236	390

Enthalpy Analytical

Company: Sanders Engineering & Analtytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Summary

	Compound / Catch Weight (ug)			
Sample ID	Acetaldehyde	Acrolein	Formaldehyde	Propionaldehyde
(21-450) RTO Run 1	37.3	14.7 J	83.7	9.37 J
(21-451) RTO Run 1 DUP	34.2	12.4 J	74.8	9.03 J
(21-452) RTO Run 2	29.9	13.4 J	80.1	8.04 J
(21-453) RTO Run 2 Low SPK	114	74.1	172	86.4
(21-454) RTO Run 3	31.7	14.2 J	83.9	9.39 J
(21-455) RTO Run 3 High SPK	599	527	410	685
(21-456) RTO Run 2 Low Field SPK	87.9	71.7	87.5	91.5
(21-457) RTO Run 3 High Field SPK	634	682	402	822
(21-458) RCO Run 1	8.52 J	2.40 J	9.33 J	7.44 J
(21-459) RCO Run 1 DUP	8.53 J	2.30 ND	7.70 J	7.48 J
(21-460) RCO Run 2	8.61 J	2.25 ND	8.62 J	7.21 J
(21-461) RCO Run 2 Low SPK	82.3	59.8	82.7	82.8
(21-462) RCO Run 3	8.62 J	4.78 J	8.08 J	9.52 J
(21-463) RCO Run 3 High SPK	637	686	403	816
(21-464) RCO Run 2 Low Field SPK	77.3	58.0	77.9	81.2
(21-465) RCO Run 3 High Field SPK	622	680	395	806
(21-466) Train Spike	268	265	172	342
(21-467) Train Field Spike	266	278	169	344

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services Inc

Job No.: 0721-063 EPA Method 26A

Site: Drax - Amite County, Gloster, MS

Summary Table - Hydrogen chloride

Sample ID	Catch Weight (ug)
RTO R1	686
RTO R2	317 J
RTO R3	374 J
RCO R1	102 J
RCO R2	70.9 J
RCO R3	48.1 J
Blank	6.43 ND

Results

ENTHALPY ANALYTICAL

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.

Job No.: 0721-063 - NCASI Method A105.01 (GC/FID)

Site: Drax - Amite County (Gloster, MS)

Sample ID	Filename	MDL	Curve Min	Curve Max	Ret. Time (min)	Conc. (ug/mL)	DF	Liquid Vol. (mL)	Catch Weight (ug)	Flag
Methanol										
(21-450) RTO Run 1	015F0701.D	0.353	0.470	949	11.20	0.989	1	148	146	
(21-451) RTO Run 1 DUP	016F0801.D	0.353	0.470	949	11.20	0.971	1	145	141	
(21-452) RTO Run 2	017F0901.D	0.353	0.470	949	11.20	0.978	1	137	134	
(21-453) RTO Run 2 Low SPK	018F1001.D	0.353	0.470	949	11.22	1.58	1	134	212	
(21-454) RTO Run 3	020F1201.D	0.353	0.470	949	11.20	1.21	1	131	159	
(21-455) RTO Run 3 High SPK	021F1401.D	0.353	0.470	949	11.20	4.11	1	130	535	
(21-456) RTO Run 2 Low Field SPK	022F1501.D	0.353	0.470	949	11.20	2.19	1	74.0	162	
(21-457) RTO Run 3 High Field SPK	023F1601.D	0.353	0.470	949	11.20	6.30	1	74.0	466	
(21-458) RCO Run 1	024F1701.D	0.353	0.470	949	11.20	0.708	1	130	92.0	
(21-459) RCO Run 1 DUP	025F1801.D	0.353	0.470	949	11.21	0.706	1	123	86.8	
(21-460) RCO Run 2	026F1901.D	0.353	0.470	949	11.20	0.814	1	110	89.5	
(21-461) RCO Run 2 Low SPK	027F2001.D	0.353	0.470	949	11.21	1.37	1	113	154	
(21-462) RCO Run 3	028F2101.D	0.353	0.470	949	11.19	1.01	1	106	107	
(21-463) RCO Run 3 High SPK	029F2201.D	0.353	0.470	949	11.20	4.85	1	100	485	
(21-464) RCO Run 2 Low Field SPK	031F2501.D	0.353	0.470	949	11.21	1.64	1	76.0	124	
(21-465) RCO Run 3 High Field SPK	032F2601.D	0.353	0.470	949	11.21	6.34	1	76.0	482	
(21-466) Train Spike	033F2701.D	0.353	0.470	949	11.20	1.53	1	122	187	
(21-467) Train Field Spike	034F2801.D	0.353	0.470	949	11.20	3.20	1	74.0	236	

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.

Job No.: 0721-063 - NCASI Method A105.01 (GC/FID)

Site: Drax - Amite County (Gloster, MS)

Sample ID	Filename	MDL	Curve Min	Curve Max	Ret. Time (min)	Conc. (ug/mL)	DF	Liquid Vol. (mL)	Catch Weight (ug)	Flag
Phenol										
(21-450) RTO Run 1	015F0701.D	0.452	0.522	1,044	NA	0.452	1	148	67.0	ND
(21-451) RTO Run 1 DUP	016F0801.D	0.452	0.522	1,044	NA	0.452	1	145	65.6	ND
(21-452) RTO Run 2	017F0901.D	0.452	0.522	1,044	NA	0.452	1	137	62.0	ND
(21-453) RTO Run 2 Low SPK	018F1001.D	0.452	0.522	1,044	24.64	0.498	1	134	66.7	
(21-454) RTO Run 3	020F1201.D	0.452	0.522	1,044	NA	0.452	1	131	59.3	ND
(21-455) RTO Run 3 High SPK	021F1401.D	0.452	0.522	1,044	24.64	8.83	1	130	1,148	
(21-456) RTO Run 2 Low Field SPK	022F1501.D	0.452	0.522	1,044	24.64	1.45	1	74.0	107	
(21-457) RTO Run 3 High Field SPK	023F1601.D	0.452	0.522	1,044	24.64	14.7	1	74.0	1,088	
(21-458) RCO Run 1	024F1701.D	0.452	0.522	1,044	NA	0.452	1	130	58.8	ND
(21-459) RCO Run 1 DUP	025F1801.D	0.452	0.522	1,044	NA	0.452	1	123	55.7	ND
(21-460) RCO Run 2	026F1901.D	0.452	0.522	1,044	NA	0.452	1	110	49.8	ND
(21-461) RCO Run 2 Low SPK	027F2001.D	0.452	0.522	1,044	24.64	0.555	1	113	62.8	J
(21-462) RCO Run 3	028F2101.D	0.452	0.522	1,044	NA	0.452	1	106	48.0	ND
(21-463) RCO Run 3 High SPK	029F2201.D	0.452	0.522	1,044	24.63	11.1	1	100	1,106	
(21-464) RCO Run 2 Low Field SPK	031F2501.D	0.452	0.522	1,044	24.64	0.643	1	76.0	48.9	
(21-465) RCO Run 3 High Field SPK	032F2601.D	0.452	0.522	1,044	24.64	13.3	1	76.0	1,012	
(21-466) Train Spike	033F2701.D	0.452	0.522	1,044	24.64	3.01	1	122	368	
(21-467) Train Field Spike	034F2801.D	0.452	0.522	1,044	24.64	5.26	1	74.0	390	

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/FID)
Site: Drax - Amite County (Gloster, MS)

Spike and Recovery Calculations

Analyte: Methanol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 2	80.7	Spiked Train		212	1.0033	93.6%
		Un-spiked Train		134	0.9876	

Analyte: Methanol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 3	403	Spiked Train		535	1.0144	91.6%
		Un-spiked Train		159	0.9733	

Analyte: Methanol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 2	80.7	Spiked Train		154	1.0107	74.9%
		Un-spiked Train		89.5	0.9635	

Analyte: Methanol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run3	403	Spiked Train		485	1.0599	92.8%
		Un-spiked Train		107	1.0202	

Duplicate % Difference Calculations

Analyte: Methanol

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RTO Run 1	Sample Train		146	1.0043	0.6%
	Duplicate Train		141	0.961	

Analyte: Methanol

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RCO Run 1	Sample Train		92.0	1.0097	1.9%
	Duplicate Train		86.8	0.972	

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/FID)
Site: Drax - Amite County (Gloster, MS)

Spike and Recovery Calculations

Analyte: Phenol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 2	74.4	Spiked Train		66.7	1.0033	89.7%
		Un-spiked Train	ND	62.0	0.9876	

Analyte: Phenol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 3	1,214	Spiked Train		1,148	1.0144	94.5%
		Un-spiked Train	ND	59.3	0.9733	

Analyte: Phenol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 2	74.4	Spiked Train		62.8	1.0107	84.3%
		Un-spiked Train	ND	49.8	0.9635	

Analyte: Phenol

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 3	1,214	Spiked Train		1,105.9	1.0599	91.1%
		Un-spiked Train	ND	48.0	1.0202	

Duplicate % Difference Calculations

Analyte: Phenol

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RTO Run 1	Sample Train	ND	67.0	1.0043	2.4%
	Duplicate Train	ND	65.6	0.961	

Analyte: Phenol

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RCO Run 1	Sample Train	ND	58.8	1.0097	1.7%
	Duplicate Train	ND	55.7	0.972	

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/FID)
Site: Drax - Amite County (Gloster, MS)

QC Samples

QC Type	QC Sample Name		Methanol	Phenol
Spiked Blank Solvent	gcprep4187 #LCS-L-BHA	catch (ug)	84.3	84.9
	spiked:	spike (ug)	80.7	74.4
	spikeprep1492.SP * 100uL	recovery	104%	114%
Spiked Blank Solvent	gcprep4187 #LCS-H-BHA	catch (ug)	400	1,096
	spiked:	spike (ug)	403	1,214
	spikeprep1493.SP * 100uL	recovery	99.1%	90.2%
Lab Dup	LD / (21-453) RTO Run 2 Low SPK	ug/mL	1.54	0.493
	(21-453) RTO Run 2 Low SPK	ug/mL	1.58	0.498
		RD	2.3%	0.9%
Lab Dup	LD / (21-463) RCO Run 3 High SPK	ug/mL	4.52	10.1
	(21-463) RCO Run 3 High SPK	ug/mL	4.85	11.1
		RD	7.2%	8.7%
Blank Solvent	gcprep4187 #MB1-BHA	ug/mL	ND	ND
Blank Solvent	gcprep4187 #MB2-BHA	ug/mL	ND	ND

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Sample ID	Filename	MDL	Curve Min	Curve Max	Ret Time (min)	Conc. (ug/mL)	DF	Liquid Vol. (mL)	Catch Weight (ug)	Flag
Acetaldehyde										
(21-450) RTO Run 1	012B0401.D	0.0473	0.473	108	NA	0.878	1	42.5	37.3	
(21-451) RTO Run 1 DUP	013B0501.D	0.0473	0.473	108	NA	0.776	1	44.0	34.2	
(21-452) RTO Run 2	014B0601.D	0.0473	0.473	108	NA	0.694	1	43.0	29.9	
(21-453) RTO Run 2 Low SPK	027B1801.D	0.0473	0.473	108	NA	2.53	1	45.0	114	
(21-454) RTO Run 3	015B0701.D	0.0473	0.473	108	NA	0.704	1	45.0	31.7	
(21-455) RTO Run 3 High SPK	030B2101.D	0.0473	0.473	108	NA	13.3	1	45.0	599	
(21-456) RTO Run 2 Low Field SPK	026B1701.D	0.0473	0.473	108	NA	1.85	1	47.5	87.9	
(21-457) RTO Run 3 High Field SPK	029B2001.D	0.0473	0.473	108	NA	13.2	1	48.0	634	
(21-458) RCO Run 1	018B0801.D	0.0473	0.473	108	NA	0.189	1	45.0	8.52	J
(21-459) RCO Run 1 DUP	019B0901.D	0.0473	0.473	108	NA	0.186	1	46.0	8.53	J
(21-460) RCO Run 2	020B1001.D	0.0473	0.473	108	NA	0.191	1	45.0	8.61	J
(21-461) RCO Run 2 Low SPK	032B2401.D	0.0473	0.473	108	NA	1.79	1	46.0	82.3	
(21-462) RCO Run 3	021B1101.D	0.0473	0.473	108	NA	0.192	1	45.0	8.62	J
(21-463) RCO Run 3 High SPK	034B2601.D	0.0473	0.473	108	NA	13.8	1	46.0	637	
(21-464) RCO Run 2 Low Field SPK	031B2201.D	0.0473	0.473	108	NA	1.63	1	47.5	77.3	
(21-465) RCO Run 3 High Field SPK	033B2501.D	0.0473	0.473	108	NA	13.2	1	47.0	622	
(21-466) Train Spike	022B1301.D	0.0473	0.473	108	NA	5.70	1	47.0	268	
(21-467) Train Field Spike	023B1401.D	0.0473	0.473	108	NA	5.54	1	48.0	266	

0721-063 NCASI A105.01 NPD

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Sample ID	Filename	MDL	Curve Min	Curve Max	Ret Time (min)	Conc. (ug/mL)	DF	Liquid Vol. (mL)	Catch Weight (ug)	Flag
Acrolein										
(21-450) RTO Run 1	012B0401.D	0.0499	0.499	113	NA	0.347	1	42.5	14.7	J
(21-451) RTO Run 1 DUP	013B0501.D	0.0499	0.499	113	NA	0.281	1	44.0	12.4	J
(21-452) RTO Run 2	014B0601.D	0.0499	0.499	113	NA	0.311	1	43.0	13.4	J
(21-453) RTO Run 2 Low SPK	027B1801.D	0.0499	0.499	113	NA	1.65	1	45.0	74.1	
(21-454) RTO Run 3	015B0701.D	0.0499	0.499	113	NA	0.316	1	45.0	14.2	J
(21-455) RTO Run 3 High SPK	030B2101.D	0.0499	0.499	113	NA	11.7	1	45.0	527	
(21-456) RTO Run 2 Low Field SPK	026B1701.D	0.0499	0.499	113	NA	1.51	1	47.5	71.7	
(21-457) RTO Run 3 High Field SPK	029B2001.D	0.0499	0.499	113	NA	14.2	1	48.0	682	
(21-458) RCO Run 1	018B0801.D	0.0499	0.499	113	NA	0.0534	1	45.0	2.40	J
(21-459) RCO Run 1 DUP	019B0901.D	0.0499	0.499	113	NA	0.0499	1	46.0	2.30	ND
(21-460) RCO Run 2	020B1001.D	0.0499	0.499	113	NA	0.0499	1	45.0	2.25	ND
(21-461) RCO Run 2 Low SPK	032B2401.D	0.0499	0.499	113	NA	1.30	1	46.0	59.8	
(21-462) RCO Run 3	021B1101.D	0.0499	0.499	113	NA	0.106	1	45.0	4.78	J
(21-463) RCO Run 3 High SPK	034B2601.D	0.0499	0.499	113	NA	14.9	1	46.0	686	
(21-464) RCO Run 2 Low Field SPK	031B2201.D	0.0499	0.499	113	NA	1.22	1	47.5	58.0	
(21-465) RCO Run 3 High Field SPK	033B2501.D	0.0499	0.499	113	NA	14.5	1	47.0	680	
(21-466) Train Spike	022B1301.D	0.0499	0.499	113	NA	5.64	1	47.0	265	
(21-467) Train Field Spike	023B1401.D	0.0499	0.499	113	NA	5.79	1	48.0	278	

0721-063 NCASI A105.01 NPD

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Sample ID	Filename	MDL	Curve Min	Curve Max	Ret Time (min)	Conc. (ug/mL)	DF	Liquid Vol. (mL)	Catch Weight (ug)	Flag
Formaldehyde										
(21-450) RTO Run 1	012B0401.D	0.0483	0.483	110	8.32	1.97	1	42.5	83.7	
(21-451) RTO Run 1 DUP	013B0501.D	0.0483	0.483	110	8.32	1.70	1	44.0	74.8	
(21-452) RTO Run 2	014B0601.D	0.0483	0.483	110	8.32	1.86	1	43.0	80.1	
(21-453) RTO Run 2 Low SPK	027B1801.D	0.0483	0.483	110	8.32	3.82	1	45.0	172	
(21-454) RTO Run 3	015B0701.D	0.0483	0.483	110	8.32	1.87	1	45.0	83.9	
(21-455) RTO Run 3 High SPK	030B2101.D	0.0483	0.483	110	8.31	9.11	1	45.0	410	
(21-456) RTO Run 2 Low Field SPK	026B1701.D	0.0483	0.483	110	8.32	1.84	1	47.5	87.5	
(21-457) RTO Run 3 High Field SPK	029B2001.D	0.0483	0.483	110	8.31	8.38	1	48.0	402	
(21-458) RCO Run 1	018B0801.D	0.0483	0.483	110	8.34	0.207	1	45.0	9.33	J
(21-459) RCO Run 1 DUP	019B0901.D	0.0483	0.483	110	8.34	0.167	1	46.0	7.70	J
(21-460) RCO Run 2	020B1001.D	0.0483	0.483	110	8.34	0.192	1	45.0	8.62	J
(21-461) RCO Run 2 Low SPK	032B2401.D	0.0483	0.483	110	8.32	1.80	1	46.0	82.7	
(21-462) RCO Run 3	021B1101.D	0.0483	0.483	110	8.34	0.180	1	45.0	8.08	J
(21-463) RCO Run 3 High SPK	034B2601.D	0.0483	0.483	110	8.31	8.75	1	46.0	403	
(21-464) RCO Run 2 Low Field SPK	031B2201.D	0.0483	0.483	110	8.32	1.64	1	47.5	77.9	
(21-465) RCO Run 3 High Field SPK	033B2501.D	0.0483	0.483	110	8.31	8.41	1	47.0	395	
(21-466) Train Spike	022B1301.D	0.0483	0.483	110	8.32	3.66	1	47.0	172	
(21-467) Train Field Spike	023B1401.D	0.0483	0.483	110	8.32	3.52	1	48.0	169	

0721-063 NCASI A105.01 NPD

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Sample ID	Filename	MDL	Curve Min	Curve Max	Ret Time (min)	Conc. (ug/mL)	DF	Liquid Vol. (mL)	Catch Weight (ug)	Flag
Propionaldehyde										
(21-450) RTO Run 1	012B0401.D	0.0482	0.482	110	NA	0.221	1	42.5	9.37	J
(21-451) RTO Run 1 DUP	013B0501.D	0.0482	0.482	110	NA	0.205	1	44.0	9.03	J
(21-452) RTO Run 2	014B0601.D	0.0482	0.482	110	NA	0.187	1	43.0	8.04	J
(21-453) RTO Run 2 Low SPK	027B1801.D	0.0482	0.482	110	NA	1.92	1	45.0	86.4	
(21-454) RTO Run 3	015B0701.D	0.0482	0.482	110	NA	0.209	1	45.0	9.39	J
(21-455) RTO Run 3 High SPK	030B2101.D	0.0482	0.482	110	NA	15.2	1	45.0	685	
(21-456) RTO Run 2 Low Field SPK	026B1701.D	0.0482	0.482	110	NA	1.93	1	47.5	91.5	
(21-457) RTO Run 3 High Field SPK	029B2001.D	0.0482	0.482	110	NA	17.1	1	48.0	822	
(21-458) RCO Run 1	018B0801.D	0.0482	0.482	110	NA	0.165	1	45.0	7.44	J
(21-459) RCO Run 1 DUP	019B0901.D	0.0482	0.482	110	NA	0.163	1	46.0	7.48	J
(21-460) RCO Run 2	020B1001.D	0.0482	0.482	110	NA	0.160	1	45.0	7.21	J
(21-461) RCO Run 2 Low SPK	032B2401.D	0.0482	0.482	110	NA	1.80	1	46.0	82.8	
(21-462) RCO Run 3	021B1101.D	0.0482	0.482	110	NA	0.211	1	45.0	9.52	J
(21-463) RCO Run 3 High SPK	034B2601.D	0.0482	0.482	110	NA	17.7	1	46.0	816	
(21-464) RCO Run 2 Low Field SPK	031B2201.D	0.0482	0.482	110	NA	1.71	1	47.5	81.2	
(21-465) RCO Run 3 High Field SPK	033B2501.D	0.0482	0.482	110	NA	17.1	1	47.0	806	
(21-466) Train Spike	022B1301.D	0.0482	0.482	110	NA	7.28	1	47.0	342	
(21-467) Train Field Spike	023B1401.D	0.0482	0.482	110	NA	7.17	1	48.0	344	

0721-063 NCASI A105.01 NPD

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Enthalpy Analytical

Company: Sanders Engineering & Analtytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Spike and Recovery Calculations

Analyte: Acetaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 2	78.8	Spiked Train		114	1.0032	106%
		Un-spiked Train		29.9	0.9876	

Analyte: Acetaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 3	630	Spiked Train		599	1.0144	89.8%
		Un-spiked Train		31.7	0.9733	

Analyte: Acetaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 2	78.8	Spiked Train		82.3	1.0107	93.0%
		Un-spiked Train		8.61	0.9635	

Analyte: Acetaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 3	630	Spiked Train		637	1.0599	99.7%
		Un-spiked Train		8.62	1.0202	

Duplicate % Difference Calculations

Analyte: Acetaldehyde

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RTO Run 1	Sample Train		37.3	1.0043	4.3%
	Duplicate Train		34.2	0.961	

Analyte: Acetaldehyde

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RCO Run 1	Sample Train		8.52	1.0097	4.1%
	Duplicate Train		8.53	0.972	

Enthalpy Analytical

Company: Sanders Engineering & Analtytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Spike and Recovery Calculations

Analyte: Acrolein

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 2	74.8	Spiked Train		74.1	1.0032	80.9%
		Un-spiked Train		13.4	0.9876	

Analyte: Acrolein

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 3	732	Spiked Train		527	1.0144	70.0%
		Un-spiked Train		14.2	0.9733	

Analyte: Acrolein

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 2	74.8	Spiked Train		59.8	1.0107	79.9%
		Un-spiked Train	ND	2.2	0.9635	

Analyte: Acrolein

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 3	732	Spiked Train		686	1.0599	93.1%
		Un-spiked Train		4.78	1.0202	

Duplicate % Difference Calculations

Analyte: Acrolein

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RTO Run 1	Sample Train		14.7	1.0043	12.2%
	Duplicate Train		12.4	0.961	

Analyte: Acrolein

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RCO Run 1	Sample Train		2.40	1.0097	0.6%
	Duplicate Train	ND	2.30	0.972	

Enthalpy Analytical

Company: Sanders Engineering & Analtytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Spike and Recovery Calculations

Analyte: Formaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 2	79.8	Spiked Train		172	1.0032	113%
		Un-spiked Train		80.1	0.9876	

Analyte: Formaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 3	399	Spiked Train		410	1.0144	80.9%
		Un-spiked Train		83.9	0.9733	

Analyte: Formaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 2	79.8	Spiked Train		82.7	1.0107	92.3%
		Un-spiked Train		8.62	0.9635	

Analyte: Formaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 3	399	Spiked Train		403	1.0599	98.8%
		Un-spiked Train		8.08	1.0202	

Duplicate % Difference Calculations

Analyte: Formaldehyde

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RTO Run 1	Sample Train		83.7	1.0043	6.7%
	Duplicate Train		74.8	0.961	

Analyte: Formaldehyde

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RCO Run 1	Sample Train		9.33	1.0097	14.2%
	Duplicate Train		7.70	0.972	

Enthalpy Analytical

Company: Sanders Engineering & Analtytical Services, Inc.
Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)
Site: Drax - Amite County, Gloster, MS

Spike and Recovery Calculations

Analyte: Propionaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 2	80.4	Spiked Train		86.4	1.0032	97.3%
		Un-spiked Train		8.04	0.9876	

Analyte: Propionaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RTO Run 3	804	Spiked Train		685	1.0144	84.0%
		Un-spiked Train		9.39	0.9733	

Analyte: Propionaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 2	80.4	Spiked Train		82.8	1.0107	93.6%
		Un-spiked Train		7.21	0.9635	

Analyte: Propionaldehyde

	Spike Amount		"ND"	Catch (ug)	Sample Volume	Recovery (%)
RCO Run 3	804	Spiked Train		816	1.0599	100%
		Un-spiked Train		9.52	1.0202	

Duplicate % Difference Calculations

Analyte: Propionaldehyde

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RTO Run 1	Sample Train		9.37	1.0043	0.6%
	Duplicate Train		9.03	0.961	

Analyte: Propionaldehyde

		"ND"	Catch (ug)	Sample Volume	Difference (%)
RCO Run 1	Sample Train		7.44	1.0097	4.5%
	Duplicate Train		7.48	0.972	

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services, Inc.

Job No.: 0721-063 - NCASI Method A105.01 (GC/NPD)

Site: Drax - Amite County, Gloster, MS

QC Samples

QC Type	QC Sample Name		Acetaldehyde	Acrolein	Formaldehyde	Propionaldehyde
Spiked Blank Solvent	gcprep4187 #LCS-L-Hex	catch (ug)	75.9	68.6	76.4	77.8
	spiked:	spike (ug)	78.8	74.8	79.8	80.4
	Spikeprep1492.SP * 100uL	recovery	96.3%	91.7%	95.7%	96.8%
Spiked Blank Solvent	gcprep4187 #LCS-H-Hex	catch (ug)	665	742	400	860
	spiked:	spike (ug)	630	732	399	804
	Spikeprep1493.SP * 100uL	recovery	105%	101%	100%	107%
Lab Dup	LD / (21-453) RTO Run 2 Low SPK	ug/mL	2.25	1.48	3.42	1.72
	(21-453) RTO Run 2 Low SPK	ug/mL	2.53	1.65	3.82	1.92
		RD	11.5%	11.0%	11.1%	11.1%
Lab Dup	LD / (21-463) RCO Run 3 High SPK	ug/mL	13.9	15.1	8.78	17.9
	(21-463) RCO Run 3 High SPK	ug/mL	13.8	14.9	8.75	17.7
		RD	0.6%	0.9%	0.3%	0.8%
Blank Solvent	gcprep4187 #MB1-Hex	ug/mL	ND	ND	0.0771	ND
Blank Solvent	gcprep4187 #MB2-Hex	ug/mL	0.0499	ND	0.0765	ND

0721-063 NCASI A105.01 NPD

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Enthalpy Analytical

Company: Sanders Engineering & Analytical Services Inc

Job No.: 0721-063 EPA Method 26A

Site: Drax - Amite County, Gloster, MS

Hydrogen Chloride as Chloride

Sample ID	Filename #1	Filename #2	MDL (ug/mL)	Curve Min. (ug/mL)	Curve Max. (ug/mL)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Liquid Vol. (mL)	Conv. Factor	Catch Weight (ug)	Flag	pH
21-412 RTO R1	039	040	0.0500	0.500	30.0	1.59	1.59	0.0	0.669	0.675	0.4	0.672	1	992	1.028	686		0
21-413 RTO R2	041	042	0.0500	0.500	30.0	1.56	1.58	0.4	0.297	0.283	2.4	0.290	1	1061	1.028	317	J	0
21-414 RTO R3	045	046	0.0500	0.500	30.0	1.60	1.60	0.1	0.381	0.373	1.1	0.377	1	964	1.028	374	J	0
21-426 RCO R1	047	048	0.0500	0.500	30.0	1.60	1.60	0.1	0.375	0.379	0.5	0.377	1	262	1.028	102	J	0
21-427 RCO R2	049	050	0.0500	0.500	30.0	1.60	1.60	0.0	0.265	0.259	1.0	0.262	1	263	1.028	70.9	J	0
21-428 RCO R3	051	052	0.0500	0.500	30.0	1.60	1.60	0.0	0.179	0.183	1.2	0.181	1	258	1.028	48.1	J	0
21-449 Blank	053	054	0.0500	0.500	30.0	NA	NA	NA	0.0500	0.0500	NA	0.0500	1	125	1.028	6.43	ND	0

0721-063 Method 26A

Enthalpy Analytical

Company: Sanders Engineering & Analytical Services Inc
Job No.: 0721-063 EPA Method 26A
Site: Drax - Amite County, Gloster, MS

Matrix Spike Recovery - Chloride

Sample ID	Filename #1	Filename #2	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc. # 1 (ug/mL)	Conc. # 2 (ug/mL)	%diff. conc.	Avg. Conc. (ug/mL)	DF	Vol. (mL)	Catch Weight (ug)	Flag
MS-RTO R1.H2SO4	055	056	1.60	1.60	0.0	10.6	10.6	0.0	10.6	1	0.8	8.44	
								Native Amount (ug):				0.484	
								Mass Spiked:				8.00	
								Recovery (%):				99.5	
MSD-RTO R1.H2SO4	057	058	1.60	1.61	0.1	10.5	10.5	0.0	10.5	1	0.8	8.38	
								Native Amount (ug):				0.484	
								Mass Spiked:				8.00	
								Recovery (%):				98.7	

0721-063 Method 26A

Narrative Summary

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Enthalpy Analytical Narrative Summary

Company	Sanders Engineering & Analytical Services, Inc.
Job #	0721-063 - NCASI Method A105.01
Site	Drax – Amite County (Gloster, MS)

Custody

Alyssa Miller received the samples on 7/22/21 after being relinquished by Sanders Engineering & Analtyical Services, Inc. The samples were received at 25.9 °C and in good condition.

Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for methanol, phenol, formaldehyde, acetaldehyde, propionaldehyde and acrolein using the analytical procedures in NCASI Method ISS/FP-A105.01, "Impinger Source Sampling Method for Selected Aldehydes, Ketones, and Polar Compounds".

The initial volumes of the combined aqueous BHA/hexane samples were measured. The combined samples were transferred to separatory funnels for the first extraction. The samples were shaken for 30 seconds and the hexane and BHA layers allowed to separate. Two additional extractions were performed by adding fresh hexane to the aqueous BHA samples in the separatory funnels, shaking for 30 seconds and allowing the hexane layers to separate. The hexane extracts were combined for each sample. The final hexane and BHA volumes were measured and recorded.

The Gas Chromatograph "Fester" was used for the analyses of the aqueous BHA fractions for methanol and phenol.

The Gas Chromatograph "Lolita" was used for the analyses of the hexane extract fractions for formaldehyde, acetaldehyde, propionaldehyde and acrolein.

Calibration

The calibration curves are located in the back of this report. For each calibration curve used, the first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

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Enthalpy Analytical Narrative Summary
(continued)

Chromatographic Conditions

The acquisition methods (FESTER0258.M and LOLITA0349.M) may be available upon request.

QC Notes

None of the compounds of interest were identified at concentrations greater than the LOQ in the analyses of the laboratory blanks.

Laboratory Duplicates (LD) were prepared and analyzed with the samples using aliquots of samples ***RTO Run 2 Low Spike (21-453)*** and ***RCO Run 3 High Spike (21-463)***. The percent difference values from the initial and the duplicate analyses were between 0.3% and 11.5%.

The laboratory prepared a low aqueous spike solution containing 807 µg/mL of methanol, 744 µg/mL of phenol, 798 µg/mL of formaldehyde, 788 µg/mL of acetaldehyde, 804 µg/mL of propionaldehyde, and 748 µg/mL of acrolein. Three vials of the spike solution were provided to the client prior to sample collection while one vial was retained to be analyzed as a Laboratory Control Sample (LCS).

The laboratory also prepared a high aqueous spike solution containing 4035 µg/mL of methanol, 12,144 µg/mL of phenol, 3989 µg/mL of formaldehyde, 6302 µg/mL of acetaldehyde, 8042 µg/mL of propionaldehyde, and 7318 µg/mL of acrolein. Three vials of the spike solution were provided to the client prior to sample collection while one vial was retained to be analyzed as an LCS.

An LCS from each level was analyzed with the samples and yielded recovery values between 90.2% and 114%.

Reporting Notes

Acetaldehyde, propionaldehyde and acrolein are identified as two peaks ("1" and "2"). This is normal for the method's derivatization process, and results for both peaks are combined on the chromatograms and Results pages.

These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above.

The results presented in this report are representative of the samples as provided to the laboratory.

Enthalpy Analytical Narrative Summary

Company	Sanders Engineering & Analytical Services, Inc.
Job #	0721-063 - EPA Method 26A
Client #	Drax – Amite County (Gloster, MS)

Custody

Alyssa Miller received the samples on 7/22/21 after being relinquished by Sanders Engineering & Analtyical Services, Inc.. The samples were received at 27.2 °C and in good condition.

Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for chloride using the analytical procedures in EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method (40 CFR Part 60, Appendix A).

The Dionex Ion Chromatograph "Raphael" was used for these analyses.

The samples were analyzed following the procedures in Section 11.0, Analytical Procedures.

Calibration

The calibration curve is included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve. The calibration curves met all method-specified precision criteria.

Chromatographic Conditions

A copy of the acquisition method (AS22 FAST ASAP.M) has not been included in the report, but may be made available upon request.

QC Notes

The samples were analyzed within the four-week holding time specified by the method.

The analyses of the client's ***(21-449)*** ***H_2SO_4 Blank*** and laboratory reagent blank did not contain chloride at concentrations greater than the MDL.

Duplicate matrix spikes were prepared using aliquots of samples ***(21-412) RTO Run 1*** and exhibited spike recovery values of 99.5% and 98.7%.

The second source standard was analyzed as a Laboratory Control Sample (LCS) and exhibited a spike recovery value of 98.8%.

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Enthalpy Analytical Narrative Summary
(continued)

Reporting Notes	The client provided the full sample volumes on their COC and these values were used to determine all the catch weight results. A fresh aliquot of the sample ***(21-412) RTO Run 1*** was analyzed and confirmed the original results. Only the original data is included in this report. The sulfuric acid matrix samples were analyzed for chloride, but are reported as hydrogen chloride. The results were converted using a factor of 1.028 to account for the additional hydrogen mass. These analyses met the requirements of the TNI Standard. Any deviations from the requirements of the reference method or TNI Standard have been stated above. The results presented in this report are representative of the samples as provided to the laboratory.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC data reports, unless specifically noted otherwise.

- Any analysis which refers to the method as ***"Type"*** represents a planned deviation from the reference method. For instance a Hydrogen Sulfide assay from a Tedlar bag would be labeled as "EPA Method 16-Type" because Tedlar bags are not mentioned as one of the collection options in EPA Method 16.
- The acronym ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot determine the presence of the analyte of interest reliably.
- The acronym ***LOQ*** represents the Limit of Quantification. Below this value the laboratory cannot quantitate the analyte of interest within the criteria of the method.
- The acronym ***ND*** following a value indicates a non-detect or analytical result below the MDL.
- The letter ***J*** in the Qualifier or Flag column in the results indicates that the value is between the MDL and the LOQ. The laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.
- The letter ***E*** in the Qualifier or Flag column indicates an analytical result exceeding 100% of the highest calibration point. The associated value should be considered as an estimate.
- Sample results are presented 'as measured' for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.
- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).
- The acronym ***DF*** represents Dilution Factor. This number represents dilution of the sample during the preparation and/or analysis process. The analytical result taken from a laboratory instrument is multiplied by the DF to determine the final undiluted sample results.
- The addition of ***MS*** to the Sample ID represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. The MS analysis indicates what effect the sample matrix may have on the target analyte, i.e. whether or not anything in the sample matrix interferes with the analysis of the analyte(s).

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General Reporting Notes
(continued)

- The addition of ***MSD*** to the Sample ID represents a Matrix Spike Duplicate. Prepared in the same manner as a MS, the use of duplicate matrix spikes allows further confirmation of laboratory quality by showing the consistency of results gained by performing the same steps multiple times.
- The addition of ***LD*** to the Sample ID represents a Laboratory Duplicate. The analyst prepares an additional aliquot of sample for testing and the results of the duplicate analysis are compared to the initial result. The result should have a difference value of within 10% of the initial result (if the results of the original analysis are greater than the LOQ).
- The addition of ***AD*** to the Sample ID represents an Alternate Dilution. The analyst prepares an additional aliquot at a different dilution factor (usually double the initial factor). This analysis helps confirm that no additional compound is present and coeluting or sharing absorbance with the analyte of interest, as they would have a different response/absorbance than the analyte of interest.
- The Sample ID ***LCS*** represents a Laboratory Control Sample. Clean matrix, similar to the client sample matrix, prepared and analyzed by the laboratory using the same reagents, spiking standards and procedures used for the client samples. The LCS is used to assess the control of the laboratory's analytical system. Whenever spikes are prepared for our client projects, two spikes are retained as LCSs. The LCSs are labeled with the associated project number and kept in-house at the appropriate temperature conditions. When the project samples are received for analysis, the LCSs are analyzed to confirm that the analyte could be recovered from the media, separate from the samples which were used on the project and which may have been affected by source matrix, sample collection, and/or sample transport.
- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed, the number is rounded to a whole number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits displayed, but no confidence should be placed on more than two significant digits. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.
- **Manual Integration**: The data systems used for processing will flag manually integrated peaks with an "M". There are several reasons a peak may be manually integrated. These reasons will be identified by the following two letter designations on sample chromatograms, if provided in the report. The peak was ***not integrated*** by the software **"NI"**, the peak was ***integrated incorrectly*** by the software **"II"** or the ***wrong peak*** was integrated by the software **"WP"**. These codes will accompany the analyst's manual integration stamp placed next to the compound name on the chromatogram.

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Sample Custody

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Sanders Engineering &
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2255 Schillinger Road N.
Semmes, AL 36575

Chain of Custody

Phone: (251)633-4120
Fax: (251)633-2285
Email: sanders@sandersengineering.com
PO# 17-0628GM1

SEAS Client: Drax
Plant Location: Amite County (Gloster, MS)
Unit Tested: RTO &RCO

Analytical Laboratory: Enthalpy Analytical, Inc.
Laboratory Location: Durham, NC
Contact/Phone: Trent Lee

SEAS Sample Number	Sample Description	Sample Date	Source	Test Method	Analysis Requested	Sample Volume	Notes
21-450	Run 1	7/13/2021	RTO	NCASI 105.01	All 6 Compounds		Call for Sample Volume
21-451	Run 1 Duplicate	7/13/2021	RTO	NCASI 105.01	All 6 Compounds		
21-452	Run 2 Unspike	7/14/2021	RTO	NCASI 105.01	All 6 Compounds		
21-453	Run 2 Low Spike	7/14/2021	RTO	NCASI 105.01	All 6 Compounds		
21-454	Run 3 Unspike	7/14/2021	RTO	NCASI 105.01	All 6 Compounds		
21-455	Run 3 High Spike	7/14/2021	RTO	NCASI 105.01	All 6 Compounds		
21-456	Run 2 Low Field Spike	7/14/2021	RTO	NCASI 105.01	All 6 Compounds		
21-457	Run 3 High Field Spike	7/15/2021	RTO	NCASI 105.01	All 6 Compounds		
21-458	Run 1	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		
21-459	Run 1 Duplicate	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		
21-460	Run 2 Unspike	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		
21-461	Run 2 Low Spike	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		
21-462	Run 3 Unspike	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		
21-463	Run 3 High Spike	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		

07-22-21 Amm* good condition Bottle 2 ~25.9°C w/ melted ice

Relinquished by:/Company	Date/Time	Received by:/Company	Date/Time
Richard Fernandez Sanders Eng	7-19-21 16:00	Alyssa M Muller EA	07-22-21 / 0950
/	/	/	/

EA Job# 0721-063 Page 32 of 170

Sanders Engineering &
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2255 Schillinger Road N.
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Chain of Custody

Phone: (251)633-4120
Fax: (251)633-2285
Email: sanders@sandersengineering.com
PO# 17-0628GM1

SEAS Client: Drax
Plant Location: Amite County (Glaster, MS)
Unit Tested: RTO & RCO

Analytical Laboratory: Enthalpy Analytical, Inc.
Laboratory Location: Durham, NC
Contact/Phone: Trent Lee

SEAS Sample Number	Sample Description	Sample Date	Source	Test Method	Analysis Requested	Sample Volume	Notes
21-464	Run 2 Low Field Spike	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		Call for Sample Volume
21-465	Run 3 High Field Spike	7/16/2021	RCO	NCASI 105.01	All 6 Compounds		
21-466	Train Spike	7/19/2021		NCASI 105.01	All 6 Compounds		
21-467	Train Field Spike	7/19/2021		NCASI 105.01	All 6 Compounds		

Relinquished by:/Company	Date/Time	Received by:/Company	Date/Time
Richard Reynolds / Sanders Eng	7-19-21 / 16:00	Alyssa McMullen / EA	07-22-21 / 0950
/	/	/	/

25.9°C w/ melted ice Raytek 2 good condition Amm# 07-22-21

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Sanders Engineering &
Analytical Services
2255 Schillinger Road N.
Semmes, AL 36575

Chain of Custody

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Fax: (251)633-2285
Email: sanders@sandersengineering.com
PO# 17-0628GM1

SEAS Client: Drax Amite
Plant Location: Gloster, MS
Unit Tested: RTO & RCO

Analytical Laboratory: Enthalpy Analytical
Laboratory Location: Durham, NC
Contact/Phone: Trent Lee 919 850 4392

SEAS Sample Number	Sample Description	Sample Date	Source	Test Method	Analysis Requested	Sample Volume	Notes
21-412	Run 1	7-15-21	RTO	26a	HCl	992mL	100mL Aliquot
21-413	Run 2	7-15-21	RTO	26a	HCl	1061mL	100mL Aliquot
21-414	Run 3	7-15-21	RTO	26a	HCl	964mL	100mL Aliquot
21-426	Run 1	7-16-21	RCO	26	HCl	262mL	100mL Aliquot
21-427	Run 2	7-16-21	RCO	26	HCl	263mL	100mL Aliquot
21-428	Run 3	7-16-21	RCO	26	HCl	258mL	100mL Aliquot
21-449	Blank	7-19-21		26/26a	HCl	TWM ~~100mL~~	125mL

27.2°C Raytek & good condition Amm3 07.22.21

Relinquished by:/Company	Date/Time	Received by:/Company	Date/Time
[illegible] / SEAS	7/19/21 / 1453	[illegible] EA	07-22-21 / 0950
/		/	/

EA Job# 0721-063 Page 34 of 170

Raw Data

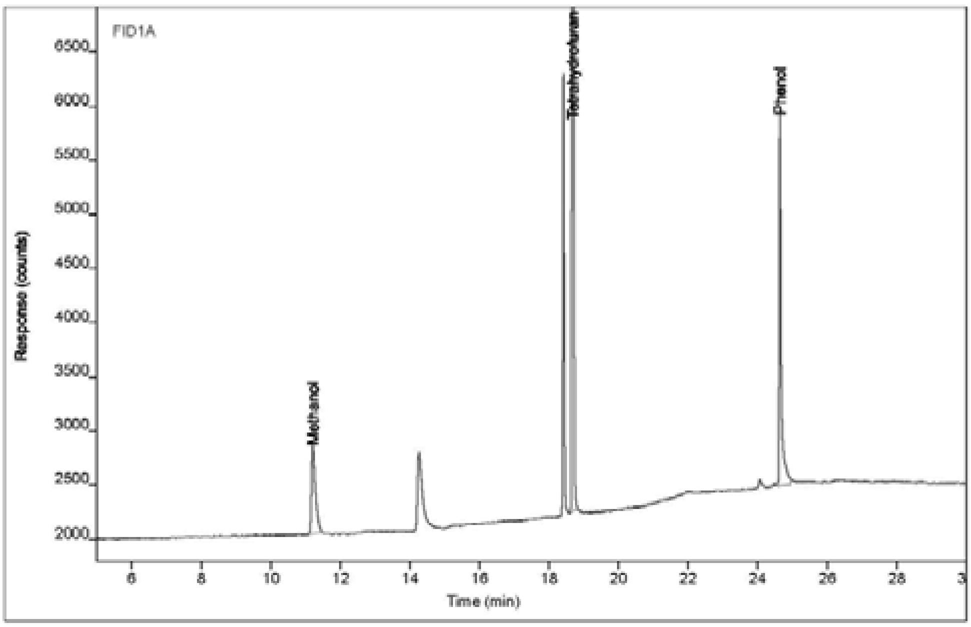
ENTHALPY
ANALYTICAL

EA Job# 0721-063 Page 35 of 170

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1494 #4	Sample Type	Calibration
Sequence Name	FESTER0623A ver.6	Vial Number	1
Inj Data File	001F0201.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	2 of 2
Injection Date	7/27/2021 8:08 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:40 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.21	6358.08	814.999	21.5931	1	21.5931	ug/mL
Tetrahydrofuran	I BB	18.69	79107.1	29386.2	152.200			ug/mL
Phenol	MF	24.64	13382.0	3434.91	19.4147	1	19.4147	ug/mL

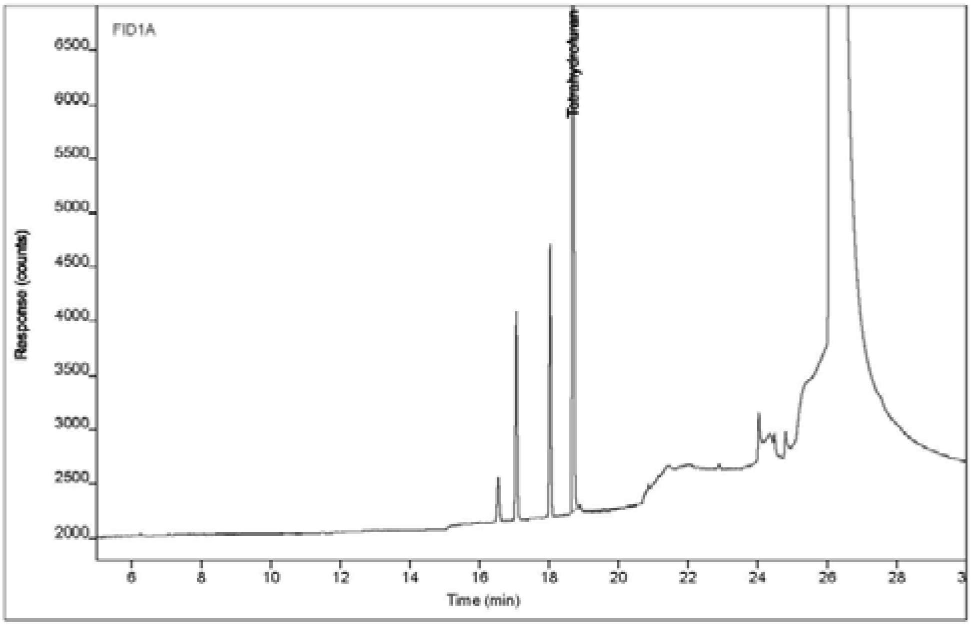
Analyst Peak Integration Comments

12:24:56 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #MB1-BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	11
Inj Data File	011F0301.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 8:49 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:40 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

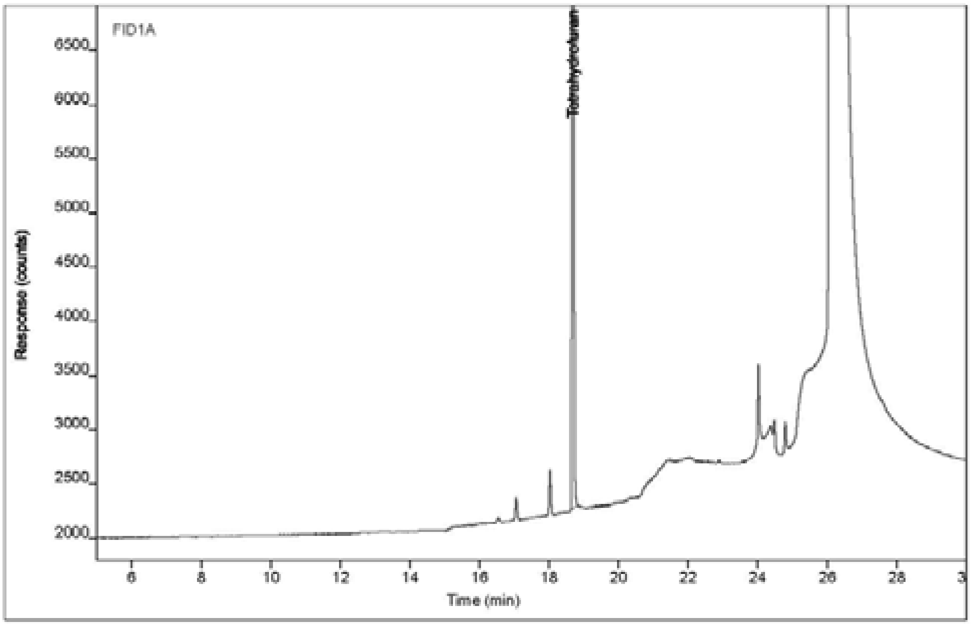


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol		(11.21)				1		ug/mL
Tetrahydrofuran	I BB	18.69	73971.4	27497.0	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #MB2-BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	12
Inj Data File	012F0401.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 9:24 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:40 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

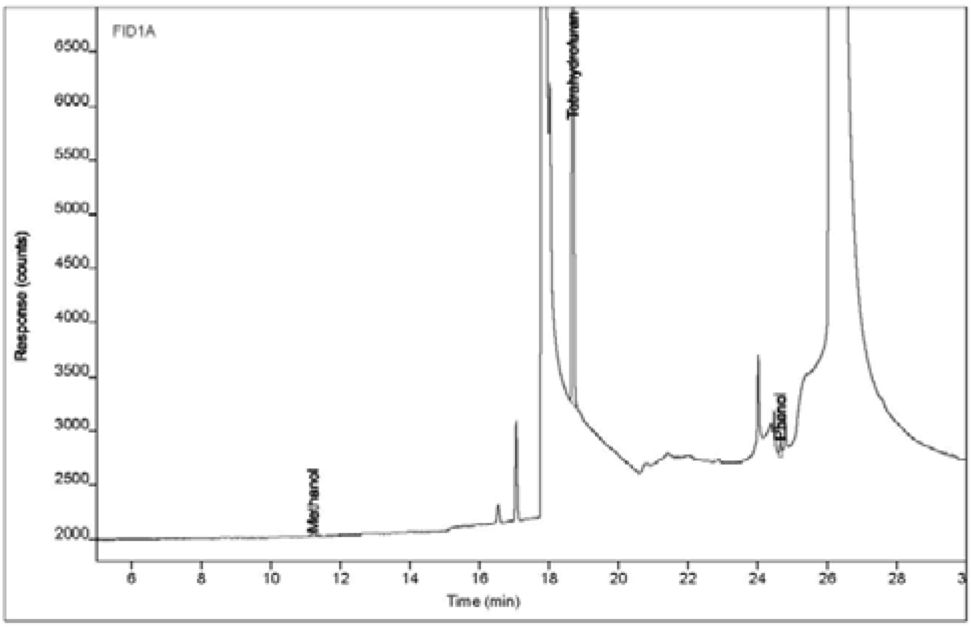


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol		(11.21)				1		ug/mL
Tetrahydrofuran	I BB	18.69	72988.2	27088.4	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #LCS-L-BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	13
Inj Data File	013F0501.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 10:00 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:41 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

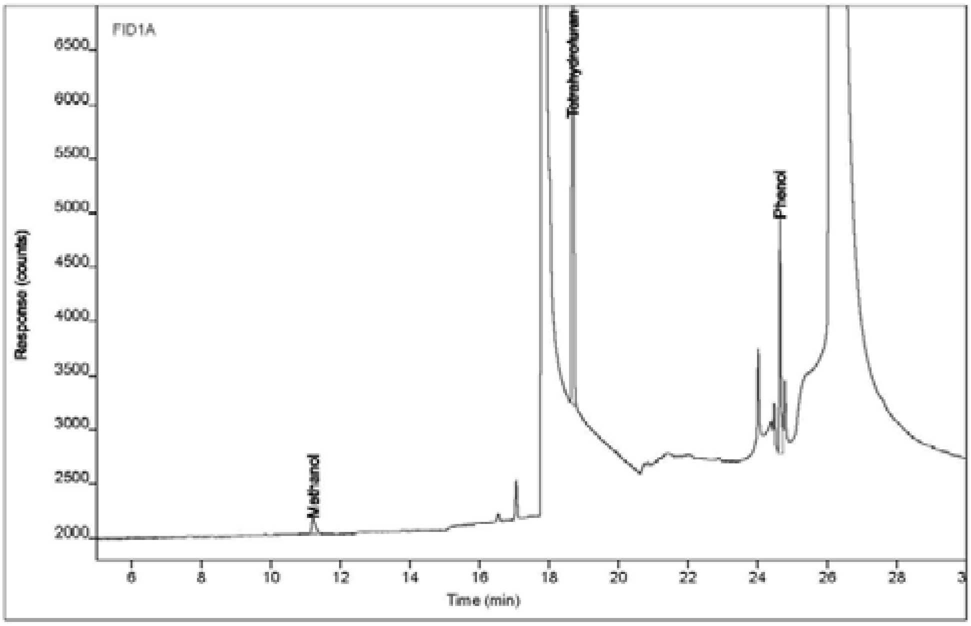


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.21	238.193	38.9995	0.84297	1	0.84297	ug/mL
Tetrahydrofuran	I BB	18.69	74217.8	27736.4	148.800			ug/mL
Phenol	FM	24.65	561.362	155.550	0.84869	1	0.84869	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #LCS-H-BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	14
Inj Data File	014F0601.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 10:36 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:41 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



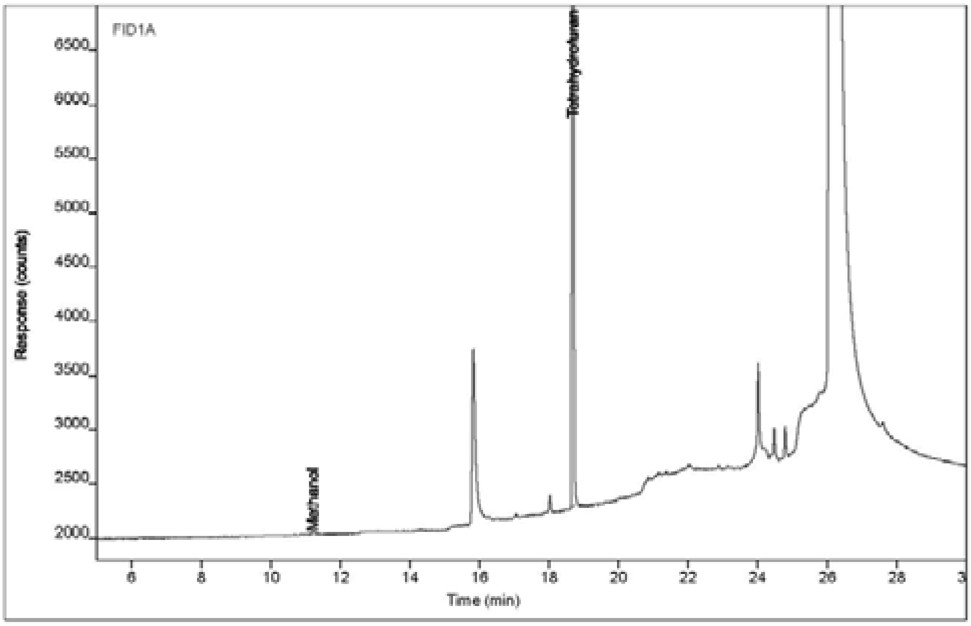
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.22	1090.05	144.534	3.99869	1	3.99869	ug/mL
Tetrahydrofuran	I BB	18.69	71601.2	26632.0	148.800			ug/mL
Phenol	FM	24.64	6991.02	2177.37	10.9556	1	10.9556	ug/mL

EA Job# 0721-063 Page 40 of 170

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R1.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	15
Inj Data File	015F0701.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 11:12 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:41 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

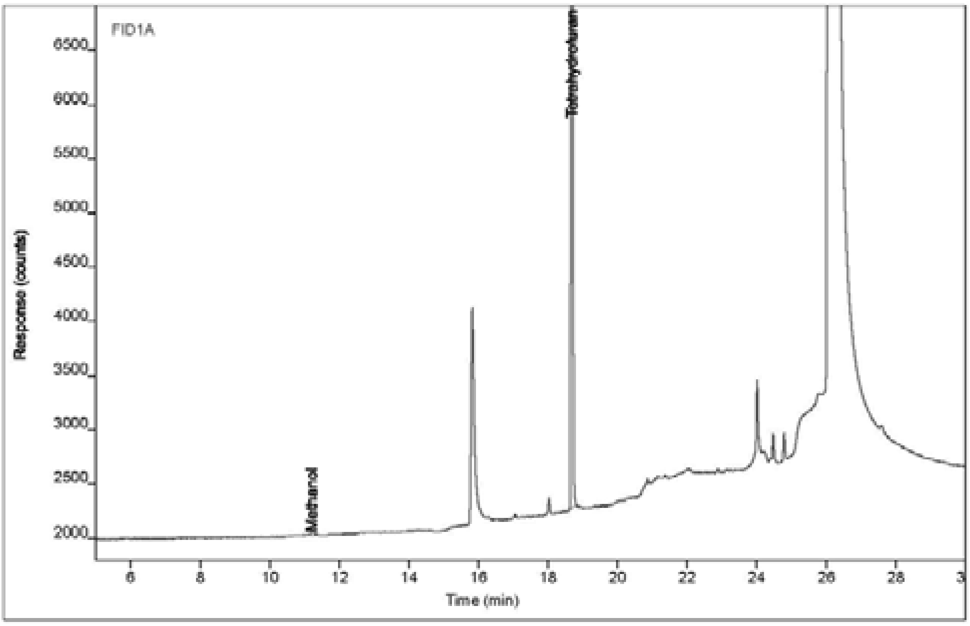


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	268.235	34.6003	0.98862	1	0.98862	ug/mL
Tetrahydrofuran	I BB	18.69	71265.2	26493.5	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R1-Dup.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	16
Inj Data File	016F0801.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 11:48 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:41 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

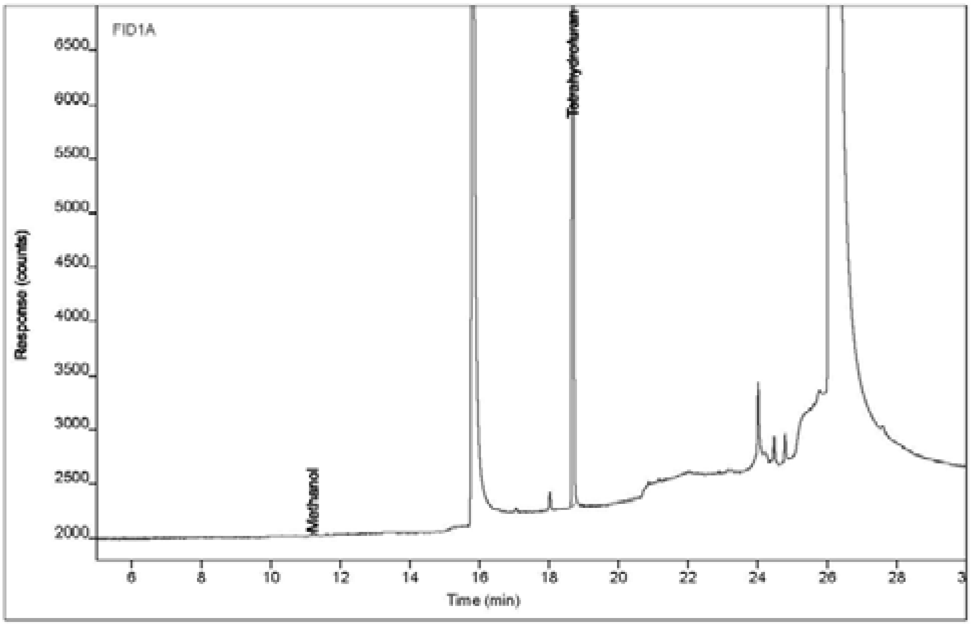


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	268.442	36.9174	0.97112	1	0.97112	ug/mL
Tetrahydrofuran	I BB	18.69	72605.9	27007.9	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	17
Inj Data File	017F0901.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 12:24 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:41 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	266.858	38.5436	0.97798	1	0.97798	ug/mL
Tetrahydrofuran	I BB	18.69	71670.6	26815.2	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

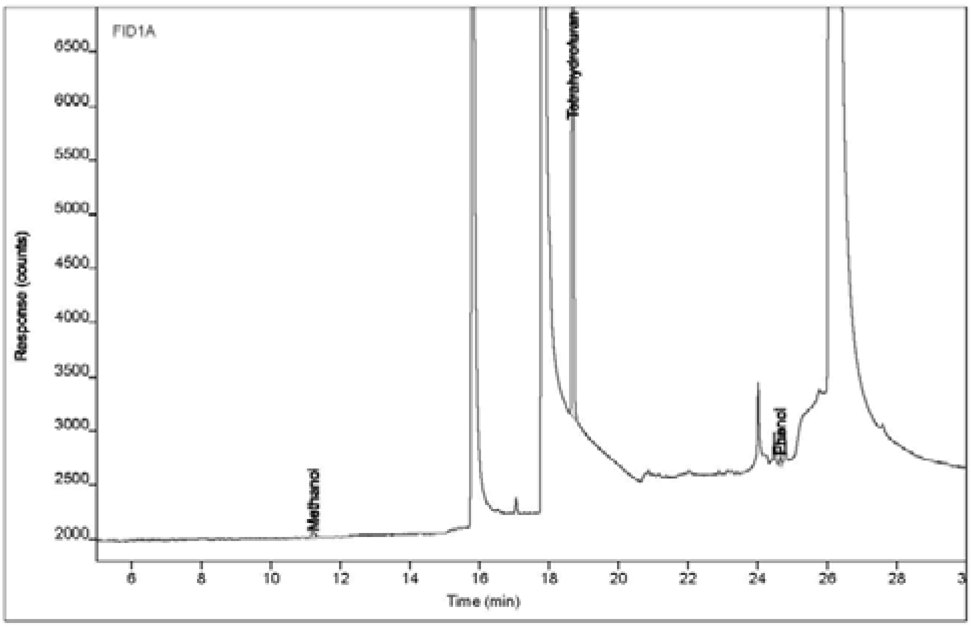
Analyst Peak Integration Comments

08:20:34 07/28/21 Jennie Parrish II
12:06:34 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2-LSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	18
Inj Data File	018F1001.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 12:59 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:41 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

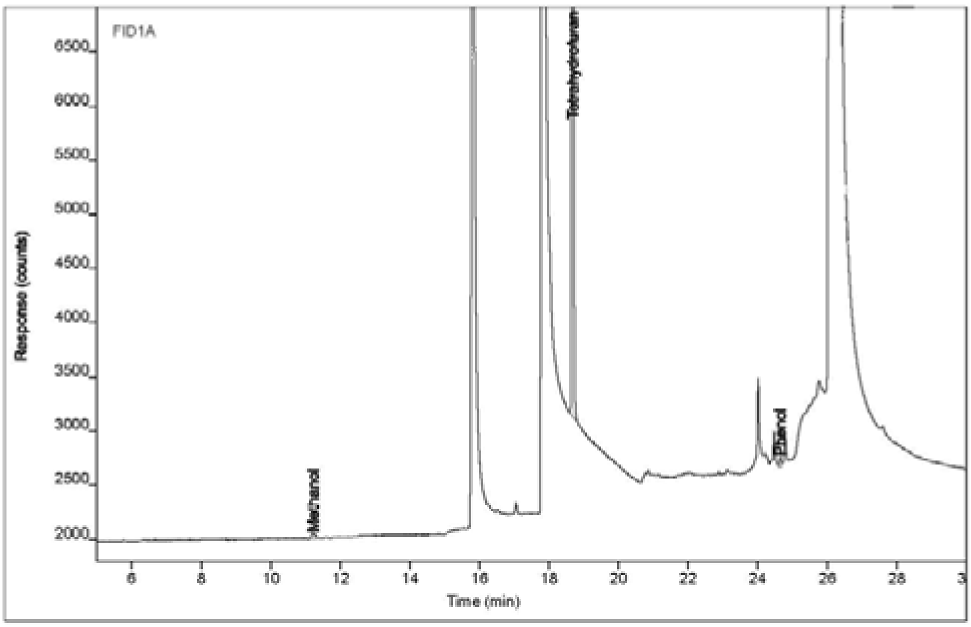


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.22	427.905	59.5318	1.57951	1	1.57951	ug/mL
Tetrahydrofuran	I BB	18.69	71157.0	26544.7	148.800			ug/mL
Phenol	FM	24.64	315.819	97.9654	0.49801	1	0.49801	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2-LSPK-LD.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	19
Inj Data File	019F1101.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 1:35 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:42 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

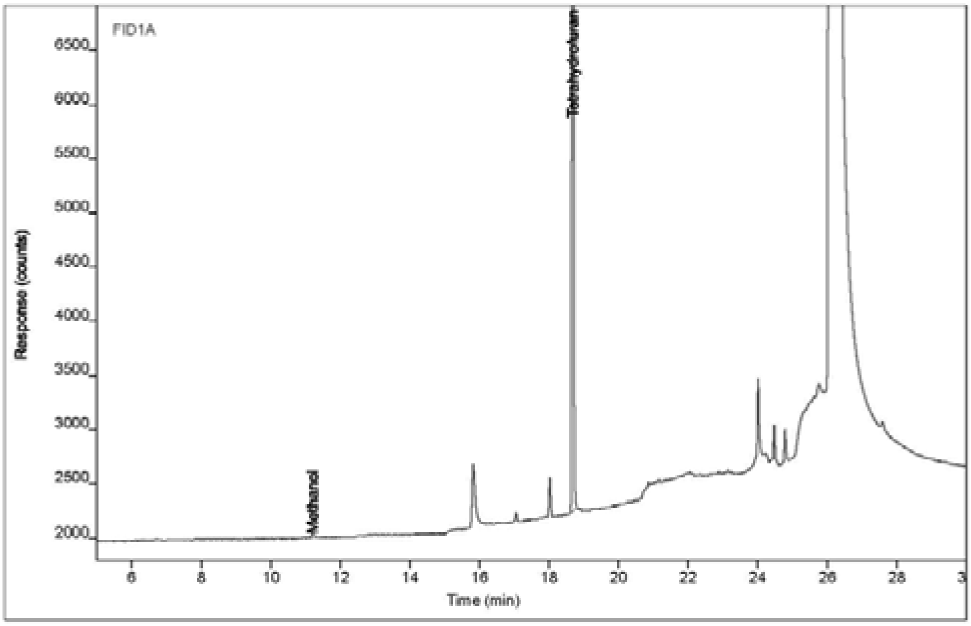


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.21	415.289	57.8472	1.54430	1	1.54430	ug/mL
Tetrahydrofuran	I BB	18.69	70633.7	26283.9	148.800			ug/mL
Phenol	MM	24.64	310.659	106.542	0.49350	1	0.49350	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R3.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	20
Inj Data File	020F1201.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 2:11 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:42 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	321.444	41.0166	1.21067	1	1.21067	ug/mL
Tetrahydrofuran	I BB	18.69	69738.5	25855.4	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

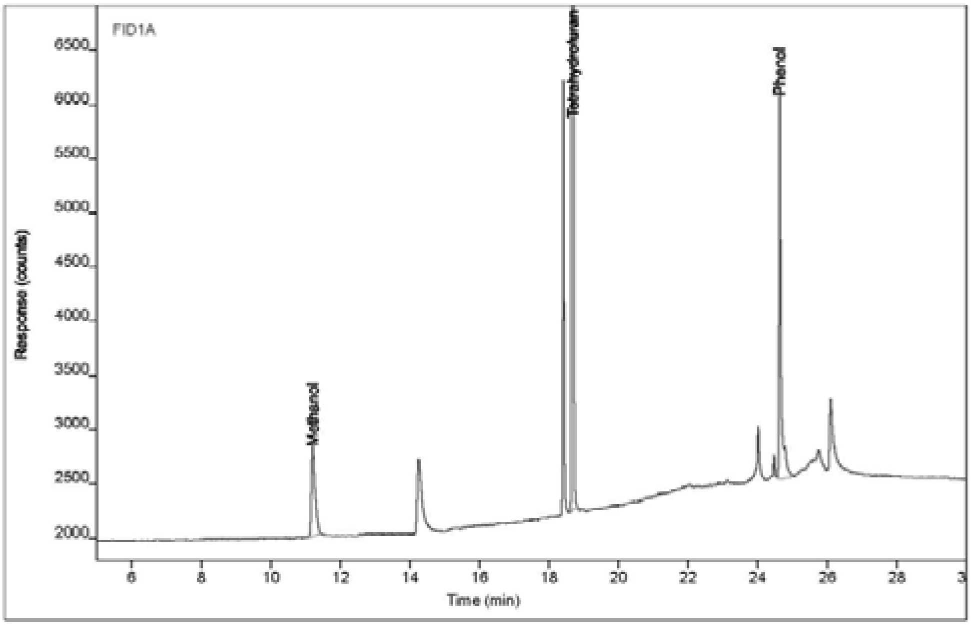
Analyst Peak Integration Comments

08:20:57 07/28/21 Jennie Parrish II
12:12:06 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1494 #4	Sample Type	Calibration
Sequence Name	FESTER0623A ver.6	Vial Number	1
Inj Data File	001F1301.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 2:47 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:42 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.21	6121.58	826.179	21.6646	1	21.6646	ug/mL
Tetrahydrofuran	I BB	18.69	75913.2	28237.4	152.200			ug/mL
Phenol	MM	24.63	13700.5	3539.76	20.7130	1	20.7130	ug/mL

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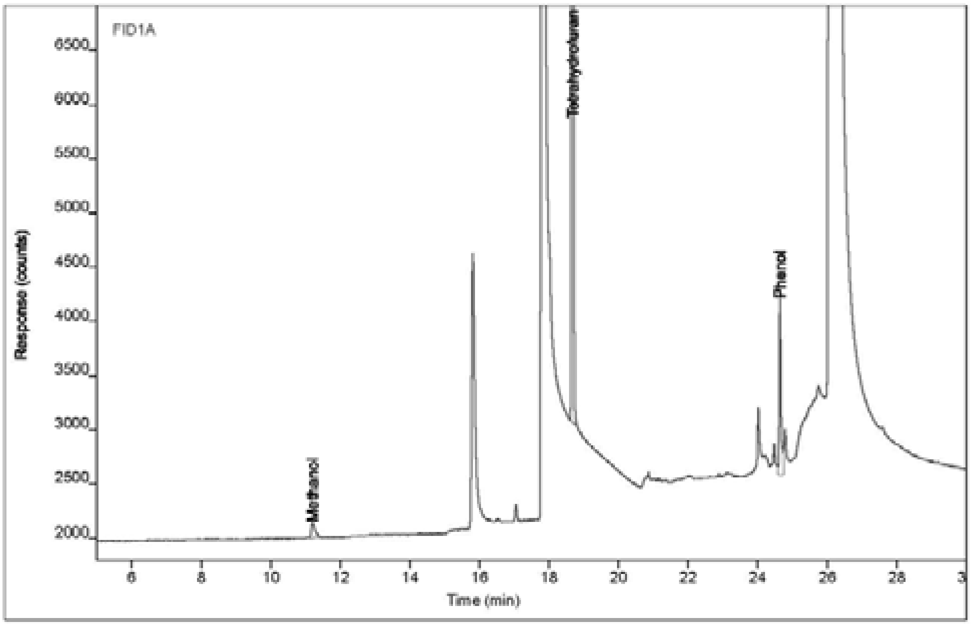
Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R3-HSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	21
Inj Data File	021F1401.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 3:23 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:42 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	1132.97	147.133	4.11481	1	4.11481	ug/mL
Tetrahydrofuran	I BB	18.69	72320.6	26849.1	148.800			ug/mL
Phenol	MF	24.64	5691.99	1629.95	8.83113	1	8.83113	ug/mL

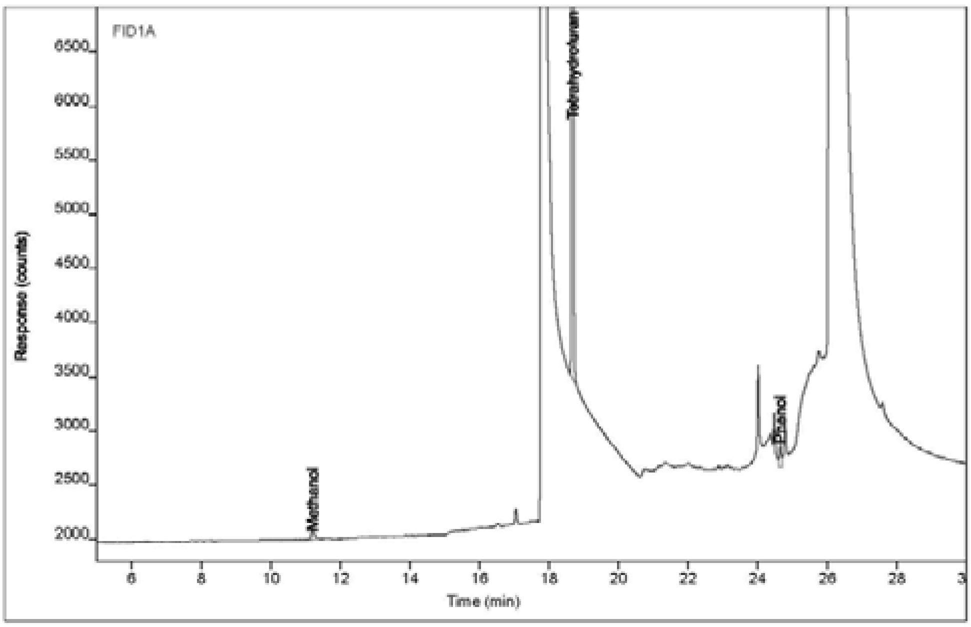
Analyst Peak Integration Comments

12:12:32 07/28/21 Jennie Parrish II
12:17:34 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2-LFSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	22
Inj Data File	022F1501.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 3:59 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:42 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.20	573.051	81.9695	2.18789	1	2.18789	ug/mL
Tetrahydrofuran	I BB	18.68	68795.4	25761.6	148.800			ug/mL
Phenol	FM	24.64	890.664	218.886	1.45268	1	1.45268	ug/mL

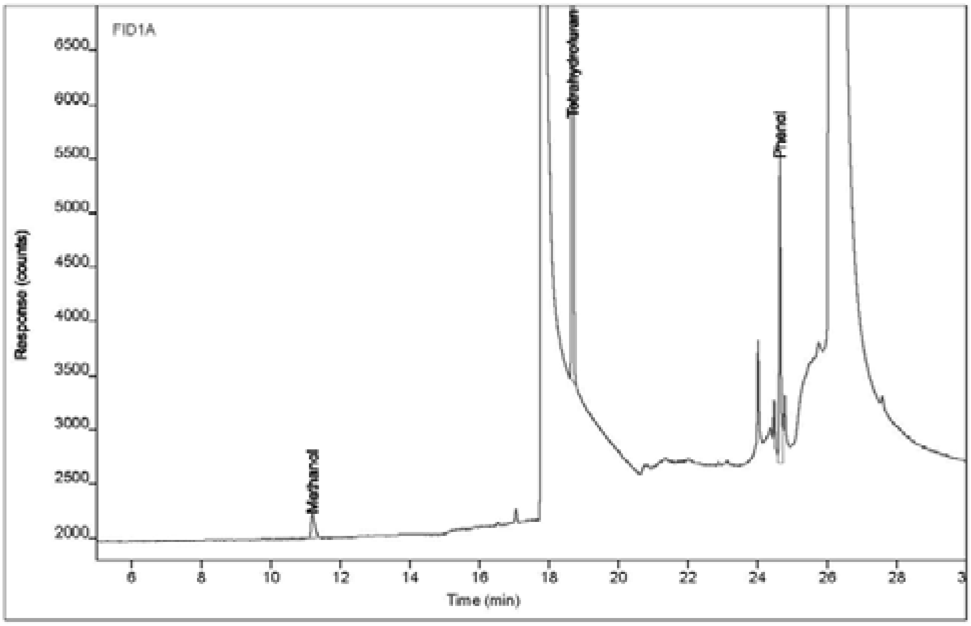
Analyst Peak Integration Comments

12:18:04 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R3-HFSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	23
Inj Data File	023F1601.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 4:35 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:43 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



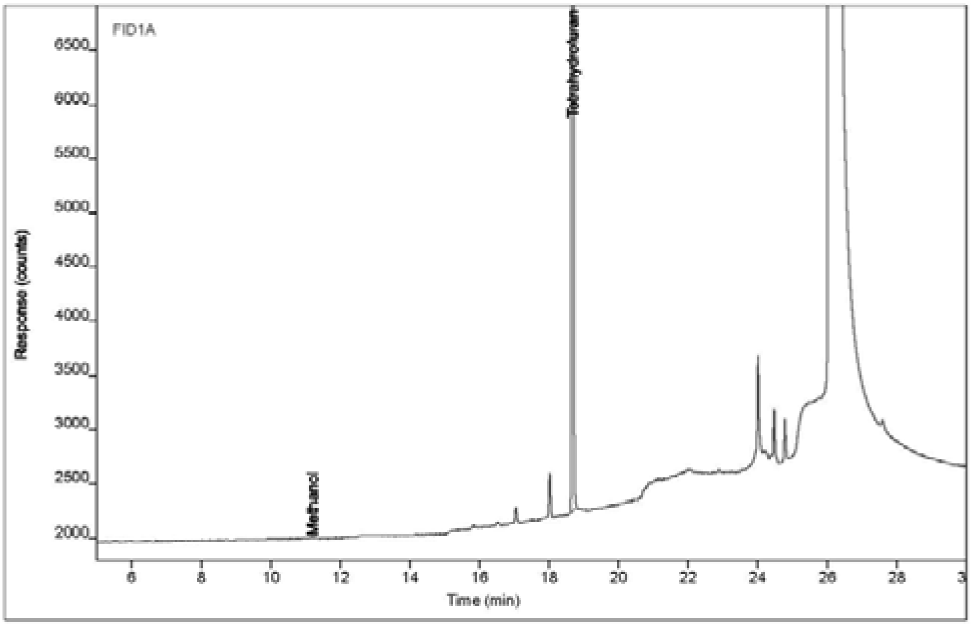
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.20	1673.75	227.792	6.30051	1	6.30051	ug/mL
Tetrahydrofuran	I BB	18.68	69776.3	25984.4	148.800			ug/mL
Phenol	MF	24.64	9140.28	2815.72	14.6983	1	14.6983	ug/mL

Analyst Peak Integration Comments
12:18:35 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R1.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	24
Inj Data File	024F1701.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 5:11 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:43 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	186.012	27.6464	0.70781	1	0.70781	ug/mL
Tetrahydrofuran	I BB	18.68	69026.5	25826.3	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

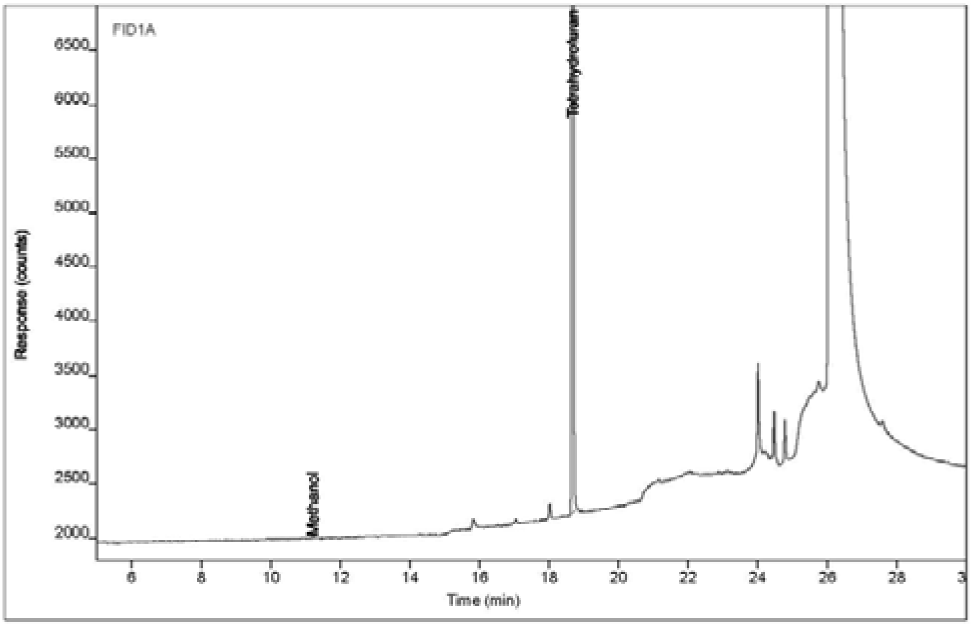
Analyst Peak Integration Comments

12:19:28 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R1-Dup.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	25
Inj Data File	025F1801.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 5:47 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:43 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.21	188.421	28.5005	0.70582	1	0.70582	ug/mL
Tetrahydrofuran	I BB	18.68	70117.6	26015.6	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

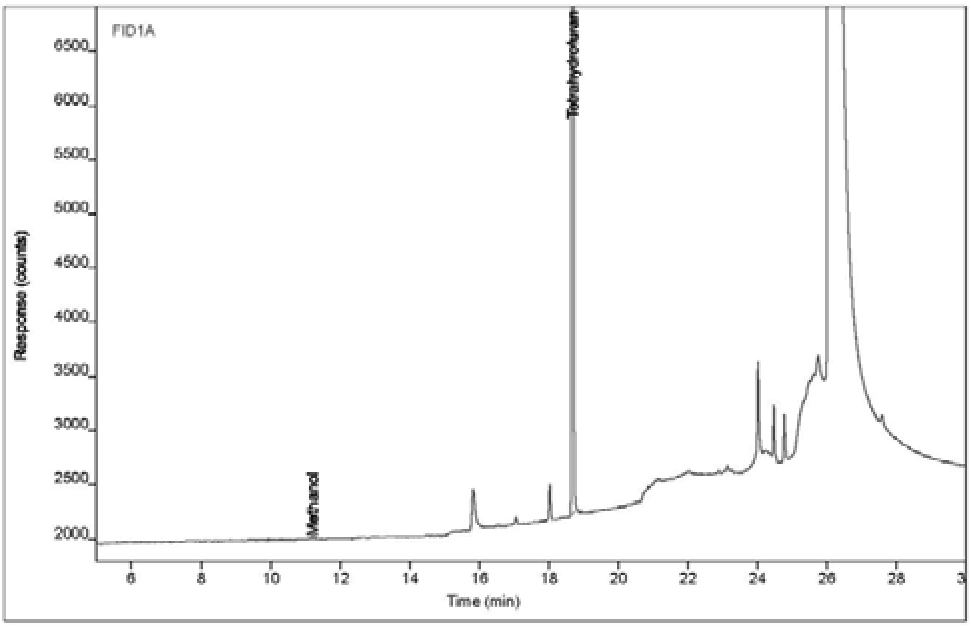
Analyst Peak Integration Comments

08:21:54 07/28/21 Jennie Parrish II
12:19:37 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R2.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	26
Inj Data File	026F1901.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 6:23 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:43 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	217.379	32.9417	0.81395	1	0.81395	ug/mL
Tetrahydrofuran	I BB	18.68	70147.7	26196.4	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

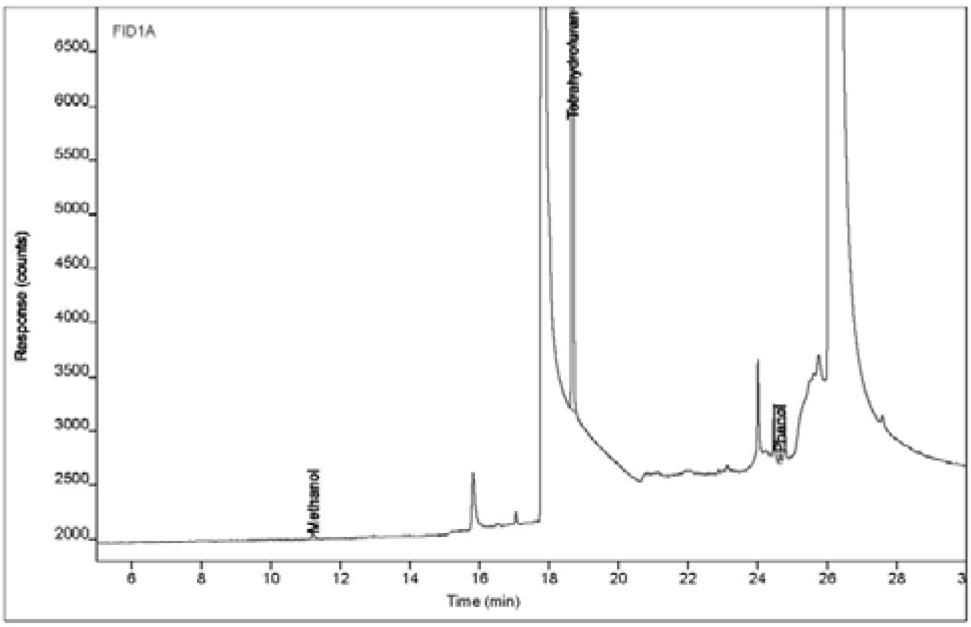
Analyst Peak Integration Comments

08:21:24 07/28/21 Jennie Parrish II
12:19:49 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R2-LSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	27
Inj Data File	027F2001.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 6:58 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:43 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.21	366.132	55.0259	1.36633	1	1.36633	ug/mL
Tetrahydrofuran	I BB	18.68	70384.3	26199.3	148.800			ug/mL
Phenol	MF	24.64	348.356	112.013	0.55534	1	0.55534	ug/mL

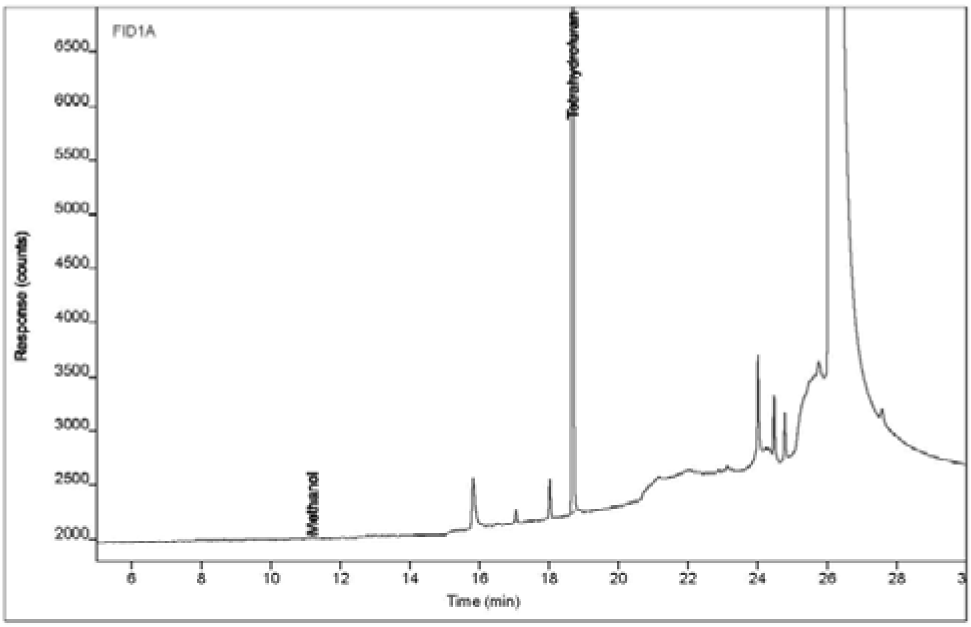
Analyst Peak Integration Comments

12:22:12 07/28/21 Jennie Parrish II
12:22:47 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	28
Inj Data File	028F2101.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 7:34 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:43 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.19	268.606	33.0434	1.00584	1	1.00584	ug/mL
Tetrahydrofuran	I BB	18.69	70142.1	26192.2	148.800			ug/mL
Phenol		(24.64)				1		ug/mL

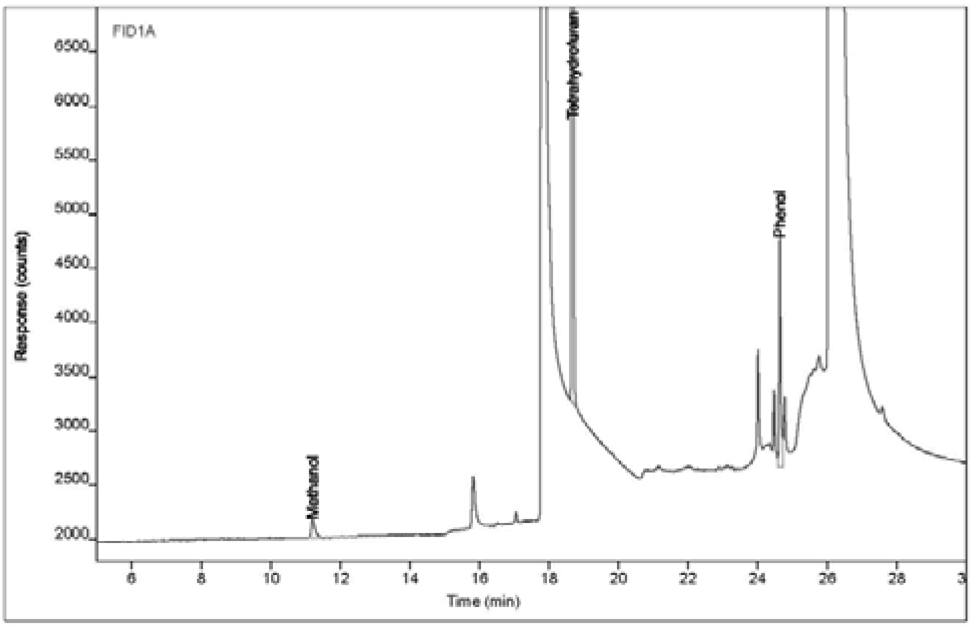
Analyst Peak Integration Comments

12:23:24 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3-HSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	29
Inj Data File	029F2201.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 8:10 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:44 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.20	1351.42	175.609	4.85105	1	4.85105	ug/mL
Tetrahydrofuran	I BB	18.69	73172.3	27156.9	148.800			ug/mL
Phenol	FM	24.63	7211.73	2118.09	11.0588	1	11.0588	ug/mL

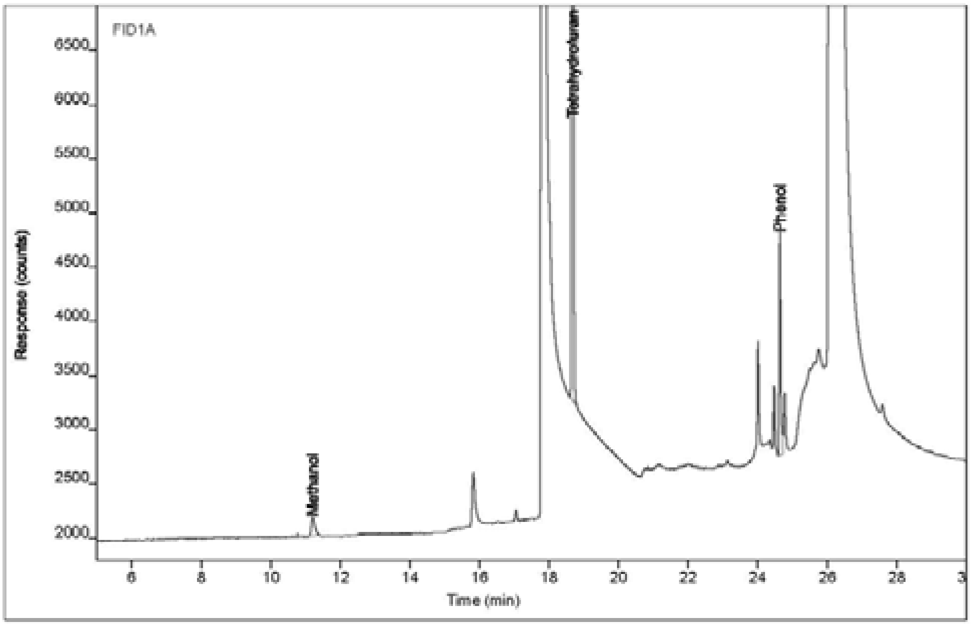
Analyst Peak Integration Comments

12:24:25 07/28/21 Jennie Parrish II

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3-HSPK-LD.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	30
Inj Data File	030F2301.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 8:46 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:44 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

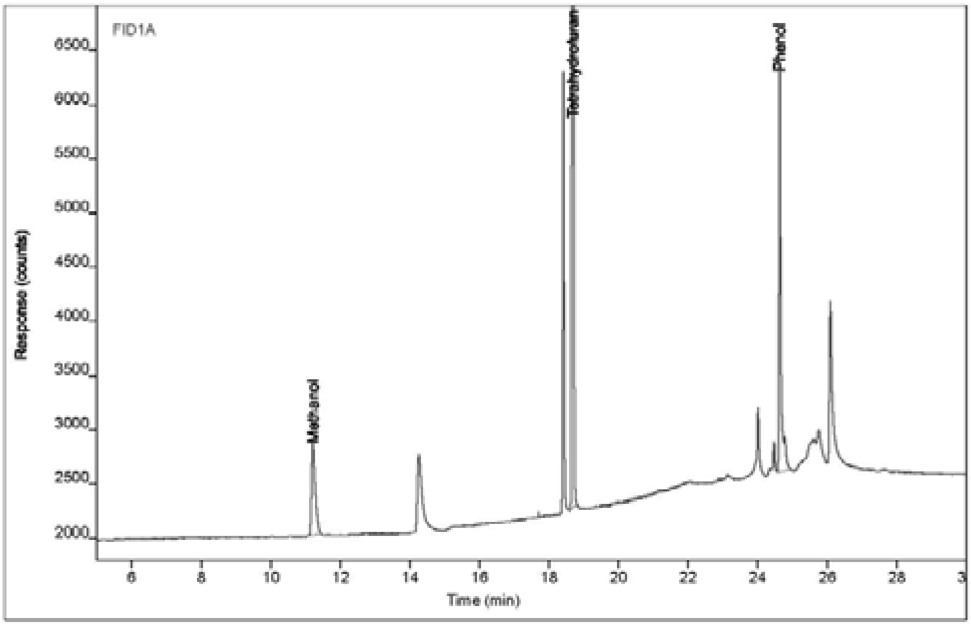


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.20	1214.79	178.918	4.51501	1	4.51501	ug/mL
Tetrahydrofuran	I BB	18.69	70670.3	26499.9	148.800			ug/mL
Phenol	VV	24.64	6382.64	2061.08	10.1339	1	10.1339	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1494 #4	Sample Type	Calibration
Sequence Name	FESTER0623A ver.6	Vial Number	1
Inj Data File	001F2401.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 9:22 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:44 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

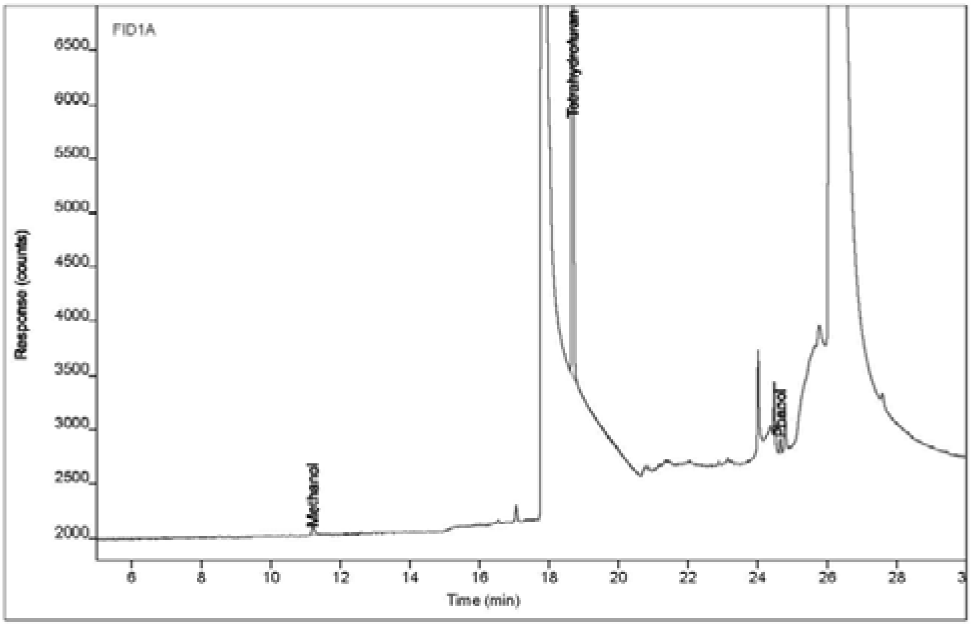


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.21	6243.84	846.530	21.6365	1	21.6365	ug/mL
Tetrahydrofuran	I BB	18.69	77529.7	29134.0	152.200			ug/mL
Phenol	MM	24.63	13818.1	3703.85	20.4554	1	20.4554	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R2-LFSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	31
Inj Data File	031F2501.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 9:58 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:44 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

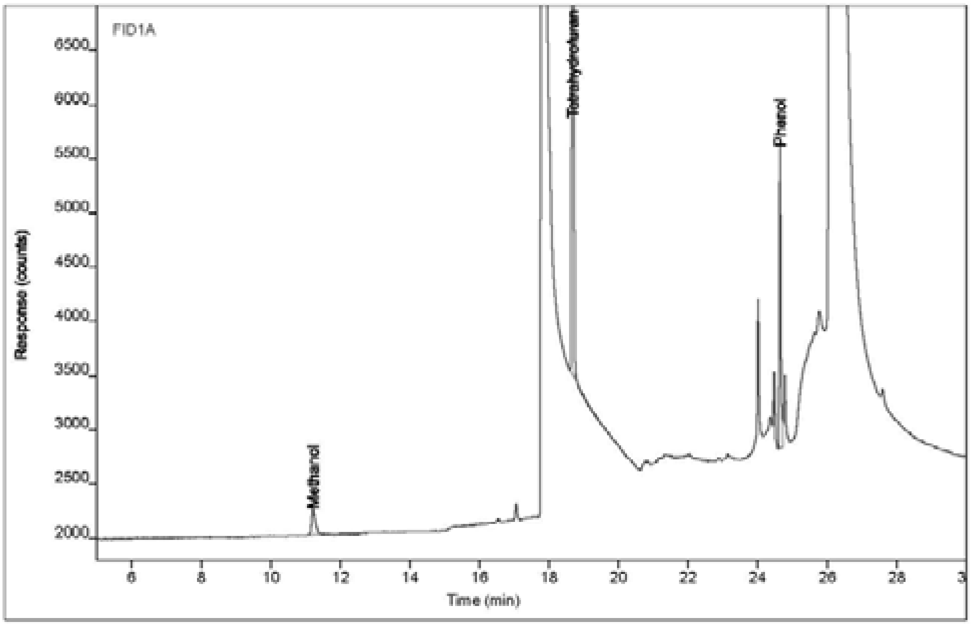


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.21	463.161	72.1047	1.63561	1	1.63561	ug/mL
Tetrahydrofuran	I BB	18.69	74377.9	27788.4	148.800			ug/mL
Phenol	VV	24.64	426.360	145.976	0.64320	1	0.64320	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3-HFSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	32
Inj Data File	032F2601.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 10:34 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:44 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

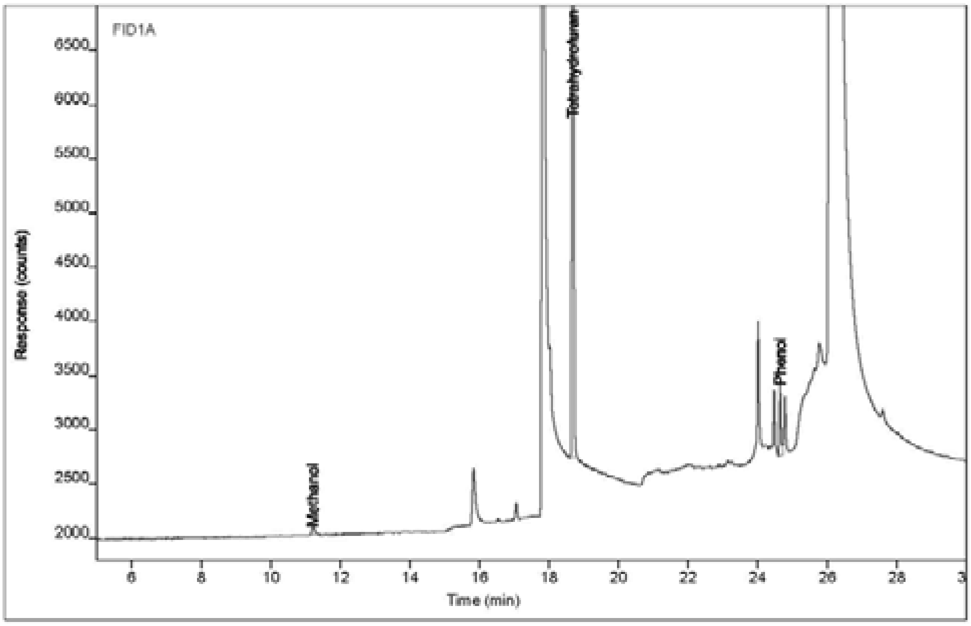


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.21	1753.02	241.707	6.34340	1	6.34340	ug/mL
Tetrahydrofuran	I BB	18.69	72586.9	27163.0	148.800			ug/mL
Phenol	VV	24.64	8611.24	2787.22	13.3113	1	13.3113	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.TSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	33
Inj Data File	033F2701.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 11:10 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:44 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.20	432.813	71.1074	1.52943	1	1.52943	ug/mL
Tetrahydrofuran	I BB	18.69	74329.8	27864.2	148.800			ug/mL
Phenol	VV	24.64	1996.55	651.464	3.01393	1	3.01393	ug/mL

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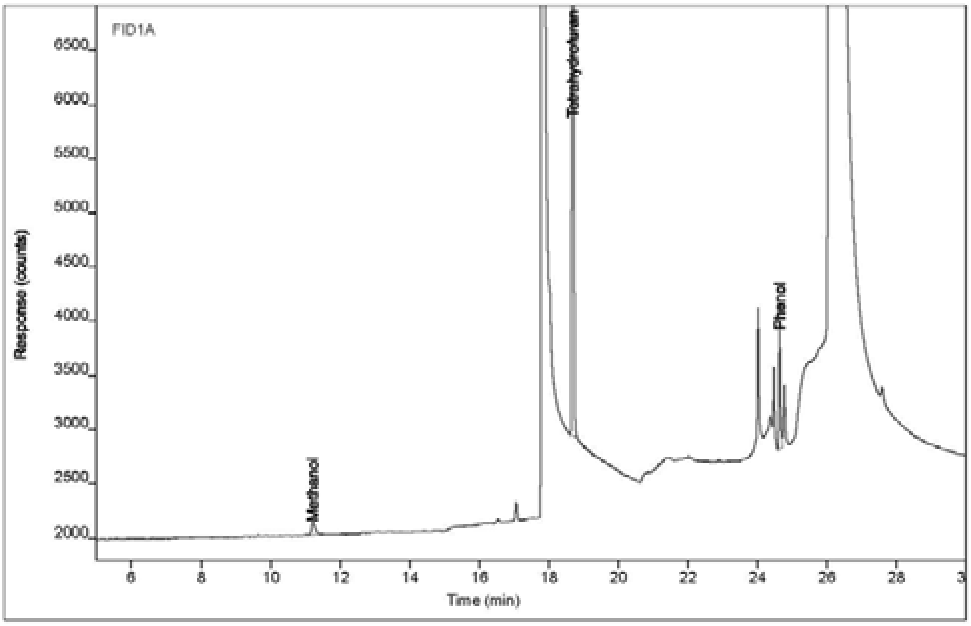
Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.TFSPK.BHA	Sample Type	Sample
Sequence Name	FESTER0623A ver.6	Vial Number	34
Inj Data File	034F2801.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 11:45 PM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:45 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM

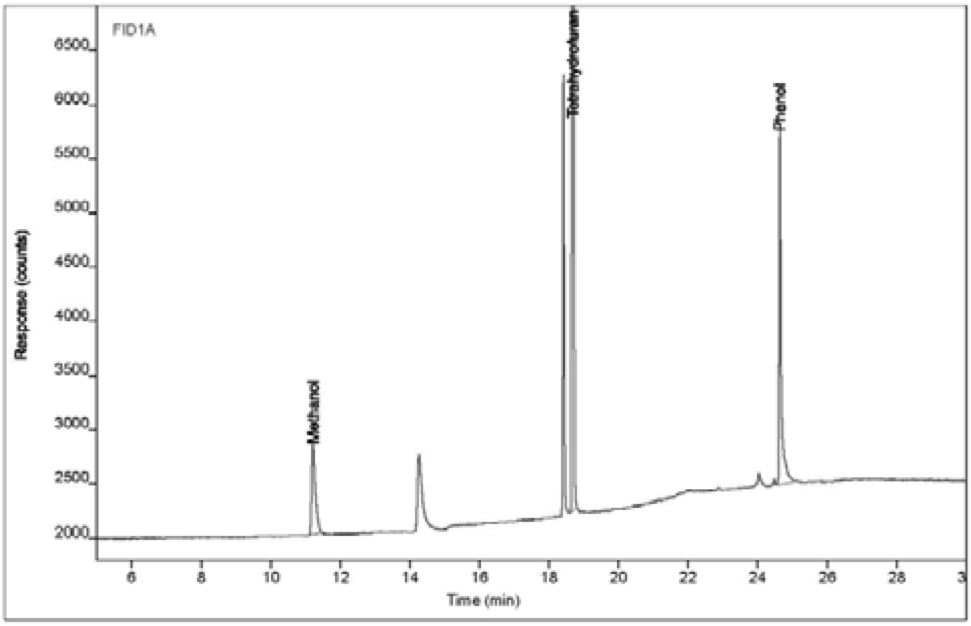


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.20	883.851	125.049	3.19526	1	3.19526	ug/mL
Tetrahydrofuran	I BB	18.69	72654.9	27175.8	148.800			ug/mL
Phenol	VV	24.64	3408.91	1104.06	5.26460	1	5.26460	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1494 #4	Sample Type	Calibration
Sequence Name	FESTER0623A ver.6	Vial Number	1
Inj Data File	001F3501.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 3	Injection	1 of 1
Injection Date	7/28/2021 4:32 AM	Acquisition Method	FESTER0258.M
File Modified	7/28/2021 1:46 PM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	7/28/2021 8:24 AM
Operator	Jennie Parrish	Printed	7/28/2021 2:06 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.21	6210.36	836.651	21.4876	1	21.4876	ug/mL
Tetrahydrofuran	I BB	18.69	77648.7	28940.9	152.200			ug/mL
Phenol	MM	24.63	13237.5	3271.26	19.5658	1	19.5658	ug/mL

Method C:\GC\2021\FESTER\METHODS\FESTER0589_ALC_THF-IS.M

Calibration Table

Calib. Data Modified : Monday, January 11, 2021 10:51:08 AM

Rel. Reference Window : 4.000 %
Abs. Reference Window : 0.200 min
Rel. Non-ref. Window : 0.000 %
Abs. Non-ref. Window : 0.200 min
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Average Response/Amount
Origin : Ignored
Weight : Equal

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Sample ISTD Information:

ISTD #	ISTD Amount [ug/mL]	Name
1	152.20000	Tetrahydrofuran

Signal 1: FID2 B,
Signal 2: FID1 A,

RetTime [min]	Sig	Lvl	Amount [ug/mL]	Area	Amt/Area	Ref	Grp	Name
11.373	2	1	4.74363e-1	136.80118	3.46753e-3	1		Methanol
		2	9.48252e-1	248.13130	3.82157e-3			
		3	4.72239	1224.71753	3.85590e-3			
		4	23.15122	6438.04932	3.59600e-3			
		5	45.20000	1.24933e4	3.61793e-3			
		6	105.46667	3.07661e4	3.42801e-3			
		7	949.20000	2.53722e5	3.74110e-3			
14.416	2	1	4.72690e-1	149.14752	3.16928e-3	1		Ethanol
		2	9.44908e-1	323.58118	2.92016e-3			
		3	4.70574	1408.98535	3.33981e-3			
		4	23.06959	6972.64404	3.30859e-3			
		5	45.04063	1.37520e4	3.27520e-3			
		6	105.09480	3.59479e4	2.92353e-3			
		7	945.85320	3.23658e5	2.92239e-3			
18.517	2	1	4.81098e-1	223.57950	2.15180e-3	1		2-Butanone
		2	9.61716e-1	431.68781	2.22780e-3			
		3	4.78944	2107.94897	2.27209e-3			
		4	23.47994	1.11053e4	2.11429e-3			
		5	45.84178	2.12237e4	2.15994e-3			
		6	106.96416	5.23673e4	2.04258e-3			
		7	962.67744	4.26861e5	[illegible]			

EA Job# 0721-063 Page 64 of 170

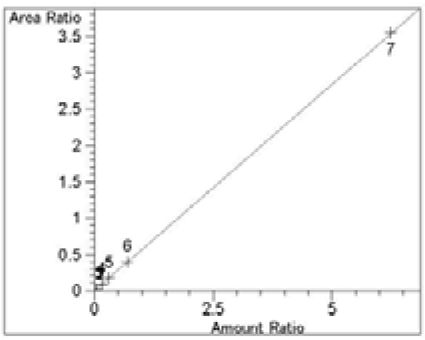
Method C:\GC\2021\FESTER\METHODS\FESTER0589_ALC_THF-IS.M

RetTime [min]	Sig	Lvl	Amount [ug/mL]	Area	Amt/Area	Ref	Grp	Name
18.771	2	1	152.20000	7.26264e4	2.09566e-3	I1		Tetrahydrofuran
		2	152.20000	7.41713e4	2.05201e-3			
		3	152.20000	7.35626e4	2.06899e-3			
		4	152.20000	7.43776e4	2.04632e-3			
		5	152.20000	7.27466e4	2.09219e-3			
		6	152.20000	7.77293e4	1.95808e-3			
		7	152.20000	7.14789e4	2.12930e-3			
24.712	2	1	5.21739e-1	317.83063	1.64156e-3	1		Phenol
		2	1.04296	626.71234	1.66417e-3			
		3	5.19403	3185.64014	1.63045e-3			
		4	25.46341	1.67331e4	1.52174e-3			
		5	49.71429	3.33544e4	1.49049e-3			
		6	116.00000	8.17914e4	1.41824e-3			
		7	1044.00000	6.74298e5	1.54828e-3			

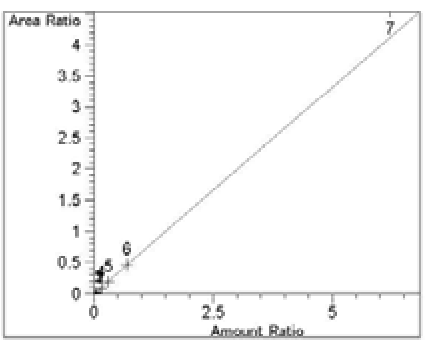
Peak Sum Table

No Entries in table

Calibration Curves

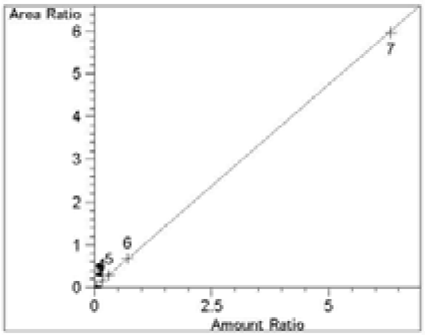


Methanol at exp. RT: 11.373
FID1 A,
Correlation: 1.00000
Residual Std. Dev.: 0.00771
Formula: y = mx
m: 5.66514e-1
x: Amount
y: Area



Ethanol at exp. RT: 14.416
FID1 A,
Correlation: 0.99996
Residual Std. Dev.: 0.18318
Formula: y = mx
m: 6.62729e-1
x: Amount
y: Area

Method C:\GC\2021\FESTER\METHODS\FESTER0589_ALC_THF-IS.M




```
2-Butanone at exp. RT: 18.517
FID1 A,
Correlation:           1.00000
Residual Std. Dev.:    0.01506
Formula: y = mx
      m:      9.49269e-1
      x: Amount
      y: Area
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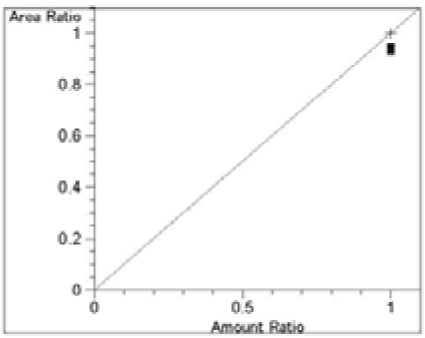
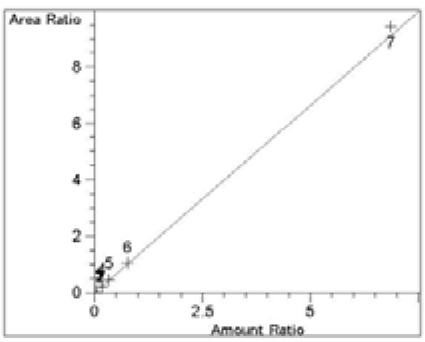



```
Tetrahydrofuran at exp. RT: 18.771
FID1 A,
Correlation:           1.00000
Residual Std. Dev.:    0.00000
Formula: y = mx
      m:      1.00000
      x: Amount
      y: Area
```



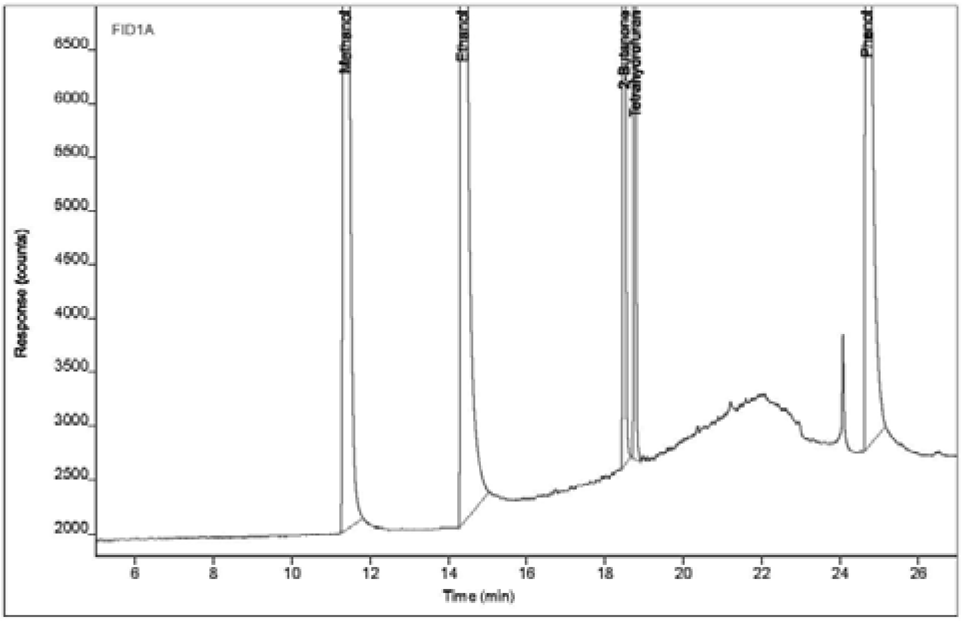

```
Phenol at exp. RT: 24.712
FID1 A,
Correlation:           1.00000
Residual Std. Dev.:    0.15229
Formula: y = mx
      m:      1.32614
      x: Amount
      y: Area
```

==

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #7	Sample Type	Calibration
Sequence Name	FESTER0589 ver.2	Vial Number	17
Inj Data File	017F0201.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 1
Injection Date	1/6/2021 3:02 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:10 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM

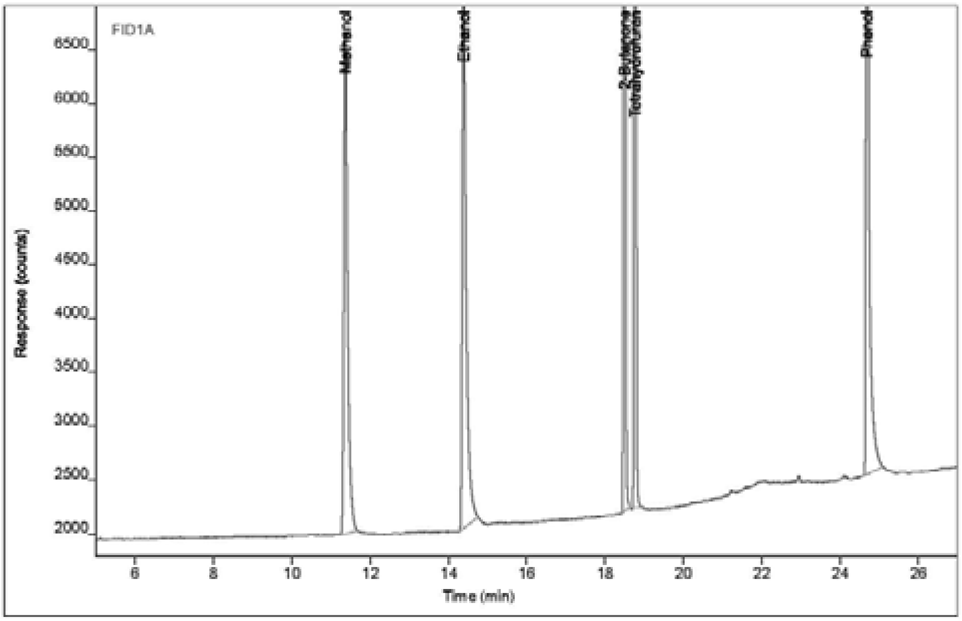


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.36	253722	41609.3	953.641	1	953.641	ug/mL
Ethanol	MM	14.36	323658	55260.6	1039.89	1	1039.89	ug/mL
2-Butanone	BB	18.49	426861	167280	957.489	1	957.489	ug/mL
Tetrahydrofuran	I BV	18.77	71478.9	27118.5	152.200			ug/mL
Phenol	BBA	24.68	674298	239373	1082.68	1	1082.68	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #6	Sample Type	Calibration
Sequence Name	FESTER0589 ver.2	Vial Number	16
Inj Data File	016F0301.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 1
Injection Date	1/6/2021 3:37 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:10 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM

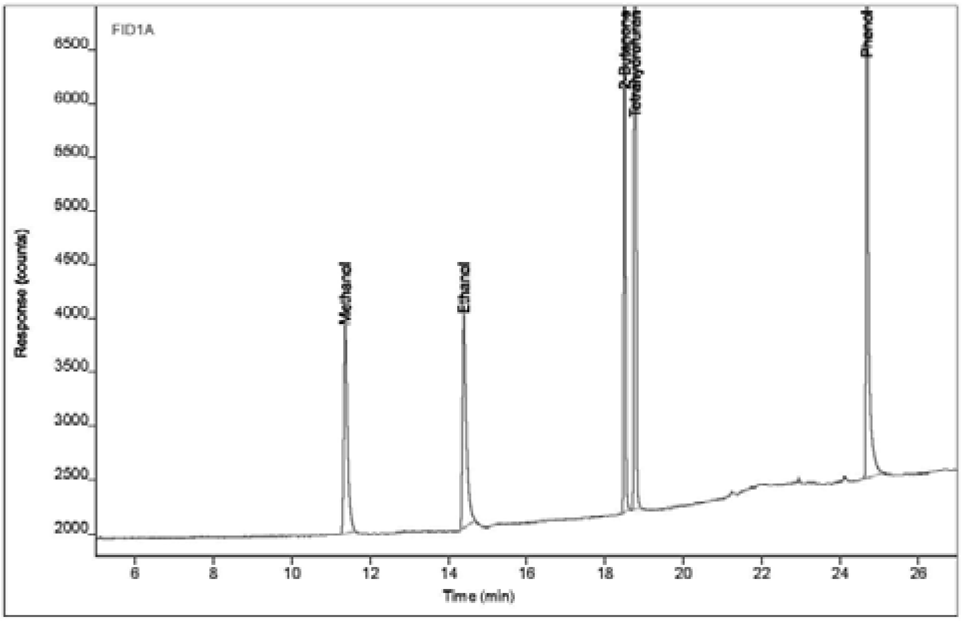


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.36	30766.1	4644.62	106.339	1	106.339	ug/mL
Ethanol	BB	14.38	35947.9	5264.07	106.210	1	106.210	ug/mL
2-Butanone	BB	18.50	52367.3	20179.1	108.019	1	108.019	ug/mL
Tetrahydrofuran	I BB	18.77	77729.3	29528.8	152.200			ug/mL
Phenol	BB	24.69	81791.4	26638.7	120.767	1	120.767	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #5	Sample Type	Calibration
Sequence Name	FESTER0589 ver.2	Vial Number	15
Inj Data File	015F0401.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 1
Injection Date	1/6/2021 4:13 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:10 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM

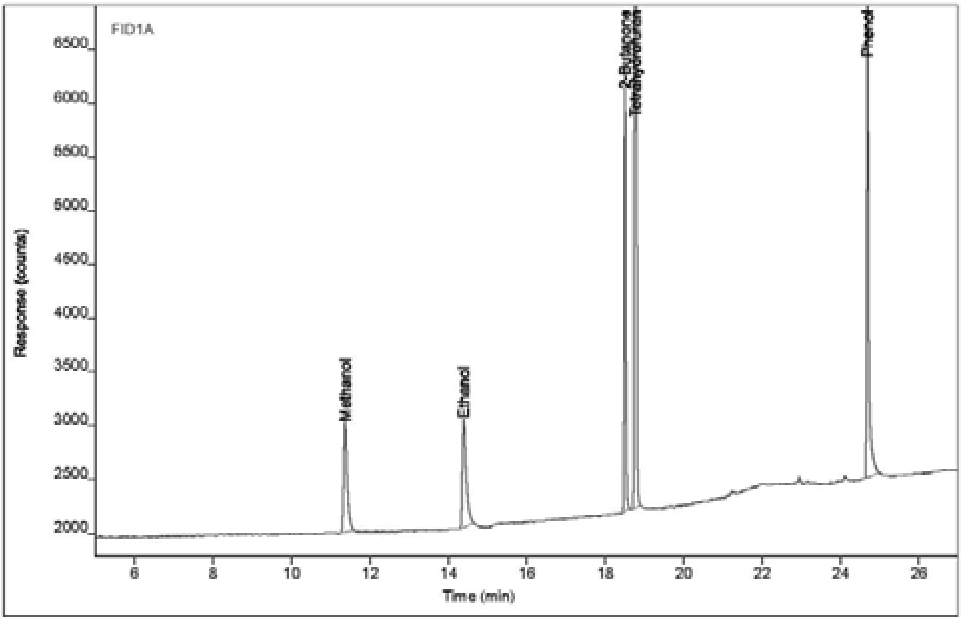


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.36	12493.3	1939.19	46.1391	1	46.1391	ug/mL
Ethanol	BB	14.39	13752.0	1986.70	43.4143	1	43.4143	ug/mL
2-Butanone	BB	18.50	21223.7	7998.96	46.7771	1	46.7771	ug/mL
Tetrahydrofuran	I BB	18.77	72746.6	27561.4	152.200			ug/mL
Phenol	BB	24.69	33354.4	10325.2	52.6218	1	52.6218	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #4	Sample Type	Calibration
Sequence Name	FESTER0589 ver.2	Vial Number	14
Inj Data File	014F0501.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 1
Injection Date	1/6/2021 4:49 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:10 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM

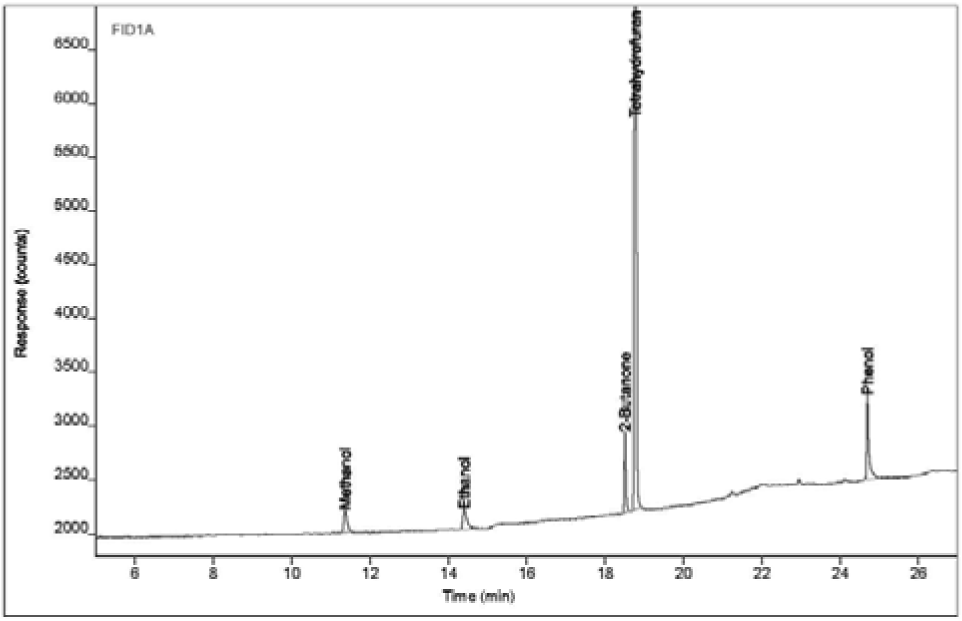


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.37	6438.05	1025.79	23.2550	1	23.2550	ug/mL
Ethanol	BB	14.39	6972.64	1014.29	21.5295	1	21.5295	ug/mL
2-Butanone	BB	18.50	11105.3	4190.47	23.9395	1	23.9395	ug/mL
Tetrahydrofuran	I BB	18.77	74377.6	28229.7	152.200			ug/mL
Phenol	BB	24.69	16733.1	5035.61	25.8203	1	25.8203	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #3	Sample Type	Calibration
Sequence Name	FESTER0589 ver.2	Vial Number	13
Inj Data File	013F0601.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 1
Injection Date	1/6/2021 5:24 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:10 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM

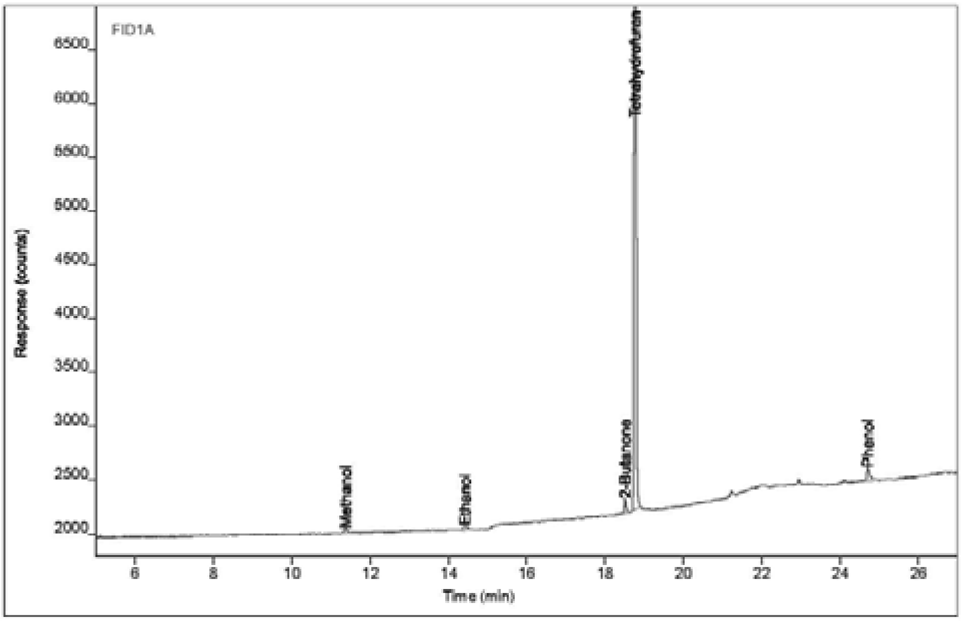


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.36	1224.72	208.695	4.47283	1	4.47283	ug/mL
Ethanol	MM	14.41	1408.99	194.010	4.39874	1	4.39874	ug/mL
2-Butanone	BB	18.51	2107.95	747.671	4.59440	1	4.59440	ug/mL
Tetrahydrofuran	I BB	18.77	73562.6	28066.4	152.200			ug/mL
Phenol	MM	24.70	3185.64	787.196	4.97010	1	4.97010	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #2	Sample Type	Calibration
Sequence Name	FESTER0589 ver.2	Vial Number	12
Inj Data File	012F0701.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 1
Injection Date	1/6/2021 6:00 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:10 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM

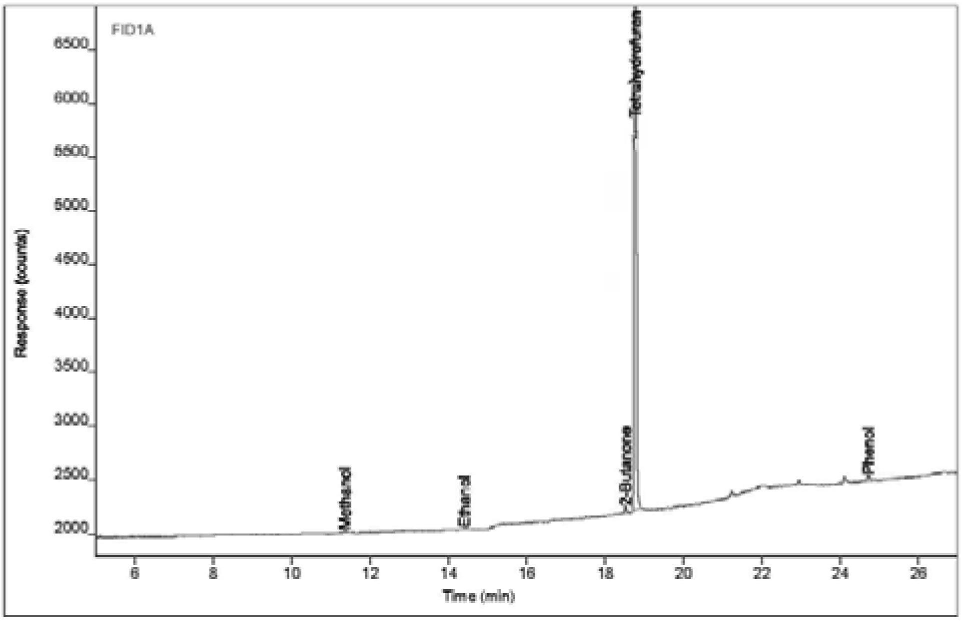


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	BB	11.37	248.131	46.2017	0.89877	1	0.89877	ug/mL
Ethanol	MM	14.42	323.581	42.2225	1.00190	1	1.00190	ug/mL
2-Butanone	BB	18.52	431.688	138.107	0.93317	1	0.93317	ug/mL
Tetrahydrofuran	I BB	18.77	74171.3	28245.3	152.200			ug/mL
Phenol	MF	24.71	626.712	129.889	0.96975	1	0.96975	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #1	Sample Type	Calibration
Sequence Name	FESTER0589 ver.2	Vial Number	11
Inj Data File	011F0801.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 8
Injection Date	1/6/2021 6:35 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:10 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM

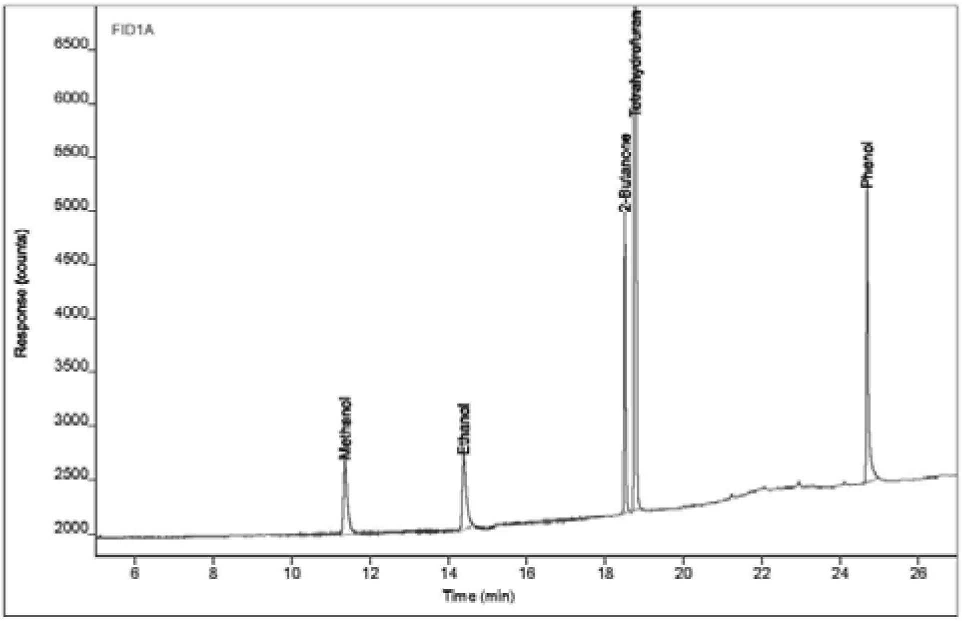


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	MM	11.36	136.801	27.1493	0.50606	1	0.50606	ug/mL
Ethanol	MM	14.41	149.148	22.2037	0.47163	1	0.47163	ug/mL
2-Butanone	BB	18.52	223.579	69.7775	0.49359	1	0.49359	ug/mL
Tetrahydrofuran	I BB	18.77	72626.4	27575.7	152.200			ug/mL
Phenol	MF	24.72	317.831	62.6140	0.50226	1	0.50226	ug/mL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1354 #3SS	Sample Type	Control
Sequence Name	FESTER0589 ver.2	Vial Number	18
Inj Data File	018F0901.D	Injection Volume	1
File Location	GC/2021/Fester/Quarter 1	Injection	1 of 1
Injection Date	1/6/2021 11:20 PM	Acquisition Method	FESTER0258.M
File Modified	1/27/2021 10:12 AM	Analysis Method	FESTER0589_ALC_THF-IS.M
Instrument	Fester	Method Modified	1/27/2021 7:54 AM
Operator	Jennie Parrish	Printed	1/29/2021 9:21 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methanol	VB	11.36	4677.75	698.901	16.4756	1	16.4756	ug/mL
Ethanol	VB	14.39	4942.66	689.951	14.8813	1	14.8813	ug/mL
2-Butanone	BB	18.50	7632.03	2792.30	16.0423	1	16.0423	ug/mL
Tetrahydrofuran	I BB	18.77	76278.1	28846.2	152.200			ug/mL
Phenol	BB	24.69	9586.92	2725.66	14.4246	1	14.4246	ug/mL

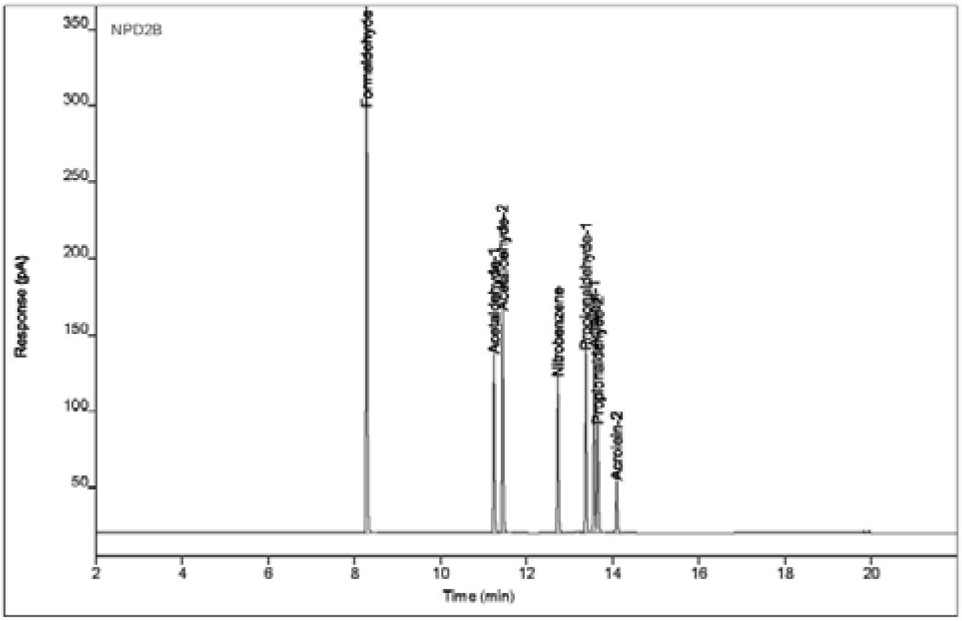
Raw Data

ENTHALPY
ANALYTICAL

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #4	Sample Type	Calibration
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 4
Inj Data File	004B0101.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 11:32 AM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

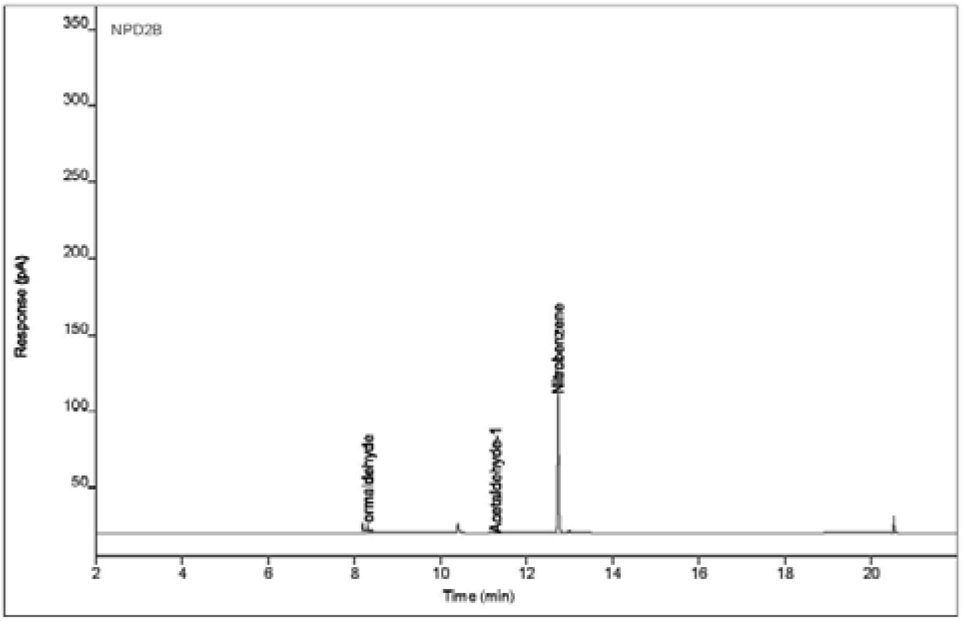


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				11.6670	1	11.6670	
Acrolein	Group				12.2783	1	12.2783	
Propionaldehyde	Group				11.8240	1	11.8240	
Formaldehyde	BB	8.28	762.399	363.780	11.8069	1	11.8069	ug/ml
Acetaldehyde-1	BV	11.24	262.132	117.064	5.23989	1	5.23989	ug/ml
Acetaldehyde-2	VB	11.45	321.525	145.189	6.42712	1	6.42712	ug/ml
Nitrobenzene	BB	12.73	238.051	101.671	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.38	267.599	119.665	7.30743	1	7.30743	ug/ml
Acrolein-1	VV	13.57	260.813	120.735	9.45252	1	9.45252	ug/ml
Propionaldehyde-2	VB	13.66	165.388	70.5078	4.51661	1	4.51661	ug/ml
Acrolein-2	BB	14.09	77.9599	34.3285	2.82583	1	2.82583	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #MB1-Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 10
Inj Data File	010B0201.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 1:33 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

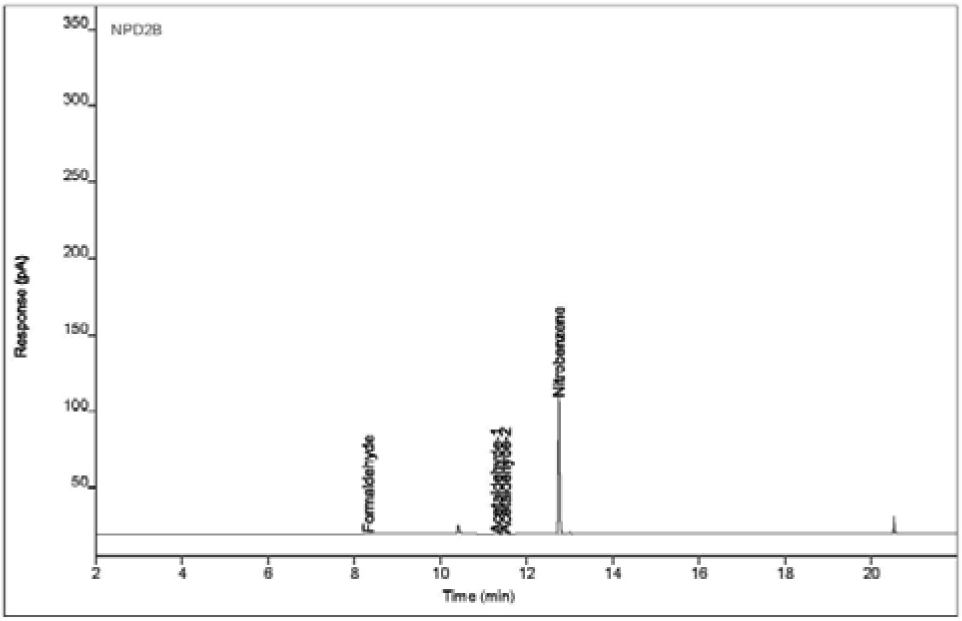


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.02287	1	0.02287	
Acrolein	Group					1		
Propionaldehyde	Group					1		
Formaldehyde	BB	8.31	1.84090	0.86530	0.07706	1	0.07706	ug/ml
Acetaldehyde-1	BB	11.29	0.19979	0.09888	0.02287	1	0.02287	ug/ml
Acetaldehyde-2		(11.49)				1		
Nitrobenzene	BB	12.73	211.695	90.8110	100.000	1	100.000	ug/ml
Propionaldehyde-1		(13.42)				1		
Acrolein-1		(13.60)				1		
Propionaldehyde-2		(13.69)				1		
Acrolein-2		(14.13)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #MB2-Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 11
Inj Data File	011B0301.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 2:02 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

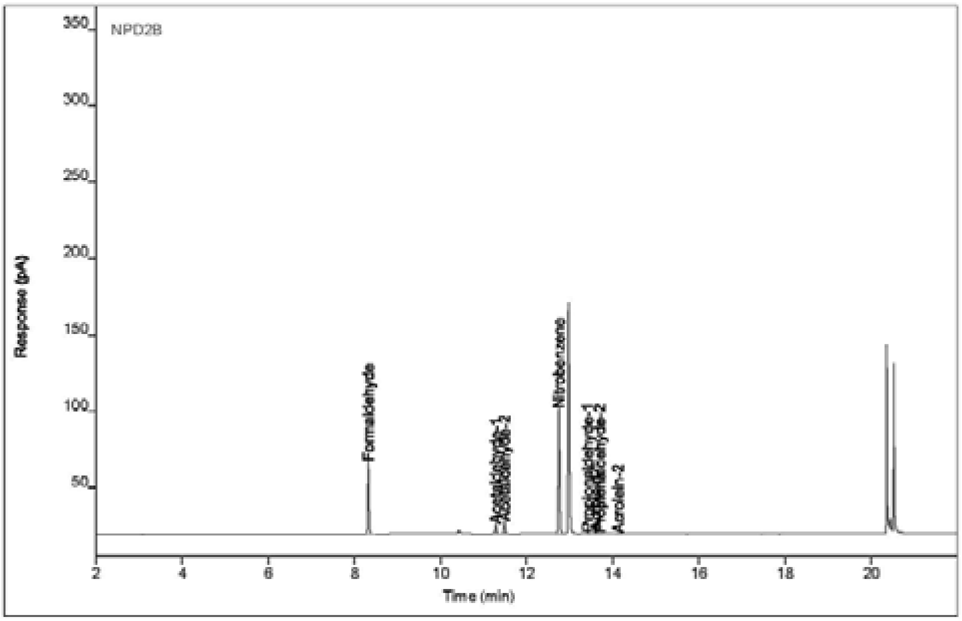


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.04987	1	0.04987	
Acrolein	Group					1		
Propionaldehyde	Group					1		
Formaldehyde	BB	8.33	1.77321	0.85887	0.07652	1	0.07652	ug/ml
Acetaldehyde-1	BB	11.30	0.17901	0.06978	0.02248	1	0.02248	ug/ml
Acetaldehyde-2	BB	11.50	0.21336	0.07651	0.02739	1	0.02739	ug/ml
Nitrobenzene	BB	12.75	207.473	89.1296	100.000	1	100.000	ug/ml
Propionaldehyde-1		(13.42)				1		
Acrolein-1		(13.60)				1		
Propionaldehyde-2		(13.69)				1		
Acrolein-2		(14.13)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R1.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 12
Inj Data File	012B0401.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 2:31 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

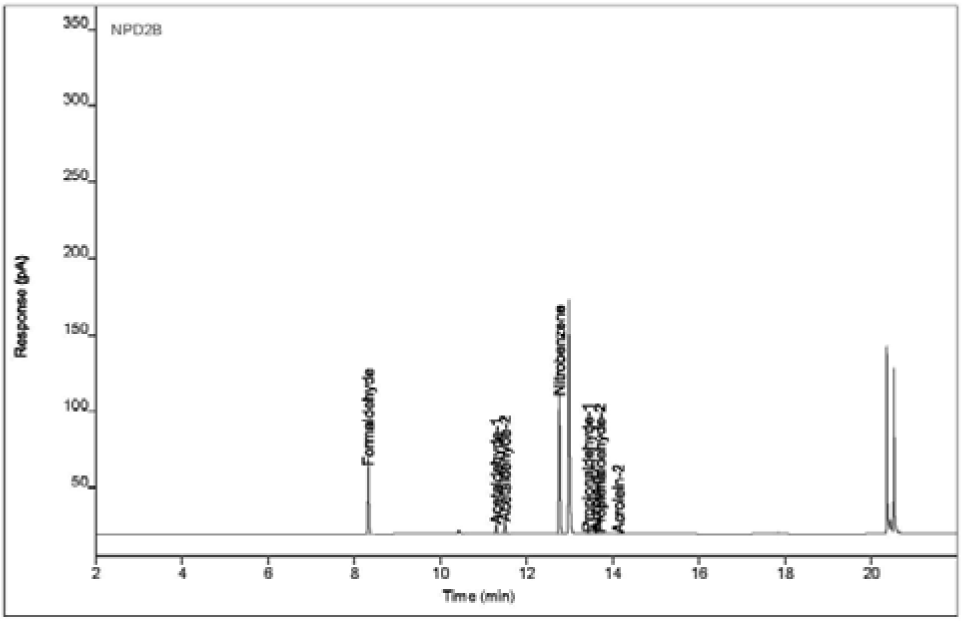


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.87772	1	0.87772	
Acrolein	Group				0.34665	1	0.34665	
Propionaldehyde	Group				0.22057	1	0.22057	
Formaldehyde	BB	8.32	99.9317	47.4753	1.96934	1	1.96934	ug/ml
Acetaldehyde-1	BB	11.29	15.0386	6.67936	0.39228	1	0.39228	ug/ml
Acetaldehyde-2	BB	11.49	18.6202	8.22937	0.48544	1	0.48544	ug/ml
Nitrobenzene	BV	12.75	190.727	81.8370	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.42	3.20142	1.41667	0.13317	1	0.13317	ug/ml
Acrolein-1	BV	13.61	4.68040	2.04183	0.25781	1	0.25781	ug/ml
Propionaldehyde-2	VB	13.70	2.13492	0.84668	0.08740	1	0.08740	ug/ml
Acrolein-2	BB	14.13	1.67419	0.64679	0.08884	1	0.08884	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R1-DUP.HEX	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 13
Inj Data File	013B0501.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 3:00 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

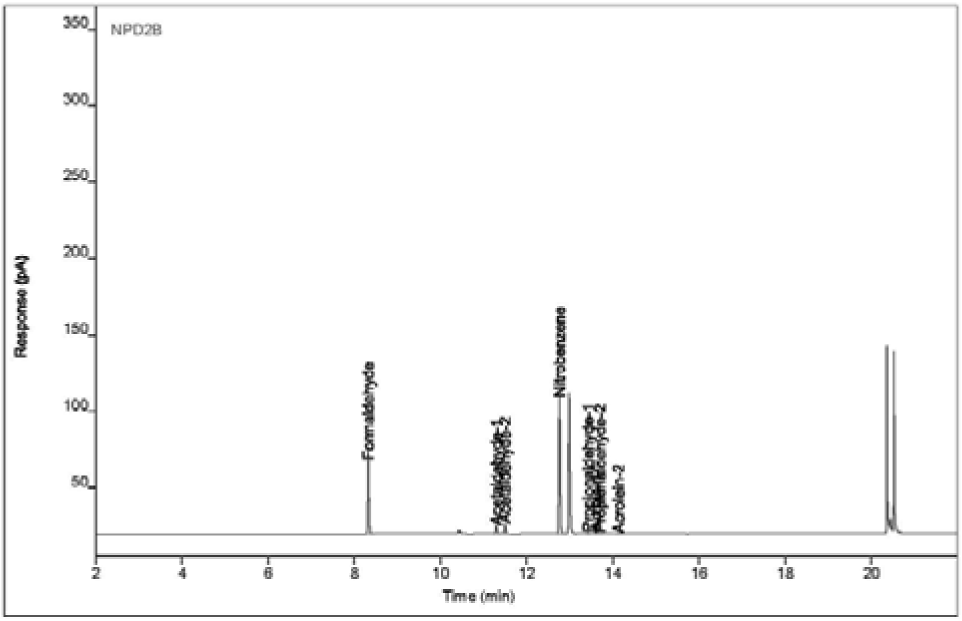


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.77616	1	0.77616	
Acrolein	Group				0.28143	1	0.28143	
Propionaldehyde	Group				0.20515	1	0.20515	
Formaldehyde	BB	8.32	93.5398	44.4021	1.69897	1	1.69897	ug/ml
Acetaldehyde-1	BB	11.29	14.2789	6.37641	0.34436	1	0.34436	ug/ml
Acetaldehyde-2	BB	11.49	17.9285	7.92850	0.43180	1	0.43180	ug/ml
Nitrobenzene	BV	12.76	207.713	90.2840	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.42	3.39048	1.49249	0.13018	1	0.13018	ug/ml
Acrolein-1	BV	13.61	4.08620	1.83529	0.21602	1	0.21602	ug/ml
Propionaldehyde-2	VB	13.70	1.92682	0.83219	0.07498	1	0.07498	ug/ml
Acrolein-2	BB	14.13	1.25646	0.55353	0.06541	1	0.06541	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2.HEX	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 14
Inj Data File	014B0601.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 3:29 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

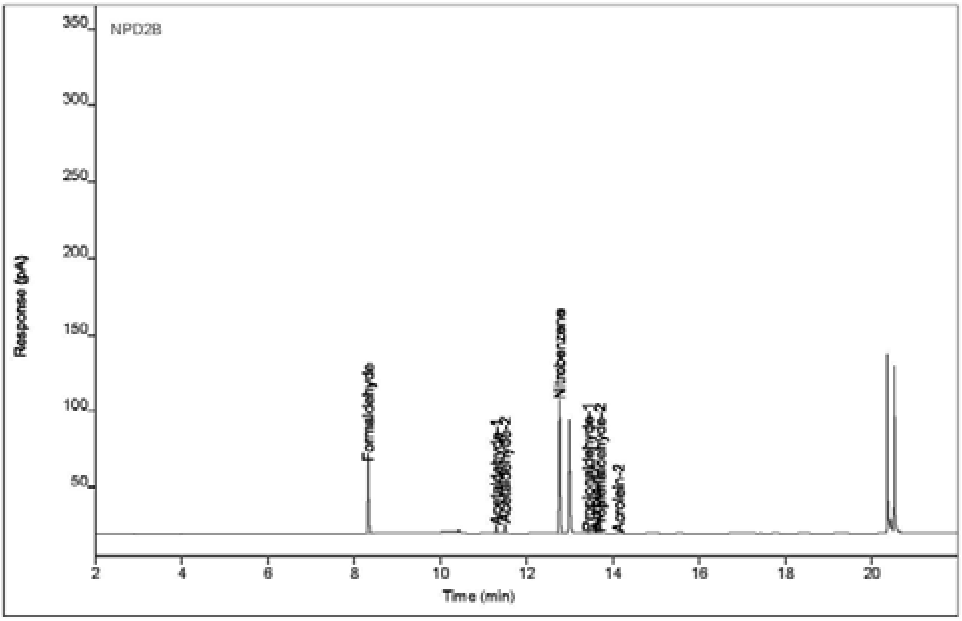


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.69422	1	0.69422	
Acrolein	Group				0.31119	1	0.31119	
Propionaldehyde	Group				0.18706	1	0.18706	
Formaldehyde	BB	8.32	102.494	48.4202	1.86173	1	1.86173	ug/ml
Acetaldehyde-1	BB	11.29	12.8162	5.74868	0.31168	1	0.31168	ug/ml
Acetaldehyde-2	BB	11.49	15.7321	6.96709	0.38254	1	0.38254	ug/ml
Nitrobenzene	BB	12.76	207.205	89.2409	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.42	3.01738	1.35698	0.11877	1	0.11877	ug/ml
Acrolein-1	BV	13.61	4.59004	2.06646	0.23731	1	0.23731	ug/ml
Propionaldehyde-2	VB	13.70	1.70816	0.74702	0.06829	1	0.06829	ug/ml
Acrolein-2	BB	14.13	1.45776	0.62461	0.07388	1	0.07388	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R3.HEX	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 15
Inj Data File	015B0701.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 3:59 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

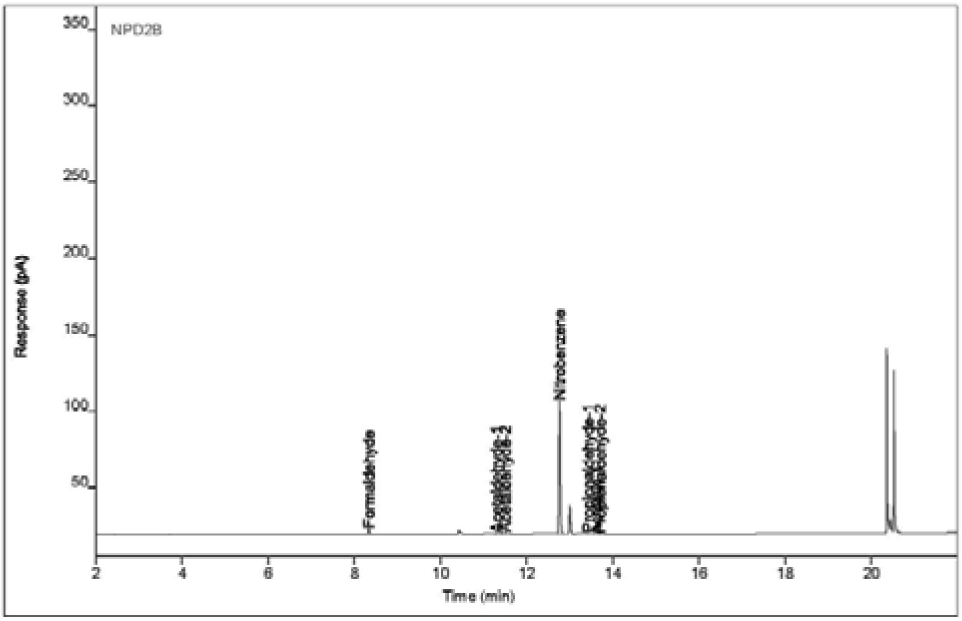


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.70361	1	0.70361	
Acrolein	Group				0.31561	1	0.31561	
Propionaldehyde	Group				0.20871	1	0.20871	
Formaldehyde	BB	8.32	99.2839	47.1561	1.86508	1	1.86508	ug/ml
Acetaldehyde-1	BB	11.29	12.5324	5.61054	0.31501	1	0.31501	ug/ml
Acetaldehyde-2	BB	11.50	15.4674	6.87978	0.38860	1	0.38860	ug/ml
Nitrobenzene	BB	12.76	200.346	87.6866	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.42	3.09019	1.40668	0.12435	1	0.12435	ug/ml
Acrolein-1	BV	13.61	4.55189	2.01834	0.24219	1	0.24219	ug/ml
Propionaldehyde-2	VB	13.70	2.14859	0.83922	0.08436	1	0.08436	ug/ml
Acrolein-2	BB	14.13	1.39890	0.61389	0.07342	1	0.07342	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R1.HEX	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 18
Inj Data File	018B0801.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 4:28 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

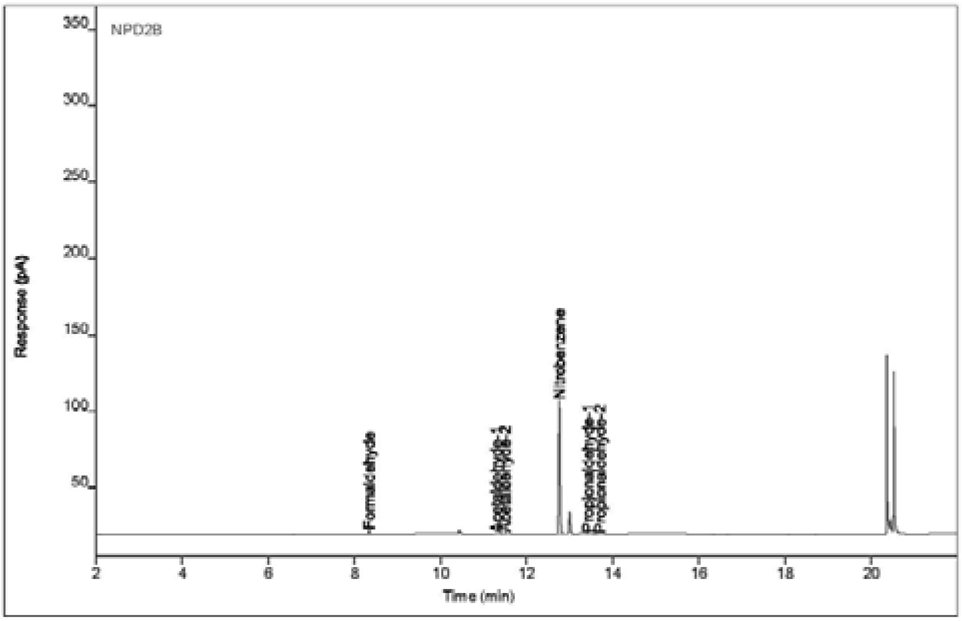


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.18930	1	0.18930	
Acrolein	Group				0.05339	1	0.05339	
Propionaldehyde	Group				0.16543	1	0.16543	
Formaldehyde	BB	8.34	8.94910	4.22282	0.20722	1	0.20722	ug/ml
Acetaldehyde-1	BB	11.30	2.90513	1.28059	0.08633	1	0.08633	ug/ml
Acetaldehyde-2	BB	11.50	3.44044	1.55312	0.10297	1	0.10297	ug/ml
Nitrobenzene	BB	12.76	202.754	87.5163	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.43	2.34899	1.05624	0.09948	1	0.09948	ug/ml
Acrolein-1	BV	13.62	0.14763	0.06817	0.05339	1	0.05339	ug/ml
Propionaldehyde-2	VB	13.71	1.59829	0.64327	0.06595	1	0.06595	ug/ml
Acrolein-2		(14.13)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R1-DUP.HEX	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 19
Inj Data File	019B0901.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 4:57 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

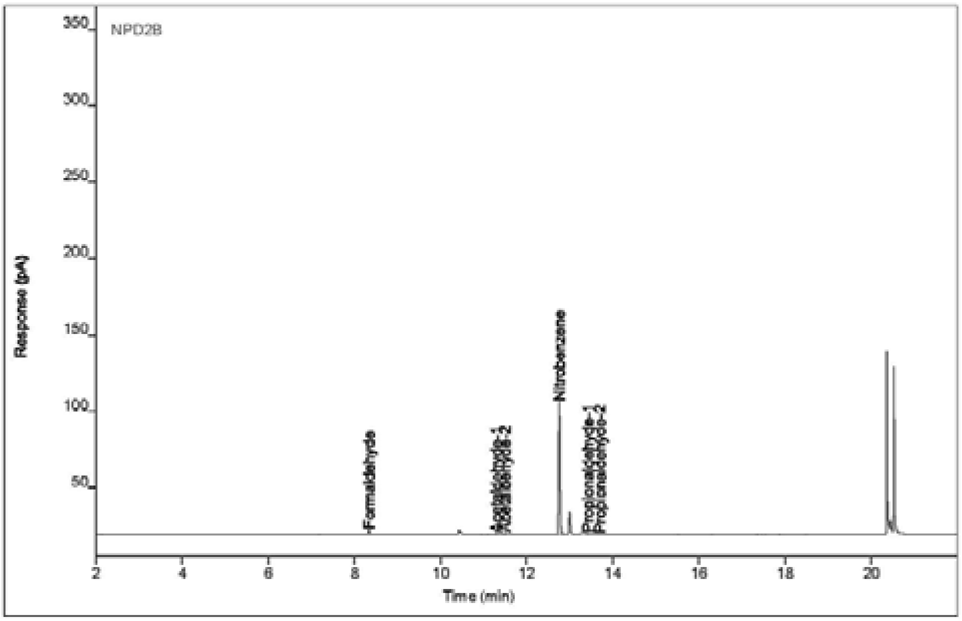


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.18552	1	0.18552	
Acrolein	Group					1		
Propionaldehyde	Group				0.16267	1	0.16267	
Formaldehyde	BB	8.34	6.76581	3.21454	0.16729	1	0.16729	ug/ml
Acetaldehyde-1	BB	11.30	2.66113	1.19492	0.08043	1	0.08043	ug/ml
Acetaldehyde-2	BB	11.50	3.54204	1.49025	0.10509	1	0.10509	ug/ml
Nitrobenzene	BV	12.76	203.389	87.8103	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.43	2.42131	1.07733	0.10155	1	0.10155	ug/ml
Acrolein-1		(13.60)				1		
Propionaldehyde-2	BB	13.71	1.45164	0.59851	0.06112	1	0.06112	ug/ml
Acrolein-2		(14.13)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R2.HEX	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 20
Inj Data File	020B1001.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 5:26 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.19142	1	0.19142	
Acrolein	Group					1		
Propionaldehyde	Group				0.16033	1	0.16033	
Formaldehyde	BB	8.34	7.96294	3.78559	0.19161	1	0.19161	ug/ml
Acetaldehyde-1	BB	11.30	2.83892	1.24596	0.08582	1	0.08582	ug/ml
Acetaldehyde-2	BB	11.50	3.49814	1.53880	0.10560	1	0.10560	ug/ml
Nitrobenzene	BB	12.76	199.637	87.0381	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.43	2.27038	1.02854	0.09810	1	0.09810	ug/ml
Acrolein-1		(13.60)				1		
Propionaldehyde-2	BB	13.71	1.45893	0.59497	0.06222	1	0.06222	ug/ml
Acrolein-2		(14.13)				1		

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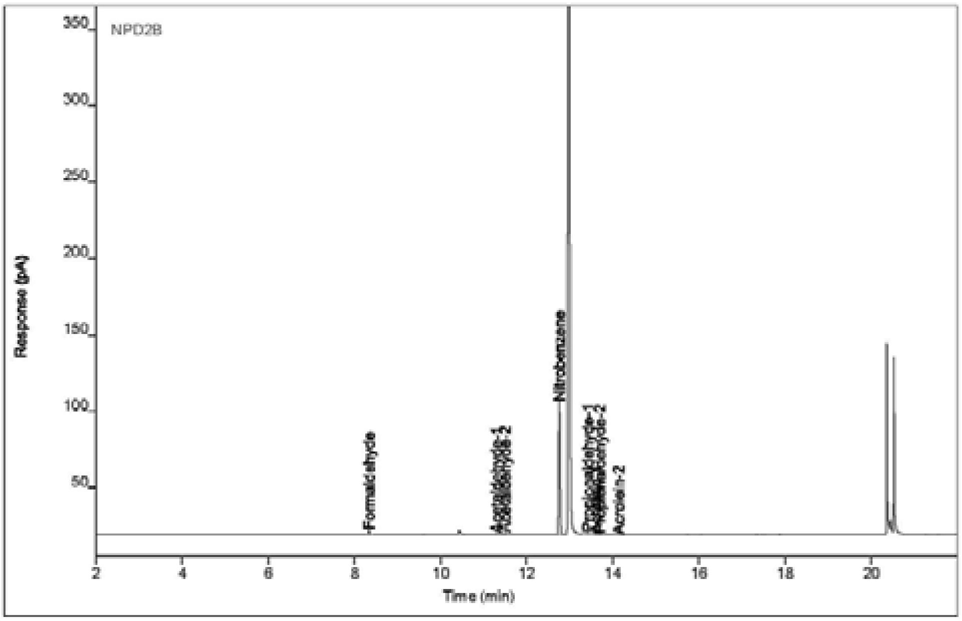
Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3.HEX	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 21
Inj Data File	021B1101.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 5:55 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

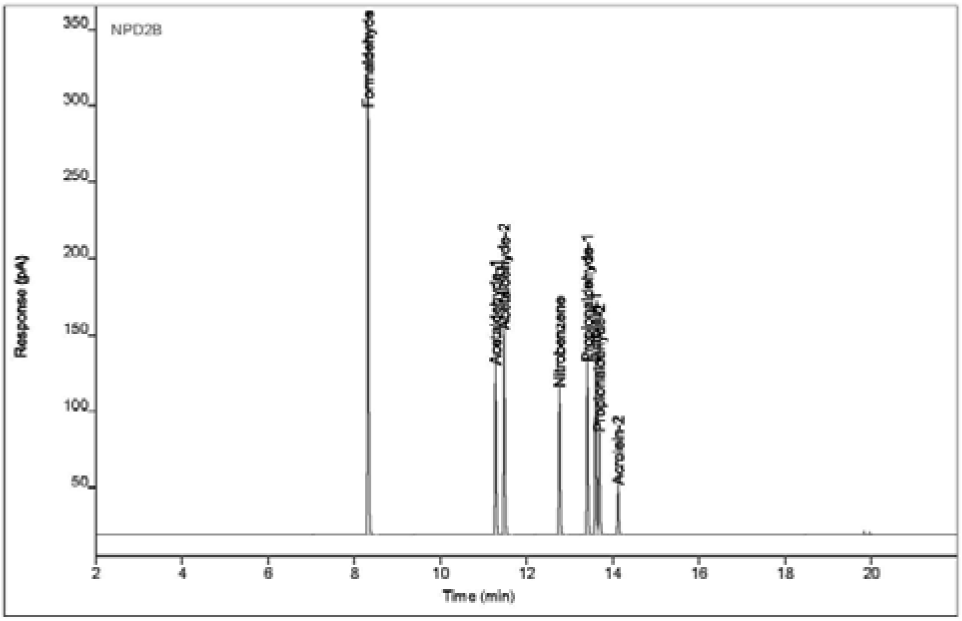


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.19151	1	0.19151	
Acrolein	Group				0.10619	1	0.10619	
Propionaldehyde	Group				0.21149	1	0.21149	
Formaldehyde	BB	8.34	7.37130	3.43031	0.17961	1	0.17961	ug/ml
Acetaldehyde-1	BB	11.30	2.83397	1.26899	0.08515	1	0.08515	ug/ml
Acetaldehyde-2	BB	11.50	3.55960	1.57814	0.10636	1	0.10636	ug/ml
Nitrobenzene	BV	12.76	201.292	87.0100	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.43	3.38068	1.46208	0.13323	1	0.13323	ug/ml
Acrolein-1	BV	13.61	0.82240	0.37904	0.08222	1	0.08222	ug/ml
Propionaldehyde-2	VB	13.70	1.96922	0.87661	0.07826	1	0.07826	ug/ml
Acrolein-2	BB	14.14	0.24649	0.10349	0.02398	1	0.02398	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #4	Sample Type	Calibration
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 4
Inj Data File	004B1201.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 2
Injection Date	7/27/2021 6:25 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

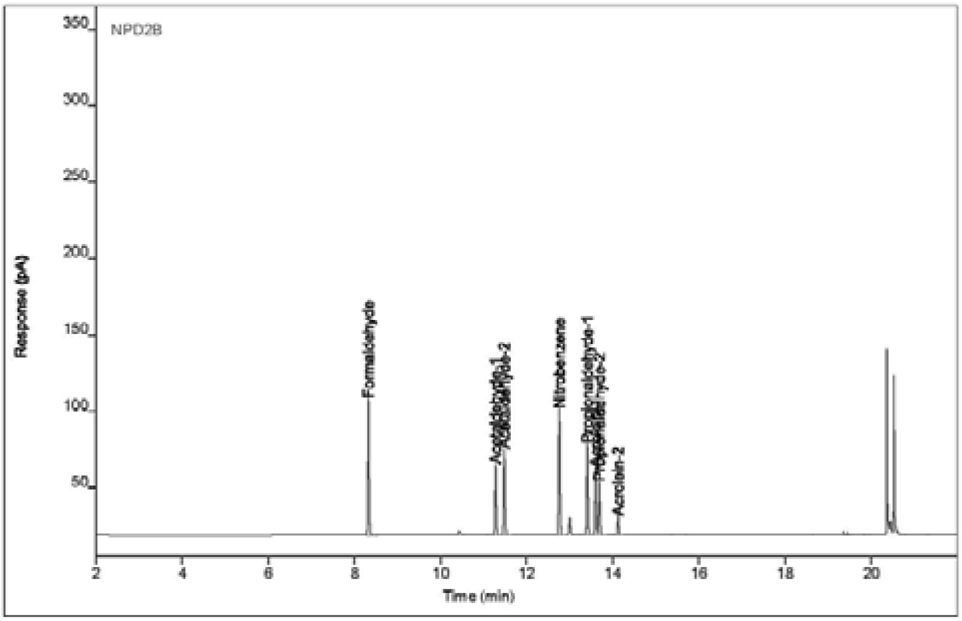


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				11.6136	1	11.6136	
Acrolein	Group				12.1922	1	12.1922	
Propionaldehyde	Group				11.8492	1	11.8492	
Formaldehyde	BB	8.32	709.389	340.522	11.7700	1	11.7700	ug/ml
Acetaldehyde-1	BV	11.28	243.046	110.692	5.20512	1	5.20512	ug/ml
Acetaldehyde-2	VB	11.48	299.239	134.039	6.40850	1	6.40850	ug/ml
Nitrobenzene	BB	12.76	222.197	96.2325	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	249.531	112.811	7.30024	1	7.30024	ug/ml
Acrolein-1	VV	13.60	242.425	113.633	9.41320	1	9.41320	ug/ml
Propionaldehyde-2	VV	13.69	155.484	67.0276	4.54900	1	4.54900	ug/ml
Acrolein-2	BB	14.12	71.5558	32.5893	2.77898	1	2.77898	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.TSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 22
Inj Data File	022B1301.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 7:23 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

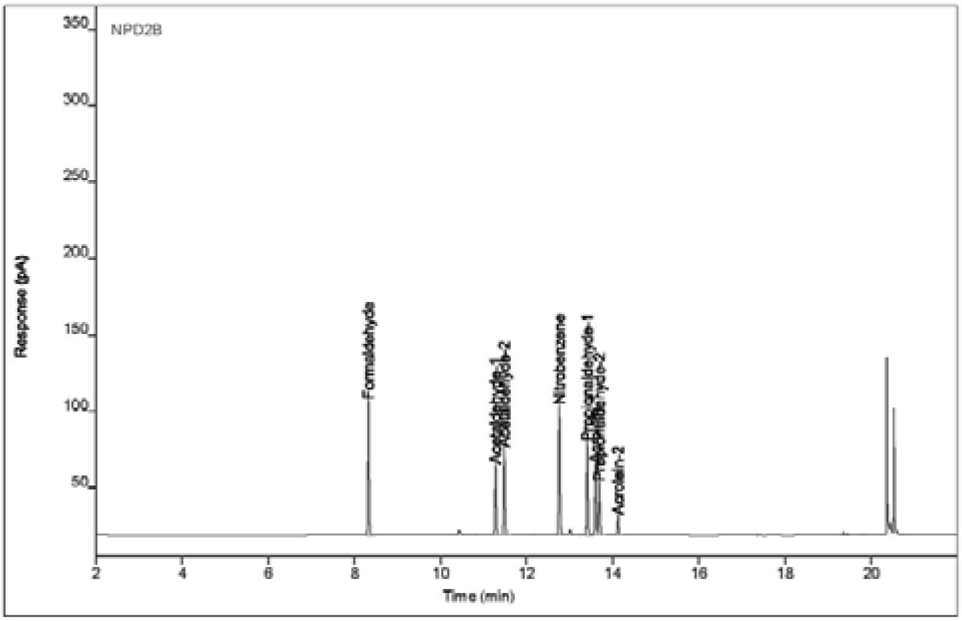


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				5.69747	1	5.69747	
Acrolein	Group				5.63536	1	5.63536	
Propionaldehyde	Group				7.27674	1	7.27674	
Formaldehyde	BB	8.32	188.495	89.4988	3.66165	1	3.66165	ug/ml
Acetaldehyde-1	BV	11.28	102.527	46.4537	2.55827	1	2.55827	ug/ml
Acetaldehyde-2	VB	11.48	125.810	56.4632	3.13920	1	3.13920	ug/ml
Nitrobenzene	BB	12.76	191.413	82.6512	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	133.812	59.9449	4.55362	1	4.55362	ug/ml
Acrolein-1	VV	13.60	96.2808	44.6566	4.36517	1	4.36517	ug/ml
Propionaldehyde-2	VB	13.69	80.0045	34.9579	2.72312	1	2.72312	ug/ml
Acrolein-2	BB	14.13	28.0117	12.5675	1.27018	1	1.27018	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.TfSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 23
Inj Data File	023B1401.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 7:52 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

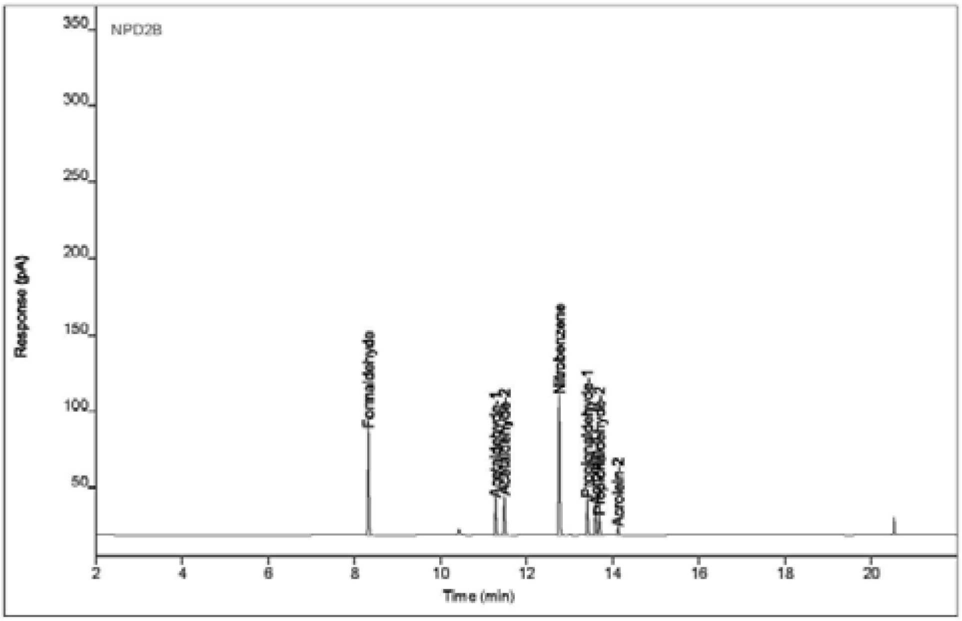


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				5.53748	1	5.53748	
Acrolein	Group				5.79246	1	5.79246	
Propionaldehyde	Group				7.17097	1	7.17097	
Formaldehyde	BB	8.32	186.701	88.7917	3.52057	1	3.52057	ug/ml
Acetaldehyde-1	BB	11.28	102.352	46.4177	2.47843	1	2.47843	ug/ml
Acetaldehyde-2	BB	11.48	126.337	57.1720	3.05905	1	3.05905	ug/ml
Nitrobenzene	BB	12.76	197.287	85.1341	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	136.162	61.1205	4.49592	1	4.49592	ug/ml
Acrolein-1	VV	13.60	101.918	47.0529	4.48189	1	4.48189	ug/ml
Propionaldehyde-2	VB	13.69	80.9961	35.0164	2.67505	1	2.67505	ug/ml
Acrolein-2	BB	14.12	29.7992	13.2600	1.31057	1	1.31057	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #LCS-L-Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 24
Inj Data File	024B1501.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 8:21 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

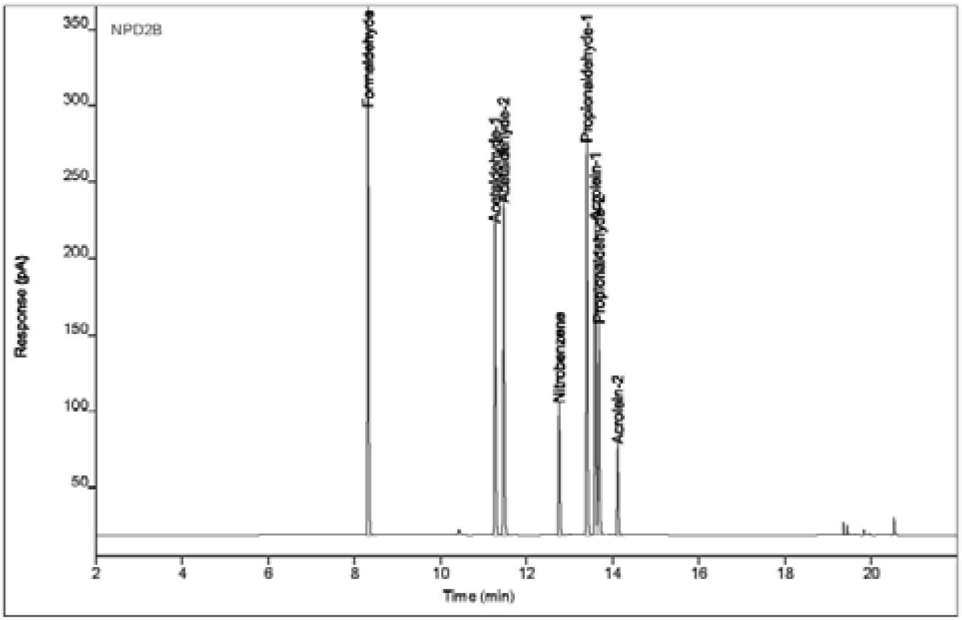


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				2.57169	1	2.57169	
Acrolein	Group				2.32610	1	2.32610	
Propionaldehyde	Group				2.63778	1	2.63778	
Formaldehyde	BB	8.32	147.142	69.9477	2.58898	1	2.58898	ug/ml
Acetaldehyde-1	BB	11.28	54.5670	24.6519	1.23645	1	1.23645	ug/ml
Acetaldehyde-2	BB	11.49	58.8076	26.4276	1.33524	1	1.33524	ug/ml
Nitrobenzene	BB	12.76	212.425	92.1102	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	54.4051	24.5063	1.68374	1	1.68374	ug/ml
Acrolein-1	VV	13.60	43.2912	20.0192	1.79663	1	1.79663	ug/ml
Propionaldehyde-2	VB	13.69	30.7897	13.3769	0.95404	1	0.95404	ug/ml
Acrolein-2	BB	14.13	12.7641	5.72112	0.52947	1	0.52947	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcprep4187 #LCS-H-Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 25
Inj Data File	025B1601.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 8:50 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

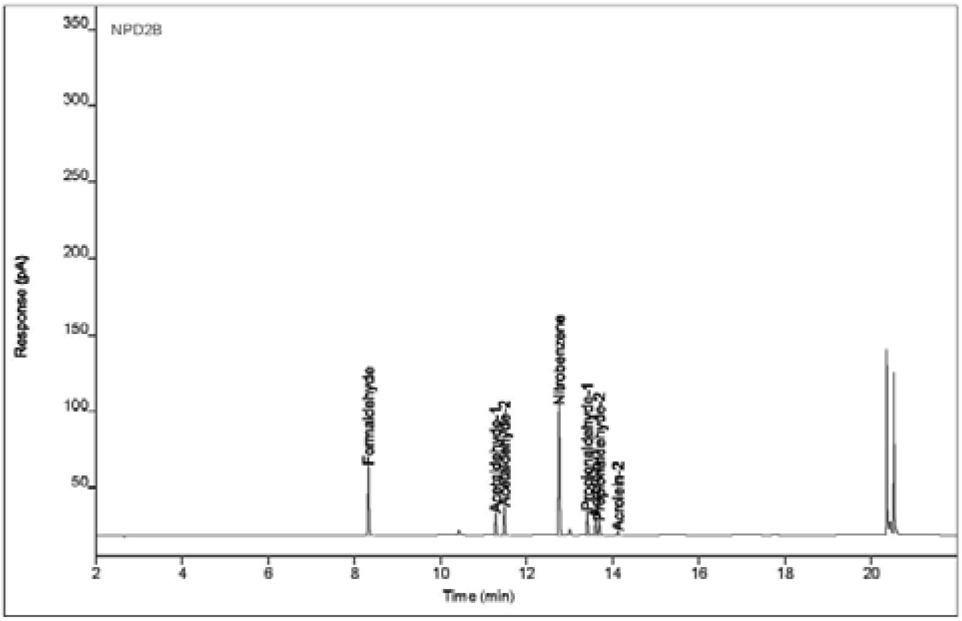


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				22.1569	1	22.1569	
Acrolein	Group				24.7447	1	24.7447	
Propionaldehyde	Group				28.6817	1	28.6817	
Formaldehyde	BB	8.31	722.033	344.654	13.3267	1	13.3267	ug/ml
Acetaldehyde-1	BV	11.27	447.678	204.011	10.6510	1	10.6510	ug/ml
Acetaldehyde-2	VB	11.47	483.497	216.950	11.5059	1	11.5059	ug/ml
Nitrobenzene	BB	12.76	199.651	86.4777	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	563.949	256.841	18.3251	1	18.3251	ug/ml
Acrolein-1	VV	13.59	442.957	205.323	19.0934	1	19.0934	ug/ml
Propionaldehyde-2	VB	13.68	318.652	138.197	10.3566	1	10.3566	ug/ml
Acrolein-2	BB	14.12	131.073	59.3886	5.65133	1	5.65133	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2-LFSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 26
Inj Data File	026B1701.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 9:19 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

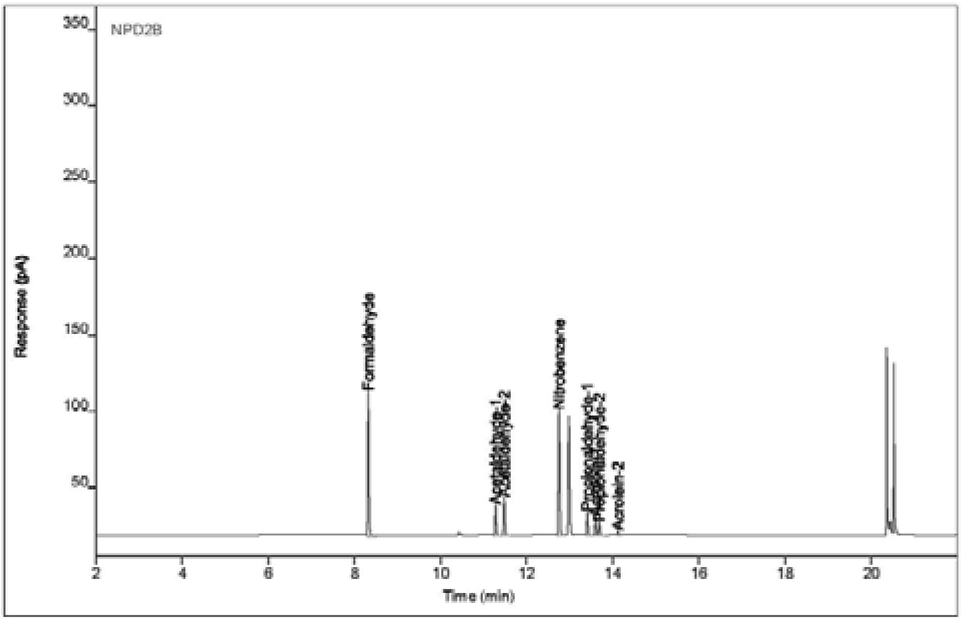


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				1.85020	1	1.85020	
Acrolein	Group				1.50915	1	1.50915	
Propionaldehyde	Group				1.92626	1	1.92626	
Formaldehyde	BB	8.32	96.5946	46.1843	1.84199	1	1.84199	ug/ml
Acetaldehyde-1	BB	11.29	33.0177	14.9684	0.81143	1	0.81143	ug/ml
Acetaldehyde-2	BB	11.49	42.3116	18.8988	1.03878	1	1.03878	ug/ml
Nitrobenzene	BB	12.76	197.424	84.9470	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.41	35.4315	16.1084	1.18717	1	1.18717	ug/ml
Acrolein-1	BV	13.60	25.8900	11.9538	1.17292	1	1.17292	ug/ml
Propionaldehyde-2	VB	13.69	22.0659	9.53736	0.73909	1	0.73909	ug/ml
Acrolein-2	BB	14.13	7.42039	3.34279	0.33624	1	0.33624	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2-LSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 27
Inj Data File	027B1801.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 9:48 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

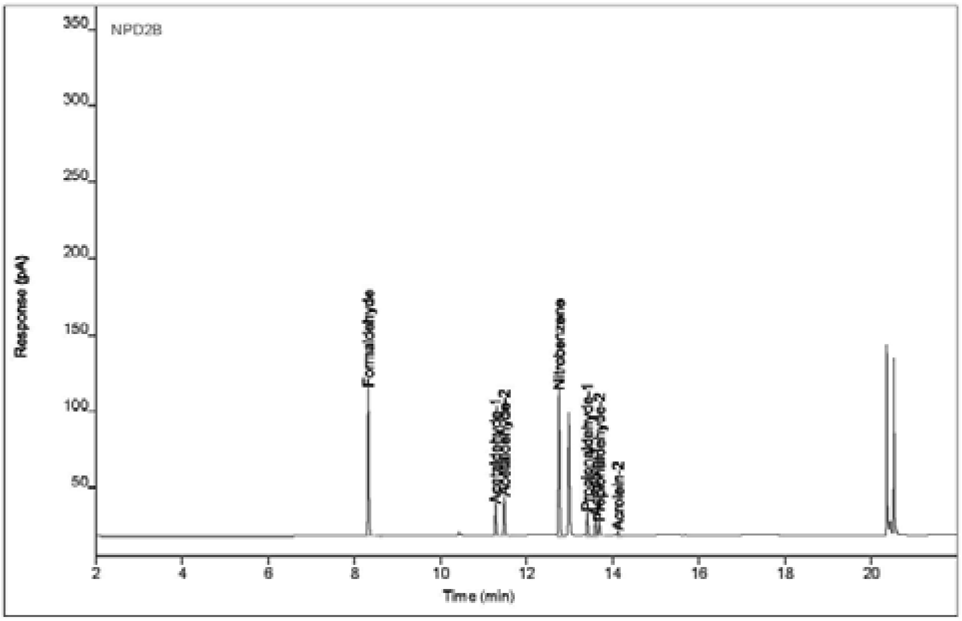


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				2.53035	1	2.53035	
Acrolein	Group				1.64678	1	1.64678	
Propionaldehyde	Group				1.91982	1	1.91982	
Formaldehyde	BB	8.32	198.171	95.0098	3.81902	1	3.81902	ug/ml
Acetaldehyde-1	BB	11.28	44.8064	20.3132	1.12011	1	1.12011	ug/ml
Acetaldehyde-2	BB	11.48	56.4375	25.1939	1.41024	1	1.41024	ug/ml
Nitrobenzene	BB	12.76	192.847	82.4808	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.41	34.6889	15.9477	1.18982	1	1.18982	ug/ml
Acrolein-1	BV	13.60	27.4856	12.7120	1.27066	1	1.27066	ug/ml
Propionaldehyde-2	VB	13.69	21.2839	9.25782	0.73000	1	0.73000	ug/ml
Acrolein-2	BB	14.12	8.14394	3.56600	0.37612	1	0.37612	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R2-LSPK-LD.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 28
Inj Data File	028B1901.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 10:17 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

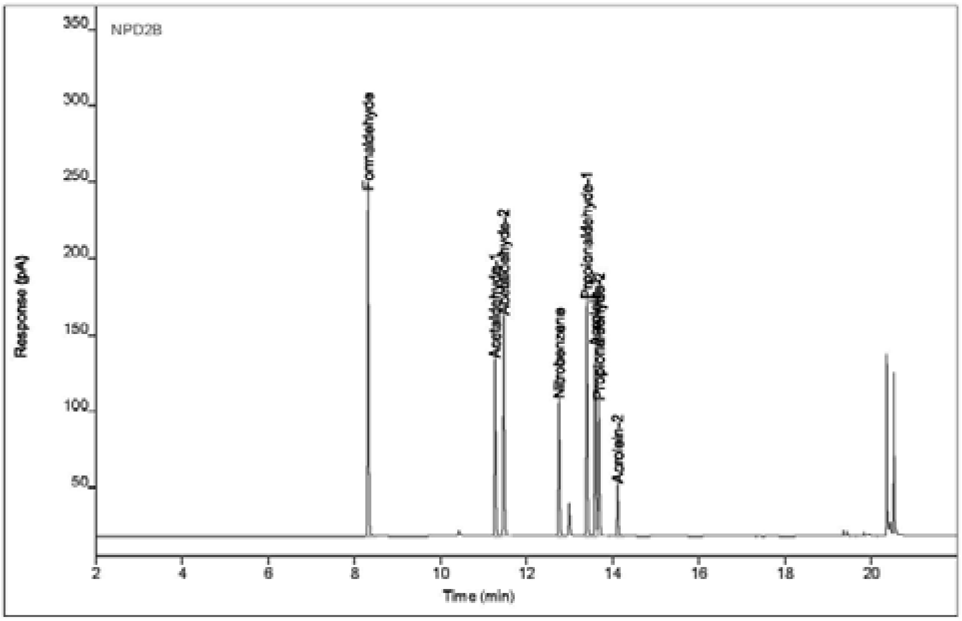


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				2.25495	1	2.25495	
Acrolein	Group				1.47505	1	1.47505	
Propionaldehyde	Group				1.71714	1	1.71714	
Formaldehyde	BB	8.32	203.376	96.9051	3.41591	1	3.41591	ug/ml
Acetaldehyde-1	BB	11.28	45.7483	20.8546	0.99740	1	0.99740	ug/ml
Acetaldehyde-2	BB	11.48	57.7114	26.0758	1.25754	1	1.25754	ug/ml
Nitrobenzene	BB	12.76	221.580	95.4112	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.41	35.4862	15.8623	1.06201	1	1.06201	ug/ml
Acrolein-1	BV	13.60	28.0879	13.0368	1.13534	1	1.13534	ug/ml
Propionaldehyde-2	VB	13.69	21.8948	9.40603	0.65513	1	0.65513	ug/ml
Acrolein-2	BB	14.13	8.41820	3.70999	0.33972	1	0.33972	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R3-HFSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 29
Inj Data File	029B2001.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 10:46 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				13.2179	1	13.2179	
Acrolein	Group				14.1980	1	14.1980	
Propionaldehyde	Group				17.1177	1	17.1177	
Formaldehyde	BB	8.31	471.626	225.968	8.38048	1	8.38048	ug/ml
Acetaldehyde-1	BV	11.27	253.541	115.811	5.80410	1	5.80410	ug/ml
Acetaldehyde-2	VB	11.47	323.900	144.377	7.41383	1	7.41383	ug/ml
Nitrobenzene	BB	12.76	207.796	89.6429	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	340.114	154.718	10.6288	1	10.6288	ug/ml
Acrolein-1	VV	13.59	266.207	123.804	11.0448	1	11.0448	ug/ml
Propionaldehyde-2	VB	13.68	207.618	88.7103	6.48891	1	6.48891	ug/ml
Acrolein-2	BB	14.12	75.9742	34.3463	3.15325	1	3.15325	ug/ml

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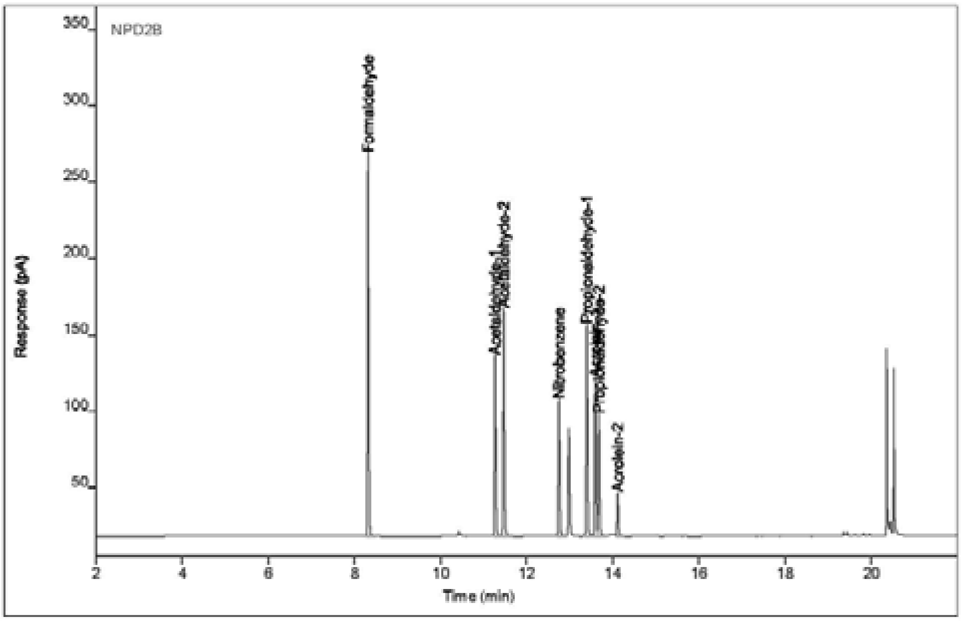
Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RTO-R3-HSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 30
Inj Data File	030B2101.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 11:15 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

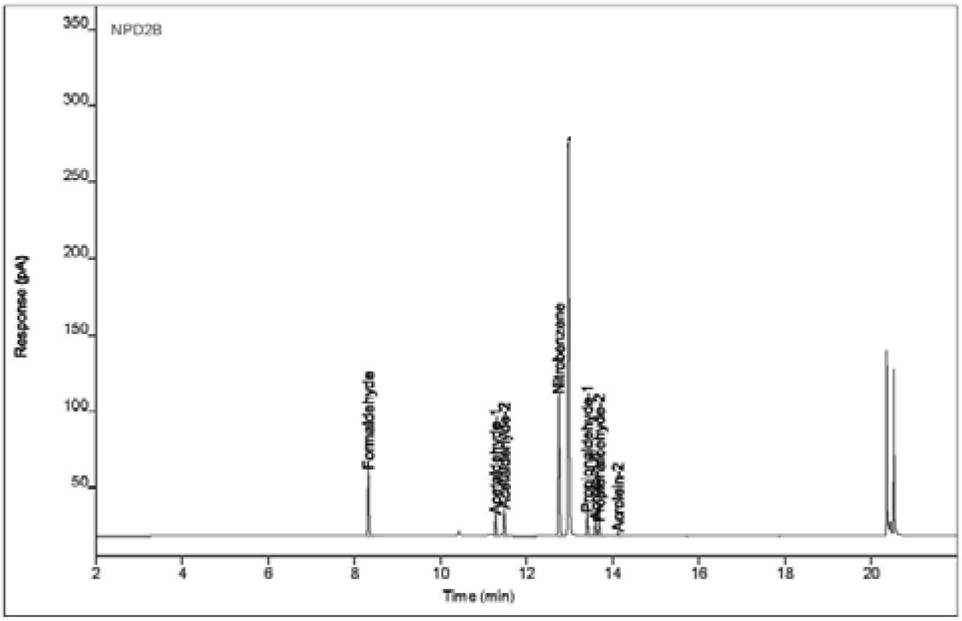


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				13.3096	1	13.3096	
Acrolein	Group				11.7185	1	11.7185	
Propionaldehyde	Group				15.2270	1	15.2270	
Formaldehyde	BB	8.31	520.580	250.422	9.11409	1	9.11409	ug/ml
Acetaldehyde-1	BV	11.27	260.200	118.005	5.87113	1	5.87113	ug/ml
Acetaldehyde-2	VB	11.47	329.692	149.076	7.43842	1	7.43842	ug/ml
Nitrobenzene	BV	12.75	210.811	89.8556	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	308.615	138.954	9.50907	1	9.50907	ug/ml
Acrolein-1	VV	13.59	221.872	103.506	9.08215	1	9.08215	ug/ml
Propionaldehyde-2	VB	13.68	185.547	79.9791	5.71792	1	5.71792	ug/ml
Acrolein-2	BB	14.12	64.3886	28.7553	2.63640	1	2.63640	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R2-LFSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 31
Inj Data File	031B2201.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 11:44 PM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

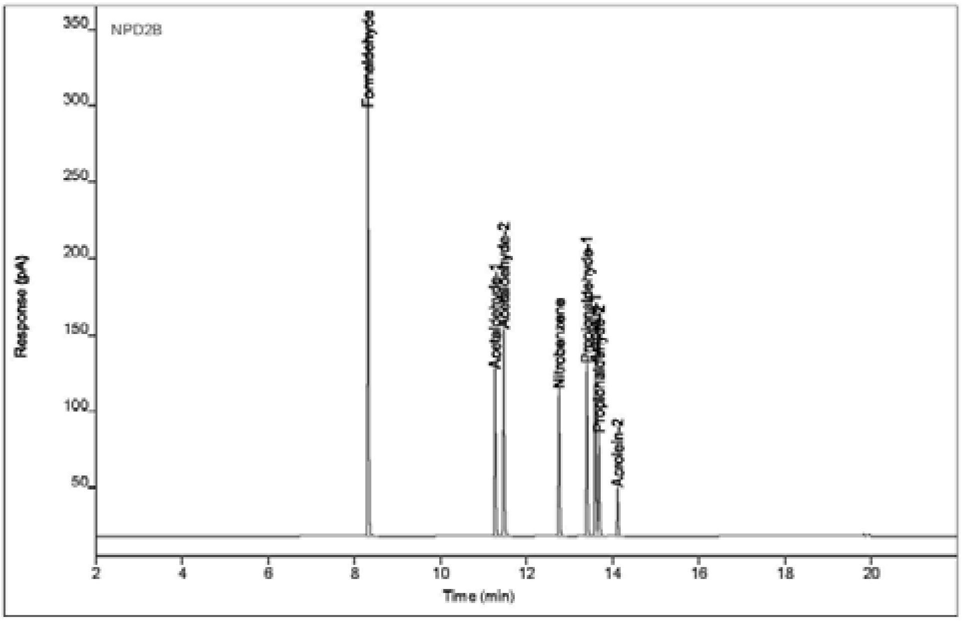


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				1.62733	1	1.62733	
Acrolein	Group				1.22101	1	1.22101	
Propionaldehyde	Group				1.70898	1	1.70898	
Formaldehyde	BB	8.32	92.5663	43.6105	1.64093	1	1.64093	ug/ml
Acetaldehyde-1	BB	11.28	31.3856	14.1939	0.71701	1	0.71701	ug/ml
Acetaldehyde-2	BB	11.48	39.8851	17.7560	0.91033	1	0.91033	ug/ml
Nitrobenzene	BB	12.75	213.027	92.7099	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.41	34.0686	15.1226	1.06055	1	1.06055	ug/ml
Acrolein-1	BV	13.60	22.1883	10.1711	0.94128	1	0.94128	ug/ml
Propionaldehyde-2	VB	13.69	20.8291	8.90805	0.64842	1	0.64842	ug/ml
Acrolein-2	BB	14.12	6.60515	2.95995	0.27973	1	0.27973	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #4	Sample Type	Calibration
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 4
Inj Data File	004B2301.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 2
Injection Date	7/28/2021 12:13 AM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:02 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

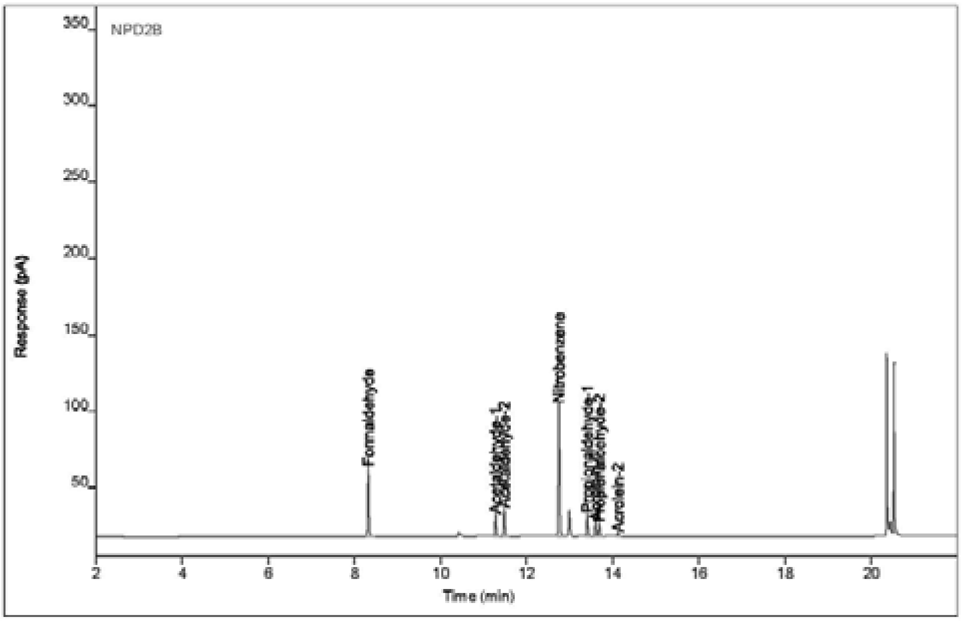


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				11.6410	1	11.6410	
Acrolein	Group				12.1762	1	12.1762	
Propionaldehyde	Group				11.7695	1	11.7695	
Formaldehyde	BB	8.31	716.324	340.875	11.8273	1	11.8273	ug/ml
Acetaldehyde-1	BV	11.27	244.535	109.147	5.21164	1	5.21164	ug/ml
Acetaldehyde-2	VB	11.47	301.677	135.671	6.42936	1	6.42936	ug/ml
Nitrobenzene	BB	12.76	223.278	96.5710	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	249.544	112.963	7.26541	1	7.26541	ug/ml
Acrolein-1	VV	13.59	242.727	113.346	9.37948	1	9.37948	ug/ml
Propionaldehyde-2	VB	13.68	154.694	67.5396	4.50413	1	4.50413	ug/ml
Acrolein-2	BB	14.12	72.3657	32.0236	2.79675	1	2.79675	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R2-LSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 32
Inj Data File	032B2401.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/28/2021 1:11 AM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:03 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

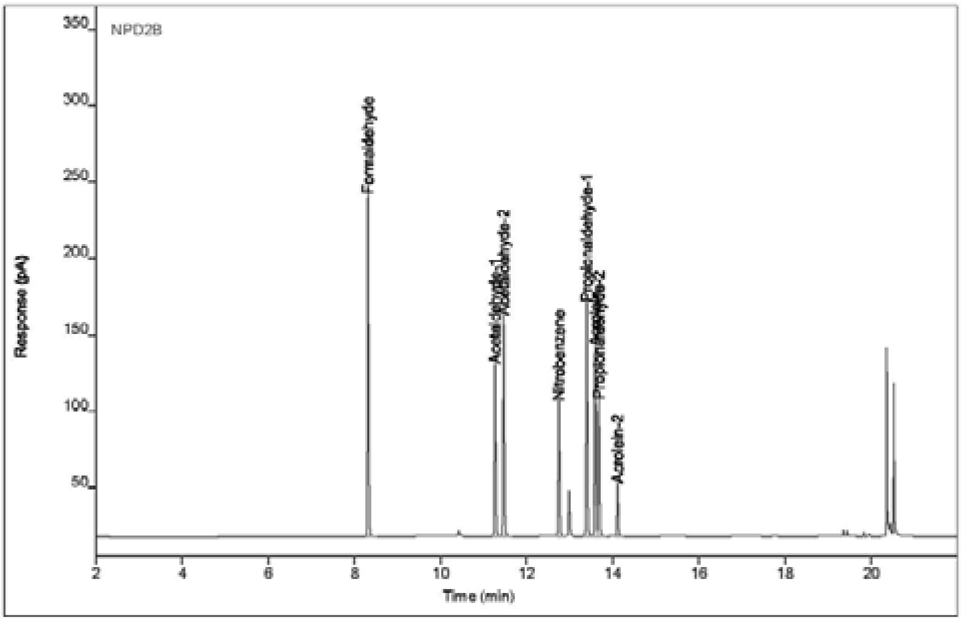


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				1.78824	1	1.78824	
Acrolein	Group				1.30039	1	1.30039	
Propionaldehyde	Group				1.80096	1	1.80096	
Formaldehyde	BB	8.32	95.9996	45.6803	1.79693	1	1.79693	ug/ml
Acetaldehyde-1	BB	11.28	32.7488	14.8636	0.78999	1	0.78999	ug/ml
Acetaldehyde-2	BB	11.48	41.4123	18.4860	0.99824	1	0.99824	ug/ml
Nitrobenzene	BB	12.75	201.255	87.1025	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.41	33.7866	15.2962	1.11209	1	1.11209	ug/ml
Acrolein-1	BV	13.60	22.3778	10.1249	1.00167	1	1.00167	ug/ml
Propionaldehyde-2	VB	13.69	20.9346	9.03395	0.68888	1	0.68888	ug/ml
Acrolein-2	BB	14.12	6.68521	2.94568	0.29872	1	0.29872	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3-HFSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 33
Inj Data File	033B2501.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/28/2021 1:40 AM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:03 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

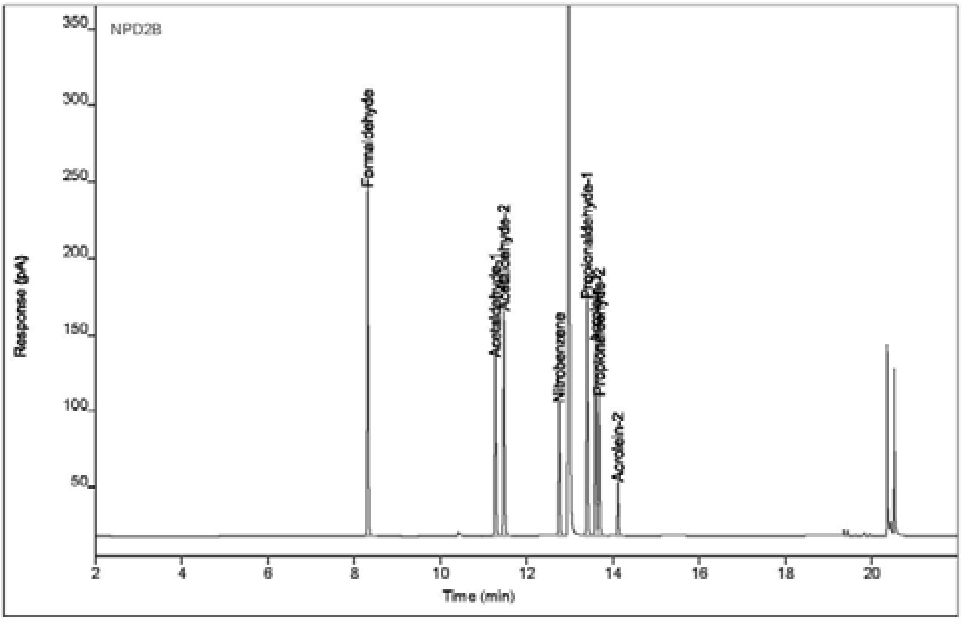


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				13.2350	1	13.2350	
Acrolein	Group				14.4613	1	14.4613	
Propionaldehyde	Group				17.1458	1	17.1458	
Formaldehyde	BB	8.31	468.830	223.896	8.40940	1	8.40940	ug/ml
Acetaldehyde-1	BV	11.27	250.338	112.641	5.78501	1	5.78501	ug/ml
Acetaldehyde-2	VB	11.47	322.434	144.300	7.44996	1	7.44996	ug/ml
Nitrobenzene	BB	12.75	205.849	88.7512	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	336.284	152.720	10.6085	1	10.6085	ug/ml
Acrolein-1	VV	13.59	267.606	124.535	11.2071	1	11.2071	ug/ml
Propionaldehyde-2	VB	13.68	207.211	89.3268	6.53731	1	6.53731	ug/ml
Acrolein-2	BB	14.11	77.6806	34.5407	3.25412	1	3.25412	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3-HSPK.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 34
Inj Data File	034B2601.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/28/2021 2:09 AM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:03 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

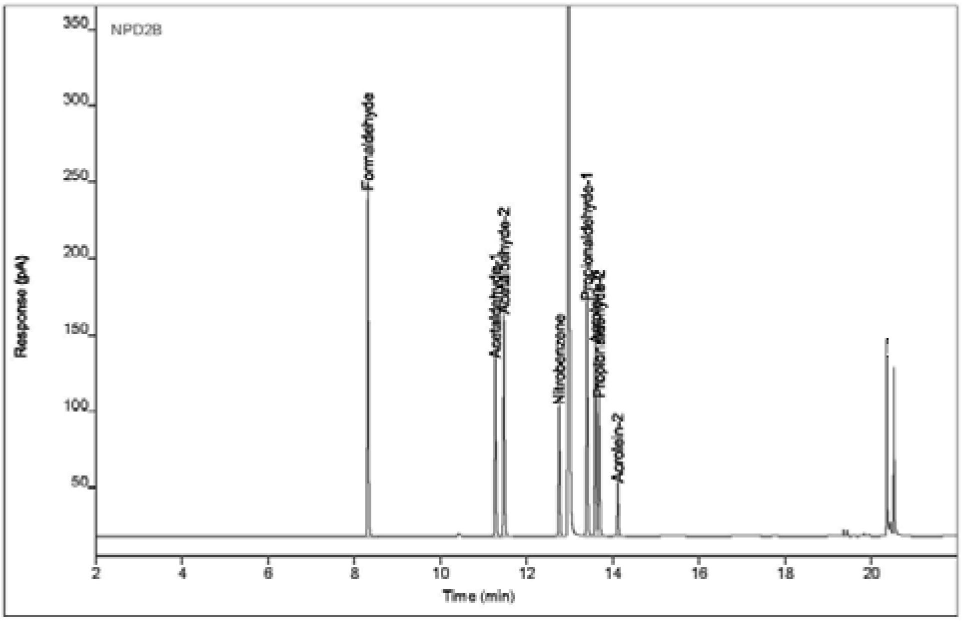


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				13.8496	1	13.8496	
Acrolein	Group				14.9226	1	14.9226	
Propionaldehyde	Group				17.7411	1	17.7411	
Formaldehyde	BB	8.31	475.667	228.111	8.75043	1	8.75043	ug/ml
Acetaldehyde-1	BV	11.27	256.300	116.546	6.07476	1	6.07476	ug/ml
Acetaldehyde-2	VB	11.47	328.071	147.392	7.77486	1	7.77486	ug/ml
Nitrobenzene	BV	12.75	200.670	87.0988	100.000	1	100.000	ug/ml
Propionaldehyde-1	VV	13.40	340.065	154.825	11.0038	1	11.0038	ug/ml
Acrolein-1	VV	13.59	269.752	126.387	11.5870	1	11.5870	ug/ml
Propionaldehyde-2	VB	13.68	208.190	91.3604	6.73728	1	6.73728	ug/ml
Acrolein-2	BB	14.12	77.6308	35.2633	3.33564	1	3.33564	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	0721-063.RCO-R3-HSPK-LD.Hex	Sample Type	Sample
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 35
Inj Data File	035B2701.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/28/2021 2:38 AM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:03 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM

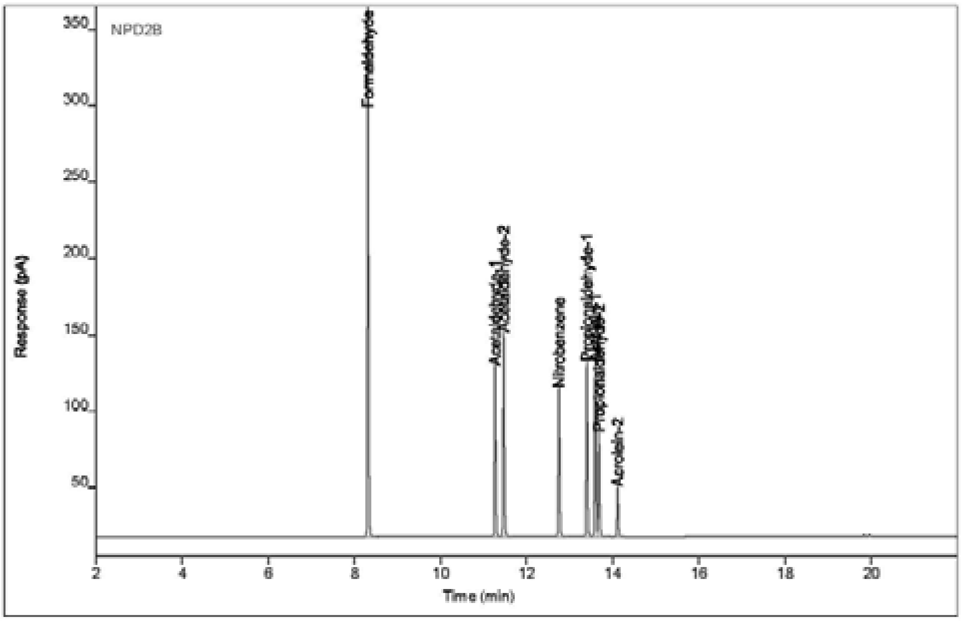


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				13.9296	1	13.9296	
Acrolein	Group				15.0549	1	15.0549	
Propionaldehyde	Group				17.8824	1	17.8824	
Formaldehyde	BB	8.31	474.041	226.169	8.77747	1	8.77747	ug/ml
Acetaldehyde-1	BV	11.27	255.982	116.235	6.10684	1	6.10684	ug/ml
Acetaldehyde-2	VB	11.47	327.950	145.430	7.82276	1	7.82276	ug/ml
Nitrobenzene	BB	12.75	199.364	85.9351	100.000	1	100.000	ug/ml
Propionaldehyde-1	VV	13.40	340.486	154.306	11.0893	1	11.0893	ug/ml
Acrolein-1	VV	13.59	270.234	126.074	11.6833	1	11.6833	ug/ml
Propionaldehyde-2	VB	13.68	208.553	90.0101	6.79308	1	6.79308	ug/ml
Acrolein-2	BB	14.11	77.9604	35.1540	3.37159	1	3.37159	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #4	Sample Type	Calibration
Sequence Name	LOLITA0359A ver.2	Vial Number	Vial 4
Inj Data File	004B2801.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 2
Injection Date	7/28/2021 3:07 AM	Acquisition Method	LOLITA0349.M
File Modified	7/28/2021 8:03 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/28/2021 8:02 AM
Operator	Kim Maturo	Printed	7/28/2021 11:50 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				11.6077	1	11.6077	
Acrolein	Group				12.2122	1	12.2122	
Propionaldehyde	Group				11.8144	1	11.8144	
Formaldehyde	BB	8.31	722.735	345.576	11.8195	1	11.8195	ug/ml
Acetaldehyde-1	BV	11.27	246.012	111.559	5.19323	1	5.19323	ug/ml
Acetaldehyde-2	VB	11.47	303.870	133.904	6.41443	1	6.41443	ug/ml
Nitrobenzene	BB	12.75	225.426	97.3869	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	252.872	114.463	7.29206	1	7.29206	ug/ml
Acrolein-1	VV	13.59	245.945	114.359	9.41310	1	9.41310	ug/ml
Propionaldehyde-2	VB	13.68	156.817	68.4365	4.52236	1	4.52236	ug/ml
Acrolein-2	BB	14.12	73.1242	32.6840	2.79912	1	2.79912	ug/ml

Method C:\GC\2021\LOLITA\METHODS\LOLITA0359_NPD.M

Calibration Table

Calib. Data Modified : Tuesday, July 27, 2021 10:02:31 AM

Rel. Reference Window : 0.000 %
Abs. Reference Window : 0.200 min
Rel. Non-ref. Window : 0.000 %
Abs. Non-ref. Window : 0.200 min
Uncalibrated Peaks : not reported
Partial Calibration : Yes, identified peaks are recalibrated
Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
Origin : Ignored
Weight : Quadratic (Resp)

Recalibration Settings:
Average Response : Average all calibrations
Average Retention Time: Floating Average New 75%

Calibration Report Options :
Printout of recalibrations within a sequence:
Calibration Table after Recalibration
Normal Report after Recalibration
If the sequence is done with bracketing:
Results of first cycle (ending previous bracket)

Default Sample ISTD Information (if not set in sample table):

ISTD #	ISTD Amount [ug/ml]	Name
1	100.00000	Nitrobenzene

Signal 1: NPD2 B,

RetTime [min]	Sig	Lvl	Amount [ug/ml]	Area	Amt/Area	Ref	Grp	Name
8.324	1	1	4.82500e-1	27.54061	1.75196e-2	1		Formaldehyde
		2	3.00900	177.18997	1.69818e-2			
		3	6.00300	367.50397	1.63345e-2			
		4	11.94700	719.35992	1.66078e-2			
		5	29.43000	1846.36597	1.59394e-2			
		6	57.45900	3614.05688	1.58988e-2			
		7	109.69400	6918.04004	1.58562e-2			
11.290	1	1	2.12674e-1	9.45820	2.24857e-2	1	1	Acetaldehyde-1
		2	1.32691	60.87114	2.17986e-2			
		3	2.64400	126.73483	2.08625e-2			
		4	5.25258	247.62988	2.12114e-2			
		5	12.91110	624.89557	2.06612e-2			
		6	25.10872	1208.29749	2.07802e-2			
		7	47.76366	2308.92920	2.06865e-2			
11.490	1	1	2.60316e-1	11.57693	2.24857e-2	1	1	Acetaldehyde-2
		2	1.62309	74.45867	2.17986e-2			
		3	3.24100	155.35081	2.08625e-2			
		4	6.45942	304.52521	2.12114e-2			
		5	15.94090	771.53790	2.06612e-2			
		6	31.22228	1502.49817	2.07802e-2			
		7	59.77634	2889.63013	2.06865e-2			
12.753	1	1	100.00000	229.5656[illegible]	4.35605e-1	I1		Nitrobenzene

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reprocess 7/27/2021 10:02:40 AM Kim Maturo Page 1 of 5

Method C:\GC\2021\LOLITA\METHODS\LOLITA0359_NPD.M

RetTime [min]	Sig	Lvl	Amount [ug/ml]	Area	Amt/Area	Ref	Grp	Name
		2	100.00000	227.75542	4.39067e-1			
		3	100.00000	230.62923	4.33596e-1			
		4	100.00000	225.60005	4.43262e-1			
		5	100.00000	228.12393	4.38358e-1			
		6	100.00000	227.65953	4.39252e-1			
		7	100.00000	221.96567	4.50520e-1			
13.415	1	1	2.99502e-1	9.81222	3.05234e-2	1	2	Propionaldehyde-1
		2	1.85339	62.15237	2.98201e-2			
		3	3.70149	128.86824	2.87231e-2			
		4	7.36982	253.02646	2.91267e-2			
		5	18.16831	645.08704	2.81641e-2			
		6	35.35349	1251.35376	2.82522e-2			
		7	67.31911	2402.04785	2.80257e-2			
13.601	1	1	3.87609e-1	9.18203	4.22138e-2	1	3	Acrolein-1
		2	2.39293	59.62100	4.01356e-2			
		3	4.78487	124.41055	3.84603e-2			
		4	9.52301	245.54744	3.87828e-2			
		5	23.43597	630.89691	3.71471e-2			
		6	45.74629	1228.95142	3.72238e-2			
		7	87.25789	2372.51611	3.67786e-2			
13.694	1	1	1.82818e-1	5.98943	3.05234e-2	1	2	Propionaldehyde-2
		2	1.15461	38.71935	2.98201e-2			
		3	2.29951	80.05800	2.87231e-2			
		4	4.57318	157.01015	2.91267e-2			
		5	11.25369	399.57538	2.81641e-2			
		6	22.08951	781.86865	2.82522e-2			
		7	42.34089	1510.78711	2.80257e-2			
14.125	1	1	1.11191e-1	2.63400	4.22138e-2	1	3	Acrolein-2
		2	7.18074e-1	17.89119	4.01356e-2			
		3	1.42113	36.95069	3.84603e-2			
		4	2.82699	72.89294	3.87828e-2			
		5	6.98803	188.11809	3.71471e-2			
		6	13.65371	366.80020	3.72238e-2			
		7	26.14211	710.79614	3.67786e-2			

Group summary :

Group 1 (Acetaldehyde) :
Group members:
Acetaldehyde-1 with retention time 11.290 min
Acetaldehyde-2 with retention time 11.490 min
Group Amount Calculation:
Level 1 with amount 0.47299 ug/ml
Level 2 with amount 2.95000 ug/ml
Level 3 with amount 5.88500 ug/ml
Level 4 with amount 11.71200 ug/ml
Level 5 with amount 28.85200 ug/ml
Level 6 with amount 56.33100 ug/ml
Level 7 with amount 107.54000 ug/ml

Group 2 (Propionaldehyde) :
Group members:
Propionaldehyde-1 with retention time 13.415 min
Propionaldehyde-2 with retention time 13.694 min
Group Amount Calculation:
Level 1 with amount 0.48232 ug/ml
Level 2 with amount 3.00800 ug/ml
Level 3 with amount 6.00100 ug/ml
Level 4 with amount 11.94300 ug/ml
Level 5 with amount 29.42200 ug/ml
Level 6 with amount 57.44300 ug/ml
Level 7 with amount 109.66000 ug/ml

Group 3 (Acrolein) :

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Method C:\GC\2021\LOLITA\METHODS\LOLITA0359_NPD.M

        Group members:
           Acrolein-1 with retention time 13.601 min
           Acrolein-2 with retention time 14.125 min
        Group Amount Calculation:
          Level 1 with amount 0.49880 ug/ml
          Level 2 with amount 3.11100 ug/ml
          Level 3 with amount 6.20600 ug/ml
          Level 4 with amount 12.35000 ug/ml
          Level 5 with amount 30.42400 ug/ml
          Level 6 with amount 59.40000 ug/ml
          Level 7 with amount 113.40000 ug/ml

    3 Warnings or Errors :

    Warning : Curve requires more calibration points., (Nitrobenzene)
    Warning : Overlapping peak time windows at 13.415 min, signal 1
    Warning : Overlapping peak time windows at 13.601 min, signal 1

    =====================================================================
                              Peak Sum Table
    =====================================================================

    ***No Entries in table***
    =====================================================================
    =====================================================================
                            Calibration Curves
    =====================================================================
```
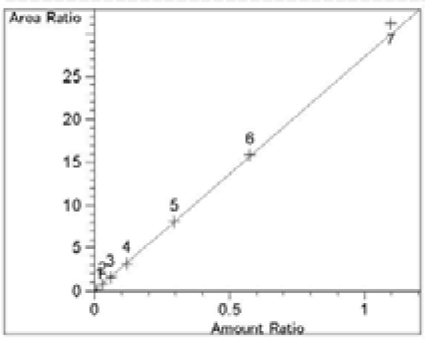
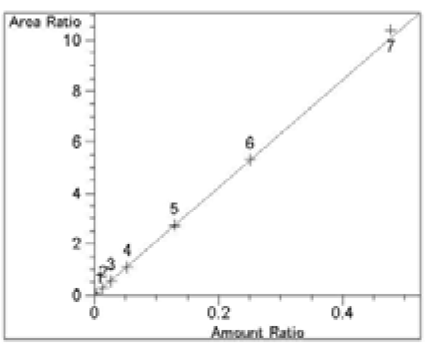
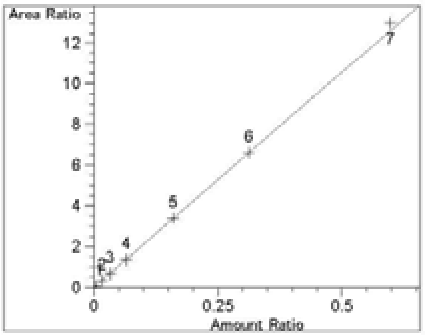




```
Formaldehyde at exp. RT: 8.324
NPD2 B,
Correlation:              0.99961
Residual Std. Dev.:       0.59809
Formula: y = mx + b
      m:       27.22936
      b:       -1.22879e-2
      x: Amount
      y: Area
Calibration Level Weights:
     Level 1     : 1
     Level 2     : 0.023779
     Level 3     : 0.005668
     Level 4     : 0.001416
     Level 5     : 0.00022
     Level 6     : 0.000057
     Level 7     : 0.000015
```

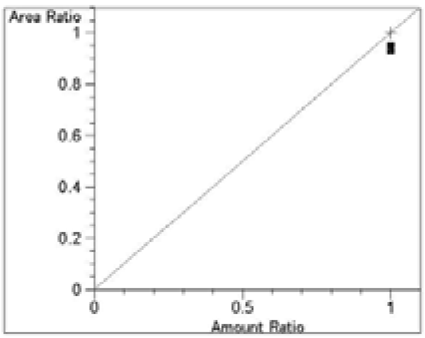



```
Acetaldehyde-1 at exp. RT: 11.290
NPD2 B,
Correlation:              0.99979
Residual Std. Dev.:       0.14956
Formula: y = mx + b
      m:       21.08895
      b:       -3.87833e-3
      x: Amount
      y: Area
Calibration Level Weights:
     Level 1     : 1
     Level 2     : 0.023764
     Level 3     : 0.005621
     Level 4     : 0.001409
     Level 5     : 0.000226
     Level 6     : 0.00006
     Level 7     : 0.000016
```

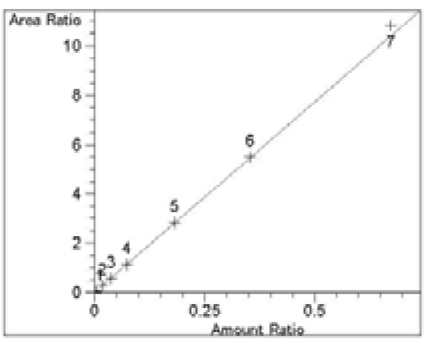
Method C:\GC\2021\LOLITA\METHODS\LOLITA0359_NPD.M



Acetaldehyde-2 at exp. RT: 11.490
NPD2 B,
Correlation: 0.99979
Residual Std. Dev.: 0.18715
Formula: y = mx + b
m: 21.08879
b: -4.74688e-3
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.023795
Level 3 : 0.005605
Level 4 : 0.001396
Level 5 : 0.000222
Level 6 : 0.000058
Level 7 : 0.000015

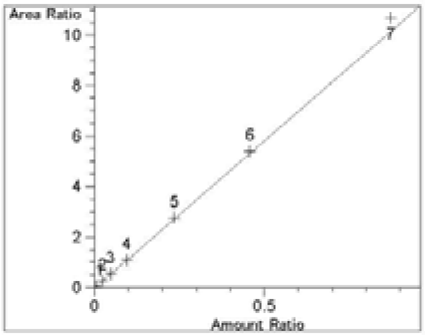


Nitrobenzene at exp. RT: 12.753
NPD2 B,
Correlation: 1.00000
Residual Std. Dev.: 0.00000
Formula: y = mx + b
m: 1.00000
b: 0.00000
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 1
Level 3 : 1
Level 4 : 1
Level 5 : 1
Level 6 : 1
Level 7 : 1

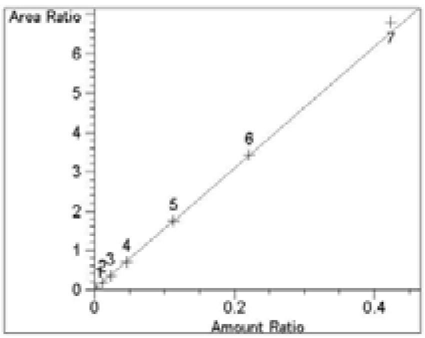


Propionaldehyde-1 at exp. RT: 13.415
NPD2 B,
Correlation: 0.99969
Residual Std. Dev.: 0.19599
Formula: y = mx + b
m: 15.43488
b: -3.76946e-3
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.024533
Level 3 : 0.005851
Level 4 : 0.001452
Level 5 : 0.000228
Level 6 : 0.00006
Level 7 : 0.000016

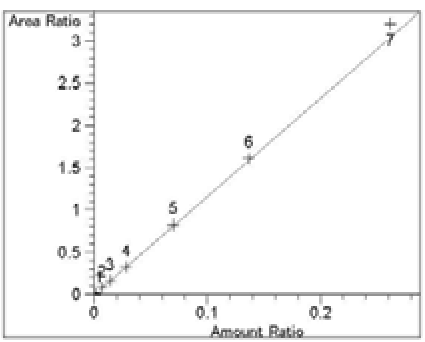
Method C:\GC\2021\LOLITA\METHODS\LOLITA0359_NPD.M




```
Acrolein-1 at exp. RT: 13.601
NPD2 B,
Correlation:              0.99948
Residual Std. Dev.:       0.24013
Formula: y = mx + b
      m:       11.64882
      b:       -5.49159e-3
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1     : 1
    Level 2     : 0.023345
    Level 3     : 0.005498
    Level 4     : 0.00135
    Level 5     : 0.000209
    Level 6     : 0.000055
    Level 7     : 0.000014
```




```
Propionaldehyde-2 at exp. RT: 13.694
NPD2 B,
Correlation:              0.99968
Residual Std. Dev.:       0.12357
Formula: y = mx + b
      m:       15.43312
      b:       -2.29503e-3
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1     : 1
    Level 2     : 0.023553
    Level 3     : 0.005649
    Level 4     : 0.001405
    Level 5     : 0.000222
    Level 6     : 0.000058
    Level 7     : 0.000015
```



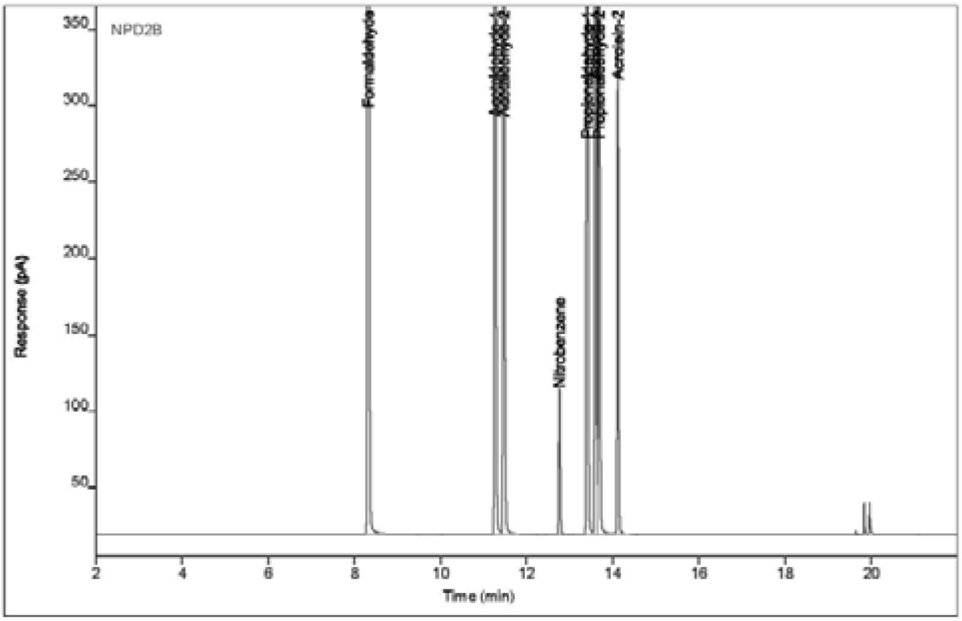

```
Acrolein-2 at exp. RT: 14.125
NPD2 B,
Correlation:              0.99947
Residual Std. Dev.:       0.07241
Formula: y = mx + b
      m:       11.64473
      b:       -1.56772e-3
      x: Amount
      y: Area
Calibration Level Weights:
    Level 1     : 1
    Level 2     : 0.021334
    Level 3     : 0.005129
    Level 4     : 0.001261
    Level 5     : 0.000194
    Level 6     : 0.000051
    Level 7     : 0.000013
```

===

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #7	Sample Type	Calibration
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 7
Inj Data File	007B0202.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	2 of 2
Injection Date	7/26/2021 7:15 PM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:15 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM

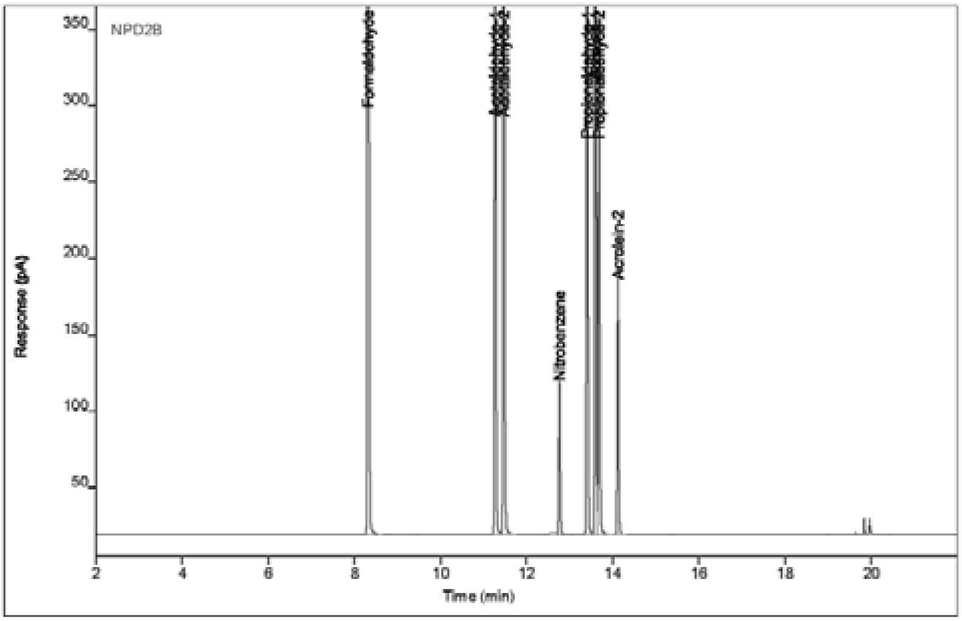


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				111.097	1	111.097	
Acrolein	Group				119.318	1	119.318	
Propionaldehyde	Group				114.254	1	114.254	
Formaldehyde	BB	8.32	6918.04	3208.23	114.507	1	114.507	ug/ml
Acetaldehyde-1	BV	11.27	2308.93	1036.08	49.3437	1	49.3437	ug/ml
Acetaldehyde-2	VB	11.47	2889.63	1319.50	61.7537	1	61.7537	ug/ml
Nitrobenzene	BB	12.77	221.966	95.6291	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	2402.05	1077.56	70.1365	1	70.1365	ug/ml
Acrolein-1	VV	13.60	2372.52	1092.28	91.8046	1	91.8046	ug/ml
Propionaldehyde-2	VB	13.68	1510.79	669.598	44.1174	1	44.1174	ug/ml
Acrolein-2	BB	14.12	710.796	324.989	27.5133	1	27.5133	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #6	Sample Type	Calibration
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 6
Inj Data File	006B0301.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/26/2021 7:44 PM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:15 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				56.5031	1	56.5031	
Acrolein	Group				60.2379	1	60.2379	
Propionaldehyde	Group				57.9042	1	57.9042	
Formaldehyde	BB	8.31	3614.06	1731.39	58.3456	1	58.3456	ug/ml
Acetaldehyde-1	BV	11.27	1208.30	546.233	25.1855	1	25.1855	ug/ml
Acetaldehyde-2	VB	11.47	1502.50	675.644	31.3176	1	31.3176	ug/ml
Nitrobenzene	BB	12.77	227.660	100.325	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	1251.35	566.028	35.6360	1	35.6360	ug/ml
Acrolein-1	VV	13.60	1228.95	575.915	46.3883	1	46.3883	ug/ml
Propionaldehyde-2	VB	13.68	781.869	340.078	22.2682	1	22.2682	ug/ml
Acrolein-2	BB	14.12	366.800	166.821	13.8496	1	13.8496	ug/ml

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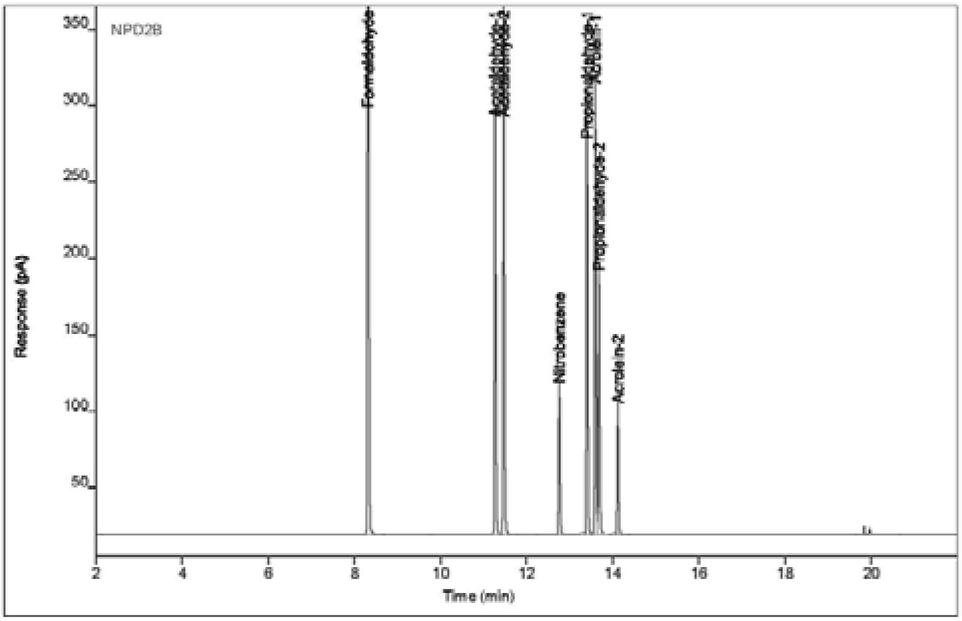
Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #5	Sample Type	Calibration
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 5
Inj Data File	005B0401.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/26/2021 8:13 PM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:15 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM

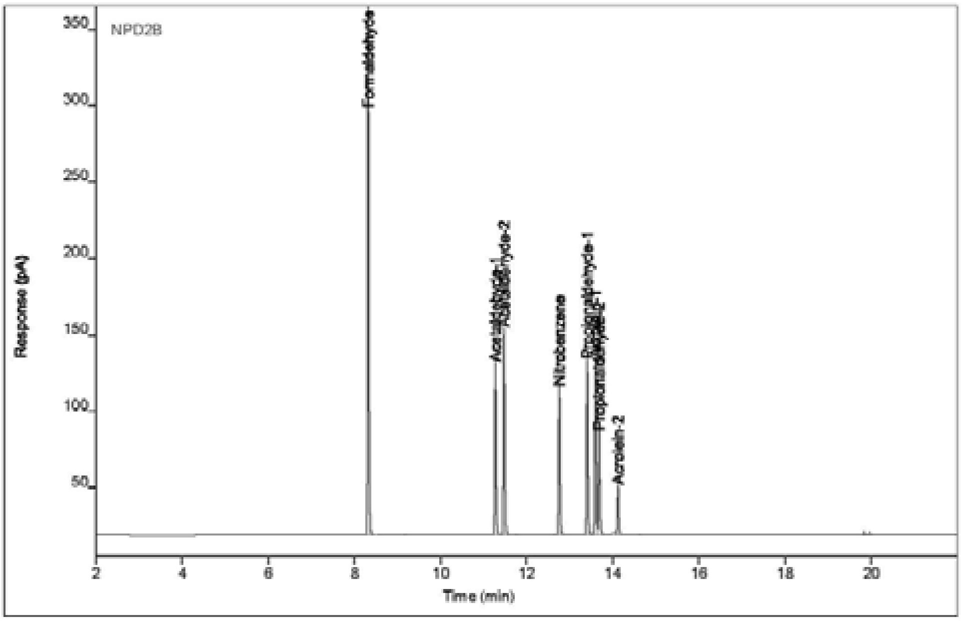


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				29.0675	1	29.0675	
Acrolein	Group				30.8835	1	30.8835	
Propionaldehyde	Group				29.7095	1	29.7095	
Formaldehyde	BB	8.31	1846.37	885.770	29.7693	1	29.7693	ug/ml
Acetaldehyde-1	BV	11.27	624.896	280.010	13.0076	1	13.0076	ug/ml
Acetaldehyde-2	VB	11.47	771.538	344.709	16.0599	1	16.0599	ug/ml
Nitrobenzene	BB	12.76	228.124	98.9682	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	645.087	291.013	18.3452	1	18.3452	ug/ml
Acrolein-1	VV	13.60	630.897	294.593	23.7885	1	23.7885	ug/ml
Propionaldehyde-2	VB	13.68	399.575	172.008	11.3643	1	11.3643	ug/ml
Acrolein-2	BB	14.12	188.118	85.6487	7.09505	1	7.09505	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #4	Sample Type	Calibration
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 4
Inj Data File	004B0501.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/26/2021 8:42 PM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:15 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM

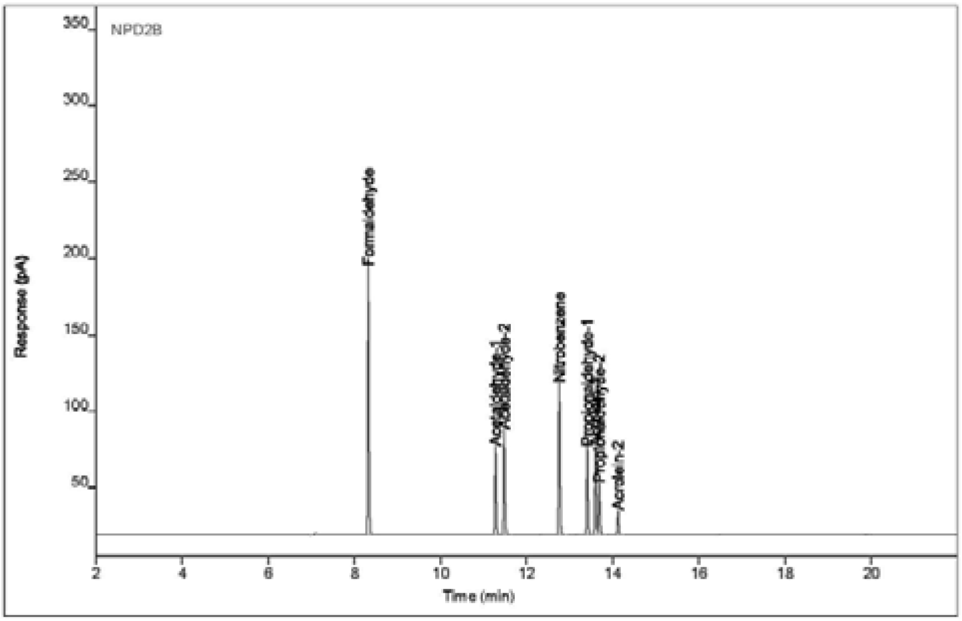


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				11.6465	1	11.6465	
Acrolein	Group				12.1789	1	12.1789	
Propionaldehyde	Group				11.8153	1	11.8153	
Formaldehyde	BB	8.32	719.360	346.311	11.7555	1	11.7555	ug/ml
Acetaldehyde-1	BV	11.28	247.630	112.607	5.22325	1	5.22325	ug/ml
Acetaldehyde-2	VB	11.48	304.525	135.578	6.42328	1	6.42328	ug/ml
Nitrobenzene	BB	12.76	225.600	97.1426	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	253.026	114.479	7.29089	1	7.29089	ug/ml
Acrolein-1	VV	13.60	245.547	115.392	9.39074	1	9.39074	ug/ml
Propionaldehyde-2	VB	13.69	157.010	67.7684	4.52444	1	4.52444	ug/ml
Acrolein-2	BB	14.12	72.8929	32.7063	2.78817	1	2.78817	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #3	Sample Type	Calibration
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 3
Inj Data File	003B0601.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/26/2021 9:11 PM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:15 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				5.84071	1	5.84071	
Acrolein	Group				6.06733	1	6.06733	
Propionaldehyde	Group				5.90870	1	5.90870	
Formaldehyde	BB	8.32	367.504	175.521	5.89721	1	5.89721	ug/ml
Acetaldehyde-1	BB	11.28	126.735	57.8723	2.62410	1	2.62410	ug/ml
Acetaldehyde-2	BB	11.48	155.351	68.7643	3.21660	1	3.21660	ug/ml
Nitrobenzene	BB	12.76	230.629	99.4046	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.41	128.868	57.8594	3.64459	1	3.64459	ug/ml
Acrolein-1	VV	13.60	124.411	57.7052	4.67799	1	4.67799	ug/ml
Propionaldehyde-2	VB	13.69	80.0580	33.9554	2.26412	1	2.26412	ug/ml
Acrolein-2	BB	14.12	36.9507	16.2239	1.38934	1	1.38934	ug/ml

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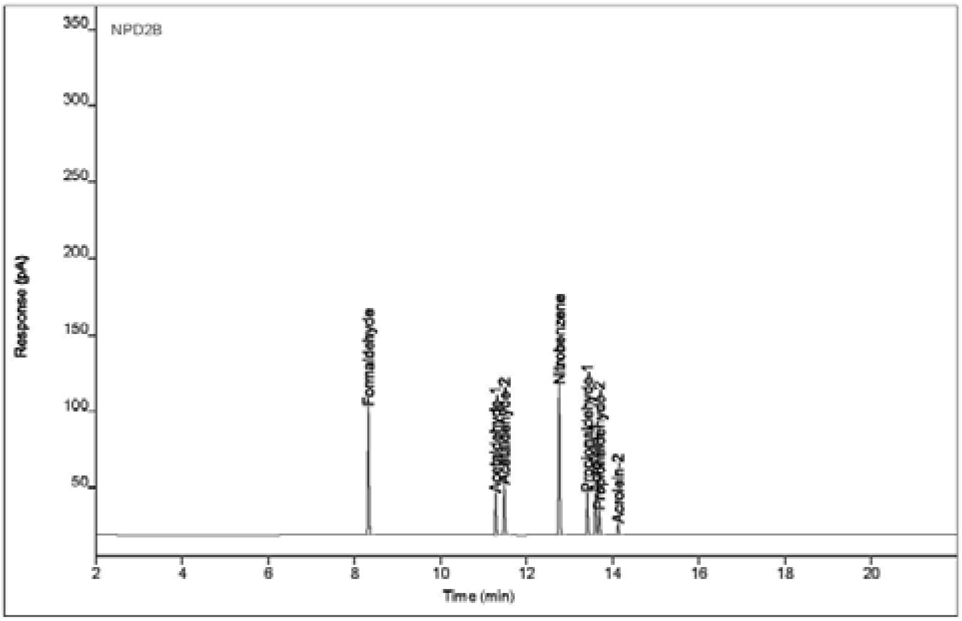
Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #2	Sample Type	Calibration
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 2
Inj Data File	002B0701.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/26/2021 9:40 PM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:15 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM

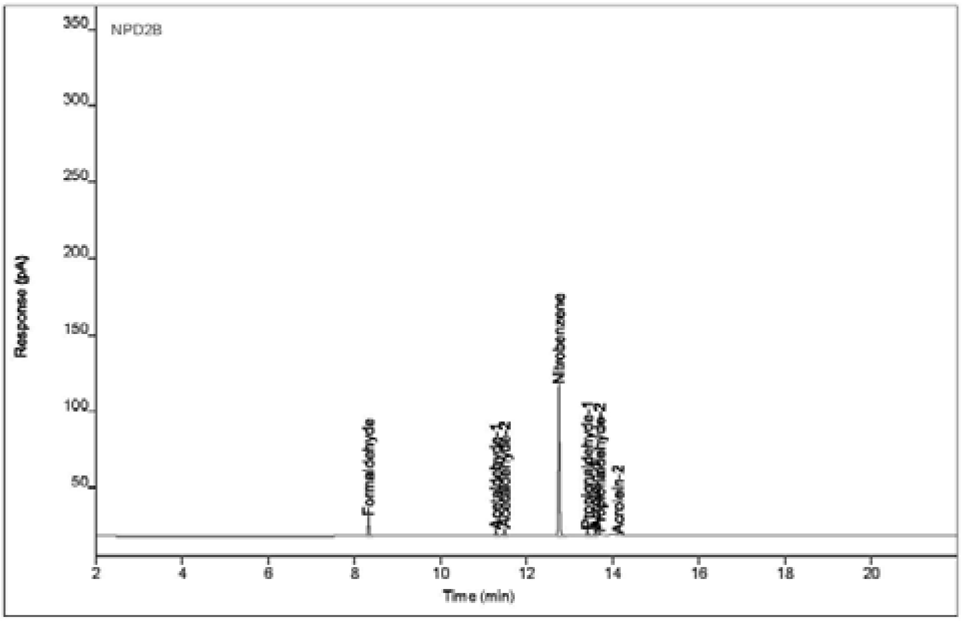


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				2.85845	1	2.85845	
Acrolein	Group				2.98243	1	2.98243	
Propionaldehyde	Group				2.90886	1	2.90886	
Formaldehyde	BB	8.32	177.190	84.0794	2.90228	1	2.90228	ug/ml
Acetaldehyde-1	BB	11.28	60.8711	27.6253	1.28571	1	1.28571	ug/ml
Acetaldehyde-2	BB	11.48	74.4587	33.2166	1.57273	1	1.57273	ug/ml
Nitrobenzene	BB	12.76	227.755	98.1207	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.41	62.1524	28.0090	1.79244	1	1.79244	ug/ml
Acrolein-1	BV	13.60	59.6210	27.6094	2.29438	1	2.29438	ug/ml
Propionaldehyde-2	VB	13.69	38.7193	16.3280	1.11642	1	1.11642	ug/ml
Acrolein-2	BB	14.12	17.8912	7.78936	0.68805	1	0.68805	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #1	Sample Type	Calibration
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 1
Inj Data File	001B0808.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	8 of 8
Injection Date	7/27/2021 1:33 AM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:16 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM

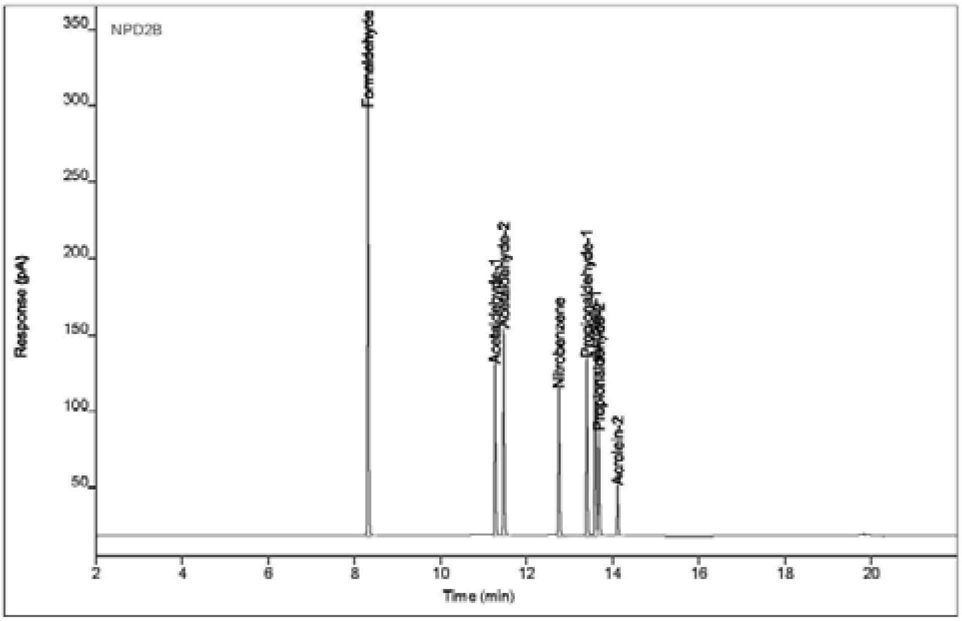


Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				0.47539	1	0.47539	
Acrolein	Group				0.50250	1	0.50250	
Propionaldehyde	Group				0.48527	1	0.48527	
Formaldehyde	BB	8.32	27.5406	13.0839	0.48571	1	0.48571	ug/ml
Acetaldehyde-1	BB	11.29	9.45820	4.25271	0.21376	1	0.21376	ug/ml
Acetaldehyde-2	BB	11.49	11.5769	5.15548	0.26164	1	0.26164	ug/ml
Nitrobenzene	BB	12.75	229.566	98.9980	100.000	1	100.000	ug/ml
Propionaldehyde-1	BB	13.42	9.81222	4.28163	0.30134	1	0.30134	ug/ml
Acrolein-1	BV	13.60	9.18203	4.13767	0.39050	1	0.39050	ug/ml
Propionaldehyde-2	VB	13.69	5.98943	2.59590	0.18392	1	0.18392	ug/ml
Acrolein-2	BB	14.13	2.63400	1.18624	0.11200	1	0.11200	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name	gcstds1505 #3ss	Sample Type	Control
Sequence Name	LOLITA0359 ver.3	Vial Number	Vial 8
Inj Data File	008B0901.D	Injection Volume	1
File Location	GC/2021/Lolita/Quarter 3	Injection	1 of 1
Injection Date	7/27/2021 2:02 AM	Acquisition Method	LOLITA0349.M
File Modified	7/27/2021 10:16 AM	Analysis Method	LOLITA0359_NPD.M
Instrument	Lolita	Method Modified	7/27/2021 10:15 AM
Operator	Kim Maturo	Printed	7/27/2021 11:18 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	Group				11.6658	1	11.6658	
Acrolein	Group				12.4902	1	12.4902	
Propionaldehyde	Group				12.0631	1	12.0631	
Formaldehyde	BB	8.31	716.492	340.038	11.7588	1	11.7588	ug/ml
Acetaldehyde-1	BV	11.27	248.194	112.160	5.25746	1	5.25746	ug/ml
Acetaldehyde-2	VB	11.47	302.519	135.632	6.40836	1	6.40836	ug/ml
Nitrobenzene	BB	12.75	224.637	96.4670	100.000	1	100.000	ug/ml
Propionaldehyde-1	BV	13.40	255.757	116.373	7.40080	1	7.40080	ug/ml
Acrolein-1	VV	13.59	251.145	115.666	9.64469	1	9.64469	ug/ml
Propionaldehyde-2	VB	13.68	161.121	68.4548	4.66233	1	4.66233	ug/ml
Acrolein-2	BB	14.12	74.0822	33.1889	2.84552	1	2.84552	ug/ml

method: C:\GC\2021\LOLITA\METHODS\LOLITA0349.M
Modified on: 3/29/2021 at 9:10:16 AM

6890 GC METHOD

OVEN

Initial temp: 60 'C (On)
Initial time: 4.00 min
Ramps:

#	Rate	Final temp	Final time
1	5.00	120	0.00
2	20.00	260	1.00
3	0.0(Off)		

Post temp: 50 'C
Post time: 0.00 min
Run time: 24.00 min

Maximum temp: 400 'C
Equilibration time: 0.50 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 225 'C (On)
Pressure: 1.05 psi (On)
Split ratio: 1.99:1
Split flow: 10.8 mL/min
Total flow: 24.8 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 225 'C (On)
Pressure: 19.36 psi (On)
Split ratio: 20:1
Split flow: 36.0 mL/min
Total flow: 40.6 mL/min
Gas saver: On
Saver flow: 20.0 mL/min
Saver time: 2.00 min
Gas type: Helium

COLUMN 1

Capillary Column
Model Number: Restek 10637
Stabilwax 15m x 0.53mmID x 0.5um
Max temperature: 260 'C
Nominal length: 15.0 m
Nominal diameter: 530.00 um
Nominal film thickness: 0.50 um
Mode: constant flow
Initial flow: 5.4 mL/min
Nominal init pressure: 1.05 psi
Average velocity: 44 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: Restek 15023
Rtx-200 Rtx-200 30m x 0.25 x 0.25
Max temperature: 340 'C
Nominal length: 30.0 m
Nominal diameter: 250.00 um
Nominal film thickness: 0.25 um
Mode: constant flow
Initial flow: 1.8 mL/min
Nominal init pressure: 19.37 psi
Average velocity: 39 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 150 'C (On)
Hydrogen flow: 40.0 mL/min (Off)
Air flow: 450.0 mL/min (Off)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (Off)
Makeup Gas Type: Nitrogen
Flame: Off
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (NPD)

Temperature: 150 'C (On)
Hydrogen flow: 2.0 mL/min (On)
Air flow: 60.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 3.0 mL/min (On)
Makeup Gas Type: Helium
Adjust offset: 22.00
Electrometer: On
Bead: On
Equilibration time: 2.00

SIGNAL 1

Data rate: 50 Hz
Type: front detector
Save Data: Off
Zero: 0.0 (Off)
Range: 0

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On
Zero: 0.0 (Off)
Range: 0

```
 method: C:\GC\2021\LOLITA\METHODS\LOLITA0349.M
Modified on: 3/29/2021 at 9:10:16 AM
   Fast Peaks:  Off                        Fast Peaks:  Off
   Attenuation:  0                         Attenuation:  0

COLUMN COMP 1                           COLUMN COMP 2
   Derive from front detector              Derive from back detector

                                        POST RUN
                                           Post Time: 0.00 min

TIME TABLE
   Time       Specifier                     Parameter & Setpoint


                             GC Injector


     Front Injector:
No parameters specified

     Back Injector:
        Sample Washes                0
        Sample Pumps                 7
        Injection Volume          1.00 microliters
        Syringe Size              10.0 microliters
        Nanoliter Adapter          Off
        PostInj Solvent A Washes     3
        PostInj Solvent B Washes     3
        Viscosity Delay              2 seconds
        Plunger Speed             Fast
```

Raw Data

ENTHALPY
ANALYTICAL

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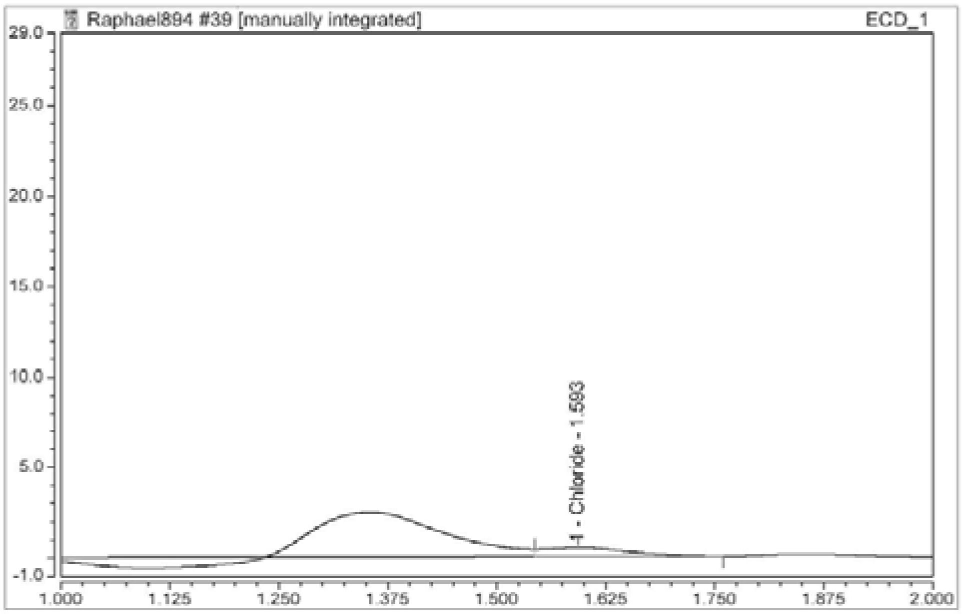
Sample Name:	0721-063.RTO R1.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 17:34	Run Time:	5.50

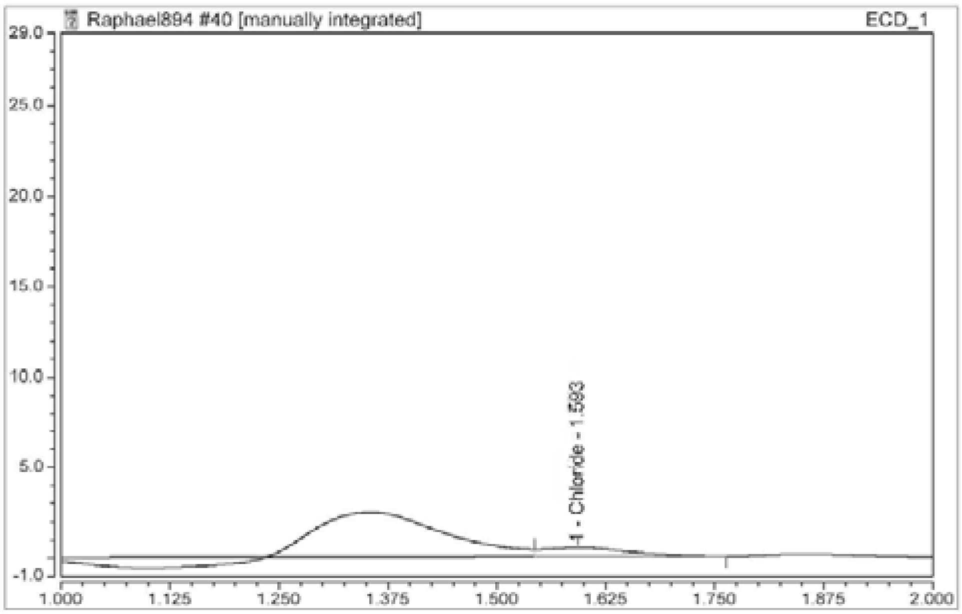


Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.59	Chloride	0.057	0.507	0.66923	FALSE	TRUE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

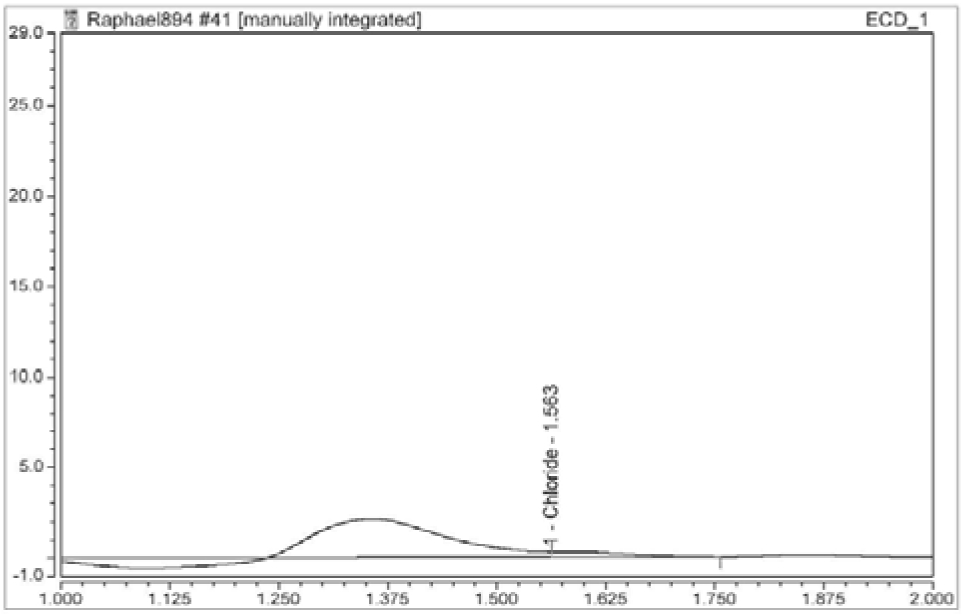
Sample Name:	0721-063.RTO R1.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 17:41	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.59	Chloride	0.057	0.508	0.67509	FALSE	TRUE

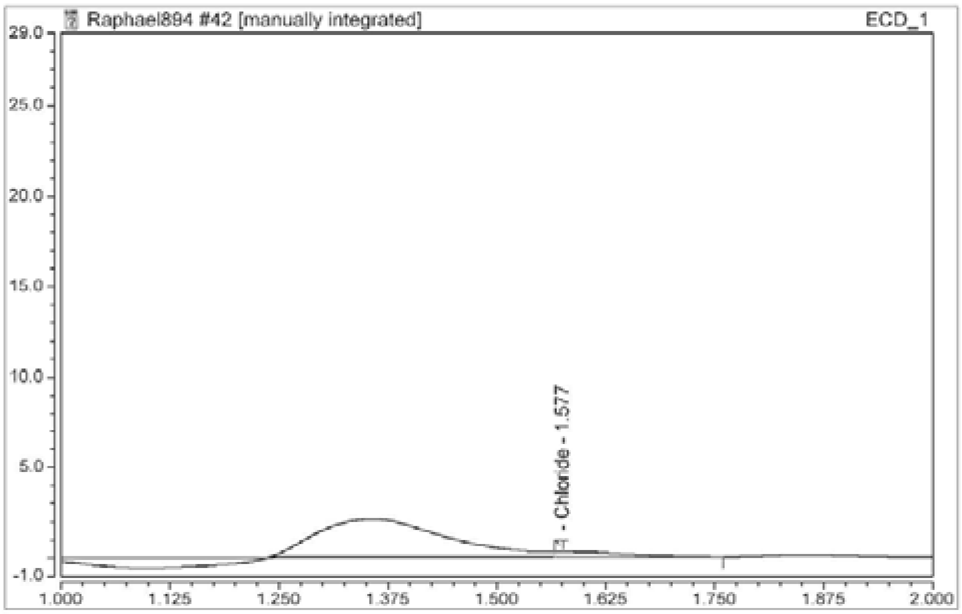
Sample Name:	0721-063.RTO R2.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 17:48	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.56	Chloride	0.028	0.302	0.29701	FALSE	TRUE

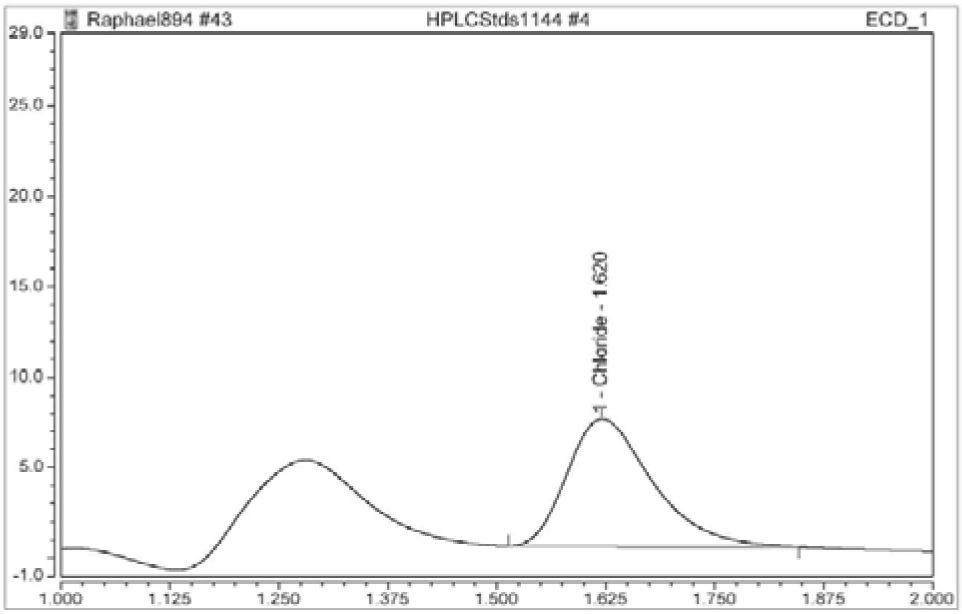
Sample Name:	0721-063.RTO R2.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 17:56	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.58	Chloride	0.027	0.304	0.28332	FALSE	TRUE

Sample Name:	**HPLCStds1144 #4**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 18:03**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.801	7.072	9.89562	FALSE	FALSE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

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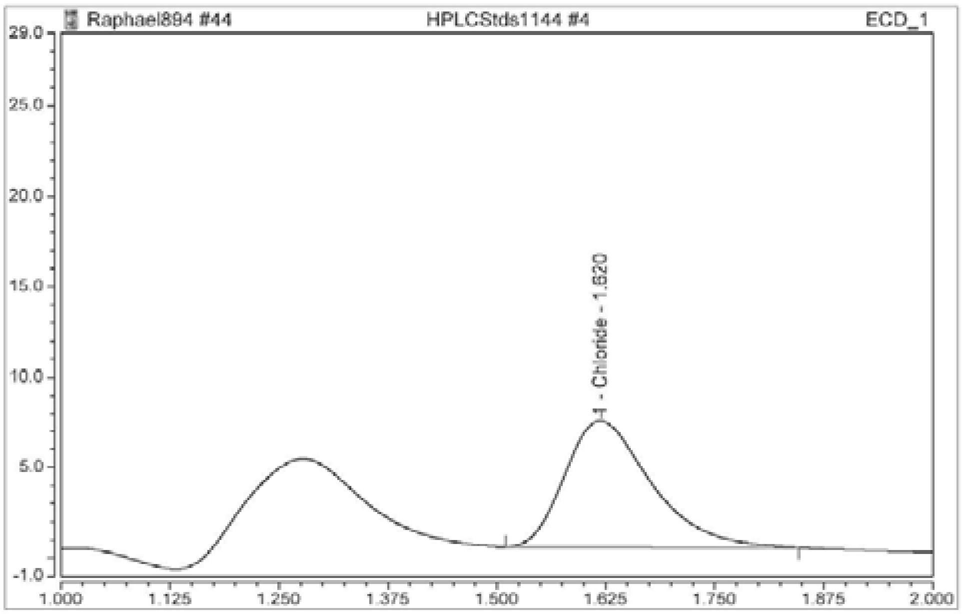
Sample Name:	HPLCStds1144 #4	Injection Volume:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 18:10	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.801	6.994	9.89775	FALSE	FALSE

9 Anions/Integration

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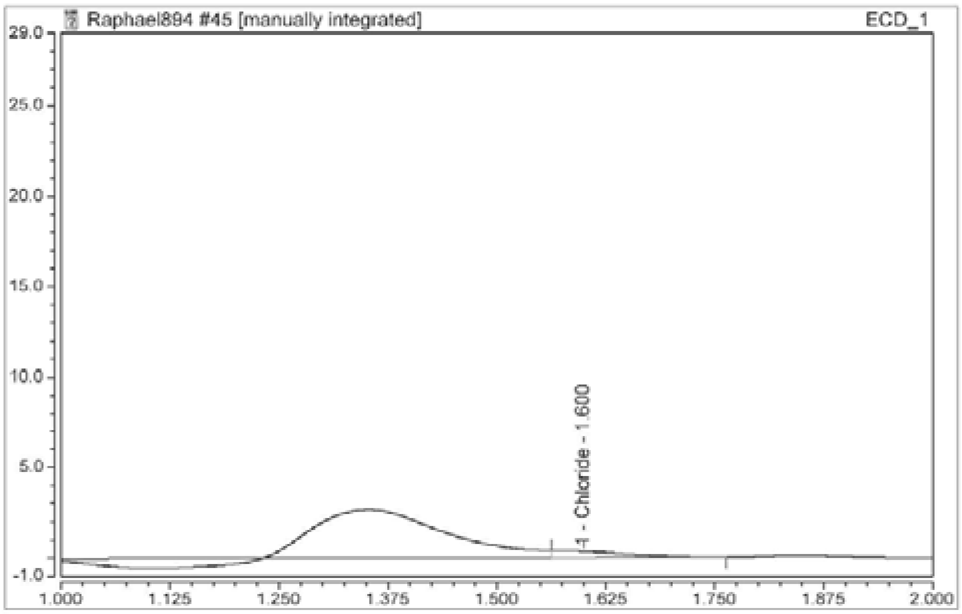
Chromeleon (c) Dionex 1996-2009
Version 7.2.8.10783

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

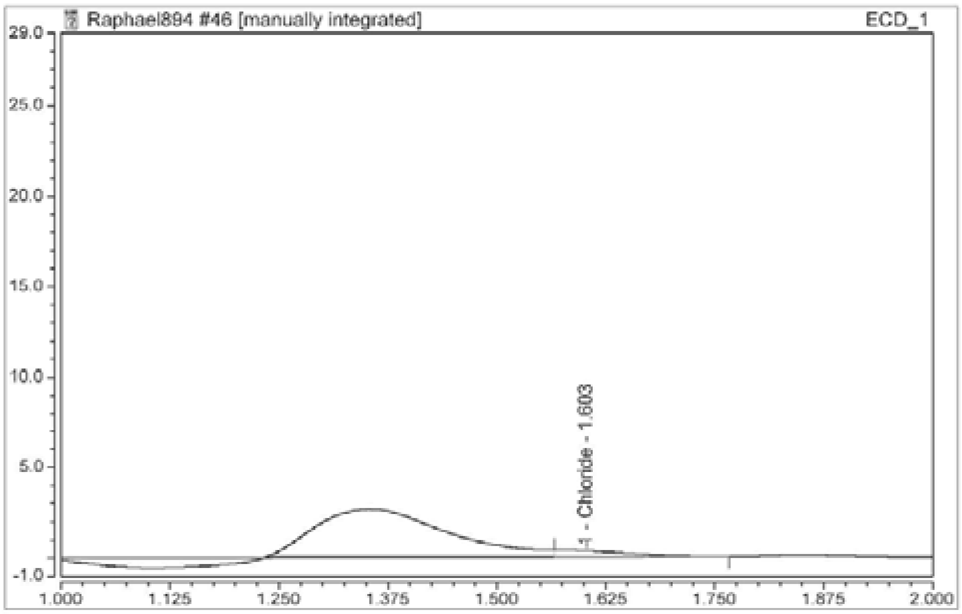
Sample Name:	0721-063.RTO R3.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 18:17	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.035	0.355	0.38108	FALSE	TRUE

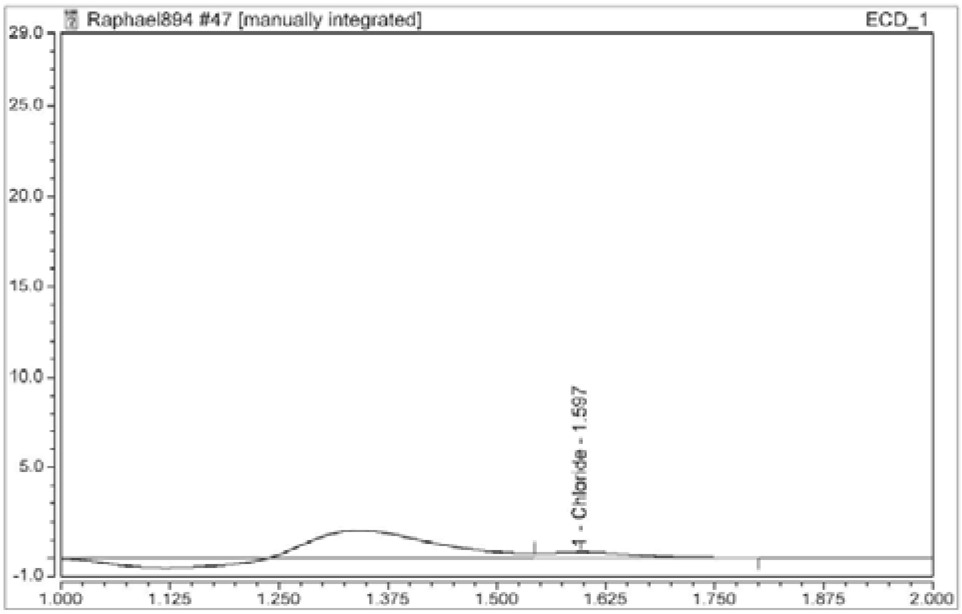
Sample Name:	0721-063.RTO R3.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 18:24	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.034	0.349	0.37300	FALSE	TRUE

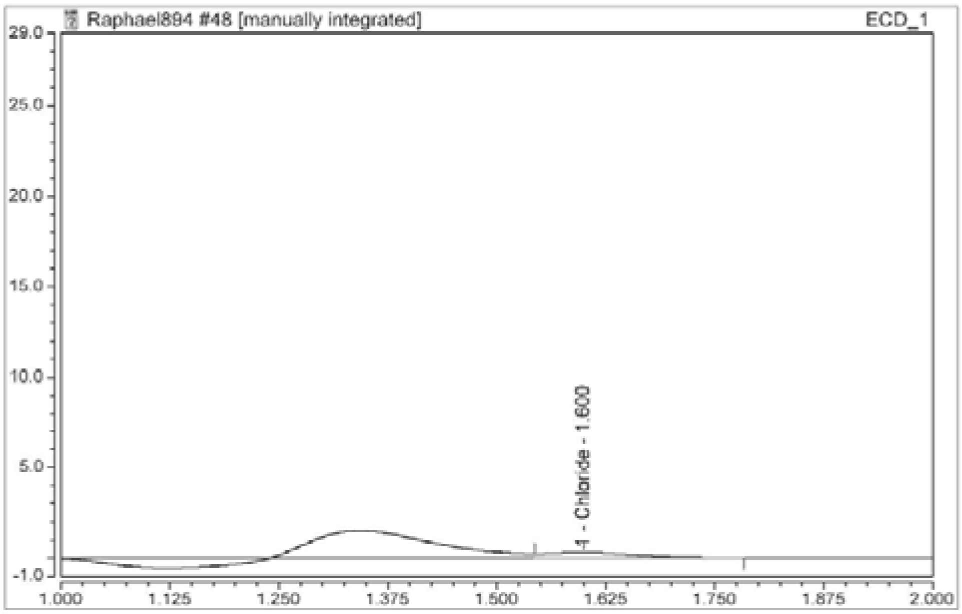
Sample Name:	0721-063.RCO R1.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 18:32	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.034	0.301	0.37538	FALSE	TRUE

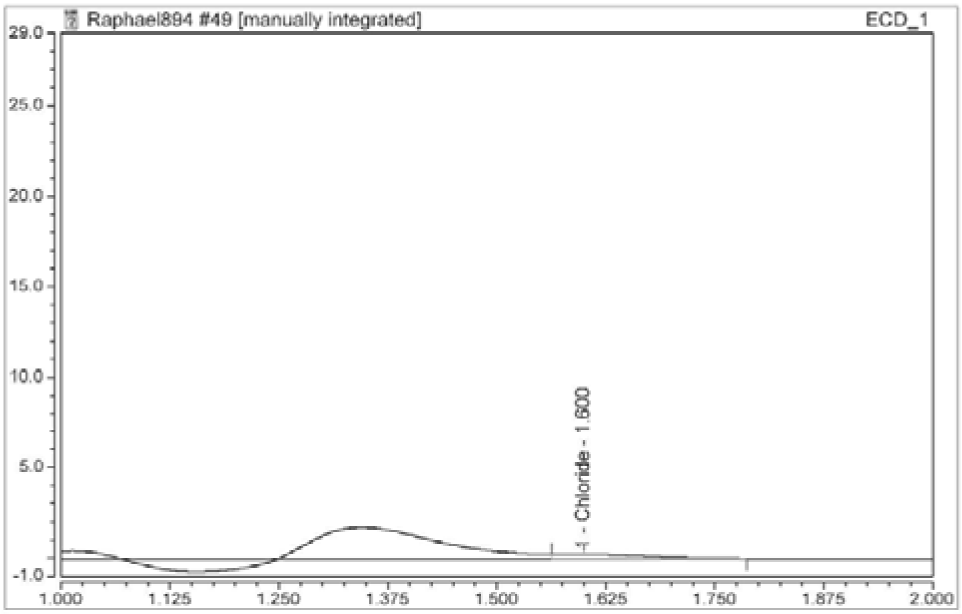
Sample Name:	0721-063.RCO R1.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 18:39	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.035	0.303	0.37936	FALSE	TRUE

Sample Name:	0721-063.RCO R2.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 18:46	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area μS*min	Height μS	Conc μg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.026	0.228	0.26460	FALSE	TRUE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

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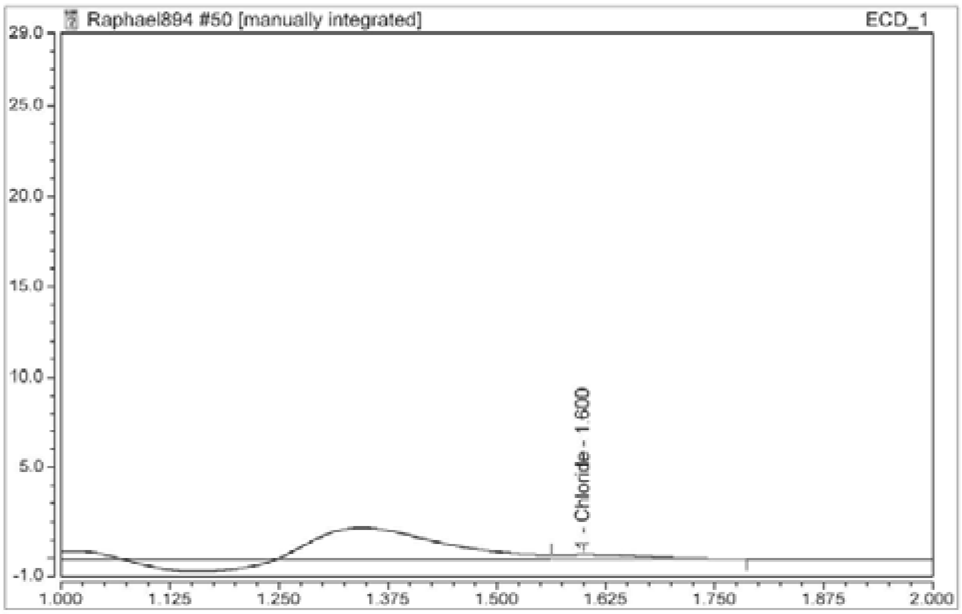
Sample Name:	0721-063.RCO R2.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 18:53	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.026	0.224	0.25936	FALSE	TRUE

9 Anions/Integration

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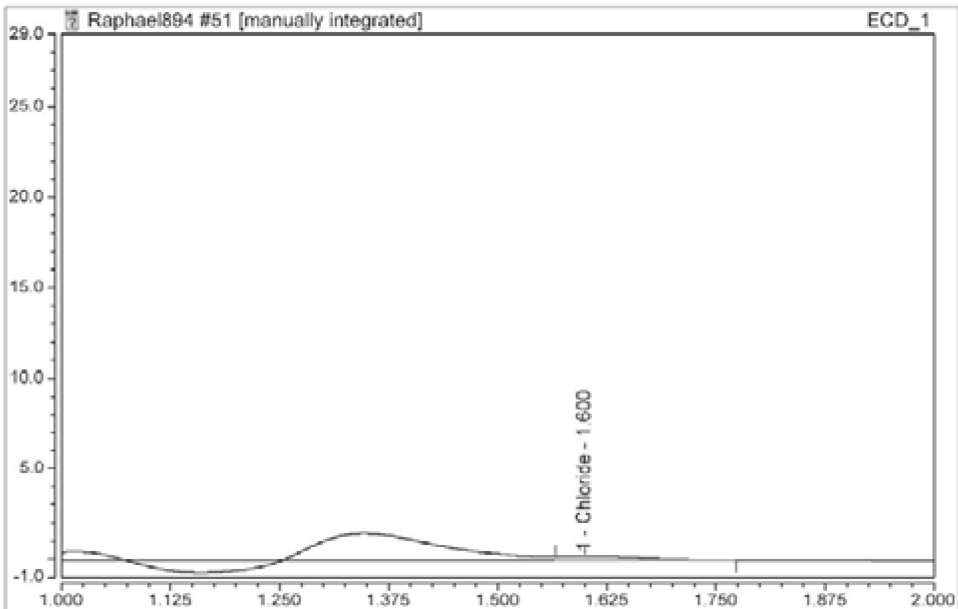
Chromeleon (c) Dionex 1996-2009
Version 7.2.8.10783

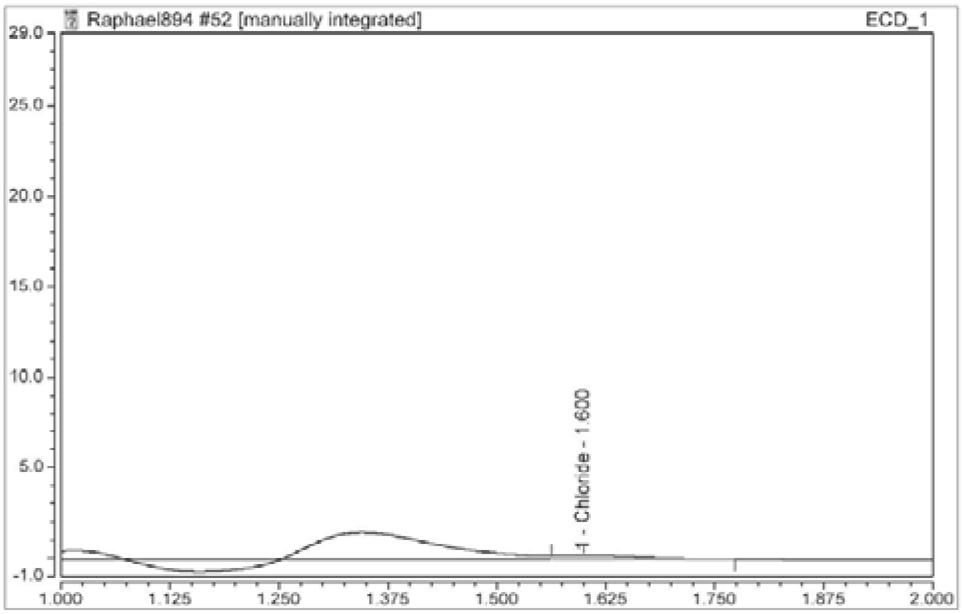
Sample Name:	0721-063.RCO R3.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 19:00	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.019	0.178	0.17914	FALSE	TRUE

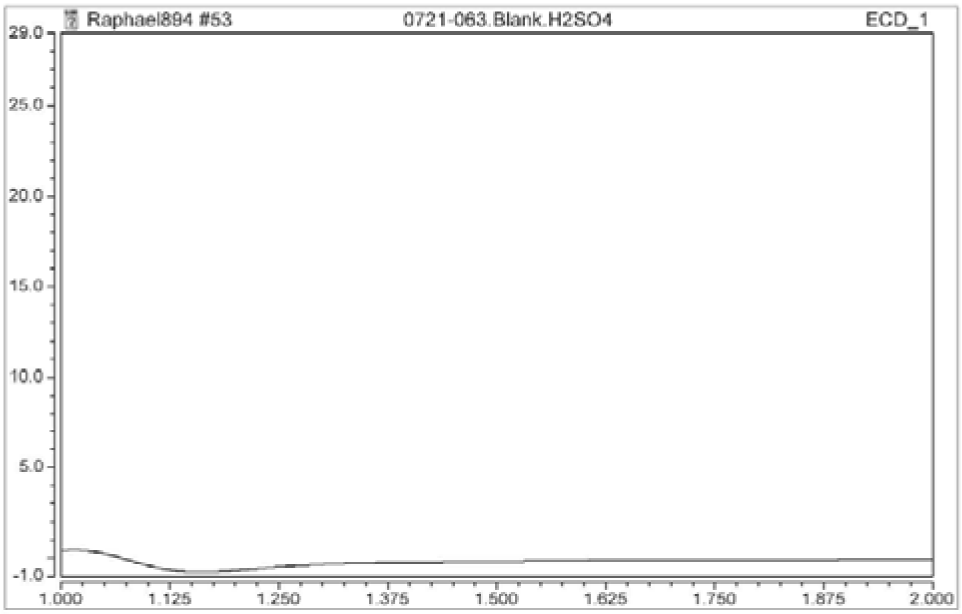
Sample Name:	0721-063.RCO R3.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 19:07	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.020	0.177	0.18340	FALSE	TRUE

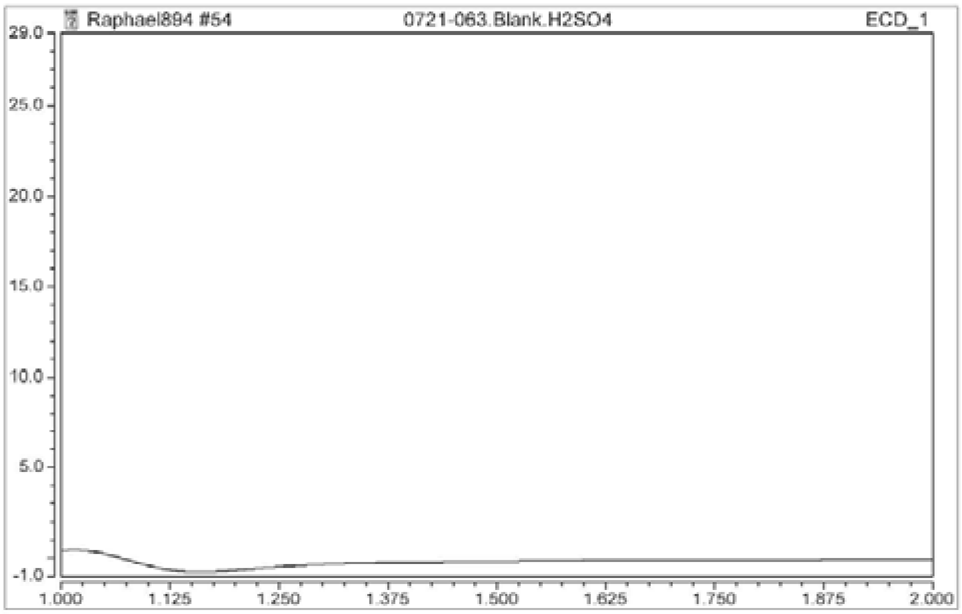
Sample Name:	0721-063.Blank.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 19:15	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	n.a.

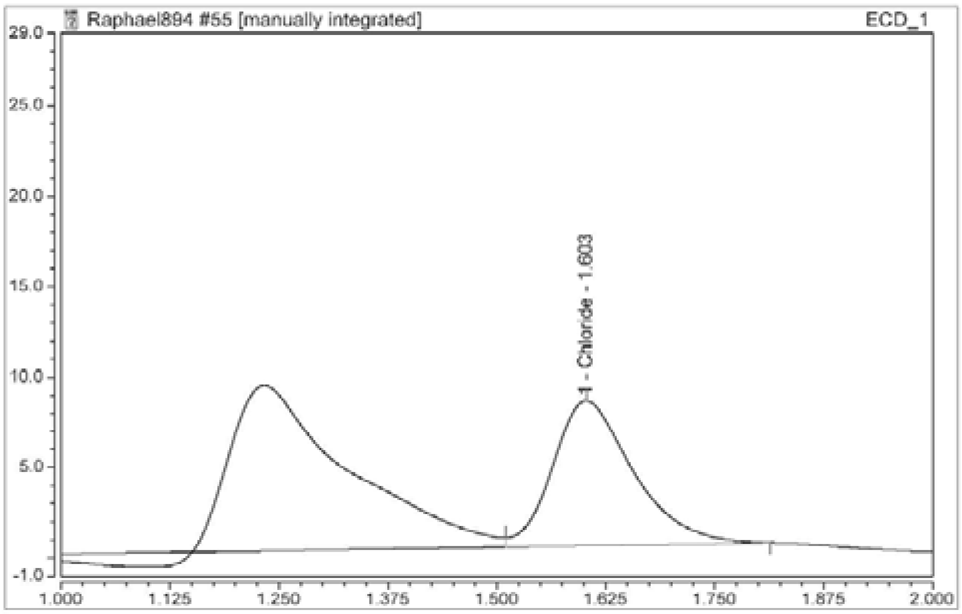
Sample Name:	0721-063.Blank.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 19:22	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	n.a.

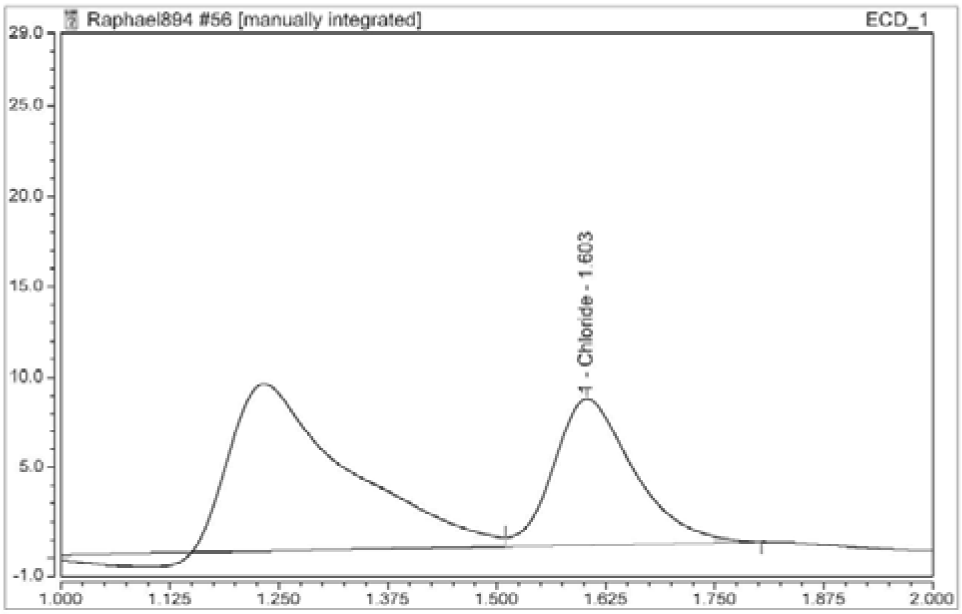
Sample Name:	0721-063.MS-RTO R1.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 19:29	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.857	8.024	10.55647	FALSE	TRUE

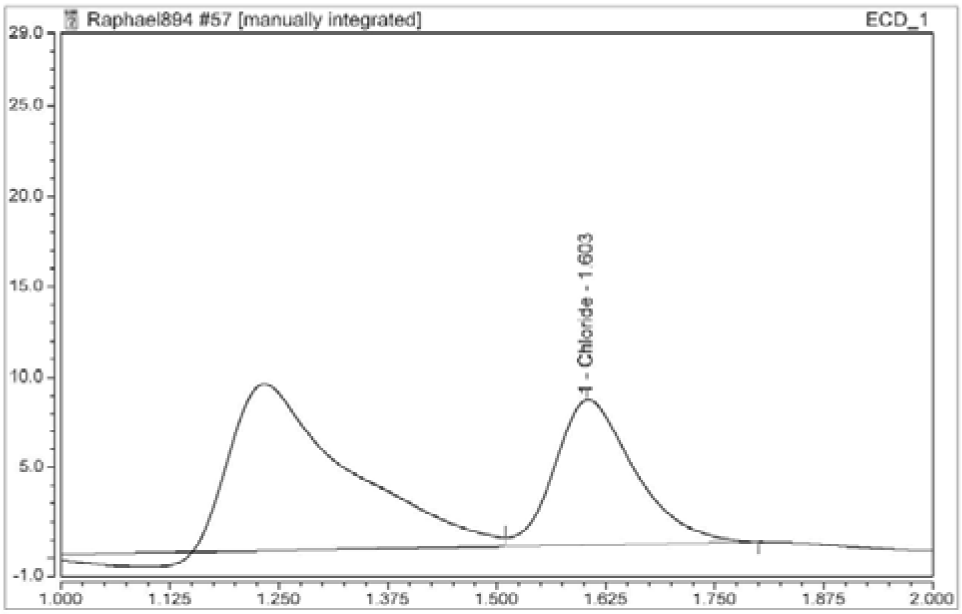
Sample Name:	0721-063.MS-RTO R1.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 19:36	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.857	8.091	10.55159	FALSE	TRUE

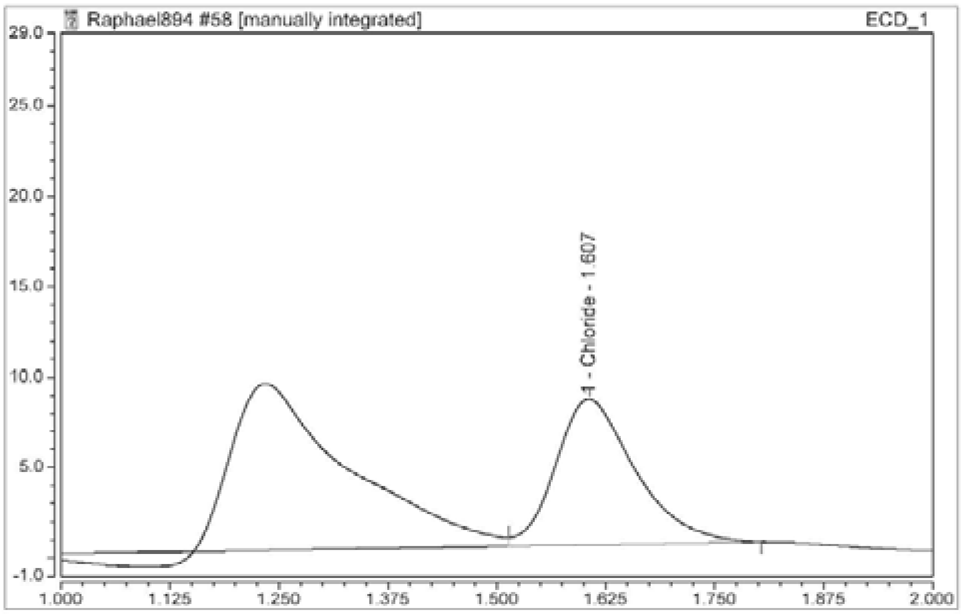
Sample Name:	0721-063.MSD-RTO R1.H2SO4	Injection Volume:	25.00
Injection Type:	Unknown	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 19:43	Run Time:	5.50



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.60	Chloride	0.850	8.030	10.47280	FALSE	TRUE

Sample Name:	**0721-063.MSD-RTO R1.H2SO4**	Injection Volume:	**25.00**
Injection Type:	**Unknown**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 19:50**	Run Time:	**5.50**



Analyst Comment: II PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.61	Chloride	0.850	8.067	10.47515	FALSE	TRUE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael094

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7/26/2021 12:33 PM

Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Chloride	ECD_1 Chloride		
7	HPLCStds1144 #6	23/Jul/2021 13:44	GA6	06	30.0000	Ok	1.0000	25.00
8	HPLCStds1144 #6	23/Jul/2021 13:51	GA6	06	30.0000	Ok	1.0000	25.00
9	HPLCStds1144 #5	23/Jul/2021 13:59	GA5	05	15.0000	Ok	1.0000	25.00
10	HPLCStds1144 #5	23/Jul/2021 14:06	GA5	05	15.0000	Ok	1.0000	25.00
11	HPLCStds1144 #4	23/Jul/2021 14:13	GA4	04	10.0000	Ok	1.0000	25.00
12	HPLCStds1144 #4	23/Jul/2021 14:20	GA4	04	10.0000	Ok	1.0000	25.00
13	HPLCStds1144 #3	23/Jul/2021 14:27	GA3	03	5.0000	Ok	1.0000	25.00
14	HPLCStds1144 #3	23/Jul/2021 14:35	GA3	03	5.0000	Ok	1.0000	25.00
15	HPLCStds1144 #2	23/Jul/2021 14:42	GA2	02	1.0000	Ok	1.0000	25.00
16	HPLCStds1144 #2	23/Jul/2021 14:49	GA2	02	1.0000	Ok	1.0000	25.00
17	HPLCStds1144 #1	23/Jul/2021 14:56	GA1	01	0.5000	Ok	1.0000	25.00
18	HPLCStds1144 #1	23/Jul/2021 15:03	GA1	01	0.5000	Ok	1.0000	25.00
61	HPLCStds1144 #6	23/Jul/2021 20:12	GA6	06	30.0000	Ok	1.0000	25.00
62	HPLCStds1144 #6	23/Jul/2021 20:19	GA6	06	30.0000	Ok	1.0000	25.00
63	HPLCStds1144 #5	23/Jul/2021 20:26	GA5	05	15.0000	Ok	1.0000	25.00
64	HPLCStds1144 #5	23/Jul/2021 20:34	GA5	05	15.0000	Ok	1.0000	25.00
65	HPLCStds1144 #4	23/Jul/2021 20:41	GA4	04	10.0000	Ok	1.0000	25.00
66	HPLCStds1144 #4	23/Jul/2021 20:48	GA4	04	10.0000	Ok	1.0000	25.00
67	HPLCStds1144 #3	23/Jul/2021 20:55	GA3	03	5.0000	Ok	1.0000	25.00
68	HPLCStds1144 #3	23/Jul/2021 21:02	GA3	03	5.0000	Ok	1.0000	25.00
69	HPLCStds1144 #2	23/Jul/2021 21:09	GA2	02	1.0000	Ok	1.0000	25.00
70	HPLCStds1144 #2	23/Jul/2021 21:17	GA2	02	1.0000	Ok	1.0000	25.00
71	HPLCStds1144 #1	23/Jul/2021 21:24	GA1	01	0.5000	Ok	1.0000	25.00
72	HPLCStds1144 #1	23/Jul/2021 21:31	GA1	01	0.5000	Ok	1.0000	25.00

Detection Parameters

Ret. Tin min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	Off	Any	All Channels
Always	Baseline Noise Start Time	0.400 [min]	Any	All Channels
Always	Baseline Noise End Time	0.700 [min]	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Tailing Sensitivity Factor	0.500 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
1.450	Inhibit Integration	Off	Any	All Channels
1.850	Inhibit Integration	On	Any	All Channels

9 Anions/Calibration Details

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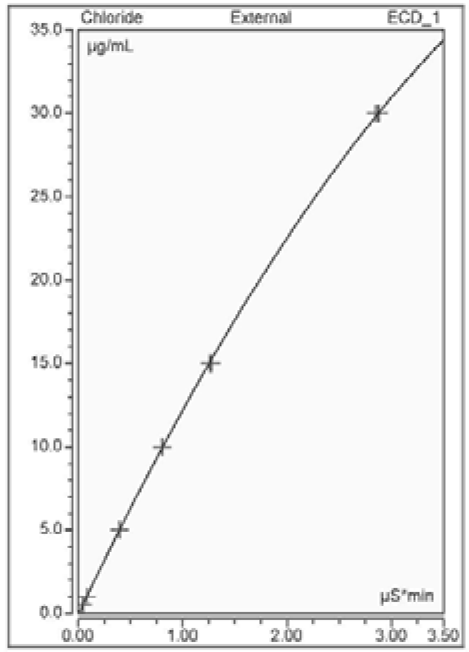
Calibration Batch Report

Sequence:	Raphael894	*Injection Volume:*	25.00
Instrument Method:	AS22 FAST ASAP	*Operator:*	PMann
Inj. Date / Time:	23-Jul-2021 / 17:56	*Run Time:*	5.5

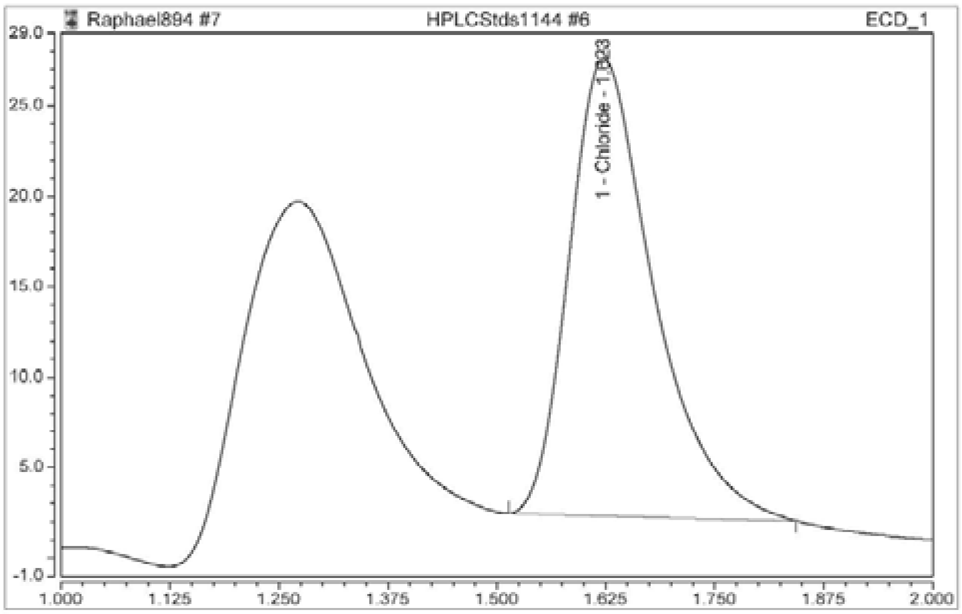
Calibration Summary

Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Chloride	Area	Quad, WithOffset, 1/A	24.000	-0.078	13.227	-0.961	99.992
		AVERAGE:		-0.0784	13.2274	-0.9613	99.9918

Injection Name	Ret.Time min ECD_1	Area µS*min ECD_1	Height µS ECD_1	Amount µg/mL ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStds1144 #6	1.623	2.845	25.331	29.776
HPLCStds1144 #6	1.620	2.880	25.503	30.045
HPLCStds1144 #5	1.617	1.264	11.190	15.108
HPLCStds1144 #5	1.617	1.259	11.103	15.050
HPLCStds1144 #4	1.617	0.797	6.974	9.853
HPLCStds1144 #4	1.613	0.798	6.995	9.866
HPLCStds1144 #3	1.613	0.392	3.373	4.956
HPLCStds1144 #3	1.613	0.392	3.367	4.960
HPLCStds1144 #2	1.617	0.080	0.660	0.977
HPLCStds1144 #2	1.617	0.080	0.657	0.980
HPLCStds1144 #1	1.617	0.044	0.349	0.507
HPLCStds1144 #1	1.617	0.044	0.348	0.507
HPLCStds1144 #6	1.623	2.863	25.869	30.063
HPLCStds1144 #6	1.623	2.871	25.481	29.977
HPLCStds1144 #5	1.617	1.271	11.196	15.185
HPLCStds1144 #5	1.617	1.277	11.193	15.250
HPLCStds1144 #4	1.617	0.804	7.008	9.935
HPLCStds1144 #4	1.617	0.806	6.998	9.953
HPLCStds1144 #3	1.617	0.397	3.401	5.019
HPLCStds1144 #3	1.613	0.396	3.399	5.011
HPLCStds1144 #2	1.617	0.081	0.664	0.987
HPLCStds1144 #2	1.617	0.081	0.665	0.992
HPLCStds1144 #1	1.617	0.045	0.350	0.512
HPLCStds1144 #1	1.617	0.045	0.352	0.513



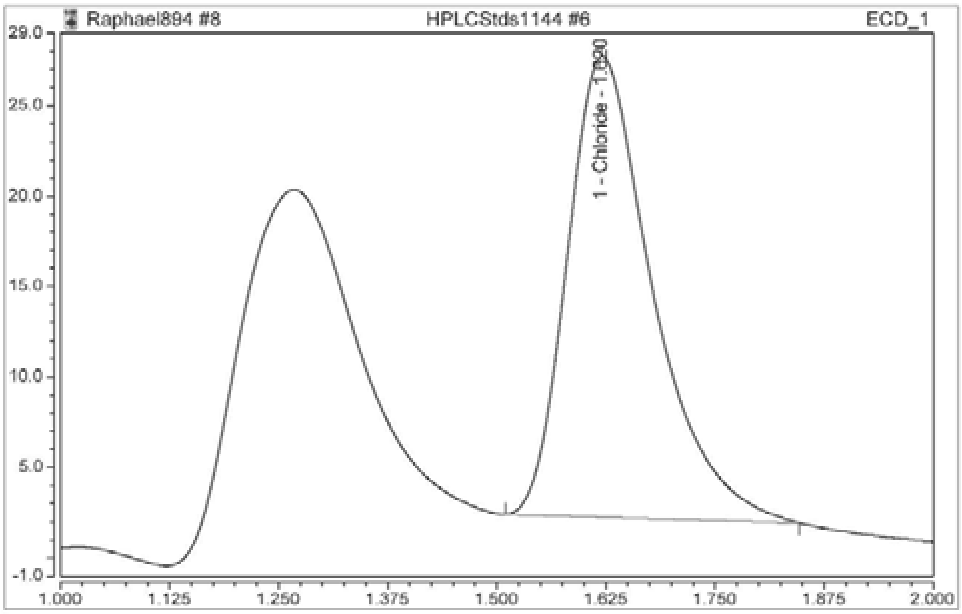
Sample Name:	**HPLCStds1144 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 13:44**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	2.845	25.331	29.77604	FALSE	FALSE

Sample Name:	**HPLCStds1144 #6**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 13:51**	Run Time:	**5.50**

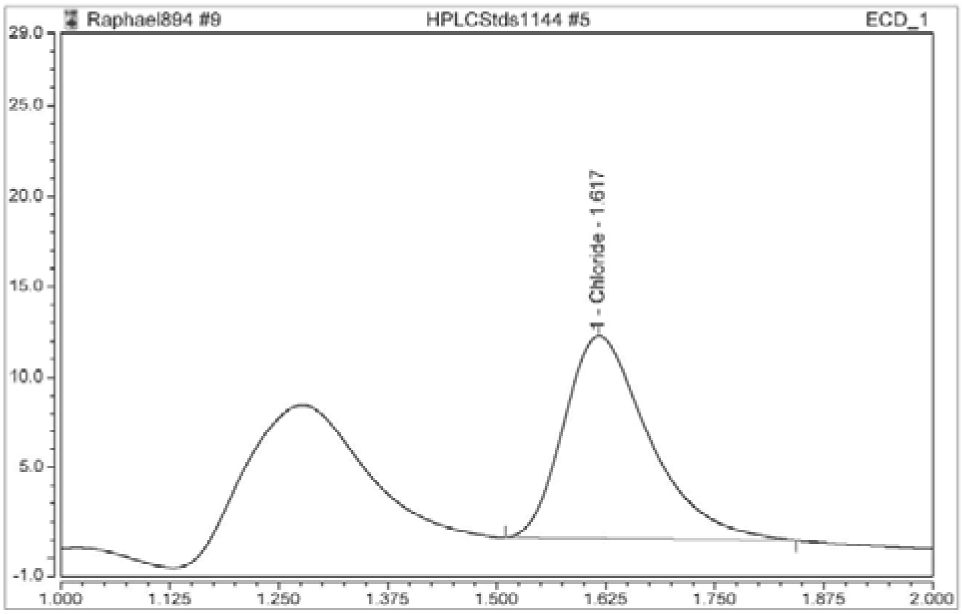


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	2.880	25.503	30.04457	FALSE	FALSE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

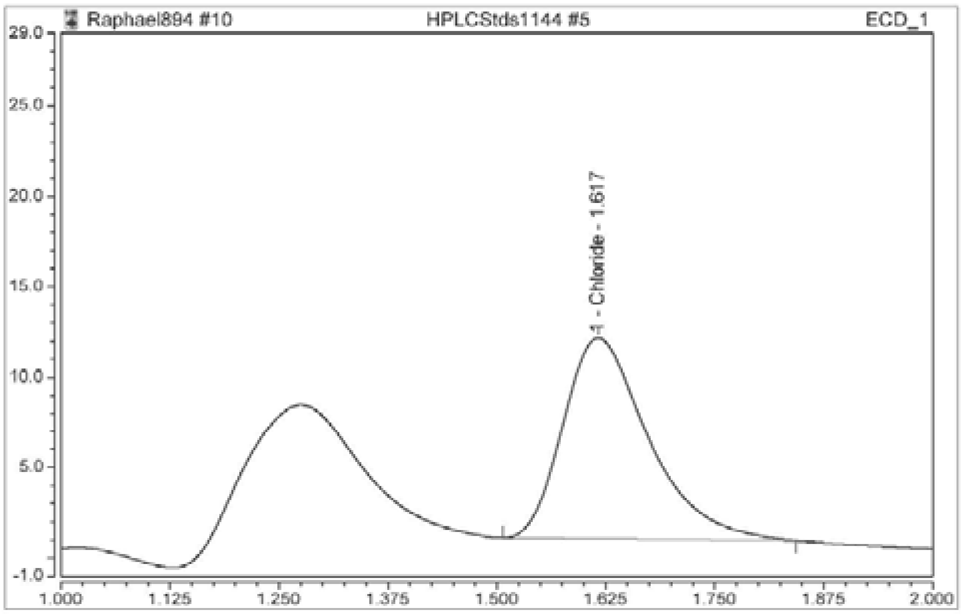
Sample Name:	HPLCStds1144 #5	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 13:59	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	1.264	11.190	15.10838	FALSE	FALSE

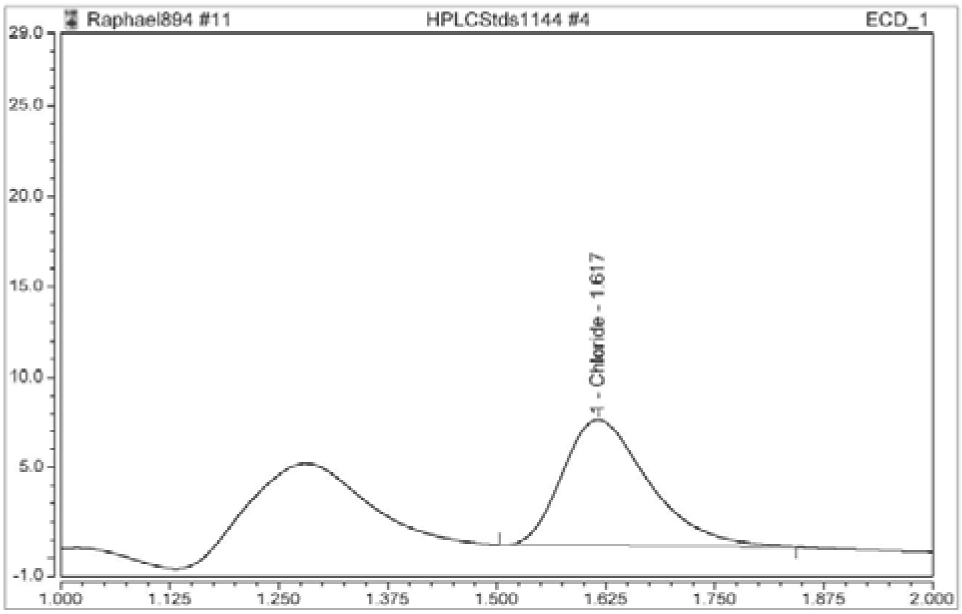
Sample Name:	HPLCStds1144 #5	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 14:06	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	1.259	11.103	15.05006	FALSE	FALSE

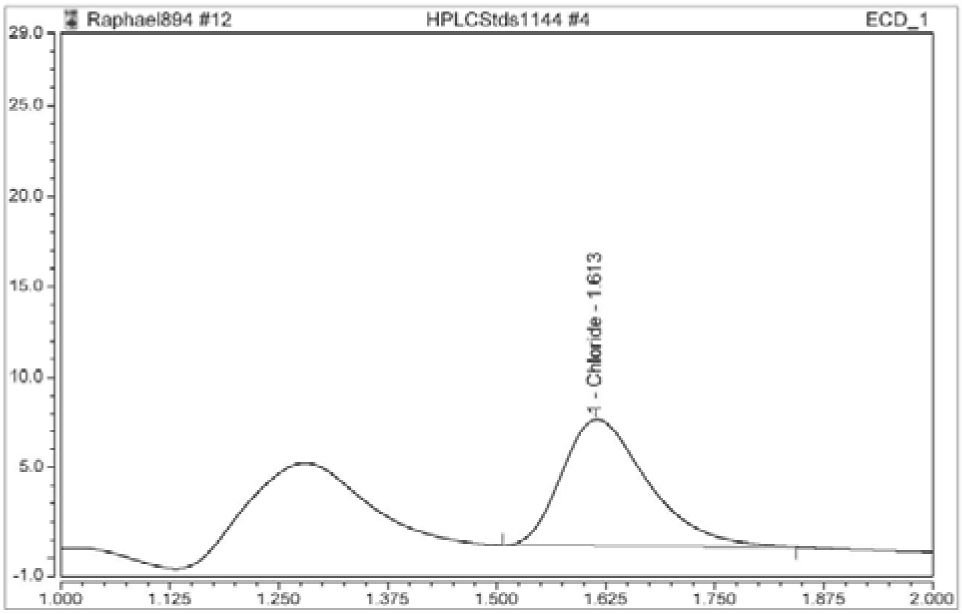
Sample Name:	**HPLCStds1144 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 14:13**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.797	6.974	9.85272	FALSE	FALSE

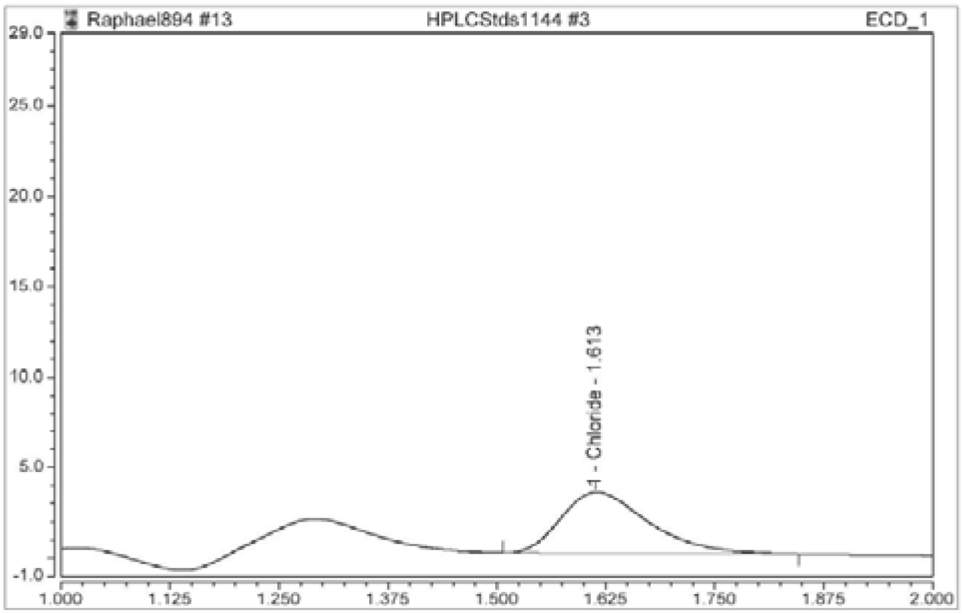
Sample Name:	HPLCStds1144 #4	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 14:20	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.61	Chloride	0.798	6.995	9.86640	FALSE	FALSE

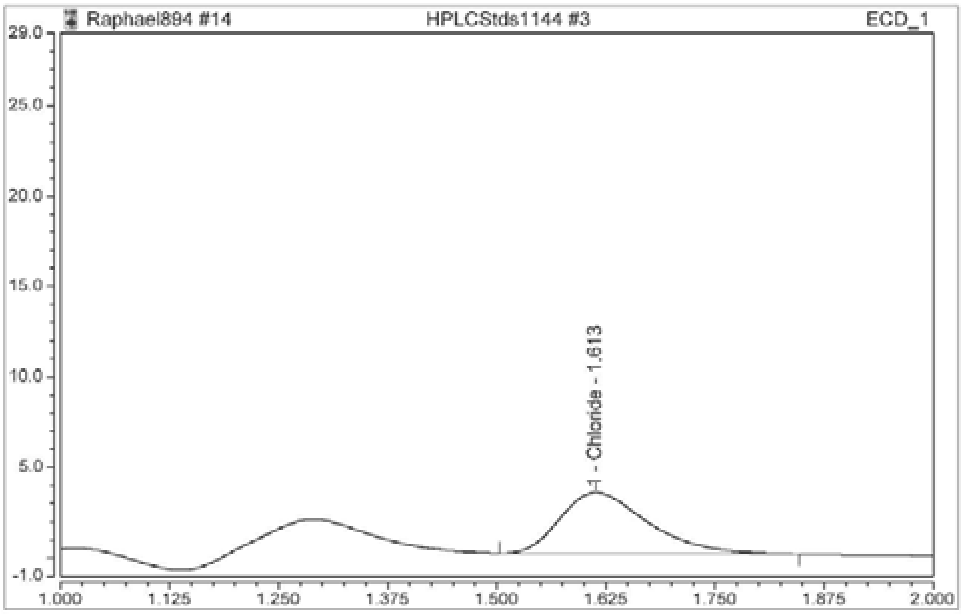
Sample Name:	**HPLCStds1144 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 14:27**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area μS*min	Height μS	Conc μg/mL	Manually Assigned?	Manipulated?
1	1.61	Chloride	0.392	3.373	4.95607	FALSE	FALSE

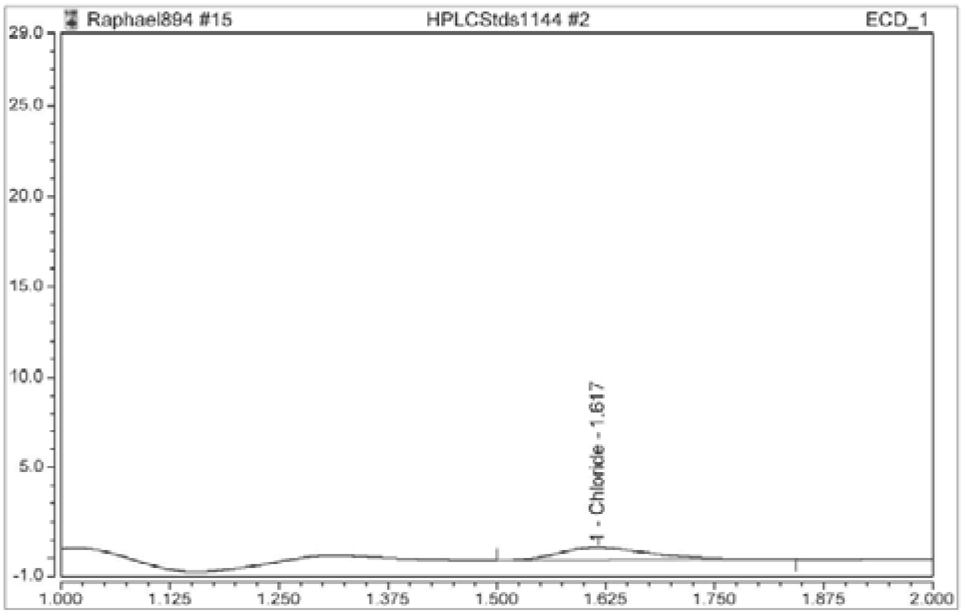
Sample Name:	HPLCStds1144 #3	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 14:35	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.61	Chloride	0.392	3.367	4.96024	FALSE	FALSE

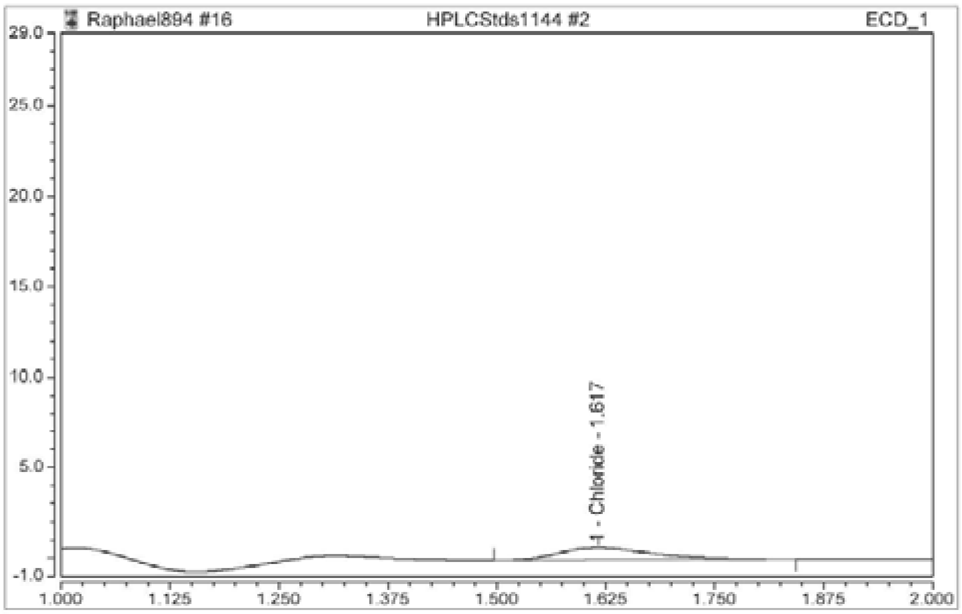
Sample Name:	**HPLCStds1144 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 14:42**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.080	0.660	0.97698	FALSE	FALSE

Sample Name:	**HPLCStds1144 #2**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 14:49**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.080	0.657	0.97950	FALSE	FALSE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

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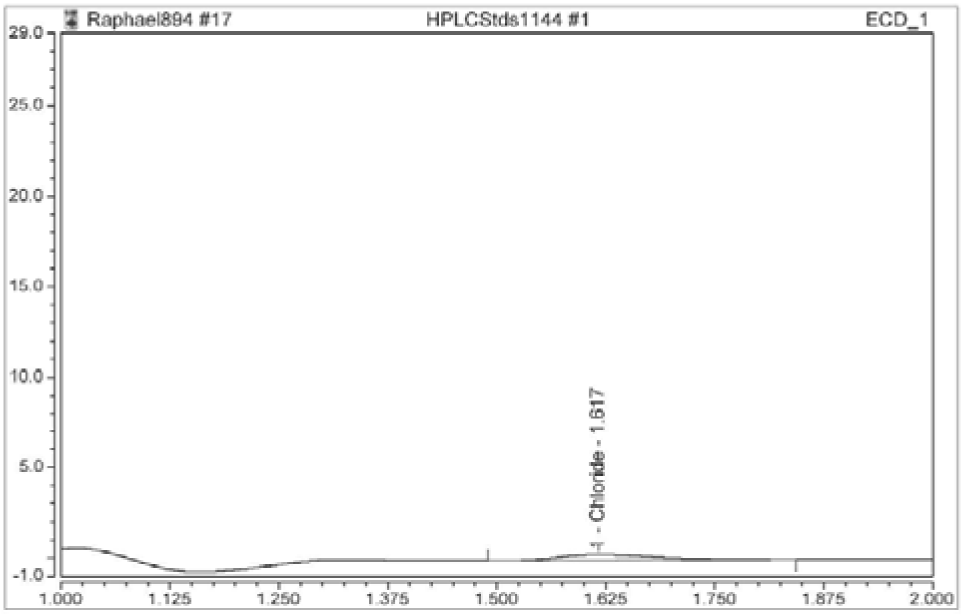
Sample Name:	HPLCStds1144 #1	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 14:56	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.044	0.349	0.50709	FALSE	FALSE

9 Anions/Integration

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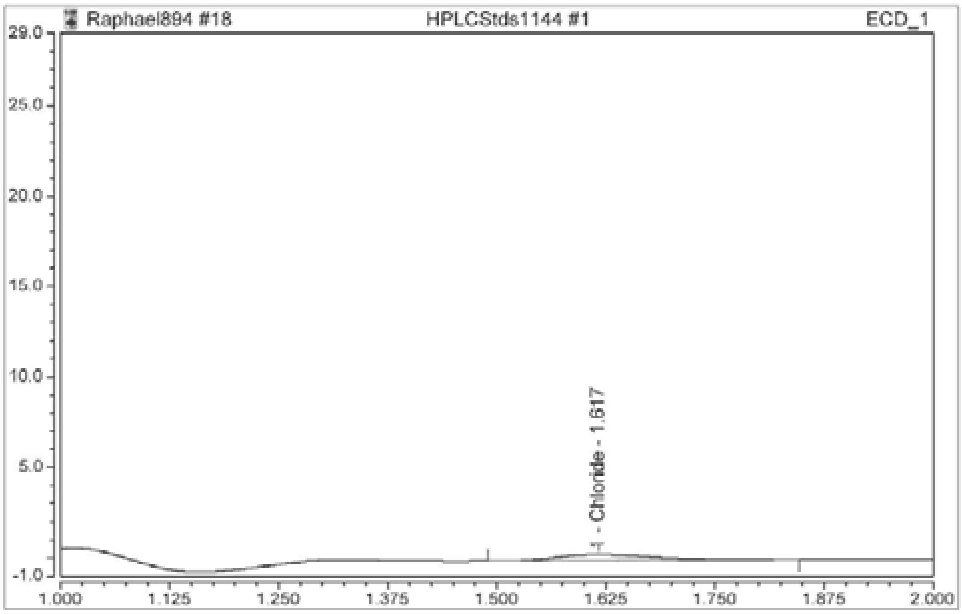
Chromeleon (c) Dionex 1996-2009
Version 7.2.8.10783

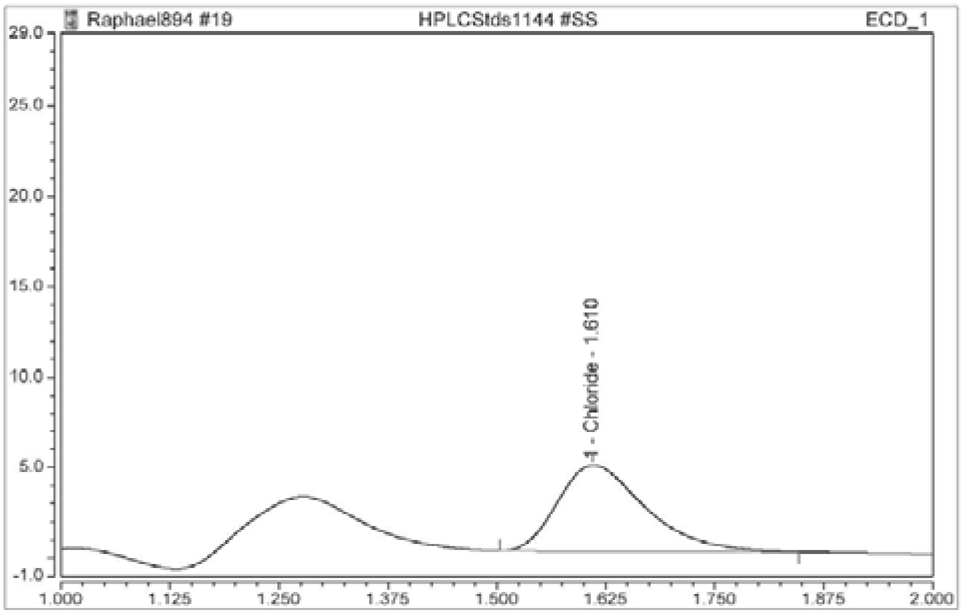
Sample Name:	**HPLCStds1144 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 15:03**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.044	0.348	0.50687	FALSE	FALSE

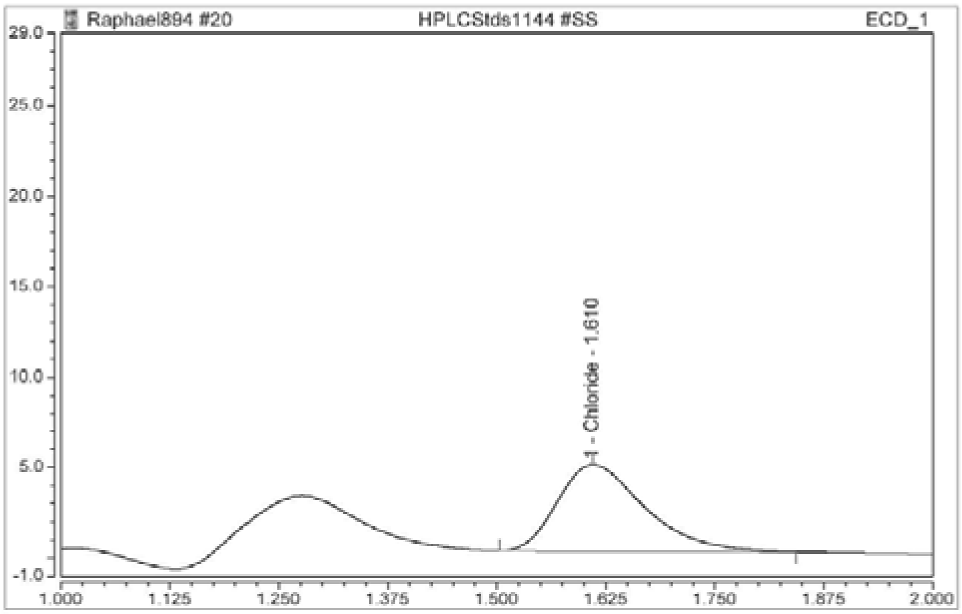
Sample Name:	HPLCStds1144 #SS	Injection Volume:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 15:11	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.61	Chloride	0.551	4.753	6.91331	FALSE	FALSE

Sample Name:	HPLCStds1144 #SS	Injection Volume:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 15:18	Run Time:	5.50

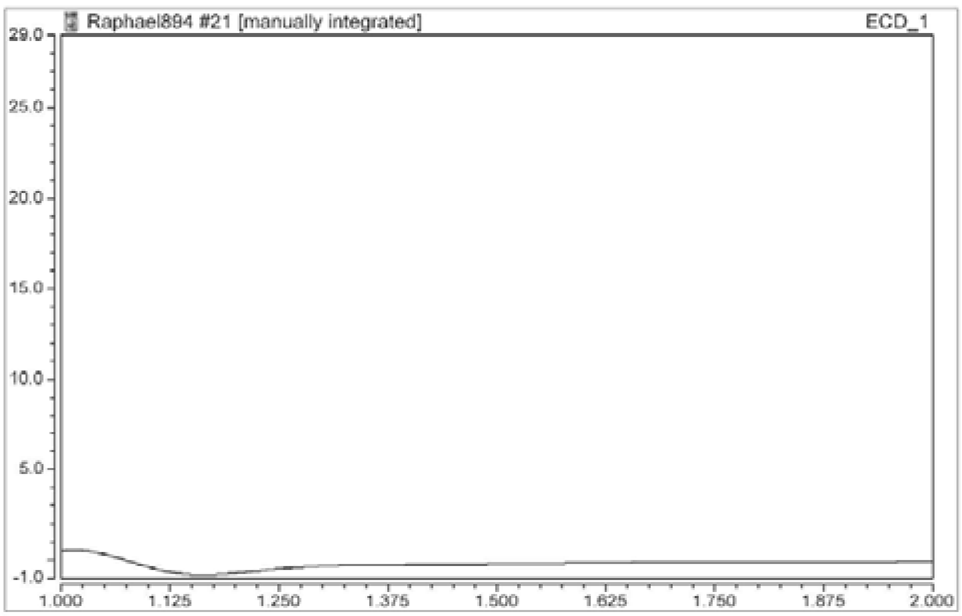


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.61	Chloride	0.551	4.782	6.91932	FALSE	FALSE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

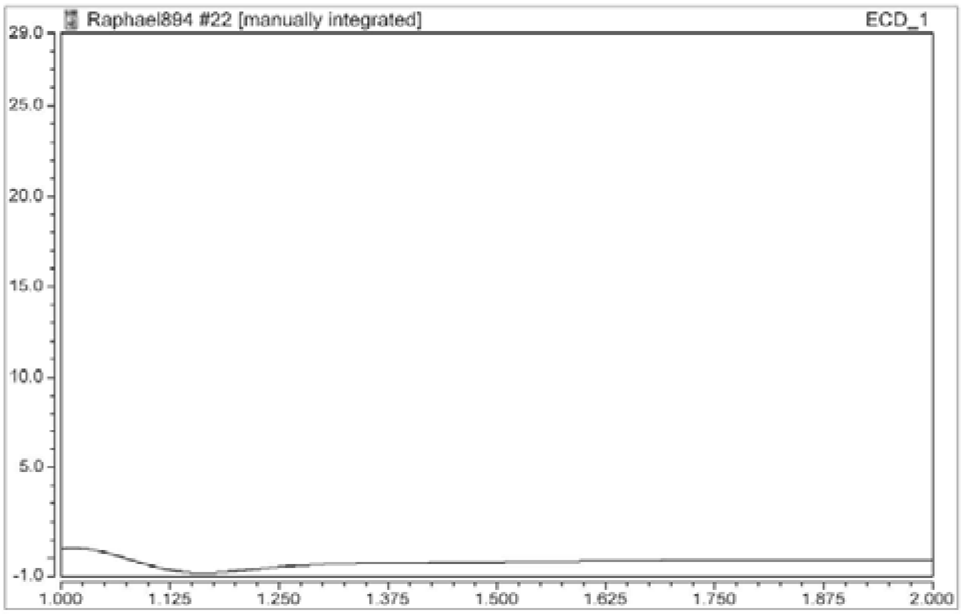
Sample Name:	**HPLCStds1144 #RB**	Injection Volume:	**25.00**
Injection Type:	**Check Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 15:25**	Run Time:	**5.50**



Analyst Comment: WP PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	n.a.

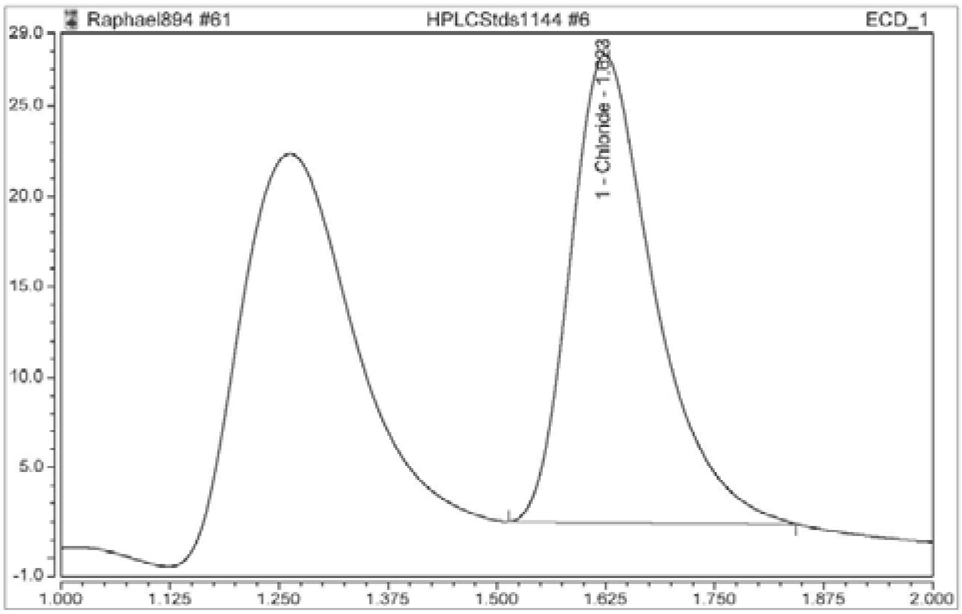
Sample Name:	HPLCStds1144 #RB	Injection Volume:	25.00
Injection Type:	Check Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 15:32	Run Time:	5.50



Analyst Comment: WP PRM 7/26/21

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
n.a.	n.a.	Chloride	n.a.	n.a.	n.a.	n.a.	n.a.

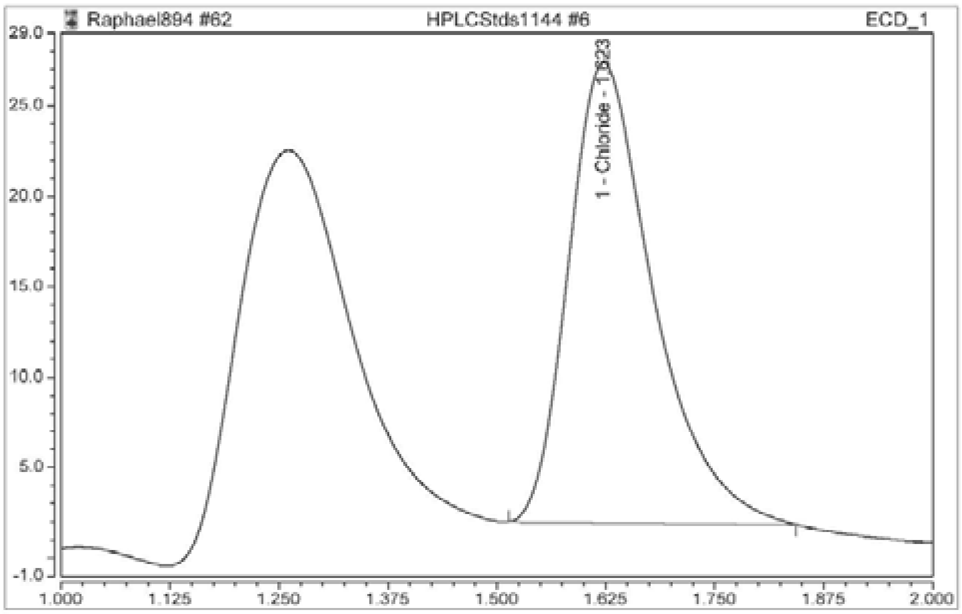
Sample Name:	HPLCStds1144 #6	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 20:12	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	2.883	25.869	30.06301	FALSE	FALSE

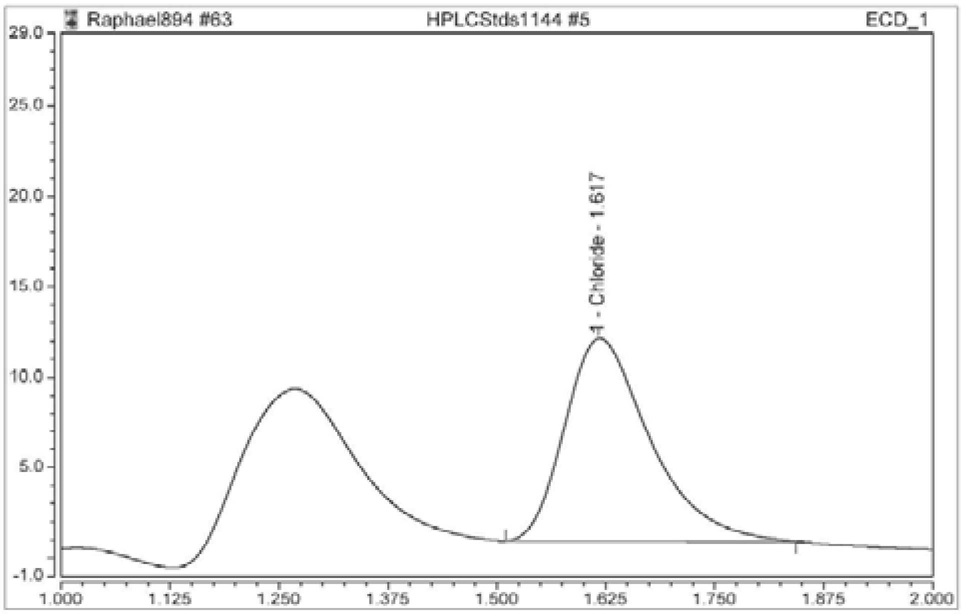
Sample Name:	HPLCStds1144 #6	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 20:19	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	2.871	25.481	29.97686	FALSE	FALSE

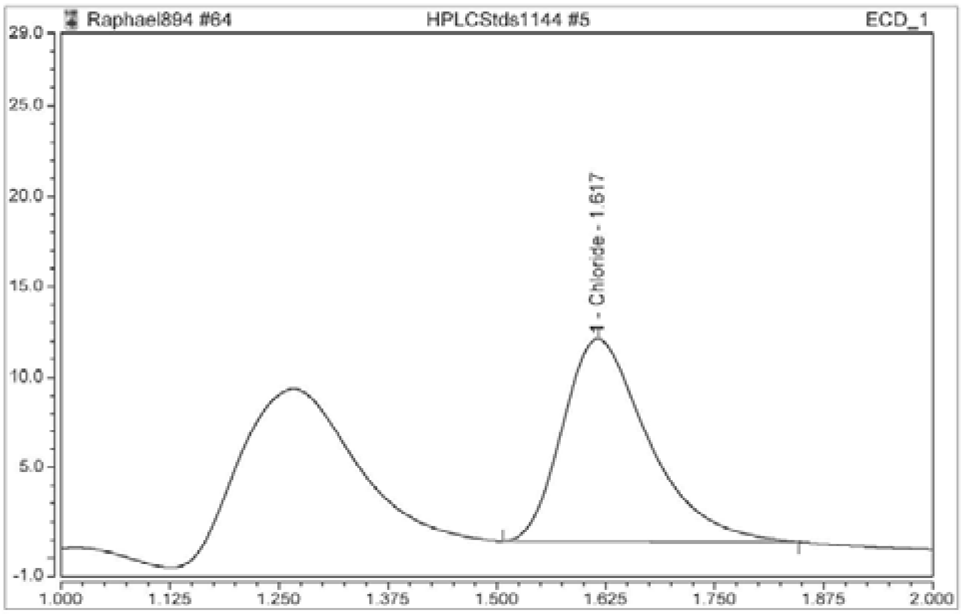
Sample Name:	HPLCStds1144 #5	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 20:26	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	1.271	11.196	15.18546	FALSE	FALSE

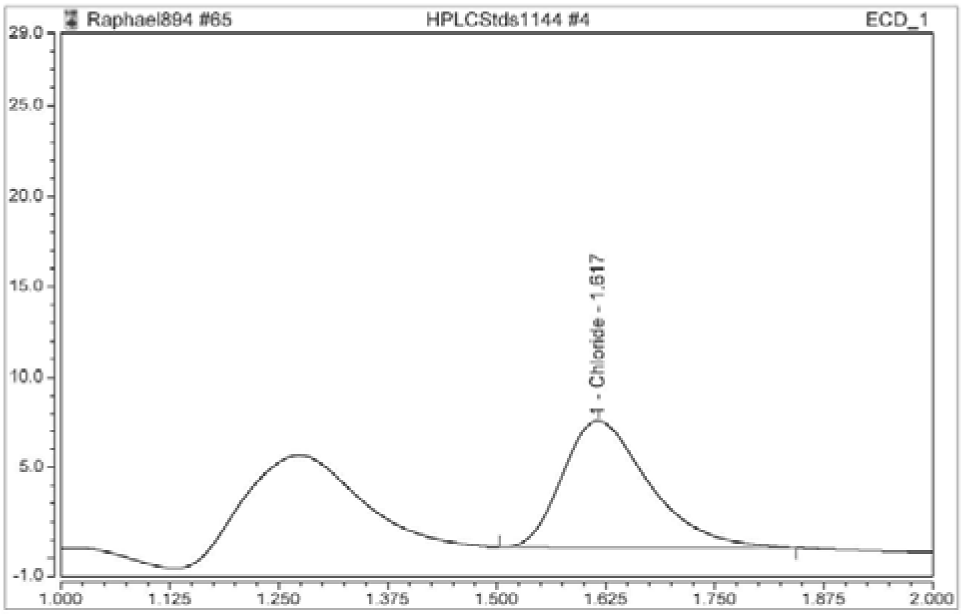
Sample Name:	HPLCStds1144 #5	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 20:34	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	1.277	11.193	15.25025	FALSE	FALSE

Sample Name:	**HPLCStds1144 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 20:41**	Run Time:	**5.50**

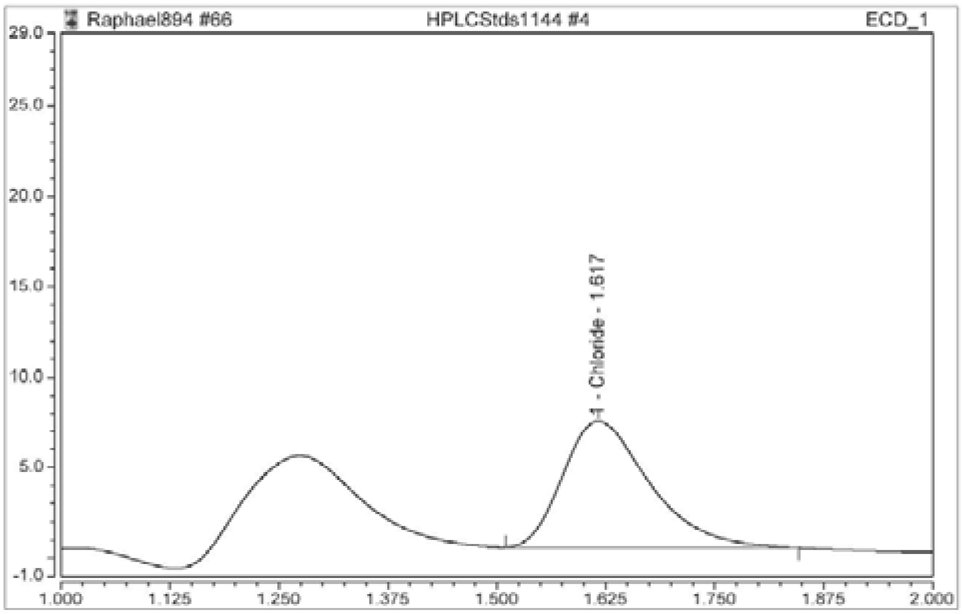


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.804	7.008	9.93489	FALSE	FALSE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

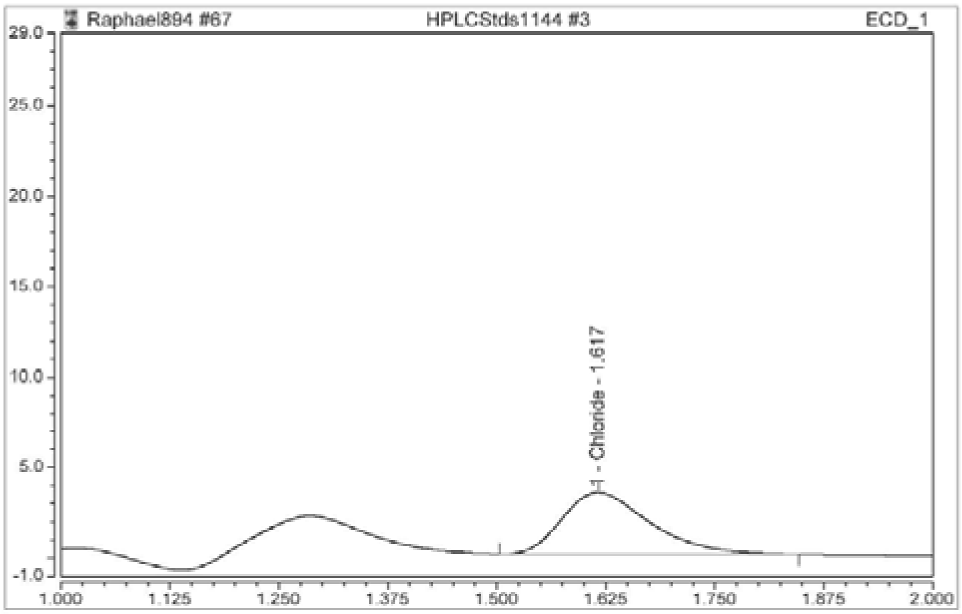
Sample Name:	**HPLCStds1144 #4**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 20:48**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.806	6.998	9.95277	FALSE	FALSE

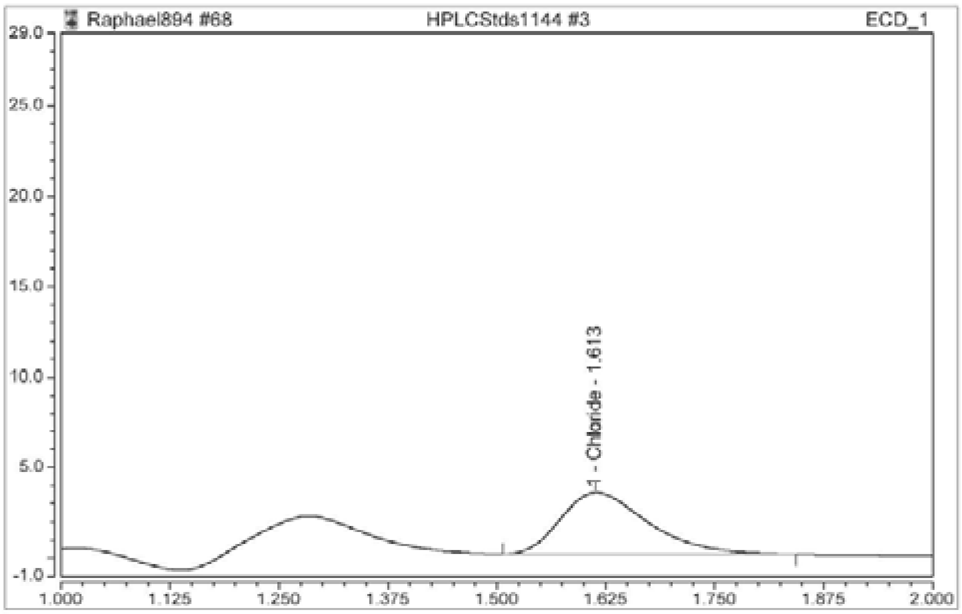
Sample Name:	HPLCStds1144 #3	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 20:55	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.397	3.401	5.01882	FALSE	FALSE

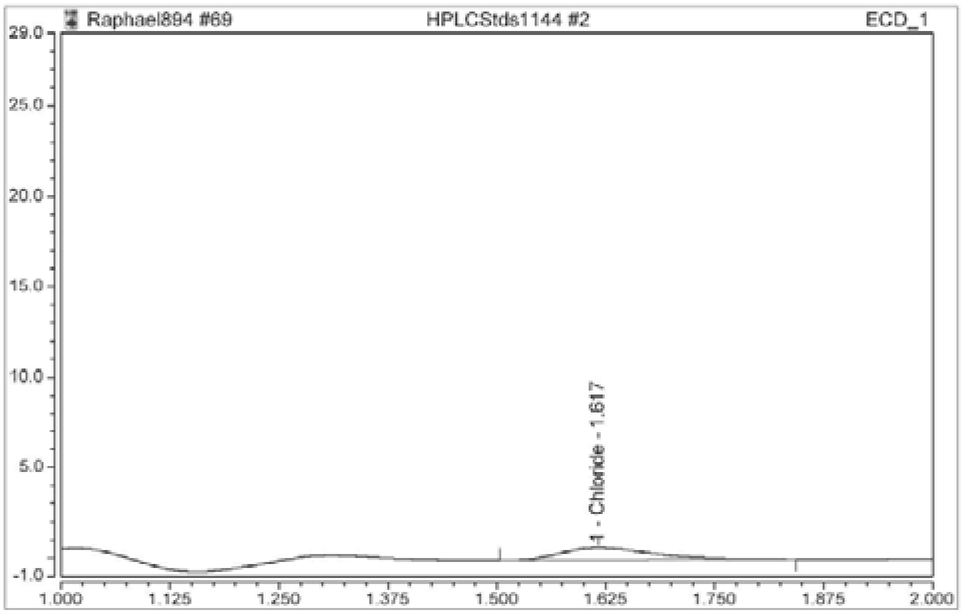
Sample Name:	**HPLCStds1144 #3**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 21:02**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.61	Chloride	0.396	3.399	5.01120	FALSE	FALSE

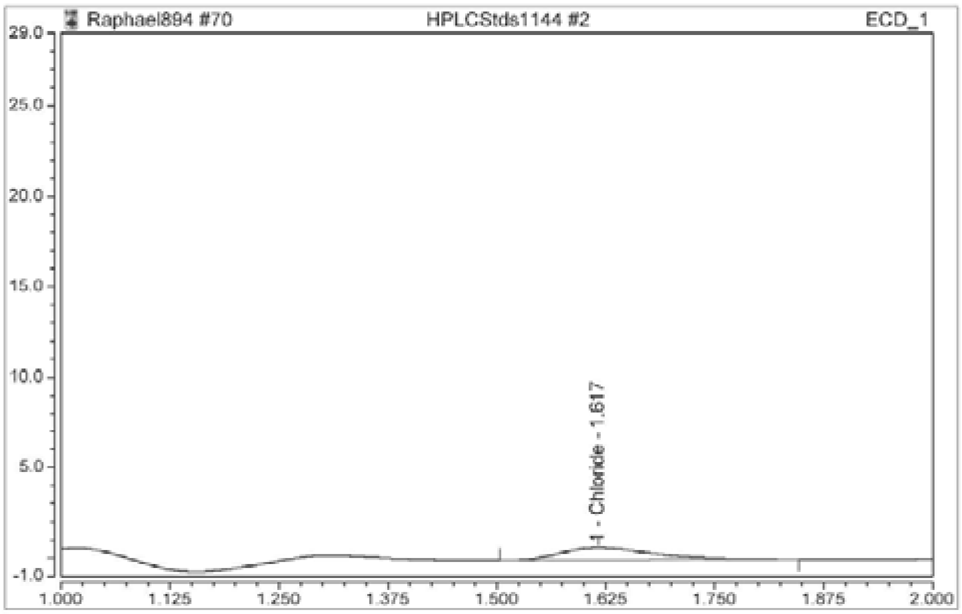
Sample Name:	HPLCStds1144 #2	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 21:09	Run Time:	5.50



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.081	0.664	0.98726	FALSE	FALSE

Sample Name:	HPLCStds1144 #2	Injection Volume:	25.00
Injection Type:	Calibration Standard	Dilution Factor:	1.0
Instrument Method:	AS22 FAST ASAP	Operator:	PMann
Inj. Date / Time:	23-Jul-2021 / 21:17	Run Time:	5.50

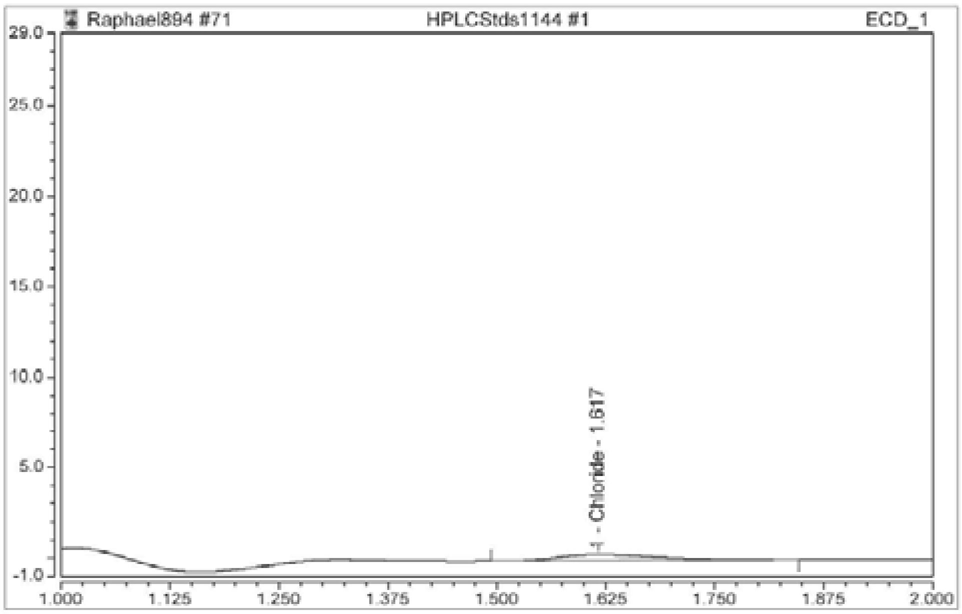


Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.081	0.665	0.99226	FALSE	FALSE

Logged on User: PMann
Instrument: Raphael
Sequence: Raphael894

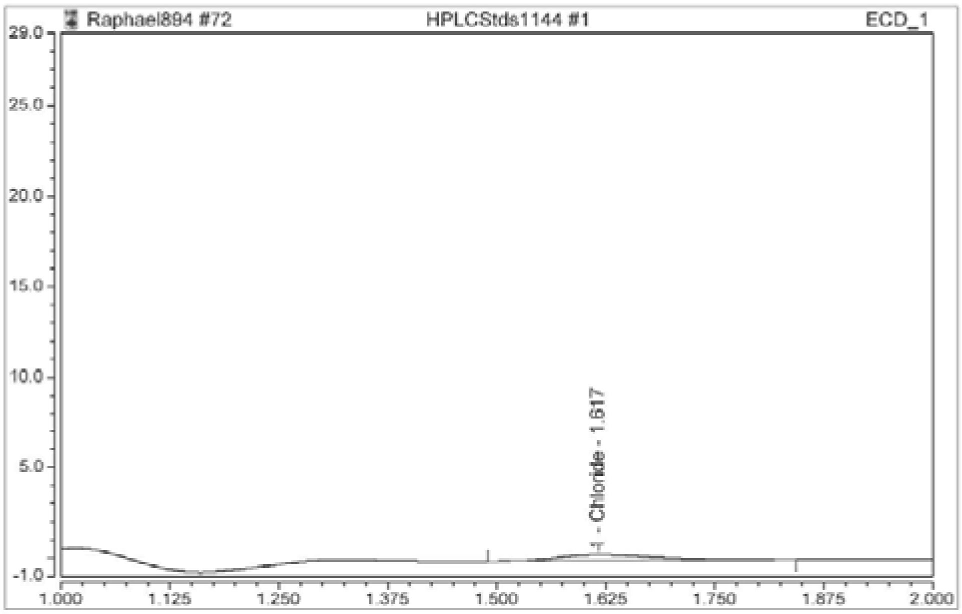
Sample Name:	**HPLCStds1144 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 21:24**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.045	0.350	0.51227	FALSE	FALSE

Sample Name:	**HPLCStds1144 #1**	Injection Volume:	**25.00**
Injection Type:	**Calibration Standard**	Dilution Factor:	**1.0**
Instrument Method:	**AS22 FAST ASAP**	Operator:	**PMann**
Inj. Date / Time:	**23-Jul-2021 / 21:31**	Run Time:	**5.50**



Analyst Comment:

No.	Time min	Peak Name	Area µS*min	Height µS	Conc µg/mL	Manually Assigned?	Manipulated?
1	1.62	Chloride	0.045	0.352	0.51332	FALSE	FALSE

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APPENDIX F OPERATIONAL DATA

Shifts			Dryer		Pellet Mills Availability												
July		*Production*	*Availabilty*	*Feedrate*	*Total*	*1A*	*1B*	*1C*	*1D*	*2A*	*2B*	*2C*	*2D*	*3A*	*3B*	*3C*	*3D*
13th	Day	838	100	90	98	97	100	94	100	97	100	98	100	94	100	96	96
	Night	831	100	89	95	98	95	94	98	100	89	100	98	75	98	100	100
14th	Day	808	97	86	95	100	100	100	100	95	87	95	97	100	100	100	66
	Night	895	99	85	99	100	97	100	97	100	98	100	99	97	99	100	98
15th	Day	806	85	86	96	95	91	84	100	97	100	98	100	92	700	94	100
	Night	849	94	84	99	100	98	100	98	100	98	97	98	100	98	100	98
16th	Day	786	93	74	96	96	100	97	100	97	100	100	98	83	98	85	94
	Night	832	100	79	98	100	98	100	98	100	96	97	98	100	96	100	97
17th	Day	844	96	85	97	94	100	97	100	96	94	97	100	95	100	98	96
	Night	869	100	84	97	100	98	100	98	100	100	100	98	100	98	89	86
18th	Day	851	100	83	97	98	100	98	100	97	80	98	100	96	100	96	95
	Night	877	100	79	99	100	97	100	98	100	100	100	98	100	98	100	100
Avg		**841**	**97**	**84**	**97**	**98**	**98**	**97**	**99**	**98**	**95**	**98**	**99**	**94**	**149**	**97**	**94**

Shifts			Dryer		Hammermill Availabilty									
July		*Production*	*Availabilty*	*Feedrate*	*Total*	*SHM 1*	*SHM 2*	*SHM 3*	*PHM 1A*	*PHM 1B*	*PHM 2A*	*PHM 2B*	*PHM 3A*	*PHM 3B*
13th	Day	838	100	90	87	100	100	100	94	97	95	100	100	0
	Night	831	100	89	88	96	100	100	100	100	100	100	100	0
14th	Day	808	97	86	87	100	97	100	93	100	100	100	92	0
	Night	895	99	85	87	97	100	100	93	100	100	100	93	0
15th	Day	806	85	86	88	100	100	97	100	100	100	95	96	0
	Night	849	94	84	78	100	100	100	100	100	100	0	100	0
16th	Day	786	93	74	84	100	100	100	100	100	100	52	100	0
	Night	832	100	79	99	100	100	100	100	100	100	100	100	92
17th	Day	844	96	85	99	95	98	100	100	100	100	100	100	100
	Night	869	100	84	98	100	100	100	100	100	95	87	100	100
18th	Day	851	100	83	96	100	100	98	100	97	100	85	100	87
	Night	877	100	79	100	100	100	100	100	100	100	100	100	100
Avg		**841**	**97**	**84**	**91**	**99**	**100**	**100**	**98**	**100**	**99**	**85**	**98**	**40**

RTO								
Date	Run#	Start Time	Stop Time	RTO 1 Combustion Temp (F)	RTO 2 Combustion Temp (F)	WESP Voltage	Oven dried Metric tons of wood chips from dryer	Metric Tons of green wood chips from hammermills
7/13/2021	1	1455	1555	1677.52	1675.77	58.03	48.36	53.73
7/14/2021	2	1210	1310	1699.82	1699.66	58.23	48.36	53.73
7/14/2021	3	1420	1520	1699.75	1699.63	58.86	48.36	53.73
7/15/2021	4	826	935	1700.32	1700.28	57.19	47.19	52.43
		1003	1014	1700.17	1696.29	57.1	48.36	53.73
7/15/2021	5	1119	1233	1700.14	1700.07	57.7	48.36	53.73
7/15/2021	6	1337	1424	1699.99	1700	56.79	44.51	49.45
		1638	1706	1698.02	1696.89	57.06	48.36	53.73

RCO					
Date	Run #	Start Time	Stop Time	RCO Combustion Temp (F)	Oven Dried Metric Tons of Pellets Produced
7/16/2021	1	1207	1307	750	101
7/16/2021	2	1408	1508	750	104
7/16/2021	3	1832	1932	750	96
7/17/2021	4	1050	1328	750	272
7/17/2021	5	1433	1640	750	228
7/17/2021	6	1928	2119	750	208