

# **Test Report for the EPA Section 114 Request for Coke Ovens: SunCoke Haverhill Bypass Vent Stack**

**Prepared for:  
Haverhill Coke Company  
Franklin Furnace, Ohio**

**Prepared by:  
AECOM  
Raleigh, NC**

**January 2023**



TEST REPORT  
FOR THE EPA SECTION 114 REQUEST FOR  
COKE OVENS: SUNCOKE  
HAVERHILL BYPASS VENT STACK

Test Dates: September 28-October 3, 2022

Prepared for:

Haverhill Coke Company  
2446 Gallia Pike  
Franklin Furnace, Ohio 45629

Prepared by:

AECOM Technical Services  
5438 Wade Park Blvd  
Suite 200  
Raleigh, NC 27607

January 2023



## **PROJECT CONTACT INFORMATION**

### **Plant Name and Address**

Haverhill Coke Co.  
2446 Gallia Pike  
Franklin Furnace, OH 45629

### **Source Identification**

Facility ID - 0773000182  
Stack Test – Bypass Vent Stack No. 6

### **Source Contact**

Diana Starkweather  
Tel: (740) 352-2593  
Email: [dmstarkweather@suncoke.com](mailto:dmstarkweather@suncoke.com)

### **Test Company Name**

AECOM Technical Services  
5438 Wade Park Blvd, Suite 200  
Raleigh, NC 27607

### **Test Company Contact**

Jerry Workman  
Tel: 919-461-1289  
Email: [jerry.workman@aecom.com](mailto:jerry.workman@aecom.com)



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## LIST OF ACRONYMS

ACFM	actual cubic feet per minute
CD	Consent Decree
CEM	Continuous Emissions Monitor
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
dscf	dry standard cubic feet
DSCFM	dry standard cubic feet per minute
FGD	Flue Gas Desulfurization
FTIR	Fourier Transform Infrared
HAP	Hazardous Air Pollutant
H <sub>2</sub> O <sub>2</sub>	Hydrogen Peroxide
H <sub>2</sub> SO <sub>4</sub>	Sulfuric Acid Mist
HCl	Hydrogen Chloride
HF	Hydrogen Fluoride
HCC	Haverhill Coke Company
HCN	Hydrogen Cyanide
HNO <sub>3</sub>	Nitric Acid
HNR	Heat or Non-Recovery
HRSG	Heat Recovery Steam Generator
ICR	Information Collection Request
KMnO <sub>4</sub>	Potassium Permanganate
NESHAP	National Air Emission Standards for Hazardous Air Pollutants
NO <sub>x</sub>	Nitrogen Oxides
O <sub>2</sub>	Oxygen
PM	Particulate Matter
ppm	parts per million
scf	standard cubic feet
SCFM	standard cubic feet per minute
SO <sub>2</sub>	Sulfur Dioxide
USEPA	U.S. Environmental Protection Agency



## **1. INTRODUCTION/OVERVIEW**

On July 27, 2022, SunCoke received a letter from USEPA pursuant to Section 114 of the federal Clean Air Act (CAA), 42 U.S.C. §7414(a), regarding an Information Collection Request (ICR) for hazardous air pollutant (HAP) emissions at coke manufacturing facilities. EPA has requested the information “to update and expand the information requested in 2016 to support the EPA’s residual risk and technology review being conducted pursuant to CAA section 112(f)(2) and 112(d)(6) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Coke Ovens: Pushing, Quenching, and Battery Stacks (subpart CCCCC) and the technology review being conducted pursuant to CAA section 112(d)(6) of the NESHAP for Coke Oven Batteries (subpart L).” The letter requested that stack tests be conducted on a waste heat stack at the SunCoke Jewell facility in Vansant, VA.

To accommodate the EPA’s schedule, SunCoke requested the stack testing instead be conducted in conjunction with an already-planned testing program at a bypass vent stack at the Haverhill Coke Company (HCC) facility in Franklin Furnace, OH. This plan also required the scope of the tests to be modified to allow for completion within the limited period during which the bypass vent stacks on the coke oven battery would be open and venting flue gases. EPA agreed to the requested changes, and Bypass Vent Stack 6 was tested at the HCC facility between September 28-October 3, 2022. This report documents the results of those stack tests.

The remainder of this report contains ICR test requirements (Section 2), test results (Section 3), test methods (Section 4), Sample Train Diagrams (Appendix A), Production Data (Appendix B), Calculations and Field Data (Appendix C), Analytical Reports (Appendix D), and Calibration Information & Quality Control (Appendix E).



## 2. ICR TEST REQUIREMENTS

Table 1 shows the test scope agreed upon by SunCoke and EPA for the ICR test. HAP Metals include antimony (Sb), arsenic (As), beryllium (Be), cadmium (Cd), chromium (Cr), cobalt (Co), lead (Pb), manganese (Mn), particulate and vapor phase mercury (Hg), nickel (Ni), and selenium (Se).

**Table 1. Scope of ICR Testing – SunCoke Haverhill**

Pollutant or Parameter	Test Method	Number of Test Runs	Minimum Sample Volume	Unit of Measure
Filterable PM	EPA Method 5	3	2 dscm	mg/dscm mg/dscm @ 7% O <sub>2</sub> lb/hr
HAP Metals	EPA Method 29	3	3 dscm	
Sulfur Dioxide	EPA Method 6C	3	NA	ppm ppm @ 7% O <sub>2</sub> lb/hr
Carbon Monoxide	EPA Method 10	3	NA	
Oxides of Nitrogen	EPA Method 7E	3	NA	
Hydrogen Chloride	EPA Method 26A	3	1 dscm	mg/dscm mg/dscm @ 7% O <sub>2</sub> lb/hr
Hydrogen Fluoride	EPA Method 26A	3	1 dscm	
Formaldehyde	EPA Method 320	3	NA	
Hydrogen Cyanide	EPA Method 320	3	NA	



### **3. STACK TEST RESULTS**

The bypass vent stacks at HCC No. 2 were opened for Flue Gas Desulfurization (FGD) unit maintenance on September 26, 2022. The stack tests started September 28, 2022, at approximately 11:00 AM and were completed on October 3, 2022, at approximately 1:00 PM.

The 200 ovens at HCC currently operate on a 48-hour coking cycle. Pushing and charging the ovens is referred to as “production” at HCC. One half of the ovens are pushed and charged each day. Production occurs twice a day – with approximately 1/4 of the ovens charged during each production run. Detailed production data is provided in Appendix B of this report.

When interpreting the data, it is important to note that ovens were operated at reduced throughput due to Consent Decree requirements. As a result, if these data are used to establish emissions limits, it is important that this be done on a lb/ton of coal charged basis and not a lb/hour basis. Furthermore, emissions are highly variable over the course of the coking cycle (e.g. production, mid, late) and are generally greater during production (i.e., pushing and charging operations). Therefore, it is important for any limits to be based on the highest level of emissions during all coking activities in order that continuous compliance is achievable for those limits.

Three PM test runs (Runs 4-6) were conducted on October 1 & 3 and these three runs were used to calculate emissions for this report. The test results for PM are summarized in Table 2. EPA originally requested a 3 dscm minimum sample volume for PM, but this was reduced to 2 dscm after the stack test crew had difficulty collecting 3 dscm because the stack gas PM concentration was high enough to overload the filter at that volume.



**Table 2. Test Results for Particulate Matter**

Parameters	Run 4	Run 5	Run 6	Average
Date	10/1/22	10/3/22	10/3/22	
Run times	16:07-20:28	10:15-12:59	13:50-15:57	
Relation to production cycle	Production	Mid Cycle	Late Cycle	
Sample time (minutes)	120	120	120	
Volume sampled (dscf)	81.35	76.39	70.61	73.5
Moisture content (% Vol.)	12.74	10.27	9.91	10.1
O <sub>2</sub> (%)	9.31	9.94	10.71	10.3
CO <sub>2</sub> (%)	7.59	7.79	7.38	7.6
Stack gas temperature (°F)	1,694	1,523	1,499	1,511
Stack velocity (ft/sec)	68.3	62.2	57.1	59.6
Gas flow rate (ACFM)	260,841	237,250	217,959	227,604
Gas flow rate (DSCFM)	54,724	56,171	52,363	54,267
Percent isokinetic	105.5	96.6	95.7	96.1
Coal Charged in 48 hours (wet tons)	831.0	868.7	868.7	856.1
Coal Charged per hour (wet tons)	17.3	18.1	18.1	17.8
Filterable PM (mg/dscm)	66.0	37.0	36.7	46.6
Filterable PM (mg/dscm @ 7% O <sub>2</sub> )	79.1	46.9	50.1	58.7
Filterable PM (lb/hr)	13.5	7.8	7.2	9.5
Filterable PM (lb/wet ton of coal)	0.780	0.430	0.398	0.536

The HAP metals tests were performed between September 28 and 29, 2022, and the results of these tests are summarized in Table 3. Samples were collected with a 3 dscm target volume and were analyzed for 11 HAP metals by Element One laboratory in Wilmington, NC.

**Table 3. Test Results for HAP Metals**

Parameters	Run 1	Run 2	Run 3	Average
Date	9/28/2022	9/28/2022	9/29/2022	
Run times	10:51-15:37	17:33-21:27	16:22-20:15	
Relation to production cycle	Mid Cycle	Late Cycle	Production	
Sample time (minutes)	228	216	216	
Volume sampled (dscf)	113.01	121.51	129.95	121.5
Moisture content (% Vol.)	11.6	11.21	12.31	11.7
Gas flow rate (DSCFM)	44,030	49,426	47,000	46,819
Coal Charged in 48 hours (wet tons)	839.6	839.6	839.3	840
Coal Charged per hour (wet tons)	17.49	17.49	17.49	17.49
Antimony (mg/dscm)	0.0157	0.0174	0.0147	0.0159
<b>Antimony (mg/dscm @ 7% O<sub>2</sub>)</b>	<b>0.0207</b>	<b>0.0276</b>	<b>0.0170</b>	<b>0.0218</b>
<b>Antimony emissions (lb/hour)</b>	<b>2.59E-03</b>	<b>3.24E-03</b>	<b>2.58E-03</b>	<b>2.80E-03</b>
<b>Antimony emissions (lb/ton coal)</b>	<b>1.48E-04</b>	<b>1.85E-04</b>	<b>1.48E-04</b>	<b>1.60E-04</b>
Arsenic (mg/dscm)	0.154	0.181	0.148	0.161
<b>Arsenic (mg/dscm @ 7% O<sub>2</sub>)</b>	<b>0.2030</b>	<b>0.3064</b>	<b>0.1712</b>	<b>0.2268</b>
<b>Arsenic emissions (lb/hour)</b>	<b>0.0254</b>	<b>0.0359</b>	<b>0.0260</b>	<b>0.0291</b>
<b>Arsenic emissions (lb/ton coal)</b>	<b>1.45E-03</b>	<b>2.05E-03</b>	<b>1.49E-03</b>	<b>1.66E-03</b>
Beryllium (mg/dscm)	0.00159	0.00141	0.00147	0.00149
<b>Beryllium (mg/dscm @ 7% O<sub>2</sub>)</b>	<b>2.10E-03</b>	<b>2.23E-03</b>	<b>1.71E-03</b>	<b>2.01E-03</b>
<b>Beryllium emissions (lb/hour)</b>	<b>2.62E-04</b>	<b>2.62E-04</b>	<b>2.59E-04</b>	<b>2.61E-04</b>
<b>Beryllium emissions (lb/ton coal)</b>	<b>1.50E-05</b>	<b>1.50E-05</b>	<b>1.48E-05</b>	<b>1.49E-05</b>



Parameters	Run 1	Run 2	Run 3	Average
Cadmium (mg/dscm)	0.00652	0.00521	0.00835	0.00669
<b>Cadmium (mg/dscm @ 7% O2</b>	<b>8.62E-03</b>	<b>8.22E-03</b>	<b>9.68E-03</b>	<b>8.84E-03</b>
<b>Cadmium emissions (lb/hour)</b>	<b>1.08E-03</b>	<b>9.64E-04</b>	<b>1.47E-03</b>	<b>1.17E-03</b>
<b>Cadmium emissions (lb/ton coal)</b>	<b>6.16E-05</b>	<b>5.51E-05</b>	<b>8.40E-05</b>	<b>6.69E-05</b>
Chromium (mg/dscm)	0.0110	0.00688	0.00783	0.00857
<b>Chromium (mg/dscm @ 7% O2</b>	<b>0.0145</b>	<b>0.0109</b>	<b>0.0086</b>	<b>0.0113</b>
<b>Chromium emissions (lb/hour)</b>	<b>1.81E-03</b>	<b>1.28E-03</b>	<b>1.31E-03</b>	<b>1.47E-03</b>
<b>Chromium emissions (lb/ton coal)</b>	<b>1.03E-04</b>	<b>7.33E-05</b>	<b>7.50E-05</b>	<b>8.39E-05</b>
Cobalt (mg/dscm)	0.00693	0.00613	0.00861	0.00722
<b>Cobalt (mg/dscm @ 7% O2</b>	<b>9.16E-03</b>	<b>9.70E-03</b>	<b>9.99E-03</b>	<b>9.62E-03</b>
<b>Cobalt emissions (lb/hour)</b>	<b>1.14E-03</b>	<b>1.14E-03</b>	<b>1.52E-03</b>	<b>1.27E-03</b>
<b>Cobalt emissions (lb/ton coal)</b>	<b>6.54E-05</b>	<b>6.50E-05</b>	<b>8.67E-05</b>	<b>7.24E-05</b>
Lead (mg/dscm)	0.3550	0.3660	0.4110	0.3774
<b>Lead (mg/dscm @ 7% O2</b>	<b>0.4686</b>	<b>0.6057</b>	<b>0.4761</b>	<b>0.5168</b>
<b>Lead emissions (lb/hour)</b>	<b>0.0586</b>	<b>0.0710</b>	<b>0.0722</b>	<b>0.0673</b>
<b>Lead emissions (lb/ton coal)</b>	<b>3.35E-03</b>	<b>4.06E-03</b>	<b>4.13E-03</b>	<b>3.85E-03</b>
Manganese (mg/dscm)	0.005440	0.005030	0.003630	0.004700
<b>Manganese (mg/dscm @ 7% O2</b>	<b>7.19E-03</b>	<b>7.95E-03</b>	<b>4.21E-03</b>	<b>6.45E-03</b>
<b>Manganese emissions (lb/hour)</b>	<b>8.98E-04</b>	<b>9.32E-04</b>	<b>6.39E-04</b>	<b>8.23E-04</b>
<b>Manganese emissions (lb/ton coal)</b>	<b>5.14E-05</b>	<b>5.33E-05</b>	<b>3.66E-05</b>	<b>4.71E-05</b>
Mercury (mg/dscm)	0.0252	0.0132	0.0098	0.0161
<b>Mercury (mg/dscm @ 7% O2</b>	<b>0.0332</b>	<b>0.0208</b>	<b>0.0114</b>	<b>0.0218</b>
<b>Mercury emissions (lb/hour)</b>	<b>4.15E-03</b>	<b>2.44E-03</b>	<b>1.72E-03</b>	<b>2.77E-03</b>
<b>Mercury emissions (lb/ton coal)</b>	<b>2.37E-04</b>	<b>1.40E-04</b>	<b>9.85E-05</b>	<b>1.59E-04</b>
Nickel (mg/dscm)	0.053600	0.024800	0.054500	0.044300
<b>Nickel (mg/dscm @ 7% O2</b>	<b>0.0708</b>	<b>0.0427</b>	<b>0.0621</b>	<b>0.0585</b>
<b>Nickel emissions (lb/hour)</b>	<b>8.84E-03</b>	<b>5.01E-03</b>	<b>9.42E-03</b>	<b>7.76E-03</b>
<b>Nickel emissions (lb/ton coal)</b>	<b>5.06E-04</b>	<b>2.86E-04</b>	<b>5.39E-04</b>	<b>4.43E-04</b>
Selenium (mg/dscm)	0.0661	0.0773	0.0718	0.0717
<b>Selenium (mg/dscm @ 7% O2</b>	<b>0.0873</b>	<b>0.1374</b>	<b>0.0833</b>	<b>0.1027</b>
<b>Selenium emissions (lb/hour)</b>	<b>0.0109</b>	<b>0.0161</b>	<b>0.0126</b>	<b>0.0132</b>
<b>Selenium emissions (lb/ton coal)</b>	<b>4.99E-03</b>	<b>7.86E-03</b>	<b>4.76E-03</b>	<b>5.87E-03</b>

Stack tests for sulfur dioxide were conducted on September 29, 2022. Three 1-hour test runs were conducted as shown in Table 4. Stack gas velocity and moisture were measured during the Method 29 metals run conducted concurrently with Run 3.



**Table 4. Test Results for Sulfur Dioxide**

Parameters	Run 1	Run 2	Run 3	Average
Date	9/29/2022	9/29/2022	9/29/2022	
Run times	11:56-12:56	13:27-14:27	16:24-17:24	
Relation to production cycle	Late Cycle	Late Cycle	Production	
Sample time (minutes)	60	60	60	
Moisture content (% Vol.)	12.31			12.31
O <sub>2</sub> (%)	11.29	11.48	7.82	1.020
CO <sub>2</sub> (%)	6.68	6.64	8.90	8.19
Stack gas temperature (°F)	1,611			1,611
Stack velocity (ft/sec)	55.53			55.53
Gas flow rate (ACFM)	211,978			211,978
Gas flow rate (DSCFM)	47,000			47,000
Coal Charged in 48 hours (wet tons)	839.3	839.3	839.3	839.3
Coal Charged per hour (wet tons)	17.5	17.5	17.5	17.5
SO <sub>2</sub> (ppm)	380.9	354.4	549.9	428.40
<b>SO<sub>2</sub> ppm @ 7% O<sub>2</sub></b>	<b>550.9</b>	<b>522.9</b>	<b>584.4</b>	<b>552.75</b>
<b>SO<sub>2</sub> emissions (lb/hour)</b>	<b>178.8</b>	<b>166.3</b>	<b>246.6</b>	<b>197.23</b>
<b>SO<sub>2</sub> emissions (lb/wet ton of coal)</b>	<b>10.19</b>	<b>9.48</b>	<b>14.63</b>	<b>11.44</b>

The stack tests for NO<sub>x</sub> and CO were performed on September 29-30 and October 1, 2022. Run 1 was performed during production concurrently with the M29 metals test. Run 2 was performed concurrently with the H<sub>2</sub>SO<sub>4</sub> tests during the late cycle. Run 3 was performed concurrently with the H<sub>2</sub>SO<sub>4</sub> tests during the mid-cycle. The results of these tests are summarized in Table 5.



**Table 5. Test Results for Nitrogen Oxides and Carbon Monoxide**

Parameters	Run 1	Run 2	Run 3	Average
Date	9/29/22	9/30/22	10/1/22	
Run times	16:24-17:24	16:02-17:02	9:24-10:24	
Relation to production cycle	Production	Late cycle	Mid cycle	
Sample time (minutes)	60	60	60	
Moisture content (% Vol.)	12.31	10.31	11.96	11.53
O <sub>2</sub> (%)	7.82	11.04	8.96	9.27
CO <sub>2</sub> (%)	8.89	6.95	8.16	8.00
Stack gas temperature (°F)	1,611	1,489	1,569	1,556
Stack velocity (ft/sec)	55.51	61.00	62.59	59.70
Gas flow rate (ACFM)	211,866	232,831	238,903	227,867
Gas flow rate (DSCFM)	46,975	55,854	53,610	52,146
Coal Charged in 48 hours (wet tons)	839.3	829.8	831.0	833.4
Coal Charged per hour (wet tons)	17.5	17.3	17.3	17.4
NO <sub>x</sub> (ppm)	61.7	44.5	41.2	49.1
<b>NO<sub>x</sub> (ppm @ 7% O<sub>2</sub>)</b>	<b>65.6</b>	<b>62.7</b>	<b>48.0</b>	<b>58.8</b>
<b>NO<sub>x</sub> emissions (lb/hr)</b>	<b>20.7</b>	<b>17.8</b>	<b>15.8</b>	<b>18.1</b>
<b>NO<sub>x</sub> emissions (lb/wet ton of coal)</b>	<b>1.19</b>	<b>1.03</b>	<b>0.91</b>	<b>1.04</b>
CO (ppm)	13.4	4.9	4.3	7.5
<b>CO (ppm @ 7% O<sub>2</sub>)</b>	<b>14.3</b>	<b>6.9</b>	<b>5.0</b>	<b>8.7</b>
<b>CO emissions (lb/hr)</b>	<b>2.75</b>	<b>1.20</b>	<b>0.99</b>	<b>1.65</b>
<b>CO emissions (lb/wet ton of coal)</b>	<b>0.157</b>	<b>0.069</b>	<b>0.057</b>	<b>0.095</b>

The hydrogen chloride (HCl) and hydrogen fluoride (HF) tests were performed between September 30 and October 1, 2022, and the results of these tests are summarized in Table 6.

**Table 6. Test Results for Hydrogen Chloride and Hydrogen Fluoride**

Parameters	Run 1	Run 2	Run 3	Average
Date	9/30/22	9/30/22	10/1/22	
Run times	16:00-17:06	20:17-21:24	09:22-10:29	
Relation to production cycle	Late	Production	Mid	
Sample time (minutes)	60	60	60	
Volume sampled (dscf)	35.5	36.5	36.8	36.3
Moisture content (% Vol.)	13.07	14.83	13.49	13.8
O <sub>2</sub> (%)	11.04	8.30	9.86	9.7
CO <sub>2</sub> (%)	7.16	8.73	8.40	8.1
Stack gas temperature (°F)	1,489	1,632	1,569	2023.3
Stack velocity (ft/sec)	61.31	67.30	62.72	63.8
Gas flow rate (ACFM)	234,030	256,897	239,386	243,438



Parameters	Run 1	Run 2	Run 3	Average
Gas flow rate (DSCFM)	47,401	47,253	45,983	46,879
Coal Charged in 48 hours (wet tons)	829.8	829.8	831.0	830.2
Coal Charged per hour (wet tons)	17.3	17.3	17.3	17.3
HCl mass (µg)	134,224	246,230	211,760	197,405
HCl (mg/dscm)	133.49	238.02	203.13	191.54
<b>HCl (mg/dscm @ 7% O<sub>2</sub>)</b>	<b>163.93</b>	<b>228.74</b>	<b>206.00</b>	<b>199.56</b>
<b>HCl emissions (lb/hour)</b>	<b>24.3</b>	<b>42.8</b>	<b>35.5</b>	<b>34.2</b>
<b>HCl emissions (lb/wet ton of coal)</b>	<b>1.41</b>	<b>2.48</b>	<b>2.05</b>	<b>1.98</b>
HF mass (µg)	4990	5773	6456	5740
HF (mg/dscm)	4.96	5.58	6.19	5.58
<b>HF (mg/dscm @ 7% O<sub>2</sub>)</b>	<b>6.09</b>	<b>5.36</b>	<b>6.28</b>	<b>5.91</b>
<b>HF emissions (lb/hour)</b>	<b>0.905</b>	<b>1.004</b>	<b>1.084</b>	<b>0.997</b>
<b>HF emissions (lb/wet ton of coal)</b>	<b>0.0523</b>	<b>0.0581</b>	<b>0.0626</b>	<b>0.0577</b>

The formaldehyde (HCHO) and hydrogen cyanide (HCN) tests were performed between October 1 and 2, 2022, and the results of these tests are summarized in Table 7.

**Table 7. Test Results for Formaldehyde and Hydrogen Cyanide**

Parameters	Run 1	Run 2	Run 3	Average
Date	10/1/22	10/1/22 - 10/2/22	10/1/22	
Run times	22:43 - 23:43	23:44 - 00:44	00:46 - 01:46	
Relation to production cycle	Production	Production	Production	
Sample time (minutes)	60	60	60	
Moisture content (% Vol.)	3.20	6.36	2.72	4.1
O <sub>2</sub> (%)	8.83	8.83	8.83	8.8
Stack velocity (ft/sec)	63.72	63.72	63.72	63.7
Gas flow rate (ACFM)	243,239	243,239	243,239	243,239
Gas flow rate (DSCFM)	49,659	49,659	49,659	49,659
Coal Charged in 48 hours (wet tons)	831.0	868.9	868.9	856.2
Coal Charged per hour (wet tons)	17.3	18.1	18.1	17.8
HCHO (ppm)	0.23	1.84	0.14	0.74
HCHO (mg/dscm)	0.29	2.30	0.17	0.92
<b>HCHO (mg/dscm @ 7% O<sub>2</sub>)</b>	<b>0.32</b>	<b>2.58</b>	<b>0.19</b>	<b>1.03</b>
<b>HCHO emissions (lb/hour)</b>	<b>0.056</b>	<b>0.451</b>	<b>0.034</b>	<b>0.180</b>
<b>HCHO emissions (lb/wet ton of coal)</b>	<b>3.25E-03</b>	<b>2.49E-02</b>	<b>1.86E-03</b>	<b>1.00E-02</b>
HCN (ppm)	< 0.101	< 0.101	< 0.101	< 0.101
HCN (mg/dscm)	< 0.114	< 0.114	< 0.114	< 0.114
<b>HCN (mg/dscm @ 7% O<sub>2</sub>)</b>	<b>&lt; 0.128</b>	<b>&lt; 0.128</b>	<b>&lt; 0.128</b>	<b>&lt; 0.128</b>
<b>HCN emissions (lb/hour)</b>	<b>&lt; 0.022</b>	<b>&lt; 0.022</b>	<b>&lt; 0.022</b>	<b>&lt; 0.022</b>
<b>HCN emissions (lb/wet ton of coal)</b>	<b>&lt; 1.27E-03</b>	<b>&lt; 1.27E-03</b>	<b>&lt; 1.27E-03</b>	<b>&lt; 1.27E-03</b>



## **4. STACK TEST METHODS**

Each test was based on USEPA reference methods per Table 1 in Section 1. This section contains a brief description of the sampling and analytical procedures for each method that was employed during the test program. Any deviations from the methods are also discussed.

### **4.1 Sampling Point Determination – USEPA Method 1**

The number and location of the sampling or traverse points was determined according to the procedures outlined in USEPA Method 1. The sample location was inspected to ensure USEPA Method 1 criteria were met. All points were at least 1.0 inch from the stack wall, per Method 1. The bypass vent stack required a 24-point traverse for isokinetic sampling, which was distributed between four sampling ports.

### **4.2 Flue Gas Velocity and Volumetric Flow Rate – USEPA Method 2**

The flue gas velocity and volumetric flow rate were determined according to the procedures outlined in USEPA Method 2. Velocity measurements were made using S-type Pitot tubes that had been calibrated according to USEPA Method 2 criteria. Differential pressures were measured with a fluid inclined manometer. Flue gas temperatures were measured with Type K thermocouples equipped with digital readouts.

### **4.3 Flue Gas Composition – USEPA Method 3A**

Flue gas analysis for oxygen (O<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>) concentrations to determine the flue gas dry molecular weight was performed in accordance with USEPA Method 3A utilizing CEMs for each gas. The concentrations of O<sub>2</sub> and CO<sub>2</sub> were reported in percent levels.

### **4.4 Flue Gas Moisture Content – USEPA Method 4**

The flue gas moisture content was determined in conjunction with each USEPA Method 5/202, Method 29, and Method 26A sampling train and according to the sampling and analytical procedures outlined in USEPA Method 4. The impingers were connected in series and contained reagents as described in the discussion of specific sampling trains. The impingers were contained in an ice bath to ensure condensation of the moisture in the flue gas stream. Any moisture that



was not condensed in the impingers was captured in the silica gel; therefore, all moisture was collected and weighed.

#### **4.5 PM – USEPA Method 5**

The filterable PM was measured using USEPA Reference Method 5. The filterable PM was performed by extracting a sample of the stack exhaust gas stream through a one-piece quartz nozzle and liner encased in an air-cooled probe. The probe was attached to a heated, glass filter holder containing a pre-weighed, glass-fiber filter. The filter heater box was maintained at a temperature of 248°F +25°F as measured by a K-type thermocouple.

At the conclusion of each test run, the sample train was recovered by rinsing the sample probe and nozzle three times with acetone into a sample container. The filter was removed from the filter holder and placed into a Petri dish and sealed for transportation. The front half of the glass filter holder and connecting elbow were rinsed with acetone into the probe wash sample container. A sample of the acetone used in the sample recovery was collected and analyzed as a reagent blank. The acetone rinses and filters were analyzed for filterable PM.

#### **4.6 HCl and HF – USEPA Method 26A**

Sampling for HCl and HF was performed using an USEPA Method 26A sampling train. The train consisted of a quartz liner fitted into an air-cooled sampling probe. This is required because the stack temperature was at least 1,300°F. The probe was connected to a heated, glass filter holder containing a quartz filter. The outlet of the filter holder was connected to a series of ball-joint impingers. The first impinger was a knockout impinger containing 50 mL of 0.1N sulfuric acid (H<sub>2</sub>SO<sub>4</sub>). The second and third impingers were the Greenburg-Smith type and each contained 100 mL of 0.1N sulfuric acid (H<sub>2</sub>SO<sub>4</sub>). The fourth and fifth impingers were modified Greenburg-Smith impingers containing 0.1N sodium hydroxide (NaOH). The sixth impinger was a modified Greenburg-Smith impinger containing approximately 350 grams of indicating silica gel. The recovered H<sub>2</sub>SO<sub>4</sub> impinger liquid was analyzed for HCl and HF. The NaOH impinger liquid was analyzed for HF also.



#### **4.7 SO<sub>2</sub>, NO<sub>x</sub>, and CO – USEPA Methods 6C, 7E, and 10**

CEMs were operated for SO<sub>2</sub>, NO<sub>x</sub> and CO according to USEPA Methods 6C, 7E and 10, respectively. Method 7E contains most of the procedural details, which are referenced in the other methods. The CEM analyzers were calibrated before the start of testing. System bias checks were performed before and after each test run. The calibration and bias checks used USEPA protocol gases according to USEPA Method 7E guidelines. The gases were measured continuously, and an electronic datalogger recorded 10 second averages for the test runs.

The CEM sampling was performed by placing a sample probe in the stack to withdraw a continuous gas sample. The gas sample was transported through a heated, Teflon sample line to an electric gas chiller that removed moisture from the gas stream. Exiting the gas chiller, the dried sample gas was distributed to each CEM for subsequent analysis.

Stratification was determined on a three-point concentration traverse at the test ports.

#### **4.8 HAP Metals – USEPA Method 29**

The sampling was performed using an USEPA Method 29 sampling train for the 11 HAP metals. The sample train consisted of an integrated quartz nozzle and probe liner fitted into an air-cooled sampling probe. This is required because the stack temperature was >1,300°F. The outlet of the probe was connected to a heated, glass filter holder containing a quartz fiber filter. The outlet of the filter holder was connected to a series of ball-joint impingers by a Teflon transfer line. The first impinger was a modified Greenburg-Smith containing 100 mL of a 5% nitric acid (HNO<sub>3</sub>)/10% H<sub>2</sub>O<sub>2</sub> mixture. The second impinger was a Greenburg-Smith containing a 5% HNO<sub>3</sub>/10% H<sub>2</sub>O<sub>2</sub> mixture. The third impinger was modified Greenburg-Smith and was initially empty. The fourth and fifth impingers were modified Greenburg-Smith types containing a mixture of 4% potassium permanganate (KMnO<sub>4</sub>)/10% H<sub>2</sub>SO<sub>4</sub>. The sixth impinger was a modified Greenburg-Smith containing 200 grams of indicating silica gel. The remainder of the sampling train was identical to the previously described Method 5/202 train.

The Method 29 train was operated identically to the Method 5 train, except the total sample volume collected was at least 3 dry standard cubic meters to ensure adequate detection limits of the target metals. At the conclusion of the sample run, the Method 29 sample train was removed from the stack to the sample recovery trailer for subsequent recovery per Method 29



procedures. The sample probe was washed on the stack to avoid potential breakage of the probe liner.

At the conclusion of each Method 29 test run, the sample train was recovered by washing the nozzle/probe assembly and front half of the filter holder three times with 0.1N HNO<sub>3</sub> into a sample container. The impinger train was then disassembled and each impinger weighed to determine the moisture gained during the sample run. The liquid contents of impingers one and two were transferred into a sample container along with a 0.1N HNO<sub>3</sub> rinse of the impingers and the Teflon transfer line. Impinger three was rinsed with 0.1N HNO<sub>3</sub> into a separate sample container. The contents of impingers four and five were transferred into a separate sample container. The impingers were then rinsed with 100 mL of fresh KMnO<sub>4</sub> solution. The impingers were then rinsed with 100 mL of deionized water and added to the same sample container. A 25 mL rinse of 8N HNO<sub>3</sub> was performed and collected into a separate sample container. The silica gel in the last impinger was recovered for subsequent reconditioning.

Samples of the filter, deionized water, impinger solutions, and rinse solutions were collected along with the actual test samples to serve as blanks for the tests. The blank samples were analyzed along with the actual test samples.

#### **4.9 Formaldehyde and Hydrogen Cyanide – USEPA Method 320**

Hydrogen cyanide and formaldehyde were measured in accordance with EPA Method 320. Stack gas was continuously sampled and analyzed utilizing a Fourier Transform Infrared (FTIR) Spectroscopy extractive sampling system. The FTIR instrument used was a MKS Multigas 2030. Further details of the continuous monitoring procedures for each parameter are presented in the following subsections.

The FTIR extractive system was comprised of a stainless-steel probe (~1 foot), a stainless-steel spiking “T”, a 50-ft heated (185°C) PFA-grade Teflon line, a MKS 2030 FTIR spectrometer complete with a heated (191 °C) fixed-path sample cell, a flow regulating valve, a rotameter, and a sample pump. Given these components hydrogen cyanide and formaldehyde monitoring consisted of continuously pulling a gas stream from the sample port through the sample probe, spiking tee, and heated extraction line, into the heated FTIR sample cell and out through the pump and exhaust line. Sample flow was continuous and maintained at approximately 12 standard liters per minute (lpm) by a diaphragm pump connected to the outlet of the FTIR cell. Since the pump provides samples slightly below ambient pressure to the FTIR



cell, cell pressure was continuously recorded during measurement periods using a pressure sensor calibrated over the 0 – 900 torr range. These pressures were then used in the quantification of each spectrum.

#### 4.9.1 Hydrogen Cyanide & Formaldehyde Spiking System

Per EPA Method 320, analyte spiking was performed to determine the effectiveness of the sampling and analytical systems in transporting and quantifying each analyte. The aforementioned spiking “T”, placed between the probe and the extraction line (as specified in the EPA Method 320), enabled injection of each analyte gas standard directly into the extracted sample gas stream. EPA Method 320 stipulates an analyte spike equal to the native concentration at no more than 10% of the total flow be delivered through the entire sampling system. Spikes at, above, and below the 1-5 ppm expected limit were performed. Controlled by a needle valve, a precise volume of the analyte gas standard was delivered into the extracted stack gas (system recovery checks). Furthermore, since the injected standard flow was negligible compared to the extracted sample flow (maximum of 10% of total flow), the sample gas matrix (including interferences) was not significantly changed.

#### 4.9.2 Hydrogen Cyanide & Formaldehyde Spectrum Analyses Method

An infrared spectrum was collected and analyzed in approximately one second, but data was averaged over one- to five-minute integration periods to produce adequate signal-to-noise and ppb level detection limits. For this testing, all run data was signal averaged for two minutes (~130 individual spectra) and all QA spiking data was averaged for 1/2 minute (~32 individual spectra). Shorter scan durations were used for the equilibrium and mechanical response tests to better characterize system retention/response time.

An infrared spectrum analysis was performed by matching the features of an observed spectrum to those of reference standards. If more than one feature was present in the same region, a linear combination of references was used to match the compound features. The standards were scaled to match the observed band intensities; this scaling also matches the unknown concentrations.

The scaled references were added together to produce a composite that represents the best match with the sample. A classical least squares mathematical technique was used to match the reference standards' absorption profiles with those of the observed sample spectrum in specified spectral analysis regions. Compounds of interest and any known compounds expected to present

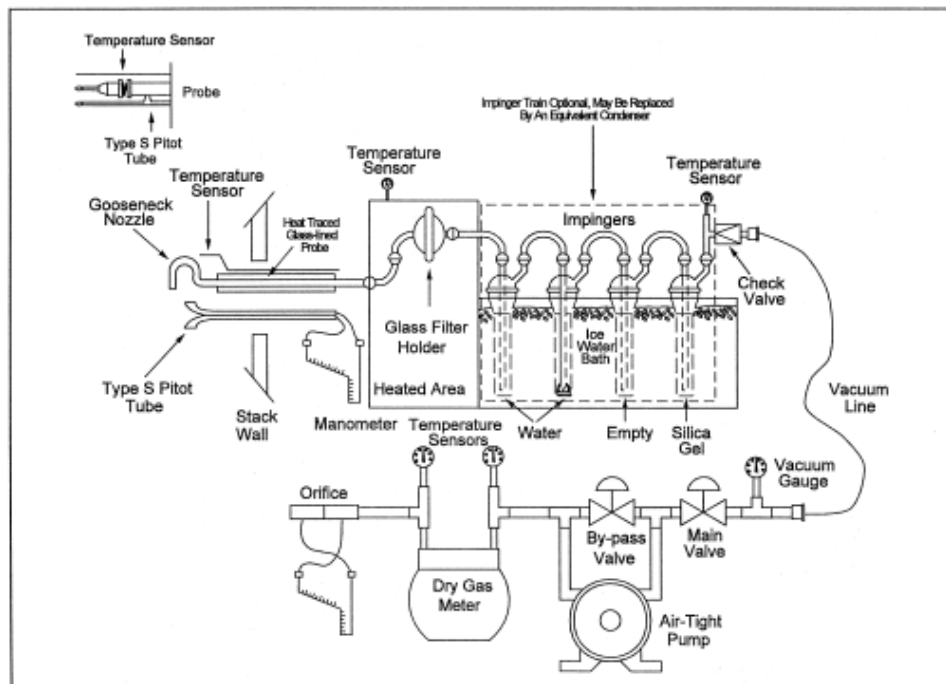


spectral interference (water and methanol for this data set) were included in the analyte analysis region. The analysis method for this sampling would be optimized for hydrogen cyanide and formaldehyde analysis during sampling and later refined to best fit the interferences within the analysis region.

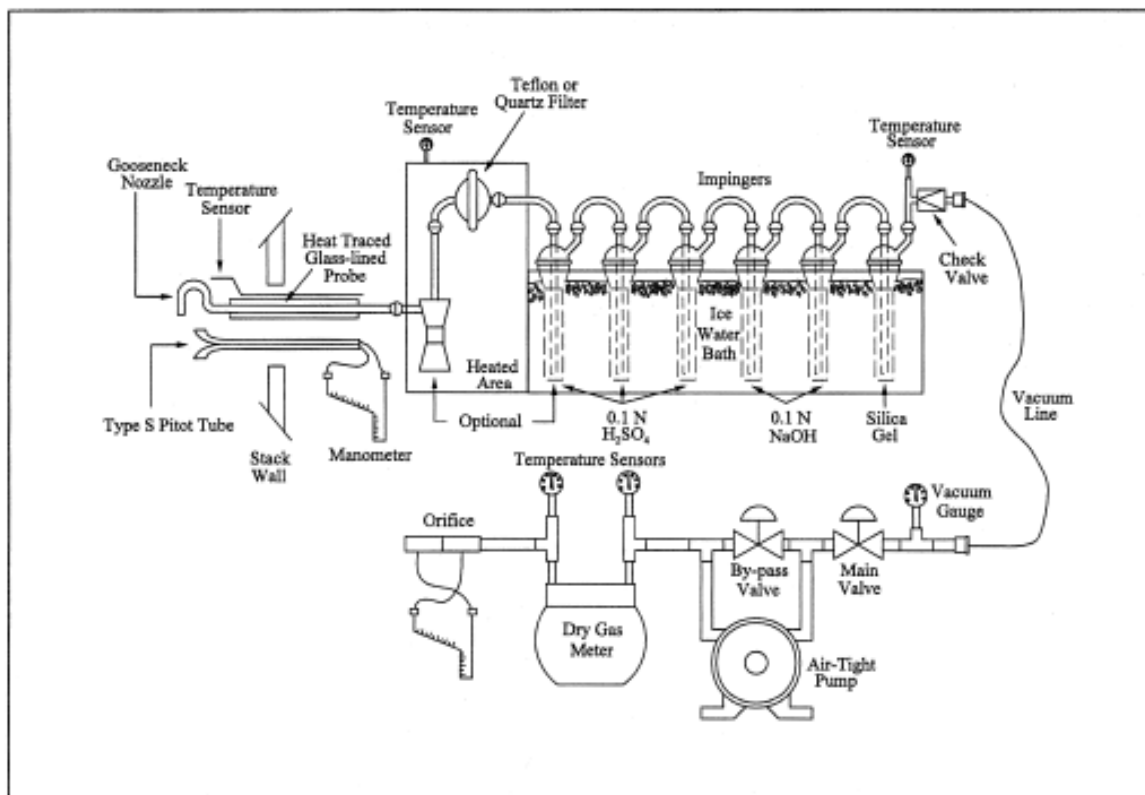


**Appendix A**  
**SAMPLE TRAIN DIAGRAMS**



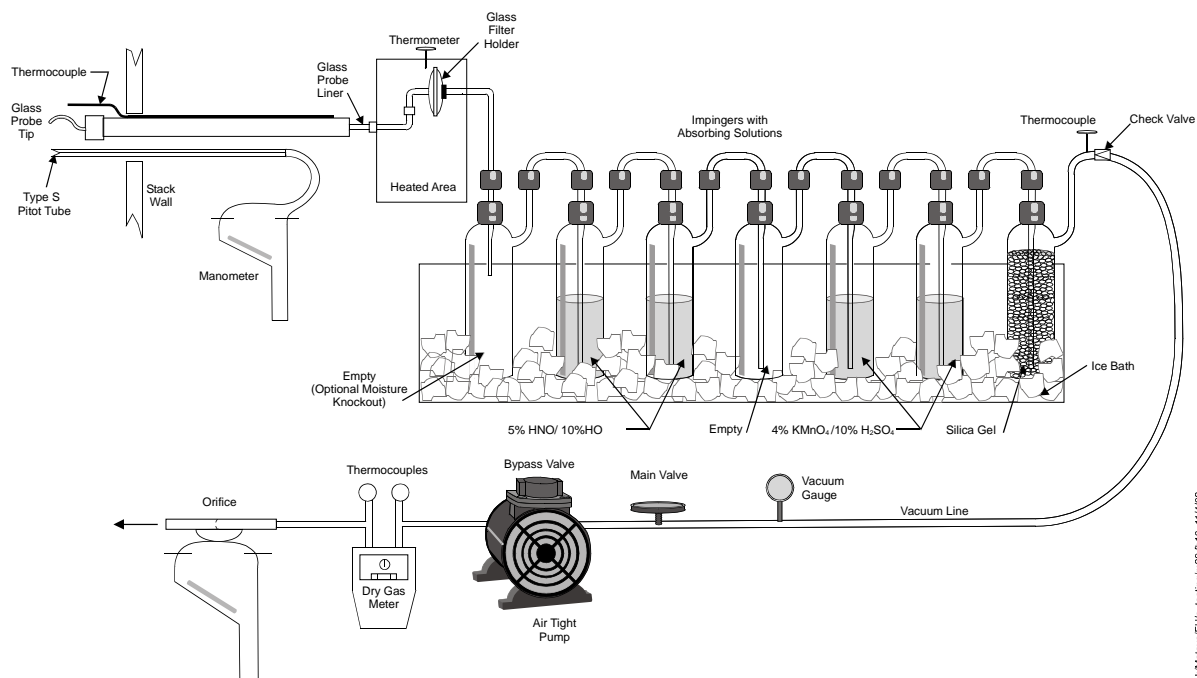


USEPA Method 5 Train (front portion)



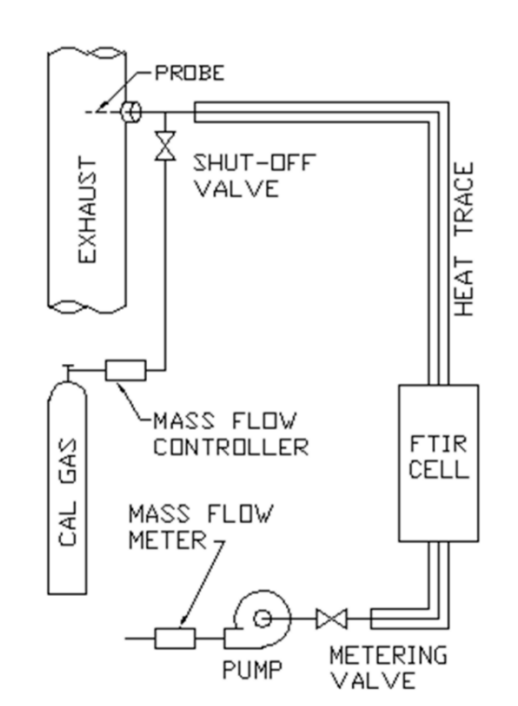
USEPA Method 26A Train





N:\Mazaya\FHIs\_testing\m29.b10 1/14/02

USEPA Method 29 Train



USEPA Method 320 Sampling System



**Appendix B**  
**PRODUCTION DATA**



Date Charged	9/26/2022			9/27/2022		
	Oven	Coal Charged	Coke Produced	Oven	Coal Charged	Coke Produced
	104	43.58	30.51	101	44.47	31.13
	108	43.48	30.44	105	43.28	30.30
	112	43.60	30.52	109	43.47	30.43
	116	43.48	30.44	113	43.50	30.45
	120	43.62	30.53	117	53.55	37.49
	102	43.65	30.56	103	43.53	30.47
	106	43.87	30.71	107	43.60	30.52
	110	44.18	30.93	111	43.74	30.62
	114	43.79	30.65	115	MTY	MTY
	118	43.76	30.63	119	43.45	30.42
	Average	43.70	30.59	Average	44.73	31.31
	Total	437.01	305.91	Total	402.59	281.81
	Average (per oven)				44.22	30.95
	Total				839.60	587.72
In Production on					9/28/2022	



**9/28/2022**

	Coal	Coke
Oven	Charged	Produced
104	43.67	30.57
108	43.57	30.50
112	43.53	30.47
116	43.62	30.53
120	43.55	30.49
102	43.41	30.39
106	43.62	30.53
110	43.50	30.45
114	44.63	31.24
118	43.62	30.53
Average	43.67	30.57
Total	436.72	305.70
	44.20	30.94
	839.31	587.52
	9/29/2022	

**9/29/2022**

	Coal	Coke
Oven	Charged	Produced
101	44.03	30.82
105	43.45	30.42
109	43.82	30.67
113	43.53	30.47
117	43.57	30.50
103	43.58	30.51
107	43.60	30.52
111	43.67	30.57
115	MTY	MTY
119	43.81	30.67
Average	43.67	30.57
Total	393.06	275.14
	43.67	30.57
	829.78	580.85
	9/30/2022	

**9/30/2022**

	Coal	Coke
Oven	Charged	Produced
104	43.43	30.40
108	43.62	30.53
112	44.11	30.88
116	43.38	30.37
120	43.50	30.45
102	43.70	30.59
106	44.34	31.04
110	44.13	30.89
114	43.50	30.45
118	44.20	30.94
Average	43.79	30.65
Total	437.91	306.54
	43.73	30.61
	830.97	581.68
	10/1/2022	



**10/1/2022**

	Coal	Coke
Oven	Charged	Produced
101	43.35	30.35
105	43.28	30.30
109	43.28	30.30
113	43.79	30.65
117	43.43	30.40
103	43.36	30.35
107	43.33	30.33
111	43.55	30.49
115	40.15	28.11
119	43.45	30.42
Average	43.10	30.17
Total	430.97	301.68
	43.44	30.41
	868.88	608.22
	10/2/2022	

**10/2/2022**

	Coal	Coke
Oven	Charged	Produced
104	44.08	30.86
108	44.32	31.02
112	43.21	30.25
116	43.17	30.22
120	43.93	30.75
102	43.67	30.57
106	43.96	30.77
110	44.01	30.81
114	43.77	30.64
118	43.62	30.53
Average	43.77	30.64
Total	437.74	306.42
	43.44	30.40
	868.71	608.10
	10/3/2022	

**10/3/2022**

	Coal	Coke
Oven	Charged	Produced
101	43.35	30.35
105	43.28	30.30
109	43.28	30.30
113	43.79	30.65
117	43.43	30.40
103	43.36	30.35
107	43.33	30.33
111	43.55	30.49
115	40.15	28.11
119	43.45	30.42
Average	43.10	30.17
Total	430.97	301.68
	43.44	30.40
	868.71	608.10
	10/4/2022	



HNCC PUSHING REPORT

DATE: 09/26/22

Initials: JB/MA

Target Push Times: 4hrs 30 mins

Total Push Time:

Time Lost :

Purple: >47.4 tons

Blue: < 46.6Tons/ >= 45.9 Tons

Orange: < 46 Tons

47.2 = No Color

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM	CIRCLE	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
									Front	Back			DOOR	DOOR	Fire Out	Pressure	Fan Amp	Cor Act	CO	PT	TL	Watch Tonnage for Outage	Last Decarb Date
													OBS.	FIRE	Time	Reading	Reading	Required	Time	Intial	Optional		
102	X	2:03 AM	43.94	9/24	1152	AM/PM	9/25	4365	18	14	44.0	Y // N	Y // N	Y // N		6.8	118	Y // N	1135	JG		OV-102	8/20/2021
106	X	2:29 AM	43.94	9/24	1200	AM/PM	9/26	4387	18	14	44.0	Y // N	Y // N	Y // N		7.2	119	Y // N	1136	JG		OV-106	7/7/2020
110	X	2:39 AM	43.79	9/24	1209	AM/PM		4418	18	14	44.0	Y // N	Y // N	Y // N				Y // N	1137	JG		OV-110	9/29/2021
114	X	2:49 AM	43.81	9/24	1216	AM/PM		4379	18	12	44.0	Y // N	Y // N	Y // N				Y // N	1138	JG		OV-114	8/3/2022
118	X	2:58 AM	43.76	9/24	1225	AM/PM		4376	18	14	44.0	Y // N	Y // N	Y // N				Y // N	1139	JG		OV-118	12/8/2021
122	X	3:06 AM	44.08	9/24	1233	AM/PM		4324	16.5	12.5	44.0	Y // N	Y // N	Y // N				Y // N	1140	JG		OV-122	8/25/2022
126	X	3:14 AM	44.03	9/24	1242	AM/PM		4343	16	12	44.0	Y // N	Y // N	Y // N				Y // N	1141	JG		OV-126	8/17/2022
130	X	MTY	MTY	MTY		AM/PM		MTY			MTY	Y // N	Y // N	Y // N				Y // N	MTY	MTY		OV-130	5/26/2021
134	X	3:30 AM	44.49	9/24	1252	AM/PM	9/26	4338	18	14	44.0	Y // N	Y // N	Y // N				Y // N	1200	CW		OV-134	9/14/2022
138	X	3:39 AM	43.28	9/24	12:59	AM/PM		4398	18	14	44.0	Y // N	Y // N	Y // N				Y // N	1201	CW		OV-138	12/8/2021
142	X	3:48 AM	43.86	9/24	1:08	AM/PM		4384	18	14	44.0	Y // N	Y // N	Y // N				Y // N	1202	CW		OV-142	4/13/2022
146	X	4:15 AM	43.76	9/24	1:16	AM/PM		4391	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	1203	CW		OV-146	8/25/2022
150	X	4:23 AM	44.23	9/24	3:15	AM/PM		4390	18	14	44.0	Y // N	Y // N	Y // N		8.3	114	Y // N	1200	CW		OV-150	2/14/2022
154	X	5:19 AM	43.81	9/24	1:25	AM/PM		4398	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	1204	CW		OV-154	9/14/2022
158	X	5:27 AM	43.83	9/24	1:34	AM/PM		4392	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	1205	CW		OV-158	1/31/2022
162	X	5:36 AM	43.16	9/24	1:43	AM/PM		4370	18	14	43.9	Y // N	Y // N	Y // N				Y // N	1206	CW		OV-162	6/5/2019
166	X	5:43 AM	43.70	9/24	152	AM/PM		4372	17	13	44.0	Y // N	Y // N	Y // N				Y // N	121	CW		OV-166	2/14/2022
170	X	MTY	MTY	MTY		AM/PM		MTY			MTY	Y // N	Y // N	Y // N				Y // N	MTY	MTY		OV-170	2/20/2020
174	X	5:57 AM	43.91	9/24	202	AM/PM	9/26	4391	18	14	44.0	Y // N	Y // N	Y // N				Y // N	130	CW		OV-174	1/6/2021
178	X	6:05 AM	44.00	9/24	211	AM/PM	9/26	4348	18.5	14.5	44.0	Y // N	Y // N	Y // N				Y // N	133	CW		OV-178	2/17/2021
182	X	6:12 AM	43.57	9/24	2:52	AM/PM		4418	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	130	CW		OV-182	4/13/2022
186	X	6:21 AM	43.76	9/24	3:01	AM/PM		4410	18	14	44.0	Y // N	Y // N	Y // N				Y // N	131	CW		OV-186	1/31/2022
190	X	6:29 AM	43.81	9/24	221	AM/PM	9/26	4367	18.5	14.5	44.0	Y // N	Y // N	Y // N				Y // N	134	CW		OV-190	3/11/2021
194	X	6:37 AM	43.79	9/24	2:30	AM/PM		4409	18	14	44.0	Y // N	Y // N	Y // N				Y // N	135	CW		OV-194	8/17/2022
198	X	6:45 AM	43.88	9/24	2:38	AM/PM		4398	18	14	44.0	Y // N	Y // N	Y // N				Y // N	136	CW		OV-198	5/12/2021

PCM Inspection

Charged Fire Ext. YES-NO

Hydraulic Oil Spill YES-NO

Windows Good Condition. YES-NO

Doors Good Condition. YES-NO

Comments

Record Review

C/O & Chg Times

Max Ovens/Hr

Door Fire Obs

# Ops Deviations

TM Signature James Fitcher

Deviation

DP Readings

Comments Review

Door Fire CAs

Rev'd w/ Operator?

Enviro Review

PCM Pressure Readings

Must be between 3.0 and 9.0 before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the 1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay. Record all out of sequence and skipped ovens in the comment section

Daily Time Audits must be done on the Prod. Run

Delay to Hood:

Delay to Fresh:

Baghouse Settings Daily Audit

Coal to feed:

Tons Charged:



HNCC PUSHING REPORT

DATE: 09/26/22

Target Push Times: 4hrs 30 mins

Initials: *SH MLJL*

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

Purple: >47.4 tons			Blue: <46.6Ton/ >= 45.9 Tons			Orange: < 46 Tons			47.2 = No Color		DOOR FIRE - PUSHER SIDE				PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR OBS.	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional	Watch Tonnage for Outage	Last Decarb Date
104	4:00 PM	44.83	9/23	407	AM/PM	9-25	4358	15	14	44.0	Y // N	Y // N	Y // N		5.3	122	Y // N	3:58	NB		OV-104 C- Door won't start	8/25/2022
108	4:08 PM	43.28	9/23	414	AM/PM		4348	18	14	44.0	Y // N	Y // N	Y // N				Y // N	3:59	NB		OV-108	5/26/2021
112	4:15 PM	43.72	9/23	422	AM/PM		4360	17	13	44.0	Y // N	Y // N	Y // N				Y // N	4:00	NB		OV-112	8/17/2022
116	4:22 PM	43.98	9/23	429	AM/PM		4348	18.5	14.5	44.0	Y // N	Y // N	Y // N				Y // N	4:01	NB		OV-116	1/6/2021
120	4:29 PM	44.05	9/23	438	AM/PM		4362	18.5	14.5	44.0	Y // N	Y // N	Y // N				Y // N	4:02	NB		OV-120	2/3/2021
124	4:37 PM	43.94	9/23	445	AM/PM		4376	18.8	14.8	44.0	Y // N	Y // N	Y // N				Y // N	4:03	NB		OV-124	2/17/2021
128	4:44 PM	44.23	9/23	506	AM/PM		4368	17	13	44.0	Y // N	Y // N	Y // N				Y // N	4:04	NB		OV-128 Switching decks	7/28/2022
132	4:58 PM	44.05	9/23	514	AM/PM		4429	19	15	44.0	Y // N	Y // N	Y // N				Y // N	4:05	GR		OV-132	6/4/2020
136	11:27 PM	42.15	9/23	522	AM/PM		4275	17	13	42.9	Y // N	Y // N	Y // N				Y // N	4:06	GR		OV-136	1/1/2020
140	5:06 PM	43.70	9/23	530	AM/PM		4393	18.5	14.5	44.0	Y // N	Y // N	Y // N				Y // N	4:07	GR		OV-140	6/9/2021
144	5:14 PM	43.57	9/23	531	AM/PM		4495			44.0	Y // N	Y // N	Y // N				Y // N	4:08	GR		OV-144 Dave machine shut down	2/8/2022
148	5:21 PM	43.64	9/23	600	AM/PM		4403			44.0	Y // N	Y // N	Y // N				Y // N	4:09	GR		OV-148	9/29/2021
152	5:29 PM	44.11	9/23	609	AM/PM		4423			44.0	Y // N	Y // N	Y // N				Y // N	4:10	GR		OV-152	8/3/2022
156	5:37 PM	43.94	9/23	618	AM/PM		4374			44.0	Y // N	Y // N	Y // N				Y // N	4:11	GR		OV-156	4/22/2021
160	5:45 PM	44.00	9/23	627	AM/PM		4384			44.0	Y // N	Y // N	Y // N				Y // N	4:12	GR		OV-160	6/9/2021
164	1:26 AM	43.62	9/24	1086	AM/PM		4381			44.0	Y // N	Y // N	Y // N				Y // N	10:10 - GR			OV-164	5/12/2021
168	12:06 AM	43.33	9/24	1005	AM/PM		4386			44.0	Y // N	Y // N	Y // N				Y // N	10:13 - GR			OV-168	5/12/2021
172	12:14 AM	43.58	9/24	942	AM/PM		4408			44.0	Y // N	Y // N	Y // N		6.2	118	Y // N	9:30	GR		OV-172 Pushed A battery first	12/8/2021
176	12:22 AM	43.60	9/24	955	AM/PM		4420			44.0	Y // N	Y // N	Y // N				Y // N	9:31	GR		OV-176	1/20/2021
180	12:29 AM	43.36	9/24	1113	AM/PM		4397			44.0	Y // N	Y // N	Y // N		8.0	114	Y // N	10:15 - GR			OV-180	4/22/2021
184	12:36 AM	43.31	9/24	1004	AM/PM		4398			44.0	Y // N	Y // N	Y // N				Y // N	9:35	GR		OV-184	2/8/2022
188	12:43 AM	43.52	9/24	1013	AM/PM		4370			44.0	Y // N	Y // N	Y // N				Y // N	9:36	GR		OV-188	8/3/2022
192	12:53 AM	43.41	9/24	1022	AM/PM		4381			44.0	Y // N	Y // N	Y // N				Y // N	9:37	GR		OV-192	3/3/2021
196	1:03 AM	43.86	9/24	1031	AM/PM		4384			44.0	Y // N	Y // N	Y // N				Y // N	9:38	GR		OV-196	9/23/2021
200	1:12 AM	43.89	9/24	1040	AM/PM		4384			44.0	Y // N	Y // N	Y // N				Y // N	9:39	GR		OV-200	7/28/2022

PCM Inspection		Comments		Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES/NO			✓	C/O & Chg Times	✓	DP Readings
Hydraulic Oil Spill	YES/NO			62	Max Ovens/Hr	✓	Comments Review
Windows Good Condition.	YES/NO			✓	Door Fire Obs	✓	Door Fire CAs
Doors Good Condition.	YES/NO			0	# Ops Deviations	No	Rev'd w/ Operator?
Door fire corrections:				TM Signature <i>James Fitch</i>		Daily Time Audits must be done on the Prod. Run	
Tighten door	Place K-Wool					Baghouse Settings Daily Audit	
Open uptake	Raise draft					Delay to Hood: _____ Coal to feed: _____	
Check blocks	Adjust Sole flue					Delay to Fresh: _____ Tons Charged: _____	
Verify up take setting	Adjust door holes						



HNCC PUSHING REPORT

DATE: 09/27/22 Initials: JL ML GR/50

Purple: >47.4 tons Blue: <46.6Ton/ >= 45.9 Tons Orange: < 46 Tons

Target Push Times: 4hrs 30 mins

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

47.2 = No Color										DOOR FIRE - PUSHER SIDE				PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:		
OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM	DATE	TONS GHG	Leveler Settings		Target	SPILL	DOOR	DOOR	Fire Out	Pressure	Fan Amp	Cor Act	CO	PT	TL	WATCH TONNAGE FOR OUTAGE	Last Decarb Date
										Weight	>250 LBS	OBS.	FIRE	Time	Reading	Reading	Required	Time	Intial	Optional		
101	8:24 PM	43.96	9/24	845	AM/PM	9/26	4447	18	14	44.0	Y II (N)	Y II (N)	Y II (N)		6.6	119	Y II (N)	800	NB		OV-101	5/29/2019
105	8:34 PM	43.40	9/24	854	AM/PM		4328			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	801	NB		OV-105	10/6/2021
109	8:42 PM	43.82	9/24	903	AM/PM		4347			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	802	NB		OV-109	6/2/2021
113	8:49 PM	43.89	9/24	912	AM/PM		4350			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	803	NB		OV-113	4/20/2022
117	8:57 PM	43.84	9/24	920	AM/PM		4355			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	804	NB		OV-117	5/21/2020
121	9:06 PM	43.84	9/24	928	AM/PM		4377			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	805	NB		OV-121	1/13/2021
125	9:13 PM	43.98	9/24	936	AM/PM		4408			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	806	NB		OV-125	6/2/2021
129	9:21 PM	44.17	9/24	944	AM/PM		4370			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	807	NB		OV-129	2/10/2021
133	9:44 PM	44.61	9/24	953	AM/PM		4396			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	900	GR		OV-133	3/24/2021
137	10:57 PM	43.21	9/24	1001	AM/PM		4369			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	901	GR		OV-137	5/5/2021
141	9:57 PM	43.43	9/24	1009	AM/PM		4401			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	902	GR		OV-141	10/6/2021
145	10:05 PM	43.89	9/24	1017	AM/PM		4376			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	903	GR		OV-145	7/7/2020
149	10:13 PM	43.91	9/24	1025	AM/PM		4398			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	904	GR		OV-149	10/20/2021
153	10:23 PM	44.23	9/24	1132	AM/PM		4353			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1130	CW		OV-153	7/15/2020
157	10:44 PM	43.67	9/24	1034	AM/PM		4444			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	905	GR		OV-157	7/1/2020
161	1:35 AM	43.62	9/25	5:25	AM/PM	9/27	4444			44.0	Y II (N)	Y II (N)	Y II (N)		7.6	121	Y II (N)	906	CW		OV-161	> 2019
165	11:35 PM	43.06	9/24	1043	AM/PM		4352	13	14	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	906	GR		OV-165	5/13/2020
169	11:44 PM	43.76	9/24	1052	AM/PM		4350			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	907	GR		OV-169	5/5/2021
173	11:52 PM	43.91	9/24	1101	AM/PM		4351			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	908	GR		OV-173	4/20/2022
177	12:00 AM	44.03	9/25	1146	AM/PM		4380			44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1145	CW		OV-177	5/7/2020
181	12:08 AM	43.77	9/25	1206	AM/PM	9-27	4358	17	13	44.0	Y II (N)	Y II (N)	Y II (N)		7.3	117	Y II (N)	1200	CW		OV-181	6/16/2021
185	12:53 AM	43.88	9/25	1217	AM/PM		4389	18	14	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1201	CW		OV-185	5/13/2020
189	1:03 AM	43.93	9/25	1226	AM/PM		4328	17	13	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1202	CW		OV-189	5/19/2021
193	1:12 AM	43.64	9/25	1235	AM/PM		4388	15	11	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1203	CW		OV-193	9/7/2022
197	1:21 AM	43.69	9/25	1243	AM/PM		4384	16	12	44.0	Y II (N)	Y II (N)	Y II (N)		7.9	116	Y II (N)	1204	CW		OV-197	10/20/2021

PCM Inspection		Comments		Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES NO			✓ C/O & Chg Times	✓ DP Readings	Must be between 3.0 and 9.0 before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the 1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay. Record all out of sequence and skipped ovens in the comment section	
Hydraulic Oil Spill	YES NO			7 Max Ovens/Hr	✓ Comments Review		
Windows Good Condition.	YES NO			✓ Door Fire Obs	✓ Door Fire CAs		
Doors Good Condition.	YES NO			✓ # Ops Deviations	NO Rev'd w/ Operator?	Daily Time Audits must be done on the Prod. Run	
Door fire corrections:				TM Signature	Deviation		
Tighten door	Place K-Wool						
Open uptake	Raise draft					Baqhouse Settings Daily Audit	
Check blocks	Adjst Sole flue					Delay to Hood: _____	Coal to feed: _____
Verify up take setting	Adjust door holes					Delay to Fresh: _____	Tons Charged: _____



HNCC PUSHING REPORT

DATE: 09/27/22

Target Push Times: 4hrs 30 mins

Initials: JB RHA

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

Purple: >47.4 tons Blue: <46.6Tons/ >= 45.9 Tons Orange: < 46 Tons

47.2 = No Color

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
								Front	Back			DOOR OBS.	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Intial	TL Optional		
103	3:16 AM	43.60	9/25	349	AM/PM		4353			44.0	Y II N	Y II N	Y II N		6.4	123	Y II N	240	36		OV-103	9/7/2022
107	3:25 AM	43.74	9/25	358	AM/PM		4360			44.0	Y II N	Y II N	Y II N				Y II N	241	36		OV-107	2/24/2021
111	3:35 AM	44.08	9/25	124	AM/PM	9/27	4374	16.5	12.5	44.0	Y II N	Y II N	Y II N		6.9	122	Y II N	110a	36		OV-111	6/16/2021
115	3:41 AM	MTY	MTY		AM/PM		MTY			MTY	Y II N	Y II N	Y II N				Y II N	MTY	MTY		OV-115	DO NOT CHARGE THIS OVEN 4/9/2020
119	3:50 AM	44.17	9/25	407	AM/PM		4345			44.0	Y II N	Y II N	Y II N				Y II N	242	36		OV-119	4/1/2021
123	3:57 AM	43.40	9/25	416	AM/PM		4375			44.0	Y II N	Y II N	Y II N				Y II N	243	36		OV-123	1/27/2021
127	4:05 AM	43.94	9/25	134	AM/PM	9/27	4420	16.8	12.8	44.0	Y II N	Y II N	Y II N		7.4	118	Y II N	111	36		OV-127	3/10/2021
131	4:13 AM	43.72	9/25	438	AM/PM		4333			44.0	Y II N	Y II N	Y II N				Y II N	425	CW		OV-131	4/1/2021
135	4:22 AM	43.88	9/25	440	AM/PM		4340			44.0	Y II N	Y II N	Y II N				Y II N	426	CW		OV-135	5/21/2020
139	4:28 AM	43.64	9/25	454	AM/PM		4350			44.0	Y II N	Y II N	Y II N				Y II N	427	CW		OV-139	2/24/2021
143	4:37 AM	44.13	9/25	502	AM/PM		4358			44.0	Y II N	Y II N	Y II N				Y II N	428	CW		OV-143	5/19/2021
147	4:44 AM	44.25	9/25	706	AM/PM	9/27	4321			44.0	Y II N	Y II N	Y II N				Y II N	-700	113		OV-147	3/10/2021
151	4:51 AM	MTY	MTY		AM/PM		MTY			MTY	Y II N	Y II N	Y II N				Y II N	MTY	MTY		OV-151	DO NOT CHARGE THIS OVEN 8/19/2021
155	5:00 AM	44.26	9/25	719	AM/PM		4319			44.0	Y II N	Y II N	Y II N		7.2	118	Y II N	-701	113		OV-155	4/15/2020
159	5:08 AM	44.06	9/25	722	AM/PM		4290			44.0	Y II N	Y II N	Y II N		7.7	119	Y II N	-702	113		OV-159	1/27/2021
163	5:22 AM	43.60	9/25	515	AM/PM	9/27	4345			44.0	Y II N	Y II N	Y II N				Y II N	430	CW		OV-163	2/10/2021
167	5:31 AM	43.76	9/25	532	AM/PM		4324			44.0	Y II N	Y II N	Y II N				Y II N	431	CW		OV-167	5/27/2020
171	5:39 AM	43.50	9/25	540	AM/PM		4380	17.5	13.5	44.0	Y II N	Y II N	Y II N				Y II N	432	CW		OV-171	9/25/2020
175	5:47 AM	43.91	9/25	548	AM/PM		4367	"	"	44.0	Y II N	Y II N	Y II N				Y II N	433	CW		OV-175	9/7/2022
179	6:32 AM	43.69	9/25	550	AM/PM		4377	"	"	44.0	Y II N	Y II N	Y II N				Y II N	434	CW		OV-179	6/10/2020
183	6:40 AM	44.00	9/25	604	AM/PM		4422	17.5	13.5	44.0	Y II N	Y II N	Y II N				Y II N	435	CW		OV-183	3/24/2021
187	5:57 AM	43.77	9/25	615	AM/PM	9/27	4370	"	"	44.0	Y II N	Y II N	Y II N		8.0	116	Y II N	436	CW		OV-187	Q2m CAL 5/27/2020
191	6:05 AM	43.58	9/25	624	AM/PM		4400	17.5	13.5	44.0	Y II N	Y II N	Y II N				Y II N	437	CW		OV-191	2/20/2020
195	6:13 AM	43.62	9/25	634	AM/PM		4418	"	"	44.0	Y II N	Y II N	Y II N				Y II N	438	CW		OV-195	6/24/2020
199	6:21 AM	43.76	9/25	643	AM/PM		4379	"	"	44.0	Y II N	Y II N	Y II N				Y II N	439	CW		OV-199	6/17/2020

PCM Inspection		Comments	Record Review		PCM Pressure Readings		
Charged Fire Ext.	YES-NO		✓ C/O & Chg Times	✓ DP Readings	Must be between 3.0 and 9.0 before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the 1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay. Record all out of sequence and skipped ovens in the comment section		
Hydraulic Oil Spill	YES-NO		✓ Max Ovens/Hr	✓ Comments Review			
Windows Good Condition.	YES-NO		✓ Door Fire Obs	✓ Door Fire CAs	Baghouse Settings Daily Audit		
Doors Good Condition.	YES-NO		✓ # Ops Deviations	✓ Rev'd w/ Operator?			
Door fire corrections:			TM Signature		Daily Time Audits must be done on the Prod. Run	Delay to Hood: _____ Delay to Fresh: _____	
Tighten door	Place K-Wool						
Open uptake	Raise draft						
Check blocks	Adjust Sole flue				Tons Charged: _____		
Verify up take setting	Adjust door holes						



HNCC PUSHING REPORT

DATE: 09/28/22

Purple: >47.4 tons Blue: < 46.6Tons/ >= 45.9 Tons Orange: < 46 Tons

Target Push Times: 4hrs 30 mins

Initials: JL ML

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM	CIRCLE	DATE	TONGS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint	Corrective Action	Comments:	Last Decarb Date
									Front	Back			DOOR	DOOR	Fire Out	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional				
104	4:07 PM	43.58	9/25	453	AM	PM	9/27	4367	18	14	44.0	Y // N	Y // N	Y // N		6.7	118	Y // N	400	JB		OV-104	Lockout on coke and P side		8/25/2022
108	4:14 PM	43.48	9/25	501	AM	PM		4357			44.0	Y // N	Y // N	Y // N				Y // N	401	JB		OV-108			5/26/2021
112	4:22 PM	43.60	9/25	509	AM	PM		4353			44.0	Y // N	Y // N	Y // N				Y // N	402	JB		OV-112			8/17/2022
116	4:29 PM	43.48	9/25	516	AM	PM		4362			44.0	Y // N	Y // N	Y // N				Y // N	403	JB		OV-116			1/6/2021
120	4:38 PM	43.62	9/25	523	AM	PM		4355			44.0	Y // N	Y // N	Y // N				Y // N	404	JB		OV-120			2/3/2021
124	4:45 PM	43.76	9/25	529	AM	PM		4362			44.0	Y // N	Y // N	Y // N				Y // N	405	JB		OV-124			2/17/2021
128	5:06 PM	43.68	9/25	536	AM	PM		4353			44.0	Y // N	Y // N	Y // N				Y // N	406	JB		OV-128			7/28/2022
132	5:14 PM	44.29	9/25	544	AM	PM		4353			44.0	Y // N	Y // N	Y // N				Y // N	400	JB		OV-132			6/4/2020
136	5:22 PM	42.75	9/25	551	AM	PM		4348			43.5	Y // N	Y // N	Y // N				Y // N	401	JB		OV-136			1/1/2020
140	5:30 PM	43.93	9/25	559	AM	PM		4360			44.0	Y // N	Y // N	Y // N				Y // N	402	JB		OV-140			6/9/2021
144	5:51 PM	44.95	9/25	607	AM	PM		4379			44.0	Y // N	Y // N	Y // N				Y // N	403	JB		OV-144			2/8/2022
148	6:00 PM	44.03	9/25	615	AM	PM		4369			44.0	Y // N	Y // N	Y // N				Y // N	404	JB		OV-148			9/29/2021
152	6:09 PM	44.23	9/25	623	AM	PM		4367			44.0	Y // N	Y // N	Y // N				Y // N	405	JB		OV-152			8/3/2022
156	6:18 PM	43.74	9/25	631	AM	PM		4386			44.0	Y // N	Y // N	Y // N				Y // N	406	JB		OV-156			4/22/2021
160	6:27 PM	43.84	9/25	640	AM	PM		4396			44.0	Y // N	Y // N	Y // N				Y // N	407	JB		OV-160			6/9/2021
164	10:56 PM	43.81	9/25	650	AM	PM		4341	17	11	43.5	Y // N	Y // N	Y // N				Y // N	600	JB		OV-164			5/12/2021
168	11:05 PM	43.86	9/25	659	AM	PM		4341	17	11	43.5	Y // N	Y // N	Y // N				Y // N	601	JB		OV-168			5/12/2021
172	9:42 PM	44.08	9/25	706	AM	PM		4341	18	14	44.0	Y // N	Y // N	Y // N				Y // N	602	JB		OV-172			12/8/2021
176	9:55 PM	44.20	9/25	714	AM	PM		4350			44.0	Y // N	Y // N	Y // N				Y // N	603	JB		OV-176			1/20/2021
180	11:15 PM	44.00	9/25	722	AM	PM		4345			43.5	Y // N	Y // N	Y // N				Y // N	604	JB		OV-180			4/22/2021
184	10:04 PM	43.98	9/25	755	AM	PM		4343			43.5	Y // N	Y // N	Y // N				Y // N	605	JB		OV-184	Switch Deck		2/8/2022
188	10:13 PM	43.70	9/25	809	AM	PM		4352			43.5	Y // N	Y // N	Y // N				Y // N	606	JB		OV-188	Chute plug Transfer C		8/3/2022
192	10:22 PM	43.81	9/25	818	AM	PM		4347			43.5	Y // N	Y // N	Y // N				Y // N	607	JB		OV-192			3/3/2021
196	10:31 PM	43.84	9/25	827	AM	PM		4345			43.5	Y // N	Y // N	Y // N				Y // N	608	JB		OV-196			9/23/2021
200	10:40 PM	43.84	9/25	802	AM	PM	9/25	4362			43.5	Y // N	Y // N	Y // N		8.1	117	Y // N	609	JB		OV-200	8:35		7/28/2022

PCM Inspection		Comments		Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES/NO		C/O & Chg Times		DP Readings	Must be between 3.0 and 9.0 before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the 1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay. Record all out of sequence and skipped ovens in the comment section	
Hydraulic Oil Spill	YES/NO		Max Ovens/Hr		Comments Review		
Windows Good Condition.	YES/NO		Door Fire Obs		Door Fire CAs		
Doors Good Condition.	YES/NO		# Ops-Deviations		Rev'd w/ Operator?		
Door fire corrections:			TM Signature	Deviation	Enviro Review	Daily Time Audits must be done on the Prod. Run	
Tighten door	Place K-Wool					Baghouse Settings Daily Audit	
Open uptake	Raise draft						
Check blocks	Adjust Sole flue						
Verify up take setting	Adjust door holes					Delay to Hood: _____	Coal to feed: _____
						Delay to Fresh: _____	Tons Charged: _____











HNCC PUSHING REPORT

DATE: 09/29/22

Purple: >47.4 tons Blue: <46.6Tons/ >= 45.9 Tons Orange: < 46 Tons 47.2 = No Color

Target Push Times: 4hrs 30 mins

Initials: JB/SR/SH

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint	Corrective Action	Comments	Last Decarb Date
								Front	Back			DOOR OBS.	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional				
103	3:49 AM	43.53	9/27	3:33	AM/PM	9/29	4358	16	12	44.0	Y II (N)	Y II (N)	Y II (N)		7.2	121	Y II (N)	320	JG		OV-103			9/7/2022
107	3:58 AM	43.60	9/27	3:41	AM/PM	9/29	4360	18	14	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	321	JG		OV-107			2/24/2021
111	1:24 AM	43.74	9/27	1:29	AM/PM	9/29	4367	18	14	44.0	Y II (N)	Y II (N)	Y II (N)		8.6	122	Y II (N)	115am	JG		OV-111			6/16/2021
115	mtly	mtly	MTY		AM/PM	9/29	MTY			MTY	Y II (N)	Y II (N)	Y II (N)				Y II (N)	MTY	MTY		OV-115	DO NOT CHARGE THIS OVEN		4/9/2020
119	4:07 AM	43.45	9/27	1:37	AM/PM	9/29	4381	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	116am	JG		OV-119			4/1/2021
123	4:16 AM	43.75	9/27	5:18	AM/PM	9/29	4355	18	14	44.0	Y II (N)	Y II (N)	Y II (N)		8.2	123	Y II (N)	330	JG		OV-123	HC2 problem with lockpin		1/27/2021
127	1:34 AM	44.20	9/27	1:46	AM/PM	9/29	4434	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)		8.6	122	Y II (N)	117am	JG		OV-127			3/10/2021
131	4:38 AM	43.33	9/27	7:53	AM/PM		4422	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)		7.6	122	Y II (N)	7:43	SG		OV-131			4/1/2021
135	4:48 AM	43.40	9/27	8:01	AM/PM		4367	17	13	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	7:44	SG		OV-135			5/21/2020
139	4:54 AM	43.50	9/27	8:08	AM/PM		4376	18.3	14.3	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	7:45	SG		OV-139			2/24/2021
143	5:02 AM	43.58	9/27	8:17	AM/PM		4382	18.6	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	7:46	SG		OV-143			5/19/2021
147	7:06 AM	43.21	9/27	8:24	AM/PM		4372	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	7:47	SG		OV-147			3/10/2021
151	mtly	mtly	MTY		AM/PM	9/29	MTY			MTY	Y II (N)	Y II (N)	Y II (N)				Y II (N)	MTY	MTY		OV-151	DO NOT CHARGE THIS OVEN		8/19/2021
155	7:19 AM	43.19	9/27	8:33	AM/PM		4374	18.6	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	7:49	SG		OV-155			4/15/2020
159	7:27 AM	42.90	9/27	8:46	AM/PM		4343	19	15	43.5	Y II (N)	Y II (N)	Y II (N)				Y II (N)	7:50	SG		OV-159			1/27/2021
163	5:15 AM	43.45	9/27	5:34	AM/PM	9/29	4413	18	14	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	500	CW		OV-163			2/10/2021
167	5:32 AM	43.74	9/27	5:42	AM/PM	9/29	4364	18	14	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	501	CW		OV-167			5/27/2020
171	5:40 AM	43.86	9/27	5:53	AM/PM	9/29	4434	18	14	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	502	CW		OV-171	p-11 cord at 10:20		9/25/2020
175	5:48 AM	43.67	9/27	6:01	AM/PM	9/29	4353	18	14	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	503	CW		OV-175			9/7/2022
179	5:56 AM	43.77	9/27	6:09	AM/PM	9/29	4384	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	504	CW		OV-179			6/10/2020
183	6:04 AM	44.22	9/27	9:12	AM/PM		4343	18	14	44.0	Y II (N)	Y II (N)	Y II (N)		8.2	125	Y II (N)	8:30	SG		OV-183			3/24/2021
187	6:15 AM	43.76	9/27	6:22	AM/PM	9/29	4388	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	6:15	GM		OV-187			5/27/2020
191	6:24 AM	44.00	9/27	6:58	AM/PM	9/29	4365	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	6:16	GM		OV-191	Maintenance working on air compressor		2/20/2020
195	6:34 AM	44.18	9/27	7:06	AM/PM	9/29	4387	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	505	CW		OV-195			6/24/2020
199	6:43 AM	43.79	9/27	7:14	AM/PM	9/29	4386	18.5	14.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	506	CW		OV-199			6/17/2020

PCM Inspection		Comments	Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES-NO		✓ C/O & Chg Times	✓ DP Readings	Must be between 3.0 and 9.0 before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the 1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay. Record all out of sequence and skipped ovens in the comment section	
Hydraulic Oil Spill	YES-NO		6 Max Ovens/Hr	✓ Comments Review		
Windows Good Condition.	YES-NO		✓ Door Fire Obs	✓ Door Fire CAs		
Doors Good Condition.	YES-NO		✓ # Ops Deviations	Rev'd w/ Operator?	Baghouse Settings Daily Audit	
Door fire corrections:						
Tighten door	Place K-Wool					
Open uptake	Raise draft					
Check blocks	Adjust Sole flue					
Verify up take setting	Adjust door holes					
Daily Time Audits must be done on the Prod. Run		TM Signature	Deviation	Enviro Review	Delay to Hood: _____	Coal to feed: _____
					Delay to Fresh: _____	Tons Charged: _____



## HNCC PUSHING REPORT

DATE: 09/30/22

Target Push Times: 4hrs 30 mins

Total Push Time: \_\_\_\_\_

Time Lost: \_\_\_\_\_

Initials: JL NK

Purple: &gt;47.4 tons Blue: &lt;46.6Ton/ &gt;= 45.9 Tons Orange: &lt; 46 Tons 47.2 = No Color

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
								Front	Back			DOOR OBS	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional	Watch Tonnage for Outage	Last Decarb Date
104	4:53 PM	43.67	9/27	417	AM/PM	9/29	4343	18	14	44.0	Y // N	Y // N	Y // N		6.6	121	Y // N	4:00	NB		OV-104 Stack Contractors	8/25/2022
106	5:01 PM	43.57	9/27	424	AM/PM		4362			44.0	Y // N	Y // N	Y // N				Y // N	4:01	NB		OV-108	5/26/2021
112	5:09 PM	43.53	9/27	432	AM/PM		4411			44.0	Y // N	Y // N	Y // N				Y // N	4:02	NB		OV-112	8/17/2022
118	5:16 PM	43.62	9/27	440	AM/PM		4338			44.0	Y // N	Y // N	Y // N				Y // N	4:03	NB		OV-116	1/6/2021
120	5:23 PM	43.55	9/27	447	AM/PM		4330			44.0	Y // N	Y // N	Y // N				Y // N	4:04	NB		OV-120	2/3/2021
124	5:29 PM	43.62	9/27	457	AM/PM		4340			44.0	Y // N	Y // N	Y // N				Y // N	4:05	NB		OV-124 door latch PCM	2/17/2021
126	5:36 PM	43.53	9/27	506	AM/PM		4352			44.0	Y // N	Y // N	Y // N				Y // N	4:06	NB		OV-128	7/28/2022
132	5:44 PM	43.53	9/27	522	AM/PM		MTY			MTY	Y // N	Y // N	Y // N				Y // N	4:08	6/3		OV-132 Leave MTY Push Time 515pm	6/4/2020
136	5:51 PM	43.48	9/27	522	AM/PM		4350			44.0	Y // N	Y // N	Y // N				Y // N	4:01	6/3		OV-136	1/1/2020
140	5:59 PM	43.60	9/27	529	AM/PM		4415			44.0	Y // N	Y // N	Y // N				Y // N	4:02	6/3		OV-140	6/9/2021
144	6:07 PM	43.79	9/27	537	AM/PM		4352			44.0	Y // N	Y // N	Y // N				Y // N	4:03	6/3		OV-144	2/8/2022
148	6:15 PM	43.69	9/27	547	AM/PM		4360			44.0	Y // N	Y // N	Y // N				Y // N	4:04	6/3		OV-148	9/29/2021
152	6:23 PM	43.67	9/27	553	AM/PM		4370			44.0	Y // N	Y // N	Y // N				Y // N	4:05	6/3		OV-152	8/3/2022
156	6:31 PM	43.86	9/27	602	AM/PM		4381			44.0	Y // N	Y // N	Y // N				Y // N	4:06	6/3		OV-156 Charge tons = 4381	4/22/2021
160	6:40 PM	43.96	9/27	610	AM/PM		4427			44.0	Y // N	Y // N	Y // N				Y // N	4:07	6/3		OV-160	6/9/2021
164	6:50 PM	43.41	9/27	618	AM/PM		4370			44.0	Y // N	Y // N	Y // N				Y // N	4:08	6/3		OV-164	5/12/2021
168	6:59 PM	43.41	9/27	627	AM/PM		4348			44.0	Y // N	Y // N	Y // N				Y // N	4:09	6/3		OV-168	5/12/2021
172	7:06 PM	43.41	9/27	636	AM/PM		4393			44.0	Y // N	Y // N	Y // N				Y // N	4:10	6/3		OV-172	12/8/2021
176	7:14 PM	43.50	9/27	644	AM/PM		4365			44.0	Y // N	Y // N	Y // N				Y // N	4:11	6/3		OV-176	1/20/2021
180	7:22 PM	43.45	9/27	654	AM/PM		4384			44.0	Y // N	Y // N	Y // N				Y // N	4:12	6/3		OV-180	4/22/2021
184	7:55 PM	43.43	9/27	704	AM/PM		4376			44.0	Y // N	Y // N	Y // N				Y // N	4:13	6/3		OV-184 Coal wouldn't send	2/8/2022
188	8:08 PM	43.52	9/27	713	AM/PM		4401			44.0	Y // N	Y // N	Y // N				Y // N	4:14	6/3		OV-188	8/3/2022
192	8:18 PM	43.47	9/27	724	AM/PM		MTY			MTY	Y // N	Y // N	Y // N				Y // N	4:15	6/3		OV-192 Leave MTY Push Time 720	3/3/2021
196	8:27 PM	43.45	9/27	730	AM/PM		4425			44.0	Y // N	Y // N	Y // N				Y // N	4:16	6/3		OV-196	9/23/2021
200	8:35 PM	43.62	9/27	737	AM/PM		4348			44.0	Y // N	Y // N	Y // N		8.4	120	Y // N	4:17	6/3		OV-200 8.4 DP	7/28/2022

PCM Inspection		Comments		Record Review		PCM Pressure Readings			
Charged Fire Ext.	YES/NO			✓	C/O & Chg Times	✓	DP Readings		
Hydraulic Oil Spill	YES/NO			7	Max Ovens/Hr	✓	Comments Review		
Windows Good Condition.	YES/NO			✓	Door Fire Obs	✓	Door Fire CAs		
Doors Good Condition.	YES/NO			0	# Ops Deviations	No	Rev'd w/ Operator?		
Door fire corrections:									
Tighten door	Place K-Wool								
Open uptake	Raise draft								
Check blocks	Adjust Sole flue								
Verify up take setting	Adjust door holes								
TM Signature <u>Jaws Fitch</u>				Deviation		Enviro Review			
				Daily Time Audits must be done on the Prod. Run					
				Baghouse Settings Daily Audit					
				Delay to Hood: _____		Coal to feed: _____			
				Delay to Fresh: _____		Tons Charged: _____			



HNCC PUSHING REPORT

DATE: 09/30/22

Purple: >47.4 tons Blue: <46.6Ton/ >= 45.9 Tons Orange: < 46 Tons

Target Push Times: 4hrs 30 mins

Initials: *W*

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TNS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
								Front	Back			DOOR OBS.	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional		
<del>102</del>	11:21 PM	43.41	9/27	1206	AM/PM	9-30	43.70	16	12	44.0	Y II (N)	Y II (N)	Y II (N)		7.4	124	Y II (N)	1200	AS		OV-102	8/20/2021
<del>106</del>	11:30 PM	43.62	9/27	1215	AM/PM		44.34	17	13	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1201	AS		OV-106	7/7/2020
<del>110</del>	11:40 PM	43.50	9/27	1224	AM/PM		44.13	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1202	AS		OV-110	9/29/2021
<del>114</del>	11:48 PM	44.63	9/27	1233	AM/PM		43.50	16	12	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1203	AS		OV-114	8/3/2022
<del>118</del>	11:55 PM	43.62	9/27	1241	AM/PM		44.20	17	13	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1204	AS		OV-118	12/8/2021
<del>122</del>	12:09 AM	42.95	9/28	1250	AM/PM		43.16	16	12	43.5	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1205	AS		OV-122	8/25/2022
<del>126</del>	12:19 AM	43.55	9/28	1258	AM/PM		43.89	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1206	AS		OV-126	8/17/2022
<del>130</del>	MTY	MTY	MTY	1147	AM/PM	9-29	39.60	12	8	40.0	Y II (N)	Y II (N)	Y II (N)		7.3	120	Y II (N)	MTY	MTY		OV-130	Do not charge until TM has told you 9/27/2022
<del>134</del>	12:29 AM	43.54	9/28	205	AM/PM	9-30	43.69	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1200	CW		OV-134	9/14/2022
<del>138</del>	12:36 AM	43.48	9/28	107	AM/PM		43.65	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1200	CW		OV-138	12/8/2021
<del>142</del>	12:43 AM	43.53	9/28	115	AM/PM		44.06	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1201	CW		OV-142	4/13/2022
<del>146</del>	12:50 AM	43.98	9/28	124	AM/PM		43.48	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1202	CW		OV-146	8/25/2022
<del>150</del>	1:01 AM	44.05	9/28	133	AM/PM		43.43	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1203	CW		OV-150	2/14/2022
<del>154</del>	1:10 AM	43.60	9/28	142	AM/PM		44.15	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1204	CW		OV-154	9/14/2022
<del>158</del>	1:20 AM	43.80	9/28	150	AM/PM		43.57	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1205	CW		OV-158	1/31/2022
<del>162</del>	1:35 AM	43.64	9/28	229	AM/PM		43.67	17	13	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1200	CW		OV-162	6/5/2019
<del>166</del>	1:44 AM	44.25	9/28	237	AM/PM		43.65	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1201	CW		OV-166	2/14/2022
<del>170</del>	MTY	MTY	MTY	1133	AM/PM	9-29	40.10	12	8	40.0	Y II (N)	Y II (N)	Y II (N)		5.8	125	Y II (N)	MTY	MTY		OV-170	Do not charge until TM has told you 9/26/2022
<del>174</del>	1:53 AM	43.19	9/28	246	AM/PM	9-30	43.77	17.5	13.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1202	CW		OV-174	1/6/2021
<del>178</del>	2:09 AM	43.33	9/28	253	AM/PM		43.79	17.5	13.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1203	CW		OV-178	2/17/2021
<del>182</del>	2:19 AM	43.67	9/28	302	AM/PM		43.70	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1204	CW		OV-182	4/13/2022
<del>186</del>	2:28 AM	43.55	9/28	310	AM/PM		43.84	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1205	CW		OV-186	1/31/2022
<del>190</del>	2:36 AM	43.69	9/28	318	AM/PM		43.69	17.5	13.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1206	CW		OV-190	3/11/2021
<del>194</del>	2:45 AM	44.25	9/28	328	AM/PM		43.38	16.5	12.5	44.0	Y II (N)	Y II (N)	Y II (N)				Y II (N)	1207	CW		OV-194	8/17/2022
<del>198</del>	3:06 AM	43.70	9/28	337	AM/PM		43.89	17.5	13.5	44.0	Y II (N)	Y II (N)	Y II (N)		9.0	121	Y II (N)	1208	CW		OV-198	5/12/2021

PCM Inspection		Comments	Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES/NO		✓ C/O & Chg Times	✓ DP Readings	Must be between <b>3.0 and 9.0</b> before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the <b>1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay</b> . Record all out of sequence and skipped ovens in the comment section	
Hydraulic Oil Spill	YES/NO		7 Max Ovens/Hr	✓ Comments Review		
Windows Good Condition.	YES/NO		✓ Door Fire Obs	✓ Door Fire CAs	<b>Baghouse Settings Daily Audit</b>  Delay to Hood: _____ Coal to feed: _____ Delay to Fresh: _____ Tons Charged: _____	
Doors Good Condition.	YES/NO		✓ # Ops Deviations	✓ Rev'd w/ Operator?		
Door fire corrections:						
Tighten door	Place K-Wool				Daily Time Audits must be done on the Prod. Run	
Open uptake	Raise draft					
Check blocks	Adjust Sole flue					
Verify up take setting	Adjust door holes					
		TM Signature <i>Paul M. Miller</i>	Deviation	Enviro Review		







HNCC PUSHING REPORT

DATE: 10/01/22  
Initials: BB/MD/NB/DA

Purple: >47.4 tons Blue: <46.6Ton/ >= 45.9 Tons Orange: < 46 Tons 47.2 = No Color

Total Push Time: \_\_\_\_\_ Time Lost: \_\_\_\_\_

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM	CIRCLE	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
									Front	Back			DOOR OBS.	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional		
103	3:33 AM	43.58	9/29	1:53	AM/PM	10/1	43.11	17.2	13.2	44.0	Y II N	Y II N	Y II N			7.9	120	Y II N	1:30AM	NB		OV-103	pulsing bag plant air
107	3:41 AM	43.60	9/29	2:01	AM/PM		43.33	17.2	13.2	44.0	Y II N	Y II N	Y II N					Y II N	1:31AM	NB		OV-107	
111	1:29 AM	43.67	9/29	2:09	AM/PM		43.55	17.8	13.8	44.0	Y II N	Y II N	Y II N					Y II N	1:32AM	NB		OV-111	Carbon
115	mtly	mtly	MTY	10:23	AM/PM	9/30	40.15	13.0	9.0	MTY	Y II N	Y II N	Y II N			9.7	120	Y II N	MTY	MTY		OV-115	Do not charge until TM has told you pulsing
119	1:37 AM	43.81	9/29	2:17	AM/PM	10/1	43.45	18.0	14.0	44.0	Y II N	Y II N	Y II N					Y II N	1:38AM	NB		OV-119	Carbon
123	5:18 AM	43.55	9/29	2:25	AM/PM		43.82	18.0	14.0	43.5	Y II N	Y II N	Y II N					Y II N	1:34AM	NB		OV-123	
127	1:46 AM	44.34	9/29	2:33	AM/PM		43.67	18.2	14.2	44.0	Y II N	Y II N	Y II N			9.2	119	Y II N	1:35AM	NB		OV-127	needs decarbed / pulsing
131	7:53 AM	44.22	9/29	7:19	AM/PM		43.45			43.5	Y II N	Y II N	Y II N			7.9	121	Y II N	6:45	113		OV-131	
135	8:01 AM	43.57	9/29	7:28	AM/PM		43.31			43.5	Y II N	Y II N	Y II N					Y II N	6:46	113		OV-135	
139	8:08 AM	43.76	9/29	7:37	AM/PM		43.07			43.5	Y II N	Y II N	Y II N					Y II N	6:47	113		OV-139	
143	8:17 AM	43.82	9/29	7:45	AM/PM		43.60			43.5	Y II N	Y II N	Y II N					Y II N	6:48	113		OV-143	
147	8:24 AM	43.72	9/29	7:54	AM/PM		43.12			43.5	Y II N	Y II N	Y II N					Y II N	6:49	113		OV-147	
151	mtly	mtly	MTY	10:13	AM/PM	9/30	40.42	13.0	9.0	MTY	Y II N	Y II N	Y II N			9.6	120	Y II N	MTY	MTY		OV-151	Do not charge until TM has told you pulsing
155	8:33 AM	43.74	9/29	8:07	AM/PM		43.19	18	15	43.5	Y II N	Y II N	Y II N					Y II N	6:50	113		OV-155	
159	8:45 AM	43.43	9/29	8:15	AM/PM		42.66	18	15	43.5	Y II N	Y II N	Y II N			9.3	121	Y II N	6:51	113		OV-159	
163	5:34 AM	44.13	9/29	4:46	AM/PM	10/1	43.47	18.0	14.0	44.0	Y II N	Y II N	Y II N			7.1	124	Y II N	4:30AM	DF		OV-163	
167	5:42 AM	43.64	9/29	4:54	AM/PM		43.23	18.0	14.0	44.0	Y II N	Y II N	Y II N					Y II N	4:31	DF		OV-167	
171	5:53 AM	44.34	9/29	5:01	AM/PM		43.43	18.2	14.2	44.0	Y II N	Y II N	Y II N					Y II N	4:32	DF		OV-171	Carbon
175	6:01 AM	43.53	9/29	5:08	AM/PM		43.94	18.5	14.5	44.0	Y II N	Y II N	Y II N					Y II N	4:33	DF		OV-175	Carbon
179	6:09 AM	43.84	9/29	5:15	AM/PM		44.11	18.5	14.5	44.0	Y II N	Y II N	Y II N					Y II N	4:34	DF		OV-179	Over buton / Carbon
183	9:12 AM	43.43	9/29	5:27	AM/PM		43.41	18.0	14.0	43.0	Y II N	Y II N	Y II N					Y II N	4:35	DF		OV-183	
187	6:22 AM	43.88	9/29	5:34	AM/PM		43.17	18.5	14.5	44.0	Y II N	Y II N	Y II N					Y II N	4:36	DF		OV-187	Carbon
191	6:58 AM	43.65	9/29	5:42	AM/PM		43.70	18.5	14.5	44.0	Y II N	Y II N	Y II N					Y II N	4:37	DF		OV-191	Carbon
195	7:06 AM	43.67	9/29	5:50	AM/PM		43.19	18.5	14.5	44.0	Y II N	Y II N	Y II N					Y II N	4:38	DF		OV-195	Carbon
199	7:14 AM	43.76	9/29	5:57	AM/PM		43.23	18.2	14.2	44.0	Y II N	Y II N	Y II N			9.8	119	Y II N	4:39	DF		OV-199	Carbon / Pulsing bags

PCM Inspection		Comments		Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES-NO			✓ C/O & Chg Times	✓ DP Readings	Must be between <u>3.0 and 9.0</u> before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the <b>1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay.</b> Record all out of sequence and skipped ovens in the comment section	
Hydraulic Oil Spill	YES-NO			8 Max Ovens/Hr	✓ Comments Review		
Windows Good Condition.	YES-NO			Door Fire Obs	✓ Door Fire CAs		
Doors Good Condition.	YES-NO			# Ops Deviations	Rev'd w/ Operator?	Baghouse Settings Daily Audit	
Door fire corrections:							
Tighten door	Place K-Wool						
Open uptake	Raise draft						
Check blocks	Adjust Sole flue						
Verify up take setting	Adjust door holes						
		TM Signature		Deviation	Enviro Review	Daily Time Audits must be done on the Prod. Run	
						Delay to Hood: _____ Coal to feed: _____	
						Delay to Fresh: _____ Tons Charged: _____	







HNCC PUSHING REPORT

DATE: 10/02/22

Target Push Times: 4hrs 30 mins

Initials: PH JB

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

Purple: >47.4 tons			Blue: <46.6Ton/ >= 45.9 Tons			Orange: <46 Tons			47.2 = No Color			DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
OVEN	PREV	PREV	DATE	CHG	AM/PM	DATE	TONS	Leveler Settings		Target	SPILL	DOOR	DOOR	Fire Out	Pressure	Fan Amp	Cor Act	CO	PT	TL	WATCH TONNAGE FOR OUTAGE	Last
	TIME	WEIGHT		TIME	CIRCLE		GHG	Front	Back	Weight	>250 LBS	OBS.	FIRE	Time	Reading	Reading	Required	Time	Initial	Optional		
102	X	12:06 AM	9/30	1136	AM	10/1	4367	17	13	44.0	Y N	Y N	Y N		6.6	124	Y N	16:15	NB		OV-102	8/20/2021
106	X	12:15 AM	9/30	1144	AM		4396	18.5	14.6	44.0	Y N	Y N	Y N				Y N	16:16	NB		OV-106	7/7/2020
110	X	12:24 AM	9/30	1151	AM		4401	18	14	44.0	Y N	Y N	Y N				Y N	16:17	NB		OV-110	9/29/2021
114	X	12:33 AM	9/30	1205	AM	10/2	4377	16.5	12.5	44.0	Y N	Y N	Y N		8.5	121	Y N	10:18	NB		OV-114	8/3/2022
118	X	12:41 AM	9/30	1213	AM		4362	17.5	13.5	44.0	Y N	Y N	Y N				Y N	10:19	NB		OV-118	12/8/2021
122	X	12:50 AM	9/30	1222	AM		4370	16.5	12.5	44.0	Y N	Y N	Y N				Y N	10:20	NB		OV-122	8/25/2022
126	X	12:58 AM	9/30	1230	AM		4379	16.5	12.5	44.0	Y N	Y N	Y N				Y N	10:21	NB		OV-126	8/17/2022
130	X	11:47 PM	9/29		AM		4054			40.5	Y N	Y N	Y N				Y N	10:22	NB		OV-130	Sticker 9/27/2022
134	X	2:05 AM	9/30	1248	AM		4387	16	12	44.0	Y N	Y N	Y N				Y N	1030	KS		OV-134	9/14/2022
138	X	1:07 AM	9/30	1256	AM		4372	18	14	44.0	Y N	Y N	Y N				Y N	1031	KS		OV-138	12/8/2021
142	X	1:15 AM	9/30	104	AM		4376	15	11	44.0	Y N	Y N	Y N				Y N	1032	KS		OV-142	4/13/2022
146	X	1:24 AM	9/30	113	AM		4453	16	12	44.0	Y N	Y N	Y N				Y N	1033	KS		OV-146	8/25/2022
150	X	1:33 AM	9/30	121	AM		4378	16	12	44.0	Y N	Y N	Y N				Y N	1034	KS		OV-150	2/14/2022
154	X	1:42 AM	9/30	130	AM		4386	17	13	44.0	Y N	Y N	Y N				Y N	1035	KS		OV-154	9/14/2022
158	X	1:50 AM	9/30	138	AM		4362	17	13	44.0	Y N	Y N	Y N				Y N	1036	KS		OV-158	1/31/2022
162	X	2:29 AM	9/30	152	AM		4350	19	15	44.0	Y N	Y N	Y N				Y N	1037	KS		OV-162	6/5/2019
166	X	2:37 AM	9/30	202	AM		4387	16.5	12.5	44.0	Y N	Y N	Y N				Y N	1038	KS		OV-166	2/14/2022
170	X	11:33 PM	9/29	0	AM		4085	11	7	41.0	Y N	Y N	Y N				Y N	1039	KS		OV-170	Sticker 9/26/2022
174	X	2:46 AM	9/30	228	AM		4392	18.5	14.5	44.0	Y N	Y N	Y N				Y N	1040	KS		OV-174	1/6/2021
178	X	2:53 AM	9/30	236	AM		4382	16.5	14.5	44.0	Y N	Y N	Y N				Y N	1041	KS		OV-178	2/17/2021
182	X	3:02 AM	9/30	245	AM		4392	18.5	12.5	44.0	Y N	Y N	Y N				Y N	1042	KS		OV-182	4/13/2022
186	X	3:10 AM	9/30	253	AM		4365	16.5	12.5	44.0	Y N	Y N	Y N				Y N	1043	KS		OV-186	1/31/2022
190	X	3:18 AM	9/30	307	AM		4377	18.5	14.5	44.0	Y N	Y N	Y N				Y N	1044	KS		OV-190	3/11/2021
194	X	3:28 AM	9/30	309	AM		4387	17	13	44.0	Y N	Y N	Y N				Y N	1045	KS		OV-194	8/17/2022
198	X	3:37 AM	9/30	317	AM		4335	18	14	44.0	Y N	Y N	Y N		9.1	114	Y N	1046	KS		OV-198	5/12/2021

PCM Inspection		Comments		Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES-NO			✓	C/O & Chg Times	✓	DP Readings
Hydraulic Oil Spill	YES-NO			6	Max Ovens/Hr	✓	Comments Review
Windows Good Condition.	YES-NO			✓	Door Fire Obs	✓	Door Fire CAs
Doors Good Condition.	YES-NO			0	# Ops Deviations	NO	Rev'd w/ Operator?
Door fire corrections:							
Tighten door	Place K-Wool						
Open uptake	Raise draft						
Check blocks	Adjust Sole flue						
Verify up take setting	Adjust door holes						
TM Signature <u>Stacy Bond</u>				Deviation		Enviro Review	



HNCC PUSHING REPORT

DATE: 10/03/22

Target Push Times: 4hrs 30 mins

Initials: SH JL RH JB

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

Purple: >47.4 tons			Blue: < 46.6Tons/ >= 45.9 Tons			Orange: < 46 Tons			47.2 = No Color			DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL >250 LBS	DOOR OBS	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional	WATCH TONNAGE FOR OUTAGE	Last Decarb Date
103	1:53 AM	43.11	10/1	506	AM/PM		4123	14	10	44.0	Y // N	Y // N	Y // N				Y // N	430	JG			9/7/2022
107	2:01 AM	43.33	10/1	243	AM/PM	10/3	4280	14	10	44.0	Y // N	Y // N	Y // N		9.0	116	Y // N	220	JG		OV-107	2/24/2021
111	2:09 AM	43.55	10/1	255	AM/PM		4312	15	11	44.0	Y // N	Y // N	Y // N				Y // N	221	JG		OV-111	6/16/2021
115	10:23 PM	40.15	9/30	1014	AM/PM	10-2	4288	13	9	41.0	Y // N	Y // N	Y // N		8.1	113	Y // N	9:29	BR		OV-115	9/27/2022
119	2:17 AM	43.45	10/1	303	AM/PM		4338	16	12	44.0	Y // N	Y // N	Y // N				Y // N	222	JG		OV-119	4/1/2021
123	2:25 AM	43.82	10/1	310	AM/PM		43	16.5	12.5	44.0	Y // N	Y // N	Y // N				Y // N	300	JG		OV-123	1/27/2021
127	2:33 AM	43.67	10/1	320	AM/PM		4285			44.0	Y // N	Y // N	Y // N				Y // N	223	JG		OV-127	3/10/2021
131	7:19 AM	43.45	10/1	336	AM/PM		43			43.0	Y // N	Y // N	Y // N				Y // N	338	JMS		OV-131	4/1/2021
135	7:28 AM	43.31	10/1	344	AM/PM		43			43.0	Y // N	Y // N	Y // N				Y // N	232	JMS		OV-135	5/21/2020
139	7:37 AM	43.07	10/1	352	AM/PM		4302			43.0	Y // N	Y // N	Y // N				Y // N	334	JMS		OV-139	2/24/2021
143	7:45 AM	43.60	10/1	400	AM/PM		4297			43.0	Y // N	Y // N	Y // N				Y // N	340	JMS		OV-143	5/19/2021
147	7:54 AM	43.12	10/1	417	AM/PM		4284			43.0	Y // N	Y // N	Y // N				Y // N	250	JMS		OV-147	3/10/2021
151	10:13 PM	40.42	9/30	430	AM/PM		4094	41.21		41.0	Y // N	Y // N	Y // N				Y // N	9:30	BR		OV-151	9/27/2022
155	8:07 AM	43.19	10/1	439	AM/PM		4292	42.92		43.0	Y // N	Y // N	Y // N				Y // N	351	JMS		OV-155	4/15/2020
159	8:15 AM	42.66	10/1	449	AM/PM		4316			43.0	Y // N	Y // N	Y // N				Y // N	352	JMS		OV-159	1/27/2021
163	4:46 AM	43.47	10/1	523	AM/PM		4319			44.0	Y // N	Y // N	Y // N				Y // N	4am	JMS		OV-163	2/10/2021
167	4:54 AM	43.23	10/1	533	AM/PM		4304			44.0	Y // N	Y // N	Y // N				Y // N	4:01	JMS		OV-167	5/27/2020
171	5:01 AM	43.48	10/1	542	AM/PM		4294			44.0	Y // N	Y // N	Y // N				Y // N	4:02	JMS		OV-171	9/25/2020
175	5:08 AM	43.94	10/1	551	AM/PM		4321			44.0	Y // N	Y // N	Y // N				Y // N	4:03	JMS		OV-175	9/7/2022
179	5:15 AM	44.11	10/1	559	AM/PM		4351			44.0	Y // N	Y // N	Y // N				Y // N	4:04	JMS		OV-179	6/10/2020
183	5:27 AM	43.41	10/1	609	AM/PM		4322			44.0	Y // N	Y // N	Y // N				Y // N	4:05	JMS		OV-183	3/24/2021
187	5:34 AM	43.17	10/1	615	AM/PM		4341			44.0	Y // N	Y // N	Y // N				Y // N	4:06	JMS		OV-187	5/27/2020
191	5:42 AM	43.70	10/1	623	AM/PM		4292			44.0	Y // N	Y // N	Y // N				Y // N	4:07	JMS		OV-191	2/20/2020
195	5:50 AM	43.19	10/1	630	AM/PM		4321			44.0	Y // N	Y // N	Y // N				Y // N	4:08	JMS		OV-195	6/24/2020
199	5:57 AM	43.23	10/1	637	AM/PM		4319			44.0	Y // N	Y // N	Y // N		9.8	112	Y // N	4:09	JMS		OV-199	6/17/2020


PCM Inspection		Comments		Record Review		PCM Pressure Readings			
Charged Fire Ext.	YES NO			✓	✓	Must be between 3.0 and 9.0 before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the 1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay. Record all out of sequence and skipped ovens in the comment section			
Hydraulic Oil Spill	YES NO			✓	✓				
Windows Good Condition.	YES NO			✓	✓				
Doors Good Condition.	YES NO			✓	✓				
Door fire corrections:		# Ops Deviations		Rev'd w/ Operator?		Baghouse Settings Daily Audit			
Tighten door	Place K-Wool	TM Signature <i>Stacey Bond</i>		Deviation					
Open uptake	Raise draft								
Check blocks	Adjust Sole flue								
Verify up take setting	Adjust door holes			Daily Time Audits must be done on the Prod. Run					
						Delay to Hood: _____			
						Delay to Fresh: _____			
						Coal to feed: _____			
						Tons Charged: _____			



Time Lost :

Initials: ML SH

47.2 = No Color

PCM Inspection		Comments	Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES <input checked="" type="checkbox"/> NO		<input checked="" type="checkbox"/> C/O & Chg Times	<input checked="" type="checkbox"/> DP Readings	Must be between <b>3.0 and 9.0</b> before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the <b>1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay.</b> Record all out of sequence and skipped ovens in the comment section	
Hydraulic Oil Spill	YES <input checked="" type="checkbox"/> NO		<input checked="" type="checkbox"/> Max Ovens/Hr	<input checked="" type="checkbox"/> Comments Review		
Windows Good Condition.	YES <input checked="" type="checkbox"/> NO		<input checked="" type="checkbox"/> Door Fire Obs	<input checked="" type="checkbox"/> Door Fire CAs		
Doors Good Condition.	YES <input checked="" type="checkbox"/> NO		<input checked="" type="checkbox"/> # Ops Deviations	<input checked="" type="checkbox"/> Rev'd w/ Operator?		
<b>Door fire corrections:</b> Tighten door      Place K-Wool Open uptake      Raise draft Check blocks      Adjust Sole flue Verify up take setting      Adjust door holes		TM Signature  Deviation _____ Enviro Review _____	Daily Time Audits must be done on the Prod. Run		<b>Baghouse Settings Daily Audit</b> Delay to Hood: _____ Coal to feed: _____ Delay to Fresh: _____ Tons Charged: _____	



HNCC PUSHING REPORT

DATE: 10/04/22

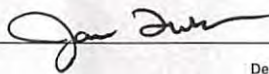
Target Push Times: 4hrs 30 mins

Initials: M. L / SH

Total Push Time: \_\_\_\_\_

Time Lost : \_\_\_\_\_

Purple: >47.4 tons Blue: < 46.6Ton/ >= 45.9 Tons Orange:< 46 Tons 47.2 = No Color										DOOR FIRE - PUSHER SIDE				PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:			
OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	Leveler Settings Front Back		Target Weight	SPILL >250 LBS	DOOR OBS.	DOOR FIRE	Fire Out Time	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional	Comments	Last Decarb Date	
104	4:00 PM	44.08	10/1	407	AM/PM	10-3	4418	18	14	44.0	Y // N	Y // N	Y // N		4.8	117	Y // N	3:58	NB		OV-104	8/25/2022	
108	4:08 PM	44.32	10/1	415	AM/PM		4352			44.0	Y // N	Y // N	Y // N				Y // N	3:59	NB		OV-108	5/26/2021	
112	4:18 PM	43.21	10/1	423	AM/PM		4321			43.5	Y // N	Y // N	Y // N				Y // N	4:00	NB		OV-112	8/17/2022	
116	4:27 PM	43.17	10/1	431	AM/PM		4331			43.5	Y // N	Y // N	Y // N				Y // N	4:01	NB		OV-116	1/6/2021	
120	4:35 PM	43.93	10/1	439	AM/PM		4396			44.0	Y // N	Y // N	Y // N				Y // N	4:02	NB		OV-120	2/3/2021	
124	4:44 PM	43.74	10/1	458	AM/PM		4397			44.0	Y // N	Y // N	Y // N				Y // N	4:03	NB		OV-124	2/17/2021	
128	4:52 PM	43.21	10/1	507	AM/PM		4343	16	12	43.5	Y // N	Y // N	Y // N				Y // N	4:04	NB		OV-128	7/28/2022	
132	MTY	MTY	MTY		AM/PM					MTY	Y // N	Y // N	Y // N				Y // N	MTY	MTY		OV-132	Do Not Charge Oven	6/4/2020
136	5:02 PM	43.24	10/1	516	AM/PM		4328	19.5	15.5	43.5	Y // N	Y // N	Y // N				Y // N	4:50	NB		OV-136	1/1/2020	
140	5:10 PM	43.50	10/1	525	AM/PM		4376	18	14	43.5	Y // N	Y // N	Y // N				Y // N	4:52	NB		OV-140	6/9/2021	
144	5:17 PM	43.31	10/1	533	AM/PM		4347			43.5	Y // N	Y // N	Y // N				Y // N	4:54	NB		OV-144	2/8/2022	
148	5:25 PM	43.48	10/1	543	AM/PM		4384	18.5	14.5	43.5	Y // N	Y // N	Y // N				Y // N	4:57	NB		OV-148	9/29/2021	
152	5:32 PM	44.27	10/1	552	AM/PM		4377	16	12	44.0	Y // N	Y // N	Y // N				Y // N	5:00	NB		OV-152	8/3/2022	
156	5:40 PM	43.72	10/1	601	AM/PM		4401	19.5	15.5	44.0	Y // N	Y // N	Y // N				Y // N	5:02	NB		OV-156	4/22/2021	
160	5:47 PM	43.57	10/1	609	AM/PM		4353	19	15	43.5	Y // N	Y // N	Y // N				Y // N	5:05	NB		OV-160	6/9/2021	
164	5:56 PM	43.81	10/1	626	AM/PM		4442	18	14	44.0	Y // N	Y // N	Y // N				Y // N	5:07	NB		OV-164	5/12/2021	
168	6:04 PM	43.47	10/1	628	AM/PM		4382	19	15	43.5	Y // N	Y // N	Y // N				Y // N	5:10	NB		OV-168	5/12/2021	
172	6:13 PM	43.52	10/1	636	AM/PM		4345	18	14	43.5	Y // N	Y // N	Y // N				Y // N	5:12	NB		OV-172	12/8/2021	
176	6:22 PM	43.50	10/1	649	AM/PM		4347	19.5	15.5	43.5	Y // N	Y // N	Y // N				Y // N	5:15	NB		OV-176	1/20/2021	
180	6:30 PM	43.58	10/1	653	AM/PM		4393	19	15	43.5	Y // N	Y // N	Y // N				Y // N	5:17	NB		OV-180	4/22/2021	
184	6:39 PM	43.88	10/1	701	AM/PM		4423	16.5	12.5	44.0	Y // N	Y // N	Y // N				Y // N	5:20	NB		OV-184	2/8/2022	
188	6:48 PM	43.58	10/1	710	AM/PM		4348	16	12	43.5	Y // N	Y // N	Y // N				Y // N	5:22	NB		OV-188	8/3/2022	
192	MTY	MTY	MTY		AM/PM					MTY	Y // N	Y // N	Y // N				Y // N	MTY	MTY		OV-192	Do Not Charge Oven	3/3/2021
196	6:56 PM	43.53	10/1	718	AM/PM		4379	18	14	43.5	Y // N	Y // N	Y // N				Y // N	5:25	NB		OV-196	9/23/2021	
200	7:03 PM	43.57	10/1	726	AM/PM		4329	16	12	43.5	Y // N	Y // N	Y // N		8.3	111	Y // N	5:28	NB		OV-200	7/28/2022	

PCM Inspection		Comments		Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES-NO			✓	C/O & Chg Times	✓	DP Readings
Hydraulic Oil Spill	YES-NO			7	Max Ovens/Hr	✓	Comments Review
Windows Good Condition.	YES-NO			✓	Door Fire Obs	✓	Door Fire CAs
Doors Good Condition.	YES-NO			0	# Ops Deviations	NO	Rev'd w/ Operator?
Door fire corrections:							
Tighten door	Place K-Wool						
Open uptake	Raise draft						
Check blocks	Adjust Sole flue						
Verify up take setting	Adjust door holes						
				TM Signature		Deviation	
						Enviro Review	
Daily Time Audits must be done on the Prod. Run						Baghouse Settings Daily Audit	
						Delay to Hood: _____	Coal to feed: _____
						Delay to Fresh: _____	Tons Charged: _____



## HNCC PUSHING REPORT

DATE: 10/04/22

Target Push Times: 4hrs 30 mins

Total Push Time: \_\_\_\_\_

Time Lost: \_\_\_\_\_

Initials: MA JR

Purple: &gt;47.4 tons Blue: &lt;46.6Ton/ &gt;= 45.9 Tons Orange: &lt; 46 Tons 47.2 = No Color

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM	DATE	TONS GHG	Leveler Settings		Target Weight	SPILL	DOOR FIRE - PUSHER SIDE			PCM Pressure Readings			Oven Inspection			Operator / Maint Corrective Action Comments:	
								Front	Back			DOOR	DOOR	Fire Out	Pressure Reading	Fan Amp Reading	Cor Act Required	CO Time	PT Initial	TL Optional		
102	11:36 PM	43.67	10/1	11:33	AM/PM	10/3	4406	16.5	12.5	44.0	Y // N	Y // N	Y // N		6.9	122	Y // N	10:15	NB		OV-102	8/20/2021
106	11:44 PM	43.96	10/1	11:40	AM/PM		4350	17	13	44.0	Y // N	Y // N	Y // N				Y // N	10:16	NB		OV-106	7/7/2020
110	11:51 PM	44.01	10/1	11:48	AM/PM		4398	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	10:17	NB		OV-110	9/29/2021
114	12:05 AM	43.77	10/2	11:58	AM/PM		4370	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	10:18	NB		OV-114	8/3/2022
118	12:13 AM	43.62	10/2	12:08	AM/PM	10/4	4362	17	13	44.0	Y // N	Y // N	Y // N				Y // N	10:19	NB		OV-118	12/8/2021
122	12:22 AM	43.70	10/2	12:17	AM/PM		4355	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	10:20	NB		OV-122	8/25/2022
126	12:30 AM	43.79	10/2	1:13	AM/PM		4411	17	13	44.0	Y // N	Y // N	Y // N				Y // N	10:21	NB		OV-126	8/17/2022
130	11:47 PM	39.60	9/29	10:04	AM/PM	10/4	4071	10.5		40.0	Y // N	Y // N	Y // N	AA	8.5	116	Y // N	10:22	NB		OV-130	9/27/2022
134	12:48 AM	43.87	10/2	1:22	AM/PM		4377	17	13	44.0	Y // N	Y // N	Y // N				Y // N	1200	CW		OV-134	9/14/2022
138	12:56 AM	43.72	10/2	1:40	AM/PM		4420	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	1201	CW		OV-138	12/8/2021
142	1:04 AM	43.76	10/2	1:48	AM/PM		4375	17	13	44.0	Y // N	Y // N	Y // N				Y // N	1202	CW		OV-142	4/13/2022
146	1:13 AM	44.53	10/2	1:56	AM/PM	10/4	4390	17	13	44.0	Y // N	Y // N	Y // N				Y // N	1203	CW		OV-146	8/25/2022
150	1:21 AM	43.28	10/2	2:06	AM/PM		4362	17	13	44.0	Y // N	Y // N	Y // N				Y // N	1204	CW		OV-150	2/14/2022
154	1:30 AM	43.86	10/2	2:14	AM/PM		4370	17	13	44.0	Y // N	Y // N	Y // N				Y // N	1205	CW		OV-154	9/14/2022
158	1:38 AM	43.62	10/2	2:25	AM/PM		4325	17	13	44.0	Y // N	Y // N	Y // N				Y // N	1206	CW		OV-158	1/31/2022
162	1:52 AM	43.50	10/2	2:49	AM/PM		4330	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	1207	CW		OV-162	6/5/2019
166	2:02 AM	43.87	10/2	2:58	AM/PM		4388	17	13	44.0	Y // N	Y // N	Y // N				Y // N	1208	CW		OV-166	2/14/2022
170	11:33 PM	40.10	9/29	3:09	AM/PM		3974	16	12	40.0	Y // N	Y // N	Y // N				Y // N	101	CW		OV-170	9/26/2022
174	2:28 AM	43.92	10/2	3:17	AM/PM		4382	17	13	44.0	Y // N	Y // N	Y // N				Y // N	102	CW		OV-174	1/6/2021
178	2:36 AM	43.82	10/2	3:25	AM/PM		4434	17.5	13.5	44.0	Y // N	Y // N	Y // N				Y // N	103	CW		OV-178	2/17/2021
182	2:45 AM	43.92	10/2	3:34	AM/PM		4440	17	13	44.0	Y // N	Y // N	Y // N				Y // N	104	CW		OV-182	4/13/2022
186	2:53 AM	43.65	10/2	3:42	AM/PM		4400	17	13	44.0	Y // N	Y // N	Y // N				Y // N	105	CW		OV-186	1/31/2022
190	3:01 AM	43.74	10/2	3:50	AM/PM		4485	18	14	44.0	Y // N	Y // N	Y // N				Y // N	106	CW		OV-190	3/11/2021
194	3:09 AM	43.89	10/2	3:58	AM/PM		4303	17	13	44.0	Y // N	Y // N	Y // N				Y // N	107	CW		OV-194	8/17/2022
198	3:17 AM	43.35	10/2	4:13	AM/PM		4329	16.5	12.5	44.0	Y // N	Y // N	Y // N		10.0	113	Y // N	108	CW		OV-198	5/12/2021

PCM Inspection		Comments		Record Review		PCM Pressure Readings	
Charged Fire Ext.	YES/NO	Big water leak	✓	C/O & Chg Times	✓	Must be between 3.0 and 9.0 before operating. If the pressure isn't within the required range at any time, notify your Supervisor immediately. Write the corrective actions in the comment section. Record a Pressure & Fan Amps reading on the 1st oven you push, the last oven you push, and the 1st oven pushed after a 1 hour delay. Record all out of sequence and skipped ovens in the comment section	
Hydraulic Oil Spill	YES/NO	on head of pushing	7	Max Ovens/Hr	✓		
Windows Good Condition.	YES/NO	can't see	✓	Door Fire Obs	✓		
Doors Good Condition.	YES/NO	will hook up plant air to keep pushing after production	0	# Ops Deviations	No		
Door fire corrections:		TM Signature <u>Jane Fitch</u>		Deviation		Daily Time Audits must be done on the Prod. Run	
Tighten door	Place K-Wool					Baghouse Settings Daily Audit	
Open uptake	Raise draft					Delay to Hood: _____ Coal to feed: _____	
Check blocks	Adjust Sole flue					Delay to Fresh: _____ Tons Charged: _____	
Verify up take setting	Adjust door holes						



**Appendix C**  
**CALCULATIONS AND FIELD DATA**



## Calculation Summary

Project Name	HHO CD Test						
Project Number	60682866						
Facility	SunCoke Haverhill Ohio						
Sample Type	M29	M29	M29	M5/202	M5/202	M5/202	Averages
Source	BVS-6	BVS-6	BVS-6	BVS-6	BVS-6	BVS-6	
Condition	Mid Cycle	Late Cycle	Production	Production	Mid Cycle	Late Cycle	
Run	1	2	3	4	5	6	
Date	9/28/2022	9/28/2022	9/29/2022	10/1/2022	10/3/2022	10/3/2022	
Time Start	10:51	17:33	16:22	16:07	10:15	13:50	
Time Stop	15:37	21:27	20:15	20:28	12:59	15:57	
Sampling Times	10:51-15:37	17:33-21:27	16:22-20:15	16:07-20:28	10:15-12:59	13:50-15:57	
Duct Diameter (ft) <i>(equivalent if square duct)</i>	9.00	9.00	9.00	9.00	9.00	9.00	
Pitot Tube Correction Factor	0.84	0.84	0.84	0.84	0.84	0.84	
Nozzle Diameter (inches)	0.375	0.375	0.375	0.370	0.370	0.370	
DGMCF ( $Y_d$ )	0.986	0.986	0.986	1.001	1.001	1.001	
Orifice Factor ("wc) ( $\Delta H_o$ )	1.899	1.899	1.899	1.888	1.888	1.888	
Console Identification	SC-M1544	SC-M1544	SC-M1544	SC-M1542	SC-M1542	SC-M1542	1521.7
Standard Temperature ( $^{\circ}\text{F}$ ) ( $T_{std}$ )	68	68	68	68	68	68	
Barometric Pressure Measured ("Hg)	28.87	28.93	29.69	29.36	29.67	29.61	
Stack Elevation (ft) (relative to Barometer)	25	25	0	0	0	0	
Barometric Pressure ("Hg) ( $P_{bar}$ )	28.845	28.905	29.69	29.36	29.67	29.61	
Average Stack Temperature ( $^{\circ}\text{F}$ ) ( $T_s$ )	1449.8	1354.0	1610.6	1693.8	1523.3	1498.6	
Average DGM Temp ( $^{\circ}\text{F}$ ) ( $T_m$ )	67.9	71.0	74.3	51.0	49.6	65.5	
Average Delta H ("wc) ( $\Delta H_{avg}$ )	0.91	1.20	1.21	1.53	1.40	1.21	
Condensed Water (g)	314.0	324.8	386.2	251.6	185.2	164.4	
Test Duration (minutes) ( $\Theta$ )	228	216	216	120	120	120	
Static Pressure ("wc) ( $P_g$ )	-0.20	-0.20	-0.31	-0.20	-0.20	-0.20	
Carbon Monoxide Content (%) (%CO)	0	0	0	0	0	0	
Carbon Dioxide Content (%) (%CO <sub>2</sub> )	7.37	6.30	8.16	7.88	7.57	7.17	
Oxygen Content (%) (%O <sub>2</sub> )	10.37	12.09	8.91	9.35	9.94	10.71	
Hydrogen Content (%) (%H <sub>2</sub> )	0.0	0.0	0.0	0.0	0.0	0.0	
Methane Content (%) (%CH <sub>4</sub> )	0.0	0.0	0.0	0.0	0.0	0.0	
Nitrogen Content (%) (%N <sub>2</sub> )	82.26	81.61	82.93	82.77	82.49	82.12	
Meter Volume (dcf) ( $V_m$ )	118.587	127.887	133.997	79.839	74.017	70.726	11.34
Average square root of $\Delta P$ ( $(\sqrt{\Delta P})_{avg}$ )	0.446	0.484	0.492	0.589	0.565	0.521	
Absolute Stack Pressure ("Hg) ( $P_s$ )	28.83	28.89	29.67	29.35	29.66	29.60	
Absolute Stack Temperature ( $^{\circ}\text{R}$ ) ( $T_s$ )	1909.8	1814.0	2070.6	2153.8	1983.3	1958.6	
Flue Gas Moisture (%) ( $B_{ws}$ )	11.60	11.21	12.31	12.74	10.27	9.91	
Moisture at saturation	N/A	N/A	N/A	N/A	N/A	N/A	
Moisture used in Calculation	11.60	11.21	12.31	12.74	10.27	9.91	
Gas Molecular Wt (Wet) (g/g-mole) ( $M_s$ )	28.25	28.20	28.23	28.15	28.42	28.43	
Corrected Vol of Gas Sample (dcf) ( $V_{m(actual)}$ )	116.927	126.097	132.121	79.919	74.091	70.797	
Volume at Meter (dscf) ( $V_M$ )	113.005	121.510	129.953	81.349	76.386	70.608	
Average Gas Velocity (ft/sec) ( $V_s$ )	49.01	51.86	55.51	68.29	62.19	57.13	
Avg Flow Rate (acfh)	11,224,847	11,876,843	12,711,962	15,638,843	14,242,887	13,084,492	
Avg Flow Rate (acfm)	187,081	197,947	211,866	260,647	237,381	218,075	
Avg Flow Rate (scfh)	2,990,263	3,338,055	3,214,088	3,760,192	3,758,223	3,489,071	
Avg Flow Rate (scfm)	49,838	55,634	53,568	62,670	62,637	58,151	



## Calculation Summary

Avg Flow Rate (dscfh) ( $Q_{sd}$ )	2,643,390	2,963,905	2,818,517	3,280,970	3,372,115	3,143,426	3,037,054
Avg Flow Rate (dscfm) ( $Q_{sd}$ )	44,057	49,398	46,975	54,683	56,202	52,390	50,618
Isokinetic Sampling Rate (%) (I)	93.31	94.46	106.23	105.62	96.50	95.69	

### Console Calibration Check

Console Identification	SC-M1544	SC-M1544	SC-M1544	SC-M1542	SC-M1542	SC-M1542
Date	9/28/2022	9/28/2022	9/29/2022	10/1/2022	10/3/2022	10/3/2022
Project Name	HHO CD Test					
Test Duration (minutes) ( $\Theta$ )	228	216	216	120	120	120
Meter Volume (dcf) ( $V_m$ )	118.59	127.89	134.00	79.84	74.02	70.73
Oxygen Content (%) ( $\%O_2$ )	10.37	12.09	8.91	9.35	9.94	10.71
Carbon Dioxide Content (%) ( $\%CO_2$ )	7.37	6.30	8.16	7.88	7.57	7.17
Nitrogen Content (%) ( $\%N_2$ )	82.26	81.61	82.93	82.77	82.49	82.12
Average DGM Temp ( $^{\circ}F$ ) ( $T_m$ )	67.92	70.9545455	74.2727273	50.96	49.6153846	65.5
Orifice Factor ("wc) ( $\Delta H_{\theta}$ )	1.899	1.899	1.899	1.888	1.888	1.888
Barometric Pressure ("Hg) (Pbar)	28.85	28.91	29.69	29.36	29.67	29.61
Average Delta H ("wc) ( $\Delta H_{avg}$ )	0.91	1.20	1.21	1.53	1.40	1.21
Average square root of $\Delta H$ ( $(\sqrt{\Delta H})_{avg}$ )	0.94	1.09	1.08	1.23	1.18	1.09
Gas Molecular Weight (Dry) ( $M_d$ ) (g/g-mole)	29.6	29.5	29.7	29.6	29.6	29.6
DGMCF (Yd)	0.986	0.986	0.986	1.001	1.001	1.001
Dry Gas Meter Calibration Check Value ( $Y_{QA}$ )	0.99	1.01	0.95	0.99	1.02	1.01
Deviation $Y_{QA}$ to $Y_d$ (%)	0.01	2.76	-4.03	-0.72	1.65	0.44

DGM post-test calibration is acceptable when Deviation is below 3.5.

If not, the DGM must undergo a 3-point post-test calibration.

	Run			4	5	6	
	Condition			Production	Mid Cycle	Late Cycle	
Filter Weight Gain (mg)				101.34	29.83	28.54	
PNR Weight Gain (mg)				50.676	50.254	44.843	
Impinger Residue (mg)				94.42	133.69	163.01	
Front-Half Particulate Loading (gr/dscf)	#VALUE!	#VALUE!	#VALUE!	0.0288	0.0162	0.0160	0.0203
Back-Half Particulate Loading (gr/dscf)	NA	NA	NA	0.0179	0.0270	0.0356	0.0268
Total Particulate Loading (gr/dscf)	#VALUE!	#VALUE!	#VALUE!	0.0467	0.0432	0.0517	0.0472
Front-Half Particulate Loading (mg/dscm)	#VALUE!	#VALUE!	#VALUE!	66.0	37.0	36.7	46.6
Back-Half Particulate Loading (mg/dscm)	NA	NA	NA	41.0	61.8	81.5	61.4
Total Particulate Loading (mg/dscm)	#VALUE!	#VALUE!	#VALUE!	107	98.8	118	108
Front-Half Particulate Loading $O_2$ Corr (gr/dscf)	#VALUE!	#VALUE!	#VALUE!	0.0347	0.0205	0.0219	0.0257
Back-Half Particulate Loading $O_2$ Corrected (gr/dscf)	NA	NA	NA	0.0216	0.0343	0.0486	0.0348
Total Particulate Loading $O_2$ Corrected (gr/dscf)	#VALUE!	#VALUE!	#VALUE!	0.0563	0.0548	0.0705	0.0605
Front-Half Particulate Loading $O_2$ Corrected (mg/dscm)	#VALUE!	#VALUE!	#VALUE!	79.4	46.9	50.1	58.8
Back-Half Particulate Loading $O_2$ Corrected (mg/dscm)	NA	NA	NA	49.3	78.4	111	79.6
Total Particulate Loading $O_2$ Corrected (mg/dscm)	#VALUE!	#VALUE!	#VALUE!	129	125	161	138
Front-Half Particulate Emission (lbs/hr)	#VALUE!	#VALUE!	#VALUE!	13.5	7.79	7.20	9.50
Total Particulate Emission (lbs/hr)	#VALUE!	#VALUE!	#VALUE!	21.9	20.8	23.2	22.0



## Calculation Summary

### Data Entry Area

Sample Type	M29	Pitot Tube Correction Factor	0.84	Entered By (initials)	<b>GSW</b>
Source	BVS-6	Console ID	SC-M1544	Checked by (initials)	<b>SP</b>
Condition	Mid Cycle	DGMCF	0.986	Corrected by (initials)	
Run	1	$\Delta H_{\oplus}$	1.899	Value Link Checked	
Date	28-Sep-22	Nozzle Diameter (in)	0.375	% CO	
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO <sub>2</sub>	7.37
Duct Depth (ft)		Bar Press ("Hg, meas)	28.87	% O <sub>2</sub>	10.37
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	25	% H <sub>2</sub>	
		Static Press ("H <sub>2</sub> O)	-0.2	% CH <sub>4</sub>	

Times		DGM Volumes (as read)		Impinger Catch (g)		
				Initial	Final	
start	10:51	start	724.263			
stop	11:39	stop	749.566	1	736.2	88.7
start	11:45	start	749.566	2	706.9	16.8
stop	12:33	stop	767.997	3	640.1	181.2
start	13:16	start	767.997	4	723.7	1.4
stop	14:16	stop	799.210	5	750.0	1
start	14:25	start	799.210	6	887.2	24.9
stop	15:37	stop	842.850	7		--
start		start		8		--
stop		stop		9		--
start		start		10		--
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
				Total Wt Gain		
Duration		Total		314.0		
228		118.587				

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.21	0.91	1450	67.9	0.4457	0.9355

Individual	0.20	0.88	1495	58	0.4472136	0.93808315
Readings	0.20	0.88	1486	60	0.4472136	0.93808315
	0.14	0.62	1474	65	0.37416574	0.78485667
	0.11	0.48	1485	66	0.33166248	0.69570109
	0.13	0.57	1474	68	0.36055513	0.75630682
	0.15	0.66	1462	62	0.38729833	0.81240384
	0.22	0.97	1490	63	0.46904158	0.98386991
	0.21	0.92	1472	60	0.45825757	0.96124919
	0.29	1.28	1495	66	0.53851648	1.1296017
	0.30	1.32	1487	63	0.54772256	1.14891253
	0.37	1.63	1477	67	0.60827625	1.27593103



### Calculation Summary

[illegible]



## Calculation Summary

### Data Entry Area

Sample Type	M29	Pitot Tube Correction Factor	0.84	Entered By (initials) Checked by (initials) Corrected by (initials)	GSW	
Source	BVS-6	Console ID	SC-M1544		SP	
Condition	Late Cycle	DGMCF	0.986			
Run	2	$\Delta H_{\oplus}$	1.899	ValueLink Checked		
Date	28-Sep-22	Nozzle Diameter (in)	0.375			
Duct Diameter (ft)	9	Std Temp (°F)	68		% CO	
Duct Depth (ft)		Bar Press ("Hg, meas)	28.93		% CO <sub>2</sub>	6.3
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	25		% O <sub>2</sub>	12.09
		Static Press ("H <sub>2</sub> O)	-0.2		% H <sub>2</sub>	
					% CH <sub>4</sub>	

Times		DGM Volumes (as read)		Impinger Catch (g)			
start	17:33	start	844.945		Initial	Final	
stop	18:27	stop	875.594	1	544.6	768.3	223.7
start	18:34	start	875.594	2	728.4	796.3	67.9
stop	19:28	stop	908.440	3	765.5	768.8	3.3
start	19:34	start	908.440	4	647.7	649.2	1.5
stop	20:28	stop	941.114	5	749.8	748.5	-1.3
start	20:33	start	941.114	6	745.7	746.7	1
stop	21:27	stop	972.832	7	931.6	960.3	28.7
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
				Total Wt Gain 324.8			
Duration	216	Total	127.887				

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\sqrt{\Delta P}$	$\sqrt{\Delta H}$
Averages	0.24	1.20	1354	71.0	0.4840	1.0907

Individual Readings	0.20	1.00	1442	75	0.4472136	1
	0.20	1.00	1431	73	0.4472136	1
	0.19	0.95	1430	76	0.43588989	0.974679434
	0.19	0.95	1430	74	0.43588989	0.974679434
	0.18	0.90	1413	72	0.42426407	0.948683298
	0.21	1.05	1411	78	0.45825757	1.024695077
	0.20	1.00	1398	74	0.4472136	1
	0.20	1.00	1406	72	0.4472136	1
	0.24	1.20	1394	73	0.48989795	1.095445115
	0.24	1.20	1392	71	0.48989795	1.095445115
	0.30	1.53	1381	70	0.54772256	1.236931688



### Calculation Summary

[illegible]



## Calculation Summary

### Data Entry Area

Sample Type	M29	Pitot Tube Correction Factor	0.84	Entered By (initials)	<b>GSW</b>
Source	BVS-6	Console ID	SC-M1544	Checked by (initials)	<b>SP</b>
Condition	Production	DGMCF	0.986	Corrected by (initials)	
Run	3	$\Delta H_{\oplus}$	1.899	Value Link Checked	
Date	29-Sep-22	Nozzle Diameter (in)	0.375	% CO	
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO <sub>2</sub>	8.2
Duct Depth (ft)		Bar Press ("Hg, meas)	29.69	% O <sub>2</sub>	8.9
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0	% H <sub>2</sub>	
		Static Press ("H <sub>2</sub> O)	-0.31	% CH <sub>4</sub>	

Times		DGM Volumes (as read)		Impinger Catch (g)		
				Initial	Final	
start	16:22	start	32.468			
stop	17:16	stop	68.096	1	576.5	899.2 322.7
start	17:25	start	68.096	2	741.5	772.0 30.5
stop	18:19	stop	92.967	3	712.1	713.3 1.2
start	18:21	start	92.967	4	642.3	644.6 2.3
stop	19:15	stop	125.761	5	726.0	727.3 1.3
start	19:21	start	125.761	6	753.8	755.6 1.8
stop	20:15	stop	166.465	7	898.6	925.0 26.4
start		start		8		--
stop		stop		9		--
start		start		10		--
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
				Total Wt Gain		
				386.2		
Duration	216	Total	133.997			

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.25	1.21	1611	74.3	0.4915	1.0814

Individual	0.29	1.48	1492	74	0.53851648	1.21655251
Readings	0.30	1.53	1548	79	0.54772256	1.23693169
	0.34	1.70	1585	79	0.58309519	1.30384048
	0.33	1.70	1648	79	0.57445626	1.30384048
	0.27	1.40	1646	80	0.51961524	1.18321596
	0.26	1.30	1681	79	0.50990195	1.14017543
	0.25	1.30	1716	78	0.5	1.14017543
	0.27	1.40	1703	79	0.51961524	1.18321596
	0.26	1.30	1707	78	0.50990195	1.14017543
	0.33	1.70	1697	78	0.57445626	1.30384048
	0.36	1.70	1697	77	0.6	1.30384048



### Calculation Summary

[illegible]



Calculation Summary

Data Entry Area

Sample Type	M5/202	Pitot Tube Correction Factor	0.84	Entered By (initials)	GSW
Source	BVS-6	Console ID	SC-M1542	Checked by (initials)	
Condition	Production	DGMCF	1.001	Corrected by (initials)	
Run	4	$\Delta H_{\oplus}$	1.888	Value	Link Checked
Date	01-Oct-22	Nozzle Diameter (in)	0.370	% CO	
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO <sub>2</sub>	7.88
Duct Depth (ft)		Bar Press ("Hg, meas)	29.36	% O <sub>2</sub>	9.35
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0	% H <sub>2</sub>	
		Static Press ("H <sub>2</sub> O)	-0.2	% CH <sub>4</sub>	

Times		DGM Volumes (as read)		Impinger Catch (g)		
				Initial	Final	
start	16:07	start	720.812			
stop	16:37	stop	740.997	1	501.3	717.7
start	16:40	start	740.997	2	613.2	612.3
stop	17:10	stop	761.090	3	706.4	707.1
start	17:14	start	761.090	4	958.0	993.4
stop	17:28	stop	770.914	5		--
start	18:38	start	777.595	6		--
stop	18:54	stop	786.706	7		--
start	19:58	start	786.706	8		--
stop	20:28	stop	807.332	9		--
start		start		10		--
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
				Total Wt Gain		251.6
Duration	120	Total	79.839			

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.35	1.53	1694	51.0	0.5889	1.2350

Individual	0.35	1.50	1530	48	0.59160798	1.22474487
Readings	0.30	1.30	1590	47	0.54772256	1.14017543
	0.31	1.40	1659	48	0.55677644	1.18321596
	0.40	1.80	1714	48	0.63245553	1.34164079
	0.40	1.80	1766	48	0.63245553	1.34164079
	0.37	1.60	1792	49	0.60827625	1.26491106
	0.34	1.50	1845	49	0.58309519	1.22474487
	0.36	1.60	1807	49	0.6	1.26491106
	0.40	1.80	1790	50	0.63245553	1.34164079
	0.39	1.70	1786	50	0.6244998	1.30384048
	0.35	1.50	1790	50	0.59160798	1.22474487



## Calculation Summary

[illegible]



## Calculation Summary

### Data Entry Area

Sample Type	M5/202	Pitot Tube Correction Factor	0.84	Entered By (initials)	GSW
Source	BVS-6	Console ID	SC-M1542	Checked by (initials)	
Condition	Mid Cycle	DGMCF	1.001	Corrected by (initials)	
Run	5	$\Delta H_{\oplus}$	1.888	Value Link Checked	
Date	03-Oct-22	Nozzle Diameter (in)	0.370	% CO	
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO <sub>2</sub>	7.57
Duct Depth (ft)		Bar Press ("Hg, meas)	29.67	% O <sub>2</sub>	9.94
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0	% H <sub>2</sub>	
		Static Press ("H <sub>2</sub> O)	-0.2	% CH <sub>4</sub>	

Times		DGM Volumes (as read)		Impinger Catch (g)		
				Initial	Final	
start	10:15	start	807.807			
stop	10:24	stop	813.217	1	619.6	620.7 1.1
start	10:49	start	814.299	2	632.1	788.0 155.9
stop	11:10	stop	828.033	3	757.7	760.2 2.5
start	11:12	start	828.033	4	926.8	952.5 25.7
stop	11:42	stop	846.105	5		--
start	11:44	start	846.105	6		--
stop	11:55	stop	852.974	7		--
start	12:07	start	853.896	8		--
stop	12:26	stop	865.786	9		--
start	12:29	start	865.786	10		--
stop	12:59	stop	883.828			
start		start				
stop		stop				
start		start				
stop		stop				
start		start				
stop		stop				
				Total Wt Gain 185.2		
Duration	120	Total	74.017			

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.32	1.40	1523	49.6	0.5645	1.1792

Individual	0.37	1.60	1568	45	0.60827625	1.26491106
Readings	0.37	1.60	1577	45	0.60827625	1.26491106
	0.37	1.60	1552	47	0.60827625	1.26491106
	0.36	1.69	1542	47	0.6	1.3
	0.34	1.50	1542	47	0.58309519	1.22474487
	0.33	1.45	1564	48	0.57445626	1.20415946
	0.33	1.45	1571	48	0.57445626	1.20415946
	0.34	1.50	1537	49	0.58309519	1.22474487
	0.35	1.50	1533	49	0.59160798	1.22474487
	0.33	1.45	1503	49	0.57445626	1.20415946
	0.28	1.20	1495	49	0.52915026	1.09544512



## Calculation Summary

[illegible]



## Calculation Summary

### Data Entry Area

Sample Type	M5/202	Pitot Tube Correction Factor	0.84	Entered By (initials)	GSW
Source	BVS-6	Console ID	SC-M1542	Checked by (initials)	
Condition	Late Cycle	DGMCF	1.001	Corrected by (initials)	
Run	6	$\Delta H_{\oplus}$	1.888	Value Link Checked	
Date	03-Oct-22	Nozzle Diameter (in)	0.370	% CO	
Duct Diameter (ft)	9	Std Temp (°F)	68	% CO <sub>2</sub>	7.17
Duct Depth (ft)		Bar Press ("Hg, meas)	29.61	% O <sub>2</sub>	10.71
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0	% H <sub>2</sub>	
		Static Press ("H <sub>2</sub> O)	-0.2	% CH <sub>4</sub>	

Times		DGM Volumes (as read)		Impinger Catch (g)			
start	13:50	start	884.208		Initial	Final	
stop	14:20	stop	901.954	1	501.2	631.6	130.4
start	14:22	start	901.954	2	613.1	612.3	-0.8
stop	14:52	stop	919.306	3	705.5	715.9	10.4
start	14:55	start	919.306	4	958.4	982.8	24.4
stop	15:25	stop	935.882	5			--
start	15:27	start	935.882	6			--
stop	15:57	stop	954.934	7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
				Total Wt Gain 164.4			
Duration	120	Total	70.726				

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.27	1.21	1499	65.5	0.5214	1.0944

Individual	0.28	1.20	1537	59	0.52915026	1.09544512
Readings	0.27	1.20	1547	59	0.51961524	1.09544512
	0.28	1.20	1546	59	0.52915026	1.09544512
	0.28	1.20	1482	61	0.52915026	1.09544512
	0.32	1.40	1544	60	0.56568542	1.18321596
	0.25	1.10	1553	61	0.5	1.04880885
	0.29	1.30	1496	61	0.53851648	1.14017543
	0.31	1.40	1519	63	0.55677644	1.18321596
	0.33	1.45	1517	63	0.57445626	1.20415946
	0.27	1.20	1495	64	0.51961524	1.09544512
	0.22	0.97	1514	64	0.46904158	0.98488578



## Calculation Summary

[illegible]



### Filterable PM Results

Parameter	Run 4	Run 5	Run 6
Filter (mg)	101.3	29.8	28.5
Probe/nozzle rinse (mg)	50.676	50.254	44.843
Total filterable PM (mg)	152.0	80.1	73.4



Master Template

Unit 1

EPA Method 29

Front half and Back half Metals Results

Full Load

O <sub>2</sub> Correction Basis (%):	7		mass / sample (µg)							Emission Concentration	Emission Rate	Emission Rate	Emission Concentration
Run Data		Metal	FH (raw)	BH (raw)	FH (Blank Corrected)	BH (Blank Corrected)	ug (blank corrected)	Analytical Flag	lb	lb/dscf	lb/hr	lb/MMBTU	lb/dscf @ 7% O2
Run 1 Date 9/28/2022 Start Time 10:51 Stop Time 15:37  Sample Vol. (dscf) 113.005 Flow Rate (dscfm) 44,057 Oxygen (%) 10.4  Raw Hg fraction data in separate table		Antimony	50.2	0.165	50.2	0.115	50.3		1.11E-07	9.81E-10	2.59E-03	1.78E-05	1.29E-09
		Arsenic	236	256	236	256	492		1.08E-06	9.59E-09	2.54E-02	1.74E-04	1.27E-08
		Beryllium	5.09	0.014	5.09	0.002	5.09	J	1.12E-08	9.93E-11	2.62E-04	1.80E-06	1.31E-10
		Cadmium	20.8	0.106	20.8	0.095	20.9		4.60E-08	4.07E-10	1.08E-03	7.40E-06	5.38E-10
		Chromium	23.6	13.6	22.2	12.8	35.1		7.73E-08	6.84E-10	1.81E-03	1.24E-05	9.03E-10
		Cobalt	21.9	0.346	21.9	0.303	22.2		4.89E-08	4.33E-10	1.14E-03	7.87E-06	5.71E-10
		Lead	1132	4.43	1131	4.12	1135		2.50E-06	2.21E-08	5.85E-02	4.03E-04	2.92E-08
		Manganese	14.3	4.01	13.8	3.61	17.4		3.84E-08	3.40E-10	8.98E-04	6.18E-06	4.48E-10
		Nickel	104	69.8	102	69.5	171		3.78E-07	3.34E-09	8.84E-03	6.08E-05	4.41E-09
		Selenium	21.6	190	21.6	190	211		4.66E-07	4.13E-09	1.09E-02	7.50E-05	5.45E-09
		Mercury	[0.02]	80.510	[0.02]	80.51	80.5		1.78E-07	1.57E-09	4.15E-03	2.86E-05	2.07E-09
		TSM*	1557.4	538.0	1552.5	535.9	2088.4		4.60E-06	4.07E-08	1.08E-01	7.41E-04	5.38E-08
Run 2 Date 9/28/2022 Start Time 17:33 Stop Time 21:27  Sample Vol. (dscf) 121.510 Flow Rate (dscfm) 49,398 Oxygen (%) 12.1  Raw Hg fraction data in separate table		Antimony	60.2	0.105	60.2	0.055	60.2		1.33E-07	1.09E-09	3.24E-03	2.37E-05	1.72E-09
		Arsenic	354	314	354	314	668		1.47E-06	1.21E-08	3.59E-02	2.63E-04	1.91E-08
		Beryllium	4.86	0.021	4.86	0.009	4.87		1.07E-08	8.83E-11	2.62E-04	1.92E-06	1.39E-10
		Cadmium	17.9	0.047	17.9	0.036	17.9		3.95E-08	3.25E-10	9.63E-04	7.06E-06	5.13E-10
		Chromium	20.0	5.98	18.6	5.2	23.8		5.26E-08	4.33E-10	1.28E-03	9.40E-06	6.82E-10
		Cobalt	20.2	0.996	20.2	0.953	21.1		4.66E-08	3.83E-10	1.14E-03	8.33E-06	6.05E-10
		Lead	1318	3.24	1317	2.93	1320		2.91E-06	2.40E-08	7.10E-02	5.20E-04	3.78E-08
		Manganese	15.6	2.62	15.1	2.22	17.3		3.82E-08	3.14E-10	9.32E-04	6.83E-06	4.96E-10
		Nickel	85.7	9.8	84	9.5	93		2.05E-07	1.69E-09	5.01E-03	3.67E-05	2.67E-09
		Selenium	16.6	283	16.6	283	299		6.60E-07	5.43E-09	1.61E-02	1.18E-04	8.57E-09
		Mercury	[0.02]	45.370	[0.02]	45.37	45.4		1.00E-07	8.24E-10	2.44E-03	1.79E-05	1.30E-09
		TSM*	1832.7	618.7	1827.8	616.6	2444.4		5.39E-06	4.43E-08	1.31E-01	9.64E-04	7.00E-08



Master Template

Unit 1

EPA Method 29

Front half and Back half Metals Results

Full Load

Run 3	Date 9/29/2022 Start Time 16:22 Stop Time 20:15 Sample Vol. (dscf) 129.953 Flow Rate (dscfm) 46,975 Oxygen (%) 8.9	Antimony	52.3	1.760	52.3	1.760	54.0		1.19E-07	9.16E-10	2.58E-03	1.46E-05	1.06E-09
		Arsenic	222	321	222	321	543		1.20E-06	9.21E-09	2.60E-02	1.47E-04	1.07E-08
		Beryllium	5.42	0.005	5.42	0.005	5.42		1.20E-08	9.20E-11	2.59E-04	1.47E-06	1.07E-10
		Cadmium	30.7	0.040	30.7	0.040	30.7		6.77E-08	5.21E-10	1.47E-03	8.32E-06	6.04E-10
		Chromium	21.0	7.8	19.6	7.78	27.4		6.04E-08	4.65E-10	1.31E-03	7.42E-06	5.39E-10
		Cobalt	30.3	1.41	30.3	1.41	31.7		6.99E-08	5.38E-10	1.52E-03	8.58E-06	6.23E-10
		Lead	1508	3.26	1507	3.260	1510		3.33E-06	2.56E-08	7.22E-02	4.09E-04	2.97E-08
		Manganese	10.4	3.46	9.9	3.46	13.4		2.95E-08	2.27E-10	6.39E-04	3.62E-06	2.63E-10
		Nickel	189	9.98	187	10.0	197		4.34E-07	3.34E-09	9.42E-03	5.33E-05	3.87E-09
		Selenium	18.3	246	18.3	246	264		5.83E-07	4.48E-09	1.26E-02	7.16E-05	5.20E-09
Raw Hg fraction data in separate table		Mercury	[0.02]	36.010	[0.02]	36.01	36.0		7.94E-08	6.11E-10	1.72E-03	9.76E-06	7.09E-10
		TSM*	2004.8	591.5	1999.9	591.5	2591.5		5.71E-06	4.40E-08	1.24E-01	7.02E-04	5.10E-08
Average	Sample Vol. (dscf) 121.489 Flow Rate (dscfm) 46,810 Oxygen (%) 10.5	Antimony					54.83		1.21E-07	9.96E-10	2.80E-03	1.87E-05	1.36E-09
		Arsenic					567.51		1.25E-06	1.03E-08	2.91E-02	1.95E-04	1.42E-08
		Beryllium					5.12		1.13E-08	9.32E-11	2.61E-04	1.73E-06	1.26E-10
		Cadmium					23.17		5.11E-08	4.18E-10	1.17E-03	7.60E-06	5.52E-10
		Chromium					28.77		6.34E-08	5.27E-10	1.47E-03	9.75E-06	7.08E-10
		Cobalt					25.01		5.51E-08	4.51E-10	1.27E-03	8.26E-06	6.00E-10
		Lead					1321.93		2.91E-06	2.39E-08	6.73E-02	4.44E-04	3.22E-08
		Manganese					16.04		3.54E-08	2.94E-10	8.23E-04	5.54E-06	4.02E-10
		Nickel					153.83		3.39E-07	2.79E-09	7.75E-03	5.03E-05	3.65E-09
		Selenium					258.39		5.70E-07	4.68E-09	1.32E-02	8.82E-05	6.41E-09
		Mercury					53.98		1.19E-07	1.00E-09	2.77E-03	1.87E-05	1.36E-09
				TSM*					2374.76		5.24E-06	4.30E-08	1.21E-01

\*Total Selected Metals = sum of As, Be, Cd, Cr, Pb, Mn, Ni, and Se

() = Detection Limit

[] = Value based on Estimated Maximum Possible Concentration



Master Template

Unit 1

EPA Method 29

Front half and Back half Metals Results

Full Load

	Metal	mass / sample (µg)					Analytical Flag	lb
		FH (raw)	BH (raw)	FH (Blank Corrected)	BH (Blank Corrected)	ug (blank corrected)		
Field Blank (µg)	Antimony	0.711	0.089	0.66	0.04	0.7		1.54E-09
	Arsenic	4.95	1.05	4.90	0.90	5.8		1.28E-08
	Beryllium	0.045	0.010	0.04	0.00	0.0		8.60E-11
	Cadmium	0.258	0.011	0.24	0.00	0.2		5.22E-10
	Chromium	2.06	5.26	0.69	4.49	5.2		1.14E-08
	Cobalt	0.205	0.124	0.19	0.08	0.3		5.93E-10
	Lead	28.30	1.67	27.46	1.36	28.8		6.35E-08
	Manganese	1.11	1.27	0.62	0.87	1.5		3.27E-09
	Nickel	3.19	5.35	1.15	5.02	6.2		1.36E-08
	Selenium	0.561	0.644	0.51	0.55	1.1		2.35E-09
	Mercury	[0.02]	[0.536]	[0.02]	[0.536]	0.5560		1.23E-09

Reagent Blanks (µg)	Metal	Front Half	Back Half	Blank Correction	
	Antimony	0.05	0.05	0.05	0.05
	Arsenic	0.051	0.153	0.05	0.15
	Beryllium	0.004	0.012	0.00	0.01
	Cadmium	0.021	0.011	0.02	0.01
	Chromium	1.37	0.772	1.37	0.77
	Cobalt	0.017	0.043	0.02	0.04
	Lead	0.845	0.309	0.85	0.31
	Manganese	0.493	0.403	0.49	0.40
	Nickel	2.04	0.334	2.04	0.33
	Selenium	0.047	0.092	0.05	0.09
	Mercury	[0.02]	[0.2755]	0.00	0.00

Filter Size (mm)	89
Filter Area (in) <sup>2</sup>	9.64
1.4 x A	13.50

Hg Fraction Raw Data Entry	Fraction 1B Filter & Rinse	Fraction 2B HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub>	Fraction 3A Empty Imp.	Fraction 3B KMnO <sub>4</sub>	Fraction 3C HCl	Total, including DL
Run 1	[0.02]	28.6	35.7	13.0	3.21	80.5300
Run 2	[0.02]	19.2	4.31	3.86	18	45.3900
Run 3	[0.02]	18.3	2.66	2.75	12.3	36.0300
FB	[0.02]	0.2855	0.055	0.1155	[0.08]	0.5560
RB	[0.02]	0.0555	[0.04]	[0.1]	[0.08]	0.2955



## Calculation Summary HCl CCS

Project Name	HHO Vent Stack 5 CD Test 2022		
Project Number	60682866		
Facility	Haverhill		
Sample Type	HCl	HCl	HCl
Source	VS6	VS6	VS6
Condition	Late	Production	Mid
Run	1	2	3
Date	9/30/2022	9/30/2022	10/1/2022
Time Start	16:00	20:17	9:22
Time Stop	17:06	21:24	10:29
Sampling Times	16:00-17:06	20:17-21:24	09:22-10:29
Duct Diameter (ft) <i>(equivalent if square duct)</i>	9.00	9.00	9.00
Pitot Tube Correction Factor	0.84	0.84	0.84
Nozzle Diameter (inches)	0.370	0.370	0.370
DGMCF ( $Y_d$ )	1.001	1.001	1.001
Orifice Factor ("wc) ( $\Delta H_o$ )	1.888	1.888	1.888
Console Identification	SC-M1542	SC-M1542	SC-M1542
Standard Temperature (°F) ( $T_{std}$ )	68	68	68
Barometric Pressure Measured ("Hg)	29.56	29.41	29.32
Stack Elevation (ft) <i>(relative to Barometer)</i>	0	0	0
Barometric Pressure ("Hg) ( $P_{bar}$ )	29.56	29.41	29.32
Average Stack Temperature (°F) ( $T_s$ )	1489.4	1632.5	1569.1
Average DGM Temp (°F) ( $T_m$ )	61.3	55.0	46.0
Average Delta H ("wc) ( $\Delta H_{avg}$ )	1.49	1.60	1.44
Condensed Water (g)	99.4	134.9	121.7
Test Duration (minutes) ( $\Theta$ )	60	60	60
Static Pressure ("wc) ( $P_g$ )	0.00	0.00	0.00
Carbon Monoxide Content (%) (%CO)	0	0	0
Carbon Dioxide Content (%) (%CO <sub>2</sub> )	6.95	8.48	8.16
Oxygen Content (%) (%O <sub>2</sub> )	11.04	8.30	8.96
Hydrogen Content (%) (%H <sub>2</sub> )	0.0	0.0	0.0
Methane Content (%) (%CH <sub>4</sub> )	0.0	0.0	0.0
Nitrogen Content (%) (%N <sub>2</sub> )	82.01	83.22	82.88
Meter Volume (dcf) ( $V_m$ )	40.540	41.406	41.139
Average square root of $\Delta P$ ( $(\sqrt{\Delta P})_{avg}$ )	0.557	0.588	0.557
Absolute Stack Pressure ("Hg) ( $P_s$ )	29.56	29.41	29.32
Absolute Stack Temperature (°R) ( $T_s$ )	1949.0	2092.2	2028.8
Flue Gas Moisture (%) ( $B_{ws}$ )	10.31	13.17	11.96
Moisture at saturation	N/A	N/A	N/A
Moisture used in Calculation	10.31	13.17	11.96
Gas Molecular Wt (Wet) (g/g-mole) ( $M_s$ )	28.36	28.15	28.27
Corrected Vol of Gas Sample (dcf) ( $V_{m(actual)}$ )	40.581	41.447	41.180
Volume at Meter (dscf) ( $V_M$ )	40.762	41.937	42.262
Average Gas Velocity (ft/sec) ( $V_s$ )	61.00	67.11	62.59
Avg Flow Rate (acfh)	13,969,873	15,369,977	14,334,170
Avg Flow Rate (acfm)	232,831	256,166	238,903
Avg Flow Rate (scfh)	3,736,593	3,810,413	3,653,416
Avg Flow Rate (scfm)	62,277	63,507	60,890
Avg Flow Rate (dscfh) ( $Q_{sd}$ )	3,351,220	3,308,536	3,216,610
Avg Flow Rate (dscfm) ( $Q_{sd}$ )	55,854	55,142	53,610
Isokinetic Sampling Rate (%) (I)	103.63	108.00	111.94



## Calculation Summary HCl CCS

### Console Calibration Check

Console Identification	SC-M1542	SC-M1542	SC-M1542
Date	9/30/2022	9/30/2022	10/1/2022
Project Name	HHO Vent Stack 5 CD Test 2022		
Test Duration (minutes) (Θ)	60	60	60
Meter Volume (dcf) (Vm)	40.54	41.41	41.14
Oxygen Content (%) (%O <sub>2</sub> )	11.04	8.30	8.96
Carbon Dioxide Content (%) (%CO <sub>2</sub> )	6.95	8.48	8.16
Nitrogen Content (%) (%N <sub>2</sub> )	82.01	83.22	82.88
Average DGM Temp (°F) (Tm)	61.25	55	46
Orifice Factor ("wc) (ΔH@)	1.888	1.888	1.888
Barometric Pressure ("Hg) (Pbar)	29.56	29.41	29.32
Average Delta H ("wc) (ΔHavg)	1.49	1.60	1.44
Average square root of ΔH ((√ΔH) <sub>avg</sub> )	1.22	1.26	1.20
Gas Molecular Weight (Dry) (M <sub>d</sub> ) (g/g-mole)	29.6	29.7	29.7
DGMCF (Yd)	1.001	1.001	1.001
Dry Gas Meter Calibration Check Value (Y <sub>QA</sub> )	0.97	0.98	0.93
Deviation Y <sub>QA</sub> to Y <sub>d</sub> (%)	-2.84	-1.87	-7.11

DGM post-test calibration is acceptable when Deviation is below 3.5.

If not, the DGM must undergo a 3-point post-test calibration.

Filter Weight Gain (mg)	NA	0	0
PNR Weight Gain (mg)	NA	0	0
Impinger Residue (mg)	0	0	0
Front-Half Particulate Loading (gr/dscf)	#VALUE!	#VALUE!	#VALUE!
Back-Half Particulate Loading (gr/dscf)	NA	NA	NA
Total Particulate Loading (gr/dscf)	#VALUE!	#VALUE!	#VALUE!
Front-Half Particulate Loading (mg/dscm)	#VALUE!	#VALUE!	#VALUE!
Back-Half Particulate Loading (mg/dscm)	NA	NA	NA
Total Particulate Loading (mg/dscm)	#VALUE!	#VALUE!	#VALUE!
Front-Half Particulate Loading O <sub>2</sub> Corr (gr/dscf)	#VALUE!	#VALUE!	#VALUE!
Back-Half Particulate Loading O <sub>2</sub> Corrected (gr/dscf)	NA	NA	NA
Total Particulate Loading O <sub>2</sub> Corrected (gr/dscf)	#VALUE!	#VALUE!	#VALUE!
Front-Half Particulate Loading O <sub>2</sub> Corrected (mg/dscm)	#VALUE!	#VALUE!	#VALUE!
Back-Half Particulate Loading O <sub>2</sub> Corrected (mg/dscm)	NA	NA	NA
Total Particulate Loading O <sub>2</sub> Corrected (mg/dscm)	#VALUE!	#VALUE!	#VALUE!
Front-Half Particulate Emission (lbs/hr)	#VALUE!	#VALUE!	#VALUE!
Total Particulate Emission (lbs/hr)	#VALUE!	#VALUE!	#VALUE!



## Calculation Summary HCl CCS

### Data Entry Area

Sample Type	HCl	Pitot Tube Correction Factor	0.84	Entered By (initials)		SP																		
Source	VS6	Console ID	SC-M1542	Checked by (initials)		BAH																		
Condition	Late	DGMCF	1.001	Corrected by (initials)		BAH																		
Run	1	$\Delta H_{\oplus}$	1.888	<table><tr><th></th><th>Value</th><th>Link Checked</th></tr><tr><td>% CO</td><td></td><td></td></tr><tr><td>% CO<sub>2</sub></td><td>6.95</td><td></td></tr><tr><td>% O<sub>2</sub></td><td>11.04</td><td></td></tr><tr><td>% H<sub>2</sub></td><td></td><td></td></tr><tr><td>% CH<sub>4</sub></td><td></td><td></td></tr></table>				Value	Link Checked	% CO			% CO <sub>2</sub>	6.95		% O <sub>2</sub>	11.04		% H <sub>2</sub>			% CH <sub>4</sub>		
	Value	Link Checked																						
% CO																								
% CO <sub>2</sub>	6.95																							
% O <sub>2</sub>	11.04																							
% H <sub>2</sub>																								
% CH <sub>4</sub>																								
Date	30-Sep	Nozzle Diameter (in)	0.3700																					
Duct Diameter (ft)	9	Std Temp (°F)	68																					
Duct Depth (ft)		Bar Press ("Hg, meas)	29.56																					
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0																					
		Static Press ("H <sub>2</sub> O)																						

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	16:00	start	591.338				
stop	16:15	stop	601.583	1	761.3	842.3	81
start	16:17	start	601.583	2	741.4	744.9	3.5
stop	16:32	stop	611.732	3	700.1	700.5	0.4
start	16:34	start	611.732	4	762.3	763.5	1.2
stop	16:49	stop	621.757	5	918.7	932.0	13.3
start	16:51	start	621.757	6			--
stop	17:06	stop	631.878	7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
Duration	60	Total	40.540			Total Wt Gain	99.4

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\nabla \Delta P$	$\nabla \Delta H$
Averages	0.31	1.49	1489	61.3	0.5571	1.2180

[illegible]



## Calculation Summary HCl CCS

### Data Entry Area

Sample Type	HCl	Pitot Tube Correction Factor	0.84	Entered By (initials)		SP																		
Source	VS6	Console ID	SC-M1542	Checked by (initials)		BAH																		
Condition	Production	DGMCF	1.001	Corrected by (initials)		BAH																		
Run	2	$\Delta H_{\oplus}$	1.888	<table><tr><th></th><th>Value</th><th>Link Checked</th></tr><tr><td>% CO</td><td></td><td></td></tr><tr><td>% CO<sub>2</sub></td><td>8.48</td><td></td></tr><tr><td>% O<sub>2</sub></td><td>8.3</td><td></td></tr><tr><td>% H<sub>2</sub></td><td></td><td></td></tr><tr><td>% CH<sub>4</sub></td><td></td><td></td></tr></table>				Value	Link Checked	% CO			% CO <sub>2</sub>	8.48		% O <sub>2</sub>	8.3		% H <sub>2</sub>			% CH <sub>4</sub>		
	Value	Link Checked																						
% CO																								
% CO <sub>2</sub>	8.48																							
% O <sub>2</sub>	8.3																							
% H <sub>2</sub>																								
% CH <sub>4</sub>																								
Date	30-Sep	Nozzle Diameter (in)	0.3700																					
Duct Diameter (ft)	9	Std Temp (°F)	68																					
Duct Depth (ft)		Bar Press ("Hg, meas)	29.41																					
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0																					
		Static Press ("H <sub>2</sub> O)																						

Times		DGM Volumes (as read)		Impinger Catch (g)			
					Initial	Final	
start	20:17	start	634.224				
stop	20:32	stop	644.428	1	686.1	806.9	120.8
start	20:35	start	644.428	2	762.9	763.7	0.8
stop	20:50	stop	654.844	3	715.4	716.9	1.5
start	20:52	start	654.844	4	730.4	732.1	1.7
stop	21:07	stop	665.265	5	895.7	905.8	10.1
start	21:09	start	665.265	6			--
stop	21:24	stop	675.630	7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
Duration	60	Total	41.406			Total Wt Gain	134.9

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\sqrt{\Delta P}$	$\sqrt{\Delta H}$
Averages	0.35	1.60	1633	55.0	0.5879	1.2639

[illegible]



## Calculation Summary HCl CCS

### Data Entry Area

Sample Type	HCl	Pitot Tube Correction Factor	0.84	Entered By (initials)	<i>SP</i>	
Source	VS6	Console ID	SC-M1542	Checked by (initials)	<i>BAH</i>	
Condition	Mid	DGMCF	1.001	Corrected by (initials)	<i>BAH</i>	
Run	3	$\Delta H_{\oplus}$	1.888	<div>Value</div> <div>Link Checked</div>		
Date	1-Oct	Nozzle Diameter (in)	0.3700			
Duct Diameter (ft)	9	Std Temp (°F)	68		% CO <sub>2</sub>	8.16
Duct Depth (ft)		Bar Press ("Hg, meas)	29.32		% O <sub>2</sub>	8.96
Duct Width (ft)		Meter Elev (ft) (rel to Brmtr)	0		% H <sub>2</sub>	
		Static Press ("H <sub>2</sub> O)			% CH <sub>4</sub>	

<b>Times</b>		<b>DGM Volumes (as read)</b>		<b>Impinger Catch (g)</b>			
start	9:22	start	675.975		Initial	Final	
stop	9:37	stop	686.401	1	762.2	869.9	107.7
start	9:39	start	686.401	2	742.6	744.6	2
stop	9:54	stop	696.789	3	702.1	702.7	0.6
start	9:57	start	696.789	4	762.5	763.2	0.7
stop	10:12	stop	706.916	5	932.4	943.1	10.7
start	10:14	start	706.916	6			--
stop	10:29	stop	717.114	7			--
start		start		8			--
stop		stop		9			--
start		start		10			--
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
start		start					
stop		stop					
				Total Wt Gain    121.7			
Duration	60	Total	41.139				

	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Stack Temp (°F)	DGM Temp (°F)	$\sqrt{\Delta P}$	$\sqrt{\Delta H}$
Averages	0.31	1.44	1569	46.0	0.5571	1.1966

[illegible]



### HCl Results

Parameter	Run 1	Run 2	Run 3
Sample volume (dscf)	40.76	41.94	42.26
Sample volume (dscm)	1.154	1.188	1.197
HCl in sample (ug)	134,224	246,230	211,760
Conc. (ug/ft3)	3293	5871	5011
Conc. (ug/m3)	116286	207346	176949
Molecular weight	36	36	36
Conc. (ppm)	77	137	117

### HF Results

Parameter	Run 1	Run 2	Run 3
Sample volume (dscf)	40.76	41.94	42.26
Sample volume (dscm)	1.154	1.188	1.197
HF in sample (ug)	4,990	5,773	6,456
Conc. (ug/ft3)	122	138	153
Conc. (ug/m3)	4323	4861	5395
Molecular weight	20	20	20
Conc. (ppm)	5	6	6

### HCN Results

Parameter	Run 1	Run 2	Run 3
Sample volume (dscf)	40.76	41.94	42.26
Sample volume (dscm)	1.154	1.188	1.197
HCN in sample (ug)			
Conc. (ug/ft3)	0	0	0
Conc. (ug/m3)	114	0	0
Molecular weight	27	27	27
Conc. (ppm)	0.101	0.101	0.101

### Formaldehyde Results

Parameter	Run 1	Run 2	Run 3
Sample volume (dscf)	40.76	41.94	42.26
Sample volume (dscm)	1.154	1.188	1.197
Formaldehyde in sample (ug)			
Conc. (ug/ft3)	0	0	0
Conc. (ug/m3)	287	2298	175
Molecular weight	30	30	30
Conc. (ppm)	0.230	1.840	0.140



**Project:** Haverhill Bypass Vent Stack 6 Test 2022  
**Facility:** SunCoke HHO  
**Source:** BVS-6  
**Project ID:** 60682866

Corrected Oxygen Concentration					
28-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1 Metals	10:51-15:37	10.35	0.07	1.01	10.37
Run 2 Metals	17:33-21:30	11.99	0.04	1.01	12.09

Corrected Carbon Dioxide Concentration					
28-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1 Metals	10:51-15:37	7.09	0.12	1.06	7.37
Run 2 Metals	17:33-21:30	6.11	0.16	1.06	6.30



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Oxygen Calibration Data  
Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	28-Sep-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	19.09
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	9:09	-0.03	0.03	0.2%
span gas	CC4981	19.09	9:13	19.06	0.03	0.2%
mid-range	CC359583	10.99	9:18	10.91	0.08	0.4%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.03	9:24	0.08	0.6%	16:47	0.07	0.5%	-0.1%	$C_0$ 0.073
10.99	10.91	9:21	10.94	0.2%	16:40	10.98	0.3%	0.2%	$C_{MA}/(C_M - C_0)$ 1.010
0.00	-0.03	16:47	0.07	0.5%	21:50	0.02	0.3%	-0.2%	$C_0$ 0.045
10.99	10.91	16:40	10.98	0.3%	21:52	10.82	-0.5%	-0.8%	$C_{MA}/(C_M - C_0)$ 1.013



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Carbon Dioxide Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	28-Sep-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	18.98
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	9:09	-0.05	0.05	0.3%
span gas	CC4981	18.98	9:13	18.96	0.02	0.1%
mid-range	CC359583	10.10	9:18	9.76	0.34	1.8%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.05	9:24	0.11	0.8%	16:47	0.12	0.9%	0.1%	$C_0$ 0.115
10.10	9.76	9:21	9.79	0.1%	16:40	9.56	-1.1%	-1.2%	$C_{MA}/(C_M - C_0)$ 1.057
0.00	-0.05	16:47	0.12	0.9%	21:50	0.19	1.3%	0.4%	$C_0$ 0.157
10.10	9.76	16:40	9.56	-1.1%	21:52	9.84	0.4%	1.4%	$C_{MA}/(C_M - C_0)$ 1.058



## SUMMARY DATA - COMPLIANCE TESTING

28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	10:51-15:37	10.35	7.09
Run 2 Metals	17:33-21:30	11.99	6.11

## CALIBRATION SUMMARY

28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Cal Error Zero 1 - UHP N2	9:09	-0.03	-0.05
Cal Error Hi 1 - CC4981	9:13	19.06	18.96
Cal Error Mid 1 - CC359583	9:18	10.91	9.76
System Bias Mid 1 - CC359583	9:21	10.94	9.79
System Bias Zero 1 - UHP N2	9:24	0.08	0.11
System Bias Mid 2 - CC359583	16:40	10.98	9.56
System Bias Zero 2 - UHP N2	16:47	0.07	0.12
System Bias Zero 3 - UHP N2	21:50	0.02	0.19
System Bias Mid 3 - CC359583	21:52	10.82	9.84



# CEMS RAW DATA

28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Cal Error Zero - UHP N2	9:09:27 AM	-0.03	-0.06
Cal Error Zero - UHP N2	9:09:37 AM	-0.04	-0.05
Cal Error Zero - UHP N2	9:09:47 AM	-0.03	-0.05
Cal Error Hi - CC4981	9:13:17 AM	19.06	18.95
Cal Error Hi - CC4981	9:13:27 AM	19.05	18.95
Cal Error Hi - CC4981	9:13:37 AM	19.06	18.96
Cal Error Hi - CC4981	9:13:47 AM	19.07	18.97
Cal Error Mid - CC359583	9:18:07 AM	10.93	9.77
Cal Error Mid - CC359583	9:18:17 AM	10.93	9.78
Cal Error Mid - CC359583	9:18:27 AM	10.92	9.77
Cal Error Mid - CC359583	9:18:37 AM	10.86	9.75
System Bias Mid - CC359583	9:21:17 AM	10.94	9.79
System Bias Mid - CC359583	9:21:27 AM	10.94	9.79
System Bias Mid - CC359583	9:21:37 AM	10.94	9.78
System Bias Zero - UHP N2	9:24:07 AM	0.08	0.11
System Bias Zero - UHP N2	9:24:17 AM	0.08	0.11
System Bias Zero - UHP N2	9:24:27 AM	0.08	0.10
Run 1 Metals	10:51:07 AM	9.64	7.53
Run 1 Metals	10:51:17 AM	9.73	7.48
Run 1 Metals	10:51:27 AM	9.80	7.42
Run 1 Metals	10:51:37 AM	9.81	7.42
Run 1 Metals	10:51:47 AM	9.82	7.42
Run 1 Metals	10:51:57 AM	9.86	7.39
Run 1 Metals	10:52:07 AM	9.71	7.50
Run 1 Metals	10:52:17 AM	9.80	7.44
Run 1 Metals	10:52:27 AM	9.75	7.48
Run 1 Metals	10:52:37 AM	9.63	7.55
Run 1 Metals	10:52:47 AM	9.71	7.50
Run 1 Metals	10:52:57 AM	9.71	7.50
Run 1 Metals	10:53:07 AM	9.72	7.49
Run 1 Metals	10:53:17 AM	9.74	7.48
Run 1 Metals	10:53:27 AM	9.72	7.50
Run 1 Metals	10:53:37 AM	9.70	7.50
Run 1 Metals	10:53:47 AM	9.71	7.49
Run 1 Metals	10:53:57 AM	9.71	7.51
Run 1 Metals	10:54:07 AM	9.72	7.50
Run 1 Metals	10:54:17 AM	9.74	7.49
Run 1 Metals	10:54:27 AM	9.78	7.46
Run 1 Metals	10:54:37 AM	9.83	7.41
Run 1 Metals	10:54:47 AM	9.84	7.42
Run 1 Metals	10:54:57 AM	9.75	7.48
Run 1 Metals	10:55:07 AM	9.81	7.43
Run 1 Metals	10:55:17 AM	9.82	7.42
Run 1 Metals	10:55:27 AM	9.91	7.36
Run 1 Metals	10:55:37 AM	9.99	7.31
Run 1 Metals	10:55:47 AM	9.90	7.38
Run 1 Metals	10:55:57 AM	9.80	7.44
Run 1 Metals	10:56:07 AM	9.82	7.44
Run 1 Metals	10:56:17 AM	9.84	7.41
Run 1 Metals	10:56:27 AM	9.86	7.41
Run 1 Metals	10:56:37 AM	9.82	7.43
Run 1 Metals	10:56:47 AM	9.86	7.41
Run 1 Metals	10:56:57 AM	9.97	7.32



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	10:57:07 AM	9.97	7.33
Run 1 Metals	10:57:17 AM	9.96	7.34
Run 1 Metals	10:57:27 AM	10.05	7.27
Run 1 Metals	10:57:37 AM	10.17	7.19
Run 1 Metals	10:57:47 AM	10.27	7.13
Run 1 Metals	10:57:57 AM	10.12	7.23
Run 1 Metals	10:58:07 AM	10.11	7.23
Run 1 Metals	10:58:17 AM	10.21	7.17
Run 1 Metals	10:58:27 AM	10.20	7.17
Run 1 Metals	10:58:37 AM	10.08	7.26
Run 1 Metals	10:58:47 AM	9.92	7.37
Run 1 Metals	10:58:57 AM	9.93	7.35
Run 1 Metals	10:59:07 AM	10.01	7.30
Run 1 Metals	10:59:17 AM	9.89	7.39
Run 1 Metals	10:59:27 AM	9.95	7.34
Run 1 Metals	10:59:37 AM	9.99	7.31
Run 1 Metals	10:59:47 AM	10.03	7.29
Run 1 Metals	10:59:57 AM	10.00	7.29
Run 1 Metals	11:00:07 AM	9.96	7.33
Run 1 Metals	11:00:17 AM	9.99	7.31
Run 1 Metals	11:00:27 AM	9.93	7.35
Run 1 Metals	11:00:37 AM	9.99	7.31
Run 1 Metals	11:00:47 AM	10.00	7.31
Run 1 Metals	11:00:57 AM	10.05	7.26
Run 1 Metals	11:01:07 AM	10.11	7.23
Run 1 Metals	11:01:17 AM	10.08	7.25
Run 1 Metals	11:01:27 AM	9.97	7.32
Run 1 Metals	11:01:37 AM	9.93	7.36
Run 1 Metals	11:01:47 AM	9.85	7.41
Run 1 Metals	11:01:57 AM	9.83	7.41
Run 1 Metals	11:02:07 AM	9.75	7.46
Run 1 Metals	11:02:17 AM	9.75	7.46
Run 1 Metals	11:02:27 AM	9.81	7.41
Run 1 Metals	11:02:37 AM	9.81	7.41
Run 1 Metals	11:02:47 AM	9.82	7.43
Run 1 Metals	11:02:57 AM	9.78	7.46
Run 1 Metals	11:03:07 AM	9.80	7.43
Run 1 Metals	11:03:17 AM	9.80	7.44
Run 1 Metals	11:03:27 AM	9.90	7.36
Run 1 Metals	11:03:37 AM	9.87	7.39
Run 1 Metals	11:03:47 AM	9.86	7.40
Run 1 Metals	11:03:57 AM	9.85	7.40
Run 1 Metals	11:04:07 AM	9.86	7.39
Run 1 Metals	11:04:17 AM	9.80	7.44
Run 1 Metals	11:04:27 AM	9.66	7.54
Run 1 Metals	11:04:37 AM	9.62	7.56
Run 1 Metals	11:04:47 AM	9.63	7.55
Run 1 Metals	11:04:57 AM	9.54	7.62
Run 1 Metals	11:05:07 AM	9.53	7.61
Run 1 Metals	11:05:17 AM	9.51	7.62
Run 1 Metals	11:05:27 AM	9.59	7.57
Run 1 Metals	11:05:37 AM	9.62	7.55
Run 1 Metals	11:05:47 AM	9.69	7.50



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	11:05:57 AM	9.82	7.41
Run 1 Metals	11:06:07 AM	9.82	7.41
Run 1 Metals	11:06:17 AM	9.83	7.41
Run 1 Metals	11:06:27 AM	9.87	7.39
Run 1 Metals	11:06:37 AM	9.80	7.44
Run 1 Metals	11:06:47 AM	9.81	7.43
Run 1 Metals	11:06:57 AM	9.77	7.45
Run 1 Metals	11:07:07 AM	9.79	7.44
Run 1 Metals	11:07:17 AM	9.78	7.44
Run 1 Metals	11:07:27 AM	9.80	7.43
Run 1 Metals	11:07:37 AM	9.83	7.41
Run 1 Metals	11:07:47 AM	9.82	7.41
Run 1 Metals	11:07:57 AM	9.83	7.41
Run 1 Metals	11:08:07 AM	9.76	7.46
Run 1 Metals	11:08:17 AM	9.69	7.52
Run 1 Metals	11:08:27 AM	9.63	7.55
Run 1 Metals	11:08:37 AM	9.70	7.49
Run 1 Metals	11:08:47 AM	9.88	7.38
Run 1 Metals	11:08:57 AM	9.84	7.41
Run 1 Metals	11:09:07 AM	9.82	7.43
Run 1 Metals	11:09:17 AM	9.83	7.42
Run 1 Metals	11:09:27 AM	9.80	7.43
Run 1 Metals	11:09:37 AM	9.82	7.41
Run 1 Metals	11:09:47 AM	9.77	7.45
Run 1 Metals	11:09:57 AM	9.81	7.41
Run 1 Metals	11:10:07 AM	9.88	7.38
Run 1 Metals	11:10:17 AM	9.84	7.40
Run 1 Metals	11:10:27 AM	9.81	7.43
Run 1 Metals	11:10:37 AM	9.86	7.39
Run 1 Metals	11:10:47 AM	9.85	7.39
Run 1 Metals	11:10:57 AM	9.75	7.47
Run 1 Metals	11:11:07 AM	9.75	7.46
Run 1 Metals	11:11:17 AM	9.81	7.41
Run 1 Metals	11:11:27 AM	9.73	7.49
Run 1 Metals	11:11:37 AM	9.78	7.44
Run 1 Metals	11:11:47 AM	9.99	7.30
Run 1 Metals	11:11:57 AM	10.01	7.30
Run 1 Metals	11:12:07 AM	9.99	7.31
Run 1 Metals	11:12:17 AM	10.02	7.26
Run 1 Metals	11:12:27 AM	10.07	7.24
Run 1 Metals	11:12:37 AM	10.11	7.22
Run 1 Metals	11:12:47 AM	10.06	7.26
Run 1 Metals	11:12:57 AM	10.07	7.26
Run 1 Metals	11:13:07 AM	10.10	7.23
Run 1 Metals	11:13:17 AM	10.20	7.17
Run 1 Metals	11:13:27 AM	10.12	7.23
Run 1 Metals	11:13:37 AM	10.08	7.24
Run 1 Metals	11:13:47 AM	10.13	7.21
Run 1 Metals	11:13:57 AM	10.11	7.23
Run 1 Metals	11:14:07 AM	10.15	7.19
Run 1 Metals	11:14:17 AM	10.17	7.17
Run 1 Metals	11:14:27 AM	10.21	7.16
Run 1 Metals	11:14:37 AM	10.05	7.27



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	11:14:47 AM	10.10	7.23
Run 1 Metals	11:14:57 AM	10.08	7.23
Run 1 Metals	11:15:07 AM	10.03	7.27
Run 1 Metals	11:15:17 AM	10.04	7.27
Run 1 Metals	11:15:27 AM	10.04	7.26
Run 1 Metals	11:15:37 AM	10.18	7.17
Run 1 Metals	11:15:47 AM	10.20	7.17
Run 1 Metals	11:15:57 AM	10.33	7.08
Run 1 Metals	11:16:07 AM	10.27	7.12
Run 1 Metals	11:16:17 AM	10.17	7.20
Run 1 Metals	11:16:27 AM	10.19	7.17
Run 1 Metals	11:16:37 AM	10.26	7.12
Run 1 Metals	11:16:47 AM	10.07	7.25
Run 1 Metals	11:16:57 AM	9.89	7.37
Run 1 Metals	11:17:07 AM	9.82	7.41
Run 1 Metals	11:17:17 AM	9.81	7.43
Run 1 Metals	11:17:27 AM	9.87	7.38
Run 1 Metals	11:17:37 AM	10.04	7.27
Run 1 Metals	11:17:47 AM	10.06	7.25
Run 1 Metals	11:17:57 AM	10.07	7.26
Run 1 Metals	11:18:07 AM	10.10	7.23
Run 1 Metals	11:18:17 AM	10.14	7.21
Run 1 Metals	11:18:27 AM	10.13	7.20
Run 1 Metals	11:18:37 AM	10.04	7.26
Run 1 Metals	11:18:47 AM	10.05	7.26
Run 1 Metals	11:18:57 AM	10.08	7.24
Run 1 Metals	11:19:07 AM	9.99	7.31
Run 1 Metals	11:19:17 AM	9.90	7.36
Run 1 Metals	11:19:27 AM	9.85	7.41
Run 1 Metals	11:19:37 AM	9.87	7.38
Run 1 Metals	11:19:47 AM	10.00	7.30
Run 1 Metals	11:19:57 AM	10.08	7.25
Run 1 Metals	11:20:07 AM	10.08	7.25
Run 1 Metals	11:20:17 AM	10.07	7.26
Run 1 Metals	11:20:27 AM	9.95	7.34
Run 1 Metals	11:20:37 AM	9.80	7.43
Run 1 Metals	11:20:47 AM	9.82	7.41
Run 1 Metals	11:20:57 AM	9.94	7.34
Run 1 Metals	11:21:07 AM	10.09	7.23
Run 1 Metals	11:21:17 AM	10.29	7.10
Run 1 Metals	11:21:27 AM	10.32	7.09
Run 1 Metals	11:21:37 AM	10.20	7.17
Run 1 Metals	11:21:47 AM	9.96	7.35
Run 1 Metals	11:21:57 AM	9.85	7.43
Run 1 Metals	11:22:07 AM	9.87	7.40
Run 1 Metals	11:22:17 AM	9.87	7.41
Run 1 Metals	11:22:27 AM	9.91	7.37
Run 1 Metals	11:22:37 AM	10.16	7.19
Run 1 Metals	11:22:47 AM	10.29	7.12
Run 1 Metals	11:22:57 AM	10.22	7.16
Run 1 Metals	11:23:07 AM	10.16	7.21
Run 1 Metals	11:23:17 AM	10.18	7.18
Run 1 Metals	11:23:27 AM	10.27	7.13



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	11:23:37 AM	10.34	7.08
Run 1 Metals	11:23:47 AM	10.35	7.08
Run 1 Metals	11:23:57 AM	10.34	7.09
Run 1 Metals	11:24:07 AM	10.29	7.11
Run 1 Metals	11:24:17 AM	10.27	7.13
Run 1 Metals	11:24:27 AM	10.12	7.23
Run 1 Metals	11:24:37 AM	10.15	7.20
Run 1 Metals	11:24:47 AM	10.23	7.16
Run 1 Metals	11:24:57 AM	10.31	7.10
Run 1 Metals	11:25:07 AM	10.34	7.08
Run 1 Metals	11:25:17 AM	10.26	7.14
Run 1 Metals	11:25:27 AM	10.11	7.24
Run 1 Metals	11:25:37 AM	10.00	7.31
Run 1 Metals	11:25:47 AM	9.92	7.37
Run 1 Metals	11:25:57 AM	9.87	7.39
Run 1 Metals	11:26:07 AM	9.87	7.38
Run 1 Metals	11:26:17 AM	9.83	7.41
Run 1 Metals	11:26:27 AM	9.85	7.40
Run 1 Metals	11:26:37 AM	9.95	7.31
Run 1 Metals	11:26:47 AM	10.04	7.28
Run 1 Metals	11:26:57 AM	10.00	7.32
Run 1 Metals	11:27:07 AM	9.96	7.33
Run 1 Metals	11:27:17 AM	9.86	7.41
Run 1 Metals	11:27:27 AM	9.82	7.42
Run 1 Metals	11:27:37 AM	9.81	7.44
Run 1 Metals	11:27:47 AM	9.80	7.45
Run 1 Metals	11:27:57 AM	9.79	7.45
Run 1 Metals	11:28:07 AM	9.86	7.39
Run 1 Metals	11:28:17 AM	10.06	7.25
Run 1 Metals	11:28:27 AM	10.25	7.13
Run 1 Metals	11:28:37 AM	10.27	7.13
Run 1 Metals	11:28:47 AM	10.16	7.20
Run 1 Metals	11:28:57 AM	10.08	7.26
Run 1 Metals	11:29:07 AM	10.02	7.29
Run 1 Metals	11:29:17 AM	10.02	7.29
Run 1 Metals	11:29:27 AM	9.96	7.32
Run 1 Metals	11:29:37 AM	9.94	7.33
Run 1 Metals	11:29:47 AM	9.89	7.38
Run 1 Metals	11:29:57 AM	10.02	7.28
Run 1 Metals	11:30:07 AM	10.17	7.18
Run 1 Metals	11:30:17 AM	10.10	7.23
Run 1 Metals	11:30:27 AM	10.14	7.20
Run 1 Metals	11:30:37 AM	10.04	7.29
Run 1 Metals	11:30:47 AM	10.01	7.29
Run 1 Metals	11:30:57 AM	10.11	7.24
Run 1 Metals	11:31:07 AM	10.10	7.24
Run 1 Metals	11:31:17 AM	10.00	7.31
Run 1 Metals	11:31:27 AM	9.99	7.31
Run 1 Metals	11:31:37 AM	10.01	7.29
Run 1 Metals	11:31:47 AM	9.99	7.30
Run 1 Metals	11:31:57 AM	10.01	7.29
Run 1 Metals	11:32:07 AM	10.09	7.24
Run 1 Metals	11:32:17 AM	10.24	7.13



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	11:32:27 AM	10.23	7.14
Run 1 Metals	11:32:37 AM	10.29	7.10
Run 1 Metals	11:32:47 AM	10.40	7.03
Run 1 Metals	11:32:57 AM	10.45	7.01
Run 1 Metals	11:33:07 AM	10.39	7.04
Run 1 Metals	11:33:17 AM	10.36	7.07
Run 1 Metals	11:33:27 AM	10.33	7.09
Run 1 Metals	11:33:37 AM	10.38	7.03
Run 1 Metals	11:33:47 AM	10.36	7.07
Run 1 Metals	11:33:57 AM	10.20	7.16
Run 1 Metals	11:34:07 AM	10.13	7.21
Run 1 Metals	11:34:17 AM	10.00	7.31
Run 1 Metals	11:34:27 AM	9.92	7.35
Run 1 Metals	11:34:37 AM	10.02	7.26
Run 1 Metals	11:34:47 AM	10.18	7.18
Run 1 Metals	11:34:57 AM	10.30	7.09
Run 1 Metals	11:35:07 AM	10.41	7.01
Run 1 Metals	11:35:17 AM	10.36	7.07
Run 1 Metals	11:35:27 AM	10.21	7.16
Run 1 Metals	11:35:37 AM	10.22	7.15
Run 1 Metals	11:35:47 AM	10.16	7.18
Run 1 Metals	11:35:57 AM	10.14	7.21
Run 1 Metals	11:36:07 AM	10.06	7.27
Run 1 Metals	11:36:17 AM	10.09	7.23
Run 1 Metals	11:36:27 AM	10.16	7.19
Run 1 Metals	11:36:37 AM	10.21	7.16
Run 1 Metals	11:36:47 AM	10.06	7.27
Run 1 Metals	11:36:57 AM	9.95	7.34
Run 1 Metals	11:37:07 AM	9.89	7.36
Run 1 Metals	11:37:17 AM	10.00	7.28
Run 1 Metals	11:37:27 AM	10.01	7.29
Run 1 Metals	11:37:37 AM	10.06	7.25
Run 1 Metals	11:37:47 AM	9.90	7.37
Run 1 Metals	11:37:57 AM	9.85	7.39
Run 1 Metals	11:38:07 AM	9.96	7.33
Run 1 Metals	11:38:17 AM	9.97	7.32
Run 1 Metals	11:38:27 AM	9.83	7.41
Run 1 Metals	11:38:37 AM	9.80	7.43
Run 1 Metals	11:38:47 AM	9.86	7.39
Run 1 Metals	11:38:57 AM	9.96	7.32
Run 1 Metals	11:39:07 AM	9.87	7.39
Run 1 Metals	11:39:17 AM	9.83	7.39
Run 1 Metals	11:39:27 AM	9.95	7.32
Run 1 Metals	11:39:37 AM	10.10	7.21
Run 1 Metals	11:39:47 AM	10.27	7.10
Run 1 Metals	11:39:57 AM	10.32	7.08
Run 1 Metals	11:40:07 AM	10.30	7.10
Run 1 Metals	11:40:17 AM	10.35	7.05
Run 1 Metals	11:40:27 AM	10.31	7.10
Run 1 Metals	11:40:37 AM	10.18	7.18
Run 1 Metals	11:40:47 AM	10.13	7.20
Run 1 Metals	11:40:57 AM	10.10	7.24
Run 1 Metals	11:41:07 AM	10.06	7.26



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	11:41:17 AM	10.07	7.24
Run 1 Metals	11:41:27 AM	10.07	7.24
Run 1 Metals	11:41:37 AM	10.13	7.20
Run 1 Metals	11:41:47 AM	10.10	7.23
Run 1 Metals	11:41:57 AM	9.98	7.32
Run 1 Metals	11:42:07 AM	9.96	7.33
Run 1 Metals	11:42:17 AM	10.00	7.31
Run 1 Metals	11:42:27 AM	10.06	7.25
Run 1 Metals	11:42:37 AM	10.07	7.26
Run 1 Metals	11:42:47 AM	9.92	7.37
Run 1 Metals	11:42:57 AM	9.82	7.43
Run 1 Metals	11:43:07 AM	9.81	7.43
Run 1 Metals	11:43:17 AM	9.93	7.35
Run 1 Metals	11:43:27 AM	9.93	7.35
Run 1 Metals	11:43:37 AM	9.94	7.33
Run 1 Metals	11:43:47 AM	10.02	7.28
Run 1 Metals	11:43:57 AM	10.05	7.26
Run 1 Metals	11:44:07 AM	10.05	7.27
Run 1 Metals	11:44:17 AM	9.99	7.30
Run 1 Metals	11:44:27 AM	9.87	7.38
Run 1 Metals	11:44:37 AM	9.83	7.43
Run 1 Metals	11:44:47 AM	9.81	7.43
Run 1 Metals	11:44:57 AM	9.91	7.35
Run 1 Metals	11:45:07 AM	10.04	7.26
Run 1 Metals	11:45:17 AM	10.06	7.25
Run 1 Metals	11:45:27 AM	10.10	7.22
Run 1 Metals	11:45:37 AM	10.07	7.25
Run 1 Metals	11:45:47 AM	10.10	7.23
Run 1 Metals	11:45:57 AM	10.08	7.24
Run 1 Metals	11:46:07 AM	10.03	7.27
Run 1 Metals	11:46:17 AM	10.05	7.26
Run 1 Metals	11:46:27 AM	10.07	7.25
Run 1 Metals	11:46:37 AM	10.11	7.22
Run 1 Metals	11:46:47 AM	10.24	7.13
Run 1 Metals	11:46:57 AM	10.38	7.04
Run 1 Metals	11:47:07 AM	10.32	7.10
Run 1 Metals	11:47:17 AM	10.15	7.21
Run 1 Metals	11:47:27 AM	10.14	7.22
Run 1 Metals	11:47:37 AM	10.08	7.25
Run 1 Metals	11:47:47 AM	10.04	7.29
Run 1 Metals	11:47:57 AM	10.08	7.24
Run 1 Metals	11:48:07 AM	10.16	7.19
Run 1 Metals	11:48:17 AM	10.08	7.25
Run 1 Metals	11:48:27 AM	9.98	7.32
Run 1 Metals	11:48:37 AM	10.09	7.24
Run 1 Metals	11:48:47 AM	10.11	7.23
Run 1 Metals	11:48:57 AM	10.12	7.21
Run 1 Metals	11:49:07 AM	10.09	7.24
Run 1 Metals	11:49:17 AM	10.09	7.23
Run 1 Metals	11:49:27 AM	10.04	7.27
Run 1 Metals	11:49:37 AM	10.07	7.25
Run 1 Metals	11:49:47 AM	10.11	7.24
Run 1 Metals	11:49:57 AM	10.10	7.24



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	11:50:07 AM	10.02	7.28
Run 1 Metals	11:50:17 AM	9.93	7.34
Run 1 Metals	11:50:27 AM	9.89	7.37
Run 1 Metals	11:50:37 AM	9.89	7.38
Run 1 Metals	11:50:47 AM	9.84	7.39
Run 1 Metals	11:50:57 AM	9.88	7.37
Run 1 Metals	11:51:07 AM	9.76	7.46
Run 1 Metals	11:51:17 AM	9.68	7.53
Run 1 Metals	11:51:27 AM	9.74	7.46
Run 1 Metals	11:51:37 AM	9.77	7.44
Run 1 Metals	11:51:47 AM	9.82	7.41
Run 1 Metals	11:51:57 AM	9.88	7.37
Run 1 Metals	11:52:07 AM	9.92	7.34
Run 1 Metals	11:52:17 AM	9.88	7.37
Run 1 Metals	11:52:27 AM	9.90	7.35
Run 1 Metals	11:52:37 AM	9.87	7.38
Run 1 Metals	11:52:47 AM	9.93	7.35
Run 1 Metals	11:52:57 AM	10.05	7.25
Run 1 Metals	11:53:07 AM	10.01	7.29
Run 1 Metals	11:53:17 AM	10.02	7.28
Run 1 Metals	11:53:27 AM	10.04	7.26
Run 1 Metals	11:53:37 AM	9.97	7.32
Run 1 Metals	11:53:47 AM	9.93	7.34
Run 1 Metals	11:53:57 AM	9.98	7.30
Run 1 Metals	11:54:07 AM	10.00	7.29
Run 1 Metals	11:54:17 AM	10.04	7.25
Run 1 Metals	11:54:27 AM	10.05	7.26
Run 1 Metals	11:54:37 AM	9.91	7.35
Run 1 Metals	11:54:47 AM	9.87	7.39
Run 1 Metals	11:54:57 AM	9.89	7.37
Run 1 Metals	11:55:07 AM	9.98	7.31
Run 1 Metals	11:55:17 AM	9.92	7.35
Run 1 Metals	11:55:27 AM	9.75	7.46
Run 1 Metals	11:55:37 AM	9.75	7.46
Run 1 Metals	11:55:47 AM	9.96	7.32
Run 1 Metals	11:55:57 AM	9.99	7.32
Run 1 Metals	11:56:07 AM	9.99	7.31
Run 1 Metals	11:56:17 AM	10.08	7.24
Run 1 Metals	11:56:27 AM	10.15	7.20
Run 1 Metals	11:56:37 AM	10.30	7.10
Run 1 Metals	11:56:47 AM	10.32	7.10
Run 1 Metals	11:56:57 AM	10.26	7.14
Run 1 Metals	11:57:07 AM	10.28	7.12
Run 1 Metals	11:57:17 AM	10.33	7.08
Run 1 Metals	11:57:27 AM	10.23	7.15
Run 1 Metals	11:57:37 AM	10.13	7.22
Run 1 Metals	11:57:47 AM	10.09	7.24
Run 1 Metals	11:57:57 AM	10.12	7.23
Run 1 Metals	11:58:07 AM	10.17	7.19
Run 1 Metals	11:58:17 AM	10.09	7.24
Run 1 Metals	11:58:27 AM	10.01	7.29
Run 1 Metals	11:58:37 AM	10.00	7.31
Run 1 Metals	11:58:47 AM	9.95	7.33



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	11:58:57 AM	9.86	7.41
Run 1 Metals	11:59:07 AM	9.81	7.42
Run 1 Metals	11:59:17 AM	9.84	7.41
Run 1 Metals	11:59:27 AM	9.97	7.32
Run 1 Metals	11:59:37 AM	10.03	7.28
Run 1 Metals	11:59:47 AM	10.17	7.19
Run 1 Metals	11:59:57 AM	10.30	7.11
Run 1 Metals	12:00:07 PM	10.32	7.10
Run 1 Metals	12:00:17 PM	10.28	7.14
Run 1 Metals	12:00:27 PM	10.40	7.03
Run 1 Metals	12:00:37 PM	10.36	7.07
Run 1 Metals	12:00:47 PM	10.28	7.14
Run 1 Metals	12:00:57 PM	10.23	7.16
Run 1 Metals	12:01:07 PM	10.21	7.17
Run 1 Metals	12:01:17 PM	10.12	7.23
Run 1 Metals	12:01:27 PM	10.13	7.22
Run 1 Metals	12:01:37 PM	10.05	7.28
Run 1 Metals	12:01:47 PM	9.93	7.36
Run 1 Metals	12:01:57 PM	9.90	7.37
Run 1 Metals	12:02:07 PM	9.85	7.41
Run 1 Metals	12:02:17 PM	9.96	7.33
Run 1 Metals	12:02:27 PM	10.09	7.24
Run 1 Metals	12:02:37 PM	10.08	7.26
Run 1 Metals	12:02:47 PM	10.02	7.31
Run 1 Metals	12:02:57 PM	9.98	7.34
Run 1 Metals	12:03:07 PM	9.95	7.36
Run 1 Metals	12:03:17 PM	9.99	7.33
Run 1 Metals	12:03:27 PM	10.10	7.25
Run 1 Metals	12:03:37 PM	10.09	7.28
Run 1 Metals	12:03:47 PM	10.07	7.29
Run 1 Metals	12:03:57 PM	10.12	7.25
Run 1 Metals	12:04:07 PM	10.14	7.22
Run 1 Metals	12:04:17 PM	10.11	7.26
Run 1 Metals	12:04:27 PM	10.04	7.32
Run 1 Metals	12:04:37 PM	10.07	7.29
Run 1 Metals	12:04:47 PM	9.96	7.38
Run 1 Metals	12:04:57 PM	9.88	7.42
Run 1 Metals	12:05:07 PM	9.89	7.43
Run 1 Metals	12:05:17 PM	10.06	7.29
Run 1 Metals	12:05:27 PM	10.17	7.23
Run 1 Metals	12:05:37 PM	10.29	7.16
Run 1 Metals	12:05:47 PM	10.35	7.11
Run 1 Metals	12:05:57 PM	10.29	7.15
Run 1 Metals	12:06:07 PM	10.14	7.24
Run 1 Metals	12:06:17 PM	10.21	7.20
Run 1 Metals	12:06:27 PM	10.08	7.30
Run 1 Metals	12:06:37 PM	10.11	7.26
Run 1 Metals	12:06:47 PM	10.36	7.10
Run 1 Metals	12:06:57 PM	10.42	7.06
Run 1 Metals	12:07:07 PM	10.43	7.06
Run 1 Metals	12:07:17 PM	10.38	7.08
Run 1 Metals	12:07:27 PM	10.42	7.06
Run 1 Metals	12:07:37 PM	10.33	7.13



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	12:07:47 PM	10.27	7.17
Run 1 Metals	12:07:57 PM	10.18	7.21
Run 1 Metals	12:08:07 PM	10.20	7.20
Run 1 Metals	12:08:17 PM	10.41	7.06
Run 1 Metals	12:08:27 PM	10.48	7.01
Run 1 Metals	12:08:37 PM	10.50	7.01
Run 1 Metals	12:08:47 PM	10.46	7.02
Run 1 Metals	12:08:57 PM	10.49	7.01
Run 1 Metals	12:09:07 PM	10.35	7.11
Run 1 Metals	12:09:17 PM	10.23	7.19
Run 1 Metals	12:09:27 PM	10.18	7.21
Run 1 Metals	12:09:37 PM	10.15	7.24
Run 1 Metals	12:09:47 PM	10.17	7.23
Run 1 Metals	12:09:57 PM	10.19	7.21
Run 1 Metals	12:10:07 PM	10.15	7.24
Run 1 Metals	12:10:17 PM	10.08	7.29
Run 1 Metals	12:10:27 PM	10.10	7.27
Run 1 Metals	12:10:37 PM	10.02	7.33
Run 1 Metals	12:10:47 PM	9.96	7.37
Run 1 Metals	12:10:57 PM	9.96	7.37
Run 1 Metals	12:11:07 PM	10.06	7.29
Run 1 Metals	12:11:17 PM	10.12	7.26
Run 1 Metals	12:11:27 PM	10.12	7.24
Run 1 Metals	12:11:37 PM	10.11	7.26
Run 1 Metals	12:11:47 PM	10.09	7.27
Run 1 Metals	12:11:57 PM	10.08	7.27
Run 1 Metals	12:12:07 PM	10.04	7.32
Run 1 Metals	12:12:17 PM	9.92	7.40
Run 1 Metals	12:12:27 PM	9.88	7.41
Run 1 Metals	12:12:37 PM	9.88	7.41
Run 1 Metals	12:12:47 PM	9.86	7.43
Run 1 Metals	12:12:57 PM	9.86	7.43
Run 1 Metals	12:13:07 PM	9.76	7.50
Run 1 Metals	12:13:17 PM	9.70	7.53
Run 1 Metals	12:13:27 PM	9.68	7.55
Run 1 Metals	12:13:37 PM	9.75	7.50
Run 1 Metals	12:13:47 PM	9.77	7.48
Run 1 Metals	12:13:57 PM	9.89	7.40
Run 1 Metals	12:14:07 PM	10.02	7.32
Run 1 Metals	12:14:17 PM	10.30	7.12
Run 1 Metals	12:14:27 PM	10.41	7.07
Run 1 Metals	12:14:37 PM	10.44	7.04
Run 1 Metals	12:14:47 PM	10.42	7.06
Run 1 Metals	12:14:57 PM	10.33	7.11
Run 1 Metals	12:15:07 PM	10.28	7.15
Run 1 Metals	12:15:17 PM	10.26	7.17
Run 1 Metals	12:15:27 PM	10.28	7.16
Run 1 Metals	12:15:37 PM	10.17	7.22
Run 1 Metals	12:15:47 PM	10.17	7.22
Run 1 Metals	12:15:57 PM	10.15	7.23
Run 1 Metals	12:16:07 PM	10.07	7.29
Run 1 Metals	12:16:17 PM	10.03	7.32
Run 1 Metals	12:16:27 PM	10.02	7.31



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	12:16:37 PM	10.11	7.26
Run 1 Metals	12:16:47 PM	10.14	7.23
Run 1 Metals	12:16:57 PM	10.17	7.22
Run 1 Metals	12:17:07 PM	10.14	7.24
Run 1 Metals	12:17:17 PM	10.08	7.28
Run 1 Metals	12:17:27 PM	10.07	7.29
Run 1 Metals	12:17:37 PM	10.07	7.28
Run 1 Metals	12:17:47 PM	10.14	7.24
Run 1 Metals	12:17:57 PM	10.11	7.25
Run 1 Metals	12:18:07 PM	10.13	7.23
Run 1 Metals	12:18:17 PM	10.30	7.14
Run 1 Metals	12:18:27 PM	10.23	7.19
Run 1 Metals	12:18:37 PM	10.15	7.23
Run 1 Metals	12:18:47 PM	10.14	7.24
Run 1 Metals	12:18:57 PM	10.15	7.22
Run 1 Metals	12:19:07 PM	10.21	7.19
Run 1 Metals	12:19:17 PM	10.11	7.27
Run 1 Metals	12:19:27 PM	10.04	7.31
Run 1 Metals	12:19:37 PM	10.14	7.23
Run 1 Metals	12:19:47 PM	10.16	7.23
Run 1 Metals	12:19:57 PM	10.18	7.21
Run 1 Metals	12:20:07 PM	10.18	7.20
Run 1 Metals	12:20:17 PM	10.14	7.23
Run 1 Metals	12:20:27 PM	10.15	7.24
Run 1 Metals	12:20:37 PM	10.20	7.18
Run 1 Metals	12:20:47 PM	10.26	7.15
Run 1 Metals	12:20:57 PM	10.30	7.13
Run 1 Metals	12:21:07 PM	10.29	7.15
Run 1 Metals	12:21:17 PM	10.14	7.26
Run 1 Metals	12:21:27 PM	10.03	7.32
Run 1 Metals	12:21:37 PM	9.96	7.37
Run 1 Metals	12:21:47 PM	9.98	7.34
Run 1 Metals	12:21:57 PM	9.98	7.35
Run 1 Metals	12:22:07 PM	9.95	7.38
Run 1 Metals	12:22:17 PM	9.91	7.39
Run 1 Metals	12:22:27 PM	9.96	7.34
Run 1 Metals	12:22:37 PM	9.97	7.35
Run 1 Metals	12:22:47 PM	9.93	7.39
Run 1 Metals	12:22:57 PM	9.88	7.41
Run 1 Metals	12:23:07 PM	9.88	7.41
Run 1 Metals	12:23:17 PM	9.89	7.41
Run 1 Metals	12:23:27 PM	9.85	7.44
Run 1 Metals	12:23:37 PM	9.91	7.39
Run 1 Metals	12:23:47 PM	9.94	7.38
Run 1 Metals	12:23:57 PM	9.98	7.34
Run 1 Metals	12:24:07 PM	10.16	7.20
Run 1 Metals	12:24:17 PM	10.34	7.10
Run 1 Metals	12:24:27 PM	10.33	7.13
Run 1 Metals	12:24:37 PM	10.20	7.20
Run 1 Metals	12:24:47 PM	10.08	7.29
Run 1 Metals	12:24:57 PM	10.01	7.34
Run 1 Metals	12:25:07 PM	9.94	7.37
Run 1 Metals	12:25:17 PM	10.01	7.32



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	12:25:27 PM	10.03	7.32
Run 1 Metals	12:25:37 PM	9.94	7.38
Run 1 Metals	12:25:47 PM	9.89	7.39
Run 1 Metals	12:25:57 PM	9.85	7.43
Run 1 Metals	12:26:07 PM	9.93	7.38
Run 1 Metals	12:26:17 PM	9.92	7.38
Run 1 Metals	12:26:27 PM	9.87	7.40
Run 1 Metals	12:26:37 PM	9.90	7.39
Run 1 Metals	12:26:47 PM	9.91	7.39
Run 1 Metals	12:26:57 PM	9.92	7.39
Run 1 Metals	12:27:07 PM	9.90	7.39
Run 1 Metals	12:27:17 PM	9.86	7.42
Run 1 Metals	12:27:27 PM	9.92	7.38
Run 1 Metals	12:27:37 PM	9.96	7.36
Run 1 Metals	12:27:47 PM	9.96	7.35
Run 1 Metals	12:27:57 PM	9.96	7.34
Run 1 Metals	12:28:07 PM	10.14	7.22
Run 1 Metals	12:28:17 PM	10.21	7.19
Run 1 Metals	12:28:27 PM	10.20	7.19
Run 1 Metals	12:28:37 PM	10.21	7.18
Run 1 Metals	12:28:47 PM	10.25	7.15
Run 1 Metals	12:28:57 PM	10.32	7.11
Run 1 Metals	12:29:07 PM	10.41	7.05
Run 1 Metals	12:29:17 PM	10.39	7.08
Run 1 Metals	12:29:27 PM	10.23	7.18
Run 1 Metals	12:29:37 PM	10.12	7.25
Run 1 Metals	12:29:47 PM	10.06	7.30
Run 1 Metals	12:29:57 PM	10.10	7.26
Run 1 Metals	12:30:07 PM	10.16	7.22
Run 1 Metals	12:30:17 PM	10.21	7.18
Run 1 Metals	12:30:27 PM	10.26	7.16
Run 1 Metals	12:30:37 PM	10.23	7.17
Run 1 Metals	12:30:47 PM	10.18	7.21
Run 1 Metals	12:30:57 PM	10.11	7.24
Run 1 Metals	12:31:07 PM	10.14	7.23
Run 1 Metals	12:31:17 PM	10.09	7.27
Run 1 Metals	12:31:27 PM	10.04	7.30
Run 1 Metals	12:31:37 PM	10.04	7.29
Run 1 Metals	12:31:47 PM	10.15	7.22
Run 1 Metals	12:31:57 PM	10.30	7.12
Run 1 Metals	12:32:07 PM	10.41	7.05
Run 1 Metals	12:32:17 PM	10.31	7.14
Run 1 Metals	12:32:27 PM	10.27	7.15
Run 1 Metals	12:32:37 PM	10.37	7.06
Run 1 Metals	12:32:47 PM	10.41	7.06
Run 1 Metals	12:32:57 PM	10.33	7.12
Run 1 Metals	12:33:07 PM	10.17	7.22
Run 1 Metals	12:33:17 PM	10.09	7.27
Run 1 Metals	12:33:27 PM	10.02	7.32
Run 1 Metals	12:33:37 PM	9.98	7.33
Run 1 Metals	12:33:47 PM	9.99	7.34
Run 1 Metals	12:33:57 PM	9.96	7.36
Run 1 Metals	12:34:07 PM	9.97	7.35



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	12:34:17 PM	9.99	7.32
Run 1 Metals	12:34:27 PM	9.97	7.35
Run 1 Metals	12:34:37 PM	9.88	7.41
Run 1 Metals	12:34:47 PM	9.75	7.51
Run 1 Metals	12:34:57 PM	9.77	7.48
Run 1 Metals	12:35:07 PM	9.78	7.47
Run 1 Metals	12:35:17 PM	9.79	7.46
Run 1 Metals	12:35:27 PM	9.96	7.35
Run 1 Metals	12:35:37 PM	10.20	7.16
Run 1 Metals	12:35:47 PM	10.41	7.04
Run 1 Metals	12:35:57 PM	10.35	7.10
Run 1 Metals	12:36:07 PM	10.31	7.12
Run 1 Metals	12:36:17 PM	10.31	7.13
Run 1 Metals	12:36:27 PM	10.29	7.14
Run 1 Metals	12:36:37 PM	10.36	7.07
Run 1 Metals	12:36:47 PM	10.41	7.05
Run 1 Metals	12:36:57 PM	10.44	7.03
Run 1 Metals	12:37:07 PM	10.40	7.06
Run 1 Metals	12:37:17 PM	10.31	7.12
Run 1 Metals	12:37:27 PM	10.23	7.17
Run 1 Metals	12:37:37 PM	10.30	7.12
Run 1 Metals	12:37:47 PM	10.30	7.14
Run 1 Metals	12:37:57 PM	10.20	7.19
Run 1 Metals	12:38:07 PM	10.20	7.18
Run 1 Metals	12:38:17 PM	10.17	7.22
Run 1 Metals	12:38:27 PM	10.12	7.24
Run 1 Metals	12:38:37 PM	10.09	7.26
Run 1 Metals	12:38:47 PM	10.06	7.28
Run 1 Metals	12:38:57 PM	10.08	7.27
Run 1 Metals	12:39:07 PM	10.08	7.26
Run 1 Metals	12:39:17 PM	10.20	7.18
Run 1 Metals	12:39:27 PM	10.34	7.09
Run 1 Metals	12:39:37 PM	10.40	7.05
Run 1 Metals	12:39:47 PM	10.30	7.14
Run 1 Metals	12:39:57 PM	10.22	7.18
Run 1 Metals	12:40:07 PM	10.05	7.29
Run 1 Metals	12:40:17 PM	9.97	7.35
Run 1 Metals	12:40:27 PM	9.97	7.33
Run 1 Metals	12:40:37 PM	10.02	7.31
Run 1 Metals	12:40:47 PM	10.13	7.23
Run 1 Metals	12:40:57 PM	10.27	7.13
Run 1 Metals	12:41:07 PM	10.37	7.07
Run 1 Metals	12:41:17 PM	10.46	7.01
Run 1 Metals	12:41:27 PM	10.52	6.98
Run 1 Metals	12:41:37 PM	10.44	7.04
Run 1 Metals	12:41:47 PM	10.38	7.08
Run 1 Metals	12:41:57 PM	10.29	7.15
Run 1 Metals	12:42:07 PM	10.27	7.14
Run 1 Metals	12:42:17 PM	10.30	7.14
Run 1 Metals	12:42:27 PM	10.24	7.16
Run 1 Metals	12:42:37 PM	10.32	7.10
Run 1 Metals	12:42:47 PM	10.30	7.11
Run 1 Metals	12:42:57 PM	10.23	7.17



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	12:43:07 PM	10.08	7.28
Run 1 Metals	12:43:17 PM	10.09	7.26
Run 1 Metals	12:43:27 PM	10.22	7.17
Run 1 Metals	12:43:37 PM	10.34	7.10
Run 1 Metals	12:43:47 PM	10.35	7.10
Run 1 Metals	12:43:57 PM	10.32	7.11
Run 1 Metals	12:44:07 PM	10.22	7.18
Run 1 Metals	12:44:17 PM	10.18	7.20
Run 1 Metals	12:44:27 PM	10.12	7.24
Run 1 Metals	12:44:37 PM	10.14	7.21
Run 1 Metals	12:44:47 PM	10.14	7.23
Run 1 Metals	12:44:57 PM	10.11	7.24
Run 1 Metals	12:45:07 PM	10.14	7.22
Run 1 Metals	12:45:17 PM	10.05	7.28
Run 1 Metals	12:45:27 PM	9.99	7.32
Run 1 Metals	12:45:37 PM	10.03	7.28
Run 1 Metals	12:45:47 PM	10.02	7.31
Run 1 Metals	12:45:57 PM	9.96	7.35
Run 1 Metals	12:46:07 PM	9.86	7.41
Run 1 Metals	12:46:17 PM	9.87	7.39
Run 1 Metals	12:46:27 PM	9.89	7.39
Run 1 Metals	12:46:37 PM	9.87	7.40
Run 1 Metals	12:46:47 PM	9.94	7.34
Run 1 Metals	12:46:57 PM	9.91	7.37
Run 1 Metals	12:47:07 PM	9.90	7.38
Run 1 Metals	12:47:17 PM	9.94	7.35
Run 1 Metals	12:47:27 PM	9.95	7.35
Run 1 Metals	12:47:37 PM	10.00	7.32
Run 1 Metals	12:47:47 PM	10.07	7.26
Run 1 Metals	12:47:57 PM	10.13	7.22
Run 1 Metals	12:48:07 PM	10.18	7.19
Run 1 Metals	12:48:17 PM	10.28	7.11
Run 1 Metals	12:48:27 PM	10.46	6.99
Run 1 Metals	12:48:37 PM	10.52	6.96
Run 1 Metals	12:48:47 PM	10.47	7.00
Run 1 Metals	12:48:57 PM	10.41	7.04
Run 1 Metals	12:49:07 PM	10.34	7.10
Run 1 Metals	12:49:17 PM	10.38	7.06
Run 1 Metals	12:49:27 PM	10.47	7.01
Run 1 Metals	12:49:37 PM	10.39	7.08
Run 1 Metals	12:49:47 PM	10.26	7.15
Run 1 Metals	12:49:57 PM	10.26	7.15
Run 1 Metals	12:50:07 PM	10.32	7.09
Run 1 Metals	12:50:17 PM	10.48	6.98
Run 1 Metals	12:50:27 PM	10.53	6.96
Run 1 Metals	12:50:37 PM	10.56	6.94
Run 1 Metals	12:50:47 PM	10.66	6.88
Run 1 Metals	12:50:57 PM	10.67	6.86
Run 1 Metals	12:51:07 PM	10.65	6.88
Run 1 Metals	12:51:17 PM	10.57	6.94
Run 1 Metals	12:51:27 PM	10.55	6.95
Run 1 Metals	12:51:37 PM	10.59	6.93
Run 1 Metals	12:51:47 PM	10.50	7.00



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	12:51:57 PM	10.38	7.07
Run 1 Metals	12:52:07 PM	10.31	7.11
Run 1 Metals	12:52:17 PM	10.30	7.12
Run 1 Metals	12:52:27 PM	10.38	7.04
Run 1 Metals	12:52:37 PM	10.51	6.97
Run 1 Metals	12:52:47 PM	10.51	6.98
Run 1 Metals	12:52:57 PM	10.45	7.02
Run 1 Metals	12:53:07 PM	10.38	7.07
Run 1 Metals	12:53:17 PM	10.26	7.14
Run 1 Metals	12:53:27 PM	10.33	7.09
Run 1 Metals	12:53:37 PM	10.43	7.03
Run 1 Metals	12:53:47 PM	10.37	7.07
Run 1 Metals	12:53:57 PM	10.24	7.15
Run 1 Metals	12:54:07 PM	10.18	7.19
Run 1 Metals	12:54:17 PM	10.16	7.20
Run 1 Metals	12:54:27 PM	10.13	7.22
Run 1 Metals	12:54:37 PM	10.20	7.18
Run 1 Metals	12:54:47 PM	10.29	7.12
Run 1 Metals	12:54:57 PM	10.41	7.04
Run 1 Metals	12:55:07 PM	10.42	7.03
Run 1 Metals	12:55:17 PM	10.43	7.02
Run 1 Metals	12:55:27 PM	10.38	7.07
Run 1 Metals	12:55:37 PM	10.32	7.10
Run 1 Metals	12:55:47 PM	10.30	7.12
Run 1 Metals	12:55:57 PM	10.35	7.08
Run 1 Metals	12:56:07 PM	10.37	7.05
Run 1 Metals	12:56:17 PM	10.37	7.06
Run 1 Metals	12:56:27 PM	10.37	7.06
Run 1 Metals	12:56:37 PM	10.42	7.02
Run 1 Metals	12:56:47 PM	10.50	6.98
Run 1 Metals	12:56:57 PM	10.48	6.99
Run 1 Metals	12:57:07 PM	10.43	7.03
Run 1 Metals	12:57:17 PM	10.47	7.00
Run 1 Metals	12:57:27 PM	10.38	7.07
Run 1 Metals	12:57:37 PM	10.33	7.11
Run 1 Metals	12:57:47 PM	10.26	7.15
Run 1 Metals	12:57:57 PM	10.18	7.20
Run 1 Metals	12:58:07 PM	10.23	7.16
Run 1 Metals	12:58:17 PM	10.26	7.14
Run 1 Metals	12:58:27 PM	10.32	7.08
Run 1 Metals	12:58:37 PM	10.39	7.05
Run 1 Metals	12:58:47 PM	10.30	7.12
Run 1 Metals	12:58:57 PM	10.12	7.25
Run 1 Metals	12:59:07 PM	10.09	7.25
Run 1 Metals	12:59:17 PM	10.11	7.24
Run 1 Metals	12:59:27 PM	10.34	7.07
Run 1 Metals	12:59:37 PM	10.51	6.97
Run 1 Metals	12:59:47 PM	10.50	6.98
Run 1 Metals	12:59:57 PM	10.48	7.01
Run 1 Metals	1:00:07 PM	10.45	7.01
Run 1 Metals	1:00:17 PM	10.50	6.99
Run 1 Metals	1:00:27 PM	10.55	6.95
Run 1 Metals	1:00:37 PM	10.61	6.89



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	1:00:47 PM	10.53	6.98
Run 1 Metals	1:00:57 PM	10.54	6.96
Run 1 Metals	1:01:07 PM	10.53	6.95
Run 1 Metals	1:01:17 PM	10.56	6.95
Run 1 Metals	1:01:27 PM	10.50	7.00
Run 1 Metals	1:01:37 PM	10.35	7.08
Run 1 Metals	1:01:47 PM	10.24	7.16
Run 1 Metals	1:01:57 PM	10.23	7.16
Run 1 Metals	1:02:07 PM	10.24	7.15
Run 1 Metals	1:02:17 PM	10.33	7.09
Run 1 Metals	1:02:27 PM	10.44	7.02
Run 1 Metals	1:02:37 PM	10.44	7.03
Run 1 Metals	1:02:47 PM	10.45	7.02
Run 1 Metals	1:02:57 PM	10.45	7.02
Run 1 Metals	1:03:07 PM	10.50	6.98
Run 1 Metals	1:03:17 PM	10.56	6.94
Run 1 Metals	1:03:27 PM	10.58	6.94
Run 1 Metals	1:03:37 PM	10.64	6.89
Run 1 Metals	1:03:47 PM	10.56	6.95
Run 1 Metals	1:03:57 PM	10.48	7.00
Run 1 Metals	1:04:07 PM	10.38	7.06
Run 1 Metals	1:04:17 PM	10.41	7.04
Run 1 Metals	1:04:27 PM	10.45	7.02
Run 1 Metals	1:04:37 PM	10.55	6.95
Run 1 Metals	1:04:47 PM	10.64	6.89
Run 1 Metals	1:04:57 PM	10.68	6.85
Run 1 Metals	1:05:07 PM	10.77	6.79
Run 1 Metals	1:05:17 PM	10.87	6.72
Run 1 Metals	1:05:27 PM	10.83	6.76
Run 1 Metals	1:05:37 PM	10.84	6.74
Run 1 Metals	1:05:47 PM	10.84	6.75
Run 1 Metals	1:05:57 PM	10.78	6.80
Run 1 Metals	1:06:07 PM	10.72	6.83
Run 1 Metals	1:06:17 PM	10.76	6.80
Run 1 Metals	1:06:27 PM	10.70	6.85
Run 1 Metals	1:06:37 PM	10.60	6.93
Run 1 Metals	1:06:47 PM	10.50	7.00
Run 1 Metals	1:06:57 PM	10.44	7.02
Run 1 Metals	1:07:07 PM	10.47	7.00
Run 1 Metals	1:07:17 PM	10.37	7.08
Run 1 Metals	1:07:27 PM	10.34	7.08
Run 1 Metals	1:07:37 PM	10.30	7.10
Run 1 Metals	1:07:47 PM	10.35	7.08
Run 1 Metals	1:07:57 PM	10.32	7.12
Run 1 Metals	1:08:07 PM	10.32	7.10
Run 1 Metals	1:08:17 PM	10.30	7.12
Run 1 Metals	1:08:27 PM	10.23	7.16
Run 1 Metals	1:08:37 PM	10.26	7.14
Run 1 Metals	1:08:47 PM	10.21	7.18
Run 1 Metals	1:08:57 PM	10.23	7.15
Run 1 Metals	1:09:07 PM	10.38	7.05
Run 1 Metals	1:09:17 PM	10.39	7.05
Run 1 Metals	1:09:27 PM	10.35	7.08



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	1:09:37 PM	10.38	7.06
Run 1 Metals	1:09:47 PM	10.43	7.03
Run 1 Metals	1:09:57 PM	10.53	6.95
Run 1 Metals	1:10:07 PM	10.57	6.93
Run 1 Metals	1:10:17 PM	10.58	6.92
Run 1 Metals	1:10:27 PM	10.50	6.98
Run 1 Metals	1:10:37 PM	10.40	7.06
Run 1 Metals	1:10:47 PM	10.35	7.08
Run 1 Metals	1:10:57 PM	10.28	7.13
Run 1 Metals	1:11:07 PM	10.20	7.19
Run 1 Metals	1:11:17 PM	10.11	7.23
Run 1 Metals	1:11:27 PM	10.10	7.25
Run 1 Metals	1:11:37 PM	10.02	7.29
Run 1 Metals	1:11:47 PM	9.96	7.33
Run 1 Metals	1:11:57 PM	9.93	7.34
Run 1 Metals	1:12:07 PM	9.90	7.38
Run 1 Metals	1:12:17 PM	9.92	7.34
Run 1 Metals	1:12:27 PM	9.96	7.32
Run 1 Metals	1:12:37 PM	9.94	7.34
Run 1 Metals	1:12:47 PM	9.95	7.33
Run 1 Metals	1:12:57 PM	10.05	7.26
Run 1 Metals	1:13:07 PM	10.12	7.23
Run 1 Metals	1:13:17 PM	10.14	7.21
Run 1 Metals	1:13:27 PM	10.14	7.21
Run 1 Metals	1:13:37 PM	10.16	7.19
Run 1 Metals	1:13:47 PM	10.21	7.16
Run 1 Metals	1:13:57 PM	10.18	7.19
Run 1 Metals	1:14:07 PM	10.20	7.16
Run 1 Metals	1:14:17 PM	10.23	7.12
Run 1 Metals	1:14:27 PM	10.21	7.17
Run 1 Metals	1:14:37 PM	10.16	7.19
Run 1 Metals	1:14:47 PM	10.21	7.15
Run 1 Metals	1:14:57 PM	10.21	7.15
Run 1 Metals	1:15:07 PM	10.20	7.17
Run 1 Metals	1:15:17 PM	10.17	7.19
Run 1 Metals	1:15:27 PM	10.14	7.22
Run 1 Metals	1:15:37 PM	10.09	7.26
Run 1 Metals	1:15:47 PM	10.08	7.24
Run 1 Metals	1:15:57 PM	10.06	7.27
Run 1 Metals	1:16:07 PM	10.00	7.30
Run 1 Metals	1:16:17 PM	10.03	7.29
Run 1 Metals	1:16:27 PM	10.00	7.31
Run 1 Metals	1:16:37 PM	9.98	7.32
Run 1 Metals	1:16:47 PM	10.06	7.25
Run 1 Metals	1:16:57 PM	10.13	7.21
Run 1 Metals	1:17:07 PM	10.07	7.25
Run 1 Metals	1:17:17 PM	10.07	7.24
Run 1 Metals	1:17:27 PM	10.02	7.29
Run 1 Metals	1:17:37 PM	9.98	7.30
Run 1 Metals	1:17:47 PM	10.03	7.27
Run 1 Metals	1:17:57 PM	10.02	7.29
Run 1 Metals	1:18:07 PM	10.02	7.28
Run 1 Metals	1:18:17 PM	9.96	7.32



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	1:18:27 PM	9.91	7.35
Run 1 Metals	1:18:37 PM	9.92	7.34
Run 1 Metals	1:18:47 PM	9.93	7.35
Run 1 Metals	1:18:57 PM	9.97	7.31
Run 1 Metals	1:19:07 PM	10.04	7.25
Run 1 Metals	1:19:17 PM	10.14	7.20
Run 1 Metals	1:19:27 PM	10.21	7.15
Run 1 Metals	1:19:37 PM	10.28	7.11
Run 1 Metals	1:19:47 PM	10.29	7.10
Run 1 Metals	1:19:57 PM	10.32	7.08
Run 1 Metals	1:20:07 PM	10.34	7.07
Run 1 Metals	1:20:17 PM	10.32	7.10
Run 1 Metals	1:20:27 PM	10.29	7.10
Run 1 Metals	1:20:37 PM	10.31	7.08
Run 1 Metals	1:20:47 PM	10.28	7.13
Run 1 Metals	1:20:57 PM	10.19	7.19
Run 1 Metals	1:21:07 PM	10.13	7.21
Run 1 Metals	1:21:17 PM	10.20	7.15
Run 1 Metals	1:21:27 PM	10.33	7.08
Run 1 Metals	1:21:37 PM	10.45	7.00
Run 1 Metals	1:21:47 PM	10.42	7.02
Run 1 Metals	1:21:57 PM	10.33	7.08
Run 1 Metals	1:22:07 PM	10.23	7.14
Run 1 Metals	1:22:17 PM	10.17	7.19
Run 1 Metals	1:22:27 PM	10.10	7.23
Run 1 Metals	1:22:37 PM	10.14	7.20
Run 1 Metals	1:22:47 PM	10.25	7.14
Run 1 Metals	1:22:57 PM	10.40	7.02
Run 1 Metals	1:23:07 PM	10.43	7.01
Run 1 Metals	1:23:17 PM	10.28	7.12
Run 1 Metals	1:23:27 PM	10.23	7.15
Run 1 Metals	1:23:37 PM	10.31	7.08
Run 1 Metals	1:23:47 PM	10.27	7.12
Run 1 Metals	1:23:57 PM	10.21	7.15
Run 1 Metals	1:24:07 PM	10.24	7.14
Run 1 Metals	1:24:17 PM	10.22	7.14
Run 1 Metals	1:24:27 PM	10.38	7.03
Run 1 Metals	1:24:37 PM	10.52	6.95
Run 1 Metals	1:24:47 PM	10.46	7.00
Run 1 Metals	1:24:57 PM	10.36	7.06
Run 1 Metals	1:25:07 PM	10.29	7.12
Run 1 Metals	1:25:17 PM	10.27	7.11
Run 1 Metals	1:25:27 PM	10.27	7.11
Run 1 Metals	1:25:37 PM	10.29	7.09
Run 1 Metals	1:25:47 PM	10.35	7.07
Run 1 Metals	1:25:57 PM	10.34	7.07
Run 1 Metals	1:26:07 PM	10.27	7.12
Run 1 Metals	1:26:17 PM	10.32	7.09
Run 1 Metals	1:26:27 PM	10.38	7.04
Run 1 Metals	1:26:37 PM	10.38	7.05
Run 1 Metals	1:26:47 PM	10.29	7.12
Run 1 Metals	1:26:57 PM	10.18	7.17
Run 1 Metals	1:27:07 PM	10.10	7.24



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	1:27:17 PM	10.03	7.27
Run 1 Metals	1:27:27 PM	10.06	7.26
Run 1 Metals	1:27:37 PM	10.04	7.27
Run 1 Metals	1:27:47 PM	10.07	7.25
Run 1 Metals	1:27:57 PM	10.07	7.23
Run 1 Metals	1:28:07 PM	10.19	7.17
Run 1 Metals	1:28:17 PM	10.16	7.18
Run 1 Metals	1:28:27 PM	10.21	7.14
Run 1 Metals	1:28:37 PM	10.30	7.08
Run 1 Metals	1:28:47 PM	10.37	7.04
Run 1 Metals	1:28:57 PM	10.46	7.00
Run 1 Metals	1:29:07 PM	10.48	7.00
Run 1 Metals	1:29:17 PM	10.49	6.98
Run 1 Metals	1:29:27 PM	10.51	6.96
Run 1 Metals	1:29:37 PM	10.58	6.92
Run 1 Metals	1:29:47 PM	10.58	6.92
Run 1 Metals	1:29:57 PM	10.58	6.91
Run 1 Metals	1:30:07 PM	10.44	7.01
Run 1 Metals	1:30:17 PM	10.41	7.03
Run 1 Metals	1:30:27 PM	10.39	7.05
Run 1 Metals	1:30:37 PM	10.35	7.08
Run 1 Metals	1:30:47 PM	10.36	7.07
Run 1 Metals	1:30:57 PM	10.39	7.06
Run 1 Metals	1:31:07 PM	10.35	7.09
Run 1 Metals	1:31:17 PM	10.30	7.11
Run 1 Metals	1:31:27 PM	10.27	7.12
Run 1 Metals	1:31:37 PM	10.31	7.09
Run 1 Metals	1:31:47 PM	10.30	7.12
Run 1 Metals	1:31:57 PM	10.29	7.12
Run 1 Metals	1:32:07 PM	10.30	7.11
Run 1 Metals	1:32:17 PM	10.30	7.12
Run 1 Metals	1:32:27 PM	10.28	7.13
Run 1 Metals	1:32:37 PM	10.24	7.15
Run 1 Metals	1:32:47 PM	10.20	7.17
Run 1 Metals	1:32:57 PM	10.27	7.11
Run 1 Metals	1:33:07 PM	10.44	7.01
Run 1 Metals	1:33:17 PM	10.53	6.95
Run 1 Metals	1:33:27 PM	10.55	6.94
Run 1 Metals	1:33:37 PM	10.51	6.97
Run 1 Metals	1:33:47 PM	10.47	7.00
Run 1 Metals	1:33:57 PM	10.39	7.06
Run 1 Metals	1:34:07 PM	10.27	7.13
Run 1 Metals	1:34:17 PM	10.24	7.14
Run 1 Metals	1:34:27 PM	10.34	7.08
Run 1 Metals	1:34:37 PM	10.33	7.10
Run 1 Metals	1:34:47 PM	10.20	7.19
Run 1 Metals	1:34:57 PM	10.17	7.19
Run 1 Metals	1:35:07 PM	10.27	7.12
Run 1 Metals	1:35:17 PM	10.21	7.19
Run 1 Metals	1:35:27 PM	10.14	7.22
Run 1 Metals	1:35:37 PM	10.03	7.29
Run 1 Metals	1:35:47 PM	10.02	7.28
Run 1 Metals	1:35:57 PM	10.17	7.17



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	1:36:07 PM	10.33	7.07
Run 1 Metals	1:36:17 PM	10.45	7.00
Run 1 Metals	1:36:27 PM	10.53	6.95
Run 1 Metals	1:36:37 PM	10.48	6.98
Run 1 Metals	1:36:47 PM	10.42	7.02
Run 1 Metals	1:36:57 PM	10.50	6.97
Run 1 Metals	1:37:07 PM	10.51	6.97
Run 1 Metals	1:37:17 PM	10.42	7.03
Run 1 Metals	1:37:27 PM	10.32	7.10
Run 1 Metals	1:37:37 PM	10.28	7.12
Run 1 Metals	1:37:47 PM	10.36	7.06
Run 1 Metals	1:37:57 PM	10.48	6.98
Run 1 Metals	1:38:07 PM	10.52	6.96
Run 1 Metals	1:38:17 PM	10.50	6.98
Run 1 Metals	1:38:27 PM	10.41	7.04
Run 1 Metals	1:38:37 PM	10.36	7.08
Run 1 Metals	1:38:47 PM	10.23	7.17
Run 1 Metals	1:38:57 PM	10.17	7.19
Run 1 Metals	1:39:07 PM	10.20	7.15
Run 1 Metals	1:39:17 PM	10.35	7.06
Run 1 Metals	1:39:27 PM	10.46	6.98
Run 1 Metals	1:39:37 PM	10.55	6.93
Run 1 Metals	1:39:47 PM	10.65	6.87
Run 1 Metals	1:39:57 PM	10.80	6.75
Run 1 Metals	1:40:07 PM	10.84	6.75
Run 1 Metals	1:40:17 PM	10.73	6.83
Run 1 Metals	1:40:27 PM	10.63	6.90
Run 1 Metals	1:40:37 PM	10.63	6.89
Run 1 Metals	1:40:47 PM	10.62	6.91
Run 1 Metals	1:40:57 PM	10.54	6.95
Run 1 Metals	1:41:07 PM	10.50	6.98
Run 1 Metals	1:41:17 PM	10.58	6.91
Run 1 Metals	1:41:27 PM	10.66	6.86
Run 1 Metals	1:41:37 PM	10.69	6.85
Run 1 Metals	1:41:47 PM	10.63	6.90
Run 1 Metals	1:41:57 PM	10.57	6.93
Run 1 Metals	1:42:07 PM	10.49	6.98
Run 1 Metals	1:42:17 PM	10.53	6.96
Run 1 Metals	1:42:27 PM	10.54	6.95
Run 1 Metals	1:42:37 PM	10.59	6.92
Run 1 Metals	1:42:47 PM	10.56	6.95
Run 1 Metals	1:42:57 PM	10.47	7.00
Run 1 Metals	1:43:07 PM	10.52	6.96
Run 1 Metals	1:43:17 PM	10.57	6.92
Run 1 Metals	1:43:27 PM	10.58	6.92
Run 1 Metals	1:43:37 PM	10.58	6.92
Run 1 Metals	1:43:47 PM	10.62	6.90
Run 1 Metals	1:43:57 PM	10.68	6.86
Run 1 Metals	1:44:07 PM	10.71	6.83
Run 1 Metals	1:44:17 PM	10.78	6.78
Run 1 Metals	1:44:27 PM	10.72	6.84
Run 1 Metals	1:44:37 PM	10.67	6.86
Run 1 Metals	1:44:47 PM	10.65	6.89



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	1:44:57 PM	10.59	6.92
Run 1 Metals	1:45:07 PM	10.60	6.91
Run 1 Metals	1:45:17 PM	10.54	6.95
Run 1 Metals	1:45:27 PM	10.54	6.96
Run 1 Metals	1:45:37 PM	10.49	6.98
Run 1 Metals	1:45:47 PM	10.51	6.98
Run 1 Metals	1:45:57 PM	10.50	6.98
Run 1 Metals	1:46:07 PM	10.55	6.94
Run 1 Metals	1:46:17 PM	10.59	6.92
Run 1 Metals	1:46:27 PM	10.57	6.93
Run 1 Metals	1:46:37 PM	10.58	6.92
Run 1 Metals	1:46:47 PM	10.59	6.92
Run 1 Metals	1:46:57 PM	10.57	6.93
Run 1 Metals	1:47:07 PM	10.59	6.92
Run 1 Metals	1:47:17 PM	10.58	6.93
Run 1 Metals	1:47:27 PM	10.51	6.99
Run 1 Metals	1:47:37 PM	10.53	6.96
Run 1 Metals	1:47:47 PM	10.57	6.93
Run 1 Metals	1:47:57 PM	10.60	6.92
Run 1 Metals	1:48:07 PM	10.58	6.93
Run 1 Metals	1:48:17 PM	10.57	6.94
Run 1 Metals	1:48:27 PM	10.62	6.90
Run 1 Metals	1:48:37 PM	10.64	6.90
Run 1 Metals	1:48:47 PM	10.64	6.89
Run 1 Metals	1:48:57 PM	10.61	6.91
Run 1 Metals	1:49:07 PM	10.59	6.92
Run 1 Metals	1:49:17 PM	10.60	6.92
Run 1 Metals	1:49:27 PM	10.71	6.83
Run 1 Metals	1:49:37 PM	10.74	6.83
Run 1 Metals	1:49:47 PM	10.69	6.86
Run 1 Metals	1:49:57 PM	10.64	6.90
Run 1 Metals	1:50:07 PM	10.58	6.95
Run 1 Metals	1:50:17 PM	10.55	6.95
Run 1 Metals	1:50:27 PM	10.53	6.97
Run 1 Metals	1:50:37 PM	10.47	7.01
Run 1 Metals	1:50:47 PM	10.40	7.05
Run 1 Metals	1:50:57 PM	10.48	7.00
Run 1 Metals	1:51:07 PM	10.50	7.00
Run 1 Metals	1:51:17 PM	10.48	7.02
Run 1 Metals	1:51:27 PM	10.44	7.03
Run 1 Metals	1:51:37 PM	10.47	7.01
Run 1 Metals	1:51:47 PM	10.58	6.94
Run 1 Metals	1:51:57 PM	10.53	6.96
Run 1 Metals	1:52:07 PM	10.51	6.98
Run 1 Metals	1:52:17 PM	10.49	7.00
Run 1 Metals	1:52:27 PM	10.54	6.95
Run 1 Metals	1:52:37 PM	10.62	6.91
Run 1 Metals	1:52:47 PM	10.66	6.87
Run 1 Metals	1:52:57 PM	10.69	6.86
Run 1 Metals	1:53:07 PM	10.57	6.95
Run 1 Metals	1:53:17 PM	10.52	6.98
Run 1 Metals	1:53:27 PM	10.48	7.00
Run 1 Metals	1:53:37 PM	10.48	7.01



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	1:53:47 PM	10.49	7.00
Run 1 Metals	1:53:57 PM	10.43	7.04
Run 1 Metals	1:54:07 PM	10.52	6.96
Run 1 Metals	1:54:17 PM	10.61	6.90
Run 1 Metals	1:54:27 PM	10.68	6.86
Run 1 Metals	1:54:37 PM	10.67	6.88
Run 1 Metals	1:54:47 PM	10.54	6.98
Run 1 Metals	1:54:57 PM	10.42	7.05
Run 1 Metals	1:55:07 PM	10.39	7.06
Run 1 Metals	1:55:17 PM	10.37	7.08
Run 1 Metals	1:55:27 PM	10.30	7.14
Run 1 Metals	1:55:37 PM	10.31	7.12
Run 1 Metals	1:55:47 PM	10.45	7.03
Run 1 Metals	1:55:57 PM	10.56	6.94
Run 1 Metals	1:56:07 PM	10.55	6.96
Run 1 Metals	1:56:17 PM	10.48	7.01
Run 1 Metals	1:56:27 PM	10.45	7.01
Run 1 Metals	1:56:37 PM	10.50	6.98
Run 1 Metals	1:56:47 PM	10.40	7.08
Run 1 Metals	1:56:57 PM	10.24	7.18
Run 1 Metals	1:57:07 PM	10.24	7.16
Run 1 Metals	1:57:17 PM	10.36	7.08
Run 1 Metals	1:57:27 PM	10.47	7.01
Run 1 Metals	1:57:37 PM	10.56	6.94
Run 1 Metals	1:57:47 PM	10.67	6.88
Run 1 Metals	1:57:57 PM	10.63	6.92
Run 1 Metals	1:58:07 PM	10.54	6.97
Run 1 Metals	1:58:17 PM	10.56	6.94
Run 1 Metals	1:58:27 PM	10.62	6.90
Run 1 Metals	1:58:37 PM	10.62	6.91
Run 1 Metals	1:58:47 PM	10.57	6.95
Run 1 Metals	1:58:57 PM	10.58	6.92
Run 1 Metals	1:59:07 PM	10.63	6.90
Run 1 Metals	1:59:17 PM	10.63	6.91
Run 1 Metals	1:59:27 PM	10.65	6.90
Run 1 Metals	1:59:37 PM	10.63	6.90
Run 1 Metals	1:59:47 PM	10.70	6.86
Run 1 Metals	1:59:57 PM	10.71	6.86
Run 1 Metals	2:00:07 PM	10.70	6.85
Run 1 Metals	2:00:17 PM	10.75	6.82
Run 1 Metals	2:00:27 PM	10.78	6.81
Run 1 Metals	2:00:37 PM	10.75	6.83
Run 1 Metals	2:00:47 PM	10.66	6.91
Run 1 Metals	2:00:57 PM	10.54	6.98
Run 1 Metals	2:01:07 PM	10.49	7.02
Run 1 Metals	2:01:17 PM	10.52	6.98
Run 1 Metals	2:01:27 PM	10.58	6.95
Run 1 Metals	2:01:37 PM	10.60	6.94
Run 1 Metals	2:01:47 PM	10.51	7.02
Run 1 Metals	2:01:57 PM	10.39	7.08
Run 1 Metals	2:02:07 PM	10.33	7.11
Run 1 Metals	2:02:17 PM	10.27	7.16
Run 1 Metals	2:02:27 PM	10.20	7.20



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	2:02:37 PM	10.16	7.23
Run 1 Metals	2:02:47 PM	10.17	7.21
Run 1 Metals	2:02:57 PM	10.31	7.10
Run 1 Metals	2:03:07 PM	10.29	7.13
Run 1 Metals	2:03:17 PM	10.34	7.10
Run 1 Metals	2:03:27 PM	10.34	7.11
Run 1 Metals	2:03:37 PM	10.33	7.10
Run 1 Metals	2:03:47 PM	10.42	7.04
Run 1 Metals	2:03:57 PM	10.47	7.01
Run 1 Metals	2:04:07 PM	10.51	7.00
Run 1 Metals	2:04:17 PM	10.54	6.98
Run 1 Metals	2:04:27 PM	10.47	7.02
Run 1 Metals	2:04:37 PM	10.45	7.03
Run 1 Metals	2:04:47 PM	10.44	7.04
Run 1 Metals	2:04:57 PM	10.45	7.02
Run 1 Metals	2:05:07 PM	10.50	6.99
Run 1 Metals	2:05:17 PM	10.58	6.94
Run 1 Metals	2:05:27 PM	10.61	6.92
Run 1 Metals	2:05:37 PM	10.65	6.90
Run 1 Metals	2:05:47 PM	10.60	6.94
Run 1 Metals	2:05:57 PM	10.62	6.90
Run 1 Metals	2:06:07 PM	10.59	6.94
Run 1 Metals	2:06:17 PM	10.54	6.97
Run 1 Metals	2:06:27 PM	10.61	6.92
Run 1 Metals	2:06:37 PM	10.60	6.93
Run 1 Metals	2:06:47 PM	10.60	6.93
Run 1 Metals	2:06:57 PM	10.65	6.90
Run 1 Metals	2:07:07 PM	10.63	6.92
Run 1 Metals	2:07:17 PM	10.58	6.96
Run 1 Metals	2:07:27 PM	10.54	6.98
Run 1 Metals	2:07:37 PM	10.55	6.98
Run 1 Metals	2:07:47 PM	10.48	7.04
Run 1 Metals	2:07:57 PM	10.42	7.06
Run 1 Metals	2:08:07 PM	10.38	7.10
Run 1 Metals	2:08:17 PM	10.33	7.12
Run 1 Metals	2:08:27 PM	10.35	7.12
Run 1 Metals	2:08:37 PM	10.38	7.08
Run 1 Metals	2:08:47 PM	10.37	7.08
Run 1 Metals	2:08:57 PM	10.44	7.04
Run 1 Metals	2:09:07 PM	10.51	7.00
Run 1 Metals	2:09:17 PM	10.52	7.00
Run 1 Metals	2:09:27 PM	10.48	7.02
Run 1 Metals	2:09:37 PM	10.40	7.08
Run 1 Metals	2:09:47 PM	10.29	7.17
Run 1 Metals	2:09:57 PM	10.20	7.20
Run 1 Metals	2:10:07 PM	10.22	7.19
Run 1 Metals	2:10:17 PM	10.19	7.20
Run 1 Metals	2:10:27 PM	10.20	7.19
Run 1 Metals	2:10:37 PM	10.32	7.10
Run 1 Metals	2:10:47 PM	10.51	6.98
Run 1 Metals	2:10:57 PM	10.60	6.92
Run 1 Metals	2:11:07 PM	10.62	6.93
Run 1 Metals	2:11:17 PM	10.55	6.98



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	2:11:27 PM	10.44	7.06
Run 1 Metals	2:11:37 PM	10.38	7.08
Run 1 Metals	2:11:47 PM	10.38	7.08
Run 1 Metals	2:11:57 PM	10.49	7.00
Run 1 Metals	2:12:07 PM	10.50	7.00
Run 1 Metals	2:12:17 PM	10.48	7.01
Run 1 Metals	2:12:27 PM	10.43	7.04
Run 1 Metals	2:12:37 PM	10.41	7.06
Run 1 Metals	2:12:47 PM	10.39	7.08
Run 1 Metals	2:12:57 PM	10.45	7.02
Run 1 Metals	2:13:07 PM	10.50	6.99
Run 1 Metals	2:13:17 PM	10.50	7.00
Run 1 Metals	2:13:27 PM	10.52	6.98
Run 1 Metals	2:13:37 PM	10.55	6.97
Run 1 Metals	2:13:47 PM	10.48	7.02
Run 1 Metals	2:13:57 PM	10.40	7.07
Run 1 Metals	2:14:07 PM	10.34	7.12
Run 1 Metals	2:14:17 PM	10.33	7.11
Run 1 Metals	2:14:27 PM	10.36	7.08
Run 1 Metals	2:14:37 PM	10.43	7.05
Run 1 Metals	2:14:47 PM	10.49	7.01
Run 1 Metals	2:14:57 PM	10.56	6.96
Run 1 Metals	2:15:07 PM	10.59	6.95
Run 1 Metals	2:15:17 PM	10.64	6.90
Run 1 Metals	2:15:27 PM	10.67	6.89
Run 1 Metals	2:15:37 PM	10.67	6.90
Run 1 Metals	2:15:47 PM	10.60	6.95
Run 1 Metals	2:15:57 PM	10.64	6.90
Run 1 Metals	2:16:07 PM	10.64	6.92
Run 1 Metals	2:16:17 PM	10.52	7.00
Run 1 Metals	2:16:27 PM	10.53	6.98
Run 1 Metals	2:16:37 PM	10.63	6.91
Run 1 Metals	2:16:47 PM	10.64	6.92
Run 1 Metals	2:16:57 PM	10.69	6.88
Run 1 Metals	2:17:07 PM	10.70	6.87
Run 1 Metals	2:17:17 PM	10.67	6.90
Run 1 Metals	2:17:27 PM	10.67	6.89
Run 1 Metals	2:17:37 PM	10.68	6.88
Run 1 Metals	2:17:47 PM	10.63	6.93
Run 1 Metals	2:17:57 PM	10.57	6.96
Run 1 Metals	2:18:07 PM	10.50	7.01
Run 1 Metals	2:18:17 PM	10.48	7.02
Run 1 Metals	2:18:27 PM	10.43	7.06
Run 1 Metals	2:18:37 PM	10.29	7.16
Run 1 Metals	2:18:47 PM	10.27	7.16
Run 1 Metals	2:18:57 PM	10.28	7.15
Run 1 Metals	2:19:07 PM	10.22	7.19
Run 1 Metals	2:19:17 PM	10.30	7.12
Run 1 Metals	2:19:27 PM	10.39	7.08
Run 1 Metals	2:19:37 PM	10.40	7.07
Run 1 Metals	2:19:47 PM	10.44	7.04
Run 1 Metals	2:19:57 PM	10.49	7.01
Run 1 Metals	2:20:07 PM	10.59	6.94



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	2:20:17 PM	10.72	6.85
Run 1 Metals	2:20:27 PM	10.73	6.85
Run 1 Metals	2:20:37 PM	10.80	6.79
Run 1 Metals	2:20:47 PM	10.81	6.79
Run 1 Metals	2:20:57 PM	10.70	6.88
Run 1 Metals	2:21:07 PM	10.64	6.91
Run 1 Metals	2:21:17 PM	10.65	6.91
Run 1 Metals	2:21:27 PM	10.67	6.88
Run 1 Metals	2:21:37 PM	10.75	6.83
Run 1 Metals	2:21:47 PM	10.73	6.85
Run 1 Metals	2:21:57 PM	10.71	6.86
Run 1 Metals	2:22:07 PM	10.70	6.87
Run 1 Metals	2:22:17 PM	10.70	6.87
Run 1 Metals	2:22:27 PM	10.72	6.86
Run 1 Metals	2:22:37 PM	10.74	6.84
Run 1 Metals	2:22:47 PM	10.83	6.77
Run 1 Metals	2:22:57 PM	10.78	6.84
Run 1 Metals	2:23:07 PM	10.74	6.86
Run 1 Metals	2:23:17 PM	10.72	6.86
Run 1 Metals	2:23:27 PM	10.64	6.93
Run 1 Metals	2:23:37 PM	10.56	6.96
Run 1 Metals	2:23:47 PM	10.56	6.96
Run 1 Metals	2:23:57 PM	10.63	6.91
Run 1 Metals	2:24:07 PM	10.69	6.88
Run 1 Metals	2:24:17 PM	10.71	6.86
Run 1 Metals	2:24:27 PM	10.68	6.89
Run 1 Metals	2:24:37 PM	10.64	6.93
Run 1 Metals	2:24:47 PM	10.58	6.96
Run 1 Metals	2:24:57 PM	10.54	6.99
Run 1 Metals	2:25:07 PM	10.47	7.02
Run 1 Metals	2:25:17 PM	10.51	7.00
Run 1 Metals	2:25:27 PM	10.51	7.00
Run 1 Metals	2:25:37 PM	10.58	6.93
Run 1 Metals	2:25:47 PM	10.65	6.89
Run 1 Metals	2:25:57 PM	10.69	6.88
Run 1 Metals	2:26:07 PM	10.63	6.93
Run 1 Metals	2:26:17 PM	10.52	6.99
Run 1 Metals	2:26:27 PM	10.54	6.98
Run 1 Metals	2:26:37 PM	10.49	7.01
Run 1 Metals	2:26:47 PM	10.43	7.06
Run 1 Metals	2:26:57 PM	10.39	7.07
Run 1 Metals	2:27:07 PM	10.48	7.01
Run 1 Metals	2:27:17 PM	10.56	6.96
Run 1 Metals	2:27:27 PM	10.60	6.94
Run 1 Metals	2:27:37 PM	10.61	6.94
Run 1 Metals	2:27:47 PM	10.62	6.93
Run 1 Metals	2:27:57 PM	10.54	6.99
Run 1 Metals	2:28:07 PM	10.47	7.03
Run 1 Metals	2:28:17 PM	10.43	7.04
Run 1 Metals	2:28:27 PM	10.40	7.07
Run 1 Metals	2:28:37 PM	10.29	7.15
Run 1 Metals	2:28:47 PM	10.29	7.15
Run 1 Metals	2:28:57 PM	10.31	7.13



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	2:29:07 PM	10.34	7.11
Run 1 Metals	2:29:17 PM	10.35	7.10
Run 1 Metals	2:29:27 PM	10.36	7.10
Run 1 Metals	2:29:37 PM	10.47	7.01
Run 1 Metals	2:29:47 PM	10.57	6.95
Run 1 Metals	2:29:57 PM	10.64	6.92
Run 1 Metals	2:30:07 PM	10.62	6.93
Run 1 Metals	2:30:17 PM	10.62	6.92
Run 1 Metals	2:30:27 PM	10.71	6.86
Run 1 Metals	2:30:37 PM	10.70	6.89
Run 1 Metals	2:30:47 PM	10.64	6.92
Run 1 Metals	2:30:57 PM	10.67	6.89
Run 1 Metals	2:31:07 PM	10.60	6.95
Run 1 Metals	2:31:17 PM	10.57	6.98
Run 1 Metals	2:31:27 PM	10.54	6.98
Run 1 Metals	2:31:37 PM	10.60	6.94
Run 1 Metals	2:31:47 PM	10.63	6.91
Run 1 Metals	2:31:57 PM	10.76	6.83
Run 1 Metals	2:32:07 PM	10.77	6.83
Run 1 Metals	2:32:17 PM	10.69	6.90
Run 1 Metals	2:32:27 PM	10.67	6.90
Run 1 Metals	2:32:37 PM	10.70	6.88
Run 1 Metals	2:32:47 PM	10.78	6.82
Run 1 Metals	2:32:57 PM	10.81	6.80
Run 1 Metals	2:33:07 PM	10.76	6.85
Run 1 Metals	2:33:17 PM	10.63	6.94
Run 1 Metals	2:33:27 PM	10.55	6.98
Run 1 Metals	2:33:37 PM	10.58	6.96
Run 1 Metals	2:33:47 PM	10.61	6.95
Run 1 Metals	2:33:57 PM	10.62	6.92
Run 1 Metals	2:34:07 PM	10.67	6.90
Run 1 Metals	2:34:17 PM	10.71	6.88
Run 1 Metals	2:34:27 PM	10.67	6.91
Run 1 Metals	2:34:37 PM	10.62	6.92
Run 1 Metals	2:34:47 PM	10.63	6.91
Run 1 Metals	2:34:57 PM	10.64	6.92
Run 1 Metals	2:35:07 PM	10.60	6.94
Run 1 Metals	2:35:17 PM	10.62	6.92
Run 1 Metals	2:35:27 PM	10.64	6.91
Run 1 Metals	2:35:37 PM	10.73	6.85
Run 1 Metals	2:35:47 PM	10.81	6.79
Run 1 Metals	2:35:57 PM	10.76	6.84
Run 1 Metals	2:36:07 PM	10.74	6.84
Run 1 Metals	2:36:17 PM	10.72	6.86
Run 1 Metals	2:36:27 PM	10.63	6.93
Run 1 Metals	2:36:37 PM	10.52	7.01
Run 1 Metals	2:36:47 PM	10.45	7.05
Run 1 Metals	2:36:57 PM	10.44	7.04
Run 1 Metals	2:37:07 PM	10.52	7.00
Run 1 Metals	2:37:17 PM	10.59	6.95
Run 1 Metals	2:37:27 PM	10.56	6.98
Run 1 Metals	2:37:37 PM	10.48	7.03
Run 1 Metals	2:37:47 PM	10.46	7.04



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	2:37:57 PM	10.41	7.06
Run 1 Metals	2:38:07 PM	10.42	7.05
Run 1 Metals	2:38:17 PM	10.50	7.00
Run 1 Metals	2:38:27 PM	10.52	6.99
Run 1 Metals	2:38:37 PM	10.53	6.98
Run 1 Metals	2:38:47 PM	10.55	6.97
Run 1 Metals	2:38:57 PM	10.54	6.98
Run 1 Metals	2:39:07 PM	10.54	6.98
Run 1 Metals	2:39:17 PM	10.62	6.92
Run 1 Metals	2:39:27 PM	10.68	6.88
Run 1 Metals	2:39:37 PM	10.73	6.84
Run 1 Metals	2:39:47 PM	10.72	6.87
Run 1 Metals	2:39:57 PM	10.62	6.94
Run 1 Metals	2:40:07 PM	10.47	7.03
Run 1 Metals	2:40:17 PM	10.46	7.03
Run 1 Metals	2:40:27 PM	10.46	7.03
Run 1 Metals	2:40:37 PM	10.46	7.03
Run 1 Metals	2:40:47 PM	10.49	7.02
Run 1 Metals	2:40:57 PM	10.46	7.05
Run 1 Metals	2:41:07 PM	10.42	7.07
Run 1 Metals	2:41:17 PM	10.40	7.08
Run 1 Metals	2:41:27 PM	10.47	7.01
Run 1 Metals	2:41:37 PM	10.58	6.93
Run 1 Metals	2:41:47 PM	10.70	6.87
Run 1 Metals	2:41:57 PM	10.74	6.86
Run 1 Metals	2:42:07 PM	10.74	6.85
Run 1 Metals	2:42:17 PM	10.72	6.86
Run 1 Metals	2:42:27 PM	10.70	6.90
Run 1 Metals	2:42:37 PM	10.66	6.92
Run 1 Metals	2:42:47 PM	10.70	6.88
Run 1 Metals	2:42:57 PM	10.69	6.89
Run 1 Metals	2:43:07 PM	10.65	6.91
Run 1 Metals	2:43:17 PM	10.68	6.89
Run 1 Metals	2:43:27 PM	10.78	6.82
Run 1 Metals	2:43:37 PM	10.84	6.77
Run 1 Metals	2:43:47 PM	10.91	6.72
Run 1 Metals	2:43:57 PM	11.02	6.65
Run 1 Metals	2:44:07 PM	11.03	6.67
Run 1 Metals	2:44:17 PM	11.00	6.68
Run 1 Metals	2:44:27 PM	10.99	6.70
Run 1 Metals	2:44:37 PM	10.93	6.73
Run 1 Metals	2:44:47 PM	10.86	6.78
Run 1 Metals	2:44:57 PM	10.82	6.80
Run 1 Metals	2:45:07 PM	10.75	6.86
Run 1 Metals	2:45:17 PM	10.70	6.89
Run 1 Metals	2:45:27 PM	10.80	6.82
Run 1 Metals	2:45:37 PM	10.84	6.78
Run 1 Metals	2:45:47 PM	10.84	6.79
Run 1 Metals	2:45:57 PM	10.80	6.83
Run 1 Metals	2:46:07 PM	10.79	6.82
Run 1 Metals	2:46:17 PM	10.80	6.80
Run 1 Metals	2:46:27 PM	10.80	6.81
Run 1 Metals	2:46:37 PM	10.77	6.84



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	2:46:47 PM	10.71	6.89
Run 1 Metals	2:46:57 PM	10.61	6.95
Run 1 Metals	2:47:07 PM	10.61	6.93
Run 1 Metals	2:47:17 PM	10.67	6.90
Run 1 Metals	2:47:27 PM	10.73	6.85
Run 1 Metals	2:47:37 PM	10.80	6.83
Run 1 Metals	2:47:47 PM	10.83	6.80
Run 1 Metals	2:47:57 PM	10.81	6.82
Run 1 Metals	2:48:07 PM	10.74	6.88
Run 1 Metals	2:48:17 PM	10.64	6.93
Run 1 Metals	2:48:27 PM	10.59	6.95
Run 1 Metals	2:48:37 PM	10.64	6.92
Run 1 Metals	2:48:47 PM	10.69	6.90
Run 1 Metals	2:48:57 PM	10.75	6.84
Run 1 Metals	2:49:07 PM	10.77	6.84
Run 1 Metals	2:49:17 PM	10.72	6.86
Run 1 Metals	2:49:27 PM	10.72	6.87
Run 1 Metals	2:49:37 PM	10.66	6.92
Run 1 Metals	2:49:47 PM	10.59	6.97
Run 1 Metals	2:49:57 PM	10.60	6.95
Run 1 Metals	2:50:07 PM	10.61	6.95
Run 1 Metals	2:50:17 PM	10.52	7.02
Run 1 Metals	2:50:27 PM	10.52	7.00
Run 1 Metals	2:50:37 PM	10.67	6.90
Run 1 Metals	2:50:47 PM	10.77	6.83
Run 1 Metals	2:50:57 PM	10.83	6.79
Run 1 Metals	2:51:07 PM	10.83	6.80
Run 1 Metals	2:51:17 PM	10.78	6.83
Run 1 Metals	2:51:27 PM	10.77	6.85
Run 1 Metals	2:51:37 PM	10.73	6.86
Run 1 Metals	2:51:47 PM	10.74	6.86
Run 1 Metals	2:51:57 PM	10.71	6.88
Run 1 Metals	2:52:07 PM	10.68	6.90
Run 1 Metals	2:52:17 PM	10.67	6.91
Run 1 Metals	2:52:27 PM	10.67	6.90
Run 1 Metals	2:52:37 PM	10.63	6.92
Run 1 Metals	2:52:47 PM	10.63	6.93
Run 1 Metals	2:52:57 PM	10.62	6.95
Run 1 Metals	2:53:07 PM	10.69	6.87
Run 1 Metals	2:53:17 PM	10.72	6.88
Run 1 Metals	2:53:27 PM	10.73	6.85
Run 1 Metals	2:53:37 PM	10.83	6.78
Run 1 Metals	2:53:47 PM	10.88	6.76
Run 1 Metals	2:53:57 PM	10.91	6.74
Run 1 Metals	2:54:07 PM	10.98	6.69
Run 1 Metals	2:54:17 PM	11.01	6.66
Run 1 Metals	2:54:27 PM	10.93	6.74
Run 1 Metals	2:54:37 PM	10.90	6.74
Run 1 Metals	2:54:47 PM	10.90	6.74
Run 1 Metals	2:54:57 PM	10.88	6.75
Run 1 Metals	2:55:07 PM	10.85	6.78
Run 1 Metals	2:55:17 PM	10.84	6.78
Run 1 Metals	2:55:27 PM	10.81	6.80



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	2:55:37 PM	10.72	6.87
Run 1 Metals	2:55:47 PM	10.64	6.93
Run 1 Metals	2:55:57 PM	10.60	6.94
Run 1 Metals	2:56:07 PM	10.61	6.94
Run 1 Metals	2:56:17 PM	10.69	6.89
Run 1 Metals	2:56:27 PM	10.77	6.83
Run 1 Metals	2:56:37 PM	10.71	6.88
Run 1 Metals	2:56:47 PM	10.63	6.93
Run 1 Metals	2:56:57 PM	10.59	6.94
Run 1 Metals	2:57:07 PM	10.63	6.92
Run 1 Metals	2:57:17 PM	10.65	6.92
Run 1 Metals	2:57:27 PM	10.64	6.92
Run 1 Metals	2:57:37 PM	10.62	6.94
Run 1 Metals	2:57:47 PM	10.59	6.96
Run 1 Metals	2:57:57 PM	10.61	6.94
Run 1 Metals	2:58:07 PM	10.60	6.94
Run 1 Metals	2:58:17 PM	10.63	6.92
Run 1 Metals	2:58:27 PM	10.63	6.91
Run 1 Metals	2:58:37 PM	10.68	6.89
Run 1 Metals	2:58:47 PM	10.64	6.92
Run 1 Metals	2:58:57 PM	10.64	6.92
Run 1 Metals	2:59:07 PM	10.65	6.91
Run 1 Metals	2:59:17 PM	10.61	6.95
Run 1 Metals	2:59:27 PM	10.54	7.00
Run 1 Metals	2:59:37 PM	10.50	7.01
Run 1 Metals	2:59:47 PM	10.48	7.03
Run 1 Metals	2:59:57 PM	10.44	7.05
Run 1 Metals	3:00:07 PM	10.41	7.08
Run 1 Metals	3:00:17 PM	10.45	7.05
Run 1 Metals	3:00:27 PM	10.44	7.05
Run 1 Metals	3:00:37 PM	10.45	7.03
Run 1 Metals	3:00:47 PM	10.51	7.02
Run 1 Metals	3:00:57 PM	10.49	7.02
Run 1 Metals	3:01:07 PM	10.51	7.00
Run 1 Metals	3:01:17 PM	10.53	7.00
Run 1 Metals	3:01:27 PM	10.51	7.02
Run 1 Metals	3:01:37 PM	10.54	6.98
Run 1 Metals	3:01:47 PM	10.59	6.95
Run 1 Metals	3:01:57 PM	10.59	6.95
Run 1 Metals	3:02:07 PM	10.56	6.97
Run 1 Metals	3:02:17 PM	10.48	7.02
Run 1 Metals	3:02:27 PM	10.51	6.98
Run 1 Metals	3:02:37 PM	10.73	6.83
Run 1 Metals	3:02:47 PM	10.94	6.71
Run 1 Metals	3:02:57 PM	10.97	6.70
Run 1 Metals	3:03:07 PM	10.87	6.76
Run 1 Metals	3:03:17 PM	10.79	6.83
Run 1 Metals	3:03:27 PM	10.79	6.83
Run 1 Metals	3:03:37 PM	10.80	6.82
Run 1 Metals	3:03:47 PM	10.75	6.86
Run 1 Metals	3:03:57 PM	10.68	6.90
Run 1 Metals	3:04:07 PM	10.57	6.98
Run 1 Metals	3:04:17 PM	10.43	7.07



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	3:04:27 PM	10.36	7.12
Run 1 Metals	3:04:37 PM	10.36	7.12
Run 1 Metals	3:04:47 PM	10.35	7.12
Run 1 Metals	3:04:57 PM	10.40	7.07
Run 1 Metals	3:05:07 PM	10.50	7.00
Run 1 Metals	3:05:17 PM	10.57	6.97
Run 1 Metals	3:05:27 PM	10.62	6.93
Run 1 Metals	3:05:37 PM	10.78	6.80
Run 1 Metals	3:05:47 PM	10.95	6.69
Run 1 Metals	3:05:57 PM	11.07	6.64
Run 1 Metals	3:06:07 PM	10.98	6.71
Run 1 Metals	3:06:17 PM	10.78	6.84
Run 1 Metals	3:06:27 PM	10.70	6.89
Run 1 Metals	3:06:37 PM	10.74	6.84
Run 1 Metals	3:06:47 PM	10.83	6.78
Run 1 Metals	3:06:57 PM	10.86	6.75
Run 1 Metals	3:07:07 PM	10.83	6.78
Run 1 Metals	3:07:17 PM	10.80	6.81
Run 1 Metals	3:07:27 PM	10.77	6.85
Run 1 Metals	3:07:37 PM	10.74	6.86
Run 1 Metals	3:07:47 PM	10.84	6.77
Run 1 Metals	3:07:57 PM	10.85	6.77
Run 1 Metals	3:08:07 PM	10.79	6.83
Run 1 Metals	3:08:17 PM	10.66	6.92
Run 1 Metals	3:08:27 PM	10.61	6.95
Run 1 Metals	3:08:37 PM	10.58	6.96
Run 1 Metals	3:08:47 PM	10.52	7.01
Run 1 Metals	3:08:57 PM	10.51	7.01
Run 1 Metals	3:09:07 PM	10.50	7.01
Run 1 Metals	3:09:17 PM	10.53	6.98
Run 1 Metals	3:09:27 PM	10.56	6.97
Run 1 Metals	3:09:37 PM	10.61	6.94
Run 1 Metals	3:09:47 PM	10.65	6.91
Run 1 Metals	3:09:57 PM	10.62	6.93
Run 1 Metals	3:10:07 PM	10.68	6.88
Run 1 Metals	3:10:17 PM	10.74	6.84
Run 1 Metals	3:10:27 PM	10.78	6.82
Run 1 Metals	3:10:37 PM	10.80	6.80
Run 1 Metals	3:10:47 PM	10.78	6.83
Run 1 Metals	3:10:57 PM	10.75	6.85
Run 1 Metals	3:11:07 PM	10.61	6.95
Run 1 Metals	3:11:17 PM	10.54	6.99
Run 1 Metals	3:11:27 PM	10.58	6.94
Run 1 Metals	3:11:37 PM	10.68	6.89
Run 1 Metals	3:11:47 PM	10.70	6.88
Run 1 Metals	3:11:57 PM	10.67	6.90
Run 1 Metals	3:12:07 PM	10.72	6.87
Run 1 Metals	3:12:17 PM	10.63	6.93
Run 1 Metals	3:12:27 PM	10.53	7.00
Run 1 Metals	3:12:37 PM	10.53	6.99
Run 1 Metals	3:12:47 PM	10.59	6.95
Run 1 Metals	3:12:57 PM	10.73	6.84
Run 1 Metals	3:13:07 PM	10.82	6.80



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	3:13:17 PM	10.83	6.79
Run 1 Metals	3:13:27 PM	10.86	6.75
Run 1 Metals	3:13:37 PM	10.96	6.70
Run 1 Metals	3:13:47 PM	10.97	6.71
Run 1 Metals	3:13:57 PM	10.85	6.78
Run 1 Metals	3:14:07 PM	10.73	6.88
Run 1 Metals	3:14:17 PM	10.69	6.88
Run 1 Metals	3:14:27 PM	10.68	6.91
Run 1 Metals	3:14:37 PM	10.63	6.94
Run 1 Metals	3:14:47 PM	10.63	6.93
Run 1 Metals	3:14:57 PM	10.69	6.89
Run 1 Metals	3:15:07 PM	10.75	6.84
Run 1 Metals	3:15:17 PM	10.79	6.83
Run 1 Metals	3:15:27 PM	10.83	6.80
Run 1 Metals	3:15:37 PM	10.80	6.82
Run 1 Metals	3:15:47 PM	10.85	6.78
Run 1 Metals	3:15:57 PM	10.88	6.76
Run 1 Metals	3:16:07 PM	10.74	6.88
Run 1 Metals	3:16:17 PM	10.57	6.98
Run 1 Metals	3:16:27 PM	10.55	6.99
Run 1 Metals	3:16:37 PM	10.57	6.98
Run 1 Metals	3:16:47 PM	10.60	6.96
Run 1 Metals	3:16:57 PM	10.73	6.85
Run 1 Metals	3:17:07 PM	10.89	6.74
Run 1 Metals	3:17:17 PM	11.02	6.66
Run 1 Metals	3:17:27 PM	11.02	6.66
Run 1 Metals	3:17:37 PM	11.05	6.63
Run 1 Metals	3:17:47 PM	11.00	6.68
Run 1 Metals	3:17:57 PM	10.97	6.71
Run 1 Metals	3:18:07 PM	10.96	6.71
Run 1 Metals	3:18:17 PM	10.86	6.79
Run 1 Metals	3:18:27 PM	10.77	6.84
Run 1 Metals	3:18:37 PM	10.68	6.91
Run 1 Metals	3:18:47 PM	10.65	6.92
Run 1 Metals	3:18:57 PM	10.62	6.94
Run 1 Metals	3:19:07 PM	10.69	6.88
Run 1 Metals	3:19:17 PM	10.88	6.74
Run 1 Metals	3:19:27 PM	10.97	6.71
Run 1 Metals	3:19:37 PM	10.99	6.69
Run 1 Metals	3:19:47 PM	10.99	6.71
Run 1 Metals	3:19:57 PM	10.96	6.71
Run 1 Metals	3:20:07 PM	10.97	6.71
Run 1 Metals	3:20:17 PM	10.97	6.70
Run 1 Metals	3:20:27 PM	11.00	6.68
Run 1 Metals	3:20:37 PM	11.05	6.65
Run 1 Metals	3:20:47 PM	11.06	6.65
Run 1 Metals	3:20:57 PM	11.15	6.57
Run 1 Metals	3:21:07 PM	11.15	6.59
Run 1 Metals	3:21:17 PM	11.09	6.63
Run 1 Metals	3:21:27 PM	11.08	6.63
Run 1 Metals	3:21:37 PM	11.05	6.67
Run 1 Metals	3:21:47 PM	10.92	6.76
Run 1 Metals	3:21:57 PM	10.80	6.83



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 1 Metals	3:22:07 PM	10.82	6.80
Run 1 Metals	3:22:17 PM	10.80	6.83
Run 1 Metals	3:22:27 PM	10.79	6.83
Run 1 Metals	3:22:37 PM	10.80	6.83
Run 1 Metals	3:22:47 PM	10.75	6.87
Run 1 Metals	3:22:57 PM	10.72	6.89
Run 1 Metals	3:23:07 PM	10.67	6.93
Run 1 Metals	3:23:17 PM	10.62	6.95
Run 1 Metals	3:23:27 PM	10.58	6.98
Run 1 Metals	3:23:37 PM	10.52	7.02
Run 1 Metals	3:23:47 PM	10.50	7.03
Run 1 Metals	3:23:57 PM	10.50	7.03
Run 1 Metals	3:24:07 PM	10.49	7.04
Run 1 Metals	3:24:17 PM	10.49	7.03
Run 1 Metals	3:24:27 PM	10.56	6.97
Run 1 Metals	3:24:37 PM	10.62	6.95
Run 1 Metals	3:24:47 PM	10.66	6.91
Run 1 Metals	3:24:57 PM	10.72	6.88
Run 1 Metals	3:25:07 PM	10.70	6.91
Run 1 Metals	3:25:17 PM	10.70	6.89
Run 1 Metals	3:25:27 PM	10.65	6.93
Run 1 Metals	3:25:37 PM	10.68	6.90
Run 1 Metals	3:25:47 PM	10.73	6.88
Run 1 Metals	3:25:57 PM	10.77	6.84
Run 1 Metals	3:26:07 PM	10.82	6.80
Run 1 Metals	3:26:17 PM	10.85	6.78
Run 1 Metals	3:26:27 PM	10.79	6.84
Run 1 Metals	3:26:37 PM	10.67	6.92
Run 1 Metals	3:26:47 PM	10.63	6.95
Run 1 Metals	3:26:57 PM	10.63	6.94
Run 1 Metals	3:27:07 PM	10.65	6.92
Run 1 Metals	3:27:17 PM	10.75	6.84
Run 1 Metals	3:27:27 PM	10.87	6.76
Run 1 Metals	3:27:37 PM	10.98	6.69
Run 1 Metals	3:27:47 PM	11.03	6.67
Run 1 Metals	3:27:57 PM	10.95	6.73
Run 1 Metals	3:28:07 PM	10.87	6.77
Run 1 Metals	3:28:17 PM	10.85	6.79
Run 1 Metals	3:28:27 PM	10.82	6.81
Run 1 Metals	3:28:37 PM	10.77	6.85
Run 1 Metals	3:28:47 PM	10.84	6.78
Run 1 Metals	3:28:57 PM	11.02	6.64
Run 1 Metals	3:29:07 PM	11.22	6.53
Run 1 Metals	3:29:17 PM	11.19	6.56
Run 1 Metals	3:29:27 PM	11.17	6.57
Run 1 Metals	3:29:37 PM	11.15	6.60
Run 1 Metals	3:29:47 PM	11.15	6.60
Run 1 Metals	3:29:57 PM	11.14	6.60
Run 1 Metals	3:30:07 PM	11.09	6.63
Run 1 Metals	3:30:17 PM	11.09	6.62
Run 1 Metals	3:30:27 PM	11.20	6.56
Run 1 Metals	3:30:37 PM	11.24	6.54
Run 1 Metals	3:30:47 PM	11.24	6.55



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 1 Metals	3:30:57 PM	11.24	6.53
Run 1 Metals	3:31:07 PM	11.27	6.51
Run 1 Metals	3:31:17 PM	11.25	6.53
Run 1 Metals	3:31:27 PM	11.09	6.64
Run 1 Metals	3:31:37 PM	11.02	6.68
Run 1 Metals	3:31:47 PM	11.12	6.60
Run 1 Metals	3:31:57 PM	11.16	6.59
Run 1 Metals	3:32:07 PM	11.13	6.61
Run 1 Metals	3:32:17 PM	11.08	6.64
Run 1 Metals	3:32:27 PM	11.08	6.63
Run 1 Metals	3:32:37 PM	11.09	6.64
Run 1 Metals	3:32:47 PM	11.07	6.66
Run 1 Metals	3:32:57 PM	11.09	6.62
Run 1 Metals	3:33:07 PM	11.18	6.57
Run 1 Metals	3:33:17 PM	11.14	6.61
Run 1 Metals	3:33:27 PM	11.14	6.61
Run 1 Metals	3:33:37 PM	11.17	6.59
Run 1 Metals	3:33:47 PM	11.11	6.63
Run 1 Metals	3:33:57 PM	11.09	6.64
Run 1 Metals	3:34:07 PM	11.11	6.62
Run 1 Metals	3:34:17 PM	11.13	6.60
Run 1 Metals	3:34:27 PM	11.08	6.65
Run 1 Metals	3:34:37 PM	10.98	6.71
Run 1 Metals	3:34:47 PM	10.94	6.75
Run 1 Metals	3:34:57 PM	10.88	6.77
Run 1 Metals	3:35:07 PM	10.85	6.80
Run 1 Metals	3:35:17 PM	10.75	6.88
Run 1 Metals	3:35:27 PM	10.71	6.90
Run 1 Metals	3:35:37 PM	10.76	6.85
Run 1 Metals	3:35:47 PM	10.84	6.79
Run 1 Metals	3:35:57 PM	10.94	6.72
Run 1 Metals	3:36:07 PM	10.97	6.71
Run 1 Metals	3:36:17 PM	10.95	6.74
Run 1 Metals	3:36:27 PM	10.92	6.75
Run 1 Metals	3:36:37 PM	10.93	6.74
Run 1 Metals	3:36:47 PM	10.93	6.77
Run 1 Metals	3:36:57 PM	10.87	6.80
System Bias Mid - CC359583	4:40:07 PM	10.98	9.55
System Bias Mid - CC359583	4:40:17 PM	10.98	9.56
System Bias Mid - CC359583	4:40:27 PM	10.98	9.57
System Bias Mid - CC359583	4:40:37 PM	10.96	9.57
System Bias Zero - UHP N2	4:47:17 PM	0.07	0.12
System Bias Zero - UHP N2	4:47:27 PM	0.07	0.13
System Bias Zero - UHP N2	4:47:37 PM	0.07	0.12
Run 2 Metals	5:33:07 PM	10.94	6.33
Run 2 Metals	5:33:17 PM	10.99	6.35
Run 2 Metals	5:33:27 PM	11.05	6.33
Run 2 Metals	5:33:37 PM	11.14	6.27
Run 2 Metals	5:33:47 PM	11.22	6.20
Run 2 Metals	5:33:57 PM	11.27	6.14
Run 2 Metals	5:34:07 PM	11.28	6.11
Run 2 Metals	5:34:17 PM	11.29	6.13
Run 2 Metals	5:34:27 PM	11.28	6.19



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	5:34:37 PM	11.25	6.24
Run 2 Metals	5:34:47 PM	11.23	6.27
Run 2 Metals	5:34:57 PM	11.22	6.26
Run 2 Metals	5:35:07 PM	11.23	6.24
Run 2 Metals	5:35:17 PM	11.25	6.26
Run 2 Metals	5:35:27 PM	11.27	6.30
Run 2 Metals	5:35:37 PM	11.30	6.34
Run 2 Metals	5:35:47 PM	11.32	6.36
Run 2 Metals	5:35:57 PM	11.34	6.36
Run 2 Metals	5:36:07 PM	11.34	6.37
Run 2 Metals	5:36:17 PM	11.32	6.40
Run 2 Metals	5:36:27 PM	11.28	6.43
Run 2 Metals	5:36:37 PM	11.22	6.46
Run 2 Metals	5:36:47 PM	11.20	6.46
Run 2 Metals	5:36:57 PM	11.19	6.45
Run 2 Metals	5:37:07 PM	11.22	6.42
Run 2 Metals	5:37:17 PM	11.24	6.39
Run 2 Metals	5:37:27 PM	11.30	6.35
Run 2 Metals	5:37:37 PM	11.33	6.31
Run 2 Metals	5:37:47 PM	11.34	6.25
Run 2 Metals	5:37:57 PM	11.34	6.19
Run 2 Metals	5:38:07 PM	11.35	6.15
Run 2 Metals	5:38:17 PM	11.37	6.16
Run 2 Metals	5:38:27 PM	11.40	6.16
Run 2 Metals	5:38:37 PM	11.44	6.17
Run 2 Metals	5:38:47 PM	11.47	6.20
Run 2 Metals	5:38:57 PM	11.49	6.20
Run 2 Metals	5:39:07 PM	11.54	6.19
Run 2 Metals	5:39:17 PM	11.57	6.18
Run 2 Metals	5:39:27 PM	11.58	6.18
Run 2 Metals	5:39:37 PM	11.57	6.19
Run 2 Metals	5:39:47 PM	11.57	6.20
Run 2 Metals	5:39:57 PM	11.55	6.21
Run 2 Metals	5:40:07 PM	11.56	6.20
Run 2 Metals	5:40:17 PM	11.59	6.17
Run 2 Metals	5:40:27 PM	11.63	6.16
Run 2 Metals	5:40:37 PM	11.66	6.15
Run 2 Metals	5:40:47 PM	11.69	6.16
Run 2 Metals	5:40:57 PM	11.70	6.16
Run 2 Metals	5:41:07 PM	11.70	6.17
Run 2 Metals	5:41:17 PM	11.71	6.17
Run 2 Metals	5:41:27 PM	11.71	6.17
Run 2 Metals	5:41:37 PM	11.70	6.18
Run 2 Metals	5:41:47 PM	11.66	6.21
Run 2 Metals	5:41:57 PM	11.62	6.24
Run 2 Metals	5:42:07 PM	11.59	6.26
Run 2 Metals	5:42:17 PM	11.59	6.23
Run 2 Metals	5:42:27 PM	11.60	6.22
Run 2 Metals	5:42:37 PM	11.60	6.21
Run 2 Metals	5:42:47 PM	11.58	6.22
Run 2 Metals	5:42:57 PM	11.54	6.23
Run 2 Metals	5:43:07 PM	11.51	6.22
Run 2 Metals	5:43:17 PM	11.51	6.21



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	5:43:27 PM	11.54	6.18
Run 2 Metals	5:43:37 PM	11.58	6.15
Run 2 Metals	5:43:47 PM	11.62	6.13
Run 2 Metals	5:43:57 PM	11.64	6.11
Run 2 Metals	5:44:07 PM	11.64	6.13
Run 2 Metals	5:44:17 PM	11.61	6.16
Run 2 Metals	5:44:27 PM	11.57	6.19
Run 2 Metals	5:44:37 PM	11.55	6.20
Run 2 Metals	5:44:47 PM	11.53	6.18
Run 2 Metals	5:44:57 PM	11.53	6.17
Run 2 Metals	5:45:07 PM	11.53	6.18
Run 2 Metals	5:45:17 PM	11.51	6.20
Run 2 Metals	5:45:27 PM	11.50	6.21
Run 2 Metals	5:45:37 PM	11.47	6.22
Run 2 Metals	5:45:47 PM	11.47	6.23
Run 2 Metals	5:45:57 PM	11.47	6.23
Run 2 Metals	5:46:07 PM	11.47	6.22
Run 2 Metals	5:46:17 PM	11.47	6.21
Run 2 Metals	5:46:27 PM	11.47	6.20
Run 2 Metals	5:46:37 PM	11.46	6.19
Run 2 Metals	5:46:47 PM	11.46	6.17
Run 2 Metals	5:46:57 PM	11.46	6.15
Run 2 Metals	5:47:07 PM	11.46	6.12
Run 2 Metals	5:47:17 PM	11.46	6.09
Run 2 Metals	5:47:27 PM	11.46	6.07
Run 2 Metals	5:47:37 PM	11.46	6.04
Run 2 Metals	5:47:47 PM	11.47	6.03
Run 2 Metals	5:47:57 PM	11.49	6.01
Run 2 Metals	5:48:07 PM	11.50	5.98
Run 2 Metals	5:48:17 PM	11.53	5.97
Run 2 Metals	5:48:27 PM	11.56	5.94
Run 2 Metals	5:48:37 PM	11.57	5.90
Run 2 Metals	5:48:47 PM	11.59	5.86
Run 2 Metals	5:48:57 PM	11.63	5.81
Run 2 Metals	5:49:07 PM	11.66	5.75
Run 2 Metals	5:49:17 PM	11.70	5.71
Run 2 Metals	5:49:27 PM	11.74	5.68
Run 2 Metals	5:49:37 PM	11.77	5.67
Run 2 Metals	5:49:47 PM	11.81	5.68
Run 2 Metals	5:49:57 PM	11.84	5.67
Run 2 Metals	5:50:07 PM	11.88	5.68
Run 2 Metals	5:50:17 PM	11.93	5.70
Run 2 Metals	5:50:27 PM	11.95	5.73
Run 2 Metals	5:50:37 PM	11.95	5.78
Run 2 Metals	5:50:47 PM	11.91	5.87
Run 2 Metals	5:50:57 PM	11.87	5.96
Run 2 Metals	5:51:07 PM	11.84	6.02
Run 2 Metals	5:51:17 PM	11.83	6.01
Run 2 Metals	5:51:27 PM	11.85	6.01
Run 2 Metals	5:51:37 PM	11.87	6.01
Run 2 Metals	5:51:47 PM	11.90	6.04
Run 2 Metals	5:51:57 PM	11.91	6.06
Run 2 Metals	5:52:07 PM	11.90	6.08



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	5:52:17 PM	11.88	6.12
Run 2 Metals	5:52:27 PM	11.86	6.14
Run 2 Metals	5:52:37 PM	11.84	6.17
Run 2 Metals	5:52:47 PM	11.83	6.18
Run 2 Metals	5:52:57 PM	11.82	6.19
Run 2 Metals	5:53:07 PM	11.81	6.20
Run 2 Metals	5:53:17 PM	11.80	6.21
Run 2 Metals	5:53:27 PM	11.80	6.22
Run 2 Metals	5:53:37 PM	11.78	6.23
Run 2 Metals	5:53:47 PM	11.78	6.25
Run 2 Metals	5:53:57 PM	11.75	6.26
Run 2 Metals	5:54:07 PM	11.74	6.27
Run 2 Metals	5:54:17 PM	11.73	6.28
Run 2 Metals	5:54:27 PM	11.73	6.28
Run 2 Metals	5:54:37 PM	11.73	6.28
Run 2 Metals	5:54:47 PM	11.74	6.26
Run 2 Metals	5:54:57 PM	11.74	6.25
Run 2 Metals	5:55:07 PM	11.75	6.25
Run 2 Metals	5:55:17 PM	11.76	6.22
Run 2 Metals	5:55:27 PM	11.76	6.19
Run 2 Metals	5:55:37 PM	11.77	6.17
Run 2 Metals	5:55:47 PM	11.77	6.15
Run 2 Metals	5:55:57 PM	11.76	6.12
Run 2 Metals	5:56:07 PM	11.76	6.10
Run 2 Metals	5:56:17 PM	11.75	6.07
Run 2 Metals	5:56:27 PM	11.75	6.06
Run 2 Metals	5:56:37 PM	11.75	6.04
Run 2 Metals	5:56:47 PM	11.75	6.02
Run 2 Metals	5:56:57 PM	11.75	5.99
Run 2 Metals	5:57:07 PM	11.76	5.97
Run 2 Metals	5:57:17 PM	11.78	5.94
Run 2 Metals	5:57:27 PM	11.79	5.91
Run 2 Metals	5:57:37 PM	11.81	5.86
Run 2 Metals	5:57:47 PM	11.83	5.80
Run 2 Metals	5:57:57 PM	11.88	5.72
Run 2 Metals	5:58:07 PM	11.93	5.63
Run 2 Metals	5:58:17 PM	12.05	5.53
Run 2 Metals	5:58:27 PM	12.20	5.47
Run 2 Metals	5:58:37 PM	12.33	5.48
Run 2 Metals	5:58:47 PM	12.39	5.53
Run 2 Metals	5:58:57 PM	12.41	5.61
Run 2 Metals	5:59:07 PM	12.39	5.69
Run 2 Metals	5:59:17 PM	12.35	5.77
Run 2 Metals	5:59:27 PM	12.31	5.84
Run 2 Metals	5:59:37 PM	12.28	5.89
Run 2 Metals	5:59:47 PM	12.24	5.92
Run 2 Metals	5:59:57 PM	12.20	5.96
Run 2 Metals	6:00:07 PM	12.15	6.00
Run 2 Metals	6:00:17 PM	12.11	6.03
Run 2 Metals	6:00:27 PM	12.08	6.05
Run 2 Metals	6:00:37 PM	12.03	6.08
Run 2 Metals	6:00:47 PM	12.02	6.11
Run 2 Metals	6:00:57 PM	11.98	6.13



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	6:01:07 PM	11.95	6.15
Run 2 Metals	6:01:17 PM	11.92	6.16
Run 2 Metals	6:01:27 PM	11.90	6.19
Run 2 Metals	6:01:37 PM	11.88	6.20
Run 2 Metals	6:01:47 PM	11.86	6.22
Run 2 Metals	6:01:57 PM	11.85	6.23
Run 2 Metals	6:02:07 PM	11.83	6.25
Run 2 Metals	6:02:17 PM	11.81	6.25
Run 2 Metals	6:02:27 PM	11.81	6.25
Run 2 Metals	6:02:37 PM	11.80	6.24
Run 2 Metals	6:02:47 PM	11.81	6.25
Run 2 Metals	6:02:57 PM	11.80	6.23
Run 2 Metals	6:03:07 PM	11.79	6.23
Run 2 Metals	6:03:17 PM	11.81	6.22
Run 2 Metals	6:03:27 PM	11.81	6.21
Run 2 Metals	6:03:37 PM	11.82	6.20
Run 2 Metals	6:03:47 PM	11.83	6.20
Run 2 Metals	6:03:57 PM	11.82	6.18
Run 2 Metals	6:04:07 PM	11.83	6.18
Run 2 Metals	6:04:17 PM	11.84	6.17
Run 2 Metals	6:04:27 PM	11.85	6.16
Run 2 Metals	6:04:37 PM	11.85	6.15
Run 2 Metals	6:04:47 PM	11.86	6.15
Run 2 Metals	6:04:57 PM	11.86	6.13
Run 2 Metals	6:05:07 PM	11.87	6.12
Run 2 Metals	6:05:17 PM	11.88	6.10
Run 2 Metals	6:05:27 PM	11.89	6.09
Run 2 Metals	6:05:37 PM	11.89	6.07
Run 2 Metals	6:05:47 PM	11.91	6.06
Run 2 Metals	6:05:57 PM	11.92	6.04
Run 2 Metals	6:06:07 PM	11.93	6.03
Run 2 Metals	6:06:17 PM	11.94	6.02
Run 2 Metals	6:06:27 PM	11.95	6.00
Run 2 Metals	6:06:37 PM	11.95	5.98
Run 2 Metals	6:06:47 PM	11.97	5.97
Run 2 Metals	6:06:57 PM	11.98	5.95
Run 2 Metals	6:07:07 PM	12.00	5.93
Run 2 Metals	6:07:17 PM	12.01	5.92
Run 2 Metals	6:07:27 PM	12.02	5.89
Run 2 Metals	6:07:37 PM	12.03	5.89
Run 2 Metals	6:07:47 PM	12.05	5.86
Run 2 Metals	6:07:57 PM	12.06	5.84
Run 2 Metals	6:08:07 PM	12.08	5.82
Run 2 Metals	6:08:17 PM	12.09	5.80
Run 2 Metals	6:08:27 PM	12.11	5.79
Run 2 Metals	6:08:37 PM	12.12	5.77
Run 2 Metals	6:08:47 PM	12.14	5.75
Run 2 Metals	6:08:57 PM	12.17	5.73
Run 2 Metals	6:09:07 PM	12.19	5.71
Run 2 Metals	6:09:17 PM	12.21	5.69
Run 2 Metals	6:09:27 PM	12.23	5.68
Run 2 Metals	6:09:37 PM	12.24	5.65
Run 2 Metals	6:09:47 PM	12.26	5.65



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 2 Metals	6:09:57 PM	12.28	5.62
Run 2 Metals	6:10:07 PM	12.30	5.60
Run 2 Metals	6:10:17 PM	12.33	5.60
Run 2 Metals	6:10:27 PM	12.35	5.58
Run 2 Metals	6:10:37 PM	12.37	5.56
Run 2 Metals	6:10:47 PM	12.40	5.54
Run 2 Metals	6:10:57 PM	12.42	5.52
Run 2 Metals	6:11:07 PM	12.44	5.50
Run 2 Metals	6:11:17 PM	12.46	5.49
Run 2 Metals	6:11:27 PM	12.48	5.46
Run 2 Metals	6:11:37 PM	12.51	5.44
Run 2 Metals	6:11:47 PM	12.54	5.41
Run 2 Metals	6:11:57 PM	12.56	5.39
In Calibration	6:12:07 PM	12.59	5.35
In Calibration	6:12:17 PM	12.61	5.32
In Calibration	6:12:27 PM	12.64	5.29
In Calibration	6:12:37 PM	12.67	5.26
In Calibration	6:12:47 PM	12.70	5.23
In Calibration	6:12:57 PM	12.73	5.20
In Calibration	6:13:07 PM	12.77	5.16
In Calibration	6:13:17 PM	12.83	5.11
In Calibration	6:13:27 PM	13.04	4.98
In Calibration	6:13:37 PM	13.72	4.68
In Calibration	6:13:47 PM	14.79	4.19
In Calibration	6:13:57 PM	15.59	3.80
In Calibration	6:14:07 PM	15.91	3.66
In Calibration	6:14:17 PM	16.94	2.84
In Calibration	6:14:27 PM	18.71	1.56
In Calibration	6:14:37 PM	19.89	0.74
In Calibration	6:14:47 PM	20.36	0.43
In Calibration	6:14:57 PM	20.53	0.30
In Calibration	6:15:07 PM	20.62	0.26
In Calibration	6:15:17 PM	20.63	0.24
In Calibration	6:15:27 PM	20.62	0.25
In Calibration	6:15:37 PM	20.62	0.25
In Calibration	6:15:47 PM	20.63	0.24
In Calibration	6:15:57 PM	20.65	0.23
In Calibration	6:16:07 PM	20.67	0.21
In Calibration	6:16:17 PM	20.69	0.21
In Calibration	6:16:27 PM	20.67	0.20
In Calibration	6:16:37 PM	20.66	0.21
In Calibration	6:16:47 PM	20.64	0.21
In Calibration	6:16:57 PM	20.66	0.21
In Calibration	6:17:07 PM	20.67	0.21
In Calibration	6:17:17 PM	20.75	0.20
In Calibration	6:17:27 PM	20.72	0.16
In Calibration	6:17:37 PM	20.75	0.12
In Calibration	6:17:47 PM	20.78	0.11
In Calibration	6:17:57 PM	20.80	0.11
In Calibration	6:18:07 PM	20.79	0.10
In Calibration	6:18:17 PM	20.80	0.09
In Calibration	6:18:27 PM	20.80	0.10
In Calibration	6:18:37 PM	20.81	0.10



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
In Calibration	6:18:47 PM	20.81	0.10
In Calibration	6:18:57 PM	20.81	0.09
In Calibration	6:19:07 PM	20.81	0.09
In Calibration	6:19:17 PM	20.81	0.09
In Calibration	6:19:27 PM	20.82	0.09
In Calibration	6:19:37 PM	20.81	0.09
In Calibration	6:19:47 PM	20.82	0.09
In Calibration	6:19:57 PM	20.81	0.09
In Calibration	6:20:07 PM	20.81	0.09
In Calibration	6:20:17 PM	20.82	0.09
In Calibration	6:20:27 PM	20.81	0.09
In Calibration	6:20:37 PM	20.82	0.10
In Calibration	6:20:47 PM	20.82	0.10
In Calibration	6:20:57 PM	20.81	0.09
In Calibration	6:21:07 PM	20.81	0.10
In Calibration	6:21:17 PM	20.81	0.09
In Calibration	6:21:27 PM	20.81	0.09
In Calibration	6:21:37 PM	20.80	0.13
In Calibration	6:21:47 PM	20.80	0.13
In Calibration	6:21:57 PM	20.78	0.13
In Calibration	6:22:07 PM	20.78	0.14
In Calibration	6:22:17 PM	20.82	0.13
In Calibration	6:22:27 PM	20.81	0.13
In Calibration	6:22:37 PM	20.81	0.13
In Calibration	6:22:47 PM	20.82	0.13
In Calibration	6:22:57 PM	20.82	0.13
In Calibration	6:23:07 PM	20.82	0.14
In Calibration	6:23:17 PM	20.82	0.14
In Calibration	6:23:27 PM	20.82	0.13
In Calibration	6:23:37 PM	20.82	0.14
In Calibration	6:23:47 PM	20.82	0.14
In Calibration	6:23:57 PM	20.83	0.14
In Calibration	6:24:07 PM	20.82	0.14
In Calibration	6:24:17 PM	20.83	0.14
In Calibration	6:24:27 PM	20.83	0.14
In Calibration	6:24:37 PM	20.82	0.14
In Calibration	6:24:47 PM	20.83	0.14
In Calibration	6:24:57 PM	20.82	0.13
In Calibration	6:25:07 PM	20.82	0.13
In Calibration	6:25:17 PM	20.82	0.14
In Calibration	6:25:27 PM	20.83	0.14
In Calibration	6:25:37 PM	20.83	0.14
In Calibration	6:25:47 PM	20.83	0.14
In Calibration	6:25:57 PM	20.83	0.14
In Calibration	6:26:07 PM	20.82	0.14
In Calibration	6:26:17 PM	20.83	0.14
In Calibration	6:26:27 PM	20.82	0.14
In Calibration	6:26:37 PM	20.82	0.13
In Calibration	6:26:47 PM	20.82	0.14
In Calibration	6:26:57 PM	20.82	0.14
In Calibration	6:27:07 PM	20.82	0.14
In Calibration	6:27:17 PM	20.82	0.14
In Calibration	6:27:27 PM	20.82	0.14



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
In Calibration	6:27:37 PM	20.83	0.14
In Calibration	6:27:47 PM	20.82	0.14
In Calibration	6:27:57 PM	20.82	0.14
In Calibration	6:28:07 PM	20.81	0.14
In Calibration	6:28:17 PM	20.81	0.14
In Calibration	6:28:27 PM	20.81	0.14
In Calibration	6:28:37 PM	20.81	0.15
In Calibration	6:28:47 PM	20.81	0.15
In Calibration	6:28:57 PM	20.81	0.15
In Calibration	6:29:07 PM	20.81	0.15
In Calibration	6:29:17 PM	20.80	0.14
In Calibration	6:29:27 PM	20.80	0.15
In Calibration	6:29:37 PM	20.80	0.15
In Calibration	6:29:47 PM	20.80	0.15
In Calibration	6:29:57 PM	20.80	0.15
In Calibration	6:30:07 PM	20.79	0.15
In Calibration	6:30:17 PM	20.80	0.14
In Calibration	6:30:27 PM	20.79	0.15
In Calibration	6:30:37 PM	20.79	0.15
In Calibration	6:30:47 PM	20.79	0.14
In Calibration	6:30:57 PM	20.79	0.14
In Calibration	6:31:07 PM	20.79	0.15
In Calibration	6:31:17 PM	20.79	0.15
In Calibration	6:31:27 PM	20.79	0.15
In Calibration	6:31:37 PM	20.79	0.16
In Calibration	6:31:47 PM	20.79	0.16
In Calibration	6:31:57 PM	20.79	0.15
In Calibration	6:32:07 PM	20.78	0.15
In Calibration	6:32:17 PM	20.78	0.14
In Calibration	6:32:27 PM	20.79	0.15
In Calibration	6:32:37 PM	20.79	0.16
In Calibration	6:32:47 PM	20.79	0.16
In Calibration	6:32:57 PM	20.79	0.16
In Calibration	6:33:07 PM	20.79	0.16
In Calibration	6:33:17 PM	20.78	0.15
In Calibration	6:33:27 PM	20.79	0.15
In Calibration	6:33:37 PM	20.79	0.15
In Calibration	6:33:47 PM	20.78	0.15
In Calibration	6:33:57 PM	20.79	0.15
In Calibration	6:34:07 PM	20.79	0.15
In Calibration	6:34:17 PM	20.79	0.15
In Calibration	6:34:27 PM	20.79	0.15
In Calibration	6:34:37 PM	20.79	0.15
In Calibration	6:34:47 PM	20.80	0.15
In Calibration	6:34:57 PM	20.79	0.14
In Calibration	6:35:07 PM	20.78	0.15
In Calibration	6:35:17 PM	20.79	0.15
In Calibration	6:35:27 PM	20.80	0.15
In Calibration	6:35:37 PM	20.79	0.15
In Calibration	6:35:47 PM	20.79	0.15
In Calibration	6:35:57 PM	20.80	0.15
In Calibration	6:36:07 PM	20.80	0.15
In Calibration	6:36:17 PM	20.80	0.15



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
In Calibration	6:36:27 PM	20.80	0.15
In Calibration	6:36:37 PM	20.79	0.15
In Calibration	6:36:47 PM	20.80	0.15
In Calibration	6:36:57 PM	20.80	0.15
In Calibration	6:37:07 PM	20.80	0.15
In Calibration	6:37:17 PM	20.80	0.16
In Calibration	6:37:27 PM	20.80	0.15
In Calibration	6:37:37 PM	20.80	0.15
In Calibration	6:37:47 PM	20.80	0.14
In Calibration	6:37:57 PM	20.80	0.15
In Calibration	6:38:07 PM	20.80	0.14
In Calibration	6:38:17 PM	20.80	0.14
In Calibration	6:38:27 PM	20.80	0.14
In Calibration	6:38:37 PM	20.80	0.15
In Calibration	6:38:47 PM	20.81	0.14
In Calibration	6:38:57 PM	20.80	0.14
In Calibration	6:39:07 PM	20.80	0.14
In Calibration	6:39:17 PM	20.81	0.14
In Calibration	6:39:27 PM	20.80	0.14
In Calibration	6:39:37 PM	20.81	0.14
In Calibration	6:39:47 PM	20.80	0.14
In Calibration	6:39:57 PM	20.80	0.14
In Calibration	6:40:07 PM	20.81	0.14
In Calibration	6:40:17 PM	20.81	0.14
In Calibration	6:40:27 PM	20.81	0.14
In Calibration	6:40:37 PM	20.80	0.14
In Calibration	6:40:47 PM	20.81	0.14
In Calibration	6:40:57 PM	20.81	0.14
In Calibration	6:41:07 PM	20.81	0.14
In Calibration	6:41:17 PM	20.81	0.13
In Calibration	6:41:27 PM	20.80	0.14
In Calibration	6:41:37 PM	20.80	0.13
In Calibration	6:41:47 PM	20.81	0.13
In Calibration	6:41:57 PM	20.80	0.13
In Calibration	6:42:07 PM	20.81	0.13
In Calibration	6:42:17 PM	20.80	0.13
In Calibration	6:42:27 PM	20.80	0.13
In Calibration	6:42:37 PM	20.80	0.14
In Calibration	6:42:47 PM	20.81	0.14
In Calibration	6:42:57 PM	20.81	0.13
In Calibration	6:43:07 PM	20.80	0.14
In Calibration	6:43:17 PM	20.80	0.13
In Calibration	6:43:27 PM	20.80	0.13
In Calibration	6:43:37 PM	20.80	0.14
In Calibration	6:43:47 PM	20.81	0.14
In Calibration	6:43:57 PM	20.81	0.14
In Calibration	6:44:07 PM	20.81	0.14
In Calibration	6:44:17 PM	20.81	0.14
In Calibration	6:44:27 PM	20.80	0.14
In Calibration	6:44:37 PM	20.81	0.14
In Calibration	6:44:47 PM	20.81	0.14
In Calibration	6:44:57 PM	20.81	0.13
In Calibration	6:45:07 PM	20.80	0.13



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
In Calibration	6:45:17 PM	19.90	0.66
In Calibration	6:45:27 PM	12.47	5.78
In Calibration	6:45:37 PM	11.78	6.24
In Calibration	6:45:47 PM	12.21	5.98
In Calibration	6:45:57 PM	12.35	5.87
In Calibration	6:46:07 PM	12.32	5.89
In Calibration	6:46:17 PM	12.31	5.89
In Calibration	6:46:27 PM	12.14	6.02
In Calibration	6:46:37 PM	11.97	6.13
In Calibration	6:46:47 PM	11.86	6.21
In Calibration	6:46:57 PM	11.82	6.21
In Calibration	6:47:07 PM	11.75	6.25
In Calibration	6:47:17 PM	12.02	6.09
In Calibration	6:47:27 PM	12.08	6.04
In Calibration	6:47:37 PM	12.13	6.01
In Calibration	6:47:47 PM	12.08	6.04
In Calibration	6:47:57 PM	11.95	6.13
In Calibration	6:48:07 PM	11.82	6.23
In Calibration	6:48:17 PM	11.71	6.30
In Calibration	6:48:27 PM	11.69	6.31
In Calibration	6:48:37 PM	11.77	6.24
In Calibration	6:48:47 PM	11.82	6.22
In Calibration	6:48:57 PM	11.79	6.24
In Calibration	6:49:07 PM	11.98	6.12
In Calibration	6:49:17 PM	11.95	6.13
In Calibration	6:49:27 PM	12.04	6.09
In Calibration	6:49:37 PM	12.00	6.14
In Calibration	6:49:47 PM	12.07	6.08
In Calibration	6:49:57 PM	14.06	4.58
In Calibration	6:50:07 PM	5.78	0.68
In Calibration	6:50:17 PM	0.30	0.17
In Calibration	6:50:27 PM	0.13	0.14
In Calibration	6:50:37 PM	0.09	0.13
In Calibration	6:50:47 PM	0.08	0.13
In Calibration	6:50:57 PM	0.07	0.12
In Calibration	6:51:07 PM	0.07	0.11
In Calibration	6:51:17 PM	0.06	0.11
In Calibration	6:51:27 PM	0.06	0.11
In Calibration	6:51:37 PM	0.05	0.11
In Calibration	6:51:47 PM	0.06	0.11
In Calibration	6:51:57 PM	4.73	2.48
In Calibration	6:52:07 PM	9.39	4.70
In Calibration	6:52:17 PM	11.28	5.61
In Calibration	6:52:27 PM	11.89	5.94
In Calibration	6:52:37 PM	12.12	5.95
In Calibration	6:52:47 PM	11.98	6.09
Run 2 Metals	6:52:57 PM	12.09	6.02
Run 2 Metals	6:53:07 PM	12.01	6.10
Run 2 Metals	6:53:17 PM	12.01	6.10
Run 2 Metals	6:53:27 PM	12.02	6.09
Run 2 Metals	6:53:37 PM	12.16	6.00
Run 2 Metals	6:53:47 PM	12.30	5.91
Run 2 Metals	6:53:57 PM	12.10	6.05



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	6:54:07 PM	12.35	5.89
Run 2 Metals	6:54:17 PM	12.11	6.04
Run 2 Metals	6:54:27 PM	12.07	6.06
Run 2 Metals	6:54:37 PM	12.08	6.06
Run 2 Metals	6:54:47 PM	12.22	5.97
Run 2 Metals	6:54:57 PM	12.14	6.03
Run 2 Metals	6:55:07 PM	12.04	6.09
Run 2 Metals	6:55:17 PM	12.04	6.09
Run 2 Metals	6:55:27 PM	12.01	6.11
Run 2 Metals	6:55:37 PM	12.11	6.04
Run 2 Metals	6:55:47 PM	12.19	6.00
Run 2 Metals	6:55:57 PM	12.18	6.01
Run 2 Metals	6:56:07 PM	12.12	6.03
Run 2 Metals	6:56:17 PM	11.95	6.14
Run 2 Metals	6:56:27 PM	11.91	6.19
Run 2 Metals	6:56:37 PM	11.92	6.18
Run 2 Metals	6:56:47 PM	11.94	6.17
Run 2 Metals	6:56:57 PM	11.97	6.14
Run 2 Metals	6:57:07 PM	12.14	6.03
Run 2 Metals	6:57:17 PM	12.10	6.06
Run 2 Metals	6:57:27 PM	12.14	6.03
Run 2 Metals	6:57:37 PM	12.00	6.14
Run 2 Metals	6:57:47 PM	12.21	5.98
Run 2 Metals	6:57:57 PM	12.08	6.08
Run 2 Metals	6:58:07 PM	11.91	6.18
Run 2 Metals	6:58:17 PM	11.87	6.21
Run 2 Metals	6:58:27 PM	11.89	6.19
Run 2 Metals	6:58:37 PM	11.93	6.17
Run 2 Metals	6:58:47 PM	11.87	6.22
Run 2 Metals	6:58:57 PM	11.95	6.14
Run 2 Metals	6:59:07 PM	11.86	6.22
Run 2 Metals	6:59:17 PM	11.71	6.32
Run 2 Metals	6:59:27 PM	11.84	6.22
Run 2 Metals	6:59:37 PM	11.77	6.27
Run 2 Metals	6:59:47 PM	11.78	6.26
Run 2 Metals	6:59:57 PM	11.80	6.25
Run 2 Metals	7:00:07 PM	11.69	6.32
Run 2 Metals	7:00:17 PM	11.81	6.24
Run 2 Metals	7:00:27 PM	11.71	6.31
Run 2 Metals	7:00:37 PM	11.75	6.28
Run 2 Metals	7:00:47 PM	11.76	6.27
Run 2 Metals	7:00:57 PM	11.78	6.25
Run 2 Metals	7:01:07 PM	11.62	6.37
Run 2 Metals	7:01:17 PM	11.64	6.34
Run 2 Metals	7:01:27 PM	11.62	6.36
Run 2 Metals	7:01:37 PM	11.65	6.35
Run 2 Metals	7:01:47 PM	11.62	6.37
Run 2 Metals	7:01:57 PM	11.62	6.37
Run 2 Metals	7:02:07 PM	11.43	6.49
Run 2 Metals	7:02:17 PM	11.44	6.49
Run 2 Metals	7:02:27 PM	11.58	6.38
Run 2 Metals	7:02:37 PM	11.61	6.36
Run 2 Metals	7:02:47 PM	11.63	6.37



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 2 Metals	7:02:57 PM	11.59	6.38
Run 2 Metals	7:03:07 PM	11.56	6.40
Run 2 Metals	7:03:17 PM	11.51	6.43
Run 2 Metals	7:03:27 PM	11.58	6.39
Run 2 Metals	7:03:37 PM	11.69	6.31
Run 2 Metals	7:03:47 PM	11.68	6.31
Run 2 Metals	7:03:57 PM	11.62	6.37
Run 2 Metals	7:04:07 PM	11.79	6.24
Run 2 Metals	7:04:17 PM	11.71	6.32
Run 2 Metals	7:04:27 PM	11.72	6.30
Run 2 Metals	7:04:37 PM	11.56	6.41
Run 2 Metals	7:04:47 PM	11.67	6.34
Run 2 Metals	7:04:57 PM	11.62	6.37
Run 2 Metals	7:05:07 PM	11.55	6.41
Run 2 Metals	7:05:17 PM	11.62	6.37
Run 2 Metals	7:05:27 PM	11.65	6.35
Run 2 Metals	7:05:37 PM	11.50	6.46
Run 2 Metals	7:05:47 PM	11.42	6.49
Run 2 Metals	7:05:57 PM	11.54	6.41
Run 2 Metals	7:06:07 PM	11.74	6.28
Run 2 Metals	7:06:17 PM	11.68	6.31
Run 2 Metals	7:06:27 PM	11.76	6.27
Run 2 Metals	7:06:37 PM	11.78	6.26
Run 2 Metals	7:06:47 PM	11.63	6.37
Run 2 Metals	7:06:57 PM	11.63	6.37
Run 2 Metals	7:07:07 PM	11.73	6.30
Run 2 Metals	7:07:17 PM	11.81	6.23
Run 2 Metals	7:07:27 PM	11.77	6.26
Run 2 Metals	7:07:37 PM	11.62	6.38
Run 2 Metals	7:07:47 PM	11.57	6.42
Run 2 Metals	7:07:57 PM	11.57	6.40
Run 2 Metals	7:08:07 PM	11.64	6.38
Run 2 Metals	7:08:17 PM	11.62	6.35
Run 2 Metals	7:08:27 PM	11.45	6.48
Run 2 Metals	7:08:37 PM	11.56	6.40
Run 2 Metals	7:08:47 PM	11.70	6.32
Run 2 Metals	7:08:57 PM	11.83	6.22
Run 2 Metals	7:09:07 PM	11.70	6.32
Run 2 Metals	7:09:17 PM	11.83	6.22
Run 2 Metals	7:09:27 PM	11.72	6.30
Run 2 Metals	7:09:37 PM	11.71	6.31
Run 2 Metals	7:09:47 PM	11.66	6.34
Run 2 Metals	7:09:57 PM	11.56	6.40
Run 2 Metals	7:10:07 PM	11.62	6.36
Run 2 Metals	7:10:17 PM	11.55	6.42
Run 2 Metals	7:10:27 PM	11.65	6.34
Run 2 Metals	7:10:37 PM	11.92	6.17
Run 2 Metals	7:10:47 PM	11.78	6.27
Run 2 Metals	7:10:57 PM	11.89	6.18
Run 2 Metals	7:11:07 PM	11.91	6.17
Run 2 Metals	7:11:17 PM	11.93	6.16
Run 2 Metals	7:11:27 PM	11.86	6.21
Run 2 Metals	7:11:37 PM	11.83	6.23



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	7:11:47 PM	11.85	6.21
Run 2 Metals	7:11:57 PM	11.82	6.25
Run 2 Metals	7:12:07 PM	11.73	6.28
Run 2 Metals	7:12:17 PM	11.74	6.29
Run 2 Metals	7:12:27 PM	11.86	6.20
Run 2 Metals	7:12:37 PM	11.83	6.24
Run 2 Metals	7:12:47 PM	11.81	6.26
Run 2 Metals	7:12:57 PM	11.67	6.34
Run 2 Metals	7:13:07 PM	11.98	6.12
Run 2 Metals	7:13:17 PM	11.90	6.19
Run 2 Metals	7:13:27 PM	11.80	6.25
Run 2 Metals	7:13:37 PM	11.73	6.29
Run 2 Metals	7:13:47 PM	11.75	6.29
Run 2 Metals	7:13:57 PM	11.80	6.25
Run 2 Metals	7:14:07 PM	11.63	6.36
Run 2 Metals	7:14:17 PM	11.65	6.35
Run 2 Metals	7:14:27 PM	11.76	6.27
Run 2 Metals	7:14:37 PM	11.79	6.26
Run 2 Metals	7:14:47 PM	11.95	6.15
Run 2 Metals	7:14:57 PM	12.12	6.04
Run 2 Metals	7:15:07 PM	11.91	6.17
Run 2 Metals	7:15:17 PM	11.82	6.23
Run 2 Metals	7:15:27 PM	11.89	6.18
Run 2 Metals	7:15:37 PM	12.03	6.08
Run 2 Metals	7:15:47 PM	11.91	6.19
Run 2 Metals	7:15:57 PM	11.75	6.28
Run 2 Metals	7:16:07 PM	11.71	6.29
Run 2 Metals	7:16:17 PM	11.74	6.28
Run 2 Metals	7:16:27 PM	11.86	6.23
Run 2 Metals	7:16:37 PM	11.90	6.17
Run 2 Metals	7:16:47 PM	11.82	6.25
Run 2 Metals	7:16:57 PM	11.94	6.14
Run 2 Metals	7:17:07 PM	11.79	6.26
Run 2 Metals	7:17:17 PM	11.67	6.34
Run 2 Metals	7:17:27 PM	11.81	6.24
Run 2 Metals	7:17:37 PM	11.81	6.25
Run 2 Metals	7:17:47 PM	11.95	6.16
Run 2 Metals	7:17:57 PM	11.78	6.28
Run 2 Metals	7:18:07 PM	11.80	6.25
Run 2 Metals	7:18:17 PM	11.63	6.39
Run 2 Metals	7:18:27 PM	11.71	6.30
Run 2 Metals	7:18:37 PM	11.80	6.26
Run 2 Metals	7:18:47 PM	11.67	6.35
Run 2 Metals	7:18:57 PM	11.83	6.23
Run 2 Metals	7:19:07 PM	11.88	6.22
Run 2 Metals	7:19:17 PM	11.84	6.23
Run 2 Metals	7:19:27 PM	11.92	6.18
Run 2 Metals	7:19:37 PM	11.85	6.22
Run 2 Metals	7:19:47 PM	11.85	6.22
Run 2 Metals	7:19:57 PM	11.75	6.29
Run 2 Metals	7:20:07 PM	11.79	6.25
Run 2 Metals	7:20:17 PM	11.81	6.25
Run 2 Metals	7:20:27 PM	11.66	6.36



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	7:20:37 PM	11.67	6.33
Run 2 Metals	7:20:47 PM	11.66	6.35
Run 2 Metals	7:20:57 PM	11.80	6.26
Run 2 Metals	7:21:07 PM	11.96	6.13
Run 2 Metals	7:21:17 PM	11.94	6.16
Run 2 Metals	7:21:27 PM	11.86	6.22
Run 2 Metals	7:21:37 PM	11.74	6.30
Run 2 Metals	7:21:47 PM	11.87	6.19
Run 2 Metals	7:21:57 PM	11.92	6.17
Run 2 Metals	7:22:07 PM	11.96	6.16
Run 2 Metals	7:22:17 PM	11.82	6.25
Run 2 Metals	7:22:27 PM	11.90	6.18
Run 2 Metals	7:22:37 PM	12.07	6.06
Run 2 Metals	7:22:47 PM	11.89	6.18
Run 2 Metals	7:22:57 PM	11.86	6.21
Run 2 Metals	7:23:07 PM	11.82	6.25
Run 2 Metals	7:23:17 PM	11.99	6.13
Run 2 Metals	7:23:27 PM	11.88	6.21
Run 2 Metals	7:23:37 PM	11.75	6.29
Run 2 Metals	7:23:47 PM	11.78	6.27
Run 2 Metals	7:23:57 PM	11.89	6.19
Run 2 Metals	7:24:07 PM	11.78	6.26
Run 2 Metals	7:24:17 PM	11.79	6.25
Run 2 Metals	7:24:27 PM	11.73	6.30
Run 2 Metals	7:24:37 PM	11.89	6.19
Run 2 Metals	7:24:47 PM	11.79	6.25
Run 2 Metals	7:24:57 PM	11.82	6.25
Run 2 Metals	7:25:07 PM	11.74	6.30
Run 2 Metals	7:25:17 PM	11.68	6.35
Run 2 Metals	7:25:27 PM	11.73	6.30
Run 2 Metals	7:25:37 PM	11.78	6.26
Run 2 Metals	7:25:47 PM	11.75	6.30
Run 2 Metals	7:25:57 PM	11.72	6.30
Run 2 Metals	7:26:07 PM	11.76	6.28
Run 2 Metals	7:26:17 PM	11.69	6.33
Run 2 Metals	7:26:27 PM	11.71	6.30
Run 2 Metals	7:26:37 PM	11.80	6.24
Run 2 Metals	7:26:47 PM	11.78	6.27
Run 2 Metals	7:26:57 PM	11.67	6.34
Run 2 Metals	7:27:07 PM	11.67	6.33
Run 2 Metals	7:27:17 PM	11.87	6.20
Run 2 Metals	7:27:27 PM	11.80	6.24
Run 2 Metals	7:27:37 PM	11.73	6.31
Run 2 Metals	7:27:47 PM	11.74	6.29
Run 2 Metals	7:27:57 PM	11.57	6.42
Run 2 Metals	7:28:07 PM	11.56	6.41
Run 2 Metals	7:28:17 PM	11.55	6.43
Run 2 Metals	7:28:27 PM	11.75	6.28
Run 2 Metals	7:28:37 PM	11.80	6.25
Run 2 Metals	7:28:47 PM	11.74	6.30
Run 2 Metals	7:28:57 PM	11.71	6.34
Run 2 Metals	7:29:07 PM	11.71	6.31
Run 2 Metals	7:29:17 PM	11.78	6.27



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 2 Metals	7:29:27 PM	11.67	6.37
Run 2 Metals	7:29:37 PM	11.66	6.37
Run 2 Metals	7:29:47 PM	11.69	6.34
Run 2 Metals	7:29:57 PM	11.79	6.26
Run 2 Metals	7:30:07 PM	11.78	6.28
Run 2 Metals	7:30:17 PM	11.55	6.43
Run 2 Metals	7:30:27 PM	11.51	6.45
Run 2 Metals	7:30:37 PM	11.60	6.40
Run 2 Metals	7:30:47 PM	11.76	6.29
Run 2 Metals	7:30:57 PM	11.73	6.31
Run 2 Metals	7:31:07 PM	11.64	6.36
Run 2 Metals	7:31:17 PM	11.72	6.31
Run 2 Metals	7:31:27 PM	11.62	6.38
Run 2 Metals	7:31:37 PM	11.71	6.31
Run 2 Metals	7:31:47 PM	11.58	6.41
Run 2 Metals	7:31:57 PM	11.67	6.37
Run 2 Metals	7:32:07 PM	11.72	6.31
Run 2 Metals	7:32:17 PM	11.61	6.39
Run 2 Metals	7:32:27 PM	11.62	6.39
Run 2 Metals	7:32:37 PM	11.60	6.41
Run 2 Metals	7:32:47 PM	11.71	6.32
Run 2 Metals	7:32:57 PM	11.60	6.39
Run 2 Metals	7:33:07 PM	11.69	6.33
Run 2 Metals	7:33:17 PM	11.70	6.33
Run 2 Metals	7:33:27 PM	11.55	6.43
Run 2 Metals	7:33:37 PM	11.56	6.42
Run 2 Metals	7:33:47 PM	11.63	6.38
Run 2 Metals	7:33:57 PM	11.54	6.43
Run 2 Metals	7:34:07 PM	11.68	6.34
Run 2 Metals	7:34:17 PM	11.71	6.32
Run 2 Metals	7:34:27 PM	11.66	6.36
Run 2 Metals	7:34:37 PM	11.65	6.38
Run 2 Metals	7:34:47 PM	11.64	6.39
Run 2 Metals	7:34:57 PM	11.74	6.31
Run 2 Metals	7:35:07 PM	11.85	6.23
Run 2 Metals	7:35:17 PM	11.85	6.24
Run 2 Metals	7:35:27 PM	11.82	6.25
Run 2 Metals	7:35:37 PM	11.83	6.25
Run 2 Metals	7:35:47 PM	11.82	6.25
Run 2 Metals	7:35:57 PM	11.81	6.25
Run 2 Metals	7:36:07 PM	11.87	6.21
Run 2 Metals	7:36:17 PM	11.81	6.25
Run 2 Metals	7:36:27 PM	11.72	6.32
Run 2 Metals	7:36:37 PM	11.79	6.28
Run 2 Metals	7:36:47 PM	11.74	6.31
Run 2 Metals	7:36:57 PM	11.78	6.28
Run 2 Metals	7:37:07 PM	11.66	6.36
Run 2 Metals	7:37:17 PM	11.71	6.31
Run 2 Metals	7:37:27 PM	11.86	6.22
Run 2 Metals	7:37:37 PM	11.67	6.35
Run 2 Metals	7:37:47 PM	11.66	6.35
Run 2 Metals	7:37:57 PM	11.81	6.26
Run 2 Metals	7:38:07 PM	11.71	6.30



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	7:38:17 PM	11.76	6.28
Run 2 Metals	7:38:27 PM	11.78	6.26
Run 2 Metals	7:38:37 PM	11.96	6.14
Run 2 Metals	7:38:47 PM	11.72	6.34
Run 2 Metals	7:38:57 PM	11.67	6.35
Run 2 Metals	7:39:07 PM	11.83	6.24
Run 2 Metals	7:39:17 PM	11.84	6.25
Run 2 Metals	7:39:27 PM	11.66	6.36
Run 2 Metals	7:39:37 PM	11.76	6.29
Run 2 Metals	7:39:47 PM	11.82	6.25
Run 2 Metals	7:39:57 PM	11.93	6.17
Run 2 Metals	7:40:07 PM	11.85	6.23
Run 2 Metals	7:40:17 PM	11.88	6.20
Run 2 Metals	7:40:27 PM	12.03	6.10
Run 2 Metals	7:40:37 PM	12.06	6.08
Run 2 Metals	7:40:47 PM	11.99	6.13
Run 2 Metals	7:40:57 PM	12.01	6.11
Run 2 Metals	7:41:07 PM	11.80	6.26
Run 2 Metals	7:41:17 PM	11.72	6.31
Run 2 Metals	7:41:27 PM	11.87	6.21
Run 2 Metals	7:41:37 PM	11.79	6.28
Run 2 Metals	7:41:47 PM	11.87	6.21
Run 2 Metals	7:41:57 PM	11.74	6.31
Run 2 Metals	7:42:07 PM	11.83	6.25
Run 2 Metals	7:42:17 PM	11.87	6.22
Run 2 Metals	7:42:27 PM	11.83	6.25
Run 2 Metals	7:42:37 PM	11.72	6.31
Run 2 Metals	7:42:47 PM	11.56	6.43
Run 2 Metals	7:42:57 PM	11.66	6.36
Run 2 Metals	7:43:07 PM	11.85	6.21
Run 2 Metals	7:43:17 PM	11.64	6.38
Run 2 Metals	7:43:27 PM	11.68	6.33
Run 2 Metals	7:43:37 PM	11.61	6.40
Run 2 Metals	7:43:47 PM	11.64	6.37
Run 2 Metals	7:43:57 PM	11.71	6.32
Run 2 Metals	7:44:07 PM	11.63	6.39
Run 2 Metals	7:44:17 PM	11.72	6.31
Run 2 Metals	7:44:27 PM	11.78	6.28
Run 2 Metals	7:44:37 PM	11.59	6.42
Run 2 Metals	7:44:47 PM	11.71	6.34
Run 2 Metals	7:44:57 PM	11.56	6.43
Run 2 Metals	7:45:07 PM	11.56	6.43
Run 2 Metals	7:45:17 PM	11.61	6.39
Run 2 Metals	7:45:27 PM	11.62	6.39
Run 2 Metals	7:45:37 PM	11.76	6.28
Run 2 Metals	7:45:47 PM	11.56	6.45
Run 2 Metals	7:45:57 PM	11.72	6.31
Run 2 Metals	7:46:07 PM	11.94	6.16
Run 2 Metals	7:46:17 PM	11.98	6.14
Run 2 Metals	7:46:27 PM	12.02	6.11
Run 2 Metals	7:46:37 PM	11.81	6.27
Run 2 Metals	7:46:47 PM	11.97	6.16
Run 2 Metals	7:46:57 PM	11.80	6.26



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	7:47:07 PM	11.81	6.25
Run 2 Metals	7:47:17 PM	11.69	6.34
Run 2 Metals	7:47:27 PM	11.79	6.26
Run 2 Metals	7:47:37 PM	11.71	6.32
Run 2 Metals	7:47:47 PM	11.76	6.31
Run 2 Metals	7:47:57 PM	11.75	6.30
Run 2 Metals	7:48:07 PM	11.69	6.35
Run 2 Metals	7:48:17 PM	11.80	6.26
Run 2 Metals	7:48:27 PM	11.88	6.21
Run 2 Metals	7:48:37 PM	11.72	6.34
Run 2 Metals	7:48:47 PM	11.82	6.26
Run 2 Metals	7:48:57 PM	11.86	6.24
Run 2 Metals	7:49:07 PM	11.90	6.20
Run 2 Metals	7:49:17 PM	11.78	6.29
Run 2 Metals	7:49:27 PM	11.73	6.31
Run 2 Metals	7:49:37 PM	11.66	6.37
Run 2 Metals	7:49:47 PM	11.83	6.25
Run 2 Metals	7:49:57 PM	11.87	6.22
Run 2 Metals	7:50:07 PM	11.89	6.20
Run 2 Metals	7:50:17 PM	11.91	6.20
Run 2 Metals	7:50:27 PM	11.89	6.22
Run 2 Metals	7:50:37 PM	11.84	6.25
Run 2 Metals	7:50:47 PM	11.82	6.25
Run 2 Metals	7:50:57 PM	12.07	6.09
Run 2 Metals	7:51:07 PM	11.85	6.25
Run 2 Metals	7:51:17 PM	11.78	6.31
Run 2 Metals	7:51:27 PM	11.85	6.24
Run 2 Metals	7:51:37 PM	12.02	6.12
Run 2 Metals	7:51:47 PM	11.96	6.17
Run 2 Metals	7:51:57 PM	12.05	6.10
Run 2 Metals	7:52:07 PM	12.16	6.03
Run 2 Metals	7:52:17 PM	12.06	6.10
Run 2 Metals	7:52:27 PM	12.00	6.15
Run 2 Metals	7:52:37 PM	11.86	6.24
Run 2 Metals	7:52:47 PM	11.93	6.19
Run 2 Metals	7:52:57 PM	11.86	6.25
Run 2 Metals	7:53:07 PM	11.91	6.19
Run 2 Metals	7:53:17 PM	11.93	6.19
Run 2 Metals	7:53:27 PM	11.95	6.18
Run 2 Metals	7:53:37 PM	11.93	6.19
Run 2 Metals	7:53:47 PM	11.88	6.22
Run 2 Metals	7:53:57 PM	11.99	6.14
Run 2 Metals	7:54:07 PM	11.97	6.16
Run 2 Metals	7:54:17 PM	11.96	6.17
Run 2 Metals	7:54:27 PM	11.98	6.15
Run 2 Metals	7:54:37 PM	11.86	6.25
Run 2 Metals	7:54:47 PM	11.87	6.22
Run 2 Metals	7:54:57 PM	11.84	6.25
Run 2 Metals	7:55:07 PM	11.69	6.34
Run 2 Metals	7:55:17 PM	11.69	6.34
Run 2 Metals	7:55:27 PM	11.95	6.16
Run 2 Metals	7:55:37 PM	11.90	6.20
Run 2 Metals	7:55:47 PM	11.78	6.29



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	7:55:57 PM	11.80	6.28
Run 2 Metals	7:56:07 PM	11.96	6.14
Run 2 Metals	7:56:17 PM	11.92	6.20
Run 2 Metals	7:56:27 PM	11.99	6.15
Run 2 Metals	7:56:37 PM	11.93	6.19
Run 2 Metals	7:56:47 PM	11.86	6.24
Run 2 Metals	7:56:57 PM	11.88	6.21
Run 2 Metals	7:57:07 PM	11.90	6.22
Run 2 Metals	7:57:17 PM	11.89	6.20
Run 2 Metals	7:57:27 PM	11.94	6.17
Run 2 Metals	7:57:37 PM	11.89	6.20
Run 2 Metals	7:57:47 PM	12.02	6.11
Run 2 Metals	7:57:57 PM	11.97	6.16
Run 2 Metals	7:58:07 PM	12.16	6.03
Run 2 Metals	7:58:17 PM	12.03	6.12
Run 2 Metals	7:58:27 PM	11.83	6.24
Run 2 Metals	7:58:37 PM	12.10	6.06
Run 2 Metals	7:58:47 PM	11.94	6.19
Run 2 Metals	7:58:57 PM	11.88	6.21
Run 2 Metals	7:59:07 PM	11.94	6.19
Run 2 Metals	7:59:17 PM	11.91	6.19
Run 2 Metals	7:59:27 PM	11.86	6.23
Run 2 Metals	7:59:37 PM	12.15	6.04
Run 2 Metals	7:59:47 PM	12.27	5.96
Run 2 Metals	7:59:57 PM	12.20	6.00
Run 2 Metals	8:00:07 PM	12.21	6.00
Run 2 Metals	8:00:17 PM	12.03	6.11
Run 2 Metals	8:00:27 PM	11.99	6.14
Run 2 Metals	8:00:37 PM	11.86	6.25
Run 2 Metals	8:00:47 PM	11.91	6.20
Run 2 Metals	8:00:57 PM	11.99	6.14
Run 2 Metals	8:01:07 PM	12.05	6.10
Run 2 Metals	8:01:17 PM	12.14	6.04
Run 2 Metals	8:01:27 PM	12.02	6.12
Run 2 Metals	8:01:37 PM	12.12	6.05
Run 2 Metals	8:01:47 PM	11.95	6.16
Run 2 Metals	8:01:57 PM	12.07	6.07
Run 2 Metals	8:02:07 PM	12.11	6.06
Run 2 Metals	8:02:17 PM	11.92	6.19
Run 2 Metals	8:02:27 PM	12.16	6.01
Run 2 Metals	8:02:37 PM	12.03	6.11
Run 2 Metals	8:02:47 PM	12.18	6.03
Run 2 Metals	8:02:57 PM	12.15	6.03
Run 2 Metals	8:03:07 PM	11.91	6.20
Run 2 Metals	8:03:17 PM	11.95	6.16
Run 2 Metals	8:03:27 PM	11.99	6.14
Run 2 Metals	8:03:37 PM	11.96	6.16
Run 2 Metals	8:03:47 PM	12.03	6.10
Run 2 Metals	8:03:57 PM	11.84	6.25
Run 2 Metals	8:04:07 PM	11.82	6.25
Run 2 Metals	8:04:17 PM	11.97	6.16
Run 2 Metals	8:04:27 PM	11.97	6.16
Run 2 Metals	8:04:37 PM	12.08	6.09



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	8:04:47 PM	12.15	6.04
Run 2 Metals	8:04:57 PM	12.38	5.87
Run 2 Metals	8:05:07 PM	12.22	5.99
Run 2 Metals	8:05:17 PM	12.10	6.08
Run 2 Metals	8:05:27 PM	12.15	6.04
Run 2 Metals	8:05:37 PM	12.11	6.07
Run 2 Metals	8:05:47 PM	12.08	6.08
Run 2 Metals	8:05:57 PM	12.16	6.03
Run 2 Metals	8:06:07 PM	12.30	5.94
Run 2 Metals	8:06:17 PM	12.23	5.98
Run 2 Metals	8:06:27 PM	12.12	6.06
Run 2 Metals	8:06:37 PM	12.11	6.06
Run 2 Metals	8:06:47 PM	12.15	6.03
Run 2 Metals	8:06:57 PM	12.19	6.01
Run 2 Metals	8:07:07 PM	12.08	6.09
Run 2 Metals	8:07:17 PM	12.08	6.08
Run 2 Metals	8:07:27 PM	12.15	6.05
Run 2 Metals	8:07:37 PM	12.05	6.10
Run 2 Metals	8:07:47 PM	12.12	6.07
Run 2 Metals	8:07:57 PM	12.05	6.12
Run 2 Metals	8:08:07 PM	12.08	6.08
Run 2 Metals	8:08:17 PM	12.02	6.14
Run 2 Metals	8:08:27 PM	11.91	6.21
Run 2 Metals	8:08:37 PM	12.01	6.13
Run 2 Metals	8:08:47 PM	11.87	6.25
Run 2 Metals	8:08:57 PM	11.92	6.21
Run 2 Metals	8:09:07 PM	12.01	6.14
Run 2 Metals	8:09:17 PM	12.06	6.10
Run 2 Metals	8:09:27 PM	12.14	6.04
Run 2 Metals	8:09:37 PM	12.13	6.06
Run 2 Metals	8:09:47 PM	12.13	6.06
Run 2 Metals	8:09:57 PM	12.09	6.08
Run 2 Metals	8:10:07 PM	12.09	6.08
Run 2 Metals	8:10:17 PM	11.99	6.16
Run 2 Metals	8:10:27 PM	12.25	5.98
Run 2 Metals	8:10:37 PM	12.15	6.05
Run 2 Metals	8:10:47 PM	12.02	6.15
Run 2 Metals	8:10:57 PM	11.99	6.16
Run 2 Metals	8:11:07 PM	11.92	6.20
Run 2 Metals	8:11:17 PM	12.01	6.14
Run 2 Metals	8:11:27 PM	12.12	6.08
Run 2 Metals	8:11:37 PM	11.85	6.25
Run 2 Metals	8:11:47 PM	11.99	6.15
Run 2 Metals	8:11:57 PM	12.03	6.12
Run 2 Metals	8:12:07 PM	12.02	6.13
Run 2 Metals	8:12:17 PM	12.04	6.12
Run 2 Metals	8:12:27 PM	12.25	5.98
Run 2 Metals	8:12:37 PM	12.20	6.03
Run 2 Metals	8:12:47 PM	12.19	6.02
Run 2 Metals	8:12:57 PM	12.26	5.96
Run 2 Metals	8:13:07 PM	12.05	6.12
Run 2 Metals	8:13:17 PM	11.98	6.16
Run 2 Metals	8:13:27 PM	12.01	6.13



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	8:13:37 PM	11.99	6.16
Run 2 Metals	8:13:47 PM	11.97	6.16
Run 2 Metals	8:13:57 PM	11.95	6.18
Run 2 Metals	8:14:07 PM	12.00	6.15
Run 2 Metals	8:14:17 PM	11.92	6.20
Run 2 Metals	8:14:27 PM	12.02	6.14
Run 2 Metals	8:14:37 PM	12.11	6.08
Run 2 Metals	8:14:47 PM	12.22	6.00
Run 2 Metals	8:14:57 PM	12.29	5.95
Run 2 Metals	8:15:07 PM	12.18	6.04
Run 2 Metals	8:15:17 PM	11.98	6.16
Run 2 Metals	8:15:27 PM	11.94	6.19
Run 2 Metals	8:15:37 PM	11.95	6.18
Run 2 Metals	8:15:47 PM	12.03	6.13
Run 2 Metals	8:15:57 PM	11.97	6.16
Run 2 Metals	8:16:07 PM	12.05	6.11
Run 2 Metals	8:16:17 PM	11.99	6.16
Run 2 Metals	8:16:27 PM	11.92	6.20
Run 2 Metals	8:16:37 PM	12.10	6.07
Run 2 Metals	8:16:47 PM	12.36	5.91
Run 2 Metals	8:16:57 PM	12.39	5.89
Run 2 Metals	8:17:07 PM	12.32	5.95
Run 2 Metals	8:17:17 PM	12.08	6.10
Run 2 Metals	8:17:27 PM	11.94	6.20
Run 2 Metals	8:17:37 PM	12.06	6.09
Run 2 Metals	8:17:47 PM	12.21	6.01
Run 2 Metals	8:17:57 PM	12.21	6.02
Run 2 Metals	8:18:07 PM	12.05	6.13
Run 2 Metals	8:18:17 PM	12.15	6.03
Run 2 Metals	8:18:27 PM	12.16	6.04
Run 2 Metals	8:18:37 PM	12.26	5.98
Run 2 Metals	8:18:47 PM	12.07	6.11
Run 2 Metals	8:18:57 PM	12.11	6.08
Run 2 Metals	8:19:07 PM	12.08	6.08
Run 2 Metals	8:19:17 PM	12.16	6.05
Run 2 Metals	8:19:27 PM	12.06	6.12
Run 2 Metals	8:19:37 PM	12.22	6.02
Run 2 Metals	8:19:47 PM	12.11	6.07
Run 2 Metals	8:19:57 PM	12.22	6.01
Run 2 Metals	8:20:07 PM	12.01	6.14
Run 2 Metals	8:20:17 PM	12.01	6.14
Run 2 Metals	8:20:27 PM	11.99	6.17
Run 2 Metals	8:20:37 PM	11.94	6.20
Run 2 Metals	8:20:47 PM	11.99	6.16
Run 2 Metals	8:20:57 PM	11.86	6.26
Run 2 Metals	8:21:07 PM	12.01	6.15
Run 2 Metals	8:21:17 PM	12.06	6.11
Run 2 Metals	8:21:27 PM	12.08	6.11
Run 2 Metals	8:21:37 PM	11.94	6.20
Run 2 Metals	8:21:47 PM	12.11	6.08
Run 2 Metals	8:21:57 PM	12.23	6.00
Run 2 Metals	8:22:07 PM	12.57	5.76
Run 2 Metals	8:22:17 PM	12.50	5.81



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	8:22:27 PM	12.47	5.84
Run 2 Metals	8:22:37 PM	12.24	6.00
Run 2 Metals	8:22:47 PM	12.22	6.01
Run 2 Metals	8:22:57 PM	12.15	6.05
Run 2 Metals	8:23:07 PM	12.12	6.07
Run 2 Metals	8:23:17 PM	12.21	6.03
Run 2 Metals	8:23:27 PM	12.31	5.95
Run 2 Metals	8:23:37 PM	12.15	6.06
Run 2 Metals	8:23:47 PM	12.26	5.99
Run 2 Metals	8:23:57 PM	12.12	6.09
Run 2 Metals	8:24:07 PM	12.08	6.10
Run 2 Metals	8:24:17 PM	12.06	6.13
Run 2 Metals	8:24:27 PM	12.22	6.00
Run 2 Metals	8:24:37 PM	12.18	6.05
Run 2 Metals	8:24:47 PM	12.26	5.98
Run 2 Metals	8:24:57 PM	12.14	6.08
Run 2 Metals	8:25:07 PM	12.14	6.07
Run 2 Metals	8:25:17 PM	12.20	6.03
Run 2 Metals	8:25:27 PM	12.22	6.01
Run 2 Metals	8:25:37 PM	12.01	6.14
Run 2 Metals	8:25:47 PM	12.02	6.16
Run 2 Metals	8:25:57 PM	11.93	6.21
Run 2 Metals	8:26:07 PM	11.97	6.18
Run 2 Metals	8:26:17 PM	11.96	6.18
Run 2 Metals	8:26:27 PM	11.98	6.18
Run 2 Metals	8:26:37 PM	11.99	6.17
Run 2 Metals	8:26:47 PM	12.05	6.13
Run 2 Metals	8:26:57 PM	12.16	6.05
Run 2 Metals	8:27:07 PM	12.12	6.09
Run 2 Metals	8:27:17 PM	12.32	5.95
Run 2 Metals	8:27:27 PM	12.11	6.08
Run 2 Metals	8:27:37 PM	12.20	6.04
Run 2 Metals	8:27:47 PM	12.28	5.99
Run 2 Metals	8:27:57 PM	12.34	5.92
Run 2 Metals	8:28:07 PM	12.34	5.92
Run 2 Metals	8:28:17 PM	12.37	5.91
Run 2 Metals	8:28:27 PM	12.40	5.89
Run 2 Metals	8:28:37 PM	12.27	5.98
Run 2 Metals	8:28:47 PM	12.27	5.99
Run 2 Metals	8:28:57 PM	12.32	5.95
Run 2 Metals	8:29:07 PM	12.19	6.04
Run 2 Metals	8:29:17 PM	12.24	5.99
Run 2 Metals	8:29:27 PM	12.23	6.01
Run 2 Metals	8:29:37 PM	12.19	6.05
Run 2 Metals	8:29:47 PM	12.24	6.00
Run 2 Metals	8:29:57 PM	12.23	6.01
Run 2 Metals	8:30:07 PM	12.21	6.01
Run 2 Metals	8:30:17 PM	12.03	6.16
Run 2 Metals	8:30:27 PM	12.02	6.15
Run 2 Metals	8:30:37 PM	12.24	6.00
Run 2 Metals	8:30:47 PM	12.20	6.04
Run 2 Metals	8:30:57 PM	12.43	5.87
Run 2 Metals	8:31:07 PM	12.41	5.89



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	8:31:17 PM	12.34	5.94
Run 2 Metals	8:31:27 PM	12.46	5.87
Run 2 Metals	8:31:37 PM	12.53	5.81
Run 2 Metals	8:31:47 PM	12.34	5.95
Run 2 Metals	8:31:57 PM	12.19	6.05
Run 2 Metals	8:32:07 PM	12.22	6.03
Run 2 Metals	8:32:17 PM	12.32	5.95
Run 2 Metals	8:32:27 PM	12.31	5.96
Run 2 Metals	8:32:37 PM	12.32	5.95
Run 2 Metals	8:32:47 PM	12.36	5.93
Run 2 Metals	8:32:57 PM	12.34	5.94
Run 2 Metals	8:33:07 PM	12.25	6.01
Run 2 Metals	8:33:17 PM	12.19	6.05
Run 2 Metals	8:33:27 PM	12.26	5.98
Run 2 Metals	8:33:37 PM	12.31	5.96
Run 2 Metals	8:33:47 PM	12.31	5.97
Run 2 Metals	8:33:57 PM	12.28	5.97
Run 2 Metals	8:34:07 PM	12.38	5.89
Run 2 Metals	8:34:17 PM	12.32	5.94
Run 2 Metals	8:34:27 PM	12.32	5.96
Run 2 Metals	8:34:37 PM	12.32	5.95
Run 2 Metals	8:34:47 PM	12.21	6.03
Run 2 Metals	8:34:57 PM	12.14	6.07
Run 2 Metals	8:35:07 PM	12.31	5.97
Run 2 Metals	8:35:17 PM	12.42	5.88
Run 2 Metals	8:35:27 PM	12.39	5.92
Run 2 Metals	8:35:37 PM	12.32	5.96
Run 2 Metals	8:35:47 PM	12.27	6.00
Run 2 Metals	8:35:57 PM	12.40	5.88
Run 2 Metals	8:36:07 PM	12.16	6.07
Run 2 Metals	8:36:17 PM	12.23	6.01
Run 2 Metals	8:36:27 PM	12.25	6.00
Run 2 Metals	8:36:37 PM	12.23	6.01
Run 2 Metals	8:36:47 PM	12.29	5.98
Run 2 Metals	8:36:57 PM	12.42	5.89
Run 2 Metals	8:37:07 PM	12.51	5.84
Run 2 Metals	8:37:17 PM	12.36	5.92
Run 2 Metals	8:37:27 PM	12.23	6.02
Run 2 Metals	8:37:37 PM	12.23	6.02
Run 2 Metals	8:37:47 PM	12.26	5.99
Run 2 Metals	8:37:57 PM	12.54	5.80
Run 2 Metals	8:38:07 PM	12.30	5.97
Run 2 Metals	8:38:17 PM	12.53	5.80
Run 2 Metals	8:38:27 PM	12.44	5.87
Run 2 Metals	8:38:37 PM	12.53	5.81
Run 2 Metals	8:38:47 PM	12.45	5.87
Run 2 Metals	8:38:57 PM	12.47	5.86
Run 2 Metals	8:39:07 PM	12.34	5.96
Run 2 Metals	8:39:17 PM	12.55	5.79
Run 2 Metals	8:39:27 PM	12.38	5.94
Run 2 Metals	8:39:37 PM	12.36	5.92
Run 2 Metals	8:39:47 PM	12.66	5.73
Run 2 Metals	8:39:57 PM	12.40	5.90



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 2 Metals	8:40:07 PM	12.36	5.93
Run 2 Metals	8:40:17 PM	12.30	5.95
Run 2 Metals	8:40:27 PM	12.37	5.92
Run 2 Metals	8:40:37 PM	12.29	5.98
Run 2 Metals	8:40:47 PM	12.20	6.04
Run 2 Metals	8:40:57 PM	12.20	6.02
Run 2 Metals	8:41:07 PM	12.31	5.96
Run 2 Metals	8:41:17 PM	12.40	5.90
Run 2 Metals	8:41:27 PM	12.38	5.91
Run 2 Metals	8:41:37 PM	12.38	5.92
Run 2 Metals	8:41:47 PM	12.50	5.84
Run 2 Metals	8:41:57 PM	12.32	5.96
Run 2 Metals	8:42:07 PM	12.37	5.92
Run 2 Metals	8:42:17 PM	12.47	5.84
Run 2 Metals	8:42:27 PM	12.50	5.83
Run 2 Metals	8:42:37 PM	12.30	5.97
Run 2 Metals	8:42:47 PM	12.14	6.08
Run 2 Metals	8:42:57 PM	12.32	5.96
Run 2 Metals	8:43:07 PM	12.29	5.98
Run 2 Metals	8:43:17 PM	12.12	6.09
Run 2 Metals	8:43:27 PM	12.18	6.05
Run 2 Metals	8:43:37 PM	12.26	6.00
Run 2 Metals	8:43:47 PM	12.23	6.02
Run 2 Metals	8:43:57 PM	12.42	5.88
Run 2 Metals	8:44:07 PM	12.22	6.04
Run 2 Metals	8:44:17 PM	12.47	5.86
Run 2 Metals	8:44:27 PM	12.31	5.97
Run 2 Metals	8:44:37 PM	12.28	5.99
Run 2 Metals	8:44:47 PM	12.34	5.96
Run 2 Metals	8:44:57 PM	12.28	5.99
Run 2 Metals	8:45:07 PM	12.20	6.06
Run 2 Metals	8:45:17 PM	12.18	6.06
Run 2 Metals	8:45:27 PM	12.46	5.86
Run 2 Metals	8:45:37 PM	12.34	5.96
Run 2 Metals	8:45:47 PM	12.22	6.04
Run 2 Metals	8:45:57 PM	12.21	6.03
Run 2 Metals	8:46:07 PM	12.33	5.96
Run 2 Metals	8:46:17 PM	12.20	6.06
Run 2 Metals	8:46:27 PM	12.19	6.04
Run 2 Metals	8:46:37 PM	12.19	6.06
Run 2 Metals	8:46:47 PM	12.09	6.13
Run 2 Metals	8:46:57 PM	12.12	6.10
Run 2 Metals	8:47:07 PM	12.12	6.09
Run 2 Metals	8:47:17 PM	12.08	6.12
Run 2 Metals	8:47:27 PM	12.02	6.16
Run 2 Metals	8:47:37 PM	12.18	6.04
Run 2 Metals	8:47:47 PM	12.09	6.12
Run 2 Metals	8:47:57 PM	12.28	6.00
Run 2 Metals	8:48:07 PM	12.09	6.12
Run 2 Metals	8:48:17 PM	12.15	6.07
Run 2 Metals	8:48:27 PM	12.29	5.98
Run 2 Metals	8:48:37 PM	12.23	6.03
Run 2 Metals	8:48:47 PM	12.20	6.05



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	8:48:57 PM	12.43	5.89
Run 2 Metals	8:49:07 PM	12.20	6.04
Run 2 Metals	8:49:17 PM	12.23	6.01
Run 2 Metals	8:49:27 PM	12.42	5.89
Run 2 Metals	8:49:37 PM	12.54	5.80
Run 2 Metals	8:49:47 PM	12.39	5.93
Run 2 Metals	8:49:57 PM	12.27	6.02
Run 2 Metals	8:50:07 PM	12.26	6.01
Run 2 Metals	8:50:17 PM	12.15	6.08
Run 2 Metals	8:50:27 PM	12.23	6.01
Run 2 Metals	8:50:37 PM	12.36	5.92
Run 2 Metals	8:50:47 PM	12.33	5.97
Run 2 Metals	8:50:57 PM	12.32	5.97
Run 2 Metals	8:51:07 PM	12.30	5.97
Run 2 Metals	8:51:17 PM	12.30	5.97
Run 2 Metals	8:51:27 PM	12.24	6.03
Run 2 Metals	8:51:37 PM	12.37	5.93
Run 2 Metals	8:51:47 PM	12.33	5.96
Run 2 Metals	8:51:57 PM	12.25	6.01
Run 2 Metals	8:52:07 PM	12.28	5.99
Run 2 Metals	8:52:17 PM	12.27	6.01
Run 2 Metals	8:52:27 PM	12.38	5.92
Run 2 Metals	8:52:37 PM	12.28	5.99
Run 2 Metals	8:52:47 PM	12.24	6.03
Run 2 Metals	8:52:57 PM	12.40	5.91
Run 2 Metals	8:53:07 PM	12.24	6.02
Run 2 Metals	8:53:17 PM	12.24	6.04
Run 2 Metals	8:53:27 PM	12.41	5.91
Run 2 Metals	8:53:37 PM	12.33	5.96
Run 2 Metals	8:53:47 PM	12.20	6.05
Run 2 Metals	8:53:57 PM	12.23	6.03
Run 2 Metals	8:54:07 PM	12.23	6.04
Run 2 Metals	8:54:17 PM	12.19	6.07
Run 2 Metals	8:54:27 PM	12.08	6.13
Run 2 Metals	8:54:37 PM	12.20	6.06
Run 2 Metals	8:54:47 PM	12.22	6.04
Run 2 Metals	8:54:57 PM	12.29	5.98
Run 2 Metals	8:55:07 PM	12.19	6.07
Run 2 Metals	8:55:17 PM	12.22	6.03
Run 2 Metals	8:55:27 PM	12.19	6.07
Run 2 Metals	8:55:37 PM	12.22	6.04
Run 2 Metals	8:55:47 PM	12.51	5.83
Run 2 Metals	8:55:57 PM	12.18	6.08
Run 2 Metals	8:56:07 PM	12.32	5.96
Run 2 Metals	8:56:17 PM	12.33	5.95
Run 2 Metals	8:56:27 PM	12.25	6.01
Run 2 Metals	8:56:37 PM	12.32	5.98
Run 2 Metals	8:56:47 PM	12.23	6.04
Run 2 Metals	8:56:57 PM	12.26	6.01
Run 2 Metals	8:57:07 PM	12.30	5.98
Run 2 Metals	8:57:17 PM	12.39	5.91
Run 2 Metals	8:57:27 PM	12.32	5.97
Run 2 Metals	8:57:37 PM	12.40	5.90



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	8:57:47 PM	12.38	5.94
Run 2 Metals	8:57:57 PM	12.30	6.00
Run 2 Metals	8:58:07 PM	12.43	5.88
Run 2 Metals	8:58:17 PM	12.30	5.99
Run 2 Metals	8:58:27 PM	12.35	5.95
Run 2 Metals	8:58:37 PM	12.43	5.87
Run 2 Metals	8:58:47 PM	12.39	5.93
Run 2 Metals	8:58:57 PM	12.37	5.92
Run 2 Metals	8:59:07 PM	12.38	5.94
Run 2 Metals	8:59:17 PM	12.43	5.91
Run 2 Metals	8:59:27 PM	12.39	5.93
Run 2 Metals	8:59:37 PM	12.29	5.99
Run 2 Metals	8:59:47 PM	12.22	6.04
Run 2 Metals	8:59:57 PM	12.22	6.05
Run 2 Metals	9:00:07 PM	12.26	6.01
Run 2 Metals	9:00:17 PM	12.31	5.96
Run 2 Metals	9:00:27 PM	12.31	5.97
Run 2 Metals	9:00:37 PM	12.28	5.99
Run 2 Metals	9:00:47 PM	12.35	5.96
Run 2 Metals	9:00:57 PM	12.43	5.89
Run 2 Metals	9:01:07 PM	12.33	5.96
Run 2 Metals	9:01:17 PM	12.21	6.04
Run 2 Metals	9:01:27 PM	12.19	6.06
Run 2 Metals	9:01:37 PM	12.14	6.09
Run 2 Metals	9:01:47 PM	12.19	6.06
Run 2 Metals	9:01:57 PM	12.27	5.99
Run 2 Metals	9:02:07 PM	12.28	5.98
Run 2 Metals	9:02:17 PM	12.34	5.96
Run 2 Metals	9:02:27 PM	12.23	6.04
Run 2 Metals	9:02:37 PM	12.29	5.98
Run 2 Metals	9:02:47 PM	12.31	5.98
Run 2 Metals	9:02:57 PM	12.14	6.10
Run 2 Metals	9:03:07 PM	12.19	6.06
Run 2 Metals	9:03:17 PM	12.29	5.98
Run 2 Metals	9:03:27 PM	12.26	6.01
Run 2 Metals	9:03:37 PM	12.26	6.01
Run 2 Metals	9:03:47 PM	12.26	6.02
Run 2 Metals	9:03:57 PM	12.28	6.00
Run 2 Metals	9:04:07 PM	12.33	5.97
Run 2 Metals	9:04:17 PM	12.49	5.84
Run 2 Metals	9:04:27 PM	12.48	5.86
Run 2 Metals	9:04:37 PM	12.34	5.97
Run 2 Metals	9:04:47 PM	12.20	6.05
Run 2 Metals	9:04:57 PM	12.18	6.06
Run 2 Metals	9:05:07 PM	12.31	5.97
Run 2 Metals	9:05:17 PM	12.10	6.12
Run 2 Metals	9:05:27 PM	12.10	6.11
Run 2 Metals	9:05:37 PM	12.25	6.00
Run 2 Metals	9:05:47 PM	12.19	6.06
Run 2 Metals	9:05:57 PM	12.23	6.03
Run 2 Metals	9:06:07 PM	12.19	6.05
Run 2 Metals	9:06:17 PM	12.12	6.10
Run 2 Metals	9:06:27 PM	12.30	5.97



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	9:06:37 PM	12.10	6.12
Run 2 Metals	9:06:47 PM	12.25	6.02
Run 2 Metals	9:06:57 PM	12.27	6.01
Run 2 Metals	9:07:07 PM	12.22	6.03
Run 2 Metals	9:07:17 PM	12.20	6.05
Run 2 Metals	9:07:27 PM	12.28	6.01
Run 2 Metals	9:07:37 PM	12.13	6.10
Run 2 Metals	9:07:47 PM	12.07	6.15
Run 2 Metals	9:07:57 PM	12.22	6.04
Run 2 Metals	9:08:07 PM	12.20	6.06
Run 2 Metals	9:08:17 PM	12.34	5.95
Run 2 Metals	9:08:27 PM	12.21	6.05
Run 2 Metals	9:08:37 PM	12.17	6.09
Run 2 Metals	9:08:47 PM	12.26	6.01
Run 2 Metals	9:08:57 PM	12.30	5.98
Run 2 Metals	9:09:07 PM	12.23	6.03
Run 2 Metals	9:09:17 PM	12.23	6.03
Run 2 Metals	9:09:27 PM	12.22	6.04
Run 2 Metals	9:09:37 PM	12.26	6.00
Run 2 Metals	9:09:47 PM	12.16	6.08
Run 2 Metals	9:09:57 PM	12.30	5.98
Run 2 Metals	9:10:07 PM	12.26	6.02
Run 2 Metals	9:10:17 PM	12.41	5.92
Run 2 Metals	9:10:27 PM	12.29	6.01
Run 2 Metals	9:10:37 PM	12.48	5.89
Run 2 Metals	9:10:47 PM	12.50	5.88
Run 2 Metals	9:10:57 PM	12.56	5.82
Run 2 Metals	9:11:07 PM	12.59	5.80
Run 2 Metals	9:11:17 PM	12.39	5.96
Run 2 Metals	9:11:27 PM	12.56	5.84
Run 2 Metals	9:11:37 PM	12.61	5.80
Run 2 Metals	9:11:47 PM	12.42	5.93
Run 2 Metals	9:11:57 PM	12.48	5.89
Run 2 Metals	9:12:07 PM	12.61	5.80
Run 2 Metals	9:12:17 PM	12.42	5.94
Run 2 Metals	9:12:27 PM	12.53	5.86
Run 2 Metals	9:12:37 PM	12.52	5.87
Run 2 Metals	9:12:47 PM	12.53	5.86
Run 2 Metals	9:12:57 PM	12.51	5.87
Run 2 Metals	9:13:07 PM	12.59	5.83
Run 2 Metals	9:13:17 PM	12.64	5.77
Run 2 Metals	9:13:27 PM	12.65	5.77
Run 2 Metals	9:13:37 PM	12.67	5.77
Run 2 Metals	9:13:47 PM	12.62	5.79
Run 2 Metals	9:13:57 PM	12.59	5.83
Run 2 Metals	9:14:07 PM	12.71	5.74
Run 2 Metals	9:14:17 PM	12.59	5.82
Run 2 Metals	9:14:27 PM	12.61	5.80
Run 2 Metals	9:14:37 PM	12.59	5.82
Run 2 Metals	9:14:47 PM	12.51	5.87
Run 2 Metals	9:14:57 PM	12.61	5.80
Run 2 Metals	9:15:07 PM	12.68	5.76
Run 2 Metals	9:15:17 PM	12.52	5.86



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Run 2 Metals	9:15:27 PM	12.39	5.95
Run 2 Metals	9:15:37 PM	12.40	5.93
Run 2 Metals	9:15:47 PM	12.40	5.94
Run 2 Metals	9:15:57 PM	12.36	5.95
Run 2 Metals	9:16:07 PM	12.42	5.92
Run 2 Metals	9:16:17 PM	12.38	5.92
Run 2 Metals	9:16:27 PM	12.41	5.91
Run 2 Metals	9:16:37 PM	12.30	6.00
Run 2 Metals	9:16:47 PM	12.42	5.91
Run 2 Metals	9:16:57 PM	12.31	5.97
Run 2 Metals	9:17:07 PM	12.27	6.02
Run 2 Metals	9:17:17 PM	12.21	6.05
Run 2 Metals	9:17:27 PM	12.24	6.02
Run 2 Metals	9:17:37 PM	12.28	5.99
Run 2 Metals	9:17:47 PM	12.25	6.03
Run 2 Metals	9:17:57 PM	12.52	5.82
Run 2 Metals	9:18:07 PM	12.36	5.94
Run 2 Metals	9:18:17 PM	12.26	6.01
Run 2 Metals	9:18:27 PM	12.24	6.03
Run 2 Metals	9:18:37 PM	12.19	6.05
Run 2 Metals	9:18:47 PM	12.24	6.04
Run 2 Metals	9:18:57 PM	12.19	6.06
Run 2 Metals	9:19:07 PM	12.18	6.06
Run 2 Metals	9:19:17 PM	12.20	6.05
Run 2 Metals	9:19:27 PM	12.15	6.09
Run 2 Metals	9:19:37 PM	12.05	6.16
Run 2 Metals	9:19:47 PM	12.08	6.14
Run 2 Metals	9:19:57 PM	12.13	6.09
Run 2 Metals	9:20:07 PM	12.13	6.10
Run 2 Metals	9:20:17 PM	12.24	6.04
Run 2 Metals	9:20:27 PM	12.36	5.95
Run 2 Metals	9:20:37 PM	12.17	6.08
Run 2 Metals	9:20:47 PM	12.23	6.03
Run 2 Metals	9:20:57 PM	12.07	6.14
Run 2 Metals	9:21:07 PM	12.13	6.10
Run 2 Metals	9:21:17 PM	12.07	6.14
Run 2 Metals	9:21:27 PM	12.05	6.16
Run 2 Metals	9:21:37 PM	12.26	6.01
Run 2 Metals	9:21:47 PM	12.13	6.11
Run 2 Metals	9:21:57 PM	12.05	6.15
Run 2 Metals	9:22:07 PM	12.08	6.15
Run 2 Metals	9:22:17 PM	12.15	6.07
Run 2 Metals	9:22:27 PM	12.15	6.08
Run 2 Metals	9:22:37 PM	12.28	6.00
Run 2 Metals	9:22:47 PM	12.30	5.99
Run 2 Metals	9:22:57 PM	12.14	6.10
Run 2 Metals	9:23:07 PM	12.20	6.05
Run 2 Metals	9:23:17 PM	12.20	6.06
Run 2 Metals	9:23:27 PM	12.10	6.13
Run 2 Metals	9:23:37 PM	12.12	6.11
Run 2 Metals	9:23:47 PM	12.01	6.19
Run 2 Metals	9:23:57 PM	12.16	6.08
Run 2 Metals	9:24:07 PM	12.28	5.99



# CEMS RAW DATA

## 28-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
Run 2 Metals	9:24:17 PM	12.09	6.13
Run 2 Metals	9:24:27 PM	12.22	6.05
Run 2 Metals	9:24:37 PM	12.18	6.06
Run 2 Metals	9:24:47 PM	12.33	5.97
Run 2 Metals	9:24:57 PM	12.31	5.98
Run 2 Metals	9:25:07 PM	12.28	6.03
Run 2 Metals	9:25:17 PM	12.14	6.10
Run 2 Metals	9:25:27 PM	12.16	6.08
Run 2 Metals	9:25:37 PM	12.22	6.04
Run 2 Metals	9:25:47 PM	12.23	6.03
Run 2 Metals	9:25:57 PM	12.20	6.06
Run 2 Metals	9:26:07 PM	12.23	6.06
Run 2 Metals	9:26:17 PM	12.12	6.11
Run 2 Metals	9:26:27 PM	12.23	6.04
Run 2 Metals	9:26:37 PM	12.06	6.15
Run 2 Metals	9:26:47 PM	12.27	6.02
Run 2 Metals	9:26:57 PM	12.10	6.13
Run 2 Metals	9:27:07 PM	12.20	6.06
Run 2 Metals	9:27:17 PM	12.07	6.15
Run 2 Metals	9:27:27 PM	12.11	6.13
Run 2 Metals	9:27:37 PM	12.09	6.14
Run 2 Metals	9:27:47 PM	12.15	6.10
Run 2 Metals	9:27:57 PM	12.18	6.09
Run 2 Metals	9:28:07 PM	12.13	6.11
Run 2 Metals	9:28:17 PM	12.09	6.14
Run 2 Metals	9:28:27 PM	12.13	6.09
Run 2 Metals	9:28:37 PM	12.23	6.04
Run 2 Metals	9:28:47 PM	12.23	6.06
Run 2 Metals	9:28:57 PM	12.17	6.07
Run 2 Metals	9:29:07 PM	12.15	6.09
Run 2 Metals	9:29:17 PM	12.26	6.02
Run 2 Metals	9:29:27 PM	12.40	5.93
Run 2 Metals	9:29:37 PM	12.17	6.09
Run 2 Metals	9:29:47 PM	12.08	6.16
Run 2 Metals	9:29:57 PM	12.23	6.06
System Bias Zero - UHP N2	9:50:07 PM	0.02	0.19
System Bias Zero - UHP N2	9:50:17 PM	0.02	0.19
System Bias Zero - UHP N2	9:50:27 PM	0.02	0.19
System Bias Mid - CC359583	9:52:47 PM	10.81	9.83
System Bias Mid - CC359583	9:52:57 PM	10.82	9.84
System Bias Mid - CC359583	9:53:07 PM	10.82	9.84
System Bias Mid - CC359583	9:53:17 PM	10.82	9.84



**Project:** HHO Vent Stack 6 SO2 RATA Test 2022  
**Facility:** Haverhill  
**Source:** Vent Stack 6  
**Project ID:** 60682866

Corrected Oxygen Concentration					
29-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1	11:56-12:56	11.16	0.02	1.01	11.29
Run 2	13:27-14:27	11.31	0.02	1.02	11.48
Run 3	16:24-17:24	7.70	0.03	1.02	7.82

Corrected Carbon Dioxide Concentration					
29-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1	11:56-12:56	6.50	0.09	1.04	6.68
Run 2	13:27-14:27	6.46	0.11	1.05	6.64
Run 3	16:24-17:24	8.65	0.12	1.04	8.90

Corrected Sulfur Dioxide Concentration					
29-Sep-22	Time	Uncorrected Concentration (ppmv)	Eq. 7E-5 Factors		Bias Corrected Concentration (ppmv)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1	11:56-12:56	379.20	10.80	1.03	380.87
Run 2	13:27-14:27	356.85	15.89	1.04	354.46
Run 3	16:24-17:24	529.71	20.44	1.07	546.90



# HHO Vent Stack 6 SO2 RATA Test 2022

## Oxygen Calibration Data Summary

Facility:	Haverhill
Source:	Vent Stack 6
Project Number:	60682866
Date:	29-Sep-22
Instrument Make/Model:	CAI
Instrument Name/ID	602P/D09011-M
Calibration Span Value:	19.09
Analyzer Range:	25
Units:	%, dry
Technician(s):	CS

### Calibration Error Test Results

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	Nitrogen	0.00	10:38	-0.03	0.03	0.2%
span gas	CC4981	19.09	10:07	19.12	0.03	0.2%
mid-range	CC359583	10.99	10:12	11.00	0.01	0.1%

### CEMS Calibration Bias and Drift Tests

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	-0.03	10:41	0.02	0.3%	13:09	0.02	0.3%	0.0%	$C_0$	0.024
10.99	11.00	10:32	10.88	-0.6%	13:13	10.84	-0.9%	-0.2%	$C_{MA}/(C_M - C_0)$	1.014
0.00	-0.03	13:09	0.02	0.3%	14:43	0.02	0.3%	0.0%	$C_0$	0.023
10.99	11.00	13:13	10.84	-0.9%	15:55	10.82	-1.0%	-0.1%	$C_{MA}/(C_M - C_0)$	1.017
0.00	-0.03	14:43	0.02	0.3%	15:52	0.03	0.3%	0.0%	$C_0$	0.025
10.99	11.00	15:55	10.82	-1.0%	17:34	10.80	-1.1%	-0.1%	$C_{MA}/(C_M - C_0)$	1.019



**HHO Vent Stack 6 SO2 RATA  
Test 2022**

**Carbon Dioxide Calibration  
Data Summary**

<b>Facility:</b>	Haverhill
<b>Source:</b>	Vent Stack 6
<b>Project Number:</b>	60682866
<b>Date:</b>	29-Sep-22
<b>Instrument Make/Model:</b>	CAI
<b>Instrument Name/ID</b>	602P/D09011-M
<b>Calibration Span Value:</b>	18.98
<b>Analyzer Range:</b>	30
<b>Units:</b>	%, dry
<b>Technician(s):</b>	CS

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	Nitrogen	0.00	10:38	-0.02	0.02	0.1%
span gas	CC4981	18.98	10:07	18.97	0.01	0.0%
mid-range	CC359583	10.10	10:12	9.79	0.31	1.6%

**CEMS Calibration Bias and Drift Tests**

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	-0.02	10:41	0.08	0.5%	13:09	0.10	0.6%	0.1%	$C_0$	0.089
10.10	9.79	10:32	9.79	0.0%	13:13	9.76	-0.2%	-0.1%	$C_{MA}/(C_M - C_0)$	1.043
0.00	-0.02	13:09	0.10	0.6%	14:43	0.12	0.7%	0.1%	$C_0$	0.110
10.10	9.79	13:13	9.76	-0.2%	15:55	9.78	-0.1%	0.1%	$C_{MA}/(C_M - C_0)$	1.045
0.00	-0.02	14:43	0.12	0.7%	15:52	0.11	0.7%	0.0%	$C_0$	0.115
10.10	9.79	15:55	9.78	-0.1%	17:34	9.83	0.2%	0.2%	$C_{MA}/(C_M - C_0)$	1.043



**HHO Vent Stack 6 SO2 RATA  
Test 2022**

**Sulfur Dioxide Calibration Data  
Summary**

<b>Facility:</b>	Haverhill
<b>Source:</b>	Vent Stack 6
<b>Project Number:</b>	60682866
<b>Date:</b>	29-Sep-22
<b>Instrument Make/Model:</b>	Bovar
<b>Instrument Name/ID</b>	721-M
<b>Calibration Span Value:</b>	945.80
<b>Analyzer Range:</b>	1500
<b>Units:</b>	ppmv dry
<b>Technician(s):</b>	CS

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference 0.5ppm Limit	Cal Error (% of Span) 2.0% Limit
zero gas	Nitrogen	0.00	10:38	2.08	2.08	0.2%
span gas	SA15002	945.80	10:20	944.80	1.00	0.1%
mid-range	CC15587	482.30	10:23	480.64	1.66	0.2%

CEMS Calibration Bias and Drift Tests										
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	2.08	10:41	5.53	0.4%	13:09	16.08	1.5%	1.1%	$C_0$	10.803
482.30	480.64	10:51	466.51	-1.5%	13:04	488.11	0.8%	2.3%	$C_{MA}/(C_M - C_0)$	1.034
0.00	2.08	13:09	16.08	1.5%	14:43	15.70	1.4%	0.0%	$C_0$	15.888
482.30	480.64	13:04	488.11	0.8%	14:36	471.53	-1.0%	-1.8%	$C_{MA}/(C_M - C_0)$	1.040
0.00	2.08	14:43	15.70	1.4%	15:52	19.29	1.8%	0.4%	$C_0$	17.495
482.30	480.64	14:36	471.53	-1.0%	16:03	466.81	-1.5%	-0.5%	$C_{MA}/(C_M - C_0)$	1.068
0.00	2.08	15:52	19.29	1.8%	17:43	21.58	2.1%	0.2%	$C_0$	20.435
482.30	480.64	16:03	466.81	-1.5%	17:32	472.31	-0.9%	0.6%	$C_{MA}/(C_M - C_0)$	1.074



## SUMMARY DATA - COMPLIANCE TESTING

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1	11:56-12:56	11.16	6.50	379.20
Run 2	13:27-14:27	11.31	6.46	356.85
Run 3	16:24-17:24	7.70	8.65	529.71
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## CALIBRATION SUMMARY

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Cal Error Hi 1 - CC4981	10:07	19.12	18.97	0.23
Cal Error Mid 1 - CC359583	10:12	11.00	9.79	0.35
Cal Error Hi 1 - SA15002	10:20	-0.03	-0.03	944.80
Cal Error Mid 1 - CC15587	10:23	-0.03	-0.04	480.64
System Bias Mid 1 - CC359583	10:32	10.88	9.79	5.68
Cal Error Zero 1 - Nitrogen	10:38	-0.03	-0.02	2.08
System Bias Zero 1 - Nitrogen	10:41	0.02	0.08	5.53
System Bias Mid 1 - CC15587	10:51	0.01	0.07	466.51
Cal Error Hi 1 - CC438688	11:00	-0.03	-0.03	3.11
Cal Error Mid 1 - CC740532	11:03	-0.03	-0.04	2.34
System Bias Mid 1 - CC740532	11:07	0.01	0.06	7.75
System Bias Mid 2 - CC15587	13:04	0.04	0.11	488.11
System Bias Zero 2 - Nitrogen	13:09	0.02	0.10	16.08
System Bias Mid 2 - CC359583	13:13	10.84	9.76	21.81
System Bias Mid 2 - CC740532	13:18	0.04	0.13	12.51
System Bias Mid 3 - CC15587	14:36	0.04	0.14	471.53
System Bias Zero 3 - Nitrogen	14:43	0.02	0.12	15.70
Cal Error Zero 2 - Nitrogen	15:34	0.00	-0.43	5.56
Cal Error Hi 2 - CC438688	15:39	0.00	-0.04	4.47
Cal Error Mid 2 - CC740532	15:43	0.00	-0.05	4.17
Cal Error Hi 2 - CC4981	15:45	19.14	18.96	3.97
Cal Error Mid 2 - CC359583	15:47	11.01	9.79	4.04
System Bias Zero 4 - Nitrogen	15:52	0.03	0.11	19.29
System Bias Mid 3 - CC359583	15:55	10.82	9.78	16.18
System Bias Mid 3 - CC740532	15:58	0.03	0.14	14.01
System Bias Mid 4 - CC15587	16:03	0.03	0.13	466.81
System Bias Mid 5 - CC15587	17:32	0.04	0.19	472.31



System Bias Mid 4 - CC359583	17:34	10.80	9.83	53.58
System Bias Mid 4 - CC740532	17:38	0.04	0.19	22.28
System Bias Zero 5 - Nitrogen	17:43	0.03	0.18	21.58

## CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Sulfur Dioxide (ppmv dry)
Cal Error Hi - CC4981	10:07:09 AM	19.12	18.97	0.15
Cal Error Hi - CC4981	10:07:19 AM	19.12	18.98	-0.05
Cal Error Hi - CC4981	10:07:29 AM	19.12	18.97	0.15
Cal Error Hi - CC4981	10:07:39 AM	19.12	18.98	0.65
Cal Error Mid - CC359583	10:12:59 AM	11.00	9.79	0.15
Cal Error Mid - CC359583	10:13:09 AM	11.00	9.79	0.45
Cal Error Mid - CC359583	10:13:19 AM	11.00	9.79	0.55
Cal Error Mid - CC359583	10:13:29 AM	11.01	9.79	0.25
Cal Error Hi - SA15002	10:20:09 AM	-0.03	-0.02	944.67
Cal Error Hi - SA15002	10:20:19 AM	-0.03	-0.02	944.87
Cal Error Hi - SA15002	10:20:29 AM	-0.03	-0.03	944.67
Cal Error Hi - SA15002	10:20:39 AM	-0.04	-0.03	944.97
Cal Error Mid - CC15587	10:23:59 AM	-0.02	-0.04	482.53
Cal Error Mid - CC15587	10:24:09 AM	-0.03	-0.04	480.94
Cal Error Mid - CC15587	10:24:19 AM	-0.03	-0.04	479.94
Cal Error Mid - CC15587	10:24:29 AM	-0.03	-0.04	479.14
System Bias Zero - Nitrogen	10:41:59 AM	0.03	0.08	5.53
System Bias Zero - Nitrogen	10:42:09 AM	0.02	0.07	5.23
System Bias Zero - Nitrogen	10:42:19 AM	0.03	0.08	5.43
System Bias Zero - Nitrogen	10:42:29 AM	0.02	0.08	5.53
System Bias Zero - Nitrogen	10:42:39 AM	0.03	0.07	5.93
System Bias Mid - CC15587	10:51:59 AM	0.01	0.08	465.98
System Bias Mid - CC15587	10:52:09 AM	0.02	0.07	465.98
System Bias Mid - CC15587	10:52:19 AM	0.01	0.07	466.58
System Bias Mid - CC15587	10:52:29 AM	0.01	0.07	467.48
Cal Error Hi - CC438688	11:00:49 AM	-0.04	-0.03	3.14
Cal Error Hi - CC438688	11:00:59 AM	-0.04	-0.03	3.14
Cal Error Hi - CC438688	11:01:09 AM	-0.03	-0.04	3.04
Cal Error Mid - CC740532	11:03:19 AM	-0.03	-0.04	2.44
Cal Error Mid - CC740532	11:03:29 AM	-0.03	-0.04	2.14
Cal Error Mid - CC740532	11:03:39 AM	-0.04	-0.04	2.44
System Bias Mid - CC740532	11:07:59 AM	0.02	0.06	8.02
System Bias Mid - CC740532	11:08:09 AM	0.01	0.06	7.63
System Bias Mid - CC740532	11:08:19 AM	0.01	0.06	7.73
System Bias Mid - CC740532	11:08:29 AM	0.01	0.06	7.63
Run 1 , Run 1	11:56:09 AM	10.45	6.94	387.13
Run 1 , Run 1	11:56:19 AM	10.30	7.06	392.81
Run 1 , Run 1	11:56:29 AM	10.26	7.08	398.89
Run 1 , Run 1	11:56:39 AM	10.36	7.01	402.78
Run 1 , Run 1	11:56:49 AM	10.39	6.99	403.08
Run 1 , Run 1	11:56:59 AM	10.35	7.01	400.69
Run 1 , Run 1	11:57:09 AM	10.45	6.95	397.90
Run 1 , Run 1	11:57:19 AM	10.37	7.00	396.70
Run 1 , Run 1	11:57:29 AM	10.41	6.97	395.11
Run 1 , Run 1	11:57:39 AM	10.37	7.00	395.01
Run 1 , Run 1	11:57:49 AM	10.50	6.91	393.41
Run 1 , Run 1	11:57:59 AM	10.59	6.86	388.83
Run 1 , Run 1	11:58:09 AM	10.74	6.73	383.84



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1 , Run 1	11:58:19 AM	10.68	6.78	381.25
Run 1 , Run 1	11:58:29 AM	10.69	6.77	379.95
Run 1 , Run 1	11:58:39 AM	10.48	6.92	381.75
Run 1 , Run 1	11:58:49 AM	10.44	6.95	387.13
Run 1 , Run 1	11:58:59 AM	10.45	6.94	392.41
Run 1 , Run 1	11:59:09 AM	10.69	6.77	392.71
Run 1 , Run 1	11:59:19 AM	10.69	6.79	387.73
Run 1 , Run 1	11:59:29 AM	10.73	6.75	384.24
Run 1 , Run 1	11:59:39 AM	10.55	6.88	384.54
Run 1 , Run 1	11:59:49 AM	10.60	6.85	385.74
Run 1 , Run 1	11:59:59 AM	10.54	6.87	387.73
Run 1 , Run 1	12:00:09 PM	10.36	7.01	392.21
Run 1 , Run 1	12:00:19 PM	10.53	6.88	396.50
Run 1 , Run 1	12:00:29 PM	10.43	6.96	396.20
Run 1 , Run 1	12:00:39 PM	10.59	6.84	394.21
Run 1 , Run 1	12:00:49 PM	10.56	6.88	388.43
Run 1 , Run 1	12:00:59 PM	10.66	6.78	383.84
Run 1 , Run 1	12:01:09 PM	10.70	6.76	381.15
Run 1 , Run 1	12:01:19 PM	10.69	6.78	378.66
Run 1 , Run 1	12:01:29 PM	11.21	6.43	369.19
Run 1 , Run 1	12:01:39 PM	11.15	6.48	363.31
Run 1 , Run 1	12:01:49 PM	11.00	6.59	366.60
Run 1 , Run 1	12:01:59 PM	10.88	6.64	375.37
Run 1 , Run 1	12:02:09 PM	10.93	6.62	382.05
Run 1 , Run 1	12:02:19 PM	11.12	6.50	383.34
Run 1 , Run 1	12:02:29 PM	11.00	6.58	383.04
Run 1 , Run 1	12:02:39 PM	11.06	6.53	383.24
Run 1 , Run 1	12:02:49 PM	11.21	6.44	381.75
Run 1 , Run 1	12:02:59 PM	11.17	6.46	380.05
Run 1 , Run 1	12:03:09 PM	11.06	6.54	379.75
Run 1 , Run 1	12:03:19 PM	11.05	6.55	381.45
Run 1 , Run 1	12:03:29 PM	11.01	6.57	385.44
Run 1 , Run 1	12:03:39 PM	11.02	6.56	387.63
Run 1 , Run 1	12:03:49 PM	11.00	6.59	388.23
Run 1 , Run 1	12:03:59 PM	11.01	6.57	388.23
Run 1 , Run 1	12:04:09 PM	10.95	6.61	389.22
Run 1 , Run 1	12:04:19 PM	10.80	6.71	391.92
Run 1 , Run 1	12:04:29 PM	10.61	6.83	398.59
Run 1 , Run 1	12:04:39 PM	10.95	6.61	402.38
Run 1 , Run 1	12:04:49 PM	11.57	6.20	392.51
Run 1 , Run 1	12:04:59 PM	11.70	6.11	376.96
Run 1 , Run 1	12:05:09 PM	11.68	6.13	365.90
Run 1 , Run 1	12:05:19 PM	11.61	6.18	361.61
Run 1 , Run 1	12:05:29 PM	11.61	6.18	360.71
Run 1 , Run 1	12:05:39 PM	11.62	6.17	359.82
Run 1 , Run 1	12:05:49 PM	11.78	6.06	358.62
Run 1 , Run 1	12:05:59 PM	11.80	6.07	355.43
Run 1 , Run 1	12:06:09 PM	11.62	6.19	354.43
Run 1 , Run 1	12:06:19 PM	11.50	6.26	357.82
Run 1 , Run 1	12:06:29 PM	11.36	6.37	362.71
Run 1 , Run 1	12:06:39 PM	11.40	6.32	366.89
Run 1 , Run 1	12:06:49 PM	11.47	6.26	370.08



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1, Run 1	12:06:59 PM	11.27	6.41	372.28
Run 1, Run 1	12:07:09 PM	11.22	6.44	374.67
Run 1, Run 1	12:07:19 PM	11.16	6.48	378.66
Run 1, Run 1	12:07:29 PM	10.97	6.62	382.74
Run 1, Run 1	12:07:39 PM	10.88	6.67	389.02
Run 1, Run 1	12:07:49 PM	10.91	6.65	392.61
Run 1, Run 1	12:07:59 PM	10.99	6.59	392.81
Run 1, Run 1	12:08:09 PM	11.12	6.51	390.42
Run 1, Run 1	12:08:19 PM	11.35	6.35	386.43
Run 1, Run 1	12:08:29 PM	11.28	6.39	380.55
Run 1, Run 1	12:08:39 PM	11.46	6.28	376.07
Run 1, Run 1	12:08:49 PM	11.34	6.37	373.57
Run 1, Run 1	12:08:59 PM	11.24	6.43	374.17
Run 1, Run 1	12:09:09 PM	11.26	6.41	375.77
Run 1, Run 1	12:09:19 PM	11.27	6.40	377.76
Run 1, Run 1	12:09:29 PM	11.41	6.31	377.16
Run 1, Run 1	12:09:39 PM	11.58	6.21	371.98
Run 1, Run 1	12:09:49 PM	11.28	6.41	369.79
Run 1, Run 1	12:09:59 PM	11.23	6.44	373.67
Run 1, Run 1	12:10:09 PM	10.98	6.60	379.75
Run 1, Run 1	12:10:19 PM	10.77	6.74	388.43
Run 1, Run 1	12:10:29 PM	10.75	6.75	395.70
Run 1, Run 1	12:10:39 PM	10.84	6.68	399.29
Run 1, Run 1	12:10:49 PM	11.04	6.55	397.20
Run 1, Run 1	12:10:59 PM	11.24	6.42	390.02
Run 1, Run 1	12:11:09 PM	11.43	6.30	380.25
Run 1, Run 1	12:11:19 PM	11.51	6.25	370.78
Run 1, Run 1	12:11:29 PM	11.47	6.28	365.90
Run 1, Run 1	12:11:39 PM	11.47	6.28	363.90
Run 1, Run 1	12:11:49 PM	11.44	6.29	363.51
Run 1, Run 1	12:11:59 PM	11.40	6.33	363.80
Run 1, Run 1	12:12:09 PM	11.32	6.38	365.60
Run 1, Run 1	12:12:19 PM	11.15	6.49	369.79
Run 1, Run 1	12:12:29 PM	11.28	6.40	372.58
Run 1, Run 1	12:12:39 PM	11.41	6.31	372.98
Run 1, Run 1	12:12:49 PM	11.32	6.39	371.48
Run 1, Run 1	12:12:59 PM	11.04	6.56	372.98
Run 1, Run 1	12:13:09 PM	10.97	6.61	377.16
Run 1, Run 1	12:13:19 PM	11.07	6.54	380.55
Run 1, Run 1	12:13:29 PM	11.06	6.54	382.84
Run 1, Run 1	12:13:39 PM	11.15	6.49	383.04
Run 1, Run 1	12:13:49 PM	11.20	6.45	382.15
Run 1, Run 1	12:13:59 PM	11.08	6.54	381.45
Run 1, Run 1	12:14:09 PM	11.21	6.43	382.05
Run 1, Run 1	12:14:19 PM	11.08	6.53	381.45
Run 1, Run 1	12:14:29 PM	11.03	6.56	382.45
Run 1, Run 1	12:14:39 PM	11.04	6.55	384.54
Run 1, Run 1	12:14:49 PM	11.08	6.54	385.74
Run 1, Run 1	12:14:59 PM	10.98	6.59	387.13
Run 1, Run 1	12:15:09 PM	11.23	6.40	386.93
Run 1, Run 1	12:15:19 PM	11.14	6.49	383.34
Run 1, Run 1	12:15:29 PM	11.23	6.42	381.45



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1, Run 1	12:15:39 PM	10.93	6.64	382.25
Run 1, Run 1	12:15:49 PM	10.89	6.65	386.43
Run 1, Run 1	12:15:59 PM	10.81	6.70	389.62
Run 1, Run 1	12:16:09 PM	10.55	6.88	395.80
Run 1, Run 1	12:16:19 PM	10.71	6.74	402.48
Run 1, Run 1	12:16:29 PM	11.15	6.46	400.09
Run 1, Run 1	12:16:39 PM	11.42	6.29	390.42
Run 1, Run 1	12:16:49 PM	11.44	6.29	377.86
Run 1, Run 1	12:16:59 PM	11.56	6.20	369.59
Run 1, Run 2	12:17:09 PM	11.51	6.23	364.10
Run 1, Run 2	12:17:19 PM	11.54	6.23	361.41
Run 1, Run 2	12:17:29 PM	11.65	6.16	358.62
Run 1, Run 2	12:17:39 PM	11.58	6.21	357.62
Run 1, Run 2	12:17:49 PM	11.65	6.16	357.42
Run 1, Run 2	12:17:59 PM	11.59	6.20	358.32
Run 1, Run 2	12:18:09 PM	11.43	6.30	360.02
Run 1, Run 2	12:18:19 PM	11.45	6.29	363.31
Run 1, Run 2	12:18:29 PM	11.51	6.24	365.00
Run 1, Run 2	12:18:39 PM	11.60	6.18	365.60
Run 1, Run 2	12:18:49 PM	11.49	6.27	366.00
Run 1, Run 2	12:18:59 PM	11.52	6.23	367.39
Run 1, Run 2	12:19:09 PM	11.36	6.34	369.89
Run 1, Run 2	12:19:19 PM	11.20	6.44	374.17
Run 1, Run 2	12:19:29 PM	11.25	6.41	378.06
Run 1, Run 2	12:19:39 PM	11.19	6.44	380.25
Run 1, Run 2	12:19:49 PM	11.35	6.34	380.25
Run 1, Run 2	12:19:59 PM	11.24	6.42	379.26
Run 1, Run 2	12:20:09 PM	11.17	6.46	379.95
Run 1, Run 2	12:20:19 PM	11.31	6.38	380.15
Run 1, Run 2	12:20:29 PM	11.17	6.47	380.25
Run 1, Run 2	12:20:39 PM	11.01	6.58	382.74
Run 1, Run 2	12:20:49 PM	10.85	6.68	386.63
Run 1, Run 2	12:20:59 PM	10.94	6.62	390.02
Run 1, Run 2	12:21:09 PM	10.95	6.63	390.02
Run 1, Run 2	12:21:19 PM	10.90	6.64	391.02
Run 1, Run 2	12:21:29 PM	10.94	6.62	390.02
Run 1, Run 2	12:21:39 PM	11.12	6.50	386.93
Run 1, Run 2	12:21:49 PM	11.22	6.42	384.04
Run 1, Run 2	12:21:59 PM	11.34	6.35	379.06
Run 1, Run 2	12:22:09 PM	11.41	6.30	373.77
Run 1, Run 2	12:22:19 PM	11.41	6.31	369.29
Run 1, Run 2	12:22:29 PM	11.34	6.35	367.79
Run 1, Run 2	12:22:39 PM	11.34	6.37	368.09
Run 1, Run 2	12:22:49 PM	11.42	6.31	368.09
Run 1, Run 2	12:22:59 PM	11.13	6.50	369.29
Run 1, Run 2	12:23:09 PM	11.02	6.57	374.27
Run 1, Run 2	12:23:19 PM	10.93	6.64	381.85
Run 1, Run 2	12:23:29 PM	10.97	6.60	387.53
Run 1, Run 2	12:23:39 PM	11.18	6.46	388.83
Run 1, Run 2	12:23:49 PM	11.28	6.40	384.44
Run 1, Run 2	12:23:59 PM	11.32	6.37	379.95
Run 1, Run 2	12:24:09 PM	11.43	6.30	376.36



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1 , Run 2	12:24:19 PM	11.28	6.41	374.57
Run 1 , Run 2	12:24:29 PM	11.16	6.48	378.06
Run 1 , Run 2	12:24:39 PM	11.39	6.33	379.16
Run 1 , Run 2	12:24:49 PM	11.51	6.25	375.77
Run 1 , Run 2	12:24:59 PM	11.61	6.19	370.98
Run 1 , Run 2	12:25:09 PM	11.85	6.03	365.00
Run 1 , Run 2	12:25:19 PM	11.67	6.15	361.11
Run 1 , Run 2	12:25:29 PM	11.53	6.23	362.71
Run 1 , Run 2	12:25:39 PM	11.48	6.27	365.00
Run 1 , Run 2	12:25:49 PM	11.43	6.31	367.29
Run 1 , Run 2	12:25:59 PM	11.50	6.26	367.49
Run 1 , Run 2	12:26:09 PM	11.51	6.25	367.49
Run 1 , Run 2	12:26:19 PM	11.51	6.25	367.29
Run 1 , Run 2	12:26:29 PM	11.54	6.22	366.89
Run 1 , Run 2	12:26:39 PM	11.44	6.30	367.19
Run 1 , Run 2	12:26:49 PM	11.34	6.37	368.69
Run 1 , Run 2	12:26:59 PM	11.42	6.31	370.48
Run 1 , Run 2	12:27:09 PM	11.42	6.31	370.58
Run 1 , Run 2	12:27:19 PM	11.36	6.36	369.98
Run 1 , Run 2	12:27:29 PM	11.42	6.31	370.08
Run 1 , Run 2	12:27:39 PM	11.47	6.29	369.39
Run 1 , Run 2	12:27:49 PM	11.42	6.32	369.59
Run 1 , Run 2	12:27:59 PM	11.21	6.45	370.88
Run 1 , Run 2	12:28:09 PM	11.33	6.35	372.38
Run 1 , Run 2	12:28:19 PM	11.34	6.37	373.97
Run 1 , Run 2	12:28:29 PM	11.58	6.21	372.38
Run 1 , Run 2	12:28:39 PM	11.68	6.14	368.39
Run 1 , Run 2	12:28:49 PM	11.68	6.15	363.51
Run 1 , Run 2	12:28:59 PM	11.50	6.25	363.01
Run 1 , Run 2	12:29:09 PM	11.45	6.29	365.70
Run 1 , Run 2	12:29:19 PM	11.34	6.37	368.99
Run 1 , Run 2	12:29:29 PM	11.21	6.45	374.57
Run 1 , Run 2	12:29:39 PM	11.31	6.38	377.86
Run 1 , Run 2	12:29:49 PM	11.32	6.37	378.56
Run 1 , Run 2	12:29:59 PM	11.49	6.25	376.66
Run 1 , Run 2	12:30:09 PM	11.36	6.35	374.47
Run 1 , Run 2	12:30:19 PM	11.33	6.37	373.57
Run 1 , Run 2	12:30:29 PM	11.19	6.45	376.56
Run 1 , Run 2	12:30:39 PM	11.20	6.47	379.06
Run 1 , Run 2	12:30:49 PM	11.11	6.52	381.45
Run 1 , Run 2	12:30:59 PM	11.14	6.50	382.64
Run 1 , Run 2	12:31:09 PM	11.25	6.43	382.35
Run 1 , Run 2	12:31:19 PM	11.29	6.40	381.15
Run 1 , Run 2	12:31:29 PM	11.47	6.27	377.76
Run 1 , Run 2	12:31:39 PM	11.63	6.18	372.28
Run 1 , Run 2	12:31:49 PM	11.57	6.23	367.19
Run 1 , Run 2	12:31:59 PM	11.51	6.25	365.60
Run 1 , Run 2	12:32:09 PM	11.29	6.40	366.60
Run 1 , Run 2	12:32:19 PM	11.20	6.46	371.48
Run 1 , Run 2	12:32:29 PM	11.30	6.40	374.67
Run 1 , Run 2	12:32:39 PM	11.31	6.39	376.07
Run 1 , Run 2	12:32:49 PM	11.09	6.54	377.26



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1, Run 2	12:32:59 PM	11.00	6.59	381.45
Run 1, Run 2	12:33:09 PM	11.15	6.48	385.04
Run 1, Run 2	12:33:19 PM	11.26	6.42	384.54
Run 1, Run 2	12:33:29 PM	11.29	6.40	382.15
Run 1, Run 2	12:33:39 PM	11.21	6.44	380.25
Run 1, Run 2	12:33:49 PM	11.40	6.32	379.26
Run 1, Run 2	12:33:59 PM	11.41	6.32	376.07
Run 1, Run 2	12:34:09 PM	11.41	6.31	373.77
Run 1, Run 2	12:34:19 PM	11.48	6.28	372.38
Run 1, Run 2	12:34:29 PM	11.29	6.40	372.98
Run 1, Run 2	12:34:39 PM	11.07	6.56	376.96
Run 1, Run 2	12:34:49 PM	11.16	6.49	381.45
Run 1, Run 2	12:34:59 PM	11.14	6.50	385.04
Run 1, Run 2	12:35:09 PM	11.16	6.49	386.93
Run 1, Run 2	12:35:19 PM	11.32	6.38	385.44
Run 1, Run 2	12:35:29 PM	10.98	6.62	384.54
Run 1, Run 2	12:35:39 PM	10.83	6.71	387.63
Run 1, Run 2	12:35:49 PM	11.04	6.57	391.02
Run 1, Run 2	12:35:59 PM	11.12	6.52	389.42
Run 1, Run 2	12:36:09 PM	11.25	6.43	384.74
Run 1, Run 2	12:36:19 PM	11.11	6.53	381.45
Run 1, Run 2	12:36:29 PM	11.30	6.40	379.36
Run 1, Run 2	12:36:39 PM	11.34	6.37	376.07
Run 1, Run 2	12:36:49 PM	11.55	6.24	371.48
Run 1, Run 2	12:36:59 PM	11.57	6.22	367.19
Run 1, Run 2	12:37:09 PM	11.36	6.35	365.40
Run 1, Run 2	12:37:19 PM	11.32	6.37	367.49
Run 1, Run 2	12:37:29 PM	11.28	6.41	368.99
Run 1, Run 2	12:37:39 PM	11.36	6.37	369.69
Run 1, Run 2	12:37:49 PM	11.33	6.38	369.69
Run 1, Run 2	12:37:59 PM	11.33	6.38	370.58
Run 1, Run 3	12:38:09 PM	11.43	6.31	370.58
Run 1, Run 3	12:38:19 PM	11.28	6.42	370.78
Run 1, Run 3	12:38:29 PM	11.51	6.25	370.48
Run 1, Run 3	12:38:39 PM	11.27	6.43	370.88
Run 1, Run 3	12:38:49 PM	11.08	6.55	375.97
Run 1, Run 3	12:38:59 PM	11.18	6.48	381.55
Run 1, Run 3	12:39:09 PM	11.13	6.51	384.34
Run 1, Run 3	12:39:19 PM	10.98	6.61	386.03
Run 1, Run 3	12:39:29 PM	11.04	6.59	389.02
Run 1, Run 3	12:39:39 PM	10.93	6.65	390.62
Run 1, Run 3	12:39:49 PM	10.95	6.65	393.41
Run 1, Run 3	12:39:59 PM	11.05	6.57	394.31
Run 1, Run 3	12:40:09 PM	10.93	6.66	393.61
Run 1, Run 3	12:40:19 PM	10.91	6.68	395.50
Run 1, Run 3	12:40:29 PM	10.94	6.65	396.40
Run 1, Run 3	12:40:39 PM	11.08	6.57	394.61
Run 1, Run 3	12:40:49 PM	11.29	6.43	389.22
Run 1, Run 3	12:40:59 PM	11.22	6.48	382.15
Run 1, Run 3	12:41:09 PM	11.39	6.35	377.86
Run 1, Run 3	12:41:19 PM	11.69	6.16	369.79
Run 1, Run 3	12:41:29 PM	11.49	6.30	363.21



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1, Run 3	12:41:39 PM	11.28	6.43	364.00
Run 1, Run 3	12:41:49 PM	11.35	6.40	367.79
Run 1, Run 3	12:41:59 PM	11.25	6.47	370.48
Run 1, Run 3	12:42:09 PM	11.31	6.43	371.88
Run 1, Run 3	12:42:19 PM	11.35	6.39	372.98
Run 1, Run 3	12:42:29 PM	11.35	6.41	371.88
Run 1, Run 3	12:42:39 PM	11.33	6.41	371.78
Run 1, Run 3	12:42:49 PM	11.28	6.45	371.38
Run 1, Run 3	12:42:59 PM	11.38	6.37	371.08
Run 1, Run 3	12:43:09 PM	11.57	6.25	369.39
Run 1, Run 3	12:43:19 PM	11.40	6.37	366.60
Run 1, Run 3	12:43:29 PM	11.26	6.45	368.69
Run 1, Run 3	12:43:39 PM	11.34	6.39	371.78
Run 1, Run 3	12:43:49 PM	11.15	6.54	374.77
Run 1, Run 3	12:43:59 PM	11.15	6.53	379.16
Run 1, Run 3	12:44:09 PM	11.34	6.40	379.65
Run 1, Run 3	12:44:19 PM	11.21	6.49	378.46
Run 1, Run 3	12:44:29 PM	11.05	6.61	379.75
Run 1, Run 3	12:44:39 PM	10.92	6.68	384.14
Run 1, Run 3	12:44:49 PM	11.07	6.60	388.03
Run 1, Run 3	12:44:59 PM	11.01	6.64	388.83
Run 1, Run 3	12:45:09 PM	11.41	6.35	385.74
Run 1, Run 3	12:45:19 PM	11.21	6.49	381.25
Run 1, Run 3	12:45:29 PM	11.21	6.50	379.65
Run 1, Run 3	12:45:39 PM	11.30	6.43	377.96
Run 1, Run 3	12:45:49 PM	11.08	6.59	378.06
Run 1, Run 3	12:45:59 PM	11.00	6.62	381.45
Run 1, Run 3	12:46:09 PM	11.12	6.55	383.14
Run 1, Run 3	12:46:19 PM	11.12	6.55	382.64
Run 1, Run 3	12:46:29 PM	11.22	6.49	380.95
Run 1, Run 3	12:46:39 PM	11.05	6.60	380.65
Run 1, Run 3	12:46:49 PM	11.06	6.60	381.75
Run 1, Run 3	12:46:59 PM	10.99	6.64	382.74
Run 1, Run 3	12:47:09 PM	11.06	6.59	382.84
Run 1, Run 3	12:47:19 PM	11.04	6.61	382.64
Run 1, Run 3	12:47:29 PM	10.94	6.67	382.45
Run 1, Run 3	12:47:39 PM	10.87	6.71	384.54
Run 1, Run 3	12:47:49 PM	10.75	6.80	388.83
Run 1, Run 3	12:47:59 PM	10.87	6.70	392.51
Run 1, Run 3	12:48:09 PM	10.85	6.73	393.81
Run 1, Run 3	12:48:19 PM	10.81	6.74	396.50
Run 1, Run 3	12:48:29 PM	10.88	6.72	396.80
Run 1, Run 3	12:48:39 PM	10.98	6.65	396.00
Run 1, Run 3	12:48:49 PM	11.11	6.57	392.41
Run 1, Run 3	12:48:59 PM	11.17	6.52	388.23
Run 1, Run 3	12:49:09 PM	11.28	6.46	382.45
Run 1, Run 3	12:49:19 PM	11.49	6.33	376.46
Run 1, Run 3	12:49:29 PM	11.27	6.47	372.28
Run 1, Run 3	12:49:39 PM	11.34	6.42	372.38
Run 1, Run 3	12:49:49 PM	11.45	6.36	372.38
Run 1, Run 3	12:49:59 PM	11.35	6.42	371.78
Run 1, Run 3	12:50:09 PM	11.34	6.43	371.78



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 1 , Run 3	12:50:19 PM	11.55	6.29	369.69
Run 1 , Run 3	12:50:29 PM	11.54	6.30	366.00
Run 1 , Run 3	12:50:39 PM	11.61	6.23	363.01
Run 1 , Run 3	12:50:49 PM	11.32	6.45	362.21
Run 1 , Run 3	12:50:59 PM	11.31	6.45	365.40
Run 1 , Run 3	12:51:09 PM	11.41	6.38	367.29
Run 1 , Run 3	12:51:19 PM	11.36	6.42	367.19
Run 1 , Run 3	12:51:29 PM	11.11	6.58	369.29
Run 1 , Run 3	12:51:39 PM	11.22	6.49	373.57
Run 1 , Run 3	12:51:49 PM	11.27	6.47	375.77
Run 1 , Run 3	12:51:59 PM	11.07	6.60	376.56
Run 1 , Run 3	12:52:09 PM	11.01	6.63	379.75
Run 1 , Run 3	12:52:19 PM	10.91	6.71	383.04
Run 1 , Run 3	12:52:29 PM	10.82	6.77	386.43
Run 1 , Run 3	12:52:39 PM	11.05	6.62	387.23
Run 1 , Run 3	12:52:49 PM	10.92	6.70	387.53
Run 1 , Run 3	12:52:59 PM	10.63	6.90	390.12
Run 1 , Run 3	12:53:09 PM	10.91	6.71	392.71
Run 1 , Run 3	12:53:19 PM	10.77	6.83	393.41
Run 1 , Run 3	12:53:29 PM	10.84	6.76	393.21
Run 1 , Run 3	12:53:39 PM	10.71	6.86	394.41
Run 1 , Run 3	12:53:49 PM	10.75	6.83	396.30
Run 1 , Run 3	12:53:59 PM	10.73	6.85	396.40
Run 1 , Run 3	12:54:09 PM	10.77	6.83	396.10
Run 1 , Run 3	12:54:19 PM	10.96	6.68	393.71
Run 1 , Run 3	12:54:29 PM	10.84	6.75	391.62
Run 1 , Run 3	12:54:39 PM	10.79	6.80	391.62
Run 1 , Run 3	12:54:49 PM	10.83	6.77	392.81
Run 1 , Run 3	12:54:59 PM	10.81	6.77	394.61
Run 1 , Run 3	12:55:09 PM	10.85	6.74	395.60
Run 1 , Run 3	12:55:19 PM	10.83	6.77	394.51
Run 1 , Run 3	12:55:29 PM	11.07	6.60	391.32
Run 1 , Run 3	12:55:39 PM	11.06	6.61	385.83
Run 1 , Run 3	12:55:49 PM	10.92	6.71	382.74
Run 1 , Run 3	12:55:59 PM	10.82	6.77	382.84
Run 3	12:56:09 PM	10.93	6.68	386.13
Run 3	12:56:19 PM	10.77	6.80	388.73
Run 3	12:56:29 PM	10.82	6.77	390.72
Run 3	12:56:39 PM	10.65	6.91	394.41
Run 3	12:56:49 PM	10.60	6.93	397.90
Run 3	12:56:59 PM	10.57	6.95	400.19
Run 3	12:57:09 PM	10.48	7.00	402.28
Run 3	12:57:19 PM	10.76	6.82	401.88
Run 3	12:57:29 PM	10.76	6.81	398.99
Run 3	12:57:39 PM	10.93	6.71	394.51
Run 3	12:57:49 PM	10.92	6.72	390.32
Run 3	12:57:59 PM	11.09	6.59	386.93
Run 3	12:58:09 PM	11.05	6.62	385.44
Run 3	12:58:19 PM	11.00	6.66	384.34
Run 3	12:58:29 PM	11.18	6.53	382.84
Run 3	12:58:39 PM	10.99	6.68	380.65
Run 3	12:58:49 PM	10.94	6.71	381.45



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3	12:58:59 PM	10.98	6.66	384.04
System Bias Mid - CC15587	1:04:59 PM	0.03	0.11	487.51
System Bias Mid - CC15587	1:05:09 PM	0.05	0.11	487.81
System Bias Mid - CC15587	1:05:19 PM	0.04	0.11	488.41
System Bias Mid - CC15587	1:05:29 PM	0.03	0.11	488.71
System Bias Zero - Nitrogen	1:09:49 PM	0.02	0.10	16.80
System Bias Zero - Nitrogen	1:09:59 PM	0.02	0.10	16.10
System Bias Zero - Nitrogen	1:10:09 PM	0.03	0.10	15.90
System Bias Zero - Nitrogen	1:10:19 PM	0.02	0.10	15.50
System Bias Mid - CC359583	1:13:59 PM	10.84	9.75	24.97
System Bias Mid - CC359583	1:14:09 PM	10.84	9.76	22.18
System Bias Mid - CC359583	1:14:19 PM	10.84	9.76	20.49
System Bias Mid - CC359583	1:14:29 PM	10.84	9.77	19.59
System Bias Mid - CC740532	1:18:09 PM	0.05	0.13	12.61
System Bias Mid - CC740532	1:18:19 PM	0.05	0.13	12.51
System Bias Mid - CC740532	1:18:29 PM	0.03	0.13	12.31
System Bias Mid - CC740532	1:18:39 PM	0.03	0.13	12.61
Run 2 , Run 4	1:27:09 PM	11.24	6.48	347.75
Run 2 , Run 4	1:27:19 PM	11.43	6.34	345.56
Run 2 , Run 4	1:27:29 PM	11.33	6.41	344.07
Run 2 , Run 4	1:27:39 PM	11.23	6.48	344.27
Run 2 , Run 4	1:27:49 PM	11.22	6.49	346.16
Run 2 , Run 4	1:27:59 PM	11.16	6.53	348.25
Run 2 , Run 4	1:28:09 PM	11.21	6.50	349.75
Run 2 , Run 4	1:28:19 PM	11.32	6.41	348.75
Run 2 , Run 4	1:28:29 PM	11.26	6.46	347.36
Run 2 , Run 4	1:28:39 PM	11.27	6.46	346.26
Run 2 , Run 4	1:28:49 PM	11.25	6.46	347.66
Run 2 , Run 4	1:28:59 PM	11.31	6.43	348.25
Run 2 , Run 4	1:29:09 PM	11.35	6.40	348.15
Run 2 , Run 4	1:29:19 PM	11.23	6.49	348.45
Run 2 , Run 4	1:29:29 PM	11.29	6.43	350.84
Run 2 , Run 4	1:29:39 PM	11.13	6.56	352.74
Run 2 , Run 4	1:29:49 PM	11.05	6.61	355.53
Run 2 , Run 4	1:29:59 PM	11.12	6.55	357.32
Run 2 , Run 4	1:30:09 PM	11.24	6.48	355.33
Run 2 , Run 4	1:30:19 PM	11.33	6.42	352.84
Run 2 , Run 4	1:30:29 PM	11.11	6.58	353.64
Run 2 , Run 4	1:30:39 PM	10.95	6.67	358.02
Run 2 , Run 4	1:30:49 PM	10.77	6.78	363.21
Run 2 , Run 4	1:30:59 PM	11.01	6.63	366.50
Run 2 , Run 4	1:31:09 PM	11.10	6.57	364.80
Run 2 , Run 4	1:31:19 PM	11.19	6.52	360.51
Run 2 , Run 4	1:31:29 PM	11.42	6.35	354.83
Run 2 , Run 4	1:31:39 PM	11.34	6.42	349.65
Run 2 , Run 4	1:31:49 PM	11.28	6.47	346.96
Run 2 , Run 4	1:31:59 PM	11.39	6.37	345.56
Run 2 , Run 4	1:32:09 PM	11.50	6.32	342.17
Run 2 , Run 4	1:32:19 PM	11.44	6.34	340.68
Run 2 , Run 4	1:32:29 PM	11.40	6.37	342.07
Run 2 , Run 4	1:32:39 PM	11.14	6.56	346.36
Run 2 , Run 4	1:32:49 PM	11.00	6.67	352.84



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 2 , Run 4	1:32:59 PM	11.17	6.53	357.13
Run 2 , Run 4	1:33:09 PM	11.29	6.45	357.92
Run 2 , Run 4	1:33:19 PM	11.18	6.54	357.42
Run 2 , Run 4	1:33:29 PM	11.51	6.29	354.03
Run 2 , Run 4	1:33:39 PM	11.43	6.36	349.15
Run 2 , Run 4	1:33:49 PM	11.21	6.52	348.65
Run 2 , Run 4	1:33:59 PM	11.18	6.53	352.34
Run 2 , Run 4	1:34:09 PM	10.96	6.69	358.22
Run 2 , Run 4	1:34:19 PM	10.93	6.71	364.90
Run 2 , Run 4	1:34:29 PM	10.78	6.82	370.68
Run 2 , Run 4	1:34:39 PM	10.94	6.70	372.98
Run 2 , Run 4	1:34:49 PM	11.22	6.50	369.89
Run 2 , Run 4	1:34:59 PM	11.28	6.46	363.21
Run 2 , Run 4	1:35:09 PM	11.51	6.30	354.83
Run 2 , Run 4	1:35:19 PM	11.64	6.24	346.86
Run 2 , Run 4	1:35:29 PM	11.57	6.26	342.57
Run 2 , Run 4	1:35:39 PM	11.34	6.44	342.77
Run 2 , Run 4	1:35:49 PM	11.16	6.56	348.05
Run 2 , Run 4	1:35:59 PM	11.06	6.61	355.53
Run 2 , Run 4	1:36:09 PM	11.05	6.62	360.22
Run 2 , Run 4	1:36:19 PM	11.22	6.51	360.22
Run 2 , Run 4	1:36:29 PM	11.16	6.54	358.82
Run 2 , Run 4	1:36:39 PM	10.98	6.69	358.82
Run 2 , Run 4	1:36:49 PM	11.07	6.62	360.41
Run 2 , Run 4	1:36:59 PM	10.83	6.76	363.80
Run 2 , Run 4	1:37:09 PM	10.81	6.76	368.99
Run 2 , Run 4	1:37:19 PM	10.76	6.82	373.57
Run 2 , Run 4	1:37:29 PM	10.77	6.81	376.46
Run 2 , Run 4	1:37:39 PM	10.90	6.72	375.97
Run 2 , Run 4	1:37:49 PM	11.35	6.41	368.69
Run 2 , Run 4	1:37:59 PM	11.35	6.41	359.32
Run 2 , Run 4	1:38:09 PM	11.44	6.35	352.24
Run 2 , Run 4	1:38:19 PM	11.24	6.49	350.35
Run 2 , Run 4	1:38:29 PM	11.42	6.35	350.05
Run 2 , Run 4	1:38:39 PM	11.46	6.34	348.25
Run 2 , Run 4	1:38:49 PM	11.42	6.38	346.36
Run 2 , Run 4	1:38:59 PM	11.42	6.36	347.06
Run 2 , Run 4	1:39:09 PM	11.62	6.25	344.86
Run 2 , Run 4	1:39:19 PM	11.61	6.26	341.47
Run 2 , Run 4	1:39:29 PM	11.39	6.40	341.47
Run 2 , Run 4	1:39:39 PM	11.67	6.20	341.77
Run 2 , Run 4	1:39:49 PM	11.42	6.38	342.67
Run 2 , Run 4	1:39:59 PM	11.39	6.40	345.76
Run 2 , Run 4	1:40:09 PM	11.27	6.49	348.75
Run 2 , Run 4	1:40:19 PM	11.14	6.57	353.64
Run 2 , Run 4	1:40:29 PM	11.32	6.44	356.43
Run 2 , Run 4	1:40:39 PM	11.19	6.53	357.32
Run 2 , Run 4	1:40:49 PM	11.22	6.51	358.12
Run 2 , Run 4	1:40:59 PM	11.38	6.40	355.63
Run 2 , Run 4	1:41:09 PM	11.17	6.56	354.13
Run 2 , Run 4	1:41:19 PM	11.26	6.50	354.13
Run 2 , Run 4	1:41:29 PM	11.37	6.41	351.94



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 2 , Run 4	1:41:39 PM	11.31	6.45	350.75
Run 2 , Run 4	1:41:49 PM	11.15	6.56	353.04
Run 2 , Run 4	1:41:59 PM	11.18	6.54	355.73
Run 2 , Run 4	1:42:09 PM	11.14	6.56	357.92
Run 2 , Run 4	1:42:19 PM	11.26	6.47	358.82
Run 2 , Run 4	1:42:29 PM	11.65	6.22	352.44
Run 2 , Run 4	1:42:39 PM	11.42	6.38	345.76
Run 2 , Run 4	1:42:49 PM	11.38	6.41	344.56
Run 2 , Run 4	1:42:59 PM	11.23	6.50	347.66
Run 2 , Run 4	1:43:09 PM	11.27	6.46	352.04
Run 2 , Run 4	1:43:19 PM	11.26	6.47	355.13
Run 2 , Run 4	1:43:29 PM	11.04	6.64	359.72
Run 2 , Run 4	1:43:39 PM	11.14	6.56	363.11
Run 2 , Run 4	1:43:49 PM	11.19	6.54	363.01
Run 2 , Run 4	1:43:59 PM	11.32	6.43	361.21
Run 2 , Run 4	1:44:09 PM	11.32	6.45	358.42
Run 2 , Run 4	1:44:19 PM	11.19	6.53	358.82
Run 2 , Run 4	1:44:29 PM	11.28	6.46	359.32
Run 2 , Run 4	1:44:39 PM	11.31	6.46	357.62
Run 2 , Run 4	1:44:49 PM	11.27	6.47	357.13
Run 2 , Run 4	1:44:59 PM	11.18	6.55	358.42
Run 2 , Run 4	1:45:09 PM	11.27	6.48	359.32
Run 2 , Run 4	1:45:19 PM	11.30	6.46	358.22
Run 2 , Run 4	1:45:29 PM	11.64	6.22	354.83
Run 2 , Run 4	1:45:39 PM	11.65	6.22	347.46
Run 2 , Run 4	1:45:49 PM	11.42	6.39	343.47
Run 2 , Run 4	1:45:59 PM	11.25	6.50	346.26
Run 2 , Run 4	1:46:09 PM	11.26	6.49	350.15
Run 2 , Run 4	1:46:19 PM	11.08	6.60	355.03
Run 2 , Run 4	1:46:29 PM	11.23	6.49	358.82
Run 2 , Run 4	1:46:39 PM	11.09	6.61	360.02
Run 2 , Run 4	1:46:49 PM	10.95	6.71	363.31
Run 2 , Run 4	1:46:59 PM	10.79	6.80	370.68
Run 2 , Run 4	1:47:09 PM	10.84	6.76	376.46
Run 2 , Run 4	1:47:19 PM	11.06	6.61	376.36
Run 2 , Run 4	1:47:29 PM	11.07	6.61	371.38
Run 2 , Run 4	1:47:39 PM	11.15	6.54	367.09
Run 2 , Run 4	1:47:49 PM	11.19	6.54	362.11
Run 2 , Run 4	1:47:59 PM	11.21	6.52	359.32
Run 2 , Run 5	1:48:09 PM	11.61	6.26	353.54
Run 2 , Run 5	1:48:19 PM	11.64	6.25	346.06
Run 2 , Run 5	1:48:29 PM	11.61	6.28	339.68
Run 2 , Run 5	1:48:39 PM	11.51	6.32	339.18
Run 2 , Run 5	1:48:49 PM	11.59	6.26	341.18
Run 2 , Run 5	1:48:59 PM	11.44	6.40	342.57
Run 2 , Run 5	1:49:09 PM	11.40	6.40	346.16
Run 2 , Run 5	1:49:19 PM	11.36	6.44	349.75
Run 2 , Run 5	1:49:29 PM	11.50	6.33	351.44
Run 2 , Run 5	1:49:39 PM	11.35	6.45	351.54
Run 2 , Run 5	1:49:49 PM	11.19	6.54	354.63
Run 2 , Run 5	1:49:59 PM	11.09	6.60	361.01
Run 2 , Run 5	1:50:09 PM	10.92	6.71	369.59



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 2 , Run 5	1:50:19 PM	10.81	6.78	377.46
Run 2 , Run 5	1:50:29 PM	10.93	6.72	379.65
Run 2 , Run 5	1:50:39 PM	11.13	6.56	376.36
Run 2 , Run 5	1:50:49 PM	11.01	6.68	371.28
Run 2 , Run 5	1:50:59 PM	11.28	6.47	365.30
Run 2 , Run 5	1:51:09 PM	11.66	6.21	354.53
Run 2 , Run 5	1:51:19 PM	11.61	6.27	345.86
Run 2 , Run 5	1:51:29 PM	11.60	6.26	340.48
Run 2 , Run 5	1:51:39 PM	11.40	6.39	340.88
Run 2 , Run 5	1:51:49 PM	11.43	6.39	343.77
Run 2 , Run 5	1:51:59 PM	11.43	6.38	346.66
Run 2 , Run 5	1:52:09 PM	11.12	6.60	349.95
Run 2 , Run 5	1:52:19 PM	10.98	6.69	357.03
Run 2 , Run 5	1:52:29 PM	10.92	6.72	365.30
Run 2 , Run 5	1:52:39 PM	10.86	6.75	370.98
Run 2 , Run 5	1:52:49 PM	11.01	6.66	373.17
Run 2 , Run 5	1:52:59 PM	11.13	6.59	371.18
Run 2 , Run 5	1:53:09 PM	11.51	6.31	364.40
Run 2 , Run 5	1:53:19 PM	11.64	6.24	353.44
Run 2 , Run 5	1:53:29 PM	11.48	6.35	346.96
Run 2 , Run 5	1:53:39 PM	11.25	6.51	347.95
Run 2 , Run 5	1:53:49 PM	11.28	6.49	352.24
Run 2 , Run 5	1:53:59 PM	11.37	6.42	354.63
Run 2 , Run 5	1:54:09 PM	11.45	6.35	355.83
Run 2 , Run 5	1:54:19 PM	11.55	6.28	354.73
Run 2 , Run 5	1:54:29 PM	11.54	6.31	351.54
Run 2 , Run 5	1:54:39 PM	11.54	6.31	349.75
Run 2 , Run 5	1:54:49 PM	11.64	6.24	348.55
Run 2 , Run 5	1:54:59 PM	11.65	6.22	346.96
Run 2 , Run 5	1:55:09 PM	11.47	6.35	347.26
Run 2 , Run 5	1:55:19 PM	11.63	6.23	348.05
Run 2 , Run 5	1:55:29 PM	11.62	6.25	346.46
Run 2 , Run 5	1:55:39 PM	11.40	6.41	346.66
Run 2 , Run 5	1:55:49 PM	11.37	6.42	350.25
Run 2 , Run 5	1:55:59 PM	11.39	6.40	352.54
Run 2 , Run 5	1:56:09 PM	11.55	6.28	352.94
Run 2 , Run 5	1:56:19 PM	11.32	6.44	352.74
Run 2 , Run 5	1:56:29 PM	11.30	6.45	355.13
Run 2 , Run 5	1:56:39 PM	11.13	6.59	358.82
Run 2 , Run 5	1:56:49 PM	10.87	6.75	365.70
Run 2 , Run 5	1:56:59 PM	11.03	6.64	371.58
Run 2 , Run 5	1:57:09 PM	11.25	6.49	370.38
Run 2 , Run 5	1:57:19 PM	11.27	6.49	366.20
Run 2 , Run 5	1:57:29 PM	11.15	6.56	364.70
Run 2 , Run 5	1:57:39 PM	11.33	6.44	362.51
Run 2 , Run 5	1:57:49 PM	11.29	6.47	359.42
Run 2 , Run 5	1:57:59 PM	11.54	6.30	355.83
Run 2 , Run 5	1:58:09 PM	11.47	6.36	351.04
Run 2 , Run 5	1:58:19 PM	11.35	6.43	350.05
Run 2 , Run 5	1:58:29 PM	11.22	6.52	353.64
Run 2 , Run 5	1:58:39 PM	11.01	6.67	361.21
Run 2 , Run 5	1:58:49 PM	11.19	6.54	367.39



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 2 , Run 5	1:58:59 PM	11.30	6.47	367.09
Run 2 , Run 5	1:59:09 PM	11.18	6.56	364.60
Run 2 , Run 5	1:59:19 PM	11.24	6.52	362.51
Run 2 , Run 5	1:59:29 PM	11.45	6.35	360.12
Run 2 , Run 5	1:59:39 PM	11.57	6.29	355.43
Run 2 , Run 5	1:59:49 PM	11.61	6.25	351.44
Run 2 , Run 5	1:59:59 PM	11.65	6.25	348.55
Run 2 , Run 5	2:00:09 PM	11.59	6.28	347.56
Run 2 , Run 5	2:00:19 PM	11.59	6.28	346.36
Run 2 , Run 5	2:00:29 PM	11.65	6.25	345.06
Run 2 , Run 5	2:00:39 PM	11.44	6.37	346.46
Run 2 , Run 5	2:00:49 PM	11.46	6.37	349.35
Run 2 , Run 5	2:00:59 PM	11.42	6.38	351.44
Run 2 , Run 5	2:01:09 PM	11.34	6.45	353.64
Run 2 , Run 5	2:01:19 PM	11.19	6.54	357.32
Run 2 , Run 5	2:01:29 PM	11.18	6.55	360.51
Run 2 , Run 5	2:01:39 PM	11.12	6.59	363.90
Run 2 , Run 5	2:01:49 PM	10.94	6.71	370.48
Run 2 , Run 5	2:01:59 PM	11.16	6.55	373.17
Run 2 , Run 5	2:02:09 PM	11.20	6.53	371.08
Run 2 , Run 5	2:02:19 PM	11.13	6.58	368.39
Run 2 , Run 5	2:02:29 PM	11.05	6.64	367.69
Run 2 , Run 5	2:02:39 PM	11.32	6.44	366.20
Run 2 , Run 5	2:02:49 PM	11.44	6.37	361.01
Run 2 , Run 5	2:02:59 PM	11.38	6.42	355.83
Run 2 , Run 5	2:03:09 PM	11.71	6.19	350.65
Run 2 , Run 5	2:03:19 PM	11.75	6.18	343.67
Run 2 , Run 5	2:03:29 PM	11.41	6.40	342.67
Run 2 , Run 5	2:03:39 PM	11.55	6.31	345.16
Run 2 , Run 5	2:03:49 PM	11.58	6.29	347.85
Run 2 , Run 5	2:03:59 PM	11.29	6.50	350.84
Run 2 , Run 5	2:04:09 PM	11.23	6.53	356.73
Run 2 , Run 5	2:04:19 PM	11.24	6.50	362.21
Run 2 , Run 5	2:04:29 PM	11.43	6.38	362.91
Run 2 , Run 5	2:04:39 PM	11.35	6.44	361.61
Run 2 , Run 5	2:04:49 PM	11.25	6.52	361.31
Run 2 , Run 5	2:04:59 PM	11.34	6.45	363.51
Run 2 , Run 5	2:05:09 PM	11.31	6.46	365.30
Run 2 , Run 5	2:05:19 PM	11.27	6.49	365.00
Run 2 , Run 5	2:05:29 PM	11.23	6.53	363.31
Run 2 , Run 5	2:05:39 PM	11.30	6.47	362.21
Run 2 , Run 5	2:05:49 PM	11.38	6.42	360.81
Run 2 , Run 5	2:05:59 PM	11.30	6.48	360.02
Run 2 , Run 5	2:06:09 PM	11.59	6.28	359.22
Run 2 , Run 5	2:06:19 PM	11.51	6.34	354.53
Run 2 , Run 5	2:06:29 PM	11.49	6.33	351.54
Run 2 , Run 5	2:06:39 PM	11.64	6.25	348.15
Run 2 , Run 5	2:06:49 PM	11.28	6.50	349.15
Run 2 , Run 5	2:06:59 PM	11.52	6.33	351.34
Run 2 , Run 5	2:07:09 PM	11.29	6.50	353.34
Run 2 , Run 5	2:07:19 PM	11.09	6.63	358.92
Run 2 , Run 5	2:07:29 PM	11.03	6.66	366.30



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 2 , Run 5	2:07:39 PM	11.18	6.55	370.18
Run 2 , Run 5	2:07:49 PM	11.33	6.46	368.99
Run 2 , Run 5	2:07:59 PM	11.45	6.37	364.00
Run 2 , Run 5	2:08:09 PM	11.34	6.45	359.52
Run 2 , Run 5	2:08:19 PM	11.53	6.31	357.13
Run 2 , Run 5	2:08:29 PM	11.67	6.23	353.44
Run 2 , Run 5	2:08:39 PM	11.71	6.20	348.15
Run 2 , Run 5	2:08:49 PM	11.74	6.18	344.27
Run 2 , Run 5	2:08:59 PM	11.65	6.25	343.37
Run 2 , Run 6	2:09:09 PM	11.58	6.31	344.27
Run 2 , Run 6	2:09:19 PM	11.44	6.38	347.95
Run 2 , Run 6	2:09:29 PM	11.50	6.33	352.04
Run 2 , Run 6	2:09:39 PM	11.26	6.52	356.13
Run 2 , Run 6	2:09:49 PM	11.12	6.62	362.01
Run 2 , Run 6	2:09:59 PM	11.13	6.60	367.89
Run 2 , Run 6	2:10:09 PM	11.24	6.52	368.59
Run 2 , Run 6	2:10:19 PM	11.26	6.50	367.99
Run 2 , Run 6	2:10:29 PM	11.45	6.37	364.00
Run 2 , Run 6	2:10:39 PM	11.34	6.44	360.41
Run 2 , Run 6	2:10:49 PM	11.30	6.46	359.42
Run 2 , Run 6	2:10:59 PM	11.32	6.46	359.52
Run 2 , Run 6	2:11:09 PM	11.34	6.44	360.41
Run 2 , Run 6	2:11:19 PM	11.34	6.45	359.82
Run 2 , Run 6	2:11:29 PM	11.42	6.38	358.02
Run 2 , Run 6	2:11:39 PM	11.32	6.46	356.63
Run 2 , Run 6	2:11:49 PM	11.23	6.53	358.02
Run 2 , Run 6	2:11:59 PM	11.12	6.60	360.51
Run 2 , Run 6	2:12:09 PM	11.30	6.46	363.60
Run 2 , Run 6	2:12:19 PM	11.51	6.32	361.91
Run 2 , Run 6	2:12:29 PM	11.57	6.30	355.93
Run 2 , Run 6	2:12:39 PM	11.44	6.38	351.94
Run 2 , Run 6	2:12:49 PM	11.51	6.33	350.15
Run 2 , Run 6	2:12:59 PM	11.52	6.34	349.35
Run 2 , Run 6	2:13:09 PM	11.62	6.25	349.15
Run 2 , Run 6	2:13:19 PM	11.71	6.19	348.25
Run 2 , Run 6	2:13:29 PM	11.47	6.37	347.95
Run 2 , Run 6	2:13:39 PM	11.38	6.43	352.24
Run 2 , Run 6	2:13:49 PM	11.35	6.46	356.83
Run 2 , Run 6	2:13:59 PM	11.25	6.53	360.71
Run 2 , Run 6	2:14:09 PM	11.13	6.61	365.90
Run 2 , Run 6	2:14:19 PM	11.16	6.58	370.58
Run 2 , Run 6	2:14:29 PM	10.92	6.74	374.07
Run 2 , Run 6	2:14:39 PM	10.91	6.76	379.36
Run 2 , Run 6	2:14:49 PM	11.12	6.61	380.95
Run 2 , Run 6	2:14:59 PM	10.95	6.74	379.95
Run 2 , Run 6	2:15:09 PM	10.90	6.75	381.25
Run 2 , Run 6	2:15:19 PM	11.29	6.49	378.96
Run 2 , Run 6	2:15:29 PM	11.23	6.53	373.57
Run 2 , Run 6	2:15:39 PM	11.22	6.56	368.69
Run 2 , Run 6	2:15:49 PM	11.19	6.56	365.10
Run 2 , Run 6	2:15:59 PM	11.35	6.44	363.21
Run 2 , Run 6	2:16:09 PM	11.38	6.44	359.02



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 2 , Run 6	2:16:19 PM	11.53	6.33	354.03
Run 2 , Run 6	2:16:29 PM	11.61	6.27	349.75
Run 2 , Run 6	2:16:39 PM	11.61	6.28	346.26
Run 2 , Run 6	2:16:49 PM	11.75	6.18	344.56
Run 2 , Run 6	2:16:59 PM	11.80	6.16	342.07
Run 2 , Run 6	2:17:09 PM	11.62	6.26	340.68
Run 2 , Run 6	2:17:19 PM	11.39	6.42	342.87
Run 2 , Run 6	2:17:29 PM	11.56	6.30	345.76
Run 2 , Run 6	2:17:39 PM	11.41	6.42	347.75
Run 2 , Run 6	2:17:49 PM	11.67	6.23	349.05
Run 2 , Run 6	2:17:59 PM	11.61	6.26	348.65
Run 2 , Run 6	2:18:09 PM	11.51	6.34	349.15
Run 2 , Run 6	2:18:19 PM	11.43	6.39	350.45
Run 2 , Run 6	2:18:29 PM	11.58	6.30	352.14
Run 2 , Run 6	2:18:39 PM	11.54	6.33	352.94
Run 2 , Run 6	2:18:49 PM	11.34	6.46	355.03
Run 2 , Run 6	2:18:59 PM	11.32	6.46	358.82
Run 2 , Run 6	2:19:09 PM	11.29	6.49	361.51
Run 2 , Run 6	2:19:19 PM	11.13	6.59	366.30
Run 2 , Run 6	2:19:29 PM	11.06	6.63	372.18
Run 2 , Run 6	2:19:39 PM	11.03	6.66	377.36
Run 2 , Run 6	2:19:49 PM	11.12	6.59	379.45
Run 2 , Run 6	2:19:59 PM	11.16	6.57	378.66
Run 2 , Run 6	2:20:09 PM	11.15	6.58	376.17
Run 2 , Run 6	2:20:19 PM	11.17	6.57	374.27
Run 2 , Run 6	2:20:29 PM	11.52	6.34	367.29
Run 2 , Run 6	2:20:39 PM	11.54	6.32	357.82
Run 2 , Run 6	2:20:49 PM	11.62	6.28	350.55
Run 2 , Run 6	2:20:59 PM	11.61	6.28	346.26
Run 2 , Run 6	2:21:09 PM	11.46	6.38	346.26
Run 2 , Run 6	2:21:19 PM	11.66	6.25	345.96
Run 2 , Run 6	2:21:29 PM	11.63	6.27	345.56
Run 2 , Run 6	2:21:39 PM	11.43	6.40	348.25
Run 2 , Run 6	2:21:49 PM	11.32	6.46	352.34
Run 2 , Run 6	2:21:59 PM	11.52	6.32	355.33
Run 2 , Run 6	2:22:09 PM	11.51	6.34	354.23
Run 2 , Run 6	2:22:19 PM	11.40	6.43	352.34
Run 2 , Run 6	2:22:29 PM	11.77	6.15	349.55
Run 2 , Run 6	2:22:39 PM	11.57	6.30	346.46
Run 2 , Run 6	2:22:49 PM	11.48	6.37	346.56
Run 2 , Run 6	2:22:59 PM	11.51	6.34	348.45
Run 2 , Run 6	2:23:09 PM	11.56	6.32	350.35
Run 2 , Run 6	2:23:19 PM	11.34	6.46	353.64
Run 2 , Run 6	2:23:29 PM	11.25	6.52	360.71
Run 2 , Run 6	2:23:39 PM	11.26	6.51	365.50
Run 2 , Run 6	2:23:49 PM	11.35	6.46	367.89
Run 2 , Run 6	2:23:59 PM	11.36	6.45	367.09
Run 2 , Run 6	2:24:09 PM	11.33	6.46	366.50
Run 2 , Run 6	2:24:19 PM	11.32	6.49	365.60
Run 2 , Run 6	2:24:29 PM	11.21	6.56	365.60
Run 2 , Run 6	2:24:39 PM	11.12	6.61	369.19
Run 2 , Run 6	2:24:49 PM	11.22	6.55	371.98



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Sulfur Dioxide (ppmv dry)
Run 2 , Run 6	2:24:59 PM	11.11	6.62	371.98
Run 2 , Run 6	2:25:09 PM	11.06	6.65	373.27
Run 2 , Run 6	2:25:19 PM	11.16	6.59	373.47
Run 2 , Run 6	2:25:29 PM	11.25	6.51	372.18
Run 2 , Run 6	2:25:39 PM	11.18	6.58	370.08
Run 2 , Run 6	2:25:49 PM	11.24	6.54	368.59
Run 2 , Run 6	2:25:59 PM	11.35	6.45	366.20
Run 2 , Run 6	2:26:09 PM	11.31	6.49	362.51
Run 2 , Run 6	2:26:19 PM	11.31	6.50	361.61
Run 2 , Run 6	2:26:29 PM	11.25	6.53	361.81
Run 2 , Run 6	2:26:39 PM	11.43	6.40	360.51
Run 2 , Run 6	2:26:49 PM	11.37	6.45	357.62
Run 2 , Run 6	2:26:59 PM	11.41	6.42	356.73
Run 6	2:27:09 PM	11.31	6.50	356.33
Run 6	2:27:19 PM	11.25	6.53	358.52
Run 6	2:27:29 PM	11.14	6.62	362.71
Run 6	2:27:39 PM	11.16	6.59	366.79
Run 6	2:27:49 PM	11.03	6.68	371.28
Run 6	2:27:59 PM	11.17	6.59	374.07
Run 6	2:28:09 PM	11.25	6.53	372.48
Run 6	2:28:19 PM	11.25	6.54	370.48
Run 6	2:28:29 PM	11.19	6.57	369.69
Run 6	2:28:39 PM	11.05	6.67	372.98
Run 6	2:28:49 PM	10.87	6.80	378.96
Run 6	2:28:59 PM	10.88	6.77	385.34
Run 6	2:29:09 PM	10.78	6.86	390.32
Run 6	2:29:19 PM	10.88	6.76	392.71
Run 6	2:29:29 PM	10.86	6.79	392.02
Run 6	2:29:39 PM	10.86	6.80	390.62
Run 6	2:29:49 PM	10.77	6.86	391.12
Run 6	2:29:59 PM	10.95	6.74	391.32
System Bias Mid - CC15587	2:36:09 PM	0.05	0.15	471.37
System Bias Mid - CC15587	2:36:19 PM	0.03	0.14	471.56
System Bias Mid - CC15587	2:36:29 PM	0.03	0.14	471.66
System Bias Zero - Nitrogen	2:43:59 PM	0.02	0.12	16.00
System Bias Zero - Nitrogen	2:44:09 PM	0.02	0.12	15.60
System Bias Zero - Nitrogen	2:44:19 PM	0.02	0.12	15.60
System Bias Zero - Nitrogen	2:44:29 PM	0.03	0.12	15.60
Cal Error Zero - Nitrogen	3:34:09 PM	0.00	-0.42	5.43
Cal Error Zero - Nitrogen	3:34:19 PM	-0.01	-0.43	5.83
Cal Error Zero - Nitrogen	3:34:29 PM	0.00	-0.44	5.43
Cal Error Hi - CC438688	3:39:59 PM	-0.01	-0.04	4.44
Cal Error Hi - CC438688	3:40:09 PM	-0.01	-0.04	4.34
Cal Error Hi - CC438688	3:40:19 PM	0.00	-0.04	4.64
Cal Error Mid - CC740532	3:43:09 PM	0.00	-0.05	4.44
Cal Error Mid - CC740532	3:43:19 PM	-0.01	-0.05	4.04
Cal Error Mid - CC740532	3:43:29 PM	-0.01	-0.05	4.04
Cal Error Hi - CC4981	3:45:39 PM	19.14	18.95	4.04
Cal Error Hi - CC4981	3:45:49 PM	19.14	18.96	3.74
Cal Error Hi - CC4981	3:45:59 PM	19.14	18.95	4.04
Cal Error Hi - CC4981	3:46:09 PM	19.14	18.97	4.04
Cal Error Mid - CC359583	3:47:59 PM	11.02	9.80	4.14



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Sulfur Dioxide (ppmv dry)
Cal Error Mid - CC359583	3:48:09 PM	11.02	9.80	3.84
Cal Error Mid - CC359583	3:48:19 PM	11.01	9.79	3.94
Cal Error Mid - CC359583	3:48:29 PM	11.01	9.79	4.24
System Bias Zero - Nitrogen	3:52:59 PM	0.03	0.11	19.59
System Bias Zero - Nitrogen	3:53:09 PM	0.03	0.11	19.19
System Bias Zero - Nitrogen	3:53:19 PM	0.03	0.11	19.39
System Bias Zero - Nitrogen	3:53:29 PM	0.03	0.11	19.29
System Bias Zero - Nitrogen	3:53:39 PM	0.03	0.11	18.99
System Bias Mid - CC359583	3:55:09 PM	10.81	9.76	16.70
System Bias Mid - CC359583	3:55:19 PM	10.82	9.78	16.20
System Bias Mid - CC359583	3:55:29 PM	10.82	9.80	16.20
System Bias Mid - CC359583	3:55:39 PM	10.82	9.79	15.60
System Bias Mid - CC740532	3:58:59 PM	0.03	0.14	14.50
System Bias Mid - CC740532	3:59:09 PM	0.03	0.14	13.91
System Bias Mid - CC740532	3:59:19 PM	0.03	0.14	13.81
System Bias Mid - CC740532	3:59:29 PM	0.03	0.14	13.81
System Bias Mid - CC15587	4:03:59 PM	0.03	0.13	466.08
System Bias Mid - CC15587	4:04:09 PM	0.03	0.13	466.38
System Bias Mid - CC15587	4:04:19 PM	0.03	0.13	467.28
System Bias Mid - CC15587	4:04:29 PM	0.03	0.13	467.48
Run 3 , Run 7	4:24:09 PM	10.35	7.20	349.15
Run 3 , Run 7	4:24:19 PM	10.13	7.32	361.01
Run 3 , Run 7	4:24:29 PM	10.11	7.37	374.87
Run 3 , Run 7	4:24:39 PM	9.96	7.50	383.74
Run 3 , Run 7	4:24:49 PM	9.87	7.61	385.34
Run 3 , Run 7	4:24:59 PM	10.11	7.41	378.36
Run 3 , Run 7	4:25:09 PM	10.55	7.07	360.91
Run 3 , Run 7	4:25:19 PM	10.63	7.00	347.46
Run 3 , Run 7	4:25:29 PM	10.36	7.20	346.06
Run 3 , Run 7	4:25:39 PM	10.20	7.31	354.43
Run 3 , Run 7	4:25:49 PM	10.01	7.45	369.79
Run 3 , Run 7	4:25:59 PM	9.58	7.76	389.82
Run 3 , Run 7	4:26:09 PM	9.66	7.68	406.97
Run 3 , Run 7	4:26:19 PM	9.70	7.67	416.74
Run 3 , Run 7	4:26:29 PM	9.75	7.61	423.72
Run 3 , Run 7	4:26:39 PM	9.95	7.47	421.32
Run 3 , Run 7	4:26:49 PM	10.21	7.28	406.17
Run 3 , Run 7	4:26:59 PM	10.02	7.41	392.02
Run 3 , Run 7	4:27:09 PM	9.84	7.54	389.52
Run 3 , Run 7	4:27:19 PM	9.72	7.62	394.11
Run 3 , Run 7	4:27:29 PM	9.76	7.57	398.49
Run 3 , Run 7	4:27:39 PM	9.67	7.64	396.90
Run 3 , Run 7	4:27:49 PM	9.72	7.59	390.72
Run 3 , Run 7	4:27:59 PM	9.66	7.60	381.55
Run 3 , Run 7	4:28:09 PM	9.50	7.71	376.26
Run 3 , Run 7	4:28:19 PM	9.48	7.71	376.07
Run 3 , Run 7	4:28:29 PM	9.45	7.71	379.55
Run 3 , Run 7	4:28:39 PM	9.63	7.61	377.96
Run 3 , Run 7	4:28:49 PM	9.50	7.67	373.07
Run 3 , Run 7	4:28:59 PM	9.43	7.71	372.98
Run 3 , Run 7	4:29:09 PM	9.34	7.78	379.85
Run 3 , Run 7	4:29:19 PM	9.24	7.82	394.81



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3 , Run 7	4:29:29 PM	9.43	7.69	404.78
Run 3 , Run 7	4:29:39 PM	9.43	7.71	401.88
Run 3 , Run 7	4:29:49 PM	9.46	7.72	396.00
Run 3 , Run 7	4:29:59 PM	9.36	7.77	396.50
Run 3 , Run 7	4:30:09 PM	8.97	8.05	406.47
Run 3 , Run 7	4:30:19 PM	8.89	8.10	420.03
Run 3 , Run 7	4:30:29 PM	8.94	8.05	428.30
Run 3 , Run 7	4:30:39 PM	9.03	7.99	429.20
Run 3 , Run 7	4:30:49 PM	9.22	7.87	423.42
Run 3 , Run 7	4:30:59 PM	9.07	7.98	420.63
Run 3 , Run 7	4:31:09 PM	9.03	7.97	422.82
Run 3 , Run 7	4:31:19 PM	9.29	7.81	421.92
Run 3 , Run 7	4:31:29 PM	9.14	7.92	420.33
Run 3 , Run 7	4:31:39 PM	9.07	7.96	428.90
Run 3 , Run 7	4:31:49 PM	8.90	8.08	445.95
Run 3 , Run 7	4:31:59 PM	8.88	8.07	461.40
Run 3 , Run 7	4:32:09 PM	9.01	8.01	467.98
Run 3 , Run 7	4:32:19 PM	8.83	8.14	471.86
Run 3 , Run 7	4:32:29 PM	9.42	7.69	466.38
Run 3 , Run 7	4:32:39 PM	9.46	7.68	439.57
Run 3 , Run 7	4:32:49 PM	9.29	7.80	412.15
Run 3 , Run 7	4:32:59 PM	9.37	7.73	397.70
Run 3 , Run 7	4:33:09 PM	9.31	7.77	395.40
Run 3 , Run 7	4:33:19 PM	9.46	7.68	396.90
Run 3 , Run 7	4:33:29 PM	9.33	7.81	398.69
Run 3 , Run 7	4:33:39 PM	8.65	8.29	412.55
Run 3 , Run 7	4:33:49 PM	8.70	8.25	433.09
Run 3 , Run 7	4:33:59 PM	8.78	8.17	445.85
Run 3 , Run 7	4:34:09 PM	8.69	8.23	452.42
Run 3 , Run 7	4:34:19 PM	8.78	8.16	457.41
Run 3 , Run 7	4:34:29 PM	8.98	8.00	455.81
Run 3 , Run 7	4:34:39 PM	9.04	7.96	447.84
Run 3 , Run 7	4:34:49 PM	8.95	8.01	446.44
Run 3 , Run 7	4:34:59 PM	9.08	7.91	446.94
Run 3 , Run 7	4:35:09 PM	9.07	7.92	443.75
Run 3 , Run 7	4:35:19 PM	8.89	8.03	437.67
Run 3 , Run 7	4:35:29 PM	8.85	8.08	426.31
Run 3 , Run 7	4:35:39 PM	8.58	8.24	428.60
Run 3 , Run 7	4:35:49 PM	8.68	8.15	444.85
Run 3 , Run 7	4:35:59 PM	8.94	7.96	449.63
Run 3 , Run 7	4:36:09 PM	8.86	8.01	443.05
Run 3 , Run 7	4:36:19 PM	8.69	8.14	443.05
Run 3 , Run 7	4:36:29 PM	8.65	8.15	459.10
Run 3 , Run 7	4:36:39 PM	8.50	8.23	482.43
Run 3 , Run 7	4:36:49 PM	8.56	8.20	497.78
Run 3 , Run 7	4:36:59 PM	8.57	8.17	501.17
Run 3 , Run 7	4:37:09 PM	8.52	8.22	493.69
Run 3 , Run 7	4:37:19 PM	8.30	8.37	489.91
Run 3 , Run 7	4:37:29 PM	8.43	8.25	494.79
Run 3 , Run 7	4:37:39 PM	8.39	8.30	506.06
Run 3 , Run 7	4:37:49 PM	8.20	8.47	521.61
Run 3 , Run 7	4:37:59 PM	8.00	8.60	539.95



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3 , Run 7	4:38:09 PM	7.83	8.69	563.08
Run 3 , Run 7	4:38:19 PM	8.10	8.51	576.63
Run 3 , Run 7	4:38:29 PM	7.94	8.64	577.73
Run 3 , Run 7	4:38:39 PM	7.96	8.61	580.22
Run 3 , Run 7	4:38:49 PM	7.86	8.67	584.11
Run 3 , Run 7	4:38:59 PM	7.53	8.90	590.19
Run 3 , Run 7	4:39:09 PM	7.64	8.81	598.66
Run 3 , Run 7	4:39:19 PM	7.67	8.78	603.55
Run 3 , Run 7	4:39:29 PM	7.91	8.64	591.79
Run 3 , Run 7	4:39:39 PM	7.96	8.60	573.44
Run 3 , Run 7	4:39:49 PM	8.08	8.53	549.72
Run 3 , Run 7	4:39:59 PM	7.93	8.64	532.87
Run 3 , Run 7	4:40:09 PM	7.81	8.74	526.19
Run 3 , Run 7	4:40:19 PM	7.97	8.57	528.09
Run 3 , Run 7	4:40:29 PM	7.97	8.60	537.16
Run 3 , Run 7	4:40:39 PM	7.83	8.69	555.80
Run 3 , Run 7	4:40:49 PM	7.81	8.69	579.42
Run 3 , Run 7	4:40:59 PM	7.87	8.66	607.14
Run 3 , Run 7	4:41:09 PM	7.75	8.72	644.62
Run 3 , Run 7	4:41:19 PM	7.62	8.84	680.51
Run 3 , Run 7	4:41:29 PM	7.36	9.04	709.32
Run 3 , Run 7	4:41:39 PM	7.32	9.06	729.05
Run 3 , Run 7	4:41:49 PM	7.68	8.79	731.35
Run 3 , Run 7	4:41:59 PM	7.83	8.69	710.51
Run 3 , Run 7	4:42:09 PM	7.96	8.58	689.78
Run 3 , Run 7	4:42:19 PM	8.01	8.56	672.13
Run 3 , Run 7	4:42:29 PM	8.11	8.45	649.21
Run 3 , Run 7	4:42:39 PM	8.02	8.52	624.78
Run 3 , Run 7	4:42:49 PM	7.93	8.62	604.45
Run 3 , Run 7	4:42:59 PM	8.07	8.50	581.02
Run 3 , Run 7	4:43:09 PM	7.96	8.58	554.40
Run 3 , Run 7	4:43:19 PM	7.74	8.71	534.27
Run 3 , Run 7	4:43:29 PM	7.63	8.74	527.69
Run 3 , Run 7	4:43:39 PM	7.46	8.87	535.26
Run 3 , Run 7	4:43:49 PM	7.29	8.98	558.39
Run 3 , Run 7	4:43:59 PM	7.42	8.86	582.22
Run 3 , Run 7	4:44:09 PM	7.38	8.90	595.27
Run 3 , Run 7	4:44:19 PM	7.61	8.72	598.96
Run 3 , Run 7	4:44:29 PM	7.78	8.62	591.39
Run 3 , Run 7	4:44:39 PM	7.96	8.49	578.23
Run 3 , Run 7	4:44:49 PM	7.57	8.76	572.75
Run 3 , Run 7	4:44:59 PM	7.56	8.74	582.22
Run 3 , Run 8	4:45:09 PM	7.60	8.75	591.49
Run 3 , Run 8	4:45:19 PM	7.19	9.03	604.75
Run 3 , Run 8	4:45:29 PM	7.25	8.97	624.78
Run 3 , Run 8	4:45:39 PM	7.13	9.06	638.24
Run 3 , Run 8	4:45:49 PM	7.33	8.93	633.06
Run 3 , Run 8	4:45:59 PM	7.38	8.91	612.52
Run 3 , Run 8	4:46:09 PM	7.54	8.79	586.20
Run 3 , Run 8	4:46:19 PM	7.43	8.86	561.98
Run 3 , Run 8	4:46:29 PM	7.24	9.00	550.72
Run 3 , Run 8	4:46:39 PM	7.29	8.94	556.70



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3 , Run 8	4:46:49 PM	7.52	8.78	559.59
Run 3 , Run 8	4:46:59 PM	7.37	8.87	562.68
Run 3 , Run 8	4:47:09 PM	7.40	8.85	568.56
Run 3 , Run 8	4:47:19 PM	7.32	8.90	582.91
Run 3 , Run 8	4:47:29 PM	7.31	8.93	600.56
Run 3 , Run 8	4:47:39 PM	6.98	9.14	619.30
Run 3 , Run 8	4:47:49 PM	7.12	9.04	639.44
Run 3 , Run 8	4:47:59 PM	7.13	9.00	654.39
Run 3 , Run 8	4:48:09 PM	6.99	9.11	660.27
Run 3 , Run 8	4:48:19 PM	6.95	9.11	664.76
Run 3 , Run 8	4:48:29 PM	7.14	9.01	662.66
Run 3 , Run 8	4:48:39 PM	7.16	8.99	655.29
Run 3 , Run 8	4:48:49 PM	7.27	8.93	647.11
Run 3 , Run 8	4:48:59 PM	7.27	8.95	635.85
Run 3 , Run 8	4:49:09 PM	6.92	9.19	631.66
Run 3 , Run 8	4:49:19 PM	7.18	9.02	620.60
Run 3 , Run 8	4:49:29 PM	7.12	9.07	599.56
Run 3 , Run 8	4:49:39 PM	7.29	8.92	575.74
Run 3 , Run 8	4:49:49 PM	7.10	9.04	553.61
Run 3 , Run 8	4:49:59 PM	6.95	9.15	537.66
Run 3 , Run 8	4:50:09 PM	6.94	9.13	540.05
Run 3 , Run 8	4:50:19 PM	7.28	8.91	546.83
Run 3 , Run 8	4:50:29 PM	7.17	9.01	536.16
Run 3 , Run 8	4:50:39 PM	6.77	9.26	535.66
Run 3 , Run 8	4:50:49 PM	6.39	9.51	565.27
Run 3 , Run 8	4:50:59 PM	5.94	9.78	630.46
Run 3 , Run 8	4:51:09 PM	6.13	9.63	702.34
Run 3 , Run 8	4:51:19 PM	6.12	9.63	761.75
Run 3 , Run 8	4:51:29 PM	6.23	9.56	803.52
Run 3 , Run 8	4:51:39 PM	6.15	9.60	832.83
Run 3 , Run 8	4:51:49 PM	6.08	9.65	869.71
Run 3 , Run 8	4:51:59 PM	5.96	9.72	904.00
Run 3 , Run 8	4:52:09 PM	6.20	9.53	905.60
Run 3 , Run 8	4:52:19 PM	7.18	8.87	838.61
Run 3 , Run 8	4:52:29 PM	7.20	8.93	732.14
Run 3 , Run 8	4:52:39 PM	6.62	9.28	672.43
Run 3 , Run 8	4:52:49 PM	6.40	9.43	666.65
Run 3 , Run 8	4:52:59 PM	6.01	9.70	691.87
Run 3 , Run 8	4:53:09 PM	5.87	9.80	729.15
Run 3 , Run 8	4:53:19 PM	6.15	9.60	748.89
Run 3 , Run 8	4:53:29 PM	6.24	9.53	740.82
Run 3 , Run 8	4:53:39 PM	6.31	9.51	719.38
Run 3 , Run 8	4:53:49 PM	6.05	9.66	715.00
Run 3 , Run 8	4:53:59 PM	6.20	9.55	723.27
Run 3 , Run 8	4:54:09 PM	6.24	9.53	726.66
Run 3 , Run 8	4:54:19 PM	6.46	9.38	711.71
Run 3 , Run 8	4:54:29 PM	6.54	9.33	681.00
Run 3 , Run 8	4:54:39 PM	6.35	9.45	648.61
Run 3 , Run 8	4:54:49 PM	6.76	9.16	620.30
Run 3 , Run 8	4:54:59 PM	6.86	9.12	592.28
Run 3 , Run 8	4:55:09 PM	6.72	9.21	583.11
Run 3 , Run 8	4:55:19 PM	7.00	9.00	585.31



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3 , Run 8	4:55:29 PM	7.21	8.88	580.42
Run 3 , Run 8	4:55:39 PM	6.60	9.27	585.01
Run 3 , Run 8	4:55:49 PM	6.26	9.50	614.71
Run 3 , Run 8	4:55:59 PM	6.31	9.44	650.80
Run 3 , Run 8	4:56:09 PM	6.40	9.40	665.45
Run 3 , Run 8	4:56:19 PM	6.35	9.45	665.45
Run 3 , Run 8	4:56:29 PM	6.45	9.36	666.25
Run 3 , Run 8	4:56:39 PM	6.54	9.31	658.08
Run 3 , Run 8	4:56:49 PM	6.55	9.31	641.03
Run 3 , Run 8	4:56:59 PM	6.57	9.28	622.39
Run 3 , Run 8	4:57:09 PM	6.80	9.12	608.13
Run 3 , Run 8	4:57:19 PM	6.94	9.03	589.59
Run 3 , Run 8	4:57:29 PM	6.87	9.09	573.74
Run 3 , Run 8	4:57:39 PM	7.05	8.96	564.17
Run 3 , Run 8	4:57:49 PM	7.02	9.01	558.99
Run 3 , Run 8	4:57:59 PM	6.90	9.06	559.79
Run 3 , Run 8	4:58:09 PM	6.92	9.06	559.69
Run 3 , Run 8	4:58:19 PM	7.05	8.96	552.31
Run 3 , Run 8	4:58:29 PM	7.01	8.99	544.83
Run 3 , Run 8	4:58:39 PM	7.00	9.00	539.45
Run 3 , Run 8	4:58:49 PM	6.83	9.14	538.95
Run 3 , Run 8	4:58:59 PM	6.64	9.24	545.33
Run 3 , Run 8	4:59:09 PM	6.59	9.27	555.00
Run 3 , Run 8	4:59:19 PM	6.73	9.17	557.29
Run 3 , Run 8	4:59:29 PM	6.83	9.11	549.32
Run 3 , Run 8	4:59:39 PM	6.77	9.15	540.85
Run 3 , Run 8	4:59:49 PM	6.98	9.01	528.29
Run 3 , Run 8	4:59:59 PM	6.80	9.11	523.10
Run 3 , Run 8	5:00:09 PM	6.78	9.14	528.59
Run 3 , Run 8	5:00:19 PM	6.79	9.13	533.37
Run 3 , Run 8	5:00:29 PM	6.85	9.08	531.87
Run 3 , Run 8	5:00:39 PM	6.71	9.19	530.68
Run 3 , Run 8	5:00:49 PM	6.69	9.20	539.85
Run 3 , Run 8	5:00:59 PM	6.80	9.12	548.42
Run 3 , Run 8	5:01:09 PM	6.79	9.12	545.93
Run 3 , Run 8	5:01:19 PM	6.83	9.08	537.46
Run 3 , Run 8	5:01:29 PM	6.82	9.10	538.85
Run 3 , Run 8	5:01:39 PM	6.88	9.05	545.93
Run 3 , Run 8	5:01:49 PM	7.05	8.95	546.33
Run 3 , Run 8	5:01:59 PM	6.86	9.07	543.24
Run 3 , Run 8	5:02:09 PM	6.90	9.05	537.46
Run 3 , Run 8	5:02:19 PM	7.08	8.93	517.92
Run 3 , Run 8	5:02:29 PM	6.87	9.07	504.96
Run 3 , Run 8	5:02:39 PM	6.62	9.24	512.73
Run 3 , Run 8	5:02:49 PM	6.59	9.25	530.68
Run 3 , Run 8	5:02:59 PM	6.69	9.18	543.54
Run 3 , Run 8	5:03:09 PM	6.92	9.03	541.44
Run 3 , Run 8	5:03:19 PM	7.11	8.92	521.61
Run 3 , Run 8	5:03:29 PM	7.51	8.64	497.68
Run 3 , Run 8	5:03:39 PM	7.43	8.73	477.75
Run 3 , Run 8	5:03:49 PM	7.36	8.75	472.26
Run 3 , Run 8	5:03:59 PM	7.30	8.80	477.84



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3 , Run 8	5:04:09 PM	7.10	8.92	496.88
Run 3 , Run 8	5:04:19 PM	6.98	9.00	524.40
Run 3 , Run 8	5:04:29 PM	6.95	9.01	551.81
Run 3 , Run 8	5:04:39 PM	6.82	9.09	572.65
Run 3 , Run 8	5:04:49 PM	6.82	9.08	588.00
Run 3 , Run 8	5:04:59 PM	7.03	8.94	595.67
Run 3 , Run 8	5:05:09 PM	7.27	8.79	588.60
Run 3 , Run 8	5:05:19 PM	7.45	8.67	562.28
Run 3 , Run 8	5:05:29 PM	7.64	8.54	526.09
Run 3 , Run 8	5:05:39 PM	7.96	8.35	488.51
Run 3 , Run 8	5:05:49 PM	7.37	8.77	469.47
Run 3 , Run 8	5:05:59 PM	7.19	8.87	476.65
Run 3 , Run 9	5:06:09 PM	7.05	8.95	495.59
Run 3 , Run 9	5:06:19 PM	7.24	8.83	512.14
Run 3 , Run 9	5:06:29 PM	6.99	8.98	524.70
Run 3 , Run 9	5:06:39 PM	6.91	9.03	536.86
Run 3 , Run 9	5:06:49 PM	6.87	9.07	549.12
Run 3 , Run 9	5:06:59 PM	7.08	8.91	556.40
Run 3 , Run 9	5:07:09 PM	6.98	8.99	552.71
Run 3 , Run 9	5:07:19 PM	6.76	9.14	542.24
Run 3 , Run 9	5:07:29 PM	6.72	9.15	541.94
Run 3 , Run 9	5:07:39 PM	6.73	9.14	549.32
Run 3 , Run 9	5:07:49 PM	7.48	8.63	541.54
Run 3 , Run 9	5:07:59 PM	7.73	8.48	514.03
Run 3 , Run 9	5:08:09 PM	7.73	8.48	485.92
Run 3 , Run 9	5:08:19 PM	7.45	8.70	473.16
Run 3 , Run 9	5:08:29 PM	7.10	8.91	482.63
Run 3 , Run 9	5:08:39 PM	7.08	8.92	502.67
Run 3 , Run 9	5:08:49 PM	7.20	8.84	515.43
Run 3 , Run 9	5:08:59 PM	7.64	8.52	508.35
Run 3 , Run 9	5:09:09 PM	7.43	8.69	489.51
Run 3 , Run 9	5:09:19 PM	7.43	8.67	478.24
Run 3 , Run 9	5:09:29 PM	7.18	8.86	481.63
Run 3 , Run 9	5:09:39 PM	7.31	8.74	494.19
Run 3 , Run 9	5:09:49 PM	7.35	8.75	501.77
Run 3 , Run 9	5:09:59 PM	7.43	8.68	505.46
Run 3 , Run 9	5:10:09 PM	7.49	8.64	505.66
Run 3 , Run 9	5:10:19 PM	7.60	8.55	498.98
Run 3 , Run 9	5:10:29 PM	7.33	8.76	491.00
Run 3 , Run 9	5:10:39 PM	7.46	8.66	488.11
Run 3 , Run 9	5:10:49 PM	7.05	8.91	494.69
Run 3 , Run 9	5:10:59 PM	7.05	8.91	510.04
Run 3 , Run 9	5:11:09 PM	7.23	8.79	521.81
Run 3 , Run 9	5:11:19 PM	7.14	8.85	522.40
Run 3 , Run 9	5:11:29 PM	7.08	8.90	518.22
Run 3 , Run 9	5:11:39 PM	7.30	8.75	507.75
Run 3 , Run 9	5:11:49 PM	7.48	8.64	495.59
Run 3 , Run 9	5:11:59 PM	7.66	8.52	479.44
Run 3 , Run 9	5:12:09 PM	7.80	8.44	462.99
Run 3 , Run 9	5:12:19 PM	7.44	8.70	461.70
Run 3 , Run 9	5:12:29 PM	7.17	8.87	479.54
Run 3 , Run 9	5:12:39 PM	7.34	8.74	498.78



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3 , Run 9	5:12:49 PM	7.48	8.66	503.26
Run 3 , Run 9	5:12:59 PM	7.49	8.66	499.48
Run 3 , Run 9	5:13:09 PM	7.40	8.72	500.37
Run 3 , Run 9	5:13:19 PM	7.17	8.87	511.34
Run 3 , Run 9	5:13:29 PM	6.98	9.00	527.79
Run 3 , Run 9	5:13:39 PM	7.08	8.91	535.26
Run 3 , Run 9	5:13:49 PM	7.22	8.84	533.07
Run 3 , Run 9	5:13:59 PM	7.05	8.94	537.86
Run 3 , Run 9	5:14:09 PM	7.13	8.89	551.21
Run 3 , Run 9	5:14:19 PM	7.09	8.94	562.68
Run 3 , Run 9	5:14:29 PM	6.71	9.17	579.23
Run 3 , Run 9	5:14:39 PM	6.75	9.13	598.76
Run 3 , Run 9	5:14:49 PM	6.87	9.05	605.44
Run 3 , Run 9	5:14:59 PM	7.18	8.84	594.38
Run 3 , Run 9	5:15:09 PM	7.24	8.83	571.35
Run 3 , Run 9	5:15:19 PM	7.27	8.81	542.94
Run 3 , Run 9	5:15:29 PM	7.24	8.83	517.92
Run 3 , Run 9	5:15:39 PM	7.20	8.83	506.65
Run 3 , Run 9	5:15:49 PM	7.37	8.74	505.66
Run 3 , Run 9	5:15:59 PM	7.24	8.82	509.94
Run 3 , Run 9	5:16:09 PM	7.23	8.82	517.62
Run 3 , Run 9	5:16:19 PM	7.46	8.68	520.41
Run 3 , Run 9	5:16:29 PM	7.42	8.71	518.02
Run 3 , Run 9	5:16:39 PM	7.46	8.67	513.93
Run 3 , Run 9	5:16:49 PM	7.23	8.83	509.94
Run 3 , Run 9	5:16:59 PM	7.20	8.86	512.24
Run 3 , Run 9	5:17:09 PM	7.46	8.68	513.93
Run 3 , Run 9	5:17:19 PM	7.51	8.66	505.46
Run 3 , Run 9	5:17:29 PM	7.72	8.52	492.30
Run 3 , Run 9	5:17:39 PM	7.88	8.41	474.85
Run 3 , Run 9	5:17:49 PM	7.80	8.48	462.39
Run 3 , Run 9	5:17:59 PM	7.81	8.47	457.91
Run 3 , Run 9	5:18:09 PM	7.63	8.58	460.30
Run 3 , Run 9	5:18:19 PM	7.44	8.73	466.78
Run 3 , Run 9	5:18:29 PM	7.55	8.63	473.96
Run 3 , Run 9	5:18:39 PM	7.58	8.61	474.56
Run 3 , Run 9	5:18:49 PM	7.67	8.57	473.36
Run 3 , Run 9	5:18:59 PM	7.74	8.52	474.75
Run 3 , Run 9	5:19:09 PM	7.72	8.55	477.05
Run 3 , Run 9	5:19:19 PM	7.73	8.53	480.44
Run 3 , Run 9	5:19:29 PM	7.71	8.54	485.02
Run 3 , Run 9	5:19:39 PM	7.61	8.60	494.39
Run 3 , Run 9	5:19:49 PM	7.56	8.63	503.46
Run 3 , Run 9	5:19:59 PM	7.69	8.55	509.74
Run 3 , Run 9	5:20:09 PM	7.74	8.52	510.24
Run 3 , Run 9	5:20:19 PM	7.52	8.66	505.76
Run 3 , Run 9	5:20:29 PM	7.60	8.60	501.17
Run 3 , Run 9	5:20:39 PM	7.87	8.42	491.50
Run 3 , Run 9	5:20:49 PM	7.81	8.46	480.44
Run 3 , Run 9	5:20:59 PM	7.73	8.53	471.66
Run 3 , Run 9	5:21:09 PM	7.67	8.56	469.07
Run 3 , Run 9	5:21:19 PM	7.69	8.53	476.15



# CEMS RAW DATA

## 29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Sulfur Dioxide (ppmv dry)
Run 3 , Run 9	5:21:29 PM	7.82	8.46	484.72
Run 3 , Run 9	5:21:39 PM	7.95	8.38	482.53
Run 3 , Run 9	5:21:49 PM	7.94	8.39	477.65
Run 3 , Run 9	5:21:59 PM	7.89	8.42	477.94
Run 3 , Run 9	5:22:09 PM	7.85	8.46	481.43
Run 3 , Run 9	5:22:19 PM	7.60	8.62	490.01
Run 3 , Run 9	5:22:29 PM	7.64	8.58	495.79
Run 3 , Run 9	5:22:39 PM	7.65	8.58	491.80
Run 3 , Run 9	5:22:49 PM	7.84	8.46	479.84
Run 3 , Run 9	5:22:59 PM	7.78	8.48	470.17
Run 3 , Run 9	5:23:09 PM	7.66	8.58	471.07
Run 3 , Run 9	5:23:19 PM	7.81	8.48	479.04
Run 3 , Run 9	5:23:29 PM	7.79	8.50	481.33
Run 3 , Run 9	5:23:39 PM	7.57	8.63	479.74
Run 3 , Run 9	5:23:49 PM	7.75	8.52	476.35
Run 3 , Run 9	5:23:59 PM	7.72	8.54	471.86
Run 9	5:24:09 PM	7.60	8.61	468.77
Run 9	5:24:19 PM	7.87	8.43	467.88
Run 9	5:24:29 PM	7.72	8.54	467.28
Run 9	5:24:39 PM	7.77	8.50	467.88
Run 9	5:24:49 PM	7.69	8.55	474.06
Run 9	5:24:59 PM	8.02	8.33	477.75
Run 9	5:25:09 PM	7.88	8.44	481.63
Run 9	5:25:19 PM	7.54	8.66	492.90
Run 9	5:25:29 PM	7.78	8.49	507.85
Run 9	5:25:39 PM	7.64	8.58	516.22
Run 9	5:25:49 PM	7.68	8.53	517.02
Run 9	5:25:59 PM	7.87	8.43	505.96
Run 9	5:26:09 PM	7.63	8.60	491.00
Run 9	5:26:19 PM	7.71	8.54	484.22
Run 9	5:26:29 PM	7.83	8.44	483.13
Run 9	5:26:39 PM	8.12	8.26	477.75
Run 9	5:26:49 PM	8.02	8.36	470.97
Run 9	5:26:59 PM	7.63	8.59	480.44
System Bias Mid - CC15587	5:32:19 PM	0.05	0.19	472.26
System Bias Mid - CC15587	5:32:29 PM	0.05	0.19	472.16
System Bias Mid - CC15587	5:32:39 PM	0.05	0.19	472.26
System Bias Mid - CC15587	5:32:49 PM	0.03	0.20	472.56
System Bias Mid - CC359583	5:34:59 PM	10.79	9.81	75.01
System Bias Mid - CC359583	5:35:09 PM	10.80	9.83	55.28
System Bias Mid - CC359583	5:35:19 PM	10.80	9.83	45.21
System Bias Mid - CC359583	5:35:29 PM	10.80	9.84	38.83
System Bias Mid - CC740532	5:38:59 PM	0.04	0.20	22.38
System Bias Mid - CC740532	5:39:09 PM	0.05	0.19	22.58
System Bias Mid - CC740532	5:39:19 PM	0.05	0.19	22.18
System Bias Mid - CC740532	5:39:29 PM	0.05	0.19	21.98
System Bias Zero - Nitrogen	5:43:09 PM	0.03	0.18	21.28
System Bias Zero - Nitrogen	5:43:19 PM	0.03	0.18	21.88
System Bias Zero - Nitrogen	5:43:29 PM	0.02	0.18	21.78
System Bias Zero - Nitrogen	5:43:39 PM	0.03	0.18	21.38



**Project:** HHO Vent Stack 6 SO2 RATA Test 2022  
**Facility:** Haverhill  
**Source:** Vent Stack 6  
**Project ID:** 60682866

Corrected Oxygen Concentration					
29-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			C <sub>O</sub>	C <sub>MA</sub> /(C <sub>M</sub> -C <sub>O</sub> )	
NOx Run 1	16:24-17:24	7.70	0.03	1.02	7.82

Corrected Carbon Dioxide Concentration					
29-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			C <sub>O</sub>	C <sub>MA</sub> /(C <sub>M</sub> -C <sub>O</sub> )	
NOx Run 1	16:24-17:24	8.65	0.14	1.05	8.89



Corrected Carbon Monoxide Concentration					
29-Sep-22	Time	Uncorrected Concentration (ppmv)	Eq. 7E-5 Factors		Bias Corrected Concentration (ppmv)
			$C_O$	$C_{MA}/(C_M - C_O)$	
NOx Run 1	16:24-17:24	13.09	-0.06	1.02	13.4

Corrected Nitrogen Oxides Concentration					
29-Sep-22	Time	Uncorrected Concentration (ppmv)	Eq. 7E-5 Factors		Bias Corrected Concentration (ppmv)
			$C_O$	$C_{MA}/(C_M - C_O)$	
NOx Run 1	16:24-17:24	59.11	0.55	1.05	61.7



**HHO Vent Stack 6 SO<sub>2</sub> RATA  
Test 2022**

**Oxygen Calibration Data  
Summary**

<b>Facility:</b>	Haverhill
<b>Source:</b>	Vent Stack 6
<b>Project Number:</b>	60682866
<b>Date:</b>	29-Sep-22
<b>Instrument Make/Model:</b>	CAI
<b>Instrument Name/ID</b>	602P/D09011-M
<b>Calibration Span Value:</b>	19.09
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	CS

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	Nitrogen	0.00	15:34	0.00	0.00	0.0%
span gas	CC4981	19.09	15:45	19.14	0.05	0.3%
mid-range	CC359583	10.99	15:47	11.01	0.02	0.1%

**CEMS Calibration Bias and Drift Tests**

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	0.00	15:52	0.03	0.1%	17:43	0.03	0.1%	0.0%	$C_0$	0.027
10.99	11.01	15:55	10.82	-1.0%	17:34	10.80	-1.1%	-0.1%	$C_{MA}/(C_M - C_0)$	1.019
0.00	0.00	17:43	0.03	0.1%	19:17	0.03	0.2%	0.0%	$C_0$	0.031
10.99	11.01	17:34	10.80	-1.1%	19:23	10.81	-1.1%	0.1%	$C_{MA}/(C_M - C_0)$	1.020
0.00	0.00	19:17	0.03	0.2%	20:59	0.03	0.2%	0.0%	$C_0$	0.033
10.99	11.01	19:23	10.81	-1.1%	21:07	10.83	-0.9%	0.1%	$C_{MA}/(C_M - C_0)$	1.019



**HHO Vent Stack 6 SO2 RATA  
Test 2022**

**Carbon Dioxide Calibration  
Data Summary**

<b>Facility:</b>	Haverhill
<b>Source:</b>	Vent Stack 6
<b>Project Number:</b>	60682866
<b>Date:</b>	29-Sep-22
<b>Instrument Make/Model:</b>	CAI
<b>Instrument Name/ID</b>	602P/D09011-M
<b>Calibration Span Value:</b>	18.98
<b>Analyzer Range:</b>	30
<b>Units:</b>	%, dry
<b>Technician(s):</b>	CS

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	Nitrogen	0.00	15:34	-0.04	0.04	0.2%
span gas	CC4981	18.98	15:45	18.96	0.02	0.1%
mid-range	CC359583	10.10	15:47	9.79	0.31	1.6%

**CEMS Calibration Bias and Drift Tests**

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	-0.04	15:52	0.11	0.8%	17:43	0.18	1.1%	0.3%	$C_0$	0.143
10.10	9.79	15:55	9.78	-0.1%	17:34	9.83	0.2%	0.2%	$C_{MA}/(C_M - C_0)$	1.046
0.00	-0.04	17:43	0.18	1.1%	19:17	0.17	1.1%	0.0%	$C_0$	0.172
10.10	9.79	17:34	9.83	0.2%	19:23	9.81	0.1%	-0.1%	$C_{MA}/(C_M - C_0)$	1.047
0.00	-0.04	19:17	0.17	1.1%	20:59	0.14	0.9%	-0.2%	$C_0$	0.154
10.10	9.79	19:23	9.81	0.1%	21:07	9.83	0.2%	0.1%	$C_{MA}/(C_M - C_0)$	1.045



**HHO Vent Stack 6 SO2 RATA  
Test 2022**

**Carbon Monoxide Calibration  
Data Summary**

<b>Facility:</b>	Haverhill
<b>Source:</b>	Vent Stack 6
<b>Project Number:</b>	60682866
<b>Date:</b>	29-Sep-22
<b>Instrument Make/Model:</b>	CAI
<b>Instrument Name/ID</b>	602P/D09011-M
<b>Calibration Span Value:</b>	61.99
<b>Analyzer Range:</b>	150
<b>Units:</b>	ppmv dry
<b>Technician(s):</b>	CS

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5ppm Limit	2.0% Limit
zero gas	Nitrogen	0.00	15:34	0.07	0.07	0.1%
span gas	CC438688	61.99	15:39	61.91	0.08	0.1%
mid-range	CC740532	30.09	15:43	29.91	0.18	0.3%

**CEMS Calibration Bias and Drift Tests**

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
									$C_0$	
0.00	0.07	15:52	0.07	0.0%	17:43	-0.19	-0.4%	-0.4%		-0.060
30.09	29.91	15:58	29.45	-0.7%	17:38	29.29	-1.0%	-0.3%	$C_{MA}/(C_M - C_0)$	1.022



**HHO Vent Stack 6 SO2 RATA  
Test 2022**

**Nitrogen Oxides Calibration  
Data Summary**

<b>Facility:</b>	Haverhill
<b>Source:</b>	Vent Stack 6
<b>Project Number:</b>	60682866
<b>Date:</b>	29-Sep-22
<b>Instrument Make/Model:</b>	Teledyne
<b>Instrument Name/ID</b>	200EH - 395
<b>Calibration Span Value:</b>	64.87
<b>Analyzer Range:</b>	100
<b>Units:</b>	ppmv dry
<b>Technician(s):</b>	CS

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5ppm Limit	2.0% Limit
zero gas	Nitrogen	0.00	15:34	0.41	0.41	0.6%
span gas	CC438688	64.87	15:39	66.05	1.18	1.8%
mid-range	CC740532	30.26	15:43	30.22	0.04	0.1%

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5ppm Limit	2.0% Limit
zero gas	Nitrogen	0.00	17:58	0.24	0.24	0.4%
span gas	eb0077948	125.60	17:53	125.87	0.27	0.4%
mid-range	CC438688	64.87	17:56	65.85	0.98	1.5%

**CEMS Calibration Bias and Drift Tests**

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	0.41	15:52	1.05	1.0%	17:43	0.05	-0.6%	-1.5%	$C_0$	0.547
30.26	30.22	15:58	29.46	-1.2%	17:38	29.07	-1.8%	-0.6%	$C_{MA}/(C_M - C_0)$	1.054
0.00	0.24	18:01	0.91	0.5%	19:17	0.22	0.0%	-0.6%	$C_0$	0.563
64.87	65.85	18:06	64.05	-1.4%	19:20	63.07	-2.2%	-0.8%	$C_{MA}/(C_M - C_0)$	1.030
0.00	0.24	19:17	0.22	0.0%	20:59	-0.44	-0.5%	-0.5%	$C_0$	-0.113
64.87	65.85	19:20	63.07	-2.2%	21:14	60.11	-4.6%	-2.4%	$C_{MA}/(C_M - C_0)$	1.051
0.00	0.24	18:01	0.91	0.5%	19:17	0.22	0.0%	-0.6%	$C_0$	0.563
64.87	65.85	18:06	64.05	-1.4%	19:20	63.07	-2.2%	-0.8%	$C_{MA}/(C_M - C_0)$	1.030
0.00	0.24	19:17	0.22	0.0%	20:59	-0.44	-0.5%	-0.5%	$C_0$	-0.113
64.87	65.85	19:20	63.07	-4.3%	21:14	60.11	-4.6%	-2.4%	$C_{MA}/(C_M - C_0)$	1.051



## SUMMARY DATA - COMPLIANCE TESTING

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1	16:24-17:24	7.70	8.65	13.09	59.11

## CALIBRATION SUMMARY

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
Cal Error Zero 2 - Nitrogen	15:34	0.00	-0.04	0.07	0.41
Cal Error Hi 2 - CC438688	15:39	0.00	-0.04	61.91	66.05
Cal Error Mid 2 - CC740532	15:43	0.00	-0.05	29.91	30.22
Cal Error Hi 2 - CC4981	15:45	19.14	18.96	-0.57	0.16
Cal Error Mid 2 - CC359583	15:47	11.01	9.79	-0.19	0.24
System Bias Zero 3 - Nitrogen	15:52	0.03	0.11	0.07	1.05
System Bias Mid 3 - CC359583	15:55	10.82	9.78	-0.19	0.57
System Bias Mid 3 - CC740532	15:58	0.03	0.14	29.45	29.46
System Bias Mid 4 - CC15587	16:03	0.03	0.13	-0.21	9.96
System Bias Mid 5 - CC15587	17:32	0.04	0.19	-0.25	9.96
System Bias Mid 4 - CC359583	17:34	10.80	9.83	-0.34	0.30
System Bias Mid 4 - CC740532	17:38	0.04	0.19	29.29	29.07
System Bias Zero 4 - Nitrogen	17:43	0.03	0.18	-0.19	0.05



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
Cal Error Hi - CC438688	3:39:59 PM	-0.01	-0.04	62.01	66.04
Cal Error Hi - CC438688	3:40:09 PM	-0.01	-0.04	61.89	66.04
Cal Error Hi - CC438688	3:40:19 PM	0.00	-0.04	61.84	66.08
Cal Error Mid - CC740532	3:43:09 PM	0.00	-0.05	29.92	30.22
Cal Error Mid - CC740532	3:43:19 PM	-0.01	-0.05	29.89	30.20
Cal Error Mid - CC740532	3:43:29 PM	-0.01	-0.05	29.92	30.24
Cal Error Hi - CC4981	3:45:39 PM	19.14	18.95	-0.55	0.14
Cal Error Hi - CC4981	3:45:49 PM	19.14	18.96	-0.55	0.20
Cal Error Hi - CC4981	3:45:59 PM	19.14	18.95	-0.58	0.16
Cal Error Hi - CC4981	3:46:09 PM	19.14	18.97	-0.60	0.14
Cal Error Mid - CC359583	3:47:59 PM	11.02	9.80	0.01	0.24
Cal Error Mid - CC359583	3:48:09 PM	11.02	9.80	-0.22	0.26
Cal Error Mid - CC359583	3:48:19 PM	11.01	9.79	-0.24	0.22
Cal Error Mid - CC359583	3:48:29 PM	11.01	9.79	-0.30	0.22
System Bias Zero - Nitrogen	3:52:59 PM	0.03	0.11	0.12	1.16
System Bias Zero - Nitrogen	3:53:09 PM	0.03	0.11	0.07	1.14
System Bias Zero - Nitrogen	3:53:19 PM	0.03	0.11	0.07	1.08
System Bias Zero - Nitrogen	3:53:29 PM	0.03	0.11	0.03	0.98
System Bias Zero - Nitrogen	3:53:39 PM	0.03	0.11	0.04	0.88
System Bias Mid - CC359583	3:55:09 PM	10.81	9.76	-0.15	0.60
System Bias Mid - CC359583	3:55:19 PM	10.82	9.78	-0.18	0.60
System Bias Mid - CC359583	3:55:29 PM	10.82	9.80	-0.22	0.54
System Bias Mid - CC359583	3:55:39 PM	10.82	9.79	-0.21	0.54
System Bias Mid - CC740532	3:58:59 PM	0.03	0.14	29.46	29.48
System Bias Mid - CC740532	3:59:09 PM	0.03	0.14	29.45	29.42
System Bias Mid - CC740532	3:59:19 PM	0.03	0.14	29.45	29.44
System Bias Mid - CC740532	3:59:29 PM	0.03	0.14	29.45	29.50
System Bias Mid - CC15587	4:03:59 PM	0.03	0.13	-0.18	9.98
System Bias Mid - CC15587	4:04:09 PM	0.03	0.13	-0.22	9.98
System Bias Mid - CC15587	4:04:19 PM	0.03	0.13	-0.22	9.90
System Bias Mid - CC15587	4:04:29 PM	0.03	0.13	-0.21	9.98
NOx Run 1, Run 7	4:24:09 PM	10.35	7.20	3.90	47.88
NOx Run 1, Run 7	4:24:19 PM	10.13	7.32	4.56	47.98
NOx Run 1, Run 7	4:24:29 PM	10.11	7.37	5.46	48.12
NOx Run 1, Run 7	4:24:39 PM	9.96	7.50	6.61	48.18
NOx Run 1, Run 7	4:24:49 PM	9.87	7.61	7.71	48.28
NOx Run 1, Run 7	4:24:59 PM	10.11	7.41	8.62	48.72
NOx Run 1, Run 7	4:25:09 PM	10.55	7.07	9.01	48.96
NOx Run 1, Run 7	4:25:19 PM	10.63	7.00	9.15	48.76
NOx Run 1, Run 7	4:25:29 PM	10.36	7.20	9.25	48.50
NOx Run 1, Run 7	4:25:39 PM	10.20	7.31	9.46	48.56
NOx Run 1, Run 7	4:25:49 PM	10.01	7.45	9.88	48.60
NOx Run 1, Run 7	4:25:59 PM	9.58	7.76	10.54	48.68
NOx Run 1, Run 7	4:26:09 PM	9.66	7.68	11.13	53.38
NOx Run 1, Run 7	4:26:19 PM	9.70	7.67	11.74	55.00
NOx Run 1, Run 7	4:26:29 PM	9.75	7.61	12.31	54.98
NOx Run 1, Run 7	4:26:39 PM	9.95	7.47	12.96	53.76
NOx Run 1, Run 7	4:26:49 PM	10.21	7.28	13.56	51.36
NOx Run 1, Run 7	4:26:59 PM	10.02	7.41	14.03	49.94
NOx Run 1, Run 7	4:27:09 PM	9.84	7.54	14.31	49.94
NOx Run 1, Run 7	4:27:19 PM	9.72	7.62	14.46	49.72
NOx Run 1, Run 7	4:27:29 PM	9.76	7.57	14.58	49.82



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1 , Run 7	4:27:39 PM	9.67	7.64	14.73	49.96
NOx Run 1 , Run 7	4:27:49 PM	9.72	7.59	14.62	49.96
NOx Run 1 , Run 7	4:27:59 PM	9.66	7.60	14.28	49.70
NOx Run 1 , Run 7	4:28:09 PM	9.50	7.71	13.70	49.46
NOx Run 1 , Run 7	4:28:19 PM	9.48	7.71	12.90	49.46
NOx Run 1 , Run 7	4:28:29 PM	9.45	7.71	12.13	49.38
NOx Run 1 , Run 7	4:28:39 PM	9.63	7.61	11.62	49.36
NOx Run 1 , Run 7	4:28:49 PM	9.50	7.67	11.14	49.36
NOx Run 1 , Run 7	4:28:59 PM	9.43	7.71	10.63	49.14
NOx Run 1 , Run 7	4:29:09 PM	9.34	7.78	10.04	49.22
NOx Run 1 , Run 7	4:29:19 PM	9.24	7.82	9.46	49.24
NOx Run 1 , Run 7	4:29:29 PM	9.43	7.69	8.92	49.26
NOx Run 1 , Run 7	4:29:39 PM	9.43	7.71	8.58	49.24
NOx Run 1 , Run 7	4:29:49 PM	9.46	7.72	8.14	49.14
NOx Run 1 , Run 7	4:29:59 PM	9.36	7.77	7.87	49.16
NOx Run 1 , Run 7	4:30:09 PM	8.97	8.05	7.62	49.04
NOx Run 1 , Run 7	4:30:19 PM	8.89	8.10	7.81	49.62
NOx Run 1 , Run 7	4:30:29 PM	8.94	8.05	8.34	50.38
NOx Run 1 , Run 7	4:30:39 PM	9.03	7.99	9.18	50.32
NOx Run 1 , Run 7	4:30:49 PM	9.22	7.87	9.95	50.80
NOx Run 1 , Run 7	4:30:59 PM	9.07	7.98	10.70	50.80
NOx Run 1 , Run 7	4:31:09 PM	9.03	7.97	11.37	51.16
NOx Run 1 , Run 7	4:31:19 PM	9.29	7.81	11.97	51.94
NOx Run 1 , Run 7	4:31:29 PM	9.14	7.92	12.60	52.40
NOx Run 1 , Run 7	4:31:39 PM	9.07	7.96	13.47	52.38
NOx Run 1 , Run 7	4:31:49 PM	8.90	8.08	14.45	57.86
NOx Run 1 , Run 7	4:31:59 PM	8.88	8.07	15.79	58.48
NOx Run 1 , Run 7	4:32:09 PM	9.01	8.01	16.96	59.00
NOx Run 1 , Run 7	4:32:19 PM	8.83	8.14	17.84	59.02
NOx Run 1 , Run 7	4:32:29 PM	9.42	7.69	18.04	59.98
NOx Run 1 , Run 7	4:32:39 PM	9.46	7.68	17.59	58.92
NOx Run 1 , Run 7	4:32:49 PM	9.29	7.80	16.65	58.64
NOx Run 1 , Run 7	4:32:59 PM	9.37	7.73	15.52	58.64
NOx Run 1 , Run 7	4:33:09 PM	9.31	7.77	14.49	58.66
NOx Run 1 , Run 7	4:33:19 PM	9.46	7.68	13.86	58.38
NOx Run 1 , Run 7	4:33:29 PM	9.33	7.81	13.37	58.08
NOx Run 1 , Run 7	4:33:39 PM	8.65	8.29	13.12	58.18
NOx Run 1 , Run 7	4:33:49 PM	8.70	8.25	12.75	58.12
NOx Run 1 , Run 7	4:33:59 PM	8.78	8.17	12.36	58.32
NOx Run 1 , Run 7	4:34:09 PM	8.69	8.23	11.98	58.18
NOx Run 1 , Run 7	4:34:19 PM	8.78	8.16	11.73	58.02
NOx Run 1 , Run 7	4:34:29 PM	8.98	8.00	11.59	58.00
NOx Run 1 , Run 7	4:34:39 PM	9.04	7.96	11.56	57.94
NOx Run 1 , Run 7	4:34:49 PM	8.95	8.01	11.55	57.46
NOx Run 1 , Run 7	4:34:59 PM	9.08	7.91	11.43	57.62
NOx Run 1 , Run 7	4:35:09 PM	9.07	7.92	11.26	57.58
NOx Run 1 , Run 7	4:35:19 PM	8.89	8.03	11.12	57.58
NOx Run 1 , Run 7	4:35:29 PM	8.85	8.08	10.87	57.60
NOx Run 1 , Run 7	4:35:39 PM	8.58	8.24	10.66	57.60
NOx Run 1 , Run 7	4:35:49 PM	8.68	8.15	10.53	57.78
NOx Run 1 , Run 7	4:35:59 PM	8.94	7.96	10.29	57.74
NOx Run 1 , Run 7	4:36:09 PM	8.86	8.01	9.97	57.70



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1 , Run 7	4:36:19 PM	8.69	8.14	9.84	57.38
NOx Run 1 , Run 7	4:36:29 PM	8.65	8.15	9.82	57.26
NOx Run 1 , Run 7	4:36:39 PM	8.50	8.23	10.04	57.42
NOx Run 1 , Run 7	4:36:49 PM	8.56	8.20	10.46	57.40
NOx Run 1 , Run 7	4:36:59 PM	8.57	8.17	11.14	57.44
NOx Run 1 , Run 7	4:37:09 PM	8.52	8.22	11.65	57.48
NOx Run 1 , Run 7	4:37:19 PM	8.30	8.37	12.18	57.28
NOx Run 1 , Run 7	4:37:29 PM	8.43	8.25	12.48	57.26
NOx Run 1 , Run 7	4:37:39 PM	8.39	8.30	12.53	57.38
NOx Run 1 , Run 7	4:37:49 PM	8.20	8.47	12.54	57.38
NOx Run 1 , Run 7	4:37:59 PM	8.00	8.60	12.71	57.78
NOx Run 1 , Run 7	4:38:09 PM	7.83	8.69	13.41	58.06
NOx Run 1 , Run 7	4:38:19 PM	8.10	8.51	14.67	58.10
NOx Run 1 , Run 7	4:38:29 PM	7.94	8.64	16.27	58.24
NOx Run 1 , Run 7	4:38:39 PM	7.96	8.61	17.95	58.82
NOx Run 1 , Run 7	4:38:49 PM	7.86	8.67	19.32	59.32
NOx Run 1 , Run 7	4:38:59 PM	7.53	8.90	20.29	59.32
NOx Run 1 , Run 7	4:39:09 PM	7.64	8.81	20.85	59.74
NOx Run 1 , Run 7	4:39:19 PM	7.67	8.78	21.16	60.32
NOx Run 1 , Run 7	4:39:29 PM	7.91	8.64	21.25	60.72
NOx Run 1 , Run 7	4:39:39 PM	7.96	8.60	21.13	60.72
NOx Run 1 , Run 7	4:39:49 PM	8.08	8.53	20.76	61.18
NOx Run 1 , Run 7	4:39:59 PM	7.93	8.64	20.04	61.24
NOx Run 1 , Run 7	4:40:09 PM	7.81	8.74	19.00	61.24
NOx Run 1 , Run 7	4:40:19 PM	7.97	8.57	18.02	61.66
NOx Run 1 , Run 7	4:40:29 PM	7.97	8.60	17.31	61.66
NOx Run 1 , Run 7	4:40:39 PM	7.83	8.69	17.29	61.72
NOx Run 1 , Run 7	4:40:49 PM	7.81	8.69	18.02	61.82
NOx Run 1 , Run 7	4:40:59 PM	7.87	8.66	19.34	61.60
NOx Run 1 , Run 7	4:41:09 PM	7.75	8.72	21.04	61.42
NOx Run 1 , Run 7	4:41:19 PM	7.62	8.84	22.56	61.42
NOx Run 1 , Run 7	4:41:29 PM	7.36	9.04	23.79	61.16
NOx Run 1 , Run 7	4:41:39 PM	7.32	9.06	24.82	61.20
NOx Run 1 , Run 7	4:41:49 PM	7.68	8.79	25.92	61.50
NOx Run 1 , Run 7	4:41:59 PM	7.83	8.69	27.36	61.44
NOx Run 1 , Run 7	4:42:09 PM	7.96	8.58	28.89	61.54
NOx Run 1 , Run 7	4:42:19 PM	8.01	8.56	30.16	61.56
NOx Run 1 , Run 7	4:42:29 PM	8.11	8.45	30.86	61.56
NOx Run 1 , Run 7	4:42:39 PM	8.02	8.52	30.87	60.98
NOx Run 1 , Run 7	4:42:49 PM	7.93	8.62	30.22	60.96
NOx Run 1 , Run 7	4:42:59 PM	8.07	8.50	29.16	60.56
NOx Run 1 , Run 7	4:43:09 PM	7.96	8.58	27.73	60.06
NOx Run 1 , Run 7	4:43:19 PM	7.74	8.71	26.13	59.74
NOx Run 1 , Run 7	4:43:29 PM	7.63	8.74	24.43	59.72
NOx Run 1 , Run 7	4:43:39 PM	7.46	8.87	22.75	59.64
NOx Run 1 , Run 7	4:43:49 PM	7.29	8.98	21.37	59.58
NOx Run 1 , Run 7	4:43:59 PM	7.42	8.86	20.52	59.30
NOx Run 1 , Run 7	4:44:09 PM	7.38	8.90	20.22	59.32
NOx Run 1 , Run 7	4:44:19 PM	7.61	8.72	20.52	58.82
NOx Run 1 , Run 7	4:44:29 PM	7.78	8.62	21.06	58.72
NOx Run 1 , Run 7	4:44:39 PM	7.96	8.49	21.70	58.58
NOx Run 1 , Run 7	4:44:49 PM	7.57	8.76	22.23	58.54



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1 , Run 7	4:44:59 PM	7.56	8.74	22.65	58.58
NOx Run 1 , Run 8	4:45:09 PM	7.60	8.75	22.83	58.54
NOx Run 1 , Run 8	4:45:19 PM	7.19	9.03	22.89	58.68
NOx Run 1 , Run 8	4:45:29 PM	7.25	8.97	22.80	58.94
NOx Run 1 , Run 8	4:45:39 PM	7.13	9.06	22.63	58.94
NOx Run 1 , Run 8	4:45:49 PM	7.33	8.93	22.30	59.32
NOx Run 1 , Run 8	4:45:59 PM	7.38	8.91	21.79	59.60
NOx Run 1 , Run 8	4:46:09 PM	7.54	8.79	20.86	59.80
NOx Run 1 , Run 8	4:46:19 PM	7.43	8.86	19.84	59.68
NOx Run 1 , Run 8	4:46:29 PM	7.24	9.00	18.95	59.72
NOx Run 1 , Run 8	4:46:39 PM	7.29	8.94	18.31	59.96
NOx Run 1 , Run 8	4:46:49 PM	7.52	8.78	17.91	60.00
NOx Run 1 , Run 8	4:46:59 PM	7.37	8.87	17.71	60.06
NOx Run 1 , Run 8	4:47:09 PM	7.40	8.85	17.41	60.02
NOx Run 1 , Run 8	4:47:19 PM	7.32	8.90	17.02	60.04
NOx Run 1 , Run 8	4:47:29 PM	7.31	8.93	16.56	59.96
NOx Run 1 , Run 8	4:47:39 PM	6.98	9.14	16.17	60.02
NOx Run 1 , Run 8	4:47:49 PM	7.12	9.04	15.96	60.24
NOx Run 1 , Run 8	4:47:59 PM	7.13	9.00	16.30	60.24
NOx Run 1 , Run 8	4:48:09 PM	6.99	9.11	17.07	60.02
NOx Run 1 , Run 8	4:48:19 PM	6.95	9.11	18.22	59.82
NOx Run 1 , Run 8	4:48:29 PM	7.14	9.01	19.34	59.64
NOx Run 1 , Run 8	4:48:39 PM	7.16	8.99	20.11	59.66
NOx Run 1 , Run 8	4:48:49 PM	7.27	8.93	20.54	59.62
NOx Run 1 , Run 8	4:48:59 PM	7.27	8.95	20.75	59.36
NOx Run 1 , Run 8	4:49:09 PM	6.92	9.19	20.86	59.48
NOx Run 1 , Run 8	4:49:19 PM	7.18	9.02	21.03	59.48
NOx Run 1 , Run 8	4:49:29 PM	7.12	9.07	20.91	59.86
NOx Run 1 , Run 8	4:49:39 PM	7.29	8.92	20.45	59.86
NOx Run 1 , Run 8	4:49:49 PM	7.10	9.04	19.41	59.96
NOx Run 1 , Run 8	4:49:59 PM	6.95	9.15	17.98	60.12
NOx Run 1 , Run 8	4:50:09 PM	6.94	9.13	16.54	60.10
NOx Run 1 , Run 8	4:50:19 PM	7.28	8.91	15.40	60.24
NOx Run 1 , Run 8	4:50:29 PM	7.17	9.01	14.54	60.32
NOx Run 1 , Run 8	4:50:39 PM	6.77	9.26	14.07	60.24
NOx Run 1 , Run 8	4:50:49 PM	6.39	9.51	13.89	60.22
NOx Run 1 , Run 8	4:50:59 PM	5.94	9.78	14.13	60.34
NOx Run 1 , Run 8	4:51:09 PM	6.13	9.63	14.80	60.72
NOx Run 1 , Run 8	4:51:19 PM	6.12	9.63	16.30	61.02
NOx Run 1 , Run 8	4:51:29 PM	6.23	9.56	18.25	61.20
NOx Run 1 , Run 8	4:51:39 PM	6.15	9.60	20.38	61.20
NOx Run 1 , Run 8	4:51:49 PM	6.08	9.65	22.57	61.28
NOx Run 1 , Run 8	4:51:59 PM	5.96	9.72	24.54	61.30
NOx Run 1 , Run 8	4:52:09 PM	6.20	9.53	25.81	61.62
NOx Run 1 , Run 8	4:52:19 PM	7.18	8.87	26.20	61.80
NOx Run 1 , Run 8	4:52:29 PM	7.20	8.93	25.36	61.78
NOx Run 1 , Run 8	4:52:39 PM	6.62	9.28	23.47	61.54
NOx Run 1 , Run 8	4:52:49 PM	6.40	9.43	21.21	61.64
NOx Run 1 , Run 8	4:52:59 PM	6.01	9.70	19.30	62.06
NOx Run 1 , Run 8	4:53:09 PM	5.87	9.80	18.13	62.04
NOx Run 1 , Run 8	4:53:19 PM	6.15	9.60	17.98	62.34
NOx Run 1 , Run 8	4:53:29 PM	6.24	9.53	18.50	62.06



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1 , Run 8	4:53:39 PM	6.31	9.51	19.50	62.00
NOx Run 1 , Run 8	4:53:49 PM	6.05	9.66	20.95	62.00
NOx Run 1 , Run 8	4:53:59 PM	6.20	9.55	22.74	62.10
NOx Run 1 , Run 8	4:54:09 PM	6.24	9.53	24.70	62.12
NOx Run 1 , Run 8	4:54:19 PM	6.46	9.38	26.73	62.14
NOx Run 1 , Run 8	4:54:29 PM	6.54	9.33	28.12	61.94
NOx Run 1 , Run 8	4:54:39 PM	6.35	9.45	28.72	61.94
NOx Run 1 , Run 8	4:54:49 PM	6.76	9.16	28.09	61.82
NOx Run 1 , Run 8	4:54:59 PM	6.86	9.12	26.37	61.96
NOx Run 1 , Run 8	4:55:09 PM	6.72	9.21	24.11	61.76
NOx Run 1 , Run 8	4:55:19 PM	7.00	9.00	21.97	61.76
NOx Run 1 , Run 8	4:55:29 PM	7.21	8.88	20.49	61.28
NOx Run 1 , Run 8	4:55:39 PM	6.60	9.27	19.95	60.60
NOx Run 1 , Run 8	4:55:49 PM	6.26	9.50	20.05	60.44
NOx Run 1 , Run 8	4:55:59 PM	6.31	9.44	20.46	60.46
NOx Run 1 , Run 8	4:56:09 PM	6.40	9.40	20.88	60.40
NOx Run 1 , Run 8	4:56:19 PM	6.35	9.45	21.60	60.26
NOx Run 1 , Run 8	4:56:29 PM	6.45	9.36	22.56	59.98
NOx Run 1 , Run 8	4:56:39 PM	6.54	9.31	23.68	59.94
NOx Run 1 , Run 8	4:56:49 PM	6.55	9.31	24.54	59.90
NOx Run 1 , Run 8	4:56:59 PM	6.57	9.28	24.88	59.86
NOx Run 1 , Run 8	4:57:09 PM	6.80	9.12	24.51	59.68
NOx Run 1 , Run 8	4:57:19 PM	6.94	9.03	23.68	59.54
NOx Run 1 , Run 8	4:57:29 PM	6.87	9.09	22.66	59.32
NOx Run 1 , Run 8	4:57:39 PM	7.05	8.96	21.96	59.34
NOx Run 1 , Run 8	4:57:49 PM	7.02	9.01	21.57	59.22
NOx Run 1 , Run 8	4:57:59 PM	6.90	9.06	21.43	59.20
NOx Run 1 , Run 8	4:58:09 PM	6.92	9.06	21.37	59.10
NOx Run 1 , Run 8	4:58:19 PM	7.05	8.96	21.16	59.12
NOx Run 1 , Run 8	4:58:29 PM	7.01	8.99	20.54	58.78
NOx Run 1 , Run 8	4:58:39 PM	7.00	9.00	19.59	58.50
NOx Run 1 , Run 8	4:58:49 PM	6.83	9.14	18.25	58.36
NOx Run 1 , Run 8	4:58:59 PM	6.64	9.24	16.91	58.36
NOx Run 1 , Run 8	4:59:09 PM	6.59	9.27	15.60	58.34
NOx Run 1 , Run 8	4:59:19 PM	6.73	9.17	14.61	58.30
NOx Run 1 , Run 8	4:59:29 PM	6.83	9.11	13.77	58.22
NOx Run 1 , Run 8	4:59:39 PM	6.77	9.15	13.09	58.40
NOx Run 1 , Run 8	4:59:49 PM	6.98	9.01	12.31	58.44
NOx Run 1 , Run 8	4:59:59 PM	6.80	9.11	11.65	58.52
NOx Run 1 , Run 8	5:00:09 PM	6.78	9.14	10.89	58.68
NOx Run 1 , Run 8	5:00:19 PM	6.79	9.13	10.33	58.94
NOx Run 1 , Run 8	5:00:29 PM	6.85	9.08	9.78	58.90
NOx Run 1 , Run 8	5:00:39 PM	6.71	9.19	9.45	59.24
NOx Run 1 , Run 8	5:00:49 PM	6.69	9.20	9.15	59.46
NOx Run 1 , Run 8	5:00:59 PM	6.80	9.12	9.09	59.74
NOx Run 1 , Run 8	5:01:09 PM	6.79	9.12	9.16	59.72
NOx Run 1 , Run 8	5:01:19 PM	6.83	9.08	9.42	60.04
NOx Run 1 , Run 8	5:01:29 PM	6.82	9.10	9.60	60.02
NOx Run 1 , Run 8	5:01:39 PM	6.88	9.05	9.88	60.14
NOx Run 1 , Run 8	5:01:49 PM	7.05	8.95	10.12	60.22
NOx Run 1 , Run 8	5:01:59 PM	6.86	9.07	10.56	60.20
NOx Run 1 , Run 8	5:02:09 PM	6.90	9.05	10.81	60.16



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1 , Run 8	5:02:19 PM	7.08	8.93	10.81	60.26
NOx Run 1 , Run 8	5:02:29 PM	6.87	9.07	10.33	60.28
NOx Run 1 , Run 8	5:02:39 PM	6.62	9.24	9.69	60.32
NOx Run 1 , Run 8	5:02:49 PM	6.59	9.25	9.01	60.28
NOx Run 1 , Run 8	5:02:59 PM	6.69	9.18	8.61	60.40
NOx Run 1 , Run 8	5:03:09 PM	6.92	9.03	8.38	60.52
NOx Run 1 , Run 8	5:03:19 PM	7.11	8.92	8.16	60.46
NOx Run 1 , Run 8	5:03:29 PM	7.51	8.64	7.69	60.46
NOx Run 1 , Run 8	5:03:39 PM	7.43	8.73	7.04	60.46
NOx Run 1 , Run 8	5:03:49 PM	7.36	8.75	6.24	60.50
NOx Run 1 , Run 8	5:03:59 PM	7.30	8.80	5.59	60.22
NOx Run 1 , Run 8	5:04:09 PM	7.10	8.92	5.22	60.34
NOx Run 1 , Run 8	5:04:19 PM	6.98	9.00	5.25	60.38
NOx Run 1 , Run 8	5:04:29 PM	6.95	9.01	5.68	60.38
NOx Run 1 , Run 8	5:04:39 PM	6.82	9.09	6.57	60.38
NOx Run 1 , Run 8	5:04:49 PM	6.82	9.08	7.83	60.40
NOx Run 1 , Run 8	5:04:59 PM	7.03	8.94	9.40	60.44
NOx Run 1 , Run 8	5:05:09 PM	7.27	8.79	10.87	60.60
NOx Run 1 , Run 8	5:05:19 PM	7.45	8.67	12.00	60.40
NOx Run 1 , Run 8	5:05:29 PM	7.64	8.54	12.18	59.98
NOx Run 1 , Run 8	5:05:39 PM	7.96	8.35	11.55	59.98
NOx Run 1 , Run 8	5:05:49 PM	7.37	8.77	10.24	59.72
NOx Run 1 , Run 8	5:05:59 PM	7.19	8.87	8.91	59.62
NOx Run 1 , Run 9	5:06:09 PM	7.05	8.95	7.84	59.58
NOx Run 1 , Run 9	5:06:19 PM	7.24	8.83	7.33	59.72
NOx Run 1 , Run 9	5:06:29 PM	6.99	8.98	7.32	59.72
NOx Run 1 , Run 9	5:06:39 PM	6.91	9.03	7.81	59.60
NOx Run 1 , Run 9	5:06:49 PM	6.87	9.07	8.58	59.72
NOx Run 1 , Run 9	5:06:59 PM	7.08	8.91	9.64	59.60
NOx Run 1 , Run 9	5:07:09 PM	6.98	8.99	10.75	59.68
NOx Run 1 , Run 9	5:07:19 PM	6.76	9.14	11.56	59.74
NOx Run 1 , Run 9	5:07:29 PM	6.72	9.15	11.76	59.78
NOx Run 1 , Run 9	5:07:39 PM	6.73	9.14	11.41	60.02
NOx Run 1 , Run 9	5:07:49 PM	7.48	8.63	10.57	60.44
NOx Run 1 , Run 9	5:07:59 PM	7.73	8.48	9.78	60.50
NOx Run 1 , Run 9	5:08:09 PM	7.73	8.48	8.92	60.52
NOx Run 1 , Run 9	5:08:19 PM	7.45	8.70	8.27	60.48
NOx Run 1 , Run 9	5:08:29 PM	7.10	8.91	7.68	60.48
NOx Run 1 , Run 9	5:08:39 PM	7.08	8.92	7.30	60.64
NOx Run 1 , Run 9	5:08:49 PM	7.20	8.84	6.97	60.62
NOx Run 1 , Run 9	5:08:59 PM	7.64	8.52	6.71	60.56
NOx Run 1 , Run 9	5:09:09 PM	7.43	8.69	6.29	60.52
NOx Run 1 , Run 9	5:09:19 PM	7.43	8.67	5.76	60.66
NOx Run 1 , Run 9	5:09:29 PM	7.18	8.86	5.08	60.66
NOx Run 1 , Run 9	5:09:39 PM	7.31	8.74	4.56	60.62
NOx Run 1 , Run 9	5:09:49 PM	7.35	8.75	4.12	60.48
NOx Run 1 , Run 9	5:09:59 PM	7.43	8.68	3.90	60.24
NOx Run 1 , Run 9	5:10:09 PM	7.49	8.64	3.79	60.24
NOx Run 1 , Run 9	5:10:19 PM	7.60	8.55	3.78	60.08
NOx Run 1 , Run 9	5:10:29 PM	7.33	8.76	3.82	60.24
NOx Run 1 , Run 9	5:10:39 PM	7.46	8.66	3.99	60.52
NOx Run 1 , Run 9	5:10:49 PM	7.05	8.91	4.09	60.46



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1 , Run 9	5:10:59 PM	7.05	8.91	4.18	60.50
NOx Run 1 , Run 9	5:11:09 PM	7.23	8.79	4.20	60.60
NOx Run 1 , Run 9	5:11:19 PM	7.14	8.85	4.26	60.76
NOx Run 1 , Run 9	5:11:29 PM	7.08	8.90	4.27	60.90
NOx Run 1 , Run 9	5:11:39 PM	7.30	8.75	4.30	60.96
NOx Run 1 , Run 9	5:11:49 PM	7.48	8.64	4.14	61.08
NOx Run 1 , Run 9	5:11:59 PM	7.66	8.52	3.93	61.18
NOx Run 1 , Run 9	5:12:09 PM	7.80	8.44	3.54	61.30
NOx Run 1 , Run 9	5:12:19 PM	7.44	8.70	3.30	61.44
NOx Run 1 , Run 9	5:12:29 PM	7.17	8.87	3.03	61.46
NOx Run 1 , Run 9	5:12:39 PM	7.34	8.74	2.94	61.86
NOx Run 1 , Run 9	5:12:49 PM	7.48	8.66	2.83	62.04
NOx Run 1 , Run 9	5:12:59 PM	7.49	8.66	2.85	62.22
NOx Run 1 , Run 9	5:13:09 PM	7.40	8.72	2.83	62.18
NOx Run 1 , Run 9	5:13:19 PM	7.17	8.87	2.91	62.18
NOx Run 1 , Run 9	5:13:29 PM	6.98	9.00	3.06	62.20
NOx Run 1 , Run 9	5:13:39 PM	7.08	8.91	3.37	62.38
NOx Run 1 , Run 9	5:13:49 PM	7.22	8.84	3.84	62.44
NOx Run 1 , Run 9	5:13:59 PM	7.05	8.94	4.50	62.44
NOx Run 1 , Run 9	5:14:09 PM	7.13	8.89	5.31	62.46
NOx Run 1 , Run 9	5:14:19 PM	7.09	8.94	6.27	62.54
NOx Run 1 , Run 9	5:14:29 PM	6.71	9.17	7.26	62.68
NOx Run 1 , Run 9	5:14:39 PM	6.75	9.13	8.32	62.68
NOx Run 1 , Run 9	5:14:49 PM	6.87	9.05	9.27	62.90
NOx Run 1 , Run 9	5:14:59 PM	7.18	8.84	10.19	62.98
NOx Run 1 , Run 9	5:15:09 PM	7.24	8.83	10.84	63.00
NOx Run 1 , Run 9	5:15:19 PM	7.27	8.81	11.07	62.96
NOx Run 1 , Run 9	5:15:29 PM	7.24	8.83	10.62	62.92
NOx Run 1 , Run 9	5:15:39 PM	7.20	8.83	9.81	62.94
NOx Run 1 , Run 9	5:15:49 PM	7.37	8.74	8.85	63.00
NOx Run 1 , Run 9	5:15:59 PM	7.24	8.82	8.13	62.78
NOx Run 1 , Run 9	5:16:09 PM	7.23	8.82	7.71	62.76
NOx Run 1 , Run 9	5:16:19 PM	7.46	8.68	7.69	62.80
NOx Run 1 , Run 9	5:16:29 PM	7.42	8.71	7.87	62.70
NOx Run 1 , Run 9	5:16:39 PM	7.46	8.67	8.07	62.62
NOx Run 1 , Run 9	5:16:49 PM	7.23	8.83	8.13	62.64
NOx Run 1 , Run 9	5:16:59 PM	7.20	8.86	8.14	62.56
NOx Run 1 , Run 9	5:17:09 PM	7.46	8.68	8.14	62.34
NOx Run 1 , Run 9	5:17:19 PM	7.51	8.66	8.14	62.10
NOx Run 1 , Run 9	5:17:29 PM	7.72	8.52	8.04	62.10
NOx Run 1 , Run 9	5:17:39 PM	7.88	8.41	7.72	62.08
NOx Run 1 , Run 9	5:17:49 PM	7.80	8.48	7.14	62.20
NOx Run 1 , Run 9	5:17:59 PM	7.81	8.47	6.52	62.18
NOx Run 1 , Run 9	5:18:09 PM	7.63	8.58	5.97	61.96
NOx Run 1 , Run 9	5:18:19 PM	7.44	8.73	5.59	61.86
NOx Run 1 , Run 9	5:18:29 PM	7.55	8.63	5.34	61.84
NOx Run 1 , Run 9	5:18:39 PM	7.58	8.61	5.12	61.80
NOx Run 1 , Run 9	5:18:49 PM	7.67	8.57	4.75	61.82
NOx Run 1 , Run 9	5:18:59 PM	7.74	8.52	4.46	62.06
NOx Run 1 , Run 9	5:19:09 PM	7.72	8.55	4.05	62.00
NOx Run 1 , Run 9	5:19:19 PM	7.73	8.53	3.94	62.00
NOx Run 1 , Run 9	5:19:29 PM	7.71	8.54	4.00	61.82



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
NOx Run 1 , Run 9	5:19:39 PM	7.61	8.60	4.39	61.94
NOx Run 1 , Run 9	5:19:49 PM	7.56	8.63	4.91	61.90
NOx Run 1 , Run 9	5:19:59 PM	7.69	8.55	5.43	61.98
NOx Run 1 , Run 9	5:20:09 PM	7.74	8.52	5.89	61.94
NOx Run 1 , Run 9	5:20:19 PM	7.52	8.66	6.25	61.90
NOx Run 1 , Run 9	5:20:29 PM	7.60	8.60	6.31	62.32
NOx Run 1 , Run 9	5:20:39 PM	7.87	8.42	6.33	62.28
NOx Run 1 , Run 9	5:20:49 PM	7.81	8.46	6.24	62.36
NOx Run 1 , Run 9	5:20:59 PM	7.73	8.53	6.10	62.32
NOx Run 1 , Run 9	5:21:09 PM	7.67	8.56	5.94	62.44
NOx Run 1 , Run 9	5:21:19 PM	7.69	8.53	5.76	62.44
NOx Run 1 , Run 9	5:21:29 PM	7.82	8.46	5.59	62.46
NOx Run 1 , Run 9	5:21:39 PM	7.95	8.38	5.55	62.62
NOx Run 1 , Run 9	5:21:49 PM	7.94	8.39	5.58	62.82
NOx Run 1 , Run 9	5:21:59 PM	7.89	8.42	5.75	62.88
NOx Run 1 , Run 9	5:22:09 PM	7.85	8.46	5.83	62.84
NOx Run 1 , Run 9	5:22:19 PM	7.60	8.62	6.04	62.60
NOx Run 1 , Run 9	5:22:29 PM	7.64	8.58	6.18	62.70
NOx Run 1 , Run 9	5:22:39 PM	7.65	8.58	6.19	62.68
NOx Run 1 , Run 9	5:22:49 PM	7.84	8.46	6.03	62.66
NOx Run 1 , Run 9	5:22:59 PM	7.78	8.48	5.76	62.56
NOx Run 1 , Run 9	5:23:09 PM	7.66	8.58	5.44	62.80
NOx Run 1 , Run 9	5:23:19 PM	7.81	8.48	5.33	63.12
NOx Run 1 , Run 9	5:23:29 PM	7.79	8.50	5.33	63.14
NOx Run 1 , Run 9	5:23:39 PM	7.57	8.63	5.43	63.16
NOx Run 1 , Run 9	5:23:49 PM	7.75	8.52	5.40	63.12
NOx Run 1 , Run 9	5:23:59 PM	7.72	8.54	5.34	63.02
Run 9	5:24:09 PM	7.60	8.61	5.07	63.04
Run 9	5:24:19 PM	7.87	8.43	4.74	63.02
Run 9	5:24:29 PM	7.72	8.54	4.30	63.24
Run 9	5:24:39 PM	7.77	8.50	3.99	63.44
Run 9	5:24:49 PM	7.69	8.55	3.69	63.46
Run 9	5:24:59 PM	8.02	8.33	3.63	63.42
Run 9	5:25:09 PM	7.88	8.44	3.67	63.40
Run 9	5:25:19 PM	7.54	8.66	3.94	63.22
Run 9	5:25:29 PM	7.78	8.49	4.39	63.16
Run 9	5:25:39 PM	7.64	8.58	5.16	63.02
Run 9	5:25:49 PM	7.68	8.53	6.03	62.96
Run 9	5:25:59 PM	7.87	8.43	6.85	63.04
Run 9	5:26:09 PM	7.63	8.60	7.29	63.14
Run 9	5:26:19 PM	7.71	8.54	7.36	63.36
Run 9	5:26:29 PM	7.83	8.44	7.21	63.32
Run 9	5:26:39 PM	8.12	8.26	7.09	63.46
Run 9	5:26:49 PM	8.02	8.36	6.94	63.38
Run 9	5:26:59 PM	7.63	8.59	6.99	63.52
System Bias Mid - CC15587	5:32:19 PM	0.05	0.19	-0.20	9.96
System Bias Mid - CC15587	5:32:29 PM	0.05	0.19	-0.24	9.96
System Bias Mid - CC15587	5:32:39 PM	0.05	0.19	-0.22	9.98
System Bias Mid - CC15587	5:32:49 PM	0.03	0.20	-0.32	9.94
System Bias Mid - CC359583	5:34:59 PM	10.79	9.81	-0.22	0.68
System Bias Mid - CC359583	5:35:09 PM	10.80	9.83	-0.34	0.14
System Bias Mid - CC359583	5:35:19 PM	10.80	9.83	-0.36	0.20



# CEMS RAW DATA

29-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Carbon Monoxide (ppmv dry)	Oxides of Nitrogen (ppmv dry)
System Bias Mid - CC359583	5:35:29 PM	10.80	9.84	-0.42	0.16
System Bias Mid - CC740532	5:38:59 PM	0.04	0.20	29.31	29.04
System Bias Mid - CC740532	5:39:09 PM	0.05	0.19	29.29	29.04
System Bias Mid - CC740532	5:39:19 PM	0.05	0.19	29.32	29.02
System Bias Mid - CC740532	5:39:29 PM	0.05	0.19	29.25	29.18
System Bias Zero - Nitrogen	5:43:09 PM	0.03	0.18	-0.21	0.04
System Bias Zero - Nitrogen	5:43:19 PM	0.03	0.18	-0.15	0.04
System Bias Zero - Nitrogen	5:43:29 PM	0.02	0.18	-0.22	0.06
System Bias Zero - Nitrogen	5:43:39 PM	0.03	0.18	-0.16	0.04



**Project:** Haverhill Bypass Vent Stack 6 Test 2022  
**Facility:** SunCoke HHO  
**Source:** BVS-6  
**Project ID:** 60682866

Corrected Oxygen Concentration					
30-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1 Late	16:02-17:06	10.86	0.08	1.02	11.04
Run 2 Prod.	20:19-21:40	8.22	0.08	1.02	8.30

Corrected Carbon Dioxide Concentration					
30-Sep-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1 Late	16:02-17:06	6.75	0.13	1.05	6.95



Corrected Carbon Monoxide Concentration					
30-Sep-22	Time	Uncorrected Concentration (ppmv)	Eq. 7E-5 Factors		Bias Corrected Concentration (ppmv)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1 Late	16:02-17:06	4.85	0.11	1.04	4.9

Corrected Nitrogen Oxides Concentration					
30-Sep-22	Time	Uncorrected Concentration (ppmv)	Eq. 7E-5 Factors		Bias Corrected Concentration (ppmv)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 1 Late	16:02-17:06	43.94	-0.10	1.01	44.5



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Oxygen Calibration Data  
Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	30-Sep-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	19.09
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	9:24	-0.02	0.02	0.1%
span gas	CC4981	19.09	9:27	19.09	0.00	0.0%
mid-range	CC359583	10.99	9:29	11.01	0.02	0.1%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.02	15:49	0.08	0.6%	17:39	0.07	0.5%	-0.1%	$C_0$ 0.077
10.99	11.01	15:45	10.82	-0.9%	17:42	10.79	-1.1%	-0.2%	$C_{MA}/(C_M - C_0)$ 1.024
0.00	-0.02	17:39	0.07	0.5%	22:03	0.09	0.6%	0.1%	$C_0$ 0.080
10.99	11.01	17:42	10.79	-1.1%	22:07	10.94	-0.4%	0.8%	$C_{MA}/(C_M - C_0)$ 1.019



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Carbon Dioxide Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	30-Sep-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	18.98
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	9:24	-0.01	0.01	0.0%
span gas	CC4981	18.98	9:27	18.98	0.00	0.0%
mid-range	CC359583	10.10	9:29	9.79	0.31	1.6%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.01	15:49	0.13	0.7%	17:39	0.14	0.8%	0.1%	$C_0$ 0.134
10.10	9.79	15:45	9.73	-0.3%	17:42	9.75	-0.2%	0.1%	$C_{MA}/(C_M - C_0)$ 1.052
0.00	-0.01	17:39	0.14	0.8%	22:03	0.07	0.4%	-0.4%	$C_0$ 0.104
10.10	9.79	17:42	9.75	-0.2%	22:07	9.76	-0.1%	0.1%	$C_{MA}/(C_M - C_0)$ 1.046



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Carbon Monoxide Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	30-Sep-22
<b>Instrument Make/Model:</b>	0
<b>Instrument Name/ID</b>	0
<b>Calibration Span Value:</b>	61.99
<b>Analyzer Range:</b>	0
<b>Units:</b>	0
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5ppm Limit	2.0% Limit
zero gas	UHP N2	0.00	9:24	-1.00	1.00	1.6%
span gas	CC438688	61.99	9:48	61.23	0.76	1.2%
mid-range	CC740532	30.04	9:52	29.30	0.74	1.2%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-1.00	15:49	0.18	1.9%	17:39	0.04	1.7%	-0.2%	$C_0$ 0.108
30.04	29.30	15:43	29.37	0.1%	17:47	28.84	-0.8%	-0.9%	$C_{MA}/(C_M - C_0)$ 1.036



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Nitrogen Oxides Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	30-Sep-22
<b>Instrument Make/Model:</b>	Teledyne 200 EH
<b>Instrument Name/ID</b>	395
<b>Calibration Span Value:</b>	64.87
<b>Analyzer Range:</b>	100
<b>Units:</b>	ppmv dry
<b>Technician(s):</b>	Sastry

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference 0.5ppm Limit	Cal Error (% of Span) 2.0% Limit
zero gas	UHP N2	0.00	9:24	0.33	0.33	0.5%
span gas	CC438688	64.87	9:48	65.31	0.44	0.7%

**CEMS Calibration Bias and Drift Tests**

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	0.33	15:49	-0.03	-0.5%	17:39	-0.17	-0.8%	-0.2%	$C_0$	-0.097
30.26	29.81	15:43	30.51	1.1%	17:47	29.17	-1.0%	-2.1%	$C_{MA}/(C_M - C_0)$	1.011



## SUMMARY DATA - COMPLIANCE TESTING

30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	16:02-17:06	10.86	6.75	4.85	43.94
Run 2 Prod.	20:19-21:40	8.22	8.20	8.07	65.99

## CALIBRATION SUMMARY

30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Cal Error Zero 1 - UHP N2	9:24	-0.02	-0.01	-1.00	0.33
Cal Error Hi 1 - CC4981	9:27	19.09	18.98	-1.64	0.17
Cal Error Mid 1 - CC359583	9:29	11.01	9.79	-1.35	0.13
Cal Error Hi 1 - CC438688	9:48	0.00	-0.07	61.23	65.31
Cal Error Mid 1 - CC740532	9:52	0.00	-0.08	29.30	29.81
System Bias Mid 1 - CC740532	15:43	0.08	0.11	29.37	30.51
System Bias Mid 1 - CC359583	15:45	10.82	9.73	0.34	0.15
System Bias Zero 1 - UHP N2	15:49	0.08	0.13	0.18	-0.03
System Bias Zero 2 - UHP N2	17:39	0.07	0.14	0.04	-0.17
System Bias Mid 2 - CC359583	17:42	10.79	9.75	-0.37	-0.28
System Bias Mid 2 - CC740532	17:47	0.07	0.15	28.84	29.17
System Bias Mid 1 - CC438688	19:33	0.06	0.12	60.31	66.83
System Bias Zero 3 - UHP N2	22:03	0.09	0.07	-0.16	0.51
System Bias Mid 3 - CC359583	22:07	10.94	9.76	-0.50	0.54
System Bias Mid 3 - CC740532	22:12	0.09	0.09	29.05	31.65
System Bias Mid 2 - CC438688	22:19	0.08	0.08	60.61	68.42
#N/A	#N/A	--	--	--	--
#N/A	#N/A	--	--	--	--



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Cal Error Hi - CC4981	9:27:21 AM	19.10	18.98	-1.68	0.18
Cal Error Hi - CC4981	9:27:31 AM	19.09	18.97	-1.62	0.14
Cal Error Hi - CC4981	9:27:41 AM	19.09	18.97	-1.62	0.18
Cal Error Mid - CC359583	9:29:11 AM	11.01	9.80	-1.39	0.14
Cal Error Mid - CC359583	9:29:21 AM	11.01	9.79	-1.35	0.12
Cal Error Mid - CC359583	9:29:31 AM	11.00	9.79	-1.32	0.12
	9:29:41 AM	11.01	9.79	-1.36	0.08
	9:29:51 AM	11.01	9.79	-1.36	0.10
	9:30:01 AM	11.01	9.79	-1.33	0.10
Cal Error Hi - CC438688	9:48:21 AM	-0.01	-0.07	61.16	65.32
Cal Error Hi - CC438688	9:48:31 AM	0.00	-0.07	61.27	65.30
Cal Error Hi - CC438688	9:48:41 AM	-0.01	-0.07	61.26	65.30
	9:48:51 AM	0.00	-0.07	61.24	65.34
	9:51:41 AM	0.00	-0.08	29.36	29.80
	9:51:51 AM	0.00	-0.07	29.33	29.80
	9:52:01 AM	0.00	-0.08	29.36	29.80
Cal Error Mid - CC740532	9:52:11 AM	0.00	-0.08	29.34	29.78
Cal Error Mid - CC740532	9:52:21 AM	0.00	-0.08	29.30	29.80
Cal Error Mid - CC740532	9:52:31 AM	0.00	-0.08	29.27	29.86
	9:52:41 AM	0.00	-0.08	29.28	29.84
	3:39:31 PM	0.08	0.13	61.61	66.54
	3:39:41 PM	0.09	0.12	61.45	66.54
	3:39:51 PM	0.08	0.12	61.41	66.60
	3:40:01 PM	0.08	0.12	61.26	66.58
System Bias Mid - CC740532	3:43:21 PM	0.08	0.11	29.37	30.50
System Bias Mid - CC740532	3:43:31 PM	0.08	0.11	29.39	30.52
System Bias Mid - CC740532	3:43:41 PM	0.09	0.11	29.34	30.50
System Bias Mid - CC359583	3:45:51 PM	10.82	9.72	0.41	0.20
System Bias Mid - CC359583	3:46:01 PM	10.83	9.74	0.35	0.12
System Bias Mid - CC359583	3:46:11 PM	10.82	9.73	0.26	0.12
System Bias Zero - UHP N2	3:49:51 PM	0.08	0.13	0.18	-0.02
System Bias Zero - UHP N2	3:50:01 PM	0.08	0.13	0.18	-0.04
System Bias Zero - UHP N2	3:50:11 PM	0.08	0.12	0.18	-0.02
Run 1 Late	4:02:01 PM	11.11	6.56	3.78	47.90
Run 1 Late	4:02:11 PM	11.40	6.39	3.29	47.94
Run 1 Late	4:02:21 PM	11.30	6.44	2.72	44.46
Run 1 Late	4:02:31 PM	11.36	6.40	2.14	41.74
Run 1 Late	4:02:41 PM	11.49	6.31	1.78	41.42
Run 1 Late	4:02:51 PM	11.44	6.35	1.50	41.50
Run 1 Late	4:03:01 PM	11.03	6.65	1.35	41.90
Run 1 Late	4:03:11 PM	10.80	6.78	1.24	43.02
Run 1 Late	4:03:21 PM	10.69	6.87	1.21	41.84
Run 1 Late	4:03:31 PM	10.71	6.85	1.16	41.84
Run 1 Late	4:03:41 PM	10.12	7.26	1.16	42.20
Run 1 Late	4:03:51 PM	10.11	7.24	1.21	42.48
Run 1 Late	4:04:01 PM	10.04	7.29	1.32	42.88
Run 1 Late	4:04:11 PM	10.13	7.23	1.45	42.94
Run 1 Late	4:04:21 PM	10.16	7.20	1.56	43.32
Run 1 Late	4:04:31 PM	10.15	7.22	1.64	43.38
Run 1 Late	4:04:41 PM	10.45	7.02	1.61	43.78
Run 1 Late	4:04:51 PM	10.18	7.20	1.59	44.16
Run 1 Late	4:05:01 PM	10.26	7.16	1.42	44.16



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	4:05:11 PM	10.30	7.14	1.39	44.60
Run 1 Late	4:05:21 PM	10.34	7.11	1.33	45.06
Run 1 Late	4:05:31 PM	10.29	7.13	1.33	45.54
Run 1 Late	4:05:41 PM	10.25	7.16	1.38	45.50
Run 1 Late	4:05:51 PM	10.03	7.32	1.42	45.70
Run 1 Late	4:06:01 PM	10.04	7.29	1.50	45.88
Run 1 Late	4:06:11 PM	10.04	7.29	1.59	46.22
Run 1 Late	4:06:21 PM	9.98	7.34	1.67	46.38
Run 1 Late	4:06:31 PM	10.02	7.30	1.82	46.40
Run 1 Late	4:06:41 PM	10.07	7.27	1.94	46.44
Run 1 Late	4:06:51 PM	10.02	7.32	2.08	46.40
Run 1 Late	4:07:01 PM	10.22	7.17	2.10	46.54
Run 1 Late	4:07:11 PM	10.15	7.23	2.07	46.50
Run 1 Late	4:07:21 PM	10.12	7.24	1.96	46.52
Run 1 Late	4:07:31 PM	9.94	7.36	1.90	46.62
Run 1 Late	4:07:41 PM	10.12	7.25	1.78	46.66
Run 1 Late	4:07:51 PM	10.38	7.08	1.61	46.64
Run 1 Late	4:08:01 PM	10.47	7.02	1.55	46.64
Run 1 Late	4:08:11 PM	10.60	6.93	1.50	46.74
Run 1 Late	4:08:21 PM	10.32	7.12	1.45	46.58
Run 1 Late	4:08:31 PM	10.16	7.22	1.42	46.52
Run 1 Late	4:08:41 PM	9.96	7.36	1.42	46.48
Run 1 Late	4:08:51 PM	9.93	7.38	1.38	46.62
Run 1 Late	4:09:01 PM	9.89	7.41	1.33	46.56
Run 1 Late	4:09:11 PM	9.88	7.43	1.32	46.52
Run 1 Late	4:09:21 PM	9.83	7.43	1.33	46.56
Run 1 Late	4:09:31 PM	10.10	7.25	1.30	46.52
Run 1 Late	4:09:41 PM	10.16	7.22	1.27	46.62
Run 1 Late	4:09:51 PM	10.40	7.06	1.26	46.52
Run 1 Late	4:10:01 PM	10.41	7.06	1.26	46.48
Run 1 Late	4:10:11 PM	10.42	7.05	1.27	46.48
Run 1 Late	4:10:21 PM	10.38	7.07	1.24	46.40
Run 1 Late	4:10:31 PM	10.35	7.09	1.27	46.34
Run 1 Late	4:10:41 PM	10.35	7.10	1.26	46.38
Run 1 Late	4:10:51 PM	10.40	7.07	1.26	46.40
Run 1 Late	4:11:01 PM	10.45	7.03	1.21	46.20
Run 1 Late	4:11:11 PM	10.44	7.03	1.21	46.10
Run 1 Late	4:11:21 PM	10.36	7.09	1.19	46.08
Run 1 Late	4:11:31 PM	10.33	7.10	1.16	46.06
Run 1 Late	4:11:41 PM	10.36	7.08	1.16	46.06
Run 1 Late	4:11:51 PM	10.38	7.09	1.16	45.94
Run 1 Late	4:12:01 PM	10.26	7.17	1.12	45.84
Run 1 Late	4:12:11 PM	10.22	7.18	1.13	45.60
Run 1 Late	4:12:21 PM	10.21	7.19	1.07	45.50
Run 1 Late	4:12:31 PM	10.22	7.18	1.09	45.52
Run 1 Late	4:12:41 PM	10.12	7.24	1.03	45.60
Run 1 Late	4:12:51 PM	10.19	7.20	1.03	45.74
Run 1 Late	4:13:01 PM	10.16	7.22	0.99	45.90
Run 1 Late	4:13:11 PM	10.06	7.29	0.99	45.88
Run 1 Late	4:13:21 PM	10.03	7.31	0.96	46.08
Run 1 Late	4:13:31 PM	10.06	7.29	0.99	45.92
Run 1 Late	4:13:41 PM	10.15	7.23	0.90	45.96



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	4:13:51 PM	10.18	7.20	0.92	45.94
Run 1 Late	4:14:01 PM	10.26	7.15	0.90	45.98
Run 1 Late	4:14:11 PM	10.20	7.18	0.89	46.06
Run 1 Late	4:14:21 PM	10.24	7.15	0.89	46.34
Run 1 Late	4:14:31 PM	10.06	7.29	0.89	46.56
Run 1 Late	4:14:41 PM	10.14	7.25	0.90	46.54
Run 1 Late	4:14:51 PM	10.24	7.17	0.89	46.62
Run 1 Late	4:15:01 PM	10.48	7.00	0.93	46.62
Run 1 Late	4:15:11 PM	10.51	6.99	0.89	46.28
Run 1 Late	4:15:21 PM	10.35	7.09	0.87	46.28
Run 1 Late	4:15:31 PM	10.29	7.14	0.83	46.02
Run 1 Late	4:15:41 PM	10.41	7.04	0.84	45.94
Run 1 Late	4:15:51 PM	10.58	6.93	0.84	46.06
Run 1 Late	4:16:01 PM	10.33	7.12	0.81	46.06
Run 1 Late	4:16:11 PM	10.24	7.16	0.87	46.00
Run 1 Late	4:16:21 PM	10.26	7.16	0.78	46.02
Run 1 Late	4:16:31 PM	10.30	7.13	0.77	45.94
Run 1 Late	4:16:41 PM	10.50	6.99	0.72	45.90
Run 1 Late	4:16:51 PM	10.37	7.08	0.73	45.90
Run 1 Late	4:17:01 PM	10.39	7.07	0.69	45.80
Run 1 Late	4:17:11 PM	10.24	7.16	0.72	45.64
Run 1 Late	4:17:21 PM	10.26	7.17	0.72	45.64
Run 1 Late	4:17:31 PM	10.11	7.25	0.67	45.78
Run 1 Late	4:17:41 PM	10.21	7.19	0.67	45.80
Run 1 Late	4:17:51 PM	10.07	7.29	0.64	45.92
Run 1 Late	4:18:01 PM	10.17	7.23	0.63	45.76
Run 1 Late	4:18:11 PM	10.32	7.12	0.61	45.70
Run 1 Late	4:18:21 PM	10.34	7.10	0.60	45.68
Run 1 Late	4:18:31 PM	10.34	7.11	0.64	45.72
Run 1 Late	4:18:41 PM	10.38	7.08	0.58	45.66
Run 1 Late	4:18:51 PM	10.21	7.19	0.58	45.62
Run 1 Late	4:19:01 PM	10.13	7.23	0.57	45.62
Run 1 Late	4:19:11 PM	10.21	7.18	0.55	45.64
Run 1 Late	4:19:21 PM	10.13	7.24	0.58	45.78
Run 1 Late	4:19:31 PM	10.09	7.25	0.60	46.06
Run 1 Late	4:19:41 PM	10.13	7.22	0.55	46.20
Run 1 Late	4:19:51 PM	10.22	7.16	0.60	46.22
Run 1 Late	4:20:01 PM	10.13	7.22	0.57	46.38
Run 1 Late	4:20:11 PM	10.09	7.25	0.61	46.46
Run 1 Late	4:20:21 PM	10.11	7.25	0.63	46.38
Run 1 Late	4:20:31 PM	10.06	7.29	0.61	46.40
Run 1 Late	4:20:41 PM	9.92	7.36	0.67	46.36
Run 1 Late	4:20:51 PM	10.00	7.30	0.66	46.38
Run 1 Late	4:21:01 PM	10.10	7.26	0.72	46.38
Run 1 Late	4:21:11 PM	10.18	7.19	0.66	46.44
Run 1 Late	4:21:21 PM	10.28	7.13	0.72	46.40
Run 1 Late	4:21:31 PM	10.26	7.14	0.73	46.28
Run 1 Late	4:21:41 PM	10.29	7.14	0.75	46.18
Run 1 Late	4:21:51 PM	10.12	7.23	0.86	45.94
Run 1 Late	4:22:01 PM	10.21	7.17	0.95	45.96
Run 1 Late	4:22:11 PM	10.17	7.19	1.07	45.84
Run 1 Late	4:22:21 PM	10.46	6.99	1.15	45.68



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	4:22:31 PM	10.48	6.99	1.16	45.54
Run 1 Late	4:22:41 PM	10.37	7.08	1.13	45.54
Run 1 Late	4:22:51 PM	10.21	7.17	1.07	45.54
Run 1 Late	4:23:01 PM	10.05	7.29	1.03	45.50
Run 1 Late	4:23:11 PM	10.07	7.27	0.98	45.46
Run 1 Late	4:23:21 PM	10.15	7.22	0.98	45.44
Run 1 Late	4:23:31 PM	10.12	7.23	0.90	45.52
Run 1 Late	4:23:41 PM	10.16	7.20	0.96	45.50
Run 1 Late	4:23:51 PM	10.03	7.31	1.06	45.72
Run 1 Late	4:24:01 PM	10.12	7.24	1.15	45.80
Run 1 Late	4:24:11 PM	10.16	7.21	1.35	45.94
Run 1 Late	4:24:21 PM	10.07	7.27	1.52	45.92
Run 1 Late	4:24:31 PM	10.10	7.26	1.87	46.02
Run 1 Late	4:24:41 PM	10.03	7.30	2.30	46.06
Run 1 Late	4:24:51 PM	10.05	7.28	2.91	46.28
Run 1 Late	4:25:01 PM	10.07	7.28	3.54	46.28
Run 1 Late	4:25:11 PM	10.00	7.32	4.26	46.56
Run 1 Late	4:25:21 PM	9.91	7.38	4.97	46.72
Run 1 Late	4:25:31 PM	10.09	7.25	5.76	46.86
Run 1 Late	4:25:41 PM	10.14	7.21	6.47	46.86
Run 1 Late	4:25:51 PM	10.10	7.25	7.16	46.88
Run 1 Late	4:26:01 PM	10.34	7.08	7.79	46.94
Run 1 Late	4:26:11 PM	10.74	6.78	8.27	46.88
Run 1 Late	4:26:21 PM	10.76	6.80	8.49	46.62
Run 1 Late	4:26:31 PM	10.34	7.08	8.46	46.62
Run 1 Late	4:26:41 PM	11.04	6.60	8.20	46.42
Run 1 Late	4:26:51 PM	11.20	6.50	7.71	43.78
Run 1 Late	4:27:01 PM	11.11	6.58	7.03	42.14
Run 1 Late	4:27:11 PM	10.88	6.73	6.23	42.12
Run 1 Late	4:27:21 PM	10.76	6.80	5.23	41.80
Run 1 Late	4:27:31 PM	10.71	6.85	4.35	43.12
Run 1 Late	4:27:41 PM	10.51	6.97	3.54	44.12
Run 1 Late	4:27:51 PM	10.36	7.09	2.95	42.76
Run 1 Late	4:28:01 PM	10.38	7.07	2.56	42.76
Run 1 Late	4:28:11 PM	10.48	7.00	2.33	42.78
Run 1 Late	4:28:21 PM	10.36	7.08	2.16	42.80
Run 1 Late	4:28:31 PM	10.32	7.12	2.02	43.10
Run 1 Late	4:28:41 PM	10.12	7.24	1.96	43.32
Run 1 Late	4:28:51 PM	10.21	7.18	1.85	43.30
Run 1 Late	4:29:01 PM	10.33	7.10	1.78	43.52
Run 1 Late	4:29:11 PM	10.35	7.07	1.73	43.78
Run 1 Late	4:29:21 PM	10.38	7.06	1.74	44.10
Run 1 Late	4:29:31 PM	10.66	6.88	1.76	44.12
Run 1 Late	4:29:41 PM	10.48	6.99	1.78	44.26
Run 1 Late	4:29:51 PM	10.35	7.10	1.81	44.52
Run 1 Late	4:30:01 PM	10.36	7.08	1.73	44.80
Run 1 Late	4:30:11 PM	10.29	7.14	1.71	44.80
Run 1 Late	4:30:21 PM	10.34	7.10	1.65	45.04
Run 1 Late	4:30:31 PM	10.47	7.01	1.58	45.04
Run 1 Late	4:30:41 PM	10.54	6.97	1.59	45.26
Run 1 Late	4:30:51 PM	10.47	7.02	1.53	45.20
Run 1 Late	4:31:01 PM	10.45	7.03	1.53	45.14



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	4:31:11 PM	10.40	7.06	1.50	45.20
Run 1 Late	4:31:21 PM	10.28	7.13	1.42	45.26
Run 1 Late	4:31:31 PM	10.14	7.22	1.38	45.48
Run 1 Late	4:31:41 PM	10.22	7.17	1.33	45.44
Run 1 Late	4:31:51 PM	10.40	7.06	1.33	45.60
Run 1 Late	4:32:01 PM	10.35	7.10	1.30	45.74
Run 1 Late	4:32:11 PM	10.36	7.09	1.30	45.84
Run 1 Late	4:32:21 PM	10.30	7.12	1.24	45.84
Run 1 Late	4:32:31 PM	10.06	7.29	1.27	45.80
Run 1 Late	4:32:41 PM	10.03	7.31	1.24	45.72
Run 1 Late	4:32:51 PM	10.14	7.22	1.26	45.74
Run 1 Late	4:33:01 PM	10.15	7.22	1.19	45.80
Run 1 Late	4:33:11 PM	10.05	7.28	1.22	46.02
Run 1 Late	4:33:21 PM	10.36	7.08	1.18	46.04
Run 1 Late	4:33:31 PM	10.53	6.97	1.18	46.12
Run 1 Late	4:33:41 PM	10.62	6.91	1.16	46.18
Run 1 Late	4:33:51 PM	10.64	6.88	1.16	45.98
Run 1 Late	4:34:01 PM	10.55	6.96	1.16	46.02
Run 1 Late	4:34:11 PM	10.30	7.14	1.16	45.78
Run 1 Late	4:34:21 PM	10.30	7.12	1.12	45.74
Run 1 Late	4:34:31 PM	10.17	7.21	1.15	45.76
Run 1 Late	4:34:41 PM	10.48	6.99	1.09	45.74
Run 1 Late	4:34:51 PM	10.41	7.05	1.10	45.94
Run 1 Late	4:35:01 PM	10.37	7.07	1.12	46.06
Run 1 Late	4:35:11 PM	10.56	6.93	1.16	46.06
Run 1 Late	4:35:21 PM	10.60	6.91	1.13	46.00
Run 1 Late	4:35:31 PM	10.52	6.96	1.13	46.02
Run 1 Late	4:35:41 PM	10.31	7.11	1.07	45.94
Run 1 Late	4:35:51 PM	10.36	7.09	1.10	45.96
Run 1 Late	4:36:01 PM	10.48	7.01	1.07	46.02
Run 1 Late	4:36:11 PM	10.42	7.04	1.06	46.00
Run 1 Late	4:36:21 PM	10.22	7.17	1.07	46.12
Run 1 Late	4:36:31 PM	10.15	7.21	1.06	46.30
Run 1 Late	4:36:41 PM	10.68	6.84	1.10	46.44
Run 1 Late	4:36:51 PM	10.87	6.74	1.07	46.44
Run 1 Late	4:37:01 PM	10.94	6.69	1.09	46.22
Run 1 Late	4:37:11 PM	10.76	6.79	1.10	45.84
Run 1 Late	4:37:21 PM	10.45	7.03	1.09	45.60
Run 1 Late	4:37:31 PM	10.19	7.19	1.12	45.58
Run 1 Late	4:37:41 PM	10.12	7.24	1.03	45.54
Run 1 Late	4:37:51 PM	10.10	7.25	0.99	45.82
Run 1 Late	4:38:01 PM	10.13	7.24	0.92	45.94
Run 1 Late	4:38:11 PM	10.36	7.07	0.90	45.96
Run 1 Late	4:38:21 PM	10.61	6.91	0.84	45.96
Run 1 Late	4:38:31 PM	10.81	6.76	0.86	45.94
Run 1 Late	4:38:41 PM	10.67	6.88	0.84	45.88
Run 1 Late	4:38:51 PM	10.63	6.91	0.86	45.76
Run 1 Late	4:39:01 PM	10.47	7.02	0.87	45.70
Run 1 Late	4:39:11 PM	10.52	6.98	0.81	45.68
Run 1 Late	4:39:21 PM	10.47	7.01	0.81	45.96
Run 1 Late	4:39:31 PM	10.57	6.94	0.78	46.26
Run 1 Late	4:39:41 PM	10.44	7.04	0.77	46.54



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	4:39:51 PM	10.48	7.00	0.78	46.58
Run 1 Late	4:40:01 PM	10.65	6.89	0.73	46.52
Run 1 Late	4:40:11 PM	10.50	7.00	0.72	46.18
Run 1 Late	4:40:21 PM	10.42	7.06	0.70	46.04
Run 1 Late	4:40:31 PM	10.24	7.16	0.73	45.88
Run 1 Late	4:40:41 PM	10.30	7.12	0.67	45.84
Run 1 Late	4:40:51 PM	10.46	7.02	0.67	45.86
Run 1 Late	4:41:01 PM	10.38	7.07	0.64	45.82
Run 1 Late	4:41:11 PM	10.36	7.07	0.60	45.92
Run 1 Late	4:41:21 PM	10.43	7.05	0.61	45.88
Run 1 Late	4:41:31 PM	10.07	7.28	0.60	45.86
Run 1 Late	4:41:41 PM	10.17	7.21	0.60	45.82
Run 1 Late	4:41:51 PM	10.13	7.25	0.55	45.78
Run 1 Late	4:42:01 PM	10.09	7.26	0.60	45.76
Run 1 Late	4:42:11 PM	10.11	7.25	0.55	45.78
Run 1 Late	4:42:21 PM	10.33	7.10	0.55	45.82
Run 1 Late	4:42:31 PM	10.32	7.12	0.57	45.94
Run 1 Late	4:42:41 PM	10.28	7.14	0.51	45.94
Run 1 Late	4:42:51 PM	10.27	7.16	0.55	45.94
Run 1 Late	4:43:01 PM	10.53	6.96	0.55	45.96
Run 1 Late	4:43:11 PM	10.55	6.95	0.57	45.86
Run 1 Late	4:43:21 PM	10.74	6.83	0.60	45.84
Run 1 Late	4:43:31 PM	10.64	6.91	0.63	45.90
Run 1 Late	4:43:41 PM	10.69	6.86	0.61	45.92
Run 1 Late	4:43:51 PM	10.74	6.83	0.57	46.06
Run 1 Late	4:44:01 PM	10.83	6.76	0.55	45.96
Run 1 Late	4:44:11 PM	10.83	6.76	0.57	45.88
Run 1 Late	4:44:21 PM	10.53	6.98	0.57	45.94
Run 1 Late	4:44:31 PM	10.44	7.03	0.57	45.72
Run 1 Late	4:44:41 PM	10.40	7.05	0.55	45.72
Run 1 Late	4:44:51 PM	10.56	6.95	0.52	45.84
Run 1 Late	4:45:01 PM	10.43	7.06	0.52	45.96
Run 1 Late	4:45:11 PM	10.33	7.11	0.47	45.94
Run 1 Late	4:45:21 PM	10.39	7.06	0.43	46.12
Run 1 Late	4:45:31 PM	10.61	6.92	0.46	46.34
Run 1 Late	4:45:41 PM	10.64	6.89	0.43	46.56
Run 1 Late	4:45:51 PM	10.64	6.90	0.44	46.52
Run 1 Late	4:46:01 PM	10.53	6.98	0.40	46.58
Run 1 Late	4:46:11 PM	10.34	7.12	0.41	46.50
Run 1 Late	4:46:21 PM	10.18	7.19	0.38	46.70
Run 1 Late	4:46:31 PM	10.82	6.74	0.38	46.72
Run 1 Late	4:46:41 PM	10.79	6.78	0.34	46.96
Run 1 Late	4:46:51 PM	10.38	7.07	0.35	46.96
Run 1 Late	4:47:01 PM	10.47	7.02	0.34	46.90
Run 1 Late	4:47:11 PM	10.70	6.84	0.38	46.94
Run 1 Late	4:47:21 PM	10.83	6.75	0.40	46.96
Run 1 Late	4:47:31 PM	10.58	6.95	0.40	46.94
Run 1 Late	4:47:41 PM	10.32	7.10	0.41	46.72
Run 1 Late	4:47:51 PM	10.08	7.27	0.41	46.82
Run 1 Late	4:48:01 PM	9.91	7.39	0.46	46.80
Run 1 Late	4:48:11 PM	10.00	7.31	0.44	47.00
Run 1 Late	4:48:21 PM	10.17	7.20	0.46	47.32



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	4:48:31 PM	10.11	7.25	0.57	47.52
Run 1 Late	4:48:41 PM	10.15	7.21	0.64	47.52
Run 1 Late	4:48:51 PM	10.08	7.27	0.87	47.54
Run 1 Late	4:49:01 PM	10.07	7.29	0.93	47.54
Run 1 Late	4:49:11 PM	10.11	7.24	1.13	47.88
Run 1 Late	4:49:21 PM	10.14	7.23	1.21	47.82
Run 1 Late	4:49:31 PM	10.10	7.23	1.35	47.80
Run 1 Late	4:49:41 PM	10.18	7.20	1.52	47.82
Run 1 Late	4:49:51 PM	10.26	7.14	1.74	47.80
Run 1 Late	4:50:01 PM	10.14	7.22	1.94	48.02
Run 1 Late	4:50:11 PM	10.20	7.19	2.20	47.90
Run 1 Late	4:50:21 PM	10.18	7.20	2.43	47.90
Run 1 Late	4:50:31 PM	10.20	7.20	2.72	47.68
Run 1 Late	4:50:41 PM	10.05	7.29	3.08	47.42
Run 1 Late	4:50:51 PM	10.02	7.32	3.67	47.32
Run 1 Late	4:51:01 PM	9.95	7.36	4.41	47.32
Run 1 Late	4:51:11 PM	9.96	7.35	5.53	47.16
Run 1 Late	4:51:21 PM	9.97	7.33	6.75	47.18
Run 1 Late	4:51:31 PM	10.02	7.29	8.22	47.28
Run 1 Late	4:51:41 PM	10.05	7.28	9.69	47.28
Run 1 Late	4:51:51 PM	10.23	7.17	11.02	47.28
Run 1 Late	4:52:01 PM	10.16	7.21	12.11	47.38
Run 1 Late	4:52:11 PM	10.13	7.24	12.84	47.48
Run 1 Late	4:52:21 PM	10.34	7.06	13.50	47.72
Run 1 Late	4:52:31 PM	12.88	5.34	14.04	47.66
Run 1 Late	4:52:41 PM	14.10	4.54	13.99	47.72
Run 1 Late	4:52:51 PM	13.83	4.78	13.29	40.24
Run 1 Late	4:53:01 PM	13.90	4.70	11.80	31.78
Run 1 Late	4:53:11 PM	13.31	5.12	9.86	31.78
Run 1 Late	4:53:21 PM	12.11	5.89	8.14	32.94
Run 1 Late	4:53:31 PM	13.20	5.15	6.86	35.20
Run 1 Late	4:53:41 PM	12.83	5.45	5.91	36.82
Run 1 Late	4:53:51 PM	11.22	6.51	5.36	39.48
Run 1 Late	4:54:01 PM	11.51	6.28	5.11	39.46
Run 1 Late	4:54:11 PM	13.13	5.20	5.23	39.46
Run 1 Late	4:54:21 PM	13.29	5.09	5.39	39.28
Run 1 Late	4:54:31 PM	13.60	4.90	5.56	34.24
Run 1 Late	4:54:41 PM	12.21	5.87	5.56	34.92
Run 1 Late	4:54:51 PM	12.24	5.80	5.53	34.94
Run 1 Late	4:55:01 PM	12.92	5.36	5.46	37.84
Run 1 Late	4:55:11 PM	13.52	4.96	5.51	36.96
Run 1 Late	4:55:21 PM	13.05	5.30	5.51	33.84
Run 1 Late	4:55:31 PM	14.02	4.62	5.56	33.82
Run 1 Late	4:55:41 PM	11.97	6.07	5.57	31.96
Run 1 Late	4:55:51 PM	12.01	5.96	5.85	35.12
Run 1 Late	4:56:01 PM	12.82	5.41	6.38	37.96
Run 1 Late	4:56:11 PM	13.75	4.78	7.07	37.92
Run 1 Late	4:56:21 PM	14.27	4.43	7.58	35.94
Run 1 Late	4:56:31 PM	15.36	3.69	7.84	35.94
Run 1 Late	4:56:41 PM	15.65	3.50	7.65	28.72
Run 1 Late	4:56:51 PM	14.40	4.39	7.12	25.72
Run 1 Late	4:57:01 PM	14.09	4.57	6.51	25.68



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	4:57:11 PM	12.91	5.37	5.91	30.12
Run 1 Late	4:57:21 PM	12.91	5.34	5.43	34.02
Run 1 Late	4:57:31 PM	13.03	5.24	5.25	35.82
Run 1 Late	4:57:41 PM	13.29	5.09	5.27	35.82
Run 1 Late	4:57:51 PM	12.59	5.59	5.43	35.06
Run 1 Late	4:58:01 PM	12.53	5.61	5.60	35.26
Run 1 Late	4:58:11 PM	13.39	5.00	5.74	36.10
Run 1 Late	4:58:21 PM	13.79	4.76	5.72	36.08
Run 1 Late	4:58:31 PM	13.36	5.06	5.69	34.06
Run 1 Late	4:58:41 PM	13.40	5.03	5.54	33.80
Run 1 Late	4:58:51 PM	13.09	5.24	5.36	33.76
Run 1 Late	4:59:01 PM	12.72	5.49	5.08	33.76
Run 1 Late	4:59:11 PM	13.16	5.17	4.91	33.72
Run 1 Late	4:59:21 PM	12.05	5.98	4.71	33.86
Run 1 Late	4:59:31 PM	11.56	6.26	4.70	37.06
Run 1 Late	4:59:41 PM	11.22	6.49	4.73	40.72
Run 1 Late	4:59:51 PM	11.57	6.25	5.13	41.60
Run 1 Late	5:00:01 PM	11.45	6.34	6.32	41.62
Run 1 Late	5:00:11 PM	12.46	5.63	8.19	41.64
Run 1 Late	5:00:21 PM	12.36	5.77	9.92	39.68
Run 1 Late	5:00:31 PM	11.67	6.22	11.85	38.70
Run 1 Late	5:00:41 PM	11.08	6.61	14.46	38.66
Run 1 Late	5:00:51 PM	11.40	6.37	18.02	41.74
Run 1 Late	5:01:01 PM	11.52	6.31	22.16	41.18
Run 1 Late	5:01:11 PM	11.52	6.31	26.19	41.18
Run 1 Late	5:01:21 PM	13.29	5.08	27.98	40.30
Run 1 Late	5:01:31 PM	12.22	5.83	27.40	40.28
Run 1 Late	5:01:41 PM	11.59	6.27	26.14	37.66
Run 1 Late	5:01:51 PM	11.87	6.06	24.98	39.10
Run 1 Late	5:02:01 PM	11.51	6.31	24.81	40.04
Run 1 Late	5:02:11 PM	11.75	6.13	26.04	40.02
Run 1 Late	5:02:21 PM	11.52	6.31	27.78	39.94
Run 1 Late	5:02:31 PM	11.47	6.35	29.79	39.60
Run 1 Late	5:02:41 PM	11.99	6.02	31.55	39.58
Run 1 Late	5:02:51 PM	11.58	6.28	33.09	39.62
Run 1 Late	5:03:01 PM	11.49	6.32	34.62	39.52
Run 1 Late	5:03:11 PM	11.71	6.18	36.12	39.54
Run 1 Late	5:03:21 PM	12.70	5.49	37.74	39.50
Run 1 Late	5:03:31 PM	15.20	3.78	38.49	39.50
Run 1 Late	5:03:41 PM	13.08	5.30	37.67	39.48
Run 1 Late	5:03:51 PM	12.77	5.46	35.54	39.54
Run 1 Late	5:04:01 PM	13.82	4.71	32.76	36.86
Run 1 Late	5:04:11 PM	12.83	5.46	30.47	34.82
Run 1 Late	5:04:21 PM	11.87	6.07	29.91	34.82
Run 1 Late	5:04:31 PM	11.87	6.06	31.41	37.98
Run 1 Late	5:04:41 PM	12.64	5.55	34.44	40.22
Run 1 Late	5:04:51 PM	13.42	5.04	37.97	38.82
Run 1 Late	5:05:01 PM	14.45	4.30	41.16	35.36
Run 1 Late	5:05:11 PM	14.15	4.54	42.63	35.40
Run 1 Late	5:05:21 PM	13.68	4.86	42.49	32.22
Run 1 Late	5:05:31 PM	12.93	5.37	42.09	32.92
Run 1 Late	5:05:41 PM	14.82	4.09	41.22	31.86



# CEMS RAW DATA

## 30-Sep-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 1 Late	5:05:51 PM	14.56	4.27	40.26	31.84
System Bias Zero - UHP N2	5:39:41 PM	0.07	0.14	0.03	-0.14
System Bias Zero - UHP N2	5:39:51 PM	0.08	0.14	0.05	-0.18
System Bias Zero - UHP N2	5:40:01 PM	0.07	0.14	0.03	-0.18
System Bias Mid - CC359583	5:42:41 PM	10.79	9.75	-0.40	-0.28
System Bias Mid - CC359583	5:42:51 PM	10.79	9.74	-0.35	-0.28
System Bias Mid - CC359583	5:43:01 PM	10.79	9.75	-0.35	-0.28
System Bias Mid - CC740532	5:47:31 PM	0.08	0.15	28.87	29.22
System Bias Mid - CC740532	5:47:41 PM	0.07	0.15	28.82	29.20
System Bias Mid - CC740532	5:47:51 PM	0.07	0.15	28.82	29.08
System Bias Mid - CC438688	7:33:11 PM	0.06	0.12	60.29	66.78
System Bias Mid - CC438688	7:33:21 PM	0.06	0.13	60.31	66.88
System Bias Mid - CC438688	7:33:31 PM	0.06	0.13	60.32	66.84



**Project:** Haverhill Bypass Vent Stack 6 Test 2022  
**Facility:** SunCoke HHO  
**Source:** BVS-6  
**Project ID:** 60682866

Corrected Oxygen Concentration					
1-Oct-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 3 Mid	09:24-10:24	8.94	0.12	1.02	8.96
Run 4 (Bag)	22:28-22:31	9.31	0.09	1.01	9.35

Corrected Carbon Dioxide Concentration					
1-Oct-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
Run 3 Mid	09:24-10:24	7.82	-0.03	1.04	8.16
Run 4 (Bag)	22:28-22:31	7.59	-0.03	1.04	7.88



Corrected Carbon Monoxide Concentration					
1-Oct-22	Time	Uncorrected Concentration (ppmv)	Eq. 7E-5 Factors		Bias Corrected Concentration (ppmv)
			$C_O$	$C_{MA}/(C_M-C_O)$	
Run 3 Mid	09:24-10:24	4.51	0.43	1.04	4.3

Corrected Nitrogen Oxides Concentration					
1-Oct-22	Time	Uncorrected Concentration (ppmv)	Eq. 7E-5 Factors		Bias Corrected Concentration (ppmv)
			$C_O$	$C_{MA}/(C_M-C_O)$	
Run 3 Mid	09:24-10:24	39.88	0.15	1.04	41.2



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Oxygen Calibration Data  
Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	1-Oct-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	19.09
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	6:19	0.00	0.00	0.0%
span gas	CC4981	19.09	6:27	19.09	0.00	0.0%
mid-range	CC359583	10.99	6:32	11.00	0.01	0.0%

**Calibration Error Test Results**

	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	22:07	0.00	0.00	0.0%
span gas	CC4981	19.09	22:09	19.11	0.02	0.1%
mid-range	CC359583	10.99	22:12	11.01	0.02	0.1%

**CEMS Calibration Bias and Drift Tests**

Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5	
0.00	0.00	9:10	0.12	0.6%	11:24	0.13	0.7%	0.1%	$C_0$	0.125
10.99	11.00	9:13	10.93	-0.3%	11:28	10.94	-0.3%	0.1%	$C_{MA}/(C_M - C_0)$	1.016
0.00	0.00	22:07	0.13	0.7%	22:16	0.05	0.3%	-0.4%	$C_0$	0.092
10.99	11.01	22:12	10.94	-0.3%	22:38	10.92	-0.5%	-0.1%	$C_{MA}/(C_M - C_0)$	1.014



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Carbon Dioxide Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	1-Oct-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	18.98
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	6:19	-0.02	0.02	0.1%
span gas	CC4981	18.98	6:27	18.97	0.01	0.1%
mid-range	CC359583	10.10	6:32	9.75	0.35	1.8%

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	22:07	-0.06	0.06	0.3%
span gas	CC4981	18.98	22:09	18.99	0.01	0.1%
mid-range	CC359583	10.10	22:12	9.80	0.30	1.6%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.02	9:10	-0.01	0.0%	11:24	-0.04	-0.1%	-0.2%	$C_0$ -0.029
10.10	9.75	9:13	9.70	-0.3%	11:28	9.67	-0.4%	-0.2%	$C_{MA}/(C_M - C_0)$ 1.039
0.00	-0.06	22:07	-0.04	0.1%	22:16	-0.01	0.2%	0.2%	$C_0$ -0.028
10.10	9.80	22:12	9.67	-0.6%	22:38	9.78	-0.1%	0.5%	$C_{MA}/(C_M - C_0)$ 1.036



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Carbon Monoxide Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	1-Oct-22
<b>Instrument Make/Model:</b>	0
<b>Instrument Name/ID</b>	0
<b>Calibration Span Value:</b>	61.99
<b>Analyzer Range:</b>	0
<b>Units:</b>	0
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5ppm Limit	2.0% Limit
zero gas	UHP N2	0.00	6:19	-0.02	0.02	0.0%
span gas	CC438688	61.99	6:40	61.37	0.62	1.0%
mid-range	CC740532	30.04	6:44	29.47	0.57	0.9%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.02	9:10	0.68	1.1%	11:24	0.19	0.3%	-0.8%	$C_0$ 0.434
30.04	29.47	9:20	29.20	-0.4%	11:34	29.20	-0.4%	0.0%	$C_{MA}/(C_M - C_0)$ 1.044



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Nitrogen Oxides Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	1-Oct-22
<b>Instrument Make/Model:</b>	Teledyne 200 EH
<b>Instrument Name/ID</b>	395
<b>Calibration Span Value:</b>	64.87
<b>Analyzer Range:</b>	100
<b>Units:</b>	ppmv dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference 0.5ppm Limit	Cal Error (% of Span) 2.0% Limit
zero gas	UHP N2	0.00	6:19	0.58	0.58	0.9%
span gas	CC438688	64.87	6:40	65.81	0.94	1.4%
mid-range	CC740532	30.26	6:44	30.21	0.05	0.1%

NO <sub>2</sub> Challenge Gas Converter Efficiency Test Results					
Cylinder ID	Certified Value	Time	CEM Response	Recovery (%)	≥90%?
CC518059	49.10	12:08	48.98	99.7	PASS

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	0.58	9:10	0.22	-0.6%	11:24	0.08	-0.8%	-0.2%	C <sub>0</sub> 0.150
30.26	30.21	9:20	29.79	-0.6%	11:34	28.85	-2.1%	-1.5%	C <sub>MA</sub> /(C <sub>M</sub> -C <sub>0</sub> ) 1.037



## SUMMARY DATA - COMPLIANCE TESTING

**01-Oct-22**

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	09:24-10:24	8.94	7.82	4.51	39.88
Run 4 (Bag)	22:28-22:31	9.31	7.59	29.07	28.34

## CALIBRATION SUMMARY

**01-Oct-22**

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Cal Error Zero 1 - UHP N2	6:19	0.00	-0.02	-0.02	0.58
Cal Error Hi 1 - CC4981	6:27	19.09	18.97	-0.70	0.01
Cal Error Mid 1 - CC359583	6:32	11.00	9.75	-0.32	0.11
Cal Error Hi 1 - CC438688	6:40	0.01	-0.09	61.37	65.81
Cal Error Mid 1 - CC740532	6:44	0.02	-0.10	29.47	30.21
System Bias Zero 1 - UHP N2	9:10	0.12	-0.01	0.68	0.22
System Bias Mid 1 - CC359583	9:13	10.93	9.70	-0.10	0.14
System Bias Mid 1 - CC740532	9:20	0.10	-0.02	29.20	29.79
System Bias Zero 2 - UHP N2	11:24	0.13	-0.04	0.19	0.08
System Bias Mid 2 - CC359583	11:28	10.94	9.67	-0.20	0.12
System Bias Mid 2 - CC740532	11:34	0.11	-0.02	29.20	28.85
Conv Check 1 - CC518059	12:08	0.13	-0.13	-0.21	48.98
Cal Error Zero 2 - UHP N2	22:07	0.00	-0.06	0.25	6.37
Cal Error Hi 2 - CC4981	22:09	19.11	18.99	0.17	2.21
Cal Error Mid 2 - CC359583	22:12	11.01	9.80	0.25	1.33
System Bias Zero 3 - UHP N2	22:16	0.05	-0.01	5.77	1.10
System Bias Mid 3 - CC740532	22:20	10.91	9.80	8.36	1.10
System Bias Zero 4 - UHP N2	22:35	0.07	-0.01	11.31	3.64
System Bias Mid 3 - CC359583	22:38	10.92	9.78	8.47	1.41



# CEMS RAW DATA

01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide (l)	Oxides of Nitrogen (ppmv dry)
Cal Error Zero - UHP N2	6:19:49 AM	-0.01	-0.02	0.00	0.54
Cal Error Zero - UHP N2	6:19:59 AM	0.00	-0.02	-0.03	0.60
Cal Error Zero - UHP N2	6:20:09 AM	0.00	-0.02	0.00	0.58
Cal Error Zero - UHP N2	6:20:19 AM	0.00	-0.03	-0.03	0.60
Cal Error Hi - CC4981	6:27:19 AM	19.09	18.97	-0.72	0.02
Cal Error Hi - CC4981	6:27:29 AM	19.09	18.97	-0.69	0.00
Cal Error Hi - CC4981	6:27:39 AM	19.09	18.97	-0.73	-0.02
Cal Error Hi - CC4981	6:27:49 AM	19.09	18.96	-0.67	0.02
Cal Error Mid - CC359583	6:32:09 AM	11.00	9.76	-0.34	0.12
Cal Error Mid - CC359583	6:32:19 AM	11.00	9.75	-0.29	0.14
Cal Error Mid - CC359583	6:32:29 AM	11.00	9.75	-0.32	0.08
Cal Error Hi - CC438688	6:40:59 AM	0.01	-0.10	61.35	65.82
Cal Error Hi - CC438688	6:41:09 AM	0.01	-0.09	61.38	65.80
Cal Error Hi - CC438688	6:41:19 AM	0.02	-0.09	61.38	65.80
Cal Error Mid - CC740532	6:44:19 AM	0.02	-0.10	29.49	30.20
Cal Error Mid - CC740532	6:44:29 AM	0.02	-0.10	29.46	30.20
Cal Error Mid - CC740532	6:44:39 AM	0.02	-0.11	29.46	30.22
System Bias Zero - UHP N2	9:10:39 AM	0.12	-0.02	0.77	0.20
System Bias Zero - UHP N2	9:10:49 AM	0.12	-0.01	0.66	0.20
System Bias Zero - UHP N2	9:10:59 AM	0.12	-0.01	0.61	0.26
System Bias Mid - CC359583	9:13:09 AM	10.93	9.70	-0.12	0.14
System Bias Mid - CC359583	9:13:19 AM	10.93	9.70	-0.11	0.14
System Bias Mid - CC359583	9:13:29 AM	10.93	9.71	-0.12	0.10
System Bias Mid - CC359583	9:13:39 AM	10.94	9.71	-0.06	0.16
System Bias Mid - CC740532	9:20:09 AM	0.11	-0.03	29.20	29.80
System Bias Mid - CC740532	9:20:19 AM	0.10	-0.02	29.20	29.78
System Bias Mid - CC740532	9:20:29 AM	0.10	-0.03	29.20	29.80
Run 3 Mid	9:24:09 AM	8.66	7.91	5.36	40.18
Run 3 Mid	9:24:19 AM	8.77	7.84	5.46	40.32
Run 3 Mid	9:24:29 AM	8.75	7.85	5.43	40.46
Run 3 Mid	9:24:39 AM	8.73	7.88	5.39	40.42
Run 3 Mid	9:24:49 AM	8.75	7.87	5.33	40.42
Run 3 Mid	9:24:59 AM	8.55	8.02	5.27	40.40
Run 3 Mid	9:25:09 AM	8.56	8.00	5.28	40.48
Run 3 Mid	9:25:19 AM	8.44	8.08	5.30	40.52
Run 3 Mid	9:25:29 AM	8.42	8.08	5.30	40.46
Run 3 Mid	9:25:39 AM	8.64	7.94	5.37	40.48
Run 3 Mid	9:25:49 AM	8.73	7.90	5.43	40.44
Run 3 Mid	9:25:59 AM	8.75	7.90	5.46	40.26
Run 3 Mid	9:26:09 AM	8.70	7.92	5.45	40.04
Run 3 Mid	9:26:19 AM	8.63	7.96	5.43	40.10
Run 3 Mid	9:26:29 AM	8.55	8.02	5.33	40.08
Run 3 Mid	9:26:39 AM	8.41	8.10	5.27	40.02
Run 3 Mid	9:26:49 AM	8.41	8.10	5.25	40.14
Run 3 Mid	9:26:59 AM	8.51	8.04	5.27	40.12
Run 3 Mid	9:27:09 AM	8.56	8.00	5.28	40.14
Run 3 Mid	9:27:19 AM	8.56	8.00	5.31	40.14
Run 3 Mid	9:27:29 AM	8.47	8.06	5.30	40.04
Run 3 Mid	9:27:39 AM	8.47	8.07	5.33	40.06
Run 3 Mid	9:27:49 AM	8.54	8.02	5.28	40.08
Run 3 Mid	9:27:59 AM	8.57	8.00	5.28	40.08
Run 3 Mid	9:28:09 AM	8.49	8.06	5.27	40.00



# CEMS RAW DATA

## 01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	9:28:19 AM	8.49	8.06	5.27	40.16
Run 3 Mid	9:28:29 AM	8.52	8.04	5.25	40.14
Run 3 Mid	9:28:39 AM	8.58	8.00	5.30	40.26
Run 3 Mid	9:28:49 AM	8.57	8.00	5.25	40.20
Run 3 Mid	9:28:59 AM	8.68	7.94	5.25	40.20
Run 3 Mid	9:29:09 AM	8.83	7.85	5.20	40.16
Run 3 Mid	9:29:19 AM	8.66	7.96	5.08	40.10
Run 3 Mid	9:29:29 AM	8.42	8.11	5.05	40.12
Run 3 Mid	9:29:39 AM	8.30	8.18	4.97	40.12
Run 3 Mid	9:29:49 AM	8.41	8.12	4.94	40.10
Run 3 Mid	9:29:59 AM	8.55	8.02	4.91	39.98
Run 3 Mid	9:30:09 AM	8.57	8.02	4.91	39.96
Run 3 Mid	9:30:19 AM	8.39	8.12	4.96	39.86
Run 3 Mid	9:30:29 AM	8.37	8.13	5.04	39.88
Run 3 Mid	9:30:39 AM	8.35	8.15	5.08	39.82
Run 3 Mid	9:30:49 AM	8.24	8.22	5.10	39.84
Run 3 Mid	9:30:59 AM	8.30	8.20	5.17	39.88
Run 3 Mid	9:31:09 AM	8.38	8.13	5.25	40.08
Run 3 Mid	9:31:19 AM	8.28	8.20	5.33	40.14
Run 3 Mid	9:31:29 AM	8.21	8.24	5.45	40.14
Run 3 Mid	9:31:39 AM	8.22	8.23	5.54	40.36
Run 3 Mid	9:31:49 AM	8.31	8.18	5.62	40.28
Run 3 Mid	9:31:59 AM	8.39	8.14	5.68	40.38
Run 3 Mid	9:32:09 AM	8.40	8.13	5.69	40.44
Run 3 Mid	9:32:19 AM	8.68	7.94	5.68	40.44
Run 3 Mid	9:32:29 AM	9.09	7.68	5.60	40.56
Run 3 Mid	9:32:39 AM	9.08	7.70	5.56	40.38
Run 3 Mid	9:32:49 AM	8.84	7.85	5.37	40.20
Run 3 Mid	9:32:59 AM	8.77	7.90	5.22	40.22
Run 3 Mid	9:33:09 AM	8.93	7.79	5.07	40.14
Run 3 Mid	9:33:19 AM	8.88	7.82	4.93	40.04
Run 3 Mid	9:33:29 AM	8.88	7.82	4.79	39.92
Run 3 Mid	9:33:39 AM	8.89	7.83	4.73	39.96
Run 3 Mid	9:33:49 AM	8.98	7.76	4.67	39.96
Run 3 Mid	9:33:59 AM	8.92	7.80	4.58	39.72
Run 3 Mid	9:34:09 AM	8.87	7.84	4.56	39.74
Run 3 Mid	9:34:19 AM	8.81	7.88	4.50	39.68
Run 3 Mid	9:34:29 AM	8.82	7.86	4.47	39.64
Run 3 Mid	9:34:39 AM	8.73	7.93	4.47	39.58
Run 3 Mid	9:34:49 AM	8.77	7.89	4.47	39.50
Run 3 Mid	9:34:59 AM	8.76	7.91	4.55	39.68
Run 3 Mid	9:35:09 AM	8.68	7.96	4.56	39.84
Run 3 Mid	9:35:19 AM	8.71	7.93	4.71	39.82
Run 3 Mid	9:35:29 AM	8.77	7.89	4.74	39.80
Run 3 Mid	9:35:39 AM	8.81	7.87	4.81	39.92
Run 3 Mid	9:35:49 AM	8.85	7.85	4.82	39.82
Run 3 Mid	9:35:59 AM	8.76	7.91	4.87	39.88
Run 3 Mid	9:36:09 AM	8.74	7.92	4.88	39.80
Run 3 Mid	9:36:19 AM	8.72	7.93	4.88	39.92
Run 3 Mid	9:36:29 AM	8.73	7.93	4.91	39.84
Run 3 Mid	9:36:39 AM	8.69	7.96	4.93	40.02
Run 3 Mid	9:36:49 AM	8.77	7.90	4.94	40.00



# CEMS RAW DATA

## 01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	9:36:59 AM	9.02	7.74	5.05	40.00
Run 3 Mid	9:37:09 AM	8.98	7.77	5.02	39.92
Run 3 Mid	9:37:19 AM	9.00	7.75	4.99	39.96
Run 3 Mid	9:37:29 AM	8.98	7.77	4.91	39.96
Run 3 Mid	9:37:39 AM	8.88	7.84	4.82	39.94
Run 3 Mid	9:37:49 AM	8.89	7.84	4.78	39.86
Run 3 Mid	9:37:59 AM	8.95	7.80	4.76	39.78
Run 3 Mid	9:38:09 AM	8.89	7.82	4.68	39.76
Run 3 Mid	9:38:19 AM	8.86	7.84	4.73	39.70
Run 3 Mid	9:38:29 AM	8.96	7.77	4.65	39.68
Run 3 Mid	9:38:39 AM	8.99	7.77	4.65	39.58
Run 3 Mid	9:38:49 AM	9.00	7.77	4.62	39.56
Run 3 Mid	9:38:59 AM	8.87	7.85	4.65	39.56
Run 3 Mid	9:39:09 AM	8.79	7.90	4.65	39.36
Run 3 Mid	9:39:19 AM	8.73	7.94	4.68	39.30
Run 3 Mid	9:39:29 AM	9.01	7.76	4.70	39.42
Run 3 Mid	9:39:39 AM	8.95	7.80	4.74	39.48
Run 3 Mid	9:39:49 AM	8.95	7.79	4.82	39.46
Run 3 Mid	9:39:59 AM	8.89	7.83	4.84	39.48
Run 3 Mid	9:40:09 AM	8.80	7.89	4.91	39.60
Run 3 Mid	9:40:19 AM	8.83	7.87	4.97	39.80
Run 3 Mid	9:40:29 AM	8.93	7.81	5.04	39.80
Run 3 Mid	9:40:39 AM	9.07	7.72	5.08	39.86
Run 3 Mid	9:40:49 AM	9.11	7.70	5.08	39.88
Run 3 Mid	9:40:59 AM	9.12	7.69	5.10	39.86
Run 3 Mid	9:41:09 AM	9.30	7.57	5.04	39.84
Run 3 Mid	9:41:19 AM	9.39	7.51	4.96	39.86
Run 3 Mid	9:41:29 AM	9.28	7.60	4.82	39.80
Run 3 Mid	9:41:39 AM	9.22	7.63	4.74	39.68
Run 3 Mid	9:41:49 AM	9.22	7.62	4.64	39.54
Run 3 Mid	9:41:59 AM	9.13	7.69	4.59	39.56
Run 3 Mid	9:42:09 AM	9.03	7.74	4.58	39.34
Run 3 Mid	9:42:19 AM	8.95	7.81	4.61	39.24
Run 3 Mid	9:42:29 AM	9.00	7.78	4.58	39.12
Run 3 Mid	9:42:39 AM	9.01	7.76	4.59	39.14
Run 3 Mid	9:42:49 AM	9.02	7.76	4.59	39.02
Run 3 Mid	9:42:59 AM	9.01	7.77	4.64	38.92
Run 3 Mid	9:43:09 AM	9.32	7.56	4.65	39.02
Run 3 Mid	9:43:19 AM	9.21	7.64	4.68	39.02
Run 3 Mid	9:43:29 AM	9.04	7.75	4.64	38.98
Run 3 Mid	9:43:39 AM	8.83	7.88	4.56	39.00
Run 3 Mid	9:43:49 AM	8.80	7.90	4.56	39.14
Run 3 Mid	9:43:59 AM	9.01	7.78	4.55	39.34
Run 3 Mid	9:44:09 AM	8.99	7.79	4.58	39.30
Run 3 Mid	9:44:19 AM	8.98	7.79	4.62	39.44
Run 3 Mid	9:44:29 AM	8.93	7.81	4.56	39.48
Run 3 Mid	9:44:39 AM	8.92	7.82	4.62	39.68
Run 3 Mid	9:44:49 AM	8.90	7.83	4.55	39.66
Run 3 Mid	9:44:59 AM	8.92	7.83	4.56	39.68
Run 3 Mid	9:45:09 AM	8.82	7.89	4.56	39.58
Run 3 Mid	9:45:19 AM	8.63	8.01	4.56	39.58
Run 3 Mid	9:45:29 AM	8.48	8.10	4.53	39.58



# CEMS RAW DATA

## 01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	9:45:39 AM	8.49	8.09	4.59	39.58
Run 3 Mid	9:45:49 AM	8.62	8.01	4.62	39.86
Run 3 Mid	9:45:59 AM	8.75	7.94	4.67	39.82
Run 3 Mid	9:46:09 AM	8.77	7.91	4.74	39.84
Run 3 Mid	9:46:19 AM	8.80	7.89	4.82	39.78
Run 3 Mid	9:46:29 AM	9.03	7.75	4.79	39.80
Run 3 Mid	9:46:39 AM	9.08	7.72	4.76	39.88
Run 3 Mid	9:46:49 AM	9.12	7.69	4.68	39.86
Run 3 Mid	9:46:59 AM	9.22	7.63	4.55	39.74
Run 3 Mid	9:47:09 AM	9.08	7.72	4.47	39.70
Run 3 Mid	9:47:19 AM	8.82	7.89	4.38	39.70
Run 3 Mid	9:47:29 AM	8.66	7.99	4.35	39.88
Run 3 Mid	9:47:39 AM	8.63	8.01	4.29	39.92
Run 3 Mid	9:47:49 AM	8.75	7.93	4.26	39.92
Run 3 Mid	9:47:59 AM	8.72	7.96	4.29	39.82
Run 3 Mid	9:48:09 AM	8.61	8.03	4.30	39.76
Run 3 Mid	9:48:19 AM	8.56	8.06	4.36	39.72
Run 3 Mid	9:48:29 AM	8.52	8.08	4.42	39.76
Run 3 Mid	9:48:39 AM	8.51	8.10	4.48	39.78
Run 3 Mid	9:48:49 AM	8.55	8.07	4.53	39.68
Run 3 Mid	9:48:59 AM	8.72	7.96	4.62	39.76
Run 3 Mid	9:49:09 AM	8.86	7.87	4.59	39.80
Run 3 Mid	9:49:19 AM	8.85	7.87	4.56	39.80
Run 3 Mid	9:49:29 AM	8.92	7.83	4.53	39.84
Run 3 Mid	9:49:39 AM	9.08	7.73	4.47	39.96
Run 3 Mid	9:49:49 AM	9.09	7.72	4.42	39.90
Run 3 Mid	9:49:59 AM	9.03	7.77	4.39	39.92
Run 3 Mid	9:50:09 AM	8.85	7.87	4.29	39.88
Run 3 Mid	9:50:19 AM	8.66	8.01	4.21	39.86
Run 3 Mid	9:50:29 AM	8.59	8.05	4.24	39.92
Run 3 Mid	9:50:39 AM	8.53	8.08	4.22	39.90
Run 3 Mid	9:50:49 AM	8.54	8.08	4.30	39.92
Run 3 Mid	9:50:59 AM	8.74	7.94	4.38	39.98
Run 3 Mid	9:51:09 AM	8.89	7.85	4.38	40.06
Run 3 Mid	9:51:19 AM	9.01	7.78	4.47	40.08
Run 3 Mid	9:51:29 AM	8.80	7.92	4.39	40.14
Run 3 Mid	9:51:39 AM	8.65	8.01	4.45	40.14
Run 3 Mid	9:51:49 AM	8.73	7.96	4.36	40.14
Run 3 Mid	9:51:59 AM	8.77	7.93	4.39	40.24
Run 3 Mid	9:52:09 AM	8.85	7.89	4.35	40.26
Run 3 Mid	9:52:19 AM	9.00	7.79	4.33	40.26
Run 3 Mid	9:52:29 AM	9.25	7.62	4.30	40.32
Run 3 Mid	9:52:39 AM	9.30	7.59	4.33	40.36
Run 3 Mid	9:52:49 AM	9.18	7.67	4.21	40.26
Run 3 Mid	9:52:59 AM	9.17	7.69	4.12	40.20
Run 3 Mid	9:53:09 AM	8.95	7.83	3.99	40.18
Run 3 Mid	9:53:19 AM	8.84	7.90	3.95	40.18
Run 3 Mid	9:53:29 AM	8.87	7.88	3.84	40.00
Run 3 Mid	9:53:39 AM	8.89	7.86	3.87	39.92
Run 3 Mid	9:53:49 AM	8.78	7.94	3.84	39.88
Run 3 Mid	9:53:59 AM	8.79	7.93	3.86	39.94
Run 3 Mid	9:54:09 AM	8.81	7.91	3.95	39.88



# CEMS RAW DATA

## 01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	9:54:19 AM	8.89	7.86	3.95	39.76
Run 3 Mid	9:54:29 AM	8.92	7.85	3.98	39.72
Run 3 Mid	9:54:39 AM	8.90	7.85	3.99	39.72
Run 3 Mid	9:54:49 AM	8.80	7.91	3.96	39.70
Run 3 Mid	9:54:59 AM	8.76	7.95	3.98	39.80
Run 3 Mid	9:55:09 AM	8.69	7.99	3.98	39.78
Run 3 Mid	9:55:19 AM	8.71	7.97	3.96	39.92
Run 3 Mid	9:55:29 AM	8.73	7.97	4.06	39.88
Run 3 Mid	9:55:39 AM	8.71	7.97	4.07	39.96
Run 3 Mid	9:55:49 AM	8.84	7.90	4.10	40.00
Run 3 Mid	9:55:59 AM	8.81	7.90	4.13	40.12
Run 3 Mid	9:56:09 AM	9.00	7.79	4.09	40.10
Run 3 Mid	9:56:19 AM	9.08	7.74	4.12	40.14
Run 3 Mid	9:56:29 AM	8.99	7.79	4.03	40.02
Run 3 Mid	9:56:39 AM	8.76	7.93	4.09	40.06
Run 3 Mid	9:56:49 AM	8.86	7.87	4.04	40.06
Run 3 Mid	9:56:59 AM	9.02	7.79	4.10	40.10
Run 3 Mid	9:57:09 AM	9.00	7.79	4.06	39.96
Run 3 Mid	9:57:19 AM	8.95	7.81	4.04	39.92
Run 3 Mid	9:57:29 AM	9.03	7.77	4.01	39.94
Run 3 Mid	9:57:39 AM	9.19	7.67	4.04	40.10
Run 3 Mid	9:57:49 AM	9.19	7.67	4.03	40.04
Run 3 Mid	9:57:59 AM	9.14	7.70	3.98	39.98
Run 3 Mid	9:58:09 AM	9.16	7.68	3.98	40.00
Run 3 Mid	9:58:19 AM	9.15	7.69	3.93	39.96
Run 3 Mid	9:58:29 AM	9.19	7.67	3.89	40.02
Run 3 Mid	9:58:39 AM	9.22	7.65	3.90	39.88
Run 3 Mid	9:58:49 AM	9.22	7.64	3.84	39.88
Run 3 Mid	9:58:59 AM	9.13	7.72	3.83	39.90
Run 3 Mid	9:59:09 AM	8.96	7.81	3.78	39.94
Run 3 Mid	9:59:19 AM	8.87	7.88	3.81	39.82
Run 3 Mid	9:59:29 AM	8.94	7.84	3.78	39.84
Run 3 Mid	9:59:39 AM	8.71	7.98	3.87	39.84
Run 3 Mid	9:59:49 AM	8.63	8.03	3.87	39.96
Run 3 Mid	9:59:59 AM	8.65	8.01	3.95	39.90
Run 3 Mid	10:00:09 AM	8.73	7.97	3.95	39.90
Run 3 Mid	10:00:19 AM	8.92	7.84	4.03	39.98
Run 3 Mid	10:00:29 AM	8.99	7.79	4.07	39.92
Run 3 Mid	10:00:39 AM	9.14	7.70	4.10	40.04
Run 3 Mid	10:00:49 AM	9.17	7.68	4.10	39.90
Run 3 Mid	10:00:59 AM	9.31	7.59	4.04	39.92
Run 3 Mid	10:01:09 AM	9.18	7.68	3.98	39.86
Run 3 Mid	10:01:19 AM	9.08	7.74	3.89	39.88
Run 3 Mid	10:01:29 AM	9.19	7.67	3.86	39.80
Run 3 Mid	10:01:39 AM	9.12	7.71	3.86	39.78
Run 3 Mid	10:01:49 AM	9.15	7.70	3.84	39.80
Run 3 Mid	10:01:59 AM	9.20	7.67	3.84	39.80
Run 3 Mid	10:02:09 AM	9.06	7.77	3.81	39.68
Run 3 Mid	10:02:19 AM	8.95	7.83	3.84	39.64
Run 3 Mid	10:02:29 AM	8.98	7.82	3.86	39.64
Run 3 Mid	10:02:39 AM	8.92	7.85	3.90	39.58
Run 3 Mid	10:02:49 AM	8.81	7.93	3.86	39.58



# CEMS RAW DATA

## 01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	10:02:59 AM	9.00	7.80	3.95	39.64
Run 3 Mid	10:03:09 AM	9.12	7.73	4.01	39.68
Run 3 Mid	10:03:19 AM	9.12	7.72	4.07	39.72
Run 3 Mid	10:03:29 AM	9.28	7.62	4.12	39.72
Run 3 Mid	10:03:39 AM	9.30	7.60	4.13	39.76
Run 3 Mid	10:03:49 AM	9.29	7.60	4.12	39.78
Run 3 Mid	10:03:59 AM	9.11	7.74	4.13	39.94
Run 3 Mid	10:04:09 AM	8.92	7.85	4.15	39.92
Run 3 Mid	10:04:19 AM	8.95	7.83	4.18	40.00
Run 3 Mid	10:04:29 AM	9.01	7.80	4.21	40.10
Run 3 Mid	10:04:39 AM	9.00	7.80	4.26	40.10
Run 3 Mid	10:04:49 AM	9.01	7.79	4.27	40.04
Run 3 Mid	10:04:59 AM	8.97	7.82	4.30	40.06
Run 3 Mid	10:05:09 AM	9.04	7.78	4.35	40.10
Run 3 Mid	10:05:19 AM	9.25	7.64	4.38	39.96
Run 3 Mid	10:05:29 AM	9.44	7.51	4.41	39.98
Run 3 Mid	10:05:39 AM	9.32	7.60	4.42	39.94
Run 3 Mid	10:05:49 AM	9.29	7.62	4.38	39.90
Run 3 Mid	10:05:59 AM	9.40	7.54	4.35	39.82
Run 3 Mid	10:06:09 AM	9.35	7.57	4.35	39.84
Run 3 Mid	10:06:19 AM	9.28	7.61	4.36	39.80
Run 3 Mid	10:06:29 AM	9.21	7.66	4.33	39.80
Run 3 Mid	10:06:39 AM	9.16	7.68	4.33	39.70
Run 3 Mid	10:06:49 AM	9.04	7.78	4.24	39.54
Run 3 Mid	10:06:59 AM	8.93	7.85	4.29	39.54
Run 3 Mid	10:07:09 AM	8.80	7.93	4.26	39.54
Run 3 Mid	10:07:19 AM	8.91	7.86	4.30	39.56
Run 3 Mid	10:07:29 AM	9.06	7.76	4.39	39.64
Run 3 Mid	10:07:39 AM	9.02	7.78	4.39	39.78
Run 3 Mid	10:07:49 AM	9.13	7.71	4.53	39.94
Run 3 Mid	10:07:59 AM	9.22	7.66	4.50	39.96
Run 3 Mid	10:08:09 AM	9.36	7.57	4.56	40.08
Run 3 Mid	10:08:19 AM	9.37	7.56	4.58	39.96
Run 3 Mid	10:08:29 AM	9.29	7.62	4.56	39.96
Run 3 Mid	10:08:39 AM	9.27	7.63	4.52	39.92
Run 3 Mid	10:08:49 AM	9.09	7.75	4.48	39.92
Run 3 Mid	10:08:59 AM	8.98	7.82	4.41	40.02
Run 3 Mid	10:09:09 AM	8.91	7.87	4.47	40.02
Run 3 Mid	10:09:19 AM	8.97	7.82	4.48	40.10
Run 3 Mid	10:09:29 AM	9.12	7.73	4.47	40.04
Run 3 Mid	10:09:39 AM	9.20	7.67	4.58	40.12
Run 3 Mid	10:09:49 AM	9.18	7.69	4.53	39.88
Run 3 Mid	10:09:59 AM	9.20	7.67	4.58	39.84
Run 3 Mid	10:10:09 AM	9.14	7.71	4.58	39.84
Run 3 Mid	10:10:19 AM	9.22	7.65	4.61	39.68
Run 3 Mid	10:10:29 AM	9.29	7.62	4.58	39.66
Run 3 Mid	10:10:39 AM	9.55	7.43	4.61	39.92
Run 3 Mid	10:10:49 AM	9.68	7.36	4.52	39.92
Run 3 Mid	10:10:59 AM	9.48	7.51	4.44	39.96
Run 3 Mid	10:11:09 AM	9.34	7.59	4.36	39.92
Run 3 Mid	10:11:19 AM	9.20	7.69	4.30	39.92
Run 3 Mid	10:11:29 AM	9.11	7.73	4.36	39.88



# CEMS RAW DATA

## 01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	10:11:39 AM	9.08	7.75	4.41	39.86
Run 3 Mid	10:11:49 AM	9.05	7.77	4.47	39.68
Run 3 Mid	10:11:59 AM	9.04	7.79	4.50	39.70
Run 3 Mid	10:12:09 AM	8.94	7.84	4.52	39.74
Run 3 Mid	10:12:19 AM	9.04	7.77	4.58	39.74
Run 3 Mid	10:12:29 AM	9.01	7.81	4.64	39.72
Run 3 Mid	10:12:39 AM	8.94	7.85	4.68	39.72
Run 3 Mid	10:12:49 AM	9.07	7.76	4.70	39.68
Run 3 Mid	10:12:59 AM	9.18	7.70	4.73	39.58
Run 3 Mid	10:13:09 AM	9.17	7.71	4.70	39.60
Run 3 Mid	10:13:19 AM	9.26	7.63	4.73	39.66
Run 3 Mid	10:13:29 AM	9.25	7.65	4.67	39.64
Run 3 Mid	10:13:39 AM	9.20	7.67	4.62	39.62
Run 3 Mid	10:13:49 AM	9.11	7.74	4.56	39.62
Run 3 Mid	10:13:59 AM	9.20	7.68	4.53	39.66
Run 3 Mid	10:14:09 AM	9.31	7.62	4.47	39.60
Run 3 Mid	10:14:19 AM	9.26	7.65	4.47	39.64
Run 3 Mid	10:14:29 AM	9.11	7.75	4.44	39.58
Run 3 Mid	10:14:39 AM	9.10	7.75	4.44	39.58
Run 3 Mid	10:14:49 AM	8.96	7.84	4.45	39.54
Run 3 Mid	10:14:59 AM	8.91	7.88	4.47	39.62
Run 3 Mid	10:15:09 AM	8.90	7.87	4.48	39.72
Run 3 Mid	10:15:19 AM	9.10	7.74	4.50	39.68
Run 3 Mid	10:15:29 AM	9.17	7.69	4.52	39.82
Run 3 Mid	10:15:39 AM	9.18	7.68	4.55	39.94
Run 3 Mid	10:15:49 AM	9.21	7.67	4.52	40.14
Run 3 Mid	10:15:59 AM	9.39	7.56	4.48	40.14
Run 3 Mid	10:16:09 AM	9.43	7.51	4.45	40.18
Run 3 Mid	10:16:19 AM	9.34	7.60	4.50	40.20
Run 3 Mid	10:16:29 AM	9.26	7.64	4.42	40.26
Run 3 Mid	10:16:39 AM	9.31	7.61	4.47	40.20
Run 3 Mid	10:16:49 AM	9.28	7.63	4.33	40.24
Run 3 Mid	10:16:59 AM	9.29	7.62	4.39	40.16
Run 3 Mid	10:17:09 AM	9.23	7.67	4.30	40.14
Run 3 Mid	10:17:19 AM	9.14	7.71	4.30	39.92
Run 3 Mid	10:17:29 AM	9.21	7.67	4.21	39.84
Run 3 Mid	10:17:39 AM	9.16	7.70	4.26	39.84
Run 3 Mid	10:17:49 AM	9.16	7.71	4.16	39.80
Run 3 Mid	10:17:59 AM	9.18	7.71	4.24	39.74
Run 3 Mid	10:18:09 AM	9.17	7.70	4.22	39.76
Run 3 Mid	10:18:19 AM	9.09	7.75	4.29	39.74
Run 3 Mid	10:18:29 AM	9.12	7.74	4.27	39.84
Run 3 Mid	10:18:39 AM	9.09	7.76	4.22	39.82
Run 3 Mid	10:18:49 AM	9.06	7.77	4.21	39.88
Run 3 Mid	10:18:59 AM	9.15	7.72	4.21	39.84
Run 3 Mid	10:19:09 AM	9.13	7.74	4.18	39.86
Run 3 Mid	10:19:19 AM	9.12	7.73	4.19	39.92
Run 3 Mid	10:19:29 AM	9.11	7.74	4.19	39.92
Run 3 Mid	10:19:39 AM	9.03	7.79	4.18	39.92
Run 3 Mid	10:19:49 AM	8.92	7.86	4.12	39.92
Run 3 Mid	10:19:59 AM	8.95	7.84	4.18	40.00
Run 3 Mid	10:20:09 AM	8.96	7.84	4.12	40.04



# CEMS RAW DATA

## 01-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)	Carbon Monoxide ( )	Oxides of Nitrogen (ppmv dry)
Run 3 Mid	10:20:19 AM	9.01	7.81	4.16	40.06
Run 3 Mid	10:20:29 AM	9.05	7.79	4.15	40.06
Run 3 Mid	10:20:39 AM	9.01	7.82	4.21	40.02
Run 3 Mid	10:20:49 AM	9.05	7.78	4.21	39.94
Run 3 Mid	10:20:59 AM	9.12	7.74	4.26	39.98
Run 3 Mid	10:21:09 AM	9.04	7.79	4.21	39.94
Run 3 Mid	10:21:19 AM	9.12	7.73	4.21	40.14
Run 3 Mid	10:21:29 AM	9.26	7.65	4.21	40.14
Run 3 Mid	10:21:39 AM	9.37	7.57	4.18	40.14
Run 3 Mid	10:21:49 AM	9.36	7.58	4.15	40.10
Run 3 Mid	10:21:59 AM	9.31	7.62	4.09	40.14
Run 3 Mid	10:22:09 AM	9.19	7.69	4.01	40.08
Run 3 Mid	10:22:19 AM	9.05	7.77	3.92	39.92
Run 3 Mid	10:22:29 AM	9.00	7.81	3.93	39.80
Run 3 Mid	10:22:39 AM	8.94	7.85	3.89	39.78
Run 3 Mid	10:22:49 AM	8.91	7.87	3.87	39.80
Run 3 Mid	10:22:59 AM	8.92	7.87	3.95	39.88
Run 3 Mid	10:23:09 AM	8.89	7.89	3.99	39.98
Run 3 Mid	10:23:19 AM	8.88	7.90	3.99	40.02
Run 3 Mid	10:23:29 AM	8.95	7.84	3.98	40.06
Run 3 Mid	10:23:39 AM	9.06	7.77	4.04	40.04
Run 3 Mid	10:23:49 AM	9.16	7.70	4.12	40.08
Run 3 Mid	10:23:59 AM	9.16	7.70	4.04	40.16
System Bias Zero - UHP N2	11:24:19 AM	0.14	-0.04	0.23	0.08
System Bias Zero - UHP N2	11:24:29 AM	0.14	-0.04	0.17	0.08
System Bias Zero - UHP N2	11:24:39 AM	0.13	-0.04	0.18	0.08
System Bias Zero - UHP N2	11:24:49 AM	0.13	-0.04	0.17	0.08
System Bias Mid - CC359583	11:28:09 AM	10.94	9.66	-0.17	0.10
System Bias Mid - CC359583	11:28:19 AM	10.94	9.68	-0.20	0.16
System Bias Mid - CC359583	11:28:29 AM	10.94	9.67	-0.21	0.08
System Bias Mid - CC359583	11:28:39 AM	10.94	9.68	-0.20	0.14
System Bias Mid - CC740532	11:34:19 AM	0.11	-0.02	29.20	28.78
System Bias Mid - CC740532	11:34:29 AM	0.11	-0.03	29.20	28.88
System Bias Mid - CC740532	11:34:39 AM	0.11	-0.02	29.20	28.86
System Bias Mid - CC740532	11:34:49 AM	0.11	-0.02	29.20	28.86
Conv Check - CC518059	12:08:19 PM	0.13	-0.13	-0.18	48.90
Conv Check - CC518059	12:08:29 PM	0.13	-0.13	-0.20	48.90
Conv Check - CC518059	12:08:39 PM	0.13	-0.13	-0.20	49.06
Conv Check - CC518059	12:08:49 PM	0.13	-0.13	-0.21	49.12
Conv Check - CC518059	12:08:59 PM	0.14	-0.13	-0.23	49.14
Conv Check - CC518059	12:09:09 PM	0.13	-0.13	-0.23	49.10
Conv Check - CC518059	12:09:19 PM	0.13	-0.13	-0.23	48.84
Conv Check - CC518059	12:09:29 PM	0.13	-0.12	-0.20	48.90
Conv Check - CC518059	12:09:39 PM	0.13	-0.13	-0.18	48.90
Conv Check - CC518059	12:09:49 PM	0.13	-0.12	-0.21	48.90



**Project:** Haverhill Bypass Vent Stack 6 Test 2022  
**Facility:** SunCoke HHO  
**Source:** BVS-6  
**Project ID:** 60682866

Corrected Oxygen Concentration					
3-Oct-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
M5 Run 2 Mid	10:15-13:00	9.87	0.07	1.01	9.94
M5 Run 3 Late	13:50-15:57	10.65	0.08	1.01	10.71

Corrected Carbon Dioxide Concentration					
3-Oct-22	Time	Uncorrected Concentration (%)	Eq. 7E-5 Factors		Bias Corrected Concentration (%)
			$C_O$	$C_{MA}/(C_M - C_O)$	
M5 Run 2 Mid	10:15-13:00	7.28	0.06	1.05	7.57
M5 Run 3 Late	13:50-15:57	6.95	0.14	1.05	7.17



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Oxygen Calibration Data  
Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	3-Oct-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	19.09
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference	Cal Error (% of Span)
					0.5% Limit	2.0% Limit
zero gas	UHP N2	0.00	8:55	-0.02	0.02	0.1%
span gas	CC4981	19.09	8:59	19.10	0.01	0.1%
mid-range	CC359583	10.99	9:03	11.25	0.26	1.4%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.02	10:08	0.08	0.5%	13:07	0.07	0.4%	-0.1%	$C_0$ 0.073
10.99	11.25	10:11	10.91	-1.8%	13:10	10.91	-1.8%	0.0%	$C_{MA}/(C_M - C_0)$ 1.014
0.00	-0.02	13:07	0.07	0.4%	16:05	0.10	0.6%	0.2%	$C_0$ 0.083
10.99	11.25	13:10	10.91	-1.8%	16:10	10.96	-1.6%	0.2%	$C_{MA}/(C_M - C_0)$ 1.013



**Haverhill Bypass Vent Stack 6  
Test 2022**

**Carbon Dioxide Calibration  
Data Summary**

<b>Facility:</b>	SunCoke HHO
<b>Source:</b>	BVS-6
<b>Project Number:</b>	60682866
<b>Date:</b>	3-Oct-22
<b>Instrument Make/Model:</b>	CAI 600
<b>Instrument Name/ID</b>	D09012-M
<b>Calibration Span Value:</b>	18.98
<b>Analyzer Range:</b>	25
<b>Units:</b>	%, dry
<b>Technician(s):</b>	Sastry

Calibration Error Test Results						
	Cylinder ID	Certified Value	Time	CEM Response	Absolute Difference 0.5% Limit	Cal Error (% of Span) 2.0% Limit
zero gas	UHP N2	0.00	8:55	-0.06	0.06	0.3%
span gas	CC4981	18.98	8:59	18.95	0.03	0.1%

CEMS Calibration Bias and Drift Tests									
Cylinder Value	Calibration Error CEMS Response	Time	Pre-Test CEMS Response	Bias (% of Span) 5.0% Limit	Time	Post-Test CEMS Response	Bias (% of Span) 5.0% Limit	Drift (% of Span) 3.0% Limit	Calculated Factors from Equation 7E-5
0.00	-0.06	10:08	0.04	0.5%	13:07	0.08	0.7%	0.2%	$C_0$ 0.061
10.10	9.93	10:11	9.70	-1.2%	13:10	9.69	-1.3%	0.0%	$C_{MA}/(C_M - C_0)$ 1.049
0.00	-0.06	13:07	0.08	0.7%	16:05	0.20	1.4%	0.6%	$C_0$ 0.140
10.10	9.93	13:10	9.69	-1.3%	16:10	9.79	-0.8%	0.5%	$C_{MA}/(C_M - C_0)$ 1.052



## SUMMARY DATA - COMPLIANCE TESTING

03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	10:15-13:00	9.87	7.28
M5 Run 3 Late	13:50-15:57	10.65	6.95

## CALIBRATION SUMMARY

03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Cal Error Zero 1 - UHP N2	8:55	-0.02	-0.06
Cal Error Hi 1 - CC4981	8:59	19.10	18.95
Cal Error Mid 1 - CC359583	9:03	11.25	9.93
System Bias Zero 1 - UHP N2	10:08	0.08	0.04
System Bias Mid 1 - CC359583	10:11	10.91	9.70
System Bias Zero 2 - UHP N2	13:07	0.07	0.08
System Bias Mid 2 - CC359583	13:10	10.91	9.69
System Bias Zero 3 - UHP N2	16:05	0.10	0.20
System Bias Mid 3 - CC359583	16:10	10.96	9.79



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
Cal Error Zero - UHP N2	8:55:43 AM	-0.01	-0.06
Cal Error Zero - UHP N2	8:55:53 AM	-0.01	-0.06
Cal Error Zero - UHP N2	8:56:03 AM	0.00	-0.06
Cal Error Zero - UHP N2	8:56:13 AM	-0.05	-0.06
Cal Error Hi - CC4981	8:59:43 AM	19.10	18.96
Cal Error Hi - CC4981	8:59:53 AM	19.10	18.95
Cal Error Hi - CC4981	9:00:03 AM	19.11	18.95
Cal Error Hi - CC4981	9:00:13 AM	19.11	18.95
Cal Error Mid - CC359583	9:03:33 AM	11.26	9.94
Cal Error Mid - CC359583	9:03:43 AM	11.25	9.93
Cal Error Mid - CC359583	9:03:53 AM	11.25	9.93
Cal Error Mid - CC359583	9:04:03 AM	11.25	9.93
Cal Error Mid - CC359583	9:04:13 AM	11.25	9.93
System Bias Zero - UHP N2	10:08:43 AM	0.09	0.04
System Bias Zero - UHP N2	10:08:53 AM	0.09	0.04
System Bias Zero - UHP N2	10:09:03 AM	0.08	0.04
System Bias Zero - UHP N2	10:09:13 AM	0.07	0.04
System Bias Mid - CC359583	10:11:03 AM	10.91	9.68
System Bias Mid - CC359583	10:11:13 AM	10.91	9.69
System Bias Mid - CC359583	10:11:23 AM	10.91	9.69
System Bias Mid - CC359583	10:11:33 AM	10.91	9.70
System Bias Mid - CC359583	10:11:43 AM	10.91	9.71
M5 Run 2 Mid	10:15:03 AM	9.45	7.51
M5 Run 2 Mid	10:15:13 AM	9.46	7.48
M5 Run 2 Mid	10:15:23 AM	9.45	7.50
M5 Run 2 Mid	10:15:33 AM	9.37	7.55
M5 Run 2 Mid	10:15:43 AM	9.40	7.51
M5 Run 2 Mid	10:15:53 AM	9.45	7.50
M5 Run 2 Mid	10:16:03 AM	9.45	7.51
M5 Run 2 Mid	10:16:13 AM	9.34	7.59
M5 Run 2 Mid	10:16:23 AM	9.27	7.61
M5 Run 2 Mid	10:16:33 AM	9.25	7.63
M5 Run 2 Mid	10:16:43 AM	9.22	7.66
M5 Run 2 Mid	10:16:53 AM	9.17	7.68
M5 Run 2 Mid	10:17:03 AM	9.19	7.67
M5 Run 2 Mid	10:17:13 AM	9.24	7.61
M5 Run 2 Mid	10:17:23 AM	9.40	7.49
M5 Run 2 Mid	10:17:33 AM	9.53	7.44
M5 Run 2 Mid	10:17:43 AM	9.53	7.44
M5 Run 2 Mid	10:17:53 AM	9.54	7.44
M5 Run 2 Mid	10:18:03 AM	9.52	7.46
M5 Run 2 Mid	10:18:13 AM	9.51	7.47
M5 Run 2 Mid	10:18:23 AM	9.57	7.42
M5 Run 2 Mid	10:18:33 AM	9.53	7.46
M5 Run 2 Mid	10:18:43 AM	9.49	7.47
M5 Run 2 Mid	10:18:53 AM	9.48	7.48
M5 Run 2 Mid	10:19:03 AM	9.43	7.53
M5 Run 2 Mid	10:19:13 AM	9.35	7.57
M5 Run 2 Mid	10:19:23 AM	9.32	7.57
M5 Run 2 Mid	10:19:33 AM	9.38	7.53
M5 Run 2 Mid	10:19:43 AM	9.44	7.50
M5 Run 2 Mid	10:19:53 AM	9.39	7.55



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	10:20:03 AM	9.35	7.58
M5 Run 2 Mid	10:20:13 AM	9.27	7.62
M5 Run 2 Mid	10:20:23 AM	9.31	7.57
M5 Run 2 Mid	10:20:33 AM	9.38	7.53
M5 Run 2 Mid	10:20:43 AM	9.44	7.51
M5 Run 2 Mid	10:20:53 AM	9.43	7.52
M5 Run 2 Mid	10:21:03 AM	9.36	7.58
M5 Run 2 Mid	10:21:13 AM	9.36	7.56
M5 Run 2 Mid	10:21:23 AM	9.34	7.58
M5 Run 2 Mid	10:21:33 AM	9.31	7.61
M5 Run 2 Mid	10:21:43 AM	9.23	7.65
M5 Run 2 Mid	10:21:53 AM	9.19	7.68
M5 Run 2 Mid	10:22:03 AM	9.19	7.67
M5 Run 2 Mid	10:22:13 AM	9.23	7.63
M5 Run 2 Mid	10:22:23 AM	9.22	7.66
M5 Run 2 Mid	10:22:33 AM	9.19	7.67
M5 Run 2 Mid	10:22:43 AM	9.21	7.66
M5 Run 2 Mid	10:22:53 AM	9.23	7.64
M5 Run 2 Mid	10:23:03 AM	9.29	7.60
M5 Run 2 Mid	10:23:13 AM	9.31	7.60
M5 Run 2 Mid	10:23:23 AM	9.31	7.60
M5 Run 2 Mid	10:23:33 AM	9.27	7.61
M5 Run 2 Mid	10:23:43 AM	9.28	7.62
M5 Run 2 Mid	10:23:53 AM	9.23	7.66
M5 Run 2 Mid	10:24:03 AM	9.25	7.62
M5 Run 2 Mid	10:24:13 AM	9.28	7.61
M5 Run 2 Mid	10:24:23 AM	9.30	7.60
M5 Run 2 Mid	10:24:33 AM	9.31	7.59
M5 Run 2 Mid	10:24:43 AM	9.29	7.63
M5 Run 2 Mid	10:24:53 AM	9.28	7.62
M5 Run 2 Mid	10:25:03 AM	9.36	7.56
M5 Run 2 Mid	10:25:13 AM	9.41	7.53
M5 Run 2 Mid	10:25:23 AM	9.40	7.53
M5 Run 2 Mid	10:25:33 AM	9.46	7.49
M5 Run 2 Mid	10:25:43 AM	9.49	7.48
M5 Run 2 Mid	10:25:53 AM	9.48	7.48
M5 Run 2 Mid	10:26:03 AM	9.52	7.44
M5 Run 2 Mid	10:26:13 AM	9.55	7.44
M5 Run 2 Mid	10:26:23 AM	9.57	7.41
M5 Run 2 Mid	10:26:33 AM	9.55	7.44
M5 Run 2 Mid	10:26:43 AM	9.52	7.47
M5 Run 2 Mid	10:26:53 AM	9.45	7.52
M5 Run 2 Mid	10:27:03 AM	9.50	7.46
M5 Run 2 Mid	10:27:13 AM	9.52	7.48
M5 Run 2 Mid	10:27:23 AM	9.45	7.53
M5 Run 2 Mid	10:27:33 AM	9.42	7.53
M5 Run 2 Mid	10:27:43 AM	9.40	7.55
M5 Run 2 Mid	10:27:53 AM	9.35	7.58
M5 Run 2 Mid	10:28:03 AM	9.38	7.55
M5 Run 2 Mid	10:28:13 AM	9.38	7.56
M5 Run 2 Mid	10:28:23 AM	9.40	7.53
M5 Run 2 Mid	10:28:33 AM	9.45	7.50



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	10:28:43 AM	9.45	7.53
M5 Run 2 Mid	10:28:53 AM	9.40	7.53
M5 Run 2 Mid	10:29:03 AM	9.53	7.42
M5 Run 2 Mid	10:29:13 AM	9.64	7.39
M5 Run 2 Mid	10:29:23 AM	9.71	7.32
M5 Run 2 Mid	10:29:33 AM	9.75	7.32
M5 Run 2 Mid	10:29:43 AM	9.73	7.35
M5 Run 2 Mid	10:29:53 AM	9.71	7.34
M5 Run 2 Mid	10:30:03 AM	9.78	7.31
M5 Run 2 Mid	10:30:13 AM	9.74	7.34
M5 Run 2 Mid	10:30:23 AM	9.72	7.34
M5 Run 2 Mid	10:30:33 AM	9.80	7.28
M5 Run 2 Mid	10:30:43 AM	9.80	7.27
M5 Run 2 Mid	10:30:53 AM	9.85	7.25
M5 Run 2 Mid	10:31:03 AM	9.83	7.28
M5 Run 2 Mid	10:31:13 AM	9.78	7.30
M5 Run 2 Mid	10:31:23 AM	9.80	7.27
M5 Run 2 Mid	10:31:33 AM	9.85	7.26
M5 Run 2 Mid	10:31:43 AM	9.71	7.38
M5 Run 2 Mid	10:31:53 AM	9.69	7.34
M5 Run 2 Mid	10:32:03 AM	9.75	7.31
M5 Run 2 Mid	10:32:13 AM	9.80	7.29
M5 Run 2 Mid	10:32:23 AM	9.76	7.32
M5 Run 2 Mid	10:32:33 AM	9.71	7.37
M5 Run 2 Mid	10:32:43 AM	9.64	7.42
M5 Run 2 Mid	10:32:53 AM	9.67	7.36
M5 Run 2 Mid	10:33:03 AM	9.70	7.38
M5 Run 2 Mid	10:33:13 AM	9.52	7.50
M5 Run 2 Mid	10:33:23 AM	9.54	7.44
M5 Run 2 Mid	10:33:33 AM	9.60	7.42
M5 Run 2 Mid	10:33:43 AM	9.63	7.41
M5 Run 2 Mid	10:33:53 AM	9.58	7.44
M5 Run 2 Mid	10:34:03 AM	9.67	7.36
M5 Run 2 Mid	10:34:13 AM	9.68	7.38
M5 Run 2 Mid	10:34:23 AM	9.63	7.41
M5 Run 2 Mid	10:34:33 AM	9.57	7.46
M5 Run 2 Mid	10:34:43 AM	9.49	7.51
M5 Run 2 Mid	10:34:53 AM	9.47	7.48
M5 Run 2 Mid	10:35:03 AM	9.52	7.44
M5 Run 2 Mid	10:35:13 AM	9.65	7.39
M5 Run 2 Mid	10:35:23 AM	9.55	7.47
M5 Run 2 Mid	10:35:33 AM	9.53	7.46
M5 Run 2 Mid	10:35:43 AM	9.50	7.50
M5 Run 2 Mid	10:35:53 AM	9.45	7.51
M5 Run 2 Mid	10:36:03 AM	9.49	7.49
M5 Run 2 Mid	10:36:13 AM	9.53	7.47
M5 Run 2 Mid	10:36:23 AM	9.56	7.43
M5 Run 2 Mid	10:36:33 AM	9.73	7.29
M5 Run 2 Mid	10:36:43 AM	9.84	7.26
M5 Run 2 Mid	10:36:53 AM	9.82	7.27
M5 Run 2 Mid	10:37:03 AM	9.82	7.30
M5 Run 2 Mid	10:37:13 AM	9.76	7.32



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	10:37:23 AM	9.76	7.32
M5 Run 2 Mid	10:37:33 AM	9.79	7.30
M5 Run 2 Mid	10:37:43 AM	9.71	7.38
M5 Run 2 Mid	10:37:53 AM	9.69	7.35
M5 Run 2 Mid	10:38:03 AM	9.73	7.35
M5 Run 2 Mid	10:38:13 AM	9.67	7.40
M5 Run 2 Mid	10:38:23 AM	9.61	7.41
M5 Run 2 Mid	10:38:33 AM	9.61	7.42
M5 Run 2 Mid	10:38:43 AM	9.55	7.46
M5 Run 2 Mid	10:38:53 AM	9.58	7.41
M5 Run 2 Mid	10:39:03 AM	9.59	7.42
M5 Run 2 Mid	10:39:13 AM	9.56	7.46
M5 Run 2 Mid	10:39:23 AM	9.51	7.47
M5 Run 2 Mid	10:39:33 AM	9.49	7.50
M5 Run 2 Mid	10:39:43 AM	9.52	7.46
M5 Run 2 Mid	10:39:53 AM	9.52	7.47
M5 Run 2 Mid	10:40:03 AM	9.51	7.48
M5 Run 2 Mid	10:40:13 AM	9.46	7.53
M5 Run 2 Mid	10:40:23 AM	9.46	7.51
M5 Run 2 Mid	10:40:33 AM	9.46	7.49
M5 Run 2 Mid	10:40:43 AM	9.44	7.53
M5 Run 2 Mid	10:40:53 AM	9.39	7.54
M5 Run 2 Mid	10:41:03 AM	9.38	7.56
M5 Run 2 Mid	10:41:13 AM	9.42	7.53
M5 Run 2 Mid	10:41:23 AM	9.42	7.54
M5 Run 2 Mid	10:41:33 AM	9.45	7.50
M5 Run 2 Mid	10:41:43 AM	9.48	7.50
M5 Run 2 Mid	10:41:53 AM	9.48	7.48
M5 Run 2 Mid	10:42:03 AM	9.50	7.48
M5 Run 2 Mid	10:42:13 AM	9.55	7.43
M5 Run 2 Mid	10:42:23 AM	9.55	7.46
M5 Run 2 Mid	10:42:33 AM	9.52	7.47
M5 Run 2 Mid	10:42:43 AM	9.52	7.46
M5 Run 2 Mid	10:42:53 AM	9.53	7.45
M5 Run 2 Mid	10:43:03 AM	9.58	7.43
M5 Run 2 Mid	10:43:13 AM	9.66	7.35
M5 Run 2 Mid	10:43:23 AM	9.61	7.43
M5 Run 2 Mid	10:43:33 AM	9.59	7.41
M5 Run 2 Mid	10:43:43 AM	9.66	7.38
M5 Run 2 Mid	10:43:53 AM	9.68	7.38
M5 Run 2 Mid	10:44:03 AM	9.65	7.41
M5 Run 2 Mid	10:44:13 AM	9.58	7.46
M5 Run 2 Mid	10:44:23 AM	9.50	7.49
M5 Run 2 Mid	10:44:33 AM	9.49	7.49
M5 Run 2 Mid	10:44:43 AM	9.50	7.50
M5 Run 2 Mid	10:44:53 AM	9.51	7.47
M5 Run 2 Mid	10:45:03 AM	9.58	7.42
M5 Run 2 Mid	10:45:13 AM	9.72	7.32
M5 Run 2 Mid	10:45:23 AM	9.76	7.32
M5 Run 2 Mid	10:45:33 AM	9.71	7.35
M5 Run 2 Mid	10:45:43 AM	9.80	7.28
M5 Run 2 Mid	10:45:53 AM	9.79	7.31



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	10:46:03 AM	9.83	7.26
M5 Run 2 Mid	10:46:13 AM	9.85	7.27
M5 Run 2 Mid	10:46:23 AM	9.77	7.33
M5 Run 2 Mid	10:46:33 AM	9.72	7.37
M5 Run 2 Mid	10:46:43 AM	9.65	7.40
M5 Run 2 Mid	10:46:53 AM	9.56	7.47
M5 Run 2 Mid	10:47:03 AM	9.53	7.47
M5 Run 2 Mid	10:47:13 AM	9.50	7.49
M5 Run 2 Mid	10:47:23 AM	9.49	7.50
M5 Run 2 Mid	10:47:33 AM	9.48	7.50
M5 Run 2 Mid	10:47:43 AM	9.46	7.52
M5 Run 2 Mid	10:47:53 AM	9.42	7.55
M5 Run 2 Mid	10:48:03 AM	9.35	7.59
M5 Run 2 Mid	10:48:13 AM	9.41	7.54
M5 Run 2 Mid	10:48:23 AM	9.46	7.50
M5 Run 2 Mid	10:48:33 AM	9.45	7.52
M5 Run 2 Mid	10:48:43 AM	9.49	7.47
M5 Run 2 Mid	10:48:53 AM	9.51	7.47
M5 Run 2 Mid	10:49:03 AM	9.54	7.46
M5 Run 2 Mid	10:49:13 AM	9.56	7.43
M5 Run 2 Mid	10:49:23 AM	9.59	7.43
M5 Run 2 Mid	10:49:33 AM	9.57	7.44
M5 Run 2 Mid	10:49:43 AM	9.62	7.40
M5 Run 2 Mid	10:49:53 AM	9.59	7.44
M5 Run 2 Mid	10:50:03 AM	9.48	7.51
M5 Run 2 Mid	10:50:13 AM	9.59	7.41
M5 Run 2 Mid	10:50:23 AM	9.51	7.49
M5 Run 2 Mid	10:50:33 AM	9.47	7.51
M5 Run 2 Mid	10:50:43 AM	9.49	7.49
M5 Run 2 Mid	10:50:53 AM	9.51	7.47
M5 Run 2 Mid	10:51:03 AM	9.49	7.50
M5 Run 2 Mid	10:51:13 AM	9.52	7.47
M5 Run 2 Mid	10:51:23 AM	9.53	7.44
M5 Run 2 Mid	10:51:33 AM	9.59	7.43
M5 Run 2 Mid	10:51:43 AM	9.54	7.47
M5 Run 2 Mid	10:51:53 AM	9.57	7.42
M5 Run 2 Mid	10:52:03 AM	9.65	7.38
M5 Run 2 Mid	10:52:13 AM	9.65	7.40
M5 Run 2 Mid	10:52:23 AM	9.65	7.39
M5 Run 2 Mid	10:52:33 AM	9.61	7.42
M5 Run 2 Mid	10:52:43 AM	9.67	7.36
M5 Run 2 Mid	10:52:53 AM	9.77	7.32
M5 Run 2 Mid	10:53:03 AM	9.75	7.34
M5 Run 2 Mid	10:53:13 AM	9.81	7.31
M5 Run 2 Mid	10:53:23 AM	9.75	7.35
M5 Run 2 Mid	10:53:33 AM	9.72	7.36
M5 Run 2 Mid	10:53:43 AM	9.67	7.40
M5 Run 2 Mid	10:53:53 AM	9.59	7.44
M5 Run 2 Mid	10:54:03 AM	9.65	7.39
M5 Run 2 Mid	10:54:13 AM	9.57	7.47
M5 Run 2 Mid	10:54:23 AM	9.50	7.48
M5 Run 2 Mid	10:54:33 AM	9.54	7.45



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	10:54:43 AM	9.60	7.41
M5 Run 2 Mid	10:54:53 AM	9.67	7.36
M5 Run 2 Mid	10:55:03 AM	9.70	7.36
M5 Run 2 Mid	10:55:13 AM	9.67	7.39
M5 Run 2 Mid	10:55:23 AM	9.60	7.43
M5 Run 2 Mid	10:55:33 AM	9.60	7.42
M5 Run 2 Mid	10:55:43 AM	9.65	7.39
M5 Run 2 Mid	10:55:53 AM	9.65	7.40
M5 Run 2 Mid	10:56:03 AM	9.68	7.35
M5 Run 2 Mid	10:56:13 AM	9.75	7.34
M5 Run 2 Mid	10:56:23 AM	9.70	7.38
M5 Run 2 Mid	10:56:33 AM	9.73	7.33
M5 Run 2 Mid	10:56:43 AM	9.74	7.34
M5 Run 2 Mid	10:56:53 AM	9.73	7.35
M5 Run 2 Mid	10:57:03 AM	9.71	7.36
M5 Run 2 Mid	10:57:13 AM	9.66	7.39
M5 Run 2 Mid	10:57:23 AM	9.70	7.35
M5 Run 2 Mid	10:57:33 AM	9.65	7.42
M5 Run 2 Mid	10:57:43 AM	9.59	7.42
M5 Run 2 Mid	10:57:53 AM	9.66	7.36
M5 Run 2 Mid	10:58:03 AM	9.75	7.30
M5 Run 2 Mid	10:58:13 AM	9.76	7.32
M5 Run 2 Mid	10:58:23 AM	9.72	7.36
M5 Run 2 Mid	10:58:33 AM	9.68	7.38
M5 Run 2 Mid	10:58:43 AM	9.65	7.39
M5 Run 2 Mid	10:58:53 AM	9.63	7.41
M5 Run 2 Mid	10:59:03 AM	9.64	7.42
M5 Run 2 Mid	10:59:13 AM	9.61	7.43
M5 Run 2 Mid	10:59:23 AM	9.62	7.41
M5 Run 2 Mid	10:59:33 AM	9.60	7.42
M5 Run 2 Mid	10:59:43 AM	9.56	7.47
M5 Run 2 Mid	10:59:53 AM	9.55	7.46
M5 Run 2 Mid	11:00:03 AM	9.50	7.50
M5 Run 2 Mid	11:00:13 AM	9.52	7.49
M5 Run 2 Mid	11:00:23 AM	9.52	7.47
M5 Run 2 Mid	11:00:33 AM	9.48	7.51
M5 Run 2 Mid	11:00:43 AM	9.47	7.50
M5 Run 2 Mid	11:00:53 AM	9.49	7.49
M5 Run 2 Mid	11:01:03 AM	9.55	7.44
M5 Run 2 Mid	11:01:13 AM	9.55	7.48
M5 Run 2 Mid	11:01:23 AM	9.52	7.47
M5 Run 2 Mid	11:01:33 AM	9.50	7.48
M5 Run 2 Mid	11:01:43 AM	9.50	7.49
M5 Run 2 Mid	11:01:53 AM	9.52	7.48
M5 Run 2 Mid	11:02:03 AM	9.56	7.44
M5 Run 2 Mid	11:02:13 AM	9.69	7.34
M5 Run 2 Mid	11:02:23 AM	9.74	7.35
M5 Run 2 Mid	11:02:33 AM	9.64	7.43
M5 Run 2 Mid	11:02:43 AM	9.57	7.44
M5 Run 2 Mid	11:02:53 AM	9.52	7.49
M5 Run 2 Mid	11:03:03 AM	9.50	7.51
M5 Run 2 Mid	11:03:13 AM	9.41	7.57



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	11:03:23 AM	9.40	7.55
M5 Run 2 Mid	11:03:33 AM	9.43	7.54
M5 Run 2 Mid	11:03:43 AM	9.45	7.52
M5 Run 2 Mid	11:03:53 AM	9.50	7.47
M5 Run 2 Mid	11:04:03 AM	9.57	7.43
M5 Run 2 Mid	11:04:13 AM	9.64	7.38
M5 Run 2 Mid	11:04:23 AM	9.77	7.30
M5 Run 2 Mid	11:04:33 AM	9.85	7.26
M5 Run 2 Mid	11:04:43 AM	9.81	7.32
M5 Run 2 Mid	11:04:53 AM	9.77	7.34
M5 Run 2 Mid	11:05:03 AM	9.79	7.30
M5 Run 2 Mid	11:05:13 AM	9.78	7.33
M5 Run 2 Mid	11:05:23 AM	9.74	7.34
M5 Run 2 Mid	11:05:33 AM	9.69	7.38
M5 Run 2 Mid	11:05:43 AM	9.71	7.35
M5 Run 2 Mid	11:05:53 AM	9.75	7.33
M5 Run 2 Mid	11:06:03 AM	9.80	7.29
M5 Run 2 Mid	11:06:13 AM	9.77	7.34
M5 Run 2 Mid	11:06:23 AM	9.71	7.37
M5 Run 2 Mid	11:06:33 AM	9.72	7.36
M5 Run 2 Mid	11:06:43 AM	9.68	7.39
M5 Run 2 Mid	11:06:53 AM	9.65	7.40
M5 Run 2 Mid	11:07:03 AM	9.67	7.39
M5 Run 2 Mid	11:07:13 AM	9.65	7.41
M5 Run 2 Mid	11:07:23 AM	9.66	7.40
M5 Run 2 Mid	11:07:33 AM	9.68	7.38
M5 Run 2 Mid	11:07:43 AM	9.65	7.41
M5 Run 2 Mid	11:07:53 AM	9.64	7.41
M5 Run 2 Mid	11:08:03 AM	9.65	7.41
M5 Run 2 Mid	11:08:13 AM	9.61	7.44
M5 Run 2 Mid	11:08:23 AM	9.59	7.44
M5 Run 2 Mid	11:08:33 AM	9.53	7.50
M5 Run 2 Mid	11:08:43 AM	9.54	7.46
M5 Run 2 Mid	11:08:53 AM	9.57	7.45
M5 Run 2 Mid	11:09:03 AM	9.57	7.46
M5 Run 2 Mid	11:09:13 AM	9.53	7.50
M5 Run 2 Mid	11:09:23 AM	9.54	7.47
M5 Run 2 Mid	11:09:33 AM	9.56	7.45
M5 Run 2 Mid	11:09:43 AM	9.66	7.39
M5 Run 2 Mid	11:09:53 AM	9.62	7.44
M5 Run 2 Mid	11:10:03 AM	9.60	7.43
M5 Run 2 Mid	11:10:13 AM	9.58	7.45
M5 Run 2 Mid	11:10:23 AM	9.59	7.44
M5 Run 2 Mid	11:10:33 AM	9.59	7.43
M5 Run 2 Mid	11:10:43 AM	9.58	7.44
M5 Run 2 Mid	11:10:53 AM	9.60	7.41
M5 Run 2 Mid	11:11:03 AM	9.67	7.38
M5 Run 2 Mid	11:11:13 AM	9.70	7.37
M5 Run 2 Mid	11:11:23 AM	9.83	7.25
M5 Run 2 Mid	11:11:33 AM	9.92	7.23
M5 Run 2 Mid	11:11:43 AM	9.80	7.32
M5 Run 2 Mid	11:11:53 AM	9.75	7.33



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	11:12:03 AM	9.84	7.26
M5 Run 2 Mid	11:12:13 AM	9.88	7.25
M5 Run 2 Mid	11:12:23 AM	9.81	7.32
M5 Run 2 Mid	11:12:33 AM	9.72	7.36
M5 Run 2 Mid	11:12:43 AM	9.81	7.28
M5 Run 2 Mid	11:12:53 AM	9.83	7.29
M5 Run 2 Mid	11:13:03 AM	9.74	7.35
M5 Run 2 Mid	11:13:13 AM	9.65	7.44
M5 Run 2 Mid	11:13:23 AM	9.56	7.47
M5 Run 2 Mid	11:13:33 AM	9.58	7.44
M5 Run 2 Mid	11:13:43 AM	9.69	7.36
M5 Run 2 Mid	11:13:53 AM	9.80	7.30
M5 Run 2 Mid	11:14:03 AM	9.89	7.26
M5 Run 2 Mid	11:14:13 AM	9.85	7.29
M5 Run 2 Mid	11:14:23 AM	9.89	7.23
M5 Run 2 Mid	11:14:33 AM	9.86	7.30
M5 Run 2 Mid	11:14:43 AM	9.89	7.25
M5 Run 2 Mid	11:14:53 AM	9.89	7.24
M5 Run 2 Mid	11:15:03 AM	9.87	7.29
M5 Run 2 Mid	11:15:13 AM	9.73	7.39
M5 Run 2 Mid	11:15:23 AM	9.60	7.44
M5 Run 2 Mid	11:15:33 AM	9.60	7.44
M5 Run 2 Mid	11:15:43 AM	9.60	7.44
M5 Run 2 Mid	11:15:53 AM	9.65	7.39
M5 Run 2 Mid	11:16:03 AM	9.83	7.25
M5 Run 2 Mid	11:16:13 AM	10.00	7.17
M5 Run 2 Mid	11:16:23 AM	9.90	7.28
M5 Run 2 Mid	11:16:33 AM	9.84	7.30
M5 Run 2 Mid	11:16:43 AM	9.74	7.37
M5 Run 2 Mid	11:16:53 AM	9.73	7.35
M5 Run 2 Mid	11:17:03 AM	9.75	7.37
M5 Run 2 Mid	11:17:13 AM	9.68	7.41
M5 Run 2 Mid	11:17:23 AM	9.65	7.43
M5 Run 2 Mid	11:17:33 AM	9.63	7.43
M5 Run 2 Mid	11:17:43 AM	9.72	7.35
M5 Run 2 Mid	11:17:53 AM	9.79	7.31
M5 Run 2 Mid	11:18:03 AM	9.83	7.29
M5 Run 2 Mid	11:18:13 AM	9.90	7.26
M5 Run 2 Mid	11:18:23 AM	9.90	7.25
M5 Run 2 Mid	11:18:33 AM	9.97	7.20
M5 Run 2 Mid	11:18:43 AM	10.02	7.16
M5 Run 2 Mid	11:18:53 AM	10.05	7.16
M5 Run 2 Mid	11:19:03 AM	9.96	7.25
M5 Run 2 Mid	11:19:13 AM	9.90	7.25
M5 Run 2 Mid	11:19:23 AM	9.93	7.22
M5 Run 2 Mid	11:19:33 AM	9.94	7.24
M5 Run 2 Mid	11:19:43 AM	9.84	7.31
M5 Run 2 Mid	11:19:53 AM	9.79	7.32
M5 Run 2 Mid	11:20:03 AM	9.77	7.35
M5 Run 2 Mid	11:20:13 AM	9.69	7.40
M5 Run 2 Mid	11:20:23 AM	9.69	7.37
M5 Run 2 Mid	11:20:33 AM	9.77	7.30



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	11:20:43 AM	9.95	7.19
M5 Run 2 Mid	11:20:53 AM	10.06	7.12
M5 Run 2 Mid	11:21:03 AM	10.13	7.10
M5 Run 2 Mid	11:21:13 AM	10.03	7.19
M5 Run 2 Mid	11:21:23 AM	9.91	7.24
M5 Run 2 Mid	11:21:33 AM	9.86	7.28
M5 Run 2 Mid	11:21:43 AM	9.81	7.31
M5 Run 2 Mid	11:21:53 AM	9.77	7.34
M5 Run 2 Mid	11:22:03 AM	9.75	7.34
M5 Run 2 Mid	11:22:13 AM	9.80	7.29
M5 Run 2 Mid	11:22:23 AM	9.86	7.26
M5 Run 2 Mid	11:22:33 AM	9.94	7.20
M5 Run 2 Mid	11:22:43 AM	10.03	7.16
M5 Run 2 Mid	11:22:53 AM	10.05	7.15
M5 Run 2 Mid	11:23:03 AM	9.99	7.22
M5 Run 2 Mid	11:23:13 AM	9.89	7.28
M5 Run 2 Mid	11:23:23 AM	9.80	7.34
M5 Run 2 Mid	11:23:33 AM	9.80	7.29
M5 Run 2 Mid	11:23:43 AM	9.87	7.27
M5 Run 2 Mid	11:23:53 AM	9.88	7.27
M5 Run 2 Mid	11:24:03 AM	9.89	7.27
M5 Run 2 Mid	11:24:13 AM	9.77	7.37
M5 Run 2 Mid	11:24:23 AM	9.74	7.36
M5 Run 2 Mid	11:24:33 AM	9.74	7.35
M5 Run 2 Mid	11:24:43 AM	9.82	7.31
M5 Run 2 Mid	11:24:53 AM	9.81	7.34
M5 Run 2 Mid	11:25:03 AM	9.77	7.35
M5 Run 2 Mid	11:25:13 AM	9.76	7.36
M5 Run 2 Mid	11:25:23 AM	9.86	7.25
M5 Run 2 Mid	11:25:33 AM	10.00	7.17
M5 Run 2 Mid	11:25:43 AM	10.07	7.14
M5 Run 2 Mid	11:25:53 AM	10.02	7.20
M5 Run 2 Mid	11:26:03 AM	9.96	7.23
M5 Run 2 Mid	11:26:13 AM	9.91	7.27
M5 Run 2 Mid	11:26:23 AM	9.95	7.20
M5 Run 2 Mid	11:26:33 AM	10.01	7.20
M5 Run 2 Mid	11:26:43 AM	10.04	7.15
M5 Run 2 Mid	11:26:53 AM	10.15	7.09
M5 Run 2 Mid	11:27:03 AM	10.05	7.17
M5 Run 2 Mid	11:27:13 AM	10.02	7.20
M5 Run 2 Mid	11:27:23 AM	9.99	7.20
M5 Run 2 Mid	11:27:33 AM	10.00	7.20
M5 Run 2 Mid	11:27:43 AM	10.03	7.17
M5 Run 2 Mid	11:27:53 AM	10.04	7.17
M5 Run 2 Mid	11:28:03 AM	10.03	7.18
M5 Run 2 Mid	11:28:13 AM	10.00	7.20
M5 Run 2 Mid	11:28:23 AM	10.00	7.19
M5 Run 2 Mid	11:28:33 AM	10.04	7.17
M5 Run 2 Mid	11:28:43 AM	9.97	7.23
M5 Run 2 Mid	11:28:53 AM	9.91	7.26
M5 Run 2 Mid	11:29:03 AM	9.92	7.25
M5 Run 2 Mid	11:29:13 AM	9.92	7.25



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	11:29:23 AM	9.91	7.26
M5 Run 2 Mid	11:29:33 AM	9.90	7.26
M5 Run 2 Mid	11:29:43 AM	9.85	7.33
M5 Run 2 Mid	11:29:53 AM	9.74	7.38
M5 Run 2 Mid	11:30:03 AM	9.73	7.37
M5 Run 2 Mid	11:30:13 AM	9.74	7.36
M5 Run 2 Mid	11:30:23 AM	9.76	7.35
M5 Run 2 Mid	11:30:33 AM	9.71	7.38
M5 Run 2 Mid	11:30:43 AM	9.71	7.38
M5 Run 2 Mid	11:30:53 AM	9.80	7.29
M5 Run 2 Mid	11:31:03 AM	10.03	7.12
M5 Run 2 Mid	11:31:13 AM	10.20	7.04
M5 Run 2 Mid	11:31:23 AM	10.17	7.09
M5 Run 2 Mid	11:31:33 AM	10.07	7.15
M5 Run 2 Mid	11:31:43 AM	10.07	7.17
M5 Run 2 Mid	11:31:53 AM	9.95	7.24
M5 Run 2 Mid	11:32:03 AM	9.96	7.20
M5 Run 2 Mid	11:32:13 AM	9.96	7.24
M5 Run 2 Mid	11:32:23 AM	9.91	7.25
M5 Run 2 Mid	11:32:33 AM	10.02	7.14
M5 Run 2 Mid	11:32:43 AM	10.10	7.13
M5 Run 2 Mid	11:32:53 AM	10.08	7.14
M5 Run 2 Mid	11:33:03 AM	10.08	7.15
M5 Run 2 Mid	11:33:13 AM	10.01	7.21
M5 Run 2 Mid	11:33:23 AM	9.99	7.20
M5 Run 2 Mid	11:33:33 AM	10.04	7.16
M5 Run 2 Mid	11:33:43 AM	9.99	7.23
M5 Run 2 Mid	11:33:53 AM	9.95	7.23
M5 Run 2 Mid	11:34:03 AM	9.96	7.22
M5 Run 2 Mid	11:34:13 AM	10.10	7.11
M5 Run 2 Mid	11:34:23 AM	10.10	7.14
M5 Run 2 Mid	11:34:33 AM	10.08	7.16
M5 Run 2 Mid	11:34:43 AM	10.06	7.17
M5 Run 2 Mid	11:34:53 AM	10.01	7.19
M5 Run 2 Mid	11:35:03 AM	10.13	7.09
M5 Run 2 Mid	11:35:13 AM	10.24	7.05
M5 Run 2 Mid	11:35:23 AM	10.16	7.12
M5 Run 2 Mid	11:35:33 AM	10.10	7.14
M5 Run 2 Mid	11:35:43 AM	10.10	7.13
M5 Run 2 Mid	11:35:53 AM	10.10	7.15
M5 Run 2 Mid	11:36:03 AM	10.04	7.18
M5 Run 2 Mid	11:36:13 AM	10.00	7.21
M5 Run 2 Mid	11:36:23 AM	9.89	7.29
M5 Run 2 Mid	11:36:33 AM	9.86	7.27
M5 Run 2 Mid	11:36:43 AM	9.87	7.28
M5 Run 2 Mid	11:36:53 AM	9.93	7.22
M5 Run 2 Mid	11:37:03 AM	10.08	7.11
M5 Run 2 Mid	11:37:13 AM	10.22	7.05
M5 Run 2 Mid	11:37:23 AM	10.21	7.08
M5 Run 2 Mid	11:37:33 AM	10.12	7.13
M5 Run 2 Mid	11:37:43 AM	10.10	7.14
M5 Run 2 Mid	11:37:53 AM	10.07	7.14



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	11:38:03 AM	10.10	7.14
M5 Run 2 Mid	11:38:13 AM	10.09	7.13
M5 Run 2 Mid	11:38:23 AM	10.11	7.12
M5 Run 2 Mid	11:38:33 AM	10.09	7.15
M5 Run 2 Mid	11:38:43 AM	10.00	7.22
M5 Run 2 Mid	11:38:53 AM	9.98	7.21
M5 Run 2 Mid	11:39:03 AM	9.97	7.22
M5 Run 2 Mid	11:39:13 AM	9.98	7.21
M5 Run 2 Mid	11:39:23 AM	9.96	7.26
M5 Run 2 Mid	11:39:33 AM	9.83	7.32
M5 Run 2 Mid	11:39:43 AM	9.83	7.29
M5 Run 2 Mid	11:39:53 AM	9.93	7.23
M5 Run 2 Mid	11:40:03 AM	9.97	7.22
M5 Run 2 Mid	11:40:13 AM	10.01	7.17
M5 Run 2 Mid	11:40:23 AM	10.05	7.16
M5 Run 2 Mid	11:40:33 AM	10.02	7.19
M5 Run 2 Mid	11:40:43 AM	10.00	7.19
M5 Run 2 Mid	11:40:53 AM	10.01	7.20
M5 Run 2 Mid	11:41:03 AM	10.02	7.18
M5 Run 2 Mid	11:41:13 AM	10.03	7.19
M5 Run 2 Mid	11:41:23 AM	10.04	7.16
M5 Run 2 Mid	11:41:33 AM	10.00	7.21
M5 Run 2 Mid	11:41:43 AM	9.98	7.20
M5 Run 2 Mid	11:41:53 AM	10.08	7.14
M5 Run 2 Mid	11:42:03 AM	10.05	7.17
M5 Run 2 Mid	11:42:13 AM	10.00	7.21
M5 Run 2 Mid	11:42:23 AM	9.98	7.20
M5 Run 2 Mid	11:42:33 AM	10.00	7.21
M5 Run 2 Mid	11:42:43 AM	9.92	7.26
M5 Run 2 Mid	11:42:53 AM	9.98	7.20
M5 Run 2 Mid	11:43:03 AM	10.09	7.13
M5 Run 2 Mid	11:43:13 AM	10.11	7.14
M5 Run 2 Mid	11:43:23 AM	10.06	7.19
M5 Run 2 Mid	11:43:33 AM	9.99	7.22
M5 Run 2 Mid	11:49:22 AM	10.05	7.17
M5 Run 2 Mid	11:49:32 AM	10.06	7.18
M5 Run 2 Mid	11:49:42 AM	9.98	7.24
M5 Run 2 Mid	11:49:52 AM	9.97	7.21
M5 Run 2 Mid	11:50:02 AM	9.99	7.23
M5 Run 2 Mid	11:50:12 AM	9.92	7.27
M5 Run 2 Mid	11:50:22 AM	9.99	7.19
M5 Run 2 Mid	11:50:32 AM	9.96	7.26
M5 Run 2 Mid	11:50:42 AM	9.96	7.24
M5 Run 2 Mid	11:50:52 AM	9.97	7.22
M5 Run 2 Mid	11:51:02 AM	10.05	7.17
M5 Run 2 Mid	11:51:12 AM	10.08	7.16
M5 Run 2 Mid	11:51:22 AM	10.05	7.18
M5 Run 2 Mid	11:51:32 AM	9.95	7.27
M5 Run 2 Mid	11:51:42 AM	9.88	7.30
M5 Run 2 Mid	11:51:52 AM	9.89	7.26
M5 Run 2 Mid	11:52:02 AM	9.86	7.32
M5 Run 2 Mid	11:52:12 AM	9.88	7.27



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	11:52:22 AM	9.94	7.26
M5 Run 2 Mid	11:52:32 AM	9.84	7.34
M5 Run 2 Mid	11:52:42 AM	9.74	7.38
M5 Run 2 Mid	11:52:52 AM	9.80	7.33
M5 Run 2 Mid	11:53:02 AM	9.88	7.29
M5 Run 2 Mid	11:53:12 AM	9.88	7.29
M5 Run 2 Mid	11:53:22 AM	9.88	7.29
M5 Run 2 Mid	11:53:32 AM	9.86	7.31
M5 Run 2 Mid	11:53:42 AM	9.80	7.38
M5 Run 2 Mid	11:53:52 AM	9.73	7.41
M5 Run 2 Mid	11:54:02 AM	9.71	7.42
M5 Run 2 Mid	11:54:12 AM	9.71	7.39
M5 Run 2 Mid	11:54:22 AM	9.79	7.35
M5 Run 2 Mid	11:54:32 AM	9.84	7.31
M5 Run 2 Mid	11:54:42 AM	9.92	7.25
M5 Run 2 Mid	11:54:52 AM	9.96	7.25
M5 Run 2 Mid	11:55:02 AM	10.00	7.19
M5 Run 2 Mid	11:55:12 AM	10.01	7.23
M5 Run 2 Mid	11:55:22 AM	9.99	7.21
M5 Run 2 Mid	11:55:32 AM	9.99	7.22
M5 Run 2 Mid	11:55:42 AM	9.96	7.24
M5 Run 2 Mid	11:55:52 AM	10.00	7.22
M5 Run 2 Mid	11:56:02 AM	10.04	7.19
M5 Run 2 Mid	11:56:12 AM	10.12	7.11
M5 Run 2 Mid	11:56:22 AM	10.18	7.09
M5 Run 2 Mid	11:56:32 AM	10.13	7.14
M5 Run 2 Mid	11:56:42 AM	10.17	7.10
M5 Run 2 Mid	11:56:52 AM	10.27	7.02
M5 Run 2 Mid	11:57:02 AM	10.30	7.04
M5 Run 2 Mid	11:57:12 AM	10.23	7.08
M5 Run 2 Mid	11:57:22 AM	10.16	7.12
M5 Run 2 Mid	11:57:32 AM	10.10	7.16
M5 Run 2 Mid	11:57:42 AM	10.02	7.22
M5 Run 2 Mid	11:57:52 AM	9.99	7.23
M5 Run 2 Mid	11:58:02 AM	9.95	7.26
M5 Run 2 Mid	11:58:12 AM	9.95	7.24
M5 Run 2 Mid	11:58:22 AM	10.00	7.21
M5 Run 2 Mid	11:58:32 AM	9.97	7.24
M5 Run 2 Mid	11:58:42 AM	9.99	7.20
M5 Run 2 Mid	11:58:52 AM	9.97	7.25
M5 Run 2 Mid	11:59:02 AM	9.94	7.26
M5 Run 2 Mid	11:59:12 AM	9.93	7.26
M5 Run 2 Mid	11:59:22 AM	9.90	7.27
M5 Run 2 Mid	11:59:32 AM	9.95	7.24
M5 Run 2 Mid	11:59:42 AM	10.00	7.19
M5 Run 2 Mid	11:59:52 AM	10.02	7.21
M5 Run 2 Mid	12:00:02 PM	9.98	7.24
M5 Run 2 Mid	12:00:12 PM	9.93	7.27
M5 Run 2 Mid	12:00:22 PM	9.85	7.34
M5 Run 2 Mid	12:00:32 PM	9.82	7.32
M5 Run 2 Mid	12:00:42 PM	9.86	7.29
M5 Run 2 Mid	12:00:52 PM	9.92	7.26



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	12:01:02 PM	9.98	7.23
M5 Run 2 Mid	12:01:12 PM	9.98	7.23
M5 Run 2 Mid	12:01:22 PM	9.92	7.29
M5 Run 2 Mid	12:01:32 PM	9.87	7.28
M5 Run 2 Mid	12:01:42 PM	9.91	7.27
M5 Run 2 Mid	12:01:52 PM	9.89	7.28
M5 Run 2 Mid	12:02:02 PM	9.97	7.24
M5 Run 2 Mid	12:02:12 PM	9.97	7.24
M5 Run 2 Mid	12:02:22 PM	9.96	7.24
M5 Run 2 Mid	12:02:32 PM	9.93	7.27
M5 Run 2 Mid	12:02:42 PM	9.94	7.26
M5 Run 2 Mid	12:02:52 PM	9.95	7.24
M5 Run 2 Mid	12:03:02 PM	10.02	7.20
M5 Run 2 Mid	12:03:12 PM	10.07	7.17
M5 Run 2 Mid	12:03:22 PM	10.16	7.10
M5 Run 2 Mid	12:03:32 PM	10.20	7.09
M5 Run 2 Mid	12:03:42 PM	10.10	7.17
M5 Run 2 Mid	12:03:52 PM	10.06	7.17
M5 Run 2 Mid	12:04:02 PM	10.03	7.22
M5 Run 2 Mid	12:04:12 PM	9.95	7.27
M5 Run 2 Mid	12:04:22 PM	9.92	7.27
M5 Run 2 Mid	12:04:32 PM	9.97	7.24
M5 Run 2 Mid	12:04:42 PM	9.94	7.27
M5 Run 2 Mid	12:04:52 PM	9.92	7.29
M5 Run 2 Mid	12:05:02 PM	10.02	7.17
M5 Run 2 Mid	12:05:12 PM	10.21	7.05
M5 Run 2 Mid	12:05:22 PM	10.31	7.01
M5 Run 2 Mid	12:05:32 PM	10.29	7.05
M5 Run 2 Mid	12:05:42 PM	10.22	7.09
M5 Run 2 Mid	12:05:52 PM	10.18	7.10
M5 Run 2 Mid	12:06:02 PM	10.18	7.12
M5 Run 2 Mid	12:06:12 PM	10.06	7.20
M5 Run 2 Mid	12:06:22 PM	10.03	7.20
M5 Run 2 Mid	12:06:32 PM	10.10	7.14
M5 Run 2 Mid	12:06:42 PM	10.15	7.11
M5 Run 2 Mid	12:06:52 PM	10.12	7.15
M5 Run 2 Mid	12:07:02 PM	10.17	7.09
M5 Run 2 Mid	12:07:12 PM	10.19	7.08
M5 Run 2 Mid	12:07:22 PM	10.22	7.06
M5 Run 2 Mid	12:07:32 PM	10.33	7.00
M5 Run 2 Mid	12:07:42 PM	10.43	6.92
M5 Run 2 Mid	12:07:52 PM	10.48	6.91
M5 Run 2 Mid	12:08:02 PM	10.42	6.97
M5 Run 2 Mid	12:08:12 PM	10.33	7.03
M5 Run 2 Mid	12:08:22 PM	10.27	7.06
M5 Run 2 Mid	12:08:32 PM	10.34	6.98
M5 Run 2 Mid	12:08:42 PM	10.34	7.02
M5 Run 2 Mid	12:08:52 PM	10.24	7.10
M5 Run 2 Mid	12:09:02 PM	10.13	7.17
M5 Run 2 Mid	12:09:12 PM	10.14	7.11
M5 Run 2 Mid	12:09:22 PM	10.23	7.07
M5 Run 2 Mid	12:09:32 PM	10.28	7.04



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
M5 Run 2 Mid	12:09:42 PM	10.22	7.11
M5 Run 2 Mid	12:09:52 PM	10.18	7.10
M5 Run 2 Mid	12:10:02 PM	10.22	7.07
M5 Run 2 Mid	12:10:12 PM	10.23	7.09
M5 Run 2 Mid	12:10:22 PM	10.17	7.14
M5 Run 2 Mid	12:10:32 PM	10.10	7.15
M5 Run 2 Mid	12:10:42 PM	10.09	7.17
M5 Run 2 Mid	12:10:52 PM	10.08	7.18
M5 Run 2 Mid	12:11:02 PM	10.09	7.17
M5 Run 2 Mid	12:11:12 PM	10.08	7.18
M5 Run 2 Mid	12:11:22 PM	10.11	7.14
M5 Run 2 Mid	12:11:32 PM	10.06	7.21
M5 Run 2 Mid	12:11:42 PM	9.99	7.23
M5 Run 2 Mid	12:11:52 PM	10.12	7.12
M5 Run 2 Mid	12:12:02 PM	10.19	7.09
M5 Run 2 Mid	12:12:12 PM	10.32	6.99
M5 Run 2 Mid	12:12:22 PM	10.31	7.06
M5 Run 2 Mid	12:12:32 PM	10.20	7.11
M5 Run 2 Mid	12:12:42 PM	10.20	7.09
M5 Run 2 Mid	12:12:52 PM	10.15	7.13
M5 Run 2 Mid	12:13:02 PM	10.12	7.16
M5 Run 2 Mid	12:13:12 PM	10.08	7.19
M5 Run 2 Mid	12:13:22 PM	10.14	7.11
M5 Run 2 Mid	12:13:32 PM	10.20	7.08
M5 Run 2 Mid	12:13:42 PM	10.16	7.15
M5 Run 2 Mid	12:13:52 PM	10.09	7.18
M5 Run 2 Mid	12:14:02 PM	10.08	7.18
M5 Run 2 Mid	12:14:12 PM	10.08	7.19
M5 Run 2 Mid	12:14:22 PM	10.08	7.19
M5 Run 2 Mid	12:14:32 PM	10.11	7.15
M5 Run 2 Mid	12:14:42 PM	10.16	7.12
M5 Run 2 Mid	12:14:52 PM	10.20	7.08
M5 Run 2 Mid	12:15:02 PM	10.24	7.07
M5 Run 2 Mid	12:15:12 PM	10.24	7.08
M5 Run 2 Mid	12:15:22 PM	10.28	7.04
M5 Run 2 Mid	12:15:32 PM	10.29	7.02
M5 Run 2 Mid	12:15:42 PM	10.32	7.01
M5 Run 2 Mid	12:15:52 PM	10.29	7.04
M5 Run 2 Mid	12:16:02 PM	10.24	7.08
M5 Run 2 Mid	12:16:12 PM	10.20	7.09
M5 Run 2 Mid	12:16:22 PM	10.32	6.98
M5 Run 2 Mid	12:16:32 PM	10.36	6.99
M5 Run 2 Mid	12:16:42 PM	10.40	6.95
M5 Run 2 Mid	12:16:52 PM	10.44	6.93
M5 Run 2 Mid	12:17:02 PM	10.44	6.95
M5 Run 2 Mid	12:17:12 PM	10.46	6.92
M5 Run 2 Mid	12:17:22 PM	10.48	6.91
M5 Run 2 Mid	12:17:32 PM	10.44	6.95
M5 Run 2 Mid	12:17:42 PM	10.36	7.01
M5 Run 2 Mid	12:17:52 PM	10.35	7.00
M5 Run 2 Mid	12:18:02 PM	10.34	7.03
M5 Run 2 Mid	12:18:12 PM	10.20	7.10



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	12:18:22 PM	10.16	7.12
M5 Run 2 Mid	12:18:32 PM	10.08	7.17
M5 Run 2 Mid	12:18:42 PM	10.13	7.14
M5 Run 2 Mid	12:18:52 PM	10.15	7.12
M5 Run 2 Mid	12:19:02 PM	10.14	7.14
M5 Run 2 Mid	12:19:12 PM	10.19	7.07
M5 Run 2 Mid	12:19:22 PM	10.26	7.05
M5 Run 2 Mid	12:19:32 PM	10.24	7.07
M5 Run 2 Mid	12:19:42 PM	10.27	7.05
M5 Run 2 Mid	12:19:52 PM	10.33	7.01
M5 Run 2 Mid	12:20:02 PM	10.38	6.97
M5 Run 2 Mid	12:20:12 PM	10.41	6.96
M5 Run 2 Mid	12:20:22 PM	10.33	7.03
M5 Run 2 Mid	12:20:32 PM	10.37	6.98
M5 Run 2 Mid	12:20:42 PM	10.43	6.93
M5 Run 2 Mid	12:20:52 PM	10.41	6.96
M5 Run 2 Mid	12:21:02 PM	10.30	7.07
M5 Run 2 Mid	12:21:12 PM	10.14	7.15
M5 Run 2 Mid	12:21:22 PM	10.12	7.14
M5 Run 2 Mid	12:21:32 PM	10.19	7.07
M5 Run 2 Mid	12:21:42 PM	10.31	7.03
M5 Run 2 Mid	12:21:52 PM	10.28	7.05
M5 Run 2 Mid	12:22:02 PM	10.35	6.98
M5 Run 2 Mid	12:22:12 PM	10.34	7.02
M5 Run 2 Mid	12:22:22 PM	10.28	7.07
M5 Run 2 Mid	12:22:32 PM	10.21	7.09
M5 Run 2 Mid	12:22:42 PM	10.21	7.09
M5 Run 2 Mid	12:22:52 PM	10.24	7.07
M5 Run 2 Mid	12:23:02 PM	10.21	7.12
M5 Run 2 Mid	12:23:12 PM	10.12	7.16
M5 Run 2 Mid	12:23:22 PM	10.13	7.13
M5 Run 2 Mid	12:23:32 PM	10.18	7.10
M5 Run 2 Mid	12:23:42 PM	10.19	7.11
M5 Run 2 Mid	12:23:52 PM	10.15	7.15
M5 Run 2 Mid	12:24:02 PM	10.04	7.24
M5 Run 2 Mid	12:24:12 PM	10.04	7.19
M5 Run 2 Mid	12:24:22 PM	10.07	7.18
M5 Run 2 Mid	12:24:32 PM	10.13	7.12
M5 Run 2 Mid	12:24:42 PM	10.16	7.12
M5 Run 2 Mid	12:24:52 PM	10.17	7.12
M5 Run 2 Mid	12:25:02 PM	10.21	7.09
M5 Run 2 Mid	12:25:12 PM	10.24	7.07
M5 Run 2 Mid	12:25:22 PM	10.39	6.96
M5 Run 2 Mid	12:25:32 PM	10.37	7.02
M5 Run 2 Mid	12:25:42 PM	10.28	7.07
M5 Run 2 Mid	12:25:52 PM	10.23	7.08
M5 Run 2 Mid	12:26:02 PM	10.17	7.14
M5 Run 2 Mid	12:26:12 PM	10.09	7.19
M5 Run 2 Mid	12:26:22 PM	10.02	7.22
M5 Run 2 Mid	12:26:32 PM	10.02	7.22
M5 Run 2 Mid	12:26:42 PM	10.04	7.20
M5 Run 2 Mid	12:26:52 PM	10.11	7.15



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	12:27:02 PM	10.20	7.08
M5 Run 2 Mid	12:27:12 PM	10.27	7.05
M5 Run 2 Mid	12:27:22 PM	10.28	7.05
M5 Run 2 Mid	12:27:32 PM	10.29	7.05
M5 Run 2 Mid	12:27:42 PM	10.22	7.10
M5 Run 2 Mid	12:27:52 PM	10.15	7.14
M5 Run 2 Mid	12:28:02 PM	10.17	7.14
M5 Run 2 Mid	12:28:12 PM	10.12	7.17
M5 Run 2 Mid	12:28:22 PM	10.15	7.13
M5 Run 2 Mid	12:28:32 PM	10.16	7.13
M5 Run 2 Mid	12:28:42 PM	10.15	7.12
M5 Run 2 Mid	12:28:52 PM	10.23	7.07
M5 Run 2 Mid	12:29:02 PM	10.19	7.14
M5 Run 2 Mid	12:29:12 PM	10.11	7.16
M5 Run 2 Mid	12:29:22 PM	10.11	7.17
M5 Run 2 Mid	12:29:32 PM	10.15	7.14
M5 Run 2 Mid	12:29:42 PM	10.02	7.27
M5 Run 2 Mid	12:29:52 PM	9.93	7.29
M5 Run 2 Mid	12:30:02 PM	10.01	7.20
M5 Run 2 Mid	12:30:12 PM	10.13	7.13
M5 Run 2 Mid	12:30:22 PM	10.19	7.09
M5 Run 2 Mid	12:30:32 PM	10.22	7.10
M5 Run 2 Mid	12:30:42 PM	10.18	7.13
M5 Run 2 Mid	12:30:52 PM	10.12	7.15
M5 Run 2 Mid	12:31:02 PM	10.14	7.14
M5 Run 2 Mid	12:31:12 PM	10.16	7.10
M5 Run 2 Mid	12:31:22 PM	10.21	7.10
M5 Run 2 Mid	12:31:32 PM	10.16	7.14
M5 Run 2 Mid	12:31:42 PM	10.10	7.19
M5 Run 2 Mid	12:31:52 PM	10.08	7.17
M5 Run 2 Mid	12:32:02 PM	10.13	7.16
M5 Run 2 Mid	12:32:12 PM	10.07	7.20
M5 Run 2 Mid	12:32:22 PM	10.03	7.23
M5 Run 2 Mid	12:32:32 PM	9.99	7.25
M5 Run 2 Mid	12:32:42 PM	10.02	7.22
M5 Run 2 Mid	12:32:52 PM	10.04	7.20
M5 Run 2 Mid	12:33:02 PM	10.11	7.15
M5 Run 2 Mid	12:33:12 PM	10.08	7.18
M5 Run 2 Mid	12:33:22 PM	10.08	7.19
M5 Run 2 Mid	12:33:32 PM	10.10	7.16
M5 Run 2 Mid	12:33:42 PM	10.10	7.17
M5 Run 2 Mid	12:33:52 PM	10.17	7.10
M5 Run 2 Mid	12:34:02 PM	10.16	7.14
M5 Run 2 Mid	12:34:12 PM	10.11	7.19
M5 Run 2 Mid	12:34:22 PM	10.13	7.14
M5 Run 2 Mid	12:34:32 PM	10.17	7.10
M5 Run 2 Mid	12:34:42 PM	10.21	7.08
M5 Run 2 Mid	12:34:52 PM	10.27	7.09
M5 Run 2 Mid	12:35:02 PM	10.19	7.11
M5 Run 2 Mid	12:35:12 PM	10.23	7.07
M5 Run 2 Mid	12:35:22 PM	10.31	7.03
M5 Run 2 Mid	12:35:32 PM	10.29	7.07



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	12:35:42 PM	10.27	7.07
M5 Run 2 Mid	12:35:52 PM	10.30	7.05
M5 Run 2 Mid	12:36:02 PM	10.27	7.09
M5 Run 2 Mid	12:36:12 PM	10.15	7.14
M5 Run 2 Mid	12:36:22 PM	10.16	7.14
M5 Run 2 Mid	12:36:32 PM	10.09	7.20
M5 Run 2 Mid	12:36:42 PM	9.99	7.26
M5 Run 2 Mid	12:36:52 PM	9.99	7.25
M5 Run 2 Mid	12:37:02 PM	10.03	7.20
M5 Run 2 Mid	12:37:12 PM	10.08	7.18
M5 Run 2 Mid	12:37:22 PM	10.03	7.25
M5 Run 2 Mid	12:37:32 PM	9.91	7.31
M5 Run 2 Mid	12:37:42 PM	9.90	7.31
M5 Run 2 Mid	12:37:52 PM	9.92	7.28
M5 Run 2 Mid	12:38:02 PM	9.97	7.27
M5 Run 2 Mid	12:38:12 PM	9.98	7.24
M5 Run 2 Mid	12:38:22 PM	9.97	7.26
M5 Run 2 Mid	12:38:32 PM	10.01	7.23
M5 Run 2 Mid	12:38:42 PM	10.07	7.18
M5 Run 2 Mid	12:38:52 PM	10.11	7.17
M5 Run 2 Mid	12:39:02 PM	10.07	7.20
M5 Run 2 Mid	12:39:12 PM	10.04	7.22
M5 Run 2 Mid	12:39:22 PM	10.05	7.20
M5 Run 2 Mid	12:39:32 PM	9.99	7.25
M5 Run 2 Mid	12:39:42 PM	10.00	7.22
M5 Run 2 Mid	12:39:52 PM	10.04	7.20
M5 Run 2 Mid	12:40:02 PM	10.03	7.22
M5 Run 2 Mid	12:40:12 PM	9.98	7.26
M5 Run 2 Mid	12:40:22 PM	9.94	7.29
M5 Run 2 Mid	12:40:32 PM	9.97	7.24
M5 Run 2 Mid	12:40:42 PM	10.04	7.20
M5 Run 2 Mid	12:40:52 PM	10.07	7.19
M5 Run 2 Mid	12:41:02 PM	10.14	7.14
M5 Run 2 Mid	12:41:12 PM	10.21	7.07
M5 Run 2 Mid	12:41:22 PM	10.33	7.00
M5 Run 2 Mid	12:41:32 PM	10.34	7.02
M5 Run 2 Mid	12:41:42 PM	10.31	7.05
M5 Run 2 Mid	12:41:52 PM	10.25	7.09
M5 Run 2 Mid	12:42:02 PM	10.21	7.11
M5 Run 2 Mid	12:42:12 PM	10.13	7.15
M5 Run 2 Mid	12:42:22 PM	10.10	7.19
M5 Run 2 Mid	12:42:32 PM	10.09	7.17
M5 Run 2 Mid	12:42:42 PM	10.07	7.21
M5 Run 2 Mid	12:42:52 PM	10.10	7.17
M5 Run 2 Mid	12:43:02 PM	10.12	7.16
M5 Run 2 Mid	12:43:12 PM	10.18	7.10
M5 Run 2 Mid	12:43:22 PM	10.27	7.04
M5 Run 2 Mid	12:43:32 PM	10.32	7.03
M5 Run 2 Mid	12:43:42 PM	10.31	7.05
M5 Run 2 Mid	12:43:52 PM	10.25	7.09
M5 Run 2 Mid	12:44:02 PM	10.19	7.14
M5 Run 2 Mid	12:44:12 PM	10.06	7.23



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	12:44:22 PM	10.01	7.24
M5 Run 2 Mid	12:44:32 PM	9.98	7.26
M5 Run 2 Mid	12:44:42 PM	9.92	7.30
M5 Run 2 Mid	12:44:52 PM	9.92	7.29
M5 Run 2 Mid	12:45:02 PM	9.92	7.30
M5 Run 2 Mid	12:45:12 PM	9.99	7.22
M5 Run 2 Mid	12:45:22 PM	9.97	7.27
M5 Run 2 Mid	12:45:32 PM	9.98	7.25
M5 Run 2 Mid	12:45:42 PM	10.01	7.23
M5 Run 2 Mid	12:45:52 PM	9.99	7.26
M5 Run 2 Mid	12:46:02 PM	9.99	7.26
M5 Run 2 Mid	12:46:12 PM	9.97	7.26
M5 Run 2 Mid	12:46:22 PM	10.03	7.21
M5 Run 2 Mid	12:46:32 PM	10.09	7.18
M5 Run 2 Mid	12:46:42 PM	10.09	7.17
M5 Run 2 Mid	12:46:52 PM	10.13	7.16
M5 Run 2 Mid	12:47:02 PM	10.11	7.18
M5 Run 2 Mid	12:47:12 PM	10.08	7.19
M5 Run 2 Mid	12:47:22 PM	10.15	7.12
M5 Run 2 Mid	12:47:32 PM	10.19	7.11
M5 Run 2 Mid	12:47:42 PM	10.25	7.07
M5 Run 2 Mid	12:47:52 PM	10.30	7.06
M5 Run 2 Mid	12:48:02 PM	10.29	7.06
M5 Run 2 Mid	12:48:12 PM	10.24	7.10
M5 Run 2 Mid	12:48:22 PM	10.20	7.13
M5 Run 2 Mid	12:48:32 PM	10.11	7.19
M5 Run 2 Mid	12:48:42 PM	10.11	7.16
M5 Run 2 Mid	12:48:52 PM	10.18	7.12
M5 Run 2 Mid	12:49:02 PM	10.17	7.15
M5 Run 2 Mid	12:49:12 PM	10.12	7.17
M5 Run 2 Mid	12:49:22 PM	10.11	7.18
M5 Run 2 Mid	12:49:32 PM	10.06	7.22
M5 Run 2 Mid	12:49:42 PM	10.02	7.24
M5 Run 2 Mid	12:49:52 PM	10.01	7.24
M5 Run 2 Mid	12:50:02 PM	9.99	7.26
M5 Run 2 Mid	12:50:12 PM	9.92	7.31
M5 Run 2 Mid	12:50:22 PM	9.96	7.26
M5 Run 2 Mid	12:50:32 PM	9.89	7.34
M5 Run 2 Mid	12:50:42 PM	9.91	7.30
M5 Run 2 Mid	12:50:52 PM	9.93	7.29
M5 Run 2 Mid	12:51:02 PM	9.94	7.26
M5 Run 2 Mid	12:51:12 PM	9.99	7.25
M5 Run 2 Mid	12:51:22 PM	10.02	7.24
M5 Run 2 Mid	12:51:32 PM	9.95	7.30
M5 Run 2 Mid	12:51:42 PM	9.92	7.30
M5 Run 2 Mid	12:51:52 PM	9.90	7.32
M5 Run 2 Mid	12:52:02 PM	9.93	7.29
M5 Run 2 Mid	12:52:12 PM	9.88	7.33
M5 Run 2 Mid	12:52:22 PM	9.87	7.33
M5 Run 2 Mid	12:52:32 PM	9.89	7.32
M5 Run 2 Mid	12:52:42 PM	9.94	7.27
M5 Run 2 Mid	12:52:52 PM	10.01	7.23



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 2 Mid	12:53:02 PM	10.03	7.23
M5 Run 2 Mid	12:53:12 PM	10.12	7.14
M5 Run 2 Mid	12:53:22 PM	10.13	7.16
M5 Run 2 Mid	12:53:32 PM	10.12	7.17
M5 Run 2 Mid	12:53:42 PM	10.10	7.19
M5 Run 2 Mid	12:53:52 PM	10.14	7.13
M5 Run 2 Mid	12:54:02 PM	10.20	7.12
M5 Run 2 Mid	12:54:12 PM	10.16	7.16
M5 Run 2 Mid	12:54:22 PM	10.13	7.17
M5 Run 2 Mid	12:54:32 PM	10.07	7.22
M5 Run 2 Mid	12:54:42 PM	10.01	7.25
M5 Run 2 Mid	12:54:52 PM	10.00	7.24
M5 Run 2 Mid	12:55:02 PM	10.04	7.20
M5 Run 2 Mid	12:55:12 PM	10.14	7.14
M5 Run 2 Mid	12:55:22 PM	10.12	7.19
M5 Run 2 Mid	12:55:32 PM	10.06	7.22
M5 Run 2 Mid	12:55:42 PM	10.04	7.22
M5 Run 2 Mid	12:55:52 PM	10.03	7.24
M5 Run 2 Mid	12:56:02 PM	9.99	7.28
M5 Run 2 Mid	12:56:12 PM	9.98	7.27
M5 Run 2 Mid	12:56:22 PM	9.96	7.29
M5 Run 2 Mid	12:56:32 PM	9.94	7.31
M5 Run 2 Mid	12:56:42 PM	10.04	7.20
M5 Run 2 Mid	12:56:52 PM	10.10	7.20
M5 Run 2 Mid	12:57:02 PM	10.08	7.20
M5 Run 2 Mid	12:57:12 PM	10.02	7.27
M5 Run 2 Mid	12:57:22 PM	10.08	7.19
M5 Run 2 Mid	12:57:32 PM	10.08	7.21
M5 Run 2 Mid	12:57:42 PM	10.13	7.14
M5 Run 2 Mid	12:57:52 PM	10.19	7.13
M5 Run 2 Mid	12:58:02 PM	10.21	7.12
M5 Run 2 Mid	12:58:12 PM	10.23	7.10
M5 Run 2 Mid	12:58:22 PM	10.29	7.07
M5 Run 2 Mid	12:58:32 PM	10.31	7.06
M5 Run 2 Mid	12:58:42 PM	10.24	7.12
M5 Run 2 Mid	12:58:52 PM	10.28	7.08
M5 Run 2 Mid	12:59:02 PM	10.24	7.12
M5 Run 2 Mid	12:59:12 PM	10.23	7.11
M5 Run 2 Mid	12:59:22 PM	10.21	7.13
M5 Run 2 Mid	12:59:32 PM	10.20	7.13
M5 Run 2 Mid	12:59:42 PM	10.18	7.17
M5 Run 2 Mid	12:59:52 PM	10.27	7.06
System Bias Zero - UHP N2	1:07:32 PM	0.07	0.09
System Bias Zero - UHP N2	1:07:42 PM	0.07	0.08
System Bias Zero - UHP N2	1:07:52 PM	0.06	0.07
System Bias Zero - UHP N2	1:08:02 PM	0.06	0.07
System Bias Mid - CC359583	1:10:42 PM	10.91	9.69
System Bias Mid - CC359583	1:10:52 PM	10.91	9.69
System Bias Mid - CC359583	1:11:02 PM	10.91	9.69
M5 Run 3 Late	1:50:02 PM	10.26	7.14
M5 Run 3 Late	1:50:12 PM	10.31	7.15
M5 Run 3 Late	1:50:22 PM	10.41	7.02



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	1:50:32 PM	10.56	6.96
M5 Run 3 Late	1:50:42 PM	10.52	7.02
M5 Run 3 Late	1:50:52 PM	10.43	7.08
M5 Run 3 Late	1:51:02 PM	10.42	7.08
M5 Run 3 Late	1:51:12 PM	10.46	7.02
M5 Run 3 Late	1:51:22 PM	10.59	6.92
M5 Run 3 Late	1:51:32 PM	10.70	6.86
M5 Run 3 Late	1:51:42 PM	10.78	6.84
M5 Run 3 Late	1:51:52 PM	10.70	6.91
M5 Run 3 Late	1:52:02 PM	10.67	6.91
M5 Run 3 Late	1:52:12 PM	10.70	6.90
M5 Run 3 Late	1:52:22 PM	10.62	6.97
M5 Run 3 Late	1:52:32 PM	10.57	6.98
M5 Run 3 Late	1:52:42 PM	10.54	7.01
M5 Run 3 Late	1:52:52 PM	10.57	6.97
M5 Run 3 Late	1:53:02 PM	10.54	7.01
M5 Run 3 Late	1:53:12 PM	10.51	7.02
M5 Run 3 Late	1:53:22 PM	10.52	7.01
M5 Run 3 Late	1:53:32 PM	10.47	7.07
M5 Run 3 Late	1:53:42 PM	10.36	7.13
M5 Run 3 Late	1:53:52 PM	10.26	7.20
M5 Run 3 Late	1:54:02 PM	10.25	7.18
M5 Run 3 Late	1:54:12 PM	10.28	7.16
M5 Run 3 Late	1:54:22 PM	10.33	7.14
M5 Run 3 Late	1:54:32 PM	10.41	7.08
M5 Run 3 Late	1:54:42 PM	10.39	7.13
M5 Run 3 Late	1:54:52 PM	10.35	7.13
M5 Run 3 Late	1:55:02 PM	10.32	7.16
M5 Run 3 Late	1:55:12 PM	10.31	7.17
M5 Run 3 Late	1:55:22 PM	10.28	7.17
M5 Run 3 Late	1:55:32 PM	10.26	7.19
M5 Run 3 Late	1:55:42 PM	10.34	7.13
M5 Run 3 Late	1:55:52 PM	10.36	7.13
M5 Run 3 Late	1:56:02 PM	10.25	7.21
M5 Run 3 Late	1:56:12 PM	10.19	7.23
M5 Run 3 Late	1:56:22 PM	10.19	7.22
M5 Run 3 Late	1:56:32 PM	10.22	7.21
M5 Run 3 Late	1:56:42 PM	10.16	7.25
M5 Run 3 Late	1:56:52 PM	10.19	7.21
M5 Run 3 Late	1:57:02 PM	10.19	7.24
M5 Run 3 Late	1:57:12 PM	10.16	7.26
M5 Run 3 Late	1:57:22 PM	10.18	7.23
M5 Run 3 Late	1:57:32 PM	10.28	7.16
M5 Run 3 Late	1:57:42 PM	10.32	7.15
M5 Run 3 Late	1:57:52 PM	10.34	7.14
M5 Run 3 Late	1:58:02 PM	10.29	7.18
M5 Run 3 Late	1:58:12 PM	10.26	7.19
M5 Run 3 Late	1:58:22 PM	10.21	7.25
M5 Run 3 Late	1:58:32 PM	10.14	7.27
M5 Run 3 Late	1:58:42 PM	10.14	7.28
M5 Run 3 Late	1:58:52 PM	10.14	7.25
M5 Run 3 Late	1:59:02 PM	10.27	7.15



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
M5 Run 3 Late	1:59:12 PM	10.38	7.10
M5 Run 3 Late	1:59:22 PM	10.44	7.03
M5 Run 3 Late	1:59:32 PM	10.55	6.97
M5 Run 3 Late	1:59:42 PM	10.58	6.97
M5 Run 3 Late	1:59:52 PM	10.63	6.94
M5 Run 3 Late	2:00:02 PM	10.60	6.97
M5 Run 3 Late	2:00:12 PM	10.54	7.02
M5 Run 3 Late	2:00:22 PM	10.51	7.03
M5 Run 3 Late	2:00:32 PM	10.56	6.96
M5 Run 3 Late	2:00:42 PM	10.73	6.82
M5 Run 3 Late	2:00:52 PM	10.80	6.82
M5 Run 3 Late	2:01:02 PM	10.70	6.92
M5 Run 3 Late	2:01:12 PM	10.72	6.86
M5 Run 3 Late	2:01:22 PM	10.72	6.89
M5 Run 3 Late	2:01:32 PM	10.61	6.99
M5 Run 3 Late	2:01:42 PM	10.58	6.96
M5 Run 3 Late	2:01:52 PM	10.58	6.97
M5 Run 3 Late	2:02:02 PM	10.52	7.04
M5 Run 3 Late	2:02:12 PM	10.43	7.08
M5 Run 3 Late	2:02:22 PM	10.30	7.19
M5 Run 3 Late	2:02:32 PM	10.25	7.17
M5 Run 3 Late	2:02:42 PM	10.28	7.16
M5 Run 3 Late	2:02:52 PM	10.32	7.13
M5 Run 3 Late	2:03:02 PM	10.36	7.11
M5 Run 3 Late	2:03:12 PM	10.39	7.09
M5 Run 3 Late	2:03:22 PM	10.42	7.07
M5 Run 3 Late	2:03:32 PM	10.50	7.01
M5 Run 3 Late	2:03:42 PM	10.58	6.96
M5 Run 3 Late	2:03:52 PM	10.60	6.96
M5 Run 3 Late	2:04:02 PM	10.56	6.99
M5 Run 3 Late	2:04:12 PM	10.59	6.95
M5 Run 3 Late	2:04:22 PM	10.58	6.98
M5 Run 3 Late	2:04:32 PM	10.56	6.98
M5 Run 3 Late	2:04:42 PM	10.59	6.96
M5 Run 3 Late	2:04:52 PM	10.66	6.91
M5 Run 3 Late	2:05:02 PM	10.61	6.97
M5 Run 3 Late	2:05:12 PM	10.52	7.04
M5 Run 3 Late	2:05:22 PM	10.49	7.02
M5 Run 3 Late	2:05:32 PM	10.51	7.01
M5 Run 3 Late	2:05:42 PM	10.51	7.04
M5 Run 3 Late	2:05:52 PM	10.38	7.14
M5 Run 3 Late	2:06:02 PM	10.28	7.19
M5 Run 3 Late	2:06:12 PM	10.28	7.17
M5 Run 3 Late	2:06:22 PM	10.38	7.07
M5 Run 3 Late	2:06:32 PM	10.51	7.00
M5 Run 3 Late	2:06:42 PM	10.53	7.00
M5 Run 3 Late	2:06:52 PM	10.52	7.00
M5 Run 3 Late	2:07:02 PM	10.55	6.98
M5 Run 3 Late	2:07:12 PM	10.56	7.00
M5 Run 3 Late	2:07:22 PM	10.51	7.02
M5 Run 3 Late	2:07:32 PM	10.48	7.04
M5 Run 3 Late	2:07:42 PM	10.49	7.03



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	2:07:52 PM	10.44	7.08
M5 Run 3 Late	2:08:02 PM	10.41	7.10
M5 Run 3 Late	2:08:12 PM	10.38	7.13
M5 Run 3 Late	2:08:22 PM	10.38	7.09
M5 Run 3 Late	2:08:32 PM	10.50	7.01
M5 Run 3 Late	2:08:42 PM	10.48	7.06
M5 Run 3 Late	2:08:52 PM	10.40	7.10
M5 Run 3 Late	2:09:02 PM	10.42	7.10
M5 Run 3 Late	2:09:12 PM	10.37	7.13
M5 Run 3 Late	2:09:22 PM	10.38	7.10
M5 Run 3 Late	2:09:32 PM	10.47	7.04
M5 Run 3 Late	2:09:42 PM	10.49	7.03
M5 Run 3 Late	2:09:52 PM	10.50	7.03
M5 Run 3 Late	2:10:02 PM	10.50	7.03
M5 Run 3 Late	2:10:12 PM	10.46	7.06
M5 Run 3 Late	2:10:22 PM	10.46	7.06
M5 Run 3 Late	2:10:32 PM	10.44	7.07
M5 Run 3 Late	2:10:42 PM	10.45	7.04
M5 Run 3 Late	2:10:52 PM	10.58	6.94
M5 Run 3 Late	2:11:02 PM	10.65	6.92
M5 Run 3 Late	2:11:12 PM	10.61	6.96
M5 Run 3 Late	2:11:22 PM	10.58	6.98
M5 Run 3 Late	2:11:32 PM	10.61	6.93
M5 Run 3 Late	2:11:42 PM	10.60	6.98
M5 Run 3 Late	2:11:52 PM	10.52	7.01
M5 Run 3 Late	2:12:02 PM	10.56	6.96
M5 Run 3 Late	2:12:12 PM	10.69	6.86
M5 Run 3 Late	2:12:22 PM	10.77	6.85
M5 Run 3 Late	2:12:32 PM	10.72	6.89
M5 Run 3 Late	2:12:42 PM	10.69	6.92
M5 Run 3 Late	2:12:52 PM	10.62	6.95
M5 Run 3 Late	2:13:02 PM	10.63	6.94
M5 Run 3 Late	2:13:12 PM	10.60	6.96
M5 Run 3 Late	2:13:22 PM	10.61	6.95
M5 Run 3 Late	2:13:32 PM	10.74	6.83
M5 Run 3 Late	2:13:42 PM	10.83	6.78
M5 Run 3 Late	2:13:52 PM	10.84	6.80
M5 Run 3 Late	2:14:02 PM	10.80	6.83
M5 Run 3 Late	2:14:12 PM	10.77	6.85
M5 Run 3 Late	2:14:22 PM	10.78	6.83
M5 Run 3 Late	2:14:32 PM	10.70	6.93
M5 Run 3 Late	2:14:42 PM	10.60	6.97
M5 Run 3 Late	2:14:52 PM	10.63	6.91
M5 Run 3 Late	2:15:02 PM	10.79	6.79
M5 Run 3 Late	2:15:12 PM	10.91	6.74
M5 Run 3 Late	2:15:22 PM	10.83	6.82
M5 Run 3 Late	2:15:32 PM	10.86	6.76
M5 Run 3 Late	2:15:42 PM	10.86	6.80
M5 Run 3 Late	2:15:52 PM	10.79	6.84
M5 Run 3 Late	2:16:02 PM	10.81	6.81
M5 Run 3 Late	2:16:12 PM	10.74	6.91
M5 Run 3 Late	2:16:22 PM	10.59	7.01



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	2:16:32 PM	10.50	7.04
M5 Run 3 Late	2:16:42 PM	10.49	7.03
M5 Run 3 Late	2:16:52 PM	10.57	6.98
M5 Run 3 Late	2:17:02 PM	10.61	6.95
M5 Run 3 Late	2:17:12 PM	10.62	6.95
M5 Run 3 Late	2:17:22 PM	10.63	6.96
M5 Run 3 Late	2:17:32 PM	10.49	7.07
M5 Run 3 Late	2:17:42 PM	10.40	7.10
M5 Run 3 Late	2:17:52 PM	10.46	7.03
M5 Run 3 Late	2:18:02 PM	10.48	7.04
M5 Run 3 Late	2:18:12 PM	10.47	7.05
M5 Run 3 Late	2:18:22 PM	10.45	7.07
M5 Run 3 Late	2:18:32 PM	10.41	7.10
M5 Run 3 Late	2:18:42 PM	10.40	7.09
M5 Run 3 Late	2:18:52 PM	10.43	7.09
M5 Run 3 Late	2:19:02 PM	10.36	7.14
M5 Run 3 Late	2:19:12 PM	10.33	7.15
M5 Run 3 Late	2:19:22 PM	10.35	7.12
M5 Run 3 Late	2:19:32 PM	10.36	7.13
M5 Run 3 Late	2:19:42 PM	10.39	7.11
M5 Run 3 Late	2:19:52 PM	10.38	7.11
M5 Run 3 Late	2:20:02 PM	10.38	7.11
M5 Run 3 Late	2:20:12 PM	10.40	7.10
M5 Run 3 Late	2:20:22 PM	10.40	7.10
M5 Run 3 Late	2:20:32 PM	10.36	7.13
M5 Run 3 Late	2:20:42 PM	10.32	7.17
M5 Run 3 Late	2:20:52 PM	10.28	7.17
M5 Run 3 Late	2:21:02 PM	10.31	7.16
M5 Run 3 Late	2:21:12 PM	10.34	7.13
M5 Run 3 Late	2:21:22 PM	10.34	7.14
M5 Run 3 Late	2:21:32 PM	10.33	7.14
M5 Run 3 Late	2:21:42 PM	10.42	7.06
M5 Run 3 Late	2:21:52 PM	10.44	7.10
M5 Run 3 Late	2:22:02 PM	10.33	7.17
M5 Run 3 Late	2:22:12 PM	10.34	7.14
M5 Run 3 Late	2:22:22 PM	10.38	7.11
M5 Run 3 Late	2:22:32 PM	10.43	7.07
M5 Run 3 Late	2:22:42 PM	10.39	7.13
M5 Run 3 Late	2:22:52 PM	10.38	7.10
M5 Run 3 Late	2:23:02 PM	10.38	7.12
M5 Run 3 Late	2:23:12 PM	10.45	7.05
M5 Run 3 Late	2:23:22 PM	10.50	7.03
M5 Run 3 Late	2:23:32 PM	10.51	7.03
M5 Run 3 Late	2:23:42 PM	10.48	7.07
M5 Run 3 Late	2:23:52 PM	10.41	7.09
M5 Run 3 Late	2:24:02 PM	10.53	6.98
M5 Run 3 Late	2:24:12 PM	10.53	7.04
M5 Run 3 Late	2:24:22 PM	10.41	7.12
M5 Run 3 Late	2:24:32 PM	10.41	7.07
M5 Run 3 Late	2:24:42 PM	10.44	7.08
M5 Run 3 Late	2:24:52 PM	10.41	7.12
M5 Run 3 Late	2:25:02 PM	10.38	7.12



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
M5 Run 3 Late	2:25:12 PM	10.41	7.10
M5 Run 3 Late	2:25:22 PM	10.41	7.10
M5 Run 3 Late	2:25:32 PM	10.41	7.10
M5 Run 3 Late	2:25:42 PM	10.39	7.12
M5 Run 3 Late	2:25:52 PM	10.37	7.13
M5 Run 3 Late	2:26:02 PM	10.32	7.16
M5 Run 3 Late	2:26:12 PM	10.34	7.14
M5 Run 3 Late	2:26:22 PM	10.37	7.11
M5 Run 3 Late	2:26:32 PM	10.44	7.08
M5 Run 3 Late	2:26:42 PM	10.43	7.08
M5 Run 3 Late	2:26:52 PM	10.48	7.04
M5 Run 3 Late	2:27:02 PM	10.56	7.00
M5 Run 3 Late	2:27:12 PM	10.57	7.00
M5 Run 3 Late	2:27:22 PM	10.57	7.02
M5 Run 3 Late	2:27:32 PM	10.49	7.05
M5 Run 3 Late	2:27:42 PM	10.49	7.06
M5 Run 3 Late	2:27:52 PM	10.47	7.06
M5 Run 3 Late	2:28:02 PM	10.51	7.01
M5 Run 3 Late	2:28:12 PM	10.52	7.03
M5 Run 3 Late	2:28:22 PM	10.47	7.06
M5 Run 3 Late	2:28:32 PM	10.43	7.10
M5 Run 3 Late	2:28:42 PM	10.37	7.13
M5 Run 3 Late	2:28:52 PM	10.38	7.10
M5 Run 3 Late	2:29:02 PM	10.38	7.13
M5 Run 3 Late	2:29:12 PM	10.41	7.09
M5 Run 3 Late	2:29:22 PM	10.40	7.10
M5 Run 3 Late	2:29:32 PM	10.39	7.10
M5 Run 3 Late	2:29:42 PM	10.40	7.10
M5 Run 3 Late	2:29:52 PM	10.39	7.10
M5 Run 3 Late	2:30:02 PM	10.46	7.04
M5 Run 3 Late	2:30:12 PM	10.54	6.99
M5 Run 3 Late	2:30:22 PM	10.57	6.98
M5 Run 3 Late	2:30:32 PM	10.62	6.95
M5 Run 3 Late	2:30:42 PM	10.61	6.96
M5 Run 3 Late	2:30:52 PM	10.56	7.01
M5 Run 3 Late	2:31:02 PM	10.52	7.03
M5 Run 3 Late	2:31:12 PM	10.45	7.10
M5 Run 3 Late	2:31:22 PM	10.38	7.14
M5 Run 3 Late	2:31:32 PM	10.35	7.14
M5 Run 3 Late	2:31:42 PM	10.45	7.04
M5 Run 3 Late	2:31:52 PM	10.62	6.92
M5 Run 3 Late	2:32:02 PM	10.70	6.91
M5 Run 3 Late	2:32:12 PM	10.69	6.91
M5 Run 3 Late	2:32:22 PM	10.73	6.88
M5 Run 3 Late	2:32:32 PM	10.72	6.90
M5 Run 3 Late	2:32:42 PM	10.63	6.99
M5 Run 3 Late	2:32:52 PM	10.52	7.04
M5 Run 3 Late	2:33:02 PM	10.46	7.09
M5 Run 3 Late	2:33:12 PM	10.43	7.10
M5 Run 3 Late	2:33:22 PM	10.41	7.11
M5 Run 3 Late	2:33:32 PM	10.42	7.09
M5 Run 3 Late	2:33:42 PM	10.38	7.13



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	2:33:52 PM	10.35	7.14
M5 Run 3 Late	2:34:02 PM	10.28	7.19
M5 Run 3 Late	2:34:12 PM	10.31	7.16
M5 Run 3 Late	2:34:22 PM	10.45	7.07
M5 Run 3 Late	2:34:32 PM	10.47	7.08
M5 Run 3 Late	2:34:42 PM	10.46	7.07
M5 Run 3 Late	2:34:52 PM	10.54	6.99
M5 Run 3 Late	2:35:02 PM	10.60	6.98
M5 Run 3 Late	2:35:12 PM	10.62	6.96
M5 Run 3 Late	2:35:22 PM	10.68	6.92
M5 Run 3 Late	2:35:32 PM	10.69	6.91
M5 Run 3 Late	2:35:42 PM	10.65	6.95
M5 Run 3 Late	2:35:52 PM	10.58	6.98
M5 Run 3 Late	2:36:02 PM	10.56	7.00
M5 Run 3 Late	2:36:12 PM	10.52	7.04
M5 Run 3 Late	2:36:22 PM	10.50	7.04
M5 Run 3 Late	2:36:32 PM	10.47	7.07
M5 Run 3 Late	2:36:42 PM	10.49	7.02
M5 Run 3 Late	2:36:52 PM	10.48	7.07
M5 Run 3 Late	2:37:02 PM	10.42	7.11
M5 Run 3 Late	2:37:12 PM	10.42	7.09
M5 Run 3 Late	2:37:22 PM	10.46	7.06
M5 Run 3 Late	2:37:32 PM	10.46	7.08
M5 Run 3 Late	2:37:42 PM	10.44	7.09
M5 Run 3 Late	2:37:52 PM	10.38	7.14
M5 Run 3 Late	2:38:02 PM	10.27	7.21
M5 Run 3 Late	2:38:12 PM	10.26	7.19
M5 Run 3 Late	2:38:22 PM	10.27	7.19
M5 Run 3 Late	2:38:32 PM	10.25	7.19
M5 Run 3 Late	2:38:42 PM	10.25	7.20
M5 Run 3 Late	2:38:52 PM	10.31	7.14
M5 Run 3 Late	2:39:02 PM	10.40	7.09
M5 Run 3 Late	2:39:12 PM	10.41	7.10
M5 Run 3 Late	2:39:22 PM	10.42	7.08
M5 Run 3 Late	2:39:32 PM	10.46	7.05
M5 Run 3 Late	2:39:42 PM	10.54	7.00
M5 Run 3 Late	2:39:52 PM	10.54	7.03
M5 Run 3 Late	2:40:02 PM	10.42	7.12
M5 Run 3 Late	2:40:12 PM	10.44	7.07
M5 Run 3 Late	2:40:22 PM	10.49	7.03
M5 Run 3 Late	2:40:32 PM	10.53	7.00
M5 Run 3 Late	2:40:42 PM	10.56	6.99
M5 Run 3 Late	2:40:52 PM	10.56	6.99
M5 Run 3 Late	2:41:02 PM	10.56	7.00
M5 Run 3 Late	2:41:12 PM	10.58	6.98
M5 Run 3 Late	2:41:22 PM	10.60	6.96
M5 Run 3 Late	2:41:32 PM	10.63	6.94
M5 Run 3 Late	2:41:42 PM	10.61	6.97
M5 Run 3 Late	2:41:52 PM	10.56	7.00
M5 Run 3 Late	2:42:02 PM	10.54	7.01
M5 Run 3 Late	2:42:12 PM	10.54	7.02
M5 Run 3 Late	2:42:22 PM	10.46	7.07



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	2:42:32 PM	10.47	7.05
M5 Run 3 Late	2:42:42 PM	10.47	7.06
M5 Run 3 Late	2:42:52 PM	10.44	7.08
M5 Run 3 Late	2:43:02 PM	10.45	7.07
M5 Run 3 Late	2:43:12 PM	10.49	7.04
M5 Run 3 Late	2:43:22 PM	10.49	7.05
M5 Run 3 Late	2:43:32 PM	10.51	7.04
M5 Run 3 Late	2:43:42 PM	10.46	7.09
M5 Run 3 Late	2:43:52 PM	10.41	7.12
M5 Run 3 Late	2:44:02 PM	10.38	7.13
M5 Run 3 Late	2:44:12 PM	10.36	7.14
M5 Run 3 Late	2:44:22 PM	10.35	7.13
M5 Run 3 Late	2:44:32 PM	10.41	7.08
M5 Run 3 Late	2:44:42 PM	10.46	7.07
M5 Run 3 Late	2:44:52 PM	10.45	7.07
M5 Run 3 Late	2:45:02 PM	10.45	7.08
M5 Run 3 Late	2:45:12 PM	10.38	7.15
M5 Run 3 Late	2:45:22 PM	10.33	7.16
M5 Run 3 Late	2:45:32 PM	10.33	7.15
M5 Run 3 Late	2:45:42 PM	10.35	7.14
M5 Run 3 Late	2:45:52 PM	10.32	7.16
M5 Run 3 Late	2:46:02 PM	10.36	7.12
M5 Run 3 Late	2:46:12 PM	10.39	7.11
M5 Run 3 Late	2:46:22 PM	10.39	7.11
M5 Run 3 Late	2:46:32 PM	10.46	7.04
M5 Run 3 Late	2:46:42 PM	10.48	7.06
M5 Run 3 Late	2:46:52 PM	10.39	7.13
M5 Run 3 Late	2:47:02 PM	10.33	7.15
M5 Run 3 Late	2:47:12 PM	10.33	7.15
M5 Run 3 Late	2:47:22 PM	10.35	7.13
M5 Run 3 Late	2:47:32 PM	10.36	7.13
M5 Run 3 Late	2:47:42 PM	10.40	7.09
M5 Run 3 Late	2:47:52 PM	10.41	7.09
M5 Run 3 Late	2:48:02 PM	10.40	7.11
M5 Run 3 Late	2:48:12 PM	10.39	7.13
M5 Run 3 Late	2:48:22 PM	10.34	7.13
M5 Run 3 Late	2:48:32 PM	10.39	7.11
M5 Run 3 Late	2:48:42 PM	10.41	7.10
M5 Run 3 Late	2:48:52 PM	10.52	6.99
M5 Run 3 Late	2:49:02 PM	10.61	6.96
M5 Run 3 Late	2:49:12 PM	10.64	6.94
M5 Run 3 Late	2:49:22 PM	10.69	6.91
M5 Run 3 Late	2:49:32 PM	10.75	6.86
M5 Run 3 Late	2:49:42 PM	10.80	6.84
M5 Run 3 Late	2:49:52 PM	10.72	6.92
M5 Run 3 Late	2:50:02 PM	10.66	6.96
M5 Run 3 Late	2:50:12 PM	10.55	7.04
M5 Run 3 Late	2:50:22 PM	10.43	7.13
M5 Run 3 Late	2:50:32 PM	10.39	7.13
M5 Run 3 Late	2:50:42 PM	10.43	7.07
M5 Run 3 Late	2:50:52 PM	10.52	6.98
M5 Run 3 Late	2:51:02 PM	10.66	6.92



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	2:51:12 PM	10.70	6.90
M5 Run 3 Late	2:51:22 PM	10.80	6.81
M5 Run 3 Late	2:51:32 PM	10.85	6.79
M5 Run 3 Late	2:51:42 PM	10.82	6.83
M5 Run 3 Late	2:51:52 PM	10.71	6.92
M5 Run 3 Late	2:52:02 PM	10.64	6.97
M5 Run 3 Late	2:52:12 PM	10.58	7.00
M5 Run 3 Late	2:52:22 PM	10.49	7.08
M5 Run 3 Late	2:52:32 PM	10.44	7.08
M5 Run 3 Late	2:52:42 PM	10.45	7.08
M5 Run 3 Late	2:52:52 PM	10.46	7.07
M5 Run 3 Late	2:53:02 PM	10.50	7.04
M5 Run 3 Late	2:53:12 PM	10.49	7.04
M5 Run 3 Late	2:53:22 PM	10.55	6.99
M5 Run 3 Late	2:53:32 PM	10.60	6.97
M5 Run 3 Late	2:53:42 PM	10.61	6.96
M5 Run 3 Late	2:53:52 PM	10.61	6.97
M5 Run 3 Late	2:54:02 PM	10.56	7.00
M5 Run 3 Late	2:54:12 PM	10.71	6.86
M5 Run 3 Late	2:54:22 PM	10.82	6.79
M5 Run 3 Late	2:54:32 PM	10.80	6.83
M5 Run 3 Late	2:54:42 PM	10.83	6.79
M5 Run 3 Late	2:54:52 PM	10.88	6.77
M5 Run 3 Late	2:55:02 PM	10.82	6.84
M5 Run 3 Late	2:55:12 PM	10.75	6.88
M5 Run 3 Late	2:55:22 PM	10.66	6.95
M5 Run 3 Late	2:55:32 PM	10.59	6.99
M5 Run 3 Late	2:55:42 PM	10.54	7.02
M5 Run 3 Late	2:55:52 PM	10.50	7.05
M5 Run 3 Late	2:56:02 PM	10.44	7.11
M5 Run 3 Late	2:56:12 PM	10.44	7.09
M5 Run 3 Late	2:56:22 PM	10.52	7.02
M5 Run 3 Late	2:56:32 PM	10.59	6.97
M5 Run 3 Late	2:56:42 PM	10.58	7.00
M5 Run 3 Late	2:56:52 PM	10.62	6.95
M5 Run 3 Late	2:57:02 PM	10.69	6.91
M5 Run 3 Late	2:57:12 PM	10.74	6.88
M5 Run 3 Late	2:57:22 PM	10.76	6.88
M5 Run 3 Late	2:57:32 PM	10.73	6.90
M5 Run 3 Late	2:57:42 PM	10.69	6.93
M5 Run 3 Late	2:57:52 PM	10.59	7.02
M5 Run 3 Late	2:58:02 PM	10.58	6.99
M5 Run 3 Late	2:58:12 PM	10.62	6.97
M5 Run 3 Late	2:58:22 PM	10.66	6.92
M5 Run 3 Late	2:58:32 PM	10.82	6.77
M5 Run 3 Late	2:58:42 PM	11.00	6.68
M5 Run 3 Late	2:58:52 PM	11.09	6.65
M5 Run 3 Late	2:59:02 PM	11.18	6.57
M5 Run 3 Late	2:59:12 PM	11.26	6.54
M5 Run 3 Late	2:59:22 PM	11.29	6.52
M5 Run 3 Late	2:59:32 PM	11.21	6.61
M5 Run 3 Late	2:59:42 PM	11.02	6.75



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	2:59:52 PM	10.84	6.86
M5 Run 3 Late	3:00:02 PM	10.76	6.91
M5 Run 3 Late	3:00:12 PM	10.62	7.00
M5 Run 3 Late	3:00:22 PM	10.59	6.97
M5 Run 3 Late	3:00:32 PM	10.61	6.97
M5 Run 3 Late	3:00:42 PM	10.60	6.97
M5 Run 3 Late	3:00:52 PM	10.67	6.92
M5 Run 3 Late	3:01:02 PM	10.81	6.81
M5 Run 3 Late	3:01:12 PM	10.78	6.91
M5 Run 3 Late	3:01:22 PM	10.67	6.96
M5 Run 3 Late	3:01:32 PM	10.59	7.01
M5 Run 3 Late	3:01:42 PM	10.50	7.07
M5 Run 3 Late	3:01:52 PM	10.51	7.04
M5 Run 3 Late	3:02:02 PM	10.55	7.01
M5 Run 3 Late	3:02:12 PM	10.63	6.94
M5 Run 3 Late	3:02:22 PM	10.75	6.86
M5 Run 3 Late	3:02:32 PM	10.74	6.89
M5 Run 3 Late	3:02:42 PM	10.75	6.88
M5 Run 3 Late	3:02:52 PM	10.79	6.83
M5 Run 3 Late	3:03:02 PM	10.85	6.80
M5 Run 3 Late	3:03:12 PM	10.92	6.74
M5 Run 3 Late	3:03:22 PM	10.92	6.78
M5 Run 3 Late	3:03:32 PM	10.82	6.84
M5 Run 3 Late	3:03:42 PM	10.80	6.84
M5 Run 3 Late	3:03:52 PM	10.78	6.86
M5 Run 3 Late	3:04:02 PM	10.80	6.83
M5 Run 3 Late	3:04:12 PM	10.83	6.82
M5 Run 3 Late	3:04:22 PM	10.78	6.90
M5 Run 3 Late	3:04:32 PM	10.65	6.98
M5 Run 3 Late	3:04:42 PM	10.55	7.02
M5 Run 3 Late	3:04:52 PM	10.54	7.03
M5 Run 3 Late	3:05:02 PM	10.57	6.99
M5 Run 3 Late	3:05:12 PM	10.64	6.94
M5 Run 3 Late	3:05:22 PM	10.68	6.94
M5 Run 3 Late	3:05:32 PM	10.68	6.92
M5 Run 3 Late	3:05:42 PM	10.68	6.94
M5 Run 3 Late	3:05:52 PM	10.63	6.98
M5 Run 3 Late	3:06:02 PM	10.64	6.96
M5 Run 3 Late	3:06:12 PM	10.69	6.93
M5 Run 3 Late	3:06:22 PM	10.68	6.94
M5 Run 3 Late	3:06:32 PM	10.71	6.90
M5 Run 3 Late	3:06:42 PM	10.78	6.86
M5 Run 3 Late	3:06:52 PM	10.75	6.89
M5 Run 3 Late	3:07:02 PM	10.78	6.86
M5 Run 3 Late	3:07:12 PM	10.75	6.92
M5 Run 3 Late	3:07:22 PM	10.62	7.03
M5 Run 3 Late	3:07:32 PM	10.50	7.08
M5 Run 3 Late	3:07:42 PM	10.53	7.02
M5 Run 3 Late	3:07:52 PM	10.65	6.92
M5 Run 3 Late	3:08:02 PM	10.80	6.80
M5 Run 3 Late	3:08:12 PM	10.96	6.73
M5 Run 3 Late	3:08:22 PM	10.98	6.74



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	3:08:32 PM	10.91	6.78
M5 Run 3 Late	3:08:42 PM	10.91	6.78
M5 Run 3 Late	3:08:52 PM	10.88	6.80
M5 Run 3 Late	3:09:02 PM	10.87	6.82
M5 Run 3 Late	3:09:12 PM	10.80	6.88
M5 Run 3 Late	3:09:22 PM	10.75	6.91
M5 Run 3 Late	3:09:32 PM	10.72	6.90
M5 Run 3 Late	3:09:42 PM	10.74	6.90
M5 Run 3 Late	3:09:52 PM	10.78	6.83
M5 Run 3 Late	3:10:02 PM	10.81	6.86
M5 Run 3 Late	3:10:12 PM	10.74	6.91
M5 Run 3 Late	3:10:22 PM	10.72	6.92
M5 Run 3 Late	3:10:32 PM	10.65	6.97
M5 Run 3 Late	3:10:42 PM	10.58	7.01
M5 Run 3 Late	3:10:52 PM	10.54	7.02
M5 Run 3 Late	3:11:02 PM	10.56	7.01
M5 Run 3 Late	3:11:12 PM	10.62	6.96
M5 Run 3 Late	3:11:22 PM	10.62	6.98
M5 Run 3 Late	3:11:32 PM	10.64	6.95
M5 Run 3 Late	3:11:42 PM	10.66	6.95
M5 Run 3 Late	3:11:52 PM	10.61	6.99
M5 Run 3 Late	3:12:02 PM	10.58	7.01
M5 Run 3 Late	3:12:12 PM	10.60	7.00
M5 Run 3 Late	3:12:22 PM	10.57	7.01
M5 Run 3 Late	3:12:32 PM	10.61	6.98
M5 Run 3 Late	3:12:42 PM	10.62	6.97
M5 Run 3 Late	3:12:52 PM	10.62	6.98
M5 Run 3 Late	3:13:02 PM	10.62	6.96
M5 Run 3 Late	3:13:12 PM	10.68	6.92
M5 Run 3 Late	3:13:22 PM	10.74	6.89
M5 Run 3 Late	3:13:32 PM	10.81	6.81
M5 Run 3 Late	3:13:42 PM	10.94	6.74
M5 Run 3 Late	3:13:52 PM	10.90	6.79
M5 Run 3 Late	3:14:02 PM	10.85	6.83
M5 Run 3 Late	3:14:12 PM	10.80	6.86
M5 Run 3 Late	3:14:22 PM	10.77	6.88
M5 Run 3 Late	3:14:32 PM	10.72	6.92
M5 Run 3 Late	3:14:42 PM	10.70	6.92
M5 Run 3 Late	3:14:52 PM	10.69	6.93
M5 Run 3 Late	3:15:02 PM	10.66	6.96
M5 Run 3 Late	3:15:12 PM	10.65	6.96
M5 Run 3 Late	3:15:22 PM	10.62	6.99
M5 Run 3 Late	3:15:32 PM	10.51	7.07
M5 Run 3 Late	3:15:42 PM	10.41	7.13
M5 Run 3 Late	3:15:52 PM	10.35	7.18
M5 Run 3 Late	3:16:02 PM	10.34	7.14
M5 Run 3 Late	3:16:12 PM	10.43	7.10
M5 Run 3 Late	3:16:22 PM	10.45	7.08
M5 Run 3 Late	3:16:32 PM	10.52	7.03
M5 Run 3 Late	3:16:42 PM	10.59	6.98
M5 Run 3 Late	3:16:52 PM	10.68	6.91
M5 Run 3 Late	3:17:02 PM	10.75	6.90



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	3:17:12 PM	10.61	7.01
M5 Run 3 Late	3:17:22 PM	10.52	7.04
M5 Run 3 Late	3:17:32 PM	10.55	7.01
M5 Run 3 Late	3:17:42 PM	10.63	6.95
M5 Run 3 Late	3:17:52 PM	10.75	6.86
M5 Run 3 Late	3:18:02 PM	10.81	6.84
M5 Run 3 Late	3:18:12 PM	10.81	6.89
M5 Run 3 Late	3:18:22 PM	10.70	6.95
M5 Run 3 Late	3:18:32 PM	10.65	6.98
M5 Run 3 Late	3:18:42 PM	10.59	7.01
M5 Run 3 Late	3:18:52 PM	10.60	6.99
M5 Run 3 Late	3:19:02 PM	10.62	6.97
M5 Run 3 Late	3:19:12 PM	10.64	6.97
M5 Run 3 Late	3:19:22 PM	10.69	6.92
M5 Run 3 Late	3:19:32 PM	10.75	6.89
M5 Run 3 Late	3:19:42 PM	10.72	6.92
M5 Run 3 Late	3:19:52 PM	10.67	6.95
M5 Run 3 Late	3:20:02 PM	10.65	6.98
M5 Run 3 Late	3:20:12 PM	10.63	6.98
M5 Run 3 Late	3:20:22 PM	10.67	6.94
M5 Run 3 Late	3:20:32 PM	10.69	6.94
M5 Run 3 Late	3:20:42 PM	10.69	6.94
M5 Run 3 Late	3:20:52 PM	10.68	6.95
M5 Run 3 Late	3:21:02 PM	10.68	6.95
M5 Run 3 Late	3:21:12 PM	10.70	6.94
M5 Run 3 Late	3:21:22 PM	10.70	6.93
M5 Run 3 Late	3:21:32 PM	10.76	6.88
M5 Run 3 Late	3:21:42 PM	10.91	6.76
M5 Run 3 Late	3:21:52 PM	10.97	6.75
M5 Run 3 Late	3:22:02 PM	10.90	6.82
M5 Run 3 Late	3:22:12 PM	10.85	6.84
M5 Run 3 Late	3:22:22 PM	10.83	6.86
M5 Run 3 Late	3:22:32 PM	10.77	6.91
M5 Run 3 Late	3:22:42 PM	10.71	6.94
M5 Run 3 Late	3:22:52 PM	10.74	6.89
M5 Run 3 Late	3:23:02 PM	10.84	6.81
M5 Run 3 Late	3:23:12 PM	10.95	6.74
M5 Run 3 Late	3:23:22 PM	11.01	6.72
M5 Run 3 Late	3:23:32 PM	11.09	6.65
M5 Run 3 Late	3:23:42 PM	11.20	6.58
M5 Run 3 Late	3:23:52 PM	11.22	6.60
M5 Run 3 Late	3:24:02 PM	11.28	6.53
M5 Run 3 Late	3:24:12 PM	11.34	6.50
M5 Run 3 Late	3:24:22 PM	11.33	6.55
M5 Run 3 Late	3:24:32 PM	11.20	6.65
M5 Run 3 Late	3:24:42 PM	11.00	6.78
M5 Run 3 Late	3:24:52 PM	10.90	6.82
M5 Run 3 Late	3:25:02 PM	10.83	6.86
M5 Run 3 Late	3:25:12 PM	10.80	6.90
M5 Run 3 Late	3:25:22 PM	10.69	6.97
M5 Run 3 Late	3:25:32 PM	10.64	7.00
M5 Run 3 Late	3:25:42 PM	10.67	6.94



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (%, dry)
M5 Run 3 Late	3:25:52 PM	10.70	6.95
M5 Run 3 Late	3:26:02 PM	10.66	6.98
M5 Run 3 Late	3:26:12 PM	10.65	6.99
M5 Run 3 Late	3:26:22 PM	10.62	7.00
M5 Run 3 Late	3:26:32 PM	10.67	6.95
M5 Run 3 Late	3:26:42 PM	10.70	6.96
M5 Run 3 Late	3:26:52 PM	10.65	6.99
M5 Run 3 Late	3:27:02 PM	10.69	6.93
M5 Run 3 Late	3:27:12 PM	10.74	6.91
M5 Run 3 Late	3:27:22 PM	10.78	6.88
M5 Run 3 Late	3:27:32 PM	10.79	6.89
M5 Run 3 Late	3:27:42 PM	10.75	6.92
M5 Run 3 Late	3:27:52 PM	10.71	6.94
M5 Run 3 Late	3:28:02 PM	10.77	6.85
M5 Run 3 Late	3:28:12 PM	10.99	6.69
M5 Run 3 Late	3:28:22 PM	11.13	6.64
M5 Run 3 Late	3:28:32 PM	11.20	6.60
M5 Run 3 Late	3:28:42 PM	11.14	6.68
M5 Run 3 Late	3:28:52 PM	11.00	6.78
M5 Run 3 Late	3:29:02 PM	10.90	6.84
M5 Run 3 Late	3:29:12 PM	10.86	6.85
M5 Run 3 Late	3:29:22 PM	10.83	6.89
M5 Run 3 Late	3:29:32 PM	10.74	6.94
M5 Run 3 Late	3:29:42 PM	10.69	6.96
M5 Run 3 Late	3:29:52 PM	10.68	6.97
M5 Run 3 Late	3:30:02 PM	10.71	6.93
M5 Run 3 Late	3:30:12 PM	10.81	6.85
M5 Run 3 Late	3:30:22 PM	10.91	6.78
M5 Run 3 Late	3:30:32 PM	10.95	6.81
M5 Run 3 Late	3:30:42 PM	10.96	6.79
M5 Run 3 Late	3:30:52 PM	11.03	6.74
M5 Run 3 Late	3:31:02 PM	11.05	6.74
M5 Run 3 Late	3:31:12 PM	11.05	6.77
M5 Run 3 Late	3:31:22 PM	11.00	6.79
M5 Run 3 Late	3:31:32 PM	11.03	6.76
M5 Run 3 Late	3:31:42 PM	11.01	6.79
M5 Run 3 Late	3:31:52 PM	10.94	6.83
M5 Run 3 Late	3:32:02 PM	10.88	6.86
M5 Run 3 Late	3:32:12 PM	10.81	6.93
M5 Run 3 Late	3:32:22 PM	10.77	6.94
M5 Run 3 Late	3:32:32 PM	10.78	6.91
M5 Run 3 Late	3:32:42 PM	10.85	6.84
M5 Run 3 Late	3:32:52 PM	10.94	6.80
M5 Run 3 Late	3:33:02 PM	10.91	6.83
M5 Run 3 Late	3:33:12 PM	10.92	6.81
M5 Run 3 Late	3:33:22 PM	10.97	6.79
M5 Run 3 Late	3:33:32 PM	10.95	6.81
M5 Run 3 Late	3:33:42 PM	10.94	6.80
M5 Run 3 Late	3:33:52 PM	10.89	6.85
M5 Run 3 Late	3:34:02 PM	10.80	6.93
M5 Run 3 Late	3:34:12 PM	10.77	6.94
M5 Run 3 Late	3:34:22 PM	10.75	6.94



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	3:34:32 PM	10.80	6.90
M5 Run 3 Late	3:34:42 PM	10.79	6.91
M5 Run 3 Late	3:34:52 PM	10.82	6.89
M5 Run 3 Late	3:35:02 PM	10.80	6.91
M5 Run 3 Late	3:35:12 PM	10.84	6.88
M5 Run 3 Late	3:35:22 PM	10.86	6.86
M5 Run 3 Late	3:35:32 PM	10.84	6.89
M5 Run 3 Late	3:35:42 PM	10.82	6.89
M5 Run 3 Late	3:35:52 PM	10.88	6.85
M5 Run 3 Late	3:36:02 PM	10.86	6.85
M5 Run 3 Late	3:36:12 PM	10.91	6.83
M5 Run 3 Late	3:36:22 PM	10.86	6.88
M5 Run 3 Late	3:36:32 PM	10.85	6.86
M5 Run 3 Late	3:36:42 PM	10.86	6.83
M5 Run 3 Late	3:36:52 PM	10.86	6.86
M5 Run 3 Late	3:37:02 PM	10.88	6.83
M5 Run 3 Late	3:37:12 PM	10.88	6.85
M5 Run 3 Late	3:37:22 PM	10.92	6.81
M5 Run 3 Late	3:37:32 PM	11.00	6.76
M5 Run 3 Late	3:37:42 PM	11.08	6.71
M5 Run 3 Late	3:37:52 PM	11.12	6.69
M5 Run 3 Late	3:38:02 PM	11.06	6.77
M5 Run 3 Late	3:38:12 PM	11.02	6.77
M5 Run 3 Late	3:38:22 PM	11.07	6.73
M5 Run 3 Late	3:38:32 PM	11.15	6.66
M5 Run 3 Late	3:38:42 PM	11.15	6.67
M5 Run 3 Late	3:38:52 PM	11.25	6.57
M5 Run 3 Late	3:39:02 PM	11.47	6.40
M5 Run 3 Late	3:39:12 PM	11.56	6.41
M5 Run 3 Late	3:39:22 PM	11.46	6.48
M5 Run 3 Late	3:39:32 PM	11.50	6.43
M5 Run 3 Late	3:39:42 PM	11.50	6.45
M5 Run 3 Late	3:39:52 PM	11.52	6.43
M5 Run 3 Late	3:40:02 PM	11.58	6.38
M5 Run 3 Late	3:40:12 PM	11.63	6.35
M5 Run 3 Late	3:40:22 PM	11.53	6.47
M5 Run 3 Late	3:40:32 PM	11.33	6.60
M5 Run 3 Late	3:40:42 PM	11.19	6.68
M5 Run 3 Late	3:40:52 PM	11.06	6.75
M5 Run 3 Late	3:41:02 PM	11.02	6.79
M5 Run 3 Late	3:41:12 PM	10.94	6.84
M5 Run 3 Late	3:41:22 PM	10.91	6.85
M5 Run 3 Late	3:41:32 PM	10.95	6.80
M5 Run 3 Late	3:41:42 PM	10.95	6.83
M5 Run 3 Late	3:41:52 PM	10.92	6.85
M5 Run 3 Late	3:42:02 PM	10.92	6.84
M5 Run 3 Late	3:42:12 PM	10.90	6.86
M5 Run 3 Late	3:42:22 PM	10.89	6.89
M5 Run 3 Late	3:42:32 PM	10.87	6.91
M5 Run 3 Late	3:42:42 PM	10.80	6.93
M5 Run 3 Late	3:42:52 PM	10.78	6.94
M5 Run 3 Late	3:43:02 PM	10.74	6.98



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	3:43:12 PM	10.73	6.97
M5 Run 3 Late	3:43:22 PM	10.79	6.92
M5 Run 3 Late	3:43:32 PM	10.83	6.89
M5 Run 3 Late	3:43:42 PM	10.80	6.94
M5 Run 3 Late	3:43:52 PM	10.79	6.94
M5 Run 3 Late	3:44:02 PM	10.78	6.94
M5 Run 3 Late	3:44:12 PM	10.75	6.98
M5 Run 3 Late	3:44:22 PM	10.71	7.00
M5 Run 3 Late	3:44:32 PM	10.70	7.01
M5 Run 3 Late	3:44:42 PM	10.68	7.00
M5 Run 3 Late	3:44:52 PM	10.72	6.96
M5 Run 3 Late	3:45:02 PM	10.79	6.93
M5 Run 3 Late	3:45:12 PM	10.77	6.97
M5 Run 3 Late	3:45:22 PM	10.71	7.01
M5 Run 3 Late	3:45:32 PM	10.65	7.02
M5 Run 3 Late	3:45:42 PM	10.69	6.99
M5 Run 3 Late	3:45:52 PM	10.75	6.94
M5 Run 3 Late	3:46:02 PM	10.82	6.88
M5 Run 3 Late	3:46:12 PM	10.93	6.82
M5 Run 3 Late	3:46:22 PM	10.95	6.84
M5 Run 3 Late	3:46:32 PM	10.87	6.91
M5 Run 3 Late	3:46:42 PM	10.80	6.94
M5 Run 3 Late	3:46:52 PM	10.81	6.92
M5 Run 3 Late	3:47:02 PM	10.77	6.96
M5 Run 3 Late	3:47:12 PM	10.81	6.92
M5 Run 3 Late	3:47:22 PM	10.92	6.81
M5 Run 3 Late	3:47:32 PM	10.99	6.80
M5 Run 3 Late	3:47:42 PM	10.99	6.80
M5 Run 3 Late	3:47:52 PM	10.92	6.86
M5 Run 3 Late	3:48:02 PM	10.87	6.86
M5 Run 3 Late	3:48:12 PM	10.89	6.86
M5 Run 3 Late	3:48:22 PM	10.86	6.89
M5 Run 3 Late	3:48:32 PM	10.93	6.82
M5 Run 3 Late	3:48:42 PM	10.99	6.78
M5 Run 3 Late	3:48:52 PM	10.99	6.79
M5 Run 3 Late	3:49:02 PM	10.97	6.81
M5 Run 3 Late	3:49:12 PM	10.98	6.81
M5 Run 3 Late	3:49:22 PM	11.01	6.79
M5 Run 3 Late	3:49:32 PM	10.99	6.81
M5 Run 3 Late	3:49:42 PM	10.96	6.83
M5 Run 3 Late	3:49:52 PM	10.85	6.92
M5 Run 3 Late	3:50:02 PM	10.83	6.91
M5 Run 3 Late	3:50:12 PM	10.81	6.94
M5 Run 3 Late	3:50:22 PM	10.79	6.93
M5 Run 3 Late	3:50:32 PM	10.84	6.90
M5 Run 3 Late	3:50:42 PM	10.83	6.93
M5 Run 3 Late	3:50:52 PM	10.78	6.96
M5 Run 3 Late	3:51:02 PM	10.79	6.92
M5 Run 3 Late	3:51:12 PM	10.81	6.94
M5 Run 3 Late	3:51:22 PM	10.83	6.90
M5 Run 3 Late	3:51:32 PM	10.82	6.91
M5 Run 3 Late	3:51:42 PM	10.88	6.86



# CEMS RAW DATA

## 03-Oct-22

	Time	Oxygen (% dry)	Carbon Dioxide (% dry)
M5 Run 3 Late	3:51:52 PM	10.90	6.84
M5 Run 3 Late	3:52:02 PM	10.99	6.77
M5 Run 3 Late	3:52:12 PM	11.02	6.79
M5 Run 3 Late	3:52:22 PM	10.96	6.83
M5 Run 3 Late	3:52:32 PM	11.03	6.74
M5 Run 3 Late	3:52:42 PM	11.09	6.72
M5 Run 3 Late	3:52:52 PM	11.10	6.74
M5 Run 3 Late	3:53:02 PM	11.11	6.72
M5 Run 3 Late	3:53:12 PM	11.08	6.76
M5 Run 3 Late	3:53:22 PM	11.05	6.77
M5 Run 3 Late	3:53:32 PM	11.10	6.73
M5 Run 3 Late	3:53:42 PM	11.14	6.69
M5 Run 3 Late	3:53:52 PM	11.20	6.67
M5 Run 3 Late	3:54:02 PM	11.16	6.72
M5 Run 3 Late	3:54:12 PM	11.05	6.80
M5 Run 3 Late	3:54:22 PM	11.02	6.79
M5 Run 3 Late	3:54:32 PM	10.98	6.83
M5 Run 3 Late	3:54:42 PM	10.95	6.84
M5 Run 3 Late	3:54:52 PM	10.91	6.85
M5 Run 3 Late	3:55:02 PM	10.96	6.82
M5 Run 3 Late	3:55:12 PM	11.01	6.79
M5 Run 3 Late	3:55:22 PM	11.02	6.78
M5 Run 3 Late	3:55:32 PM	11.06	6.75
M5 Run 3 Late	3:55:42 PM	11.09	6.74
M5 Run 3 Late	3:55:52 PM	11.11	6.74
M5 Run 3 Late	3:56:02 PM	11.05	6.79
M5 Run 3 Late	3:56:12 PM	10.97	6.82
M5 Run 3 Late	3:56:22 PM	10.97	6.83
M5 Run 3 Late	3:56:32 PM	10.97	6.82
M5 Run 3 Late	3:56:42 PM	10.96	6.83
M5 Run 3 Late	3:56:52 PM	10.99	6.80
System Bias Zero - UHP N2	4:05:52 PM	0.10	0.21
System Bias Zero - UHP N2	4:06:02 PM	0.10	0.20
System Bias Zero - UHP N2	4:06:12 PM	0.10	0.20
System Bias Zero - UHP N2	4:06:22 PM	0.10	0.20
System Bias Mid - CC359583	4:10:42 PM	10.96	9.78
System Bias Mid - CC359583	4:10:52 PM	10.95	9.78
System Bias Mid - CC359583	4:11:02 PM	10.96	9.79
System Bias Mid - CC359583	4:11:12 PM	10.96	9.79
System Bias Mid - CC359583	4:11:22 PM	10.96	9.79



## R1\_Run\_1\_NG\_rpt

Spectrum	Date	Time	Run number	Integration	Formaldehy	HCN	150c_BDL
RUNS_PRODUCTION_0002	LAB 10/1/2022	22:43:57	Run_1_NG 0:00:00		0.3	BDL	
RUNS_PRODUCTION_0003	LAB 10/1/2022	22:44:06	Run_1_NG 0:00:09		0.41	BDL	
RUNS_PRODUCTION_0004	LAB 10/1/2022	22:44:16	Run_1_NG 0:00:10		0.4	BDL	
RUNS_PRODUCTION_0005	LAB 10/1/2022	22:44:25	Run_1_NG 0:00:09		0.27	BDL	
RUNS_PRODUCTION_0006	LAB 10/1/2022	22:44:34	Run_1_NG 0:00:09		0.46	BDL	
RUNS_PRODUCTION_0007	LAB 10/1/2022	22:44:44	Run_1_NG 0:00:10		0.29	BDL	
RUNS_PRODUCTION_0008	LAB 10/1/2022	22:44:53	Run_1_NG 0:00:09		0.37	BDL	
RUNS_PRODUCTION_0009	LAB 10/1/2022	22:45:03	Run_1_NG 0:00:10		0.41	BDL	
RUNS_PRODUCTION_0010	LAB 10/1/2022	22:45:12	Run_1_NG 0:00:09		0.43	BDL	
RUNS_PRODUCTION_0011	LAB 10/1/2022	22:45:22	Run_1_NG 0:00:10		0.3	BDL	
RUNS_PRODUCTION_0012	LAB 10/1/2022	22:45:31	Run_1_NG 0:00:09		0.07	BDL	
RUNS_PRODUCTION_0013	LAB 10/1/2022	22:45:41	Run_1_NG 0:00:10		0.24	BDL	
RUNS_PRODUCTION_0014	LAB 10/1/2022	22:45:50	Run_1_NG 0:00:09		0.49	BDL	
RUNS_PRODUCTION_0015	LAB 10/1/2022	22:45:59	Run_1_NG 0:00:09		0.07	BDL	
RUNS_PRODUCTION_0016	LAB 10/1/2022	22:46:09	Run_1_NG 0:00:10		0.4	BDL	
RUNS_PRODUCTION_0017	LAB 10/1/2022	22:46:18	Run_1_NG 0:00:09		0.38	BDL	
RUNS_PRODUCTION_0018	LAB 10/1/2022	22:46:28	Run_1_NG 0:00:10		0.24	BDL	
RUNS_PRODUCTION_0019	LAB 10/1/2022	22:46:37	Run_1_NG 0:00:09		0.52	BDL	
RUNS_PRODUCTION_0020	LAB 10/1/2022	22:46:46	Run_1_NG 0:00:09		0.17	BDL	
RUNS_PRODUCTION_0021	LAB 10/1/2022	22:46:56	Run_1_NG 0:00:10		0.21	BDL	
RUNS_PRODUCTION_0022	LAB 10/1/2022	22:47:05	Run_1_NG 0:00:09		0.42	BDL	
RUNS_PRODUCTION_0023	LAB 10/1/2022	22:47:15	Run_1_NG 0:00:10		0.18	BDL	
RUNS_PRODUCTION_0024	LAB 10/1/2022	22:47:24	Run_1_NG 0:00:09		0.16	BDL	
RUNS_PRODUCTION_0025	LAB 10/1/2022	22:47:34	Run_1_NG 0:00:10		0.31	BDL	
RUNS_PRODUCTION_0026	LAB 10/1/2022	22:47:43	Run_1_NG 0:00:09		0.42	BDL	
RUNS_PRODUCTION_0027	LAB 10/1/2022	22:47:52	Run_1_NG 0:00:09		0.42	BDL	
RUNS_PRODUCTION_0028	LAB 10/1/2022	22:48:02	Run_1_NG 0:00:10		0.77	BDL	
RUNS_PRODUCTION_0029	LAB 10/1/2022	22:48:11	Run_1_NG 0:00:09		0.39	BDL	
RUNS_PRODUCTION_0030	LAB 10/1/2022	22:48:21	Run_1_NG 0:00:10		0.17	BDL	
RUNS_PRODUCTION_0031	LAB 10/1/2022	22:48:30	Run_1_NG 0:00:09		0.38	BDL	
RUNS_PRODUCTION_0032	LAB 10/1/2022	22:48:40	Run_1_NG 0:00:10		0.43	BDL	
RUNS_PRODUCTION_0033	LAB 10/1/2022	22:48:49	Run_1_NG 0:00:09		0.27	BDL	
RUNS_PRODUCTION_0034	LAB 10/1/2022	22:48:58	Run_1_NG 0:00:09		0.07	BDL	
RUNS_PRODUCTION_0035	LAB 10/1/2022	22:49:08	Run_1_NG 0:00:10		0.17	BDL	
RUNS_PRODUCTION_0036	LAB 10/1/2022	22:49:17	Run_1_NG 0:00:09		0.4	BDL	
RUNS_PRODUCTION_0037	LAB 10/1/2022	22:49:27	Run_1_NG 0:00:10		0.14	BDL	
RUNS_PRODUCTION_0038	LAB 10/1/2022	22:49:36	Run_1_NG 0:00:09		0.45	BDL	
RUNS_PRODUCTION_0039	LAB 10/1/2022	22:49:46	Run_1_NG 0:00:10		0.55	BDL	
RUNS_PRODUCTION_0040	LAB 10/1/2022	22:49:55	Run_1_NG 0:00:09		0.39	BDL	
RUNS_PRODUCTION_0041	LAB 10/1/2022	22:50:05	Run_1_NG 0:00:10		0.49	BDL	
RUNS_PRODUCTION_0042	LAB 10/1/2022	22:50:14	Run_1_NG 0:00:09		0.34	BDL	
RUNS_PRODUCTION_0043	LAB 10/1/2022	22:50:23	Run_1_NG 0:00:09		0.07	BDL	
RUNS_PRODUCTION_0044	LAB 10/1/2022	22:50:33	Run_1_NG 0:00:10		0.42	BDL	
RUNS_PRODUCTION_0045	LAB 10/1/2022	22:50:42	Run_1_NG 0:00:09		0.23	BDL	
RUNS_PRODUCTION_0046	LAB 10/1/2022	22:50:52	Run_1_NG 0:00:10		0.59	BDL	
RUNS_PRODUCTION_0047	LAB 10/1/2022	22:51:01	Run_1_NG 0:00:09		0.41	BDL	
RUNS_PRODUCTION_0048	LAB 10/1/2022	22:51:11	Run_1_NG 0:00:10		0.15	BDL	
RUNS_PRODUCTION_0049	LAB 10/1/2022	22:51:20	Run_1_NG 0:00:09		0.32	BDL	
RUNS_PRODUCTION_0050	LAB 10/1/2022	22:51:29	Run_1_NG 0:00:09		0.28	BDL	
RUNS_PRODUCTION_0051	LAB 10/1/2022	22:51:39	Run_1_NG 0:00:10		0.34	BDL	
RUNS_PRODUCTION_0052	LAB 10/1/2022	22:51:48	Run_1_NG 0:00:09		0.46	BDL	
RUNS_PRODUCTION_0053	LAB 10/1/2022	22:51:58	Run_1_NG 0:00:10		0.37	BDL	
RUNS_PRODUCTION_0054	LAB 10/1/2022	22:52:07	Run_1_NG 0:00:09		0.23	BDL	
RUNS_PRODUCTION_0055	LAB 10/1/2022	22:52:17	Run_1_NG 0:00:10		0.37	BDL	
RUNS_PRODUCTION_0056	LAB 10/1/2022	22:52:26	Run_1_NG 0:00:09		0.18	BDL	
RUNS_PRODUCTION_0057	LAB 10/1/2022	22:52:35	Run_1_NG 0:00:09		0.24	BDL	
RUNS_PRODUCTION_0058	LAB 10/1/2022	22:52:45	Run_1_NG 0:00:10		0.17	BDL	
RUNS_PRODUCTION_0059	LAB 10/1/2022	22:52:54	Run_1_NG 0:00:09		0.32	BDL	
RUNS_PRODUCTION_0060	LAB 10/1/2022	22:53:04	Run_1_NG 0:00:10		0.29	BDL	
RUNS_PRODUCTION_0061	LAB 10/1/2022	22:53:13	Run_1_NG 0:00:09		0.41	BDL	
RUNS_PRODUCTION_0062	LAB 10/1/2022	22:53:23	Run_1_NG 0:00:10		0.07	BDL	
RUNS_PRODUCTION_0063	LAB 10/1/2022	22:53:32	Run_1_NG 0:00:09		0.65	BDL	
RUNS_PRODUCTION_0064	LAB 10/1/2022	22:53:41	Run_1_NG 0:00:09		0.07	BDL	
RUNS_PRODUCTION_0065	LAB 10/1/2022	22:53:51	Run_1_NG 0:00:10		0.07	BDL	
RUNS_PRODUCTION_0066	LAB 10/1/2022	22:54:00	Run_1_NG 0:00:09		0.37	BDL	
RUNS_PRODUCTION_0067	LAB 10/1/2022	22:54:10	Run_1_NG 0:00:10		0.36	BDL	
RUNS_PRODUCTION_0068	LAB 10/1/2022	22:54:19	Run_1_NG 0:00:09		0.46	BDL	
RUNS_PRODUCTION_0069	LAB 10/1/2022	22:54:29	Run_1_NG 0:00:10		0.25	BDL	
RUNS_PRODUCTION_0070	LAB 10/1/2022	22:54:38	Run_1_NG 0:00:09		0.24	BDL	
RUNS_PRODUCTION_0071	LAB 10/1/2022	22:54:47	Run_1_NG 0:00:09		0.07	BDL	
RUNS_PRODUCTION_0072	LAB 10/1/2022	22:54:57	Run_1_NG 0:00:10		0.26	BDL	
RUNS_PRODUCTION_0073	LAB 10/1/2022	22:55:06	Run_1_NG 0:00:09		0.4	BDL	
RUNS_PRODUCTION_0074	LAB 10/1/2022	22:55:16	Run_1_NG 0:00:10		0.31	BDL	



RUNS_PRODUCTION_0075.LAB	10/1/2022	22:55:25	Run_1_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0076.LAB	10/1/2022	22:55:35	Run_1_NG 0:00:10	0.3 BDL
RUNS_PRODUCTION_0077.LAB	10/1/2022	22:55:44	Run_1_NG 0:00:09	0.2 BDL
RUNS_PRODUCTION_0078.LAB	10/1/2022	22:55:54	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0079.LAB	10/1/2022	22:56:03	Run_1_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_0080.LAB	10/1/2022	22:56:12	Run_1_NG 0:00:09	0.49 BDL
RUNS_PRODUCTION_0081.LAB	10/1/2022	22:56:22	Run_1_NG 0:00:10	0.16 BDL
RUNS_PRODUCTION_0082.LAB	10/1/2022	22:56:31	Run_1_NG 0:00:09	0.34 BDL
RUNS_PRODUCTION_0083.LAB	10/1/2022	22:56:41	Run_1_NG 0:00:10	0.22 BDL
RUNS_PRODUCTION_0084.LAB	10/1/2022	22:56:50	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0085.LAB	10/1/2022	22:56:59	Run_1_NG 0:00:09	0.28 BDL
RUNS_PRODUCTION_0086.LAB	10/1/2022	22:57:09	Run_1_NG 0:00:10	0.2 BDL
RUNS_PRODUCTION_0087.LAB	10/1/2022	22:57:18	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0088.LAB	10/1/2022	22:57:28	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0089.LAB	10/1/2022	22:57:37	Run_1_NG 0:00:09	0.21 BDL
RUNS_PRODUCTION_0090.LAB	10/1/2022	22:57:47	Run_1_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0091.LAB	10/1/2022	22:57:56	Run_1_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0092.LAB	10/1/2022	22:58:06	Run_1_NG 0:00:10	0.18 BDL
RUNS_PRODUCTION_0093.LAB	10/1/2022	22:58:15	Run_1_NG 0:00:09	0.18 BDL
RUNS_PRODUCTION_0094.LAB	10/1/2022	22:58:24	Run_1_NG 0:00:09	0.39 BDL
RUNS_PRODUCTION_0095.LAB	10/1/2022	22:58:34	Run_1_NG 0:00:10	0.22 BDL
RUNS_PRODUCTION_0096.LAB	10/1/2022	22:58:43	Run_1_NG 0:00:09	0.26 BDL
RUNS_PRODUCTION_0097.LAB	10/1/2022	22:58:53	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0098.LAB	10/1/2022	22:59:02	Run_1_NG 0:00:09	0.15 BDL
RUNS_PRODUCTION_0099.LAB	10/1/2022	22:59:12	Run_1_NG 0:00:10	0.27 BDL
RUNS_PRODUCTION_0100.LAB	10/1/2022	22:59:21	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0101.LAB	10/1/2022	22:59:30	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0102.LAB	10/1/2022	22:59:40	Run_1_NG 0:00:10	0.14 BDL
RUNS_PRODUCTION_0103.LAB	10/1/2022	22:59:49	Run_1_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0104.LAB	10/1/2022	22:59:59	Run_1_NG 0:00:10	0.36 BDL
RUNS_PRODUCTION_0105.LAB	10/1/2022	23:00:08	Run_1_NG 0:00:09	0.29 BDL
RUNS_PRODUCTION_0106.LAB	10/1/2022	23:00:17	Run_1_NG 0:00:09	0.53 BDL
RUNS_PRODUCTION_0107.LAB	10/1/2022	23:00:27	Run_1_NG 0:00:10	0.17 BDL
RUNS_PRODUCTION_0108.LAB	10/1/2022	23:00:36	Run_1_NG 0:00:09	0.3 BDL
RUNS_PRODUCTION_0109.LAB	10/1/2022	23:00:46	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0110.LAB	10/1/2022	23:00:55	Run_1_NG 0:00:09	0.14 BDL
RUNS_PRODUCTION_0111.LAB	10/1/2022	23:01:05	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0112.LAB	10/1/2022	23:01:14	Run_1_NG 0:00:09	0.21 BDL
RUNS_PRODUCTION_0113.LAB	10/1/2022	23:01:24	Run_1_NG 0:00:10	0.14 BDL
RUNS_PRODUCTION_0114.LAB	10/1/2022	23:01:33	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0115.LAB	10/1/2022	23:01:42	Run_1_NG 0:00:09	0.15 BDL
RUNS_PRODUCTION_0116.LAB	10/1/2022	23:01:52	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0117.LAB	10/1/2022	23:02:01	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0118.LAB	10/1/2022	23:02:11	Run_1_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0119.LAB	10/1/2022	23:02:20	Run_1_NG 0:00:09	0.2 BDL
RUNS_PRODUCTION_0120.LAB	10/1/2022	23:02:30	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0121.LAB	10/1/2022	23:02:39	Run_1_NG 0:00:09	0.3 BDL
RUNS_PRODUCTION_0122.LAB	10/1/2022	23:02:48	Run_1_NG 0:00:09	0.37 BDL
RUNS_PRODUCTION_0123.LAB	10/1/2022	23:02:58	Run_1_NG 0:00:10	0.33 BDL
RUNS_PRODUCTION_0124.LAB	10/1/2022	23:03:07	Run_1_NG 0:00:09	0.15 BDL
RUNS_PRODUCTION_0125.LAB	10/1/2022	23:03:17	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0126.LAB	10/1/2022	23:03:26	Run_1_NG 0:00:09	0.52 BDL
RUNS_PRODUCTION_0127.LAB	10/1/2022	23:03:36	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0128.LAB	10/1/2022	23:03:45	Run_1_NG 0:00:09	0.38 BDL
RUNS_PRODUCTION_0129.LAB	10/1/2022	23:03:54	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0130.LAB	10/1/2022	23:04:04	Run_1_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0131.LAB	10/1/2022	23:04:13	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0132.LAB	10/1/2022	23:04:23	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0133.LAB	10/1/2022	23:04:32	Run_1_NG 0:00:09	0.15 BDL
RUNS_PRODUCTION_0134.LAB	10/1/2022	23:04:42	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0135.LAB	10/1/2022	23:04:51	Run_1_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_0136.LAB	10/1/2022	23:05:00	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0137.LAB	10/1/2022	23:05:10	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0138.LAB	10/1/2022	23:05:19	Run_1_NG 0:00:09	0.52 BDL
RUNS_PRODUCTION_0139.LAB	10/1/2022	23:05:29	Run_1_NG 0:00:10	0.28 BDL
RUNS_PRODUCTION_0140.LAB	10/1/2022	23:05:38	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0141.LAB	10/1/2022	23:05:48	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0142.LAB	10/1/2022	23:05:57	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0143.LAB	10/1/2022	23:06:06	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0144.LAB	10/1/2022	23:06:16	Run_1_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_0145.LAB	10/1/2022	23:06:25	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0146.LAB	10/1/2022	23:06:35	Run_1_NG 0:00:10	0.18 BDL
RUNS_PRODUCTION_0147.LAB	10/1/2022	23:06:44	Run_1_NG 0:00:09	0.43 BDL
RUNS_PRODUCTION_0148.LAB	10/1/2022	23:06:54	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0149.LAB	10/1/2022	23:07:03	Run_1_NG 0:00:09	0.26 BDL



RUNS_PRODUCTION_0150.LAB	10/1/2022	23:07:12	Run_1_NG 0:00:09	0.2 BDL
RUNS_PRODUCTION_0151.LAB	10/1/2022	23:07:22	Run_1_NG 0:00:10	0.35 BDL
RUNS_PRODUCTION_0152.LAB	10/1/2022	23:07:31	Run_1_NG 0:00:09	0.41 BDL
RUNS_PRODUCTION_0153.LAB	10/1/2022	23:07:41	Run_1_NG 0:00:10	0.25 BDL
RUNS_PRODUCTION_0154.LAB	10/1/2022	23:07:50	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0155.LAB	10/1/2022	23:08:00	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0156.LAB	10/1/2022	23:08:09	Run_1_NG 0:00:09	0.48 BDL
RUNS_PRODUCTION_0157.LAB	10/1/2022	23:08:18	Run_1_NG 0:00:09	0.16 BDL
RUNS_PRODUCTION_0158.LAB	10/1/2022	23:08:28	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0159.LAB	10/1/2022	23:08:37	Run_1_NG 0:00:09	0.16 BDL
RUNS_PRODUCTION_0160.LAB	10/1/2022	23:08:47	Run_1_NG 0:00:10	0.43 BDL
RUNS_PRODUCTION_0161.LAB	10/1/2022	23:08:56	Run_1_NG 0:00:09	0.17 BDL
RUNS_PRODUCTION_0162.LAB	10/1/2022	23:09:06	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0163.LAB	10/1/2022	23:09:15	Run_1_NG 0:00:09	0.2 BDL
RUNS_PRODUCTION_0164.LAB	10/1/2022	23:09:24	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0165.LAB	10/1/2022	23:09:34	Run_1_NG 0:00:10	0.46 BDL
RUNS_PRODUCTION_0166.LAB	10/1/2022	23:09:43	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0167.LAB	10/1/2022	23:09:53	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0168.LAB	10/1/2022	23:10:02	Run_1_NG 0:00:09	0.22 BDL
RUNS_PRODUCTION_0169.LAB	10/1/2022	23:10:12	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0170.LAB	10/1/2022	23:10:21	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0171.LAB	10/1/2022	23:10:30	Run_1_NG 0:00:09	0.14 BDL
RUNS_PRODUCTION_0172.LAB	10/1/2022	23:10:40	Run_1_NG 0:00:10	0.16 BDL
RUNS_PRODUCTION_0173.LAB	10/1/2022	23:10:49	Run_1_NG 0:00:09	0.17 BDL
RUNS_PRODUCTION_0174.LAB	10/1/2022	23:10:59	Run_1_NG 0:00:10	0.2 BDL
RUNS_PRODUCTION_0175.LAB	10/1/2022	23:11:08	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0176.LAB	10/1/2022	23:11:17	Run_1_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0177.LAB	10/1/2022	23:11:27	Run_1_NG 0:00:10	0.36 BDL
RUNS_PRODUCTION_0178.LAB	10/1/2022	23:11:36	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0179.LAB	10/1/2022	23:11:46	Run_1_NG 0:00:10	0.17 BDL
RUNS_PRODUCTION_0180.LAB	10/1/2022	23:11:55	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0181.LAB	10/1/2022	23:12:05	Run_1_NG 0:00:10	0.33 BDL
RUNS_PRODUCTION_0182.LAB	10/1/2022	23:12:14	Run_1_NG 0:00:09	0.26 BDL
RUNS_PRODUCTION_0183.LAB	10/1/2022	23:12:23	Run_1_NG 0:00:09	0.16 BDL
RUNS_PRODUCTION_0184.LAB	10/1/2022	23:12:33	Run_1_NG 0:00:10	0.15 BDL
RUNS_PRODUCTION_0185.LAB	10/1/2022	23:12:42	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0186.LAB	10/1/2022	23:12:52	Run_1_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_0187.LAB	10/1/2022	23:13:01	Run_1_NG 0:00:09	0.34 BDL
RUNS_PRODUCTION_0188.LAB	10/1/2022	23:13:11	Run_1_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_0189.LAB	10/1/2022	23:13:20	Run_1_NG 0:00:09	0.61 BDL
RUNS_PRODUCTION_0190.LAB	10/1/2022	23:13:29	Run_1_NG 0:00:09	0.36 BDL
RUNS_PRODUCTION_0191.LAB	10/1/2022	23:13:39	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0192.LAB	10/1/2022	23:13:48	Run_1_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0193.LAB	10/1/2022	23:13:58	Run_1_NG 0:00:10	0.27 BDL
RUNS_PRODUCTION_0194.LAB	10/1/2022	23:14:07	Run_1_NG 0:00:09	0.41 BDL
RUNS_PRODUCTION_0195.LAB	10/1/2022	23:14:17	Run_1_NG 0:00:10	0.37 BDL
RUNS_PRODUCTION_0196.LAB	10/1/2022	23:14:26	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0197.LAB	10/1/2022	23:14:36	Run_1_NG 0:00:10	0.25 BDL
RUNS_PRODUCTION_0198.LAB	10/1/2022	23:14:45	Run_1_NG 0:00:09	0.35 BDL
RUNS_PRODUCTION_0199.LAB	10/1/2022	23:14:54	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0200.LAB	10/1/2022	23:15:04	Run_1_NG 0:00:10	0.28 BDL
RUNS_PRODUCTION_0201.LAB	10/1/2022	23:15:13	Run_1_NG 0:00:09	0.14 BDL
RUNS_PRODUCTION_0202.LAB	10/1/2022	23:15:23	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0203.LAB	10/1/2022	23:15:32	Run_1_NG 0:00:09	0.45 BDL
RUNS_PRODUCTION_0204.LAB	10/1/2022	23:15:41	Run_1_NG 0:00:09	0.21 BDL
RUNS_PRODUCTION_0205.LAB	10/1/2022	23:15:51	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0206.LAB	10/1/2022	23:16:00	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0207.LAB	10/1/2022	23:16:10	Run_1_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_0208.LAB	10/1/2022	23:16:19	Run_1_NG 0:00:09	0.19 BDL
RUNS_PRODUCTION_0209.LAB	10/1/2022	23:16:29	Run_1_NG 0:00:10	0.59 BDL
RUNS_PRODUCTION_0210.LAB	10/1/2022	23:16:38	Run_1_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0211.LAB	10/1/2022	23:16:47	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0212.LAB	10/1/2022	23:16:57	Run_1_NG 0:00:10	0.18 BDL
RUNS_PRODUCTION_0213.LAB	10/1/2022	23:17:06	Run_1_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0214.LAB	10/1/2022	23:17:16	Run_1_NG 0:00:10	0.3 BDL
RUNS_PRODUCTION_0215.LAB	10/1/2022	23:17:25	Run_1_NG 0:00:09	0.3 BDL
RUNS_PRODUCTION_0216.LAB	10/1/2022	23:17:35	Run_1_NG 0:00:10	0.38 BDL
RUNS_PRODUCTION_0217.LAB	10/1/2022	23:17:44	Run_1_NG 0:00:09	0.54 BDL
RUNS_PRODUCTION_0218.LAB	10/1/2022	23:17:53	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0219.LAB	10/1/2022	23:18:03	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0220.LAB	10/1/2022	23:18:12	Run_1_NG 0:00:09	0.39 BDL
RUNS_PRODUCTION_0221.LAB	10/1/2022	23:18:22	Run_1_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0222.LAB	10/1/2022	23:18:31	Run_1_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_0223.LAB	10/1/2022	23:18:41	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0224.LAB	10/1/2022	23:18:50	Run_1_NG 0:00:09	0.07 BDL



RUNS_PRODUCTION_0225.LAB	10/1/2022	23:19:00	Run_1_NG 0:00:10	0.4 BDL
RUNS_PRODUCTION_0226.LAB	10/1/2022	23:19:09	Run_1_NG 0:00:09	0.22 BDL
RUNS_PRODUCTION_0227.LAB	10/1/2022	23:19:19	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0228.LAB	10/1/2022	23:19:28	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0229.LAB	10/1/2022	23:19:37	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0230.LAB	10/1/2022	23:19:47	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0231.LAB	10/1/2022	23:19:56	Run_1_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0232.LAB	10/1/2022	23:20:05	Run_1_NG 0:00:09	0.4 BDL
RUNS_PRODUCTION_0233.LAB	10/1/2022	23:20:15	Run_1_NG 0:00:10	0.18 BDL
RUNS_PRODUCTION_0234.LAB	10/1/2022	23:20:24	Run_1_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0235.LAB	10/1/2022	23:20:34	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0236.LAB	10/1/2022	23:20:43	Run_1_NG 0:00:09	0.57 BDL
RUNS_PRODUCTION_0237.LAB	10/1/2022	23:20:53	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0238.LAB	10/1/2022	23:21:02	Run_1_NG 0:00:09	0.2 BDL
RUNS_PRODUCTION_0239.LAB	10/1/2022	23:21:11	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0240.LAB	10/1/2022	23:21:21	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0241.LAB	10/1/2022	23:21:30	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0242.LAB	10/1/2022	23:21:40	Run_1_NG 0:00:10	0.14 BDL
RUNS_PRODUCTION_0243.LAB	10/1/2022	23:21:49	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0244.LAB	10/1/2022	23:21:59	Run_1_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_0245.LAB	10/1/2022	23:22:08	Run_1_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_0246.LAB	10/1/2022	23:22:17	Run_1_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0247.LAB	10/1/2022	23:22:27	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0248.LAB	10/1/2022	23:22:36	Run_1_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0249.LAB	10/1/2022	23:22:46	Run_1_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0250.LAB	10/1/2022	23:22:55	Run_1_NG 0:00:09	0.2 BDL
RUNS_PRODUCTION_0251.LAB	10/1/2022	23:23:05	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0252.LAB	10/1/2022	23:23:14	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0253.LAB	10/1/2022	23:23:23	Run_1_NG 0:00:09	0.17 BDL
RUNS_PRODUCTION_0254.LAB	10/1/2022	23:23:33	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0255.LAB	10/1/2022	23:23:42	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0256.LAB	10/1/2022	23:23:52	Run_1_NG 0:00:10	0.3 BDL
RUNS_PRODUCTION_0257.LAB	10/1/2022	23:24:01	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0258.LAB	10/1/2022	23:24:11	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0259.LAB	10/1/2022	23:24:20	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0260.LAB	10/1/2022	23:24:30	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0261.LAB	10/1/2022	23:24:39	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0262.LAB	10/1/2022	23:24:48	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0263.LAB	10/1/2022	23:24:58	Run_1_NG 0:00:10	0.35 BDL
RUNS_PRODUCTION_0264.LAB	10/1/2022	23:25:07	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0265.LAB	10/1/2022	23:25:17	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0266.LAB	10/1/2022	23:25:26	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0267.LAB	10/1/2022	23:25:35	Run_1_NG 0:00:09	0.19 BDL
RUNS_PRODUCTION_0268.LAB	10/1/2022	23:25:45	Run_1_NG 0:00:10	0.17 BDL
RUNS_PRODUCTION_0269.LAB	10/1/2022	23:25:54	Run_1_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_0270.LAB	10/1/2022	23:26:04	Run_1_NG 0:00:10	0.38 BDL
RUNS_PRODUCTION_0271.LAB	10/1/2022	23:26:13	Run_1_NG 0:00:09	0.21 BDL
RUNS_PRODUCTION_0272.LAB	10/1/2022	23:26:23	Run_1_NG 0:00:10	0.2 BDL
RUNS_PRODUCTION_0273.LAB	10/1/2022	23:26:32	Run_1_NG 0:00:09	0.48 BDL
RUNS_PRODUCTION_0274.LAB	10/1/2022	23:26:41	Run_1_NG 0:00:09	0.41 BDL
RUNS_PRODUCTION_0275.LAB	10/1/2022	23:26:51	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0276.LAB	10/1/2022	23:27:00	Run_1_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0277.LAB	10/1/2022	23:27:10	Run_1_NG 0:00:10	0.25 BDL
RUNS_PRODUCTION_0278.LAB	10/1/2022	23:27:19	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0279.LAB	10/1/2022	23:27:29	Run_1_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_0280.LAB	10/1/2022	23:27:38	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0281.LAB	10/1/2022	23:27:47	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0282.LAB	10/1/2022	23:27:57	Run_1_NG 0:00:10	0.37 BDL
RUNS_PRODUCTION_0283.LAB	10/1/2022	23:28:06	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0284.LAB	10/1/2022	23:28:16	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0285.LAB	10/1/2022	23:28:25	Run_1_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_0286.LAB	10/1/2022	23:28:35	Run_1_NG 0:00:10	0.35 BDL
RUNS_PRODUCTION_0287.LAB	10/1/2022	23:28:44	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0288.LAB	10/1/2022	23:28:53	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0289.LAB	10/1/2022	23:29:03	Run_1_NG 0:00:10	0.16 BDL
RUNS_PRODUCTION_0290.LAB	10/1/2022	23:29:12	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0291.LAB	10/1/2022	23:29:22	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0292.LAB	10/1/2022	23:29:31	Run_1_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0293.LAB	10/1/2022	23:29:41	Run_1_NG 0:00:10	0.14 BDL
RUNS_PRODUCTION_0294.LAB	10/1/2022	23:29:50	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0295.LAB	10/1/2022	23:29:59	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0296.LAB	10/1/2022	23:30:09	Run_1_NG 0:00:10	0.3 BDL
RUNS_PRODUCTION_0297.LAB	10/1/2022	23:30:18	Run_1_NG 0:00:09	0.18 BDL
RUNS_PRODUCTION_0298.LAB	10/1/2022	23:30:28	Run_1_NG 0:00:10	0.34 BDL
RUNS_PRODUCTION_0299.LAB	10/1/2022	23:30:37	Run_1_NG 0:00:09	0.23 BDL



RUNS_PRODUCTION_0300.LAB	10/1/2022	23:30:47	Run_1_NG 0:00:10	0.2 BDL
RUNS_PRODUCTION_0301.LAB	10/1/2022	23:30:56	Run_1_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0302.LAB	10/1/2022	23:31:05	Run_1_NG 0:00:09	0.21 BDL
RUNS_PRODUCTION_0303.LAB	10/1/2022	23:31:15	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0304.LAB	10/1/2022	23:31:24	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0305.LAB	10/1/2022	23:31:34	Run_1_NG 0:00:10	0.35 BDL
RUNS_PRODUCTION_0306.LAB	10/1/2022	23:31:43	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0307.LAB	10/1/2022	23:31:53	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0308.LAB	10/1/2022	23:32:02	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0309.LAB	10/1/2022	23:32:11	Run_1_NG 0:00:09	0.21 BDL
RUNS_PRODUCTION_0310.LAB	10/1/2022	23:32:21	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0311.LAB	10/1/2022	23:32:30	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0312.LAB	10/1/2022	23:32:40	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0313.LAB	10/1/2022	23:32:49	Run_1_NG 0:00:09	0.47 BDL
RUNS_PRODUCTION_0314.LAB	10/1/2022	23:32:59	Run_1_NG 0:00:10	0.22 BDL
RUNS_PRODUCTION_0315.LAB	10/1/2022	23:33:08	Run_1_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_0316.LAB	10/1/2022	23:33:17	Run_1_NG 0:00:09	0.14 BDL
RUNS_PRODUCTION_0317.LAB	10/1/2022	23:33:27	Run_1_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0318.LAB	10/1/2022	23:33:36	Run_1_NG 0:00:09	0.29 BDL
RUNS_PRODUCTION_0319.LAB	10/1/2022	23:33:46	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0320.LAB	10/1/2022	23:33:55	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0321.LAB	10/1/2022	23:34:05	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0322.LAB	10/1/2022	23:34:14	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0323.LAB	10/1/2022	23:34:23	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0324.LAB	10/1/2022	23:34:33	Run_1_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0325.LAB	10/1/2022	23:34:42	Run_1_NG 0:00:09	0.27 BDL
RUNS_PRODUCTION_0326.LAB	10/1/2022	23:34:52	Run_1_NG 0:00:10	0.24 BDL
RUNS_PRODUCTION_0327.LAB	10/1/2022	23:35:01	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0328.LAB	10/1/2022	23:35:11	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0329.LAB	10/1/2022	23:35:20	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0330.LAB	10/1/2022	23:35:29	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0331.LAB	10/1/2022	23:35:39	Run_1_NG 0:00:10	0.46 BDL
RUNS_PRODUCTION_0332.LAB	10/1/2022	23:35:48	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0333.LAB	10/1/2022	23:35:58	Run_1_NG 0:00:10	0.15 BDL
RUNS_PRODUCTION_0334.LAB	10/1/2022	23:36:07	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0335.LAB	10/1/2022	23:36:17	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0336.LAB	10/1/2022	23:36:26	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0337.LAB	10/1/2022	23:36:35	Run_1_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0338.LAB	10/1/2022	23:36:45	Run_1_NG 0:00:10	0.24 BDL
RUNS_PRODUCTION_0339.LAB	10/1/2022	23:36:54	Run_1_NG 0:00:09	0.41 BDL
RUNS_PRODUCTION_0340.LAB	10/1/2022	23:37:04	Run_1_NG 0:00:10	0.37 BDL
RUNS_PRODUCTION_0341.LAB	10/1/2022	23:37:13	Run_1_NG 0:00:09	0.5 BDL
RUNS_PRODUCTION_0342.LAB	10/1/2022	23:37:23	Run_1_NG 0:00:10	0.27 BDL
RUNS_PRODUCTION_0343.LAB	10/1/2022	23:37:32	Run_1_NG 0:00:09	0.18 BDL
RUNS_PRODUCTION_0344.LAB	10/1/2022	23:37:41	Run_1_NG 0:00:09	0.45 BDL
RUNS_PRODUCTION_0345.LAB	10/1/2022	23:37:51	Run_1_NG 0:00:10	0.21 BDL
RUNS_PRODUCTION_0346.LAB	10/1/2022	23:38:00	Run_1_NG 0:00:09	0.45 BDL
RUNS_PRODUCTION_0347.LAB	10/1/2022	23:38:10	Run_1_NG 0:00:10	0.33 BDL
RUNS_PRODUCTION_0348.LAB	10/1/2022	23:38:19	Run_1_NG 0:00:09	0.69 BDL
RUNS_PRODUCTION_0349.LAB	10/1/2022	23:38:29	Run_1_NG 0:00:10	0.67 BDL
RUNS_PRODUCTION_0350.LAB	10/1/2022	23:38:38	Run_1_NG 0:00:09	0.59 BDL
RUNS_PRODUCTION_0351.LAB	10/1/2022	23:38:47	Run_1_NG 0:00:09	0.3 BDL
RUNS_PRODUCTION_0352.LAB	10/1/2022	23:38:57	Run_1_NG 0:00:10	0.56 BDL
RUNS_PRODUCTION_0353.LAB	10/1/2022	23:39:06	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0354.LAB	10/1/2022	23:39:16	Run_1_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0355.LAB	10/1/2022	23:39:25	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0356.LAB	10/1/2022	23:39:35	Run_1_NG 0:00:10	0.38 BDL
RUNS_PRODUCTION_0357.LAB	10/1/2022	23:39:44	Run_1_NG 0:00:09	0.2 BDL
RUNS_PRODUCTION_0358.LAB	10/1/2022	23:39:53	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0359.LAB	10/1/2022	23:40:03	Run_1_NG 0:00:10	0.4 BDL
RUNS_PRODUCTION_0360.LAB	10/1/2022	23:40:12	Run_1_NG 0:00:09	0.31 BDL
RUNS_PRODUCTION_0361.LAB	10/1/2022	23:40:22	Run_1_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0362.LAB	10/1/2022	23:40:31	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0363.LAB	10/1/2022	23:40:41	Run_1_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0364.LAB	10/1/2022	23:40:50	Run_1_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0365.LAB	10/1/2022	23:40:59	Run_1_NG 0:00:09	0.38 BDL
RUNS_PRODUCTION_0366.LAB	10/1/2022	23:41:09	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0367.LAB	10/1/2022	23:41:18	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0368.LAB	10/1/2022	23:41:28	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0369.LAB	10/1/2022	23:41:37	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0370.LAB	10/1/2022	23:41:47	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0371.LAB	10/1/2022	23:41:56	Run_1_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0372.LAB	10/1/2022	23:42:05	Run_1_NG 0:00:09	0.07 BDL
RUNS_PRODUCTION_0373.LAB	10/1/2022	23:42:15	Run_1_NG 0:00:10	0.07 BDL
RUNS_PRODUCTION_0374.LAB	10/1/2022	23:42:24	Run_1_NG 0:00:09	0.16 BDL



RUNS_PRODUCTION_0375.LAB	10/1/2022	23:42:34	Run_1_NG	0:00:10	0.07	BDL
RUNS_PRODUCTION_0376.LAB	10/1/2022	23:42:43	Run_1_NG	0:00:09	0.32	BDL
RUNS_PRODUCTION_0377.LAB	10/1/2022	23:42:53	Run_1_NG	0:00:10	0.07	BDL
RUNS_PRODUCTION_0378.LAB	10/1/2022	23:43:02	Run_1_NG	0:00:09	0.23	BDL
RUNS_PRODUCTION_0379.LAB	10/1/2022	23:43:11	Run_1_NG	0:00:09	0.07	BDL
RUNS_PRODUCTION_0380.LAB	10/1/2022	23:43:21	Run_1_NG	0:00:10	0.24	BDL
RUNS_PRODUCTION_0381.LAB	10/1/2022	23:43:30	Run_1_NG	0:00:09	0.16	BDL
RUNS_PRODUCTION_0382.LAB	10/1/2022	23:43:40	Run_1_NG	0:00:10	0.38	BDL
RUNS_PRODUCTION_0383.LAB	10/1/2022	23:43:49	Run_1_NG	0:00:09	0.07	BDL
RUNS_PRODUCTION_0384.LAB	10/1/2022	23:43:59	Run_1_NG	0:00:10	0.3	BDL
Run_1_NG_60min Averages					0.23	BDL
Run_1_NG_60min Maximum					0.77	NA
Run_1_NG_60min Minimum					0.07	NA
Validator	Ignacio Gallardo					
Reviewer	Chris Montez					
MDL					0.14	0.203
BDL (1/2 MDL)					0.07	0.101
Total time [min]	60					



## R2\_Run\_2\_NG\_rpt

Spectrum	Date	Time	Run number	Integration	Formaldehy	HCN	150c_BDL
RUNS_PRODUCTION_0386	LAB 10/1/2022	23:44:17	Run_2_NG 0:00:00		0.24	BDL	
RUNS_PRODUCTION_0387	LAB 10/1/2022	23:44:27	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0388	LAB 10/1/2022	23:44:36	Run_2_NG 0:00:09		0.21	BDL	
RUNS_PRODUCTION_0389	LAB 10/1/2022	23:44:46	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0390	LAB 10/1/2022	23:44:55	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0391	LAB 10/1/2022	23:45:05	Run_2_NG 0:00:10		0.29	BDL	
RUNS_PRODUCTION_0392	LAB 10/1/2022	23:45:14	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0393	LAB 10/1/2022	23:45:23	Run_2_NG 0:00:09		0.21	BDL	
RUNS_PRODUCTION_0394	LAB 10/1/2022	23:45:33	Run_2_NG 0:00:10		0.21	BDL	
RUNS_PRODUCTION_0395	LAB 10/1/2022	23:45:42	Run_2_NG 0:00:09		0.32	BDL	
RUNS_PRODUCTION_0396	LAB 10/1/2022	23:45:52	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0397	LAB 10/1/2022	23:46:01	Run_2_NG 0:00:09		0.3	BDL	
RUNS_PRODUCTION_0398	LAB 10/1/2022	23:46:11	Run_2_NG 0:00:10		0.24	BDL	
RUNS_PRODUCTION_0399	LAB 10/1/2022	23:46:20	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0400	LAB 10/1/2022	23:46:29	Run_2_NG 0:00:09		0.27	BDL	
RUNS_PRODUCTION_0401	LAB 10/1/2022	23:46:39	Run_2_NG 0:00:10		0.27	BDL	
RUNS_PRODUCTION_0402	LAB 10/1/2022	23:46:48	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0403	LAB 10/1/2022	23:46:58	Run_2_NG 0:00:10		0.36	BDL	
RUNS_PRODUCTION_0404	LAB 10/1/2022	23:47:07	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0405	LAB 10/1/2022	23:47:17	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0406	LAB 10/1/2022	23:47:26	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0407	LAB 10/1/2022	23:47:35	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0408	LAB 10/1/2022	23:47:45	Run_2_NG 0:00:10		0.4	BDL	
RUNS_PRODUCTION_0409	LAB 10/1/2022	23:47:54	Run_2_NG 0:00:09		0.2	BDL	
RUNS_PRODUCTION_0410	LAB 10/1/2022	23:48:04	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0411	LAB 10/1/2022	23:48:13	Run_2_NG 0:00:09		0.49	BDL	
RUNS_PRODUCTION_0412	LAB 10/1/2022	23:48:23	Run_2_NG 0:00:10		0.3	BDL	
RUNS_PRODUCTION_0413	LAB 10/1/2022	23:48:32	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0414	LAB 10/1/2022	23:48:41	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0415	LAB 10/1/2022	23:48:51	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0416	LAB 10/1/2022	23:49:00	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0417	LAB 10/1/2022	23:49:10	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0418	LAB 10/1/2022	23:49:19	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0419	LAB 10/1/2022	23:49:29	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0420	LAB 10/1/2022	23:49:38	Run_2_NG 0:00:09		0.19	BDL	
RUNS_PRODUCTION_0421	LAB 10/1/2022	23:49:47	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0422	LAB 10/1/2022	23:49:57	Run_2_NG 0:00:10		0.31	BDL	
RUNS_PRODUCTION_0423	LAB 10/1/2022	23:50:06	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0424	LAB 10/1/2022	23:50:16	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0425	LAB 10/1/2022	23:50:25	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0426	LAB 10/1/2022	23:50:35	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0427	LAB 10/1/2022	23:50:44	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0428	LAB 10/1/2022	23:50:53	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0429	LAB 10/1/2022	23:51:03	Run_2_NG 0:00:10		0.41	BDL	
RUNS_PRODUCTION_0430	LAB 10/1/2022	23:51:12	Run_2_NG 0:00:09		0.27	BDL	
RUNS_PRODUCTION_0431	LAB 10/1/2022	23:51:22	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0432	LAB 10/1/2022	23:51:31	Run_2_NG 0:00:09		0.25	BDL	
RUNS_PRODUCTION_0433	LAB 10/1/2022	23:51:41	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0434	LAB 10/1/2022	23:51:50	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0435	LAB 10/1/2022	23:51:59	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0436	LAB 10/1/2022	23:52:09	Run_2_NG 0:00:10		0.18	BDL	
RUNS_PRODUCTION_0437	LAB 10/1/2022	23:52:18	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0438	LAB 10/1/2022	23:52:28	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0439	LAB 10/1/2022	23:52:37	Run_2_NG 0:00:09		0.31	BDL	
RUNS_PRODUCTION_0440	LAB 10/1/2022	23:52:47	Run_2_NG 0:00:10		0.18	BDL	
RUNS_PRODUCTION_0441	LAB 10/1/2022	23:52:56	Run_2_NG 0:00:09		0.2	BDL	
RUNS_PRODUCTION_0442	LAB 10/1/2022	23:53:05	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0443	LAB 10/1/2022	23:53:15	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0444	LAB 10/1/2022	23:53:24	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0445	LAB 10/1/2022	23:53:34	Run_2_NG 0:00:10		0.18	BDL	
RUNS_PRODUCTION_0446	LAB 10/1/2022	23:53:43	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0447	LAB 10/1/2022	23:53:53	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0448	LAB 10/1/2022	23:54:02	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0449	LAB 10/1/2022	23:54:11	Run_2_NG 0:00:09		0.36	BDL	
RUNS_PRODUCTION_0450	LAB 10/1/2022	23:54:21	Run_2_NG 0:00:10		0.17	BDL	
RUNS_PRODUCTION_0451	LAB 10/1/2022	23:54:30	Run_2_NG 0:00:09		0.17	BDL	
RUNS_PRODUCTION_0452	LAB 10/1/2022	23:54:40	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0453	LAB 10/1/2022	23:54:49	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0454	LAB 10/1/2022	23:54:59	Run_2_NG 0:00:10		0.18	BDL	
RUNS_PRODUCTION_0455	LAB 10/1/2022	23:55:08	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0456	LAB 10/1/2022	23:55:17	Run_2_NG 0:00:09		0.08	BDL	
RUNS_PRODUCTION_0457	LAB 10/1/2022	23:55:27	Run_2_NG 0:00:10		0.08	BDL	
RUNS_PRODUCTION_0458	LAB 10/1/2022	23:55:36	Run_2_NG 0:00:09		0.31	BDL	



RUNS_PRODUCTION_0459.LAB 10/1/2022	23:55:46	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0460.LAB 10/1/2022	23:55:55	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0461.LAB 10/1/2022	23:56:05	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0462.LAB 10/1/2022	23:56:14	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0463.LAB 10/1/2022	23:56:23	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0464.LAB 10/1/2022	23:56:33	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0465.LAB 10/1/2022	23:56:42	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0466.LAB 10/1/2022	23:56:52	Run_2_NG 0:00:10	0.42 BDL
RUNS_PRODUCTION_0467.LAB 10/1/2022	23:57:01	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0468.LAB 10/1/2022	23:57:10	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0469.LAB 10/1/2022	23:57:20	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0470.LAB 10/1/2022	23:57:29	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0471.LAB 10/1/2022	23:57:39	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0472.LAB 10/1/2022	23:57:48	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0473.LAB 10/1/2022	23:57:58	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0474.LAB 10/1/2022	23:58:07	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0475.LAB 10/1/2022	23:58:17	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0476.LAB 10/1/2022	23:58:26	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0477.LAB 10/1/2022	23:58:35	Run_2_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0478.LAB 10/1/2022	23:58:45	Run_2_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0479.LAB 10/1/2022	23:58:54	Run_2_NG 0:00:09	0.34 BDL
RUNS_PRODUCTION_0480.LAB 10/1/2022	23:59:04	Run_2_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0481.LAB 10/1/2022	23:59:13	Run_2_NG 0:00:09	0.28 BDL
RUNS_PRODUCTION_0482.LAB 10/1/2022	23:59:23	Run_2_NG 0:00:10	0.17 BDL
RUNS_PRODUCTION_0483.LAB 10/1/2022	23:59:32	Run_2_NG 0:00:09	0.18 BDL
RUNS_PRODUCTION_0484.LAB 10/1/2022	23:59:41	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0485.LAB 10/1/2022	23:59:51	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0486.LAB 10/2/2022	00:00:00	Run_2_NG -1 day, 0:00:00	0.08 BDL
RUNS_PRODUCTION_0487.LAB 10/2/2022	00:00:10	Run_2_NG 0:00:10	0.19 BDL
RUNS_PRODUCTION_0488.LAB 10/2/2022	00:00:19	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0489.LAB 10/2/2022	00:00:29	Run_2_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0490.LAB 10/2/2022	00:00:38	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0491.LAB 10/2/2022	00:00:48	Run_2_NG 0:00:10	0.25 BDL
RUNS_PRODUCTION_0492.LAB 10/2/2022	00:00:57	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0493.LAB 10/2/2022	00:01:06	Run_2_NG 0:00:09	0.26 BDL
RUNS_PRODUCTION_0494.LAB 10/2/2022	00:01:16	Run_2_NG 0:00:10	0.24 BDL
RUNS_PRODUCTION_0495.LAB 10/2/2022	00:01:25	Run_2_NG 0:00:09	6.24 BDL
RUNS_PRODUCTION_0496.LAB 10/2/2022	00:01:35	Run_2_NG 0:00:10	36.53 BDL
RUNS_PRODUCTION_0497.LAB 10/2/2022	00:01:44	Run_2_NG 0:00:09	62.79 BDL
RUNS_PRODUCTION_0498.LAB 10/2/2022	00:01:53	Run_2_NG 0:00:09	65.89 BDL
RUNS_PRODUCTION_0499.LAB 10/2/2022	00:02:03	Run_2_NG 0:00:10	59.66 BDL
RUNS_PRODUCTION_0500.LAB 10/2/2022	00:02:12	Run_2_NG 0:00:09	51.33 BDL
RUNS_PRODUCTION_0501.LAB 10/2/2022	00:02:22	Run_2_NG 0:00:10	43.62 BDL
RUNS_PRODUCTION_0502.LAB 10/2/2022	00:02:31	Run_2_NG 0:00:09	37.59 BDL
RUNS_PRODUCTION_0503.LAB 10/2/2022	00:02:40	Run_2_NG 0:00:09	32.51 BDL
RUNS_PRODUCTION_0504.LAB 10/2/2022	00:02:50	Run_2_NG 0:00:10	28.91 BDL
RUNS_PRODUCTION_0505.LAB 10/2/2022	00:02:59	Run_2_NG 0:00:09	25.59 BDL
RUNS_PRODUCTION_0506.LAB 10/2/2022	00:03:09	Run_2_NG 0:00:10	21.97 BDL
RUNS_PRODUCTION_0507.LAB 10/2/2022	00:03:18	Run_2_NG 0:00:09	19.07 BDL
RUNS_PRODUCTION_0508.LAB 10/2/2022	00:03:28	Run_2_NG 0:00:10	16.45 BDL
RUNS_PRODUCTION_0509.LAB 10/2/2022	00:03:37	Run_2_NG 0:00:09	15.14 BDL
RUNS_PRODUCTION_0510.LAB 10/2/2022	00:03:47	Run_2_NG 0:00:10	14.3 BDL
RUNS_PRODUCTION_0511.LAB 10/2/2022	00:03:56	Run_2_NG 0:00:09	12.1 BDL
RUNS_PRODUCTION_0512.LAB 10/2/2022	00:04:05	Run_2_NG 0:00:09	10.65 BDL
RUNS_PRODUCTION_0513.LAB 10/2/2022	00:04:15	Run_2_NG 0:00:10	9.2 BDL
RUNS_PRODUCTION_0514.LAB 10/2/2022	00:04:24	Run_2_NG 0:00:09	8.33 BDL
RUNS_PRODUCTION_0515.LAB 10/2/2022	00:04:34	Run_2_NG 0:00:10	7.81 BDL
RUNS_PRODUCTION_0516.LAB 10/2/2022	00:04:43	Run_2_NG 0:00:09	6.5 BDL
RUNS_PRODUCTION_0517.LAB 10/2/2022	00:04:53	Run_2_NG 0:00:10	5.99 BDL
RUNS_PRODUCTION_0518.LAB 10/2/2022	00:05:02	Run_2_NG 0:00:09	5.26 BDL
RUNS_PRODUCTION_0519.LAB 10/2/2022	00:05:11	Run_2_NG 0:00:09	4.87 BDL
RUNS_PRODUCTION_0520.LAB 10/2/2022	00:05:21	Run_2_NG 0:00:10	4.28 BDL
RUNS_PRODUCTION_0521.LAB 10/2/2022	00:05:30	Run_2_NG 0:00:09	3.55 BDL
RUNS_PRODUCTION_0522.LAB 10/2/2022	00:05:40	Run_2_NG 0:00:10	3.14 BDL
RUNS_PRODUCTION_0523.LAB 10/2/2022	00:05:49	Run_2_NG 0:00:09	3.35 BDL
RUNS_PRODUCTION_0524.LAB 10/2/2022	00:05:59	Run_2_NG 0:00:10	2.78 BDL
RUNS_PRODUCTION_0525.LAB 10/2/2022	00:06:08	Run_2_NG 0:00:09	2.52 BDL
RUNS_PRODUCTION_0526.LAB 10/2/2022	00:06:17	Run_2_NG 0:00:09	2.3 BDL
RUNS_PRODUCTION_0527.LAB 10/2/2022	00:06:27	Run_2_NG 0:00:10	2.12 BDL
RUNS_PRODUCTION_0528.LAB 10/2/2022	00:06:36	Run_2_NG 0:00:09	2.11 BDL
RUNS_PRODUCTION_0529.LAB 10/2/2022	00:06:46	Run_2_NG 0:00:10	1.94 BDL
RUNS_PRODUCTION_0530.LAB 10/2/2022	00:06:55	Run_2_NG 0:00:09	1.85 BDL
RUNS_PRODUCTION_0531.LAB 10/2/2022	00:07:05	Run_2_NG 0:00:10	1.64 BDL
RUNS_PRODUCTION_0532.LAB 10/2/2022	00:07:14	Run_2_NG 0:00:09	1.98 BDL
RUNS_PRODUCTION_0533.LAB 10/2/2022	00:07:23	Run_2_NG 0:00:09	1.36 BDL



RUNS_PRODUCTION_0534.LAB	10/2/2022	00:07:33	Run_2_NG 0:00:10	1.51 BDL
RUNS_PRODUCTION_0535.LAB	10/2/2022	00:07:42	Run_2_NG 0:00:09	1.41 BDL
RUNS_PRODUCTION_0536.LAB	10/2/2022	00:07:52	Run_2_NG 0:00:10	1.15 BDL
RUNS_PRODUCTION_0537.LAB	10/2/2022	00:08:01	Run_2_NG 0:00:09	0.95 BDL
RUNS_PRODUCTION_0538.LAB	10/2/2022	00:08:11	Run_2_NG 0:00:10	0.78 BDL
RUNS_PRODUCTION_0539.LAB	10/2/2022	00:08:20	Run_2_NG 0:00:09	1.07 BDL
RUNS_PRODUCTION_0540.LAB	10/2/2022	00:08:30	Run_2_NG 0:00:10	0.84 BDL
RUNS_PRODUCTION_0541.LAB	10/2/2022	00:08:39	Run_2_NG 0:00:09	0.85 BDL
RUNS_PRODUCTION_0542.LAB	10/2/2022	00:08:48	Run_2_NG 0:00:09	1.05 BDL
RUNS_PRODUCTION_0543.LAB	10/2/2022	00:08:58	Run_2_NG 0:00:10	0.76 BDL
RUNS_PRODUCTION_0544.LAB	10/2/2022	00:09:07	Run_2_NG 0:00:09	0.96 BDL
RUNS_PRODUCTION_0545.LAB	10/2/2022	00:09:17	Run_2_NG 0:00:10	0.3 BDL
RUNS_PRODUCTION_0546.LAB	10/2/2022	00:09:26	Run_2_NG 0:00:09	0.61 BDL
RUNS_PRODUCTION_0547.LAB	10/2/2022	00:09:35	Run_2_NG 0:00:09	0.58 BDL
RUNS_PRODUCTION_0548.LAB	10/2/2022	00:09:45	Run_2_NG 0:00:10	0.57 BDL
RUNS_PRODUCTION_0549.LAB	10/2/2022	00:09:54	Run_2_NG 0:00:09	0.66 BDL
RUNS_PRODUCTION_0550.LAB	10/2/2022	00:10:04	Run_2_NG 0:00:10	0.49 BDL
RUNS_PRODUCTION_0551.LAB	10/2/2022	00:10:13	Run_2_NG 0:00:09	0.62 BDL
RUNS_PRODUCTION_0552.LAB	10/2/2022	00:10:23	Run_2_NG 0:00:10	0.74 BDL
RUNS_PRODUCTION_0553.LAB	10/2/2022	00:10:32	Run_2_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_0554.LAB	10/2/2022	00:10:42	Run_2_NG 0:00:10	0.36 BDL
RUNS_PRODUCTION_0555.LAB	10/2/2022	00:10:51	Run_2_NG 0:00:09	0.56 BDL
RUNS_PRODUCTION_0556.LAB	10/2/2022	00:11:00	Run_2_NG 0:00:09	0.52 BDL
RUNS_PRODUCTION_0557.LAB	10/2/2022	00:11:10	Run_2_NG 0:00:10	0.61 BDL
RUNS_PRODUCTION_0558.LAB	10/2/2022	00:11:19	Run_2_NG 0:00:09	0.47 BDL
RUNS_PRODUCTION_0559.LAB	10/2/2022	00:11:29	Run_2_NG 0:00:10	0.36 BDL
RUNS_PRODUCTION_0560.LAB	10/2/2022	00:11:38	Run_2_NG 0:00:09	0.57 BDL
RUNS_PRODUCTION_0561.LAB	10/2/2022	00:11:48	Run_2_NG 0:00:10	0.75 BDL
RUNS_PRODUCTION_0562.LAB	10/2/2022	00:11:57	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0563.LAB	10/2/2022	00:12:07	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0564.LAB	10/2/2022	00:12:16	Run_2_NG 0:00:09	0.27 BDL
RUNS_PRODUCTION_0565.LAB	10/2/2022	00:12:25	Run_2_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_0566.LAB	10/2/2022	00:12:35	Run_2_NG 0:00:10	0.39 BDL
RUNS_PRODUCTION_0567.LAB	10/2/2022	00:12:44	Run_2_NG 0:00:09	0.22 BDL
RUNS_PRODUCTION_0568.LAB	10/2/2022	00:12:53	Run_2_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0569.LAB	10/2/2022	00:13:03	Run_2_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0570.LAB	10/2/2022	00:13:12	Run_2_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0571.LAB	10/2/2022	00:13:22	Run_2_NG 0:00:10	0.31 BDL
RUNS_PRODUCTION_0572.LAB	10/2/2022	00:13:31	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0573.LAB	10/2/2022	00:13:41	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0574.LAB	10/2/2022	00:13:50	Run_2_NG 0:00:09	0.38 BDL
RUNS_PRODUCTION_0575.LAB	10/2/2022	00:13:59	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0576.LAB	10/2/2022	00:14:09	Run_2_NG 0:00:10	0.42 BDL
RUNS_PRODUCTION_0577.LAB	10/2/2022	00:14:18	Run_2_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0578.LAB	10/2/2022	00:14:28	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0579.LAB	10/2/2022	00:14:37	Run_2_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0580.LAB	10/2/2022	00:14:47	Run_2_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0581.LAB	10/2/2022	00:14:56	Run_2_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0582.LAB	10/2/2022	00:15:06	Run_2_NG 0:00:10	0.35 BDL
RUNS_PRODUCTION_0583.LAB	10/2/2022	00:15:15	Run_2_NG 0:00:09	0.27 BDL
RUNS_PRODUCTION_0584.LAB	10/2/2022	00:15:24	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0585.LAB	10/2/2022	00:15:34	Run_2_NG 0:00:10	0.17 BDL
RUNS_PRODUCTION_0586.LAB	10/2/2022	00:15:43	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0587.LAB	10/2/2022	00:15:53	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0588.LAB	10/2/2022	00:16:02	Run_2_NG 0:00:09	0.29 BDL
RUNS_PRODUCTION_0589.LAB	10/2/2022	00:16:12	Run_2_NG 0:00:10	0.31 BDL
RUNS_PRODUCTION_0590.LAB	10/2/2022	00:16:21	Run_2_NG 0:00:09	0.17 BDL
RUNS_PRODUCTION_0591.LAB	10/2/2022	00:16:30	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0592.LAB	10/2/2022	00:16:40	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0593.LAB	10/2/2022	00:16:49	Run_2_NG 0:00:09	0.32 BDL
RUNS_PRODUCTION_0594.LAB	10/2/2022	00:16:59	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0595.LAB	10/2/2022	00:17:08	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0596.LAB	10/2/2022	00:17:18	Run_2_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0597.LAB	10/2/2022	00:17:27	Run_2_NG 0:00:09	0.17 BDL
RUNS_PRODUCTION_0598.LAB	10/2/2022	00:17:36	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0599.LAB	10/2/2022	00:17:46	Run_2_NG 0:00:10	0.27 BDL
RUNS_PRODUCTION_0600.LAB	10/2/2022	00:17:55	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0601.LAB	10/2/2022	00:18:05	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0602.LAB	10/2/2022	00:18:14	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0603.LAB	10/2/2022	00:18:24	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0604.LAB	10/2/2022	00:18:33	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0605.LAB	10/2/2022	00:18:42	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0606.LAB	10/2/2022	00:18:52	Run_2_NG 0:00:10	0.2 BDL
RUNS_PRODUCTION_0607.LAB	10/2/2022	00:19:01	Run_2_NG 0:00:09	0.28 BDL
RUNS_PRODUCTION_0608.LAB	10/2/2022	00:19:11	Run_2_NG 0:00:10	0.19 BDL



RUNS_PRODUCTION_0609.LAB 10/2/2022	00:19:20	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0610.LAB 10/2/2022	00:19:30	Run_2_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0611.LAB 10/2/2022	00:19:39	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0612.LAB 10/2/2022	00:19:48	Run_2_NG 0:00:09	0.18 BDL
RUNS_PRODUCTION_0613.LAB 10/2/2022	00:19:58	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0614.LAB 10/2/2022	00:20:07	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0615.LAB 10/2/2022	00:20:17	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0616.LAB 10/2/2022	00:20:26	Run_2_NG 0:00:09	0.33 BDL
RUNS_PRODUCTION_0617.LAB 10/2/2022	00:20:36	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0618.LAB 10/2/2022	00:20:45	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0619.LAB 10/2/2022	00:20:54	Run_2_NG 0:00:09	0.18 BDL
RUNS_PRODUCTION_0620.LAB 10/2/2022	00:21:04	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0621.LAB 10/2/2022	00:21:13	Run_2_NG 0:00:09	0.19 BDL
RUNS_PRODUCTION_0622.LAB 10/2/2022	00:21:23	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0623.LAB 10/2/2022	00:21:32	Run_2_NG 0:00:09	0.29 BDL
RUNS_PRODUCTION_0624.LAB 10/2/2022	00:21:42	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0625.LAB 10/2/2022	00:21:51	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0626.LAB 10/2/2022	00:22:01	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0627.LAB 10/2/2022	00:22:10	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0628.LAB 10/2/2022	00:22:19	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0629.LAB 10/2/2022	00:22:29	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0630.LAB 10/2/2022	00:22:38	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0631.LAB 10/2/2022	00:22:48	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0632.LAB 10/2/2022	00:22:57	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0633.LAB 10/2/2022	00:23:06	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0634.LAB 10/2/2022	00:23:16	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0635.LAB 10/2/2022	00:23:25	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0636.LAB 10/2/2022	00:23:35	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0637.LAB 10/2/2022	00:23:44	Run_2_NG 0:00:09	0.56 BDL
RUNS_PRODUCTION_0638.LAB 10/2/2022	00:23:54	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0639.LAB 10/2/2022	00:24:03	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0640.LAB 10/2/2022	00:24:12	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0641.LAB 10/2/2022	00:24:22	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0642.LAB 10/2/2022	00:24:31	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0643.LAB 10/2/2022	00:24:41	Run_2_NG 0:00:10	0.31 BDL
RUNS_PRODUCTION_0644.LAB 10/2/2022	00:24:50	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0645.LAB 10/2/2022	00:25:00	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0646.LAB 10/2/2022	00:25:09	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0647.LAB 10/2/2022	00:25:19	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0648.LAB 10/2/2022	00:25:28	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0649.LAB 10/2/2022	00:25:37	Run_2_NG 0:00:09	0.27 BDL
RUNS_PRODUCTION_0650.LAB 10/2/2022	00:25:47	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0651.LAB 10/2/2022	00:25:56	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0652.LAB 10/2/2022	00:26:06	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0653.LAB 10/2/2022	00:26:15	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0654.LAB 10/2/2022	00:26:25	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0655.LAB 10/2/2022	00:26:34	Run_2_NG 0:00:09	0.18 BDL
RUNS_PRODUCTION_0656.LAB 10/2/2022	00:26:43	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0657.LAB 10/2/2022	00:26:53	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0658.LAB 10/2/2022	00:27:02	Run_2_NG 0:00:09	0.21 BDL
RUNS_PRODUCTION_0659.LAB 10/2/2022	00:27:12	Run_2_NG 0:00:10	0.35 BDL
RUNS_PRODUCTION_0660.LAB 10/2/2022	00:27:21	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0661.LAB 10/2/2022	00:27:31	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0662.LAB 10/2/2022	00:27:40	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0663.LAB 10/2/2022	00:27:49	Run_2_NG 0:00:09	0.29 BDL
RUNS_PRODUCTION_0664.LAB 10/2/2022	00:27:59	Run_2_NG 0:00:10	0.08 BDL
RUNS_PRODUCTION_0665.LAB 10/2/2022	00:28:08	Run_2_NG 0:00:09	0.08 BDL
RUNS_PRODUCTION_0666.LAB 10/2/2022	00:28:18	Run_2_NG	



RUNS_PRODUCTION_0684.LAB	10/2/2022	00:31:07	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0685.LAB	10/2/2022	00:31:17	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0686.LAB	10/2/2022	00:31:26	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0687.LAB	10/2/2022	00:31:36	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0688.LAB	10/2/2022	00:31:45	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0689.LAB	10/2/2022	00:31:55	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0690.LAB	10/2/2022	00:32:04	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0691.LAB	10/2/2022	00:32:13	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0692.LAB	10/2/2022	00:32:23	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0693.LAB	10/2/2022	00:32:32	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0694.LAB	10/2/2022	00:32:42	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0695.LAB	10/2/2022	00:32:51	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0696.LAB	10/2/2022	00:33:01	Run_2_NG	0:00:10	0.08 BD
RUNS_PRODUCTION_0697.LAB	10/2/2022	00:33:10	Run_2_NG	0:00:09	0.23 BDL
RUNS_PRODUCTION_0698.LAB	10/2/2022	00:33:19	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0699.LAB	10/2/2022	00:33:29	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0700.LAB	10/2/2022	00:33:38	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0701.LAB	10/2/2022	00:33:48	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0702.LAB	10/2/2022	00:33:57	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0703.LAB	10/2/2022	00:34:07	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0704.LAB	10/2/2022	00:34:16	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0705.LAB	10/2/2022	00:34:26	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0706.LAB	10/2/2022	00:34:35	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0707.LAB	10/2/2022	00:34:44	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0708.LAB	10/2/2022	00:34:54	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0709.LAB	10/2/2022	00:35:03	Run_2_NG	0:00:09	0.22 BDL
RUNS_PRODUCTION_0710.LAB	10/2/2022	00:35:13	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0711.LAB	10/2/2022	00:35:22	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0712.LAB	10/2/2022	00:35:32	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0713.LAB	10/2/2022	00:35:41	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0714.LAB	10/2/2022	00:35:50	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0715.LAB	10/2/2022	00:36:00	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0716.LAB	10/2/2022	00:36:09	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0717.LAB	10/2/2022	00:36:19	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0718.LAB	10/2/2022	00:36:28	Run_2_NG	0:00:09	0.26 BDL
RUNS_PRODUCTION_0719.LAB	10/2/2022	00:36:38	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0720.LAB	10/2/2022	00:36:47	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0721.LAB	10/2/2022	00:36:56	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0722.LAB	10/2/2022	00:37:06	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0723.LAB	10/2/2022	00:37:15	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0724.LAB	10/2/2022	00:37:25	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0725.LAB	10/2/2022	00:37:34	Run_2_NG	0:00:09	0.25 BDL
RUNS_PRODUCTION_0726.LAB	10/2/2022	00:37:44	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0727.LAB	10/2/2022	00:37:53	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0728.LAB	10/2/2022	00:38:02	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0729.LAB	10/2/2022	00:38:12	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0730.LAB	10/2/2022	00:38:21	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0731.LAB	10/2/2022	00:38:31	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0732.LAB	10/2/2022	00:38:40	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0733.LAB	10/2/2022	00:38:50	Run_2_NG	0:00:10	0.08 BDL
RUNS_PRODUCTION_0734.LAB	10/2/2022	00:38:59	Run_2_NG	0:00:09	0.08 BDL
RUNS_PRODUCTION_0735.LAB	10/2/2022	00:39:08	Run_2_NG	0:00:09	



RUNS_PRODUCTION_0759.LAB 10/2/2022	00:42:55	Run_2_NG 0:00:09	0.08	BDL
RUNS_PRODUCTION_0760.LAB 10/2/2022	00:43:04	Run_2_NG 0:00:09	0.08	BDL
RUNS_PRODUCTION_0761.LAB 10/2/2022	00:43:14	Run_2_NG 0:00:10	0.08	BDL
RUNS_PRODUCTION_0762.LAB 10/2/2022	00:43:23	Run_2_NG 0:00:09	0.08	BDL
RUNS_PRODUCTION_0763.LAB 10/2/2022	00:43:33	Run_2_NG 0:00:10	0.08	BDL
RUNS_PRODUCTION_0764.LAB 10/2/2022	00:43:42	Run_2_NG 0:00:09	0.08	BDL
RUNS_PRODUCTION_0765.LAB 10/2/2022	00:43:51	Run_2_NG 0:00:09	0.2	BDL
RUNS_PRODUCTION_0766.LAB 10/2/2022	00:44:01	Run_2_NG 0:00:10	0.08	BDL
RUNS_PRODUCTION_0767.LAB 10/2/2022	00:44:10	Run_2_NG 0:00:09	0.08	BDL
RUNS_PRODUCTION_0768.LAB 10/2/2022	00:44:20	Run_2_NG 0:00:10	0.08	BDL
Run_2_NG_60min Averages			1.844	BDL
Run_2_NG_60min Maximum			65.89	NA
Run_2_NG_60min Minimum			0.08	NA
Validator	Ignacio Gallardo			
Reviewer	Chris Montez			
MDL			0.163	0.198
BDL (1/2 MDL)			0.081	0.099
Total time [min]	60			



# R3\_Run\_3\_NG\_rpt

Spectrum	Date	Time	Run number	Integration	Formaldehy	HCN 150c	BDL
RUNS_PRODUCTION_0783.LAB	10/2/2022	00:46:41	Run_3_NG	0:00:00	0.11	BDL	
RUNS_PRODUCTION_0784.LAB	10/2/2022	00:46:51	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0785.LAB	10/2/2022	00:47:00	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0786.LAB	10/2/2022	00:47:09	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0787.LAB	10/2/2022	00:47:19	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0788.LAB	10/2/2022	00:47:28	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0789.LAB	10/2/2022	00:47:38	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0790.LAB	10/2/2022	00:47:47	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0791.LAB	10/2/2022	00:47:57	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0792.LAB	10/2/2022	00:48:06	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0793.LAB	10/2/2022	00:48:15	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0794.LAB	10/2/2022	00:48:25	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0795.LAB	10/2/2022	00:48:34	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0796.LAB	10/2/2022	00:48:44	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0797.LAB	10/2/2022	00:48:53	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0798.LAB	10/2/2022	00:49:03	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0799.LAB	10/2/2022	00:49:12	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0800.LAB	10/2/2022	00:49:21	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0801.LAB	10/2/2022	00:49:31	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0802.LAB	10/2/2022	00:49:40	Run_3_NG	0:00:09	0.44	BDL	
RUNS_PRODUCTION_0803.LAB	10/2/2022	00:49:50	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0804.LAB	10/2/2022	00:49:59	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0805.LAB	10/2/2022	00:50:09	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0806.LAB	10/2/2022	00:50:18	Run_3_NG	0:00:09	0.35	BDL	
RUNS_PRODUCTION_0807.LAB	10/2/2022	00:50:27	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0808.LAB	10/2/2022	00:50:37	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0809.LAB	10/2/2022	00:50:46	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0810.LAB	10/2/2022	00:50:56	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0811.LAB	10/2/2022	00:51:05	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0812.LAB	10/2/2022	00:51:15	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0813.LAB	10/2/2022	00:51:24	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0814.LAB	10/2/2022	00:51:33	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0815.LAB	10/2/2022	00:51:43	Run_3_NG	0:00:10	0.28	BDL	
RUNS_PRODUCTION_0816.LAB	10/2/2022	00:51:52	Run_3_NG	0:00:09	0.4	BDL	
RUNS_PRODUCTION_0817.LAB	10/2/2022	00:52:02	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0818.LAB	10/2/2022	00:52:11	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0819.LAB	10/2/2022	00:52:21	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0820.LAB	10/2/2022	00:52:30	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0821.LAB	10/2/2022	00:52:40	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0822.LAB	10/2/2022	00:52:49	Run_3_NG	0:00:09	0.33	BDL	
RUNS_PRODUCTION_0823.LAB	10/2/2022	00:52:58	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0824.LAB	10/2/2022	00:53:08	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0825.LAB	10/2/2022	00:53:17	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0826.LAB	10/2/2022	00:53:27	Run_3_NG	0:00:10	0.11	BDL	
RUNS_PRODUCTION_0827.LAB	10/2/2022	00:53:36	Run_3_NG	0:00:09	0.11	BDL	
RUNS_PRODUCTION_0828.LAB	10/2/2022	00:53:45	Run_3_NG	0:00:09	0.11	BDL	



RUNS_PRODUCTION_0829.LAB	10/2/2022	00:53:55	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0830.LAB	10/2/2022	00:54:04	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0831.LAB	10/2/2022	00:54:14	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0832.LAB	10/2/2022	00:54:23	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0833.LAB	10/2/2022	00:54:33	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0834.LAB	10/2/2022	00:54:42	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0835.LAB	10/2/2022	00:54:51	Run_3_NG 0:00:09	0.26 BDL
RUNS_PRODUCTION_0836.LAB	10/2/2022	00:55:01	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0837.LAB	10/2/2022	00:55:10	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0838.LAB	10/2/2022	00:55:20	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0839.LAB	10/2/2022	00:55:29	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0840.LAB	10/2/2022	00:55:39	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0841.LAB	10/2/2022	00:55:48	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0842.LAB	10/2/2022	00:55:57	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0843.LAB	10/2/2022	00:56:07	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0844.LAB	10/2/2022	00:56:16	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0845.LAB	10/2/2022	00:56:26	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0846.LAB	10/2/2022	00:56:35	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0847.LAB	10/2/2022	00:56:45	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0848.LAB	10/2/2022	00:56:54	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0849.LAB	10/2/2022	00:57:03	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0850.LAB	10/2/2022	00:57:13	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0851.LAB	10/2/2022	00:57:22	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0852.LAB	10/2/2022	00:57:32	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0853.LAB	10/2/2022	00:57:41	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0854.LAB	10/2/2022	00:57:51	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0855.LAB	10/2/2022	00:58:00	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0856.LAB	10/2/2022	00:58:10	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0857.LAB	10/2/2022	00:58:19	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0858.LAB	10/2/2022	00:58:28	Run_3_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_0859.LAB	10/2/2022	00:58:38	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0860.LAB	10/2/2022	00:58:47	Run_3_NG 0:00:09	0.28 BDL
RUNS_PRODUCTION_0861.LAB	10/2/2022	00:58:57	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0862.LAB	10/2/2022	00:59:06	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0863.LAB	10/2/2022	00:59:16	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0864.LAB	10/2/2022	00:59:25	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0865.LAB	10/2/2022	00:59:34	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0866.LAB	10/2/2022	00:59:44	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0867.LAB	10/2/2022	00:59:53	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0868.LAB	10/2/2022	01:00:03	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0869.LAB	10/2/2022	01:00:12	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0870.LAB	10/2/2022	01:00:21	Run_3_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_0871.LAB	10/2/2022	01:00:31	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0872.LAB	10/2/2022	01:00:40	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0873.LAB	10/2/2022	01:00:50	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0874.LAB	10/2/2022	01:00:59	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0875.LAB	10/2/2022	01:01:09	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0876.LAB	10/2/2022	01:01:18	Run_3_NG 0:00:09	0.11 BDL



RUNS_PRODUCTION_0877.LAB	10/2/2022	01:01:28	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0878.LAB	10/2/2022	01:01:37	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0879.LAB	10/2/2022	01:01:46	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0880.LAB	10/2/2022	01:01:56	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0881.LAB	10/2/2022	01:02:05	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0882.LAB	10/2/2022	01:02:15	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0883.LAB	10/2/2022	01:02:24	Run_3_NG 0:00:09	0.27 BDL
RUNS_PRODUCTION_0884.LAB	10/2/2022	01:02:34	Run_3_NG 0:00:10	0.25 BDL
RUNS_PRODUCTION_0885.LAB	10/2/2022	01:02:43	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0886.LAB	10/2/2022	01:02:52	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0887.LAB	10/2/2022	01:03:02	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0888.LAB	10/2/2022	01:03:11	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0889.LAB	10/2/2022	01:03:21	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0890.LAB	10/2/2022	01:03:30	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0891.LAB	10/2/2022	01:03:40	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0892.LAB	10/2/2022	01:03:49	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0893.LAB	10/2/2022	01:03:58	Run_3_NG 0:00:09	0.34 BDL
RUNS_PRODUCTION_0894.LAB	10/2/2022	01:04:08	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0895.LAB	10/2/2022	01:04:17	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0896.LAB	10/2/2022	01:04:27	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0897.LAB	10/2/2022	01:04:36	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0898.LAB	10/2/2022	01:04:46	Run_3_NG 0:00:10	0.31 BDL
RUNS_PRODUCTION_0899.LAB	10/2/2022	01:04:55	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0900.LAB	10/2/2022	01:05:04	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0901.LAB	10/2/2022	01:05:14	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0902.LAB	10/2/2022	01:05:23	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0903.LAB	10/2/2022	01:05:33	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0904.LAB	10/2/2022	01:05:42	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0905.LAB	10/2/2022	01:05:51	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0906.LAB	10/2/2022	01:06:01	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0907.LAB	10/2/2022	01:06:10	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0908.LAB	10/2/2022	01:06:20	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0909.LAB	10/2/2022	01:06:29	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0910.LAB	10/2/2022	01:06:39	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0911.LAB	10/2/2022	01:06:48	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0912.LAB	10/2/2022	01:06:58	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0913.LAB	10/2/2022	01:07:07	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0914.LAB	10/2/2022	01:07:16	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0915.LAB	10/2/2022	01:07:26	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0916.LAB	10/2/2022	01:07:35	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0917.LAB	10/2/2022	01:07:45	Run_3_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0918.LAB	10/2/2022	01:07:54	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0919.LAB	10/2/2022	01:08:04	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0920.LAB	10/2/2022	01:08:13	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0921.LAB	10/2/2022	01:08:22	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0922.LAB	10/2/2022	01:08:32	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0923.LAB	10/2/2022	01:08:41	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0924.LAB	10/2/2022	01:08:51	Run_3_NG 0:00:10	0.11 BDL



RUNS_PRODUCTION_0925.LAB	10/2/2022	01:09:00	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0926.LAB	10/2/2022	01:09:10	Run_3_NG 0:00:10	0.25 BDL
RUNS_PRODUCTION_0927.LAB	10/2/2022	01:09:19	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0928.LAB	10/2/2022	01:09:28	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0929.LAB	10/2/2022	01:09:38	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0930.LAB	10/2/2022	01:09:48	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0931.LAB	10/2/2022	01:09:57	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0932.LAB	10/2/2022	01:10:06	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0933.LAB	10/2/2022	01:10:16	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0934.LAB	10/2/2022	01:10:25	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0935.LAB	10/2/2022	01:10:34	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0936.LAB	10/2/2022	01:10:44	Run_3_NG 0:00:10	0.28 BDL
RUNS_PRODUCTION_0937.LAB	10/2/2022	01:10:53	Run_3_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_0938.LAB	10/2/2022	01:11:03	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0939.LAB	10/2/2022	01:11:12	Run_3_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_0940.LAB	10/2/2022	01:11:22	Run_3_NG 0:00:10	0.3 BDL
RUNS_PRODUCTION_0941.LAB	10/2/2022	01:11:31	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0942.LAB	10/2/2022	01:11:40	Run_3_NG 0:00:09	0.29 BDL
RUNS_PRODUCTION_0943.LAB	10/2/2022	01:11:50	Run_3_NG 0:00:10	0.45 BDL
RUNS_PRODUCTION_0944.LAB	10/2/2022	01:11:59	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0945.LAB	10/2/2022	01:12:09	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0946.LAB	10/2/2022	01:12:18	Run_3_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0947.LAB	10/2/2022	01:12:28	Run_3_NG 0:00:10	0.81 BDL
RUNS_PRODUCTION_0948.LAB	10/2/2022	01:12:37	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0949.LAB	10/2/2022	01:12:46	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0950.LAB	10/2/2022	01:12:56	Run_3_NG 0:00:10	0.29 BDL
RUNS_PRODUCTION_0951.LAB	10/2/2022	01:13:05	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0952.LAB	10/2/2022	01:13:15	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0953.LAB	10/2/2022	01:13:24	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0954.LAB	10/2/2022	01:13:34	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0955.LAB	10/2/2022	01:13:43	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0956.LAB	10/2/2022	01:13:52	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0957.LAB	10/2/2022	01:14:02	Run_3_NG 0:00:10	0.32 BDL
RUNS_PRODUCTION_0958.LAB	10/2/2022	01:14:11	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0959.LAB	10/2/2022	01:14:21	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0960.LAB	10/2/2022	01:14:30	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0961.LAB	10/2/2022	01:14:40	Run_3_NG 0:00:10	0.4 BDL
RUNS_PRODUCTION_0962.LAB	10/2/2022	01:14:49	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0963.LAB	10/2/2022	01:14:58	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0964.LAB	10/2/2022	01:15:08	Run_3_NG 0:00:10	0.24 BDL
RUNS_PRODUCTION_0965.LAB	10/2/2022	01:15:17	Run_3_NG 0:00:09	0.41 BDL
RUNS_PRODUCTION_0966.LAB	10/2/2022	01:15:27	Run_3_NG 0:00:10	0.37 BDL
RUNS_PRODUCTION_0967.LAB	10/2/2022	01:15:36	Run_3_NG 0:00:09	0.25 BDL
RUNS_PRODUCTION_0968.LAB	10/2/2022	01:15:46	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0969.LAB	10/2/2022	01:15:55	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0970.LAB	10/2/2022	01:16:04	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0971.LAB	10/2/2022	01:16:14	Run_3_NG 0:00:10	0.55 BDL
RUNS_PRODUCTION_0972.LAB	10/2/2022	01:16:23	Run_3_NG 0:00:09	0.39 BDL



RUNS_PRODUCTION_0973.LAB	10/2/2022	01:16:33	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0974.LAB	10/2/2022	01:16:42	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0975.LAB	10/2/2022	01:16:52	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0976.LAB	10/2/2022	01:17:01	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0977.LAB	10/2/2022	01:17:10	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0978.LAB	10/2/2022	01:17:20	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0979.LAB	10/2/2022	01:17:29	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0980.LAB	10/2/2022	01:17:39	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0981.LAB	10/2/2022	01:17:48	Run_3_NG 0:00:09	0.34 BDL
RUNS_PRODUCTION_0982.LAB	10/2/2022	01:17:58	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0983.LAB	10/2/2022	01:18:07	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0984.LAB	10/2/2022	01:18:16	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0985.LAB	10/2/2022	01:18:26	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0986.LAB	10/2/2022	01:18:35	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0987.LAB	10/2/2022	01:18:45	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0988.LAB	10/2/2022	01:18:54	Run_3_NG 0:00:09	0.28 BDL
RUNS_PRODUCTION_0989.LAB	10/2/2022	01:19:04	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0990.LAB	10/2/2022	01:19:13	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0991.LAB	10/2/2022	01:19:22	Run_3_NG 0:00:09	0.34 BDL
RUNS_PRODUCTION_0992.LAB	10/2/2022	01:19:32	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0993.LAB	10/2/2022	01:19:41	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0994.LAB	10/2/2022	01:19:51	Run_3_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_0995.LAB	10/2/2022	01:20:00	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0996.LAB	10/2/2022	01:20:10	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0997.LAB	10/2/2022	01:20:19	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_0998.LAB	10/2/2022	01:20:29	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_0999.LAB	10/2/2022	01:20:38	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1000.LAB	10/2/2022	01:20:47	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1001.LAB	10/2/2022	01:20:57	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1002.LAB	10/2/2022	01:21:06	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1003.LAB	10/2/2022	01:21:16	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1004.LAB	10/2/2022	01:21:25	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1005.LAB	10/2/2022	01:21:35	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1006.LAB	10/2/2022	01:21:44	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1007.LAB	10/2/2022	01:21:54	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1008.LAB	10/2/2022	01:22:03	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1009.LAB	10/2/2022	01:22:12	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1010.LAB	10/2/2022	01:22:22	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1011.LAB	10/2/2022	01:22:31	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1012.LAB	10/2/2022	01:22:40	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1013.LAB	10/2/2022	01:22:50	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1014.LAB	10/2/2022	01:22:59	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1015.LAB	10/2/2022	01:23:09	Run_3_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_1016.LAB	10/2/2022	01:23:18	Run_3_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_1017.LAB	10/2/2022	01:23:28	Run_3_NG 0:00:10	0.33 BDL
RUNS_PRODUCTION_1018.LAB	10/2/2022	01:23:37	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1019.LAB	10/2/2022	01:23:46	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1020.LAB	10/2/2022	01:23:56	Run_3_NG 0:00:10	0.11 BDL



RUNS_PRODUCTION_1021.LAB	10/2/2022	01:24:05	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1022.LAB	10/2/2022	01:24:15	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1023.LAB	10/2/2022	01:24:24	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1024.LAB	10/2/2022	01:24:34	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1025.LAB	10/2/2022	01:24:43	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1026.LAB	10/2/2022	01:24:53	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1027.LAB	10/2/2022	01:25:02	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1028.LAB	10/2/2022	01:25:11	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1029.LAB	10/2/2022	01:25:21	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1030.LAB	10/2/2022	01:25:30	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1031.LAB	10/2/2022	01:25:40	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1032.LAB	10/2/2022	01:25:49	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1033.LAB	10/2/2022	01:25:58	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1034.LAB	10/2/2022	01:26:08	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1035.LAB	10/2/2022	01:26:18	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1036.LAB	10/2/2022	01:26:27	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1037.LAB	10/2/2022	01:26:36	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1038.LAB	10/2/2022	01:26:46	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1039.LAB	10/2/2022	01:26:55	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1040.LAB	10/2/2022	01:27:23	Run_3_NG 0:00:28	0.11 BDL
RUNS_PRODUCTION_1041.LAB	10/2/2022	01:27:32	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1042.LAB	10/2/2022	01:27:42	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1043.LAB	10/2/2022	01:27:51	Run_3_NG 0:00:09	0.49 BDL
RUNS_PRODUCTION_1044.LAB	10/2/2022	01:28:01	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1045.LAB	10/2/2022	01:28:10	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1046.LAB	10/2/2022	01:28:19	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1047.LAB	10/2/2022	01:28:29	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1048.LAB	10/2/2022	01:28:38	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1049.LAB	10/2/2022	01:28:48	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1050.LAB	10/2/2022	01:28:57	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1051.LAB	10/2/2022	01:29:07	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1052.LAB	10/2/2022	01:29:16	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1053.LAB	10/2/2022	01:29:25	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1054.LAB	10/2/2022	01:29:35	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1055.LAB	10/2/2022	01:29:45	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1056.LAB	10/2/2022	01:29:54	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1057.LAB	10/2/2022	01:30:03	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1058.LAB	10/2/2022	01:30:13	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1059.LAB	10/2/2022	01:30:22	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1060.LAB	10/2/2022	01:30:31	Run_3_NG 0:00:09	0.22 BDL
RUNS_PRODUCTION_1061.LAB	10/2/2022	01:30:41	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1062.LAB	10/2/2022	01:30:50	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1063.LAB	10/2/2022	01:31:00	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1064.LAB	10/2/2022	01:31:09	Run_3_NG 0:00:09	0.23 BDL
RUNS_PRODUCTION_1065.LAB	10/2/2022	01:31:19	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1066.LAB	10/2/2022	01:31:28	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1067.LAB	10/2/2022	01:31:37	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1068.LAB	10/2/2022	01:31:47	Run_3_NG 0:00:10	0.11 BDL



RUNS_PRODUCTION_1069.LAB	10/2/2022	01:31:56	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1070.LAB	10/2/2022	01:32:06	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1071.LAB	10/2/2022	01:32:15	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1072.LAB	10/2/2022	01:32:25	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1073.LAB	10/2/2022	01:32:34	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1074.LAB	10/2/2022	01:32:43	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1075.LAB	10/2/2022	01:32:53	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1076.LAB	10/2/2022	01:33:02	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1077.LAB	10/2/2022	01:33:12	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1078.LAB	10/2/2022	01:33:21	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1079.LAB	10/2/2022	01:33:31	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1080.LAB	10/2/2022	01:33:40	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1081.LAB	10/2/2022	01:33:49	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1082.LAB	10/2/2022	01:33:59	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1083.LAB	10/2/2022	01:34:08	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1084.LAB	10/2/2022	01:34:18	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1085.LAB	10/2/2022	01:34:27	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1086.LAB	10/2/2022	01:34:36	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1087.LAB	10/2/2022	01:34:46	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1088.LAB	10/2/2022	01:34:55	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1089.LAB	10/2/2022	01:35:05	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1090.LAB	10/2/2022	01:35:14	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1091.LAB	10/2/2022	01:35:24	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1092.LAB	10/2/2022	01:35:33	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1093.LAB	10/2/2022	01:35:43	Run_3_NG 0:00:10	0.36 BDL
RUNS_PRODUCTION_1094.LAB	10/2/2022	01:35:52	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1095.LAB	10/2/2022	01:36:01	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1096.LAB	10/2/2022	01:36:11	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1097.LAB	10/2/2022	01:36:20	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1098.LAB	10/2/2022	01:36:30	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1099.LAB	10/2/2022	01:36:39	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1100.LAB	10/2/2022	01:36:48	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1101.LAB	10/2/2022	01:36:58	Run_3_NG 0:00:10	0.23 BDL
RUNS_PRODUCTION_1102.LAB	10/2/2022	01:37:07	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1103.LAB	10/2/2022	01:37:17	Run_3_NG 0:00:10	0.24 BDL
RUNS_PRODUCTION_1104.LAB	10/2/2022	01:37:26	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1105.LAB	10/2/2022	01:37:36	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1106.LAB	10/2/2022	01:37:45	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1107.LAB	10/2/2022	01:37:55	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1108.LAB	10/2/2022	01:38:04	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1109.LAB	10/2/2022	01:38:13	Run_3_NG 0:00:09	0.41 BDL
RUNS_PRODUCTION_1110.LAB	10/2/2022	01:38:23	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1111.LAB	10/2/2022	01:38:32	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1112.LAB	10/2/2022	01:38:42	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1113.LAB	10/2/2022	01:38:51	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1114.LAB	10/2/2022	01:39:01	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1115.LAB	10/2/2022	01:39:10	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1116.LAB	10/2/2022	01:39:20	Run_3_NG 0:00:10	0.11 BDL



RUNS_PRODUCTION_1117.LAB	10/2/2022	01:39:29	Run_3_NG 0:00:09	0.3 BDL
RUNS_PRODUCTION_1118.LAB	10/2/2022	01:39:38	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1119.LAB	10/2/2022	01:39:48	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1120.LAB	10/2/2022	01:39:57	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1121.LAB	10/2/2022	01:40:06	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1122.LAB	10/2/2022	01:40:16	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1123.LAB	10/2/2022	01:40:25	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1124.LAB	10/2/2022	01:40:35	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1125.LAB	10/2/2022	01:40:44	Run_3_NG 0:00:09	0.43 BDL
RUNS_PRODUCTION_1126.LAB	10/2/2022	01:40:54	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1127.LAB	10/2/2022	01:41:03	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1128.LAB	10/2/2022	01:41:13	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1129.LAB	10/2/2022	01:41:22	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1130.LAB	10/2/2022	01:41:31	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1131.LAB	10/2/2022	01:41:41	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1132.LAB	10/2/2022	01:41:50	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1133.LAB	10/2/2022	01:42:00	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1134.LAB	10/2/2022	01:42:09	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1135.LAB	10/2/2022	01:42:19	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1136.LAB	10/2/2022	01:42:28	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1137.LAB	10/2/2022	01:42:37	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1138.LAB	10/2/2022	01:42:47	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1139.LAB	10/2/2022	01:42:56	Run_3_NG 0:00:09	0.24 BDL
RUNS_PRODUCTION_1140.LAB	10/2/2022	01:43:06	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1141.LAB	10/2/2022	01:43:15	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1142.LAB	10/2/2022	01:43:24	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1143.LAB	10/2/2022	01:43:34	Run_3_NG 0:00:10	0.3 BDL
RUNS_PRODUCTION_1144.LAB	10/2/2022	01:43:43	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1145.LAB	10/2/2022	01:43:53	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1146.LAB	10/2/2022	01:44:02	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1147.LAB	10/2/2022	01:44:12	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1148.LAB	10/2/2022	01:44:21	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1149.LAB	10/2/2022	01:44:30	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1150.LAB	10/2/2022	01:44:40	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1151.LAB	10/2/2022	01:44:49	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1152.LAB	10/2/2022	01:44:59	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1153.LAB	10/2/2022	01:45:08	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1154.LAB	10/2/2022	01:45:18	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1155.LAB	10/2/2022	01:45:27	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1156.LAB	10/2/2022	01:45:37	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1157.LAB	10/2/2022	01:45:46	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1158.LAB	10/2/2022	01:45:55	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1159.LAB	10/2/2022	01:46:05	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1160.LAB	10/2/2022	01:46:14	Run_3_NG 0:00:09	0.22 BDL
RUNS_PRODUCTION_1161.LAB	10/2/2022	01:46:24	Run_3_NG 0:00:10	0.11 BDL
RUNS_PRODUCTION_1162.LAB	10/2/2022	01:46:33	Run_3_NG 0:00:09	0.11 BDL
RUNS_PRODUCTION_1163.LAB	10/2/2022	01:46:43	Run_3_NG 0:00:10	0.11 BDL



Run_3_NG_60min Averages			0.138 BDL
Run_3_NG_60min Maximum			0.81 NA
Run_3_NG_60min Minimum			0.11 NA
Validator	Ignacio Gallardo		
Reviewer	Chris Montez		
MDL			0.214 0.28
BDL (1/2 MDL)			0.107 0.14
Total time [min]	60		



# DL\_CTS\_pretest\_NG\_rpt

Spectrum	Date	Time	Run number	Integration	Ethylene to	Methane to	R22 150C_BDL
CTS_PRETEST_0029.LAB	9/30/2022	14:08:54	CTS_pretest0029	0:00:10	10.11	9.49	11.09
CTS_PRETEST_0030.LAB	9/30/2022	14:09:04	CTS_pretest0030	0:00:10	10.13	9.62	11.16
CTS_PRETEST_0031.LAB	9/30/2022	14:09:13	CTS_pretest0031	0:00:09	10.13	9.4	11.16
CTS_PRETEST_0032.LAB	9/30/2022	14:09:22	CTS_pretest0032	0:00:09	10.12	9.51	11.17
CTS_PRETEST_0033.LAB	9/30/2022	14:09:31	CTS_pretest0033	0:00:09	10.07	9.26	11.16
CTS_PRETEST_0034.LAB	9/30/2022	14:09:41	CTS_pretest0034	0:00:10	10.14	9.28	11.15
CTS_PRETEST_0035.LAB	9/30/2022	14:09:50	CTS_pretest0035	0:00:09	10.16	9.61	11.17
CTS_PRETEST_0036.LAB	9/30/2022	14:10:00	CTS_pretest0036	0:00:10	10.25	9.55	11.16
CTS_PRETEST_0037.LAB	9/30/2022	14:10:09	CTS_pretest0037	0:00:09	10.21	9.3	11.18
CTS_PRETEST_0038.LAB	9/30/2022	14:10:19	CTS_pretest0038	0:00:10	10.07	9.43	11.16
CTS_PRETEST_0039.LAB	9/30/2022	14:10:28	CTS_pretest0039	0:00:09	10.03	9.48	11.18
CTS_PRETEST_0040.LAB	9/30/2022	14:10:37	CTS_pretest0040	0:00:09	10.16	9.45	11.18
CTS_PRETEST_0041.LAB	9/30/2022	14:10:47	CTS_pretest0041	0:00:10	10	9.44	11.2
CTS_PRETEST_0042.LAB	9/30/2022	14:10:56	CTS_pretest0042	0:00:09	10.09	9.4	11.2
CTS_PRETEST_0043.LAB	9/30/2022	14:11:06	CTS_pretest0043	0:00:10	10.16	9.53	11.18
CTS_PRETEST_0044.LAB	9/30/2022	14:11:15	CTS_pretest0044	0:00:09	10.15	9.5	11.2
CTS_PRETEST_0045.LAB	9/30/2022	14:11:25	CTS_pretest0045	0:00:10	10.02	9.32	11.17
CTS_PRETEST_0046.LAB	9/30/2022	14:11:34	CTS_pretest0046	0:00:09	10.11	9.55	11.18
CTS_PRETEST_0047.LAB	9/30/2022	14:11:44	CTS_pretest0047	0:00:10	10.05	9.54	11.17
CTS_PRETEST_0048.LAB	9/30/2022	14:11:53	CTS_pretest0048	0:00:09	10.09	9.52	11.17
CTS_PRETEST_0049.LAB	9/30/2022	14:12:02	CTS_pretest0049	0:00:09	10.07	9.45	11.18
CTS_PRETEST_0050.LAB	9/30/2022	14:12:12	CTS_pretest0050	0:00:10	10.16	9.42	11.18
CTS_PRETEST_0051.LAB	9/30/2022	14:12:21	CTS_pretest0051	0:00:09	10.16	9.53	11.18
CTS_PRETEST_0052.LAB	9/30/2022	14:12:31	CTS_pretest0052	0:00:10	10.05	9.57	11.17
CTS_PRETEST_0053.LAB	9/30/2022	14:12:40	CTS_pretest0053	0:00:09	9.98	9.51	11.18
CTS_PRETEST_0054.LAB	9/30/2022	14:12:50	CTS_pretest0054	0:00:10	10.17	9.56	11.16
CTS_PRETEST_0055.LAB	9/30/2022	14:12:59	CTS_pretest0055	0:00:09	10.1	9.49	11.17
CTS_PRETEST_0056.LAB	9/30/2022	14:13:09	CTS_pretest0056	0:00:10	10.05	9.36	11.16
CTS_PRETEST_0057.LAB	9/30/2022	14:13:18	CTS_pretest0057	0:00:09	10.06	9.66	11.15
CTS_PRETEST_0058.LAB	9/30/2022	14:13:27	CTS_pretest0058	0:00:09	10.05	9.41	11.16
CTS_PRETEST_0059.LAB	9/30/2022	14:13:37	CTS_pretest0059	0:00:10	10.11	9.23	11.19
CTS_PRETEST_0060.LAB	9/30/2022	14:13:46	CTS_pretest0060	0:00:09	10.08	9.44	11.17
CTS_PRETEST_0061.LAB	9/30/2022	14:13:56	CTS_pretest0061	0:00:10	10.01	9.62	11.17

CTS\_pretest\_NG Averages

10.1 9.47 11.17

CTS\_pretest\_NG % Deviation

0.03 0.028 0.024

CTS\_pretest\_NG Pass/Fail

PASS PASS PASS

Cylinder Concentration Values

Ethylene to 430 ppm 9.806 ppm

R22 150C\_BDL 11.45 ppm

Methane to 1310 ppm 9.740 ppm



# DI\_formal\_pretest\_NG\_rpt

Spectrum	Date	Time	Run numbr	Integration	Formaldehyde 150c_BDL	SF6 to 112 ppmm 150C_BDL
FORMALDEHYDE_PRETEST_0029.LAB 9/30/2022	15:21:08	formal_pre 0:00:10	31.01	5.43		
FORMALDEHYDE_PRETEST_0030.LAB 9/30/2022	15:21:17	formal_pre 0:00:09	30.84	5.44		
FORMALDEHYDE_PRETEST_0031.LAB 9/30/2022	15:21:27	formal_pre 0:00:10	30.8	5.42		
FORMALDEHYDE_PRETEST_0032.LAB 9/30/2022	15:21:36	formal_pre 0:00:09	30.42	5.41		
FORMALDEHYDE_PRETEST_0033.LAB 9/30/2022	15:21:46	formal_pre 0:00:10	31.05	5.41		
FORMALDEHYDE_PRETEST_0034.LAB 9/30/2022	15:21:55	formal_pre 0:00:09	30.61	5.41		
FORMALDEHYDE_PRETEST_0035.LAB 9/30/2022	15:22:04	formal_pre 0:00:09	31.34	5.59		
FORMALDEHYDE_PRETEST_0036.LAB 9/30/2022	15:22:14	formal_pre 0:00:10	30.84	5.53		
FORMALDEHYDE_PRETEST_0037.LAB 9/30/2022	15:22:23	formal_pre 0:00:09	30.62	5.5		
FORMALDEHYDE_PRETEST_0038.LAB 9/30/2022	15:22:33	formal_pre 0:00:10	30.46	5.48		
FORMALDEHYDE_PRETEST_0039.LAB 9/30/2022	15:22:42	formal_pre 0:00:09	30.64	5.48		
FORMALDEHYDE_PRETEST_0040.LAB 9/30/2022	15:22:51	formal_pre 0:00:09	30.56	5.5		
FORMALDEHYDE_PRETEST_0041.LAB 9/30/2022	15:23:01	formal_pre 0:00:10	31.96	5.85		
FORMALDEHYDE_PRETEST_0042.LAB 9/30/2022	15:23:10	formal_pre 0:00:09	31.87	5.93		
FORMALDEHYDE_PRETEST_0043.LAB 9/30/2022	15:23:20	formal_pre 0:00:10	31.27	5.93		
FORMALDEHYDE_PRETEST_0044.LAB 9/30/2022	15:23:29	formal_pre 0:00:09	31.22	5.91		
FORMALDEHYDE_PRETEST_0045.LAB 9/30/2022	15:23:39	formal_pre 0:00:10	30.66	5.91		
FORMALDEHYDE_PRETEST_0046.LAB 9/30/2022	15:28:07	formal_pre 0:04:28	26.24	5.13		
FORMALDEHYDE_PRETEST_0047.LAB 9/30/2022	15:28:16	formal_pre 0:00:09	29.24	5.24		
FORMALDEHYDE_PRETEST_0048.LAB 9/30/2022	15:28:25	formal_pre 0:00:09	30.11	5.24		
FORMALDEHYDE_PRETEST_0049.LAB 9/30/2022	15:28:35	formal_pre 0:00:10	30.43	5.24		
FORMALDEHYDE_PRETEST_0050.LAB 9/30/2022	15:28:44	formal_pre 0:00:09	30.75	5.24		
FORMALDEHYDE_PRETEST_0051.LAB 9/30/2022	15:28:54	formal_pre 0:00:10	30.51	5.23		
FORMALDEHYDE_PRETEST_0052.LAB 9/30/2022	15:29:03	formal_pre 0:00:09	30.03	5.25		
FORMALDEHYDE_PRETEST_0053.LAB 9/30/2022	15:29:12	formal_pre 0:00:09	31.42	5.27		
FORMALDEHYDE_PRETEST_0054.LAB 9/30/2022	15:29:22	formal_pre 0:00:10	30.39	5.21		
FORMALDEHYDE_PRETEST_0055.LAB 9/30/2022	15:29:31	formal_pre 0:00:09	30.57	5.22		
FORMALDEHYDE_PRETEST_0056.LAB 9/30/2022	15:29:41	formal_pre 0:00:10	31.13	5.22		
FORMALDEHYDE_PRETEST_0057.LAB 9/30/2022	15:29:50	formal_pre 0:00:09	31.29	5.23		
FORMALDEHYDE_PRETEST_0058.LAB 9/30/2022	15:30:00	formal_pre 0:00:10	31.35	5.24		
FORMALDEHYDE_PRETEST_0059.LAB 9/30/2022	15:30:09	formal_pre 0:00:09	30.82	5.25		
FORMALDEHYDE_PRETEST_0060.LAB 9/30/2022	15:30:19	formal_pre 0:00:10	30.74	5.23		
FORMALDEHYDE_PRETEST_0061.LAB 9/30/2022	15:30:28	formal_pre 0:00:09	31.4	5.23		
FORMALDEHYDE_PRETEST_0062.LAB 9/30/2022	15:30:37	formal_pre 0:00:09	31.17	5.24		
FORMALDEHYDE_PRETEST_0063.LAB 9/30/2022	15:30:47	formal_pre 0:00:10	31.52	5.24		
FORMALDEHYDE_PRETEST_0064.LAB 9/30/2022	15:30:56	formal_pre 0:00:09	31.29	5.24		
FORMALDEHYDE_PRETEST_0065.LAB 9/30/2022	15:31:06	formal_pre 0:00:10	31.03	5.24		
FORMALDEHYDE_PRETEST_0066.LAB 9/30/2022	15:31:15	formal_pre 0:00:09	30.96	5.24		
FORMALDEHYDE_PRETEST_0067.LAB 9/30/2022	15:31:24	formal_pre 0:00:09	31.24	5.24		
FORMALDEHYDE_PRETEST_0068.LAB 9/30/2022	15:31:34	formal_pre 0:00:10	31.01	5.23		
FORMALDEHYDE_PRETEST_0069.LAB 9/30/2022	15:31:43	formal_pre 0:00:09	31.16	5.23		
FORMALDEHYDE_PRETEST_0070.LAB 9/30/2022	15:31:53	formal_pre 0:00:10	30.99	5.23		
FORMALDEHYDE_PRETEST_0071.LAB 9/30/2022	15:32:02	formal_pre 0:00:09	31.21	5.23		
FORMALDEHYDE_PRETEST_0072.LAB 9/30/2022	15:32:12	formal_pre 0:00:10	31.22	5.24		
FORMALDEHYDE_PRETEST_0073.LAB 9/30/2022	15:32:21	formal_pre 0:00:09	31.38	5.22		
FORMALDEHYDE_PRETEST_0074.LAB 9/30/2022	15:32:31	formal_pre 0:00:10	31.09	5.22		
FORMALDEHYDE_PRETEST_0075.LAB 9/30/2022	15:32:40	formal_pre 0:00:09	31.21	5.23		
FORMALDEHYDE_PRETEST_0076.LAB 9/30/2022	15:32:49	formal_pre 0:00:09	31.15	5.22		
FORMALDEHYDE_PRETEST_0077.LAB 9/30/2022	15:32:59	formal_pre 0:00:10	31.15	5.23		
FORMALDEHYDE_PRETEST_0078.LAB 9/30/2022	15:33:08	formal_pre 0:00:09	31.16	5.22		
FORMALDEHYDE_PRETEST_0079.LAB 9/30/2022	15:33:18	formal_pre 0:00:10	31.59	5.27		
FORMALDEHYDE_PRETEST_0080.LAB 9/30/2022	15:33:27	formal_pre 0:00:09	31.42	5.23		
FORMALDEHYDE_PRETEST_0081.LAB 9/30/2022	15:33:36	formal_pre 0:00:09	31.46	5.23		
FORMALDEHYDE_PRETEST_0082.LAB 9/30/2022	15:33:46	formal_pre 0:00:10	31.35	5.23		
FORMALDEHYDE_PRETEST_0083.LAB 9/30/2022	15:33:55	formal_pre 0:00:09	31.36	5.23		
FORMALDEHYDE_PRETEST_0084.LAB 9/30/2022	15:34:05	formal_pre 0:00:10	31.31	5.24		
FORMALDEHYDE_PRETEST_0085.LAB 9/30/2022	15:34:14	formal_pre 0:00:09	31.26	5.23		
FORMALDEHYDE_PRETEST_0086.LAB 9/30/2022	15:34:24	formal_pre 0:00:10	31.63	5.24		
FORMALDEHYDE_PRETEST_0087.LAB 9/30/2022	15:34:33	formal_pre 0:00:09	31.45	5.24		
FORMALDEHYDE_PRETEST_0088.LAB 9/30/2022	15:34:43	formal_pre 0:00:10	31.23	5.24		
FORMALDEHYDE_PRETEST_0089.LAB 9/30/2022	15:34:52	formal_pre 0:00:09	31.42	5.25		
FORMALDEHYDE_PRETEST_0090.LAB 9/30/2022	15:35:01	formal_pre 0:00:09	31.07	5.25		
FORMALDEHYDE_PRETEST_0091.LAB 9/30/2022	15:35:11	formal_pre 0:00:10	31.34	5.24		
FORMALDEHYDE_PRETEST_0092.LAB 9/30/2022	15:35:20	formal_pre 0:00:09	31.32	5.24		
FORMALDEHYDE_PRETEST_0093.LAB 9/30/2022	15:35:30	formal_pre 0:00:10	31.65	5.24		
FORMALDEHYDE_PRETEST_0094.LAB 9/30/2022	15:35:39	formal_pre 0:00:09	31.7	5.24		
FORMALDEHYDE_PRETEST_0095.LAB 9/30/2022	15:35:49	formal_pre 0:00:10	31.48	5.24		
FORMALDEHYDE_PRETEST_0096.LAB 9/30/2022	15:35:58	formal_pre 0:00:09	31.61	5.24		
FORMALDEHYDE_PRETEST_0097.LAB 9/30/2022	15:36:07	formal_pre 0:00:09	31.32	5.23		
FORMALDEHYDE_PRETEST_0098.LAB 9/30/2022	15:36:17	formal_pre 0:00:10	31.69	5.23		
FORMALDEHYDE_PRETEST_0099.LAB 9/30/2022	15:36:26	formal_pre 0:00:09	31.36	5.23		
FORMALDEHYDE_PRETEST_0100.LAB 9/30/2022	15:36:36	formal_pre 0:00:10	31.2	5.23		
FORMALDEHYDE_PRETEST_0101.LAB 9/30/2022	15:36:45	formal_pre 0:00:09	31.22	5.22		
FORMALDEHYDE_PRETEST_0102.LAB 9/30/2022	15:36:54	formal_pre 0:00:09	31.25	5.22		
FORMALDEHYDE_PRETEST_0103.LAB 9/30/2022	15:37:04	formal_pre 0:00:10	31.37	5.22		
FORMALDEHYDE_PRETEST_0104.LAB 9/30/2022	15:37:13	formal_pre 0:00:09	31.62	5.23		
FORMALDEHYDE_PRETEST_0105.LAB 9/30/2022	15:37:23	formal_pre 0:00:10	31.24	5.23		
FORMALDEHYDE_PRETEST_0106.LAB 9/30/2022	15:37:32	formal_pre 0:00:09	31.31	5.24		
FORMALDEHYDE_PRETEST_0107.LAB 9/30/2022	15:37:42	formal_pre 0:00:10	31.19	5.24		

formal_pretest_NG Averages			31.05	5.31
formal_pretest_NG % Deviation			0.085	0.069
formal_pretest_NG Pass/Fail		PASS		PASS
Cylinder Concentration Values				
Formaldehyde 150c_BDL	33.92	ppm		
SF6 to 112 ppmm 150C_BDL	4.965	ppm		



# DI\_hcn\_pretest\_NG\_rpt

Spectrum	Date	Time	Run number	Integration	HCN 150c_BDL
HCN_PRETEST_0011.LAB	9/30/2022	14:53:08	hcn_pretest	0:00:10	9.24
HCN_PRETEST_0012.LAB	9/30/2022	14:53:17	hcn_pretest	0:00:09	9
HCN_PRETEST_0013.LAB	9/30/2022	14:53:27	hcn_pretest	0:00:10	8.99
HCN_PRETEST_0014.LAB	9/30/2022	14:53:36	hcn_pretest	0:00:09	8.98
HCN_PRETEST_0015.LAB	9/30/2022	14:53:46	hcn_pretest	0:00:10	9.03
HCN_PRETEST_0016.LAB	9/30/2022	14:53:55	hcn_pretest	0:00:09	8.9
HCN_PRETEST_0017.LAB	9/30/2022	14:54:04	hcn_pretest	0:00:09	8.92
HCN_PRETEST_0018.LAB	9/30/2022	14:54:14	hcn_pretest	0:00:10	9.24
HCN_PRETEST_0019.LAB	9/30/2022	14:54:23	hcn_pretest	0:00:09	9.22
HCN_PRETEST_0020.LAB	9/30/2022	14:54:33	hcn_pretest	0:00:10	9.64
HCN_PRETEST_0021.LAB	9/30/2022	14:54:42	hcn_pretest	0:00:09	8.89
HCN_PRETEST_0022.LAB	9/30/2022	14:54:52	hcn_pretest	0:00:10	9.37
HCN_PRETEST_0023.LAB	9/30/2022	14:55:01	hcn_pretest	0:00:09	9.08
HCN_PRETEST_0024.LAB	9/30/2022	14:55:10	hcn_pretest	0:00:09	8.83
HCN_PRETEST_0025.LAB	9/30/2022	14:55:20	hcn_pretest	0:00:10	8.99
HCN_PRETEST_0026.LAB	9/30/2022	14:55:29	hcn_pretest	0:00:09	9.23
HCN_PRETEST_0027.LAB	9/30/2022	14:55:39	hcn_pretest	0:00:10	9.14
HCN_PRETEST_0028.LAB	9/30/2022	14:55:48	hcn_pretest	0:00:09	9.01
HCN_PRETEST_0029.LAB	9/30/2022	14:55:58	hcn_pretest	0:00:10	9.15
HCN_PRETEST_0030.LAB	9/30/2022	14:56:07	hcn_pretest	0:00:09	8.74
HCN_PRETEST_0031.LAB	9/30/2022	14:56:17	hcn_pretest	0:00:10	9.14
HCN_PRETEST_0032.LAB	9/30/2022	14:56:26	hcn_pretest	0:00:09	9.57
HCN_PRETEST_0033.LAB	9/30/2022	14:56:35	hcn_pretest	0:00:09	9.16
HCN_PRETEST_0034.LAB	9/30/2022	14:56:45	hcn_pretest	0:00:10	8.94
HCN_PRETEST_0035.LAB	9/30/2022	14:56:54	hcn_pretest	0:00:09	8.99
HCN_PRETEST_0036.LAB	9/30/2022	14:57:04	hcn_pretest	0:00:10	8.88
HCN_PRETEST_0037.LAB	9/30/2022	14:57:13	hcn_pretest	0:00:09	9.12
HCN_PRETEST_0038.LAB	9/30/2022	14:57:22	hcn_pretest	0:00:09	9.28
HCN_PRETEST_0039.LAB	9/30/2022	14:57:32	hcn_pretest	0:00:10	8.78
HCN_PRETEST_0040.LAB	9/30/2022	14:57:41	hcn_pretest	0:00:09	9.02
HCN_PRETEST_0041.LAB	9/30/2022	14:57:51	hcn_pretest	0:00:10	9.01

hcn\_pretest\_NG Averages

9.08

hcn\_pretest\_NG % Deviation

0.092

hcn\_pretest\_NG Pass/Fail

PASS

Cylinder Concentration Values

HCN 150c\_BDL 10 ppm



# DI\_hcl\_pretest\_NG\_rpt

Spectrum	Date	Time	Run num	Integrator	HYDROCHLORIC ACID 150(SF6 to 112 ppmm 150C_BDL	
HCL_PRETEST_0172.LAB	9/30/2022	16:13:50	hcl_pretest	0:00:09	18.28	10.68
HCL_PRETEST_0173.LAB	9/30/2022	16:14:00	hcl_pretest	0:00:10	18.09	10.69
HCL_PRETEST_0174.LAB	9/30/2022	16:14:09	hcl_pretest	0:00:09	18.15	10.68
HCL_PRETEST_0175.LAB	9/30/2022	16:14:18	hcl_pretest	0:00:09	18.31	10.68
HCL_PRETEST_0176.LAB	9/30/2022	16:14:28	hcl_pretest	0:00:10	18.25	10.68
HCL_PRETEST_0177.LAB	9/30/2022	16:14:38	hcl_pretest	0:00:10	18.21	10.69
HCL_PRETEST_0178.LAB	9/30/2022	16:14:47	hcl_pretest	0:00:09	18.28	10.69
HCL_PRETEST_0179.LAB	9/30/2022	16:14:56	hcl_pretest	0:00:09	18.35	10.69
HCL_PRETEST_0180.LAB	9/30/2022	16:15:06	hcl_pretest	0:00:10	18.35	10.69
HCL_PRETEST_0181.LAB	9/30/2022	16:15:15	hcl_pretest	0:00:09	18.28	10.69
HCL_PRETEST_0182.LAB	9/30/2022	16:15:25	hcl_pretest	0:00:10	18.54	10.69
HCL_PRETEST_0183.LAB	9/30/2022	16:15:34	hcl_pretest	0:00:09	18.39	10.71
HCL_PRETEST_0184.LAB	9/30/2022	16:15:43	hcl_pretest	0:00:09	18.3	10.68
HCL_PRETEST_0185.LAB	9/30/2022	16:15:53	hcl_pretest	0:00:10	18.32	10.7
HCL_PRETEST_0186.LAB	9/30/2022	16:16:02	hcl_pretest	0:00:09	18.4	10.69
HCL_PRETEST_0187.LAB	9/30/2022	16:16:12	hcl_pretest	0:00:10	18.69	10.69
HCL_PRETEST_0188.LAB	9/30/2022	16:16:21	hcl_pretest	0:00:09	18.43	10.69
HCL_PRETEST_0189.LAB	9/30/2022	16:16:30	hcl_pretest	0:00:09	18.33	10.7
HCL_PRETEST_0190.LAB	9/30/2022	16:16:40	hcl_pretest	0:00:10	18.42	10.7
HCL_PRETEST_0191.LAB	9/30/2022	16:16:49	hcl_pretest	0:00:09	18.49	10.7
HCL_PRETEST_0192.LAB	9/30/2022	16:16:59	hcl_pretest	0:00:10	18.53	10.71
HCL_PRETEST_0193.LAB	9/30/2022	16:17:08	hcl_pretest	0:00:09	18.45	10.7
HCL_PRETEST_0194.LAB	9/30/2022	16:17:18	hcl_pretest	0:00:10	18.53	10.7
HCL_PRETEST_0195.LAB	9/30/2022	16:17:27	hcl_pretest	0:00:09	18.62	10.7
HCL_PRETEST_0196.LAB	9/30/2022	16:17:37	hcl_pretest	0:00:10	18.59	10.71
HCL_PRETEST_0197.LAB	9/30/2022	16:17:46	hcl_pretest	0:00:09	18.79	10.7
HCL_PRETEST_0198.LAB	9/30/2022	16:17:56	hcl_pretest	0:00:10	18.46	10.71
HCL_PRETEST_0199.LAB	9/30/2022	16:18:05	hcl_pretest	0:00:09	18.36	10.71
HCL_PRETEST_0200.LAB	9/30/2022	16:18:14	hcl_pretest	0:00:09	18.59	10.72
HCL_PRETEST_0201.LAB	9/30/2022	16:18:24	hcl_pretest	0:00:10	18.56	10.7
HCL_PRETEST_0202.LAB	9/30/2022	16:18:33	hcl_pretest	0:00:09	18.52	10.69
HCL_PRETEST_0203.LAB	9/30/2022	16:18:43	hcl_pretest	0:00:10	18.54	10.7
HCL_PRETEST_0204.LAB	9/30/2022	16:18:52	hcl_pretest	0:00:09	18.64	10.7
HCL_PRETEST_0205.LAB	9/30/2022	16:19:01	hcl_pretest	0:00:09	18.49	10.69
HCL_PRETEST_0206.LAB	9/30/2022	16:19:11	hcl_pretest	0:00:10	18.58	10.7
HCL_PRETEST_0207.LAB	9/30/2022	16:19:20	hcl_pretest	0:00:09	18.27	10.69
HCL_PRETEST_0208.LAB	9/30/2022	16:19:30	hcl_pretest	0:00:10	18.56	10.71
HCL_PRETEST_0209.LAB	9/30/2022	16:19:39	hcl_pretest	0:00:09	18.55	10.69
HCL_PRETEST_0210.LAB	9/30/2022	16:19:48	hcl_pretest	0:00:09	18.64	10.7
HCL_PRETEST_0211.LAB	9/30/2022	16:19:58	hcl_pretest	0:00:10	18.77	10.69
HCL_PRETEST_0212.LAB	9/30/2022	16:20:07	hcl_pretest	0:00:09	18.54	10.69
HCL_PRETEST_0213.LAB	9/30/2022	16:20:17	hcl_pretest	0:00:10	18.77	10.69
HCL_PRETEST_0214.LAB	9/30/2022	16:20:26	hcl_pretest	0:00:09	18.68	10.7
HCL_PRETEST_0215.LAB	9/30/2022	16:20:36	hcl_pretest	0:00:10	18.63	10.71
HCL_PRETEST_0216.LAB	9/30/2022	16:20:45	hcl_pretest	0:00:09	18.46	10.69
HCL_PRETEST_0217.LAB	9/30/2022	16:20:54	hcl_pretest	0:00:09	18.63	10.69
HCL_PRETEST_0218.LAB	9/30/2022	16:21:04	hcl_pretest	0:00:10	18.75	10.71

hcl\_pretest\_NG Averages

18.48 10.7

hcl\_pretest\_NG % Deviation

0.083 0.062

hcl\_pretest\_NG Pass/Fail

PASS

PASS

Cylinder Concentration Values

HYDROCHLORIC ACID 150 20.15 ppm

SF6 to 112 ppmm 150C\_BI 10.08 ppm



UP_cts_pretest_up_2_NG_rpt							
Spectrum	Date	Time	Run number	Integration	Ethylene to	Methane to	R22 150C_I
CTS_PRETEST_UP_2_0821.LAB	10/1/2022	22:39:04	cts_pretest	0:00:03	9.82	8.64	10.82
CTS_PRETEST_UP_2_0822.LAB	10/1/2022	22:39:07	cts_pretest	0:00:03	9.67	8.62	10.83
CTS_PRETEST_UP_2_0823.LAB	10/1/2022	22:39:09	cts_pretest	0:00:02	9.91	9.33	10.85
CTS_PRETEST_UP_2_0824.LAB	10/1/2022	22:39:12	cts_pretest	0:00:03	9.57	9.2	10.77
CTS_PRETEST_UP_2_0825.LAB	10/1/2022	22:39:15	cts_pretest	0:00:03	9.66	9.21	10.87
CTS_PRETEST_UP_2_0826.LAB	10/1/2022	22:39:18	cts_pretest	0:00:03	9.56	9.24	10.88
CTS_PRETEST_UP_2_0827.LAB	10/1/2022	22:39:21	cts_pretest	0:00:03	9.34	9.16	10.84
CTS_PRETEST_UP_2_0828.LAB	10/1/2022	22:39:24	cts_pretest	0:00:03	9.78	8.92	10.9
CTS_PRETEST_UP_2_0829.LAB	10/1/2022	22:39:26	cts_pretest	0:00:02	9.78	8.78	10.94
CTS_PRETEST_UP_2_0830.LAB	10/1/2022	22:39:29	cts_pretest	0:00:03	9.67	9.38	10.88
CTS_PRETEST_UP_2_0831.LAB	10/1/2022	22:39:32	cts_pretest	0:00:03	9.73	9.16	10.9
CTS_PRETEST_UP_2_0832.LAB	10/1/2022	22:39:35	cts_pretest	0:00:03	9.84	9.12	10.9
CTS_PRETEST_UP_2_0833.LAB	10/1/2022	22:39:38	cts_pretest	0:00:03	9.58	9.06	10.92
CTS_PRETEST_UP_2_0834.LAB	10/1/2022	22:39:41	cts_pretest	0:00:03	9.58	9.12	10.95
CTS_PRETEST_UP_2_0835.LAB	10/1/2022	22:39:43	cts_pretest	0:00:02	9.75	9.11	10.95
CTS_PRETEST_UP_2_0836.LAB	10/1/2022	22:39:46	cts_pretest	0:00:03	9.89	8.94	10.88
CTS_PRETEST_UP_2_0837.LAB	10/1/2022	22:39:49	cts_pretest	0:00:03	9.72	9.17	10.94
CTS_PRETEST_UP_2_0838.LAB	10/1/2022	22:39:52	cts_pretest	0:00:03	9.85	8.97	10.91
CTS_PRETEST_UP_2_0839.LAB	10/1/2022	22:39:55	cts_pretest	0:00:03	9.64	9.3	10.96
CTS_PRETEST_UP_2_0840.LAB	10/1/2022	22:39:57	cts_pretest	0:00:02	9.81	9.09	10.99
CTS_PRETEST_UP_2_0841.LAB	10/1/2022	22:40:00	cts_pretest	0:00:03	9.8	9.07	10.97
CTS_PRETEST_UP_2_0842.LAB	10/1/2022	22:40:03	cts_pretest	0:00:03	9.87	8.87	10.94
CTS_PRETEST_UP_2_0843.LAB	10/1/2022	22:40:06	cts_pretest	0:00:03	9.85	8.96	10.97
CTS_PRETEST_UP_2_0844.LAB	10/1/2022	22:40:09	cts_pretest	0:00:03	9.65	9.41	10.96
CTS_PRETEST_UP_2_0845.LAB	10/1/2022	22:40:12	cts_pretest	0:00:03	9.78	9.42	10.95
CTS_PRETEST_UP_2_0846.LAB	10/1/2022	22:40:14	cts_pretest	0:00:02	9.63	9.03	10.97
CTS_PRETEST_UP_2_0847.LAB	10/1/2022	22:40:17	cts_pretest	0:00:03	9.86	8.92	10.96
CTS_PRETEST_UP_2_0848.LAB	10/1/2022	22:40:20	cts_pretest	0:00:03	9.51	8.91	10.97
CTS_PRETEST_UP_2_0849.LAB	10/1/2022	22:40:23	cts_pretest	0:00:03	9.85	9.36	11
CTS_PRETEST_UP_2_0850.LAB	10/1/2022	22:40:26	cts_pretest	0:00:03	9.78	8.84	10.9
CTS_PRETEST_UP_2_0851.LAB	10/1/2022	22:40:29	cts_pretest	0:00:03	9.68	8.85	11.03
CTS_PRETEST_UP_2_0852.LAB	10/1/2022	22:40:31	cts_pretest	0:00:02	9.56	9.46	11.03
CTS_PRETEST_UP_2_0853.LAB	10/1/2022	22:40:34	cts_pretest	0:00:03	10.06	9.38	10.99
CTS_PRETEST_UP_2_0854.LAB	10/1/2022	22:40:37	cts_pretest	0:00:03	9.78	9.06	10.92
CTS_PRETEST_UP_2_0855.LAB	10/1/2022	22:40:40	cts_pretest	0:00:03	9.7	9.29	10.98
CTS_PRETEST_UP_2_0856.LAB	10/1/2022	22:40:43	cts_pretest	0:00:03	9.63	9.31	10.99
CTS_PRETEST_UP_2_0857.LAB	10/1/2022	22:40:46	cts_pretest	0:00:03	9.76	9.03	10.98
CTS_PRETEST_UP_2_0858.LAB	10/1/2022	22:40:48	cts_pretest	0:00:02	9.82	8.63	11
CTS_PRETEST_UP_2_0859.LAB	10/1/2022	22:40:51	cts_pretest	0:00:03	9.59	9.39	10.96
cts_pretest_up_2_NG Averages					9.73	9.1	10.93
cts_pretest_up_2_NG % Deviation					0.037	0.039	0.021
cts_pretest_up_2_NG Pass/Fail					PASS	PASS	PASS
Cylinder Concentration Values							
Ethylene to 430 ppmm 150C_BDL	10.1	ppm					
Methane to 1310 ppmm 150C_BI	9.47	ppm					
R22 150C_BDL	11.17	ppm					



# UP\_CTS\_post\_NG\_rpt

Spectrum	Date	Time	Run number	Integration	Ethylene to	Methane to	R22 150C_BDL
CTS_POST_0048.LAB	10/2/2022	01:57:47	CTS_post_10:00:09	9.48	10.23	10.88	
CTS_POST_0049.LAB	10/2/2022	01:57:57	CTS_post_10:00:10	10.71	10.46	11.08	
CTS_POST_0050.LAB	10/2/2022	01:58:06	CTS_post_10:00:09	9.41	8.87	10.76	
CTS_POST_0051.LAB	10/2/2022	01:58:15	CTS_post_10:00:09	9.82	8.9	11.01	
CTS_POST_0052.LAB	10/2/2022	01:58:25	CTS_post_10:00:10	9.58	10.49	10.75	
CTS_POST_0053.LAB	10/2/2022	01:58:34	CTS_post_10:00:09	9.66	8.9	11.11	
CTS_POST_0054.LAB	10/2/2022	01:58:44	CTS_post_10:00:10	9.69	8.82	11.05	
CTS_POST_0055.LAB	10/2/2022	01:58:53	CTS_post_10:00:09	9.69	9.04	11.14	
CTS_POST_0056.LAB	10/2/2022	01:59:03	CTS_post_10:00:10	9.65	9.16	11.13	
CTS_POST_0057.LAB	10/2/2022	01:59:12	CTS_post_10:00:09	9.57	9.29	11.16	
CTS_POST_0058.LAB	10/2/2022	01:59:21	CTS_post_10:00:09	9.7	9.43	11.19	

CTS\_post\_NG Averages

9.72 9.42 11.02

CTS\_post\_NG % Deviation

0.038 0.005 0.013

CTS\_post\_NG Pass/Fail

PASS PASS PASS

## DI Concentration Values

Ethylene to 430 ppm	150C	10.1	ppm
Methane to 1310 ppm	150C	9.47	ppm
R22 150C_BDL		11.17	ppm



## Formaldehyde\_pre\_spiik

Spectrum	Date	Time	Run number	Integration	SF6 to 112	Formaldehy	Expected_	Recovery	PASS/FAIL	Dilution
STACK_GAS_0001.LAB	10/1/2022	20:32:29	stack_gas_0:00:00	0.365	3.411	2.222	153.5	FAIL	0.069	
STACK_GAS_0002.LAB	10/1/2022	20:32:39	stack_gas_0:00:10	0.361	3.319	2.201	150.8	FAIL	0.068	
STACK_GAS_0003.LAB	10/1/2022	20:32:48	stack_gas_0:00:09	0.36	3.716	2.196	169.2	FAIL	0.068	
STACK_GAS_0004.LAB	10/1/2022	20:32:57	stack_gas_0:00:09	0.364	3.037	2.216	137	FAIL	0.069	
STACK_GAS_0005.LAB	10/1/2022	20:33:07	stack_gas_0:00:10	0.363	3.406	2.209	154.2	FAIL	0.068	
STACK_GAS_0006.LAB	10/1/2022	20:33:16	stack_gas_0:00:09	0.362	3.18	2.205	144.2	FAIL	0.068	
STACK_GAS_0007.LAB	10/1/2022	20:33:26	stack_gas_0:00:10	0.361	3.037	2.199	138.1	FAIL	0.068	
STACK_GAS_0008.LAB	10/1/2022	20:33:36	stack_gas_0:00:10	0.359	3.389	2.19	154.7	FAIL	0.068	
STACK_GAS_0009.LAB	10/1/2022	20:33:45	stack_gas_0:00:09	0.366	3.273	2.227	146.9	FAIL	0.069	
STACK_GAS_0010.LAB	10/1/2022	20:33:54	stack_gas_0:00:09	0.363	3.457	2.213	156.2	FAIL	0.068	
STACK_GAS_0011.LAB	10/1/2022	20:34:04	stack_gas_0:00:10	0.369	3.517	2.243	156.8	FAIL	0.069	
STACK_GAS_0012.LAB	10/1/2022	20:34:13	stack_gas_0:00:09	0.362	3.453	2.203	156.7	FAIL	0.068	
STACK_GAS_0013.LAB	10/1/2022	20:34:22	stack_gas_0:00:09	0.361	3.426	2.202	155.6	FAIL	0.068	
STACK_GAS_0014.LAB	10/1/2022	20:34:32	stack_gas_0:00:10	0.361	3.242	2.201	147.3	FAIL	0.068	
STACK_GAS_0015.LAB	10/1/2022	20:34:41	stack_gas_0:00:09	0.362	3.533	2.204	160.3	FAIL	0.068	
STACK_GAS_0016.LAB	10/1/2022	20:34:51	stack_gas_0:00:10	0.362	3.254	2.205	147.6	FAIL	0.068	
STACK_GAS_0017.LAB	10/1/2022	20:35:00	stack_gas_0:00:09	0.366	3.085	2.23	138.3	FAIL	0.069	
STACK_GAS_0018.LAB	10/1/2022	20:35:10	stack_gas_0:00:10	0.36	3.379	2.197	153.8	FAIL	0.068	
STACK_GAS_0019.LAB	10/1/2022	20:35:19	stack_gas_0:00:09	0.369	3.562	2.247	158.5	FAIL	0.07	
STACK_GAS_0020.LAB	10/1/2022	20:35:28	stack_gas_0:00:09	0.364	3.336	2.215	150.6	FAIL	0.068	
STACK_GAS_0021.LAB	10/1/2022	20:35:38	stack_gas_0:00:10	0.364	2.987	2.218	134.6	FAIL	0.069	
STACK_GAS_0022.LAB	10/1/2022	20:35:47	stack_gas_0:00:09	0.368	3.445	2.239	153.9	FAIL	0.069	
STACK_GAS_0023.LAB	10/1/2022	20:35:57	stack_gas_0:00:10	0.364	3.365	2.216	151.8	FAIL	0.069	
STACK_GAS_0024.LAB	10/1/2022	20:36:06	stack_gas_0:00:09	0.367	3.386	2.233	151.6	FAIL	0.069	
STACK_GAS_0025.LAB	10/1/2022	20:36:16	stack_gas_0:00:10	0.366	3.077	2.228	138.1	FAIL	0.069	
STACK_GAS_0026.LAB	10/1/2022	20:36:25	stack_gas_0:00:09	0.362	3.474	2.204	157.7	FAIL	0.068	
STACK_GAS_0027.LAB	10/1/2022	20:36:35	stack_gas_0:00:10	0.367	3.453	2.232	154.7	FAIL	0.069	
STACK_GAS_0028.LAB	10/1/2022	20:36:44	stack_gas_0:00:09	0.362	3.006	2.208	136.1	FAIL	0.068	
STACK_GAS_0029.LAB	10/1/2022	20:36:53	stack_gas_0:00:09	0.364	3.26	2.215	147.2	FAIL	0.068	
STACK_GAS_0030.LAB	10/1/2022	20:37:03	stack_gas_0:00:10	0.367	3.388	2.235	151.6	FAIL	0.069	
STACK_GAS_0031.LAB	10/1/2022	20:37:12	stack_gas_0:00:09	0.364	3.162	2.218	142.6	FAIL	0.069	
STACK_GAS_0032.LAB	10/1/2022	20:37:22	stack_gas_0:00:10	0.364	3.036	2.217	136.9	FAIL	0.069	
STACK_GAS_0033.LAB	10/1/2022	20:37:31	stack_gas_0:00:09	0.363	3.467	2.213	156.7	FAIL	0.068	
STACK_GAS_0034.LAB	10/1/2022	20:37:41	stack_gas_0:00:10	0.368	3.207	2.24	143.2	FAIL	0.069	
STACK_GAS_0035.LAB	10/1/2022	20:37:50	stack_gas_0:00:09	0.364	3.276	2.218	147.7	FAIL	0.069	
STACK_GAS_0036.LAB	10/1/2022	20:38:00	stack_gas_0:00:10	0.367	3.615	2.235	161.8	FAIL	0.069	
STACK_GAS_0037.LAB	10/1/2022	20:38:09	stack_gas_0:00:09	0.366	3.041	2.227	136.6	FAIL	0.069	
STACK_GAS_0038.LAB	10/1/2022	20:38:18	stack_gas_0:00:09	0.366	3.02	2.226	135.7	FAIL	0.069	
STACK_GAS_0039.LAB	10/1/2022	20:38:28	stack_gas_0:00:10	0.372	3.433	2.266	151.5	FAIL	0.07	
STACK_GAS_0040.LAB	10/1/2022	20:38:37	stack_gas_0:00:09	0.366	3.166	2.229	142.1	FAIL	0.069	
STACK_GAS_0041.LAB	10/1/2022	20:38:47	stack_gas_0:00:10	0.364	3.246	2.218	146.4	FAIL	0.069	
STACK_GAS_0042.LAB	10/1/2022	20:38:56	stack_gas_0:00:09	0.373	3.022	2.267	133.3	FAIL	0.07	
STACK_GAS_0043.LAB	10/1/2022	20:39:06	stack_gas_0:00:10	0.376	3.254	2.288	142.2	FAIL	0.071	
STACK_GAS_0044.LAB	10/1/2022	20:39:15	stack_gas_0:00:09	0.367	2.955	2.236	132.2	FAIL	0.069	
STACK_GAS_0045.LAB	10/1/2022	20:39:25	stack_gas_0:00:10	0.37	3.197	2.249	142.1	FAIL	0.07	
STACK_GAS_0046.LAB	10/1/2022	20:39:34	stack_gas_0:00:09	0.367	3.276	2.233	146.8	FAIL	0.069	
STACK_GAS_0047.LAB	10/1/2022	20:39:43	stack_gas_0:00:09	0.368	2.743	2.243	122.3	PASS	0.069	
STACK_GAS_0048.LAB	10/1/2022	20:39:53	stack_gas_0:00:10	0.368	3.232	2.239	144.4	FAIL	0.069	
STACK_GAS_0049.LAB	10/1/2022	20:40:02	stack_gas_0:00:09	0.371	3.394	2.255	150.5	FAIL	0.07	
STACK_GAS_0050.LAB	10/1/2022	20:40:12	stack_gas_0:00:10	0.369	3.182	2.244	141.8	FAIL	0.069	
STACK_GAS_0051.LAB	10/1/2022	20:40:21	stack_gas_0:00:09	0.372	3.317	2.262	146.7	FAIL	0.07	
STACK_GAS_0052.LAB	10/1/2022	20:40:31	stack_gas_0:00:10	0.369	3.353	2.245	149.3	FAIL	0.069	
STACK_GAS_0053.LAB	10/1/2022	20:40:40	stack_gas_0:00:09	0.37	3.467	2.253	153.9	FAIL	0.07	
STACK_GAS_0054.LAB	10/1/2022	20:40:50	stack_gas_0:00:10	0.368	3.8	2.242	169.5	FAIL	0.069	
STACK_GAS_0055.LAB	10/1/2022	20:40:59	stack_gas_0:00:09	0.366	3.216	2.231	144.1	FAIL	0.069	
STACK_GAS_0056.LAB	10/1/2022	20:41:08	stack_gas_0:00:09	0.37	3.56	2.253	158	FAIL	0.07	
STACK_GAS_0057.LAB	10/1/2022	20:41:18	stack_gas_0:00:10	0.367	3.154	2.235	141.1	FAIL	0.069	
STACK_GAS_0058.LAB	10/1/2022	20:41:27	stack_gas_0:00:09	0.368	3.245	2.242	144.7	FAIL	0.069	
STACK_GAS_0059.LAB	10/1/2022	20:41:37	stack_gas_0:00:10	0.366	3.135	2.23	140.6	FAIL	0.069	
STACK_GAS_0060.LAB	10/1/2022	20:41:46	stack_gas_0:00:09	0.366	3.143	2.229	141	FAIL	0.069	
STACK_GAS_0061.LAB	10/1/2022	20:41:56	stack_gas_0:00:10	0.37	3.411	2.254	151.3	FAIL	0.07	
STACK_GAS_0062.LAB	10/1/2022	20:42:05	stack_gas_0:00:09	0.376	3.483	2.286	152.4	FAIL	0.071	



STACK_GAS_0063.LAB	10/1/2022	20:42:15	stack_gas_0:00:10	0.372	3.654	2.266	161.3 FAIL	0.07
STACK_GAS_0064.LAB	10/1/2022	20:42:24	stack_gas_0:00:09	0.366	3.565	2.228	160 FAIL	0.069
STACK_GAS_0065.LAB	10/1/2022	20:42:33	stack_gas_0:00:09	0.368	3.4	2.242	151.6 FAIL	0.069
STACK_GAS_0066.LAB	10/1/2022	20:42:43	stack_gas_0:00:10	0.366	3.243	2.231	145.4 FAIL	0.069
STACK_GAS_0067.LAB	10/1/2022	20:42:52	stack_gas_0:00:09	0.366	2.964	2.231	132.9 FAIL	0.069
STACK_GAS_0068.LAB	10/1/2022	20:43:02	stack_gas_0:00:10	0.365	3.285	2.224	147.7 FAIL	0.069
STACK_GAS_0069.LAB	10/1/2022	20:43:11	stack_gas_0:00:09	0.371	3.3	2.26	146.1 FAIL	0.07
STACK_GAS_0070.LAB	10/1/2022	20:43:21	stack_gas_0:00:10	0.372	3.135	2.262	138.6 FAIL	0.07
STACK_GAS_0071.LAB	10/1/2022	20:43:30	stack_gas_0:00:09	0.367	3.299	2.233	147.7 FAIL	0.069
STACK_GAS_0072.LAB	10/1/2022	20:43:39	stack_gas_0:00:09	0.374	3.376	2.276	148.3 FAIL	0.07
STACK_GAS_0073.LAB	10/1/2022	20:43:49	stack_gas_0:00:10	0.367	3.379	2.237	151 FAIL	0.069
STACK_GAS_0074.LAB	10/1/2022	20:43:59	stack_gas_0:00:10	0.374	2.921	2.277	128.3 PASS	0.07
STACK_GAS_0075.LAB	10/1/2022	20:44:08	stack_gas_0:00:09	0.37	3.024	2.253	134.2 FAIL	0.07
STACK_GAS_0076.LAB	10/1/2022	20:44:17	stack_gas_0:00:09	0.368	3.279	2.238	146.6 FAIL	0.069
STACK_GAS_0077.LAB	10/1/2022	20:44:27	stack_gas_0:00:10	0.374	3.586	2.273	157.7 FAIL	0.07
STACK_GAS_0078.LAB	10/1/2022	20:44:36	stack_gas_0:00:09	0.376	3.425	2.289	149.6 FAIL	0.071
STACK_GAS_0079.LAB	10/1/2022	20:44:46	stack_gas_0:00:10	0.367	2.957	2.232	132.5 FAIL	0.069
STACK_GAS_0080.LAB	10/1/2022	20:44:55	stack_gas_0:00:09	0.371	3.44	2.257	152.4 FAIL	0.07
STACK_GAS_0081.LAB	10/1/2022	20:45:04	stack_gas_0:00:09	0.373	3.315	2.268	146.1 FAIL	0.07
STACK_GAS_0082.LAB	10/1/2022	20:45:14	stack_gas_0:00:10	0.366	3.077	2.228	138.1 FAIL	0.069
STACK_GAS_0083.LAB	10/1/2022	20:45:23	stack_gas_0:00:09	0.371	3.384	2.259	149.8 FAIL	0.07
STACK_GAS_0084.LAB	10/1/2022	20:45:33	stack_gas_0:00:10	0.372	3.372	2.265	148.8 FAIL	0.07
STACK_GAS_0085.LAB	10/1/2022	20:45:42	stack_gas_0:00:09	0.373	3.135	2.272	138 FAIL	0.07
STACK_GAS_0086.LAB	10/1/2022	20:45:52	stack_gas_0:00:10	0.37	3.494	2.253	155 FAIL	0.07
STACK_GAS_0087.LAB	10/1/2022	20:46:01	stack_gas_0:00:09	0.374	3.148	2.274	138.4 FAIL	0.07
STACK_GAS_0088.LAB	10/1/2022	20:46:10	stack_gas_0:00:09	0.374	2.999	2.275	131.8 FAIL	0.07
STACK_GAS_0089.LAB	10/1/2022	20:46:20	stack_gas_0:00:10	0.372	3.158	2.266	139.3 FAIL	0.07
STACK_GAS_0090.LAB	10/1/2022	20:46:29	stack_gas_0:00:09	0.373	3.261	2.267	143.9 FAIL	0.07
STACK_GAS_0091.LAB	10/1/2022	20:46:39	stack_gas_0:00:10	0.371	3.241	2.26	143.4 FAIL	0.07
STACK_GAS_0092.LAB	10/1/2022	20:46:48	stack_gas_0:00:09	0.374	3.178	2.275	139.7 FAIL	0.07
STACK_GAS_0093.LAB	10/1/2022	20:46:58	stack_gas_0:00:10	0.368	3.41	2.243	152 FAIL	0.069
STACK_GAS_0094.LAB	10/1/2022	20:47:07	stack_gas_0:00:09	0.374	3.344	2.278	146.8 FAIL	0.071
STACK_GAS_0095.LAB	10/1/2022	20:47:17	stack_gas_0:00:10	0.373	3.202	2.269	141.2 FAIL	0.07
STACK_GAS_0096.LAB	10/1/2022	20:47:26	stack_gas_0:00:09	0.373	3.362	2.269	148.2 FAIL	0.07
STACK_GAS_0097.LAB	10/1/2022	20:47:35	stack_gas_0:00:09	0.368	3.357	2.241	149.8 FAIL	0.069
STACK_GAS_0098.LAB	10/1/2022	20:47:45	stack_gas_0:00:10	0.376	3.204	2.287	140.1 FAIL	0.071
STACK_GAS_0099.LAB	10/1/2022	20:47:55	stack_gas_0:00:10	0.366	2.993	2.231	134.2 FAIL	0.069
STACK_GAS_0100.LAB	10/1/2022	20:48:04	stack_gas_0:00:09	0.371	3.192	2.255	141.5 FAIL	0.07
STACK_GAS_0101.LAB	10/1/2022	20:48:13	stack_gas_0:00:09	0.366	2.981	2.229	133.8 FAIL	0.069
STACK_GAS_0102.LAB	10/1/2022	20:48:23	stack_gas_0:00:10	0.373	3.073	2.268	135.5 FAIL	0.07
STACK_GAS_0103.LAB	10/1/2022	20:48:32	stack_gas_0:00:09	0.377	3.053	2.29	133.3 FAIL	0.071
STACK_GAS_0104.LAB	10/1/2022	20:48:41	stack_gas_0:00:09	0.371	3.648	2.258	161.6 FAIL	0.07
STACK_GAS_0105.LAB	10/1/2022	20:48:51	stack_gas_0:00:10	0.376	3.326	2.288	145.4 FAIL	0.071
STACK_GAS_0106.LAB	10/1/2022	20:49:00	stack_gas_0:00:09	0.369	3.09	2.249	137.4 FAIL	0.07
STACK_GAS_0107.LAB	10/1/2022	20:49:10	stack_gas_0:00:10	0.372	3.514	2.263	155.2 FAIL	0.07
STACK_GAS_0108.LAB	10/1/2022	20:49:19	stack_gas_0:00:09	0.369	3.216	2.245	143.2 FAIL	0.069
STACK_GAS_0109.LAB	10/1/2022	20:49:29	stack_gas_0:00:10	0.373	3.349	2.269	147.6 FAIL	0.07
STACK_GAS_0110.LAB	10/1/2022	20:49:38	stack_gas_0:00:09	0.369	3.329	2.245	148.3 FAIL	0.069
STACK_GAS_0111.LAB	10/1/2022	20:49:48	stack_gas_0:00:10	0.372	3.752	2.265	165.6 FAIL	0.07
STACK_GAS_0112.LAB	10/1/2022	20:49:57	stack_gas_0:00:09	0.374	3.303	2.275	145.2 FAIL	0.07
STACK_GAS_0113.LAB	10/1/2022	20:50:06	stack_gas_0:00:09	0.377	2.95	2.291	128.8 PASS	0.071
STACK_GAS_0114.LAB	10/1/2022	20:50:16	stack_gas_0:00:10	0.377	3.213	2.292	140.2 FAIL	0.071
STACK_GAS_0115.LAB	10/1/2022	20:50:26	stack_gas_0:00:10	0.373	3.518	2.271	154.9 FAIL	0.07
STACK_GAS_0116.LAB	10/1/2022	20:50:35	stack_gas_0:00:09	0.374	3.161	2.273	139.1 FAIL	0.07
STACK_GAS_0117.LAB	10/1/2022	20:50:44	stack_gas_0:00:09	0.375	3.357	2.278	147.3 FAIL	0.071
STACK_GAS_0118.LAB	10/1/2022	20:50:54	stack_gas_0:00:10	0.37	2.949	2.249	131.1 FAIL	0.07
STACK_GAS_0119.LAB	10/1/2022	20:51:03	stack_gas_0:00:09	0.371	3.073	2.258	136.1 FAIL	0.07
STACK_GAS_0120.LAB	10/1/2022	20:51:13	stack_gas_0:00:10	0.375	3.076	2.283	134.7 FAIL	0.071
STACK_GAS_0121.LAB	10/1/2022	20:51:22	stack_gas_0:00:09	0.376	3.273	2.284	143.3 FAIL	0.071
STACK_GAS_0122.LAB	10/1/2022	20:51:31	stack_gas_0:00:09	0.377	3.223	2.292	140.6 FAIL	0.071
STACK_GAS_0123.LAB	10/1/2022	20:51:41	stack_gas_0:00:10	0.372	3.22	2.264	142.2 FAIL	0.07
STACK_GAS_0124.LAB	10/1/2022	20:51:50	stack_gas_0:00:09	0.375	2.87	2.284	125.7 PASS	0.071
STACK_GAS_0125.LAB	10/1/2022	20:52:00	stack_gas_0:00:10	0.375	3.191	2.28	140 FAIL	0.071
STACK_GAS_0126.LAB	10/1/2022	20:52:09	stack_gas_0:00:09	0.374	3.205	2.274	140.9 FAIL	0.07



STACK_GAS_0127.LAB	10/1/2022	20:52:19	stack_gas_0:00:10	0.376	3.211	2.285	140.6 FAIL	0.071
STACK_GAS_0128.LAB	10/1/2022	20:52:28	stack_gas_0:00:09	0.377	3.203	2.295	139.5 FAIL	0.071
STACK_GAS_0129.LAB	10/1/2022	20:52:38	stack_gas_0:00:10	0.376	3.379	2.289	147.6 FAIL	0.071
STACK_GAS_0130.LAB	10/1/2022	20:52:47	stack_gas_0:00:09	0.373	3.125	2.27	137.7 FAIL	0.07
STACK_GAS_0131.LAB	10/1/2022	20:52:56	stack_gas_0:00:09	0.377	3.39	2.292	147.9 FAIL	0.071
STACK_GAS_0132.LAB	10/1/2022	20:53:06	stack_gas_0:00:10	0.379	3.202	2.302	139.1 FAIL	0.071
STACK_GAS_0133.LAB	10/1/2022	20:53:15	stack_gas_0:00:09	0.378	3.194	2.296	139.1 FAIL	0.071
STACK_GAS_0134.LAB	10/1/2022	20:53:25	stack_gas_0:00:10	0.376	2.946	2.287	128.8 PASS	0.071
STACK_GAS_0135.LAB	10/1/2022	20:53:34	stack_gas_0:00:09	0.376	3.468	2.287	151.7 FAIL	0.071
STACK_GAS_0136.LAB	10/1/2022	20:53:44	stack_gas_0:00:10	0.375	3.259	2.282	142.8 FAIL	0.071
STACK_GAS_0137.LAB	10/1/2022	20:53:53	stack_gas_0:00:09	0.378	3.199	2.301	139 FAIL	0.071
STACK_GAS_0138.LAB	10/1/2022	20:54:02	stack_gas_0:00:09	0.375	3.001	2.282	131.5 FAIL	0.071
STACK_GAS_0139.LAB	10/1/2022	20:54:12	stack_gas_0:00:10	0.373	2.994	2.272	131.8 FAIL	0.07
STACK_GAS_0140.LAB	10/1/2022	20:54:21	stack_gas_0:00:09	0.381	3.27	2.314	141.3 FAIL	0.072
STACK_GAS_0141.LAB	10/1/2022	20:54:31	stack_gas_0:00:10	0.379	3.177	2.302	138 FAIL	0.071
STACK_GAS_0142.LAB	10/1/2022	20:54:40	stack_gas_0:00:09	0.383	3.166	2.327	136.1 FAIL	0.072
STACK_GAS_0143.LAB	10/1/2022	20:54:50	stack_gas_0:00:10	0.373	3.361	2.267	148.3 FAIL	0.07
STACK_GAS_0144.LAB	10/1/2022	20:54:59	stack_gas_0:00:09	0.371	3.245	2.26	143.6 FAIL	0.07
STACK_GAS_0145.LAB	10/1/2022	20:55:09	stack_gas_0:00:10	0.382	3.236	2.322	139.4 FAIL	0.072
STACK_GAS_0146.LAB	10/1/2022	20:55:18	stack_gas_0:00:09	0.376	3.298	2.289	144.1 FAIL	0.071
STACK_GAS_0147.LAB	10/1/2022	20:55:27	stack_gas_0:00:09	0.376	3.234	2.286	141.5 FAIL	0.071
STACK_GAS_0148.LAB	10/1/2022	20:55:37	stack_gas_0:00:10	0.382	3.07	2.32	132.3 FAIL	0.072
STACK_GAS_0149.LAB	10/1/2022	20:55:46	stack_gas_0:00:09	0.381	3.021	2.317	130.4 FAIL	0.072
STACK_GAS_0150.LAB	10/1/2022	20:55:56	stack_gas_0:00:10	0.381	3.136	2.317	135.3 FAIL	0.072
STACK_GAS_0151.LAB	10/1/2022	20:56:05	stack_gas_0:00:09	0.377	3.223	2.295	140.5 FAIL	0.071
STACK_GAS_0152.LAB	10/1/2022	20:56:15	stack_gas_0:00:10	0.381	3.299	2.314	142.5 FAIL	0.072
STACK_GAS_0153.LAB	10/1/2022	20:56:24	stack_gas_0:00:09	0.378	3.391	2.296	147.7 FAIL	0.071
STACK_GAS_0154.LAB	10/1/2022	20:56:34	stack_gas_0:00:10	0.381	3.183	2.313	137.6 FAIL	0.072
STACK_GAS_0155.LAB	10/1/2022	20:56:43	stack_gas_0:00:09	0.381	3.014	2.319	130 PASS	0.072
STACK_GAS_0156.LAB	10/1/2022	20:56:52	stack_gas_0:00:09	0.381	3.38	2.317	145.9 FAIL	0.072
STACK_GAS_0157.LAB	10/1/2022	20:57:02	stack_gas_0:00:10	0.377	3.146	2.291	137.3 FAIL	0.071
STACK_GAS_0158.LAB	10/1/2022	20:57:11	stack_gas_0:00:09	0.383	3.302	2.327	141.9 FAIL	0.072
STACK_GAS_0159.LAB	10/1/2022	20:57:21	stack_gas_0:00:10	0.379	3.261	2.303	141.6 FAIL	0.071
STACK_GAS_0160.LAB	10/1/2022	20:57:30	stack_gas_0:00:09	0.374	3.417	2.277	150 FAIL	0.071
STACK_GAS_0161.LAB	10/1/2022	20:57:40	stack_gas_0:00:10	0.377	3.106	2.294	135.4 FAIL	0.071
STACK_GAS_0162.LAB	10/1/2022	20:57:49	stack_gas_0:00:09	0.381	3.136	2.315	135.5 FAIL	0.072
STACK_GAS_0163.LAB	10/1/2022	20:57:59	stack_gas_0:00:10	0.382	3.207	2.32	138.2 FAIL	0.072
STACK_GAS_0164.LAB	10/1/2022	20:58:08	stack_gas_0:00:09	0.375	3.185	2.281	139.6 FAIL	0.071
STACK_GAS_0165.LAB	10/1/2022	20:58:17	stack_gas_0:00:09	0.379	3.436	2.303	149.2 FAIL	0.071
STACK_GAS_0166.LAB	10/1/2022	20:58:27	stack_gas_0:00:10	0.375	3.416	2.283	149.6 FAIL	0.071
STACK_GAS_0167.LAB	10/1/2022	20:58:36	stack_gas_0:00:09	0.376	3.189	2.286	139.5 FAIL	0.071
STACK_GAS_0168.LAB	10/1/2022	20:58:46	stack_gas_0:00:10	0.381	3.545	2.313	153.3 FAIL	0.072
STACK_GAS_0169.LAB	10/1/2022	20:58:55	stack_gas_0:00:09	0.381	3	2.314	129.7 PASS	0.072
STACK_GAS_0170.LAB	10/1/2022	20:59:05	stack_gas_0:00:10	0.374	3.22	2.276	141.5 FAIL	0.07
STACK_GAS_0171.LAB	10/1/2022	20:59:14	stack_gas_0:00:09	0.376	3.191	2.286	139.6 FAIL	0.071
STACK_GAS_0172.LAB	10/1/2022	20:59:23	stack_gas_0:00:09	0.374	3.226	2.276	141.8 FAIL	0.07
STACK_GAS_0173.LAB	10/1/2022	20:59:33	stack_gas_0:00:10	0.38	3.329	2.313	143.9 FAIL	0.072
STACK_GAS_0174.LAB	10/1/2022	20:59:42	stack_gas_0:00:09	0.375	3.212	2.278	141 FAIL	0.071
STACK_GAS_0175.LAB	10/1/2022	20:59:52	stack_gas_0:00:10	0.422	2.965	2.557	115.9 PASS	0.08
STACK_GAS_0176.LAB	10/1/2022	21:00:01	stack_gas_0:00:09	2.577	6.533	15.12	43.2 FAIL	0.485
STACK_GAS_0177.LAB	10/1/2022	21:00:11	stack_gas_0:00:10	3.501	4.623	20.502	22.5 FAIL	0.659
STACK_GAS_0178.LAB	10/1/2022	21:00:20	stack_gas_0:00:09	1.652	3.046	9.724	31.3 FAIL	0.311
STACK_GAS_0179.LAB	10/1/2022	21:00:30	stack_gas_0:00:10	0.56	2.72	3.361	80.9 FAIL	0.106
STACK_GAS_0180.LAB	10/1/2022	21:00:39	stack_gas_0:00:09	0.182	2.207	1.158	190.6 FAIL	0.034
STACK_GAS_0181.LAB	10/1/2022	21:00:48	stack_gas_0:00:09	0.042	2.096	0.338	620.5 FAIL	0.008
STACK_GAS_0182.LAB	10/1/2022	21:00:58	stack_gas_0:00:10	0.042	1.91	0.338	565.4 FAIL	0.008
STACK_GAS_0183.LAB	10/1/2022	21:01:07	stack_gas_0:00:09	0.042	1.589	0.338	470.6 FAIL	0.008
STACK_GAS_0184.LAB	10/1/2022	21:01:17	stack_gas_0:00:10	0.042	1.524	0.338	451.2 FAIL	0.008
STACK_GAS_0185.LAB	10/1/2022	21:01:26	stack_gas_0:00:09	0.042	1.391	0.338	411.8 FAIL	0.008
STACK_GAS_0186.LAB	10/1/2022	21:01:36	stack_gas_0:00:10	0.201	1.551	1.267	122.4 PASS	0.038
STACK_GAS_0187.LAB	10/1/2022	21:01:45	stack_gas_0:00:09	2.664	1.285	15.623	8.2 FAIL	0.502
STACK_GAS_0188.LAB	10/1/2022	21:01:55	stack_gas_0:00:10	4.471	1.385	26.157	5.3 FAIL	0.842
STACK_GAS_0189.LAB	10/1/2022	21:02:04	stack_gas_0:00:09	4.919	1.979	28.773	6.9 FAIL	0.926
STACK_GAS_0190.LAB	10/1/2022	21:02:13	stack_gas_0:00:09	5.021	1.881	29.364	6.4 FAIL	0.946



STACK_GAS_0191.LAB	10/1/2022	21:02:23	stack_gas_ 0:00:10	5.058	2.186	29.583	7.4 FAIL	0.953
STACK_GAS_0192.LAB	10/1/2022	21:02:32	stack_gas_ 0:00:09	5.069	2.405	29.643	8.1 FAIL	0.955
STACK_GAS_0193.LAB	10/1/2022	21:02:42	stack_gas_ 0:00:10	5.08	2.5	29.711	8.4 FAIL	0.957
STACK_GAS_0194.LAB	10/1/2022	21:02:51	stack_gas_ 0:00:09	5.085	2.648	29.737	8.9 FAIL	0.958
STACK_GAS_0195.LAB	10/1/2022	21:03:01	stack_gas_ 0:00:10	5.095	2.579	29.795	8.7 FAIL	0.959
STACK_GAS_0196.LAB	10/1/2022	21:03:10	stack_gas_ 0:00:09	5.089	3.02	29.762	10.1 FAIL	0.958
STACK_GAS_0197.LAB	10/1/2022	21:03:19	stack_gas_ 0:00:09	5.082	2.942	29.722	9.9 FAIL	0.957
STACK_GAS_0198.LAB	10/1/2022	21:03:29	stack_gas_ 0:00:10	5.084	3.464	29.734	11.6 FAIL	0.957
STACK_GAS_0199.LAB	10/1/2022	21:03:38	stack_gas_ 0:00:09	5.087	3.669	29.75	12.3 FAIL	0.958
STACK_GAS_0200.LAB	10/1/2022	21:03:48	stack_gas_ 0:00:10	5.009	3.425	29.293	11.7 FAIL	0.943
STACK_GAS_0201.LAB	10/1/2022	21:03:57	stack_gas_ 0:00:09	3.206	3.466	18.785	18.5 FAIL	0.604
STACK_GAS_0202.LAB	10/1/2022	21:04:07	stack_gas_ 0:00:10	1.112	3.411	6.576	51.9 FAIL	0.209
STACK_GAS_0203.LAB	10/1/2022	21:04:16	stack_gas_ 0:00:09	0.336	3.145	2.051	153.3 FAIL	0.063
STACK_GAS_0204.LAB	10/1/2022	21:04:25	stack_gas_ 0:00:09	0.14	2.993	0.913	327.8 FAIL	0.026
STACK_GAS_0205.LAB	10/1/2022	21:04:35	stack_gas_ 0:00:10	0.042	3.116	0.338	922.4 FAIL	0.008
STACK_GAS_0206.LAB	10/1/2022	21:04:44	stack_gas_ 0:00:09	0.042	2.739	0.338	810.8 FAIL	0.008
STACK_GAS_0207.LAB	10/1/2022	21:04:54	stack_gas_ 0:00:10	0.042	3.047	0.338	902.1 FAIL	0.008
STACK_GAS_0208.LAB	10/1/2022	21:05:03	stack_gas_ 0:00:09	0.042	2.859	0.338	846.5 FAIL	0.008
STACK_GAS_0209.LAB	10/1/2022	21:05:13	stack_gas_ 0:00:10	0.042	3.091	0.338	915.2 FAIL	0.008
STACK_GAS_0210.LAB	10/1/2022	21:05:22	stack_gas_ 0:00:09	0.042	2.747	0.338	813.2 FAIL	0.008
STACK_GAS_0211.LAB	10/1/2022	21:05:32	stack_gas_ 0:00:10	0.042	2.643	0.338	782.5 FAIL	0.008
STACK_GAS_0212.LAB	10/1/2022	21:05:41	stack_gas_ 0:00:09	0.042	2.729	0.338	808 FAIL	0.008
STACK_GAS_0213.LAB	10/1/2022	21:05:50	stack_gas_ 0:00:09	0.042	2.942	0.338	871 FAIL	0.008
STACK_GAS_0214.LAB	10/1/2022	21:06:00	stack_gas_ 0:00:10	0.042	2.748	0.338	813.6 FAIL	0.008
STACK_GAS_0215.LAB	10/1/2022	21:06:09	stack_gas_ 0:00:09	0.042	2.358	0.338	698.2 FAIL	0.008
STACK_GAS_0216.LAB	10/1/2022	21:06:19	stack_gas_ 0:00:10	0.042	2.624	0.338	776.9 FAIL	0.008
STACK_GAS_0217.LAB	10/1/2022	21:06:28	stack_gas_ 0:00:09	0.042	2.545	0.338	753.3 FAIL	0.008
STACK_GAS_0218.LAB	10/1/2022	21:06:38	stack_gas_ 0:00:10	0.042	2.668	0.338	789.8 FAIL	0.008
STACK_GAS_0219.LAB	10/1/2022	21:06:47	stack_gas_ 0:00:09	0.042	2.872	0.338	850.4 FAIL	0.008
STACK_GAS_0220.LAB	10/1/2022	21:06:57	stack_gas_ 0:00:10	0.042	2.438	0.338	721.7 FAIL	0.008
STACK_GAS_0221.LAB	10/1/2022	21:07:06	stack_gas_ 0:00:09	0.042	2.522	0.338	746.7 FAIL	0.008
STACK_GAS_0222.LAB	10/1/2022	21:07:15	stack_gas_ 0:00:09	0.042	2.394	0.338	708.8 FAIL	0.008
STACK_GAS_0223.LAB	10/1/2022	21:07:25	stack_gas_ 0:00:10	0.042	2.553	0.338	756 FAIL	0.008
STACK_GAS_0224.LAB	10/1/2022	21:07:34	stack_gas_ 0:00:09	0.042	2.341	0.338	693.1 FAIL	0.008
STACK_GAS_0225.LAB	10/1/2022	21:07:44	stack_gas_ 0:00:10	0.042	2.393	0.338	708.4 FAIL	0.008
STACK_GAS_0226.LAB	10/1/2022	21:07:53	stack_gas_ 0:00:09	0.042	2.376	0.338	703.4 FAIL	0.008
STACK_GAS_0227.LAB	10/1/2022	21:08:03	stack_gas_ 0:00:10	0.042	2.389	0.338	707.3 FAIL	0.008
STACK_GAS_0228.LAB	10/1/2022	21:08:12	stack_gas_ 0:00:09	0.042	2.556	0.338	756.6 FAIL	0.008
STACK_GAS_0229.LAB	10/1/2022	21:08:22	stack_gas_ 0:00:10	0.042	2.176	0.338	644.1 FAIL	0.008
STACK_GAS_0230.LAB	10/1/2022	21:08:31	stack_gas_ 0:00:09	0.042	1.89	0.338	559.7 FAIL	0.008
STACK_GAS_0231.LAB	10/1/2022	21:08:40	stack_gas_ 0:00:09	0.042	2.253	0.338	666.9 FAIL	0.008
STACK_GAS_0232.LAB	10/1/2022	21:08:50	stack_gas_ 0:00:10	0.042	2.31	0.338	683.9 FAIL	0.008
STACK_GAS_0233.LAB	10/1/2022	21:08:59	stack_gas_ 0:00:09	0.042	1.978	0.338	585.6 FAIL	0.008
STACK_GAS_0234.LAB	10/1/2022	21:09:09	stack_gas_ 0:00:10	0.042	1.97	0.338	583.1 FAIL	0.008
STACK_GAS_0235.LAB	10/1/2022	21:09:18	stack_gas_ 0:00:09	0.042	2.067	0.338	611.9 FAIL	0.008
STACK_GAS_0236.LAB	10/1/2022	21:09:28	stack_gas_ 0:00:10	0.042	2.036	0.338	602.7 FAIL	0.008
STACK_GAS_0237.LAB	10/1/2022	21:09:37	stack_gas_ 0:00:09	0.042	1.745	0.338	516.8 FAIL	0.008

Native Analyte concentr 0.095

Bias = 0

Direct inject analyte cor 31.05

Direct inject tracer conc 5.31

The above data is for: spike\_stack\_gas\_NG

Tracer Bias 0



## spike\_hcl\_pretest\_NG\_rpt

Spectrum	Date	Time	Run num	Integrator	SF6 to 112	HYDROCHL	Expected_	Recovery	PASS/FAIL	Dilution
HCL_PRETEST_SPIKE_0001.LAB	10/1/2022	21:22:03	hcl_pretest 0:00:00	0.073	0.25	0.364	68.6	FAIL		0.007
HCL_PRETEST_SPIKE_0002.LAB	10/1/2022	21:22:12	hcl_pretest 0:00:09	0.073	0.396	0.364	108.7	PASS		0.007
HCL_PRETEST_SPIKE_0003.LAB	10/1/2022	21:22:21	hcl_pretest 0:00:09	0.073	0.234	0.364	64.2	FAIL		0.007
HCL_PRETEST_SPIKE_0004.LAB	10/1/2022	21:22:31	hcl_pretest 0:00:10	0.073	0.484	0.364	132.8	FAIL		0.007
HCL_PRETEST_SPIKE_0005.LAB	10/1/2022	21:22:40	hcl_pretest 0:00:09	0.073	0.444	0.364	121.8	PASS		0.007
HCL_PRETEST_SPIKE_0006.LAB	10/1/2022	21:22:50	hcl_pretest 0:00:10	0.073	0.524	0.364	143.8	FAIL		0.007
HCL_PRETEST_SPIKE_0007.LAB	10/1/2022	21:22:59	hcl_pretest 0:00:09	0.073	0.455	0.364	125	PASS		0.007
HCL_PRETEST_SPIKE_0008.LAB	10/1/2022	21:23:09	hcl_pretest 0:00:10	0.073	0.511	0.364	140.3	FAIL		0.007
HCL_PRETEST_SPIKE_0009.LAB	10/1/2022	21:23:18	hcl_pretest 0:00:09	0.073	0.392	0.364	107.7	PASS		0.007
HCL_PRETEST_SPIKE_0010.LAB	10/1/2022	21:23:28	hcl_pretest 0:00:10	0.073	0.374	0.364	102.7	PASS		0.007
HCL_PRETEST_SPIKE_0011.LAB	10/1/2022	21:23:37	hcl_pretest 0:00:09	0.073	0.352	0.364	96.8	PASS		0.007
HCL_PRETEST_SPIKE_0012.LAB	10/1/2022	21:23:46	hcl_pretest 0:00:09	0.073	0.289	0.364	79.4	PASS		0.007
HCL_PRETEST_SPIKE_0013.LAB	10/1/2022	21:23:56	hcl_pretest 0:00:10	0.073	0.454	0.364	124.8	PASS		0.007
HCL_PRETEST_SPIKE_0014.LAB	10/1/2022	21:24:05	hcl_pretest 0:00:09	0.073	0.317	0.364	87	PASS		0.007
HCL_PRETEST_SPIKE_0015.LAB	10/1/2022	21:24:15	hcl_pretest 0:00:10	0.073	0.407	0.364	111.7	PASS		0.007
HCL_PRETEST_SPIKE_0016.LAB	10/1/2022	21:24:24	hcl_pretest 0:00:09	0.073	0.465	0.364	127.6	PASS		0.007
HCL_PRETEST_SPIKE_0017.LAB	10/1/2022	21:24:34	hcl_pretest 0:00:10	0.073	0.359	0.364	98.5	PASS		0.007
HCL_PRETEST_SPIKE_0018.LAB	10/1/2022	21:24:43	hcl_pretest 0:00:09	0.073	0.34	0.364	93.5	PASS		0.007
HCL_PRETEST_SPIKE_0019.LAB	10/1/2022	21:24:52	hcl_pretest 0:00:09	0.073	0.253	0.364	69.6	FAIL		0.007
HCL_PRETEST_SPIKE_0020.LAB	10/1/2022	21:25:02	hcl_pretest 0:00:10	0.073	0.508	0.364	139.6	FAIL		0.007
HCL_PRETEST_SPIKE_0021.LAB	10/1/2022	21:25:11	hcl_pretest 0:00:09	0.073	0.522	0.364	143.2	FAIL		0.007
HCL_PRETEST_SPIKE_0022.LAB	10/1/2022	21:25:21	hcl_pretest 0:00:10	0.073	0.602	0.364	165.3	FAIL		0.007
HCL_PRETEST_SPIKE_0023.LAB	10/1/2022	21:25:30	hcl_pretest 0:00:09	0.073	0.358	0.364	98.2	PASS		0.007
HCL_PRETEST_SPIKE_0024.LAB	10/1/2022	21:25:40	hcl_pretest 0:00:10	0.073	0.349	0.364	96	PASS		0.007
HCL_PRETEST_SPIKE_0025.LAB	10/1/2022	21:25:49	hcl_pretest 0:00:09	0.073	0.282	0.364	77.4	PASS		0.007
HCL_PRETEST_SPIKE_0026.LAB	10/1/2022	21:25:59	hcl_pretest 0:00:10	0.073	0.538	0.364	147.8	FAIL		0.007
HCL_PRETEST_SPIKE_0027.LAB	10/1/2022	21:26:08	hcl_pretest 0:00:09	0.073	0.283	0.364	77.7	PASS		0.007
HCL_PRETEST_SPIKE_0028.LAB	10/1/2022	21:26:17	hcl_pretest 0:00:09	0.073	0.479	0.364	131.4	FAIL		0.007
HCL_PRETEST_SPIKE_0029.LAB	10/1/2022	21:26:27	hcl_pretest 0:00:10	0.073	0.322	0.364	88.5	PASS		0.007
HCL_PRETEST_SPIKE_0030.LAB	10/1/2022	21:26:36	hcl_pretest 0:00:09	0.073	0.214	0.364	58.8	FAIL		0.007
HCL_PRETEST_SPIKE_0031.LAB	10/1/2022	21:26:46	hcl_pretest 0:00:10	0.073	0.274	0.364	75.3	PASS		0.007
HCL_PRETEST_SPIKE_0032.LAB	10/1/2022	21:26:55	hcl_pretest 0:00:09	0.073	0.419	0.364	115.2	PASS		0.007
HCL_PRETEST_SPIKE_0033.LAB	10/1/2022	21:27:05	hcl_pretest 0:00:10	0.073	0.311	0.364	85.4	PASS		0.007
HCL_PRETEST_SPIKE_0034.LAB	10/1/2022	21:27:14	hcl_pretest 0:00:09	0.073	0.564	0.364	154.9	FAIL		0.007
HCL_PRETEST_SPIKE_0035.LAB	10/1/2022	21:27:23	hcl_pretest 0:00:09	0.073	0.391	0.364	107.5	PASS		0.007
HCL_PRETEST_SPIKE_0036.LAB	10/1/2022	21:27:33	hcl_pretest 0:00:10	0.073	0.407	0.364	111.8	PASS		0.007
HCL_PRETEST_SPIKE_0037.LAB	10/1/2022	21:27:42	hcl_pretest 0:00:09	0.073	0.226	0.364	62.2	FAIL		0.007
HCL_PRETEST_SPIKE_0038.LAB	10/1/2022	21:27:52	hcl_pretest 0:00:10	0.073	0.226	0.364	62	FAIL		0.007
HCL_PRETEST_SPIKE_0039.LAB	10/1/2022	21:28:01	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7	FAIL		0.007
HCL_PRETEST_SPIKE_0040.LAB	10/1/2022	21:28:11	hcl_pretest 0:00:10	0.073	0.199	0.364	54.5	FAIL		0.007
HCL_PRETEST_SPIKE_0041.LAB	10/1/2022	21:28:20	hcl_pretest 0:00:09	0.073	0.214	0.364	58.7	FAIL		0.007
HCL_PRETEST_SPIKE_0042.LAB	10/1/2022	21:28:29	hcl_pretest 0:00:09	0.073	0.259	0.364	71.2	PASS		0.007
HCL_PRETEST_SPIKE_0043.LAB	10/1/2022	21:28:39	hcl_pretest 0:00:10	0.073	0.268	0.364	73.7	PASS		0.007
HCL_PRETEST_SPIKE_0044.LAB	10/1/2022	21:28:48	hcl_pretest 0:00:09	0.073	0.27	0.364	74.1	PASS		0.007
HCL_PRETEST_SPIKE_0045.LAB	10/1/2022	21:28:58	hcl_pretest 0:00:10	0.073	0.315	0.364	86.4	PASS		0.007
HCL_PRETEST_SPIKE_0046.LAB	10/1/2022	21:29:07	hcl_pretest 0:00:09	0.073	0.286	0.364	78.5	PASS		0.007
HCL_PRETEST_SPIKE_0047.LAB	10/1/2022	21:29:17	hcl_pretest 0:00:10	0.073	0.225	0.364	61.7	FAIL		0.007
HCL_PRETEST_SPIKE_0048.LAB	10/1/2022	21:29:26	hcl_pretest 0:00:09	0.073	0.288	0.364	79.2	PASS		0.007
HCL_PRETEST_SPIKE_0049.LAB	10/1/2022	21:29:36	hcl_pretest 0:00:10	0.073	0.273	0.364	75	PASS		0.007
HCL_PRETEST_SPIKE_0050.LAB	10/1/2022	21:29:45	hcl_pretest 0:00:09	0.073	0.384	0.364	105.4	PASS		0.007
HCL_PRETEST_SPIKE_0051.LAB	10/1/2022	21:29:54	hcl_pretest 0:00:09	0.073	0.39	0.364	107.1	PASS		0.007
HCL_PRETEST_SPIKE_0052.LAB	10/1/2022	21:30:04	hcl_pretest 0:00:10	0.073	0.229	0.364	62.9	FAIL		0.007
HCL_PRETEST_SPIKE_0053.LAB	10/1/2022	21:30:13	hcl_pretest 0:00:09	0.073	0.108	0.364	29.7	FAIL		0.007
HCL_PRETEST_SPIKE_0054.LAB	10/1/2022	21:30:23	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7	FAIL		0.007
HCL_PRETEST_SPIKE_0055.LAB	10/1/2022	21:30:32	hcl_pretest 0:00:09	0.073	0.319	0.364	87.7	PASS		0.007
HCL_PRETEST_SPIKE_0056.LAB	10/1/2022	21:30:42	hcl_pretest 0:00:10	0.073	0.275	0.364	75.6	PASS		0.007
HCL_PRETEST_SPIKE_0057.LAB	10/1/2022	21:30:51	hcl_pretest 0:00:09	0.073	0.154	0.364	42.3	FAIL		0.007
HCL_PRETEST_SPIKE_0058.LAB	10/1/2022	21:31:00	hcl_pretest 0:00:09	0.073	0.117	0.364	32.1	FAIL		0.007
HCL_PRETEST_SPIKE_0059.LAB	10/1/2022	21:31:10	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7	FAIL		0.007
HCL_PRETEST_SPIKE_0060.LAB	10/1/2022	21:31:19	hcl_pretest 0:00:09	0.073	0.103	0.364	28.3	FAIL		0.007
HCL_PRETEST_SPIKE_0061.LAB	10/1/2022	21:31:29	hcl_pretest 0:00:10	0.073	0.309	0.364	84.9	PASS		0.007
HCL_PRETEST_SPIKE_0062.LAB	10/1/2022	21:31:38	hcl_pretest 0:00:09	0.073	0.123	0.364	33.8	FAIL		0.007



HCL_PRETEST_SPIKE_0063.LAB	10/1/2022	21:31:48	hcl_pretest 0:00:10	0.073	0.208	0.364	57.1 FAIL	0.007
HCL_PRETEST_SPIKE_0064.LAB	10/1/2022	21:31:57	hcl_pretest 0:00:09	0.073	0.394	0.364	108.3 PASS	0.007
HCL_PRETEST_SPIKE_0065.LAB	10/1/2022	21:32:07	hcl_pretest 0:00:10	0.073	0.188	0.364	51.7 FAIL	0.007
HCL_PRETEST_SPIKE_0066.LAB	10/1/2022	21:32:16	hcl_pretest 0:00:09	0.073	0.118	0.364	32.5 FAIL	0.007
HCL_PRETEST_SPIKE_0067.LAB	10/1/2022	21:32:25	hcl_pretest 0:00:09	0.073	0.171	0.364	46.9 FAIL	0.007
HCL_PRETEST_SPIKE_0068.LAB	10/1/2022	21:32:35	hcl_pretest 0:00:10	0.073	0.295	0.364	81.1 PASS	0.007
HCL_PRETEST_SPIKE_0069.LAB	10/1/2022	21:32:44	hcl_pretest 0:00:09	0.073	0.383	0.364	105.1 PASS	0.007
HCL_PRETEST_SPIKE_0070.LAB	10/1/2022	21:32:54	hcl_pretest 0:00:10	0.073	0.17	0.364	46.7 FAIL	0.007
HCL_PRETEST_SPIKE_0071.LAB	10/1/2022	21:33:03	hcl_pretest 0:00:09	0.073	0.264	0.364	72.5 PASS	0.007
HCL_PRETEST_SPIKE_0072.LAB	10/1/2022	21:33:13	hcl_pretest 0:00:10	0.073	0.375	0.364	102.9 PASS	0.007
HCL_PRETEST_SPIKE_0073.LAB	10/1/2022	21:33:22	hcl_pretest 0:00:09	0.073	0.471	0.364	129.3 PASS	0.007
HCL_PRETEST_SPIKE_0074.LAB	10/1/2022	21:33:31	hcl_pretest 0:00:09	0.073	0.246	0.364	67.6 FAIL	0.007
HCL_PRETEST_SPIKE_0075.LAB	10/1/2022	21:33:41	hcl_pretest 0:00:10	0.073	0.293	0.364	80.6 PASS	0.007
HCL_PRETEST_SPIKE_0076.LAB	10/1/2022	21:33:50	hcl_pretest 0:00:09	0.073	0.107	0.364	29.3 FAIL	0.007
HCL_PRETEST_SPIKE_0077.LAB	10/1/2022	21:34:00	hcl_pretest 0:00:10	0.073	0.307	0.364	84.3 PASS	0.007
HCL_PRETEST_SPIKE_0078.LAB	10/1/2022	21:34:09	hcl_pretest 0:00:09	0.073	0.307	0.364	84.3 PASS	0.007
HCL_PRETEST_SPIKE_0079.LAB	10/1/2022	21:34:19	hcl_pretest 0:00:10	0.073	0.287	0.364	78.8 PASS	0.007
HCL_PRETEST_SPIKE_0080.LAB	10/1/2022	21:34:28	hcl_pretest 0:00:09	0.073	0.096	0.364	26.5 FAIL	0.007
HCL_PRETEST_SPIKE_0081.LAB	10/1/2022	21:34:37	hcl_pretest 0:00:09	0.073	0.321	0.364	88.2 PASS	0.007
HCL_PRETEST_SPIKE_0082.LAB	10/1/2022	21:34:47	hcl_pretest 0:00:10	0.073	0.092	0.364	25.2 FAIL	0.007
HCL_PRETEST_SPIKE_0083.LAB	10/1/2022	21:34:56	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0084.LAB	10/1/2022	21:35:06	hcl_pretest 0:00:10	0.073	0.216	0.364	59.4 FAIL	0.007
HCL_PRETEST_SPIKE_0085.LAB	10/1/2022	21:35:15	hcl_pretest 0:00:09	0.073	0.143	0.364	39.3 FAIL	0.007
HCL_PRETEST_SPIKE_0086.LAB	10/1/2022	21:35:25	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0087.LAB	10/1/2022	21:35:34	hcl_pretest 0:00:09	0.073	0.153	0.364	42 FAIL	0.007
HCL_PRETEST_SPIKE_0088.LAB	10/1/2022	21:35:43	hcl_pretest 0:00:09	0.073	0.158	0.364	43.5 FAIL	0.007
HCL_PRETEST_SPIKE_0089.LAB	10/1/2022	21:35:53	hcl_pretest 0:00:10	0.073	0.342	0.364	93.8 PASS	0.007
HCL_PRETEST_SPIKE_0090.LAB	10/1/2022	21:36:02	hcl_pretest 0:00:09	0.073	0.308	0.364	84.7 PASS	0.007
HCL_PRETEST_SPIKE_0091.LAB	10/1/2022	21:36:12	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0092.LAB	10/1/2022	21:36:21	hcl_pretest 0:00:09	0.073	0.427	0.364	117.3 PASS	0.007
HCL_PRETEST_SPIKE_0093.LAB	10/1/2022	21:36:31	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0094.LAB	10/1/2022	21:36:40	hcl_pretest 0:00:09	0.073	0.117	0.364	32.1 FAIL	0.007
HCL_PRETEST_SPIKE_0095.LAB	10/1/2022	21:36:50	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0096.LAB	10/1/2022	21:36:59	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0097.LAB	10/1/2022	21:37:08	hcl_pretest 0:00:09	0.073	0.145	0.364	39.8 FAIL	0.007
HCL_PRETEST_SPIKE_0098.LAB	10/1/2022	21:37:18	hcl_pretest 0:00:10	0.073	0.145	0.364	39.9 FAIL	0.007
HCL_PRETEST_SPIKE_0099.LAB	10/1/2022	21:37:27	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0100.LAB	10/1/2022	21:37:37	hcl_pretest 0:00:10	0.073	0.101	0.364	27.6 FAIL	0.007
HCL_PRETEST_SPIKE_0101.LAB	10/1/2022	21:37:46	hcl_pretest 0:00:09	0.073	0.112	0.364	30.7 FAIL	0.007
HCL_PRETEST_SPIKE_0102.LAB	10/1/2022	21:37:56	hcl_pretest 0:00:10	0.073	0.158	0.364	43.4 FAIL	0.007
HCL_PRETEST_SPIKE_0103.LAB	10/1/2022	21:38:05	hcl_pretest 0:00:09	0.073	0.264	0.364	72.5 PASS	0.007
HCL_PRETEST_SPIKE_0104.LAB	10/1/2022	21:38:14	hcl_pretest 0:00:09	0.073	0.139	0.364	38.2 FAIL	0.007
HCL_PRETEST_SPIKE_0105.LAB	10/1/2022	21:38:24	hcl_pretest 0:00:10	0.073	0.093	0.364	25.5 FAIL	0.007
HCL_PRETEST_SPIKE_0106.LAB	10/1/2022	21:38:33	hcl_pretest 0:00:09	0.073	0.191	0.364	52.4 FAIL	0.007
HCL_PRETEST_SPIKE_0107.LAB	10/1/2022	21:38:43	hcl_pretest 0:00:10	0.073	0.191	0.364	52.4 FAIL	0.007
HCL_PRETEST_SPIKE_0108.LAB	10/1/2022	21:38:52	hcl_pretest 0:00:09	0.073	0.199	0.364	54.6 FAIL	0.007
HCL_PRETEST_SPIKE_0109.LAB	10/1/2022	21:39:02	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0110.LAB	10/1/2022	21:39:11	hcl_pretest 0:00:09	0.073	0.168	0.364	46.1 FAIL	0.007
HCL_PRETEST_SPIKE_0111.LAB	10/1/2022	21:39:20	hcl_pretest 0:00:09	0.073	0.294	0.364	80.7 PASS	0.007
HCL_PRETEST_SPIKE_0112.LAB	10/1/2022	21:39:30	hcl_pretest 0:00:10	0.073	0.114	0.364	31.4 FAIL	0.007
HCL_PRETEST_SPIKE_0113.LAB	10/1/2022	21:39:39	hcl_pretest 0:00:09	0.073	0.214	0.364	58.7 FAIL	0.007
HCL_PRETEST_SPIKE_0114.LAB	10/1/2022	21:39:49	hcl_pretest 0:00:10	0.073	0.225	0.364	61.8 FAIL	0.007
HCL_PRETEST_SPIKE_0115.LAB	10/1/2022	21:39:58	hcl_pretest 0:00:09	0.073	0.098	0.364	27 FAIL	0.007
HCL_PRETEST_SPIKE_0116.LAB	10/1/2022	21:40:08	hcl_pretest 0:00:10	0.073	0.178	0.364	48.8 FAIL	0.007
HCL_PRETEST_SPIKE_0117.LAB	10/1/2022	21:40:17	hcl_pretest 0:00:09	0.073	0.171	0.364	46.9 FAIL	0.007
HCL_PRETEST_SPIKE_0118.LAB	10/1/2022	21:40:27	hcl_pretest 0:00:10	0.073	0.146	0.364	40 FAIL	0.007
HCL_PRETEST_SPIKE_0119.LAB	10/1/2022	21:40:36	hcl_pretest 0:00:09	0.073	0.097	0.364	26.7 FAIL	0.007
HCL_PRETEST_SPIKE_0120.LAB	10/1/2022	21:40:45	hcl_pretest 0:00:09	0.073	0.113	0.364	31.1 FAIL	0.007
HCL_PRETEST_SPIKE_0121.LAB	10/1/2022	21:40:55	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0122.LAB	10/1/2022	21:41:04	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0123.LAB	10/1/2022	21:41:14	hcl_pretest 0:00:10	0.073	0.221	0.364	60.7 FAIL	0.007
HCL_PRETEST_SPIKE_0124.LAB	10/1/2022	21:41:23	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0125.LAB	10/1/2022	21:41:33	hcl_pretest 0:00:10	0.073	0.243	0.364	66.8 FAIL	0.007
HCL_PRETEST_SPIKE_0126.LAB	10/1/2022	21:41:42	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007



HCL_PRETEST_SPIKE_0127.LAB	10/1/2022	21:41:51	hcl_pretest 0:00:09	0.073	0.139	0.364	38.1 FAIL	0.007
HCL_PRETEST_SPIKE_0128.LAB	10/1/2022	21:42:01	hcl_pretest 0:00:10	0.073	0.085	0.364	23.3 FAIL	0.007
HCL_PRETEST_SPIKE_0129.LAB	10/1/2022	21:42:10	hcl_pretest 0:00:09	0.073	0.094	0.364	25.9 FAIL	0.007
HCL_PRETEST_SPIKE_0130.LAB	10/1/2022	21:42:20	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0131.LAB	10/1/2022	21:42:29	hcl_pretest 0:00:09	0.073	0.174	0.364	47.8 FAIL	0.007
HCL_PRETEST_SPIKE_0132.LAB	10/1/2022	21:42:39	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0133.LAB	10/1/2022	21:42:48	hcl_pretest 0:00:09	0.073	0.156	0.364	42.8 FAIL	0.007
HCL_PRETEST_SPIKE_0134.LAB	10/1/2022	21:42:57	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0135.LAB	10/1/2022	21:43:07	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0136.LAB	10/1/2022	21:43:16	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0137.LAB	10/1/2022	21:43:26	hcl_pretest 0:00:10	0.073	0.135	0.364	37 FAIL	0.007
HCL_PRETEST_SPIKE_0138.LAB	10/1/2022	21:43:35	hcl_pretest 0:00:09	0.073	0.12	0.364	32.9 FAIL	0.007
HCL_PRETEST_SPIKE_0139.LAB	10/1/2022	21:43:45	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0140.LAB	10/1/2022	21:43:54	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0141.LAB	10/1/2022	21:44:03	hcl_pretest 0:00:09	0.073	0.125	0.364	34.5 FAIL	0.007
HCL_PRETEST_SPIKE_0142.LAB	10/1/2022	21:44:13	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0143.LAB	10/1/2022	21:44:22	hcl_pretest 0:00:09	0.073	0.305	0.364	83.7 PASS	0.007
HCL_PRETEST_SPIKE_0144.LAB	10/1/2022	21:44:32	hcl_pretest 0:00:10	0.073	0.205	0.364	56.2 FAIL	0.007
HCL_PRETEST_SPIKE_0145.LAB	10/1/2022	21:44:41	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0146.LAB	10/1/2022	21:44:51	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0147.LAB	10/1/2022	21:45:00	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0148.LAB	10/1/2022	21:45:09	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0149.LAB	10/1/2022	21:45:19	hcl_pretest 0:00:10	0.073	0.121	0.364	33.2 FAIL	0.007
HCL_PRETEST_SPIKE_0150.LAB	10/1/2022	21:45:28	hcl_pretest 0:00:09	0.073	0.379	0.364	104 PASS	0.007
HCL_PRETEST_SPIKE_0151.LAB	10/1/2022	21:45:38	hcl_pretest 0:00:10	0.073	0.273	0.364	75 PASS	0.007
HCL_PRETEST_SPIKE_0152.LAB	10/1/2022	21:45:47	hcl_pretest 0:00:09	0.888	0.039	1.754	2.2 FAIL	0.083
HCL_PRETEST_SPIKE_0153.LAB	10/1/2022	21:45:57	hcl_pretest 0:00:10	1.439	0.08	2.692	3 FAIL	0.134
HCL_PRETEST_SPIKE_0154.LAB	10/1/2022	21:46:06	hcl_pretest 0:00:09	1.631	0.3	3.019	9.9 FAIL	0.152
HCL_PRETEST_SPIKE_0155.LAB	10/1/2022	21:46:15	hcl_pretest 0:00:09	1.672	0.039	3.089	1.3 FAIL	0.156
HCL_PRETEST_SPIKE_0156.LAB	10/1/2022	21:46:25	hcl_pretest 0:00:10	1.546	0.039	2.874	1.3 FAIL	0.144
HCL_PRETEST_SPIKE_0157.LAB	10/1/2022	21:46:34	hcl_pretest 0:00:09	2.493	0.039	4.49	0.9 FAIL	0.233
HCL_PRETEST_SPIKE_0158.LAB	10/1/2022	21:46:44	hcl_pretest 0:00:10	3.195	0.039	5.685	0.7 FAIL	0.299
HCL_PRETEST_SPIKE_0159.LAB	10/1/2022	21:46:53	hcl_pretest 0:00:09	3.422	0.039	6.073	0.6 FAIL	0.32
HCL_PRETEST_SPIKE_0160.LAB	10/1/2022	21:47:03	hcl_pretest 0:00:10	3.481	0.114	6.172	1.8 FAIL	0.325
HCL_PRETEST_SPIKE_0161.LAB	10/1/2022	21:47:12	hcl_pretest 0:00:09	3.498	0.039	6.202	0.6 FAIL	0.327
HCL_PRETEST_SPIKE_0162.LAB	10/1/2022	21:47:21	hcl_pretest 0:00:09	3.511	0.039	6.225	0.6 FAIL	0.328
HCL_PRETEST_SPIKE_0163.LAB	10/1/2022	21:47:31	hcl_pretest 0:00:10	3.519	0.1	6.238	1.6 FAIL	0.329
HCL_PRETEST_SPIKE_0164.LAB	10/1/2022	21:47:40	hcl_pretest 0:00:09	3.515	0.039	6.231	0.6 FAIL	0.329
HCL_PRETEST_SPIKE_0165.LAB	10/1/2022	21:47:50	hcl_pretest 0:00:10	3.511	0.039	6.224	0.6 FAIL	0.328
HCL_PRETEST_SPIKE_0166.LAB	10/1/2022	21:47:59	hcl_pretest 0:00:09	3.515	0.039	6.231	0.6 FAIL	0.328
HCL_PRETEST_SPIKE_0167.LAB	10/1/2022	21:48:09	hcl_pretest 0:00:10	3.512	0.039	6.227	0.6 FAIL	0.328
HCL_PRETEST_SPIKE_0168.LAB	10/1/2022	21:48:18	hcl_pretest 0:00:09	3.525	0.039	6.248	0.6 FAIL	0.329
HCL_PRETEST_SPIKE_0169.LAB	10/1/2022	21:48:28	hcl_pretest 0:00:10	3.497	0.039	6.2	0.6 FAIL	0.327
HCL_PRETEST_SPIKE_0170.LAB	10/1/2022	21:48:37	hcl_pretest 0:00:09	2.663	0.145	4.778	3 FAIL	0.249
HCL_PRETEST_SPIKE_0171.LAB	10/1/2022	21:48:46	hcl_pretest 0:00:09	1.114	0.039	2.139	1.8 FAIL	0.104
HCL_PRETEST_SPIKE_0172.LAB	10/1/2022	21:48:56	hcl_pretest 0:00:10	0.373	0.039	0.874	4.4 FAIL	0.035
HCL_PRETEST_SPIKE_0173.LAB	10/1/2022	21:49:05	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0174.LAB	10/1/2022	21:49:15	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0175.LAB	10/1/2022	21:49:24	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0176.LAB	10/1/2022	21:49:34	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0177.LAB	10/1/2022	21:49:43	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0178.LAB	10/1/2022	21:49:52	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0179.LAB	10/1/2022	21:50:02	hcl_pretest 0:00:10	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0180.LAB	10/1/2022	21:50:11	hcl_pretest 0:00:09	0.073	0.039	0.364	10.7 FAIL	0.007
HCL_PRETEST_SPIKE_0181.LAB	10/1/2022	21:50:21	hcl_pretest 0:00:10	0.341	0.039	0.82	4.7 FAIL	0.032
HCL_PRETEST_SPIKE_0182.LAB	10/1/2022	21:50:30	hcl_pretest 0:00:09	1.948	0.039	3.56	1.1 FAIL	0.182
HCL_PRETEST_SPIKE_0183.LAB	10/1/2022	21:50:40	hcl_pretest 0:00:10	3.147	0.039	5.605	0.7 FAIL	0.294
HCL_PRETEST_SPIKE_0184.LAB	10/1/2022	21:50:49	hcl_pretest 0:00:09	3.577	0.039	6.337	0.6 FAIL	0.334
HCL_PRETEST_SPIKE_0185.LAB	10/1/2022	21:50:58	hcl_pretest 0:00:09	3.694	0.106	6.536	1.6 FAIL	0.345
HCL_PRETEST_SPIKE_0186.LAB	10/1/2022	21:51:08	hcl_pretest 0:00:10	3.727	0.039	6.592	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0187.LAB	10/1/2022	21:51:17	hcl_pretest 0:00:09	3.744	0.188	6.622	2.8 FAIL	0.35
HCL_PRETEST_SPIKE_0188.LAB	10/1/2022	21:51:27	hcl_pretest 0:00:10	3.751	0.198	6.633	3 FAIL	0.351
HCL_PRETEST_SPIKE_0189.LAB	10/1/2022	21:51:36	hcl_pretest 0:00:09	3.744	0.039	6.621	0.6 FAIL	0.35
HCL_PRETEST_SPIKE_0190.LAB	10/1/2022	21:51:46	hcl_pretest 0:00:10	3.736	0.088	6.608	1.3 FAIL	0.349



HCL_PRETEST_SPIKE_0191.LAB	10/1/2022	21:51:55	hcl_pretest 0:00:09	3.732	0.039	6.601	0.6 FAIL	0.349
HCL_PRETEST_SPIKE_0192.LAB	10/1/2022	21:52:04	hcl_pretest 0:00:09	3.723	0.039	6.586	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0193.LAB	10/1/2022	21:52:14	hcl_pretest 0:00:10	3.727	0.039	6.593	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0194.LAB	10/1/2022	21:52:23	hcl_pretest 0:00:09	3.724	0.039	6.588	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0195.LAB	10/1/2022	21:52:33	hcl_pretest 0:00:10	3.71	0.217	6.564	3.3 FAIL	0.347
HCL_PRETEST_SPIKE_0196.LAB	10/1/2022	21:52:42	hcl_pretest 0:00:09	3.718	0.112	6.578	1.7 FAIL	0.348
HCL_PRETEST_SPIKE_0197.LAB	10/1/2022	21:52:52	hcl_pretest 0:00:10	3.716	0.039	6.574	0.6 FAIL	0.347
HCL_PRETEST_SPIKE_0198.LAB	10/1/2022	21:53:01	hcl_pretest 0:00:09	3.728	0.091	6.594	1.4 FAIL	0.348
HCL_PRETEST_SPIKE_0199.LAB	10/1/2022	21:53:10	hcl_pretest 0:00:09	3.723	0.039	6.587	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0200.LAB	10/1/2022	21:53:20	hcl_pretest 0:00:10	3.721	0.039	6.583	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0201.LAB	10/1/2022	21:53:29	hcl_pretest 0:00:09	3.725	0.039	6.589	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0202.LAB	10/1/2022	21:53:39	hcl_pretest 0:00:10	3.717	0.039	6.575	0.6 FAIL	0.347
HCL_PRETEST_SPIKE_0203.LAB	10/1/2022	21:53:48	hcl_pretest 0:00:09	3.704	0.039	6.553	0.6 FAIL	0.346
HCL_PRETEST_SPIKE_0204.LAB	10/1/2022	21:53:58	hcl_pretest 0:00:10	3.722	0.039	6.585	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0205.LAB	10/1/2022	21:54:07	hcl_pretest 0:00:09	3.726	0.112	6.591	1.7 FAIL	0.348
HCL_PRETEST_SPIKE_0206.LAB	10/1/2022	21:54:17	hcl_pretest 0:00:10	3.724	0.039	6.587	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0207.LAB	10/1/2022	21:54:26	hcl_pretest 0:00:09	3.725	0.039	6.588	0.6 FAIL	0.348
HCL_PRETEST_SPIKE_0208.LAB	10/1/2022	21:54:35	hcl_pretest 0:00:09	3.739	0.039	6.612	0.6 FAIL	0.349
HCL_PRETEST_SPIKE_0209.LAB	10/1/2022	21:54:45	hcl_pretest 0:00:10	3.746	0.086	6.625	1.3 FAIL	0.35
HCL_PRETEST_SPIKE_0210.LAB	10/1/2022	21:54:54	hcl_pretest 0:00:09	3.686	0.039	6.523	0.6 FAIL	0.344
HCL_PRETEST_SPIKE_0211.LAB	10/1/2022	21:55:04	hcl_pretest 0:00:10	3.498	0.079	6.202	1.3 FAIL	0.327
HCL_PRETEST_SPIKE_0212.LAB	10/1/2022	21:55:13	hcl_pretest 0:00:09	3.342	0.039	5.936	0.7 FAIL	0.312
HCL_PRETEST_SPIKE_0213.LAB	10/1/2022	21:55:23	hcl_pretest 0:00:10	3.276	0.039	5.823	0.7 FAIL	0.306
HCL_PRETEST_SPIKE_0214.LAB	10/1/2022	21:55:32	hcl_pretest 0:00:09	3.26	0.039	5.797	0.7 FAIL	0.305
HCL_PRETEST_SPIKE_0215.LAB	10/1/2022	21:55:41	hcl_pretest 0:00:09	3.247	0.13	5.775	2.3 FAIL	0.303
HCL_PRETEST_SPIKE_0216.LAB	10/1/2022	21:55:51	hcl_pretest 0:00:10	3.257	0.039	5.791	0.7 FAIL	0.304
HCL_PRETEST_SPIKE_0217.LAB	10/1/2022	21:56:00	hcl_pretest 0:00:09	3.247	0.039	5.775	0.7 FAIL	0.303
HCL_PRETEST_SPIKE_0218.LAB	10/1/2022	21:56:10	hcl_pretest 0:00:10	3.26	0.039	5.797	0.7 FAIL	0.305
HCL_PRETEST_SPIKE_0219.LAB	10/1/2022	21:56:19	hcl_pretest 0:00:09	3.262	0.039	5.801	0.7 FAIL	0.305
HCL_PRETEST_SPIKE_0220.LAB	10/1/2022	21:56:29	hcl_pretest 0:00:10	3.257	0.039	5.792	0.7 FAIL	0.304
HCL_PRETEST_SPIKE_0221.LAB	10/1/2022	21:56:38	hcl_pretest 0:00:09	3.255	0.106	5.788	1.8 FAIL	0.304
HCL_PRETEST_SPIKE_0222.LAB	10/1/2022	21:56:48	hcl_pretest 0:00:10	3.244	0.313	5.769	5.4 FAIL	0.303
HCL_PRETEST_SPIKE_0223.LAB	10/1/2022	21:56:57	hcl_pretest 0:00:09	2.95	0.096	5.268	1.8 FAIL	0.276
HCL_PRETEST_SPIKE_0224.LAB	10/1/2022	21:57:06	hcl_pretest 0:00:09	1.979	0.039	3.613	1.1 FAIL	0.185
HCL_PRETEST_SPIKE_0225.LAB	10/1/2022	21:57:16	hcl_pretest 0:00:10	1.291	0.039	2.441	1.6 FAIL	0.121
HCL_PRETEST_SPIKE_0226.LAB	10/1/2022	21:57:25	hcl_pretest 0:00:09	1.022	0.039	1.982	2 FAIL	0.096
HCL_PRETEST_SPIKE_0227.LAB	10/1/2022	21:57:35	hcl_pretest 0:00:10	0.933	0.039	1.83	2.1 FAIL	0.087
HCL_PRETEST_SPIKE_0228.LAB	10/1/2022	21:57:44	hcl_pretest 0:00:09	0.951	0.163	1.86	8.8 FAIL	0.089
HCL_PRETEST_SPIKE_0229.LAB	10/1/2022	21:57:53	hcl_pretest 0:00:09	1.021	0.123	1.979	6.2 FAIL	0.095
HCL_PRETEST_SPIKE_0230.LAB	10/1/2022	21:58:03	hcl_pretest 0:00:10	1.068	0.039	2.06	1.9 FAIL	0.1
HCL_PRETEST_SPIKE_0231.LAB	10/1/2022	21:58:12	hcl_pretest 0:00:09	1.099	0.039	2.112	1.8 FAIL	0.103
HCL_PRETEST_SPIKE_0232.LAB	10/1/2022	21:58:22	hcl_pretest 0:00:10	1.093	0.039	2.102	1.8 FAIL	0.102
HCL_PRETEST_SPIKE_0233.LAB	10/1/2022	21:58:31	hcl_pretest 0:00:09	1.081	0.271	2.082	13 FAIL	0.101
HCL_PRETEST_SPIKE_0234.LAB	10/1/2022	21:58:41	hcl_pretest 0:00:10	1.079	0.144	2.079	6.9 FAIL	0.101
HCL_PRETEST_SPIKE_0235.LAB	10/1/2022	21:58:50	hcl_pretest 0:00:09	1.088	0.039	2.093	1.9 FAIL	0.102
HCL_PRETEST_SPIKE_0236.LAB	10/1/2022	21:58:59	hcl_pretest 0:00:09	1.078	0.039	2.077	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0237.LAB	10/1/2022	21:59:09	hcl_pretest 0:00:10	1.072	0.039	2.067	1.9 FAIL	0.1
HCL_PRETEST_SPIKE_0238.LAB	10/1/2022	21:59:18	hcl_pretest 0:00:09	1.075	0.039	2.071	1.9 FAIL	0.1
HCL_PRETEST_SPIKE_0239.LAB	10/1/2022	21:59:28	hcl_pretest 0:00:10	1.077	0.039	2.075	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0240.LAB	10/1/2022	21:59:37	hcl_pretest 0:00:09	1.078	0.202	2.076	9.7 FAIL	0.101
HCL_PRETEST_SPIKE_0241.LAB	10/1/2022	21:59:47	hcl_pretest 0:00:10	1.082	0.039	2.084	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0242.LAB	10/1/2022	21:59:56	hcl_pretest 0:00:09	1.081	0.147	2.082	7.1 FAIL	0.101
HCL_PRETEST_SPIKE_0243.LAB	10/1/2022	22:00:06	hcl_pretest 0:00:10	1.075	0.107	2.071	5.2 FAIL	0.1
HCL_PRETEST_SPIKE_0244.LAB	10/1/2022	22:00:15	hcl_pretest 0:00:09	1.077	0.039	2.075	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0245.LAB	10/1/2022	22:00:24	hcl_pretest 0:00:09	1.082	0.082	2.083	4 FAIL	0.101
HCL_PRETEST_SPIKE_0246.LAB	10/1/2022	22:00:34	hcl_pretest 0:00:10	1.082	0.171	2.083	8.2 FAIL	0.101
HCL_PRETEST_SPIKE_0247.LAB	10/1/2022	22:00:43	hcl_pretest 0:00:09	1.08	0.106	2.08	5.1 FAIL	0.101
HCL_PRETEST_SPIKE_0248.LAB	10/1/2022	22:00:53	hcl_pretest 0:00:10	1.08	0.039	2.08	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0249.LAB	10/1/2022	22:01:02	hcl_pretest 0:00:09	1.074	0.039	2.07	1.9 FAIL	0.1
HCL_PRETEST_SPIKE_0250.LAB	10/1/2022	22:01:12	hcl_pretest 0:00:10	1.076	0.039	2.074	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0251.LAB	10/1/2022	22:01:21	hcl_pretest 0:00:09	1.08	0.039	2.079	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0252.LAB	10/1/2022	22:01:30	hcl_pretest 0:00:09	1.082	0.039	2.084	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0253.LAB	10/1/2022	22:01:40	hcl_pretest 0:00:10	1.075	0.118	2.072	5.7 FAIL	0.1
HCL_PRETEST_SPIKE_0254.LAB	10/1/2022	22:01:49	hcl_pretest 0:00:09	1.076	0.039	2.073	1.9 FAIL	0.101



HCL_PRETEST_SPIKE_0255.LAB	10/1/2022	22:01:59	hcl_pretest 0:00:10	1.082	0.039	2.083	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0256.LAB	10/1/2022	22:02:08	hcl_pretest 0:00:09	1.079	0.039	2.078	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0257.LAB	10/1/2022	22:02:18	hcl_pretest 0:00:10	1.083	0.039	2.085	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0258.LAB	10/1/2022	22:02:27	hcl_pretest 0:00:09	1.078	0.249	2.077	12 FAIL	0.101
HCL_PRETEST_SPIKE_0259.LAB	10/1/2022	22:02:36	hcl_pretest 0:00:09	1.084	0.039	2.087	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0260.LAB	10/1/2022	22:02:46	hcl_pretest 0:00:10	1.082	0.106	2.084	5.1 FAIL	0.101
HCL_PRETEST_SPIKE_0261.LAB	10/1/2022	22:02:55	hcl_pretest 0:00:09	1.085	0.039	2.089	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0262.LAB	10/1/2022	22:03:05	hcl_pretest 0:00:10	1.083	0.236	2.085	11.3 FAIL	0.101
HCL_PRETEST_SPIKE_0263.LAB	10/1/2022	22:03:14	hcl_pretest 0:00:09	1.085	0.039	2.088	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0264.LAB	10/1/2022	22:03:24	hcl_pretest 0:00:10	1.089	0.039	2.096	1.9 FAIL	0.102
HCL_PRETEST_SPIKE_0265.LAB	10/1/2022	22:03:33	hcl_pretest 0:00:09	1.087	0.039	2.092	1.9 FAIL	0.102
HCL_PRETEST_SPIKE_0266.LAB	10/1/2022	22:03:43	hcl_pretest 0:00:10	1.084	0.039	2.087	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0267.LAB	10/1/2022	22:03:52	hcl_pretest 0:00:09	1.083	0.128	2.085	6.1 FAIL	0.101
HCL_PRETEST_SPIKE_0268.LAB	10/1/2022	22:04:01	hcl_pretest 0:00:09	1.083	0.039	2.085	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0269.LAB	10/1/2022	22:04:11	hcl_pretest 0:00:10	1.08	0.039	2.081	1.9 FAIL	0.101
HCL_PRETEST_SPIKE_0270.LAB	10/1/2022	22:04:20	hcl_pretest 0:00:09	1.08	0.119	2.081	5.7 FAIL	0.101
HCL_PRETEST_SPIKE_0271.LAB	10/1/2022	22:04:30	hcl_pretest 0:00:10	1.081	0.084	2.082	4.1 FAIL	0.101
HCL_PRETEST_SPIKE_0272.LAB	10/1/2022	22:04:39	hcl_pretest 0:00:09	1.088	0.039	2.094	1.9 FAIL	0.102
HCL_PRETEST_SPIKE_0273.LAB	10/1/2022	22:04:49	hcl_pretest 0:00:10	1.086	0.039	2.091	1.9 FAIL	0.102
HCL_PRETEST_SPIKE_0274.LAB	10/1/2022	22:04:58	hcl_pretest 0:00:09	1.083	0.129	2.085	6.2 FAIL	0.101
HCL_PRETEST_SPIKE_0275.LAB	10/1/2022	22:05:07	hcl_pretest 0:00:09	1.088	0.039	2.094	1.9 FAIL	0.102
HCL_PRETEST_SPIKE_0276.LAB	10/1/2022	22:05:17	hcl_pretest 0:00:10	1.09	0.116	2.098	5.5 FAIL	0.102
HCL_PRETEST_SPIKE_0277.LAB	10/1/2022	22:05:26	hcl_pretest 0:00:09	1.09	0.039	2.098	1.8 FAIL	0.102
HCL_PRETEST_SPIKE_0278.LAB	10/1/2022	22:05:36	hcl_pretest 0:00:10	1.087	0.039	2.093	1.9 FAIL	0.102
HCL_PRETEST_SPIKE_0279.LAB	10/1/2022	22:05:45	hcl_pretest 0:00:09	1.094	0.039	2.104	1.8 FAIL	0.102
HCL_PRETEST_SPIKE_0280.LAB	10/1/2022	22:05:55	hcl_pretest 0:00:10	1.089	0.039	2.095	1.9 FAIL	0.102

Native Analyte concentration = 0.239  
Bias = 0  
Direct inject analyte concentration 18.48  
Direct inject tracer concentration 10.7  
The above data is for: spike\_hcl\_pretest\_NG  
Tracer Bias 0



## spike\_formal\_post\_spike\_NG\_rpt

Spectrum	Date	Time	Run num	Integrat	SF6 to 112	Formaldeh	Expected_	Recovery	PASS/FAIL	Dilution
FORMALDEHYDE_POST_SPIKE_0174.LAB	10/2/2022	02:29:30	formal_po:0:00:09	0.056	0.063	0.421	15	FAIL	0.011	
FORMALDEHYDE_POST_SPIKE_0175.LAB	10/2/2022	02:29:40	formal_po:0:00:10	0.056	0.063	0.421	15	FAIL	0.011	
FORMALDEHYDE_POST_SPIKE_0176.LAB	10/2/2022	02:29:49	formal_po:0:00:09	0.056	0.063	0.421	15	FAIL	0.011	
FORMALDEHYDE_POST_SPIKE_0177.LAB	10/2/2022	02:29:59	formal_po:0:00:10	0.056	0.063	0.421	15	FAIL	0.011	
FORMALDEHYDE_POST_SPIKE_0178.LAB	10/2/2022	02:30:08	formal_po:0:00:09	0.056	0.063	0.421	15	FAIL	0.011	
FORMALDEHYDE_POST_SPIKE_0179.LAB	10/2/2022	02:30:18	formal_po:0:00:10	0.124	0.063	0.815	7.7	FAIL	0.023	
FORMALDEHYDE_POST_SPIKE_0180.LAB	10/2/2022	02:30:27	formal_po:0:00:09	0.151	0.166	0.972	17.1	FAIL	0.028	
FORMALDEHYDE_POST_SPIKE_0181.LAB	10/2/2022	02:30:36	formal_po:0:00:09	0.184	0.227	1.165	19.5	FAIL	0.035	
FORMALDEHYDE_POST_SPIKE_0182.LAB	10/2/2022	02:30:46	formal_po:0:00:10	0.224	0.063	1.402	4.5	FAIL	0.042	
FORMALDEHYDE_POST_SPIKE_0183.LAB	10/2/2022	02:30:55	formal_po:0:00:09	0.279	0.063	1.723	3.7	FAIL	0.053	
FORMALDEHYDE_POST_SPIKE_0184.LAB	10/2/2022	02:31:05	formal_po:0:00:10	0.343	0.387	2.095	18.5	FAIL	0.065	
FORMALDEHYDE_POST_SPIKE_0185.LAB	10/2/2022	02:31:14	formal_po:0:00:09	0.425	0.063	2.574	2.5	FAIL	0.08	
FORMALDEHYDE_POST_SPIKE_0186.LAB	10/2/2022	02:31:24	formal_po:0:00:10	0.529	0.063	3.18	2	FAIL	0.1	
FORMALDEHYDE_POST_SPIKE_0187.LAB	10/2/2022	02:31:33	formal_po:0:00:09	0.638	0.063	3.817	1.7	FAIL	0.12	
FORMALDEHYDE_POST_SPIKE_0188.LAB	10/2/2022	02:31:42	formal_po:0:00:09	0.748	0.063	4.457	1.4	FAIL	0.141	
FORMALDEHYDE_POST_SPIKE_0189.LAB	10/2/2022	02:31:52	formal_po:0:00:10	0.849	0.164	5.042	3.3	FAIL	0.16	
FORMALDEHYDE_POST_SPIKE_0190.LAB	10/2/2022	02:32:01	formal_po:0:00:09	0.955	0.159	5.662	2.8	FAIL	0.18	
FORMALDEHYDE_POST_SPIKE_0191.LAB	10/2/2022	02:32:11	formal_po:0:00:10	1.029	0.203	6.093	3.3	FAIL	0.194	
FORMALDEHYDE_POST_SPIKE_0192.LAB	10/2/2022	02:32:20	formal_po:0:00:09	1.122	0.063	6.634	1	FAIL	0.211	
FORMALDEHYDE_POST_SPIKE_0193.LAB	10/2/2022	02:32:30	formal_po:0:00:10	1.247	0.343	7.362	4.7	FAIL	0.235	
FORMALDEHYDE_POST_SPIKE_0194.LAB	10/2/2022	02:32:39	formal_po:0:00:09	1.41	0.063	8.315	0.8	FAIL	0.266	
FORMALDEHYDE_POST_SPIKE_0195.LAB	10/2/2022	02:32:49	formal_po:0:00:10	1.583	0.063	9.324	0.7	FAIL	0.298	
FORMALDEHYDE_POST_SPIKE_0196.LAB	10/2/2022	02:32:58	formal_po:0:00:09	1.759	0.063	10.35	0.6	FAIL	0.331	
FORMALDEHYDE_POST_SPIKE_0197.LAB	10/2/2022	02:33:07	formal_po:0:00:09	1.926	0.234	11.32	2.1	FAIL	0.363	
FORMALDEHYDE_POST_SPIKE_0198.LAB	10/2/2022	02:33:17	formal_po:0:00:10	2.085	0.174	12.247	1.4	FAIL	0.393	
FORMALDEHYDE_POST_SPIKE_0199.LAB	10/2/2022	02:33:26	formal_po:0:00:09	2.241	0.063	13.156	0.5	FAIL	0.422	
FORMALDEHYDE_POST_SPIKE_0200.LAB	10/2/2022	02:33:36	formal_po:0:00:10	2.379	0.396	13.964	2.8	FAIL	0.448	
FORMALDEHYDE_POST_SPIKE_0201.LAB	10/2/2022	02:33:45	formal_po:0:00:09	2.517	0.063	14.766	0.4	FAIL	0.474	
FORMALDEHYDE_POST_SPIKE_0202.LAB	10/2/2022	02:34:13	formal_po:0:00:28	2.867	0.39	16.81	2.3	FAIL	0.54	
FORMALDEHYDE_POST_SPIKE_0203.LAB	10/2/2022	02:34:16	formal_po:0:00:03	2.905	0.235	17.031	1.4	FAIL	0.547	
FORMALDEHYDE_POST_SPIKE_0204.LAB	10/2/2022	02:34:19	formal_po:0:00:03	2.934	0.063	17.198	0.4	FAIL	0.553	
FORMALDEHYDE_POST_SPIKE_0205.LAB	10/2/2022	02:34:22	formal_po:0:00:03	2.951	0.289	17.3	1.7	FAIL	0.556	
FORMALDEHYDE_POST_SPIKE_0206.LAB	10/2/2022	02:34:25	formal_po:0:00:03	2.972	0.437	17.419	2.5	FAIL	0.56	
FORMALDEHYDE_POST_SPIKE_0207.LAB	10/2/2022	02:34:28	formal_po:0:00:03	2.999	0.063	17.576	0.4	FAIL	0.565	
FORMALDEHYDE_POST_SPIKE_0208.LAB	10/2/2022	02:34:30	formal_po:0:00:02	3.043	0.46	17.836	2.6	FAIL	0.573	
FORMALDEHYDE_POST_SPIKE_0209.LAB	10/2/2022	02:34:33	formal_po:0:00:03	3.056	0.063	17.91	0.4	FAIL	0.576	
FORMALDEHYDE_POST_SPIKE_0210.LAB	10/2/2022	02:34:36	formal_po:0:00:03	3.08	0.063	18.048	0.3	FAIL	0.58	
FORMALDEHYDE_POST_SPIKE_0211.LAB	10/2/2022	02:34:39	formal_po:0:00:03	3.096	0.063	18.143	0.3	FAIL	0.583	
FORMALDEHYDE_POST_SPIKE_0212.LAB	10/2/2022	02:34:42	formal_po:0:00:03	3.125	0.27	18.31	1.5	FAIL	0.588	
FORMALDEHYDE_POST_SPIKE_0213.LAB	10/2/2022	02:34:45	formal_po:0:00:03	3.145	0.063	18.427	0.3	FAIL	0.592	
FORMALDEHYDE_POST_SPIKE_0214.LAB	10/2/2022	02:34:47	formal_po:0:00:02	3.172	0.063	18.586	0.3	FAIL	0.597	
FORMALDEHYDE_POST_SPIKE_0215.LAB	10/2/2022	02:34:50	formal_po:0:00:03	3.198	0.063	18.737	0.3	FAIL	0.602	
FORMALDEHYDE_POST_SPIKE_0216.LAB	10/2/2022	02:34:53	formal_po:0:00:03	3.195	0.063	18.718	0.3	FAIL	0.602	
FORMALDEHYDE_POST_SPIKE_0217.LAB	10/2/2022	02:34:56	formal_po:0:00:03	3.205	0.349	18.779	1.9	FAIL	0.604	
FORMALDEHYDE_POST_SPIKE_0218.LAB	10/2/2022	02:34:59	formal_po:0:00:03	3.23	0.309	18.922	1.6	FAIL	0.608	
FORMALDEHYDE_POST_SPIKE_0219.LAB	10/2/2022	02:35:02	formal_po:0:00:03	3.258	0.156	19.086	0.8	FAIL	0.614	
FORMALDEHYDE_POST_SPIKE_0220.LAB	10/2/2022	02:35:04	formal_po:0:00:02	3.262	0.561	19.11	2.9	FAIL	0.614	
FORMALDEHYDE_POST_SPIKE_0221.LAB	10/2/2022	02:35:07	formal_po:0:00:03	3.284	0.063	19.238	0.3	FAIL	0.618	
FORMALDEHYDE_POST_SPIKE_0222.LAB	10/2/2022	02:35:10	formal_po:0:00:03	3.287	0.409	19.259	2.1	FAIL	0.619	
FORMALDEHYDE_POST_SPIKE_0223.LAB	10/2/2022	02:35:13	formal_po:0:00:03	3.295	0.063	19.305	0.3	FAIL	0.621	
FORMALDEHYDE_POST_SPIKE_0224.LAB	10/2/2022	02:35:16	formal_po:0:00:03	3.311	0.063	19.399	0.3	FAIL	0.624	
FORMALDEHYDE_POST_SPIKE_0225.LAB	10/2/2022	02:35:19	formal_po:0:00:03	3.3	0.391	19.333	2	FAIL	0.621	
FORMALDEHYDE_POST_SPIKE_0226.LAB	10/2/2022	02:35:21	formal_po:0:00:02	3.324	0.063	19.473	0.3	FAIL	0.626	
FORMALDEHYDE_POST_SPIKE_0227.LAB	10/2/2022	02:35:24	formal_po:0:00:03	3.311	0.269	19.398	1.4	FAIL	0.624	
FORMALDEHYDE_POST_SPIKE_0228.LAB	10/2/2022	02:35:27	formal_po:0:00:03	3.336	0.063	19.541	0.3	FAIL	0.628	
FORMALDEHYDE_POST_SPIKE_0229.LAB	10/2/2022	02:35:30	formal_po:0:00:03	3.34	0.472	19.568	2.4	FAIL	0.629	
FORMALDEHYDE_POST_SPIKE_0230.LAB	10/2/2022	02:35:33	formal_po:0:00:03	3.346	0.152	19.598	0.8	FAIL	0.63	
FORMALDEHYDE_POST_SPIKE_0231.LAB	10/2/2022	02:35:36	formal_po:0:00:03	3.356	0.207	19.658	1.1	FAIL	0.632	
FORMALDEHYDE_POST_SPIKE_0232.LAB	10/2/2022	02:35:38	formal_po:0:00:02	3.348	0.313	19.615	1.6	FAIL	0.631	
FORMALDEHYDE_POST_SPIKE_0233.LAB	10/2/2022	02:35:41	formal_po:0:00:03	3.346	0.063	19.599	0.3	FAIL	0.63	
FORMALDEHYDE_POST_SPIKE_0234.LAB	10/2/2022	02:35:44	formal_po:0:00:03	3.358	0.184	19.669	0.9	FAIL	0.632	
FORMALDEHYDE_POST_SPIKE_0235.LAB	10/2/2022	02:35:47	formal_po:0:00:03	3.377	0.063	19.78	0.3	FAIL	0.636	
FORMALDEHYDE_POST_SPIKE_0236.LAB	10/2/2022	02:35:50	formal_po:0:00:03	3.361	0.177	19.685	0.9	FAIL	0.633	
FORMALDEHYDE_POST_SPIKE_0237.LAB	10/2/2022	02:35:53	formal_po:0:00:03	3.364	0.289	19.708	1.5	FAIL	0.634	
FORMALDEHYDE_POST_SPIKE_0238.LAB	10/2/2022	02:35:55	formal_po:0:00:02	3.36	0.283	19.681	1.4	FAIL	0.633	
FORMALDEHYDE_POST_SPIKE_0239.LAB	10/2/2022	02:35:58	formal_po:0:00:03	3.359	0.063	19.676	0.3	FAIL	0.633	
FORMALDEHYDE_POST_SPIKE_0240.LAB	10/2/2022	02:36:01	formal_po:0:00:03	3.374	0.344	19.763	1.7	FAIL	0.635	
FORMALDEHYDE_POST_SPIKE_0241.LAB	10/2/2022	02:36:04	formal_po:0:00:03	3.375	0.427	19.772	2.2	FAIL	0.636	
FORMALDEHYDE_POST_SPIKE_0242.LAB	10/2/2022	02:36:07	formal_po:0:00:03	3.374	0.063	19.763	0.3	FAIL	0.635	
FORMALDEHYDE_POST_SPIKE_0243.LAB	10/2/2022	02:36:10	formal_po:0:00:03	3.365	0.063	19.712	0.3	FAIL	0.634	
FORMALDEHYDE_POST_SPIKE_0244.LAB	10/2/2022	02:36:13	formal_po:0:00:03	3.37	0.063	19.741	0.3	FAIL	0.635	
FORMALDEHYDE_POST_SPIKE_0245.LAB	10/2/2022	02:36:15	formal_po:0:00:02	3.358	0.063	19.671	0.3	FAIL	0.632	
FORMALDEHYDE_POST_SPIKE_0246.LAB	10/2/2022	02:36:18	formal_po:0:00:03	3.371	0.063	19.748	0.3	FAIL	0.635	
FORMALDEHYDE_POST_SPIKE_0247.LAB	10/2/2022	02:36:21	formal_po:0:00:03	3.345	0.063	19.593	0.3	FAIL	0.63	
FORMALDEHYDE_POST_SPIKE_0248.LAB	10/2/2022	02:36:24	formal_po:0:00:03	3.363	0.063	19.698	0.3	FAIL	0.633	
FORMALDEHYDE_POST_SPIKE_0249.LAB	10/2/2022	02:36:27	formal_po:0:00:03	3.343	0.063	19.586	0.3	FAIL	0.63	
FORMALDEHYDE_POST_SPIKE_0250.LAB	10/2/2022	02:36:30	formal_po:0:00:03	3.346	0.308	19.602	1.6	FAIL	0.63	
FORMALDEHYDE_POST_SPIKE_0251.LAB	10/2/2022	02:36:32	formal_po:0:00:02	3.333	0.063	19.524	0.3	FAIL	0.628	
FORMALDEHYDE_POST_SPIKE_0252.LAB	10/2/2022	02:36:35	formal_po:0:00:03	3.323	0.063	19.466	0.3	FAIL	0.626	
FORMALDEHYDE_POST_SPIKE_0253.LAB	10/2/2022	02:36:38	formal_po:0:00:03	3.325	0.063	19.479	0.3	FAIL	0.626	
FORMALDEHYDE_POST_SPIKE_0254.LAB	10/2/2022	02:36:41	formal_po:0:00:03	3.293	0.231	19.29	1.2	FAIL	0.62	



FORMALDEHYDE_POST_SPIKE_0255.LAB	10/2/2022	02:36:44	formal_po:0:00:03	3.294	0.063	19.3	0.3 FAIL	0.62
FORMALDEHYDE_POST_SPIKE_0256.LAB	10/2/2022	02:36:47	formal_po:0:00:03	3.29	0.315	19.276	1.6 FAIL	0.62
FORMALDEHYDE_POST_SPIKE_0257.LAB	10/2/2022	02:36:49	formal_po:0:00:02	3.195	0.278	18.718	1.5 FAIL	0.602
FORMALDEHYDE_POST_SPIKE_0258.LAB	10/2/2022	02:36:52	formal_po:0:00:03	2.899	0.063	16.996	0.4 FAIL	0.546
FORMALDEHYDE_POST_SPIKE_0259.LAB	10/2/2022	02:36:55	formal_po:0:00:03	2.338	0.063	13.724	0.5 FAIL	0.44
FORMALDEHYDE_POST_SPIKE_0260.LAB	10/2/2022	02:36:58	formal_po:0:00:03	1.597	0.161	9.407	1.7 FAIL	0.301
FORMALDEHYDE_POST_SPIKE_0261.LAB	10/2/2022	02:37:01	formal_po:0:00:03	0.982	0.063	5.819	1.1 FAIL	0.185
FORMALDEHYDE_POST_SPIKE_0262.LAB	10/2/2022	02:37:03	formal_po:0:00:02	0.592	0.26	3.546	7.3 FAIL	0.111
FORMALDEHYDE_POST_SPIKE_0263.LAB	10/2/2022	02:37:06	formal_po:0:00:03	0.359	0.063	2.189	2.9 FAIL	0.068
FORMALDEHYDE_POST_SPIKE_0264.LAB	10/2/2022	02:37:09	formal_po:0:00:03	0.214	0.449	1.343	33.4 FAIL	0.04
FORMALDEHYDE_POST_SPIKE_0265.LAB	10/2/2022	02:37:12	formal_po:0:00:03	0.153	0.063	0.985	6.4 FAIL	0.029
FORMALDEHYDE_POST_SPIKE_0266.LAB	10/2/2022	02:37:15	formal_po:0:00:03	0.125	0.438	0.821	53.4 FAIL	0.023
FORMALDEHYDE_POST_SPIKE_0267.LAB	10/2/2022	02:37:18	formal_po:0:00:03	0.056	0.81	0.421	192.4 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0268.LAB	10/2/2022	02:37:20	formal_po:0:00:02	0.056	0.576	0.421	136.8 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0269.LAB	10/2/2022	02:37:23	formal_po:0:00:03	0.056	0.43	0.421	102.1 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0270.LAB	10/2/2022	02:37:26	formal_po:0:00:03	0.056	0.063	0.421	15 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0271.LAB	10/2/2022	02:37:29	formal_po:0:00:03	0.056	0.181	0.421	43 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0272.LAB	10/2/2022	02:37:32	formal_po:0:00:03	0.056	0.622	0.421	147.7 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0273.LAB	10/2/2022	02:37:35	formal_po:0:00:03	0.056	0.063	0.421	15 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0274.LAB	10/2/2022	02:37:37	formal_po:0:00:02	0.056	0.144	0.421	34.3 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0275.LAB	10/2/2022	02:37:40	formal_po:0:00:03	0.056	0.526	0.421	125 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0276.LAB	10/2/2022	02:37:43	formal_po:0:00:03	0.056	0.517	0.421	122.7 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0277.LAB	10/2/2022	02:37:46	formal_po:0:00:03	0.056	0.205	0.421	48.7 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0278.LAB	10/2/2022	02:37:49	formal_po:0:00:03	0.056	0.839	0.421	199.3 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0279.LAB	10/2/2022	02:37:52	formal_po:0:00:03	0.056	0.57	0.421	135.5 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0280.LAB	10/2/2022	02:37:54	formal_po:0:00:02	0.056	0.063	0.421	15 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0281.LAB	10/2/2022	02:37:57	formal_po:0:00:03	0.056	0.063	0.421	15 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0282.LAB	10/2/2022	02:38:00	formal_po:0:00:03	0.056	0.458	0.421	108.8 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0283.LAB	10/2/2022	02:38:03	formal_po:0:00:03	0.056	0.319	0.421	75.9 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0284.LAB	10/2/2022	02:38:06	formal_po:0:00:03	0.056	0.97	0.421	230.4 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0285.LAB	10/2/2022	02:38:09	formal_po:0:00:03	0.056	0.526	0.421	125 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0286.LAB	10/2/2022	02:38:11	formal_po:0:00:02	0.056	0.489	0.421	116 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0287.LAB	10/2/2022	02:38:14	formal_po:0:00:03	0.056	0.262	0.421	62.2 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0288.LAB	10/2/2022	02:38:17	formal_po:0:00:03	0.056	0.655	0.421	155.6 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0289.LAB	10/2/2022	02:38:20	formal_po:0:00:03	0.056	0.781	0.421	185.4 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0290.LAB	10/2/2022	02:38:23	formal_po:0:00:03	0.056	0.063	0.421	15 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0291.LAB	10/2/2022	02:38:26	formal_po:0:00:03	0.056	0.5	0.421	118.8 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0292.LAB	10/2/2022	02:38:28	formal_po:0:00:02	0.056	0.8	0.421	190.1 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0293.LAB	10/2/2022	02:38:31	formal_po:0:00:03	0.056	0.289	0.421	68.7 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0294.LAB	10/2/2022	02:38:34	formal_po:0:00:03	0.056	0.589	0.421	139.9 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0295.LAB	10/2/2022	02:38:37	formal_po:0:00:03	0.056	0.713	0.421	169.4 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0296.LAB	10/2/2022	02:38:40	formal_po:0:00:03	0.056	0.063	0.421	15 FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0297.LAB	10/2/2022	02:38:43	formal_po:0:00:03	0.056	0.438	0.421	104.1 PASS	0.011
FORMALDEHYDE_POST_SPIKE_0298.LAB	10/2/2022	02:38:45	formal_po:0:00:02	0.131	0.312	0.859	36.3 FAIL	0.025
FORMALDEHYDE_POST_SPIKE_0299.LAB	10/2/2022	02:38:48	formal_po:0:00:03	0.183	0.562	1.162	48.4 FAIL	0.034
FORMALDEHYDE_POST_SPIKE_0300.LAB	10/2/2022	02:38:51	formal_po:0:00:03	0.257	0.063	1.591	4 FAIL	0.048
FORMALDEHYDE_POST_SPIKE_0301.LAB	10/2/2022	02:38:54	formal_po:0:00:03	0.318	0.063	1.949	3.2 FAIL	0.06
FORMALDEHYDE_POST_SPIKE_0302.LAB	10/2/2022	02:38:57	formal_po:0:00:03	0.352	0.063	2.147	2.9 FAIL	0.066
FORMALDEHYDE_POST_SPIKE_0303.LAB	10/2/2022	02:39:00	formal_po:0:00:03	0.38	0.063	2.312	2.7 FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0304.LAB	10/2/2022	02:39:02	formal_po:0:00:02	0.387	0.53	2.352	22.5 FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0305.LAB	10/2/2022	02:39:05	formal_po:0:00:03	0.389	0.334	2.363	14.1 FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0306.LAB	10/2/2022	02:39:08	formal_po:0:00:03	0.4	0.202	2.426	8.3 FAIL	0.075
FORMALDEHYDE_POST_SPIKE_0307.LAB	10/2/2022	02:39:11	formal_po:0:00:03	0.477	0.063	2.873	2.2 FAIL	0.09
FORMALDEHYDE_POST_SPIKE_0308.LAB	10/2/2022	02:39:14	formal_po:0:00:03	0.59	0.063	3.532	1.8 FAIL	0.111
FORMALDEHYDE_POST_SPIKE_0309.LAB	10/2/2022	02:39:17	formal_po:0:00:03	0.676	0.196	4.038	4.8 FAIL	0.127
FORMALDEHYDE_POST_SPIKE_0310.LAB	10/2/2022	02:39:19	formal_po:0:00:02	0.658	0.728	3.929	18.5 FAIL	0.124
FORMALDEHYDE_POST_SPIKE_0311.LAB	10/2/2022	02:39:22	formal_po:0:00:03	0.632	0.063	3.779	1.7 FAIL	0.119
FORMALDEHYDE_POST_SPIKE_0312.LAB	10/2/2022	02:39:25	formal_po:0:00:03	0.602	0.063	3.603	1.8 FAIL	0.113
FORMALDEHYDE_POST_SPIKE_0313.LAB	10/2/2022	02:39:28	formal_po:0:00:03	0.591	0.063	3.54	1.8 FAIL	0.111
FORMALDEHYDE_POST_SPIKE_0314.LAB	10/2/2022	02:39:31	formal_po:0:00:03	0.591	0.61	3.542	17.2 FAIL	0.111
FORMALDEHYDE_POST_SPIKE_0315.LAB	10/2/2022	02:39:34	formal_po:0:00:03	0.586	0.497	3.512	14.2 FAIL	0.11
FORMALDEHYDE_POST_SPIKE_0316.LAB	10/2/2022	02:39:36	formal_po:0:00:02	0.577	0.063	3.457	1.8 FAIL	0.109
FORMALDEHYDE_POST_SPIKE_0317.LAB	10/2/2022	02:39:39	formal_po:0:00:03	0.576	0.354	3.451	10.3 FAIL	0.108
FORMALDEHYDE_POST_SPIKE_0318.LAB	10/2/2022	02:39:42	formal_po:0:00:03	0.571	0.892	3.423	26 FAIL	0.108
FORMALDEHYDE_POST_SPIKE_0319.LAB	10/2/2022	02:39:45	formal_po:0:00:03	0.568	0.262	3.407	7.7 FAIL	0.107
FORMALDEHYDE_POST_SPIKE_0320.LAB	10/2/2022	02:39:48	formal_po:0:00:03	0.571	0.063	3.426	1.8 FAIL	0.108
FORMALDEHYDE_POST_SPIKE_0321.LAB	10/2/2022	02:39:51	formal_po:0:00:03	0.565	0.063	3.389	1.9 FAIL	0.106
FORMALDEHYDE_POST_SPIKE_0322.LAB	10/2/2022	02:39:53	formal_po:0:00:02	0.567	0.278	3.403	8.2 FAIL	0.107
FORMALDEHYDE_POST_SPIKE_0323.LAB	10/2/2022	02:39:56	formal_po:0:00:03	0.557	0.457	3.342	13.7 FAIL	0.105
FORMALDEHYDE_POST_SPIKE_0324.LAB	10/2/2022	02:39:59	formal_po:0:00:03	0.554	0.25	3.327	7.5 FAIL	0.104
FORMALDEHYDE_POST_SPIKE_0325.LAB	10/2/2022	02:40:02	formal_po:0:00:03	0.566	0.466	3.397	13.7 FAIL	0.107
FORMALDEHYDE_POST_SPIKE_0326.LAB	10/2/2022	02:40:05	formal_po:0:00:03	0.562	0.063	3.37	1.9 FAIL	0.106
FORMALDEHYDE_POST_SPIKE_0327.LAB	10/2/2022	02:40:08	formal_po:0:00:03	0.558	0.4	3.347	11.9 FAIL	0.105
FORMALDEHYDE_POST_SPIKE_0328.LAB	10/2/2022	02:40:10	formal_po:0:00:02	0.559	0.063	3.355	1.9 FAIL	0.105
FORMALDEHYDE_POST_SPIKE_0329.LAB	10/2/2022	02:40:13	formal_po:0:00:03	0.558	0.36	3.347	10.7 FAIL	0.105
FORMALDEHYDE_POST_SPIKE_0330.LAB	10/2/2022	02:40:16	formal_po:0:00:03	0.547	0.702	3.286	21.4 FAIL	0.103
FORMALDEHYDE_POST_SPIKE_0331.LAB	10/2/2022	02:40:19	formal_po:0:00:03	0.547	0.692	3.282	21.1 FAIL	0.103
FORMALDEHYDE_POST_SPIKE_0332.LAB	10/2/2022	02:40:22	formal_po:0:00:03	0.557	0.292	3.345	8.7 FAIL	0.105
FORMALDEHYDE_POST_SPIKE_0333.LAB	10/2/2022	02:40:24	formal_po:0:00:02	0.551	0.321	3.309	9.7 FAIL	0.104
FORMALDEHYDE_POST_SPIKE_0334.LAB	10/2/2022	02:40:27	formal_po:0:00:03	0.55	0.063	3.303	1.9 FAIL	0.104
FORMALDEHYDE_POST_SPIKE_0335.LAB	10/2/2022	02:40:30	formal_po:0:00:03	0.549	0.063	3.293	1.9 FAIL	0.103
FORMALDEHYDE_POST_SPIKE_0336.LAB	10/2/2022	02:40:33	formal_po:0:00:03	0.546	0.225	3.279	6.9 FAIL	0.103
FORMALDEHYDE_POST_SPIKE_0337.LAB	10/2/2022	02:40:36	formal_po:0:00:03	0.542	0.063	3.256	1.9 FAIL	0.102



FORMALDEHYDE_POST_SPIKE_0338.LAB	10/2/2022	02:40:39	formal_po:0:00:03	0.531	0.393	3.191	12.3 FAIL	0.1
FORMALDEHYDE_POST_SPIKE_0339.LAB	10/2/2022	02:40:41	formal_po:0:00:02	0.515	0.207	3.095	6.7 FAIL	0.097
FORMALDEHYDE_POST_SPIKE_0340.LAB	10/2/2022	02:40:44	formal_po:0:00:03	0.517	0.407	3.109	13.1 FAIL	0.097
FORMALDEHYDE_POST_SPIKE_0341.LAB	10/2/2022	02:40:47	formal_po:0:00:03	0.516	0.366	3.1	11.8 FAIL	0.097
FORMALDEHYDE_POST_SPIKE_0342.LAB	10/2/2022	02:40:50	formal_po:0:00:03	0.506	0.063	3.042	2.1 FAIL	0.095
FORMALDEHYDE_POST_SPIKE_0343.LAB	10/2/2022	02:40:53	formal_po:0:00:03	0.52	0.489	3.127	15.6 FAIL	0.098
FORMALDEHYDE_POST_SPIKE_0344.LAB	10/2/2022	02:40:56	formal_po:0:00:03	0.502	0.584	3.024	19.3 FAIL	0.095
FORMALDEHYDE_POST_SPIKE_0345.LAB	10/2/2022	02:40:58	formal_po:0:00:02	0.491	0.254	2.96	8.6 FAIL	0.093
FORMALDEHYDE_POST_SPIKE_0346.LAB	10/2/2022	02:41:01	formal_po:0:00:03	0.494	0.488	2.974	16.4 FAIL	0.093
FORMALDEHYDE_POST_SPIKE_0347.LAB	10/2/2022	02:41:04	formal_po:0:00:03	0.493	0.063	2.971	2.1 FAIL	0.093
FORMALDEHYDE_POST_SPIKE_0348.LAB	10/2/2022	02:41:07	formal_po:0:00:03	0.5	0.357	3.007	11.9 FAIL	0.094
FORMALDEHYDE_POST_SPIKE_0349.LAB	10/2/2022	02:41:10	formal_po:0:00:03	0.476	1.061	2.87	37 FAIL	0.09
FORMALDEHYDE_POST_SPIKE_0350.LAB	10/2/2022	02:41:13	formal_po:0:00:03	0.312	2.117	1.912	110.7 PASS	0.059
FORMALDEHYDE_POST_SPIKE_0351.LAB	10/2/2022	02:41:15	formal_po:0:00:02	0.228	3.338	1.427	234 FAIL	0.043
FORMALDEHYDE_POST_SPIKE_0352.LAB	10/2/2022	02:41:18	formal_po:0:00:03	0.281	2.202	1.735	126.9 PASS	0.053
FORMALDEHYDE_POST_SPIKE_0353.LAB	10/2/2022	02:41:21	formal_po:0:00:03	0.349	0.809	2.13	38 FAIL	0.066
FORMALDEHYDE_POST_SPIKE_0354.LAB	10/2/2022	02:41:24	formal_po:0:00:03	0.36	0.983	2.192	44.9 FAIL	0.068
FORMALDEHYDE_POST_SPIKE_0355.LAB	10/2/2022	02:41:27	formal_po:0:00:03	0.34	1.248	2.075	60.2 FAIL	0.064
FORMALDEHYDE_POST_SPIKE_0356.LAB	10/2/2022	02:41:30	formal_po:0:00:03	0.316	0.485	1.936	25.1 FAIL	0.059
FORMALDEHYDE_POST_SPIKE_0357.LAB	10/2/2022	02:41:33	formal_po:0:00:03	0.256	2.269	1.586	143.1 FAIL	0.048
FORMALDEHYDE_POST_SPIKE_0358.LAB	10/2/2022	02:41:35	formal_po:0:00:02	0.281	1.19	1.735	68.6 FAIL	0.053
FORMALDEHYDE_POST_SPIKE_0359.LAB	10/2/2022	02:41:38	formal_po:0:00:03	0.297	0.957	1.825	52.4 FAIL	0.056
FORMALDEHYDE_POST_SPIKE_0360.LAB	10/2/2022	02:41:41	formal_po:0:00:03	0.303	0.771	1.864	41.4 FAIL	0.057
FORMALDEHYDE_POST_SPIKE_0361.LAB	10/2/2022	02:41:44	formal_po:0:00:03	0.313	1.092	1.917	56.9 FAIL	0.059
FORMALDEHYDE_POST_SPIKE_0362.LAB	10/2/2022	02:41:47	formal_po:0:00:03	0.32	1.524	1.959	77.8 PASS	0.06
FORMALDEHYDE_POST_SPIKE_0363.LAB	10/2/2022	02:41:49	formal_po:0:00:02	0.337	0.528	2.059	25.7 FAIL	0.063
FORMALDEHYDE_POST_SPIKE_0364.LAB	10/2/2022	02:41:52	formal_po:0:00:03	0.355	0.662	2.166	30.6 FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0365.LAB	10/2/2022	02:41:55	formal_po:0:00:03	0.241	2.219	1.501	147.8 FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0366.LAB	10/2/2022	02:41:58	formal_po:0:00:03	0.268	1.812	1.658	109.3 PASS	0.05
FORMALDEHYDE_POST_SPIKE_0367.LAB	10/2/2022	02:42:01	formal_po:0:00:03	0.308	1.44	1.892	76.1 PASS	0.058
FORMALDEHYDE_POST_SPIKE_0368.LAB	10/2/2022	02:42:04	formal_po:0:00:03	0.311	0.916	1.909	48 FAIL	0.059
FORMALDEHYDE_POST_SPIKE_0369.LAB	10/2/2022	02:42:06	formal_po:0:00:02	0.334	0.931	2.042	45.6 FAIL	0.063
FORMALDEHYDE_POST_SPIKE_0370.LAB	10/2/2022	02:42:09	formal_po:0:00:03	0.332	1.382	2.033	68 FAIL	0.063
FORMALDEHYDE_POST_SPIKE_0371.LAB	10/2/2022	02:42:12	formal_po:0:00:03	0.339	1.053	2.071	50.9 FAIL	0.064
FORMALDEHYDE_POST_SPIKE_0372.LAB	10/2/2022	02:42:15	formal_po:0:00:03	0.328	0.063	2.007	3.1 FAIL	0.062
FORMALDEHYDE_POST_SPIKE_0373.LAB	10/2/2022	02:42:18	formal_po:0:00:03	0.336	0.74	2.052	36.1 FAIL	0.063
FORMALDEHYDE_POST_SPIKE_0374.LAB	10/2/2022	02:42:21	formal_po:0:00:03	0.329	0.729	2.012	36.2 FAIL	0.062
FORMALDEHYDE_POST_SPIKE_0375.LAB	10/2/2022	02:42:24	formal_po:0:00:03	0.352	0.508	2.147	23.7 FAIL	0.066
FORMALDEHYDE_POST_SPIKE_0376.LAB	10/2/2022	02:42:26	formal_po:0:00:02	0.303	1.296	1.858	69.7 FAIL	0.057
FORMALDEHYDE_POST_SPIKE_0377.LAB	10/2/2022	02:42:29	formal_po:0:00:03	0.254	1.433	1.576	90.9 PASS	0.048
FORMALDEHYDE_POST_SPIKE_0378.LAB	10/2/2022	02:42:32	formal_po:0:00:03	0.293	1.143	1.803	63.4 FAIL	0.055
FORMALDEHYDE_POST_SPIKE_0379.LAB	10/2/2022	02:42:35	formal_po:0:00:03	0.319	0.893	1.957	45.7 FAIL	0.06
FORMALDEHYDE_POST_SPIKE_0380.LAB	10/2/2022	02:42:38	formal_po:0:00:03	0.331	0.358	2.026	17.7 FAIL	0.062
FORMALDEHYDE_POST_SPIKE_0381.LAB	10/2/2022	02:42:40	formal_po:0:00:02	0.318	0.063	1.95	3.2 FAIL	0.06
FORMALDEHYDE_POST_SPIKE_0382.LAB	10/2/2022	02:42:43	formal_po:0:00:03	0.322	0.495	1.972	25.1 FAIL	0.061
FORMALDEHYDE_POST_SPIKE_0383.LAB	10/2/2022	02:42:46	formal_po:0:00:03	0.331	0.904	2.023	44.7 FAIL	0.062
FORMALDEHYDE_POST_SPIKE_0384.LAB	10/2/2022	02:42:49	formal_po:0:00:03	0.333	0.84	2.038	41.2 FAIL	0.063
FORMALDEHYDE_POST_SPIKE_0385.LAB	10/2/2022	02:42:52	formal_po:0:00:03	0.328	1.009	2.005	50.3 FAIL	0.062
FORMALDEHYDE_POST_SPIKE_0386.LAB	10/2/2022	02:42:55	formal_po:0:00:03	0.325	0.843	1.991	42.3 FAIL	0.061
FORMALDEHYDE_POST_SPIKE_0387.LAB	10/2/2022	02:42:57	formal_po:0:00:02	0.326	0.456	1.993	22.9 FAIL	0.061
FORMALDEHYDE_POST_SPIKE_0388.LAB	10/2/2022	02:43:00	formal_po:0:00:03	0.316	0.753	1.939	38.8 FAIL	0.06
FORMALDEHYDE_POST_SPIKE_0389.LAB	10/2/2022	02:43:03	formal_po:0:00:03	0.326	0.164	1.993	8.2 FAIL	0.061
FORMALDEHYDE_POST_SPIKE_0390.LAB	10/2/2022	02:43:06	formal_po:0:00:03	0.332	0.607	2.029	29.9 FAIL	0.062
FORMALDEHYDE_POST_SPIKE_0391.LAB	10/2/2022	02:43:09	formal_po:0:00:03	0.326	0.405	1.996	20.3 FAIL	0.061
FORMALDEHYDE_POST_SPIKE_0392.LAB	10/2/2022	02:43:12	formal_po:0:00:03	0.326	0.233	1.993	11.7 FAIL	0.061
FORMALDEHYDE_POST_SPIKE_0393.LAB	10/2/2022	02:43:14	formal_po:0:00:02	0.318	0.668	1.95	34.3 FAIL	0.06
FORMALDEHYDE_POST_SPIKE_0394.LAB	10/2/2022	02:43:17	formal_po:0:00:03	0.325	0.875	1.987	44 FAIL	0.061
FORMALDEHYDE_POST_SPIKE_0395.LAB	10/2/2022	02:43:20	formal_po:0:00:03	0.321	0.666	1.965	33.9 FAIL	0.06
FORMALDEHYDE_POST_SPIKE_0396.LAB	10/2/2022	02:43:23	formal_po:0:00:03	0.312	1.883	1.913	98.4 PASS	0.059
FORMALDEHYDE_POST_SPIKE_0397.LAB	10/2/2022	02:43:26	formal_po:0:00:03	0.195	1.973	1.23	160.4 FAIL	0.037
FORMALDEHYDE_POST_SPIKE_0398.LAB	10/2/2022	02:43:29	formal_po:0:00:03	0.256	1.488	1.587	93.8 PASS	0.048
FORMALDEHYDE_POST_SPIKE_0399.LAB	10/2/2022	02:43:31	formal_po:0:00:02	0.287	1.99	1.77	112.4 PASS	0.054
FORMALDEHYDE_POST_SPIKE_0400.LAB	10/2/2022	02:43:34	formal_po:0:00:03	0.283	1.124	1.747	64.3 FAIL	0.053
FORMALDEHYDE_POST_SPIKE_0401.LAB	10/2/2022	02:43:37	formal_po:0:00:03	0.284	1.577	1.752	90 PASS	0.054
FORMALDEHYDE_POST_SPIKE_0402.LAB	10/2/2022	02:43:40	formal_po:0:00:03	0.282	1.479	1.739	85.1 PASS	0.053
FORMALDEHYDE_POST_SPIKE_0403.LAB	10/2/2022	02:43:43	formal_po:0:00:03	0.295	1.182	1.814	65.1 FAIL	0.056
FORMALDEHYDE_POST_SPIKE_0404.LAB	10/2/2022	02:43:46	formal_po:0:00:03	0.317	1.324	1.942	68.2 FAIL	0.06
FORMALDEHYDE_POST_SPIKE_0405.LAB	10/2/2022	02:43:48	formal_po:0:00:02	0.316	2.005	1.936	103.5 PASS	0.059
FORMALDEHYDE_POST_SPIKE_0406.LAB	10/2/2022	02:43:51	formal_po:0:00:03	0.284	0.452	1.749	25.8 FAIL	0.053
FORMALDEHYDE_POST_SPIKE_0407.LAB	10/2/2022	02:43:54	formal_po:0:00:03	0.268	1.082	1.656	65.3 FAIL	0.05
FORMALDEHYDE_POST_SPIKE_0408.LAB	10/2/2022	02:43:57	formal_po:0:00:03	0.254	1.419	1.576	90 PASS	0.048
FORMALDEHYDE_POST_SPIKE_0409.LAB	10/2/2022	02:44:00	formal_po:0:00:03	0.237	0.941	1.477	63.7 FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0410.LAB	10/2/2022	02:44:03	formal_po:0:00:03	0.257	1.611	1.593	101.2 PASS	0.048
FORMALDEHYDE_POST_SPIKE_0411.LAB	10/2/2022	02:44:05	formal_po:0:00:02	0.244	0.859	1.518	56.6 FAIL	0.046
FORMALDEHYDE_POST_SPIKE_0412.LAB	10/2/2022	02:44:08	formal_po:0:00:03	0.239	0.681	1.488	45.8 FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0413.LAB	10/2/2022	02:44:11	formal_po:0:00:03	0.247	1.19	1.532	77.7 PASS	0.046
FORMALDEHYDE_POST_SPIKE_0414.LAB	10/2/2022	02:44:14	formal_po:0:00:03	0.245	1.408	1.526	92.2 PASS	0.046
FORMALDEHYDE_POST_SPIKE_0415.LAB	10/2/2022	02:44:17	formal_po:0:00:03	0.252	0.83	1.564	53.1 FAIL	0.047
FORMALDEHYDE_POST_SPIKE_0416.LAB	10/2/2022	02:44:19	formal_po:0:00:02	0.247	1.049	1.536	68.3 FAIL	0.047
FORMALDEHYDE_POST_SPIKE_0417.LAB	10/2/2022	02:44:22	formal_po:0:00:03	0.239	1.092	1.487	73.4 PASS	0.045
FORMALDEHYDE_POST_SPIKE_0418.LAB	10/2/2022	02:44:25	formal_po:0:00:03	0.241	1.54	1.502	102.5 PASS	0.045
FORMALDEHYDE_POST_SPIKE_0419.LAB	10/2/2022	02:44:28	formal_po:0:00:03	0.241	0.919	1.501	61.3 FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0420.LAB	10/2/2022	02:44:31	formal_po:0:00:03	0.252	0.912	1.562	58.4 FAIL	0.047



FORMALDEHYDE_POST_SPIKE_0421.LAB	10/2/2022	02:44:34	formal_po:0:00:03	0.237	1.313	1.475	89	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0422.LAB	10/2/2022	02:44:36	formal_po:0:00:02	0.242	0.542	1.508	35.9	FAIL	0.046
FORMALDEHYDE_POST_SPIKE_0423.LAB	10/2/2022	02:44:39	formal_po:0:00:03	0.245	1.047	1.525	68.7	FAIL	0.046
FORMALDEHYDE_POST_SPIKE_0424.LAB	10/2/2022	02:44:42	formal_po:0:00:03	0.242	1.014	1.507	67.3	FAIL	0.046
FORMALDEHYDE_POST_SPIKE_0425.LAB	10/2/2022	02:44:45	formal_po:0:00:03	0.232	0.841	1.449	58	FAIL	0.044
FORMALDEHYDE_POST_SPIKE_0426.LAB	10/2/2022	02:44:48	formal_po:0:00:03	0.236	0.923	1.473	62.6	FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0427.LAB	10/2/2022	02:44:51	formal_po:0:00:03	0.228	2.049	1.427	143.6	FAIL	0.043
FORMALDEHYDE_POST_SPIKE_0428.LAB	10/2/2022	02:44:53	formal_po:0:00:02	0.225	1.211	1.409	86	PASS	0.042
FORMALDEHYDE_POST_SPIKE_0429.LAB	10/2/2022	02:44:56	formal_po:0:00:03	0.237	1.073	1.475	72.8	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0430.LAB	10/2/2022	02:44:59	formal_po:0:00:03	0.229	0.771	1.43	53.9	FAIL	0.043
FORMALDEHYDE_POST_SPIKE_0431.LAB	10/2/2022	02:45:02	formal_po:0:00:03	0.245	1.257	1.522	82.6	PASS	0.046
FORMALDEHYDE_POST_SPIKE_0432.LAB	10/2/2022	02:45:05	formal_po:0:00:03	0.235	1.383	1.464	94.5	PASS	0.044
FORMALDEHYDE_POST_SPIKE_0433.LAB	10/2/2022	02:45:08	formal_po:0:00:03	0.225	0.466	1.408	33.1	FAIL	0.042
FORMALDEHYDE_POST_SPIKE_0434.LAB	10/2/2022	02:45:10	formal_po:0:00:02	0.237	0.816	1.476	55.3	FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0435.LAB	10/2/2022	02:45:13	formal_po:0:00:03	0.24	0.534	1.497	35.7	FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0436.LAB	10/2/2022	02:45:16	formal_po:0:00:03	0.234	1.886	1.457	129.5	PASS	0.044
FORMALDEHYDE_POST_SPIKE_0437.LAB	10/2/2022	02:45:19	formal_po:0:00:03	0.235	0.063	1.464	4.3	FAIL	0.044
FORMALDEHYDE_POST_SPIKE_0438.LAB	10/2/2022	02:45:22	formal_po:0:00:03	0.226	0.801	1.414	56.7	FAIL	0.043
FORMALDEHYDE_POST_SPIKE_0439.LAB	10/2/2022	02:45:25	formal_po:0:00:03	0.239	1.403	1.489	94.2	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0440.LAB	10/2/2022	02:45:27	formal_po:0:00:02	0.246	1.398	1.528	91.5	PASS	0.046
FORMALDEHYDE_POST_SPIKE_0441.LAB	10/2/2022	02:45:30	formal_po:0:00:03	0.241	1.294	1.498	86.4	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0442.LAB	10/2/2022	02:45:33	formal_po:0:00:03	0.235	1.601	1.465	109.2	PASS	0.044
FORMALDEHYDE_POST_SPIKE_0443.LAB	10/2/2022	02:45:36	formal_po:0:00:03	0.233	0.892	1.456	61.3	FAIL	0.044
FORMALDEHYDE_POST_SPIKE_0444.LAB	10/2/2022	02:45:39	formal_po:0:00:03	0.245	0.779	1.522	51.2	FAIL	0.046
FORMALDEHYDE_POST_SPIKE_0445.LAB	10/2/2022	02:45:42	formal_po:0:00:03	0.236	1.124	1.473	76.3	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0446.LAB	10/2/2022	02:45:44	formal_po:0:00:02	0.243	1.123	1.509	74.4	PASS	0.046
FORMALDEHYDE_POST_SPIKE_0447.LAB	10/2/2022	02:45:47	formal_po:0:00:03	0.241	1.472	1.501	98.1	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0448.LAB	10/2/2022	02:45:50	formal_po:0:00:03	0.241	1.227	1.497	81.9	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0449.LAB	10/2/2022	02:45:53	formal_po:0:00:03	0.24	1.529	1.495	102.3	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0450.LAB	10/2/2022	02:45:56	formal_po:0:00:03	0.259	1.009	1.602	63	FAIL	0.049
FORMALDEHYDE_POST_SPIKE_0451.LAB	10/2/2022	02:45:59	formal_po:0:00:03	0.288	1.391	1.771	78.6	PASS	0.054
FORMALDEHYDE_POST_SPIKE_0452.LAB	10/2/2022	02:46:01	formal_po:0:00:02	0.304	1.03	1.867	55.2	FAIL	0.057
FORMALDEHYDE_POST_SPIKE_0453.LAB	10/2/2022	02:46:04	formal_po:0:00:03	0.3	1.299	1.845	70.4	PASS	0.057
FORMALDEHYDE_POST_SPIKE_0454.LAB	10/2/2022	02:46:07	formal_po:0:00:03	0.279	1.594	1.721	92.6	PASS	0.053
FORMALDEHYDE_POST_SPIKE_0455.LAB	10/2/2022	02:46:10	formal_po:0:00:03	0.249	1.219	1.546	78.8	PASS	0.047
FORMALDEHYDE_POST_SPIKE_0456.LAB	10/2/2022	02:46:13	formal_po:0:00:03	0.247	1.568	1.537	102	PASS	0.047
FORMALDEHYDE_POST_SPIKE_0457.LAB	10/2/2022	02:46:16	formal_po:0:00:03	0.24	1.454	1.496	97.2	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0458.LAB	10/2/2022	02:46:18	formal_po:0:00:02	0.241	0.898	1.499	59.9	FAIL	0.045
FORMALDEHYDE_POST_SPIKE_0459.LAB	10/2/2022	02:46:21	formal_po:0:00:03	0.24	1.232	1.494	82.5	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0460.LAB	10/2/2022	02:46:24	formal_po:0:00:03	0.241	1.318	1.498	88	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0461.LAB	10/2/2022	02:46:27	formal_po:0:00:03	0.238	1.365	1.48	92.2	PASS	0.045
FORMALDEHYDE_POST_SPIKE_0462.LAB	10/2/2022	02:46:30	formal_po:0:00:03	0.255	1.116	1.582	70.5	PASS	0.048
FORMALDEHYDE_POST_SPIKE_0463.LAB	10/2/2022	02:46:33	formal_po:0:00:03	0.248	1.531	1.538	99.6	PASS	0.047
FORMALDEHYDE_POST_SPIKE_0464.LAB	10/2/2022	02:46:36	formal_po:0:00:02	0.245	1.405	1.52	92.4	PASS	0.046
FORMALDEHYDE_POST_SPIKE_0465.LAB	10/2/2022	02:46:38	formal_po:0:00:03	0.246	1.48	1.531	96.7	PASS	0.046
FORMALDEHYDE_POST_SPIKE_0466.LAB	10/2/2022	02:46:41	formal_po:0:00:03	0.257	1.604	1.591	100.8	PASS	0.048
FORMALDEHYDE_POST_SPIKE_0467.LAB	10/2/2022	02:46:44	formal_po:0:00:03	0.254	1.26	1.573	80.1	PASS	0.048
FORMALDEHYDE_POST_SPIKE_0468.LAB	10/2/2022	02:46:47	formal_po:0:00:03	0.256	1.333	1.59	83.9	PASS	0.048
FORMALDEHYDE_POST_SPIKE_0469.LAB	10/2/2022	02:46:50	formal_po:0:00:03	0.271	0.993	1.675	59.3	FAIL	0.051
FORMALDEHYDE_POST_SPIKE_0470.LAB	10/2/2022	02:46:52	formal_po:0:00:02	0.273	0.973	1.687	57.7	FAIL	0.051
FORMALDEHYDE_POST_SPIKE_0471.LAB	10/2/2022	02:46:55	formal_po:0:00:03	0.265	1.15	1.639	70.2	PASS	0.05
FORMALDEHYDE_POST_SPIKE_0472.LAB	10/2/2022	02:46:58	formal_po:0:00:03	0.26	0.636	1.612	39.4	FAIL	0.049
FORMALDEHYDE_POST_SPIKE_0473.LAB	10/2/2022	02:47:01	formal_po:0:00:03	0.284	1.823	1.753	104	PASS	0.054
FORMALDEHYDE_POST_SPIKE_0474.LAB	10/2/2022	02:47:04	formal_po:0:00:03	0.295	1.045	1.813	57.6	FAIL	0.056
FORMALDEHYDE_POST_SPIKE_0475.LAB	10/2/2022	02:47:07	formal_po:0:00:03	0.3	0.999	1.845	54.1	FAIL	0.057
FORMALDEHYDE_POST_SPIKE_0476.LAB	10/2/2022	02:47:09	formal_po:0:00:02	0.289	1.229	1.779	69.1	FAIL	0.054
FORMALDEHYDE_POST_SPIKE_0477.LAB	10/2/2022	02:47:12	formal_po:0:00:03	0.297	1.945	1.824	106.6	PASS	0.056
FORMALDEHYDE_POST_SPIKE_0478.LAB	10/2/2022	02:47:15	formal_po:0:00:03	0.287	2.019	1.766	114.3	PASS	0.054
FORMALDEHYDE_POST_SPIKE_0479.LAB	10/2/2022	02:47:18	formal_po:0:00:03	0.284	1.937	1.749	110.7	PASS	0.053
FORMALDEHYDE_POST_SPIKE_0480.LAB	10/2/2022	02:47:21	formal_po:0:00:03	0.287	0.662	1.771	37.4	FAIL	0.054
FORMALDEHYDE_POST_SPIKE_0481.LAB	10/2/2022	02:47:24	formal_po:0:00:03	0.278	0.754	1.715	44	FAIL	0.052
FORMALDEHYDE_POST_SPIKE_0482.LAB	10/2/2022	02:47:26	formal_po:0:00:02	0.31	1.516	1.903	79.7	PASS	0.058
FORMALDEHYDE_POST_SPIKE_0483.LAB	10/2/2022	02:47:29	formal_po:0:00:03	0.316	1.645	1.936	85	PASS	0.059
FORMALDEHYDE_POST_SPIKE_0484.LAB	10/2/2022	02:47:32	formal_po:0:00:03	0.329	1.373	2.014	68.2	FAIL	0.062
FORMALDEHYDE_POST_SPIKE_0485.LAB	10/2/2022	02:47:35	formal_po:0:00:03	0.329	1.48	2.015	73.5	PASS	0.062
FORMALDEHYDE_POST_SPIKE_0486.LAB	10/2/2022	02:47:38	formal_po:0:00:03	0.337	1.667	2.059	81	PASS	0.063
FORMALDEHYDE_POST_SPIKE_0487.LAB	10/2/2022	02:47:41	formal_po:0:00:03	0.342	2.159	2.087	103.5	PASS	0.064
FORMALDEHYDE_POST_SPIKE_0488.LAB	10/2/2022	02:47:43	formal_po:0:00:02	0.339	1.542	2.072	74.4	PASS	0.064
FORMALDEHYDE_POST_SPIKE_0489.LAB	10/2/2022	02:47:46	formal_po:0:00:03	0.352	1.825	2.145	85.1	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0490.LAB	10/2/2022	02:47:49	formal_po:0:00:03	0.36	1.881	2.192	85.8	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0491.LAB	10/2/2022	02:47:52	formal_po:0:00:03	0.356	1.373	2.173	63.2	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0492.LAB	10/2/2022	02:47:55	formal_po:0:00:03	0.364	1.944	2.216	87.7	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0493.LAB	10/2/2022	02:47:57	formal_po:0:00:02	0.351	1.601	2.143	74.7	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0494.LAB	10/2/2022	02:48:00	formal_po:0:00:03	0.366	1.328	2.228	59.6	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0495.LAB	10/2/2022	02:48:03	formal_po:0:00:03	0.36	1.431	2.194	65.2	FAIL	0.068
FORMALDEHYDE_POST_SPIKE_0496.LAB	10/2/2022	02:48:06	formal_po:0:00:03	0.374	2.071	2.273	91.1	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0497.LAB	10/2/2022	02:48:09	formal_po:0:00:03	0.356	1.729	2.171	79.7	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0498.LAB	10/2/2022	02:48:12	formal_po:0:00:03	0.354	1.557	2.159	72.1	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0499.LAB	10/2/2022	02:48:15	formal_po:0:00:03	0.368	1.732	2.238	77.4	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0500.LAB	10/2/2022	02:48:17	formal_po:0:00:02	0.357	1.586	2.176	72.9	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0501.LAB	10/2/2022	02:48:20	formal_po:0:00:03	0.365	1.067	2.223	48	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0502.LAB	10/2/2022	02:48:23	formal_po:0:00:03	0.363	2.485	2.21	112.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0503.LAB	10/2/2022	02:48:26	formal_po:0:00:03	0.362	1.815	2.203	82.4	PASS	0.068



FORMALDEHYDE_POST_SPIKE_0504.LAB	10/2/2022	02:48:29	formal_po:0:00:03	0.361	2.17	2.198	98.7	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0505.LAB	10/2/2022	02:48:32	formal_po:0:00:03	0.355	1.471	2.167	67.9	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0506.LAB	10/2/2022	02:48:34	formal_po:0:00:02	0.348	1.798	2.121	84.8	PASS	0.065
FORMALDEHYDE_POST_SPIKE_0507.LAB	10/2/2022	02:48:37	formal_po:0:00:03	0.354	1.043	2.159	48.3	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0508.LAB	10/2/2022	02:48:40	formal_po:0:00:03	0.348	1.246	2.122	58.7	FAIL	0.065
FORMALDEHYDE_POST_SPIKE_0509.LAB	10/2/2022	02:48:43	formal_po:0:00:03	0.35	1.331	2.137	62.3	FAIL	0.066
FORMALDEHYDE_POST_SPIKE_0510.LAB	10/2/2022	02:48:46	formal_po:0:00:03	0.361	1.418	2.198	64.5	FAIL	0.068
FORMALDEHYDE_POST_SPIKE_0511.LAB	10/2/2022	02:48:48	formal_po:0:00:02	0.353	1.623	2.156	75.3	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0512.LAB	10/2/2022	02:48:51	formal_po:0:00:03	0.358	1.753	2.18	80.4	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0513.LAB	10/2/2022	02:48:54	formal_po:0:00:03	0.362	1.298	2.207	58.8	FAIL	0.068
FORMALDEHYDE_POST_SPIKE_0514.LAB	10/2/2022	02:48:57	formal_po:0:00:03	0.355	1.097	2.162	50.7	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0515.LAB	10/2/2022	02:49:00	formal_po:0:00:03	0.353	2.122	2.153	98.6	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0516.LAB	10/2/2022	02:49:03	formal_po:0:00:03	0.361	1.856	2.201	84.3	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0517.LAB	10/2/2022	02:49:06	formal_po:0:00:03	0.356	2.514	2.169	115.9	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0518.LAB	10/2/2022	02:49:08	formal_po:0:00:02	0.37	2.174	2.254	96.5	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0519.LAB	10/2/2022	02:49:11	formal_po:0:00:03	0.378	1.833	2.3	79.7	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0520.LAB	10/2/2022	02:49:14	formal_po:0:00:03	0.383	2.023	2.328	86.9	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0521.LAB	10/2/2022	02:49:17	formal_po:0:00:03	0.375	1.851	2.282	81.1	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0522.LAB	10/2/2022	02:49:20	formal_po:0:00:03	0.376	1.773	2.289	77.5	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0523.LAB	10/2/2022	02:49:23	formal_po:0:00:03	0.368	1.528	2.241	68.2	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0524.LAB	10/2/2022	02:49:25	formal_po:0:00:02	0.376	1.724	2.287	75.4	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0525.LAB	10/2/2022	02:49:28	formal_po:0:00:03	0.362	1.617	2.207	73.3	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0526.LAB	10/2/2022	02:49:31	formal_po:0:00:03	0.387	2.443	2.35	104	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0527.LAB	10/2/2022	02:49:34	formal_po:0:00:03	0.378	1.521	2.298	66.2	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0528.LAB	10/2/2022	02:49:37	formal_po:0:00:03	0.381	1.732	2.316	74.8	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0529.LAB	10/2/2022	02:49:39	formal_po:0:00:02	0.382	1.908	2.32	82.2	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0530.LAB	10/2/2022	02:49:42	formal_po:0:00:03	0.386	1.242	2.345	53	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0531.LAB	10/2/2022	02:49:45	formal_po:0:00:03	0.383	1.331	2.326	57.2	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0532.LAB	10/2/2022	02:49:48	formal_po:0:00:03	0.382	2.33	2.319	100.5	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0533.LAB	10/2/2022	02:49:51	formal_po:0:00:03	0.388	2.344	2.357	99.5	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0534.LAB	10/2/2022	02:49:54	formal_po:0:00:03	0.386	1.914	2.346	81.6	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0535.LAB	10/2/2022	02:49:56	formal_po:0:00:02	0.386	1.912	2.344	81.6	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0536.LAB	10/2/2022	02:49:59	formal_po:0:00:03	0.371	2.221	2.258	98.3	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0537.LAB	10/2/2022	02:50:02	formal_po:0:00:03	0.377	2.149	2.292	93.7	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0538.LAB	10/2/2022	02:50:05	formal_po:0:00:03	0.385	2.101	2.338	89.9	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0539.LAB	10/2/2022	02:50:08	formal_po:0:00:03	0.37	2.744	2.249	122	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0540.LAB	10/2/2022	02:50:11	formal_po:0:00:03	0.36	2.465	2.193	112.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0541.LAB	10/2/2022	02:50:13	formal_po:0:00:02	0.364	1.853	2.217	83.6	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0542.LAB	10/2/2022	02:50:16	formal_po:0:00:03	0.372	1.619	2.264	71.5	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0543.LAB	10/2/2022	02:50:19	formal_po:0:00:03	0.368	2.547	2.241	113.6	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0544.LAB	10/2/2022	02:50:22	formal_po:0:00:03	0.362	2.336	2.204	106	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0545.LAB	10/2/2022	02:50:25	formal_po:0:00:03	0.354	2.397	2.156	111.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0546.LAB	10/2/2022	02:50:28	formal_po:0:00:03	0.363	1.857	2.211	84	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0547.LAB	10/2/2022	02:50:30	formal_po:0:00:02	0.358	2.178	2.18	99.9	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0548.LAB	10/2/2022	02:50:33	formal_po:0:00:03	0.372	2.287	2.261	101.1	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0549.LAB	10/2/2022	02:50:36	formal_po:0:00:03	0.362	2.101	2.206	95.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0550.LAB	10/2/2022	02:50:39	formal_po:0:00:03	0.369	2.108	2.245	93.9	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0551.LAB	10/2/2022	02:50:42	formal_po:0:00:03	0.361	2.343	2.2	106.5	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0552.LAB	10/2/2022	02:50:45	formal_po:0:00:03	0.36	2.33	2.192	106.3	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0553.LAB	10/2/2022	02:50:47	formal_po:0:00:02	0.364	1.872	2.215	84.5	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0554.LAB	10/2/2022	02:50:50	formal_po:0:00:03	0.364	1.775	2.217	80.1	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0555.LAB	10/2/2022	02:50:53	formal_po:0:00:03	0.355	2.572	2.164	118.8	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0556.LAB	10/2/2022	02:50:56	formal_po:0:00:03	0.364	1.773	2.215	80	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0557.LAB	10/2/2022	02:50:59	formal_po:0:00:03	0.362	2.821	2.203	128.1	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0558.LAB	10/2/2022	02:51:02	formal_po:0:00:03	0.358	1.996	2.184	91.4	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0559.LAB	10/2/2022	02:51:04	formal_po:0:00:02	0.366	2.693	2.229	120.8	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0560.LAB	10/2/2022	02:51:07	formal_po:0:00:03	0.362	2.103	2.204	95.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0561.LAB	10/2/2022	02:51:10	formal_po:0:00:03	0.35	2.729	2.137	127.7	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0562.LAB	10/2/2022	02:51:13	formal_po:0:00:03	0.363	2.685	2.212	121.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0563.LAB	10/2/2022	02:51:16	formal_po:0:00:03	0.361	2.41	2.197	109.7	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0564.LAB	10/2/2022	02:51:19	formal_po:0:00:03	0.361	1.87	2.197	85.1	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0565.LAB	10/2/2022	02:51:21	formal_po:0:00:02	0.365	2.566	2.221	115.6	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0566.LAB	10/2/2022	02:51:24	formal_po:0:00:03	0.369	2.251	2.245	100.3	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0567.LAB	10/2/2022	02:51:27	formal_po:0:00:03	0.376	2.401	2.284	105.1	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0568.LAB	10/2/2022	02:51:30	formal_po:0:00:03	0.356	2.168	2.168	100	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0569.LAB	10/2/2022	02:51:33	formal_po:0:00:03	0.361	2.347	2.2	106.7	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0570.LAB	10/2/2022	02:51:36	formal_po:0:00:03	0.364	1.564	2.215	70.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0571.LAB	10/2/2022	02:51:38	formal_po:0:00:02	0.362	2.303	2.206	104.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0572.LAB	10/2/2022	02:51:41	formal_po:0:00:03	0.373	3.06	2.268	134.9	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0573.LAB	10/2/2022	02:51:44	formal_po:0:00:03	0.362	2.618	2.208	118.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0574.LAB	10/2/2022	02:51:47	formal_po:0:00:03	0.358	1.989	2.181	91.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0575.LAB	10/2/2022	02:51:50	formal_po:0:00:03	0.358	2.594	2.183	118.8	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0576.LAB	10/2/2022	02:51:53	formal_po:0:00:03	0.352	2.482	2.147	115.6	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0577.LAB	10/2/2022	02:51:55	formal_po:0:00:02	0.353	2.285	2.156	106	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0578.LAB	10/2/2022	02:51:58	formal_po:0:00:03	0.355	1.905	2.167	87.9	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0579.LAB	10/2/2022	02:52:01	formal_po:0:00:03	0.36	2.46	2.194	112.1	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0580.LAB	10/2/2022	02:52:04	formal_po:0:00:03	0.354	2.506	2.158	116.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0581.LAB	10/2/2022	02:52:07	formal_po:0:00:03	0.356	1.698	2.17	78.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0582.LAB	10/2/2022	02:52:09	formal_po:0:00:02	0.36	1.782	2.196	81.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0583.LAB	10/2/2022	02:52:12	formal_po:0:00:03	0.363	2.051	2.21	92.8	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0584.LAB	10/2/2022	02:52:15	formal_po:0:00:03	0.36	1.941	2.195	88.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0585.LAB	10/2/2022	02:52:18	formal_po:0:00:03	0.355	1.998	2.164	92.3	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0586.LAB	10/2/2022	02:52:21	formal_po:0:00:03	0.367	2.435	2.236	108.9	PASS	0.069



FORMALDEHYDE_POST_SPIKE_0587.LAB	10/2/2022	02:52:24	formal_po:0:00:03	0.362	2.661	2.204	120.7	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0588.LAB	10/2/2022	02:52:26	formal_po:0:00:02	0.353	2.314	2.154	107.4	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0589.LAB	10/2/2022	02:52:29	formal_po:0:00:03	0.368	1.564	2.242	69.8	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0590.LAB	10/2/2022	02:52:32	formal_po:0:00:03	0.36	1.824	2.191	83.3	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0591.LAB	10/2/2022	02:52:35	formal_po:0:00:03	0.369	2.008	2.248	89.3	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0592.LAB	10/2/2022	02:52:38	formal_po:0:00:03	0.357	2.061	2.176	94.7	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0593.LAB	10/2/2022	02:52:41	formal_po:0:00:03	0.358	2.646	2.181	121.3	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0594.LAB	10/2/2022	02:52:43	formal_po:0:00:02	0.358	2.146	2.184	98.3	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0595.LAB	10/2/2022	02:52:46	formal_po:0:00:03	0.363	2.157	2.21	97.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0596.LAB	10/2/2022	02:52:49	formal_po:0:00:03	0.359	2.644	2.185	121	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0597.LAB	10/2/2022	02:52:52	formal_po:0:00:03	0.362	2.01	2.205	91.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0598.LAB	10/2/2022	02:52:55	formal_po:0:00:03	0.358	2.032	2.181	93.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0599.LAB	10/2/2022	02:52:58	formal_po:0:00:03	0.357	2.272	2.179	104.3	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0600.LAB	10/2/2022	02:53:00	formal_po:0:00:02	0.351	2.221	2.139	103.8	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0601.LAB	10/2/2022	02:53:03	formal_po:0:00:03	0.35	1.719	2.135	80.5	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0602.LAB	10/2/2022	02:53:06	formal_po:0:00:03	0.354	2.51	2.161	116.1	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0603.LAB	10/2/2022	02:53:09	formal_po:0:00:03	0.364	2.041	2.216	92.1	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0604.LAB	10/2/2022	02:53:12	formal_po:0:00:03	0.351	2.864	2.139	133.9	FAIL	0.066
FORMALDEHYDE_POST_SPIKE_0605.LAB	10/2/2022	02:53:15	formal_po:0:00:03	0.352	2.181	2.148	101.5	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0606.LAB	10/2/2022	02:53:17	formal_po:0:00:02	0.359	2.07	2.189	94.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0607.LAB	10/2/2022	02:53:20	formal_po:0:00:03	0.361	2.101	2.201	95.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0608.LAB	10/2/2022	02:53:23	formal_po:0:00:03	0.349	2.416	2.132	113.3	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0609.LAB	10/2/2022	02:53:26	formal_po:0:00:03	0.351	2.54	2.143	118.5	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0610.LAB	10/2/2022	02:53:29	formal_po:0:00:03	0.359	2.32	2.187	106.1	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0611.LAB	10/2/2022	02:53:32	formal_po:0:00:03	0.357	1.989	2.176	91.4	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0612.LAB	10/2/2022	02:53:34	formal_po:0:00:02	0.359	2.378	2.189	108.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0613.LAB	10/2/2022	02:53:37	formal_po:0:00:03	0.362	2.43	2.206	110.1	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0614.LAB	10/2/2022	02:53:40	formal_po:0:00:03	0.373	2.387	2.27	105.2	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0615.LAB	10/2/2022	02:53:43	formal_po:0:00:03	0.378	1.96	2.299	85.3	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0616.LAB	10/2/2022	02:53:46	formal_po:0:00:03	0.381	2.493	2.314	107.7	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0617.LAB	10/2/2022	02:53:49	formal_po:0:00:03	0.369	2.588	2.248	115.1	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0618.LAB	10/2/2022	02:53:51	formal_po:0:00:02	0.38	2.422	2.31	104.8	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0619.LAB	10/2/2022	02:53:54	formal_po:0:00:03	0.374	2.071	2.274	91.1	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0620.LAB	10/2/2022	02:53:57	formal_po:0:00:03	0.374	2.775	2.275	122	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0621.LAB	10/2/2022	02:54:00	formal_po:0:00:03	0.38	2.49	2.308	107.9	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0622.LAB	10/2/2022	02:54:03	formal_po:0:00:03	0.378	2.468	2.296	107.5	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0623.LAB	10/2/2022	02:54:05	formal_po:0:00:02	0.379	2.156	2.303	93.6	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0624.LAB	10/2/2022	02:54:08	formal_po:0:00:03	0.376	2.722	2.285	119.1	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0625.LAB	10/2/2022	02:54:11	formal_po:0:00:03	0.375	2.027	2.28	88.9	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0626.LAB	10/2/2022	02:54:14	formal_po:0:00:03	0.377	2.678	2.29	116.9	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0627.LAB	10/2/2022	02:54:17	formal_po:0:00:03	0.376	2.194	2.288	95.9	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0628.LAB	10/2/2022	02:54:20	formal_po:0:00:03	0.377	2.425	2.292	105.8	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0629.LAB	10/2/2022	02:54:22	formal_po:0:00:02	0.381	2.361	2.314	102	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0630.LAB	10/2/2022	02:54:25	formal_po:0:00:03	0.372	2.154	2.266	95.1	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0631.LAB	10/2/2022	02:54:28	formal_po:0:00:03	0.385	2.191	2.342	93.5	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0632.LAB	10/2/2022	02:54:31	formal_po:0:00:03	0.384	2.569	2.333	110.1	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0633.LAB	10/2/2022	02:54:34	formal_po:0:00:03	0.379	2.541	2.307	110.1	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0634.LAB	10/2/2022	02:54:37	formal_po:0:00:03	0.383	1.793	2.327	77	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0635.LAB	10/2/2022	02:54:39	formal_po:0:00:02	0.37	2.381	2.251	105.8	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0636.LAB	10/2/2022	02:54:42	formal_po:0:00:03	0.38	2.488	2.312	107.6	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0637.LAB	10/2/2022	02:54:45	formal_po:0:00:03	0.385	2.675	2.339	114.4	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0638.LAB	10/2/2022	02:54:48	formal_po:0:00:03	0.394	2.501	2.393	104.5	PASS	0.074
FORMALDEHYDE_POST_SPIKE_0639.LAB	10/2/2022	02:54:51	formal_po:0:00:03	0.391	1.982	2.375	83.4	PASS	0.074
FORMALDEHYDE_POST_SPIKE_0640.LAB	10/2/2022	02:54:54	formal_po:0:00:03	0.392	2.618	2.378	110.1	PASS	0.074
FORMALDEHYDE_POST_SPIKE_0641.LAB	10/2/2022	02:54:56	formal_po:0:00:02	0.39	2.411	2.37	101.7	PASS	0.074
FORMALDEHYDE_POST_SPIKE_0642.LAB	10/2/2022	02:54:59	formal_po:0:00:03	0.396	2.08	2.402	86.6	PASS	0.075
FORMALDEHYDE_POST_SPIKE_0643.LAB	10/2/2022	02:55:02	formal_po:0:00:03	0.385	2.416	2.339	103.3	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0644.LAB	10/2/2022	02:55:05	formal_po:0:00:03	0.382	2.414	2.324	103.8	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0645.LAB	10/2/2022	02:55:08	formal_po:0:00:03	0.404	2.515	2.448	102.7	PASS	0.076
FORMALDEHYDE_POST_SPIKE_0646.LAB	10/2/2022	02:55:11	formal_po:0:00:03	0.383	2.452	2.33	105.2	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0647.LAB	10/2/2022	02:55:13	formal_po:0:00:02	0.397	2.792	2.408	115.9	PASS	0.075
FORMALDEHYDE_POST_SPIKE_0648.LAB	10/2/2022	02:55:16	formal_po:0:00:03	0.396	2.593	2.404	107.9	PASS	0.075
FORMALDEHYDE_POST_SPIKE_0649.LAB	10/2/2022	02:55:19	formal_po:0:00:03	0.396	2.456	2.401	102.3	PASS	0.075
FORMALDEHYDE_POST_SPIKE_0650.LAB	10/2/2022	02:55:22	formal_po:0:00:03	0.392	3.183	2.382	133.6	FAIL	0.074
FORMALDEHYDE_POST_SPIKE_0651.LAB	10/2/2022	02:55:25	formal_po:0:00:03	0.396	1.963	2.403	81.7	PASS	0.075
FORMALDEHYDE_POST_SPIKE_0652.LAB	10/2/2022	02:55:28	formal_po:0:00:03	0.388	2.12	2.357	89.9	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0653.LAB	10/2/2022	02:55:30	formal_po:0:00:02	0.378	2.562	2.298	111.5	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0654.LAB	10/2/2022	02:55:33	formal_po:0:00:03	0.366	2.386	2.23	107	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0655.LAB	10/2/2022	02:55:36	formal_po:0:00:03	0.364	1.958	2.216	88.4	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0656.LAB	10/2/2022	02:55:39	formal_po:0:00:03	0.36	2.363	2.196	107.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0657.LAB	10/2/2022	02:55:42	formal_po:0:00:03	0.361	2.789	2.202	126.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0658.LAB	10/2/2022	02:55:45	formal_po:0:00:03	0.358	2.68	2.183	122.8	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0659.LAB	10/2/2022	02:55:47	formal_po:0:00:02	0.349	2.183	2.132	102.4	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0660.LAB	10/2/2022	02:55:50	formal_po:0:00:03	0.356	2.979	2.167	137.4	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0661.LAB	10/2/2022	02:55:53	formal_po:0:00:03	0.37	2.437	2.25	108.3	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0662.LAB	10/2/2022	02:55:56	formal_po:0:00:03	0.355	2.437	2.164	112.6	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0663.LAB	10/2/2022	02:55:59	formal_po:0:00:03	0.359	2.67	2.189	122	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0664.LAB	10/2/2022	02:56:02	formal_po:0:00:03	0.366	2.632	2.227	118.2	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0665.LAB	10/2/2022	02:56:04	formal_po:0:00:02	0.363	2.841	2.21	128.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0666.LAB	10/2/2022	02:56:07	formal_po:0:00:03	0.358	2.721	2.18	124.8	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0667.LAB	10/2/2022	02:56:10	formal_po:0:00:03	0.355	2.518	2.166	116.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0668.LAB	10/2/2022	02:56:13	formal_po:0:00:03	0.363	2.582	2.21	116.8	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0669.LAB	10/2/2022	02:56:16	formal_po:0:00:03	0.357	2.359	2.173	108.6	PASS	0.067



FORMALDEHYDE_POST_SPIKE_0670.LAB	10/2/2022	02:56:18	formal_po:0:00:02	0.358	2.495	2.179	114.5	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0671.LAB	10/2/2022	02:56:21	formal_po:0:00:03	0.348	2.044	2.124	96.2	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0672.LAB	10/2/2022	02:56:24	formal_po:0:00:03	0.361	2.208	2.197	100.5	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0673.LAB	10/2/2022	02:56:27	formal_po:0:00:03	0.363	2.701	2.209	122.3	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0674.LAB	10/2/2022	02:56:30	formal_po:0:00:03	0.356	2.241	2.171	103.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0675.LAB	10/2/2022	02:56:33	formal_po:0:00:03	0.354	1.549	2.156	71.8	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0676.LAB	10/2/2022	02:56:35	formal_po:0:00:02	0.364	3.111	2.219	140.2	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0677.LAB	10/2/2022	02:56:38	formal_po:0:00:03	0.35	2.328	2.134	109.1	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0678.LAB	10/2/2022	02:56:41	formal_po:0:00:03	0.352	2.339	2.149	108.8	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0679.LAB	10/2/2022	02:56:44	formal_po:0:00:03	0.355	2.187	2.163	101.1	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0680.LAB	10/2/2022	02:56:47	formal_po:0:00:03	0.349	2.395	2.128	112.5	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0681.LAB	10/2/2022	02:56:50	formal_po:0:00:03	0.358	2.229	2.182	102.1	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0682.LAB	10/2/2022	02:56:53	formal_po:0:00:03	0.363	2.494	2.211	112.8	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0683.LAB	10/2/2022	02:56:55	formal_po:0:00:02	0.368	2.274	2.241	101.5	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0684.LAB	10/2/2022	02:56:58	formal_po:0:00:03	0.352	2.061	2.149	95.9	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0685.LAB	10/2/2022	02:57:01	formal_po:0:00:03	0.368	2.2	2.238	98.3	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0686.LAB	10/2/2022	02:57:04	formal_po:0:00:03	0.361	2.383	2.197	108.5	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0687.LAB	10/2/2022	02:57:07	formal_po:0:00:03	0.371	2.299	2.256	101.9	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0688.LAB	10/2/2022	02:57:09	formal_po:0:00:02	0.356	2.08	2.171	95.8	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0689.LAB	10/2/2022	02:57:12	formal_po:0:00:03	0.359	2.631	2.189	120.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0690.LAB	10/2/2022	02:57:15	formal_po:0:00:03	0.349	2.24	2.128	105.2	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0691.LAB	10/2/2022	02:57:18	formal_po:0:00:03	0.361	1.898	2.202	86.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0692.LAB	10/2/2022	02:57:21	formal_po:0:00:03	0.361	1.906	2.197	86.7	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0693.LAB	10/2/2022	02:57:24	formal_po:0:00:03	0.358	2.038	2.18	93.5	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0694.LAB	10/2/2022	02:57:27	formal_po:0:00:03	0.365	2.131	2.222	95.9	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0695.LAB	10/2/2022	02:57:29	formal_po:0:00:02	0.365	1.645	2.221	74.1	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0696.LAB	10/2/2022	02:57:32	formal_po:0:00:03	0.361	2.479	2.2	112.7	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0697.LAB	10/2/2022	02:57:35	formal_po:0:00:03	0.354	1.973	2.157	91.5	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0698.LAB	10/2/2022	02:57:38	formal_po:0:00:03	0.359	2.356	2.191	107.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0699.LAB	10/2/2022	02:57:41	formal_po:0:00:03	0.353	2.556	2.15	118.8	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0700.LAB	10/2/2022	02:57:43	formal_po:0:00:02	0.348	2.968	2.124	139.8	FAIL	0.066
FORMALDEHYDE_POST_SPIKE_0701.LAB	10/2/2022	02:57:46	formal_po:0:00:03	0.352	2.146	2.145	100.1	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0702.LAB	10/2/2022	02:57:49	formal_po:0:00:03	0.363	2.328	2.21	105.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0703.LAB	10/2/2022	02:57:52	formal_po:0:00:03	0.358	2.348	2.182	107.6	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0704.LAB	10/2/2022	02:57:55	formal_po:0:00:03	0.355	1.446	2.164	66.9	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0705.LAB	10/2/2022	02:57:58	formal_po:0:00:03	0.358	2.668	2.184	122.2	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0706.LAB	10/2/2022	02:58:00	formal_po:0:00:02	0.354	2.006	2.157	93	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0707.LAB	10/2/2022	02:58:03	formal_po:0:00:03	0.353	2.543	2.152	118.1	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0708.LAB	10/2/2022	02:58:06	formal_po:0:00:03	0.359	2.633	2.186	120.5	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0709.LAB	10/2/2022	02:58:09	formal_po:0:00:03	0.366	2.794	2.23	125.3	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0710.LAB	10/2/2022	02:58:12	formal_po:0:00:03	0.358	2.352	2.185	107.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0711.LAB	10/2/2022	02:58:15	formal_po:0:00:03	0.36	2.649	2.191	120.9	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0712.LAB	10/2/2022	02:58:17	formal_po:0:00:02	0.359	1.955	2.187	89.4	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0713.LAB	10/2/2022	02:58:20	formal_po:0:00:03	0.361	2.695	2.198	122.6	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0714.LAB	10/2/2022	02:58:23	formal_po:0:00:03	0.366	3.375	2.226	151.6	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0715.LAB	10/2/2022	02:58:26	formal_po:0:00:03	0.366	2.119	2.229	95.1	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0716.LAB	10/2/2022	02:58:29	formal_po:0:00:03	0.35	2.835	2.138	132.6	FAIL	0.066
FORMALDEHYDE_POST_SPIKE_0717.LAB	10/2/2022	02:58:32	formal_po:0:00:03	0.357	2.188	2.176	100.5	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0718.LAB	10/2/2022	02:58:34	formal_po:0:00:02	0.355	2.46	2.166	113.6	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0719.LAB	10/2/2022	02:58:37	formal_po:0:00:03	0.357	2.097	2.176	96.4	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0720.LAB	10/2/2022	02:58:40	formal_po:0:00:03	0.362	2.868	2.205	130.1	FAIL	0.068
FORMALDEHYDE_POST_SPIKE_0721.LAB	10/2/2022	02:58:43	formal_po:0:00:03	0.36	2.759	2.193	125.8	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0722.LAB	10/2/2022	02:58:46	formal_po:0:00:03	0.367	1.906	2.236	85.2	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0723.LAB	10/2/2022	02:58:49	formal_po:0:00:03	0.364	2.349	2.215	106.1	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0724.LAB	10/2/2022	02:58:51	formal_po:0:00:02	0.366	2.07	2.228	92.9	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0725.LAB	10/2/2022	02:58:54	formal_po:0:00:03	0.358	2.352	2.184	107.7	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0726.LAB	10/2/2022	02:58:57	formal_po:0:00:03	0.358	2.967	2.182	136	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0727.LAB	10/2/2022	02:59:00	formal_po:0:00:03	0.359	1.941	2.185	88.8	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0728.LAB	10/2/2022	02:59:03	formal_po:0:00:03	0.352	1.968	2.147	91.7	PASS	0.066
FORMALDEHYDE_POST_SPIKE_0729.LAB	10/2/2022	02:59:05	formal_po:0:00:02	0.359	2.343	2.185	107.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0730.LAB	10/2/2022	02:59:08	formal_po:0:00:03	0.362	2.708	2.207	122.7	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0731.LAB	10/2/2022	02:59:11	formal_po:0:00:03	0.361	1.852	2.201	84.1	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0732.LAB	10/2/2022	02:59:14	formal_po:0:00:03	0.424	2.653	2.564	103.5	PASS	0.08
FORMALDEHYDE_POST_SPIKE_0733.LAB	10/2/2022	02:59:17	formal_po:0:00:03	0.59	2.432	3.536	68.8	FAIL	0.111
FORMALDEHYDE_POST_SPIKE_0734.LAB	10/2/2022	02:59:20	formal_po:0:00:03	0.721	3.011	4.295	70.1	FAIL	0.136
FORMALDEHYDE_POST_SPIKE_0735.LAB	10/2/2022	02:59:22	formal_po:0:00:02	0.79	3.407	4.703	72.5	FAIL	0.149
FORMALDEHYDE_POST_SPIKE_0736.LAB	10/2/2022	02:59:25	formal_po:0:00:03	0.819	3.023	4.872	62	FAIL	0.154
FORMALDEHYDE_POST_SPIKE_0737.LAB	10/2/2022	02:59:28	formal_po:0:00:03	0.833	2.854	4.952	57.6	FAIL	0.157
FORMALDEHYDE_POST_SPIKE_0738.LAB	10/2/2022	02:59:31	formal_po:0:00:03	0.836	3.841	4.968	77.3	FAIL	0.157
FORMALDEHYDE_POST_SPIKE_0739.LAB	10/2/2022	02:59:34	formal_po:0:00:03	0.836	2.692	4.967	54.2	FAIL	0.157
FORMALDEHYDE_POST_SPIKE_0740.LAB	10/2/2022	02:59:37	formal_po:0:00:03	0.829	3.454	4.929	70.1	FAIL	0.156
FORMALDEHYDE_POST_SPIKE_0741.LAB	10/2/2022	02:59:39	formal_po:0:00:02	0.835	2.925	4.964	58.9	FAIL	0.157
FORMALDEHYDE_POST_SPIKE_0742.LAB	10/2/2022	02:59:42	formal_po:0:00:03	0.84	3.186	4.993	63.8	FAIL	0.158
FORMALDEHYDE_POST_SPIKE_0743.LAB	10/2/2022	02:59:45	formal_po:0:00:03	0.823	3.63	4.893	74.2	FAIL	0.155
FORMALDEHYDE_POST_SPIKE_0744.LAB	10/2/2022	02:59:48	formal_po:0:00:03	0.736	3.57	4.384	81.4	FAIL	0.139
FORMALDEHYDE_POST_SPIKE_0745.LAB	10/2/2022	02:59:51	formal_po:0:00:03	0.622	3.122	3.72	83.9	FAIL	0.117
FORMALDEHYDE_POST_SPIKE_0746.LAB	10/2/2022	02:59:54	formal_po:0:00:03	0.563	3.372	3.38	99.8	FAIL	0.106
FORMALDEHYDE_POST_SPIKE_0747.LAB	10/2/2022	02:59:56	formal_po:0:00:02	0.535	2.782	3.216	86.5	FAIL	0.101
FORMALDEHYDE_POST_SPIKE_0748.LAB	10/2/2022	02:59:59	formal_po:0:00:03	0.529	2.572	3.177	81	PASS	0.1
FORMALDEHYDE_POST_SPIKE_0749.LAB	10/2/2022	03:00:02	formal_po:0:00:03	0.499	3.37	3.004	112.2	PASS	0.094
FORMALDEHYDE_POST_SPIKE_0750.LAB	10/2/2022	03:00:05	formal_po:0:00:03	0.365	3.022	2.223	135.9	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0751.LAB	10/2/2022	03:00:08	formal_po:0:00:03	0.208	2.794	1.306	213.9	FAIL	0.039
FORMALDEHYDE_POST_SPIKE_0752.LAB	10/2/2022	03:00:11	formal_po:0:00:03	0.121	2.015	0.801	251.6	FAIL	0.023



FORMALDEHYDE_POST_SPIKE_0753.LAB	10/2/2022	03:00:13	formal_po:0:00:02	0.056	1.819	0.421	432.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0754.LAB	10/2/2022	03:00:16	formal_po:0:00:03	0.056	2.26	0.421	536.9	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0755.LAB	10/2/2022	03:00:19	formal_po:0:00:03	0.056	2.099	0.421	498.6	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0756.LAB	10/2/2022	03:00:22	formal_po:0:00:03	0.056	1.463	0.421	347.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0757.LAB	10/2/2022	03:00:25	formal_po:0:00:03	0.056	2.329	0.421	553.3	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0758.LAB	10/2/2022	03:00:28	formal_po:0:00:03	0.056	1.157	0.421	274.9	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0759.LAB	10/2/2022	03:00:30	formal_po:0:00:02	0.056	2.221	0.421	527.6	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0760.LAB	10/2/2022	03:00:33	formal_po:0:00:03	0.056	1.321	0.421	313.8	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0761.LAB	10/2/2022	03:00:36	formal_po:0:00:03	0.056	1.668	0.421	396.3	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0762.LAB	10/2/2022	03:00:39	formal_po:0:00:03	0.056	1.68	0.421	399.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0763.LAB	10/2/2022	03:00:42	formal_po:0:00:03	0.056	1.538	0.421	365.3	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0764.LAB	10/2/2022	03:00:45	formal_po:0:00:03	0.056	1.438	0.421	341.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0765.LAB	10/2/2022	03:00:47	formal_po:0:00:02	0.056	1.178	0.421	279.8	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0766.LAB	10/2/2022	03:00:50	formal_po:0:00:03	0.056	1.089	0.421	258.6	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0767.LAB	10/2/2022	03:00:53	formal_po:0:00:03	0.123	1.187	0.812	146.2	FAIL	0.023
FORMALDEHYDE_POST_SPIKE_0768.LAB	10/2/2022	03:00:56	formal_po:0:00:03	0.144	1.651	0.933	177	FAIL	0.027
FORMALDEHYDE_POST_SPIKE_0769.LAB	10/2/2022	03:00:59	formal_po:0:00:03	0.143	1.224	0.928	131.8	FAIL	0.027
FORMALDEHYDE_POST_SPIKE_0770.LAB	10/2/2022	03:01:02	formal_po:0:00:03	0.153	1.525	0.987	154.5	FAIL	0.029
FORMALDEHYDE_POST_SPIKE_0771.LAB	10/2/2022	03:01:04	formal_po:0:00:02	0.176	1.579	1.122	140.7	FAIL	0.033
FORMALDEHYDE_POST_SPIKE_0772.LAB	10/2/2022	03:01:07	formal_po:0:00:03	0.246	1.629	1.528	106.6	PASS	0.046
FORMALDEHYDE_POST_SPIKE_0773.LAB	10/2/2022	03:01:10	formal_po:0:00:03	0.309	1.981	1.899	104.3	PASS	0.058
FORMALDEHYDE_POST_SPIKE_0774.LAB	10/2/2022	03:01:13	formal_po:0:00:03	0.339	1.488	2.072	71.8	PASS	0.064
FORMALDEHYDE_POST_SPIKE_0775.LAB	10/2/2022	03:01:16	formal_po:0:00:03	0.365	2.411	2.222	108.5	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0776.LAB	10/2/2022	03:01:19	formal_po:0:00:03	0.374	2.799	2.276	123	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0777.LAB	10/2/2022	03:01:21	formal_po:0:00:02	0.375	1.468	2.28	64.4	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0778.LAB	10/2/2022	03:01:24	formal_po:0:00:03	0.374	2.33	2.276	102.4	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0779.LAB	10/2/2022	03:01:27	formal_po:0:00:03	0.378	1.557	2.3	67.7	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0780.LAB	10/2/2022	03:01:30	formal_po:0:00:03	0.374	2.277	2.275	100.1	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0781.LAB	10/2/2022	03:01:33	formal_po:0:00:03	0.378	1.119	2.296	48.8	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0782.LAB	10/2/2022	03:01:36	formal_po:0:00:03	0.369	2.411	2.244	107.4	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0783.LAB	10/2/2022	03:01:38	formal_po:0:00:02	0.377	1.839	2.295	80.1	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0784.LAB	10/2/2022	03:01:41	formal_po:0:00:03	0.377	2.503	2.29	109.3	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0785.LAB	10/2/2022	03:01:44	formal_po:0:00:03	0.384	1.563	2.335	67	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0786.LAB	10/2/2022	03:01:47	formal_po:0:00:03	0.382	2.403	2.323	103.4	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0787.LAB	10/2/2022	03:01:50	formal_po:0:00:03	0.373	2.069	2.271	91.1	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0788.LAB	10/2/2022	03:01:52	formal_po:0:00:02	0.376	2.166	2.288	94.7	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0789.LAB	10/2/2022	03:01:55	formal_po:0:00:03	0.388	2.114	2.354	89.8	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0790.LAB	10/2/2022	03:01:58	formal_po:0:00:03	0.378	2.559	2.297	111.4	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0791.LAB	10/2/2022	03:02:01	formal_po:0:00:03	0.379	2.12	2.307	91.9	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0792.LAB	10/2/2022	03:02:04	formal_po:0:00:03	0.371	1.873	2.26	82.9	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0793.LAB	10/2/2022	03:02:07	formal_po:0:00:03	0.38	2.224	2.31	96.3	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0794.LAB	10/2/2022	03:02:10	formal_po:0:00:03	0.38	1.734	2.308	75.1	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0795.LAB	10/2/2022	03:02:12	formal_po:0:00:02	0.374	2.132	2.274	93.8	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0796.LAB	10/2/2022	03:02:15	formal_po:0:00:03	0.375	2.212	2.28	97	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0797.LAB	10/2/2022	03:02:18	formal_po:0:00:03	0.368	2.029	2.241	90.5	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0798.LAB	10/2/2022	03:02:21	formal_po:0:00:03	0.369	1.895	2.244	84.4	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0799.LAB	10/2/2022	03:02:24	formal_po:0:00:03	0.368	2.45	2.242	109.3	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0800.LAB	10/2/2022	03:02:26	formal_po:0:00:02	0.36	2.618	2.196	119.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0801.LAB	10/2/2022	03:02:29	formal_po:0:00:03	0.367	2.45	2.236	109.5	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0802.LAB	10/2/2022	03:02:32	formal_po:0:00:03	0.364	2.502	2.218	112.8	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0803.LAB	10/2/2022	03:02:35	formal_po:0:00:03	0.363	1.474	2.209	66.7	FAIL	0.068
FORMALDEHYDE_POST_SPIKE_0804.LAB	10/2/2022	03:02:38	formal_po:0:00:03	0.366	2.323	2.23	104.2	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0805.LAB	10/2/2022	03:02:41	formal_po:0:00:03	0.358	2.058	2.182	94.3	PASS	0.067
FORMALDEHYDE_POST_SPIKE_0806.LAB	10/2/2022	03:03:09	formal_po:0:00:28	0.368	2.219	2.243	98.9	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0807.LAB	10/2/2022	03:03:19	formal_po:0:00:10	0.364	2.331	2.215	105.2	PASS	0.068
FORMALDEHYDE_POST_SPIKE_0808.LAB	10/2/2022	03:03:28	formal_po:0:00:09	0.374	1.896	2.278	83.2	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0809.LAB	10/2/2022	03:03:38	formal_po:0:00:10	0.367	2.014	2.234	90.1	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0810.LAB	10/2/2022	03:03:47	formal_po:0:00:09	0.37	2.321	2.254	103	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0811.LAB	10/2/2022	03:03:57	formal_po:0:00:10	0.372	2.554	2.265	112.7	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0812.LAB	10/2/2022	03:04:06	formal_po:0:00:09	0.372	2.426	2.261	107.3	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0813.LAB	10/2/2022	03:04:15	formal_po:0:00:09	0.372	2.334	2.262	103.2	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0814.LAB	10/2/2022	03:04:25	formal_po:0:00:10	0.373	2.171	2.269	95.7	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0815.LAB	10/2/2022	03:04:34	formal_po:0:00:09	0.372	2.502	2.261	110.7	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0816.LAB	10/2/2022	03:04:44	formal_po:0:00:10	0.366	2.371	2.227	106.5	PASS	0.069
FORMALDEHYDE_POST_SPIKE_0817.LAB	10/2/2022	03:04:53	formal_po:0:00:09	0.372	2.566	2.265	113.3	PASS	0.07
FORMALDEHYDE_POST_SPIKE_0818.LAB	10/2/2022	03:05:03	formal_po:0:00:10	0.375	2.551	2.282	111.8	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0819.LAB	10/2/2022	03:05:12	formal_po:0:00:09	0.375	2.45	2.284	107.3	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0820.LAB	10/2/2022	03:05:22	formal_po:0:00:10	0.377	2.767	2.292	120.7	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0821.LAB	10/2/2022	03:05:31	formal_po:0:00:09	0.377	2.476	2.293	108	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0822.LAB	10/2/2022	03:05:40	formal_po:0:00:09	0.375	2.734	2.278	120	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0823.LAB	10/2/2022	03:05:50	formal_po:0:00:10	0.378	2.679	2.298	116.6	PASS	0.071
FORMALDEHYDE_POST_SPIKE_0824.LAB	10/2/2022	03:05:59	formal_po:0:00:09	0.377	3.37	2.293	146.9	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0825.LAB	10/2/2022	03:06:09	formal_po:0:00:10	0.379	3.326	2.305	144.3	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0826.LAB	10/2/2022	03:06:18	formal_po:0:00:09	0.376	3.613	2.286	158.1	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0827.LAB	10/2/2022	03:06:27	formal_po:0:00:09	0.378	3.847	2.3	167.3	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0828.LAB	10/2/2022	03:06:37	formal_po:0:00:10	0.37	3.963	2.254	175.8	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0829.LAB	10/2/2022	03:06:46	formal_po:0:00:09	0.374	3.948	2.274	173.6	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0830.LAB	10/2/2022	03:06:56	formal_po:0:00:10	0.38	4.313	2.312	186.5	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0831.LAB	10/2/2022	03:07:05	formal_po:0:00:09	0.382	4.854	2.324	208.9	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0832.LAB	10/2/2022	03:07:15	formal_po:0:00:10	0.378	4.566	2.296	198.8	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0833.LAB	10/2/2022	03:07:24	formal_po:0:00:09	0.376	4.829	2.289	211	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0834.LAB	10/2/2022	03:07:33	formal_po:0:00:09	0.375	4.561	2.284	199.7	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0835.LAB	10/2/2022	03:07:43	formal_po:0:00:10	0.376	4.6	2.285	201.3	FAIL	0.071



FORMALDEHYDE_POST_SPIKE_0836.LAB	10/2/2022	03:07:52	formal_po:0:00:09	0.379	5.084	2.304	220.7 FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0837.LAB	10/2/2022	03:08:02	formal_po:0:00:10	0.376	5.234	2.289	228.7 FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0838.LAB	10/2/2022	03:08:11	formal_po:0:00:09	0.374	5.204	2.274	228.9 FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0839.LAB	10/2/2022	03:08:21	formal_po:0:00:10	0.378	4.986	2.301	216.7 FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0840.LAB	10/2/2022	03:08:30	formal_po:0:00:09	0.373	5.611	2.272	247 FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0841.LAB	10/2/2022	03:08:40	formal_po:0:00:10	0.38	5.719	2.313	247.2 FAIL	0.072



FORMALDEHYDE_POST_SPIKE_0842.LAB	10/2/2022	03:08:49	formal_po:0:00:09	0.374	5.826	2.277	255.9	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0843.LAB	10/2/2022	03:08:58	formal_po:0:00:09	0.374	5.746	2.275	252.5	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0844.LAB	10/2/2022	03:09:08	formal_po:0:00:10	0.371	5.307	2.257	235.1	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0845.LAB	10/2/2022	03:09:17	formal_po:0:00:09	0.372	5.742	2.263	253.8	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0846.LAB	10/2/2022	03:09:27	formal_po:0:00:10	0.375	5.512	2.281	241.7	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0847.LAB	10/2/2022	03:09:36	formal_po:0:00:09	0.375	5.911	2.282	259.1	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0848.LAB	10/2/2022	03:09:46	formal_po:0:00:10	0.372	5.666	2.266	250.1	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0849.LAB	10/2/2022	03:09:55	formal_po:0:00:09	0.376	5.476	2.285	239.6	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0850.LAB	10/2/2022	03:10:04	formal_po:0:00:09	0.369	5.332	2.244	237.7	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0851.LAB	10/2/2022	03:10:14	formal_po:0:00:10	0.366	5.443	2.228	244.3	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0852.LAB	10/2/2022	03:10:23	formal_po:0:00:09	0.374	5.576	2.273	245.3	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0853.LAB	10/2/2022	03:10:33	formal_po:0:00:10	0.374	5.655	2.275	248.6	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0854.LAB	10/2/2022	03:10:42	formal_po:0:00:09	0.374	5.249	2.274	230.8	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0855.LAB	10/2/2022	03:10:52	formal_po:0:00:10	0.376	5.53	2.285	242	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0856.LAB	10/2/2022	03:11:01	formal_po:0:00:09	0.373	5.31	2.271	233.9	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0857.LAB	10/2/2022	03:11:11	formal_po:0:00:10	0.374	5.572	2.273	245.1	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0858.LAB	10/2/2022	03:11:20	formal_po:0:00:09	0.372	5.166	2.266	228	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0859.LAB	10/2/2022	03:11:29	formal_po:0:00:09	0.373	5.025	2.272	221.2	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0860.LAB	10/2/2022	03:11:39	formal_po:0:00:10	0.371	4.613	2.259	204.2	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0861.LAB	10/2/2022	03:11:48	formal_po:0:00:09	0.367	4.607	2.234	206.2	FAIL	0.069
FORMALDEHYDE_POST_SPIKE_0862.LAB	10/2/2022	03:11:58	formal_po:0:00:10	0.375	4.639	2.278	203.6	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0863.LAB	10/2/2022	03:12:07	formal_po:0:00:09	0.373	4.363	2.268	192.4	FAIL	0.07
FORMALDEHYDE_POST_SPIKE_0864.LAB	10/2/2022	03:12:17	formal_po:0:00:10	0.378	4.533	2.298	197.3	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0865.LAB	10/2/2022	03:12:26	formal_po:0:00:09	0.382	4.438	2.319	191.4	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0866.LAB	10/2/2022	03:12:35	formal_po:0:00:09	0.384	4.272	2.331	183.2	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0867.LAB	10/2/2022	03:12:45	formal_po:0:00:10	0.385	4.116	2.339	176	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0868.LAB	10/2/2022	03:12:54	formal_po:0:00:09	0.382	3.972	2.323	171	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0869.LAB	10/2/2022	03:13:04	formal_po:0:00:10	0.376	4.526	2.284	198.1	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0870.LAB	10/2/2022	03:14:47	formal_po:0:01:43	0.38	3.502	2.311	151.6	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0871.LAB	10/2/2022	03:14:57	formal_po:0:00:10	0.385	3.147	2.342	134.4	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0872.LAB	10/2/2022	03:15:06	formal_po:0:00:09	0.382	3.296	2.325	141.8	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0873.LAB	10/2/2022	03:15:16	formal_po:0:00:10	0.384	3.38	2.333	144.9	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0874.LAB	10/2/2022	03:15:25	formal_po:0:00:09	0.388	3.418	2.359	144.9	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0875.LAB	10/2/2022	03:15:35	formal_po:0:00:10	0.385	3.373	2.339	144.2	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0876.LAB	10/2/2022	03:15:44	formal_po:0:00:09	0.394	3.313	2.392	138.5	FAIL	0.074
FORMALDEHYDE_POST_SPIKE_0877.LAB	10/2/2022	03:15:54	formal_po:0:00:10	0.388	3.484	2.357	147.8	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0878.LAB	10/2/2022	03:16:03	formal_po:0:00:09	0.389	3.46	2.36	146.6	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0879.LAB	10/2/2022	03:16:12	formal_po:0:00:09	0.386	3.431	2.347	146.2	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0880.LAB	10/2/2022	03:16:22	formal_po:0:00:10	0.388	3.048	2.359	129.2	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0881.LAB	10/2/2022	03:16:31	formal_po:0:00:09	0.391	3.261	2.373	137.5	FAIL	0.074
FORMALDEHYDE_POST_SPIKE_0882.LAB	10/2/2022	03:16:41	formal_po:0:00:10	0.392	3.325	2.382	139.6	FAIL	0.074
FORMALDEHYDE_POST_SPIKE_0883.LAB	10/2/2022	03:16:50	formal_po:0:00:09	0.386	3.697	2.344	157.7	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0884.LAB	10/2/2022	03:16:59	formal_po:0:00:09	0.389	3.213	2.365	135.8	FAIL	0.073
FORMALDEHYDE_POST_SPIKE_0885.LAB	10/2/2022	03:17:09	formal_po:0:00:10	0.379	3.069	2.307	133.1	FAIL	0.071
FORMALDEHYDE_POST_SPIKE_0886.LAB	10/2/2022	03:17:18	formal_po:0:00:09	0.383	3.004	2.33	128.9	PASS	0.072
FORMALDEHYDE_POST_SPIKE_0887.LAB	10/2/2022	03:17:28	formal_po:0:00:10	0.386	2.952	2.348	125.7	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0888.LAB	10/2/2022	03:17:37	formal_po:0:00:09	0.387	2.951	2.35	125.6	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0889.LAB	10/2/2022	03:17:47	formal_po:0:00:10	0.385	2.945	2.342	125.7	PASS	0.073
FORMALDEHYDE_POST_SPIKE_0890.LAB	10/2/2022	03:17:56	formal_po:0:00:09	0.383	3.074	2.328	132	FAIL	0.072
FORMALDEHYDE_POST_SPIKE_0891.LAB	10/2/2022	03:18:05	formal_po:0:00:09	0.355	3.025	2.164	139.8	FAIL	0.067
FORMALDEHYDE_POST_SPIKE_0892.LAB	10/2/2022	03:18:15	formal_po:0:00:10	0.291	2.615	1.792	146	FAIL	0.055
FORMALDEHYDE_POST_SPIKE_0893.LAB	10/2/2022	03:18:24	formal_po:0:00:09	0.222	2.445	1.389	176	FAIL	0.042
FORMALDEHYDE_POST_SPIKE_0894.LAB	10/2/2022	03:18:34	formal_po:0:00:10	0.177	2.543	1.128	225.3	FAIL	0.033
FORMALDEHYDE_POST_SPIKE_0895.LAB	10/2/2022	03:18:43	formal_po:0:00:09	0.139	2.123	0.904	234.8	FAIL	0.026
FORMALDEHYDE_POST_SPIKE_0896.LAB	10/2/2022	03:18:53	formal_po:0:00:10	0.056	1.973	0.421	468.6	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0897.LAB	10/2/2022	03:19:02	formal_po:0:00:09	0.056	1.884	0.421	447.6	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0898.LAB	10/2/2022	03:19:12	formal_po:0:00:10	0.056	1.509	0.421	358.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0899.LAB	10/2/2022	03:19:21	formal_po:0:00:09	0.056	1.76	0.421	418.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0900.LAB	10/2/2022	03:19:30	formal_po:0:00:09	0.056	1.396	0.421	331.5	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0901.LAB	10/2/2022	03:19:40	formal_po:0:00:10	0.056	1.579	0.421	375.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0902.LAB	10/2/2022	03:19:49	formal_po:0:00:09	0.056	1.387	0.421	329.6	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0903.LAB	10/2/2022	03:19:59	formal_po:0:00:10	0.056	1.367	0.421	324.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0904.LAB	10/2/2022	03:20:08	formal_po:0:00:09	0.056	1.533	0.421	364.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0905.LAB	10/2/2022	03:20:18	formal_po:0:00:10	0.056	1.275	0.421	302.9	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0906.LAB	10/2/2022	03:20:27	formal_po:0:00:09	0.056	1.125	0.421	267.3	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0907.LAB	10/2/2022	03:20:36	formal_po:0:00:09	0.056	1.001	0.421	237.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0908.LAB	10/2/2022	03:20:46	formal_po:0:00:10	0.056	1.447	0.421	343.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0909.LAB	10/2/2022	03:20:55	formal_po:0:00:09	0.056	1.52	0.421	361.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0910.LAB	10/2/2022	03:21:05	formal_po:0:00:10	0.056	1.561	0.421	370.9	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0911.LAB	10/2/2022	03:21:14	formal_po:0:00:09	0.056	0.616	0.421	146.2	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0912.LAB	10/2/2022	03:21:24	formal_po:0:00:10	0.056	0.97	0.421	230.5	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0913.LAB	10/2/2022	03:21:33	formal_po:0:00:09	0.056	0.649	0.421	154.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0914.LAB	10/2/2022	03:21:42	formal_po:0:00:09	0.056	1.148	0.421	272.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0915.LAB	10/2/2022	03:21:52	formal_po:0:00:10	0.056	1.274	0.421	302.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0916.LAB	10/2/2022	03:22:01	formal_po:0:00:09	0.056	0.633	0.421	150.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0917.LAB	10/2/2022	03:22:11	formal_po:0:00:10	0.056	0.743	0.421	176.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0918.LAB	10/2/2022	03:22:20	formal_po:0:00:09	0.056	0.73	0.421	173.3	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0919.LAB	10/2/2022	03:23:07	formal_po:0:00:47	0.056	0.815	0.421	193.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0920.LAB	10/2/2022	03:23:16	formal_po:0:00:09	0.056	0.736	0.421	174.9	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0921.LAB	10/2/2022	03:23:26	formal_po:0:00:10	0.056	0.522	0.421	123.9	PASS	0.011
FORMALDEHYDE_POST_SPIKE_0922.LAB	10/2/2022	03:23:35	formal_po:0:00:09	0.056	0.747	0.421	177.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0923.LAB	10/2/2022	03:23:45	formal_po:0:00:10	0.056	0.68	0.421	161.5	FAIL	0.011



FORMALDEHYDE_POST_SPIKE_0924.LAB	10/2/2022	03:23:54	formal_po: 0:00:09	0.056	0.699	0.421	166	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0925.LAB	10/2/2022	03:24:03	formal_po: 0:00:09	0.056	0.871	0.421	206.9	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0926.LAB	10/2/2022	03:24:13	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0927.LAB	10/2/2022	03:24:22	formal_po: 0:00:09	0.056	0.195	0.421	46.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0928.LAB	10/2/2022	03:24:32	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0929.LAB	10/2/2022	03:24:41	formal_po: 0:00:09	0.056	0.213	0.421	50.5	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0930.LAB	10/2/2022	03:24:51	formal_po: 0:00:10	0.056	0.29	0.421	68.8	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0931.LAB	10/2/2022	03:25:00	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0932.LAB	10/2/2022	03:25:10	formal_po: 0:00:10	0.056	0.132	0.421	31.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0933.LAB	10/2/2022	03:25:19	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0934.LAB	10/2/2022	03:25:28	formal_po: 0:00:09	0.056	0.231	0.421	54.9	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0935.LAB	10/2/2022	03:25:38	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0936.LAB	10/2/2022	03:25:47	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0937.LAB	10/2/2022	03:25:57	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0938.LAB	10/2/2022	03:26:06	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0939.LAB	10/2/2022	03:26:15	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0940.LAB	10/2/2022	03:26:25	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0941.LAB	10/2/2022	03:26:34	formal_po: 0:00:09	0.056	0.229	0.421	54.5	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0942.LAB	10/2/2022	03:26:44	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0943.LAB	10/2/2022	03:26:53	formal_po: 0:00:09	0.056	0.287	0.421	68.1	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0944.LAB	10/2/2022	03:27:03	formal_po: 0:00:10	0.056	0.37	0.421	87.8	PASS	0.011
FORMALDEHYDE_POST_SPIKE_0945.LAB	10/2/2022	03:27:12	formal_po: 0:00:09	0.056	0.204	0.421	48.5	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0946.LAB	10/2/2022	03:27:22	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0947.LAB	10/2/2022	03:27:31	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0948.LAB	10/2/2022	03:27:40	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0949.LAB	10/2/2022	03:27:50	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0950.LAB	10/2/2022	03:27:59	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0951.LAB	10/2/2022	03:28:09	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0952.LAB	10/2/2022	03:28:18	formal_po: 0:00:09	0.056	0.145	0.421	34.4	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0953.LAB	10/2/2022	03:28:28	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0954.LAB	10/2/2022	03:28:37	formal_po: 0:00:09	0.056	0.425	0.421	101	PASS	0.011
FORMALDEHYDE_POST_SPIKE_0955.LAB	10/2/2022	03:28:46	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0956.LAB	10/2/2022	03:28:56	formal_po: 0:00:10	0.056	0.176	0.421	41.7	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0957.LAB	10/2/2022	03:29:05	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0958.LAB	10/2/2022	03:29:15	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0959.LAB	10/2/2022	03:29:24	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0960.LAB	10/2/2022	03:29:34	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0961.LAB	10/2/2022	03:29:43	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0962.LAB	10/2/2022	03:29:52	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0963.LAB	10/2/2022	03:30:02	formal_po: 0:00:10	0.056	0.063	0.421	15	FAIL	0.011
FORMALDEHYDE_POST_SPIKE_0964.LAB	10/2/2022	03:30:11	formal_po: 0:00:09	0.056	0.063	0.421	15	FAIL	0.011

Native Analyte concentration = 0.095  
Bias = 0  
Direct inject analyte concentration = 31.05  
Direct inject tracer concentration = 5.31  
The above data is for: spike\_formal\_post\_spike\_NG  
Tracer Bias 0



## CERTIFICATE OF ANALYSIS

### Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	CHEROKEE INSTRUMENTS INC	Reference Number:	160-402459816-1
Part Number:	X04NI99C15A02N7	Cylinder Volume:	143.7 CF
Cylinder Number:	CC736584	Cylinder Pressure:	2016 PSIG
Laboratory:	124 - Plumsteadville - PA	Valve Outlet:	350SS
Analysis Date:	Jul 29, 2022		
Lot Number:	160-402459816-1		

**Expiration Date: Jul 29, 2023**

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

### ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration			Analytical Uncertainty
		(Mole %)	(Volume %)	(Weight %)	
SULFUR HEXAFLUORIDE	5.000 PPM	4.965 PPM	4.965 PPM	25.89 PPM	+/- 10%
FORMALDEHYDE	30.00 PPM	33.92 PPM	33.92 PPM	36.37 PPM	+/- 10%
ETHYLENE	50.00 PPM	50.11 PPM	50.11 PPM	50.18 PPM	+/- 10%
NITROGEN	Balance		Balance		

**Notes:**

AMP-CHEROKEE Environmental Solutions  
100 Logan Ct.  
Angier, NC 27501  
919-522-0554



Signature on file

Approved for Release



Issue date March 1, 2015  
Reviewed date October 1, 2020

### Safety Data Sheet

**SDS ID# 4096**

#### Section 1. IDENTIFICATION

##### 1.1. Product identifier

Product form : Mixture

Product name : Hydrogen Cyanide (0.0001%-0.0025%) in Nitrogen

##### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Product use : Calibration gas/Bumptest gas/Function test gas

##### 1.3. Details of the supplier of the safety data sheet

Intermountain Specialty Gases  
520 N. Kings Road  
Nampa, ID 83687  
Telephone 1-208-466-9425 or Toll free 1-800-552-5003  
Fax 1-208-466-9144  
www.isgases.com

##### 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

#### Section 2. HAZARDS IDENTIFICATION

##### 2.1. Classification of the substance or mixture

Classification : GASES UNDER PRESSURE - Compressed gas  
Simple asphyxiant - Yes  
Acute toxicity, 5 Inhalation

##### 2.2. Label elements

Hazard pictograms



Signal word : WARNING

Hazard statements : H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED  
: OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.  
: H333 - MAY BE HARMFUL IF INHALED  
: OSHA - PG01 - DO NOT REMOVE THIS PRODUCT LABEL

Precautionary statements



[General]	: Read and follow all Safety Data Sheets (SDS's) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have a product container or label at hand. Use equipment rated for cylinder pressure.
[Prevention]	: P202 - Do not handle until all safety precautions have been read and understood : P308+P313 - If exposed or concerned: Get medical advice/attention. : P271+P403- Use only outdoors or in a well-ventilated area
[Response]	: P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing. : P313 - Get medical advice/attention.
[Storage]	: CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)
[Disposal]	: Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### 2.3. Other hazards

No additional information available

### 2.4. Unknown acute toxicity

No data available

## Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Product Identifier	%
Nitrogen	(CAS No) 7727-37-9	99.75 - 99.9999
Hydrogen Cyanide	(CAS No) 74-90-8	0.0001 - 0.0025

## Section 4. FIRST AID MEASURES

### 4.1. Description of first aid measures

General	: IF exposed or concerned: Get medical advice/attention.
Inhalation	: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing has stopped, give artificial respiration or oxygen by trained personnel. If victim feels unwell, seek medical advice.
Skin contact	: Immediately flush with copious amount of water for at least 15 minutes.
Eye contact	: Immediately flush with copious amount of water for at least 15 minutes.
Ingestion	: Ingestion is not considered a potential route of exposure, refer to the inhalation section.

### 4.2. Most important symptoms/effects, acute and delayed

#### Acute

Inhalation	PROMPT REMOVAL FROM THE CONTAMINATED AREA AND IMMEDIATE MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE AWARE OF THE HEALTH HAZARDS ASSOCIATED WITH HYDROGEN CYANIDE.
	: A complete Cyanide Antidote Kit should be available near all areas of use. Personnel should be trained in the use of the kit to administer first aid in advance of medical assistance. Pertinent medical records shall be maintained for 5 years following the





**FIELD ENVIRONMENTAL  
INSTRUMENTS, LLC**

Components	Concentration (Mole%)
Hydrogen Cyanide (HCN)-	10 ppm
Nitrogen (N <sub>2</sub> )	- Balance

Fill Date  
9/19/2022

Contents: 1.2 ft<sup>3</sup> @ 70°F and 500 PSIG

SDS# 4096

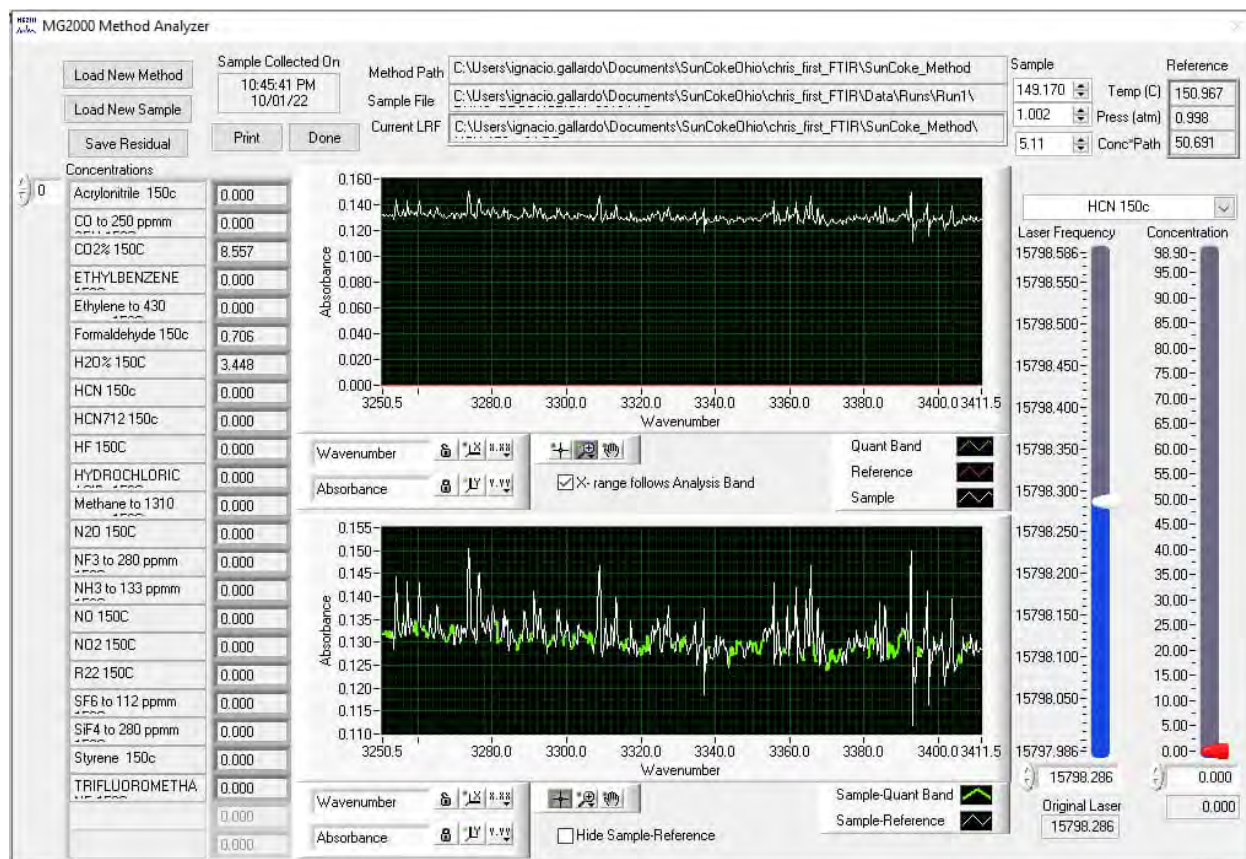


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301 Brushton Ave., Suite A, Pittsburgh PA 15201  
Corporate Headquarters: Phone (800) 358-4242



Manual validations:



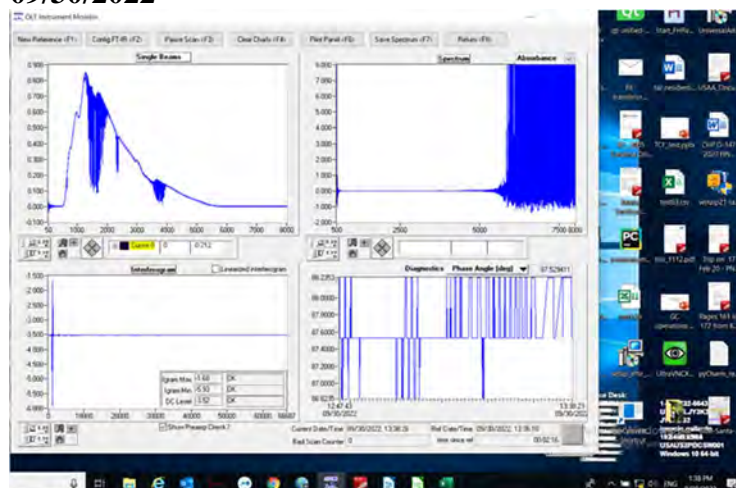
HCN above shows BDL







09/30/2022



**Calibrate Pressure Transducer**

Pressure Offset: -0.105

Baratron Max Torr: 1000.00

Pressure reading (Atm): 1.003541

Temperature Offset: -50.00

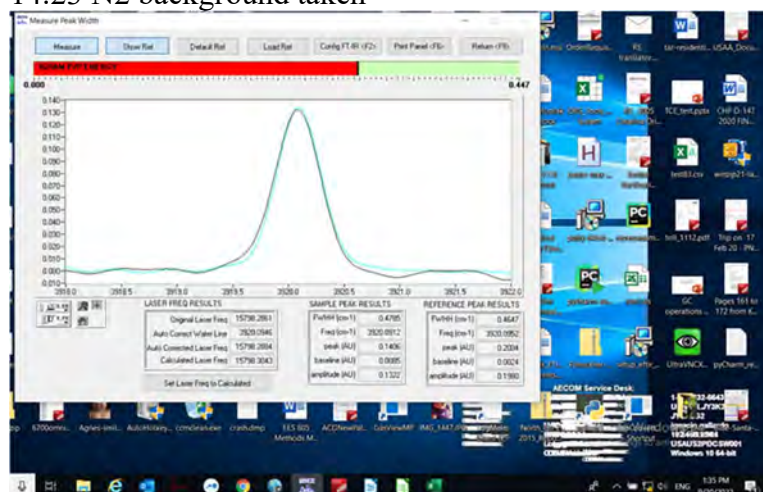
Temperature reading (C): 150.040695

**SAVE & EXIT** **CANCEL**

\*\* Actual time is 1hrf 2 min ahead comp time

12:55 Leak check failed – was determined to be a faulty rotameter. Replaced with a 0-10 lpm range

14:23 N2 background taken

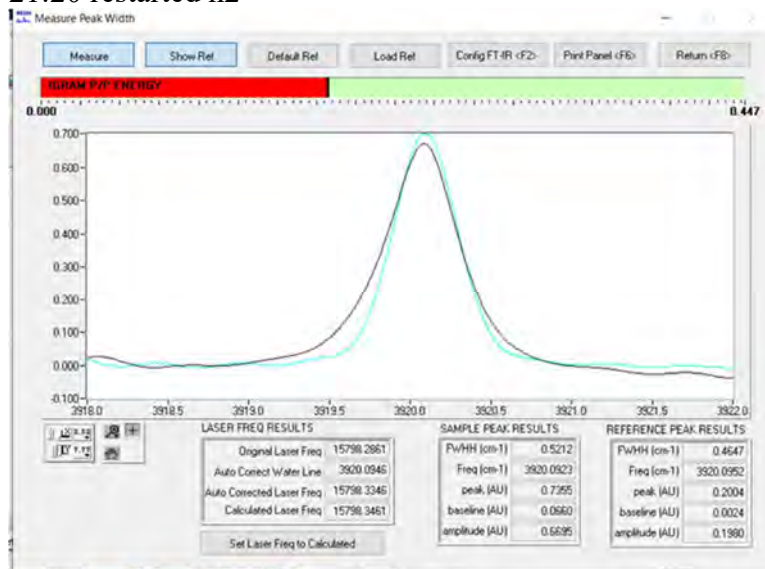




14:30 CTS Performed [R22: 11.45ppm, Ethylene: 9.846ppm, Methane: 9.740ppm]  
 15:53 HCN Direct inject started. [HCN:10ppm (+/- 1ppm)]  
 16:14 Formaldehyde direct inject started. [Formaldehyde: 33.92 ppm, SF6: 4.965ppm, Ethylene: 50.1 ppm [CC736584].  
 16:36 Formaldehyde direct inject ended.  
 17:20 HCL direct inject. [SF6: 10.08, HCl: 20.15]  
 17:46 Aair finished.  
 1700 Put together a pre-instrument filter housing at the bottom of the sample line.  
 2230 Left site.

## 10/01/2022

06:30 Arrived on site  
 0645 Filled Instrument with LN2. Began heating filter oven and sample lines  
 08:55 Replaced CEMS probe at 0850 with another 5/8 ss. Previous probe had developed a hole.  
 10:00 Replaced CEMS Filter  
 13:40: CTS leak repaired. Filter was moved during setup and heat ruined O-ring. CTS began passing around scan 368. Cal line is leaking.  
 18:06 CTS was passed again during formaldehyde up at around scan 986  
 1932 Leak check performed at from sample line tip. Passed  
 20:00 Pump switched to inlet.  
 20:40 refilled In2  
 20:57 restarted formaldehyde up stack. Decided to switch pump to inlet.  
 21:00 Formaldehyde up stack began passing around scan 1859  
 21:08 n2 up started. Having pressure issues.  
 21:20 restarted n2



21:45 Formaldehyde spike started. Scan 96  
 22:00 Restarted formaldehyde spike. Formaldehyde gas turned on at scan  
 22:08 Run started at  
 11:42 started runs.  
 02:45 ended runs. Post CTS stabilized at scan 46  
 03:00 Formaldehyde post spike



Sample Type	HCl/Cl <sub>2</sub> (Method 26A)		Date	9-30-2022		Barometer ID	200202233		Page	1 of 1			
Project Name	HHO		Cond	LATE		Run	ONE		Bar. Press. ("Hg)	29.56			
Project Number			Console ID	SC-M1542		Stat. Press. ("H <sub>2</sub> O)	-.2		Train Leak Rate (cfm @ "Hg)	Initial 0.001 @ 16"			
Facility	Haverhill Suncoke		DGMCF	1.001		Probe ID	Air-cooled Probe 1		Final	0.001 @ 6"			
Source	BVS 6		ΔH@	1.888		K <sub>t</sub>	4.75/4.8		PTCF	0.84			
Operator	SV						Meter Elevation (ft) (relative to Barometer)	0		Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)			
Duct Dimension(s)	9'		Nozzle Dia (in)	0.370						Initial (-)	0 @ 7"		
											Initial (+)	0 @ 7"	
											Final (-)	0 @ 6"	
											Final (+)	0 @ 5"	
Nozzle Calibration			Caliper Used			ID							
							Calibration Exp Date						
Post-Test Stack TC Check	Reference Thermometer ID		Ref Thermometer Exp Date		Thermometer and TC agree within 2°F		Y/N		Post-Test: Are Pitots Damaged?		Y/N		

Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft <sup>3</sup> )	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Stack	Temperature (°F)				DGM Outlet	Vacuum ("Hg)
							Probe (248-273)	Filter (248-273)	Imp Exit (<68)			
A <sup>1</sup>	16:00	0	591.338	0.36	1.70	1483		262	60	61	5	
2	16:02	2:30	593.05	0.31	1.50	1515		233	48	60	5	
3	16:05	5:00	594.71	0.33	1.60	1514		260	46	60	5	
4	16:07	7:30	596.41	0.34	1.60	1526		256	45	61	5	
5	16:10	10:00	598.10	0.35	1.70	1541		269	45	60	6	
6	16:12	12:30	599.84	0.34	1.60	1539		267	45	60	5	
	16:15	15:00	601.583	Port Change								
B <sup>1</sup>	16:17	15:00	601.583	0.31	1.50	1485		267	48	61	5	
2	16:19	17:30	603.20	0.33	1.60	1471		274	46	60	5	
3	16:21	20:00	604.88	0.34	1.60	1502		244	46	61	5	
4	16:24	22:30	606.61	0.35	1.70	1467		266	46	60	5	
5	16:26	25:00	608.40	0.32	1.50	1467		269	47	60	5	
6	16:29	27:30	610.09	0.29	1.40	1489		270	47	60	4	
	16:32	30:00	611.732	Port Change								
D <sup>1</sup>	16:34	30:00	611.732	0.35	1.70	1491		269	50	60	5	
2	16:37	32:30	613.46	0.34	1.60	1461		266	48	60	5	
3	16:39	35:00	615.21	0.30	1.40	1436		263	48	62	5	
4	16:41	37:30	616.94	0.33	1.60	1423		258	47	61	5	
5	16:44	40:00	618.63	0.29	1.40	1447		264	48	61	4	
6	16:46	42:30	620.24	0.26	1.25	1477		262	49	63	4	
	16:49	45:00	621.757	Port Change								
B <sup>1</sup>	16:51	45:00	621.757	0.30	1.40	1491		254	52	62	5	
2	16:53	47:30	623.38	0.33	1.60	1492		265	51	62	5	
3	16:56	50:00	625.08	0.36	1.70	1484		261	50	63	5	
4	16:58	52:30	626.85	0.36	1.70	1481		264	49	63	5	
5	17:01	55:00	628.59	0.32	1.50	1477		269	50	64	5	
6	17:03	57:30	630.28	0.28	1.35	1460		261	50	63	4	
	17:06	60:00	631.878	End of Run								

Notes:

SDS-21: HCl, Cl<sub>2</sub> by EPA Method 26A  
Per EM SOP-021  
Issued: April 2020  
Document reviewed biennially



Project Name	HHO
Project Number	60682866
Date	09/30/2022
Source	Bypass Vent 657ack

## Hydrogen Chloride and Chlorine EPA Method 26A

Condition No.	1
Run No.	1
Balance ID	BAL-m1701
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1*	0.1 N H <sub>2</sub> SO <sub>4</sub>	50	Kneekout	761.3	
71	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S FJS 9/29/22	744.4	842.3
82	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S	741.4	744.9
93	0.1 N NaOH	100	Mod	700.1	700.5
84	0.1 N NaOH	100	Mod	762.3	763.5
85	Silica Gel	~300g	Mod	918.7	932.0

\* this impinger optional, per Method 26A

### Sample Recovery Checklist

- ✓ (Only if transfer line is used). Disconnect transfer line, and rinse three times with DI water into acid impinger catch bottle. Transfer bottle to laboratory with impinger train.
- ✓ Using water, rinse filter support, back half of filter holder and any connecting glassware into the acid impinger catch bottle.
- ✓ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.
- ✓ Note condition of the silica gel impinger. 50 % spent
- ✓ Pour contents of the 1st, 2nd and ~~3rd~~ (containing acid) impingers into the Acid impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete acid impinger sample label.
- ✓ <sup>3rd</sup> ~~4th~~ Pour the contents of the <sup>3rd</sup> and ~~4th~~ impingers (containing NaOH) into the alkaline impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete alkaline impinger sample label.
- ✓ Log samples into logbook and store appropriately.

### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent 6-S-K-11 -M26A-AcidImp	1 L Nalgene	Acid Impinger Catch & Rinse
Bypass Vent 6-S-K-11 -M26A-AlkImp	500 mL Nalgene	Alkaline Impinger Catch & Rinse

Notes:

RDS-19: HCl/Cl<sub>2</sub> by EPA Method 26A  
Per EM SOP-021  
Issued: March 2020  
Document reviewed biennially



Sample Type	HCl/Cl <sub>2</sub> (Method 26A)		Date	9/30/22		Barometer ID	200262233		Page	1 of 1	
Project Name	H H O		Cond	PROD		Run	TWO		Bar. Press. ("Hg)	29.41	
Project Number			Console ID	SC-M1542		Stat. Press. ("H <sub>2</sub> O)	- .2		Initial	0.001 @ 15"	
Facility	Haverhill Suncoke		DGMCF	1.001		Probe ID	Air cooled Probe 1		Final	0.017 @ 11"	
Source	BVS 6		ΔH@	1.888		K <sub>r</sub>	4.6		PTCF	0.84	
Operator	SV					Meter Elevation (ft) (relative to Barometer)	0		Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)		
Duct Dimension(s)	108"		Nozzle Dia (in)	0.370		Caliper Used	ID		Initial (-)	0 @ 6"	
Nozzle Calibration	0.370 / 0.369 / 0.370					Calibration Exp Date			Initial (+)	0 @ 5"	
Post-Test Stack TC Check	Reference Thermometer ID		Ref Thermometer Exp Date		Thermometer and TC agree within 2°F		Y / N		Post-Test: Are Pitots Damaged?	Y / N	

Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft³)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)					Vacuum ("Hg)
						Stack	Probe (248-273)	Filter (248-273)	Imp Exit (<68)	DGM Outlet	
B 1	20:13	0	634.224	0.32	1.50	1418		271	52	55	4.5
2	20:19	2:30	635.92	0.35	1.60	1436		276	41	54	5.0
3	20:21	5:00	637.51	0.37	1.70	1444		278	41	54	5.0
4	20:24	7:30	639.27	0.38	1.75	1449		294	40	54	6.0
5	20:27	10:00	641.01	0.36	1.65	1496		287	40	54	6.0
6	20:29	12:30	642.76	0.32	1.50	1539		276	40	55	6.0
	20:32	15:00	644.428				Port Change				
B 1	20:35	15:00	644.428	0.38	1.75	1637		255	44	54	6.5
2	20:37	17:30	646.12	0.39	1.80	1666		278	42	55	7.5
3	20:40	20:00	647.91	0.39	1.80	1632		282	42	54	7.5
4	20:42	22:30	649.69	0.36	1.65	1651		285	43	55	7.5
5	20:45	25:00	651.45	0.34	1.60	1666		277	44	55	7.5
6	20:47	27:30	653.18	0.33	1.50	1658		295	44	55	7.5
	20:50	30:00	654.844				Port Change				
B 1	20:52	30:00	654.844	0.37	1.70	1697		247	46	56	8.0
2	20:54	32:30	656.49	0.38	1.75	1699		271	46	55	8.5
3	20:57	35:00	658.25	0.39	1.80	1704		280	46	55	9.0
4	21:00	37:30	660.08	0.38	1.75	1677		289	46	55	9.0
5	21:02	40:00	661.88	0.35	1.60	1663		283	47	55	8.0
6	21:05	42:30	663.61	0.30	1.40	1684		276	47	55	7.5
	21:07	45:00	665.265				Port Change				
A 1	21:07	45:00	665.265	0.38	1.75	1714		258	48	55	8.0
2	21:12	47:30	666.92	0.36	1.65	1705		272	47	55	8.0
3	21:14	50:00	668.64	0.37	1.70	1699		273	47	55	8.5
4	21:17	52:30	670.41	0.35	1.60	1704		286	47	55	8.5
5	21:19	55:00	672.13	0.37	1.70	1719		291	47	55	9.0
6	21:22	57:30	673.88	0.37	1.70	1713		271	48	55	9.0
	21:24	60:00	675.630				End of Run				

Notes: 0.31 ΔP = 1.4 ΔH



Project Name	H40
Project Number	60682866
Date	9/30/2022
Source	Bypass Vent 6 Stack

## Hydrogen Chloride and Chlorine EPA Method 26A

Condition No.	1
Run No.	2
Balance ID	BAL-m1701
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1 <sup>a</sup>	0.1 N H <sub>2</sub> SO <sub>4</sub>	50	Kneekout		
21	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S	686.1	806.9
22	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S	762.9	763.7
23	0.1 N NaOH	100	Mod	715.4	716.9
24	0.1 N NaOH	100	Mod	730.4	732.1
25	Silica Gel	~ 300g	Mod	895.7	905.8

<sup>a</sup> this impinger optional, per Method 26A

### Sample Recovery Checklist

- ✓ (Only if transfer line is used). Disconnect transfer line, and rinse three times with DI water into acid impinger catch bottle. Transfer bottle to laboratory with impinger train.
- ✓ Using water, rinse filter support, back half of filter holder and any connecting glassware into the acid impinger catch bottle.
- ✓ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.
- ✓ Note condition of the silica gel impinger. 50% spent
- ✓ Pour contents of the 1st, 2nd and ~~3rd~~ (containing acid) impingers into the Acid impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete acid impinger sample label.
- ✓ Pour the contents of the ~~3rd~~ and <sup>4th</sup> impingers (containing NaOH) into the alkaline impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete alkaline impinger sample label.
- ✓ Log samples into logbook and store appropriately.

### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent 6 -Stk-12 -M26A-AcidImp	1 L Nalgene	Acid Impinger Catch & Rinse
Bypass Vent 6 -Stk-12 -M26A-AlkImp	500 mL Nalgene	Alkaline Impinger Catch & Rinse

Notes:


RDS-19: HCl/Cl<sub>2</sub> by EPA Method 26A  
Per EM SOP-021  
Issued: March 2020  
Document reviewed biennially



Sample Type	HCl/Cl <sub>2</sub> (Method 26A)		Date	11/12-22		Barometer ID	1149203		Page	1 of 1	
Project Name	HAVERH. II		Cond	M10	Run	3	Bar. Press. ("Hg)	29.32		Train Leak Rate (cfm @ "Hg)	
Project Number			Console ID	SC-M1542			Stat. Press. ("H <sub>2</sub> O)	- .2		Initial	0.001 @ 17"
Facility	Sunshine		DGMCF	1.001			Probe ID	Air-cooled probe 1		Final	0.001 @ 12"
Source	Bress V6		ΔH@	1.888	K <sub>r</sub>	4.75/4.6	PTCF	0.84		Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)	
Operator	SV						Meter Elevation (ft) (relative to Barometer)	0		Initial (-)	0.8 @ 7.5
Duct Dimension(s)	108"		Nozzle Dia (in)	0.370						Initial (+)	0.0 @ 8.0
Nozzle Calibration			Caliper Used			ID			Final (-)	0.0 @ 8.0"	
							Calibration Exp Date			Final (+)	0.0 @ 6"
Post-Test Stack TC Check	Reference Thermometer ID		Ref Thermometer Exp Date		Thermometer and TC agree within 2°F		Y / N		Post-Test: Are Pitots Damaged?		Y / N

Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)					Vacuum ("Hg)	
						Stack	Probe (248-273)	Filter (248-273)	Imp Exit (<68)	DGM Outlet		
A1	9:22	0	675.975	0.34	1.60	1613		262	42	46	2	
2	9:24	2:30	677.68	0.32	1.50	1614		309	39	45	5	
3	9:27	5:00	679.34	0.35	1.60	1622		306	38	46	5	
4	9:29	7:30	681.05	0.38	1.75	1611		298	38	45	5	
5	9:32	10:00	682.82	0.39	1.80	1623		285	38	45	6	
6	9:34	12:30	684.61	0.36	1.7	1616		288	39	46	5.5	
	9:37	15:00	686.401	Port Change								
B1	9:39	15:00	686.401	0.34	1.60	1568		232	41	45	5	
2	9:42	17:30	688.11	0.32	1.70	1593		255	41	46	5	
3	9:44	20:00	689.86	0.39	1.80	1573		281	41	45	6	
4	9:47	22:30	691.68	0.38	1.75	1582		293	42	46	6	
5	9:49	25:00	693.47	0.33	1.50	1536		274	43	46	5	
6	9:52	27:30	695.20	0.29	1.30	1557		273	43	46	5	
	9:54	30:00	696.784	Port Change								(SV)
C1	9:57	30:00	696.789	0.31	1.40	1583		254	43	46	2.5	
2	9:59	32:30	698.39	0.37	1.70	1564		274	43	46	5	
3	10:02	35:00	700.14	0.38	1.75	1533		281	43	46	6	
4	10:04	37:30	701.95	0.34	1.60	1529		283	43	45	5	
5	10:07	40:00	703.68	0.32	1.50	1519		261	44	46	5	
6	10:09	42:30	705.35	0.27	1.20	1518		268	44	47	5	
	10:12	45:00	706.916	Port Change								
B1	10:14	45:00	706.916	0.32	1.50	1560		246	44	46	5	
2	10:17	47:30	708.72	0.35	1.60	1574		255	44	46	5	
3	10:19	50:00	710.26	0.38	1.80	1568		272	44	47	6	
4	10:21	52:30	712.08	0.39	1.80	1531		273	44	46	6	
5	10:24	55:00	713.91	0.31	1.40	1530		281	44	47	5	
6	10:26	57:30	715.59	0.26	1.20	1538		272	44	46	4.5	
	10:29	60:00	717.114	End of Run								

Notes:

SDS-21: HCl, Cl<sub>2</sub> by EPA Method 26A  
Per EM SOP-021

Issued: April 2020

Document reviewed biennially



Project Name	HHO
Project Number	60682866
Date	09/10/01/2022
Source	Bypass Vent 6 Stack

## Hydrogen Chloride and Chlorine EPA Method 26A

Condition No.	1
Run No.	3
Balance ID	BAL-M1701
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	0.1 N H <sub>2</sub> SO <sub>4</sub>	50	Knockout		
21	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S	762.2	869.9
32	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S	742.8	744.6
43	0.1 N NaOH	100	Mod	702.1	702.7
54	0.1 N NaOH	100	Mod	762.5	763.2
65	Silica Gel	~ 300g	Mod	932.4	949.1

\* this impinger optional, per Method 26A

### Sample Recovery Checklist

- ✓ (Only if transfer line is used). Disconnect transfer line, and rinse three times with DI water into acid impinger catch bottle. Transfer bottle to laboratory with impinger train.
- ✓ Using water, rinse filter support, back half of filter holder and any connecting glassware into the acid impinger catch bottle.
- ✓ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.
- ✓ Note condition of the silica gel impinger. 40% spent
- ✓ Pour contents of the 1st, 2nd and 3rd (containing acid) impingers into the Acid Impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete acid impinger sample label.
- ✓ Pour the contents of the <sup>3rd</sup> 4th and 5th impingers (containing NaOH) into the alkaline impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete alkaline impinger sample label.
- ✓ Log samples into logbook and store appropriately.

### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent 6-5TK-13-M26A-AcidImp	1 L Nalgene	Acid Impinger Catch & Rinse
Bypass Vent 6-5TK-13-M26A-AlkImp	500 mL Nalgene	Alkaline Impinger Catch & Rinse

Notes:


RDS-19: HCl/Cl<sub>2</sub> by EPA Method 26A  
Per EM SOP-021  
Issued: March 2020  
Document reviewed biennially



Sample Type <b>HCl/Cl<sub>2</sub> (Method 26A)</b>		Date <b>9/30/22</b>	Barometer <b>1189103</b> ID <b>SN 200202233</b>	Page <b>1</b> of <b>1</b>
Project Name <b>H40</b>	Cond <b>FB</b>	Run	Bar. Press. ("Hg) <b>29.44</b>	Train Leak Rate (cfm @ "Hg)
Project Number <b>60682866</b>	Console ID <b>SC-M1542</b>		Stat. Press. ("H <sub>2</sub> O)	Initial <b>0.005 @ 15"</b>
Facility <b>Hav<sup>W</sup> Hill</b>	DGMCF <b>1.001</b>		Probe ID <b>A1 looked Probe 1</b>	Final <b>0.005 @ 15"</b>
Source <b>0V56</b>	ΔH@ <b>1.988</b>	K <sub>i</sub>	PTCF <b>0.84</b>	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O
Operator <b>BAH</b>			Meter Elevation (ft) (relative to Barometer) <b>0</b>	Initial (-) @
Duct Dimension(s) <b>108"</b>			Nozzle Dia (in)	Initial (+) @
Nozzle Calibration	Caliper Used	ID	Calibration Exp Date	Final (-) @
				Final (+) @

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y / N	Post-Test: Are Pitots Damaged?	Y / N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft <sup>3</sup> )	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)					Vacuum ("Hg)
						Stack	Probe (248-273)	Filter (248-273)	Imp Exit (<68)	DGM Outlet	
1			<b>632.082</b>	<b>Initial</b>							
2	<b>18:52</b>		<b>633.911</b>	<b>Pre test</b>							
3	<b>18:54</b>		<b>634.078</b>	<b>Post test</b>							
4											
5											
6											
Port Change											
1											
2											
3											
4											
5											
6											
Port Change											
1											
2											
3											
4											
5											
6											
Port Change											
1											
2											
3											
4											
5											
6											
End of Run											

Notes:



Project Name	H40
Project Number	60682066
Date	09/30/2020
Source	Bypass Vent & Stack

## Hydrogen Chloride and Chlorine EPA Method 26A

Condition No.	1
Run No.	FB
Balance ID	BAL-M1701
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	0.1 N H <sub>2</sub> SO <sub>4</sub>	50	Kneekout		
11	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S	763.0	762.7
22	0.1 N H <sub>2</sub> SO <sub>4</sub>	100	G/S	745.9	745.9
43	0.1 N NaOH	100	Mod	701.7	701.7
74	0.1 N NaOH	100	Mod	762.8	762.8
85	Silica Gel	~300g	Mod	932.0	932.4

\* this impinger optional, per Method 26A

### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent & Stack - FB - M26A-AcidImp	1 L Nalgene	Acid Impinger Catch & Rinse
Bypass Vent & Stack - FB - M26A-AlkImp	500 mL Nalgene	Alkaline Impinger Catch & Rinse

### Sample Recovery Checklist

- ✓ (Only if transfer line is used). Disconnect transfer line, and rinse three times with DI water into acid impinger catch bottle. Transfer bottle to laboratory with impinger train.
- ✓ Using water, rinse filter support, back half of filter holder and any connecting glassware into the acid impinger catch bottle.
- ✓ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet.
- ✓ Note condition of the silica gel impinger. 0 % spent
- ✓ Pour contents of the 1st, 2nd and 3rd (containing acid) impingers into the Acid impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete acid impinger sample label.
- ✓ Pour the contents of the 4th and 5th impingers (containing NaOH) into the alkaline impinger catch bottle(s). Rinse impingers and connecting glassware with deionized water into the same bottle(s). Complete alkaline impinger sample label.
- ✓ Log samples into logbook and store appropriately.

Notes:


RDS-19: HCl/Cl<sub>2</sub> by EPA Method 26A  
Per EM SOP-021  
Issued: March 2020  
Document reviewed biennially



Sample Type	Filt and Cond PM (M5/M202)	Date	9/28/2022	Barometer ID	HFG-Airport st	Page	1 of 2
Project Name	HHO	Cond	ONE	Bar. Press. ("Hg)	28.87	Train Leak Rate (cfm @ "Hg)	
Project Number	60690939	Console ID	SC-M1542	Stat. Press. ("H <sub>2</sub> O)	-0.2	Initial	0.005 @ 15"
Facility	Haverhill Suncoke	DGMCF	1.001	Probe ID	Air-Cooled 1	Final	0.005 @ 20
Source	Vent Stack	ΔH@	1.888	K <sub>t</sub>	18.744	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> C)	
Operator	Saul Vega	Filter No.		Meter Elevation (ft) (relative to Barometer)	25	Initial (-)	0 @ 4"
Duct Dimension(s)	109"	Nozzle Dia (in)	0.370			Initial (+)	0 @ 4"
Nozzle Calibration				Caliper Used	ID	Final (-)	
				Calibration Exp Date		Final (+)	

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y / N	Post-Test: Are Pitots Damaged?	Y / N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)						Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter <sup>1</sup> (near but <85)	Imp Exit (<68)	DGM Outlet	
#1	10:55	0	299.132	0.33	1.452	1522		266	47	42	53	5
1	10:55	4	301.54	0.34	1.496	1503		266	42	34	54	5
2	10:59	8	304.08	0.32	1.408	1522		268	42	34	54	5
2	11:03	12	306.54	0.32	1.408	1524		265	41	35	55	5
3	11:07	16	308.02	0.35	1.54	1518		265	41	36	55	6
3	11:11	20	311.63	0.36	1.58	1510		260	41	38	55	6
4	11:15	24	314.30	0.39	1.70	1527		268	40	39	55	6
4	11:19	28	317.01	0.37	1.63	1526		265	40	39	55	7
5	11:23	32	319.79	0.35	1.54	1539		263	40	40	55	6.5
5	11:27	36	322.41	0.35	1.54	1538		264	40	40	54	6.5
6	11:31	40	325.02	0.25	1.1	1389		261	40	41	54	5
6	11:35	44	327.26	0.25	1.1	1367		263	41	41	55	5
	11:39	48	328.466									
Port Change												
#1	11:45	48	329.466	0.32	1.4	1491		263	44	43	54	6
1	11:49	52	331.92	0.32	1.4	1492		268	43	40	55	6
2	11:53	56	334.42	0.35	1.54	1479		264	42	39	56	7
2	11:57	60	337.04	0.36	1.58	1473		266	42	39	56	8
3	12:01	64	339.65	0.38	1.672	1463		261	41	40	56	9
3	12:05	68	342.28	0.38	1.672	1451		263	41	41	57	10
4	12:09	72	344.84	0.37	1.628	1451		245	39	41	57	11
4	12:13	76	347.21	0.37	1.628	1468		242	39	42	57	12
5	12:17	80	350.00	0.27	1.2	1461		258	38	42	57	11
5	12:21	84	352.48	0.27	1.20	1469		259	40	43	56	11
6	12:25	88	354.75	0.21	0.924	1449		263	41	43	57	9.5
6*	12:29	92	356.77	0.2	0.88	1431		278	41	43	57	9
	12:33	96	358.842									
Port Change												
1	13:16	100	358.842	0.32	1.408	1455		241	46	44	56	8
1	13:21	104	362.29	0.32	1.408	1452		259	43	39	58	8
2	13:26	108	365.37	0.34	1.496	1451		267	42	38	57	10

Notes:	Liner broke at port change from B to C Leak check failed at 0.005" at 13" from inside the filter. in hot box. Liner changed. Leak check after changing liner was 0.005" at 15". Leak check at nozzle.	<sup>1</sup> Remember to record Final CPM Filter Temperature	SDS-36: PM (Filt & Conc EPA Methods 5/ Per: EM SOP. Issued: June 2 Document reviewed bienr
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Project Name	C'D TESTING 2022
Project Number	60682866
Date	09/28/2022
Source	BYPASS VENT 6

## Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	MFD
Run No.	OME
Balance ID	BAL-M1721
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	Short Stem	619.0	902.5
2	empty	--	Mod	630.6	631.9
3	Water	100	Mod	796.6	788.2
4	Silica Gel	~300g	Mod	932.5	970.2
5					

### Filter

Filter ID Number	027169
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### Sample Log

Sample ID Number	Sample Container	Description
BYPASS VENT 6-STK-11 -M5/202-PNR	250 ml	Probe and Nozzle Rinse
BYPASS VENT 6-STK-11 -M5/202-Filt	Petri Dish	Filter
BYPASS VENT 6-STK-11 -M5/202-WtRns	1000 ml	Water Rinse
BYPASS VENT 6-STK-11 -M5/202-OrgRns	250 ml	Organic Rinse
BYPASS VENT 6-STK-11 -M5/202-CPMFilt	Petri Dish	CPM Filter
BYPASS VENT 6-STK-11 -M5/202-CPM Filt B	Petri Dish	CPM Filter

### Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- ☒ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger
- ☒ Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- ☒ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ☒ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: 0 ml
- ☒ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: 0 ml
- ☒ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ☒ Start 16:50 Stop 17:50
- ☒ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ☒ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ☒ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ☒ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ☒ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ☒ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- ☒ Note condition of the silica gel impinger. \_\_\_\_ % spent
- ☒ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ☒ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- ☒ Log samples into logbook and store appropriately.

Notes: MS Filter torn in center prior RDS-47 - PM and Condensables by EPA Method 5/202  
to lab recovery' Stack Recovery: ACE Hex Per: EM SOP-047 Issued: October 2021  
R. NEE AND TRANSFER LINE COLLECTED IN Document reviewed biennially




Sample Type <b>Filt and Cond PM (M5/M202)</b>	Date <b>9/28/202</b>	Barometer ID <b>Hg Airport Station</b>	Page <b>2</b> of <b>2</b>
Project Name <b>HHO</b>	Cond <b>M.L</b>	Run <b>ONE</b>	Bar. Press. ("Hg) <b>28.87</b>
Project Number <b>66682866</b>	Console ID <b>SC-M1542</b>	Stat. Press. ("H <sub>2</sub> O) <b>-0.2</b>	Train Leak Rate (cfm @ "Hg) <b>0.005 @ 15"</b>
Facility <b>Hooverhill Suncoke</b>	DGMCF <b>1.001</b>	Probe ID <b>Air Cooled 1</b>	Initial <b>0.005 @ 15"</b>
Source <b>Vent Stack</b>	ΔH@ <b>1.888</b>	K <sub>r</sub> <b>4.4</b>	Final <b>0.005 @ 15"</b>
Operator <b>Saul Vega</b>	Filter No. <b>6.370</b>	Meter Elevation (ft) (relative to Barometer) <b>25</b>	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> C) <b>0.005 @ 15"</b>
Duct Dimension(s) <b>108"</b>	Nozzle Dia (in) <b>6.370</b>	Caliper Used <b>ID</b>	Final (-) <b>0.005 @ 15"</b>
Nozzle Calibration 	Calibration Exp Date	Final (+) <b>0.005 @ 15"</b>	

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)						Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter <sup>1</sup> (near but <85)	Imp Exit (<68)	DGM Outlet	
2	108	13:10	368.68	0.37	1.452	1464	267	42	41	57	11	
3	112	13:36	370.98	0.36	1.60	1407	269	43	41	61	15.5	
3	116	13:41	374.31	0.36	1.60	1411	263	43	42	61	17	
4	120	13:46	378.43	0.33	1.45	1401	267	47	45	60	19.5	
4	124	13:51	381.47	0.31	1.32	1396	258	48	47	55	18	
5	128	13:56	385.12	0.24	1.056	1392	253	48	46	55	16	
5	132	14:01	387.51	0.24	1.056	1398	262	49	47	56	15.5	
6	136	14:06	390.28	0.24	0.88	1392	266	50	47	56	65	
6	140	14:11	392.37	0.2	0.88	1390	261	50	46	55	12	
	144	14:16	394.96	0.4	1.76	1421	Port Change					
D1	148	14:50	394.46	0.4	1.76	1421	275	54	48	55	6	
1	152	14:55	398.61	0.4	1.76	1463	257	55	44	56	7	
2	156	15:00	402.13	0.39	1.716	1453	247	55	43	57	7.5	
2	160	15:05	405.48	0.37	1.628	1455	256	54	45	57	9	
3	164	15:10	408.77	0.33	1.452	1427	281	53	47	58	11	
3	168	15:15	411.91	0.33	1.452	1432	253	53	48	58	12	
4	172	15:20	414.95	0.33	1.452	1462	244	53	49	59	15	
4	176	15:25	418.21	0.33	1.452	1456	260	52	49	58	18	
5	180	15:30	421.27	0.29	1.276	1433	258	53	51	58	19	
5	184	15:35	424.27	0.29	1.276	1472	259	42	53	57	20	
6	188	15:37	425.344			END						
6	192											

Notes: <b>At start of port D, filter was changed due to high vacuum from water in the filter. Leak check before change 0.01 @ 15", Leak check after change 0.005 @ 15"</b>	<sup>1</sup> Remember to record Final CPM Filter Temperature	SDS-36: PM (Filt & Cond) EPA Methods 5/2 Per: EM SOP-0 Issued: June 20 Document reviewed biennial
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Sample Type <b>Filt and Cond PM (M5/M202)</b>	Date <b>4/28/2022</b>	Barometer ID <b>H76-01002</b>	Page <b>1</b> of <b>2</b>
Project Name <b>HHO</b>	Cond <b>Low</b> Run <b>TWO</b>	Bar. Press. ("Hg) <b>28.88</b>	Train Leak Rate (cfm @ "Hg) <b>0.001 @ 15"</b>
Project Number <b>60682866</b>	Console ID <b>SC-M1542</b>	Stat. Press. ("H <sub>2</sub> O) <b>-0.22</b>	Initial <b>0.001 @ 15"</b>
Facility <b>Haverhill Suncorp</b>	DGMCF <b>1.001</b>	Probe ID <b>A-5 (Leak 1)</b>	Final <b>0.005 @ 21"</b>
Source <b>Vent Stack 6</b>	ΔH@ <b>1.888</b> K <sub>i</sub> <b>4.88</b>	PTCF <b>0.84</b>	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> C <b>0.074 @ 7.9</b> <b>0.0 @ 7.2</b>
Operator <b>Saul Vega</b>	Filter No. <b>4.885.0</b>	Meter Elevation (ft) (relative to Barometer) <b>25</b>	Initial (-) <b>0.074 @ 7.9</b> Initial (+) <b>0.0 @ 7.2</b>
Duct Dimension(s) <b>168"</b>	Nozzle Dia (in) <b>0.370</b>		Final (-) <b>@</b> Final (+) <b>@</b>
Nozzle Calibration 	Caliper Used <b>0.370</b>	ID <b>0.369</b> Calibration Exp Date <b>0.370</b>	

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft³)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)						Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter 1 (near but <85)	Imp Exit (<68)	DGM Outlet	
D1	17:33	0	425.831	0.4	1.952	1435	25	258	55.67	51	61	7
1	17:38	5	429.46	0.42	2.049	1420		268	58	44	60	7.5
2	17:41	8	431.71	0.38	1.854	1428		268	56	44	61	8
2	17:45	12	434.75	0.40	1.952	1410		263	54	43	62	9
3	17:49	16	437.39	0.34	1.652	1416		270	54	43	62	10.5
3	17:53	20	440.09	0.35	1.708	1405		262	52	42	62	10
4	17:57	24	442.74	0.30	1.464	1404		265	52	43	62	9
4	18:01	28	445.19	0.31	1.5128	1390		260	52	43	61	10
5	18:05	32	447.77	0.35	1.708	1418		253	51	42	60	11.5
5	18:09	36	450.52	0.34	1.652	1419		269	51	42	61	11.5
6	18:13	40	453.22	0.27	1.3126	1398		259	50	42	60	11
6	18:17	44	455.79	0.27	1.3572	1385		253	50	42	60	11
	18:21	48	458.365	Port Change								
C1	18:24	48	458.365	0.32	1.60	1362		253	52	45	58	10
1	18:28	52	460.85	0.31	1.55	1420		263	53	42	58	11
2	18:32	56	463.71	0.35	1.75	1400		267	53	42	50	13
2	18:36	60	466.31	0.36	1.80	1379		271	51	41	59	14
3	18:40	64	468.97	0.35	1.75	1348		262	50	42	58	14
3	18:44	68	471.81	0.34	1.70	1344		271	50	44	58	13.5
4	18:48	72	474.44	0.33	1.65	1329		262	50	44	58	13.5
4	18:52	76	476.99	0.34	1.76	1338		257	51	44	57	13.5
5	18:56	80	479.61	0.28	1.40	1345		270	50	44	58	12
5	19:00	84	482.22	0.26	1.30	1347		264	51	45	58	12
6	19:04	88	484.75	0.26	1.30	1338		262	50	45	58	11
6	19:08	92	487.52	0.26	1.30	1335		261	50	45	58	11
	19:12	96	489.747	Port Change								
A B1	19:15	100	489.747	0.35	1.75	1367		265	51	47	58	12.5
1	19:19	100	492.35	0.35	1.75	1381		264	50	45	58	14
2	19:23	104	495.11	0.32	1.60	1399		250	50	44	57	15

Notes:	Remember to record Final CPM Filter Temperature	SDS-36: PM (Filt & Cond) EPA Methods 5/2 Per: EM SOP-C Issued: June 20 Document reviewed bienni
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Project Name	CD TESTING 22
Project Number	60682866
Date	09/20/2020
Source	VENT STACK 6

## Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	
Run No.	2
Balance ID	BAL-1701
Recovered by	

### Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	-	Short Stem	500.4	717.2
2	empty	-	Mod	611.5	617.0
3	Water	100	Mod	743.8	702.4
4	Silica Gel	~300g	Mod	967.8	1008.9
5					

### Filter

Filter ID Number	027170
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### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent 6-Stk-12 -M5/202-PNR	250 ml	Probe and Nozzle Rinse
Bypass Vent 6-Stk-12 -M5/202-Filt A	Petri Dish	Filter
Bypass Vent 6-Stk-12 -M5/202-WtRns	1000 ml	Water Rinse
Bypass Vent 6-Stk-12 -M5/202-OrgRns	250 ml	Organic Rinse
Bypass Vent 6-Stk-12 -M5/202-CPMFilt	Petri Dish	CPM Filter
Bypass Vent 6-Stk-12 -M5/202-Filt B	Petri Dish	Filter

### Sample Recovery Checklist

- ✓ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- ✓ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger
- ✓ Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- ✓ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ✓ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- ~N/A Volume of water added: 0 ml
- ✓ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip.
- ✓ Add water if necessary.
- ✓ Volume of water added: 0 ml
- ✓ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ✓ Start 23:06 Stop 23:06
- ✓ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ✓ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ✓ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ✓ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ✓ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ✓ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- ✓ Note condition of the silica gel impinger. 75 % spent
- ✓ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ✓ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- ✓ Log samples into logbook and store appropriately.


Notes: Equipment malfunction of pump resulted in back flush of train Imp #3 bf into CPM filter and possibly Imp 2. CPM filter pulled off 1st front half

RDS-47 - PM and Condensables by EPA Method 5/202 Per: EM SOP-047 Issued: October 2021 Document reviewed biennially



Sample Type	Filt and Cond PM (M5/M202)		Date	9/28/2022		Barometer ID	Htg. A. port		Page	2 of 2	
Project Name	HHO		Cond	late	Run	TAD	Bar. Press. ("Hg)	28.88		Train Leak Rate (dm @ "Hg)	
Project Number	60682866		Console ID	SC-M1542		Stat. Press. ("H <sub>2</sub> O)	-.22		Initial	See P. 1	
Facility	Haverhill suncoke		DGMCF	1.001		Probe ID	Air Cooled		Final	See P. 1	
Source	Vent Stack 6		ΔH@	1.888	K <sub>r</sub>	4.88/5.0	PTCF	6.94		Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)	
Operator	Saul Vega		Filter No.			Meter Elevation (ft) (relative to Barometer)	25		Initial (-)	See P. 1	
Duct Dimension(s)	108"		Nozzle Dia (in)	0.370					Initial (+)	See P. 1	
Nozzle Calibration			Caliper Used	ID				Final (-)	0.0 @ 5.8		
						Calibration Exp Date		Final (+)	0.0 @ 7.5		



Sample Type <b>Filt and Cond PM (M5/M202)</b>	Date <b>9/29/22</b>	Barometer ID <b>200202333</b>	Page <b>1</b> of <b>2</b>
Project Name <b>HHD</b>	Cond <b>Prod.</b>	Run <b>Thrup</b>	Bar. Press. ("Hg) <b>29.69</b>
Project Number <b>60682866</b>	Console ID <b>SC-M1542</b>	Stat. Press. ("H <sub>2</sub> O) <b>-0.31</b>	Train Leak Rate (cfm @ "Hg) <b>Initial 0 @ 15"</b>
Facility <b>Haverhill</b>	DGMCF <b>1.001</b>	Probe ID <b>Probe 2 air</b>	Final <b>0.005 @ 21"</b>
Source <b>BUS6</b>	ΔH@ <b>1.988</b>	K <sub>i</sub> <b>5.00</b>	PTCF <b>0.84</b>
Operator <b>BATP SV</b>	Filter No. <b>4.6</b>	Meter Elevation (ft) (relative to Barometer) <b>0ft</b>	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O) <b>Initial (-) 0 @ 5"</b>
Duct Dimension(s) <b>100"</b>	Nozzle Dia (in) <b>6.370</b>		Initial (+) <b>0 @ 4"</b>
Nozzle Calibration 	Caliper Used <b>0.370</b>	ID <b>0.369</b>	Final (-) <b>@</b>
	Calibration Exp Date <b>0.376</b>		Final (+) <b>@</b>

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)						Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter <sup>1</sup> (near but <85)	Imp Exit (<68)	DGM Outlet	
B <sup>1</sup>	16:22	0	554.675	0.33	1.65	1498		268	82	66	67	6
1	16:26	4	557.34	0.33	1.65	1550		269	73	44	68	7
2	16:30	8	560.04	0.37	1.85	1594		261	70	44	68	8.5
2	16:34	12	562.92	0.37	1.85	1630		267	68	44	68	8.5
3	16:38	16	565.89	0.38	1.9	1683		261	68	45	68	8.5
3	16:42	20	568.78	0.38	1.9	1702		265	69	45	68	11
4	16:46	24	571.64	0.38	1.9	1703		261	70	45	68	20
4	16:48	26:38	573.437	PAUSE for Filter Change								
4	17:15	26:38	574.329	0.34	1.5	1717		216	71	50	66	13.5
4	17:17	28:20	575.71	0.34	1.5	1709		251	74	48	67	14
5	17:20	32	577.43	0.29	1.3	1699		248	74	48	67	14
5	17:24	36	579.81	0.29	1.3	1693		261	73	48	67	16
6	17:28	40	582.21	0.20	0.92	1633		268	71	48	66	14
6	17:32	44	584.32	0.18	0.82	1599		264	70	50	67	14
6	17:36	48	586.305	Port change								
A <sup>1</sup>	17:38	48	586.305	0.35	1.6	1669		264	70	50	67	20
2	17:40	48:47	586.731	Pause for Filter Change								
2		48:47	586.590.825	0.32	0.57	1595						
C <sup>2</sup>	19:15	48:49	590.833	END OF RUN								
1												
1												
2												
Port Change												
1												
1												
2												

Notes: Pause for filter change at 26:38 elapsed time 76:50.14  
 Leak check for 26:38 change 0.018 @ 24"  
 Leak check for 48:47 0.002 @ 21"  
 Run Ended due to break through in CPM filter at 19:15

SDS-36: PM (Filt & Cond)  
 EPA Methods 5/2  
 Per: EM SOP-0  
 Issued: June 20  
 Document reviewed biennial



Project Name	CD TESTING 22
Project Number	60682866
Date	
Source	BYPASS VENT

## Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	
Run No.	3
Balance ID	BAL-MITOI
Recovered by	

### Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	Short Stem	620.0	
2	empty	--	Mod	631.6	
3	Water	100	Mod	759.4	
4	Silica Gel	~300g	Mod	999.7	
5					

### Filter

Filter ID Number 027171

### Sample Log

Sample ID Number	Sample Container	Description
-M5/202-PNR	250 ml	Probe and Nozzle Rinse
-M5/202-Filt	Petri Dish	Filter
-M5/202-WtRns	1000 ml	Water Rinse
-M5/202-OrgRns	250 ml	Organic Rinse
-M5/202-CPMFilt	Petri Dish	CPM Filter

### Sample Recovery Checklist

- Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger.
- Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- Volume of water added: \_\_\_\_\_
- If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- Volume of water added: \_\_\_\_\_
- Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- Start \_\_\_\_\_ Stop \_\_\_\_\_
- Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- Note condition of the silica gel impinger. \_\_\_\_\_ % spent
- Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- Log samples into logbook and store appropriately.

Notes:

B: Filter  
C: 025802 Filter

RDS-47 - PM and Condensables  
by EPA Method 5/202  
Per: EM SOP-047  
Issued: October 2021  
Document reviewed biennially



Sample Type	Filt and Cond PM (M5/M202)	Date	Barometer ID	Page								
Project Name	H110	Cond	Run Three	2 of 2								
Project Number		Console ID	See Page 1									
Facility	Haverhill	DGMCF	Probe ID									
Source	BVS 6	AH@	PTCF									
Operator	SV	Filter No.	Meter Elevation (ft) relative to Barometer									
Duct Dimension(s)	Nozzle Dia (in)	ID	Calibration Exp Date									
Nozzle Calibration												
Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N								
Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft³)	ΔP ("H₂O)	ΔH ("H₂O)	Stack Temperature (°F)	Probe (248±25)	Filter (248±25)	CPM Filter¹ (near but <85)	Imp Exit (<68)	DGM Outlet	Vacuum ("Hg)
2	108											
3	112											
3	116											
4	120											
4	124											
5	128											
5	132											
6	136											
6	140											
	144											
1	144											
1	148											
2	152											
2	156											
3	160											
3	164											
4	168											
4	172											
5	176											
5	180											
6	184											
6	188											
	192											
Notes:												
SDS-36: PM (Filt & Cond) EPA Methods 5/20 Per: EM SOP-0 Issued: June 20, Document reviewed biennially												



Sample Type	Filt and Cond PM (M5/M202)		Date	9/29/22		Barometer ID	Page	1	of	1
Project Name	HHO		Cond	F0	Run	Bar. Press. ("Hg)	Train Leak Rate (cfm @ "Hg)			
Project Number	66692866		Console ID	SC-M1542		Stat. Press. ("H <sub>2</sub> O)	Initial	.005	@	15"
Facility	Haverhill		DGMCF	1.001		Probe ID	Final	.0025	@	15"
Source	BVS6		ΔH@	1.888	Kr	PTCF	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> )			
Operator	BAH		Filter No.			Meter Elevation (ft) (relative to Barometer)	Initial (-)	@		
Duct Dimension(s)	108		Nozzle Dia (in)				Initial (+)	@		
Nozzle Calibration			Caliper Used	ID			Final (-)	@		
				Calibration Exp Date			Final (+)	@		

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft <sup>3</sup> )	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)						Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter <sup>1</sup> (near but <85)	Imp Exit (<68)	DGM Outlet	
1	12:10:00		553.969	Initial								
1	12:15		554.205	Preleak								
2	12:19		554.479	Postleak								
2												
3												
3												
4												
4												
5												
5												
6												
6												
Port Change												
1												
1												
2												
2												
3												
3												
4												
4												
5												
5												
6												
6												
Port Change												
1												
1												
2												

Notes:	<p><sup>1</sup> Remember to record Final CPM Filter Temperature</p>	<p>SDS-36: PM (Filt &amp; Cond) EPA Methods 5/2 Per: EM SOP-0 Issued: June 20. Document reviewed biennial</p>
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Project Name	HHO
Project Number	60682866
Date	09/29/2022
Source	Bypass Vent 6 Stack

## Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	1
Run No.	FB
Balance ID	BAL-m1701
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	Short Stem	500.9	500.8
2	empty	--	Mod	612.7	612.5
3	Water	100	Mod	709.4	709.3
4	Silica Gel	~300g	Mod	936.2	940.5
5					

### Filter

Filter ID Number	025825
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### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent 6-5tk-18T -M5/202-PNR	250 ml	Probe and Nozzle Rinse
Bypass Vent 6-5tk-18T -M5/202-Filt	Petri Dish	Filter
Bypass Vent 6-5tk-18T -M5/202-WtRns	1000 ml	Water Rinse
Bypass Vent 6-5tk-18T -M5/202-OrgRns	250 ml	Organic Rinse
Bypass Vent 6-5tk-18T -M5/202-CPMFilt	Petri Dish	CPM Filter

### Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- ☒ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger
- ☒ Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- ☒ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ☒ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: 100ml
- ☒ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: ---
- ☒ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ☒ Start 13:20 Stop 14:20
- ☒ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ☒ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ☒ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ☒ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ☒ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ☒ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- ☒ Note condition of the silica gel impinger. 5 % spent
- ☒ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ☒ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- ☒ Log samples into logbook and store appropriately.

#### Notes:

RDS-47 - PM and Condensables  
by EPA Method 5/202  
Per: EM SOP-047  
Issued: October 2021  
Document reviewed biennially



Sample Type	Filt and Cond PM (M5/M202)	Date	10/1/22	Barometer ID	300302333	Page	1	of	1
Project Name	HHO	Cond	Prod.	Run	4	Bar. Press. ("Hg)	29.36		
Project Number	66682866	Console ID	SC-M1542	Stat. Press. ("H <sub>2</sub> O)	- .2	Initial	0.009 @ 15"		
Facility	Haverhill Junco KE	DGMCF	1.001	Probe ID	Air cooled Probe 2	Final	0.015 @ 19.5"		
Source	BVS 6	ΔH@	1.888	Kr	4.4	PTCF	0.84		
Operator	SV	Filter No.	on back	Meter Elevation (ft) (relative to Barometer)	0	Initial (-)	0 @ 5.5"		
Duct Dimension(s)	108"	Nozzle Dia (in)	0.370	Initial (+)	0 @ 6"	Final (-)	0 @ 4"		
Nozzle Calibration			Caliper Used	ID	Calibration Exp Date	Final (+)	0 @ 6"		

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)						Vacuum ("Hg)	
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter <sup>1</sup> (near but <85)	Imp Exit (<68)	DGM Outlet		
A 1	1607	0:00	720.812	0.35	1.50	1530		263	47	40	48	5	
2	1612	5:00	724.03	0.30	1.30	1590		265	46	37	47	6	
3	1617	10:00	727.11	0.31	1.40	1659		260	46	38	48	10	
4	1622	15:00	730.33	0.40	1.80	1714		262	46	38	48	15	
5	1627	20:00	733.90	0.40	1.80	1766		262	46	39	48	16	
6	1632	25:00	737.51	0.37	1.60	1792		260	47	41	48	15	
7	1637	30:00	740.997			Port Change							
B 1	1640	30:00	740.997	0.34	1.50	1845		257	48	42	48	12	
2	1645	35:00	744.11	0.36	1.60	1807		262	47	42	49	13	
3	1650	40:00	747.44	0.40	1.80	1790		266	47	42	50	18	
4	1655	45:00	751.01	0.39	1.70	1786		263	48	44	50	18.5	
5	1700	50:00	754.59	0.35	1.50	1790		264	48	45	50	16	
6	1705	55:00	758.01	0.28	1.20	1784		Port Change		49	46	50	13
7	1710	60:00	761.090			Port Change							
C 1	1714	60:00	761.090	0.38	1.70	1779		262	49	46	50	15	
2	1719	65:00	764.48	0.38	1.70	1783		270	48	44	51	18	
3	1724	70:00	768.08	0.38	1.70	1757		257	48	46	52	18	
4	1728	75:00	770.914			Pause for filter change							
5	1938	74:31	777.595	0.28	1.20	1612		223	53	48	53	6.5	
6	1939	75:00	777.95	0.28	1.20	1605		225	53	48	53	6.5	
7	1943	80:00	780.73	0.25	1.10	1607		258	53	45	53	6.5	
8	1948	85:00	783.59	0.31	1.40	1509		252	51	44	53	9.0	
9	1953	90:00	786.706										
D 1	1958	90:00	786.706	0.38	1.70	1636		260	51	46	53	12	
2	20:03	95:00	790.10	0.37	1.60	1655		283	49	46	54	15	
3	20:08	100:00	793.55	0.36	1.60	1636		Port Change		48	48	54	16
4	20:13	105:00	796.99	0.37	1.60	1627		273	49	50	54	16	
5	20:18	110:00	800.45	0.77	1.60	1637		255	49	52	54	16	
6	20:23	115:00	803.90	0.34	1.50	1649		256	50	52	54	16	

Notes: Leak check before filter change 0.18 @ 19.5"  
Leak check after filter change 0.1 @ 19.5"

Remember to record Final CPM Filter Temperature

SDS-36: PM (Filt & Cond); EPA Methods 5/1 Per: EM SOP-1 Issued: June 20 Document reviewed biennially

20.28 | 20.00 | 807.332

END RUN



Project Name	HHO		
Project Number	60682866		
Date	10/01/2022		
Source	Bypass Vent Stack 6		

## Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	Production		
Run No.	4		
Balance ID	BAL-m1701		
Recovered by	FJS		

### Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	-	Short Stem	501.3	717.7
2	empty	-	Mod	613.2	612.3
3	Water	100	Mod	706.4	707.1
4	Silica Gel	~300g	Mod	958.0	993.4
5					

### Filter

Filter ID Number 025826 / 025800

### Sample Log


Sample ID Number	Sample Container	Description
Bypass Vent 6 - 5tk-14 -M5/202-PNR	250 ml	Probe and Nozzle Rinse
Bypass Vent 6 - 5tk-14 -M5/202-Filter A	Petri Dish	Filter
Bypass Vent 6 - 5tk-14 -M5/202-WRns	1000 ml	Water Rinse
Bypass Vent 6 - 5tk-14-M5/202-Orgrns	250 ml	Organic Rinse
Bypass Vent 6 - 5tk-14-M5/202-CPMFilter	Petri Dish	CPM Filter
Bypass Vent 6 - 5tk-14-m5/202-Filter B	Petri Dish	Filter

### Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- ☒ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger
- ☒ Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- ☒ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ☒ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: 0
- ☒ if all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: 0
- ☒ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ☒ Start 21:00 Stop 22:00
- ☒ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filter sample label.
- ☒ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ☒ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ☒ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ☒ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filter sample label.
- ☒ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- ☒ Note condition of the silica gel impinger. 80% spent
- ☒ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ☒ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- ☒ Log samples into logbook and store appropriately.

Notes: Filter A - Tear during Recovery	RDS-47 - PM and Condensables
02586 Stuck to frit	by EPA Method 5/202
Filter B - Small Tear upon recovery	Per: EM SOP-047
	Issued: October 2021
	Document reviewed biennially



Sample Type <b>Filt and Cond PM (M5/M202)</b>	Date <b>10/31/2022</b>	Barometer ID <b>200202237</b>	Page <b>1</b> of <b>2</b>
Project Name <b>H H O</b>	Cond <b>M:2</b> Run <b>FIVE</b>	Bar. Press. ("Hg) <b>29.67</b>	Train Leak Rate (cfm @ "Hg) <b>0.001 @ 15"</b>
Project Number <b>60682866</b>	Console ID <b>SC-M1542</b>	Stat. Press. ("H <sub>2</sub> O) <b>- 2</b>	Initial <b>0.001 @ 15"</b>
Facility <b>SUNCOKE Haverhill</b>	DGMCF <b>1.001</b>	Probe ID <b>Air Cooled Probet</b>	Final <b>0.001 @ 23"</b>
Source <b>BVS 6</b>	ΔH@ <b>1.888</b> K <sub>r</sub> <b>4.4</b>	PTCF <b>0.84</b>	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> C) <b>0 @ 4"</b> <b>0 @ 5"</b>
Operator <b>SV</b>	Filter No. <b>0.370</b>	Meter Elevation (ft) (relative to Barometer) <b>0</b>	Initial (-) <b>0 @ 4"</b>
Duct Dimension(s) <b>108"</b>	Nozzle Dia (in) <b>0.370</b>		Initial (+) <b>0 @ 5"</b>
Nozzle Calibration 	Caliper Used <b>0.370</b>	ID <b>0.370</b>	Final (-) <b>@</b>
		Calibration Exp Date	Final (+) <b>@</b>

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y / N	Post-Test: Are Pitots Damaged?	Y / N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft <sup>3</sup> )	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Stack	Probe (248±25)	Filter (248±25)	CPM Filter <sup>1</sup> (near but <85)	Imp Exit (<68)	DGM Outlet	Vacuum ("Hg)
1	10:15	0:00	807.807	0.37	1.60	1568		259	46	40	45	5
2	10:20	5:00	810.91	0.37	1.60	1577		258	44	36	45	16
2	10:23	8:39	813.277			Pause for filter change						19.5
2	10:49	8:39	814.299	0.37	1.60	1552		232	53	41	47	4
3	10:50	10:00	815.15	0.36	1.60	1542		245	52	39	47	5
4	10:55	15:00	818.40	0.34	1.50	1542		265	49	38	47	5
5	11:00	20:00	821.59	0.33	1.45	1564		265	48	38	48	6
6	11:05	25:00	824.80	0.33	1.45	1571		264	47	39	48	7.5
	11:10	30:00	828.033			Post Change						
C1	11:12	30:00	828.033	0.34	1.50	1537		264	48	41	49	9
C2	11:17	35:00	831.10	0.35	1.50	1533		250	47	40	49	10
3	11:22	40:00	834.28	0.33	1.45	1503		269	45	41	49	16
4	11:27	45:00	837.42	0.28	1.20	1495		267	46	42	49	16
5	11:32	50:00	840.39	0.27	1.20	1461		264	47	43	50	15
6	11:37	55:00	843.35	0.23	1.00	1473		264	48	44	49	12
	11:42	60:00	846.105			Change port						
B1	11:44	60:00	846.105	0.34	1.50	1493		258	50	45	49	12.5
2	11:49	65:00	849.31	0.34	1.50	1533		264	49	44	49	16
3	11:54	70:00	852.46	0.37	1.40	1500		264	49	44	49	21
3	11:55	70:50	852.974			Pause for filter change						
3	12:07	70:50	853.896	0.37	1.60	1496		269	60	46	50	6
4	12:11	75:00	856.66	0.32	1.40	1485		269	54	44	51	6
5	12:16	80:00	859.82	0.29	1.30	1479		262	51	43	52	6
6	12:21	85:00	862.84	0.28	1.20	1480		265	50	44	51	6
	12:26	90:00	865.786									
A1	12:29	90:00	865.786	0.34	1.50	1515		269	51	46	51	7
2	12:34	95:00	868.99	0.28	1.20	1535		265	51	45	52	7
3	12:38	100:00	871.91	0.28	1.20	1535		264	49	45	53	14
4	12:46	105:00	875.01	0.29	1.30	1550		267	48	46	53	21

Notes: Leak check at filter change 0.001 @ 23"	Remember to record Final CPM Filter Temperature	SDS-36: PM (Filt & Cond) EPA Methods 5/2 Per: EM SOP-0 Issued: June 20 Document reviewed biennial
Leak check after filter change 0.001 @ 23"		

Leak check after and filter change 0.001 @ 23"



Project Name	HHO
Project Number	60602066
Date	10/01/2022
Source	Bypass Vent 6 Stack

# Particulate Matter (incl. Condensable) EPA Method 5/202

Condition No.	1
Run No.	5
Balance ID	BAL-m1701
Recovered by	

## Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	-	Short Stem	619.6	620.7
2	empty	-	Mod	632.1	788.0
3	Water	100	Mod	757.7	760.2
4	Silica Gel	~300g	Mod	926.8	952.5
5					

## Filter

Filter ID Number
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## Sample Log

Sample ID Number	Sample Container	Description
-M5/202-PNR	250 ml	Probe and Nozzle Rinse
-M5/202-Filt	Petri Dish	Filter
-M5/202-WtRns	1000 ml	Water Rinse
-M5/202-OrgRns	250 ml	Organic Rinse
-M5/202-CPMFilt	Petri Dish	CPM Filter

## Sample Recovery Checklist

- ☒ Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- ☒ Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger
- ☒ Rinse transfer line and condenser with water (two times) into water rinse sample bottle.
- ☒ Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle.
- ☒ Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: 0
- ☒ If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary.
- ☒ Volume of water added: 0
- ☒ Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet.
- ☒ Start 1330 Stop 1430
- ☒ Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Filt sample label.
- ☒ Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- ☒ Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- ☒ Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- ☒ Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- ☒ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- ☒ Note condition of the silica gel impinger. \_\_\_\_ % spent
- ☒ Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- ☒ Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- ☒ Log samples into logbook and store appropriately.

## Notes:

RDS-47 - PM and Condensables  
by EPA Method 5/202  
Per: EM SOP-047  
Issued: October 2021  
Document reviewed biennially



Notes:	' Remember to record Final CPM Filter Temperature	SDS-36: PM (Filt & Cond, EPA Methods 5/ Per: EM SOP-1 Issued: June 21 Document reviewed bienni
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Sample Type	Filt and Cond PM (M5/M202)	Date	10/3/22	Barometer ID	20020233	Page	1	of	1
Project Name	HHO	Cond		Run	Six	Bar. Press. ("Hg)	29.61	Train Leak Rate (cfm @ "Hg)	
Project Number	60682866	Console ID	SC-M1542	Stat. Press. ("H <sub>2</sub> O)	- .2	Initial	0.015	@ 16"	
Facility	Suncoke Haverhill	DGMCF	1.001	Probe ID	As cooled probe 7	Final	0.016	@ 13"	
Source	BVS 6	ΔH@	1.888	K <sub>r</sub>	4.4	PTCF	0.84	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)	
Operator	SV	Filter No.		Meter Elevation (ft) (relative to Barometer)	0	Initial (-)	0	@ 4"	
Duct Dimension(s)	108"	Nozzle Dia (in)	0.370			Initial (+)	0	@ 5"	
Nozzle Calibration			Caliper Used	ID		Final (-)	0	@ 6"	
				Calibration Exp Date		Final (+)	0	@ 6"	

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y / N	Post-Test: Are Pitots Damaged?	Y / N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)						Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	CPM Filter <sup>1</sup> (near but <85)	Imp Exit (<68)	DGM Outlet	
A1	1352	0	884.208	0.28	1.20	1537		250	57	50	59	5
2	1355	5	887.14	0.27	1.20	1547		267	55	44	59	5
3	1400	10	889.95	0.28	1.20	1546		265	52	44	59	6.5
4	1405	15	892.92	0.28	1.20	1482		267	59	45	61	6.5
5	1410	20	895.94	0.32	1.40	1544		261	63	45	60	8
6	1415	25	899.07	0.25	1.10	1553		267	64	45	61	7
	1420	30	902.754			Change port +						
B1	1422	30	901.954	0.29	1.30	1496		257	72	49	61	7.5
2	1427	35	905.00	0.31	1.40	1519		267	68	46	63	8
3	1432	40	908.11	0.33	1.45	1517		264	68	46	63	8.5
4	1437	45	911.29	0.27	1.20	1495		267	66	47	64	8.5
5	1442	50	914.18	0.22	0.97	1514		262	68	48	64	8
6	1447	55	916.87	0.17	0.75	1479		260	73	50	65	6
	1452	60	919.306			Change port +						
C1	1455	60	919.306	0.29	1.30	1467		259	72	54	66	9
2	1500	65	922.37	0.29	1.30	1486		252	78	50	67	8.5
3	1505	70	925.36	0.27	1.20	1452		267	76	50	68	8.5
4	1510	75	928.24	0.23	1.00	1443		265	77	52	69	8
5	1515	80	930.91	0.20	0.88	1461		261	78	54	69	7.5
6	1520	85	933.51	0.18	0.79	1432		263	79	54	69	6.5
	1525	90	935.882			Change port +						
D1	1527	90	935.882	0.37	1.70	1481		264	84	58	70	10
2	1532	95	939.31	0.33	1.45	1513		268	80	54	71	10
3	1537	100	942.42	0.31	1.40	1489		266	77	53	71	11
4	1542	105	945.69	0.25	1.10	1498		268	76	55	72	10
5	1547	110	948.61	0.29	1.30	1508		261	76	55	70	11
6	1552	115	951.83	0.28	1.20	1508		260	75	55	71	11
	1557	120	954.934			END						

Notes:	<sup>1</sup> Remember to record Final CPM Filter Temperature	SDS-36: PM (Filt & Cond, EPA Methods 5/1, Per: EM SOP-1, Issued: June 21, Document reviewed biennially
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Project Name	HHO
Project Number	60602066
Date	10/1/2023
Source	Bypass Vent & Stack

## Particulate Matter (incl. Condensable) EPA Method 5/202

Labation No.	1
Run No.	6
Balance ID	BAL-M1701
Recovered by	

### Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	empty	--	Short Stem	501.2	631.6
2	empty	--	Mod	613.1	612.3
3	Water	100	Mod	705.5	715.9
4	Silica Gel	~300g	Mod	958.4	982.8
5					

### Filter

Filter ID Number

### Sample Log

Sample ID Number	Sample Container	Description
-M5/202-PNR	250 ml	Probe and Nozzle Rinse
-M5/202-Filt	Petri Dish	Filter
-M5/202-WTRns	1000 ml	Water Rinse
-M5/202-ORgrns	250 ml	Organic Rinse
-M5/202-CPMFilt	Petri Dish	CPM Filter

### Sample Recovery Checklist

- Rinse and brush probe and nozzle with acetone (three times) into PNR sample bottle.
- Disconnect transfer line. Transfer any water in transfer line or condenser into the knockout impinger. ☒
- Rinse transfer line and condenser with water (two times) into water rinse sample bottle. ☒
- Rinse with acetone (one time) and hexane (two times) into the organic rinse sample bottle. ☒
- Transfer water from knockout impinger to second impinger. Ensure that water level is at least 1 cm above stem tip. Add water if necessary. ☒
- Volume of water added: 0
- If all water in knockout impinger will not fit in second impinger, replace stem on knockout impinger. Ensure that the water level in the first impinger is at least 1 cm above stem tip. Add water if necessary. ☒
- Volume of water added: 0
- Purge with nitrogen for one hour at >14 liters per minute. Record start and end times on the data sheet. ☒
- Start 1630 Stop 1730
- Separate filter holder and place filter in clean pre-rinsed glass petri dish. Complete Fil sample label.
- Rinse front half of filter holder with acetone (three times) into PNR bottle. Complete probe and nozzle rinse (PNR) sample label.
- Rinse the back half of the filter holder and any connecting glassware with water (two times) into the water rinse sample bottle.
- Rinse the back half of the filter holder and any connecting glassware with acetone (one time) and with hexane (two times) into the organic rinse sample bottle.
- Separate CPM filter holder and place CPM filter in clean pre-rinsed glass petri dish. Complete CPM-Filt sample label.
- Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section of this data sheet
- Note condition of the silica gel impinger.      % spent
- Pour the contents of the first two impingers into the water rinse catch bottle(s). Rinse impingers, connecting glassware. And the front half of the CPM filter holder two times with water into the same bottles. Complete water rinse sample label.
- Rinse the first two impingers, connecting glassware, and the front half of the CPM filter holder acetone (one time) and hexane (two times) into the organic rinse sample bottle(s)
- Log samples into logbook and store appropriately.

#### Notes:

RDS-47 - PM and Condensables  
by EPA Method 5/202  
Per: EM SOP-047  
Issued: October 2021  
Document reviewed biennially



**Determination of Cyclonic Flow  
Preliminary  
Velocity/Temperature Traverse  
EPA Methods 1 and 2**

Project	Haverhill
Project Number	60690939
Facility	HHO
Source	Bypass Vent Stack-6

Operator	Habel
Date	9-28-22
Time	0935

Console (or Temperature Readout) ID	SC-M1542
DGMCF	ΔH@
Barometer ID	28.87
Barometric Pressure (" Hg)	28.87
Elevation (Relative to Barometer) (ft)	25
Static Pressure (" wc)	-0.2
Stack Diameter (ft/in)	108"
Stack Dimensions (if not round)	N/A

Pitot Tube No.	Air-Cooled Probe 1
PTCF	0.84
Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)	
Initial (-)	0.0 @ 5"
Initial (+)	0.0 @ 7"
Final (-)	0.0 @ 4"
Final (+)	0.0 @ 4"

Traverse Point <sup>1</sup>	Yaw Angle (°)	Velocity Head (ΔP) (in. wc)	Temperature (°F)
A1	14	.34	1490
2	16	.33	1511
3	19	.32	1515
4	16	.30	1516
5	15	.34	1518
6	12	.34	1525
B1	17	.34	1491
2	18	.33	1491
3	16	.30	1470
4	16	.30	1475
5	13	.27	1488
6	10	.26	1450

Traverse Point	Yaw Angle (°)	Velocity Head (ΔP) (in. wc)	Temperature (°F)
C-1	18	.35	1445
2	19	.35	1460
3	15	.33	1472
4	15	.34	1445
5	12	.33	1440
6	11	.31	1398
D-1	19	.29	1421
2	17	.30	1445
3	17	.31	1460
4	15	.29	1462
5	10	.33	1488
6	12	.33	1490

1 - Traverse Point Locations are defined on FDS-03a or FDS-03B, using information found on FDS-03F.

Average Yaw Angle: \_\_\_\_\_. (This is the average of the absolute value of the measurements)

If the average yaw angle exceeds 20°, Method 2 is not applicable for the determination of gas velocity.

FDS-03C: Cyclonic Flow Prelim VT  
Per EM SOP-011 & SOP-012  
Issued: December 2021  
Document reviewed biennially



Sample Type	Multi Metals (Method 29)	Date	9/18/2022	Barometer ID	28.87	Page	1 of 2
Project Name	H110	Cond	Cond	Bar. Press.	1475 Hg	Train Leak Rate (cfm @ "Hg)	
Project Number	60690939	Console ID	SC-M1544	Stat. Press.	-0.2	Initial	0.005 @ 15"
Facility	Haverhill	DGMCF	0.986	Probe ID	Air-Cooled 2	Final	0.005 @ 8"
Source	Vent stack 6	ΔH@1.899	K+8.95	PTCF	0.84	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)	
Operator	BAH			Meter Elevation (ft) (relative to Barometer)	25	Initial (-)	0 @ 4"
Duct Dimension(s)	9' Ø (108")	Nozzle Dia (in)	.375			Initial (+)	0 @ 4"
Nozzle Calibration			Caliper Used	ID	M-1503	Final (-)	0 @ 5"
			Calibration Exp Date	3-19-23		Final (+)	0 @ 4"

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature ("F)					Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	Imp Exit (<68)	DGM Outlet	
26	0:10	51	724.263	0.20	0.80	1495	N/A	252.4	52.7	59.1	3.0
26	4		726.175	0.20	0.88	1486	N/A	251.3	51.5	60.2	3.0
25	8		728.215	0.14	0.616	1474	N/A	251.0	45.5	64.9	2.25
25	12		730.039	0.11	0.489	1485	N/A	250.2	50.3	66.4	1.25
24	16		731.586	0.13	0.572	1474	N/A	251.4	52.3	68.2	2.4
24	20		733.215	0.15	0.66	1462	N/A	252.7	53.2	68.4	1.75
23	24		734.875	0.22	0.966	1490	N/A	244.7	51.5	67.6	3.75
23	28		736.935	0.21	0.924	1472	N/A	252.1	48.9	60.3	3.75
22	32		739.075	0.29	1.276	1495	N/A	247.8	49.8	65.6	5.08
22	36		741.583	0.30	1.32	1487	N/A	251.2	50.4	63.0	5.08
21	40		744.689	0.37	1.628	1477	N/A	248.0	54.0	67.0	7.0
21	44		746.830	0.37	1.628	1485	N/A	251.0	54.0	67.3	7.00
	48	11:31	749.566	Port Change							
26	48	11:45	749.566	0.07	0.308	1423	N/A	249.1	56.6	69.9	1.25
26	52		750.895	0.07	0.308	1426	N/A	249.7	56.6	66.2	1.25
25	56		752.188	0.09	0.394	1411	N/A	250.9	56.1	68.5	1.25
25	60		753.581	0.09	0.396	1403	N/A	250.3	54.3	66.5	1.25
24	64		754.976	0.10	0.44	1414	N/A	247.1	56.9	69.9	1.25
24	68		756.462	0.10	0.44	1396	N/A	249.2	55.7	65.4	1.25
23	72		757.950	0.08	0.352	1414	N/A	248.5	55.4	69.2	1.2
23	76		759.340	0.09	0.396	1427	N/A	254.2	53.2	66.1	1.25
22	80		760.745	0.13	0.572	1463	N/A	254.9	56.2	69.1	2.00
22	84		762.385	0.13	0.572	1460	N/A	254.7	53.3	64.9	2.0
21	88		764.650	0.19	0.836	1472	N/A	251.8	51.4	69.9	3.0
21	92		765.975	0.19	0.836	1461	N/A	252.3	50.1	66.0	3.0
	96	12:33	767.997	Port Change							
26	96	13:16	767.997	0.16	0.704	1416	N/A	235.9	60.3	68.6	2.0
26	100		770.38	0.15	0.70	1420	N/A	254.4	57.7	69.7	2.0
25	104		772.7	0.19	0.84	1432	N/A	250.0	51.8	73.6	2.5







Sample Type	Multi Metals (Method 29)	Date	9/28/2022	Barometer ID	HHS Airport Weather Station	Page	2 of 2
Project Name	Haverhill CO Test	Cond	EARLY	Run	ONE	Bar. Press. ("Hg)	28.87
Project Number	60690939	Console ID	MPD	Stat. Press. ("H <sub>2</sub> O)	-0.2	Initial	Sheet #1
Facility	HHO	DGMCF	0.986	Probe ID	Air Cooled #2	Final	@
Source	Vent Stack 6	ΔH@	1.399	K <sub>r</sub>	4.2	PTCF	0.84
Operator	Habel	Meter Elevation (ft) (relative to Barometer)	25	Initial (-)	@	Pitot Tube Leak Check ("H <sub>2</sub> O@ "H <sub>2</sub> O)	
Duct Dimension(s)	9" (108")	Nozzle Dia (in)	.375	Initial (+)	See p. 1	Final (-)	@
Nozzle Calibration		Caliper Used		Final (+)	@		
		ID		Calibration Exp Date			

Post-Test Stack TC Check		Reference Thermometer ID	Ref Thermometer Exp Date			Thermometer and TC agree within 2°F		(Y) N	Post-Test: Are Pitots Damaged?		Y (N)	
Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft³)	ΔP ("H₂O)	ΔH ("H₂O)	Temperature (°F)					Vacuum ("Hg)	
						Stack	Probe (248±25)	Filter (248±25)	Imp Exit (<68)	DGM Outlet		
05	111		775.27	0.19	0.84	NA	NA	245.1	52.2	65.9	2.5	
04	112		777.843	0.21	0.924	1424	NA	256.8	53.8	71.1	3.75	
04	121		781.115	0.21	0.924	1420	NA	263.8	52.6	69.4	3.25	
03	126		783.175	0.23	1.012	1424	NA	251.7	53.0	68.5	4.0	
03	131		785.425	0.21	0.924	1435	NA	251.6	52.4	71.5	4.00	
02	136		788.585	0.19	0.836	1429	NA	250.7	51.2	73.0	3.75	
02	141		791.125	0.19	0.836	1441	NA	248.3	50.1	72.6	3.75	
01	146		793.650	0.22	0.968	1450	NA	255.6	48.2	65.9	4.50	
01	151		796.375	0.23	1.012	1440	NA	254.1	48.8	64.3	5.00	
	156	4:16	799.210	Port Change								
06	156	4:25	799.210	0.33	1.452	1470	NA	251.0	56.2	69.5	5.5	
06	160		801.765	0.33	1.452	1476	NA	252.1	52.1	68.3	5.5	
06	164		804.335	0.33	1.452	1475	NA	253.1	54.7	68.5	6.0	
05	168		806.865	0.31	1.364	1479	NA	248.3	56.7	68.7	6.0	
05	172		809.420	0.32	1.408	1473	NA	255.9	52.3	68.7	6.0	
05	176		811.965	0.33	1.452	1477	NA	248.9	53.3	70.5	6.0	
04	180		814.500	0.28	1.232	1466	NA	253.3	54.5	70.0	6.0	
04	184		816.965	0.26	1.32	1462	NA	250.7	54.6	71.4	6.0	
04	188		819.430	0.28	1.232	1457	NA	254.6	55.1	69.4	6.0	
03	192		821.855	0.25	1.100	1451	NA	251.1	51.8	72.4	5.5	
03	196		824.215	0.24	1.056	1450	NA	252	52.0	67.2	5.0	
03	200		826.495	0.24	1.056	1442	NA	232.4	53.8	72.3	5.0	
2	204		828.775	0.23	1.012	1453	NA	244.3	55.7	69.2	5.0	
2	208		831.01	0.24	1.056	1449	NA	242.9	56.3	71.8	5.0	
2	212		833.280	0.28	1.232	1431	NA	250.5	55.3	69.3	5.5	
1	216		835.655	0.28	1.232	1437	NA	265.9	52.1	70.9	5.5	
1	220		838.010	0.30	1.32	1432	NA	254.3	51.5	65.5	6.0	
1	224		840.415	0.31	1.364	1438	NA	242.9	51.2	70.4	7.0	
	228	15:37	842.850				END					

Notes

SDS-07 Metals by EPA Method

Per EM SOP-1

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Sample Type	Multi Metals (Method 29)	Date	9/28/22	Barometer ID	Weather Station Hg	Page	1 of 2
Project Name	HHV	Cond		Run	TWO	Bar. Press. ("Hg)	28.93
Project Number	60690939	Console ID	SC-M1544	Stat. Press. ("H <sub>2</sub> O)	-0.2	Initial	0.001 @ 15"
Facility	Haverhill	DGMCF	0.986	Probe ID	A.r 6066 #2	Final	0.005 @ 15.5"
Source	Went stack	ΔH@	1.899	Kr	5.1	PTCF	0.84
Operator	GAH	Meter Elevation (ft) (relative to Barometer)				Initial (-)	0.0 @ 6.5"
Duct Dimension(s)	108"					Nozzle Dia (in)	
Nozzle Calibration	Caliper Used				ID	Final (-)	0.0 @ 4"
				Calibration Exp Date		Final (+)	0.0 @ 5"

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft³)	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Temperature (°F)					Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	Imp Exit (<68)	DGM Outlet	
26	0	17:33:00	844.945	0.20	1.0	1442	NA	247.9	68.0	75.2	4.25
26	4	17:37:00	847.045	0.20	1.0	1431	NA	245.8	67.3	72.6	5.0
25	8	17:41:00	849.29	0.19	0.95	1430	NA	243.7	58.0	75.6	5.0
25	12	17:45:30	852.29	0.19	0.95	1430	NA	249.0	56.5	73.6	5.0
24	16	17:51:00	854.67	0.18	0.90	1413	NA	258.3	55.1	72.1	5.0
24	20	17:55:30	857.05	0.21	1.05	1411	NA	250.1	55.3	77.6	6.5
23	24	18:00:00	859.50	0.2	1.0	1390	NA	242.3	56.6	74.3	6.5
23	28	18:04:30	862.19	0.2	1.0	1406	NA	256.1	53.4	72.4	7.0
22	32	18:09:00	864.58	0.24	1.2	1394	NA	267.1	53.3	72.5	8.5
22	36	18:13:30	867.16	0.24	1.2	1392	NA	254.5	50.2	71.4	9.0
21	40	18:18:00	869.74	0.30	1.53	1301	NA	253.2	52.1	70.1	12.0
21	44	18:22:30	872.67	0.30	1.53	1375	NA	252.8	49.3	72.1	12.0
	48	18:27	875.544	Port Change							
26	52	18:34	875.544	0.19	0.97	1332	NA	226.0	50.1	71.5	7.0
26	56	18:38:30	878.21	0.19	0.97	1337	NA	236	55	70.8	7.0
25	60	18:43:00	880.71	0.20	1.33	1330	NA	244.7	57.0	69	8.5
25	64	18:47:30	883.42	0.27	1.38	1346	NA	243	53	71	9.0
24	68	18:52:00	886.21	0.3	1.53	1330	NA	230	57	74	10.5
24	72	18:56:30	889.13	0.29	1.48	1347	NA	233	54	72	10.5
23	76	19:01:00	891.99	0.26	1.33	1358	NA	246	55	71	10.5
23	80	19:05:30	894.84	0.26	1.33	1364	NA	244	54	73	10.5
22	84	19:10:00	897.62	0.24	1.22	1358	NA	253	55	76	10.5
22	88	19:14:30	900.37	0.24	1.22	1358	NA	256	54	73	10.5
21	92	19:19:00	903.16	0.24	1.22	1358	NA	259	58	76	10.5
21	96	19:23:30	905.84	0.21	1.07	1364	NA	248	53	71	10.0
	100	19:28:00	908.440	Port Change							
26	104	19:34:00	908.440	0.24	1.22	1280	NA	263	56	68	9.5
26	108	19:38:30	911.20	0.24	1.22	1289	NA	248	57	70	9.5
25	112	19:43:00	913.95	0.26	1.33	1306	NA	251	54	69	10.0

Notes  $V_A = 30.649$   $V_C = 32.674$   $V_D = 31.718$

$V_B = 32.846$

$V_{A+B} = 63.495$   $V_{A+C} = 96.169$   $V_{A+B+C} = 127.887$

SDS-07 Metals by EPA Method  
Per EM SOP  
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Sample Type	Multi Metals (Method 29)	Date	9/29/22	Barometer	1184803 ID SN 200202233	Page	1	of	2
Project Name	HHO	Cond	Run Three	Bar. Press. ("Hg)	29.69	Train Leak Rate (cfm @ "Hg)			
Project Number	60690939	Console ID	SC-M1544	Stat. Press. ("H <sub>2</sub> O)	-2.31	Initial 0.0025 @ 15"			
Facility	Haverhill	DGMCF	0.486	Probe ID	Probe 2 air cooled	Final 0.001 @ 12"			
Source	BVSG	ΔH@	1.899 K <sub>1</sub> 5.1/4.8	PTCF	0.84	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)			
Operator	BAH	Meter Elevation (ft) (relative to Barometer)			0	Initial (-) 0.0 @ 4"			
Duct Dimension(s)	108"				Nozzle Dia (in)	0.375	Initial (+) 0.0 @ 4.5"		
Nozzle Calibration	Caliper Used			ID	Final (-) 0.0 @ 5.5"				
				Calibration Exp Date	Final (+) 0.0 @ 4"				

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F	Y/N	Post-Test: Are Pitots Damaged?	Y/N
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft <sup>3</sup> )	ΔP ("H <sub>2</sub> O)	ΔH ("H <sub>2</sub> O)	Stack	Probe (248±25)	Filter (248±25)	Imp Exit (<68)	DGM Outlet	Vacuum ("Hg)
-6	0	16:22	32.468	0.29	1.479	1492	NA	251.5	67.8	73.8	6.0
6	4.5	16:26:30	35.21	0.3	1.53	1548	NA	253	52.6	78.7	6.5
5	8.9	16:31	38.20	0.34	1.7	1585	NA	259	51.8	79	7.5
5	12:35	16:35:30	41.32	0.33	1.7	1648	NA	251	50	79	8.0
4	16:18	16:40	44.46	0.27	1.4	1646	NA	252	51	80	7.0
4	20:25	16:44:30	47.45	0.26	1.3	1681	NA	252	53	79	7.0
3	24:28	16:49	50.32	0.25	1.3	1716	NA	250	54	78	7.0
3	28:35	16:53:30	53.16	0.27	1.4	1703	NA	250	55	79	7.5
2	32:36	16:58	55.99	0.26	1.3	1707	NA	248	54	78	7.5
2	36:40.5	17:02:30	58.94	0.33	1.7	1697	NA	254	55	78	10.0
1	40:45	17:07	62.02	0.36	1.7	1697	NA	251	54	77	10.6
1	44:49.5	17:11:30	65.06	0.34	1.6	1721	NA	250	57	79	11.0
	48:54	17:16	68.096	Port Change							
-6	48:54	17:25	68.096	0.17	0.58	1627	NA	250	65	76	4.0
6	52:58.5	17:29:30	70.35	0.14	0.67	1608	NA	250	60	80	4.0
5	56:63	17:34	72.44	0.14	0.67	1611	NA	251	61	77	4.0
5	60:67.5	17:38:30	74.53	0.11	0.53	1618	NA	253	61	78	3.0
4	64:72	17:43	76.41	0.15	0.72	1617	NA	250	60	76	4.5
4	68:76.5	17:47:30	78.53	0.14	0.67	1623	NA	254	57	75	4.0
3	72:81	17:52	80.66	0.12	0.58	1616	NA	249	57	75	3.0
3	76:85.5	17:56:30	82.55	0.1	0.48	1630	NA	257	59	76	2.5
2	80:90	18:01:00	84.32	0.1	0.48	1641	NA	250	58	77	2.5
2	84:44.5	18:05:30	86.08	0.12	0.58	1650	NA	250	60	76	3.0
1	88:49	18:10:00	87.97	0.21	1.0	1656	NA	250	58	76	6.0
1	92:103.5	18:14:30	90.39	0.23	1.1	1651	NA	250	56	76	6.5
	96:108	18:19	92.967	Port Change							
-6	96:108	18:21	92.967	0.18	0.86	1600	NA	250	59	75	5.5
6	100:112.5	18:25:30	95.37	0.2	0.46	1577	NA	251	57	76	6.0
5	104:117	18:30	97.83	0.24	1.15	1584	NA	251	55	75	6.5

Notes  $V_A = 35.628$   $V_B = 24.871$   $V_C = 32.794$   $V_D = 34.704$

$V_{A+B} = 60.499$   $V_{B+C+A} = 93.293$   $V_{A+B+C} = 127.997$

SDS-07 Metals by EPA Method  
Per EM SOP-  
Issued: September 2  
Document reviewed biennial



Project Name	CD TESTING 22
Project Number	60682866
Date	09/29/2022
Source	Bypass Vent 6 Stack

## Multi-Metals - EPA Method 29

### No Determination of PM

Condition No.	1 Lab Cycle
Run No.	3
Balance ID	BAL-M1701
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (ml)	Configuration	Initial Wt (g)	Final Wt (g)
1	-	-	Mod	576.5	899.2
2	HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Soln	100	Mod	741.5	772.0
3	HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Soln	100	G/S	712.1	713.3
4	-	-	Mod	642.3	644.6
5	H <sub>2</sub> SO <sub>4</sub> /KMnO <sub>4</sub> Soln	100	Mod	726.0	727.3
6	H <sub>2</sub> SO <sub>4</sub> /KMnO <sub>4</sub> Soln	100	Mod	753.8	755.6
7	Silica Gel	~ 300g	Mod	898.6	925.0

\* Per the method, this first impinger is optional and may be excluded for sources with moisture catch anticipated to be less than 100 g (Section 8.1.3.2)

### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent 6-5tk-13	250 ml	Probe and Nozzle Rinse
Bypass Vent 6-5tk-13	Petri Dish	Filter
Bypass Vent 6-5tk-13	1000 ml	Nitric Peroxide Impinger
Bypass Vent 6-5tk-13	250 ml	Empty Impinger Rinse
Bypass Vent 6-5tk-13	1000 ml	Permanganate Impinger
Bypass Vent 6-5tk-13	250 ml	HCl Rinse of Permanganate Imps

### Sample Recovery Checklist

- Rinse and brush probe and nozzle with 0.1 M Nitric Acid into PNR bottle.  
*Note - use Teflon brush.*
- Rinse the (optional) Teflon transfer line with 0.1N nitric acid into NPI bottle.
- Separate filter holder and place filter in clean Petri dish. Complete Filt sample label.
- Rinse front half of filter holder with 0.1N nitric acid into PNR bottle. Complete PNR sample label.
- Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section.
- Note condition of silica gel. 70 % spent.
- Pour contents of first 3 impingers into the NPI catch bottle(s). Rinse the impingers, filter support, back-half of the filter holder and connecting glassware with 0.1N nitric acid same bottle(s). Complete NPI sample label(s).
- Rinse the 4th (initially empty) impinger with 0.1 M nitric acid into the empty impinger rinse (EIR) bottle. Complete EIR sample label.
- Pour the contents of the 5th and 6th impingers (permanganate impingers) into the permanganate impinger catch bottle (Perm). Rinse with a total of 100 ml of permanganate solution and 100 ml of DI water. Complete Perm sample label
- Rinse the permanganate impingers with a total of 25 ml of 8N HCl into the HClRns bottle. Rinse impingers with 200 ml DI water into the same bottle. Complete HClRns sample label.
- (Note, this is not required if there is no visible solid residue)*
- Log samples into logbook and store appropriately.

Notes	
	RDS-22; Metals by EPA M29, no PM
	Per EM SOP-017
	Issued: September 2021
	Document reviewed biennially







Sample Type <b>Multi Metals (Method 29)</b>		Date		Barometer ID	Page <b>1</b> of <b>1</b>
Project Name <b>HHO</b>		Cond <b>FB</b>	Run <b>FB</b>	Bar. Press. ("Hg)	Train Leak Rate (cfm @ "Hg)
Project Number <b>60690939</b>		Console ID <b>SC-M1544</b>		Stat. Press. ("H <sub>2</sub> O)	
Facility <b>Haverhill</b>		DGMCF <b>0.986</b>		Probe ID	Initial <b>0 @ 15"</b>
Source <b>GVSG</b>		$\Delta H$ @ <b>1.899</b> K <sub>r</sub>		PTCF	Final <b>0 @ 15"</b>
Operator <b>BAH</b>		<div style="border: 1px solid black; width: 100px; height: 100px; margin: 0 auto; transform: rotate(45deg);"></div>		Meter Elevation (ft) (relative to Barometer)	Pitot Tube Leak Check ("H <sub>2</sub> O @ "H <sub>2</sub> O)
Duct Dimension(s) <b>108"</b>				Nozzle Dia (in) <b>6.375</b>	Initial (-) @
Nozzle Calibration		Caliper Used		Initial (+) @	
		ID		Final (-) @	
		Calibration Exp Date		Final (+) @	

Post-Test Stack TC Check	Reference Thermometer ID	Ref Thermometer Exp Date	Thermometer and TC agree within 2°F <b>Y / N</b>	Post-Test: Are Pitots Damaged? <b>Y / N</b>
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Point	Clock Time	Elapsed Time (optional)	DGM Reading (ft <sup>3</sup> )	$\Delta P$ ("H <sub>2</sub> O)	$\Delta H$ ("H <sub>2</sub> O)	Temperature (°F)					Vacuum ("Hg)
						Stack	Probe (248±25)	Filter (248±25)	Imp Exit (<68)	DGM Outlet	
1	0	14:57	32.084								
1	4	14:59	32.181								
2	8	15:02	32.334								
2	12										
3	16										
3	20										
4	24										
4	28										
5	32										
5	36										
6	40										
6	44										
	48										
Port Change											
1	48										
1	52										
2	56										
2	60										
3	64										
3	68										
4	72										
4	76										
5	80										
5	84										
6	88										
6	92										
	96										
Port Change											
1	96										
1	100										
2	104										

Notes \_\_\_\_\_

SDS-07 Metals by EPA Methc  
Per EM SOI  
Issued: September  
Document reviewed bien



Project Name	HMO
Project Number	60602066
Date	09/29/2022
Source	Bypass Vent 6 Stack

## Multi-Metals - EPA Method 29 No Determination of PM

Condition No.	1
Run No.	FB
Balance ID	BAL-m1701
Recovered by	FJS

### Moisture Determination

Imp No.	Contents	Vol (mL)	Configuration	Initial Wt (g)	Final Wt (g)
1	- <sup>1</sup>	-	Mod	545.6	545.5
2	HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Soln	100	Mod	779.8	779.7
3	HNO <sub>3</sub> /H <sub>2</sub> O <sub>2</sub> Soln	100	G/S	771.9	771.8
4	-	-	Mod	648.3	648.2
5	H <sub>2</sub> SO <sub>4</sub> /KMnO <sub>4</sub> Soln	100	Mod	749.7	749.6
6	H <sub>2</sub> SO <sub>4</sub> /KMnO <sub>4</sub> Soln	100	Mod	744.5	744.3
7	Silica Gel	~300g	Mod	895.3	895.7

<sup>1</sup> Per the method, this first impinger is optional and may be excluded for sources with moisture catch anticipated to be less than 100 g (Section 8.1.3.2)

### Sample Log

Sample ID Number	Sample Container	Description
Bypass Vent 6-5tk-1FB -M29-PNR	250 ml	Probe and Nozzle Rinse
Bypass Vent 6-5tk-1FB -M29-Filt	Petri Dish	Filter
Bypass Vent 6-5tk-1FB -M29-NPI	1000 ml	Nitric Peroxide Impinger
Bypass Vent 6-5tk-1FB -M29-EIR	250 ml	Empty Impinger Rinse
Bypass Vent 6-5tk-1FB -M29-Perm	1000 ml	Permanganate Impinger
Bypass Vent 6-5tk-1FB -M29-HCIRns	250 ml	HCl Rinse of Permanganate Imps

### Sample Recovery Checklist

- ✓ Rinse and brush probe and nozzle with 0.1 M Nitric Acid into PNR bottle.  
*Note - use Teflon brush.*
- ✓ Rinse the (optional) Teflon transfer line with 0.1N nitric acid into NPI bottle.
- ✓ Separate filter holder and place filter in clean Petri dish. Complete Fil sample label.
- ✓ Rinse front half of filter holder with 0.1N nitric acid into PNR bottle. Complete PNR sample label.
- ✓ Disassemble sample train, wipe off excess water and weigh each impinger. Record the final weights in the Moisture Determination section.
- ✓ Note condition of silica gel. 5 % spent.
- ✓ Pour contents of first 3 impingers into the NPI catch bottle(s). Rinse the impingers, filter support, back-half of the filter holder and connecting glassware with 0.1N nitric acid same bottle(s). Complete NPI sample label(s).
- ✓ Rinse the 4th (initially empty) impinger with 0.1 M nitric acid into the empty impinger rinse (EIR) bottle. Complete EIR sample label.
- ✓ Pour the contents of the 5th and 6th impingers (permanganate impingers) into the permanganate impinger catch bottle (Perm). Rinse with a total of 100 ml of permanganate solution and 100 ml of DI water. Complete Perm sample label
- ✓ Rinse the permanganate impingers with a total of 25 mL of 8N HCl into the HCIRns bottle. Rinse impingers with 200 ml DI water into the same bottle. Complete HCIRns sample label.
- ✓ *(Note, this is not required if there is no visible solid residue)*
- Log samples into logbook and store appropriately.

### Notes

RDS-22: Metals by EPA M29, no PM Per EM SOP-017 Issued: September 2021 Document reviewed biennially



# CEMs Operation Log (Project Setup)

Project	60682966
Project Number	Haverhill CD Test
Facility	HWO SunCoIce
Date	9/27/22

Page	1 of 1
Operator	Sastry / Meirup
Source 1	BVS-6
Source 2	NA

## Calibration Gases

Component(s) <sup>1</sup>	Supplier <sup>2</sup>	Concentration(s)	Cylinder ID	Cylinder Exp Date
UHP N <sub>2</sub>	AG	99.999% N <sub>2</sub>	UHP	NA
O <sub>2</sub> /CO <sub>2</sub>	AG	19.09%/18.98%	CC4981	8/12/24
O <sub>2</sub> /CO <sub>2</sub>	AG	10.99%/10.10%	CC359583	5/11/29
Nox/CO	AG	64.87/61.99	CC438688	11/9/29
Nox/CO	AG	30.26/30.09	CC74532	11/8/24
SO <sub>2</sub>	AG P	945.8 SO <sub>2</sub>	SA15002	5/11/28
S-2	AG	482.3 SO <sub>2</sub>	CC15587	5/10/29
NOx/CO	AG	125.6/125.8	EB0077948	3/21/30
NO <sub>2</sub>	AG	49.11 NO <sub>2</sub>	CC518059	5/25/24

<sup>1</sup> Indicate multi-component standards appropriately

<sup>2</sup> Code: AG-Airgas; AL-Air Liquide; S-Scott; P-Praxair

## Instrument Identification

Analyte	Manufacturer <sup>3</sup>	Model Number	Instrument Name or Serial Number	Instrument Status <sup>4</sup>
O <sub>2</sub> /CO <sub>2</sub> /CO	CAI	600	D09012-M	
CO	Teledyne	300 EM	172	
NOx	Teledyne	200 EH	395	
SO <sub>2</sub>	TSI/ATI	721-M	8561	

<sup>3</sup> Code: T-Thermo; W-Western; C-California; S-Servomex; O-Omega; V-Vig

<sup>4</sup> Code: O1: On Line, Source 1; O2: On-Line, Source 2, CS: Cold Standby; HS: Hot Standby

## Method Performance Checks

Activity	Method	Criterion	Check
Span Selection	3A, 6C, 7E, 10	Emissions between 20% and 100% of calibration span	✓
	25A	Span 1.5-2.5 times the emission limit; if no emission limit, span 1.5-2.5 times expected level	NA
Calibration Gas Selection	3A, 6C, 7E, 10	Protocol gas; calibration span, 40-60% of calibration span, and <20% of calibration span (or zero gas)	✓
	25A	Protocol gas: 25-35%, 45-55% and 80-90% of span, zero grade air	NA
Converter Check	7E	≥90% converter efficiency	✓
Response Time	3A, 6C, 7E, 10, 25A	No criteria; evaluated to determine duration at sample points	
Stratification Check <sup>5,6</sup>	3A, 6C, 7E, 10	See specifications on Stratification Check Data Sheet	

<sup>5</sup> The stratification check criteria do not apply to RATA.

<sup>6</sup> The stratification check is not required for stacks or ducts <4 inches in diameter

FDS-01B CEMS Operation  
Per EM SOP-016, SOP-027, SOP-028, SOP-029, SOP-037  
Issued: May 2021  
Document reviewed biennially



Project Name	CD TESTING 2022	Page	1 of 1
Project Number	606828 66	Operator	CHANDRA SASTRY
Facility	HAVERHILL COKE CO.	Source 1	BVS 6
Date	9/28/22	Source 2	

Activity	Method	Criterion		Initials
Calibration Error (CE)	3A, 6C, 7E, 10	Gas within $\pm 2.0\%$ of calibration span (or $\pm 0.5\%$ for O <sub>2</sub> or CO <sub>2</sub> )	Span gas	CS
			Mid-range gas	CS
			Zero gas	CS
	25A	Gas within 5% of certified value	Low-range gas	
			Mid-range gas	
			Span gas	
System Bias Check	3A, 6C, 7E, 10	Gas thru system agrees with CE value within $\pm 5.0\%$ of cal span ( $\pm 0.5\%$ for O <sub>2</sub> or CO <sub>2</sub> )	Upscale Gas	CS
			Zero gas	CS

Activity	Method	Criterion		Initials
Sample Flow Rate	3A, 6C, 7E, 10	Sample flow rate within 10% of flow rate from response time check and bias check		CS
Post-Test Calibration Drift Check	3A, 6C, 7E, 10	Gas reading within $\pm 3.0\%$ of calibration span of pre-test reading ( $\pm 0.5\%$ for O <sub>2</sub> or CO <sub>2</sub> )	Upscale gas	CS
			Zero Gas	CS
	25A	Selected gas reading within $\pm 3\%$ of span of pre-test reading	Upscale gas	X
		Zero Gas		
Hourly Calibration Drift Check	25A	Selected gas reading within $\pm 3\%$ of span of pre-test reading	Upscale gas	
				Zero Gas

[illegible]

<sup>1</sup> Turn On Analyzers" is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

### Comments

**FDS-01A CEMS Operation**  
**Per EM SOP-016, SOP-027, SOP-**  
**028, SOP-029, SOP-037**  
**Issued: August 2019**  
**Document reviewed biennially**



# CEMs Operation Log (Project Setup)

Project	ED TESTING 2022
Project Number	60682866
Facility	HAVERHILL COKE CO.
Date	9/28/22

Page	1 of 1
Operator	CHANDRA SASRY
Source 1	BVS 6
Source 2	

## Calibration Gases

	Component(s) <sup>1</sup>	Supplier <sup>2</sup>	Concentration(s)	Cylinder ID	Cylinder Exp Date
A1	Nitrogen	AirGas	0	NA	NA
A2	O <sub>2</sub> /CO <sub>2</sub> MID	"	10-99% / 10-10%	CC359583	5/11/29
A3	O <sub>2</sub> /CO <sub>2</sub> SPAN	"	19.09 / 18.98	CC4981	8/1/24
A4	NOx MID	"	30-26 ppm	CC740532	11/8/24
A5	NOx SPAN	"	64.87 ppm	CC438688	11/9/29
A6	SO <sub>2</sub> SPAN	PraxAir	945.8 ppm	SA15002	5/11/28
B1	SO <sub>2</sub> MID	AirGas	482.3 ppm	CC15587	5/10/29
B3	NO <sub>2</sub> CONV.	"	49.1 ppm	CC518059	5/25/24

<sup>1</sup> Indicate multi-component standards appropriately

<sup>2</sup> Code: AG-Airgas; AL-Air Liquide; S-Scott; P-Praxair

## Instrument Identification

Analyte	Manufacturer <sup>3</sup>	Model Number	Instrument Name or Serial Number	Instrument Status <sup>4</sup>
O <sub>2</sub> /CO <sub>2</sub>	CAI	600	D09012-M	01
NOx	TELEDYNE	200 EH	395	01
SO <sub>2</sub>	BOVAR	721-M	8561	01

<sup>3</sup> Code: T-Thermo; W-Western; C-California; S-Servomex; O-Omega; V-Vig

<sup>4</sup> Code: O1: On Line, Source 1; O2: On-Line, Source 2; CS: Cold Standby; HS: Hot Standby

## Method Performance Checks

Activity	Method	Criterion	Check
Span Selection	3A, 6C, 7E, 10	Emissions between 20% and 100% of calibration span	
	25A	Span 1.5-2.5 times the emission limit; if no emission limit, span 1.5-2.5 times expected level	
Calibration Gas Selection	3A, 6C, 7E, 10	Protocol gas; calibration span, 40-60% of calibration span, and <20% of calibration span (or zero gas)	
	25A	Protocol gas: 25-35%, 45-55% and 80-90% of span, zero grade air	
Converter Check	7E	≥90% converter efficiency	
Response Time	3A, 6C, 7E, 10, 25A	No criteria; evaluated to determine duration at sample points	
Stratification Check <sup>5,6</sup>	3A, 6C, 7E, 10	See specifications on Stratification Check Data Sheet	

<sup>5</sup> The stratification check criteria do not apply to RATA.

<sup>6</sup> The stratification check is not required for stacks or ducts <4 inches in diameter

FDS-01B CEMS Operation  
Per EM SOP-016, SOP-027, SOP-028, SOP-029, SOP-037  
Issued: May 2021  
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# CEMS Operation Log (Daily)

Project Name	Haverhill CO Test 2022	Page	1	of	3
Project Number	60632866	Operator	T. Microp		
Facility	HNO Suncake	Source 1	Vent stack 6		
Date	9/29/2022	Source 2			

## Method Performance Checks

Activity	Method	Criterion	Initials
Calibration Error (CE)	3A, 6C, 7E, 10	Gas within $\pm 2.0\%$ of calibration span (or $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Span gas
			Mid-range gas
			Zero gas
	25A	Gas within 5% of certified value	Low-range gas
			Mid-range gas
			Span gas
System Bias Check	3A, 6C, 7E, 10	Gas thru system agrees with CE value within $\pm 5.0\%$ of cal span ( $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Upscale Gas
			Zero gas

Activity	Method	Criterion	Initials
Sample Flow Rate	3A, 6C, 7E, 10	Sample flow rate within 10% of flow rate from response time check and bias check	
Post-Test Calibration Drift Check	3A, 6C, 7E, 10	Gas reading within $\pm 3.0\%$ of calibration span of pre-test reading ( $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Upscale gas
			Zero Gas
	25A	Selected gas reading within $\pm 3\%$ of span of pre-test reading	Upscale gas
			Zero Gas
Hourly Calibration Drift Check	25A	Selected gas reading within $\pm 3\%$ of span of pre-test reading	Upscale gas
			Zero Gas

Time	Activity	Analyzer Response						Sample Flow Rate
		$O_2$	$CO_2$	CO	NOx	$SO_2$		
0948	Begin Drift cals	-	-	-	-	-		
0954	UHP zero	-0.03	-0.06	0.32	0.28	0.65		
1007	$O_2/CO_2$ span	19.13	18.97	-2.7	0.24	-0.05		
1010	NOx/CO span	-0.02	-0.00	61.21	64.78	0.35		
1013	$O_2/CO_2$ mid	11.00	9.79	-2.85	0.28	0.45		
1016	NOx/CO mid	-0.03	-0.02	28.53	29.52	0.25		
1020	$SO_2$ span	-0.03	-0.03	-1.44	1.32	944.4		
1024	$SO_2$ mid	-0.03	-0.04	-1.84	10.04	477.25		
1026	Begin Bias cals	-	-	-	-	-		
1030	UHPV2 zero	0.03	0.07	3.54	0.72	5.33		
1033	$CO_2/CO$ mid	19.88	9.78	2.42	0.38	5.53		
1038	Rezero CO drift	-0.05	-0.01	0.01	0.38	2.14		
1042	UHPV2 zero Bias	-0.02	0.08	2.79	0.70	5.23		
1047	NOx/CO mid	0.01	0.07	32.73	28.2	6.43		
1052	$SO_2$ MID	0.01	0.07	3.03	9.8	466.78		
1059	Respan $CO_2$ drift	-0.03	-0.02	61.98	64.62	3.04		
1103	Drift $CO_2$ /NOx mid	-0.03	-0.03	29.14	29.22	2.14		
1108	Bias $CO_2$ /NOx mid	0.01	0.05	32.31	29.0	7.73		
1156	Stand Run set 1 for $SO_2$							
1256	m4 stop							
1259	end Run set 1 for $SO_2$							
1305	$SO_2$ MID	0.03	0.11	4.37	9.72	488.7		

<sup>1</sup> Turn On Analyzers<sup>1</sup> is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

Comments Das computer 2 minutes lost from Cellphone time

FDS-01A CEMS Operation  
Per EM SOP-016, SOP-027, SOP-028, SOP-029, SOP-037  
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# CEMS Operation Log (Daily)

Project Name	Howarth Hill CD Test 2022	Page	2 of 3
Project Number	60682866	Operator	T. M. Corp
Facility	WHD SunCoke	Source 1	V56
Date	9/29/22	Source 2	

## Method Performance Checks

Activity	Method	Criterion	Initials
Calibration Error (CE)	3A, 6C, 7E, 10	Gas within $\pm 2.0\%$ of calibration span (or $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Span gas
			Mid-range gas
			Zero gas
	25A	Gas within 5% of certified value	Low-range gas
			Mid-range gas
			Span gas
System Bias Check	3A, 6C, 7E, 10	Gas thru system agrees with CE value within $\pm 5.0\%$ of cal span ( $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Upscale Gas
			Zero gas

Activity	Method	Criterion	Initials
Sample Flow Rate	3A, 6C, 7E, 10	Sample flow rate within 10% of flow rate from response time check and bias check	
Post-Test Calibration Drift Check	3A, 6C, 7E, 10	Gas reading within $\pm 3.0\%$ of calibration span of pre-test reading ( $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Upscale gas
			Zero Gas
Hourly Calibration Drift Check	25A	Selected gas reading within $\pm 3\%$ of span of pre-test reading	Upscale gas
			Zero Gas

Time	Activity	Analyzer Response						Sample Flow Rate
		$O_2$	$CO_2$	CO	$NO_x$	$SO_2$		
1309	UHP $N_2$ Bias	0.02	0.09	4.58	-0.02	17.1		
1314	$O_2/CO_2$ mid Bias	10.84	9.78	3.09	0.08	15.6		
1318	$NO_x/CO$ mid Bias	0.03	0.13	33.96	29.54	12.31		
1327	Start Run Set 2 $SO_2$ data							
1427	end moisture R2							
1430	end Run Set 2 $SO_2$ data							
1436	$SO_2$ mid	0.03	0.14	4.89	9.88	471.56		
1444	UHP $N_2$ Zero	0.02	0.12	4.75	0.10	15.6		
1530	Change CO analyzer	Performing	Direct Calc	Per Analyzer				
1534	UHP $N_2$ zero dir	0.0	-0.03	0.09	0.36	4.93		
1540	$NO_x/CO$ span dir	-0.00	0.04	62.13	65.78	4.34		
1543	$NO_x/CO$ mid dir	-0.00	-0.04	29.92	30.24	4.14		
1545	$O_2/CO_2$ span dir	19.14	18.96	-0.55	0.16	4.04		
1548	$O_2/CO_2$ mid dir	11.01	9.80	-0.24	0.48	4.04		
1549	Start Bias checks							
1553	UHP $N_2$ zero	0.04	0.10	0.21	1.26	19.39		
1555	$O_2/CO_2$ mid	10.81	9.78	-0.18	0.60	16.2		
1559	$NO_x/CO$ mid	0.03	0.14	29.46	29.52	13.71		
1604	$SO_2$ mid	0.02	0.12	-0.22	9.98	467.28		
1616	First green Push complete							
1622	Start $NO_x, CO$ Run 1	Set Run Set 3						
1727	end $NO_x, CO$ Run 1	Set Run Set 3						

<sup>1</sup> Turn On Analyzers<sup>1</sup> is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

Comments

FDS-01A CEMS Operation  
Per EM SOP-016, SOP-027, SOP-028, SOP-029, SOP-037  
Issued: August 2019  
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Project Name	Haworthill CD Trst 2002	Page	3 of 3
Project Number	60682866	Operator	T. Mieser
Facility	HFO San Colce	Source 1	DVS-6
Date	9/29/02	Source 2	

<sup>1</sup> Turn On Analyzers" is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

**FDS-01 A CEMS Operation**  
**- Per EM SOP-016, SOP-027, SOP-**  
**028, SOP-029, SOP-037**  
**- Issued: September 2021**  
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# CEMS Operation Log (Daily)

Project Name	CD Testing 2022	Page	1 of 2
Project Number	60682866	Operator	T. Microp
Facility	H10 Suncake	Source 1	BV56
Date	10/1/22	Source 2	

Time	Activity	Analyzer Response						Sample Flow Rate
		O <sub>2</sub>	CO <sub>2</sub>	CO	NO <sub>x</sub>	SO <sub>2</sub>		
0615	Direct cal's							
0619	UHP N <sub>2</sub> zero	-0.02	-0.02	0.06	0.09	-5.93		
0627	O <sub>2</sub> /CO <sub>2</sub> span (19.09/18.98)	19.08	18.98	-0.72	2.02	-6.43		
0631	O <sub>2</sub> /CO <sub>2</sub> mid (10.99/10.10)	10.99	9.75	-0.35	0.12	-6.43		
0637	NOx/CO High (125.6/125.8)	0.04	-0.10	127.04	126.6	-7.23		
0641	NOx/CO mid (64.87/61.99)	0.01	-0.04	61.38	65.8	-7.23		
0644	NOx/CO Low (30.26/30.09)	0.02	-0.04	29.46	30.22	-7.23		
0645	Begin Bias Checks	-	-	-	-	-		
0649	UHP N <sub>2</sub> zero	0.09	0.00	-0.06	0.5	-3.34		
0652	O <sub>2</sub> /CO <sub>2</sub> mid (10.99/10.10)	10.86	9.74	-0.32	0.26	-3.14		
0655	NOx mid (64.87/61.99)	0.08	0.05	60.57	64.84	-2.69		
0659	NOx Low (30.26/30.09)	0.07	0.02	29.16	29.5	-2.64		
0910	UHP N <sub>2</sub> zero	0.13	-0.00	1.27	0.30	25.67		
0912	O <sub>2</sub> /CO <sub>2</sub> mid (10.99/10.10)	10.92	9.68	-0.12	0.12	4.83		
0916	NOx mid (64.87/61.99)	0.12	0.01	60.83	64.82	0.55		
0919	NOx/CO Low (30.26/30.09)	0.10	-0.02	29.22	29.78	-0.65		
0924	Start NOx/CO R5/R3							
0924	end NOx/CO R5/R3							
1031	end 25A R3							
1124	UHP N <sub>2</sub> zero	0.13	-0.04	0.17	0.08	-1.59		
1127	O <sub>2</sub> /CO <sub>2</sub> mid (10.99/10.10)	10.92	9.65	-0.21	0.14	-2.14		
1133	NOx/CO Low (30.26/30.09)	0.11	-0.01	29.2	28.84	-2.74		
1153	Direct UHP zero	0.02	-0.09	-0.03	0.32	-8.42		
1157	NOx span 64.87	0.02	-0.11	61.35	65.00	-9.22		
1159	Begin NO <sub>2</sub> converter test							
1204	NO <sub>2</sub> check 49.1ppm							
1206	Direct cal's							
1207	UHP N <sub>2</sub> zero	0.01	-0.05					
1209	O <sub>2</sub> /CO <sub>2</sub> span (19.09/18.98)	19.10	18.98					
1211	O <sub>2</sub> /CO <sub>2</sub> mid (10.99/10.10)	11.01	9.81					

<sup>1</sup> Turn On Analyzers<sup>1</sup> is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

Comments	FDS-01A CEMS Operation Per EM SOP-016, SOP-027, SOP-028, SOP-029, SOP-037 Issued: September 2021 Document reviewed biennially
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Project Name	CD Testing	Page	2	of	2
Project Number		Operator	T. Murong		
Facility	WMO Suroba	Source 1	VS 6		
Date	10/1/22	Source 2			

<sup>1</sup> Turn On Analyzers" is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

**FDS-01A CEMS Operation**  
**- Per EM SOP-016, SOP-027, SOP-**  
**028, SOP-029, SOP-037**  
**- Issued: September 2021**  
**Document reviewed biennially**



**CEMS  
Operation  
Log (Daily)**

Project Name	CD Testing 2022	Page	1 of 2
Project Number	100682866	Operator	J. Hreco
Facility	FlaVerHill Coke	Source 1	Ventstack 6
Date	9/30/22	Source 2	

Time	Activity	Analyzer Response						Sample Flow Rate
		O <sub>2</sub>	CO <sub>2</sub>	CO	NO <sub>x</sub>	SO <sub>2</sub>		
0924	Direct calcs							
0925	UHP N <sub>2</sub> Zero	0.00	-0.02	-0.46	0.32	-0.85		
0927	O <sub>2</sub> /CO <sub>2</sub> span 19.09/18.98	19.09	18.98	-1.76	0.26	-0.95		
0929	O <sub>2</sub> /CO <sub>2</sub> mid 10.99/10.10	11.00	9.78	-1.32	0.12	-1.45		
0933	NOx/CO High 125.6/125.8	0.01	-0.04	127.53	125.7	-1.54		
0936	NOx/CO midspan 64.87/61.99	0.01	-0.05	61.03	64.84	-1.54		
0940	NOx/CO Low 30.26/30.09	0.00	-0.05	28.84	29.68	-1.54		
0942	UHP N <sub>2</sub> Zero	0.00	-0.07	-0.03	0.08	-2.14		
0946	NOx/CO High 125.6/125.8	0.00	-0.06	127.01	124.2	-1.54		
0948	NOx/CO mid 64.87/61.99	0.00	-0.07	61.26	65.3	-1.54		
0952	NOx/CO Low 30.26/30.09	0.00	-0.01	29.30	29.78	-1.25		
0954	Begin Binschucks							
0956	UHP N <sub>2</sub> Zero	0.07	0.00	0.05	0.76	1.75		
0959	O <sub>2</sub> /CO <sub>2</sub> mid 10.99/10.10	10.90	9.74	-0.52	0.34	2.21		
1002	NOx/CO mid 64.87/61.99	0.06	0.06	60.83	63.16	3.14		
1007	NOx/CO Low 30.26/30.09	0.04	0.05	29.31	29.38	3.14		
1247	UHP N <sub>2</sub> Zero	0.07	0.09	0.18	-0.18	10.07		
1249	O <sub>2</sub> /CO <sub>2</sub> mid 10.99/10.10	10.83	9.72	-0.21	-0.26	68.14		
1254	NOx/CO Low 30.26/30.09	0.07	0.08	29.17	25.34	54.8		
1304	Respan NOx 64.87	0.03	-0.06	61.52	66.00	-60.2		
1307	NOx mid Direct 30.26	0.01	-0.06	29.51	30.46	-60.3		
1310	UHP N <sub>2</sub> Direct	0.02	-0.07	0.20	0.20	-60.36		
1315	UHP N <sub>2</sub> Zero Bias	0.06	0.07	0.02	0.6	0.85		
1318	NOx mid Bias 30.26/30.09	0.06	0.07	28.94	29.44	0.25		
1539	NOx/CO 64.87/61.99	0.08	0.11	61.45	66.45	25.0		
1543	NOx/CO 30.26/30.09	0.07	0.11	29.57	30.64	17.7		
1545	O <sub>2</sub> /CO <sub>2</sub> mid (10.99/10.10)	10.80	9.73	0.17	0.12	10.22		
1549	UHP N <sub>2</sub>	0.09	0.14	0.18	-0.02	9.82		
1602	Start Run 4 NOx/CO <sub>2</sub> "hectic cycle"							
1702	end Run 4 NOx/CO <sub>2</sub>							

<sup>1</sup> Turn On Analyzers<sup>1</sup> is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

Comments	FDS-01A CEMS Operation Per EM SOP-016, SOP-027, SOP-028, SOP-029, SOP-037 Issued: September 2021 Document reviewed biennially
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Project Name	CD Testing 2022	Page	2 of 2
Project Number	60682866	Operator	T. M. Kemp
Facility	H/O Suncoke	Source 1	Vent Stack 6
Date	9/30/12	Source 2	

<sup>1</sup> Turn On Analyzers" is to document sufficient warm-up time. If applicable, "yesterday" is an acceptable entry.

FDS-01A CEMS Operation  
- Per EM SOP-016, SOP-027, SOP-028, SOP-029, SOP-037  
- Issued: September 2021  
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Project Name	HHO CD Vent 6	Page	1 of 1
Project Number	60682866	Operator	GSW
Facility	Haverhill	Source 1	Vent Stack 6
Date	10-3-22	Source 2	N/A

Activity	Method	Criterion	Initials	
Calibration Error (CE)	3A, 6C, 7E, 10	Gas within $\pm 2.0\%$ of calibration span (or $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Span gas	GSW
			Mid-range gas	GSW
			Zero gas	GSW
	25A	Gas within 5% of certified value	Low-range gas	<del>X</del>
			Mid-range gas	
			Span gas	
System Bias Check	3A, 6C, 7E, 10	Gas thru system agrees with CE value within $\pm 5.0\%$ of cal span ( $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Upscale Gas	GSW
			Zero gas	GSW

Activity	Method	Criterion		Initials
Sample Flow Rate	3A, 6C, 7E, 10	Sample flow rate within 10% of flow rate from response time check and bias check		GS
Post-Test Calibration Drift Check	3A, 6C, 7E, 10	Gas reading within $\pm 3.0\%$ of calibration span of pre-test reading ( $\pm 0.5\%$ for $O_2$ or $CO_2$ )	Upscale gas	GS
			Zero Gas	GS
	25A	Selected gas reading within $\pm 3\%$ of span of pre-test reading	Upscale gas	<del>X</del>
			Zero Gas	
Hourly Calibration Drift Check	25A	Selected gas reading within $\pm 3\%$ of span of pre-test reading	Upscale gas	<del>X</del>
			Zero Gas	

[illegible]

## Comments

FDS-01A CEMS Operation  
- Per EM SOP-016, SOP-027, SOP-  
028, SOP-029, SOP-037  
- Issued: August 2019  
Document reviewed biennially



**Appendix D**  
**ANALYTICAL REPORTS**



# **AECOM - Morrisville**

1600 Perimeter Park Drive  
Morrisville, NC 27560

**SunCoke – Haverhill ICR**  
Client Project # 60682866

**Analytical Report**  
**(1022-013A)**

***EPA Method 5***  
Particulate Matter

***EPA Method 26A***  
Hydrogen Chloride, Hydrogen Fluoride, Fluoride



**Enthalpy Analytical, LLC**

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / [www.enthalpy.com](http://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 ??? pages.

Report Issued: xx/xx/xxxx





# Summary of Results



# Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013 EPA Method 5

Client No.: 60682866 Site: Suncoke-Haverhill ICR

## Summary Report

	M5-11	M5-12	M5-14	M5-15
Net Filter Catch (mg)	47.310	122.960	101.340	29.830
Net Front Rinse (mg)	76.615	51.047	50.676	50.254
Total Particulate (mg)	123.9	174.0	152.0	82.1

	M5-16	M5-1BT	M5-1RB-Filt
Net Filter Catch (mg)	28.540	0.090	0.080
Net Front Rinse (mg)	44.843	5.423	N/A
Total Particulate (mg)	73.4	5.5	0.1



## Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013-8 EPA Method 26A (Acid) Analysis

Client No.: 60682866 Site: Suncoke-Haverhill

### Summary Table

Sample ID	Hydrogen Chloride Catch Weight (ug)	Hydrogen Fluoride Catch Weight (ug)
M26A-11-AcdImp	134,224	4,990
M26A-12-AcdImp	246,230	5,773
M26A-13-AcdImp	211,760	6,456
M26A-1RB-H2SO4 Soln	42.0 J	10.1 ND
M26A-1RB-Water	5.30 ND	5.42 ND



## Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013-9 EPA Method 26A (Alkaline) Analysis

Client No.: 60682866 Site: Suncoke-Haverhill ICR

### Summary Table

Sample ID	Fluoride Catch Weight (ug)
M26A-11-AlkImp	35.0 ND
M26A-12-AlkImp	36.0 ND
M26A-13-AlkImp	38.0 ND
M26A-1RB-NaOH Soln	141 J



# Results



# Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013 EPA Method 5

Client No.: 60682866 Site: Suncoke-Haverhill ICR

## Results

	M5-11			M5-12			M5-14			M5-15		
Filter ID	027169			027170			025826			025803		
Final Weight 1 (g)	0.49433	10/18/22 07:03		0.56057	10/18/22 07:04		0.56522	10/18/22 07:07		0.47444	10/18/22 07:09	
Final Weight 2 (g)	0.49384	10/19/22 07:04		0.56020	10/19/22 07:12		0.56522	10/19/22 07:16		0.47493	10/19/22 07:18	
Tare (g)	0.44653	9/1/22 09:50		0.45390	9/1/22 09:51		0.47358	10/18/21 07:55		0.47696	10/6/21 10:15	
Net Filter Catch (mg)	47.31			106.30			91.64			-2.03		
Filter ID				027172			025800			025804		
Final Weight 1 (g)				0.47449	10/18/22 07:06		0.48861	10/18/22 07:08		0.50975	10/18/22 07:10	
Final Weight 2 (g)				0.47419	10/19/22 07:14		0.48896	10/19/22 07:17		0.50988	10/19/22 07:19	
Tare (g)				0.45753	9/1/22 09:52		0.47926	10/6/21 10:13		0.47802	10/6/21 10:16	
Net Filter Catch (mg)				16.66			9.70			31.86		
Beaker No.	37623			37624			37625			37626		
Weight 1 (g)	2.575925	10/18/22 07:14		2.564354	10/18/22 07:15		2.552854	10/18/22 07:15		2.564590	10/18/22 07:15	
Weight 2 (g)	2.57558	10/19/22 07:22		2.56427	10/19/22 07:23		2.55277	10/19/22 07:23		2.56448	10/19/22 07:24	
Tare (g)	2.498879	10/11/22 14:16		2.513189	10/11/22 14:17		2.502017	10/11/22 14:18		2.514210	10/11/22 14:18	
Acetone Volume (mL)	192			80			177			41		
Acetone Blank (g)	0.00008			0.00003			0.00008			0.00002		
Net Front Rinse (mg)	76.61			51.05			50.68			50.25		
Total Particulate (mg)	123.92			174.01			152.02			82.11		



# Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013 EPA Method 5

Client No.: 60682866 Site: Suncoke-Haverhill ICR

## Results

	M5-16			M5-1BT			M5-1RB-Filt		
Filter ID	025805			025825			025828		
Final Weight 1 (g)	0.50486	10/18/22 07:11		0.47319	10/18/22 07:12		0.45830	10/18/22 07:13	
Final Weight 2 (g)	0.50459	10/19/22 07:20		0.47312	10/19/22 07:21		0.45843	10/19/22 07:21	
Tare (g)	0.47605	10/6/21 10:16		0.47303	10/18/21 07:54		0.45835	10/18/21 07:56	
Net Filter Catch (mg)	28.54			0.09			0.08		
Beaker No.	37627			37628					
Weight 1 (g)	2.546279	10/18/22 07:16		2.526812	10/18/22 07:16				
Weight 2 (g)	2.54616	10/19/22 07:24		2.52676	10/19/22 07:24				
Tare (g)	2.501292	10/11/22 14:20		2.521306	10/11/22 14:21				
Acetone Volume (mL)	47			75					
Acetone Blank (g)	0.00002			0.00003					
Net Front Rinse (mg)	44.84			5.42					
Total Particulate (mg)	73.38			5.51			0.08		



# Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013 EPA Method 5

Client No.: 60682866 Site: Suncoke-Haverhill ICR

## Reagent Blanks (Acetone)

In House		
Beaker	37621	
Weight 1 (g)	2.495986	10/18/22 07:32
Weight 2 (g)	2.496057	10/19/22 07:35
Tare	2.495999	10/11/22 14:14
Residue (g)	0.00006	
Vol. (mL)	200	
Max. Residue	0.00158	
Client's		
Beaker	37619	
Weight 1 (g)	2.523074	10/18/22 07:31
Weight 2 (g)	2.523142	10/19/22 07:34
Tare	2.523058	10/11/22 14:13
Residue (g)	0.00008	
Vol. (mL)	196	
Max. Residue	0.00155	



## Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013-8 EPA Method 26A (Acid) Analysis

Client No.: 60682866 Site: Suncoke-Haverhill

## 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
M26A-11-AcdImp	056	057	0.0500	0.500	30.0	4.47	4.46	0.1	4.76	4.73	0.4	4.75	50	550	1.028	134,224		0
M26A-12-AcdImp	062	063	0.0500	0.500	30.0	4.46	4.46	0.0	8.87	8.87	0.0	8.87	50	540	1.028	246,230		0
M26A-13-AcdImp	068	069	0.0500	0.500	30.0	4.46	4.46	0.0	6.50	6.51	0.0	6.51	50	633	1.028	211,760		0
M26A-1RB-H2SO4 Soln	052	053	0.0500	0.500	30.0	4.56	4.58	0.2	0.246	0.179	15.7	0.213	1	192	1.028	42.0	J	0
M26A-1RB-Water	054	055	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0.0	0.0500	1	103	1.028	5.30	ND	8

## Hydrogen Fluoride as Fluoride

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
M26A-11-AcdImp	040	041	0.0500	0.500	30.0	3.15	3.15	0.0	8.62	8.61	0.1	8.62	1	550	1.053	4,990		0
M26A-12-AcdImp	048	049	0.0500	0.500	30.0	3.15	3.15	0.0	10.2	10.1	0.1	10.2	1	540	1.053	5,773		0
M26A-13-AcdImp	050	051	0.0500	0.500	30.0	3.15	3.15	0.0	9.70	9.68	0.1	9.69	1	633	1.053	6,456		0
M26A-1RB-H2SO4 Soln	052	053	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0.0	0.0500	1	192	1.053	10.1	ND	0
M26A-1RB-Water	054	055	0.0500	0.500	30.0	N/A	N/A	N/A	0.0500	0.0500	0.0	0.0500	1	103	1.053	5.42	ND	8



## Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013-8 EPA Method 26A (Acid) Analysis

Client No.: 60682866 Site: Suncoke-Haverhill

## Matrix Spike Recovery

Enthalpy Sample ID	Compound	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
1022-013.MS2-11.H2SO4	Chloride	058	059	4.46	4.46	0.0	9.30	9.32	0.1	9.31	1	0.84	7.82	
Native Amount (ug):													3.80	
Mass Spiked:													4.00	
Recovery (%):													101	
1022-013.MSD2-11.H2SO4	Chloride	060	061	4.46	4.46	0.0	9.43	9.41	0.1	9.42	1	0.84	7.91	
Native Amount (ug):													3.80	
Mass Spiked:													4.00	
Recovery (%):													103	



## Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013-8 EPA Method 26A (Acid) Analysis

Client No.: 60682866 Site: Suncoke-Haverhill

## Matrix Spike Recovery

Enthalpy Sample ID	Compound	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
1022-013.MS-11.H2SO4	Fluoride	044	045	3.15	3.15	0.1	13.1	13.2	0.4	13.2	1	0.8	10.5	
Native Amount (ug):													6.55	
Mass Spiked:													4.00	
Recovery (%):													99.8	
1022-013.MSD-11.H2SO4	Fluoride	046	047	3.15	3.15	0.0	13.0	13.2	0.7	13.1	1	0.8	10.4	
Native Amount (ug):													6.55	
Mass Spiked:													4.00	
Recovery (%):													97.5	



## Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013-9 EPA Method 26A (Alkaline) Analysis

Client No.: 60682866 Site: Suncoke-Haverhill ICR

## Fluoride

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)	Catch Weight (ug)	Flag	pH
M26A-11-AlkImp	030	031	0.100	1.00	30.0	N/A	N/A	N/A	0.100	0.100	0.0	0.100	1	350	35.0	ND	3
M26A-12-AlkImp	036	037	0.100	1.00	30.0	N/A	N/A	N/A	0.100	0.100	0.0	0.100	1	360	36.0	ND	3
M26A-13-AlkImp	038	039	0.100	1.00	30.0	N/A	N/A	N/A	0.100	0.100	0.0	0.100	1	380	38.0	ND	3
M26A-1RB-NaOH Soln	040	041	0.100	1.00	30.0	3.02	3.02	0.0	0.695	0.727	2.3	0.711	1	198	141	J	14



## Enthalpy Analytical

Company: AECOM - Morrisville

Job No.: 1022-013-9 EPA Method 26A (Alkaline) Analysis

Client No.: 60682866 Site: Suncoke-Haverhill ICR

## Matrix Spike Recovery

Enthalpy Sample ID	Compound	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
1022-013.MS-11.NaOH	fluoride	032	033	3.10	3.10	0.0	4.45	4.45	0.0	4.45	1	0.81	3.60	
Native Amount (ug):													0	
Mass Spiked:													4.00	
Recovery (%):													90.1	
1022-013.MSD-11.NaOH	fluoride	034	035	3.10	3.10	0.0	4.48	4.49	0.1	4.48	1	0.81	3.63	
Native Amount (ug):													0	
Mass Spiked:													4.00	
Recovery (%):													90.7	



# Narrative Summary



## Enthalpy Analytical Narrative Summary

<b>Company</b>	AECOM – Morrisville
<b>Job #</b>	1022-013 EPA Method 5
<b>Client #</b>	60682866 Site: Suncoke – Haverhill ICR

<b>Custody</b>	Alyssa Miller received the samples on 10/3/22 after being relinquished by AECOM of Morrisville, NC. The samples were received at 19.3°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.
<b>Analysis</b>	<p>The samples were analyzed for particulate matter using the analytical procedures in EPA Method 5, Determination of Particulate Matter Emissions from Stationary Sources (40 CFR Part 60, Appendix A).</p> <p>The filter fractions were weighed on Balance 2 (Mettler Model AB265-S, serial # 1125163272) and the rinse fractions were weighed on Balance 8 (Sartorius Model ME5-OCE, Serial # 23104965), both certified by Mettler Toledo through July 31, 2023.</p>
<b>QC Notes</b>	<p>The rinse fraction catch weights were adjusted by a corresponding reagent blank correction value. A mathematically determined (theoretical) maximum value was calculated and compared with the actual value measured for the blank. The lower of the two values was used as the blank correction value, which was then factored by the sample volume divided by the blank volume, and subtracted from the sample catch weight. An acetone blank was received and used as described.</p> <p>A laboratory acetone reagent blank was also dried down and analyzed alongside the samples. It is not used to adjust any of the samples.</p>
<b>Reporting Notes</b>	<p>The analyst noted Filter IDs <i>027169, 025826, 025800, 025803, and 025805</i> were received with a tear.</p> <p>Gravimetric analyses are considered to be accurate to <math>\pm 0.5</math> mg. Therefore, negative catch weights between 0 and <math>-0.5</math> mg are set to zero and no investigation is undertaken. Negative catch weights less than <math>-0.5</math> mg are investigated. There were no negative catch weights associated with this project.</p> <p>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.</p>





## Enthalpy Analytical Narrative Summary

Company Job No. Client ID.	AECOM - Morrisville 1022-013 EPA Method 26A (Acid) 60682866 Site: Suncoke-Haverhill
Custody	Alyssa Miller received the samples on 10/3/22 at 19.3 °C after being relinquished by AECOM - Morrisville. The samples were received in good condition. Prior to, during, and after analyses, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.
Analysis	<p>The samples were analyzed for chloride and fluoride using the analytical procedures in Section 11.0 of EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method.</p> <p>All sample aliquots and standards are prepared, stored and analyzed using high-density polyethylene containers. Client samples are retained in the container as received. Sample catch weight results were determined using the sample volumes measured by the laboratory.</p> <p>The Dionex Ion Chromatograph "Raphael" equipped with a conductivity detector was used for these analyses.</p>
Calibration	The calibration curves are included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve.
Conditions	The acquisition method <i>AS22 ASAP</i> may be made available upon request.
QC Notes	<p>The samples were analyzed within the 28-day holding time specified by the method.</p> <p>The analyses of the laboratory reagent blanks and field reagent blanks did not contain chloride or fluoride at concentrations greater than the LOQ.</p> <p>Duplicate matrix spikes were prepared using aliquots of <b>M26A-11-AcdImp</b> and met method spike recovery criteria of 80-120%.</p> <p>The analyses of second source standards also served as laboratory control samples and met the laboratory acceptance criteria of <math>\pm 5\%</math> of the tag value.</p>



## Enthalpy Analytical Narrative Summary

Company Job No. Client ID.	AECOM - Morrisville 1022-013 EPA Method 26A (Acid) 60682866 Site: Suncoke-Haverhill
Reporting Notes	<p>The MDL was determined by performing an IDL study and performing calculations as described in Title 40 of the Code of Federal Regulations, Part 136, Appendix B, Revision 1.1.</p> <p>The samples were analyzed for chloride and fluoride, but the results have been reported as hydrogen chloride and hydrogen fluoride. The results were converted using factors of 1.028 and 1.053 respectively to account for the additional hydrogen mass.</p> <p>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.</p>



## Enthalpy Analytical Narrative Summary

Company Job No. Client ID.	AECOM - Morrisville 1022-013 EPA Method 26A (Alkaline) 60682866 Site: Suncoke-Haverhill ICR
Custody	Alyssa Miller received the samples on 10/3/22 at 19.3 °C after being relinquished by AECOM - Morrisville. The samples were received 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	<p>The samples were analyzed for fluoride using the analytical procedures in Section 11.0 of EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method.</p> <p>All sample aliquots and standards are prepared, stored and analyzed using high-density polyethylene containers. Client samples are retained in the container as received. Sample catch weight results were determined using the sample volumes measured by the laboratory.</p> <p>The Dionex Ion Chromatograph "Raphael" equipped with a conductivity detector was used for this analysis.</p>
Calibration	The calibration curves are included in the Raw Data section of this report. A quadratic curve type was used instead of the method-specified linear curve.
Conditions	The acquisition method <i>AS22 ASAP Base</i> may be made available upon request.
QC Notes	<p>The samples were analyzed within the 28-day holding time specified by the method.</p> <p>The analysis of the laboratory reagent blank and field reagent blank did not contain fluoride at a concentration greater than the LOQ. The field reagent blank was confirmed by the laboratory with a fresh aliquot.</p> <p>Duplicate matrix spikes were prepared using aliquots of <b>M26A-11-AlkImp</b> and met method spike recovery criteria of 80-120%.</p> <p>The analysis of a second source standard also served as a laboratory control sample and met the laboratory acceptance criteria of <math>\pm 5\%</math> of the tag value.</p>



## Enthalpy Analytical Narrative Summary

Company Job No. Client ID.	AECOM - Morrisville 1022-013 EPA Method 26A (Alkaline) 60682866 Site: Suncoke-Haverhill ICR
Reporting Notes	<p>The pH was not in the range specified by the method. A H<sub>2</sub>SO<sub>4</sub> peak was observed in all samples except the field reagent blank.</p> <p>The MDL was determined by performing an IDL study and performing calculations as described in Title 40 of the Code of Federal Regulations, Part 136, Appendix B, Revision 1.1.</p> <p>This analysis 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.</p>



## 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).





## 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.



# Sample Custody



## Chain of Custody Record

### Filterable and condensable particulate

Project <b>VS6</b>			Particulate Matter - Gravimetric Determination								
Site <b>HHO</b>											
Project Number <b>60682866</b>											
Prepared by <b>FJS</b>											
Sample ID Code	Sample Matrix	Date/Time					Hold	MS/MSD	Comments		
Bypass Vent 6-Stk-11-M5/202-PNR	Probe and Nozzle Rinse	9/28/2022 15:37	X								
Bypass Vent 6-Stk-11-M5/202-Filt	Filter	↓	X								
Bypass Vent 6-Stk-11-M5/202-WtrRns	Water Rinse		X								
Bypass Vent 6-Stk-11-M5/202-OrgRns	Organic Rinse		X								
Bypass Vent 6-Stk-11-M5/202-CPMFilt A	CPM Filter		X								
Bypass Vent 6-Stk-12-M5/202-PNR	Probe and Nozzle Rinse	9/28/2022 21:25	X								
Bypass Vent 6-Stk-12-M5/202-Filt A	Filter	↓	X							027170	
Bypass Vent 6-Stk-12-M5/202-WtrRns	Water Rinse		X								
Bypass Vent 6-Stk-12-M5/202-OrgRns	Organic Rinse		X								
Bypass Vent 6-Stk-12-M5/202-CPMFilt	CPM Filter		X								
<del>Bypass Vent 6-Stk-13-M5/202-PNR</del>	<del>Probe and Nozzle Rinse</del>									NOT A SAMPLE	
Bypass Vent 6-Stk-12-M5/202-Filt B	Filter	↓	X							027172	
Bypass Vent 6-Stk-14-M5/202-WtrRns	Water Rinse	10/1/2022 20:28	X								
Bypass Vent 6-Stk-14-M5/202-OrgRns	Organic Rinse	10/1/2022 20:28	X								
Bypass Vent 6-Stk-13-M5/202-CPMFilt B	CPM Filter	9/28/2022 15:37	X								
Remarks: Provide results in total milligrams per sample. Provide raw data package											
Relinquished by: Adderthal	Date/Time 10/3/22 11:46	Relinquished by:	Date/Time	Relinquished by:	Date/Time	Relinquished by:	Date/Time				
Received by: Alysemm	Date/Time 10-03-22 11:46	Received by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time				
Remarks (Laboratory Only) 19.3°C Reylek 2, good condition Amm 3 10-03-22											



## Chain of Custody Record Filterable and condensable particulate

Project <b>VS6</b>			Particulate Matter - Gravimetric Determination					Hold	MS/MSD	
Site <b>HHO</b>										
Project Number <b>60682866</b>										
Prepared by <b>FJS</b>										
Sample ID Code	Sample Matrix	Date/Time								Comments
Bypass Vent 6-Stk-1BT-M5/202-PNR	Probe and Nozzle Rinse	9/29/2022 12:19	X							
Bypass Vent 6-Stk-1BT-M5/202-Filt	Filter		X							
Bypass Vent 6-Stk-1BT-M5/202-WtrRns	Water Rinse		X							
Bypass Vent 6-Stk-1BT-M5/202-OrgRns	Organic Rinse		X							
Bypass Vent 6-Stk-1BT-M5/202-CPMFilt	CPM Filter		X							
Bypass Vent 6-Stk-1RB-M5/202-Filt	Filter	9/30/2022 13:38	X							
Bypass Vent 6-Stk-1RB-M5/202-Ace	Acetone	9/30/2022 13:43	X							
Bypass Vent 6-Stk-1RB-M5/202-Water	Water (DI)	9/30/2022 13:51	X							
Bypass Vent 6-Stk-1RB-M5/202-Hex	Hexane	9/30/2022 13:49	X							
Bypass Vent 6-Stk-1RB-M5/202-CPMFilt	CPM Filter	9/30/2022 13:55	X							
Bypass Vent 6-Stk-1RB-M5/202-HPLC Water	HPLC Water	10/1/2022 14:20	X							
Bypass Vent 6-Stk-14-m5/202-PNR	Probe and Nozzle Rinse	10/1/2022 20:28	X							
Bypass Vent 6-Stk-14-m5/202-Filt A	Filter		X							025826
Bypass Vent 6-Stk-14-m5/202-Filt B	Filter		X							
Bypass Vent 6-Stk-14-m5/202-CPM Filt	CPM Filter		X							
Remarks: Provide results in total milligrams per sample. Provide raw data package										
Relinquished by: <i>Andrew Haber</i>	Date/Time 10/3/22 11:46	Relinquished by:	Date/Time	Relinquished by:	Date/Time					
Received by: <i>Debra M. Moore</i>	Date/Time 10-03-22 11:46	Received by:	Date/Time	Received by:	Date/Time					
Remarks (Laboratory Only) P.30c Page 2, good condition Amm 3 10-03-22										



## Chain of Custody Record Samples from Method 26A Sampling trains

Project <b>VS6</b>			Chloride by Ion Chromatography								
Site <b>HHO</b>											
Project Number <b>60682866</b>											
Prepared by <b>FJS</b>											
Sample ID Code	Sample Matrix	Date/Time					Hold	MS/MSD	Comments		
Bypass Vent 6-Stk-11-M26A-AcdImp	Sulfuric Acid Impinger Catch	9/30/2022 17:06	X								
Bypass Vent 6-Stk-11-M26A-AlkImp	Sodium Hydroxide Impinger Catch	9/30/2022 17:06	X								
Bypass Vent 6-Stk-12-M26A-AcdImp	Sulfuric Acid Impinger Catch	9/30/2022 21:24	X								
Bypass Vent 6-Stk-12-M26A-AlkImp	Sodium Hydroxide Impinger Catch	9/30/2022 21:24	X								
Bypass Vent 6-Stk-13-M26A-AcdImp	Sulfuric Acid Impinger Catch	10/1/2022 10:29	X								
Bypass Vent 6-Stk-13-M26A-AlkImp	Sodium Hydroxide Impinger Catch	10/1/2022 10:29	X								
Bypass Vent 6-Stk-1RB-M26A-H2SO4 Soln	Sulfuric Acid Solution	10/1/2022 10:50	X								
Bypass Vent 6-Stk-1RB-M26A-NaOH Soln	Sodium Hydroxide Solution	9/30/2022 15:12	X								
Bypass Vent 6-Stk-1RB-M26A-Water	Water	9/30/2022 15:18									
Bypass Vent 6-Stk-1FB-M26A-AcdImp	Sulfuric Acid Impinger Catch	9/30/2022 18:54					X				
Bypass Vent 6-Stk-1FB-M26A-AlkImp	Sodium Hydroxide Impinger Catch	9/30/2022 18:54					X				
Remarks: Provide results in total micrograms per sample. Raw data package required * Also analyse for HF & HCN											
Relinquished by: Andrew Haber	Date/Time 10/3/22 11:46	Relinquished by:	Date/Time	Relinquished by:	Date/Time	Relinquished by:	Date/Time	Relinquished by:	Date/Time	Relinquished by:	Date/Time
Received by: Alyssa Muehlen	Date/Time 10-03-22 11:46	Received by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time	Received by:	Date/Time
Remarks (Laboratory Only) 19.3°C Baytek 2, good condition Amms 10-03-22											





## Chain of Custody Record

Page 1 of 1

PROJECT			# OF CONTAINERS	ANALYSES										Method 5			
VS6				Gravimetric for PM (M5)	202 For CPM												
COLLECTED BY (Signature)																	
FIELD SAMPLE ID	SAMPLE MATRIX	DATE/TIME														REMARKS	ID NO. (lab use only)
Bypass Vent 6-Stk-15-M5/202-PNR	Probe and Nozzle Rinse	10/3/2022	1	x													
Bypass Vent 6-Stk-15-M5/202-OrgRns	Organic Rinse	10/3/2022	1		x												
Bypass Vent 6-Stk-16-M5/202-WtrRns	Water Rinse	10/3/2022	1		x												
Bypass Vent 6-Stk-15-M5/202-WtrRns	Water Rinse	10/3/2022	1		x												
Bypass Vent 6-Stk-16-M5/202-OrgRns	Organic Rinse	10/3/2022	1		x												
Bypass Vent 6-Stk-16-M5/202-PNR	Probe and Nozzle Rinse	10/3/2022	1	x													
Bypass Vent 6-Stk-16-M5/202-CPMFilt	CPM Filter	10/3/2022	1		x												
Bypass Vent 6-Stk-16-M5/202-Filt	Filter	10/3/2022	1	x											025805		
Bypass Vent 6-Stk-15-M5/202-CPMFilt	CPM Filter	10/3/2022	3		x										3 Filters		
Bypass Vent 6-Stk-15-M5/202-Filt	Filter	10/3/2022	2	x											2 Filters		
REMARKS														PROJECT #	RELINQUISHED BY	DATE	TIME
Technical Contact: Jerry Workman (919) 461-1289 or (919) 949-9445.																	
RECEIVED BY	DATE	TIME	RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME	RELINQUISHED BY	DATE	TIME						
Brick Haynie	10/5/22	9:25am	Brick Haynie	10/5/22	10:15am	Ted	10/5/22	10:15am									
RECEIVED FOR LABORATORY BY			DATE	TIME	AIRBILL#	OPENED BY	DATE	TIME	TEMP (degC)	SEAL #	CONDITION						
REMARKS																	

22.7°C Raytek 2, good condition Amm3 10.05.22



# Raw Data



Samples Received

JobNo	SampleName	Train	OafNos	Quant	Volume	LoggedBy	Login Date
1022-013	M5-11-PNR	0	1	192		ammiller	10/3/2022
1022-013	M5-11-Filt <i>027169</i>	0	1			ammiller	10/3/2022
1022-013	M202-11-WtrRns	0	5	550	1.72	ammiller	10/3/2022
1022-013	M202-11-OrgRns	0	5	226		ammiller	10/3/2022
1022-013	M202-11-CPMFilt-A	0	5			ammiller	10/3/2022
1022-013	M202-11-CPMFilt-B	0	5			ammiller	10/3/2022
1022-013	M5-12-PNR	0	2		80	ammiller	10/3/2022
1022-013	M5-12-Filt-A <i>027170</i>	0	2			ammiller	10/3/2022
1022-013	M5-12-Filt-B <i>027172</i>	0	2			ammiller	10/3/2022
1022-013	M202-12-WtrRns	0	6	186	475	ammiller	10/3/2022
1022-013	M202-12-OrgRns	0	6		224	ammiller	10/3/2022
1022-013	M202-12-CPMFilt	0	6			ammiller	10/3/2022
1022-013	M5-14-PNR	0	2		177	ammiller	10/3/2022
1022-013	M5-14-Filt-A <i>025826</i>	0	2			ammiller	10/3/2022
1022-013	M5-14-Filt-B <i>025800</i>	0	2			ammiller	10/3/2022
1022-013	M202-14-WtrRns	0	6	1.81	580	ammiller	10/3/2022
1022-013	M202-14-OrgRns	0	6		204	ammiller	10/3/2022
1022-013	M202-14-CPMFilt	0	6			ammiller	10/3/2022
1022-013	M5-1BT-PNR	0	3		75	ammiller	10/3/2022
1022-013	M5-1BT-Filt <i>025825</i>	0	3			ammiller	10/3/2022
1022-013	M202-1BT-WtrRns	0	6	5.15	355	ammiller	10/3/2022
1022-013	M202-1BT-OrgRns	0	6		255	ammiller	10/3/2022
1022-013	M202-1BT-CPMFilt	0	6			ammiller	10/3/2022
1022-013	M5-1RB-Filt <i>025828</i>	0	3			ammiller	10/3/2022
1022-013	M5-1RB-Ace	0	3		196	ammiller	10/3/2022
1022-013	M202-1RB-Water	0	7	6.31	242	ammiller	10/3/2022
1022-013	M202-1RB-Hex	0	7		198	ammiller	10/3/2022
1022-013	M202-1RB-CPMFilt	0	7			ammiller	10/3/2022
1022-013	M202-1RB-HPLCWater	0	7	6.34	224	ammiller	10/3/2022
1022-013	M5-15-PNR	0	2		41	ammiller	10/5/2022
1022-013	M5-15-Filt-1 <i>025803</i>	0	2			ammiller	10/5/2022
1022-013	M5-15-Filt-2 <i>025804</i>	0	2			ammiller	10/5/2022
1022-013	M202-15-WtrRns	0	4	1.67	390	ammiller	10/5/2022
1022-013	M202-15-OrgRns	0	4	2.14	194 B.20	ammiller	10/5/2022
1022-013	M202-15-CPMFilt-1	0	4			ammiller	10/5/2022
1022-013	M202-15-CPMFilt-2	0	4			ammiller	10/5/2022
1022-013	M202-15-CPMFilt-3	0	4			ammiller	10/5/2022
1022-013	M5-16-PNR	0	1		47	ammiller	10/5/2022
1022-013	M5-16-Filt <i>025805</i>	0	1			ammiller	10/5/2022
1022-013	M202-16-WtrRns	0	6	1.54	320	ammiller	10/5/2022



Samples Received

JobNo	SampleName	Train	OafNos	Quant	Volume	LoggedBy	Login Date
1022-013	M202-16-OrgRns	0	6	20g Y: 182 B: 20		ammiller	10/5/2022
1022-013	M202-16-CPMFilt	0	6			ammiller	10/5/2022
1022-013	M26A-11-AcdImp	0	8			ammiller	10/3/2022
1022-013	M26A-12-AcdImp	0	8			ammiller	10/3/2022
1022-013	M26A-13-AcdImp	0	8			ammiller	10/3/2022
1022-013	M26A-11-AlkImp	0	9			ammiller	10/3/2022
1022-013	M26A-12-AlkImp	0	9			ammiller	10/3/2022
1022-013	M26A-13-AlkImp	0	9			ammiller	10/3/2022
1022-013	M26A-1RB-H2SO4 Soln	0	8			ammiller	10/3/2022
1022-013	M26A-1RB-NaOH Soln	0	9			ammiller	10/3/2022
1022-013	M26A-1RB-Water	0	8			ammiller	10/3/2022
1022-013	M26A-1FB-AcdImp-HOLD	0				ammiller	10/3/2022
1022-013	M26A-1FB-AlkImp-HOLD	0				ammiller	10/3/2022
1022-013	CCS-11-Cond1	0	10			ammiller	10/3/2022
1022-013	CCS-12-Cond1	0	10			ammiller	10/3/2022
1022-013	CCS-12-Cond2	0	10			ammiller	10/3/2022
1022-013	CCS-13-Cond1	0	10			ammiller	10/3/2022
1022-013	CCS-1RB-Water	0	10			ammiller	10/3/2022

Vol used & ph WFT 10/5/22



Analyst: CCB

Date: 10-05-22

Job #s

1022-013

Describe Work Documented on This Page

Sample ID	Fraction	Filter ID
M5-11-Filt	Filter	027169
M5-12-Filt		027170
M5-12-Filt-B		027172
M5-14-Filt		025826
M5-14-Filt-B		025800
M5-15-Filt		025803
M5-15-Filt-B		025804
M5-16-Filt		025805
M5-1BT-Filt		025825
M5-1RB-Filt		025828
Sample ID	Fraction	Aluminum
M5-11-PNR	Acetone	37623
M5-12-PNR		37624
M5-14-PNR		37625
M5-15-PNR		37626
M5-16-PNR		37627
M5-1BT-PNR		37628
M5-1RB-Ace		37619
In House (218250)		37621

Supplies, Ancillary Equipment  
Serial #s, Lot #s, Etc

MS

## Filters:

1. Confirm filter ID's on petri labels match actual ID's on filters (Initial/Date) CCB/10-17-22
2. Petri dishes opened and placed into desiccator(s) for at least 24 hours.
  - a. desiccator ID Theta Date/Time In: 10-17-22 10:07:00
3. Filters were weighed to constant weight. Received with the with tear. CCB 10-18-22

## Rinse Fractions:

1. Rinse fractions were measured using 250 mL graduated cylinder(s).
2. Rinse fractions (which include the Lab Acetone and Client Acetone Blanks) were assigned to aluminum beakers, which were topped off until dry, in evaporator(s) (evaporator ID Evap. 3).
3. Rinse fraction aluminum beakers were placed in desiccator(s) for more than 24 hours (desiccator ID Theta). Date/Time In: 10-17-22 10:07:05

## Acetone

Brand: Fisher

Lot: 218250

Exp: 07-08-24

## Filter Tare Weights:

1. Filter Tare Weight Date/Time. Balance Verified (Initials)
  - a. Initial Tare measured by CCB using balance 2 on 10/06/21 @ 14:51. CCB
  - b. Final Tare measured by CCB using balance 2 on 10/07/21 @ 14:20. CCB
  - c. Tare weights provided by Client NO

## Final Weights:

1. Filter final weights dates:
  - a. 1<sup>st</sup> Weights measured by CCB using balance 2 on 10/18/22 CCB
  - b. 2<sup>nd</sup> Weights measured by CCB using balance 2 on 10/19/22 CCB
  - c. 3<sup>rd</sup> Weights measured by N/A using balance on N/A N/A
  - d. 4<sup>th</sup> Weights measured by N/A using balance on N/A N/A
2. Rinse final weights dates:
  - a. 1<sup>st</sup> Weights measured by CCB using balance 8 on 10/18/22 CCB
  - b. 2<sup>nd</sup> Weights measured by CCB using balance 8 on 10/19/22 CCB
  - c. 3<sup>rd</sup> Weights measured by N/A using balance on N/A N/A
  - d. 4<sup>th</sup> Weights measured by N/A using balance on N/A N/A

Reviewer's Initials &amp; Date:

W 10-19-22

PARTICULATE  
page 4952ENTHALPY  
ANALYTICAL



Samples Received

JobNo	SampleName	Train	OafNos	Quant	Volume	LoggedBy	Login Date
1022-013	M5-11-PNR	0	1			ammiller	10/3/2022
1022-013	M5-11-Filt	0	1			ammiller	10/3/2022
1022-013	M202-11-WtrRns	0	5			ammiller	10/3/2022
1022-013	M202-11-OrgRns	0	5			ammiller	10/3/2022
1022-013	M202-11-CPMFilt-A	0	5			ammiller	10/3/2022
1022-013	M202-11-CPMFilt-B	0	5			ammiller	10/3/2022
1022-013	M5-12-PNR	0	2			ammiller	10/3/2022
1022-013	M5-12-Filt-A	0	2			ammiller	10/3/2022
1022-013	M5-12-Filt-B	0	2			ammiller	10/3/2022
1022-013	M202-12-WtrRns	0	6			ammiller	10/3/2022
1022-013	M202-12-OrgRns	0	6			ammiller	10/3/2022
1022-013	M202-12-CPMFilt	0	6			ammiller	10/3/2022
1022-013	M5-14-PNR	0	2			ammiller	10/3/2022
1022-013	M5-14-Filt-A	0	2			ammiller	10/3/2022
1022-013	M5-14-Filt-B	0	2			ammiller	10/3/2022
1022-013	M202-14-WtrRns	0	6			ammiller	10/3/2022
1022-013	M202-14-OrgRns	0	6			ammiller	10/3/2022
1022-013	M202-14-CPMFilt	0	6			ammiller	10/3/2022
1022-013	M5-1BT-PNR	0	3			ammiller	10/3/2022
1022-013	M5-1BT-Filt	0	3			ammiller	10/3/2022
1022-013	M202-1BT-WtrRns	0	6			ammiller	10/3/2022
1022-013	M202-1BT-OrgRns	0	6			ammiller	10/3/2022
1022-013	M202-1BT-CPMFilt	0	6			ammiller	10/3/2022
1022-013	M5-1RB-Filt	0	3			ammiller	10/3/2022
1022-013	M5-1RB-Ace	0	3			ammiller	10/3/2022
1022-013	M202-1RB-Water	0	7			ammiller	10/3/2022
1022-013	M202-1RB-Hex	0	7			ammiller	10/3/2022
1022-013	M202-1RB-CPMFilt	0	7			ammiller	10/3/2022
1022-013	M202-1RB-HPLCWater	0	7			ammiller	10/3/2022
1022-013	M5-15-PNR	0	1			ammiller	10/5/2022
1022-013	M5-15-Filt	0	1			ammiller	10/5/2022
1022-013	M202-15-WtrRns	0	6			ammiller	10/5/2022
1022-013	M202-15-OrgRns	0	6			ammiller	10/5/2022
1022-013	M202-15-CPMFilt	0	6			ammiller	10/5/2022
1022-013	M5-16-PNR	0	2			ammiller	10/5/2022
1022-013	M5-16-Filt-1	0	2			ammiller	10/5/2022
1022-013	M5-16-Filt-2	0	2			ammiller	10/5/2022
1022-013	M202-16-WtrRns	0	4			ammiller	10/5/2022
1022-013	M202-16-OrgRns	0	4			ammiller	10/5/2022
1022-013	M202-16-CPMFilt-1	0	4			ammiller	10/5/2022



Samples Received

Column change  
DUM 10/12/22

JobNo	SampleName	Train	OafNos	Quant	Volume	LoggedBy	Login Date
1022-013	M202-16-CPMFill-2	0	4	pH	(ml)	ammiller	10/5/2022
1022-013	M202-16-CPMFill-3	0	4			ammiller	10/5/2022
1022-013	M26A-11-AcdImp	0	8	0	550	ammiller	10/3/2022
1022-013	M26A-12-AcdImp	0	8	0	540	ammiller	10/3/2022
1022-013	M26A-13-AcdImp	0	8	0	633	ammiller	10/3/2022
1022-013	M26A-11-AlkImp	0	9	3	350	ammiller	10/3/2022
1022-013	M26A-12-AlkImp	0	9	3	360	ammiller	10/3/2022
1022-013	M26A-13-AlkImp	0	9	3	380	ammiller	10/3/2022
1022-013	M26A-1RB-H2SO4 Soln	0	8	0	192	ammiller	10/3/2022
1022-013	M26A-1RB-NaOH Soln	0	9	14	198	ammiller	10/3/2022
1022-013	M26A-1RB-Water	0	8	8	103	ammiller	10/3/2022
1022-013	M26A-1FB-AcdImp-HOLD	0				ammiller	10/3/2022
1022-013	M26A-1FB-AlkImp-HOLD	0				ammiller	10/3/2022
1022-013	CCS-11-Cond1	0	10		34	ammiller	10/3/2022
1022-013	CCS-12-Cond1	0	10		35	ammiller	10/3/2022
1022-013	CCS-12-Cond2	0	10		37	ammiller	10/3/2022
1022-013	CCS-13-Cond1	0	10		36	ammiller	10/3/2022
1022-013	CCS-1RB-Water	0	10		59	ammiller	10/3/2022

Volume/pH by DUM 10/6/22



Analyst: DUMDate: 10/6/22

Job #s

Describe Work Documented on This Page

1022-013MZ6A/CTM-013 prepMZ6A

- Volumned / pH'd all samples via pH strips + poly graduated cylinders.
- $H_2SO_4$  fraction: 11.  $H_2SO_4$  MS/MSD: 760  $\mu$ l sample + 40  $\mu$ l anion mix 4
- NaOH fraction: 11. NaOH MS/MSD: 760  $\mu$ l sample + 40  $\mu$ l anion mix 4
  - 10  $\mu$ l sodium thio sulfate added to each NaOH A.S. val

NOTE - NaOH fraction pH @ 3 except NaOH RB solution. Many have been sampled incorrectly - screen on 779 Raphael 12296 did not have high Cl concentration.  
 66 num 10/10/22

CTM-013

- Volumned all samples via poly graduated cylinder + Filtered <sup>①</sup> (except DI BLK)
- 12. CTM013 proportional aliquot: 3.5 mls Cond 1 + 3.7 mls Cond 2  $\rightarrow$  = 1/10 of measured volume in mls

① MUNKTELL syringe filters  
 lot: 120712007, 0.2  $\mu$ m

- 11. CTM013 MS/MSD: 760  $\mu$ l of filtered spl

+ 40  $\mu$ l Sulfate (AccuStandard, lot # 221125098, exp: 11/23/24)

- Downloaded DI  $H_2O$  (Dracor) filter BLK to run w/ job

Supplies, Ancillary Equipment  
Serial #s, Lot #s, EtcpH StripsMacherey-Nagel

lot: 10D3112

exp: 10/31/25

Sodium thio sulfateHPLCprep 5621

exp: 5/20/23

PipettesHPLC40 (12/1/22)

41 (12/1/22)

74 (12/2/22)

HPLC32 (11/15/22)

DUM 10/6/22

Reviewer's Initials &amp; Date:

SJT 10/07/2022HPLCPrep  
page 6021

ENTHALPY  
ANALYTICAL



Analyst: DLMDate: 10/16/22Job #s  
1022-021  
1022-013

Describe Work Documented on This Page

MZGA dilutions - H<sub>2</sub>SO<sub>4</sub>1022-021: Dilute 2 WFB R1-R3 + 1 WFB R1-R3to \*5: 160  $\mu$ l sample  
+ 640  $\mu$ l 0.1 N H<sub>2</sub>SO<sub>4</sub>- 2 WFB R1 (863) MS/MSD \*5: 160  $\mu$ l sample  
+ 640  $\mu$ l 0.1 N H<sub>2</sub>SO<sub>4</sub>  
+ 40  $\mu$ l anion mix 41022-013: Dilute MZGA 11, 12 + 13 (AccuImp)to \*50: 16  $\mu$ l sample  
+ 784  $\mu$ l 0.1 N H<sub>2</sub>SO<sub>4</sub>- 11. H<sub>2</sub>SO<sub>4</sub> MS/MSD \*50: 16  $\mu$ l sample  
+ 784  $\mu$ l 0.1 N H<sub>2</sub>SO<sub>4</sub>  
+ 40  $\mu$ l anion mix 4Supplies, Ancillary Equipment  
Serial #s, Lot #s, Etc0.1 N H<sub>2</sub>SO<sub>4</sub>HPLC prep 5922exp: 2/28/22  
23  
EE DLM 10/16/22Anion Mix 4AccuStandardlot: 220125046exp: 1/16/23pipettesHPLC 74 (12/2/22)HPLC 41 (12/1/22)HPLC 40 (12/1/22)DLM 10/7/22

Reviewer's Initials &amp; Date:

SJT 10/07/2022HPLCPrep  
page 6023ENTHALPY  
ANALYTICAL



Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Ref.Amount	Calibration Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Fluoride	ECD_1 Fluoride	µg/mL ECD_1 Chloride	ECD_1 Chloride		
6	HPLCStd1416 #6	06/Oct/2022 17:15	RA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
7	HPLCStd1416 #6	06/Oct/2022 17:31	RA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
8	HPLCStd1416 #5	06/Oct/2022 17:48	RA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
9	HPLCStd1416 #5	06/Oct/2022 18:04	RA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
10	HPLCStd1416 #4	06/Oct/2022 18:20	RA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
11	HPLCStd1416 #4	06/Oct/2022 18:36	RA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
12	HPLCStd1416 #3	06/Oct/2022 18:52	RA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
13	HPLCStd1416 #3	06/Oct/2022 19:08	RA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
14	HPLCStd1416 #2	06/Oct/2022 19:24	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
15	HPLCStd1416 #2	06/Oct/2022 19:40	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
16	HPLCStd1416 #1	06/Oct/2022 19:56	RA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00
17	HPLCStd1416 #1	06/Oct/2022 20:13	RA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00
70	HPLCStd1416 #6	07/Oct/2022 10:26	RA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
71	HPLCStd1416 #6	07/Oct/2022 10:42	RA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
72	HPLCStd1416 #5	07/Oct/2022 10:58	RA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
73	HPLCStd1416 #5	07/Oct/2022 11:14	RA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
74	HPLCStd1416 #4	07/Oct/2022 11:31	RA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
75	HPLCStd1416 #4	07/Oct/2022 11:47	RA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
76	HPLCStd1416 #3	07/Oct/2022 12:03	RA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
77	HPLCStd1416 #3	07/Oct/2022 12:19	RA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
78	HPLCStd1416 #2	07/Oct/2022 12:35	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
79	HPLCStd1416 #2	07/Oct/2022 12:51	RA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
80	HPLCStd1416 #1	07/Oct/2022 13:07	RA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00
81	HPLCStd1416 #1	07/Oct/2022 13:23	RA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	Off	Any	All Channels
Always	Baseline Noise Start Time	1.621 [min]	Any	All Channels
Always	Baseline Noise End Time	2.175 [min]	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Fronting Sensitivity Factor	0.500 [%]	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	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
2.755	Inhibit Integration	Off	Any	All Channels
5.850	Inhibit Integration	On	Any	All Channels



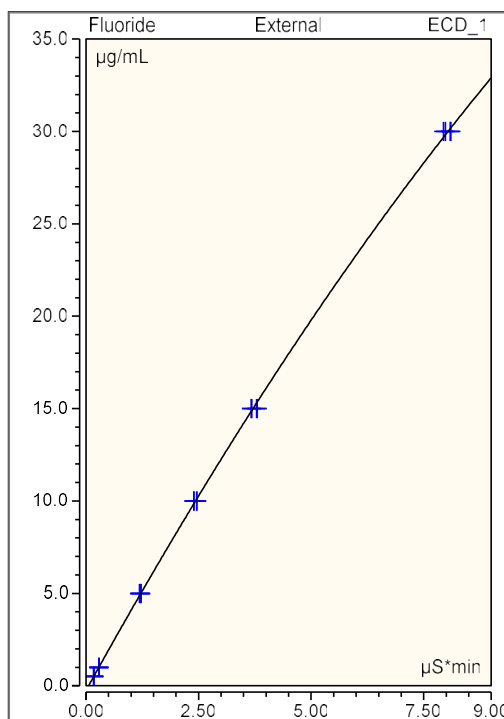
## Calibration Batch Report

Sequence:	Raphael1231	Injection Volume:	25.00
Instrument Method:	AS22 ASAP	Operator:	dlmckee
Inj. Date / Time:	07-Oct-2022 / 02:55	Run Time:	14.5

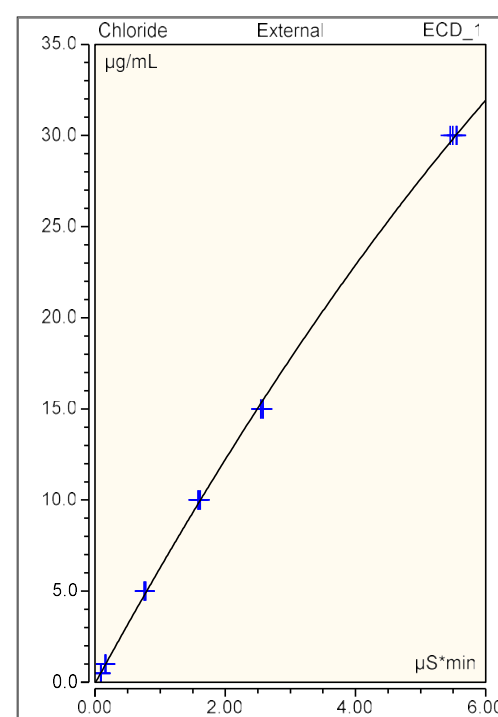
### Calibration Summary

Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	-0.251	4.413	-0.081	99.982
Chloride	Area	Quad, WithOffset, 1/A	24.000	-0.056	6.547	-0.202	99.958
AVERAGE:				-0.1535	5.4800	-0.1417	99.9701

Injection Name	Ret.Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height $\mu\text{S}$ ECD 1	Amount $\mu\text{g/mL}$ ECD 1
Fluoride	Fluoride	Fluoride	Fluoride	Fluoride
HPLCStd1416 #6	3.173	7.942	34.263	29.686
HPLCStd1416 #6	3.173	7.985	34.843	29.821
HPLCStd1416 #5	3.163	3.671	16.246	14.856
HPLCStd1416 #5	3.163	3.681	16.358	14.897
HPLCStd1416 #4	3.160	2.398	10.254	9.867
HPLCStd1416 #4	3.160	2.393	10.302	9.846
HPLCStd1416 #3	3.160	1.193	4.716	4.898
HPLCStd1416 #3	3.160	1.187	4.727	4.874
HPLCStd1416 #2	3.187	0.290	1.021	1.021
HPLCStd1416 #2	3.183	0.284	1.004	0.997
HPLCStd1416 #1	3.203	0.171	0.581	0.499
HPLCStd1416 #1	3.203	0.169	0.576	0.494
HPLCStd1416 #6	3.167	8.087	37.510	30.140
HPLCStd1416 #6	3.167	8.105	37.571	30.195
HPLCStd1416 #5	3.157	3.803	17.744	15.360
HPLCStd1416 #5	3.153	3.786	17.690	15.295
HPLCStd1416 #4	3.153	2.461	11.111	10.120
HPLCStd1416 #4	3.153	2.455	11.094	10.097
HPLCStd1416 #3	3.150	1.220	5.056	5.012
HPLCStd1416 #3	3.150	1.212	5.050	4.977
HPLCStd1416 #2	3.170	0.288	1.057	1.013
HPLCStd1416 #2	3.170	0.281	1.053	0.981
HPLCStd1416 #1	3.193	0.172	0.598	0.505
HPLCStd1416 #1	3.190	0.173	0.595	0.512



Injection Name	Ret.Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height $\mu\text{S}$ ECD 1	Amount $\mu\text{g/mL}$ ECD 1
Chloride	Chloride	Chloride	Chloride	Chloride
HPLCStd1416 #6	4.477	5.453	25.457	29.625
HPLCStd1416 #6	4.477	5.495	25.708	29.806
HPLCStd1416 #5	4.470	2.542	11.594	15.281
HPLCStd1416 #5	4.473	2.548	11.607	15.308
HPLCStd1416 #4	4.470	1.581	7.329	9.791
HPLCStd1416 #4	4.470	1.583	7.338	9.802
HPLCStd1416 #3	4.470	0.755	3.504	4.774
HPLCStd1416 #3	4.467	0.757	3.516	4.783
HPLCStd1416 #2	4.470	0.161	0.704	0.992
HPLCStd1416 #2	4.467	0.158	0.698	0.971
HPLCStd1416 #1	4.470	0.087	0.375	0.515
HPLCStd1416 #1	4.470	0.088	0.375	0.517
HPLCStd1416 #6	4.470	5.546	26.601	30.028
HPLCStd1416 #6	4.467	5.555	26.618	30.065
HPLCStd1416 #5	4.463	2.577	11.990	15.469
HPLCStd1416 #5	4.463	2.577	11.970	15.473
HPLCStd1416 #4	4.467	1.614	7.559	9.985
HPLCStd1416 #4	4.463	1.608	7.551	9.945
HPLCStd1416 #3	4.463	0.772	3.600	4.879
HPLCStd1416 #3	4.460	0.773	3.604	4.883
HPLCStd1416 #2	4.463	0.161	0.717	0.994
HPLCStd1416 #2	4.463	0.159	0.713	0.982
HPLCStd1416 #1	4.470	0.088	0.380	0.521
HPLCStd1416 #1	4.467	0.089	0.382	0.526





# 1.00 validated 12/10/08 VR

Calculation of MDL per SOP ENT-027

Enter values into the highlighted cells.

Date Analyzed 5/16/22  
Analyst DLM  
Date Reviewed 6/6/22  
Reviewed By AMC

Seven (or more) replicates of a low concentration preparation are made. The worst injection(s) (farthest from the mean area) may be removed assuming an appropriate Outlier Test calculation shows the value(s) to be an outlier. At least seven injections must remain.

Instrument Raphael  
Logbook Page Raphael1116  
Injector (F,R,NA)  
Column Dionex AS22 SN: 211103046  
Injector (F,R,NA)  
Column

MDL = Stdev \* Student's t-value

t-value = 3.143 N=7 Degrees of Freedom = 6  
t-value = 2.998 N=8 Degrees of Freedom = 7  
t-value = 2.896 N=9 Degrees of Freedom = 8  
t-value = 2.821 N=10 Degrees of Freedom = 9

Job #(s) 0522-035, 0522-046 & 0522-076  
Applicable Method(s) M26 H2SO4 Fraction  
Matrix 0.1N H2SO4  
Solvent

Compound #	1	2	3	4	5	6	7
Compound Name	Fluoride	Chloride					
Notes (if needed)							
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Test Std Concentrations	#1 0.50390 #2 0.49530 #3 0.49520 #4 0.48600 #5 0.49180 #6 0.48510 #7 0.48950 #8 0.48830 #9 0.50180 #10 0.50330	#1 0.51770 #2 0.52230 #3 0.51930 #4 0.52690 #5 0.52000 #6 0.52450 #7 0.52540 #8 0.52650 #9 0.52810 #10 0.52490	#1 #2 #3 #4 #5 #6 #7 #8 #9 #10	#1 0.00000 #2 0.00000 #3 0.00000 #4 0.00000 #5 0.00000 #6 0.00000 #7 0.00000 #8 0.00000 #9 0.00000 #10 0.00000	#1 0.00000 #2 0.00000 #3 0.00000 #4 0.00000 #5 0.00000 #6 0.00000 #7 0.00000 #8 0.00000 #9 0.00000 #10 0.00000	#1 0.00000 #2 0.00000 #3 0.00000 #4 0.00000 #5 0.00000 #6 0.00000 #7 0.00000 #8 0.00000 #9 0.00000 #10 0.00000	#1 0.00000 #2 0.00000 #3 0.00000 #4 0.00000 #5 0.00000 #6 0.00000 #7 0.00000 #8 0.00000 #9 0.00000 #10 0.00000
Standard Deviation	0.0071	0.0035	#DIV/0!	0.0000	0.0000	0.0000	0.0000
Student's T factor	2.821	2.821	0.000	2.821	2.821	2.821	2.821
Calculated MDL = StDev * t	0.020	0.010	#DIV/0!	0.000	0.000	0.000	0.000
Concentration of Std	0.500	0.500		0.000	0.000	0.000	0.000
Lowest Part 136 App B value*	0.050	0.050	0.000	0.000	0.000	0.000	0.000
MDL value <1/10 Std Value?	<1/10 Conc of Std	<1/10 Conc of Std	#DIV/0!	Pass	Pass	Pass	Pass
MDL to Use	0.05000	0.05000	#DIV/0!	0.00000	0.00000	0.00000	0.00000

\*40 CFR Part 136 Appendix B, a common detection limit guidance, indicates that the MDL can not be <1/10th the standard used to set the MDL. MDL to use is the maximum of the Calculated MDL, lowest integratable concentration and the Lowest Part 136 B value.



Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Cal Point Status	Ref.Amount	Cal Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Chloride	ECD_1 Chloride	µg/mL ECD_1 Fluoride	ECD_1 Fluoride		
3	HPLCStd1308 #6	16/May/2022 13:16	GA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
4	HPLCStd1308 #6	16/May/2022 13:33	GA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
5	HPLCStd1308 #5	16/May/2022 13:49	GA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
6	HPLCStd1308 #5	16/May/2022 14:05	GA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
7	HPLCStd1308 #4	16/May/2022 14:21	GA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
8	HPLCStd1308 #4	16/May/2022 14:37	GA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
9	HPLCStd1308 #3	16/May/2022 15:58	GA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
10	HPLCStd1308 #3	16/May/2022 16:14	GA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
11	HPLCStd1308 #2	16/May/2022 16:30	GA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
12	HPLCStd1308 #2	16/May/2022 16:46	GA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
13	HPLCStd1308 #1	16/May/2022 17:02	GA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00
14	HPLCStd1308 #1	16/May/2022 17:19	GA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00
111	HPLCStd1308 #6	17/May/2022 19:21	GA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
112	HPLCStd1308 #6	17/May/2022 19:38	GA6	06	30.0000	Ok	30.0000	Ok	1.0000	25.00
113	HPLCStd1308 #5	17/May/2022 19:54	GA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
114	HPLCStd1308 #5	17/May/2022 20:10	GA5	05	15.0000	Ok	15.0000	Ok	1.0000	25.00
115	HPLCStd1308 #4	17/May/2022 20:26	GA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
116	HPLCStd1308 #4	17/May/2022 20:42	GA4	04	10.0000	Ok	10.0000	Ok	1.0000	25.00
117	HPLCStd1308 #3	17/May/2022 20:58	GA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
118	HPLCStd1308 #3	17/May/2022 21:14	GA3	03	5.0000	Ok	5.0000	Ok	1.0000	25.00
119	HPLCStd1308 #2	17/May/2022 21:30	GA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
120	HPLCStd1308 #2	17/May/2022 21:46	GA2	02	1.0000	Ok	1.0000	Ok	1.0000	25.00
121	HPLCStd1308 #1	17/May/2022 22:03	GA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00
122	HPLCStd1308 #1	17/May/2022 22:19	GA1	01	0.5000	Ok	0.5000	Ok	1.0000	25.00

Detection Parameters

Ret. Time 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	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	1.000 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
2.891	Inhibit Integration	Off	Any	All Channels
5.180	Inhibit Integration	On	Any	All Channels



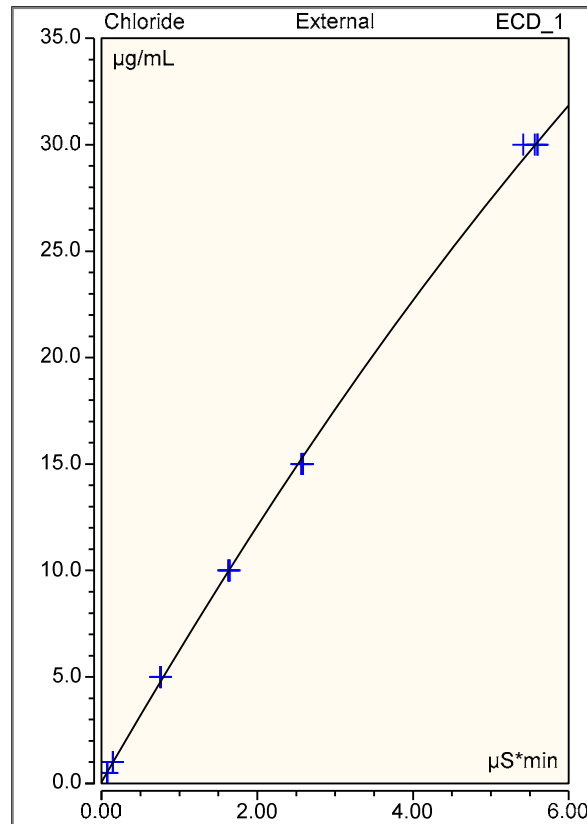
## Calibration Batch Report

Sequence:	Raphael1116b	Injection Volume:	25.00
Instrument Method:	AS22 ASAP	Operator:	dlmckee
Inj. Date / Time:	16-May-2022 / 19:43	Run Time:	14.5

### Calibration Summary

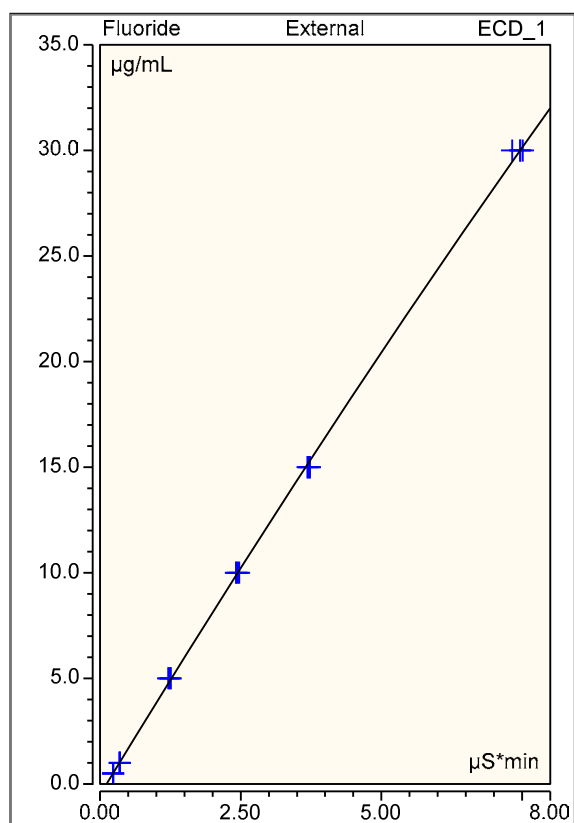
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	-0.529	4.405	-0.042	99.974
Chloride	Area	Quad, WithOffset, 1/A	24.000	0.057	6.376	-0.179	99.959
AVERAGE:				-0.2359	5.3903	-0.1108	99.9665

Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height $\mu\text{S}$ ECD_1	Amount $\mu\text{g/mL}$ ECD_1
	Chloride	Chloride	Chloride	Chloride
HPLCStd1308 #6	4.530	5.414	40.570	29.316
HPLCStd1308 #6	4.527	5.600	41.627	30.135
HPLCStd1308 #5	4.517	2.565	18.656	15.232
HPLCStd1308 #5	4.517	2.571	18.628	15.266
HPLCStd1308 #4	4.517	1.631	11.756	9.981
HPLCStd1308 #4	4.513	1.625	11.684	9.947
HPLCStd1308 #3	4.520	0.753	5.335	4.756
HPLCStd1308 #3	4.520	0.763	5.412	4.820
HPLCStd1308 #2	4.517	0.145	1.022	0.977
HPLCStd1308 #2	4.517	0.145	1.016	0.976
HPLCStd1308 #1	4.513	0.073	0.510	0.525
HPLCStd1308 #1	4.517	0.073	0.507	0.524
HPLCStd1308 #6	4.537	5.596	41.972	30.121
HPLCStd1308 #6	4.537	5.562	41.969	29.970
HPLCStd1308 #5	4.523	2.586	18.875	15.348
HPLCStd1308 #5	4.523	2.584	18.888	15.336
HPLCStd1308 #4	4.523	1.647	11.848	10.071
HPLCStd1308 #4	4.520	1.638	11.839	10.017
HPLCStd1308 #3	4.520	0.759	5.464	4.795
HPLCStd1308 #3	4.520	0.760	5.468	4.798
HPLCStd1308 #2	4.513	0.146	1.028	0.982
HPLCStd1308 #2	4.517	0.145	1.026	0.980
HPLCStd1308 #1	4.517	0.073	0.512	0.524
HPLCStd1308 #1	4.517	0.073	0.510	0.521





Injection Name	Ret.Time min ECD_1	Area $\mu\text{S} \cdot \text{min}$ ECD_1	Height $\mu\text{S}$ ECD_1	Amount $\mu\text{g/mL}$ ECD_1
HPLCStd1308 #6	3.200	7.320	34.744	29.458
HPLCStd1308 #6	3.200	7.511	36.148	30.180
HPLCStd1308 #5	3.187	3.697	16.209	15.179
HPLCStd1308 #5	3.187	3.683	16.285	15.124
HPLCStd1308 #4	3.183	2.415	10.150	9.863
HPLCStd1308 #4	3.183	2.426	10.148	9.907
HPLCStd1308 #3	3.190	1.211	4.417	4.741
HPLCStd1308 #3	3.187	1.230	4.538	4.825
HPLCStd1308 #2	3.213	0.354	0.904	1.027
HPLCStd1308 #2	3.213	0.350	0.894	1.006
HPLCStd1308 #1	3.230	0.233	0.528	0.494
HPLCStd1308 #1	3.230	0.233	0.528	0.494
HPLCStd1308 #6	3.200	7.465	39.284	30.007
HPLCStd1308 #6	3.200	7.463	39.632	30.000
HPLCStd1308 #5	3.183	3.727	17.960	15.303
HPLCStd1308 #5	3.187	3.728	17.989	15.306
HPLCStd1308 #4	3.183	2.451	11.105	10.012
HPLCStd1308 #4	3.180	2.475	11.133	10.113
HPLCStd1308 #3	3.180	1.257	4.950	4.939
HPLCStd1308 #3	3.180	1.252	4.947	4.919
HPLCStd1308 #2	3.203	0.353	0.935	1.022
HPLCStd1308 #2	3.200	0.350	0.924	1.008
HPLCStd1308 #1	3.223	0.237	0.538	0.514
HPLCStd1308 #1	3.223	0.235	0.533	0.505





Location: ChromelconDrawer: RaphaelAnalyst: DUMCabinet: 2022 Q2Folder: Raphael 1116Date: 5/13/22Job #s  
0522-035  
0522-046  
0522-076

Describe Work Documented on This Page

MZGA - H<sub>2</sub>SO<sub>4</sub> fraction HF, HClDUM 5/11/22 - sequence moved to "Raphael 1116" due to bad injection on STD #3 in opening curve + ran out of M.P. during closing curve.Supplies, Ancillary Equipment  
Serial #s, Lot #s, EtcMobile phaseHPLCprep 5568  
(exp 6/13/22)ColumnDionex IonPac AS22  
4x250mmSN: 211103046- HPLCprep 5528  
(0522-046)- HPLCprep 5530  
(0522-035)- HPLCprep 5557  
(0522-076)- HPLCprep 5571  
(0522-076  
proportional  
aliquots)- HPLCprep 5578  
(spike re-preps)① DUM 5/11/22  
Non-reproducing  
samples ran @  
end of sequence.

No.	Injection Name	Position	Dilution	Type	Instrument/Method	Comment
1	Eq Blank	GB1	1.0	Unknown	AS22 ASAP	
2	Eq Blank	GB1	1.0	Unknown	AS22 ASAP	
3	HPLCStd1308 #6	GA6	1.0	Calibration Standard	AS22 ASAP	
4	HPLCStd1308 #6	GA6	1.0	Calibration Standard	AS22 ASAP	II DLM 5/16/22
5	HPLCStd1308 #5	GA5	1.0	Calibration Standard	AS22 ASAP	
6	HPLCStd1308 #5	GA5	1.0	Calibration Standard	AS22 ASAP	II DLM 5/16/22
7	HPLCStd1308 #4	GA4	1.0	Calibration Standard	AS22 ASAP	II DLM 5/16/22
8	HPLCStd1308 #4	GA4	1.0	Calibration Standard	AS22 ASAP	II DLM 5/16/22 paused to screen NaOH fraction
9	HPLCStd1308 #3	GA3	1.0	Calibration Standard	AS22 ASAP	II DLM 5/16/22
10	HPLCStd1308 #3	GA3	1.0	Calibration Standard	AS22 ASAP	II DLM 5/16/22
11	HPLCStd1308 #2	GA2	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
12	HPLCStd1308 #2	GA2	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
13	HPLCStd1308 #1	GA1	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
14	HPLCStd1308 #1	GA1	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
15	HPLCStd1308 #SS	GB3	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
16	HPLCStd1308 #SS	GB3	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
17	HPLCStd1308 #RB	GB2	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
18	HPLCStd1308 #RB	GB2	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
19	HPLCStd1308 #1	GB6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
20	HPLCStd1308 #1	GB6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
21	HPLCStd1308 #1	GB6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
22	HPLCStd1308 #1	GB7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
23	HPLCStd1308 #1	GB7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
24	HPLCStd1308 #1	GB7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
25	HPLCStd1308 #1	GB8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
26	HPLCStd1308 #1	GB8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
27	HPLCStd1308 #1	GB8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
28	HPLCStd1308 #1	GB8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
29	HPLCStd1308 #4	GB4	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
30	HPLCStd1308 #4	GB4	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
31	0522-035 R1 PA	GC1	1.0	Unknown	AS22 ASAP	did not reproduce ⑧
32	0522-035 R1 PA	GC1	1.0	Unknown	AS22 ASAP	did not reproduce ⑧
33	0522-035 MS-R1 PA	GC2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
34	0522-035 MS-R1 PA	GC2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
35	0522-035 MSD-R1 PA	GC3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
36	0522-035 MSD-R1 PA	GC3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
37	0522-035 R2 PA	GC4	1.0	Unknown	AS22 ASAP	did not reproduce ⑧
38	0522-035 R2 PA	GC4	1.0	Unknown	AS22 ASAP	did not reproduce ⑧
39	0522-035 R3 PA	GC5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
40	0522-035 R3 PA	GC5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
41	0522-035 R4 PA	GC6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
42	0522-035 R4 PA	GC6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
43	0522-035 R5 PA	GC7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
44	0522-035 R5 PA	GC7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
45	0522-035 H2SO4 BLK	GC8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
46	0522-035 H2SO4 BLK	GC8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
47	0522-046 R1 PA	GD1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
48	0522-046 R1 PA	GD1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
49	0522-046 MS-R1 PA	GD2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
50	0522-046 MS-R1 PA	GD2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
51	HPLCStd1308 #SS	GB3	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
52	HPLCStd1308 #SS	GB3	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
53	HPLCStd1308 #RB	GB2	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
54	HPLCStd1308 #RB	GB2	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
55	0522-046 MSD-R1 PA	GD3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22

Reviewer's Initials &amp; Date:

STW 5/18/22Raphael  
page 1116



Location: \_\_\_\_\_

Drawer: \_\_\_\_\_

Analyst: DUMDate: 5/18/22

Cabinet: \_\_\_\_\_

Folder: \_\_\_\_\_

56	0522-046 MSD-R1 PA	GD3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
57	0522-046 R2 PA	GD4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
58	0522-046 R2 PA	GD4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
59	0522-046 R3 PA	GD5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
60	0522-046 R3 PA	GD5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
61	0522-046 R4 PA	GD6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
62	0522-046 R4 PA	GD6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
63	0522-046 R5 PA	GD7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
64	0522-046 R5 PA	GD7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
65	0522-046 R6 PA	GD8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
66	0522-046 R6 PA	GD8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
67	0522-046 R7 PA	GE1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
68	0522-046 R7 PA	GE1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
69	0522-046 H2SO4 BLK	GE2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
70	0522-046 H2SO4 BLK	GE2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
71	0522-046 DH12O BLK	GE3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
72	0522-046 DH12O BLK	GE3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
73	0522-076 R1 PA	GE4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
74	0522-076 R1 PA	GE4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
75	HPLCStd1308 #4	GB4	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
76	HPLCStd1308 #4	GB4	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22

Cont.  
from  
Raphael/1116

Supplies, Ancillary Equipment  
Material #s, Lot #s, Etc

① DUM 5/18/22  
re-run @ end of  
sequence.

77	0522-076 MS-R1 PA	GE5	1.0	Unknown	AS22 ASAP	did not reproduce ①
78	0522-076 MS-R1 PA	GE5	1.0	Unknown	AS22 ASAP	did not reproduce ①
79	0522-076 MSD-R1 PA	GE6	1.0	Unknown	AS22 ASAP	did not reproduce ①
80	0522-076 MSD-R1 PA	GE6	1.0	Unknown	AS22 ASAP	did not reproduce ①
81	0522-076 R2 PA	GE7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
82	0522-076 R2 PA	GE7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
83	0522-076 R3 PA	GE8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
84	0522-076 R3 PA	GE8	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
85	0522-076 DH12O BLK	RA1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
86	0522-076 DH12O BLK	RA1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
87	0522-076 H2SO4 BLK	RA2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
88	0522-076 H2SO4 BLK	RA2	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
89	0522-076 R1 IMP4	RA3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
90	0522-076 R1 IMP4	RA3	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
91	0522-076 MS-R1 IMP4	RA4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
92	0522-076 MS-R1 IMP4	RA4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
93	0522-076 MSD-R1 IMP4	RA5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
94	0522-076 MSD-R1 IMP4	RA5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
95	0522-076 R2 IMP4	RA6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
96	0522-076 R2 IMP4	RA6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
97	HPLCStd1308 #SS	GA7	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
98	HPLCStd1308 #SS	GA7	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
99	HPLCStd1308 #RB	GA8	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
100	HPLCStd1308 #RB	GA8	1.0	Check Standard	AS22 ASAP	II DLM 5/17/22
101	0522-076 R3 IMP4	RA7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
102	0522-076 R3 IMP4	RA7	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
103	0522-035 R1 PA	GC1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
104	0522-035 R1 PA	GC1	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
105	0522-035 R2 PA	GC4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
106	0522-035 R2 PA	GC4	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
107	0522-076 MS-R1 PA	GE5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
108	0522-076 MS-R1 PA	GE5	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
109	0522-076 MSD-R1 PA	GE6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
110	0522-076 MSD-R1 PA	GE6	1.0	Unknown	AS22 ASAP	II DLM 5/17/22
111	HPLCStd1308 #6	GA6	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
112	HPLCStd1308 #6	GA6	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
113	HPLCStd1308 #5	GA5	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
114	HPLCStd1308 #5	GA5	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
115	HPLCStd1308 #4	GA4	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
116	HPLCStd1308 #4	GA4	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
117	HPLCStd1308 #3	GA3	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
118	HPLCStd1308 #3	GA3	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
119	HPLCStd1308 #2	GA2	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
120	HPLCStd1308 #2	GA2	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
121	HPLCStd1308 #1	GA1	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
122	HPLCStd1308 #1	GA1	1.0	Calibration Standard	AS22 ASAP	II DLM 5/17/22
123	Eq Blank	GB1	1.0	Unknown	Pump off method ASAP	

Reviewer's Initials &amp; Date:

STW 5/18/22

Raphael  
page 1117





Location: C Momeleon  
Cabinet: 2022 Q4

Drawer: Raphael  
Folder: Raphael 1231

Analyst: DLM  
Date: 10/16/22

Job #s  
1022-021  
1022-013

Describe Work Documented on This Page

MZGA - H<sub>2</sub>SO<sub>4</sub> fraction - HF, HCl

Sequence  
Timebase  
# Samples

Raphael 1231  
Raphael  
81

Supplies, Ancillary Equipment  
Serial #s, Lot #s, Etc

Mobile phase  
HPLC prep 6009  
exp: 10/31/22

Column  
Dionex IonPac AS22  
4x250mm  
SN: 211103046

- HPLC prep 6017  
(1022-021)

- HPLC prep 6021  
(1022-013)

- HPLC prep 6023  
(dilutions)

- Deleted all peaks  
Not requested by  
client - DLM 10/17/22

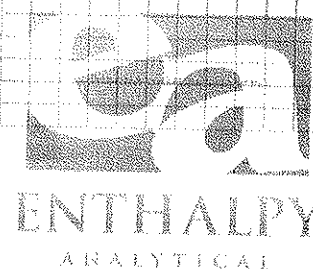
No	Injection Name	Position	Dilution	Type	Instrument/Method	Comment
1	1022-021 2WFB-R1 H2SO4	RC1	1.0	Unknown	AS22 ASAP	screen
2	1022-013 11 H2SO4	RD2	1.0	Unknown	AS22 ASAP	screen
3	1022-021 1WFB-R1 H2SO4	RC6	1.0	Unknown	AS22 ASAP	screen - 5x ok
4	eq blk	RB1	1.0	Unknown	AS22 ASAP	
5	eq blk	RB1	1.0	Unknown	AS22 ASAP	
6	HPLC Sids 1416 #6	RA6	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
7	HPLC Sids 1416 #6	RA6	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
8	HPLC Sids 1416 #5	RA5	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
9	HPLC Sids 1416 #5	RA5	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
10	HPLC Sids 1416 #4	RA4	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
11	HPLC Sids 1416 #4	RA4	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
12	HPLC Sids 1416 #3	RA3	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
13	HPLC Sids 1416 #3	RA3	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
14	HPLC Sids 1416 #2	RA2	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
15	HPLC Sids 1416 #2	RA2	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
16	HPLC Sids 1416 #1	RA1	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
17	HPLC Sids 1416 #1	RA1	1.0	Calibration Standard	AS22 ASAP	II DLM 10/7/22
18	HPLC Sids 1416 #SS	RB3	1.0	Check Standard	AS22 ASAP	II DLM 10/7/22
19	HPLC Sids 1416 #SS	RB3	1.0	Check Standard	AS22 ASAP	II DLM 10/7/22
20	HPLC Sids 1416 #RB	RB2	1.0	Check Standard	AS22 ASAP	II DLM 10/7/22
21	HPLC Sids 1416 #RB	RB2	1.0	Check Standard	AS22 ASAP	II DLM 10/7/22
22	1022-021 2WFB-R1 H2SO4	RC1	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
23	1022-021 2WFB-R1 H2SO4	RC1	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
24	1022-021 MS-2WFB-R1 H2SO4	RC2	1.0	Unknown	AS22 ASAP	u *5 II DLM 10/7/22
25	1022-021 MS-2WFB-R1 H2SO4	RC2	1.0	Unknown	AS22 ASAP	u *5 II DLM 10/7/22
26	1022-021 MSD-2WFB-R1 H2SO4	RC3	1.0	Unknown	AS22 ASAP	u *5 II DLM 10/7/22
27	1022-021 MSD-2WFB-R1 H2SO4	RC3	1.0	Unknown	AS22 ASAP	u *5 II DLM 10/7/22
28	1022-021 2WFB-R2 H2SO4	RC4	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
29	1022-021 2WFB-R2 H2SO4	RC4	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
30	1022-021 2WFB-R3 H2SO4	RC5	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
31	1022-021 2WFB-R3 H2SO4	RC5	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
32	1022-021 1WFB-R1 H2SO4	RC6	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
33	1022-021 1WFB-R1 H2SO4	RC6	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
34	1022-021 1WFB-R2 H2SO4	RC7	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
35	1022-021 1WFB-R2 H2SO4	RC7	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
36	1022-021 1WFB-R3 H2SO4	RC8	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
37	1022-021 1WFB-R3 H2SO4	RC8	5.0	Unknown	AS22 ASAP	II DLM 10/7/22
38	1022-021 Blank H2SO4	RD1	1.0	Unknown	AS22 ASAP	II DLM 10/7/22
39	1022-021 Blank H2SO4	RD1	1.0	Unknown	AS22 ASAP	II DLM 10/7/22
40	1022-013 11 H2SO4	RD2	1.0	Unknown	AS22 ASAP	II DLM 10/7/22
41	1022-013 11 H2SO4	RD2	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
42	HPLC Sids 1416 #4	RA7	1.0	Check Standard	AS22 ASAP	use for F II DLM 10/7/22
43	HPLC Sids 1416 #4	RA7	1.0	Check Standard	AS22 ASAP	II DLM 10/7/22
44	1022-013 MS-11 H2SO4	RD3	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
45	1022-013 MS-11 H2SO4	RD3	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
46	1022-013 MSD-11 H2SO4	RD4	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
47	1022-013 MSD-11 H2SO4	RD4	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
48	1022-013 12 H2SO4	RD5	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
49	1022-013 12 H2SO4	RD5	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
50	1022-013 13 H2SO4	RD6	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
51	1022-013 13 H2SO4	RD6	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
52	1022-013 H2SO4 RB	RD7	1.0	Unknown	AS22 ASAP	use for F II DLM 10/7/22
53	1022-013 H2SO4 RB	RD7	1.0	Unknown	AS22 ASAP	II DLM 10/7/22
54	1022-013 H2O RB	RD8	1.0	Unknown	AS22 ASAP	II DLM 10/7/22
55	1022-013 H2O RB	RD8	1.0	Unknown	AS22 ASAP	II DLM 10/7/22
56	1022-013 11 H2SO4	RE1	50.0	Unknown	AS22 ASAP	II DLM 10/7/22
57	1022-013 11 H2SO4	RE1	50.0	Unknown	AS22 ASAP	use for C I H DLM 10/7/22
58	1022-013 MS2-11 H2SO4	RE2	1.0	Unknown	AS22 ASAP	use for C I H DLM 10/7/22
59	1022-013 MS2-11 H2SO4	RE2	1.0	Unknown	AS22 ASAP	u *50 use for C I H DLM 10/7/22
60	1022-013 MSD2-11 H2SO4	RE3	1.0	Unknown	AS22 ASAP	u *50 use for C I H DLM 10/7/22
61	1022-013 MSD2-11 H2SO4	RE3	1.0	Unknown	AS22 ASAP	u *50 use for C I H DLM 10/7/22

21/10/22 DLM

Reviewer's Initials & Date:

SW 10/7/22

Raphael  
page 1231





Location: \_\_\_\_\_

Drawer: \_\_\_\_\_

Analyst: DLM

Cabinet: \_\_\_\_\_

Folder: \_\_\_\_\_

Date: 10/6/22

Job #s	Describe Work Documented on This Page					
62	1022-013 12 H2SO4	RE4	50.0	Unknown	AS22 ASAP	use for C1 H DLM 10/7/22
63	1022-013 12 H2SO4	RE4	50.0	Unknown	AS22 ASAP	use for C1 H DLM 10/7/22
64	HPLC Sids 1416 #SS	RB3	1.0	Check Standard	AS22 ASAP	H DLM 10/7/22
65	HPLC Sids 1416 #SS	RB3	1.0	Check Standard	AS22 ASAP	H DLM 10/7/22
66	HPLC Sids 1416 #RB	RB2	1.0	Check Standard	AS22 ASAP	H DLM 10/7/22
67	HPLC Sids 1416 #RB	RB2	1.0	Check Standard	AS22 ASAP	H DLM 10/7/22
68	1022-013 13 H2SO4	RE5	50.0	Unknown	AS22 ASAP	use for C1 H DLM 10/7/22
69	1022-013 13 H2SO4	RE5	50.0	Unknown	AS22 ASAP	use for C1 H DLM 10/7/22
70	HPLC Sids 1416 #6	RA6	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
71	HPLC Sids 1416 #6	RA6	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
72	HPLC Sids 1416 #5	RA5	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
73	HPLC Sids 1416 #5	RA5	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
74	HPLC Sids 1416 #4	RA4	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
75	HPLC Sids 1416 #4	RA4	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
76	HPLC Sids 1416 #3	RA3	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
77	HPLC Sids 1416 #3	RA3	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
78	HPLC Sids 1416 #2	RA2	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
79	HPLC Sids 1416 #2	RA2	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
80	HPLC Sids 1416 #1	RA1	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22
81	HPLC Sids 1416 #1	RA1	1.0	Calibration Standard	AS22 ASAP	H DLM 10/7/22

Cont. from  
Raphael 1231Supplies, Ancillary Equipment  
Serial #s, Lot #s, Etc

Sum 10/7/22

Sum 10/7/22

Reviewer's Initials &amp; Date:

SW 10/7/22

Raphael  
page 1232ENTHALPY  
ANALYTICAL



# Raw Data



Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Fluoride	ECD_1 Fluoride		
3	HPLCStd1424 #6	13/Oct/2022 18:48	BA6	06	30.0000	Ok	1.0000	25.00
4	HPLCStd1424 #6	13/Oct/2022 19:19	BA6	06	30.0000	Ok	1.0000	25.00
5	HPLCStd1424 #5	13/Oct/2022 19:51	BA5	05	20.0000	Ok	1.0000	25.00
6	HPLCStd1424 #5	13/Oct/2022 20:22	BA5	05	20.0000	Ok	1.0000	25.00
7	HPLCStd1424 #4	13/Oct/2022 20:53	BA4	04	15.0000	Ok	1.0000	25.00
8	HPLCStd1424 #4	13/Oct/2022 21:24	BA4	04	15.0000	Ok	1.0000	25.00
9	HPLCStd1424 #3	13/Oct/2022 21:55	BA3	03	10.0000	Ok	1.0000	25.00
10	HPLCStd1424 #3	13/Oct/2022 22:26	BA3	03	10.0000	Ok	1.0000	25.00
11	HPLCStd1424 #2	13/Oct/2022 22:57	BA2	02	5.0000	Ok	1.0000	25.00
12	HPLCStd1424 #2	13/Oct/2022 23:28	BA2	02	5.0000	Ok	1.0000	25.00
13	HPLCStd1424 #1	13/Oct/2022 23:59	BA1	01	1.0000	Ok	1.0000	25.00
14	HPLCStd1424 #1	14/Oct/2022 00:31	BA1	01	1.0000	Ok	1.0000	25.00
42	HPLCStd1424 #6	14/Oct/2022 15:01	BA6	06	30.0000	Ok	1.0000	25.00
43	HPLCStd1424 #6	14/Oct/2022 15:33	BA6	06	30.0000	Ok	1.0000	25.00
44	HPLCStd1424 #5	14/Oct/2022 16:04	BA5	05	20.0000	Ok	1.0000	25.00
45	HPLCStd1424 #5	14/Oct/2022 16:35	BA5	05	20.0000	Ok	1.0000	25.00
46	HPLCStd1424 #4	14/Oct/2022 17:06	BA4	04	15.0000	Ok	1.0000	25.00
47	HPLCStd1424 #4	14/Oct/2022 17:37	BA4	04	15.0000	Ok	1.0000	25.00
48	HPLCStd1424 #3	14/Oct/2022 18:08	BA3	03	10.0000	Ok	1.0000	25.00
49	HPLCStd1424 #3	14/Oct/2022 18:39	BA3	03	10.0000	Ok	1.0000	25.00
50	HPLCStd1424 #2	14/Oct/2022 19:10	BA2	02	5.0000	Ok	1.0000	25.00
51	HPLCStd1424 #2	14/Oct/2022 19:41	BA2	02	5.0000	Ok	1.0000	25.00
52	HPLCStd1424 #1	14/Oct/2022 20:13	BA1	01	1.0000	Ok	1.0000	25.00
53	HPLCStd1424 #1	14/Oct/2022 20:44	BA1	01	1.0000	Ok	1.0000	25.00

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	Off	Any	All Channels
Always	Baseline Noise Start Time	14.737 [min]	Any	All Channels
Always	Baseline Noise End Time	22.493 [min]	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
1.256	Inhibit Integration	Off	Any	All Channels
7.220	Inhibit Integration	On	Any	All Channels

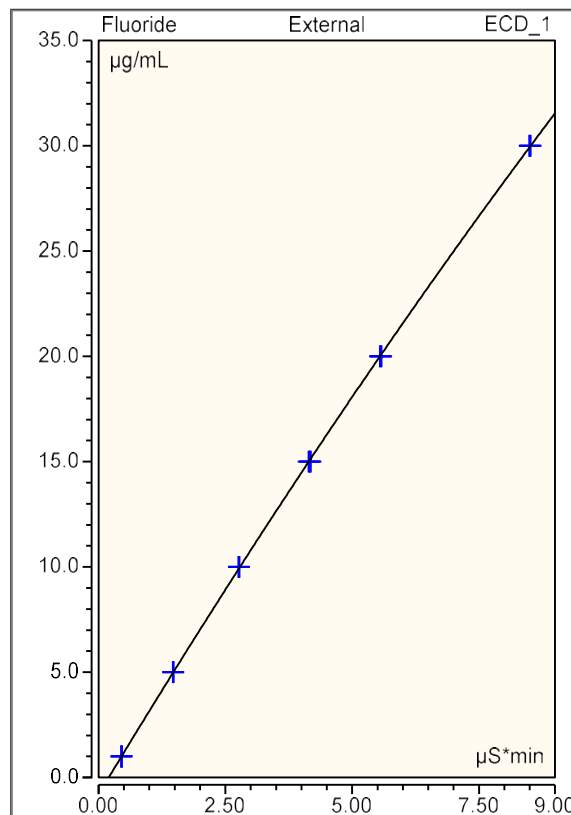


## Calibration Batch Report

Sequence:	Raphael1234b	Injection Volume:	25.00
Instrument Method:	AS22 ASAP Base	Operator:	dlmckee
Inj. Date / Time:	14-Oct-2022 / 01:02	Run Time:	29.5

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	-0.797	3.999	-0.045	99.997
AVERAGE:				-0.7966	3.9993	-0.0451	99.9969

Injection Name	Ret. Time min ECD 1	Area $\mu\text{S} \cdot \text{min}$ ECD 1	Height $\mu\text{S}$ ECD 1	Amount $\mu\text{g/mL}$ ECD 1
HPLCStd1424 #6	3.060	8.493	33.673	29.919
HPLCStd1424 #6	3.060	8.502	33.649	29.949
HPLCStd1424 #5	3.053	5.545	21.819	19.993
HPLCStd1424 #5	3.053	5.555	21.755	20.029
HPLCStd1424 #4	3.047	4.184	16.171	15.147
HPLCStd1424 #4	3.047	4.139	16.035	14.983
HPLCStd1424 #3	3.040	2.758	10.415	9.891
HPLCStd1424 #3	3.040	2.768	10.426	9.930
HPLCStd1424 #2	3.033	1.465	5.197	4.967
HPLCStd1424 #2	3.030	1.473	5.189	4.997
HPLCStd1424 #1	3.010	0.457	1.404	1.023
HPLCStd1424 #1	3.010	0.454	1.401	1.011
HPLCStd1424 #6	3.057	8.519	33.660	30.005
HPLCStd1424 #6	3.057	8.509	33.534	29.971
HPLCStd1424 #5	3.047	5.577	21.840	20.106
HPLCStd1424 #5	3.047	5.564	21.742	20.060
HPLCStd1424 #4	3.043	4.164	16.060	15.076
HPLCStd1424 #4	3.043	4.163	16.129	15.070
HPLCStd1424 #3	3.037	2.765	10.433	9.917
HPLCStd1424 #3	3.037	2.777	10.476	9.963
HPLCStd1424 #2	3.030	1.476	5.234	5.009
HPLCStd1424 #2	3.030	1.473	5.209	4.997
HPLCStd1424 #1	3.010	0.447	1.396	0.982
HPLCStd1424 #1	3.007	0.451	1.404	0.997





## 1.00 validated 12/10/08 VR

Calculation of MDL per SOP ENT-027

Enter values into the highlighted cells.

Date Analyzed 10/14/22  
 Analyst DLM  
 Date Reviewed 10/19/22  
 Reviewed By AMC

Seven (or more) replicates of a low concentration preparation are made. The worst injection(s) (farthest from the mean area) may be removed assuming an appropriate Outlier Test calculation shows the value(s) to be an outlier. At least seven injections must remain.

Instrument Raphael  
 Logbook Page Raphael1234b  
 Injector (F,R,NA)  
 Column Dionex AS22 SN: 211103046  
 Injector (F,R,NA)  
 Column

MDL = Stdev \* Student's t-value

t-value = 3.143 N=7 Degrees of Freedom = 6  
 t-value = 2.998 N=8 Degrees of Freedom = 7  
 t-value = 2.896 N=9 Degrees of Freedom = 8  
 t-value = 2.821 N=10 Degrees of Freedom = 9

Job #(s) 1022-013  
 Applicable Method(s) Modified M26 - NaOH fraction for F  
 Matrix 0.1 N NaOH  
 Solvent

Compound #	1	2	3	4	5	6	7
Compound Name	Fluoride						
Notes (if needed)							

Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Test Std Concentrations	#1 0.99830	#1	#1 0.00000	#1 0.00000	#1 0.00000	#1 0.00000	#1 0.00000
	#2 1.03610	#2	#2 0.00000	#2 0.00000	#2 0.00000	#2 0.00000	#2 0.00000
	#3 1.01910	#3	#3 0.00000	#3 0.00000	#3 0.00000	#3 0.00000	#3 0.00000
	#4 0.99690	#4	#4 0.00000	#4 0.00000	#4 0.00000	#4 0.00000	#4 0.00000
	#5 1.01060	#5	#5 0.00000	#5 0.00000	#5 0.00000	#5 0.00000	#5 0.00000
	#6 1.00720	#6	#6 0.00000	#6 0.00000	#6 0.00000	#6 0.00000	#6 0.00000
	#7 1.04000	#7	#7 0.00000	#7 0.00000	#7 0.00000	#7 0.00000	#7 0.00000
	#8 1.03760	#8	#8 0.00000	#8 0.00000	#8 0.00000	#8 0.00000	#8 0.00000
!! Remove extra zeros !!	#9 1.02330	#9	#9 0.00000	#9 0.00000	#9 0.00000	#9 0.00000	#9 0.00000
	#10	#10	#10 0.00000	#10 0.00000	#10 0.00000	#10 0.00000	#10 0.00000
Standard Deviation	0.0167	#DIV/0!	0.0000	0.0000	0.0000	0.0000	0.0000
Student's T factor	2.896	0.000	2.821	2.821	2.821	2.821	2.821
Calculated MDL = StDev * t	0.048	#DIV/0!	0.000	0.000	0.000	0.000	0.000
Concentration of Std	1.000	0.000	0.000	0.000	0.000	0.000	0.000
Lowest Part 136 App B value*	0.100	0.000	0.000	0.000	0.000	0.000	0.000
MDL value <1/10 Std Value?	<1/10 Conc of Std	#DIV/0!	Pass	Pass	Pass	Pass	Pass
MDL to Use	0.10000	#DIV/0!	0.00000	0.00000	0.00000	0.00000	0.00000

\*40 CFR Part 136 Appendix B, a common detection limit guidance, indicates that the MDL can not be <1/10th the standard used to set the MDL. MDL to use is the maximum of the Calculated MDL, lowest integratable concentration and the Lowest Part 136 B value.



Calibration Table

No.	Injection Name	Inject Time	Pos.	Level	Ref.Amount	Calibration Point Status	Dil.Factor	Volume
					µg/mL ECD_1 Fluoride	ECD_1 Fluoride		
3	HPLCStd1424 #6	13/Oct/2022 18:48	BA6	06	30.0000	Ok	1.0000	25.00
4	HPLCStd1424 #6	13/Oct/2022 19:19	BA6	06	30.0000	Ok	1.0000	25.00
5	HPLCStd1424 #5	13/Oct/2022 19:51	BA5	05	20.0000	Ok	1.0000	25.00
6	HPLCStd1424 #5	13/Oct/2022 20:22	BA5	05	20.0000	Ok	1.0000	25.00
7	HPLCStd1424 #4	13/Oct/2022 20:53	BA4	04	15.0000	Ok	1.0000	25.00
8	HPLCStd1424 #4	13/Oct/2022 21:24	BA4	04	15.0000	Ok	1.0000	25.00
9	HPLCStd1424 #3	13/Oct/2022 21:55	BA3	03	10.0000	Ok	1.0000	25.00
10	HPLCStd1424 #3	13/Oct/2022 22:26	BA3	03	10.0000	Ok	1.0000	25.00
11	HPLCStd1424 #2	13/Oct/2022 22:57	BA2	02	5.0000	Ok	1.0000	25.00
12	HPLCStd1424 #2	13/Oct/2022 23:28	BA2	02	5.0000	Ok	1.0000	25.00
13	HPLCStd1424 #1	13/Oct/2022 23:59	BA1	01	1.0000	Ok	1.0000	25.00
14	HPLCStd1424 #1	14/Oct/2022 00:31	BA1	01	1.0000	Ok	1.0000	25.00
42	HPLCStd1424 #6	14/Oct/2022 15:01	BA6	06	30.0000	Ok	1.0000	25.00
43	HPLCStd1424 #6	14/Oct/2022 15:33	BA6	06	30.0000	Ok	1.0000	25.00
44	HPLCStd1424 #5	14/Oct/2022 16:04	BA5	05	20.0000	Ok	1.0000	25.00
45	HPLCStd1424 #5	14/Oct/2022 16:35	BA5	05	20.0000	Ok	1.0000	25.00
46	HPLCStd1424 #4	14/Oct/2022 17:06	BA4	04	15.0000	Ok	1.0000	25.00
47	HPLCStd1424 #4	14/Oct/2022 17:37	BA4	04	15.0000	Ok	1.0000	25.00
48	HPLCStd1424 #3	14/Oct/2022 18:08	BA3	03	10.0000	Ok	1.0000	25.00
49	HPLCStd1424 #3	14/Oct/2022 18:39	BA3	03	10.0000	Ok	1.0000	25.00
50	HPLCStd1424 #2	14/Oct/2022 19:10	BA2	02	5.0000	Ok	1.0000	25.00
51	HPLCStd1424 #2	14/Oct/2022 19:41	BA2	02	5.0000	Ok	1.0000	25.00
52	HPLCStd1424 #1	14/Oct/2022 20:13	BA1	01	1.0000	Ok	1.0000	25.00
53	HPLCStd1424 #1	14/Oct/2022 20:44	BA1	01	1.0000	Ok	1.0000	25.00

Detection Parameters

Ret. Time min	Param. Name	Param. Value	Inj. Type	Channel
Always	Baseline Noise Auto Range	Off	Any	All Channels
Always	Baseline Noise Start Time	14.737 [min]	Any	All Channels
Always	Baseline Noise End Time	22.493 [min]	Any	All Channels
Always	Cobra Smoothing Width	Auto	Any	All Channels
Always	Consider Void Peak	Off	Any	All Channels
0.000	Maximum Rider Ratio	10 [%]	Any	All Channels
0.000	Tailing Sensitivity Factor	0.100 [%]	Any	All Channels
0.000	Inhibit Integration	On	Any	All Channels
0.000	Minimum Area	Auto	Any	All Channels
1.256	Inhibit Integration	Off	Any	All Channels
7.220	Inhibit Integration	On	Any	All Channels

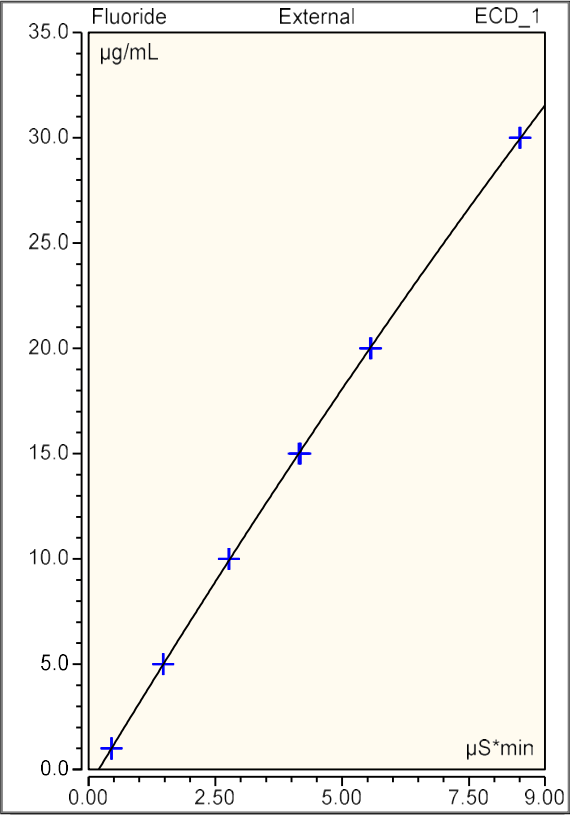


Calibration Batch Report

Sequence:	Raphael1234b	Injection Volume:	25.00
Instrument Method:	AS22 ASAP Base	Operator:	dlmckee
Inj. Date / Time:	14-Oct-2022 / 01:02	Run Time:	29.5

Calibration Summary							
Peak Name	Eval.Type	Cal.Type	Points	Offset (C0)	Slope (C1)	Curve (C2)	Coeff.Det. %
Fluoride	Area	Quad, WithOffset, 1/A	24.000	-0.797	3.999	-0.045	99.997
AVERAGE:				-0.7966	3.9993	-0.0451	99.9969

Injection Name	Ret. Time min ECD 1	Area $\mu\text{S}\cdot\text{min}$ ECD 1	Height $\mu\text{S}$ ECD 1	Amount $\mu\text{g/mL}$ ECD 1
HPLCStd1424 #6	3.060	8.493	33.673	29.919
HPLCStd1424 #6	3.060	8.502	33.649	29.949
HPLCStd1424 #5	3.053	5.545	21.819	19.993
HPLCStd1424 #5	3.053	5.555	21.755	20.029
HPLCStd1424 #4	3.047	4.184	16.171	15.147
HPLCStd1424 #4	3.047	4.139	16.035	14.983
HPLCStd1424 #3	3.040	2.758	10.415	9.891
HPLCStd1424 #3	3.040	2.768	10.426	9.930
HPLCStd1424 #2	3.033	1.465	5.197	4.967
HPLCStd1424 #2	3.030	1.473	5.189	4.997
HPLCStd1424 #1	3.010	0.457	1.404	1.023
HPLCStd1424 #1	3.010	0.454	1.401	1.011
HPLCStd1424 #6	3.057	8.519	33.660	30.005
HPLCStd1424 #6	3.057	8.509	33.534	29.971
HPLCStd1424 #5	3.047	5.577	21.840	20.106
HPLCStd1424 #5	3.047	5.564	21.742	20.060
HPLCStd1424 #4	3.043	4.164	16.060	15.076
HPLCStd1424 #4	3.043	4.163	16.129	15.070
HPLCStd1424 #3	3.037	2.765	10.433	9.917
HPLCStd1424 #3	3.037	2.777	10.476	9.963
HPLCStd1424 #2	3.030	1.476	5.234	5.009
HPLCStd1424 #2	3.030	1.473	5.209	4.997
HPLCStd1424 #1	3.010	0.447	1.396	0.982
HPLCStd1424 #1	3.007	0.451	1.404	0.997





Location: ChromeleonDrawer: RaphaelAnalyst: DLMCabinet: 2022 Q4Folder: Raphael 1234Date: 10/11/22

Job #s

1022-013

Describe Work Documented on This Page

MZLeA (modified) NaOH fraction - Fluoride

Dum 10/13/22 - moved sequence to "Raphael 1234b" due to having no MDL for Fin NaOH on this instrument during original run.

Supplies, Ancillary Equipment  
Serial #s, Lot #s, EtcMobile phaseHPLC prep 6009 ②exp 10/31/22 ②ColumnDionex Ion Pac AS224x250mmSN: 21103046- HPLC prep 6021- Dum 10/12/22

Deleted peaks  
not requested by  
client.

- Dum 10/12/22DownloadedNaOH PB fresh

from client bottle  
into new poly A.S. vial  
for confirmation.

② Dum 10/17/22

NaOH-PB = j-f lag.  
Confirmation run due  
to PB having higher F  
result than other  
samples (all n.d.)

Sequence: Rapha 1234b  
Functions: Raphael  
# Samples: 54

No	Injection Name	Position	Dilution	Type	Instrument/Method	Comment
1	Eq. Blank	BB1	1.0	Unknown	AS22 ASAP Base	
2	Eq. Blank	BB1	1.0	Unknown	AS22 ASAP Base	
3	HPLC Sids 1424 #6	BA6	1.0	Calibration Standard	AS22 ASAP Base	
4	HPLC Sids 1424 #6	BA6	1.0	Calibration Standard	AS22 ASAP Base	
5	HPLC Sids 1424 #5	BA5	1.0	Calibration Standard	AS22 ASAP Base	
6	HPLC Sids 1424 #5	BA5	1.0	Calibration Standard	AS22 ASAP Base	
7	HPLC Sids 1424 #4	BA4	1.0	Calibration Standard	AS22 ASAP Base	
8	HPLC Sids 1424 #4	BA4	1.0	Calibration Standard	AS22 ASAP Base	
9	HPLC Sids 1424 #3	BA3	1.0	Calibration Standard	AS22 ASAP Base	
10	HPLC Sids 1424 #3	BA3	1.0	Calibration Standard	AS22 ASAP Base	
11	HPLC Sids 1424 #2	BA2	1.0	Calibration Standard	AS22 ASAP Base	
12	HPLC Sids 1424 #2	BA2	1.0	Calibration Standard	AS22 ASAP Base	
13	HPLC Sids 1424 #1	BA1	1.0	Calibration Standard	AS22 ASAP Base	
14	HPLC Sids 1424 #1	BA1	1.0	Calibration Standard	AS22 ASAP Base	
15	HPLC Sids 1424 #SS	BB3	1.0	Check Standard	AS22 ASAP Base	
16	HPLC Sids 1424 #SS	BB3	1.0	Check Standard	AS22 ASAP Base	
17	HPLC Sids 1424 #RB	BB2	1.0	Check Standard	AS22 ASAP Base	
18	HPLC Sids 1424 #RB	BB2	1.0	Check Standard	AS22 ASAP Base	
19	HPLC Sids 1424 #1	BE1	1.0	Unknown	AS22 ASAP Base	
20	HPLC Sids 1424 #1	BE1	1.0	Unknown	AS22 ASAP Base	
21	HPLC Sids 1424 #1	BE1	1.0	Unknown	AS22 ASAP Base	
22	HPLC Sids 1424 #1	BE2	1.0	Unknown	AS22 ASAP Base	
23	HPLC Sids 1424 #1	BE2	1.0	Unknown	AS22 ASAP Base	
24	HPLC Sids 1424 #1	BE2	1.0	Unknown	AS22 ASAP Base	
25	HPLC Sids 1424 #1	BE3	1.0	Unknown	AS22 ASAP Base	
26	HPLC Sids 1424 #1	BE3	1.0	Unknown	AS22 ASAP Base	
27	HPLC Sids 1424 #1	BE3	1.0	Unknown	AS22 ASAP Base	
28	HPLC Sids 1424 #4	BA7	1.0	Check Standard	AS22 ASAP Base	
29	HPLC Sids 1424 #4	BA7	1.0	Check Standard	AS22 ASAP Base	
30	1022-013.11 NaOH	BC1	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
31	1022-013.11 NaOH	BC1	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
32	1022-013.11 NaOH	BC2	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
33	1022-013.11 NaOH	BC2	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
34	1022-013.11 NaOH	BC3	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
35	1022-013.11 NaOH	BC3	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
36	1022-013.12 NaOH	BC4	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
37	1022-013.12 NaOH	BC4	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
38	1022-013.13 NaOH	BC5	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
39	1022-013.13 NaOH	BC5	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
40	1022-013.13 NaOH	BC6	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
41	1022-013.13 NaOH	BC6	1.0	Unknown	AS22 ASAP Base	11 DLM 10/14/22
42	HPLC Sids 1424 #6	BA6	1.0	Calibration Standard	AS22 ASAP Base	
43	HPLC Sids 1424 #6	BA6	1.0	Calibration Standard	AS22 ASAP Base	
44	HPLC Sids 1424 #5	BA5	1.0	Calibration Standard	AS22 ASAP Base	
45	HPLC Sids 1424 #5	BA5	1.0	Calibration Standard	AS22 ASAP Base	
46	HPLC Sids 1424 #4	BA4	1.0	Calibration Standard	AS22 ASAP Base	
47	HPLC Sids 1424 #4	BA4	1.0	Calibration Standard	AS22 ASAP Base	
48	HPLC Sids 1424 #3	BA3	1.0	Calibration Standard	AS22 ASAP Base	
49	HPLC Sids 1424 #3	BA3	1.0	Calibration Standard	AS22 ASAP Base	
50	HPLC Sids 1424 #2	BA2	1.0	Calibration Standard	AS22 ASAP Base	
51	HPLC Sids 1424 #2	BA2	1.0	Calibration Standard	AS22 ASAP Base	
52	HPLC Sids 1424 #1	BA1	1.0	Calibration Standard	AS22 ASAP Base	
53	HPLC Sids 1424 #1	BA1	1.0	Calibration Standard	AS22 ASAP Base	
54	Eq. Blank	BB1	1.0	Unknown	Pump off method ASAP	

② Dum 10/17/22 - switched to HPLC prep 6045 (exp: 11/13/22) before "B" sequence started.

Reviewer's Initials &amp; Date:

SJT 10/17/2022Raphael  
page 1234ENTHALPY  
ANALYTICAL



**This Is The Last Page  
Of This Report.**



# **AECOM**

1600 Perimeter Park Dr. Suite 400  
Morrisville, NC 28560

Project Number: 60682866

Antimony, Arsenic, Beryllium, Cadmium, Chromium,  
Cobalt, Lead, Manganese, Nickel,  
Selenium & Mercury

EPA Method 29 Analysis

Analytical Report  
39452



Element One, Inc.  
6319-D Carolina Beach Rd., Wilmington, NC 28412  
910-793-0128 FAX: 910-792-6853 [e1lab@e1lab.com](mailto:e1lab@e1lab.com)



The following data for Analytical Report 39452  
has been reviewed for completeness, accuracy,  
adherence to method protocol,  
and compliance with quality assurance guidelines.

Review by:

A handwritten signature in black ink, appearing to read 'Daphne', with a long horizontal line extending to the right.

Daphne Woodman, B.S. Chemist  
October 21, 2022

Report Reviewed and Finalized by:

A handwritten signature in black ink, appearing to read 'Ken Smith', with a large 'S' and 'M'.

Ken Smith, Laboratory Director  
October 21, 2022



# **SUMMARY OF RESULTS**



## Summary of Analysis

### Summary of Method 29 Mercury Analysis

Run Number		Average Total Catch, µg	Front Half µg	5% HNO <sub>3</sub> / 10% H <sub>2</sub> O <sub>2</sub> µg	Empty Impinger µg	KMnO <sub>4</sub> µg	HCl µg
Bypass Vent 6 STK-11-R1	#1	80.9	< 0.02*	28.6	35.7	13.0	3.21
	#2		< 0.02*	28.7	36.4	13.1	3.21
Bypass Vent 6 STK-12-R2	#1	45.5	< 0.02*	19.2	4.31	3.86	18.0
	#2		< 0.02*	19.1	4.38	3.91	18.2
Bypass Vent 6 STK-12-R2 Dup	#1	45.1	< 0.02*	19.2	4.29	4.04	17.5
	#2		< 0.02*	19.2	4.32	4.07	17.6
Bypass Vent 6 STK-13-R3	#1	36.0	< 0.02*	18.3	2.66	2.75	12.3
	#2		< 0.02*	18.2	2.68	2.74	12.4
Field Blank	#1	0.456*	< 0.02*	0.287*	0.053*	0.105*	< 0.08*
	#2		< 0.02*	0.284*	0.057*	0.126*	< 0.08*
Reagent Blank	#1	< 0.08*	< 0.02*	0.053*	< 0.04*	< 0.1*	< 0.08*
	#2		< 0.02*	0.058*	< 0.04*	< 0.1*	< 0.08*

\*J-value, for informational purposes only.



## Summary of Analysis

### Front Half - Summary of Method 29 Metals Analysis

	Bypass Vent 6- Stk-11-M29-R1 e39452-1 FH	Bypass Vent 6- Stk-12-M29-R2 e39452-2 FH	Bypass Vent 6- Stk-12-M29-R2 e39452-2 FH dup	Bypass Vent 6- Stk-13-M29-R3 e39452-3 FH
Element	Total µg	Total µg	Total µg	Total µg
Antimony	50.2	60.2	59.6	52.3
Arsenic	236	354	317	222
Beryllium	5.09	4.86	4.85	5.42
Cadmium	20.8	17.9	17.9	30.7
Chromium	23.6	20.0	19.8	21.0
Cobalt	21.9	20.2	20.1	30.3
Lead	1132	1318	1195	1508
Manganese	14.3	15.6	15.5	10.4
Nickel	104	85.7	84.7	189
Selenium	21.6	16.6	16.5	18.3

### Back Half - Summary of Method 29 Metals Analysis

	Bypass Vent 6- Stk-11-M29-R1 e39452-1 BH	Bypass Vent 6- Stk-12-M29-R2 e39452-2 BH	Bypass Vent 6- Stk-12-M29-R2 e39452-2 BH dup	Bypass Vent 6- Stk-13-M29-R3 e39452-3 BH
Element	Total µg	Total µg	Total µg	Total µg
Antimony	0.165	0.105	0.075*	1.76
Arsenic	256	314	261	321
Beryllium	0.014*	0.021*	< 0.004*	0.005*
Cadmium	0.106	0.047*	0.051*	0.040*
Chromium	13.6	5.98	5.84	7.78
Cobalt	0.346	0.996	0.994	1.41
Lead	4.43	3.24	3.00	3.26
Manganese	4.01	2.62	2.67	3.46
Nickel	69.8	9.79	9.34	9.98
Selenium	190	283	253	246

\*J-value, for informational purposes only.



## Summary of Analysis

### Blanks - Summary of Method 29 Metals Analysis

Element	Field Blank	Reagent Blank	Field Blank	Reagent Blank
	Front Half e39452-4 FH Total µg	Front Half e39452-5 FH Total µg	Back Half e39452-4 BH Total µg	Back Half e39452-5 BH Total µg
Antimony	0.711	< 0.05*	0.089*	< 0.05*
Arsenic	4.95	< 0.051*	1.05	0.153
Beryllium	0.045	< 0.004*	0.010*	0.012*
Cadmium	0.258	0.021*	< 0.011*	< 0.011*
Chromium	2.06	1.37	5.26	0.772
Cobalt	0.205	< 0.017*	0.124	0.043*
Lead	28.3	0.845	1.67	0.309
Manganese	1.11	0.493	1.27	0.403
Nickel	3.19	2.04	5.35	0.334
Selenium	0.561	< 0.047*	0.644	0.092*

\*J-value, for informational purposes only.



# **ANALYTICAL NARRATIVE**



## Element One Analytical Narrative

Client:	AECOM	Element One #:	39452
Client ID:	60682866	Analyst:	DAZ, RMH
Method:	Method 29	Dates Received:	10/07/22
Analytes:	Sb, As, Be, Cd, Cr, Co, Pb, Mn, Ni, Se & Hg	Dates Analyzed:	10/19-21/22

### Summary of Analysis

The Method 29 samples were digested, prepared, and analyzed according to Method 29 protocol. Samples were analyzed for mercury on a PerkinElmer FIMS-100 CVAA mercury analyzer. The samples were analyzed for the other metals on a PerkinElmer Nexlon 1000 ICP-MS.

### Detection Limits

The FIMS-100 CVAA instrument reporting limit for mercury was 0.004 µg per aliquot analyzed. The ICP-MS instrument reporting limits were 0.25µg/L for beryllium and 1.0µg/L for the other metals.

### Analysis QA/QC

Duplicate analyses relative percent difference (RPD), spike sample recovery, and second source calibration verification data are summarized in the Quality Control Section.

\*Ref. page 12; back half spike recoveries for sample Bypass Vent 6-Stk-13-M29-R3 were outside of laboratory guidelines of 75-125% at a one-fold dilution for beryllium and cadmium. Sample was reanalyzed at a five-fold dilution resulting in acceptable recoveries summarized in the table below. All other QA/QC data was within criteria of the method.

	Bypass Vent 6- Stk-13-M29-R3 X1	Bypass Vent 6- Stk-13-M29-R3 X5
Element	Recovery	Recovery
-----	-----	-----
Beryllium	60%	83%
Cadmium	57%	82%

### Additional Comments

The reported results have not been corrected for any blank values or spike recovery values. The reported results relate only to the items tested or calibrated.



## Element One Analytical Narrative

### Additional Comments

The ICP analysis of the blank samples revealed detectable traces of metals. The individual fractions of the blank samples were analyzed to identify the source of the metals; results are summarized in the table below.

Element	Field Blank e39452-4 FH Total µg	Field Blank e39452-4 BH Total µg	Field Blank e39452-4 BH undigested Total µg
Antimony	0.711	0.089*	< 0.146*
Arsenic	4.95	1.05	1.34
Beryllium	0.045	0.010*	< 0.011*
Cadmium	0.258	< 0.011*	< 0.032*
Chromium	2.06	5.26	5.54
Cobalt	0.205	0.124	0.104*
Lead	28.3	1.67	1.92
Manganese	1.11	1.27	1.22
Nickel	3.19	5.35	6.18
Selenium	0.561	0.644	1.01

Element	Reagent Blank e39452-5 FH Total µg	Reagent Blank e39452-5 BH Total µg	Reagent Blank e39452-5 c8A Total µg	Reagent Blank e39452-5c8Ac9 Total µg
Antimony	< 0.05*	< 0.05*	< 0.051*	< 0.151*
Arsenic	< 0.051*	0.153	< 0.153*	< 0.153*
Beryllium	< 0.004*	0.012*	< 0.011*	< 0.011*
Cadmium	0.021*	< 0.011*	< 0.033*	< 0.033*
Chromium	1.37	0.772	0.242*	0.528
Cobalt	< 0.017*	0.043*	< 0.05*	< 0.05*
Lead	0.845	0.309	0.143*	< 0.108*
Manganese	0.493	0.403	0.154	0.161*
Nickel	2.04	0.334	< 0.163*	0.210*
Selenium	< 0.047*	0.092*	< 0.14*	< 0.108*

\*J-value, for informational purposes only.

Per client's request, results below the reporting limit were calculated and flagged as J-values using Element One's MDL's. J-values are results below the reporting limit and should be used for informational purposes only. Element One's MDL's are listed in the table below.

Element	µg/L	Element	µg/L
Antimony	0.502	Lead	0.359
Arsenic	0.509	Manganese	0.488
Beryllium	0.038	Nickel	0.544
Cadmium	0.109	Selenium	0.467
Chromium	0.576		
Cobalt	0.167	Mercury	0.0008 µg



# **QUALITY CONTROL SUMMARY**



## Summary of Quality Control Data

### Mercury Duplicate Injection RPD

(Method 29 QC limits: < 10% for RPD)

Run Number	Front Half	5% HNO <sub>3</sub> / 10% H <sub>2</sub> O <sub>2</sub>	Empty Imp	KMnO <sub>4</sub>	HCl
Bypass Vent 6 STK-11-R1	NA	0.4%	1.8%	1.2%	0.1%
Bypass Vent 6 STK-12-R2	NA	0.6%	1.6%	1.3%	0.9%
Bypass Vent 6 STK-12-R2 Dup	NA	0.1%	0.6%	0.6%	0.5%
Bypass Vent 6 STK-13-R3	NA	0.5%	0.8%	0.3%	0.6%
Field Blank	NA	NA	NA	NA	NA
Reagent Blank	NA	NA	NA	NA	NA

### Mercury Duplicate Analysis RPD

(Method 29 QC limits: < 20% for RPD)

Run Number	Front Half	5% HNO <sub>3</sub> / 10% H <sub>2</sub> O <sub>2</sub>	Empty Imp	KMnO <sub>4</sub>	HCl
Bypass Vent 6 STK-12-R2 Dup	NA	0.3%	1.0%	4.4%	2.8%

### Mercury Spike Recoveries

(Method 29 QC limits: 75-125% for Spike Recoveries)

Run Number		Front Half	5% HNO <sub>3</sub> / 10% H <sub>2</sub> O <sub>2</sub>	Empty Imp	KMnO <sub>4</sub>	HCl
Bypass Vent 6 STK-13-R3	#1	99%	93%	99%	100%	101%
	#2	100%	93%	100%	101%	102%



## Summary of Quality Control Data

### Metals Duplicate Analysis RPD

(Method 29 QC limits: < 20% for RPD)

Bypass Vent 6-Stk-12-M29-R2      Bypass Vent 6-Stk-12-M29-R2

Element	Front Half RPD	Back Half RPD
Antimony	1.0%	NA
Arsenic	11.1%	18.4%
Beryllium	0.4%	NA
Cadmium	0.1%	NA
Chromium	0.8%	2.3%
Cobalt	0.8%	0.2%
Lead	9.8%	7.6%
Manganese	0.3%	2.3%
Nickel	1.1%	4.7%
Selenium	0.6%	11.0%

### Metals Analysis Spike Recoveries

(Method 29 QC limits: 75-125% for Spike Recoveries)

Bypass Vent 6-Stk-13-M29-R3      Bypass Vent 6-Stk-13-M29-R3

Element	Front Half RPD	Back Half RPD
Antimony	94%	75%
Arsenic	98%	93%
Beryllium	98%	*60%
Cadmium	97%	*57%
Chromium	100%	111%
Cobalt	101%	117%
Lead	103%	78%
Manganese	99%	110%
Nickel	102%	89%
Selenium	100%	94%

\*See Analytical Narrative page 8.



## Summary of Quality Control Data

### Second Source Calibration Check Recoveries

(Method 29 QC limits:  $\pm 10\%$  for Second Source Continuing Check Standard\*)

Element	0.25 ppb	1 ppb	25 ppb	50 ppb*	75 ppb
Antimony		103%	95%	94%	103%
Arsenic		100%	99%	96%	103%
Beryllium	98%	101%	98%	96%	102%
Cadmium		102%	100%	97%	101%
Chromium		104%	102%	99%	102%
Cobalt		102%	100%	98%	101%
Lead		104%	101%	98%	104%
Manganese		102%	98%	97%	100%
Nickel		101%	98%	96%	101%
Selenium		100%	101%	98%	104%



# **SAMPLE CUSTODY**





**Chain of Custody Record**  
**Samples from Multi-Metals Sampling Trains**

39452  
Page 1 of 2

Project <b>VS6</b>			Metals by ICPEES - SW-846 Method 6010B	Mercury by CVM4 - SW-846 Method 7570A				Hold	MS/MSD	Comments
Site <b>HHO</b>										
Project Number <b>60682866</b>										
Prepared by <b>FJS</b>										
Sample ID Code	Sample Matrix	Date/Time								
Bypass Vent 6-Stk-11-M29-PNR	Probe and Nozzle Rinse	7/28/2002 15:45	X	X						
Bypass Vent 6-Stk-11-M29-Filt	Filter		X	X						
Bypass Vent 6-Stk-11-M29-NPI	Nitric/Peroxide Impingers		X	X						
Bypass Vent 6-Stk-11-M29-EIR	Empty Impinger Rinse		X	X						
Bypass Vent 6-Stk-11-M29-Perm	Permanganate Impinger		X	X						
Bypass Vent 6-Stk-11-M29-HCIRns	HCl Rinse of Permanganate Imp		X	X						
Bypass Vent 6-Stk-12-M29-PNR	Probe and Nozzle Rinse	7/28/2002 21:23	X	X						
Bypass Vent 6-Stk-12-M29-Filt	Filter		X	X						
Bypass Vent 6-Stk-12-M29-NPI	Nitric/Peroxide Impingers		X	X						
Bypass Vent 6-Stk-12-M29-EIR	Empty Impinger Rinse		X	X						
Bypass Vent 6-Stk-12-M29-Perm	Permanganate Impinger		X	X						
Bypass Vent 6-Stk-12-M29-HCIRns	HCl Rinse of Permanganate Imp		X	X						
Bypass Vent 6-Stk-13-M29-PNR	Probe and Nozzle Rinse	7/29/2002 20:15	X	X						
Bypass Vent 6-Stk-13-M29-Filt	Filter		X	X						
Bypass Vent 6-Stk-13-M29-NPI	Nitric/Peroxide Impingers		X	X						
Remarks: Provide results in total micrograms per sample. Raw data package required Antimony, Arsenic, Barium, Cadmium, Chromium, Cobalt, Lead, Manganese, Mercury, Nickel, Selenium										
Relinquished by: Andrew Hubel	Date/Time 10/3/22 11:46	Relinquished by: Alexandra M. Mullen	Date/Time 10-7-22 0900	Relinquished by: [Signature]	Date/Time 10-7-22 09:50					
Received by: Alexandra M. Mullen	Date/Time 10-7-22 11:46	Received by: [Signature]	Date/Time 10-7-22 0900	Received by: Gemma Evans	Date/Time 10-7-22 0955					
Remarks (Laboratory Only): 19.3°C Raytek 2 good condition Amms 100322 Per Jerry via phone, FH/BH separate. RELIS' Gemma Evans 10-7-22 15:02 received by Lisa Burton 10-7-22 17:02 Samples received in good condition. No empty containers.										

elementOne





Chain of Custody Record  
Samples from Multi-Metals Sampling Trains

39452  
Page 2 of 2

Project VS6			Metals by 6010B COPES - SW-646 Method	Mercury by 7470A CVAA - SW-646 Method			Hold	MS/MSD	Comments
Site HHO									
Project Number 60682866									
Prepared by FJS									
Sample ID Code	Sample Matrix	Date/Time							
Bypass Vent 6-Stk-13-M29-EIR	Empty Impinger Rinse	9/29/2022 20:15	X	X					
Bypass Vent 6-Stk-13-M29-Perm	Permanganate Impinger	↓	X	X					
Bypass Vent 6-Stk-13-M29-HClRns	HCl Rinse of Permanganate Imp	↓	X	X					
Bypass Vent 6-Stk-1RB-M29-Filter	Filter	9/30/2022 13:13	X	X					
Bypass Vent 6-Stk-1RB-M29- <del>As</del> PNR	<del>Asbestos</del> Probe and Nozzle Rinse	9/29/2022 15:02	X	X					
Bypass Vent 6-Stk-1RB-M29-NA Rns Soln	Nitric Acid Rinse Solution	9/30/2022 13:19	X	X					
Bypass Vent 6-Stk-1RB-M29-NP Soln	Nitric Acid/Peroxide Solution	9/30/2022 13:27	X	X					
Bypass Vent 6-Stk-1RB-M29-Perm Soln	Permanganate Solution	9/29/2022 22:18	X	X					
Bypass Vent 6-Stk-1RB-M29-HCl Soln	HCl Rinse Solution	9/30/2022 13:34	X	X					
Bypass Vent 6-Stk-1RB-M29-Water	Water	9/30/2022 13:36	X	X					
Bypass Vent 6-Stk-1FB-M29-Filter	Filter	9/29/2022 15:02	X	X					
Bypass Vent 6-Stk-1FB-M29-NPI	Nitric/Peroxide Impingers		X	X					
Bypass Vent 6-Stk-1FB-M29-EIR	Empty Impinger Rinse		X	X					
Bypass Vent 6-Stk-1FB-M29-Perm	Permanganate Impinger		X	X					
Bypass Vent 6-Stk-1FB-M29-HClRns	HCl Rinse of Permanganate Imp	✓	X	X					
Remarks: Provide results in total micrograms per sample. Raw data package required									
Relinquished by: Andrew Hildner	Date/Time: 10/3/22 11:46	Relinquished by: Chrysanne Miller	Date/Time: 10-07-22 0900	Relinquished by: Samantha Evans	Date/Time: 10-7-22 13:43				
Received by: Chrysanne Miller	Date/Time: 10-03-22 0444	Received by: Samantha Evans	Date/Time: 10-7-22 0955	Received by: Sara Branton	Date/Time: 10-7-22 1302				
Remarks (Laboratory Only) 19.3°C Daylight & good conditions Ambient 10-03-22									



# **ANALYTICAL DATA**



## Analytical Calculations

### Metals-

$$\text{Element Results } (\mu\text{g}) = \text{ICP Results } (\mu\text{g/L}) * \text{Dilution} * \text{Final Volume (L)}$$

### Where-

ICP Results= Raw sample concentration (ppb)--*ICP-Data Sheet*

Dilution=  $\frac{\text{Diluted Volume}}{\text{Aliquot}}$ --*ICP-MS Run Sheet*

Final Volume= FH= Final Volume (FV)--*Sample Submission*  
BH=  $\frac{\text{Received Volume (BV)} * \text{Final Volume (FV)}}{\text{Aliquot (Used)}}$ --*Sample Submission*

### Mercury-

$$\text{Mercury Results } (\mu\text{g}) = \frac{\text{CVAA Results } (\mu\text{g}) * \text{Final Volume (ml)}}{\text{Aliquot (ml)}}$$

### Where-

CVAA Results= Raw sample reading ( $\mu\text{g}$ ) --*Hg-Data Sheet*

Aliquot= Sample Aliquot (Alq.) --*Hg-Data Sheet*

Final Volume= Final Volume (FV)\*--*Sample Submission*  
\* With the exception of the BH fraction where-  
= Received Volume (BV)--*Sample Submission*



## Analytical Calculations

### Spike Recovery-

$$\text{Spike (\%)} = \frac{(\text{Spiked Result } (\mu\text{g/L}) - \text{Sample Result } (\mu\text{g/L})) \times 100}{\text{Spike Amount } (\mu\text{g/L})}$$

### Where-

Spike Result = Raw sample concentration (ppb)--*ICP-Data Sheet*

Sample Result = Raw sample concentration (ppb)--*ICP-Data Sheet*

Spike Amount--*ICP-MS Spike Table*

### Duplicate Analysis RPD-

$$\text{RPD (\%)} = \frac{(\text{Duplicate Result } (\mu\text{g/L}) - \text{Sample Result } (\mu\text{g/L})) \times 100}{\text{Average } (\mu\text{g/L})}$$

### Where-

Sample Result and Duplicate Results=Raw sample concentration (ppb)--*ICP-Data Sheet*

$$\text{Average} = \frac{(\text{Duplicate} + \text{Sample Results})}{2}$$



elementOne AIR TESTING SAMPLE SUBMISSION FORM Lab ID 39452

FH / BH Separate

Analysis Due Date 10.17.22  
QA/QC/Report Due Date 10.19.22

Client: AECOM	Date Rec 10.07.22
Project ID 60682866	Time Rec 1302

HNO <sub>3</sub> Lot: 22140159	HF Lot: 5120120	HCl Lot: 4127020	Ref. Method: 29
Volume Marked <input checked="" type="checkbox"/> N	Volume Loss <input checked="" type="checkbox"/> N	Acetone Lot:	

Sample Identification

1	Bypass Vent 6-Stk-11-M29-R1	4	Field Blank
2	Bypass Vent 6-Stk-12-M29-R2	5	Reagent Blank
	Bypass Vent 6-Stk-12-M29-R2 Duplicate		
3	Bypass Vent 6-Stk-13-M29-R3		
	Bypass Vent 6-Stk-13-M29-R3 Spike		

Analyses Requested	Samples 1-5	Sb, As, Be, Cd, Cr, Co, Pb, Mn, Ni, Se
	Samples 1-5	Hg

Runs / FB	Fil / Ace (FH)		HNO <sub>3</sub> (FH)		5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub> (BH)			HNO <sub>3</sub> (A)		KMnO <sub>4</sub> (B)		HCl (C)	
			pH <2.0 (Y) N		pH <2.0 (Y) N			pH <2.0 (Y) N		pH <2.0 (Y) N		pH <2.0 (Y) N	
Lab ID	Fil ID	BV, ml	BV ml	FV ml	BV ml	Used	FV ml	BV ml	FV ml	BV ml	FV ml	BV ml	FV ml
1			99	100	390	195	50	269	300	400	500	230	400
2.D			100	↓	520	260	↓	96	200	395	↓	225	↓
3.S			98		665	333		100		405		225	
4			100	↓	290	145	↓	98	↓	395	↓	225	↓

M-29 Reagent Blank

Lab ID	Fraction	BV, ml	FV, ml	Comments
5	C 7 FH Acetone Blank			
	C 8A FH 0.1N HNO <sub>3</sub>	300	100	Cooper 100ml
	C 8A A 0.1N HNO <sub>3</sub>			
	C 8B B DI H <sub>2</sub> O	300	-	
	C 9 BH 5% HNO <sub>3</sub> /10% H <sub>2</sub> O <sub>2</sub>	200	50	200ml C9 + 100ml C8A, Cooped 150 ml
	C 10 B 4% KMnO <sub>4</sub> /10% H <sub>2</sub> SO <sub>4</sub>	302	133	100ml C10 + 33ml C8B
	C 11 C 8N HCl DI H <sub>2</sub> O	300	400	
	C 12 FH Filter			

Lab Communications

LLB + Sp. Ref. w/ 0.1 ml of 35 ppm ~~std~~ H (021422-H), std A (021422-A), & std B (021422-B)

M29: Fractions Received: Runs/FB: C1, C3, C4, C5A, C5B, C5C—RB: C12, C8A, C8B, C9, C10, C11—10.07.22 LLB

SS Page 1 of 1

10/7/2022 3:52:04 PM

SS by SEA

Labeled By/Date ADK 10/7/22

ID Verification By / Date DBJ 10/7/22

FH Prep By/Date DAZ 10/4/22 BH Hg Prep By/Date DAZ 10/13/22

BH Metals Prep By/Date DAZ 10/4/22 A Prep By/Date DAZ 10/13/22

FH/BH Prep By/Date - B Prep By/Date DAZ 10/18/22

M5 Prep By/Date - C Prep By/Date DAZ 10/11/22

M5 Completed By/Date -

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Certification: NJ NELAP NC009  
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Method 29 CEM Mars 6 Microwave Worksheet

Client: A FLO M

Date Digested: 10/16/22 Initials: DAZ Worksheet Prepared by: DAZ

Element One, Inc. F214 R2 Microwave Sheet M29



# Sample/Batch Report

*BH*  
10/21/22

User Name: bobo  
Computer Name: E1-8080  
Sample File: C:\Users\Public\Documents\PerkinElmer Syngistix\CPMS\Sample\c2.sam  
Report Date/Time: Friday, October 21, 2022 12:58:13

A/S Loc.	Batch ID	Sample ID	Description	Sample Type	Ini. Quant.	Prep. Vol.	Aliquot Vol.	Diluted Vol.	Solids Ratio
	7	QC Std 2		Sample					
101	(FH)	LRB		Sample					
102	(FH)s	LRB SPK		Spike - 1 of 2					
103	x10	39452-1 FH AECOM		Sample					
104	x500	39452-1 FH AECOM		Sample					
105	x10	39452-2 FH AECOM		Sample					
106	x10d	39452-2 FH AECOM		Duplicate of 6					
107	x500	39452-2 FH AECOM		Sample					
108	x500d	39452-2 FH AECOM		Duplicate of 8					
109	x10	39452-3 FH AECOM		Sample					
110	x10s	39452-3 FH AECOM		Spike - 1 of 10					
111	x500	39452-3 FH AECOM		Sample					
112	x500s	39452-3 FH AECOM		Spike - 1 of 12					
113		39452-4 FH AECOM		Sample					
114	x5	39452-4 FH AECOM		Sample					
115		39452-5 FH AECOM		Sample					
116		39452 C9a AECOM		Sample					
117	(BH)	LRB		Sample					
118	(BH)s	LRB SPK		Spike - 1 of 16					
119		39452-1 BH AECOM		Sample					
120	x50	39452-1 BH AECOM		Sample					
121		39452-2 BH AECOM		Sample					
122	d	39452-2 BH AECOM		Duplicate of 22					
123	x50	39452-2 BH AECOM		Sample					
124	x50d	39452-2 BH AECOM		Duplicate of 24					
125		39452-3 BH AECOM		Sample					
126	s	39452-3 BH AECOM		Spike - 1 of 26					
127	x50	39452-3 BH AECOM		Sample					
128	x50s	39452-3 BH AECOM		Spike - 1 of 28					
129		39452-4 BH AECOM		Sample					
130		39452-4 BH AECOM		Sample					
131		39452-5 BH AECOM		Sample					
132		39452 C9 AECOM		Sample					
133	x5	39452-3 BH AECOM		Sample					
134	x5s	39452-3 BH AECOM		Spike - 1 of 34					
135	x100	39452-3 BH AECOM		Sample					
136	x100s	39452-3 BH AECOM		Spike - 1 of 36					
137	x10	39452-3 BH AECOM		Sample					
138	x10s	39452-3 BH AECOM		Spike - 1 of 38					
139	x25	39452-3 BH AECOM		Sample					
140	x25s	39452-3 BH AECOM		Spike - 1 of 40					



# Dataset Report

*Handwritten:* JH 10/21/22

User Name: bobo  
Computer Name: E1-BOBO  
Dataset File Path: C:\Users\Public\Documents\PerkinElmer Syngistix\CPMS\DataSet\102122-1b\  
Report Date/Time: Friday, October 21, 2022 12:57:47

## The Dataset

Time	Sample ID	Batch ID	Read Type	Description	Init. Quant Prep. Vol	Aliquot Vol.	Diluted Vol.
09:50:38 Fri 21-Oct-22	Blank		Blank				
09:52:44 Fri 21-Oct-22	Standard 1		Standard #1				
09:54:51 Fri 21-Oct-22	Standard 2		Standard #2				
09:59:58 Fri 21-Oct-22	Standard 3		Standard #3				
09:59:06 Fri 21-Oct-22	Standard 4		Standard #4				
10:01:12 Fri 21-Oct-22	Standard 5		Standard #5				
10:03:19 Fri 21-Oct-22	Standard 6		Standard #6				
10:05:27 Fri 21-Oct-22	QC Std 1		QC Std #1	<i>use as blank</i>			
10:07:34 Fri 21-Oct-22	QC Std 2		QC Std #2				
10:09:41 Fri 21-Oct-22	QC Std 3		QC Std #3				
10:11:48 Fri 21-Oct-22	QC Std 4		QC Std #4				
10:13:56 Fri 21-Oct-22	QC Std 5		QC Std #5				
10:16:04 Fri 21-Oct-22	QC Std 6		QC Std #6				
10:18:11 Fri 21-Oct-22	QC Std 7		QC Std #7				
10:20:19 Fri 21-Oct-22	QC Std 8		QC Std #8				
10:22:26 Fri 21-Oct-22	QC Std 2		Sample				
10:24:34 Fri 21-Oct-22	QC Std 1		QC Std #1				
10:28:04 Fri 21-Oct-22	LRB	(FH)	Sample				
10:37:17 Fri 21-Oct-22	LRB	(FH)	Sample				
10:39:24 Fri 21-Oct-22	LRB SPK	(FH)s	Spike - 1 of 19				
10:41:31 Fri 21-Oct-22	39452-1 FH	x10	Sample	AECOM			
10:43:38 Fri 21-Oct-22	39452-1 FH	x500	Sample	AECOM			
10:46:45 Fri 21-Oct-22	39452-2 FH	x10	Sample	AECOM			
10:47:52 Fri 21-Oct-22	39452-2 FH	x10d	Duplicate of 23	AECOM			
10:49:59 Fri 21-Oct-22	39452-2 FH	x500	Sample	AECOM			
10:52:06 Fri 21-Oct-22	39452-2 FH	x500d	Duplicate of 25	AECOM			
10:54:13 Fri 21-Oct-22	39452-3 FH	x10	Sample	AECOM			
10:58:20 Fri 21-Oct-22	39452-3 FH	x10s	Spike - 1 of 27	AECOM			
11:01:51 Fri 21-Oct-22	QC Std 1		Sample				
11:03:59 Fri 21-Oct-22	QC Std 4		Sample				
11:06:49 Fri 21-Oct-22	39452-3 FH	x500	Sample	AECOM			
11:08:56 Fri 21-Oct-22	39452-3 FH	x500s	Spike - 1 of 31	AECOM			
11:11:03 Fri 21-Oct-22	39452-4 FH		Sample	AECOM			
11:13:10 Fri 21-Oct-22	39452-4 FH	x5	Sample	AECOM			
11:15:17 Fri 21-Oct-22	39452-5 FH		Sample	AECOM			
11:17:24 Fri 21-Oct-22	39452 C8a		Sample	AECOM			
11:19:31 Fri 21-Oct-22	LRB	(BH)	Sample				
11:21:38 Fri 21-Oct-22	LRB SPK	(BH)s	Spike - 1 of 37				
11:23:45 Fri 21-Oct-22	39452-1 BH		Sample	AECOM			
11:25:52 Fri 21-Oct-22	39452-1 BH	x50	Sample	AECOM			
11:32:48 Fri 21-Oct-22	QC Std 1		Sample				
11:37:17 Fri 21-Oct-22	QC Std 4		QC Std #4				
11:39:44 Fri 21-Oct-22	39452-2 BH		Sample	AECOM			
11:41:51 Fri 21-Oct-22	39452-2 BH	d	Duplicate of 43	AECOM			
11:43:58 Fri 21-Oct-22	39452-2 BH	x50	Sample	AECOM			
11:46:05 Fri 21-Oct-22	39452-2 BH	x50d	Duplicate of 45	AECOM			
11:48:12 Fri 21-Oct-22	39452-3 BH		Sample	AECOM			
11:50:19 Fri 21-Oct-22	39452-3 BH	s	Spike - 1 of 47	AECOM			
11:52:26 Fri 21-Oct-22	39452-3 BH	x50	Sample	AECOM			



11:54:33 Fri 21-Oct-22	39452-3 BH	x50s	Spike - 1 of 49	AECOM
11:55:39 Fri 21-Oct-22	39452-4 BH		Sample	AECOM
11:58:46 Fri 21-Oct-22	39452-4 BH undig		Sample	AECOM
12:08:18 Fri 21-Oct-22	QC Std 1		QC Std #1	
12:21:10 Fri 21-Oct-22	QC Std 4		QC Std #4	
12:24:29 Fri 21-Oct-22	39452-5 BH		Sample	AECOM
12:25:43 Fri 21-Oct-22	39452 C9		Sample	AECOM
12:28:50 Fri 21-Oct-22	39452-3 BH	x5	Sample	AECOM
12:30:57 Fri 21-Oct-22	39452-3 BH	x5s	Spike - 1 of 57	AECOM
12:34:48 Fri 21-Oct-22	39452-3 BH	x100	Sample	AECOM
12:36:55 Fri 21-Oct-22	39452-3 BH	x100s	Spike - 1 of 59	AECOM
12:39:02 Fri 21-Oct-22	39452-3 BH	x10	Sample	AECOM
12:41:09 Fri 21-Oct-22	39452-3 BH	x10s	Spike - 1 of 61	AECOM
12:49:29 Fri 21-Oct-22	39452-3 BH	x25	Sample	AECOM
12:49:36 Fri 21-Oct-22	39452-3 BH	x25s	Spike - 1 of 63	AECOM
12:52:51 Fri 21-Oct-22	QC Std 4		QC Std #4	
12:55:47 Fri 21-Oct-22	QC Std 1		Sample	



## Method 6020 & 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Date/Time: Friday, October 21, 2022 10:05:27

Sample Description:

Number of Replicates: 3

Batch ID:

Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\ICPMS\DataSet\102122-1b\QC Std 1.008

Sample Prep Volume (mL):

Initial Sample Quantity (mg):

Aliquot Volume (mL):

Diluted To Volume (mL):

Autosampler Position: 1

### Calibration

Analyte	Curve Type	Slope	Correlation Coefficient	Intercept
Li (7)	Linear Thru Zero			
Be	Linear Thru Ze0.010		0.999605	0.00
Cr	Linear Thru Ze0.017		0.999893	0.00
Mn	Linear Thru Ze0.012		0.999722	0.00
Co	Linear Thru Ze0.007		0.999637	0.00
Ni	Linear Thru Ze0.007		0.999658	0.00
As	Linear Thru Ze0.006		0.999629	0.00
Se	Linear Thru Ze0.001		0.999800	0.00
Cd	Linear Thru Ze0.006		0.999896	0.00
Cd (114)	Linear Thru Ze0.014		0.999870	0.00
Sb	Linear Thru Ze0.011		0.999737	0.00
Pb	Linear Thru Ze0.027		0.999940	0.00
Kr	Linear Thru Zero			
Rh (IS1)	Linear Thru Zero			
Hc (IS1)	Linear Thru Zero			
Sc (IS1)	Linear Thru Zero			
Li	Linear Thru Zero			



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ICP-MS RUN SHEET  
10/21/2022

A/S Loc.	Dilution	Sample ID	Client	Type	Weight (g)	Prep Vol (ml)
7		QC Std 2		Sample		
101	(FH)	LRB		Sample		100
102	(FH)s	LRB SPK		Spike - 1 of 2		100
103	x10	39452-1 FH	AECOM	Sample		100
104	x500	39452-1 FH	AECOM	Sample		100
105	x10	39452-2 FH	AECOM	Sample		100
106	x10d	39452-2 FH	AECOM	Duplicate of 6		100
107	x500	39452-2 FH	AECOM	Sample		100
108	x500d	39452-2 FH	AECOM	Duplicate of 8		100
109	x10	39452-3 FH	AECOM	Sample		100
110	x10s	39452-3 FH	AECOM	Spike - 1 of 10		100
111	x500	39452-3 FH	AECOM	Sample		100
112	x500s	39452-3 FH	AECOM	Spike - 1 of 12		100
113		39452-4 FH	AECOM	Sample		100
114	x5	39452-4 FH	AECOM	Sample		100
115		39452-5 FH	AECOM	Sample		100
116		39452 C8a	AECOM	Sample		300
117	(BH)	LRB		Sample		50x2
118	(BH)s	LRB SPK		Spike - 1 of 18		50x2
119		39452-1 BH	AECOM	Sample		50x2
120	x50	39452-1 BH	AECOM	Sample		50x2
121		39452-2 BH	AECOM	Sample		50x2
122	d	39452-2 BH	AECOM	Duplicate of 22		50x2
123	x50	39452-2 BH	AECOM	Sample		50x2
124	x50d	39452-2 BH	AECOM	Duplicate of 24		50x2
125		39452-3 BH	AECOM	Sample		50x2
126	s	39452-3 BH	AECOM	Spike - 1 of 26		50x2
127	x50	39452-3 BH	AECOM	Sample		50x2
128	x50s	39452-3 BH	AECOM	Spike - 1 of 28		50x2
129		39452-4 BH	AECOM	Sample		50x2
130		39452-4 BH undig	AECOM	Sample		290
131		39452-5 BH	AECOM	Sample		50x2
132		39452 C9 CSP	AECOM	Sample		200 300 250 10/21/22
133	x5	39452-3 BH	AECOM	Sample		50x2
134	x5s	39452-3 BH	AECOM	Spike - 1 of 34		50x2
135	x100	39452-3 BH	AECOM	Sample		50x2
136	x100s	39452-3 BH	AECOM	Spike - 1 of 36		50x2
137	x10	39452-3 BH	AECOM	Sample		50x2
138	x10s	39452-3 BH	AECOM	Spike - 1 of 38		50x2
139	x25	39452-3 BH	AECOM	Sample		50x2
140	x25s	39452-3 BH	AECOM	Spike - 1 of 40		50x2
Spikes are post at 0.02mL of 25ppm spiking solutions lot 021422-A&B in a final volume of 10mL						
Submitted for QC by:		Date/Time:		QC Review By:		Date/Time:
RMH		10/21/22 12:52		DOW		10/21/22 1507
Re-Test Required:		No:	Yes:	Comments:		
Resubmitted for QC by:		Date/Time:		QC Review:		By: Date/Time:

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### Method QC Spike Tables

Analyte	Mass	ST1 Conc	ST1 Det Lt	ST2 Conc	ST2 Det Lt	ST3 Conc	ST 3 Det Lt
Li (7)	7.016						
Be	9.012	50.000	0.250	25.000			
Cr	51.941	50.000	1.000	25.000	1.000	100.000	1.000
Mn	54.938	50.000	1.000	25.000	1.000	100.000	1.000
Co	58.933	50.000	1.000	25.000	1.000	100.000	1.000
Ni	59.933	50.000	1.000	25.000	1.000	100.000	1.000
As	74.922	50.000	1.000	25.000	1.000	100.000	1.000
Se	81.917	50.000	1.000	25.000	1.000	100.000	1.000
Cd	110.904	50.000	1.000	25.000	1.000	100.000	1.000
Cd (111)	113.904	50.000	1.000	25.000	1.000	100.000	1.000
Sb	122.904	50.000	1.000	25.000	1.000	100.000	1.000
Pb	207.977	50.000	1.000	25.000	1.000	100.000	1.000
Kr	82.914						
Li	6.015						



## Quantitative Analysis - Summary Report

**Sample ID: QC Std 1**

Sample Date/Time: Friday, October 21, 2022 10:05:27

Report Date/Time: Friday, October 21, 2022 12:58:32

Solution Type: Blank

Sample Type: Sample

Autosampler Position: 1

Sample Description:

Batch ID:

Sample File: C:\Users\Public\Documents\PerkinElmer Syngistix\CPMS\Sample\c2.sam

Method File: C:\Users\Public\Documents\PerkinElmer Syngistix\CPMS\Method\c2.mtl

Dataset File: C:\Users\Public\Documents\PerkinElmer Syngistix\CPMS\DataSet\102122-1b\QC Std 1 005

Initial Sample Quantity (mg):

Sample Prep Volume (mL):

Aliquot Volume (mL):

Diluted to Volume (mL):

Torch Z Position (mm): 0.00

### Results (Mean Data)

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
Sc (IS1)	Li (7)	7	72584.9	2.7				ppb		Standard
Rh (IS1)	Be	9	121.3	12.8				ppb		Standard
Rh (IS1)	Cr	52	24411.6	1.2				ppb		Standard
Rh (IS1)	Mn	55	445.7	4.6				ppb		Standard
Rh (IS1)	Co	59	101.0	20.5				ppb		Standard
Rh (IS1)	Ni	60	860.4	4.7				ppb		Standard
Rh (IS1)	As	75	-1037.8	34.6				ppb		Standard
Rh (IS1)	Se	82	94.4	34.0				ppb		Standard
Rh (IS1)	Cd	111	-40.7	102.5				ppb		Standard
Rh (IS1)	Cd (114)	114	181.3	27.6				ppb		Standard
Ho (IS1)	Sb	123	259.0	22.0				ppb		Standard
Ho (IS1)	Pb	208	760.0	12.3				ppb		Standard
	Kr	83	76.7	2.7				ppb		Standard
	Rh (IS1)	103	712170.5	2.7				ppb		Standard
	Ho (IS1)	185	870416.6	3.5				ppb		Standard
	Sc (IS1)	45	736159.0	3.1				ppb		Standard
	Li	6	1306072.3	3.4				ppb		Standard

Sample ID: QC Std 1

Report Date/Time: Friday, October 21, 2022 12:58:32

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NexION 1000 ICP-MS Standards and QC Standards Values Table

Element or Test	Mass	Symbol	Std.#1 ppb	Std.#2 ppb	Std.#3 ppb	Std.#4 ppb	Std.#5 ppb	Std.#6 ppb	QC #1	QC #2	QC #3	QC #4	QC #5	QC #6 A	QC #7 AB	QC #8 .25
<b>Lithium</b>	6	Li														
Lithium	7	Li (7)	1	10	50	80	100		0	1	75	50	25			0.25
Beryllium	9	Be	1	10	50	80	100	0.25	0	1	75	50	25			
Boron	10	B	5	10	50	80	100		0	5	75	50	25			
Boron	11	B	5	10	50	80	100		0	5	75	50	25			
Sodium	23	Na	21	210	550	880	1100		0	21	825	550	275	25000	0	
Magnesium	24	Mg	21	210	550	880	1100		0	21	825	550	275	10000	0	
Aluminum	27	Al	1	10	50	80	100		0	1	75	50	25	10000	0	
Phosphorus	31	P	20	100	200	400	500		0	20	250	200	250	10000	0	
Potassium	39	K	21	210	550	880	1100		0	21	825	550	250	10000	0	
Calcium	44	Ca	50	210	550	880	1100		0	21	825	550	275	30000	0	
<b>Scandium</b>	45	Sc (IS1)														
Titanium	47	Ti	1	10	50	80	100		0	1	75	50	25	200	0	
Titanium	49	Ti (49)	1	10	50	80	100		0	1	75	50	25	200	0	
Vanadium	51	V	1	10	50	80	100		0	1	75	50	25	0	200	
Vanadium	51	V-1	1	10	50	80	100		0	1	75	50	25	0	200	
Chromium	52	Cr	1	10	50	80	100		0	1	75	50	25	0	200	
Iron	54	Fe (54)	21	210	550	880	1100		0	21	825	550	275	25000	0	
Manganese	55	Mn	1	10	50	80	100		0	1	75	50	25	0	200	
Iron	57	Fe	21	210	550	880	1100		0	21	825	550	275	25000	0	
Cobalt	59	Co	1	10	50	80	100		0	1	75	50	25	0	200	
Nickel	60	Ni	1	10	50	80	100		0	1	75	50	25	0	200	
Copper	63	Cu	1	10	50	80	100		0	1	75	50	25	0	200	
Copper	65	Cu (65)	1	10	50	80	100		0	1	75	50	25	0	200	
Zinc	66	Zn	1	10	50	80	100		0	1	75	50	25	0	100	
Zinc	67	Zn (67)	1	10	50	80	100		0	1	75	50	25			
Zinc	68	Zn (68)	1	10	50	80	100		0	1	75	50	25			
Arsenic	75	As	1	10	50	80	100		0	1	75	50	25	0	100	
Selenium	82	Se	1	10	50	80	100		0	1	75	50	25	0	100	
Strontium	88	Sr	1	10	50	80	100		0	1	75	50	25			
Molybdenum	98	Mo	1	10	50	80	100		0	1	75	50	25	200	0	
<b>Rhodium</b>	103	Rh (IS1)														
Silver	107	Ag	1	10	50	80	100		0	1	75	50	25	0	200	
Cadmium	111	Cd	1	10	50	80	100		0	1	75	50	25	0	100	
Cadmium	114	Cd (114)	1	10	50	80	100		0	1	75	50	25			
Tin	118	Sn	1	10	50	80	100		0	1	75	50	25			
Antimony	123	Sb	1	10	50	80	100		0	1	75	50	25			
Tellurium	128	Te	1	10	50	80	100		0	1	75	50	25			
Cesium	133	Cs	1	10	50	80	100		0	1	75	50	25			
Barium	137	Ba (137)	1	10	50	80	100		0	1	75	50	25			
Barium	138	Ba	1	10	50	80	100		0	1	75	50	25			
Lanthanum	139	La	1	10	50	80	100		0	1	75	50	25			
Tantalum	159	Ta	1	10	50	80	100		0	1	75	50	25			
<b>Holmium</b>	165	Ho (IS1)														
Platinum	195	Pt	1	10	50	80	100		0	1	75	50	25			
Gold	181	Au	1	10	50	80	100		0	1	75	50	25			
Thallium	205	Tl	1	10	50	80	100		0	1	75	50	25			
Lead	208	Pb	1	10	50	80	100		0	1	75	50	25			
Bismuth	209	Bi	1	10	50	80	100		0	1	75	50	25			
Thorium	232	Th	1	10	50	80	100		0	1	75	50	25			
Uranium	238	U	1	10	50	80	100		0	1	75	50	25			
<b>Krypton</b>	83	Kr														



# MERCURY BATCH DIGESTION - RUN WORKSHEET

Date Prepared/Digested: 10/15/22 Prep By: DAZ SIF File #: 101922-1  
 Block #1 Temperature: — Start Time: 5:45 Machine ID: FIMS 2  
 Block #2 Temperature: 93.42 Stop Time: 6:00 Batch Analyst: DAZ  
 Block #3 Temperature: 94.34 Typed By: DAZ Verified By: POC

A/S	Curve & QC's	0.4ug/ml working std		BV, ml	FV, ml	Standard Lot Numbers
1	Lab BLK (3/ batch)	0		40	40	Standard #1 (for working std)
2	0.004 ug	0.01ml		40	40	Lot #: 2130431-100 HPS
3	0.04 ug	0.10ml		40	40	Working Standard
4	0.08 ug	0.20ml		40	40	Lot #: H45 0561 by: DAZ
5	0.16 ug	0.40ml		40	40	Standard #2 (QC #2): DAZ
6	0.20ug	0.50ml		40	40	Lot #: H45 0563
						Standard #3 (QC #3): DAZ
						Lot #: H45 0563
7	QC #2= 0.08ug	0.2ml #2 std		40	40	
8	QC #3= 0.08ug	0.2ml #3 std		40	40	Curve prepared by: DAZ

Initial Review By: DAZ Date: 10/15/22 Time: 12:00  
 Final QC Review By: DAZ Date: 10/19/2022 Time: 1400  
 Comments: \_\_\_\_\_

A/S	LAB #	Method	Wt (g) FV (mL)	Prep Aliquot Used, mL	Aliquot or Calc Mass	FV, mL or "1" for conc.	Comments
9	38450-13 QC	7470A			0.1	5	TV: 433
10	L/L	↓			1	1	TV: 0005
11	38420-11 FH	M25			4	100	
12	-11 FH D				1	↓	
13	38452-13H				1	340	
14	-23H				1	520	
15	-23H D				1	↓	
16	-33H				1	665	
17	-33H +				1	↓	
18	-43H				1	290	
19	-53H	V			1	200	

**NOTES:** Lab blanks and spikes must be prepared with each batch digestion  
 "+" Denotes spike for Hg. Use calibration working 0.4ug/ml standard at the rate of 0.20ml per 40ml sample, unless otherwise noted.  
**Digestion chemicals to be added in order at the following rate per 40ml volumes.**  
 $H_2SO_4$  @ 2.0ml.....  $HNO_3$  @ 1.0ml.....  $KMnO_4$  @ 6.0ml..... Persulfate @ 3.2ml  
 $H_2SO_4$  Lot # 2116517  $HNO_3$  Lot # 22140135  $HCl$  Lot # 4122020  
 Persulfate Lot # H45-045-10  $KMnO_4$  Lot # H45-050-5 Hydrox Lot # H45-044-5  
 Clear samples after digestion with 2.4 ml of Hydroxylamine solution.



SIF File #: 101922-1

A/S	LAB #	Method	Wt (g)/ FV (mL)	Prep Aliquot Used, mL	Aliquot or Calc Mass	FV, mL or "1" for conc.	Comments
20	39452-1A	M29			4	200	
✓21	-2A				↓	↓	
22	-2A D				↓	↓	
23	-3A				↓	↓	
24	-3A +				↓	↓	
25	-4A				↓	↓	
26	-5A				↓	↓	
27	-1B				↓	500	
28	-2B				↓	↓	
29	-2B D				↓	↓	
30	-3B				↓	↓	
31	-3B +				↓	↓	
32	-4B				↓	↓	
33	-5B				↓	↓	
34	39462-FH LRB				↓	100	
✓35	-FH LRB +				1.6	↓	
36	-1FH				0.1	↓	
37	-2FH				↓	↓	
38	-2FH D				↓	↓	
39	-3FH				↓	↓	
40	-3FH +				↓	↓	
✓41	39461-1B				4	500	
✓42	-2B				↓	↓	
43	-2B D				↓	↓	
44	-3B				↓	↓	
45	-3B +				↓	↓	
46	-4B				↓	↓	
47	-5B	✓			↓	↓	
48	39497-499 FH BLK	747DA			20	1	
49	-FH BLK +				↓	↓	
50	39497-1				↓	↓	
✓51	-2				↓	↓	
52	-2 +				↓	↓	
✓53	39498-1				↓	↓	
54	39499-2	✓			↓	↓	



SIF File #: 101422-1

A/S	LAB #	Method	Wt (g)/ FV (mL)	Prep Aliquot Used, mL	Aliquot or Calc Mass	FV, mL or "1" for conc.	Comments
55	39459 - F22 BLK	7470A			20	1	
✓ 56	- F22 BLK +						
57	- 1						
58	- 1 D						
59	39459 - BLK						
✓ 60	- BLK +						
61	- 1						
62	- 2	✓			✓		
63	39471 - 16	74713	1.5002/100	10	0.0508		
64	- 17		1.5190/100		0.0518		
65	- 17 D		1.5172/100		0.0517		
66	- 18		1.5129/100		0.0513		
67	- 18 +		1.5036/100		0.0504		
68	- 19		1.5172/100		0.0517		
69	- 20		1.5126/100		0.0513		
70	- 21		1.5153/100		0.0515		
71	- 22		1.5141/100		0.0514		
72	- 23		1.5104/100		0.0510		
73	- 24		1.5266/100		0.0530		
74	- 25	✓	1.5054/100	✓	0.0505	✓	
✓ 75	39452 - 13M				2	390	
76							
77							
78							
79							
80							
81							
82							
83							
84							
85							
86							
87							
88							
89							



# MERCURY BATCH DIGESTION - RUN WORKSHEET

Date Prepared/Digested: 10/14/22 Prep By: DAZ SIF File #: 102022-1  
 Block #1 Temperature: — Start Time: 8:45 Machine ID: FIMS 1  
 Block #2 Temperature: 43.2 Stop Time: 8:00 Batch Analyst: DAZ  
 Block #3 Temperature: 43.2 Typed By: DAZ Verified By: RAL

A/S	Curve & QC's	0.4ug/ml working std	BV, ml	FV, ml	Standard Lot Numbers
1	Lab BLK (3/ batch)	0	40	40	Standard #1 (for working std)
2	0.004 ug	0.01ml	40	40	Lot #: 2130931-100 HPS
3	0.04 ug	0.10ml	40	40	Working Standard
4	0.08 ug	0.20ml	40	40	Lot #: H45-056-1 by: DAZ
5	0.16 ug	0.40ml	40	40	Standard #2 (QC #2): DAZ
6	0.20ug	0.50ml	40	40	Lot #: H45-056-2
					Standard #3 (QC #3): DAZ
					Lot #: H45-056-3
7	QC #2= 0.08ug	0.2ml #2 std	40	40	
8	QC #3= 0.08ug	0.2ml #3 std	40	40	Curve prepared by: DAZ

Initial Review By: DAZ Date: 10/20/22 Time: 12:15  
 Final QC Review By: DAM Date: 10/20/22 Time: 13:52  
 Comments: 39452-1A reacted w/ KMnO<sub>4</sub>

A/S	LAB #	Method	WI (g) FV (mL)	Prep Aliquot Used, mL	Aliquot or Calc Mass	FV, mL or "1" for conc.	Comments
9	39450-18QC	7470A			0.1	5	TV 4.33
10	L/L	↓			1	1	TV 0.008
11	39481-3.1				0.2	10	
12	-3.1 D				↓	↓	
13	-3.1 +				↓	↓	
14	39461-FH LRB	M29			4	100	
15	-FH LRB +				1.6	↓	
16	-1FH				4	↓	
17	-2B				↓	500	
18	-2B D				↓	↓	
19	39452-18H	↓			2	390	

**NOTES:** Lab blanks and spikes must be prepared with each batch digestion

"+" Denotes spike for Hg. Use calibration working 0.4ug/ml standard at the rate of 0.20ml per 40ml sample, unless otherwise noted.

**Digestion chemicals to be added in order at the following rate per 40ml volumes.**

H<sub>2</sub>SO<sub>4</sub> @ 2.0ml..... HNO<sub>3</sub> @ 1.0ml..... KMnO<sub>4</sub> @ 6.0ml..... Persulfate @ 3.2ml

H<sub>2</sub>SO<sub>4</sub> Lot # 316517 HNO<sub>3</sub> Lot # 22140139 HCl Lot #: 4122020

Persulfate Lot # H45045-6 KMnO<sub>4</sub> Lot # H45-050-5 Hydrox Lot#: H45 049-5

Clear samples after digestion with 2.4 ml of Hydroxylamine solution.



SIF File #: 102022-1

A/S	LAB #	Method	Wt (g)/ FV (mL)	Prep Aliquot Used, mL	Aliquot or Calc Mass	FV, mL or "1" for conc.	Comments
20	39452-3BH	M25			2	665	
✓21	-3BH +				↓	↓	
22	-4BH				4	290	
23	-1A				2	200300	
24	-FH LRB				4	100	
25	-FH LRB +				1.6		
26	-1FH				4		
27	-2FH						
28	-2FH D						
29	-3FH						
30	-3FH +						
31	-4FH						
32	-5FH					↓	
33	-1C					400	
34	-2C						
35	-2C D						
36	-3C						
37	-3C +						
38	-4C						
39	-5C						
✓40	39461-1C						
41	-2C						
42	-2C D						
43	-3C						
44	-3C +						
45	-4C						
46	-5C	↓			↓	↓	
✓47	39434+LRB				0.4	1	
48	-LRB +						
49	-1						
50	-1 D						
51	-1 +				↓	↓	
52	39506-F12 BLK	7470A			20	1	
53	39506-F12 BLK +	↓					
54	39506	↓			↓	↓	



SIF File #: 109022-1

A/S	LAB #	Method	Wt (g)/FV (mL)	Prep Aliquot Used, mL	Aliquot or Calc Mass	FV, mL or "1" for conc.	Comments
55	34506 D	7470A			20	1	
56	34506 +	↓			↓	1	
57	39471-18	74713	.5139/100	5	0.0236		
58	-18 +		.5036/100	↓	0.0252		
59	-26		.5010/100	10	0.0501		
60	-27		.5060/100		0.0506		
61	-27 D		.5041/100		0.0504		
62	-28		.5713/100		0.0571		
63	-28 +		.5969/100		0.0597		
64	-24		.5084/100		0.0508		
65	-30		.5476/100		0.0548		
66	-31		.5625/100		0.0563		
67	-32		.5800/100		0.0580		
68	-33		.5095/100		0.0510		
69	-34		.536/100		0.0536		
70	-35	↓	.5046/100	↓	0.0505	↓	
71	39452-1A				1	200	
72							
73							
74							
75							
76							
77							
78							
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## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Date: Friday, October 21, 2022 10:05:27

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	72584.9		ppb
	Be	9	121.3		ppb
	Cr	52	24411.8		ppb
	Mn	55	445.7		ppb
	Co	59	101		ppb
	Ni	60	860.4		ppb
	As	75	-1037.8		ppb
	Se	82	94.4		ppb
	Cd	111	-40.7		ppb
	Cd (114)	114	181.3		ppb
	Sb	123	259		ppb
	Pb	208	760		ppb
	Kr	83	76.7		ppb
>	Rh (IS1)	103	712170.5		ppb
>	Ho (IS1)	165	870416.5		ppb
>	Sc (IS1)	45	736159		ppb
	Li	6	1306072.3		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: Standard 1

Sample Date: Friday, October 21, 2022 09:52:44

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	69486.7		ppb
	Be	9	7441	1.23633	ppb
	Cr	52	32674.7	1.19781	ppb
	Mn	55	7666.7	1.01968	ppb
	Co	59	4388.4	1.00469	ppb
	Ni	60	5165.7	1.05456	ppb
	As	75	2583.2	1.03116	ppb
	Se	82	622.8	1.14938	ppb
	Cd	111	3550	1.00412	ppb
	Cd (114)	114	8798.9	1.02098	ppb
	Sb	123	8641.8	1.0402	ppb
	Pb	208	26589	1.3137	ppb
	Kr	83	71.7		ppb
>	Rh (IS1)	103	604262.9		ppb
>	Ho (IS1)	165	739958.8		ppb
>	Sc (IS1)	45	615484.7		ppb
	Li	6	1073058.7		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: Standard 2

Sample Date: Friday, October 21, 2022 09:54:51

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	59906.1		ppb
	Be	9	57932.8	9.82085	ppb
	Cr	52	122368.1	10.40263	ppb
	Mn	55	70062.8	9.94973	ppb
	Co	59	42796.6	10.17662	ppb
	Ni	60	42240.7	10.06802	ppb
	As	75	32353.8	10.09101	ppb
	Se	82	4766.7	10.13227	ppb
	Cd	111	35235.1	10.08335	ppb
	Cd (114)	114	84086.5	10.11284	ppb
	Sb	123	82206	10.20034	ppb
	Pb	208	205143.8	10.30326	ppb
	Kr	83	74.3		ppb
>	Rh (IS1)	103	592267.8		ppb
>	Ho (IS1)	165	734163.1		ppb
>	Sc (IS1)	45	602109.5		ppb
	Li	6	1048720.5		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: Standard 3

Sample Date: Friday, October 21, 2022 09:56:58

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	61604.2		ppb
	Be	9	290762.4	47.60003	ppb
	Cr	52	516226.2	48.70146	ppb
	Mn	55	347588.5	47.84009	ppb
	Co	59	210106.6	48.29463	ppb
	Ni	60	203265.6	47.38695	ppb
	As	75	160705.1	47.31609	ppb
	Se	82	23033.5	47.86911	ppb
	Cd	111	175706.5	48.48019	ppb
	Cd (114)	114	415085.5	48.25738	ppb
	Sb	123	397064.5	47.248	ppb
	Pb	208	1014453.2	48.89009	ppb
	Kr	83	86		ppb
>	Rh (IS1)	103	614056.1		ppb
>	Ho (IS1)	165	767182.8		ppb
>	Sc (IS1)	45	629222.1		ppb
	Li	6	1099837.5		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: Standard 4

Sample Date: Friday, October 21, 2022 09:59:05

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	67416.6		ppb
	Be	9	521286.6	78.5181	ppb
	Cr	52	899358.6	79.22906	ppb
	Mn	55	621935.6	78.74592	ppb
	Co	59	374075.2	79.09062	ppb
	Ni	60	367547.2	78.87388	ppb
	As	75	291253.2	78.73668	ppb
	Se	82	41460.4	79.33977	ppb
	Cd	111	313174.8	79.4388	ppb
	Cd (114)	114	743804.5	79.47608	ppb
	Sb	123	730362.5	79.77308	ppb
	Pb	208	1801941.5	79.7332	ppb
	Kr	83	90.3		ppb
>	Rh (IS1)	103	667549.2		ppb
>	Ho (IS1)	165	835550.5		ppb
>	Sc (IS1)	45	690995.6		ppb
	Li	6	1211164.7		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: Standard 5

Sample Date: Friday, October 21, 2022 10:01:12

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	71105.8		ppb
	Be	9	696876.2	102.40098	ppb
	Cr	52	1171018.2	101.22378	ppb
	Mn	55	826405.4	102.08805	ppb
	Co	59	492523	101.56248	ppb
	Ni	60	487783.7	102.20008	ppb
	As	75	388105.6	102.34319	ppb
	Se	82	54355.1	101.57891	ppb
	Cd	111	408785.1	101.20048	ppb
	Cd (114)	114	971246.3	101.27895	ppb
	Sb	123	957116.6	101.5371	ppb
	Pb	208	2345092.7	100.73493	ppb
	Kr	83	91		ppb
>	Rh (IS1)	103	684052.4		ppb
>	Ho (IS1)	165	860491		ppb
>	Sc (IS1)	45	723224.4		ppb
	Li	6	1270217.4		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: Standard 6

Sample Date: Friday, October 21, 2022 10:03:19

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	86907.4		ppb
	Be	9	2208.5	0.27789	ppb
	Cr	52	30532.9	0.37562	ppb
	Mn	55	3204.1	0.30695	ppb
	Co	59	1622.4	0.28417	ppb
	Ni	60	2421.9	0.28837	ppb
	As	75	259.7	0.32472	ppb
	Se	82	294	0.33034	ppb
	Cd	111	1188.8	0.27736	ppb
	Cd (114)	114	3194	0.28469	ppb
	Sb	123	2936.6	0.26655	ppb
	Pb	208	7955	0.29003	ppb
	Kr	83	80.7		ppb
>	Rh (IS1)	103	754584.5		ppb
>	Ho (IS1)	165	915937.8		ppb
>	Sc (IS1)	45	792070.4		ppb
	Li	6	1399405		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Date: Friday, October 21, 2022 10:05:27

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	72584.9		ppb
	Be	9	121.3	-0.00002	ppb
	Cr	52	24411.8	0.00136	ppb
	Mn	55	445.7	-0.00001	ppb
	Co	59	101	0.00005	ppb
	Ni	60	860.4	0.00005	ppb
	As	75	-1037.8	0.00095	ppb
	Se	82	94.4	-0.00077	ppb
	Cd	111	-40.7	0.0001	ppb
	Cd (114)	114	181.3	-0.00003	ppb
	Sb	123	259	0.00016	ppb
	Pb	208	760	0	ppb
	Kr	83	76.7		ppb
>	Rh (IS1)	103	712170.5		ppb
>	Ho (IS1)	165	870416.5		ppb
>	Sc (IS1)	45	736159		ppb
	Li	6	1306072.3		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 2

Sample Date: Friday, October 21, 2022 10:07:34

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	69254.1		ppb
	Be	9	6934.6	1.00794	ppb
	Cr	52	35036.4	1.04124	ppb
	Mn	55	8593.6	1.01527	ppb
	Co	59	5029.3	1.02346	ppb
	Ni	60	5599.9	1.00883	ppb
	As	75	2788.1	1.00007	ppb
	Se	82	619.4	0.99773	ppb
	Cd	111	4051.7	1.01838	ppb
	Cd (114)	114	9845.2	1.01449	ppb
	Sb	123	9629.2	1.02743	ppb
	Pb	208	24161.8	1.03909	ppb
	Kr	83	79.7		ppb
>	Rh (IS1)	103	680096.6		ppb
>	Ho (IS1)	165	833697.9		ppb
>	Sc (IS1)	45	701599.3		ppb
	Li	6	1255669.1		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 3

Sample Date: Friday, October 21, 2022 10:09:41

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	62010.9		ppb
	Be	9	463932.3	76.31304	ppb
	Cr	52	797865.5	76.69911	ppb
	Mn	55	542413.4	74.9777	ppb
	Co	59	327553.5	75.59331	ppb
	Ni	60	321735.5	75.41568	ppb
	As	75	260345.2	76.8798	ppb
	Se	82	37238.4	77.82718	ppb
	Cd	111	274633.1	76.08128	ppb
	Cd (114)	114	649490.5	75.78839	ppb
	Sb	123	635506.9	76.9725	ppb
	Pb	208	1591891.8	78.06523	ppb
	Kr	83	78.7		ppb
>	Rh (IS1)	103	611166.7		ppb
>	Ho (IS1)	165	753553.3		ppb
>	Sc (IS1)	45	629760.7		ppb
	Li	6	1117134.8		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 4

Sample Date: Friday, October 21, 2022 10:11:48

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	63623.6		ppb
	Be	9	299592.9	48.03658	ppb
	Cr	52	533474.9	49.26345	ppb
	Mn	55	357975.8	48.22541	ppb
	Co	59	216697.6	48.74758	ppb
	Ni	60	210060.4	47.93147	ppb
	As	75	165794.9	47.82807	ppb
	Se	82	24100.7	49.04104	ppb
	Cd	111	179113.7	48.37153	ppb
	Cd (114)	114	425058.9	48.33804	ppb
	Sb	123	406207.8	47.01532	ppb
	Pb	208	1039985.2	48.73927	ppb
	Kr	83	83		ppb
>	Rh (IS1)	103	627149.3		ppb
>	Ho (IS1)	165	788465.2		ppb
>	Sc (IS1)	45	652594.3		ppb
	Li	6	1152336		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 5

Sample Date: Friday, October 21, 2022 10:13:56

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	60457.4		ppb
	Be	9	145213.8	24.5848	ppb
	Cr	52	271153.2	25.50645	ppb
	Mn	55	171647.5	24.41183	ppb
	Co	59	104685.2	24.87972	ppb
	Ni	60	101853.3	24.45959	ppb
	As	75	81180.8	24.84947	ppb
	Se	82	11761.7	25.19401	ppb
	Cd	111	87311.6	24.90702	ppb
	Cd (114)	114	206906.4	24.85056	ppb
	Sb	123	193542.1	23.73861	ppb
	Pb	208	509616.3	25.33667	ppb
	Kr	83	72.3		ppb
>	Rh (IS1)	103	593770		ppb
>	Ho (IS1)	165	743300.6		ppb
>	Sc (IS1)	45	614805.2		ppb
	Li	6	1090189.6		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 6

Sample Date: Friday, October 21, 2022 10:16:04

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	68994.3		ppb
	Be	9	287	0.02964	ppb
	Cr	52	30741.8	0.8456	ppb
	Mn	55	4916.3	0.59824	ppb
	Co	59	3205.4	0.68856	ppb
	Ni	60	10514.1	2.191	ppb
	As	75	-646.9	0.08275	ppb
	Se	82	130.7	0.09387	ppb
	Cd	111	223.3	0.07084	ppb
	Cd (114)	114	1267.6	0.12427	ppb
	Sb	123	4347.6	0.45005	ppb
	Pb	208	4769	0.17507	ppb
	Kr	83	78		ppb
>	Rh (IS1)	103	639557.2		ppb
>	Ho (IS1)	165	856096.8		ppb
>	Sc (IS1)	45	713206.7		ppb
	Li	6	1241962.9		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 7

Sample Date: Friday, October 21, 2022 10:18:11

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	79622.7		ppb
	Be	9	144.7	0.00194	ppb
	Cr	52	2656836.3	207.66078	ppb
	Mn	55	1766166.7	195.21371	ppb
	Co	59	1034654.3	190.93833	ppb
	Ni	60	1034021.8	193.92401	ppb
	As	75	409951.4	96.69815	ppb
	Se	82	58096.5	97.07339	ppb
	Cd	111	431259	95.49562	ppb
	Cd (114)	114	1022079.1	95.33889	ppb
	Sb	123	716.1	0.0447	ppb
	Pb	208	2213.1	0.05721	ppb
	Kr	83	84.3		ppb
>	Rh (IS1)	103	764747.8		ppb
>	Ho (IS1)	165	916511.3		ppb
>	Sc (IS1)	45	810975.6		ppb
	Li	6	1442446.2		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 8

Sample Date: Friday, October 21, 2022 10:20:19

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	89952.6		ppb
	Be	9	2011.5	0.246	ppb
	Cr	52	35525.8	0.72432	ppb
	Mn	55	3689.2	0.35502	ppb
	Co	59	1871.5	0.32518	ppb
	Ni	60	2423.9	0.28169	ppb
	As	75	-106	0.23546	ppb
	Se	82	301.1	0.3322	ppb
	Cd	111	1290	0.29496	ppb
	Cd (114)	114	3216.3	0.28132	ppb
	Sb	123	2753	0.24803	ppb
	Pb	208	6692.4	0.23881	ppb
	Kr	83	74.7		ppb
>	Rh (IS1)	103	768802.6		ppb
>	Ho (IS1)	165	912673.6		ppb
>	Sc (IS1)	45	815573		ppb
	Li	6	1477024.9		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 2

Sample Date: Friday, October 21, 2022 10:22:26

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	72424.7		ppb
	Be	9	7177.1	1.01396	ppb
	Cr	52	39581.6	1.34597	ppb
	Mn	55	9070	1.04267	ppb
	Co	59	5212.8	1.03115	ppb
	Ni	60	5843.7	1.02571	ppb
	As	75	2936.5	1.01462	ppb
	Se	82	646.5	1.01354	ppb
	Cd	111	4207.3	1.02732	ppb
	Cd (114)	114	10111	1.01263	ppb
	Sb	123	10000.8	1.07104	ppb
	Pb	208	24088.5	1.03863	ppb
	Kr	83	72.3		ppb
>	Rh (IS1)	103	700040.9		ppb
>	Ho (IS1)	165	831515.2		ppb
>	Sc (IS1)	45	736856.1		ppb
	Li	6	1320969		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Date: Friday, October 21, 2022 10:24:34

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	74416.3		ppb
	Be	9	62.3	-0.0084	ppb
	Cr	52	25806.9	0.07922	ppb
	Mn	55	471.3	0.0022	ppb
	Co	59	127.7	0.00496	ppb
	Ni	60	787.7	-0.01687	ppb
	As	75	-959.4	0.0241	ppb
	Se	82	92.4	-0.00642	ppb
	Cd	111	-33.9	0.00207	ppb
	Cd (114)	114	189.4	0.00072	ppb
	Sb	123	203.9	-0.00543	ppb
	Pb	208	682.7	-0.00266	ppb
	Kr	83	72		ppb
>	Rh (IS1)	103	725393.7		ppb
>	Ho (IS1)	165	861349.6		ppb
>	Sc (IS1)	45	757970.3		ppb
	Li	6	1341338.1		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: LRB

Sample Date: Friday, October 21, 2022 10:37:17

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	64213.3		ppb
	Be	9	22.3	-0.01353	ppb
	Cr	52	22372.3	0.07897	ppb
	Mn	55	572.7	0.02406	ppb
	Co	59	50.3	-0.00875	ppb
	Ni	60	602.3	-0.03578	ppb
	As	75	-1236.6	-0.0893	ppb
	Se	82	68.1	-0.03219	ppb
	Cd	111	-84.6	-0.013	ppb
	Cd (114)	114	39.3	-0.01369	ppb
	Sb	123	105.4	-0.01451	ppb
	Pb	208	1767	0.0531	ppb
	Kr	83	71.3		ppb
>	Rh (IS1)	103	631349.6		ppb
>	Ho (IS1)	165	765714.5		ppb
>	Sc (IS1)	45	641589.4		ppb
	Li	6	1156087.2		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: LRB SPK

Sample Date: Friday, October 21, 2022 10:39:24

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	65820.2				ppb
	Be	9	333049		51.5703		ppb
	Cr	52	588146.3		52.59669		ppb
	Mn	55	399048.5		51.92152		ppb
	Co	59	242301.3		52.63844		ppb
	Ni	60	239542.2		52.81958		ppb
	As	75	185514.8		51.63614		ppb
	Se	82	26606.9		52.27419		ppb
	Cd	111	198405.5		51.75768		ppb
	Cd (114)	114	467313.3		51.34193		ppb
	Sb	123	446408.9		51.7642		ppb
	Pb	208	1140802.5		53.5892		ppb
	Kr	83	79.3				ppb
>	Rh (IS1)	103	649380.9				ppb
>	Ho (IS1)	165	786712.3				ppb
>	Sc (IS1)	45	662420				ppb
	Li	6	1184506.8				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-1 FH

Sample Date: Friday, October 21, 2022 10:41:31

Sample Description: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	5056498.6				ppb
	Be	9	35294.8		5.08586		ppb
	Cr	52	295588.1		23.5738		ppb
	Mn	55	117902.3		14.27718		ppb
	Co	59	108058.8		21.89683		ppb
	Ni	60	491209.4		101.24508		ppb
	As	75	840336.9		217.59238		ppb
	Se	82	11812		21.57622		ppb
	Cd	111	85457.4		20.81446		ppb
	Cd (114)	114	200483.8		20.54528		ppb
	Sb	123	479953.5		50.236		ppb
	Pb	208	27927493		1184.3144		ppb
	Kr	83	86.3				ppb
>	Rh (IS1)	103	695593.6				ppb
>	Ho (IS1)	165	872185.8				ppb
>	Sc (IS1)	45	767463				ppb
	Li	6	1229111.6				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-1 FH

Sample Date: Friday, October 21, 2022 10:43:38

Sample Description: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	177439				ppb
	Be	9	824.4		0.09724		ppb
	Cr	52	31352.6		0.5432		ppb
	Mn	55	2915.3		0.28747		ppb
	Co	59	2412.6		0.44965		ppb
	Ni	60	11336.1		2.07441		ppb
	As	75	17908.7		4.71161		ppb
	Se	82	377.2		0.49646		ppb
	Cd	111	1795.5		0.42937		ppb
	Cd (114)	114	4455.1		0.42082		ppb
	Sb	123	10907		1.10502		ppb
	Pb	208	539637.5		22.64864		ppb
	Kr	83	66				ppb
>	Rh (IS1)	103	724815.2				ppb
>	Ho (IS1)	165	879765.1				ppb
>	Sc (IS1)	45	760705.4				ppb
	Li	6	1366203.2				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-2 FH

Sample Date: Friday, October 21, 2022 10:45:45

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	4589361.1				ppb
	Be	9	34888.3		4.86293		ppb
	Cr	52	262847.9		19.98946		ppb
	Mn	55	132764.9		15.55782		ppb
	Co	59	103134.5		20.21946		ppb
	Ni	60	429691.4		85.66296		ppb
	As	75	1184512.5		296.65907		ppb
	Se	82	9429.8		16.62041		ppb
	Cd	111	76025.5		17.91321		ppb
	Cd (114)	114	180309.5		17.8764		ppb
	Sb	123	602085		60.18		ppb
	Pb	208	30337565		1228.4358		ppb
	Kr	83	100.7				ppb
>	Rh (IS1)	103	718860.1				ppb
>	Ho (IS1)	165	912988.7				ppb
>	Sc (IS1)	45	817318.6				ppb
	Li	6	1310628.3				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-2 FH

Sample Date: Friday, October 21, 2022 10:47:52

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	4520579				ppb
	Be	9	34296.7		4.84515		ppb
	Cr	52	257486.9		19.83332		ppb
	Mn	55	130535.2		15.5067		ppb
	Co	59	100983.1		20.0665		ppb
	Ni	60	419258.1		84.704		ppb
	As	75	1166730.5		296.19091		ppb
	Se	82	9245		16.51824		ppb
	Cd	111	74889		17.88817		ppb
	Cd (114)	114	177464.1		17.83253		ppb
	Sb	123	591513.1		59.58803		ppb
	Pb	208	29980393		1223.5301		ppb
	Kr	83	109				ppb
>	Rh (IS1)	103	709241.5				ppb
>	Ho (IS1)	165	905923.7				ppb
>	Sc (IS1)	45	810680.8				ppb
	Li	6	1298027.5				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-2 FH

Sample Date: Friday, October 21, 2022 10:49:59

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	153810.5				ppb
	Be	9	786		0.10467		ppb
	Cr	52	29819.5		0.70377		ppb
	Mn	55	5152.4		0.618		ppb
	Co	59	2159.2		0.44934		ppb
	Ni	60	11189		2.30084		ppb
	As	75	24613		7.08459		ppb
	Se	82	306.8		0.43541		ppb
	Cd	111	1522.9		0.40711		ppb
	Cd (114)	114	3838.4		0.40349		ppb
	Sb	123	12608.2		1.43035		ppb
	Pb	208	563833.8		26.35982		ppb
	Kr	83	73.7				ppb
>	Rh (IS1)	103	649673.8				ppb
>	Ho (IS1)	165	790282.4				ppb
>	Sc (IS1)	45	680748.3				ppb
	Li	6	1222258.6				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 FH

Sample Date: Friday, October 21, 2022 10:56:20

Sample Description: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	5092348.4				ppb
	Be	9	334545.6	54.24292			ppb
	Cr	52	751340.7	71.05679			ppb
	Mn	55	438768	59.78209			ppb
	Co	59	354848.5	80.76789			ppb
	Ni	60	1042007.3	241.13864			ppb
	As	75	984284.6	285.61302			ppb
	Se	82	33067.7	68.06955			ppb
	Cd	111	289679.8	79.09851			ppb
	Cd (114)	114	688682.6	79.21818			ppb
	Sb	123	871374.6	99.28998			ppb
	Pb	208	37580716	1736.3393			ppb
	Kr	83	84.3				ppb
>	Rh (IS1)	103	620441.2				ppb
>	Ho (IS1)	165	801140.1				ppb
>	Sc (IS1)	45	665068.4				ppb
	Li	6	1113434.1				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Date: Friday, October 21, 2022 11:01:51

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	72278.7				ppb
	Be	9	35.7	-0.0119			ppb
	Cr	52	24195.1	0.06218			ppb
	Mn	55	367	-0.00756			ppb
	Co	59	60	-0.00772			ppb
	Ni	60	673	-0.03257			ppb
	As	75	-864.6	0.03603			ppb
	Se	82	70.4	-0.03732			ppb
	Cd	111	-45.3	-0.00161			ppb
	Cd (114)	114	67.8	-0.01105			ppb
	Sb	123	600.6	0.03793			ppb
	Pb	208	4109.9	0.14648			ppb
	Kr	83	72.7				ppb
>	Rh (IS1)	103	687014.4				ppb
>	Ho (IS1)	165	849497.1				ppb
>	Sc (IS1)	45	713046.3				ppb
	Li	6	1305278.9				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 4

Sample Date: Friday, October 21, 2022 11:03:59

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	74872.8				ppb
	Be	9	345453	48.84228			ppb
	Cr	52	591909.4	48.17037			ppb
	Mn	55	398298.2	47.32122			ppb
	Co	59	238801.8	47.38047			ppb
	Ni	60	237472.4	47.79251			ppb
	As	75	185254.4	47.14071			ppb
	Se	82	26341.7	47.26833			ppb
	Cd	111	199062.2	47.41342			ppb
	Cd (114)	114	471780.5	47.3295			ppb
	Sb	123	458826.2	47.54084			ppb
	Pb	208	1163530.5	48.82268			ppb
	Kr	83	72.3				ppb
>	Rh (IS1)	103	710839.1				ppb
>	Ho (IS1)	165	880681.8				ppb
>	Sc (IS1)	45	743738.2				ppb
	Li	6	1357949.1				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 FH

Sample Da: Friday, October 21, 2022 11:06:49

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	172970.2				ppb
	Be	9	800		0.10003		ppb
	Cr	52	28577.6		0.44338		ppb
	Mn	55	2323.9		0.23338		ppb
	Co	59	2928.7		0.5811		ppb
	Ni	60	18914		3.77821		ppb
	As	75	16004		4.4488		ppb
	Se	82	258.1		0.31077		ppb
	Cd	111	2429.4		0.60875		ppb
	Cd (114)	114	5919.4		0.5963		ppb
	Sb	123	10343		1.08602		ppb
	Pb	208	692464.5		30.15151		ppb
	Kr	83	68.7				ppb
>	Rh (IS1)	103	687520.4				ppb
>	Ho (IS1)	165	848056.7				ppb
>	Sc (IS1)	45	715953.8				ppb
	Li	6	1311808.7				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 FH

Sample Da: Friday, October 21, 2022 11:08:56

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	182663.7				ppb
	Be	9	347816.9		49.93635		ppb
	Cr	52	602836.7		49.87652		ppb
	Mn	55	422750.7		51.00591		ppb
	Co	59	255455.8		51.46795		ppb
	Ni	60	268082.7		54.81589		ppb
	As	75	207806		53.66597		ppb
	Se	82	27928.4		50.90189		ppb
	Cd	111	201628.5		48.77001		ppb
	Cd (114)	114	478393		48.7288		ppb
	Sb	123	461566.7		48.64767		ppb
	Pb	208	1915868		81.78775		ppb
	Kr	83	76.7				ppb
>	Rh (IS1)	103	700031.2				ppb
>	Ho (IS1)	165	865638.9				ppb
>	Sc (IS1)	45	727382.3				ppb
	Li	6	1333299.2				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-4 FH

Sample Da: Friday, October 21, 2022 11:11:03

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	454548.8				ppb
	Be	9	2869.3		0.45226		ppb
	Cr	52	265631.1		23.85303		ppb
	Mn	55	86822.3		11.81531		ppb
	Co	59	9061.3		2.04975		ppb
	Ni	60	146856.3		33.92652		ppb
	As	75	169053.1		49.46067		ppb
	Se	82	2790.9		5.61419		ppb
	Cd	111	9361.4		2.57512		ppb
	Cd (114)	114	21787.3		2.49951		ppb
	Sb	123	64167.7		7.48233		ppb
	Pb	208	6971083.4		329.16958		ppb
	Kr	83	100.7				ppb
>	Rh (IS1)	103	618468.7				ppb
>	Ho (IS1)	165	784021				ppb
>	Sc (IS1)	45	659300.2				ppb
	Li	6	1117275.9				ppb



## PerkinElmer Nexlon 1000 ICP-MS

## Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-4 FH

Sample Date: Friday, October 21, 2022 11:13:10

Sample Date: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	164293.1				ppb
	Be	9	686		0.07824		ppb
	Cr	52	74246.7		4.12486		ppb
	Mn	55	19402.4		2.21465		ppb
	Co	59	1868.5		0.34454		ppb
	Ni	60	33040		6.38785		ppb
	As	75	43891.7		11.183		ppb
	Se	82	906.4		1.43561		ppb
	Cd	111	2276.3		0.54263		ppb
	Cd (114)	114	5440.5		0.51866		ppb
	Sb	123	14604.1		1.42217		ppb
	Pb	208	1409576.3		56.60613		ppb
	Kr	83	77.3				ppb
>	Rh (IS1)	103	723021.7				ppb
>	Ho (IS1)	165	919621				ppb
>	Sc (IS1)	45	770370.7				ppb
	Li	6	1374939.6				ppb

## Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-5 FH

Sample Date: Friday, October 21, 2022 11:15:17

Sample Date: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	66525.3				ppb
	Be	9	253.7		0.0236		ppb
	Cr	52	163330		13.70763		ppb
	Mn	55	36868.4		4.93483		ppb
	Co	59	596.7		0.11486		ppb
	Ni	60	89466.2		20.39436		ppb
	As	75	259.4		0.33807		ppb
	Se	82	98.7		0.03244		ppb
	Cd	111	743.6		0.21098		ppb
	Cd (114)	114	764.3		0.06925		ppb
	Sb	123	4214.5		0.45018		ppb
	Pb	208	185144.7		8.45415		ppb
	Kr	83	86.3				ppb
>	Rh (IS1)	103	624803				ppb
>	Ho (IS1)	165	807080.3				ppb
>	Sc (IS1)	45	658980.7				ppb
	Li	6	1165705.7				ppb

## Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452 C8a

Sample Date: Friday, October 21, 2022 11:17:24

Sample Date: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	70740.7				ppb
	Be	9	37.3		-0.01155		ppb
	Cr	52	32066.1		0.80504		ppb
	Mn	55	4503.5		0.51225		ppb
	Co	59	126.7		0.00656		ppb
	Ni	60	2422.6		0.34352		ppb
	As	75	-509.9		0.12629		ppb
	Se	82	71.4		-0.03356		ppb
	Cd	111	-1.3		0.00934		ppb
	Cd (114)	114	103.1		-0.00725		ppb
	Sb	123	399.3		0.01499		ppb
	Pb	208	11875.2		0.47548		ppb
	Kr	83	76.7				ppb
>	Rh (IS1)	103	673537.4				ppb
>	Ho (IS1)	165	865266.4				ppb
>	Sc (IS1)	45	650552.9				ppb
	Li	6	1270807.3				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: LRB

Sample Date: Friday, October 21, 2022 11:19:31

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	65431.1				ppb
	Be	9	18.3		-0.01418		ppb
	Cr	52	21805.7		0.05832		ppb
	Mn	55	411.7		0.00319		ppb
	Co	59	46.7		-0.00941		ppb
	Ni	60	581.7		-0.03794		ppb
	As	75	-963		-0.01381		ppb
	Se	82	64.4		-0.03858		ppb
	Cd	111	-40.3		-0.00143		ppb
	Cd (114)	114	33.6		-0.01429		ppb
	Sb	123	155.5		-0.00908		ppb
	Pb	208	2868.5		0.10482		ppb
	Kr	83	79.7				ppb
>	Rh (IS1)	103	620770.6				ppb
>	Ho (IS1)	165	788223.1				ppb
>	Sc (IS1)	45	648820.4				ppb
	Li	6	1197996				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: LRB SPK

Sample Date: Friday, October 21, 2022 11:21:38

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	68586.6				ppb
	Be	9	354040.4		55.21979		ppb
	Cr	52	609728.1		55.00208		ppb
	Mn	55	403763.7		52.90711		ppb
	Co	59	247898.1		54.26781		ppb
	Ni	60	239372.4		53.13879		ppb
	As	75	191765.3		53.76352		ppb
	Se	82	27298.4		54.03564		ppb
	Cd	111	203498.9		53.45968		ppb
	Cd (114)	114	482274.4		53.36559		ppb
	Sb	123	461358.8		51.32196		ppb
	Pb	208	1207957.9		54.45254		ppb
	Kr	83	79.7				ppb
>	Rh (IS1)	103	644829.7				ppb
>	Ho (IS1)	165	820142.7				ppb
>	Sc (IS1)	45	671397.4				ppb
	Li	6	1253425.1				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-1 BH

Sample Date: Friday, October 21, 2022 11:23:45

Sample Description: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	129840.7				ppb
	Be	9	761.7		0.14182		ppb
	Cr	52	1082372.5		127.70106		ppb
	Mn	55	239115		40.10066		ppb
	Co	59	12385.8		3.46236		ppb
	Ni	60	2201363.7		625.61649		ppb
	As	75	6027092.7		2158.2117		ppb
	Se	82	588782.7		1500.8855		ppb
	Cd	111	3111.5		1.06319		ppb
	Cd (114)	114	6941.6		0.9793		ppb
	Sb	123	12917.9		1.65492		ppb
	Pb	208	869166.1		44.34426		ppb
	Kr	83	267.7				ppb
>	Rh (IS1)	103	502601.1				ppb
>	Ho (IS1)	165	726305.2				ppb
>	Sc (IS1)	45	579614.6				ppb
	Li	6	1032524.3				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-1 BH

Sample Date: Friday, October 21, 2022 11:25:52

Sample Description: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	91670.8				ppb
	Be	9	69.7	-0.00881			ppb
	Cr	52	66620.9	2.72678			ppb
	Mn	55	9426.3	0.89771			ppb
	Co	59	484	0.06134			ppb
	Ni	60	82556	13.96197			ppb
	As	75	237716.6	51.28799			ppb
	Se	82	25008	38.05829			ppb
	Cd	111	49.4	0.01962			ppb
	Cd (114)	114	446.8	0.01993			ppb
	Sb	123	1145	0.05943			ppb
	Pb	208	39788	1.18891			ppb
	Kr	83	83.3				ppb
>	Rh (IS1)	103	836274.3				ppb
>	Ho (IS1)	165	1199964.2				ppb
>	Sc (IS1)	45	877523.1				ppb
	Li	6	1667497				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Date: Friday, October 21, 2022 11:32:49

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	76902.3				ppb
	Be	9	19.7	-0.0144			ppb
	Cr	52	22480.2	-0.18355			ppb
	Mn	55	383.3	-0.00791			ppb
	Co	59	40.3	-0.01209			ppb
	Ni	60	1373.7	0.10016			ppb
	As	75	1206.3	0.56285			ppb
	Se	82	321.5	0.40092			ppb
	Cd	111	-105.8	-0.01529			ppb
	Cd (114)	114	22.3	-0.01596			ppb
	Sb	123	164.5	-0.01103			ppb
	Pb	208	1007.7	0.00753			ppb
	Kr	83	69				ppb
>	Rh (IS1)	103	719951.2				ppb
>	Ho (IS1)	165	935018.2				ppb
>	Sc (IS1)	45	748756.4				ppb
	Li	6	1418088.3				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 4

Sample Date: Friday, October 21, 2022 11:37:17

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	67927.3				ppb
	Be	9	314706.5	50.29112			ppb
	Cr	52	546914.6	50.38767			ppb
	Mn	55	354719.2	47.62464			ppb
	Co	59	218204.2	48.92599			ppb
	Ni	60	206547.1	46.98545			ppb
	As	75	165422.4	47.56943			ppb
	Se	82	24255.8	49.18758			ppb
	Cd	111	178300.6	47.99555			ppb
	Cd (114)	114	421928	47.83601			ppb
	Sb	123	407951.9	44.98531			ppb
	Pb	208	1072572.6	47.90191			ppb
	Kr	83	74.7				ppb
>	Rh (IS1)	103	629205.9				ppb
>	Ho (IS1)	165	827346.4				ppb
>	Sc (IS1)	45	655519.5				ppb
	Li	6	1238595.2				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-2 BH

Sample Da: Friday, October 21, 2022 11:39:44

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report	Unit
	Li (7)	7	70817.4					ppb
	Be	9	797.4		0.20553			ppb
	Cr	52	390748.6		59.75136			ppb
	Mn	55	118365.4		26.15349			ppb
	Co	59	26984.7		9.95815			ppb
	Ni	60	260303.7		97.88626			ppb
	As	75	4942824.9		2335.721			ppb
	Se	82	602614.7		2026.3853			ppb
	Cd	111	1017.1		0.46901			ppb
	Cd (114)	114	1740.8		0.32028			ppb
	Sb	123	6731.7		1.04505			ppb
	Pb	208	512229.9		32.38924			ppb
	Kr	83	234.3					ppb
>	Rh (IS1)	103	381230.2					ppb
>	Ho (IS1)	165	585673.7					ppb
>	Sc (IS1)	45	434678.7					ppb
	Li	6	792248.4					ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-2 BH

Sample Da: Friday, October 21, 2022 11:41:51

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report	Unit
	Li (7)	7	81696.1					ppb
	Be	9	159		0.01939			ppb
	Cr	52	441966.3		58.42141			ppb
	Mn	55	139909.6		26.74912			ppb
	Co	59	31150.7		9.93782			ppb
	Ni	60	287393.6		93.38044			ppb
	As	75	5390022.1		2201.1869			ppb
	Se	82	655412.3		1903.3994			ppb
	Cd	111	1297.1		0.51025			ppb
	Cd (114)	114	-2769.8		-0.42583			ppb
	Sb	123	6207.7		0.74912			ppb
	Pb	208	593414.6		30.02488			ppb
	Kr	83	234					ppb
>	Rh (IS1)	103	441125.4					ppb
>	Ho (IS1)	165	731572.9					ppb
>	Sc (IS1)	45	498129.6					ppb
	Li	6	934091.8					ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-2 BH

Sample Da: Friday, October 21, 2022 11:43:58

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report	Unit
	Li (7)	7	92046.5					ppb
	Be	9	50.3		-0.01126			ppb
	Cr	52	42804		0.9299			ppb
	Mn	55	7506.4		0.68178			ppb
	Co	59	1451.1		0.21689			ppb
	Ni	60	18256.2		2.86205			ppb
	As	75	299565.6		62.72308			ppb
	Se	82	38204.5		56.58361			ppb
	Cd	111	-4.7		0.00846			ppb
	Cd (114)	114	185.1		-0.00298			ppb
	Sb	123	555		0.01086			ppb
	Pb	208	33942.5		0.90702			ppb
	Kr	83	79.7					ppb
>	Rh (IS1)	103	859713.9					ppb
>	Ho (IS1)	165	1326288.3					ppb
>	Sc (IS1)	45	894827					ppb
	Li	6	1736487.4					ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-2 BH

Sample Da: Friday, October 21, 2022 11:46:05

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	78956.7				ppb
	Be	9	29.3		-0.01317		ppb
	Cr	52	35555.5		0.81607		ppb
	Mn	55	4420.1		0.44961		ppb
	Co	59	932.4		0.15682		ppb
	Ni	60	12253.7		2.19211		ppb
	As	75	214571.7		52.14191		ppb
	Se	82	29559.5		50.69115		ppb
	Cd	111	-48		-0.00125		ppb
	Cd (114)	114	116.8		-0.00707		ppb
	Sb	123	386.9		0.00613		ppb
	Pb	208	22048.6		0.73588		ppb
	Kr	83	83.7				ppb
>	Rh (IS1)	103	744099.8				ppb
>	Ho (IS1)	165	1060901.4				ppb
>	Sc (IS1)	45	771052.6				ppb
	Li	6	1468486.4				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Da: Friday, October 21, 2022 11:48:12

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	111974.3				ppb
	Be	9	289		0.04871		ppb
	Cr	52	623925.2		83.03539		ppb
	Mn	55	210533.4		40.12629		ppb
	Co	59	52891.5		16.83079		ppb
	Ni	60	297922.5		96.57323		ppb
	As	75	7887549.9		3212.2249		ppb
	Se	82	787293.5		2280.3219		ppb
	Cd	111	1011.3		0.39645		ppb
	Cd (114)	114	-6147.3		-0.9612		ppb
	Sb	123	51479.2		6.51872		ppb
	Pb	208	581361.8		29.81615		ppb
	Kr	83	299.3				ppb
>	Rh (IS1)	103	442463				ppb
>	Ho (IS1)	165	722174.7				ppb
>	Sc (IS1)	45	505154.7				ppb
	Li	6	934450.2				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Da: Friday, October 21, 2022 11:50:19

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	118865.5				ppb
	Be	9	138289		29.83807		ppb
	Cr	52	1113581.2		142.07831		ppb
	Mn	55	603593.3		109.42878		ppb
	Co	59	298616		90.3631		ppb
	Ni	60	464921.9		143.12061		ppb
	As	75	8287527.2		3201.2086		ppb
	Se	82	831527.5		2285.1637		ppb
	Cd	111	78289.1		28.47162		ppb
	Cd (114)	114	174972.7		26.78268		ppb
	Sb	123	289195.5		32.22379		ppb
	Pb	208	1526898.4		68.88895		ppb
	Kr	83	296				ppb
>	Rh (IS1)	103	465855				ppb
>	Ho (IS1)	165	819629.7				ppb
>	Sc (IS1)	45	529481.3				ppb
	Li	6	991937.4				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Da: Friday, October 21, 2022 11:52:26

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	94861.7				ppb
	Be	9	1521.5	0.15504			ppb
	Cr	52	53046.5	1.61814			ppb
	Mn	55	12030.9	1.11046			ppb
	Co	59	3809.3	0.5921			ppb
	Ni	60	19365	3.01887			ppb
	As	75	373557.7	77.67704			ppb
	Se	82	37865.5	55.75945			ppb
	Cd	111	789.1	0.15894			ppb
	Cd (114)	114	2247.1	0.1624			ppb
	Sb	123	5461.2	0.32325			ppb
	Pb	208	38938.5	0.98783			ppb
	Kr	83	83.7				ppb
>	Rh (IS1)	103	864606.7				ppb
>	Ho (IS1)	165	1393070.3				ppb
>	Sc (IS1)	45	912184.1				ppb
	Li	6	1772780.8				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Da: Friday, October 21, 2022 11:54:33

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	80272.3				ppb
	Be	9	365903.2	49.35264			ppb
	Cr	52	721118.3	56.30807			ppb
	Mn	55	468001.7	53.03657			ppb
	Co	59	289045.3	54.7008			ppb
	Ni	60	257336.9	49.41881			ppb
	As	75	480614.2	116.30246			ppb
	Se	82	56877.2	97.5607			ppb
	Cd	111	212016.8	48.17835			ppb
	Cd (114)	114	503208.5	48.15835			ppb
	Sb	123	514847	42.2601			ppb
	Pb	208	1496086.6	49.72979			ppb
	Kr	83	93.7				ppb
>	Rh (IS1)	103	745073.3				ppb
>	Ho (IS1)	165	1111225.3				ppb
>	Sc (IS1)	45	775965.9				ppb
	Li	6	1483263.3				ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-4 BH

Sample Da: Friday, October 21, 2022 11:56:39

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	85434.1				ppb
	Be	9	716.7	0.10478			ppb
	Cr	52	550734.5	52.61413			ppb
	Mn	55	91660.5	12.70257			ppb
	Co	59	5398.2	1.23777			ppb
	Ni	60	227063.5	53.49803			ppb
	As	75	34218.7	10.46242			ppb
	Se	82	3110.8	6.43952			ppb
	Cd	111	-52.6	-0.00399			ppb
	Cd (114)	114	1451.8	0.15732			ppb
	Sb	123	8839	0.89368			ppb
	Pb	208	407007.7	16.69392			ppb
	Kr	83	79.3				ppb
>	Rh (IS1)	103	607360.8				ppb
>	Ho (IS1)	165	900314.1				ppb
>	Sc (IS1)	45	631614				ppb
	Li	6	1191062.8				ppb



## PerkinElmer Nexlon 1000 ICP-MS

## Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-4 BH undig

Sample Da: Friday, October 21, 2022 11:58:46

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	71108				ppb
	Be	9	85		-0.00317		ppb
	Cr	52	215460		19.1052		ppb
	Mn	55	30969.7		4.21225		ppb
	Co	59	1649.1		0.35911		ppb
	Ni	60	91785.1		21.2993		ppb
	As	75	14828.7		4.60885		ppb
	Se	82	1753.6		3.48798		ppb
	Cd	111	195.9		0.06364		ppb
	Cd (114)	114	494.2		0.0392		ppb
	Sb	123	2370.9		0.21474		ppb
	Pb	208	160970.7		6.6165		ppb
	Kr	83	73.3				ppb
>	Rh (IS1)	103	613792.5				ppb
>	Ho (IS1)	165	894865.4				ppb
>	Sc (IS1)	45	613784.4				ppb
	Li	6	1196424.5				ppb

## Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Da: Friday, October 21, 2022 12:08:18

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	76508.9				ppb
	Be	9	66.7		-0.00776		ppb
	Cr	52	21646.4		-0.23855		ppb
	Mn	55	408.3		-0.00459		ppb
	Co	59	83.7		-0.00348		ppb
	Ni	60	855.7		-0.00114		ppb
	As	75	1350.9		0.59997		ppb
	Se	82	363.1		0.4796		ppb
	Cd	111	-109.7		-0.01602		ppb
	Cd (114)	114	103.9		-0.00781		ppb
	Sb	123	224.1		-0.00612		ppb
	Pb	208	821.3		-0.00118		ppb
	Kr	83	69.3				ppb
>	Rh (IS1)	103	715553.2				ppb
>	Ho (IS1)	165	976135.2				ppb
>	Sc (IS1)	45	740224.2				ppb
	Li	6	1405163.1				ppb

## Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 4

Sample Da: Friday, October 21, 2022 12:21:16

Sample Description:

## Concentration Results

	Analyte	Mass	Meas.	Intens	Conc.	Mear	Report Unit
	Li (7)	7	70469.1				ppb
	Be	9	327207.2		50.24761		ppb
	Cr	52	565774.5		50.06481		ppb
	Mn	55	365764.7		47.18554		ppb
	Co	59	221602.9		47.73274		ppb
	Ni	60	212154.1		46.35393		ppb
	As	75	171511.3		47.37229		ppb
	Se	82	25243.4		49.186		ppb
	Cd	111	182113.2		47.10941		ppb
	Cd (114)	114	433575.4		47.23209		ppb
	Sb	123	443187.2		45.80544		ppb
	Pb	208	1115143.6		46.67837		ppb
	Kr	83	67.7				ppb
>	Rh (IS1)	103	654896.4				ppb
>	Ho (IS1)	165	882907.3				ppb
>	Sc (IS1)	45	680206				ppb
	Li	6	1302487.2				ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-5 BH

Sample Date: Friday, October 21, 2022 12:24:29

Sample De: AECOM

## Concentration Results

Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
Li (7)	7	71975.5		ppb
Be	9	673.4	0.123	ppb
Cr	52	81079.7	7.72265	ppb
Mn	55	24162.5	4.02661	ppb
Co	59	1587.8	0.43352	ppb
Ni	60	12251.4	3.34072	ppb
As	75	3498.7	1.53383	ppb
Se	82	421.1	0.92241	ppb
Cd	111	93.7	0.03906	ppb
Cd (114)	114	51.9	-0.003	ppb
Sb	123	2615.3	0.33128	ppb
Pb	208	58173.8	3.09152	ppb
Kr	83	70.7		ppb
> Rh (IS1)	103	502235		ppb
> Ho (IS1)	165	692393.9		ppb
> Sc (IS1)	45	516884.5		ppb
Li	6	973554.9		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452 C9

Sample Date: Friday, October 21, 2022 12:26:43

Sample De: AECOM

## Concentration Results

Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
Li (7)	7	61314.9		ppb
Be	9	73.3	-0.00411	ppb
Cr	52	36913.4	1.75953	ppb
Mn	55	4057.3	0.53672	ppb
Co	59	130.3	0.01192	ppb
Ni	60	3529.8	0.6989	ppb
As	75	211	0.33845	ppb
Se	82	158.1	0.18505	ppb
Cd	111	-62.7	-0.00838	ppb
Cd (114)	114	-388.3	-0.06448	ppb
Sb	123	468.3	0.02622	ppb
Pb	208	7962.3	0.33376	ppb
Kr	83	66.7		ppb
> Rh (IS1)	103	583369.3		ppb
> Ho (IS1)	165	806726.4		ppb
> Sc (IS1)	45	582885.3		ppb
Li	6	1116841.7		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Date: Friday, October 21, 2022 12:28:50

Sample De: AECOM

## Concentration Results

Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
Li (7)	7	86134.5		ppb
Be	9	143	0.00532	ppb
Cr	52	187729.4	15.55343	ppb
Mn	55	52971.2	6.91231	ppb
Co	59	12945.7	2.8198	ppb
Ni	60	90130.6	19.96263	ppb
As	75	2490419.6	697.2362	ppb
Se	82	233612.1	464.93284	ppb
Cd	111	561.4	0.15817	ppb
Cd (114)	114	288	0.01365	ppb
Sb	123	17288.2	1.60887	ppb
Pb	208	171056.4	6.51933	ppb
Kr	83	149.7		ppb
> Rh (IS1)	103	642999.3		ppb
> Ho (IS1)	165	965459.2		ppb
> Sc (IS1)	45	690711		ppb
Li	6	1309205.6		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Date: Friday, October 21, 2022 12:30:57

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	86256.5		ppb
	Be	9	273444	41.59411	ppb
	Cr	52	799061.6	70.8599	ppb
	Mn	55	486364	62.13473	ppb
	Co	59	287592.3	61.33373	ppb
	Ni	60	298491.1	64.64872	ppb
	As	75	2704445.8	736.24334	ppb
	Se	82	261399	505.88069	ppb
	Cd	111	160247.2	41.04889	ppb
	Cd (114)	114	381911.8	41.19741	ppb
	Sb	123	419382.3	38.06567	ppb
	Pb	208	1459588.3	53.69093	ppb
	Kr	83	160.3		ppb
>	Rh (IS1)	103	661399.4		ppb
>	Ho (IS1)	165	1004632.2		ppb
>	Sc (IS1)	45	690636		ppb
	Li	6	1315187		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Date: Friday, October 21, 2022 12:34:48

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	77769.1		ppb
	Be	9	97.3	-0.00363	ppb
	Cr	52	30178.7	0.43485	ppb
	Mn	55	3618.2	0.36706	ppb
	Co	59	739.7	0.1236	ppb
	Ni	60	5880.4	0.98609	ppb
	As	75	128851.6	32.07584	ppb
	Se	82	14116.5	24.62571	ppb
	Cd	111	-49	-0.00185	ppb
	Cd (114)	114	154.1	-0.00295	ppb
	Sb	123	3947.6	0.33068	ppb
	Pb	208	10423	0.3461	ppb
	Kr	83	79.7		ppb
>	Rh (IS1)	103	728649.8		ppb
>	Ho (IS1)	165	1018714.2		ppb
>	Sc (IS1)	45	747084.8		ppb
	Li	6	1433033.8		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Date: Friday, October 21, 2022 12:36:55

Sample De: AECOM

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	78480.1		ppb
	Be	9	351137.9	48.3645	ppb
	Cr	52	638590.9	50.72013	ppb
	Mn	55	430556.5	49.83335	ppb
	Co	59	262821.2	50.79992	ppb
	Ni	60	245404.5	48.11969	ppb
	As	75	317502.6	78.55128	ppb
	Se	82	40997.8	71.77653	ppb
	Cd	111	199627.7	46.3274	ppb
	Cd (114)	114	474952.2	46.41667	ppb
	Sb	123	453620.9	40.58841	ppb
	Pb	208	1301640	47.18548	ppb
	Kr	83	85		ppb
>	Rh (IS1)	103	729620		ppb
>	Ho (IS1)	165	1018951.5		ppb
>	Sc (IS1)	45	755892.8		ppb
	Li	6	1450284.8		ppb



## PerkinElmer Nexlon 1000 ICP-MS

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Date: Friday, October 21, 2022 12:39:02

Sample Description: AECOM

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	80417.9		ppb
	Be	9	347	0.03491	ppb
	Cr	52	107022	7.45335	ppb
	Mn	55	26684.1	3.27385	ppb
	Co	59	6641.1	1.36221	ppb
	Ni	60	47948.8	9.98	ppb
	As	75	1180080.2	313.30829	ppb
	Se	82	126886.1	239.3735	ppb
	Cd	111	415.5	0.11398	ppb
	Cd (114)	114	647.3	0.05071	ppb
	Sb	123	19147.5	1.7639	ppb
	Pb	208	90885	3.36	ppb
	Kr	83	113		ppb
>	Rh (IS1)	103	678133.5		ppb
>	Ho (IS1)	165	990965.2		ppb
>	Sc (IS1)	45	708005.2		ppb
	Li	6	1356487.4		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: 39452-3 BH

Sample Date: Friday, October 21, 2022 12:41:09

Sample Description: AECOM

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	73679.7		ppb
	Be	9	276597.6	44.75362	ppb
	Cr	52	650431.3	61.07043	ppb
	Mn	55	424692	57.72289	ppb
	Co	59	257767.2	58.49782	ppb
	Ni	60	245131.4	56.47586	ppb
	As	75	1246245	361.02961	ppb
	Se	82	140398.9	289.14285	ppb
	Cd	111	160123.6	43.64603	ppb
	Cd (114)	114	379286.6	43.53276	ppb
	Sb	123	397836.4	39.03886	ppb
	Pb	208	1260696.7	50.13411	ppb
	Kr	83	123		ppb
>	Rh (IS1)	103	621327.4		ppb
>	Ho (IS1)	165	929303.5		ppb
>	Sc (IS1)	45	648345.6		ppb
	Li	6	1253857.9		ppb

Method 6020 &amp; 200.8 Metals Summary Report

Sample ID: QC Std 4

Sample Date: Friday, October 21, 2022 12:52:51

Sample Description:

## Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	78463.9		ppb
	Be	9	356811.9	49.06681	ppb
	Cr	52	623013.5	49.35066	ppb
	Mn	55	404545	46.74145	ppb
	Co	59	245945.4	47.46094	ppb
	Ni	60	236135.2	46.21579	ppb
	As	75	191691.9	47.42924	ppb
	Se	82	27876	48.65831	ppb
	Cd	111	203129.3	47.05914	ppb
	Cd (114)	114	478783.5	46.71924	ppb
	Sb	123	496159	45.36546	ppb
	Pb	208	1245230.1	46.1076	ppb
	Kr	83	74.3		ppb
>	Rh (IS1)	103	730907.7		ppb
>	Ho (IS1)	165	997803.3		ppb
>	Sc (IS1)	45	762314.2		ppb
	Li	6	1446342.1		ppb



PerkinElmer Nexlon 1000 ICP-MS

Method 6020 & 200.8 Metals Summary Report

Sample ID: QC Std 1

Sample Date: Friday, October 21, 2022 12:55:47

Sample Description:

Concentration Results

	Analyte	Mass	Meas. Intens	Conc. Meas	Report Unit
	Li (7)	7	75858.8		ppb
	Be	9	242.3	0.01713	ppb
	Cr	52	22048.4	-0.1997	ppb
	Mn	55	595	0.01773	ppb
	Co	59	198.7	0.01932	ppb
	Ni	60	806	-0.01092	ppb
	As	75	-319.2	0.17949	ppb
	Se	82	192.5	0.17588	ppb
	Cd	111	56.9	0.02357	ppb
	Cd (114)	114	317.2	0.01358	ppb
	Sb	123	1612.9	0.12909	ppb
	Pb	208	1228.7	0.01548	ppb
	Kr	83	66.7		ppb
>	Rh (IS1)	103	712976		ppb
>	Ho (IS1)	165	952235.7		ppb
>	Sc (IS1)	45	733702.1		ppb
	Li	6	1400632.4		ppb



## PerkinElmer FIMS-100 CVAA Mercury Analyzer

Sample_ID	Date	Time	Mean_Sig	Mean_Rd	Mean_Rt	Units	Alq.	Vol.	Sig 1	Reading-1	Result-1	Sig 2	Reading-2	Result-2	Cor. Coeff.
Calib Blank	10/19/2022	8:58:02 AM	0.00036229			µg			0.00036163			0.00036295			
STD1 = .004ug	10/19/2022	8:59:44 AM	0.00104187			µg			0.00104173			0.001042			
STD2 = .04ug	10/19/2022	9:01:27 AM	0.01153802			µg			0.01153048			0.01154557			
STD3 = .08ug	10/19/2022	9:03:21 AM	0.02306134			µg			0.02303605			0.02308663			
STD4 = .16ug	10/19/2022	9:05:17 AM	0.04642734			µg			0.04657725			0.04627743			
STD5 = .2ug	10/19/2022	9:07:11 AM	0.05823625			µg			0.05816176			0.05831074			
Reagent Blank	10/19/2022	9:09:03 AM	0.00011304	0.0003891	0.0003891	µg			0.00011244	0.00038705	0.00038705	0.00011363	0.00039114	0.00039114	
0.004ug = DL	10/19/2022	9:10:45 AM	0.00120612	0.00415168	0.00415168	µg			0.00121051	0.0041668	0.0041668	0.00120173	0.00413656	0.00413656	0.999983532
0.080ug = QC STD 3	10/19/2022	9:12:27 AM	0.02445621	0.08418256	0.08418256	µg			0.02459054	0.08464495	0.08464495	0.02432188	0.08372016	0.08372016	0.999983532
0.080ug = QC STD 2	10/19/2022	9:14:20 AM	0.02296345	0.07904421	0.07904421	µg			0.02308956	0.07947833	0.07947833	0.02283733	0.07861008	0.07861008	0.999983532
Reagent Blank	10/19/2022	9:16:12 AM	0.00011892	0.00040934	0.00040934	µg			0.00014554	0.00050098	0.00050098	9.23E-05	0.00031769	0.00031769	0.999983532
39452-2BH	10/19/2022	9:26:55 AM	0.0428797	0.14721035	0.1373453	µg	4	520	0.04300549	0.14764334	19.1936338	0.04275391	0.14677736	19.0810569	0.999983532
39452-2BH DUP	10/19/2022	9:28:47 AM	0.04299396	0.14760365	19.1884747	µg	4	520	0.04298207	0.14756272	19.1831532	0.04300585	0.14764459	19.1937962	0.999983532
39452-4BH	10/19/2022	9:34:26 AM	0.00147056	0.00467283	0.33877985	µg	4	290	0.00144471	0.00458385	0.33232887	0.00149641	0.0047618	0.34523082	0.999983532
0.004ug = DL	10/19/2022	9:36:08 AM	0.00121489	0.00418186	0.00418186	µg			0.00124303	0.00427872	0.00427872	0.00118675	0.004085	0.004085	0.999983532
0.080ug = QC STD 2	10/19/2022	9:37:50 AM	0.0226456	0.07795012	0.07795012	µg			0.0227061	0.07815837	0.07815837	0.0225851	0.07774187	0.07774187	0.999983532
Reagent Blank	10/19/2022	9:39:43 AM	0.0001383	0.00047606	0.00047606	µg			0.0001356	0.00046675	0.00046675	0.00014101	0.00048537	0.00048537	0.999983532
39452-5BH	10/19/2022	9:41:25 AM	0.00043501	0.00110828	0.05541387	µg	4	200	0.00041946	0.00105477	0.05273825	0.00045055	0.00116179	0.05808949	0.999983532
39452-2A	10/19/2022	9:45:01 AM	0.02537405	0.08695285	4.34764234	µg	4	200	0.02517534	0.08626884	4.31344175	0.02557277	0.08763686	4.38184293	0.999983532
39452-2A DUP	10/19/2022	9:46:55 AM	0.02511726	0.08606891	4.30344561	µg	4	200	0.02504205	0.08581003	4.29050154	0.02519247	0.08632779	4.31638968	0.999983532
39452-3A	10/19/2022	9:48:49 AM	0.01564161	0.05345205	2.67260252	µg	4	200	0.01558119	0.05324407	2.66220368	0.01570203	0.05366003	2.68300137	0.999983532
39452-3A SPK	10/19/2022	9:50:44 AM	0.03871581	0.13287751	6.64387538	µg	4	200	0.03866205	0.13269247	6.63462348	0.03876957	0.13306255	6.65312728	0.999983532
39452-4A	10/19/2022	9:52:39 AM	0.00043408	0.00110507	0.0552537	µg	4	200	0.00042386	0.00106991	0.05349558	0.00044429	0.00114024	0.05701182	0.999983532
39452-5A	10/19/2022	9:54:22 AM	4.71E-05	-0.0002271	-0.0113533	µg	4	200	5.07E-05	-0.0002144	-0.010722	4.34E-05	-0.0002397	-0.0119845	0.999983532
39452-1B	10/19/2022	9:56:05 AM	0.03040521	0.10427095	13.0338693	µg	4	500	0.03023076	0.10367047	12.9588084	0.03057966	0.10487144	13.1089303	0.999983532
39452-2B	10/19/2022	9:57:58 AM	0.00913967	0.03107124	3.88390536	µg	4	500	0.00907982	0.03086522	3.85815271	0.00919952	0.03127726	3.909658	0.999983532
0.004ug = DL	10/19/2022	9:59:51 AM	0.00123173	0.00423983	0.00423983	µg			0.00121968	0.00419834	0.00419834	0.00124379	0.00428133	0.00428133	0.999983532
0.080ug = QC STD 2	10/19/2022	10:01:32 AM	0.02318703	0.07981381	0.07981381	µg			0.02307887	0.07944152	0.07944152	0.02329518	0.08018611	0.08018611	0.999983532
Reagent Blank	10/19/2022	10:03:25 AM	9.89E-05	0.00034059	0.00034059	µg			0.00010822	0.00037252	0.00037252	8.97E-05	0.00030867	0.00030867	0.999983532
39452-2B DUP	10/19/2022	10:05:07 AM	0.00954226	0.03245704	4.05712974	µg	4	500	0.00951377	0.03235896	4.04487031	0.00957075	0.03255511	4.06938918	0.999983532
39452-3B	10/19/2022	10:07:00 AM	0.00649466	0.02196665	2.74583173	µg	4	500	0.00650418	0.02199943	2.74992851	0.00648514	0.02193388	2.74173494	0.999983532
39452-3B SPK	10/19/2022	10:08:43 AM	0.02986176	0.10240033	12.8000415	µg	4	500	0.02969706	0.10183338	12.7291726	0.03002647	0.10296728	12.8709103	0.999983532
39452-4B	10/19/2022	10:10:36 AM	0.00038007	0.00092133	0.11516632	µg	4	500	0.00033565	0.00083805	0.10475629	0.00040489	0.00100461	0.12557636	0.999983532
39452-5B	10/19/2022	10:12:19 AM	8.20E-05	-0.000107	-0.0133713	µg	4	500	7.46E-05	-0.0001323	-0.0165345	8.93E-05	-8.17E-05	-0.0102081	0.999983532
0.004ug = DL	10/19/2022	10:23:02 AM	0.00123372	0.00424668	0.00424668	µg			0.00124025	0.00426916	0.00426916	0.00122719	0.0042242	0.0042242	0.999983532
0.080ug = QC STD 2	10/19/2022	10:24:44 AM	0.02340747	0.08057263	0.08057263	µg			0.02326117	0.08006903	0.08006903	0.02355378	0.08107623	0.08107623	0.999983532
Reagent Blank	10/19/2022	10:26:37 AM	0.00010642	0.00036632	0.00036632	µg			8.24E-05	0.00028374	0.00028374	0.00013041	0.0004489	0.0004489	0.999983532
0.004ug = DL	10/19/2022	11:31:59 AM	0.00131619	0.00453056	0.00453056	µg			0.00130415	0.0044891	0.0044891	0.00132824	0.00457202	0.00457202	0.999983532
0.080ug = QC STD 2	10/19/2022	11:33:40 AM	0.02428822	0.08358571	0.08358571	µg			0.02427071	0.08354404	0.08354404	0.02429492	0.08362738	0.08362738	0.999983532
Reagent Blank	10/19/2022	11:35:32 AM	0.00018013	0.00062005	0.00062005	µg			0.00017903	0.00061624	0.00061624	0.00018124	0.00062385	0.00062385	0.999983532
39452-1BH	10/19/2022	11:51:25 AM	0.04276694	0.14682222	28.6303333	µg	2	390	0.04268444	0.14653823	28.5749542	0.04284945	0.14710622	28.6857124	0.999983532
0.004ug = DL	10/19/2022	11:53:18 AM	0.00135789	0.00467409	0.00467409	µg			0.00137461	0.00473165	0.00473165	0.00134116	0.00461652	0.00461652	0.999983532
0.080ug = QC STD 3	10/19/2022	11:58:46 AM	0.02406023	0.08281954	0.08281954	µg			0.02407923	0.08288493	0.08288493	0.02404124	0.08275416	0.08275416	0.999983532
Reagent Blank	10/19/2022	12:00:38 PM	0.00015714	0.00054091	0.00054091	µg			0.00016783	0.00057769	0.00057769	0.00014646	0.00050413	0.00050413	0.999983532
Calib Blank	10/20/2022	8:47:20 AM	0.00073779			µg			0.00101976			0.00045582			
STD1 = .004ug	10/20/2022	8:49:02 AM	0.00145158			µg			0.00145833			0.00144433			
STD2 = .04ug	10/20/2022	8:50:45 AM	0.01543217			µg			0.01532337			0.01554097			
STD3 = .08ug	10/20/2022	8:52:39 AM	0.03065689			µg			0.03044323			0.03087056			
STD4 = .16ug	10/20/2022	8:54:33 AM	0.0628569			µg			0.0621667			0.06354709			
STD5 = .2ug	10/20/2022	8:56:27 AM	0.07743081			µg			0.07704436			0.07781726			
Reagent Blank	10/20/2022	8:58:18 AM	-5.21E-05	-0.0001339	-0.0001339	µg			9.20E-05	0.00023659	0.00023659	-0.0001961	-0.0005044	-0.0005044	
0.004ug = DL	10/20/2022	9:00:00 AM	0.00148567	0.0038213	0.0038213	µg			0.00153511	0.00394848	0.00394848	0.00143622	0.00369411	0.00369411	0.999906764
0.080ug = QC STD 3	10/20/2022	9:01:42 AM	0.03167608	0.08147438	0.08147438	µg			0.03138264	0.08071962	0.08071962	0.03196951	0.08222913	0.08222913	0.999906764
0.080ug = QC STD 2	10/20/2022	9:03:35 AM	0.02922659	0.07517403	0.07517403	µg			0.02893087	0.07441341	0.07441341	0.02952231	0.07593466	0.07593466	0.999906764
Reagent Blank	10/20/2022	9:09:12 AM	-0.000207	-0.0005324	-0.0005324	µg			-0.0001992	-0.0005125	-0.0005125	-0.0002147	-0.0005523	-0.0005523	0.999906764
0.004ug = DL	10/20/2022	9:28:58 AM	0.00155039	0.00398777	0.00398777	µg			0.00152538	0.00392344	0.00392344	0.0015754	0.00405209	0.00405209	0.999906764
0.080ug = QC STD 2	10/20/2022	9:30:39 AM	0.03212092	0.08261856	0.08261856	µg			0.03197494	0.0822431	0.0822431	0.03226689	0.08299402	0.08299402	0.999906764
Reagent Blank	10/20/2022	9:32:32 AM	-0.0002082	-0.0005355	-0.0005355	µg			-0.0002102	-0.0005407	-0.0005407	-0.0002062	-0.0005303	-0.0005303	0.999906764
39452-3BH	10/20/2022	9:36:07 AM	0.02129693	0.05491198	18.2582323	µg	2	665	0.02135504	0.05506144	18.3079285	0.02123882	0.05476251	18.2085361	0.999906764
39452-3BH SPK	10/20/2022	9:38:01 AM	0.05020745	0.12927303	42.983282	µg	2	665	0.05013108	0.1290766	42.9179693	0.05028381	0.12946946	43.0485947	0.999906764
39452-4BH	10/20/2022	9:39:55 AM	0.00147985	0.00394026	0.28566892	µg	4	290	0.00148687	0.0039583	0.28697647	0.00147284	0.00392223	0.28436137	0.999906764
39452-FH LRB	10/20/2022	9:43:34 AM	-0.0002062	-0.0003964	-0.0099108	µg	4	100	-0.0001735	-0.0003124	-0.0078112	-0.0002388	-0.0004804	-0.0120104	0.999906764</



## PerkinElmer FIMS-100 CVAA Mercury Analyzer

Sample_ID	Date	Time	Mean_Sig	Mean_Rd	Mean_Rt	Units	Alq.	Vol.	Sig 1	Reading-1	Result-1	Sig 2	Reading-2	Result-2	Cor. Coeff.
39452-5C	10/20/2022	10:21:07 AM	-4.81E-05	1.03E-05	0.00102898	µg	4	400	-9.81E-05	-0.0001184	-0.0118429	1.98E-06	0.00013901	0.01390088	0.999906764
0.004ug = DL	10/20/2022	10:40:21 AM	0.00163608	0.00420819	0.00420819	µg			0.00164262	0.00422501	0.00422501	0.00162955	0.00419137	0.00419137	0.999906764
0.080ug = QC STD 2	10/20/2022	10:42:04 AM	0.0324525	0.08347144	0.08347144	µg			0.03224431	0.08293594	0.08293594	0.0326607	0.08400695	0.08400695	0.999906764
Reagent Blank	10/20/2022	10:43:56 AM	-0.000143	-0.0003677	-0.0003677	µg			-0.0001343	-0.0003453	-0.0003453	-0.0001516	-0.00039	-0.00039	0.999906764
0.004ug = DL	10/20/2022	11:26:17 AM	0.00167536	0.00430921	0.00430921	µg			0.00163065	0.00419422	0.00419422	0.00172007	0.00442421	0.00442421	0.999906764
0.080ug = QC STD 2	10/20/2022	11:27:59 AM	0.03296007	0.08477694	0.08477694	µg			0.03267104	0.08403354	0.08403354	0.03324909	0.08552034	0.08552034	0.999906764
Reagent Blank	10/20/2022	11:29:51 AM	-0.0001522	-0.0003914	-0.0003914	µg			-0.0001414	-0.0003638	-0.0003638	-0.0001629	-0.000419	-0.000419	0.999906764
39452-1A	10/20/2022	11:35:01 AM	0.04669823	0.12024695	36.0740837	µg	1	300	0.04626971	0.11914473	35.7434202	0.04712676	0.12134916	36.4047472	0.999906764
0.004ug = DL	10/20/2022	11:36:55 AM	0.00172843	0.00444572	0.00444572	µg			0.00175582	0.00451615	0.00451615	0.00170105	0.00437529	0.00437529	0.999906764
0.080ug = QC STD 3	10/20/2022	11:38:37 AM	0.0330398	0.08498203	0.08498203	µg			0.03275691	0.08425441	0.08425441	0.03332268	0.08570964	0.08570964	0.999906764
Reagent Blank	10/20/2022	11:40:29 AM	-0.0001502	-0.0003863	-0.0003863	µg			-0.0001563	-0.000402	-0.000402	-0.0001441	-0.0003706	-0.0003706	0.999906764



**Appendix E**  
**CALIBRATION INFORMATION & QUALITY CONTROL**



## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA Protocol

Part Number: E03NI62E15A3356  
Cylinder Number: CC4981  
Laboratory: ASG - Durham - NC  
PGVP Number: B22016  
Gas Code: CO2,O2,BALN

Reference Number: 122-124568543-1  
Cylinder Volume: 158.6 CF  
Cylinder Pressure: 2015 PSIG  
Valve Outlet: 590  
Certification Date: Aug 01, 2016

**Expiration Date: Aug 01, 2024**

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
CARBON DIOXIDE	19.00 %	18.98 %	G1	+/- 0.6% NIST Traceable	08/01/2016
OXYGEN	19.00 %	19.09 %	G1	+/- 0.3% NIST Traceable	08/01/2016
NITROGEN	Balance				

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061551	CC354889	19.87 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 27, 2018
NTRM	12062003	CC367399	22.883 % OXYGEN/NITROGEN	+/- 0.2%	Apr 24, 2018

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA510 CO2 2L6YXWY0	Nondispersive Infrared (NDIR)	Jul 20, 2016
Horiba MPA510 O2 41499150042	Paramagnetic	Jul 20, 2016

Triad Data Available Upon Request



*[Signature]*  
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# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02NI99E15A0646	Reference Number:	122-402101189-1
Cylinder Number:	CC15587	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	660
Gas Code:	SO2,BALN	Certification Date:	May 10, 2021

**Expiration Date: May 10, 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
SULFUR DIOXIDE	500.0 PPM	482.3 PPM	G1	+/- 0.8% NIST Traceable	05/03/2021, 05/10/2021
NITROGEN	Balance				

### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	19060513	CC714704	495.2 PPM SULFUR DIOXIDE/NITROGEN	+/- 0.5%	Aug 02, 2025

### ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 SO2	FTIR	May 05, 2021

Triad Data Available Upon Request



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# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI79E15A0088	Reference Number:	122-402110633-1
Cylinder Number:	CC359583	Cylinder Volume:	151.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	May 11, 2021

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
CARBON DIOXIDE	10.00 %	10.10 %	G1	+/- 0.8% NIST Traceable	05/11/2021
OXYGEN	11.00 %	10.99 %	G1	+/- 0.4% NIST Traceable	05/11/2021
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060638	CC414571	13.359 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 14, 2025
NTRM	10010616	K014963	9.967 % OXYGEN/NITROGEN	+/- 0.3%	Apr 19, 2022

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VA-5001 CO2 BF89GV17	Nondispersive Infrared (NDIR)	Apr 29, 2021
Siemens Oxymat 61 M3299 O2	Paramagnetic	Apr 28, 2021

Triad Data Available Upon Request



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Signature on file  
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## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA Protocol

Part Number:	E03NI99E15A02N3	Reference Number:	122-402266901-1
Cylinder Number:	CC438688	Cylinder Volume:	144.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Nov 09, 2021

**Expiration Date: Nov 09, 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	65.00 PPM	64.87 PPM	G1	+/- 1.1% NIST Traceable	11/02/2021, 11/09/2021
CARBON MONOXIDE	65.00 PPM	61.99 PPM	G1	+/- 0.7% NIST Traceable	11/02/2021
NITRIC OXIDE	65.00 PPM	64.76 PPM	G1	+/- 1.1% NIST Traceable	11/02/2021, 11/09/2021
NITROGEN	Balance				

#### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12011239	KAL004623	49.24 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Aug 31, 2024
PRM	12386	D685025	9.91 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Feb 20, 2020
NTRM	20061131	CC733483	49.82 PPM NITRIC OXIDE/NITROGEN	+/- 1.0%	Feb 02, 2025
GMIS	401423838102	CC505581	4.348 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.1	Feb 18, 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 IS50 AUP2010249 CO	FTIR	Oct 13, 2021
Nicolet IS50 AUP2010249 NO	FTIR	Oct 13, 2021
Nicolet IS50 AUP2010249 NO	FTIR	Oct 13, 2021

Triad Data Available Upon Request





# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Part Number: E02NI99E15W0030 Reference Number: 122-402114718-1  
Cylinder Number: CC518059 Cylinder Volume: 144.0 CF  
Laboratory: 124 - Durham (SAP) - NC Cylinder Pressure: 2015 PSIG  
PGVP Number: B22021 Valve Outlet: 660  
Gas Code: NO2,BALN Certification Date: May 25, 2021

Expiration Date: May 25, 2024

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
NITROGEN DIOXIDE	50.00 PPM	49.11 PPM	G1	+/- 2.2% NIST Traceable	05/18/2021, 05/25/2021
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	401682994	CC515812	29.95 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Feb 19, 2023
PRM	12387	D685046	29.8 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	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	Apr 28, 2021

Triad Data Available Upon Request

PERMANENT NOTES: OXYGEN ADDED TO MAINTAIN STABILITY.



*[Signature]*  
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## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA Protocol

Part Number:	E03NI99E15A0455	Reference Number:	122-402266902-1
Cylinder Number:	CC740532	Cylinder Volume:	144.3 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22021	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Nov 08, 2021

**Expiration Date: Nov 08, 2024**

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	30.00 PPM	30.26 PPM	G1	+/- 1.2% NIST Traceable	11/01/2021, 11/08/2021
CARBON MONOXIDE	30.00 PPM	30.09 PPM	G1	+/- 0.6% NIST Traceable	11/01/2021
NITRIC OXIDE	30.00 PPM	30.25 PPM	G1	+/- 1.2% NIST Traceable	11/01/2021, 11/08/2021
NITROGEN	Balance				

#### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12011226	KAL004515	49.24 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Aug 31, 2024
PRM	12386	D885025	9.91 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Feb 20, 2020
NTRM	20061120	CC708068	49.82 PPM NITRIC OXIDE/NITROGEN	+/- 1.0%	Feb 02, 2025
GMIS	401423838102	CC505581	4.348 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.1	Feb 18, 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 IS50 AUP2110292 CO	FTIR	Oct 20, 2021
Nicolet IS50 AUP2110292 NO	FTIR	Oct 20, 2021
Nicolet IS50 AUP2110292 NO2	FTIR	Oct 20, 2021

Triad Data Available Upon Request





## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI99E15A0362	Reference Number:	122-402364932-1
Cylinder Number:	EB0077948	Cylinder Volume:	144.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22022	Valve Outlet:	660
Gas Code:	CO,NO,NOX,BALN	Certification Date:	Mar 21, 2022

Expiration Date: Mar 21, 2030

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	+/- 1.1% NIST Traceable	03/14/2022, 03/21/2022
CARBON MONOXIDE	125.0 PPM	125.8 PPM	G1	+/- 0.5% NIST Traceable	03/14/2022
NITRIC OXIDE	125.0 PPM	125.5 PPM	G1	+/- 1.1% NIST Traceable	03/14/2022, 03/21/2022
NITROGEN	Balance				

#### CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	11010106	KAL003080	97.31 PPM CARBON MONOXIDE/NITROGEN	+/- 0.4%	Oct 04, 2022
PRM	C194051001	D887660	9.91 PPM NITROGEN DIOXIDE/AIR	+/- 2.0%	Feb 02, 2022
NTRM	20061032	CC733313	98.61 PPM NITRIC OXIDE/NITROGEN	+/- 0.9%	Oct 06, 2026
GMIS	1534002020105	EB0130069	4.912 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Apr 30, 2024

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 IS50 AUP2110292 CO	FTIR	Mar 09, 2022
Nicolet IS50 AUP2110292 NO	FTIR	Mar 09, 2022
Nicolet IS50 AUP2110292 NO2	FTIR	Mar 09, 2022

Triad Data Available Upon Request



*[Signature]*  
Approved for Release





## CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

### Customer & Order Information

URS CORP  
900 PERIMETER PARK DRIVE  
MORRISVILLE NC 27560

Certificate Issuance Date: 05/12/2020

Praxair Order Number: 15011189

Part Number: NI SD950E-AS

Customer PO Number: 60597573.02

Fill Date: 04/28/2020

Lot Number: 304513119003

Cylinder Style & Outlet: AS

CGA 660

Cylinder Pressure and Volume: 2000 psig 140 ft3

### Certified Concentration

Expiration Date:	05/11/2028	NIST Traceable
Cylinder Number:	SA15002	Expanded Uncertainty
945.8 ppm	Sulfur dioxide	± 0.5 %
Balance	Nitrogen	

### ProSpec EZ Cert



### Certification Information:

Certification Date: 05/11/2020

Term: 96 Months

Expiration Date: 05/11/2028

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.

Do Not Use this Standard if Pressure is less than 100 PSIG.

### Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

#### 1. Component:

#### Sulfur dioxide

Requested Concentration: 950 ppm  
Certified Concentration: 945.8 ppm  
Instrument Used: MKS Multigas 2031  
Analytical Method: FTIR  
Last Multipoint Calibration: 04/20/2020

#### Reference Standard:

Type / Cylinder #: GMIS / CC242665

Concentration / Uncertainty: 898.8 ppm ±0.439%

Expiration Date: 10/31/2021

Traceable to: SRM # / Sample # / Cylinder #: 1662a / 93-H-50 / CAL017068

SRM Concentration / Uncertainty: 977.0 PPM / ±4.1 ppm

SRM Expiration Date: 09/23/2019

First Analysis Data:				Date	05/04/2020
Z:	0.23	R:	906.6	C:	955.4
Conc:	946.7				
R:	906.9	Z:	-0.44	C:	955.9
Conc:	947.2				
Z:	0.18	C:	955.7	R:	907.7
Conc:	947				
UOM:	ppm	Mean Test Assay:		947	ppm

Second Analysis Data:				Date	05/11/2020
Z:	-0.82	R:	909.3	C:	955.3
Conc:	943.6				
R:	909.9	Z:	-0.18	C:	956.6
Conc:	944.9				
Z:	0.89	C:	956.7	R:	910.6
Conc:	945				
UOM:	ppm	Mean Test Assay:		944.5	ppm

Analyzed By

Megha Patel

Certified By

Remzy Jema



# 5 Point Console Dry Gas Meter Calibration

Console ID	SC-M1542
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		Initials	Date
Calibrated by		JTM	10/16/21
Reviewed by			
Console Sticker	Prepared		
	Reviewed		
	Affixed		
MCL-33 Prepared			

Console Calibration Expiration Date
<b>16-Oct-2022</b>

Orifice ID:	N-30		N-23		N-19		N-16		N-11	
Orifice K':	0.8124		0.6263		0.5018		0.4305		0.3067	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b	Run #4a	Run #4b	Run #5a	Run #5b
Initial Reading, (ft <sup>3</sup> )	533.471	549.490	504.687	520.589	596.869	606.179	579.849	587.947	567.687	574.304
Final Reading, (ft <sup>3</sup> )	549.490	567.687	520.589	533.471	606.179	616.457	587.947	596.869	574.304	579.849
Difference, (ft <sup>3</sup> )	16.019	18.197	15.902	12.882	9.310	10.278	8.098	8.922	6.617	5.545
Initial Meter Temp., (°F)	69	72	67	68	70	70	70	70	70	70
Final Meter Temp., (°F)	72	74	68	70	70	71	70	70	70	69
Average Meter Temp., (°F)	70.5	73.0	67.5	69.0	70.0	70.5	70.0	70.0	70.0	69.5
Test Time (min.)	15.25	17.25	19.5	15.75	14.25	15.75	14.5	16	16.75	14
Orifice Manometer Reading, ("H <sub>2</sub> O)	3.80	3.80	2.20	2.20	1.40	1.40	1.00	1.00	0.50	0.50
Barometric Pressure, ("Hg)	29.39		29.41		29.34		29.36		29.37	
Ambient Temperature, (°F)	70.5		70.5		71.7		71.4		70.8	
Pump Vacuum, ("Hg)	15	15	18	18	20	20	21	21	22	22
Standard Volume of the Meter, (V <sub>mstd</sub> )	15.804	17.868	15.726	12.703	9.123	10.062	7.933	8.740	6.476	5.432
Standard Volume of Critical Orifice, (V <sub>crstd</sub> )	15.809	17.882	15.594	12.595	9.099	10.056	7.950	8.773	6.549	5.474
Flow Rate (cfm)	1.036	1.036	0.806	0.807	0.640	0.639	0.547	0.546	0.387	0.388
DGM Calibration Factor, (Y)	1.000	1.001	0.992	0.992	0.997	0.999	1.002	1.004	1.011	1.008
Average DGM Calibration Factor (Y)	1.001		0.992		0.998		1.003		1.009	
Delta H@, ("H <sub>2</sub> O)	1.982	1.972	1.925	1.919	1.900	1.899	1.838	1.838	1.804	1.805
Average ΔH@, ("H <sub>2</sub> O)	1.977		1.922		1.899		1.838		1.805	

Current Average Y	1.001
All Individual Y within 2% of mean?	TRUE
Average Delta H@	1.888
All individual ΔH@ within 0.20"H <sub>2</sub> O of mean	TRUE

**CDS-04S** DGM 5 point against orifice

Per EM SOP-002

Issued: August 2020

Document reviewed biennially



# 5 Point Console Dry Gas Meter Calibration

Console ID	SC-M1542
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	Initials	Date
Calibrated by	BAH	10/25/22
Reviewed by	TBH	10/25/22
Console Sticker	Prepared	
	Reviewed	
	Affixed	
MCL-33 Prepared		

Console Calibration Expiration Date
----------------------------------------

Orifice ID:	1388-12		1388-13		1388-17		1388-25		1388-31	
Orifice K':	0.3115		0.3418		0.4567		0.6908		0.8218	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b	Run #4a	Run #4b	Run #5a	Run #5b
Initial Reading, (ft <sup>3</sup> )	77.184	83.186	89.118	95.695	102.260	108.939	115.015	124.112	133.319	144.090
Final Reading, (ft <sup>3</sup> )	83.186	89.118	95.695	102.260	108.939	115.012	124.114	133.219	144.090	154.984
Difference, (ft <sup>3</sup> )	6.002	5.932	6.577	6.565	6.679	6.073	9.099	9.107	10.771	10.894
Initial Meter Temp., (°F)	69	72	74	74	75	76	76	77	77	77
Final Meter Temp., (°F)	72	73	74	75	75	76	77	77	77	78
Average Meter Temp., (°F)	70.5	72.5	74.0	74.5	75.0	76.0	76.5	77.0	77.0	77.5
Test Time (min.)	15	15	15	15	11	10	10	10	10	10
Orifice Manometer Reading, ("H <sub>2</sub> O)	0.52	0.52	0.63	0.63	1.20	1.20	2.70	2.70	3.90	3.90
Barometric Pressure, ("Hg)	29.73		29.73		29.73		29.72		29.71	
Ambient Temperature, (°F)	72		73		73.7		74.1		74.4	
Pump Vacuum, ("Hg)	24	23.5	23	23.5	23	22.5	19.5	19.5	18	18.5
Standard Volume of the Meter, (V <sub>mstd</sub> )	5.941	5.850	6.469	6.451	6.567	5.960	8.951	8.950	10.613	10.725
Standard Volume of Critical Orifice, (V <sub>crstd</sub> )	6.023	6.023	6.602	6.602	6.465	5.877	8.884	8.884	10.562	10.562
Flow Rate (cfm)	0.396	0.390	0.431	0.430	0.597	0.596	0.895	0.895	1.061	1.072
DGM Calibration Factor, (Y)	1.014	1.030	1.021	1.023	0.985	0.986	0.992	0.993	0.995	0.985
Average DGM Calibration Factor (Y)	1.022		1.022		0.985		0.993		0.990	
Delta H@, ("H <sub>2</sub> O)	1.799	1.792	1.803	1.801	1.928	1.924	1.906	1.905	1.957	1.955
Average ΔH@, ("H <sub>2</sub> O)	1.796		1.802		1.926		1.906		1.956	

Current Average Y	1.002
All Individual Y within 2% of mean?	TRUE
Average Delta H@	1.877
All individual ΔH@ within 0.20"H <sub>2</sub> O of mean	TRUE

CDS-04S DGM 5 point against orifice

Per EM SOP-002

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# 5 Point Console Dry Gas Meter Calibration

Console ID	SC-M1544
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		Initials	Date
Calibrated by		JTM	10/16/21
Reviewed by			
Console Sticker	Prepared		
	Reviewed		
	Affixed		
MCL-33 Prepared			

Console Calibration Expiration Date
<b>16-Oct-2022</b>

Orifice ID:	N-30		N-23		N-19		N-16		N-11	
Orifice K':	0.8124		0.6263		0.5018		0.4305		0.3067	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b	Run #4a	Run #4b	Run #5a	Run #5b
Initial Reading, (ft <sup>3</sup> )	721.476	737.547	696.082	709.713	675.105	685.023	654.878	666.475	753.881	759.757
Final Reading, (ft <sup>3</sup> )	737.547	753.881	709.713	721.476	685.023	696.082	666.475	675.105	759.757	766.046
Difference, (ft <sup>3</sup> )	16.071	16.334	13.631	11.763	9.918	11.059	11.597	8.630	5.876	6.289
Initial Meter Temp., (°F)	70.9	74.7	69.9	72.4	70	70.8	69	70	72.5	72.4
Final Meter Temp., (°F)	74.7	75.8	72.4	73	70.8	71.2	70	70	72.4	71.9
Average Meter Temp., (°F)	72.8	75.3	71.2	72.7	70.4	71.0	69.5	70.0	72.5	72.2
Test Time (min.)	15	15.25	16.5	14.25	15	16.45	20.5	15.25	14.5	15.5
Orifice Manometer Reading, ("H <sub>2</sub> O)	3.70	3.70	2.20	2.20	1.50	1.50	1.00	1.00	0.50	0.50
Barometric Pressure, ("Hg)	29.36		29.37		29.39		29.41		29.34	
Ambient Temperature, (°F)	71.4		70.8		70.5		70.5		71.7	
Pump Vacuum, ("Hg)	18	18	20.5	20.5	23	23	22	22	24	24
Standard Volume of the Meter, (V <sub>mstd</sub> )	15.767	15.951	13.369	11.503	9.731	10.838	11.391	8.469	5.719	6.124
Standard Volume of Critical Orifice, (V <sub>crstd</sub> )	15.521	15.779	13.174	11.377	9.605	10.533	11.269	8.383	5.659	6.049
Flow Rate (cfm)	1.051	1.046	0.810	0.807	0.649	0.659	0.556	0.555	0.394	0.395
DGM Calibration Factor, (Y)	0.984	0.989	0.985	0.989	0.987	0.972	0.989	0.990	0.989	0.988
Average DGM Calibration Factor (Y)	0.987		0.987		0.979		0.990		0.989	
Delta H@, ("H <sub>2</sub> O)	1.926	1.917	1.915	1.910	2.027	2.025	1.834	1.832	1.800	1.801
Average ΔH@, ("H <sub>2</sub> O)	1.921		1.912		2.026		1.833		1.801	

Current Average Y	0.986
All Individual Y within 2% of mean?	TRUE
Average Delta H@	1.899
All individual ΔH@ within 0.20"H <sub>2</sub> O of mean	TRUE

**CDS-04S** DGM 5 point against orifice

**Per** EM SOP-002

**Issued:** August 2020

Document reviewed biennially



# 5 Point Console Dry Gas Meter Calibration

Console ID	SC-M1544
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		Initials	Date
Calibrated by		BAH	10/25/22
Reviewed by		TBH	10/25/22
Console Sticker	Prepared		
	Reviewed		
	Affixed		
MCL-33 Prepared			

Console Calibration Expiration Date
<b>25-Oct-2023</b>

Orifice ID:	1388-12		1388-13		1388-17		1388-25		1388-21	
Orifice K':	0.3115		0.3418		0.4567		0.6908		0.8218	
Dry Gas Meter	Run #1a	Run #1b	Run #2a	Run #2b	Run #3a	Run #3b	Run #4a	Run #4b	Run #5a	Run #5b
Initial Reading, (ft <sup>3</sup> )	325.510	331.838	258.496	265.366	272.255	278.531	284.797	294.085	303.377	314.454
Final Reading, (ft <sup>3</sup> )	331.838	338.158	265.366	272.255	278.531	284.797	294.085	303.377	314.454	325.510
Difference, (ft <sup>3</sup> )	6.328	6.320	6.870	6.889	6.276	6.266	9.288	9.292	11.077	11.056
Initial Meter Temp., (°F)	77	77	69	72	73	74	74	75	76	76
Final Meter Temp., (°F)	76	77	72	73	74	74	75	76	76	77
Average Meter Temp., (°F)	76.5	77.0	70.5	72.5	73.5	74.0	74.5	75.5	76.0	76.5
Test Time (min.)	15	15	15	15	10	10	10	10	10	10
Orifice Manometer Reading, ("H <sub>2</sub> O)	0.54	0.54	0.65	0.65	1.25	1.30	2.70	2.70	3.90	3.90
Barometric Pressure, ("Hg)	29.72		29.73		29.73		29.73		29.73	
Ambient Temperature, (°F)	74.4		72		73		73.5		74	
Pump Vacuum, ("Hg)	22	22	22	22	20.5	20	17	17	15	15
Standard Volume of the Meter, (V <sub>mstd</sub> )	6.192	6.178	6.802	6.796	6.188	6.174	9.174	9.161	10.943	10.912
Standard Volume of Critical Orifice, (V <sub>crstd</sub> )	6.007	6.007	6.608	6.608	5.881	5.881	8.892	8.892	10.573	10.573
Flow Rate (cfm)	0.413	0.412	0.453	0.453	0.619	0.617	0.917	0.916	1.094	1.091
DGM Calibration Factor, (Y)	0.970	0.972	0.971	0.972	0.950	0.953	0.969	0.971	0.966	0.969
Average DGM Calibration Factor (Y)	0.971		0.972		0.951		0.970		0.968	
Delta H@, ("H <sub>2</sub> O)	1.856	1.855	1.869	1.862	2.011	2.090	1.911	1.907	1.958	1.956
Average ΔH@, ("H <sub>2</sub> O)	1.856		1.865		2.051		1.909		1.957	

Current Average Y	0.966
All Individual Y within 2% of mean?	TRUE
Average Delta H@	1.928
All individual ΔH@ within 0.20"H <sub>2</sub> O of mean	TRUE

**CDS-04S** DGM 5 point against orifice  
Per EM SOP-002  
**Issued:** July 2018  
Document reviewed biennially



# S-Type Pitot Tube Inspection

Probe ID

Air Cooled Probe 1

Calibrated by

Initials

WL

Date

10/6/2021

Reviewed by

Initials

EST

Date

10-6-21

Caliper

ID

CAL-M150B4

Calibration  
Exp Date

5-12-23

Angle  
Finder

ID

Johnson

Calibration  
Exp Date

N/A

General Pitot Tube Alignment	<div style="display: flex; justify-content: space-around;"> <div> <p>End View</p> </div> <div> <p>Side View</p> </div> </div> <div style="text-align: right;"> <p><math>A = \underline{.86}''</math></p> <p><math>D_1 = \underline{.375}''</math></p> <p><math>0.188 \leq D_1 \leq 0.375''</math> <u>Y</u> (y/n)</p> <p><math>1.05 \leq \frac{A}{2D_1} \leq 1.50</math> <u>Y</u> (y/n)</p> </div>
Misalignment	<div style="display: flex; justify-content: space-around;"> </div> <div style="text-align: right;"> <p><math>\alpha_1 = \underline{0.22}^\circ</math></p> <p><math>\alpha_2 = \underline{1.78}^\circ</math></p> <p><math>\alpha_1 \leq 10^\circ</math> <u>Y</u> (y/n)</p> <p><math>\alpha_2 \leq 10^\circ</math> <u>Y</u> (y/n)</p> </div>
	<div style="display: flex; justify-content: space-around;"> </div> <div style="text-align: right;"> <p><math>\beta_1 = \underline{0.19}</math></p> <p><math>\beta_2 = \underline{1.63}</math></p> <p><math>\beta_1 \leq 5^\circ</math> <u>Y</u> (y/n)</p> <p><math>\beta_2 \leq 5^\circ</math> <u>Y</u> (y/n)</p> </div>
	<div style="display: flex; justify-content: space-around;"> </div> <div style="display: flex; justify-content: space-between;"> <div> <p><math>\gamma = \underline{.36}^\circ</math></p> <p><math>\theta = \underline{.12}^\circ</math></p> </div> <div> <p><math>Z = A \tan(\gamma) = \underline{.0054}</math></p> <p><math>W = A \tan(\theta) = \underline{.0018}</math></p> </div> <div> <p><math>Z \leq 0.125''</math> <u>Y</u> (y/n)</p> <p><math>W \leq 0.031''</math> <u>Y</u> (y/n)</p> </div> </div>
Acceptability for Use (Circle Selection)	<div style="display: flex; justify-content: space-between;"> <p>If all answers are "Y", this pitot tube is available for use, and may be assigned a correction factor of 0.84</p> <p>If all answers except the first (<math>D_1</math>) are "Y", this pitot tube is available for use, but needs to be calibrated using a wind tunnel.</p> <p>Any other situation, the pitot tube must be removed from service.</p> </div>

## Stack Thermocouple Calibration

Thermometer (or Readout/TC)	ID <u>TM-2101</u>
	Calibration Exp Date <u>3-26-23</u>
Temperature Readout	ID <u>FLUKE 51 K/J Thermometer</u>
	Calibration Exp Date <u>N/A</u>

Calibrated by	Initials <u>WL</u>
	Date <u>10/6/2021</u>
Reviewed by	Initials <u>EST</u>
	Date <u>10-6-21</u>

Reference Thermometer $T_F \underline{76.7}^\circ F$ $T_{abs, RT} \underline{536.7}^\circ R$ <sup>1</sup>	Thermocouple Readout $T_F \underline{78.1}^\circ F$ $T_{abs, TC} \underline{538.1}^\circ R$	Compare Readings Between 0.985 and 1.015? $\frac{T_{abs, TC}}{T_{abs, RT}} = \underline{1.003}$ <u>0/N</u>	Function Check 3°F change in readout upon external temperature stimulus? <u>0/N</u>
-----------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------

<sup>1</sup>  $T_{abs, (^\circ R)} = T_F (^\circ F) + 460$



# S-Type Pitot Tube Inspection

Probe ID	AC - 2
Caliper ID	CAI-M1504
Caliper Calibration Expiration Date	5-12-23
Angle Finder ID	Johnson
Angle Finder Expiration Date	N/A

Calibrated by	Initials	WL
	Date	01/03/2023
Reviewed by	Initials	SEP
	Date	01/03/2023

General Pitot Tube Alignment	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>End View</p> </div> <div style="text-align: center;"> <p>Side View</p> </div> </div> <div style="text-align: right; margin-top: 20px;"> <math>A = \underline{.86"} \quad D_t = \underline{.375}</math>  <math>0.188 \leq D_t \leq 0.375?</math> <u>4</u> (y/n)  <math>105 \leq \frac{A}{2D_t} \leq 1.50?</math> <u>4</u> (y/n)         </div>
Misalignment	<div style="display: flex; justify-content: space-around;"> </div> <div style="text-align: right; margin-top: 10px;"> <math>\alpha_1 = \underline{0.2}^\circ</math>  <math>\alpha_2 = \underline{1.6}^\circ</math>  <math>\alpha_1 \leq 10^\circ?</math> <u>4</u> (y/n)  <math>\alpha_2 \leq 10^\circ?</math> <u>4</u> (y/n)         </div>
	<div style="display: flex; justify-content: space-around;"> </div> <div style="text-align: right; margin-top: 10px;"> <math>\beta_1 = \underline{0.2}</math>  <math>\beta_2 = \underline{1.6}</math>  <math>\beta_1 \leq 5^\circ?</math> <u>4</u> (y/n)  <math>\beta_2 \leq 5^\circ?</math> <u>4</u> (y/n)         </div>
	<div style="display: flex; justify-content: space-around;"> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> <math>\gamma = \underline{.0}^\circ</math>  <math>\theta = \underline{.7}^\circ</math> </div> <div> <math>Z = A \tan(\gamma) = \underline{.006}</math>  <math>W = A \tan(\theta) = \underline{.0015}</math> </div> <div> <math>Z \leq 0.125"? \underline{4}</math> (y/n)  <math>W \leq 0.031"? \underline{4}</math> (y/n)         </div> </div>
Acceptability for Use (Circle Selection)	<div style="display: flex; justify-content: space-between;"> <div>             If all answers are "Y", this pitot tube is available for use, and may be assigned a correction factor of 0.84           </div> <div>             If all answers except the first (D<sub>t</sub>) are "Y", this pitot tube is available for use, but needs to be calibrated using a wind tunnel.           </div> <div>             Any other situation, the pitot tube must be removed from service.           </div> </div>



## Quality Assurance / Quality Control

### FTIR Equipment and Instrumentation

This section describes EPA Method 320 QA/QC requirements. This section is broken down into three subsections the first of which presents the pre-test QC EPA Method 320 requirements that were done on site immediately prior to testing and compared to the post-test results to ensure the FTIR system operated in a stable fashion throughout the entire sampling duration. These QA tests demonstrate that the FTIR and extractive system were capable of monitoring and transporting the analytes at concentrations required to meet the test objectives. The second subsection presents the results of the QA analyte spiking as required per the EPA Method 320 method. These QA spikes were performed by injecting precisely known volumes of the analyte reference standard into the extracted sample. This method of analyte spiking is the most representative as it ensures that the FTIR can accurately quantify the analyte at representative concentrations in the sample matrix. The final subsection describes the procedure and results of daily system stability analyses.

### Pre-Test EPA Method 320 QA/QC Verifications

A series of tests were performed to demonstrate analyte quantification accuracy, system response time, etc.

Table 5-1 lists the pre-test requirements. It should be noted that some of the EPA Method 320 required checks have passing criteria that are user defined based upon the test objectives, in such cases ASTM Method D 6348-12 is cited as needed (i.e., MDC and path length).

#### EPA Method 320 Pre-Test Requirements

Procedure	Criteria
Leak Check	less than 0.250 lpm flow through system while at terminal vacuum.
System Zero	None Stated-Should be much lower than source levels (~11% H <sub>2</sub> O & 6% CO <sub>2</sub> )
Path Length	± 5% accuracy
System Mechanical Response Time	± 5% accuracy and a reasonable response time.
System Equilibration Response Time	reasonable response time compared to the data collection frequency.

### Pre and Post Test Data QC

The EPA Method 320 requires a set of QC checks to be done prior to testing. A series of operational checks as well as more frequent (pre- and post-test) system accuracy and stability checks were performed per EPA Method 320 procedures, thus ensuring high quality data. The following checks were done at a minimum of once per day:

1. A system noise-equivalent-absorbance (NEA) was measured. NEA is a measure of the system noise and a good indicator that the system is properly aligned and operating optimally. NEA is also used to determine a best-case minimum detectable concentration (MDC).
1. System background spectra was collected by purging the cell with UHP nitrogen (which does not absorb infrared radiation). This profiles the IR detector's response absent of all compound absorption. The background, once generated, is ratioed to all subsequent sample spectra.
2. Resolution Checks. The resolution was checked before and after the 3-run test by measuring the field width at half maximum (FWHM) of a CO absorption band from the CTS standard injected before and after each run. The spectral resolution at or near 0.5 cm<sup>-1</sup> during the test was considered acceptable for this test.
3. Line Position. Since each reference in this analysis method was normalized (shifted) to a specific frequency, it was imperative that the sample spectra was also aligned to a frequency and maintained at this alignment



throughout the 3-run test. This was achieved by monitoring the position of a carbon monoxide absorption peak which was injected as part of the CTS standard. Before and after each run this line position was checked.

4. System Leak Checks. The FTIR, QA spiking system, and extractive system was leak checked before and after the testing. The probe was removed from the stack and capped. The sampling system was then evacuated to terminal pressure and the flow through the system monitored using a rotameter position between the pump and the FTIR cell. In each case the rotameter ball needs to be at dead (0 or seated). Typically, a leak rate of 4% of the sample system volume is acceptable. Since the leak rates were monitored as a function of flow, a criterion of < 0.250 lpm was considered passing (per EPA Method 320).

### QA System Recovery Spiking

As part of quality assurance procedures of the EPA Method 320, QA spiking of the most reactive target analyte was performed prior to testing. As a matter of good practice, AECOM performed at least two spikes before and after the three-run performance test. These checks challenged the analysis method for accuracy of analyte quantification while simultaneously verifying that the extractive system and analyzer were unreactive with the analyte. The spiking procedure for the system recovery is described in detail in the EPA Method 320.

### QC System Stability and System Zero

The EPA Method 320 requires a system stability check before testing and at the end of the day or the performance test. This was accomplished by direct injection of the calibration transfer standard (CTS) into the FTIR cell. The quantified concentrations of the CTS component, chloro-difluoro-methane (R-22), carbon monoxide, ethylene, or methane for this test, were directly compared. A quantified concentration varying by more than  $\pm 5\%$  between pre- and post-tests measurements is indicative of an unstable system.

A system zero analysis was performed by injecting a high enough flow of N<sub>2</sub> through the calibration line, into the spiking "T" such that it floods the "T" and probe assembly. The N<sub>2</sub> was then pulled through the system via pump. The time required to purge the system to <5% of native stack concentrations was recorded. Similarly, the time it took to achieve 95% of the native stack concentration levels once the N<sub>2</sub> was turned off was recorded.