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TEST REPORT FOR 2019 EMISSIONS PERFORMANCE TESTING AND CEMS RATA AT THE DESERT VIEW POWER, MECCA PLANT

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STAC STACK TESTING ACCREDITATION COUNCIL
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REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and presented in this document were carried out by me or under my direction and supervision. I hereby certify that, to the best of my knowledge, Montrose operated in conformance with the requirements of the Montrose Quality Management System and ASTM D7036-04 during this test project.

Signature: _____ Date: 5/20/2019

Name: Dave Wonderly Title: Client Project Manager

I have reviewed, technically and editorially, details, calculations, results, conclusions, and other appropriate written materials contained herein. I hereby certify that, to the best of my knowledge, the presented material is authentic, accurate, and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

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1.0 INTRODUCTION

Montrose Air Quality Services, LLC (MAQS) was contracted by Desert View Power, to conduct performance emissions testing at the Desert View Power Project located in Mecca, California. Testing was conducted on March 19-22, 2019. The MAQS test team consisted of Dave Wonderly, Ray Madrigal, Arlene Bell and Patrick Whitman. Kevin Lawrence of Desert View Power, coordinated plant operations and data retrieval during the test program. The South Coast Air Quality Management District (SCAQMD) was notified of the test date but did not send a representative.

The emissions tests included measurements on Unit 1 and Unit 2 for hydrogen chloride (HCl), particulate (PM), sulfur dioxide (SO_2), oxides of nitrogen (NO_x), carbon monoxide (CO), and hydrocarbons (VOC). Exhaust flow rate and moisture measurements were performed in conjunction with the testing. Relative Accuracy Test Audits (RATA) were conducted on the plant's continuous emissions monitoring system (CEMS).

The Desert View Power Facility met all emissions limits required by the U.S. Environmental Protection Agency 40 CFR Part 63 Subpart DDDDD the Boiler MACT, the U.S. Environmental Protection Agency Operating Permit NSR 4-4-11;SE 87-01 including amendments through August 14, 2003: 7th Amendment Title V permit to operate CB-OP 99-01 dated 8/1/2000. The plant CEMS met all RATA requirements of CFR 40 Appendix F.

Tables 1-1 and 1-2 summarize the results of the emissions tests and Tables 1-3 and 1-4 present the results of the RATA tests for Unit 1 and Unit 2.

TABLE 1-1
SUMMARY OF EMISSIONS RESULTS UNIT 1
DESERT VIEW POWER
MARCH 19, 22, 2019

Parameter	Average Emission Results	Permit Limit	Comment
Hydrochloric Acid			
mg/dscm	17.65		
lb/hr (as HCl)	6.37		
lb/MMBtu	0.0171	0.022	Pass
Total Solid Particulate:			
gr/dscf	0.0009	--	
gr/dscf @ 12% CO_2	0.0009	0.010	Pass
lb/hr (PM_{10})	0.73	3.9	Pass
Sulfur Dioxide:			
ppm @ 3% O_2	7.00	27	Pass
lb/hr	4.67	12	Pass
NO_x:			
ppm at 3% O_2	42.65	94	Pass
lb/hr	20.44	30	Pass
CO:			
ppm @ 3% O_2	0.00	231	Pass
lb/hr	0.00	13	Pass
Hydrocarbons:			
ppm @ 3% O_2	18.38		
lb/hr	3.04	5.9	Pass

Note: NO_x CO and SO_2 results are from compliance Runs 1, 3 and 4. Hydrocarbons are total non-methane hydrocarbons reported as methane. The EPA factor of 1.086 for SCAQMD Method 25.3 was used. The higher of the two runs was used to demonstrate compliance since the difference of the individual results was >20% of the average result per SCAQMD Method 25.3.

TABLE 1-2
SUMMARY OF EMISSIONS RESULTS UNIT 2
DESERT VIEW POWER
MARCH 21, 2019

Parameter	Average Emission Results	Permit Limit	Comment
Hydrochloric Acid			
mg/dscm	22.71		
lb/hr (as HCl)	7.52		
lb/MMBtu	0.0198	0.022	Pass
Total Solid Particulate:			
gr/dscf	0.0004	--	
gr/dscf @ 12% CO_2	0.0004	0.010	Pass
lb/hr	0.34	3.9	Pass
Sulfur Dioxide:			
ppm @ 3% O_2	13.28	27	Pass
lb/hr	8.73	12	Pass
NO_x:			
ppm at 3% O_2	56.34	94	Pass
lb/hr	26.61	30	Pass
CO:			
ppm @ 3% O_2	0.00	231	Pass
lb/hr	0.00	13	Pass
Hydrocarbons:			
ppm @ 3% O_2	2.47		
lb/hr	0.41	5.9	Pass

Note: NO_x CO and SO_2 results are from NO_x CO and SO_2 Runs 1, 3 and 4. Hydrocarbons are total non-methane hydrocarbons reported as methane. The EPA factor of 1.086 for SCAQMD Method 25.3 was used.

TABLE 1-3
RELATIVE ACCURACY RESULT SUMMARY UNIT 1
DESERT VIEW POWER
MARCH 20, 2019

CEMS	RA	Limit	Comment
NO_x ppm	6.0%	20%	Pass
NO_x @ 3% O_2	6.0%	20%	Pass
NO_x lb/hr	4.2%	20%	Pass
O_2 dry	1.2%	20%	Pass
CO ppm(1)	-0.55	<5 ppm(1)	Pass
CO @ 3% O_2(1)	-0.78	<5 ppm(1)	Pass
CO lb/hr(2)	0.79%	5%(2)	Pass
SO_2 ppm	13.1%	20%	Pass
SO_2 @ 3% O_2	12.8%	20%	Pass
SO_2 lb/hr	9.5%	20%	Pass

(1) PS 4A Criteria, average difference less than 5ppm.
(2) Of applicable standard

TABLE 1-4
RELATIVE ACCURACY RESULT SUMMARY UNIT 2
DESERT VIEW POWER
MARCH 21, 2019

CEMS	RA	Limit	Comment
NO_x ppm	8.23%	20%	Pass
NO_x @ 3% O_2	7.91%	20%	Pass
NO_x lb/hr	8.92%	20%	Pass
O_2 dry	18.24%	20%	Pass
CO ppm(1)	17.74%	<5 ppm(1)	Pass
CO @ 3% O_2(1)	9.80%	<5 ppm(1)	Pass
CO lb/hr(2)	-1.64	5%(2)	Pass
SO_2 ppm	-2.22	20%	Pass
SO_2 @ 3% O_2	1.6%	20%	Pass
SO_2 lb/hr	0.65%	20%	Pass

(1) PS 4A Criteria, average difference less than 5ppm.
(2) Of applicable standard

2.0 UNIT DESCRIPTION

The Desert View Power, plant consists of two 297 MMBtu/hr, circulating bed, biomass-fired boilers. The combined units are designed to produce 47 MW of net electrical output. Each unit is equipped with the following pollution control systems:

- An ammonia injection system for control of NO_x emissions;
- Cyclonic mixing of injected ammonia with flue gas to provide for a minimum amount of ammonia slip (emission);
- A limestone injection system to limit emissions of SO_2;
- A reverse air baghouse to control opacity and emissions of sulfates and particulate to very low levels;

The plant CEMS system for each unit includes measurements of NO_x, CO, O_2, O_2 wet, SO_2, CO_2, flow and opacity. It is an extractive system with a heated line extending from the probe to the CEMS unit. Table 2-1 presents the current CEMS configuration.

TABLE 2-1
CONTINUOUS EMISSION MONITOR SYSTEM
UNITS 1 AND 2
DESERT VIEW POWER

Species	Manufacturer	Unit 1, Model/Serial Number	Unit 2, Model/Serial Number	Range
NO_x	CAI	ZRE/A3F4992T	ZRE/A3F4993T	100 and 500 ppm
CO	CAI	ZRE/A3F4992T	ZRE/A3F4993T	100 and 500 ppm
O_2 Dry	CAI	ZRE/A3F4992T	ZRE/A3F4993T	25%
SO_2	CAI	ZRE/A3F4992T	ZRE/A3F4993T	50 and 500 ppm
CO_2	CAI	ZRE/A3F4992T	ZRE/A3F4993T	20%
O_2 Wet	Thermox	WDG	WDG	25%
Flow	Dietrick Standard/Rosemont	0260938	--	Msdcfh
Opacity	Monitor Labs	Lighthawk 560	Lighthawk 560	100%
NO_2 Convertor	CAI	ZDL04001	ZDL04001	

2.1 TEST CONDITIONS

The tests were conducted at or near maximum steady state unit load conditions. Limestone injection rate, fuel combustion rate, ammonia injection rate, ash handling operations, excess air level, combustion air distribution, and combustor temperature were set to maintain stable unit operation. Pertinent operating conditions were recorded by Desert View Power personnel during the tests as presented in Table 2-2.

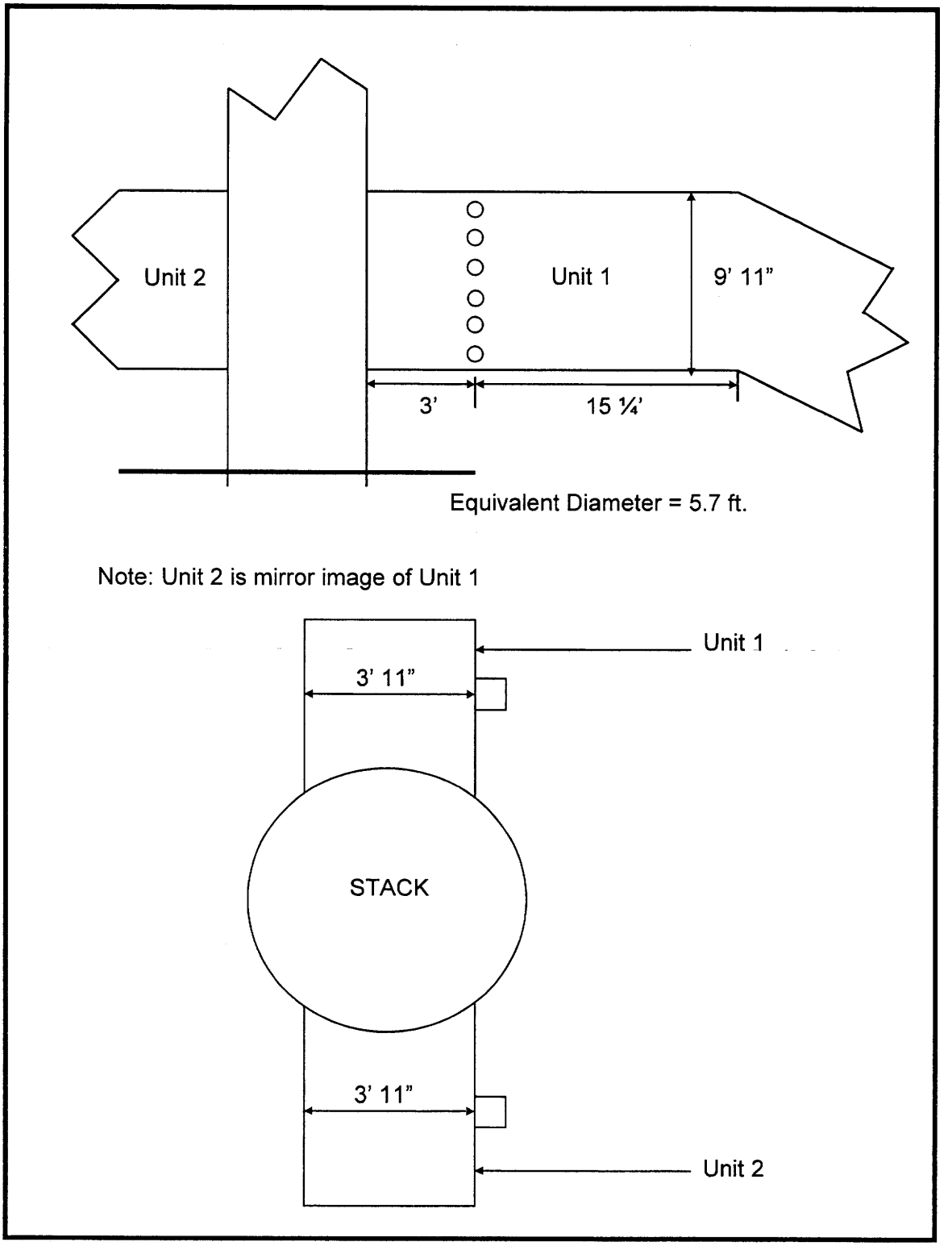
TABLE 2-2
AVERAGE DAILY UNIT DATA
DESERT VIEW POWER
MARCH AND APRIL 2019

Date	Unit No.	Steam Flow klbm/hr	Boiler Input MMBtu/hr
3/19/2019	1	208	373
3/20/2019	1	203	353
3/21/2019	2	208	379
3/22/2019	1	206	342

2.2 SAMPLE LOCATIONS

Samples were collected at the stack breaching ducts to the stack. Desert View Power previously conducted three dimensional flow testing and stratification testing on the baghouse exhaust ducts on each unit. This testing was performed in accordance to SCAQMD Chapter X, Section 1 and 13 and was presented in the report titled "Stack Gas Stratification and Absence of Flow Disturbance Testing at Desert View Power" (R106E622.T) submitted to SCAQMD in October of 1994. A copy of the sample location certification report can be found in the test plan in Appendix E of this report. The sample locations meet the requirements. All testing for both Unit 1 and 2 was conducted at the sample location presented in Figure 2-1.

FIGURE 2-1
SCHEMATIC OF THE DESERT VIEW POWER, SAMPLE LOCATION



3.0 TEST DESCRIPTIONS

The test procedures that were used are listed in Table 3-1. Tables 3-2 and 3-3 present the test schedule. The performance test runs for gaseous plant emissions were in some cases also used for RATA test runs. A minimum of nine reference method tests are required for all gaseous species relative accuracy (RA) determinations.

TABLE 3-1
TEST MATRIX PER UNIT
DESERT VIEW POWER

Parameter	No. of Tests	Measurement Principle	Reference Method	Duration per Test
NO_x	10(1)	Chemiluminescence	EPA 7E	60/30 minutes
CO	10(1)	Non-Dispersive Infrared	Modified EPA 10	60/30 minutes
CO_2	10(1)	Non-Dispersive Infrared	EPA 3A	60/30 minutes
O_2	10(1)	Electrochemical	EPA 3A	60/30 minutes
HCL	3	ion chromatography	EPA 26A	120 minutes, minimum of 2 DSCM of sample volume
PM	3	Gravimetric	EPA 5	120 minutes
SO_2	10(1)	Barium Thorin Titration	EPA 6	60/30 minutes
Hydrocarbons	2	GC/FID	SCAQMD 25.3	~60 minutes
Stack Gas Flow Rate	--	S-Type Pitot Traverse	EPA 2	--
Moisture	--	Condensation/Gravimetric	EPA 4	--

(1) Includes compliance and RATA test runs.

TABLE 3-2
TEST SCHEDULE UNIT 1
DESERT VIEW POWER

Test No.	Date	Time	Test Parameter
1-HCL-U1	3/19/2019	7:25	HCL RM data
2-HCL-U1	3/19/2019	11:01	HCL RM data L
1A&B-VOC-U1	3/19/2019	7:25	Hydrocarbon
3-HCL-U1	3/19/2019	13:37	HCL RM data
1A&B-VOC-U1	3/19/2019	7:25	Hydrocarbon
1-NO_x, CO, SO_2-U1	3/19/2019	8:20	NO_x, CO,SO_2 & CO_2 RM data
2-NO_x, CO, SO_2-U1	3/19/2019	11:01	NO_x, CO,SO_2 & CO_2 RM data
3-NO_x, CO, SO_2-U1	3/19/2019	12:17	NO_x, CO,SO_2 & CO_2 RM data
1-RA-U1	3/20/2019	9:36	NO_x, CO,SO_2 & CO_2 RM data
2-RA-U1	3/20/2019	10:35	NO_x, CO,SO_2 & CO_2 RM data
3-RA-U1	3/20/2019	11:20	NO_x, CO,SO_2 & CO_2 RM data
4-RA-U1	3/20/2019	12:05	NO_x, CO,SO_2 & CO_2 RM data
5-RA-U1	3/20/2019	12:48	NO_x, CO,SO_2 & CO_2 RM data
6-RA-U1	3/20/2019	13:32	NO_x, CO,SO_2 & CO_2 RM data
7-RA-U1	3/20/2019	14:16	NO_x, CO,SO_2 & CO_2 RM data
8-RA-U1	3/20/2019	15:00	NO_x, CO,SO_2 & CO_2 RM data
9-RA-U1	3/20/2019	15:44	NO_x, CO,SO_2 & CO_2 RM data
10-RA-U1	3/20/2019	16:38	NO_x, CO,SO_2 & CO_2 RM data
1-PM-U1	3/22/2019	6:38	PM, RM data
2-PM-U1	3/22/2019	9:01	PM, RM data
3-PM-U1	3/22/2019	11:26	PM, RM data

10 CEMS runs for the RATA were performed. RATA runs 1, 2, and 3 were used for compliance.

TABLE 3-3
TEST SCHEDULE UNIT 2
DESERT VIEW POWER

Test No.	Date	Time	Test Parameter
1-RA-U2	3/21/2019	7:21	NO_x, CO,SO_2 & CO_2 RM data
2-RA-U2	3/21/2019	8:36	NO_x, CO,SO_2 & CO_2 RM data
3-RA-U2	3/21/2019	10:10	NO_x, CO,SO_2 & CO_2 RM data
4-RA-U2	3/21/2019	11:38	NO_x, CO,SO_2 & CO_2 RM data
5-RA-U2	3/21/2019	12:22	NO_x, CO,SO_2 & CO_2 RM data
6-RA-U2	3/21/2019	13:06	NO_x, CO,SO_2 & CO_2 RM data
7-RA-U2	3/21/2019	13:50	NO_x, CO,SO_2 & CO_2 RM data
8-RA-U2	3/21/2019	14:34	NO_x, CO,SO_2 & CO_2 RM data
9-RA-U2	3/21/2019	15:16	NO_x, CO,SO_2 & CO_2 RM data
10-RA-U2	3/21/2019	16:06	NO_x, CO,SO_2 & CO_2 RM data
1-HCL-U2	3/21/2019	7:21	HCL RM data
2-HCL-U2	3/21/2019	10:10	HCL RM data L
3-HCL-U2	3/21/2019	13:06	HCL RM data
1A&B-VOC-U2	3/21/2019	7:25	Hydrocarbon
1-PM-U2	3/21/2019	7:21	PM, RM data
2-PM-U2	3/21/2019	10:10	PM, RM data
3-PM-U2	3/21/2019	13:06	PM, RM data

10 CEMS runs for the RATA were performed. RATA runs 1, 2, and 3 were used for compliance.

3.1 NO_X, O_2, CO_2, AND CO

NO_x, O_2, CO_2 and CO were measured according to EPA reference methods using MAQS' continuous emissions monitoring system (CEM). NO_x, O_2, CO_2 and CO concentrations were determined using MAQS' mobile emission measurement laboratory. The laboratory is housed in a truck outfitted to provide a clean, quiet, environmentally controlled base for the testing operations. The laboratory has lighting, electrical distribution, air conditioning and heating to support the test instruments and provide for optimal test performance.

Concentrations of these gaseous species were measured using an extractive sampling system consisting of a stainless steel probe to minimize reactions, a heat traced Teflon sample line connected to a thermo-electrically cooled sample dryer. Following the dryer, the sample is drawn into a Teflon lined pump where it is pressurized and then filtered for delivery to the gas analysis portion of the system. Gaseous samples were collected at a single point. Three 60-minute compliance tests were performed.

NO_x concentration was determined using a California Analytical Model 600. The analyzer full scale range was 100 ppm. The analyzer is equipped with a NO_2 - NO converter for the determination of total nitrogen oxides without interference from other nitrogen containing compounds.

Oxygen concentration was determined using an AMI electro-chemical cell analyzer (model #201). The analyzer full scale range was 20%. The cell contains an electrolytic fluid that reacts with oxygen to generate an electrical signal proportional to the concentration.

CO_2 was measured using a non-dispersive infrared analyzer manufactured by Horiba (model #PIR 2000). The analyzer full scale range was 20%.

CO was measured using a non-dispersive infrared/gas filter correlation analyzer manufactured by TECO (model 48i). The analyzer full scale range was 10 ppm.

The analyzers and sampling system were subjected to a variety of calibration and quality assurance procedures including leak checks, linearity and calibration error determinations before sampling, and system bias and drift determinations as part of each test run. Data are corrected for any observed bias or drift in accordance with the reference methods.

3.2 HYDROGEN CHLORIDE MEASUREMENTS

Triplicate hydrogen chloride (HCl), samples were collected using EPA Method 26A. Sampling and analysis for HF and Cl_2 which is included in EPA Method 26A was not be performed.

The sampling train consists of:

- A glass nozzle and heated glass probe heated to between 248°F and 273°F
- A Teflon Mat out-of-stack filter in a glass filter holder heated to 248°F ± 25°F
- Two impingers containing 100 ml of 0.1 N H_2SO_4 for collection of HCl
- One empty impinger
- An impinger containing silica gel

Samples are withdrawn isokinetically from the stack. The Teflon Mat filter collects particulate matter. The acidic absorbing solution collect gaseous HCl and is analyzed for HCl by ion chromatography.

The samples are recovered in the following sample fraction:

- Back half of filter holder, H_2SO_4 Impinger Catch – Weighed for moisture content and recovered with DI water into pre-cleaned HDPE bottle.

The filter and probe wash were not recovered for this test program.

Quality assurance samples collected in the field are:

- A field blank
- A reagent blank: 200 ml of 0.1 N H_2SO_4
- A reagent blank: 200 ml of DI water

The samples were analyzed by ion chromatography by AAC in Ventura.

3.3 PARTICULATE

EPA method 5 was used to measure the particulate emissions from both the Desert View Power, units. The sampling system consists of a nozzle, glass probe, 250°F heated filter, two impingers containing DI water, an empty impinger, and a fourth impinger containing silica gel.

The analysis for particulate is summarized in Table 3-4. Gravimetric analysis was performed on the probe/nozzle wash and filter according to EPA and SCAQMD procedures.

TABLE 3-4
EPA METHOD 5 ANALYSES

	Sample Component	Analysis Procedure
1.	Probe and Nozzle (Front 1/2)	Evaporation/gravimetric
2.	Heated Filter (83 mm)	Dry/gravimetric

3.4 SULFUR DIOXIDE

Sulfur dioxide was measured according to EPA Method 6. Three runs were used to demonstrate compliance. A barium thorin titration of the hydrogen peroxide impinger samples yielded SO_2 concentrations for a minimum of nine relative accuracy tests. The sample system consisted of heated glass probe and filter connected by Teflon tubing to the glass sample train consisting of a series of hydrogen peroxide filled impingers. Prior to the titrimetric analysis, all SO_x samples were passed through an ion exchange resin. This removes interferences associated with ammonium (NH_4).

3.5 HYDROCARBONS

Samples for hydrocarbon analysis were collected in clean 6-liter Summa canisters and mini water impingers and analyzed according to SCAQMD 25.3. The samples were analyzed by AtmAA in Calabasas, CA using TCA/FID.

3.6 VELOCITY AND MOISTURE

Stack gas velocity and moisture content were determined by EPA Methods 2 and 4 during the particulate testing. Velocity traverses were performed during each set of compliance tests (NO_x, CO, SO_2 and hydrocarbons) and RATA test runs.

3.7 FUEL ANALYSIS

Daily fuel samples were collected by Desert View Power personnel. Hourly samples were taken during each HCl test run and composited by the lab prior to analysis. Sampling was consistent with ASTM D6323 sample collection methodology. Desert View power sent the samples out to be analyzed for higher heating value for heat rate calculations, for Btu/lb for calculating the HCL emissions in lb/MMBtu using ASTM E711, for moisture content using ASTM D3173 and for chlorine content using ASTM E776. Copies of the analysis can be found in the appendices.

3.8 RATA TEST PROCEDURES

Relative accuracy tests were performed on NO_x, SO_2, CO and CO_2 sub-systems of each unit's CEMS. Relative accuracy was determined by comparing the CEMS data to the corresponding reference method (RM) data over nine test runs. A minimum of nine - 30 minute runs were performed on Units 1 and 2 for the NO_x, SO_2, CO, and CO_2. Relative accuracy is expressed in terms of the absolute value of the mean of the difference between the monitor value and the reference method value. It is reported in terms of a percentage of the mean reference method value. The computational procedure is summarized by the following equations:

$$\overline{RM} = \frac{1}{n}\sum_{i=1}^{n} RM_i$$

$$\overline{d} = \frac{1}{n}\sum_{i=1}^{n} d_i$$

$$S_d = \left[\frac{\sum_{i=1}^{n} d_i^{\,2} - \frac{\left[\sum_{i=1}^{n} d_i\right]^2}{n}}{n-1} \right]^{\frac{1}{2}}$$

$$CC = t_{0.975}\frac{S_d}{\sqrt{n}}$$

$$RA = \frac{|\bar{d}| + |CC|}{\overline{RM}} x100$$

Where:

$\overline{RM}$ = mean value of the reference method

$\bar{d}$ = average difference between RM and CEMS (RM – CEMS)

$|\bar{d}|$ = absolute value of the difference between RM and CEMS

S_d = sample standard deviation of the difference between RM and CEMS

RA = Relative Accuracy

$t_{0.975}$ = t value at 95% confidence interval

n = number of valid tests

4.0 RESULTS

This section presents the results of the performance tests conducted at Desert View Power, during March of 2019. Test results are presented in the following sections:

4.1 Unit 1 Performance Tests and RATA Results
4.2 Unit 2 Performance Tests and RATA Results
4.3 Fuel Analysis Results

All supporting data sheets, CEM data, instrument strip charts, and plant data are included in Appendix A. Laboratory reports and sample chain of custody records are contained in Appendix B. Emissions and Load calculations are presented in Appendix C. Quality assurance information is contained in Appendix D. The test plan that was submitted and is contained in Appendix E.

4.1 UNIT 1 PERFORMANCE TESTS AND RATA RESULTS

The results of the HCL testing are presented in Table 4-1. HCL emissions for Unit 1 were 0.0171 lb/MMBtu. This is below the permit limit of 0.022 lb/MMBtu. The results of the total solid particulate testing are presented in Table 4-2. Total solid particulate emissions for Unit 1 were 0.73 lb/hr. This is below the permit limit of 3.9 lb/hr. Gaseous emissions results are presented in Tables 4-3, and 4-4. NO_x, CO, SO_2 and hydrocarbon emissions results were below established permit limits. Results from the hydrocarbon tests can be found in Appendix C.1.5.1 and C.1.5.2.

Tables 4-5 through 4-14 present the CEMS RATA for Unit 1. The results demonstrate that the CEMS for Unit 1 is in control as defined in CFR 40 Appendix F. The results of the RATA are presented in units of ppm dry, ppm @ 3% O_2, and lb/hr for NO_x, CO and SO_2. O_2 results are presented in concentration units of %.

TABLE 4-1
HYDROCHLORIC ACID TEST RESULTS UNIT 1
DESERT VIEW POWER
MARCH 19, 2016

Test Number	1-HCL-U1	2-HCL-U1	3-HCL-U1	Average	Limit
Date	03/19/19	03/19/19	03/19/19		
Start/Stop Time	725/1040	1101/1322	1337/1547		
Stack Flow Rate, dscfm	98,598	94,633	96,126	96,452	
Sample Volume, dscf	98.204	96.125	96.933	97.087	
O_2, %	8.85	8.34	8.40	8.53	
CO_2, %	11.77	12.24	12.21	12.08	
mg/sample	46.0	50.8	48.7	48.5	
mg/dscm	16.54	18.66	17.74	17.65	
ppm (as HCl)	10.90	12.30	11.69	11.63	
lb/hr (as HCl)	6.10	6.61	6.38	6.37	
MMBtu/Hr	373	373	373	373	
lb/MMBtu	0.016	0.018	0.017	0.0171	0.022

TABLE 4-2
PARTICULATE EMISSIONS PERFORMANCE TEST UNIT 1
DESERT VIEW POWER
MARCH 22, 2019

Date:	3/22/2019	3/22/2019	3/22/2019
Time:	638/848	901/1111	1126/1336

Test No.	1-PM-U1	2-PM-U1	3-PM-U1	Average
O_2, %	8.4	8.0	8.3	8.2
CO_2, %	12.2	12.0	12.3	12.2
H_2O, %	14.5%	14.5%	13.7%	14.2%
Stack Temperature (°F)	346.5	351.6	354.3	350.8
Gas Flow:				
wacfm	173,022	171,612	172,178	172,270
dscfm	97,926	96,438	97,372	97,245
Isokinetic Ratio, %	101.2	101.8	100.8	101.3
Total Solid Particulate:				
Grain Loading, gr/dscf	0.0008	0.0011	0.0007	0.0009
Grain Loading @ 12% CO_2	0.0008	0.0011	0.0007	0.0009
lb/hr	0.66	0.93	0.60	0.73

TABLE 4-3
NO_X, CO, SO_X EMISSIONS PERFORMANCE TESTS UNIT 1
DESERT VIEW POWER
MARCH 19, 2019

Data From:	1-NO_x, CO, SO_2-U1	3-NO_x, CO, SO_2-U1	4-NO_x, CO, SO_2-U1
Date:	3/19/2019	3/19/2019	3/19/2019
Time:	8:20	11:01	12:17

Test No.	1-Compliance -U1	2-Compliance-U1	3-Compliance-U1	Average
O_2, %	8.4	8.4	8.3	8.3
CO_2, %	12.2	12.2	12.3	12.2
H_2O, %	14.81	16.27	14.81	15.30
Stack Temperature, °F	354	368	369	364
Gas Flow:				
wacfm	175,107	176,706	172,983	174,932
dscfm	97,184	94,623	94,215	95,341
NO_x ppm	28.7	30.9	30.3	29.9
NO_x ppm @ 3% O_2	41.0	44.0	42.9	42.65
NO_x lb/hr	19.99	20.92	20.43	20.44
CO ppm	-0.01	0.00	-0.03	-0.01
CO ppm @ 3% O_2	-0.01	0.00	-0.04	-0.02
CO lb/hr	0.00	0.00	-0.01	0.00
SO_x ppm	4.36	4.42	5.96	4.92
SO_x ppm @ 3% O_2	6.23	6.31	8.45	7.00
SO_x lb/hr	4.23	4.17	5.60	4.67

TABLE 4-4
HYDROCARBON EMISSIONS PERFORMANCE TEST UNIT 1
DESERT VIEW POWER
MARCH 19, 2019

Date:	3/19/2019	3/19/2019
Time:	946/1033	946/1033

Test No.	1A-HC-U1	1B-HC-U1	Average
O_2, %	8.85	8.85	8.85
CO_2, %	11.77	11.77	11.77
H_2O, %	14.88%	14.88%	14.88%
Gas Flow:			
wacfm	178,572	178,572	178,572
dscfm	98,598	98,598	98,598
EPA Correction Factor	1.086	1.086	1.086
TNMHC ppm	2.47	12.37	7.42
TNMHC ppm @ 3% O_2	3.66	18.38	11.02
TNMHC, lb/hr	0.61	3.04	1.82

Note: Flow rates from HCL Run 1. The higher of the two runs was used to demonstrate compliance since the difference of the individual results was >20% of the average result per SCAQMD Method 25.3.

TABLE 4-5
NO_X, PPM UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM NO_x, ppm dry	CEMS NO_x, ppm dry	Difference NO_x, ppm dry	Use Data? (Y or N)
1	3/20/2019	9:36	38.9	41.0	-2.0	Y
2	3/20/2019	10:35	30.1	32.2	-2.2	Y
3	3/20/2019	11:20	42.5	44.6	-2.2	Y
4	3/20/2019	12:05	39.2	41.2	-2.0	Y
5	3/20/2019	12:48	37.5	39.3	-1.9	Y
6	3/20/2019	13:32	39.5	41.8	-2.3	Y
7	3/20/2019	14:16	38.7	40.6	-1.9	N
8	3/20/2019	15:00	38.6	40.6	-2.0	Y
9	3/20/2019	15:44	40.8	42.9	-2.1	Y
10	3/20/2019	16:38	35.4	37.9	-2.5	Y

Ref. Method Average:	38.05	ppm
CEMS Average:	40.17	ppm
Average Difference:	-2.12	ppm
Number of Tests:	10	
Standard Deviation:	0.19	ppm
t Value:	2.306	
Confidence Coefficient:	0.14	ppm
Relative Accuracy:	5.96	% of Reference Method

TABLE 4-6
NO_X, PPM @ 3% O_2 UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM NO_x ppmc	CEMS NO_x ppmc	Difference NO_x ppmc	Use Data? (Y or N)
1	3/20/2019	9:36	55.6	58.1	-2.5	Y
2	3/20/2019	10:35	43.5	45.4	-1.9	Y
3	3/20/2019	11:20	59.4	62.2	-2.8	Y
4	3/20/2019	12:05	56.0	58.2	-2.1	Y
5	3/20/2019	12:48	53.3	55.9	-2.6	Y
6	3/20/2019	13:32	55.9	59.0	-3.0	Y
7	3/20/2019	14:16	54.4	56.7	-2.3	N
8	3/20/2019	15:00	53.1	55.8	-2.7	Y
9	3/20/2019	15:44	57.9	60.9	-3.0	Y
10	3/20/2019	16:38	50.8	55.0	-4.1	Y

Ref. Method Average:	53.97	ppmc
CEMS Average:	56.72	ppmc
Average Difference:	-2.75	ppmc
Number of Tests:	10	
Standard Deviation:	0.64	ppmc
t Value:	2.306	
Confidence Coefficient:	0.49	
Relative Accuracy:	6.01	% of Reference Method

TABLE 4-7
NO_X, LB/HR UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM NO_x lb/hr	CEMS NO_x lb/hr	Difference NO_x lb/hr	Use Data? (Y or N)
1	3/20/2019	9:36	26.04	26.06	-0.02	Y
2	3/20/2019	10:35	19.60	20.89	-1.29	Y
3	3/20/2019	11:20	27.47	27.31	0.16	Y
4	3/20/2019	12:05	25.49	26.24	-0.75	Y
5	3/20/2019	12:48	24.21	25.02	-0.81	Y
6	3/20/2019	13:32	25.75	26.40	-0.64	Y
7	3/20/2019	14:16	25.61	25.09	0.52	N
8	3/20/2019	15:00	25.21	25.30	-0.09	Y
9	3/20/2019	15:44	26.33	27.67	-1.34	Y
10	3/20/2019	16:38	22.68	23.50	-0.82	Y

Ref. Method Average:	24.754	lb/hr
CEMS Average:	25.377	lb/hr
Average Difference:	-0.623	lb/hr
Number of Tests:	10	
Standard Deviation:	0.538	lb/hr
t Value:	2.306	
Confidence Coefficient:	0.4135	
Relative Accuracy:	4.19	% of Reference Method

TABLE 4-8
SO_2, PPM UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference SO_2, ppm dry	Use Data? (Y or N)
1	3/20/2019	9:36	17.7	17.0	0.7	Y
2	3/20/2019	10:35	6.9	5.9	1.0	Y
3	3/20/2019	11:20	10.0	10.9	-0.9	Y
4	3/20/2019	12:05	14.1	14.0	0.1	Y
5	3/20/2019	12:48	6.4	5.6	0.8	Y
6	3/20/2019	13:32	8.7	9.6	-0.9	Y
7	3/20/2019	14:16	9.5	14.5	-5.0	N
8	3/20/2019	15:00	10.4	13.3	-2.8	Y
9	3/20/2019	15:44	6.2	7.1	-0.9	Y
10	3/20/2019	16:38	4.5	4.3	0.2	Y

Ref. Method Average:	9.43	ppm
CEMS Average:	9.73	ppm
Average Difference:	-0.31	ppm
Number of Tests:	10	
Standard Deviation:	1.21	ppm
t Value:	2.306	
Confidence Coefficient:	0.93	ppm
Relative Accuracy:	13.15	% of Reference Method

TABLE 4-9
SO_2, PPM @ 3% O_2 UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference SO_2, ppm dry	Use Data? (Y or N)
1	3/20/2019	9:36	25.2	24.3	1.0	Y
2	3/20/2019	10:35	10.0	8.3	1.8	Y
3	3/20/2019	11:20	14.0	15.3	-1.2	Y
4	3/20/2019	12:05	20.1	19.9	0.2	Y
5	3/20/2019	12:48	9.1	7.9	1.2	Y
6	3/20/2019	13:32	12.3	13.5	-1.2	Y
7	3/20/2019	14:16	13.3	20.2	-6.9	N
8	3/20/2019	15:00	14.3	18.2	-3.9	Y
9	3/20/2019	15:44	8.8	10.1	-1.3	Y
10	3/20/2019	16:38	6.4	6.2	0.2	Y

Ref. Method Average:	13.37	ppmc
CEMS Average:	13.74	ppmc
Average Difference:	-0.37	ppmc
Number of Tests:	10	
Standard Deviation:	1.74	ppmc
t Value:	2.306	
Confidence Coefficient:	1.34	ppmc
Relative Accuracy:	12.83	% of Reference Method

TABLE 4-10
SO_2, LB/HR UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM SO_2 lb/hr	CEMS SO_2 lb/hr	Difference SO_2 lb/hr	Use Data? (Y or N)
1	3/20/2019	9:36	16.45	14.96	1.49	Y
2	3/20/2019	10:35	6.28	5.27	1.00	Y
3	3/20/2019	11:20	9.03	9.22	-0.19	Y
4	3/20/2019	12:05	12.73	12.36	0.36	Y
5	3/20/2019	12:48	5.74	5.00	0.74	Y
6	3/20/2019	13:32	7.89	8.39	-0.50	Y
7	3/20/2019	14:16	8.70	12.41	-3.71	N
8	3/20/2019	15:00	9.45	11.48	-2.03	Y
9	3/20/2019	15:44	5.55	6.36	-0.81	Y
10	3/20/2019	16:38	6.41	6.23	0.18	Y

Ref. Method Average:	8.84	lb/hr
CEMS Average:	8.81	lb/hr
Average Difference:	0.03	lb/hr
Number of Tests:	10	
Standard Deviation:	1.06	lb/hr
t Value:	2.306	
Confidence Coefficient:	0.82	ppmc
Relative Accuracy:	9.53	% of Reference Method

TABLE 4-11
CO PPM UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM CO, ppm dry	CEMS CO, ppm dry	Difference CO, ppm dry	Use Data? (Y or N)
1	3/20/2019	9:36	-0.2	1.7	-1.9	Y
2	3/20/2019	10:35	0.0	0.5	-0.5	Y
3	3/20/2019	11:20	-0.2	0.6	-0.8	Y
4	3/20/2019	12:05	-0.2	0.0	-0.2	Y
5	3/20/2019	12:48	-0.2	0.0	-0.2	Y
6	3/20/2019	13:32	-0.3	0.0	-0.3	Y
7	3/20/2019	14:16	-0.2	0.0	-0.2	N
8	3/20/2019	15:00	-0.2	0.0	-0.2	Y
9	3/20/2019	15:44	-0.2	0.1	-0.3	Y
10	3/20/2019	16:38	-0.2	0.4	-0.6	Y

Ref. Method Average:	-0.17	ppm
CEMS Average:	0.37	ppm
Average Difference:	-0.55	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	10	
Standard Deviation:	0.54	ppm
t Value:	2.306	
Confidence Coefficient:	0.41	ppm
Relative Accuracy:	N/A	% of Reference Method

TABLE 4-12
CO PPM @ 3% O_2 UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM CO, ppm dry	CEMS CO, ppm dry	Difference CO, ppm dry	Use Data? (Y or N)
1	3/20/2019	9:36	-0.2	2.4	-2.7	Y
2	3/20/2019	10:35	0.0	0.7	-0.7	Y
3	3/20/2019	11:20	-0.3	0.9	-1.2	Y
4	3/20/2019	12:05	-0.2	0.1	-0.3	Y
5	3/20/2019	12:48	-0.3	0.0	-0.3	Y
6	3/20/2019	13:32	-0.4	0.0	-0.4	Y
7	3/20/2019	14:16	-0.3	0.0	-0.3	N
8	3/20/2019	15:00	-0.2	0.0	-0.2	Y
9	3/20/2019	15:44	-0.3	0.1	-0.4	Y
10	3/20/2019	16:38	-0.2	0.6	-0.8	Y

Ref. Method Average:	-0.24	ppmc
CEMS Average:	0.54	ppmc
Average Difference:	-0.78	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	10	
Standard Deviation:	0.77	ppmc
t Value:	2.306	
Confidence Coefficient:	0.59	ppmc
Relative Accuracy:	N/A	% of Reference Method

TABLE 4-13
CO, LB/HR UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER,
MARCH 20, 2019

Run #	Date	Time	RM CO, lb/hr	CEMS CO, lb/hr	Difference CO, lb/hr	Use Data? (Y or N)
1	3/20/2019	9:36	-0.06	0.65	-0.72	Y
2	3/20/2019	10:35	-0.01	0.19	-0.19	Y
3	3/20/2019	11:20	-0.08	0.24	-0.32	Y
4	3/20/2019	12:05	-0.07	0.02	-0.08	Y
5	3/20/2019	12:48	-0.09	0.00	-0.09	Y
6	3/20/2019	13:32	-0.11	0.00	-0.11	Y
7	3/20/2019	14:16	-0.08	0.00	-0.08	N
8	3/20/2019	15:00	-0.06	0.00	-0.06	Y
9	3/20/2019	15:44	-0.08	0.04	-0.12	Y
10	3/20/2019	16:38	-0.07	0.00	-0.07	Y

Ref. Method Average:	-0.07	lb/hr
CEMS Average:	0.13	lb/hr
Average Difference:	-0.19	lb/hr
Number of Tests:	10	
Standard Deviation:	0.212	
t Value:	2.306	
Confidence Coefficient:	0.163	
Applicable Standard:	45.0	lb/hr
Relative Accuracy:	N/A	% of Reference Method
Relative Accuracy:	0.79	% of Applicable Standard

TABLE 4-14
O_2, % UNIT 1
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 20, 2019

Run #	Date	Time	RM O_2, % dry	CEMS O_2, % dry	Difference O_2, % dry	Use Data? (Y or N)
1	3/20/2019	9:36	8.36	8.41	-0.04	Y
2	3/20/2019	10:35	8.53	8.59	-0.05	Y
3	3/20/2019	11:20	8.11	8.15	-0.04	Y
4	3/20/2019	12:05	8.38	8.41	-0.03	Y
5	3/20/2019	12:48	8.32	8.38	-0.06	Y
6	3/20/2019	13:32	8.27	8.31	-0.04	Y
7	3/20/2019	14:16	8.15	8.17	-0.02	N
8	3/20/2019	15:00	7.88	7.90	-0.02	Y
9	3/20/2019	15:44	8.30	8.36	-0.06	Y
10	3/20/2019	16:38	8.43	8.63	-0.20	Y

Ref. Method Average:	8.29	
CEMS Average:	8.35	
Average Difference:	-0.06	
Number of Tests:	10	
Standard Deviation:	0.05	
t Value:	2.306	
Confidence Coefficient:	0.04	
Relative Accuracy:	1.22	% of Reference Method

4.2 UNIT 2 PERFORMANCE TESTS AND RATA RESULTS

The results of the HCL testing are presented in Table 4-15. HCL emissions for Unit 1 were xxxx lb/MMBtu. This is below the permit limit of 0.022 lb/MMBtu. The results of the total solid particulate testing are presented in Table 4-16. Total solid particulate emissions for Unit 2 were 0.34 lb/hr. This is below the permit limit of 3.9 lb/hr. Gaseous emissions results are presented in Tables 4-17, and 4-18. NO_x, CO, SO_2 and hydrocarbon emissions results were also below established permit limits.

Tables 4-19 through 4-28 present the CEMS RATA results for Unit 2. The results demonstrate that the CEMS for Unit 2 is in control as defined in CFR 40 Appendix F. The results of the RATA are presented in units of ppm dry, ppm @ 3% O_2 and lb/hr for NO_x, CO and SO_2. O_2 results are presented in concentration units of %.

TABLE 4-15
HYDROCHLORIC ACID TEST RESULTS UNIT 2
DESERT VIEW POWER
MARCH 21, 2019

Test Number	1-HCL-U2	2-HCL-U2	3-HCL-U2	Average	Limit
Date	3/21/2019	3/21/2019	3/21/2019		
Start/Stop Time	721/940	1010/1242	1306/1518		
Stack Flow Rate, dscfm	91,901	87,807	87,054	88,921	
Sample Volume, dscf	89.534	88.014	87.764	88.437	
O_2, %	7.66	7.61	8.42	7.90	
CO_2, %	12.98	13.00	12.22	12.73	
mg/sample	40.5	62.5	67.3	56.8	
mg/dscm	15.97	25.07	27.08	22.71	
ppm (as HCl)	10.53	16.53	17.85	14.97	
lb/hr (as HCl)	5.49	8.24	8.82	7.52	
MMBtu/Hr	379	379	379	379	
lb/MMBtu	0.014	0.022	0.023	0.0198	0.022

TABLE 4-16
PARTICULATE EMISSIONS PERFORMANCE TEST UNIT 2
DESERT VIEW POWER
MARCH 21, 2019

Date:	3/21/2019	3/21/2019	3/28/2018	
Time:	721/940	1010/1242	1306/1518	

Test No.	1-PM-U2	2-PM-U2	3-PM-U2	Average
O_2 (%)	7.7	7.6	8.4	7.9
CO_2 (%)	13.0	13.0	12.2	12.7
H_2O%	14.6%	14.9%	15.0%	14.8%
Stack Temperature (°F)	353.7	358.0	366.0	359.3
Gas Flow				
wacfm	162,809	163,052	164,441	163,434
dscfm	90,907	90,239	90,043	90,396
Isokinetic Ratio (%)	102.8	103.1	101.0	102.3
Total Solid Particulate				
Grain Loading, gr/dscf	0.0002	0.0002	0.0010	0.0004
Grain Loading @ 12% CO_2	0.0002	0.0001	0.0010	0.0004
lb/hr	0.14	0.12	0.76	0.34

TABLE 4-17
NO_X, CO, SO_X EMISSIONS PERFORMANCE TESTS UNIT 2
DESERT VIEW POWER
MARCH 21, 2019

Data From:	1-RA-U2	2-RA-U2	3-RA-U2
Date:	3/21/2019	3/21/2019	3/21/2019
Time:	7:21	8:36	10:10

Test No.	1-Compliance –U2	2-Compliance-U2	3-Compliance-U2	Average
O_2 (%)	7.7	7.7	7.7	7.7
CO_2 (%)	13.0	13.0	12.9	13.0
H_2O%	15.8	15.8	15.4	15.7
Stack Temperature (°F)	355	355	356	355.2
Gas Flow				
wacfm	165,283	162,666	157,875	161,941
dscfm	90,919	89,368	87,096	89,128
SO_x ppm	10.6	9.5	9.4	9.83
SO_x ppm @ 3% O_2	14.3	12.8	12.7	13.28
SO_x lb/hr	9.57	8.45	8.19	8.73
NO_x ppm	41.08	42.10	41.86	41.68
NO_x ppm @ 3% O_2	55.54	56.93	56.55	56.34
NO_x lb/hr	26.76	26.95	26.11	26.61
CO ppm	0.00	0.00	0.00	0.00
CO ppm @ 3% O_2	0.00	0.00	0.00	0.00
CO lb/hr	0.00	0.00	0.00	0.00

TABLE 4-18
HYDROCARBON EMISSIONS PERFORMANCE TEST UNIT 2
DESERT VIEW POWER
MARCH 21, 2019

Date:	3/21/2019	3/21/2019
Time:	954/1037	954/1037

Test No.	1A-HC-U2	1B-HC-U2	Average
O_2, %	7.66	7.66	7.66
CO_2, %	12.98	12.98	12.98
H_2O, %	14.58%	14.58%	14.58%
Gas Flow:			
wacfm	162,809	162,809	162,809
dscfm	90,907	90,907	90,907
EPA Correction Factor	1.086	1.086	1.086
TNMHC ppm	1.86	1.80	1.83
TNMHC ppm @ 3% O_2	2.51	2.44	2.47
TNMHC, lb/hr	0.42	0.41	0.41

Note: Flow rates from PM Run 1

TABLE 4-19
NO_X, PPM UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM NO_x, ppm dry	CEMS NO_x, ppm dry	Difference NO_x, ppm dry	Use Data? (Y or N)
1	3/21/2019	7:21	41.1	44.2	-3.1	Y
2	3/21/2019	8:36	42.1	45.5	-3.4	Y
3	3/21/2019	10:10	41.9	46.2	-4.3	Y
4	3/21/2019	11:38	46.8	49.2	-2.4	Y
5	3/21/2019	12:22	50.4	53.5	-3.0	Y
6	3/21/2019	13:06	42.3	44.9	-2.7	N
7	3/21/2019	13:50	48.8	52.0	-3.3	Y
8	3/21/2019	14:34	45.8	49.1	-3.3	Y
9	3/21/2019	15:16	48.3	52.0	-3.8	Y
10	3/21/2019	16:06	43.6	47.0	-3.5	Y

Ref. Method Average:	45.41	ppm
CEMS Average:	48.74	ppm
Average Difference:	-3.34	ppm
Number of Tests:	10	
Standard Deviation:	0.52	ppm
t Value:	2.306	
Confidence Coefficient:	0.40	ppm
Relative Accuracy:	8.23	% of Reference Method

TABLE 4-20
NO_X, PPM @ 3% O_2 UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM NO_x ppmc	CEMS NO_x ppmc	Difference NO_x ppmc	Use Data? (Y or N)
1	3/21/2019	7:21	55.5	59.4	-3.9	Y
2	3/21/2019	8:36	56.9	61.4	-4.4	Y
3	3/21/2019	10:10	56.6	62.4	-5.8	Y
4	3/21/2019	11:38	62.8	66.1	-3.4	Y
5	3/21/2019	12:22	67.7	71.8	-4.1	Y
6	3/21/2019	13:06	56.4	59.2	-2.8	N
7	3/21/2019	13:50	65.3	69.4	-4.1	Y
8	3/21/2019	14:34	61.3	65.3	-4.0	Y
9	3/21/2019	15:16	65.1	69.8	-4.7	Y
10	3/21/2019	16:06	58.6	62.7	-4.2	Y

Ref. Method Average:	61.08	ppmc
CEMS Average:	65.38	ppmc
Average Difference:	-4.30	ppmc
Number of Tests:	10	
Standard Deviation:	0.69	ppmc
t Value:	2.306	
Confidence Coefficient:	0.53	
Relative Accuracy:	7.91	% of Reference Method

TABLE 4-21
NO_X, LB/HR UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM NO_x lb/hr	CEMS NO_x lb/hr	Difference NO_x lb/hr	Use Data? (Y or N)
1	3/21/2019	7:21	26.76	25.63	1.12	Y
2	3/21/2019	8:36	26.95	25.21	1.74	Y
3	3/21/2019	10:10	26.11	25.56	0.55	Y
4	3/21/2019	11:38	29.38	25.84	3.54	Y
5	3/21/2019	12:22	31.20	28.32	2.87	Y
6	3/21/2019	13:06	27.26	24.00	3.26	N
7	3/21/2019	13:50	29.16	27.44	1.72	Y
8	3/21/2019	14:34	27.63	26.33	1.30	Y
9	3/21/2019	15:16	29.24	28.09	1.15	Y
10	3/21/2019	16:06	27.71	25.53	2.17	Y

Ref. Method Average:	28.237	lb/hr
CEMS Average:	26.440	lb/hr
Average Difference:	1.797	lb/hr
Number of Tests:	10	
Standard Deviation:	0.938	lb/hr
t Value:	2.306	
Confidence Coefficient:	0.7208	
Relative Accuracy:	8.92	% of Reference Method

TABLE 4-22
SO_2 PPM UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference SO_2, ppm dry	Use Data? (Y or N)
1	3/21/2019	7:21	10.6	11.5	-0.9	Y
2	3/21/2019	8:36	9.5	10.5	-1.0	Y
3	3/21/2019	10:10	9.4	10.6	-1.2	Y
4	3/21/2019	11:38	9.2	9.9	-0.8	Y
5	3/21/2019	12:22	13.7	15.3	-1.6	Y
6	3/21/2019	13:06	9.7	12.6	-2.9	N
7	3/21/2019	13:50	12.3	14.2	-2.0	Y
8	3/21/2019	14:34	10.4	12.8	-2.4	Y
9	3/21/2019	15:16	7.9	9.3	-1.4	Y
10	3/21/2019	16:06	7.8	9.6	-1.8	Y

Ref. Method Average:	10.09	ppm
CEMS Average:	11.53	ppm
Average Difference:	-1.44	ppm
Number of Tests:	10	
Standard Deviation:	0.52	ppm
t Value:	2.306	
Confidence Coefficient:	0.40	ppm
Relative Accuracy:	18.24	% of Reference Method

TABLE 4-23
SO_2 PPM @ 3% O_2 UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM SO_2, ppm dry	CEMS SO_2, ppm dry	Difference SO_2, ppm dry	Use Data? (Y or N)
1	3/21/2019	7:21	14.3	15.5	-1.2	Y
2	3/21/2019	8:36	12.8	14.2	-1.4	Y
3	3/21/2019	10:10	12.7	14.4	-1.7	Y
4	3/21/2019	11:38	12.3	13.4	-1.0	Y
5	3/21/2019	12:22	18.4	20.5	-2.1	Y
6	3/21/2019	13:06	13.0	16.7	-3.7	N
7	3/21/2019	13:50	16.4	19.0	-2.5	Y
8	3/21/2019	14:34	13.9	17.0	-3.1	Y
9	3/21/2019	15:16	10.7	12.5	-1.8	Y
10	3/21/2019	16:06	10.6	12.9	-2.3	Y

Ref. Method Average:	13.58	ppmc
CEMS Average:	15.48	ppmc
Average Difference:	-1.90	ppmc
Number of Tests:	10	
Standard Deviation:	0.66	ppmc
t Value:	2.306	
Confidence Coefficient:	0.51	ppmc
Relative Accuracy:	17.74	% of Reference Method

TABLE 4-24
SO_2 LB/HR UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM SO_2 lb/hr	CEMS SO_2 lb/hr	Difference SO_2 lb/hr	Use Data? (Y or N)
1	3/21/2019	7:21	9.57	9.24	0.33	Y
2	3/21/2019	8:36	8.45	8.04	0.41	Y
3	3/21/2019	10:10	8.19	8.24	-0.05	Y
4	3/21/2019	11:38	8.03	7.25	0.78	Y
5	3/21/2019	12:22	11.81	11.27	0.54	Y
6	3/21/2019	13:06	8.72	9.36	-0.63	N
7	3/21/2019	13:50	10.21	10.46	-0.25	Y
8	3/21/2019	14:34	8.74	9.54	-0.79	Y
9	3/21/2019	15:16	6.67	6.96	-0.29	Y
10	3/21/2019	16:06	10.56	12.85	-2.30	Y

Ref. Method Average:	9.14	lb/hr
CEMS Average:	9.32	lb/hr
Average Difference:	-0.18	lb/hr
Number of Tests:	10	
Standard Deviation:	0.93	lb/hr
t Value:	2.306	
Confidence Coefficient:	0.72	ppmc
Relative Accuracy:	9.80	% of Reference Method

TABLE 4-25
CO, PPM UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER,
MARCH 21, 2019

Run #	Date	Time	RM CO, ppm dry	CEMS CO, ppm dry	Difference CO, ppm dry	Use Data? (Y or N)
1	3/21/2019	7:21	-0.2	2.1	-2.3	Y
2	3/21/2019	8:36	-0.2	2.5	-2.7	Y
3	3/21/2019	10:10	-0.2	2.0	-2.2	Y
4	3/21/2019	11:38	-0.2	1.0	-1.2	Y
5	3/21/2019	12:22	-0.3	0.4	-0.7	Y
6	3/21/2019	13:06	-0.2	0.1	-0.3	N
7	3/21/2019	13:50	-0.2	0.2	-0.4	Y
8	3/21/2019	14:34	-0.2	1.0	-1.2	Y
9	3/21/2019	15:16	-0.3	1.6	-1.9	Y
10	3/21/2019	16:06	-0.2	1.9	-2.1	Y

Ref. Method Average:	-0.23	ppm
CEMS Average:	1.41	ppm
Average Difference:	-1.64	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	10	
Standard Deviation:	0.77	ppm
t Value:	2.306	
Confidence Coefficient:	0.59	ppm
Relative Accuracy:	N/A	% of Reference Method

TABLE 4-26
CO, PPM @ 3% O_2 UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER,
MARCH 21, 2019

Run #	Date	Time	RM CO, ppm @ 3% O_2	CEMS CO, ppm @ 3% O_2	Difference CO, ppm @ 3% O_2	Use Data? (Y or N)
1	3/21/2019	7:21	-0.3	2.8	-3.1	Y
2	3/21/2019	8:36	-0.3	3.3	-3.6	Y
3	3/21/2019	10:10	-0.2	2.8	-3.0	Y
4	3/21/2019	11:38	-0.3	1.4	-1.6	Y
5	3/21/2019	12:22	-0.4	0.6	-1.0	Y
6	3/21/2019	13:06	-0.3	0.1	-0.4	N
7	3/21/2019	13:50	-0.3	0.3	-0.6	Y
8	3/21/2019	14:34	-0.3	1.3	-1.6	Y
9	3/21/2019	15:16	-0.4	2.2	-2.5	Y
10	3/21/2019	16:06	-0.3	2.6	-2.9	Y

Ref. Method Average:	-0.31	ppmc
CEMS Average:	1.91	ppmc
Average Difference:	-2.22	(PS 4A Criteria: Avg. Diff. less than 5 ppm)
Number of Tests:	10	
Standard Deviation:	1.04	ppmc
t Value:	2.306	
Confidence Coefficient:	0.80	ppmc
Applicable Standard:	231.0	ppmc
Relative Accuracy:	N/A	% of Reference Method

TABLE 4-27
CO LB/HR UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM CO, lb/hr	CEMS CO, lb/hr	Difference CO, lb/hr	Use Data? (Y or N)
1	3/21/2019	7:21	-0.09	0.72	-0.80	Y
2	3/21/2019	8:36	-0.09	0.82	-0.91	Y
3	3/21/2019	10:10	-0.06	0.69	-0.75	Y
4	3/21/2019	11:38	-0.08	0.32	-0.41	Y
5	3/21/2019	12:22	-0.11	0.14	-0.25	Y
6	3/21/2019	13:06	-0.09	0.02	-0.11	N
7	3/21/2019	13:50	-0.09	0.06	-0.15	Y
8	3/21/2019	14:34	-0.09	0.32	-0.41	Y
9	3/21/2019	15:16	-0.10	0.53	-0.62	Y
10	3/21/2019	16:06	-0.08	0.00	-0.08	Y

Ref. Method Average:	-0.09	lb/hr
CEMS Average:	0.40	lb/hr
Average Difference:	-0.49	lb/hr
Number of Tests:	10	
Standard Deviation:	0.298	
t Value:	2.306	
Confidence Coefficient:	0.229	
Applicable Standard:	45.0	lb/hr
Relative Accuracy:	N/A	% of Reference Method
Relative Accuracy:	1.59	% of Applicable Standard

TABLE 4-28
O_2, % UNIT 2
RELATIVE ACCURACY TEST AUDIT SUMMARY
DESERT VIEW POWER
MARCH 21, 2019

Run #	Date	Time	RM O_2, % dry	CEMS O_2, % dry	Difference O_2, % dry	Use Data? (Y or N)
1	3/21/2019	7:21	7.66	7.70	-0.04	Y
2	3/21/2019	8:36	7.66	7.71	-0.04	Y
3	3/21/2019	10:10	7.65	7.70	-0.05	Y
4	3/21/2019	11:38	7.56	7.62	-0.06	Y
5	3/21/2019	12:22	7.55	7.58	-0.03	Y
6	3/21/2019	13:06	7.48	7.48	0.00	N
7	3/21/2019	13:50	7.53	7.56	-0.03	Y
8	3/21/2019	14:34	7.53	7.54	-0.01	Y
9	3/21/2019	15:16	7.62	7.59	0.03	Y
10	3/21/2019	16:06	7.59	7.59	-0.01	Y

Ref. Method Average:	7.60	
CEMS Average:	7.62	
Average Difference:	-0.03	
Number of Tests:	10	
Standard Deviation:	0.03	
t Value:	2.306	
Confidence Coefficient:	0.02	
Relative Accuracy:	0.65	% of Reference Method

4.3 FUEL ANALYSIS

The fuel sample analysis results are presented in Appendix B.5.

APPENDIX A
FIELD AND PLANT OPERATING DATA

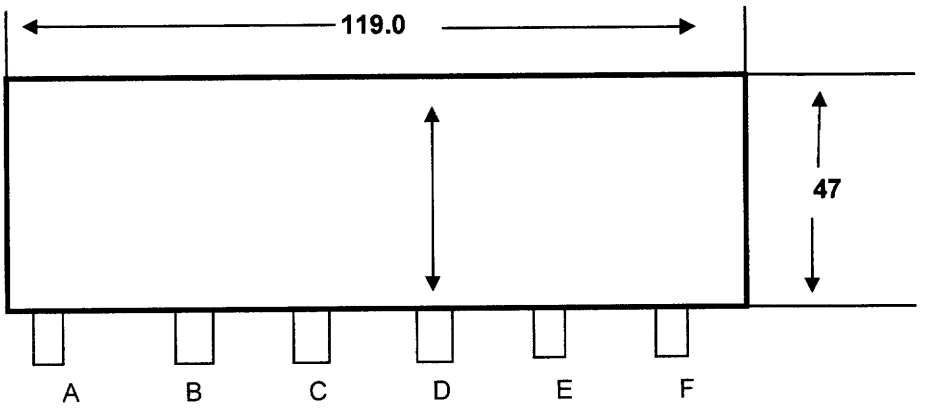
Appendix A.1
Unit 1 Data

Appendix A.1.1
Unit 1 Sample Location

Method 1

Client: Desert View Power Date: 3/20/2019

Sample Location: Unit 1-2 Prepared By: Dave Wonderly



H (in.)	**119.0**
W (in.)	**47.0**
Nipple length	**13.0**
Distance between points	**9.40**
Stack Area (ft^2)	**38.84**

Point No.	Sample Point Inches from nozzle	
1	4.7	17.7
2	14.1	27.1
3	23.5	36.5
4	32.9	45.9
5	42.3	55.3

Appendix A.1.2
Unit 1 CEM Data

Date	Time	O2 %	CO2 %	NOx ppm	CO ppm	
3/19/2019	6:30	19.3	18.883	90.811	8.592	
3/19/2019	6:31	19.3	18.904	90.448	8.59	
3/19/2019	6:32	19.301	18.935	90.544	8.606	High
3/19/2019	6:33	13.414	12.615	51.896	8.124	
3/19/2019	6:34	10.467	10.567	46.267	5.324	
3/19/2019	6:35	10.467	10.565	46.257	4.664	Mid
3/19/2019	6:36	6.544	6.23	26.808	4.519	
3/19/2019	6:37	-0.005	0.033	0.084	1.687	
3/19/2019	6:38	-0.007	0.029	0.052	0.022	Zero
3/19/2019	6:39	-0.007	0.028	0.04	0.011	NO Mode Zero
3/19/2019	6:40	5.113	6.573	65.365	-0.008	
3/19/2019	6:41	8.128	12.4	90.899	-0.018	NO Mode High
3/19/2019	6:42	7.834	12.752	26.772	-0.041	
3/19/2019	6:43	7.37	13.081	0.143	-0.122	NO2 Gas NO Mode
3/19/2019	6:44	8.168	12.262	35.301	-0.15	
3/19/2019	6:45	8.704	11.778	43.42	-0.133	NO2 Gas NOx Mode
3/19/2019	6:46	8.415	12.068	38.511	-0.106	
3/19/2019	6:47	8.961	11.562	27.795	-0.108	
3/19/2019	6:48	8.757	11.734	30.212	-0.126	
3/19/2019	6:49	8.462	11.975	33.084	-0.157	
3/19/2019	6:50	4.823	4.336	13.715	0.324	
3/19/2019	6:51	0.01	0.039	0.499	3.695	
3/19/2019	6:52	0.006	0.046	0.421	4.666	CO Bias
3/19/2019	6:53	0.02	0.063	28.653	3.894	
3/19/2019	6:54	0.001	0.036	46.038	0.254	
3/19/2019	6:55	0	0.037	46.076	0.04	NOx Bias
3/19/2019	6:56	4.848	5.435	24.372	-0.02	
3/19/2019	6:57	10.422	10.453	0.311	-0.411	O2 CO2 Bias
3/19/2019	6:58	9.177	11.765	26.232	-0.431	
3/19/2019	6:59	7.361	13.079	73.17	-0.233	
3/19/2019	7:00	9.27	11.129	31.98	-0.242	
3/19/2019	7:01	10.059	10.365	17.514	-0.168	
3/19/2019	7:02	9.055	11.288	20.102	-0.092	
3/19/2019	7:03	9.471	10.898	18.079	-0.091	
3/19/2019	7:04	9.054	11.473	28.839	-0.144	
3/19/2019	7:05	9.107	11.266	24.974	-0.201	
3/19/2019	7:06	8.887	11.653	38.258	-0.2	
3/19/2019	7:07	9.012	11.454	33.224	-0.215	
3/19/2019	7:08	8.787	11.707	39.91	-0.204	
3/19/2019	7:09	8.985	11.497	36.005	-0.249	
3/19/2019	7:10	9.078	11.365	34.381	-0.224	
3/19/2019	7:11	8.897	11.539	38.143	-0.216	
3/19/2019	7:12	9.036	11.478	35.347	-0.208	
3/19/2019	7:13	8.482	11.948	45.622	-0.236	
3/19/2019	7:14	8.681	11.857	42.822	-0.247	
3/19/2019	7:15	8.421	11.964	46.609	-0.25	
3/19/2019	7:16	8.137	12.483	49.216	-0.229	
3/19/2019	7:17	7.699	12.788	57.244	-0.249	
3/19/2019	7:18	7.943	12.478	58.176	-0.259	

3/19/2019	7:19	7.72	12.844	60.196	-0.25	
3/19/2019	7:20	7.926	12.447	35.113	-0.181	
3/19/2019	7:21	8.462	12.142	23.313	0.041	
3/19/2019	7:22	7.46	12.974	35.596	-0.002	
3/19/2019	7:23	7.606	12.934	44.376	-0.058	
3/19/2019	7:24	6.61	13.9	67.892	-0.189	
3/19/2019	7:25	7.754	12.615	39.626	-0.193	
3/19/2019	7:26	8.97	11.448	17.945	-0.047	
3/19/2019	7:27	9.269	11.214	12.225	0.29	
3/19/2019	7:28	9.255	11.245	11.815	0.415	
3/19/2019	7:29	9.103	11.453	11.695	0.436	
3/19/2019	7:30	8.682	11.847	16.191	0.309	
3/19/2019	7:31	9.579	10.986	9.514	0.355	
3/19/2019	7:32	8.557	12.037	14.259	0.37	
3/19/2019	7:33	8.235	12.429	20.074	0.203	
3/19/2019	7:34	9.348	11.05	14.864	0.09	
3/19/2019	7:35	11.001	9.57	7.772	0.175	
3/19/2019	7:36	11.611	8.964	6.942	0.168	
3/19/2019	7:37	12.209	8.431	6.479	0.098	
3/19/2019	7:38	12.172	8.362	6.429	0.133	
3/19/2019	7:39	12.805	7.807	6.554	0.134	
3/19/2019	7:40	12.443	8.224	7.619	0.158	
3/19/2019	7:41	12.301	8.252	9.32	0.243	
3/19/2019	7:42	12.011	8.662	11.928	0.3	
3/19/2019	7:43	11.145	9.544	14.932	0.321	
3/19/2019	7:44	11.241	9.319	16.66	0.291	
3/19/2019	7:45	11.284	9.326	18.775	0.197	
3/19/2019	7:46	11.971	8.658	20.955	0.153	
3/19/2019	7:47	13.104	7.36	24.83	0.134	
3/19/2019	7:48	13.492	7.282	27.99	0.219	
3/19/2019	7:49	12.876	7.75	31.652	0.309	
3/19/2019	7:50	12.688	7.949	34.786	0.35	
3/19/2019	7:51	12.063	8.515	37.026	0.423	
3/19/2019	7:52	12.089	8.519	36.929	0.426	
3/19/2019	7:53	11.252	9.315	38.031	0.378	
3/19/2019	7:54	10.493	10.059	33.657	0.271	
3/19/2019	7:55	10.292	10.165	9.387	0.56	
3/19/2019	7:56	10.296	10.208	6.938	0.766	
3/19/2019	7:57	9.866	10.701	7.456	0.699	
3/19/2019	7:58	9.525	11.036	9.312	0.505	
3/19/2019	7:59	8.759	11.677	13.137	0.34	
3/19/2019	8:00	8.361	12.16	18.729	0.162	
3/19/2019	8:01	8.181	12.313	25.958	0.038	
3/19/2019	8:02	8.577	11.811	24.123	-0.036	
3/19/2019	8:03	9.145	11.213	24.807	-0.093	
3/19/2019	8:04	9.855	10.791	16.737	-0.115	
3/19/2019	8:05	10.423	10.474	0.099	-0.398	
3/19/2019	8:06	10.427	10.483	0.068	-0.463	O2 CO2 Bias
3/19/2019	8:07	3.653	2.902	30.14	-0.391	
3/19/2019	8:08	0.008	0.061	45.771	-0.063	
3/19/2019	8:09	0.002	0.052	45.819	-0.016	NOx Bias
3/19/2019	8:10	0.004	0.047	17.701	0.953	

3/19/2019	8:11	0	0.043	0.097	4.476	
3/19/2019	8:12	-0.001	0.041	0.068	4.633	CO Bias
3/19/2019	8:13	1.298	2.795	10.375	4.597	
3/19/2019	8:14	8.841	11.575	42.342	1.533	
3/19/2019	8:15	8.691	11.819	45.409	-0.233	
3/19/2019	8:16	8.531	12.085	48.146	-0.236	
3/19/2019	8:17	8.284	12.223	49.529	-0.263	
3/19/2019	8:18	8.391	12.082	45.44	-0.246	
3/19/2019	8:19	8.546	11.947	44.778	-0.23	
3/19/2019	8:20	8.21	12.218	44.349	-0.223	
3/19/2019	8:21	8.408	12.063	42.248	-0.203	
3/19/2019	8:22	8.078	12.427	46.829	-0.206	
3/19/2019	8:23	7.831	12.494	44.652	-0.194	
3/19/2019	8:24	9.204	11.182	10.368	0.203	
3/19/2019	8:25	8.434	12.03	11.811	0.488	
3/19/2019	8:26	7.829	12.663	18.574	0.429	
3/19/2019	8:27	6.953	13.338	33.859	0.187	
3/19/2019	8:28	8.032	12.25	20.776	0.114	
3/19/2019	8:29	8.57	11.768	15.762	0.149	
3/19/2019	8:30	9.786	10.493	9.112	0.202	
3/19/2019	8:31	9.86	10.598	8.679	0.201	
3/19/2019	8:32	9.72	10.678	8.719	0.198	
3/19/2019	8:33	9.228	11.185	11.226	0.158	
3/19/2019	8:34	8.529	11.861	18.236	0.062	
3/19/2019	8:35	8.395	12.074	25.206	-0.043	
3/19/2019	8:36	8.662	11.722	22.395	-0.113	
3/19/2019	8:37	8.649	11.696	27.255	-0.155	
3/19/2019	8:38	9.436	11.01	21.288	-0.155	
3/19/2019	8:39	8.179	12.36	35.961	-0.177	
3/19/2019	8:40	7.829	12.473	45.388	-0.227	
3/19/2019	8:41	8.884	11.417	37.285	-0.263	
3/19/2019	8:42	9.476	10.941	27.867	-0.225	
3/19/2019	8:43	9.458	11.001	26	-0.204	
3/19/2019	8:44	9.2	11.254	32.219	-0.209	
3/19/2019	8:45	7.801	12.695	57.533	-0.266	
3/19/2019	8:46	7.707	12.661	61.005	-0.307	
3/19/2019	8:47	7.98	12.343	37.816	-0.277	
3/19/2019	8:48	8.814	11.489	11.293	0.232	
3/19/2019	8:49	8.282	12.238	15.72	0.443	
3/19/2019	8:50	7.519	12.807	25.088	0.253	
3/19/2019	8:51	7.888	12.469	22.105	0.21	
3/19/2019	8:52	8.267	12.055	17.275	0.197	
3/19/2019	8:53	7.996	12.317	29.63	0.19	
3/19/2019	8:54	8.072	12.326	24.406	0.036	
3/19/2019	8:55	8.377	12	22.428	0.086	
3/19/2019	8:56	8.078	12.262	24.331	0.018	
3/19/2019	8:57	8.17	12.159	17.398	0.115	
3/19/2019	8:58	8.064	12.312	20.347	0.119	
3/19/2019	8:59	7.638	12.678	31.33	0.024	
3/19/2019	9:00	7.943	12.445	32.018	-0.069	
3/19/2019	9:01	8.002	12.342	29.636	-0.112	
3/19/2019	9:02	7.82	12.53	36.998	-0.133	

3/19/2019	9:03	7.892	12.489	31.914	-0.131	
3/19/2019	9:04	8.126	12.243	31.846	-0.146	
3/19/2019	9:05	8.124	12.155	30.502	-0.14	
3/19/2019	9:06	8.176	12.175	25.761	-0.115	
3/19/2019	9:07	7.615	12.822	42.143	-0.139	
3/19/2019	9:08	7.707	12.637	41.01	-0.235	
3/19/2019	9:09	8.44	11.865	32.847	-0.213	
3/19/2019	9:10	8.047	12.321	40.433	-0.207	
3/19/2019	9:11	8.253	12.06	33.871	-0.179	
3/19/2019	9:12	8.373	12.022	33.598	-0.184	
3/19/2019	9:13	8.286	12.066	32.434	-0.171	
3/19/2019	9:14	8.919	11.444	21.94	-0.145	
3/19/2019	9:15	8.039	12.48	36.539	-0.134	
3/19/2019	9:16	8.134	12.105	34.633	-0.185	
3/19/2019	9:17	8.323	12.09	33.751	-0.178	
3/19/2019	9:18	8.333	12.068	26.516	-0.161	
3/19/2019	9:19	7.603	12.782	43.656	-0.182	
3/19/2019	9:20	7.844	12.477	47.483	-0.254	
Run 1 Average		8.32	12.06	28.98	-0.04	
3/19/2019	9:21	5.023	7.19	30.805	0.041	
3/19/2019	9:22	0.003	0.07	0.096	3.871	
3/19/2019	9:23	-0.002	0.049	0.05	4.606	CO Bias
3/19/2019	9:24	0.021	0.076	20.191	4.282	
3/19/2019	9:25	-0.002	0.043	45.511	0.545	
3/19/2019	9:26	-0.002	0.042	45.572	-0.043	NOx Bias
3/19/2019	9:27	6.006	6.668	18.5	-0.146	
3/19/2019	9:28	10.409	10.411	0.076	-0.409	O2 CO2 Bias
3/19/2019	9:29	6.598	7.508	9.535	-0.107	
3/19/2019	9:30	-0.007	0.031	0.05	-0.072	Zero
3/19/2019	9:31	7.662	8.264	34.711	1.496	
3/19/2019	9:32	10.472	10.484	46.116	4.554	
3/19/2019	9:33	10.475	10.487	46.041	4.597	Span
3/19/2019	9:34	9.319	11.579	48.293	4.329	
3/19/2019	9:35	7.844	12.553	49.195	0.529	
3/19/2019	9:36	8.131	12.33	48.559	-0.333	
3/19/2019	9:37	7.58	12.846	51.132	-0.292	
3/19/2019	9:38	7.193	13.215	58.226	-0.302	
3/19/2019	9:39	8.376	11.888	32.998	-0.265	
3/19/2019	9:40	9.646	10.724	14.348	-0.134	
3/19/2019	9:41	9.51	10.905	14.14	-0.061	
3/19/2019	9:42	9.021	11.385	18.628	-0.09	
3/19/2019	9:43	8.586	11.807	25.103	-0.163	
3/19/2019	9:44	8.764	11.653	25.301	-0.213	
3/19/2019	9:45	8.517	11.851	32.414	-0.241	
3/19/2019	9:46	8.644	11.759	30.856	-0.252	
3/19/2019	9:47	8.384	12.018	40.817	-0.281	
3/19/2019	9:48	8.096	12.327	44.462	-0.315	
3/19/2019	9:49	7.249	13.155	61.013	-0.326	
3/19/2019	9:50	7.288	12.963	67.462	-0.351	
3/19/2019	9:51	8.711	11.66	34.721	-0.328	
3/19/2019	9:52	8.874	11.423	28.913	-0.267	

3/19/2019	9:53	8.72	11.631	26.781	-0.207	
3/19/2019	9:54	7.866	12.588	46.542	-0.263	
3/19/2019	9:55	7.196	13.204	59.28	-0.32	
3/19/2019	9:56	7.226	13.117	59.148	-0.352	
3/19/2019	9:57	7.096	13.274	62.518	-0.337	
3/19/2019	9:58	7.582	12.682	42.189	-0.298	
3/19/2019	9:59	9.028	11.153	13.982	0.071	
3/19/2019	10:00	10.852	9.512	7.76	0.316	
3/19/2019	10:01	10.233	10.209	7.53	0.331	
3/19/2019	10:02	8.284	12.171	12.185	0.472	
3/19/2019	10:03	6.999	13.413	26.386	0.35	
3/19/2019	10:04	6.972	13.232	32.022	0.162	
3/19/2019	10:05	8.025	12.314	17.071	0.243	
3/19/2019	10:06	8.026	12.277	17.963	0.234	
3/19/2019	10:07	8.499	11.811	14.127	0.269	
3/19/2019	10:08	8.754	11.54	10.967	0.331	
3/19/2019	10:09	8.737	11.625	10.721	0.376	
3/19/2019	10:10	7.904	12.516	17.504	0.285	
3/19/2019	10:11	7.286	13.007	30.821	0.089	
3/19/2019	10:12	7.375	12.867	34.288	-0.072	
3/19/2019	10:13	8.252	12.095	18.479	-0.009	
3/19/2019	10:14	7.848	12.571	26.651	0.077	
3/19/2019	10:15	7.444	12.856	31.323	-0.075	
3/19/2019	10:16	7.557	12.734	34.958	-0.043	
3/19/2019	10:17	7.734	12.583	29.249	-0.089	
3/19/2019	10:18	8.053	12.22	26.002	-0.069	
3/19/2019	10:19	8.513	11.865	20.786	-0.044	
3/19/2019	10:20	7.974	12.371	27.558	-0.041	
3/19/2019	10:21	8.508	11.768	22.444	-0.061	
3/19/2019	10:22	8.579	11.825	21.71	-0.051	
3/19/2019	10:23	8.288	12.049	21.805	-0.069	
3/19/2019	10:24	6.984	13.399	46.481	-0.107	
3/19/2019	10:25	6.922	13.429	56.417	-0.252	
3/19/2019	10:26	7.183	13.096	50.703	-0.283	
3/19/2019	10:27	8.009	12.263	29.167	-0.094	
3/19/2019	10:28	8.633	11.662	14.162	0.161	
3/19/2019	10:29	8.954	11.351	10.666	0.42	
3/19/2019	10:30	8.484	11.848	11.294	0.466	
3/19/2019	10:31	8.281	11.987	12.726	0.462	
3/19/2019	10:32	8.067	12.234	14.957	0.404	
3/19/2019	10:33	8.102	12.256	17.142	0.378	
3/19/2019	10:34	7.973	12.213	19.95	0.213	
3/19/2019	10:35	7.958	12.387	20.1	0.247	
Run 2 Average		8.16	12.19	29.39	-0.02	
3/19/2019	10:36	8.095	12.193	17.104	0.194	
3/19/2019	10:37	8.487	11.813	15.307	0.248	
3/19/2019	10:38	7.61	12.698	21.916	0.231	
3/19/2019	10:39	7.931	12.328	20.402	0.172	
3/19/2019	10:40	8.042	12.235	26.208	0.115	
3/19/2019	10:41	9.078	11.326	16.085	-0.038	
3/19/2019	10:42	10.384	10.405	0.05	-0.405	O2 CO2 Bias
3/19/2019	10:43	3.477	3.082	27.312	-0.207	

3/19/2019	10:44	0.005	0.067	45.36	-0.041	NOx Bias
3/19/2019	10:45	0.003	0.046	27.132	0.383	
3/19/2019	10:46	0.001	0.05	0.076	4.167	
3/19/2019	10:47	8.454	9.863	36.734	4.652	CO Bias
3/19/2019	10:48	10.482	10.446	45.361	4.664	
3/19/2019	10:49	10.484	10.444	45.925	4.666	Span
3/19/2019	10:50	3.08	2.723	11.387	3.404	
3/19/2019	10:51	-0.005	0.032	0.024	0.081	
3/19/2019	10:52	-0.006	0.011	0.004	0.011	Zero
3/19/2019	10:53	5.088	8.338	24.732	-0.024	
3/19/2019	10:54	8.368	11.95	31.838	-0.166	
3/19/2019	10:55	7.772	12.576	43.221	-0.149	
3/19/2019	10:56	7.638	12.71	46.383	-0.153	
3/19/2019	10:57	7.676	12.634	48.226	-0.175	
3/19/2019	10:58	6.877	13.52	63.633	-0.182	
3/19/2019	10:59	7.905	12.277	44.907	-0.187	
3/19/2019	11:00	8.285	12.07	30.122	-0.089	
3/19/2019	11:01	7.863	12.452	39.628	-0.075	
3/19/2019	11:02	8.229	12.045	36.315	-0.111	
3/19/2019	11:03	8.499	11.807	26.501	-0.072	
3/19/2019	11:04	8.661	11.676	23.88	-0.046	
3/19/2019	11:05	8.233	12.061	32.03	-0.047	
3/19/2019	11:06	8.349	11.979	32.706	-0.082	
3/19/2019	11:07	7.566	12.805	46.425	-0.117	
3/19/2019	11:08	7.23	13.061	56.638	-0.16	
3/19/2019	11:09	6.46	13.853	71.176	-0.178	
3/19/2019	11:10	7.807	12.38	47.285	-0.161	
3/19/2019	11:11	7.96	12.369	38.792	-0.109	
3/19/2019	11:12	7.988	12.326	30.886	-0.073	
3/19/2019	11:13	8.193	12.062	26.632	-0.007	
3/19/2019	11:14	8.677	11.648	22.788	0.004	
3/19/2019	11:15	8.393	11.919	27.46	-0.03	
3/19/2019	11:16	8.002	12.312	35.191	-0.076	
3/19/2019	11:17	8.211	12.054	32.012	-0.111	
3/19/2019	11:18	8.554	11.724	28.84	-0.11	
3/19/2019	11:19	9.275	10.988	19.639	-0.067	
3/19/2019	11:20	8.854	11.541	24.781	-0.061	
3/19/2019	11:21	8.049	12.257	41.122	-0.119	
3/19/2019	11:22	7.866	12.481	46.004	-0.16	
3/19/2019	11:23	7.48	12.805	54.707	-0.19	
3/19/2019	11:24	8.099	12.193	44.246	-0.179	
3/19/2019	11:25	8.36	11.884	35.82	-0.146	
3/19/2019	11:26	7.071	13.348	61.278	-0.141	
3/19/2019	11:27	6.934	13.299	65.353	-0.167	
3/19/2019	11:28	7.072	13.158	65.104	-0.173	
3/19/2019	11:29	8.279	11.943	21.897	-0.05	
3/19/2019	11:30	10.057	10.181	8.719	0.421	
3/19/2019	11:31	10.667	9.712	7.462	0.477	
3/19/2019	11:32	9.073	11.245	8.426	0.574	
3/19/2019	11:33	8.05	12.278	12.047	0.63	
3/19/2019	11:34	7.723	12.59	13.649	0.58	

3/19/2019	11:35	8.163	12.004	13.821	0.487	
3/19/2019	11:36	9.076	11.225	8.994	0.515	
3/19/2019	11:37	9.105	11.206	8.717	0.517	
3/19/2019	11:38	8.784	11.443	9.473	0.537	
3/19/2019	11:39	9.57	10.764	8.314	0.45	
3/19/2019	11:40	8.5	11.802	11.276	0.406	
3/19/2019	11:41	8.138	12.15	13.34	0.357	
3/19/2019	11:42	8.048	12.223	17.706	0.274	
3/19/2019	11:43	7.901	12.446	20.02	0.202	
3/19/2019	11:44	7.548	12.693	30.481	0.069	
3/19/2019	11:45	7.999	12.311	27.493	0.003	
3/19/2019	11:46	7.803	12.493	33.069	-0.004	
3/19/2019	11:47	7.428	12.786	41.181	-0.051	
3/19/2019	11:48	8.823	11.338	20.865	-0.05	
3/19/2019	11:49	9.899	10.437	12.865	0.049	
3/19/2019	11:50	8.832	11.451	17.938	0.067	
3/19/2019	11:51	8.601	11.698	22.474	0.038	
3/19/2019	11:52	8.673	11.554	25.78	-0.046	
3/19/2019	11:53	8.528	11.786	32.683	-0.074	
3/19/2019	11:54	8.131	12.17	40.422	-0.109	
3/19/2019	11:55	8.246	12.012	41.439	-0.129	
3/19/2019	11:56	8.262	12.031	43.574	-0.125	
3/19/2019	11:57	8.763	11.459	33.536	-0.113	
3/19/2019	11:58	8.048	12.32	40.986	-0.084	
3/19/2019	11:59	7.758	12.498	49.731	-0.128	
3/19/2019	12:00	7.581	12.659	53.787	-0.128	
3/19/2019	12:01	8.831	11.392	28.938	-0.116	
Run 3 Average		8.28	12.01	30.91	0.04	
3/19/2019	12:02	6.07	6.441	15.769	0.141	
3/19/2019	12:03	0.004	0.073	0.088	3.844	
3/19/2019	12:04	-0.002	0.055	0.042	4.715	
3/19/2019	12:05	-0.001	0.049	0.033	4.718	CO Bias
3/19/2019	12:06	0.006	0.05	25.969	4.042	
3/19/2019	12:07	-0.003	0.041	45.262	0.39	
3/19/2019	12:08	-0.004	0.041	45.349	0.121	NOx Bias
3/19/2019	12:09	6.868	7.385	17.066	0.053	
3/19/2019	12:10	10.403	10.386	0.067	-0.006	O2 CO2 Bias
3/19/2019	12:11	1.546	2.005	0.021	0.048	
3/19/2019	12:12	-0.006	0.027	0.009	0	Zero
3/19/2019	12:13	8.314	6.804	28.616	1.08	
3/19/2019	12:14	10.48	10.436	45.834	4.529	
3/19/2019	12:15	10.482	10.417	45.916	4.655	Span
3/19/2019	12:16	8.974	11.653	50.744	4.247	
3/19/2019	12:17	8.055	12.274	45.254	0.373	
3/19/2019	12:18	8.072	12.21	38.841	-0.22	
3/19/2019	12:19	8.702	11.588	26.414	-0.147	
3/19/2019	12:20	8.484	11.838	27.835	-0.116	
3/19/2019	12:21	7.507	12.793	43.925	-0.121	
3/19/2019	12:22	7.679	12.63	44.143	-0.18	
3/19/2019	12:23	6.775	13.541	59.546	-0.193	
3/19/2019	12:24	6.768	13.468	59.26	-0.184	

3/19/2019	12:25	7.091	13.215	55.912	-0.19
3/19/2019	12:26	6.484	13.804	62.301	-0.178
3/19/2019	12:27	7.003	13.148	53.643	-0.173
3/19/2019	12:28	8.98	11.229	16.345	-0.009
3/19/2019	12:29	11.53	8.713	7.671	0.171
3/19/2019	12:30	10.275	10.083	7.692	0.299
3/19/2019	12:31	9.451	10.82	8.674	0.361
3/19/2019	12:32	9.471	10.791	8.503	0.311
3/19/2019	12:33	8.702	11.623	12.001	0.277
3/19/2019	12:34	6.567	13.767	44.233	0.154
3/19/2019	12:35	6.022	14.136	59.617	-0.07
3/19/2019	12:36	8.322	11.855	26.495	-0.092
3/19/2019	12:37	10.631	9.607	8.193	0.135
3/19/2019	12:38	10.465	9.907	7.15	0.37
3/19/2019	12:39	8.907	11.397	8.276	0.545
3/19/2019	12:40	8.355	11.923	8.763	0.616
3/19/2019	12:41	8.433	11.861	9.651	0.564
3/19/2019	12:42	8.607	11.653	10.718	0.448
3/19/2019	12:43	8.306	11.956	12.043	0.345
3/19/2019	12:44	8.514	11.765	11.754	0.306
3/19/2019	12:45	8.681	11.6	11.781	0.253
3/19/2019	12:46	7.949	12.323	20.45	0.175
3/19/2019	12:47	7.728	12.552	29.422	0.036
3/19/2019	12:48	7.876	12.367	30.904	-0.073
3/19/2019	12:49	7.986	12.294	33.912	-0.076
3/19/2019	12:50	8.217	12.038	31.742	-0.097
3/19/2019	12:51	7.696	12.587	41.219	-0.092
3/19/2019	12:52	8.416	11.865	29.706	-0.11
3/19/2019	12:53	8.354	11.938	30.913	-0.097
3/19/2019	12:54	7.859	12.408	44.043	-0.156
3/19/2019	12:55	7.704	12.625	50.115	-0.177
3/19/2019	12:56	7.475	12.812	56.705	-0.206
3/19/2019	12:57	8.152	12.127	41.663	-0.199
3/19/2019	12:58	8.609	11.639	27.838	-0.122
3/19/2019	12:59	8.091	12.237	32.28	-0.07
3/19/2019	13:00	6.864	13.433	63.689	-0.133
3/19/2019	13:01	7.103	13.14	67.555	-0.224
3/19/2019	13:02	7.942	12.335	48.917	-0.223
3/19/2019	13:03	7.847	12.429	41.285	-0.193
3/19/2019	13:04	8.461	11.752	19.766	0.074
3/19/2019	13:05	8.677	11.56	15.502	0.333
3/19/2019	13:06	8.853	11.388	11.621	0.407
3/19/2019	13:07	8.578	11.718	14.613	0.447
3/19/2019	13:08	8.237	12.035	18.456	0.313
3/19/2019	13:09	8.042	12.204	22.706	0.206
3/19/2019	13:10	8.497	11.755	19.808	0.237
3/19/2019	13:11	8.635	11.646	18.099	0.184
3/19/2019	13:12	8.517	11.681	21.204	0.188
3/19/2019	13:13	8.394	11.881	20.06	0.199
3/19/2019	13:14	7.868	12.404	28.101	0.104
3/19/2019	13:15	8.087	12.222	30.838	0.054
3/19/2019	13:16	7.212	13.085	51.257	-0.088

3/19/2019	13:17	7.354	12.909	50.633	-0.153	
Run 4 Average		8.20	12.07	30.27	0.06	
3/19/2019	13:18	9.208	11.009	20.898	-0.075	
3/19/2019	13:19	9.624	10.649	11.44	0.183	
3/19/2019	13:20	10.361	10.349	0.091	-0.137	
3/19/2019	13:21	10.363	10.356	0.042	-0.382	O2 CO2 Bias
3/19/2019	13:22	3.036	2.63	30.413	-0.334	
3/19/2019	13:23	0.007	0.064	45.194	0.022	
3/19/2019	13:24	0.001	0.054	45.226	0.061	NOx Bias
3/19/2019	13:25	0.001	0.052	19.139	0.9	
3/19/2019	13:26	0	0.046	0.083	4.488	
3/19/2019	13:27	-0.001	0.043	0.044	4.671	
3/19/2019	13:28	-0.001	0.038	0.035	4.668	CO Bias
3/19/2019	13:29	-0.009	0.026	0.008	2.381	
3/19/2019	13:30	-0.009	0.027	0.011	0.084	
3/19/2019	13:31	-0.009	0.027	0.01	0.017	Zero
3/19/2019	13:32	6.997	7.512	30.502	1.246	
3/19/2019	13:33	10.463	10.406	45.726	4.577	
3/19/2019	13:34	10.468	10.419	46.084	4.662	Span
3/19/2019	13:35	9.016	11.414	33.284	3.824	
3/19/2019	13:36	10.413	9.879	10.292	0.415	
3/19/2019	13:37	10.052	10.397	9.452	0.327	
3/19/2019	13:38	8.514	11.87	22.23	0.285	
3/19/2019	13:39	8.2	12.103	22.969	0.118	
3/19/2019	13:40	7.676	12.703	37.022	0.039	
3/19/2019	13:41	6.864	13.4	62.298	-0.108	
3/19/2019	13:42	8.201	12.044	31.244	-0.086	
3/19/2019	13:43	9.866	10.386	12.529	0.125	
3/19/2019	13:44	11.161	9.231	8.16	0.235	
3/19/2019	13:45	9.423	11.036	10.974	0.273	
3/19/2019	13:46	7.866	12.464	22.239	0.204	
3/19/2019	13:47	6.968	13.434	42.557	0.078	
3/19/2019	13:48	6.871	13.418	58.323	-0.119	
3/19/2019	13:49	8.526	11.672	33.562	-0.133	
3/19/2019	13:50	10.373	9.953	9.991	0.061	
3/19/2019	13:51	10.282	10.193	9.299	0.172	
3/19/2019	13:52	8.939	11.364	16.265	0.13	
3/19/2019	13:53	8.846	11.569	19.967	0.068	
3/19/2019	13:54	8.2	12.151	30.106	-0.066	
3/19/2019	13:55	7.796	12.612	41.875	-0.139	
3/19/2019	13:56	7.686	12.622	48.058	-0.208	
3/19/2019	13:57	8.373	11.943	34.343	-0.207	
3/19/2019	13:58	8.188	12.124	39.427	-0.181	
3/19/2019	13:59	8.252	12.116	40.128	-0.169	
3/19/2019	14:00	7.896	12.476	51.927	-0.23	
3/19/2019	14:01	7.878	12.423	57.064	-0.237	
3/19/2019	14:02	7.915	12.422	61.086	-0.229	
3/19/2019	14:03	7.426	12.867	55.039	-0.217	
3/19/2019	14:04	7.85	12.467	31.805	-0.056	
3/19/2019	14:05	8.807	11.389	18.423	0.092	
3/19/2019	14:06	9.13	11.184	12.116	0.351	

3/19/2019	14:07	8.376	11.94	18.492	0.313	
3/19/2019	14:08	8.499	11.705	19.94	0.178	
3/19/2019	14:09	9.023	11.274	11.833	0.398	
3/19/2019	14:10	9.008	11.304	13.495	0.411	
3/19/2019	14:11	4.669	6.717	14.948	0.529	
3/19/2019	14:12	0.003	0.041	0.046	3.988	
3/19/2019	14:13	-0.004	0.054	0.033	4.672	CO Bias
3/19/2019	14:14	-0.006	0.048	0.01	4.675	
3/19/2019	14:15	-0.002	0.07	0.02	4.668	
3/19/2019	14:16	0.025	0.055	39.505	2.911	
3/19/2019	14:17	-0.006	0.042	45.253	0.095	
3/19/2019	14:18	-0.006	0.041	45.168	0.058	NOx Bias
3/19/2019	14:19	7.491	7.883	14.236	-0.083	
3/19/2019	14:20	10.388	10.355	0.054	-0.219	O2 CO2 Bias
3/19/2019	14:21	10.392	10.364	0.023	0.011	
3/19/2019	14:22	3.347	3.527	0.015	0.005	CO Zero
3/19/2019	14:23	-0.006	0.03	0.002	1.657	O2 CO2 NOx Zero
3/19/2019	14:24	9.687	9.241	35.199	4:627	
3/19/2019	14:25	10.459	10.405	45.922	4.663	Span
3/19/2019	14:26	9.675	11.067	32.262	4.362	
3/19/2019	14:27	7.059	13.273	39.752	0.734	
3/19/2019	14:28	7.88	12.409	27.608	-0.074	
3/19/2019	14:29	7.997	12.318	27.546	-0.046	
3/19/2019	14:30	8.263	12.059	23.062	0.025	
3/19/2019	14:31	8.034	12.287	25.654	-0.017	
3/19/2019	14:32	7.808	12.523	34.01	-0.023	
3/19/2019	14:33	7.374	13.029	44.324	-0.112	
3/19/2019	14:34	6.646	13.62	66.68	-0.216	
3/19/2019	14:35	7.785	12.489	40.235	-0.219	
3/19/2019	14:36	7.277	13.075	52.9	-0.153	
3/19/2019	14:37	7.762	12.453	48.847	-0.223	
3/19/2019	14:38	9.332	10.894	21.532	-0.125	
3/19/2019	14:39	11.574	8.675	8.591	0.095	
3/19/2019	14:40	10.384	10.074	9.293	0.206	
3/19/2019	14:41	9.031	11.337	13.271	0.207	
3/19/2019	14:42	8.62	11.582	16.548	0.123	
3/19/2019	14:43	8.927	11.416	17.504	0.041	
3/19/2019	14:44	8.847	11.458	16.391	-0.019	
3/19/2019	14:45	8.146	12.221	30.613	-0.035	
3/19/2019	14:46	7.422	12.869	42.915	-0.147	
3/19/2019	14:47	7.64	12.664	50.059	-0.204	
3/19/2019	14:48	7.923	12.387	48.295	-0.242	
3/19/2019	14:49	7.434	12.895	58.059	-0.235	
3/19/2019	14:50	8.337	11.915	38.37	-0.219	
3/19/2019	14:51	7.98	12.356	41.15	-0.197	
3/19/2019	14:52	7.681	12.604	49.178	-0.216	
3/19/2019	14:53	7.586	12.702	52.345	-0.24	
3/19/2019	14:54	7.687	12.603	53.958	-0.218	
3/19/2019	14:55	7.76	12.547	44.196	-0.21	
3/19/2019	14:56	7.956	12.304	44.709	-0.18	
3/19/2019	14:57	8.12	12.113	41.485	-0.178	

3/19/2019	14:58	8.527	11.713	32.054	-0.167
3/19/2019	14:59	8.862	11.374	26.574	-0.103
3/19/2019	15:00	8.464	11.826	32.806	-0.102
3/19/2019	15:01	8.314	11.94	35.242	-0.145
3/19/2019	15:02	7.909	12.391	45.676	-0.165
3/19/2019	15:03	7.585	12.691	58.652	-0.217
3/19/2019	15:04	7.708	12.532	52.864	-0.213
3/19/2019	15:05	7.869	12.327	51.593	-0.212
3/19/2019	15:06	8.241	12.004	27.585	-0.109
3/19/2019	15:07	7.963	12.232	22.775	0.115
3/19/2019	15:08	7.773	12.408	25.379	0.252
3/19/2019	15:09	8.392	11.78	17.011	0.284
3/19/2019	15:10	8.611	11.589	14.462	0.355
3/19/2019	15:11	8.329	11.889	16.202	0.415
3/19/2019	15:12	7.803	12.398	21.373	0.279
3/19/2019	15:13	8.127	12.042	19.33	0.305
3/19/2019	15:14	8.014	12.186	24.511	0.254
3/19/2019	15:15	7.875	12.327	23.343	0.281
3/19/2019	15:16	8.41	11.705	17.048	0.28
3/19/2019	15:17	9.235	10.954	11.726	0.402
3/19/2019	15:18	7.887	12.394	22.031	0.378
3/19/2019	15:19	7.648	12.455	27.509	0.214
3/19/2019	15:20	8.573	11.676	18.168	0.316
3/19/2019	15:21	8.326	11.848	17.337	0.313
3/19/2019	15:22	8.241	11.892	18.845	0.374
3/19/2019	15:23	8.897	11.313	14.383	0.4
3/19/2019	15:24	8.259	11.942	18.575	0.401
3/19/2019	15:25	8.284	11.894	16.785	0.347
3/19/2019	15:26	8.533	11.706	15.399	0.391
3/19/2019	15:27	7.935	12.312	20.65	0.433
3/19/2019	15:28	7.77	12.397	24.636	0.256
3/19/2019	15:29	8.134	12.077	22.204	0.263
3/19/2019	15:30	7.973	12.218	23.876	0.303
3/19/2019	15:31	8.329	11.872	15.258	0.316
3/19/2019	15:32	8.202	11.969	17.396	0.377
3/19/2019	15:33	8.364	11.896	14.581	0.411
3/19/2019	15:34	8.176	12.069	18.4	0.421
3/19/2019	15:35	7.625	12.61	24.859	0.304
3/19/2019	15:36	7.404	12.856	33.103	0.185
3/19/2019	15:37	6.934	13.29	49.05	0.018
3/19/2019	15:38	8.618	11.532	23.039	0.018
3/19/2019	15:39	9.89	10.355	9.978	0.331
3/19/2019	15:40	10.754	9.538	7.902	0.409
3/19/2019	15:41	11.069	9.289	7.36	0.386
3/19/2019	15:42	9.014	11.365	10.657	0.391
3/19/2019	15:43	8.284	12.024	15.092	0.378
3/19/2019	15:44	9.074	11.189	11.219	0.274
3/19/2019	15:45	8.764	11.52	15.562	0.227
3/19/2019	15:46	7.908	12.393	27.322	0.096
3/19/2019	15:47	8.153	12.171	25.166	0.016
3/19/2019	15:47	8.153	12.171	25.166	0.016
3/19/2019	15:48	9.574	10.871	13.276	-0.121

3/19/2019	15:49	10.352	10.366	0.041	-0.365	O2 CO2 Bias
3/19/2019	15:50	7.493	6.996	10.599	-0.372	
3/19/2019	15:51	0.01	0.08	44.728	-0.093	
3/19/2019	15:52	0.001	0.058	44.911	0.069	NOx Bias
3/19/2019	15:53	0	0.052	30.502	0.268	
3/19/2019	15:54	-0.004	0.05	0.1	3.953	
3/19/2019	15:55	-0.006	0.046	0.036	4.674	CO Bias
3/19/2019	15:56	-0.007	0.033	0.014	3.356	
3/19/2019	15:57	-0.008	0.028	0.009	0.104	
3/19/2019	15:58	-0.008	0.029	0.01	0.022	Zero
3/19/2019	15:59	5.098	5.563	23.65	0.7	
3/19/2019	16:00	10.447	10.396	45.675	4.41	
3/19/2019	16:01	10.453	10.403	45.839	4.669	Span
3/19/2019	16:02	16.658	15.671	78.403	5.224	
3/19/2019	16:03	19.243	18.22	90.552	8.392	
3/19/2019	16:04	19.242	18.33	90.787	8.612	High
3/19/2019	16:05	19.245	18.342	90.983	8.607	
3/19/2019	16:06	19.261	18.456	34.625	8.619	
3/19/2019	16:07	19.276	18.56	84.518	8.598	
3/19/2019	16:08	19.279	18.549	56.696	8.596	O2 CO2 High

Date	Time	O2 %	CO2 %	NOx ppm	CO ppm	
3/20/2019	6:23	3.189	4.047	18.159	0.253	
3/20/2019	6:24	19.308	18.841	91.44	6.652	
3/20/2019	6:25	19.332	18.918	90.547	8.583	
3/20/2019	6:26	19.337	18.926	90.418	8.592	High
3/20/2019	6:27	14.547	13.945	64.553	8.086	
3/20/2019	6:28	10.485	10.596	45.924	4.945	
3/20/2019	6:29	10.482	10.592	45.801	4.656	Mid
3/20/2019	6:30	3.943	3.702	15.31	3.739	
3/20/2019	6:31	-0.001	0.031	0.056	0.156	O2 CO2 NOx Zero
3/20/2019	6:32	5.79	0.057	0.044	0.008	NO Mode Zero, CO Zero
3/20/2019	6:33	20.844	0.084	60.038	0.021	
3/20/2019	6:34	20.871	0.08	90.938	0.163	NO Mode High
3/20/2019	6:35	20.878	0.078	46.858	0.207	
3/20/2019	6:36	11.452	9.449	0.105	0.086	NO2 Gas NO Mode
3/20/2019	6:37	7.839	12.671	21.366	-0.164	
3/20/2019	6:38	8.082	12.409	42.378	-0.141	NO2 Gas NOx Mode
3/20/2019	6:39	9.258	11.211	41.945	-0.027	
3/20/2019	6:40	9.528	10.956	16.317	0.106	
3/20/2019	6:41	9.297	11.186	13.493	0.195	
3/20/2019	6:42	8.657	11.85	21.196	0.11	
3/20/2019	6:43	8.53	11.973	23.625	0.032	
3/20/2019	6:44	9.028	11.4	25.857	0.002	
3/20/2019	6:45	8.144	12.389	38.729	-0.04	
3/20/2019	6:46	7.538	12.988	57.721	-0.143	
3/20/2019	6:47	7.189	13.273	66.169	-0.206	
3/20/2019	6:48	8.348	12.143	38.767	-0.162	
3/20/2019	6:49	8.201	12.275	41.418	-0.125	
3/20/2019	6:50	7.628	12.89	52.301	-0.113	
3/20/2019	6:51	7.777	12.701	55.947	-0.148	
3/20/2019	6:52	7.412	13.084	68.492	-0.194	
3/20/2019	6:53	8.207	11.546	42.688	-0.159	
3/20/2019	6:54	10.409	10.505	0.242	-0.105	O2 CO2 Bias
3/20/2019	6:55	6.465	6.235	15.512	-0.423	
3/20/2019	6:56	0.012	0.066	45.29	-0.102	
3/20/2019	6:57	0.002	0.049	45.326	0.035	NOx Bias
3/20/2019	6:58	0.003	0.044	22.008	0.674	
3/20/2019	6:59	0.002	0.043	0.154	4.384	
3/20/2019	7:00	0.002	0.04	0.101	4.651	CO Bias
3/20/2019	7:01	6.741	4.36	2.929	4.245	
3/20/2019	7:02	13.164	7.413	5.599	0.668	
3/20/2019	7:03	13.415	7.143	5.676	0.161	
3/20/2019	7:04	13.176	7.393	6.115	0.206	
3/20/2019	7:05	13.463	7.124	6.582	0.247	
3/20/2019	7:06	13.607	6.988	7.93	0.252	
3/20/2019	7:07	13.231	7.25	10.277	0.32	
3/20/2019	7:08	12.247	7.594	10.268	0.245	
3/20/2019	7:09	11.735	7.814	11.417	-0.03	
3/20/2019	7:10	11.003	8.377	14.014	-0.081	
3/20/2019	7:11	10.424	8.681	17.065	-0.152	

3/20/2019	7:12	10.204	8.9	21.175	-0.189
3/20/2019	7:13	9.868	9.241	26.565	-0.213
3/20/2019	7:14	9.28	9.828	32.771	-0.235
3/20/2019	7:15	7.753	11.343	45.602	-0.242
3/20/2019	7:16	8.497	10.602	44.582	-0.277
3/20/2019	7:17	8.494	10.599	46.919	-0.284
3/20/2019	7:18	8.675	10.422	45.473	-0.29
3/20/2019	7:19	10.49	8.602	38.951	-0.277
3/20/2019	7:20	10.097	8.982	37.584	-0.259
3/20/2019	7:21	9.788	9.295	39.279	-0.262
3/20/2019	7:22	9.552	9.523	41.119	-0.293
3/20/2019	7:23	9.769	9.323	40.504	-0.287
3/20/2019	7:24	10.225	8.856	39.989	-0.272
3/20/2019	7:25	10.052	9.024	39.286	-0.274
3/20/2019	7:26	9.891	9.187	40.562	-0.28
3/20/2019	7:27	10.608	8.471	39.964	-0.289
3/20/2019	7:28	8.781	10.305	45.672	-0.28
3/20/2019	7:29	8.06	11.019	52.818	-0.29
3/20/2019	7:30	8.846	10.236	48.816	-0.295
3/20/2019	7:31	9.72	9.363	43.539	-0.29
3/20/2019	7:32	9.524	9.569	41.804	-0.29
3/20/2019	7:33	9.65	9.433	40.949	-0.289
3/20/2019	7:34	9.96	9.137	40.082	-0.284
3/20/2019	7:35	10.416	8.672	37.541	-0.268
3/20/2019	7:36	9.332	9.759	39.595	-0.265
3/20/2019	7:37	8.909	10.18	46.319	-0.288
3/20/2019	7:38	9.724	9.358	44.898	-0.297
3/20/2019	7:39	10.199	8.887	39.344	-0.261
3/20/2019	7:40	10.037	9.051	37.333	-0.276
3/20/2019	7:41	9.381	9.712	40.425	-0.278
3/20/2019	7:42	10.123	8.951	38.848	-0.312
3/20/2019	7:43	10.379	8.701	37.331	-0.269
Reboot DAS					
3/20/2019	7:45	10.182	8.924	37.184	-0.275
3/20/2019	7:46	10.48	8.627	36.573	-0.28
3/20/2019	7:47	11.188	7.944	36.419	-0.279
3/20/2019	7:48	11.319	7.653	35.572	-0.243
3/20/2019	7:49	9.518	9.25	41.046	-0.256
3/20/2019	7:50	9.689	9.07	42.614	-0.255
3/20/2019	7:51	9.931	8.832	42.48	-0.248
3/20/2019	7:52	9.954	8.805	41.455	-0.26
3/20/2019	7:53	9.916	8.83	42.808	-0.267
3/20/2019	7:54	10.169	8.578	43.08	-0.273
3/20/2019	7:55	10.619	8.142	40.66	-0.277
3/20/2019	7:56	10.477	8.284	39.471	-0.266
3/20/2019	7:57	10.512	8.251	39.13	-0.271
3/20/2019	7:58	10.647	8.119	37.826	-0.283
3/20/2019	7:59	10.614	8.15	37.89	-0.273
3/20/2019	8:00	10.438	8.317	39.482	-0.287
3/20/2019	8:01	8.739	9.998	50.374	-0.278

3/20/2019	8:02	9.061	9.663	48.532	-0.291
3/20/2019	8:03	9.239	9.49	46.871	-0.275
3/20/2019	8:04	8.716	10.025	49.511	-0.283
3/20/2019	8:05	8.645	10.089	50.565	-0.298
3/20/2019	8:06	9.28	9.451	48.427	-0.291
3/20/2019	8:07	9.823	8.893	36.345	-0.267
3/20/2019	8:08	9.651	9.047	12.886	-0.106
3/20/2019	8:09	9.774	8.907	10.719	0.13
3/20/2019	8:10	9.54	9.143	11.136	0.142
3/20/2019	8:11	9.874	8.792	9.945	0.122
3/20/2019	8:12	9.142	9.525	12.382	0.146
3/20/2019	8:13	9.776	8.887	11.029	0.111
3/20/2019	8:14	9.533	9.131	11.166	0.13
3/20/2019	8:15	9.244	9.435	12.677	0.129
3/20/2019	8:16	9.691	8.985	11.042	0.119
3/20/2019	8:17	10.204	8.486	10.142	0.118
3/20/2019	8:18	10.489	8.199	9.036	0.132
3/20/2019	8:19	10.159	8.521	8.941	0.153
3/20/2019	8:20	9.871	8.809	9.142	0.169
3/20/2019	8:21	10.207	8.491	8.524	0.167
3/20/2019	8:22	10.249	8.441	8.511	0.165
3/20/2019	8:23	9.849	8.786	8.29	0.178
3/20/2019	8:24	9.247	9.371	9.05	0.216
3/20/2019	8:25	8.945	9.676	9.611	0.281
3/20/2019	8:26	9.044	9.573	10.157	0.253
3/20/2019	8:27	8.906	9.715	11.09	0.178
3/20/2019	8:28	8.183	10.411	14.584	0.193
3/20/2019	8:29	7.99	10.6	23.462	0.06
3/20/2019	8:30	8.585	10.037	21.297	-0.052
3/20/2019	8:31	9.98	9.049	14.242	-0.039
3/20/2019	8:32	10.613	8.598	9.406	0.081
3/20/2019	8:33	10.305	8.902	9.388	0.099
3/20/2019	8:34	10.901	8.318	8.433	0.074
3/20/2019	8:35	10.915	8.306	8.276	0.046
3/20/2019	8:36	10.91	8.313	8.304	-0.014
3/20/2019	8:37	10.423	8.738	9.673	-0.037
3/20/2019	8:38	9.9	8.945	13.736	-0.1
3/20/2019	8:39	10.206	8.641	16.816	-0.17
3/20/2019	8:40	10.71	8.163	17.01	-0.215
3/20/2019	8:41	11.076	7.822	18.036	-0.259
3/20/2019	8:42	11.049	7.844	20.347	-0.194
3/20/2019	8:43	10.751	8.135	22.89	-0.222
3/20/2019	8:44	8.512	10.33	40.537	-0.253
3/20/2019	8:45	9.348	9.494	39.803	-0.283
3/20/2019	8:46	9.465	9.402	45.479	-0.289
3/20/2019	8:47	9.957	8.928	40.633	-0.301
3/20/2019	8:48	9.987	8.916	30.468	-0.291
3/20/2019	8:49	10.704	8.234	15.774	-0.214
3/20/2019	8:50	10.985	7.972	15.141	-0.202
3/20/2019	8:51	9.242	9.692	22.956	-0.205
3/20/2019	8:52	8.499	10.421	31.798	-0.239
3/20/2019	8:53	9.081	9.844	36.182	-0.288

3/20/2019	8:54	9.542	9.376	35.675	-0.298	
3/20/2019	8:55	9.015	9.894	39.428	-0.291	
3/20/2019	8:56	9.032	9.867	39.675	-0.299	
3/20/2019	8:57	7.095	11.774	61.155	-0.301	
3/20/2019	8:58	7.688	11.197	59.957	-0.308	
3/20/2019	8:59	7.174	11.7	67.133	-0.311	
3/20/2019	9:00	7.797	11.083	64.182	-0.304	
3/20/2019	9:01	8.069	10.81	58.439	-0.295	
3/20/2019	9:02	8.936	10.125	47.174	-0.277	
3/20/2019	9:03	10.633	9.097	18.437	-0.201	
3/20/2019	9:04	11.956	7.805	10.444	-0.1	
3/20/2019	9:05	12.026	7.74	8.72	-0.057	
3/20/2019	9:06	10.98	8.403	11.292	-0.068	
3/20/2019	9:07	9.897	9.153	18.491	-0.137	
3/20/2019	9:08	8.996	9.761	31.542	-0.232	
3/20/2019	9:09	8.99	9.779	36.838	-0.254	
3/20/2019	9:10	8.274	10.489	45.042	-0.264	
3/20/2019	9:11	8.655	10.121	44.899	-0.269	
3/20/2019	9:12	8.419	10.352	48.567	-0.258	
3/20/2019	9:13	8.783	9.988	46.504	-0.266	
3/20/2019	9:14	8.646	10.131	46.255	-0.269	
3/20/2019	9:15	9.17	9.61	43.661	-0.271	
3/20/2019	9:16	9.005	9.765	45.732	-0.257	
3/20/2019	9:17	9.217	9.558	43.91	-0.245	
3/20/2019	9:18	9.576	9.187	40.413	-0.251	
3/20/2019	9:19	9.187	9.59	40.062	-0.263	
3/20/2019	9:20	10.131	8.903	30.95	-0.266	
3/20/2019	9:21	9.911	9.236	26.375	-0.242	
3/20/2019	9:22	10.55	9.089	20.817	-0.211	
3/20/2019	9:23	10.271	9.715	23.884	-0.199	
3/20/2019	9:24	9.992	9.869	4.476	-0.022	
3/20/2019	9:25	10.431	10.458	0.07	-0.413	
3/20/2019	9:26	10.437	10.454	0.043	-0.446	O2 CO2 Bias
3/20/2019	9:27	6.094	6.074	15.663	-0.445	
3/20/2019	9:28	0.008	0.071	45.242	-0.144	
3/20/2019	9:29	0.002	0.05	45.248	0.002	NOx Bias
3/20/2019	9:30	0.003	0.044	26.561	0.384	
3/20/2019	9:31	-0.005	0.042	0.104	4.18	
3/20/2019	9:32	-0.005	0.038	0.053	4.642	CO bias
3/20/2019	9:33	3.604	4.438	14.374	4.505	
3/20/2019	9:34	9.268	11.141	34.569	0.89	
3/20/2019	9:35	8.12	12.321	53.335	-0.219	
3/20/2019	9:36	7.78	12.677	69.62	-0.261	
3/20/2019	9:37	7.924	12.531	64.469	-0.257	
3/20/2019	9:38	7.725	12.716	67.037	-0.269	
3/20/2019	9:39	8.235	12.204	53.597	-0.257	
3/20/2019	9:40	8.351	12.087	48.166	-0.224	
3/20/2019	9:41	8.611	11.82	33.713	-0.16	
3/20/2019	9:42	8.485	11.966	34.178	-0.105	
3/20/2019	9:43	8.147	12.299	34.737	-0.091	
3/20/2019	9:44	8.145	12.303	42.283	-0.13	
3/20/2019	9:45	7.547	12.897	53.431	-0.212	

3/20/2019	9:46	8.066	12.387	44.861	-0.222	
3/20/2019	9:47	8.404	12.035	36.125	-0.162	
3/20/2019	9:48	8.07	12.379	49.341	-0.182	
3/20/2019	9:49	9.126	11.322	24.568	-0.125	
3/20/2019	9:50	8.318	12.129	34.577	-0.104	
3/20/2019	9:51	8.202	12.256	31.603	-0.066	
3/20/2019	9:52	7.671	12.789	49.943	-0.149	
3/20/2019	9:53	7.696	12.759	46.803	-0.172	
3/20/2019	9:54	7.014	13.42	71.486	-0.245	
3/20/2019	9:55	7.948	12.502	59.868	-0.275	
3/20/2019	9:56	8.187	12.257	46.712	-0.192	
3/20/2019	9:57	8.807	11.622	23.656	-0.082	
3/20/2019	9:58	9.103	11.318	19.034	0.074	
3/20/2019	9:59	9.097	11.321	16.417	0.123	
3/20/2019	10:00	9.069	11.358	16.332	0.123	
3/20/2019	10:01	8.236	12.209	32.783	0.009	
3/20/2019	10:02	8.63	11.809	27.333	-0.091	
3/20/2019	10:03	8.695	11.746	28.819	-0.114	
3/20/2019	10:04	8.667	11.775	27.657	-0.056	
3/20/2019	10:05	8.758	11.682	25.407	-0.096	
3/20/2019	10:06	8.952	11.493	22.202	-0.088	
Run 1 Average		8.33	12.11	38.90	-0.13	
3/20/2019	10:07	3.32	4.054	33.883	0.048	
3/20/2019	10:08	0.005	0.063	45.231	0.049	NOx Bias
3/20/2019	10:09	0.002	0.05	26.837	0.378	
3/20/2019	10:10	-0.004	0.045	0.11	4.152	
3/20/2019	10:11	-0.005	0.042	0.073	4.641	CO Bias
3/20/2019	10:12	4.304	4.223	0.054	3.312	
3/20/2019	10:13	10.44	10.396	0.048	0.052	O2 CO2 Bias
3/20/2019	10:14	1.199	1.48	0.036	-0.021	CO Zero
3/20/2019	10:15	-0.007	0.024	0.031	1.388	O2 CO2 NOx Bias
3/20/2019	10:16	9.264	8.959	33.163	4.582	
3/20/2019	10:17	10.494	10.477	45.643	4.639	Span
3/20/2019	10:18	8.648	11.981	44.995	3.646	
3/20/2019	10:19	9.63	10.76	10.918	0.434	
3/20/2019	10:20	10.915	9.577	7.227	0.416	
3/20/2019	10:21	10.394	10.232	7.532	0.407	
3/20/2019	10:22	8.444	12.051	10.812	0.488	
3/20/2019	10:23	7.74	12.67	21.351	0.388	
3/20/2019	10:24	9.654	10.71	8.515	0.403	
3/20/2019	10:25	10.567	9.936	6.806	0.404	
3/20/2019	10:26	9.634	10.853	7.462	0.436	
3/20/2019	10:27	8.752	11.68	10.271	0.442	
3/20/2019	10:28	8.699	11.721	11.905	0.346	
3/20/2019	10:29	8.995	11.393	11.643	0.281	
3/20/2019	10:30	9.381	11.038	10.385	0.2	
3/20/2019	10:31	8.451	11.985	21.687	0.139	
3/20/2019	10:32	8.63	11.785	19.97	-0.016	
3/20/2019	10:33	7.906	12.531	40.006	-0.089	
3/20/2019	10:34	7.765	12.599	42.955	-0.151	
3/20/2019	10:35	7.928	12.523	38.147	-0.122	

3/20/2019	10:36	7.444	12.952	47.949	-0.186	
3/20/2019	10:37	7.869	12.573	38.253	-0.154	
3/20/2019	10:38	7.619	12.769	49.514	-0.17	
3/20/2019	10:39	7.831	12.602	41.835	-0.176	
3/20/2019	10:40	7.288	13.106	54.615	-0.208	
3/20/2019	10:41	7.428	12.989	48.942	-0.198	
3/20/2019	10:42	7.016	13.392	61.968	-0.181	
3/20/2019	10:43	7.142	13.248	58.571	-0.218	
3/20/2019	10:44	7.478	12.844	49.887	-0.185	
3/20/2019	10:45	10.134	10.137	11.481	0.116	
3/20/2019	10:46	11.486	8.919	6.998	0.362	
3/20/2019	10:47	10.511	9.988	7.075	0.381	
3/20/2019	10:48	9.362	11.017	7.858	0.523	
3/20/2019	10:49	9.613	10.763	7.669	0.554	
3/20/2019	10:50	9.46	10.932	8.38	0.369	
3/20/2019	10:51	9.285	11.15	10.502	0.252	
3/20/2019	10:52	7.935	12.481	21.493	0.162	
3/20/2019	10:53	7.696	12.73	27.6	0.015	
3/20/2019	10:54	7.722	12.699	32.175	-0.073	
3/20/2019	10:55	8.258	12.093	28.889	-0.113	
3/20/2019	10:56	8.91	11.446	19.431	-0.032	
3/20/2019	10:57	9.199	11.235	14.393	-0.007	
3/20/2019	10:58	8.627	11.779	22.249	0.013	
3/20/2019	10:59	8.314	12.064	28.425	-0.093	
3/20/2019	11:00	9.392	11.041	19.861	-0.097	
3/20/2019	11:01	8.586	11.815	30.374	-0.112	
3/20/2019	11:02	8.703	11.754	27.307	-0.134	
3/20/2019	11:03	8.152	12.259	32.444	-0.169	
3/20/2019	11:04	8.053	12.376	37.461	-0.177	
3/20/2019	11:05	7.994	12.424	36.577	-0.189	
Run 2 Average		8.48	11.92	29.67	0.00	
3/20/2019	11:06	2.471	3.407	43.077	-0.194	
3/20/2019	11:07	0.002	0.07	44.106	-0.015	NOx Bias
3/20/2019	11:08	-0.001	0.059	25.734	0.401	
3/20/2019	11:09	-0.005	0.052	0.112	4.168	
3/20/2019	11:10	-0.006	0.049	0.063	4.63	CO Bias
3/20/2019	11:11	6.487	6.833	0.047	3.974	
3/20/2019	11:12	10.398	10.445	0.046	-0.03	O2 CO2 Bias
3/20/2019	11:13	1.527	1.898	0.035	-0.098	
3/20/2019	11:14	-0.01	0.028	0.012	-0.042	Zero
3/20/2019	11:15	8.658	9.164	37.763	2.055	
3/20/2019	11:16	10.479	10.499	45.111	4.622	
3/20/2019	11:17	10.483	10.496	45.186	4.635	Span
3/20/2019	11:18	8.567	12.003	45.682	2.598	
3/20/2019	11:19	7.927	12.521	55.16	-0.28	
3/20/2019	11:20	8.062	12.37	49.168	-0.29	
3/20/2019	11:21	8.023	12.378	54.437	-0.262	
3/20/2019	11:22	7.608	12.838	56.143	-0.252	
3/20/2019	11:23	7.647	12.756	53.427	-0.235	
3/20/2019	11:24	7.894	12.524	48.368	-0.22	
3/20/2019	11:25	7.781	12.61	52.48	-0.222	

3/20/2019	11:26	7.796	12.63	52.945	-0.22	
3/20/2019	11:27	7.377	13.022	59.874	-0.242	
3/20/2019	11:28	7.241	13.138	62.052	-0.223	
3/20/2019	11:29	7.658	12.717	51.303	-0.221	
3/20/2019	11:30	8.134	12.274	35.428	-0.154	
3/20/2019	11:31	7.988	12.37	39.884	-0.149	
3/20/2019	11:32	7.955	12.427	38.909	-0.132	
3/20/2019	11:33	8.606	11.757	26.442	-0.104	
3/20/2019	11:34	8.458	11.957	26.437	-0.069	
3/20/2019	11:35	8.103	12.282	32.95	-0.125	
3/20/2019	11:36	8.306	12.061	34.234	-0.132	
3/20/2019	11:37	8.551	11.863	27.751	-0.14	
3/20/2019	11:38	7.903	12.507	41.226	-0.148	
3/20/2019	11:39	7.606	12.78	49.937	-0.206	
3/20/2019	11:40	7.673	12.732	49.776	-0.217	
3/20/2019	11:41	8.173	12.195	37.682	-0.239	
3/20/2019	11:42	8.722	11.66	24.354	-0.169	
3/20/2019	11:43	8.882	11.514	20.397	-0.087	
3/20/2019	11:44	8.501	11.9	28.765	-0.131	
3/20/2019	11:45	8.056	12.361	41.475	-0.165	
3/20/2019	11:46	7.829	12.55	51.983	-0.241	
3/20/2019	11:47	8.417	11.987	36.719	-0.247	
3/20/2019	11:48	8.258	12.13	42.025	-0.233	
3/20/2019	11:49	8.215	12.207	34.903	-0.224	
3/20/2019	11:50	8.207	12.19	37.416	-0.205	
Run 3 Average		8.05	12.34	41.66	-0.19	
3/20/2019	11:51	3.424	4.519	38.023	-0.224	
3/20/2019	11:52	0.003	0.074	44.733	-0.046	
3/20/2019	11:53	-0.002	0.057	44.788	0.024	NOx Bias
3/20/2019	11:54	-0.004	0.051	29.068	0.259	
3/20/2019	11:55	-0.005	0.047	0.136	3.997	
3/20/2019	11:56	-0.006	0.044	0.074	4.641	CO Bias
3/20/2019	11:57	5.024	5.162	0.047	4.364	
3/20/2019	11:58	10.418	10.413	0.042	0.398	O2 CO2 Bias
3/20/2019	11:59	1.355	1.571	0.023	-0.085	
3/20/2019	12:00	-0.009	0.026	0.018	-0.013	Zero
3/20/2019	12:01	8.518	9.005	37.774	1.9	
3/20/2019	12:02	10.477	10.457	45.5	4.624	
3/20/2019	12:03	10.48	10.469	45.538	4.642	Span
3/20/2019	12:04	8.622	12.02	50.925	3.278	
3/20/2019	12:05	8.35	12.066	36.788	-0.108	
3/20/2019	12:06	9.07	11.342	24.182	-0.161	
3/20/2019	12:07	8.598	11.871	27.04	-0.088	
3/20/2019	12:08	8.065	12.369	34.6	-0.132	
3/20/2019	12:09	7.829	12.594	43.898	-0.196	
3/20/2019	12:10	7.697	12.734	52.071	-0.169	
3/20/2019	12:11	8.077	12.303	48.908	-0.227	
3/20/2019	12:12	9.001	11.413	22.901	-0.163	
3/20/2019	12:13	8.823	11.599	22.362	-0.08	
3/20/2019	12:14	8.149	12.306	30.254	-0.068	
3/20/2019	12:15	8.387	12.039	36.527	-0.159	

3/20/2019	12:16	7.604	12.876	51.851	-0.208	
3/20/2019	12:17	7.795	12.632	54.247	-0.245	
3/20/2019	12:18	6.908	13.526	72.807	-0.247	
3/20/2019	12:19	7.224	13.22	64.92	-0.254	
3/20/2019	12:20	7.681	12.7	54.783	-0.254	
3/20/2019	12:21	8.3	12.114	36.934	-0.188	
3/20/2019	12:22	9.153	11.251	17.111	-0.044	
3/20/2019	12:23	9.212	11.19	15.852	0.049	
3/20/2019	12:24	9.546	10.869	17.883	0.031	
3/20/2019	12:25	9.083	11.36	18.874	0.003	
3/20/2019	12:26	9.158	11.269	16.606	-0.048	
3/20/2019	12:27	8.454	12.014	28.579	-0.063	
3/20/2019	12:28	8.245	12.186	42.021	-0.204	
3/20/2019	12:29	8.776	11.652	38.504	-0.231	
3/20/2019	12:30	8.537	11.904	42.679	-0.218	
3/20/2019	12:31	7.853	12.599	53.862	-0.253	
3/20/2019	12:32	7.877	12.562	54.398	-0.259	
3/20/2019	12:33	7.717	12.713	59.625	-0.259	
3/20/2019	12:34	8.142	12.287	49.148	-0.261	
3/20/2019	12:35	8.782	11.601	31.822	-0.217	
Run 4 Average		8.32	12.10	38.84	-0.16	
3/20/2019	12:36	4.956	5.843	32.015	-0.13	
3/20/2019	12:37	0.005	0.078	44.963	-0.017	NOx Bias
3/20/2019	12:38	0	0.062	41.453	0.06	
3/20/2019	12:39	-0.005	0.054	0.291	2.955	
3/20/2019	12:40	-0.006	0.05	0.093	4.659	CO Bias
3/20/2019	12:41	5.493	5.73	0.101	4.317	
3/20/2019	12:42	10.401	10.423	0.071	0.568	O2 CO2 Bias
3/20/2019	12:43	1.734	1.956	0.047	-0.004	CO Zero
3/20/2019	12:44	-0.012	0.026	0.04	1.079	O2 CO2 NOx Zero
3/20/2019	12:45	8.712	9.3	38.674	4.533	
3/20/2019	12:46	10.468	10.499	45.605	4.646	Span
3/20/2019	12:47	8.451	12.393	43.978	2.975	
3/20/2019	12:48	7.637	12.845	43.387	-0.186	
3/20/2019	12:49	7.867	12.523	36.278	-0.211	
3/20/2019	12:50	8.025	12.471	29.808	-0.149	
3/20/2019	12:51	8.313	12.104	21.606	-0.116	
3/20/2019	12:52	8.256	12.236	19.622	-0.047	
3/20/2019	12:53	7.725	12.678	34.519	-0.118	
3/20/2019	12:54	8.384	12.009	27.287	-0.191	
3/20/2019	12:55	8.667	11.779	25.132	-0.169	
3/20/2019	12:56	8.048	12.371	35.489	-0.189	
3/20/2019	12:57	8.04	12.402	35.031	-0.201	
3/20/2019	12:58	8.055	12.337	38.452	-0.241	
3/20/2019	12:59	8.301	12.125	30.664	-0.224	
3/20/2019	13:00	8.392	11.973	33.705	-0.21	
3/20/2019	13:01	8.252	12.187	37.855	-0.199	
3/20/2019	13:02	8.749	11.606	32.667	-0.233	
3/20/2019	13:03	8.901	11.535	26.265	-0.188	
3/20/2019	13:04	8.651	11.716	32.815	-0.195	
3/20/2019	13:05	8.408	11.982	37.307	-0.224	

3/20/2019	13:06	8.716	11.68	35.186	-0.234	
3/20/2019	13:07	8.873	11.544	30.684	-0.212	
3/20/2019	13:08	8.761	11.624	33.122	-0.211	
3/20/2019	13:09	9.402	10.992	25.071	-0.217	
3/20/2019	13:10	8.346	12.093	37.279	-0.212	
3/20/2019	13:11	7.676	12.751	48.416	-0.231	
3/20/2019	13:12	8.062	12.338	44.673	-0.267	
3/20/2019	13:13	8.637	11.742	37.106	-0.26	
3/20/2019	13:14	7.9	12.554	46.014	-0.241	
3/20/2019	13:15	7.059	13.349	65.565	-0.279	
3/20/2019	13:16	7.14	13.238	73.005	-0.292	
3/20/2019	13:17	8.025	12.366	55.722	-0.293	
3/20/2019	13:18	8.082	12.306	50.602	-0.288	
Run 5 Average		8.26	12.15	37.23	-0.21	
3/20/2019	13:19	3.152	3.909	42.049	-0.267	
3/20/2019	13:20	0.001	0.073	44.915	-0.035	
3/20/2019	13:21	-0.005	0.059	45.05	0.028	NOx Bias
3/20/2019	13:22	-0.004	0.053	18.56	0.927	
3/20/2019	13:23	-0.006	0.049	0.117	4.486	
3/20/2019	13:24	-0.006	0.046	0.071	4.652	CO Bias
3/20/2019	13:25	5.939	6.264	0.401	4.162	
3/20/2019	13:26	10.4	10.429	0.048	0.381	O2 CO2 Bias
3/20/2019	13:27	7.009	7.528	0.043	-0.001	CO Zero
3/20/2019	13:28	-0.008	0.028	0.025	0.425	Zero
3/20/2019	13:29	9.122	8.979	34.083	4.243	
3/20/2019	13:30	10.464	10.487	45.652	4.654	Span
3/20/2019	13:31	10.713	9.939	21.018	4.084	
3/20/2019	13:32	8.598	11.91	15.072	0.463	
3/20/2019	13:33	8.159	12.229	21.998	-0.061	
3/20/2019	13:34	8.481	11.985	22.663	-0.098	
3/20/2019	13:35	8.624	11.765	24.766	-0.169	
3/20/2019	13:36	8.706	11.699	24.919	-0.176	
3/20/2019	13:37	8.274	12.203	32.717	-0.196	
3/20/2019	13:38	8.502	11.897	34.669	-0.228	
3/20/2019	13:39	7.345	13.078	51.94	-0.259	
3/20/2019	13:40	7.912	12.518	49.759	-0.295	
3/20/2019	13:41	8.195	12.2	50.019	-0.298	
3/20/2019	13:42	8.869	11.495	40.035	-0.285	
3/20/2019	13:43	9.039	11.348	27.734	-0.229	
3/20/2019	13:44	8.796	11.642	28.108	-0.201	
3/20/2019	13:45	8.478	11.931	30.895	-0.224	
3/20/2019	13:46	8.369	12.078	34.72	-0.251	
3/20/2019	13:47	7.588	12.826	56.012	-0.283	
3/20/2019	13:48	7.068	13.324	70.418	-0.301	
3/20/2019	13:49	7.754	12.663	58.753	-0.315	
3/20/2019	13:50	8.162	12.257	43.722	-0.268	
3/20/2019	13:51	8.002	12.406	41.366	-0.27	
3/20/2019	13:52	7.321	13.113	51.994	-0.255	
3/20/2019	13:53	7.678	12.737	43.057	-0.276	
3/20/2019	13:54	7.302	13.082	54.24	-0.264	
3/20/2019	13:55	7.669	12.673	53.58	-0.296	

3/20/2019	13:56	8.391	11.996	38.299	-0.258	
3/20/2019	13:57	8.534	11.843	30.03	-0.21	
3/20/2019	13:58	8.337	12.032	34.133	-0.193	
3/20/2019	13:59	8.775	11.619	29.347	-0.203	
3/20/2019	14:00	8.455	11.909	36.626	-0.218	
3/20/2019	14:01	8.878	11.476	24.213	-0.206	
3/20/2019	14:02	8.391	11.982	35.506	-0.179	
Run 6 Average		8.20	12.20	39.21	-0.23	
3/20/2019	14:03	2.532	3.016	40.403	-0.229	
3/20/2019	14:04	0.003	0.067	44.978	-0.01	
3/20/2019	14:05	-0.002	0.054	44.914	0.033	NOx Bias
3/20/2019	14:06	-0.004	0.05	20.617	0.78	
3/20/2019	14:07	-0.006	0.045	0.121	4.434	
3/20/2019	14:08	-0.007	0.045	0.079	4.651	CO Bias
3/20/2019	14:09	7.126	7.392	0.086	3.832	
3/20/2019	14:10	10.388	10.412	0.058	0.216	O2 CO2 Bias
3/20/2019	14:11	10.346	10.495	0.31	0	CO Zero
3/20/2019	14:12	0.911	2.106	13.628	0.514	
3/20/2019	14:13	-0.012	0.024	0.039	4.305	O2 CO2 NOx Zero
3/20/2019	14:14	8.896	8.606	32.569	4.648	CO Span
3/20/2019	14:15	10.451	10.467	45.483	3.505	O2 CO2 NOx Span
3/20/2019	14:16	8.74	12.017	58.785	-0.151	
3/20/2019	14:17	7.725	12.637	61.251	-0.327	
3/20/2019	14:18	8.875	11.497	28.24	-0.246	
3/20/2019	14:19	8.367	12.037	28.985	-0.047	
3/20/2019	14:20	8.06	12.316	36.608	-0.097	
3/20/2019	14:21	7.774	12.606	41.395	-0.135	
3/20/2019	14:22	8.389	11.982	27.115	-0.157	
3/20/2019	14:23	9.009	11.371	16.67	0.003	
3/20/2019	14:24	8.341	12.032	22.036	0.046	
3/20/2019	14:25	8.282	12.133	23.683	0.013	
3/20/2019	14:26	8.323	12.05	24.146	-0.078	
3/20/2019	14:27	8.784	11.611	18.312	-0.028	
3/20/2019	14:28	8.195	12.195	28.027	-0.073	
3/20/2019	14:29	8.422	11.948	27.855	-0.163	
3/20/2019	14:30	8.307	12.149	30.479	-0.168	
3/20/2019	14:31	7.594	12.818	49.389	-0.201	
3/20/2019	14:32	7.894	12.48	48.603	-0.243	
3/20/2019	14:33	8.485	11.918	31.051	-0.165	
3/20/2019	14:34	7.466	12.959	52.244	-0.187	
3/20/2019	14:35	7.402	13.01	52.638	-0.249	
3/20/2019	14:36	7.364	13.021	56.633	-0.276	
3/20/2019	14:37	7.269	13.136	59.441	-0.289	
3/20/2019	14:38	7.926	12.449	43.64	-0.24	
3/20/2019	14:39	8.242	12.146	38.114	-0.179	
3/20/2019	14:40	8.113	12.281	38.761	-0.209	
3/20/2019	14:41	8.282	12.087	30.624	-0.181	
3/20/2019	14:42	7.893	12.533	40.157	-0.128	
3/20/2019	14:43	7.344	13.025	59.231	-0.282	
3/20/2019	14:44	7.875	12.487	55.579	-0.305	
3/20/2019	14:45	8.25	12.11	40.696	-0.271	

3/20/2019	14:46	8.131	12.317	42.351	-0.218	
Run 7 Average		8.08	12.31	38.47	-0.17	
3/20/2019	14:47	5.46	8.065	41.34	-0.205	
3/20/2019	14:48	0.007	0.092	45.027	-0.057	
3/20/2019	14:49	-0.001	0.062	45.032	0.006	NOx Bias
3/20/2019	14:50	-0.002	0.056	34.983	0.084	
3/20/2019	14:51	-0.005	0.052	0.183	3.583	
3/20/2019	14:52	-0.006	0.048	0.093	4.64	CO Bias
3/20/2019	14:53	4.79	4.895	0.106	4.09	
3/20/2019	14:54	10.379	10.406	0.07	0.322	O2 CO2 Bias
3/20/2019	14:55	3.333	3.67	0.055	-0.031	CO Zero
3/20/2019	14:56	-0.011	0.029	0.041	0.716	O2 CO2 NOx Zero
3/20/2019	14:57	8.374	8.12	30.396	4.404	
3/20/2019	14:58	10.447	10.487	45.589	4.631	Span
3/20/2019	14:59	8.809	11.788	33.102	2.769	
3/20/2019	15:00	7.653	12.82	46.804	-0.173	
3/20/2019	15:01	7.613	12.794	51.374	-0.299	
3/20/2019	15:02	8.139	12.328	39.413	-0.236	
3/20/2019	15:03	7.733	12.721	46.682	-0.202	
3/20/2019	15:04	7.66	12.758	48.752	-0.224	
3/20/2019	15:05	7.854	12.589	36.697	-0.182	
3/20/2019	15:06	8.119	12.297	30.968	-0.189	
3/20/2019	15:07	7.765	12.681	39.957	-0.152	
3/20/2019	15:08	7.866	12.559	38.47	-0.2	
3/20/2019	15:09	7.916	12.518	32.754	-0.146	
3/20/2019	15:10	7.444	12.992	45.703	-0.168	
3/20/2019	15:11	7.643	12.769	46.859	-0.228	
3/20/2019	15:12	7.47	12.98	48.651	-0.217	
3/20/2019	15:13	7.311	13.098	51.834	-0.252	
3/20/2019	15:14	7.675	12.702	45.649	-0.237	
3/20/2019	15:15	8.224	12.186	32.073	-0.183	
3/20/2019	15:16	8.173	12.208	31.403	-0.1	
3/20/2019	15:17	7.885	12.519	33.755	-0.115	
3/20/2019	15:18	7.99	12.428	37.349	-0.103	
3/20/2019	15:19	7.579	12.807	47.594	-0.17	
3/20/2019	15:20	7.518	12.863	42.921	-0.173	
3/20/2019	15:21	8.078	12.301	29.259	-0.147	
3/20/2019	15:22	7.57	12.849	38.26	-0.086	
3/20/2019	15:23	8.018	12.336	30.251	-0.123	
3/20/2019	15:24	7.753	12.682	34.333	-0.099	
3/20/2019	15:25	8.083	12.27	30.499	-0.101	
3/20/2019	15:26	7.93	12.468	32.597	-0.06	
3/20/2019	15:27	8.002	12.366	28.071	-0.076	
3/20/2019	15:28	7.487	12.902	37.055	-0.045	
3/20/2019	15:29	7.574	12.789	37.138	-0.149	
3/20/2019	15:30	8.189	12.203	24.584	-0.104	
Run 8 Average		7.81	12.60	38.36	-0.16	
3/20/2019	15:31	5.063	7.259	29.868	-0.084	
3/20/2019	15:32	0.008	0.094	44.886	-0.009	NOx Bias
3/20/2019	15:33	-0.003	0.059	37.79	0.012	
3/20/2019	15:34	-0.006	0.049	0.165	3.34	

3/20/2019	15:35	-0.008	0.045	0.078	4.647	CO Bias
3/20/2019	15:36	7.702	8.647	0.112	3.392	
3/20/2019	15:37	10.377	10.443	0.042	-0.264	O2 CO2 Bias
3/20/2019	15:38	2.517	2.787	0.044	-0.104	
3/20/2019	15:39	-0.011	0.025	0.026	-0.01	Zero
3/20/2019	15:40	7.563	8.148	34.26	1.571	
3/20/2019	15:41	10.458	10.487	45.677	4.595	
3/20/2019	15:42	10.461	10.487	45.616	4.648	Span
3/20/2019	15:43	9.918	11.028	42.641	4.53	
3/20/2019	15:44	8.289	12.139	38.907	1.024	
3/20/2019	15:45	8.317	12.044	41.415	-0.241	
3/20/2019	15:46	8.808	11.57	31.884	-0.204	
3/20/2019	15:47	9.075	11.359	25.75	-0.15	
3/20/2019	15:48	8.083	12.378	38.945	-0.174	
3/20/2019	15:49	7.897	12.566	47.756	-0.207	
3/20/2019	15:50	7.933	12.472	51.961	-0.236	
3/20/2019	15:51	7.3	13.073	64.25	-0.237	
3/20/2019	15:52	8.203	12.209	45.53	-0.201	
3/20/2019	15:53	8.087	12.4	46.762	-0.187	
3/20/2019	15:54	7.707	12.71	52.339	-0.209	
3/20/2019	15:55	7.91	12.514	49.961	-0.221	
3/20/2019	15:56	8.121	12.295	40.884	-0.194	
3/20/2019	15:57	8.347	12.092	34.025	-0.137	
3/20/2019	15:58	8.633	11.761	30.278	-0.139	
3/20/2019	15:59	8.791	11.583	29.305	-0.104	
3/20/2019	16:00	8.486	11.954	36.334	-0.121	
3/20/2019	16:01	8.481	11.882	39.679	-0.159	
3/20/2019	16:02	8.584	11.827	35.394	-0.155	
3/20/2019	16:03	8.319	12.091	38.167	-0.144	
3/20/2019	16:04	8.464	11.952	34.715	-0.127	
3/20/2019	16:05	8.43	11.913	37.915	-0.146	
3/20/2019	16:06	8.783	11.67	27.84	-0.085	
3/20/2019	16:07	7.854	12.525	43.19	-0.117	
3/20/2019	16:08	7.905	12.521	47.536	-0.139	
3/20/2019	16:09	7.968	12.355	46.215	-0.132	
3/20/2019	16:10	8.046	12.364	38.811	-0.09	
3/20/2019	16:11	7.659	12.816	44.595	-0.105	
3/20/2019	16:12	7.758	12.629	46.436	-0.111	
3/20/2019	16:13	8.088	12.217	38.503	-0.121	
3/20/2019	16:14	8.562	11.743	26.681	-0.07	
Run 9 Average		8.22	12.18	40.44	-0.16	
3/20/2019	16:15	3.3	3.383	34.769	-0.019	
3/20/2019	16:16	0.002	0.024	44.937	0.06	
3/20/2019	16:17	-0.004	0.024	44.976	0.09	NOx Bias
3/20/2019	16:18	-0.005	0.053	19.013	0.91	
3/20/2019	16:19	-0.007	0.047	0.108	4.498	
3/20/2019	16:20	-0.009	0.042	0.069	4.669	CO Bias
3/20/2019	16:21	6.94	7.514	0.363	3.713	
3/20/2019	16:22	10.384	10.459	0.044	-0.083	O2 CO2 Bias
3/20/2019	16:23	1.287	1.514	0.032	-0.023	
3/20/2019	16:24	-0.012	0.025	0.032	0.016	Zero

3/20/2019	16:25	8.083	8.462	35.735	1.68	
3/20/2019	16:26	10.461	10.486	45.639	4.62	
3/20/2019	16:27	10.461	10.527	45.693	4.659	
3/20/2019	16:28	9.675	11.296	32.388	4.19	
3/20/2019	16:29	7.351	13.14	41.761	0.43	
3/20/2019	16:30	7.89	12.424	28.569	-0.04	
3/20/2019	16:31	8.254	12.14	25.375	-0.003	
3/20/2019	16:32	8.41	11.942	26.279	-0.013	
3/20/2019	16:33	8.317	12.233	25.53	0.02	
3/20/2019	16:34	7.17	13.265	41.436	-0.016	
3/20/2019	16:35	7.706	12.694	30.603	-0.049	
3/20/2019	16:36	7.679	12.69	34.643	-0.047	
3/20/2019	16:37	7.792	12.698	32.584	-0.07	
3/20/2019	16:38	8.437	11.799	23.852	-0.052	
3/20/2019	16:39	8.822	11.554	22.436	0.005	
3/20/2019	16:40	9.304	11	15.336	0.02	
3/20/2019	16:41	9.303	11.138	15.419	0.066	
3/20/2019	16:42	8.493	11.914	22.103	0.029	
3/20/2019	16:43	8.128	12.362	30.684	-0.042	
3/20/2019	16:44	8.652	11.664	26.092	-0.093	
3/20/2019	16:45	9.102	11.306	22.791	-0.099	
3/20/2019	16:46	8.762	11.653	30.118	-0.117	
3/20/2019	16:47	8.917	11.522	26.251	-0.118	
3/20/2019	16:48	8.186	12.307	35.319	-0.149	
3/20/2019	16:49	7.888	12.512	43.113	-0.174	
3/20/2019	16:50	8.085	12.265	43.569	-0.186	
3/20/2019	16:51	8.096	12.398	45.824	-0.2	
3/20/2019	16:52	8.236	12.108	45.801	-0.198	
3/20/2019	16:53	8.168	12.254	51.778	-0.201	
3/20/2019	16:54	8.181	12.279	48.674	-0.193	
3/20/2019	16:55	8.438	11.788	46.153	-0.206	
3/20/2019	16:56	8.72	11.699	38.587	-0.189	
3/20/2019	16:57	8.522	11.827	38.244	-0.157	
3/20/2019	16:58	8.278	12.168	43.583	-0.141	
3/20/2019	16:59	8.355	11.981	37.158	-0.163	
3/20/2019	17:00	8.32	12.061	36.265	-0.145	
3/20/2019	17:01	8.003	12.439	39.258	-0.132	
3/20/2019	17:02	8.051	12.322	37.882	-0.141	
3/20/2019	17:03	8.716	11.545	27.589	-0.122	
3/20/2019	17:04	8.459	12.074	29.395	-0.082	
3/20/2019	17:05	7.491	12.799	44.708	-0.139	
3/20/2019	17:06	7.836	12.6	40.356	-0.126	
3/20/2019	17:07	7.604	12.718	45.695	-0.147	
3/20/2019	17:08	8.304	12.072	33.185	-0.14	
Run 10 Average		8.38	12.01	35.45	-0.12	
3/20/2019	17:09	2.165	1.987	41.456	-0.123	
3/20/2019	17:10	-0.001	0.061	44.832	0.027	NOx Bias
3/20/2019	17:11	-0.004	0.05	41.085	0.049	
3/20/2019	17:12	-0.007	0.049	0.233	3.042	
3/20/2019	17:13	-0.009	0.045	0.086	4.661	CO Bias
3/20/2019	17:14	6.158	6.96	0.136	4.033	

3/20/2019	17:15	10.375	10.452	0.047	0.342	O2 CO2 Bias
3/20/2019	17:16	0.823	1.027	0.045	0.003	CO Zero
3/20/2019	17:17	-0.011	0.026	0.041	0.809	O2 CO2 NOx Zero
3/20/2019	17:18	8.031	7.769	28.452	4.454	
3/20/2019	17:19	10.464	10.521	45.681	4.648	Span
3/20/2019	17:20	14.935	14.05	63.617	4.74	
3/20/2019	17:21	19.313	18.759	90.327	7.747	
3/20/2019	17:22	19.312	18.786	90.022	8.572	High
3/20/2019	17:23	11.271	13.241	45.928	6.613	

Date	Time	O2 %	CO2 %	
3/22/2019	6:22	19.33	18.95	
3/22/2019	6:23	19.35	18.95	High
3/22/2019	6:24	11.85	12.02	
3/22/2019	6:25	10.50	10.61	Mid
3/22/2019	6:26	2.05	2.28	
3/22/2019	6:27	0.00	0.02	Zero
3/22/2019	6:28	5.64	7.93	
3/22/2019	6:29	2.43	2.50	
3/22/2019	6:30	0.01	0.04	Zero Bias
3/22/2019	6:31	7.18	7.53	
3/22/2019	6:32	10.45	10.57	O2 CO2 Bias
3/22/2019	6:33	9.84	10.96	
3/22/2019	6:34	9.24	11.39	
3/22/2019	6:35	8.42	12.22	
3/22/2019	6:36	8.25	12.34	
3/22/2019	6:37	9.01	11.59	
3/22/2019	6:38	9.50	11.10	
3/22/2019	6:39	8.03	12.62	
3/22/2019	6:40	8.14	12.47	
3/22/2019	6:41	8.20	12.45	
3/22/2019	6:42	8.19	12.43	
3/22/2019	6:43	8.10	12.52	
3/22/2019	6:44	8.35	12.29	
3/22/2019	6:45	8.55	12.05	
3/22/2019	6:46	9.38	11.22	
3/22/2019	6:47	9.47	11.14	
3/22/2019	6:48	8.91	11.75	
3/22/2019	6:49	7.49	13.16	
3/22/2019	6:50	8.10	12.52	
3/22/2019	6:51	8.40	12.20	
3/22/2019	6:52	8.90	11.71	
3/22/2019	6:53	8.76	11.85	
3/22/2019	6:54	8.72	11.94	
3/22/2019	6:55	8.18	12.48	
3/22/2019	6:56	8.07	12.51	
3/22/2019	6:57	7.80	12.85	
3/22/2019	6:58	7.64	12.98	
3/22/2019	6:59	8.19	12.45	
3/22/2019	7:00	9.00	11.56	
3/22/2019	7:01	9.78	10.84	
3/22/2019	7:02	9.02	11.60	
3/22/2019	7:03	9.37	11.24	
3/22/2019	7:04	8.68	11.98	
3/22/2019	7:05	8.10	12.55	
3/22/2019	7:06	8.37	12.23	
3/22/2019	7:07	7.80	12.81	

3/22/2019	7:08	8.81	11.86
3/22/2019	7:09	8.53	12.08
3/22/2019	7:10	9.42	11.17
3/22/2019	7:11	8.56	12.13
3/22/2019	7:12	8.19	12.44
3/22/2019	7:13	8.13	12.45
3/22/2019	7:14	8.92	11.70
3/22/2019	7:15	8.86	11.76
3/22/2019	7:16	9.09	11.48
3/22/2019	7:17	9.04	11.57
3/22/2019	7:18	9.73	10.84
3/22/2019	7:19	9.00	11.63
3/22/2019	7:20	8.47	12.11
3/22/2019	7:21	8.22	12.39
3/22/2019	7:22	8.70	11.85
3/22/2019	7:23	8.96	11.65
3/22/2019	7:24	7.99	12.61
3/22/2019	7:25	8.43	12.18
3/22/2019	7:26	8.58	12.03
3/22/2019	7:27	8.43	12.15
3/22/2019	7:28	7.71	13.00
3/22/2019	7:29	7.72	12.89
3/22/2019	7:30	8.21	12.42
3/22/2019	7:31	8.15	12.46
3/22/2019	7:32	8.06	12.57
3/22/2019	7:33	7.97	12.65
3/22/2019	7:34	8.99	11.60
3/22/2019	7:35	8.25	12.42
3/22/2019	7:36	8.17	12.45
3/22/2019	7:37	8.92	11.69
3/22/2019	7:38	8.29	12.40
3/22/2019	7:39	7.68	13.00
3/22/2019	7:40	7.98	12.60
3/22/2019	7:41	8.45	12.19
3/22/2019	7:42	8.21	12.40
3/22/2019	7:43	7.67	12.97
3/22/2019	7:44	7.75	12.85
3/22/2019	7:45	8.65	11.92
3/22/2019	7:46	8.42	12.17
3/22/2019	7:47	9.38	11.21
3/22/2019	7:48	8.68	11.94
3/22/2019	7:49	8.41	12.19
3/22/2019	7:50	8.28	12.35
3/22/2019	7:51	8.10	12.46
3/22/2019	7:52	8.10	12.55
3/22/2019	7:53	7.77	12.82
3/22/2019	7:54	8.22	12.40
3/22/2019	7:55	8.37	12.23
3/22/2019	7:56	7.86	12.74

3/22/2019	7:57	7.97	12.62
3/22/2019	7:58	8.27	12.32
3/22/2019	7:59	8.42	12.18
3/22/2019	8:00	8.19	12.43
3/22/2019	8:01	7.89	12.75
3/22/2019	8:02	8.13	12.44
3/22/2019	8:03	8.70	11.90
3/22/2019	8:04	8.22	12.40
3/22/2019	8:05	7.93	12.69
3/22/2019	8:06	8.33	12.24
3/22/2019	8:07	8.66	11.96
3/22/2019	8:08	7.30	13.30
3/22/2019	8:09	8.12	12.46
3/22/2019	8:10	8.56	12.07
3/22/2019	8:11	8.40	12.17
3/22/2019	8:12	9.29	11.27
3/22/2019	8:13	9.23	11.36
3/22/2019	8:14	8.52	12.12
3/22/2019	8:15	8.39	12.25
3/22/2019	8:16	8.49	12.09
3/22/2019	8:17	8.91	11.69
3/22/2019	8:18	8.82	11.85
3/22/2019	8:19	8.21	12.45
3/22/2019	8:20	8.29	12.36
3/22/2019	8:21	8.33	12.33
3/22/2019	8:22	8.19	12.43
3/22/2019	8:23	8.86	11.77
3/22/2019	8:24	8.67	12.01
3/22/2019	8:25	8.04	12.63
3/22/2019	8:26	7.48	13.16
3/22/2019	8:27	8.41	12.23
3/22/2019	8:28	8.49	12.18
3/22/2019	8:29	8.00	12.66
3/22/2019	8:30	7.80	12.87
3/22/2019	8:31	8.12	12.54
3/22/2019	8:32	8.86	11.77
3/22/2019	8:33	8.61	12.05
3/22/2019	8:34	8.37	12.32
3/22/2019	8:35	7.57	13.11
3/22/2019	8:36	7.39	13.29
3/22/2019	8:37	7.77	12.90
3/22/2019	8:38	7.51	13.15
3/22/2019	8:39	7.68	12.99
3/22/2019	8:40	7.46	13.18
3/22/2019	8:41	8.10	12.57
3/22/2019	8:42	8.43	12.22
3/22/2019	8:43	8.60	12.04
3/22/2019	8:44	8.20	12.46
3/22/2019	8:45	8.69	11.96

3/22/2019	8:46	8.68	11.98	
3/22/2019	8:47	8.26	12.40	
3/22/2019	8:48	8.46	12.18	
1-PM-U1 Average		8.37	12.25	
3/22/2019	8:49	10.38	10.61	
3/22/2019	8:50	10.46	10.59	O2 CO2 Bias
3/22/2019	8:51	1.44	1.10	
3/22/2019	8:52	0.01	0.05	Zero Bias
3/22/2019	8:53	9.98	9.68	
3/22/2019	8:54	10.51	10.59	Span
3/22/2019	8:55	1.55	1.78	
3/22/2019	8:56	0.00	0.03	Zero
3/22/2019	8:57	6.74	9.72	
3/22/2019	8:58	7.83	12.80	
3/22/2019	8:59	8.23	12.36	
3/22/2019	9:00	8.49	12.14	
3/22/2019	9:01	8.40	12.24	
3/22/2019	9:02	8.02	12.61	
3/22/2019	9:03	8.66	11.95	
3/22/2019	9:04	8.91	11.69	
3/22/2019	9:05	9.04	11.57	
3/22/2019	9:06	8.02	12.64	
3/22/2019	9:07	7.53	13.10	
3/22/2019	9:08	7.41	13.25	
3/22/2019	9:09	7.94	12.67	
3/22/2019	9:10	8.51	12.14	
3/22/2019	9:11	7.76	12.87	
3/22/2019	9:12	8.26	12.38	
3/22/2019	9:13	8.01	12.64	
3/22/2019	9:14	8.73	11.89	
3/22/2019	9:15	8.45	12.19	
3/22/2019	9:16	8.18	12.47	
3/22/2019	9:17	7.38	13.27	
3/22/2019	9:18	7.84	12.77	
3/22/2019	9:19	8.27	12.36	
3/22/2019	9:20	8.87	11.73	
3/22/2019	9:21	8.17	12.48	
3/22/2019	9:22	8.18	12.43	
3/22/2019	9:23	8.04	12.60	
3/22/2019	9:24	8.04	12.58	
3/22/2019	9:25	7.62	13.01	
3/22/2019	9:26	8.29	12.31	
3/22/2019	9:27	8.21	12.40	
3/22/2019	9:28	7.91	12.70	
3/22/2019	9:29	7.55	13.05	
3/22/2019	9:30	8.75	11.83	
3/22/2019	9:31	8.22	12.38	
3/22/2019	9:32	8.82	11.76	

3/22/2019	9:33	8.03	12.59
3/22/2019	9:34	7.40	13.21
3/22/2019	9:35	7.57	13.03
3/22/2019	9:36	7.54	13.03
3/22/2019	9:37	8.61	11.95
3/22/2019	9:38	8.46	12.13
3/22/2019	9:39	8.75	11.84
3/22/2019	9:40	8.64	11.91
3/22/2019	9:41	9.23	11.33
3/22/2019	9:42	9.38	11.20
3/22/2019	9:43	8.80	11.77
3/22/2019	9:44	9.22	11.37
3/22/2019	9:45	8.56	12.03
3/22/2019	9:46	9.02	11.56
3/22/2019	9:47	8.62	11.95
3/22/2019	9:48	8.48	12.13
3/22/2019	9:49	8.62	11.96
3/22/2019	9:50	8.17	12.44
3/22/2019	9:51	7.63	12.96
3/22/2019	9:52	7.51	13.07
3/22/2019	9:53	8.41	12.17
3/22/2019	9:54	8.56	12.03
3/22/2019	9:55	8.03	12.56
3/22/2019	9:56	8.48	12.10
3/22/2019	9:57	8.33	12.26
3/22/2019	9:58	8.23	12.35
3/22/2019	9:59	8.93	11.62
3/22/2019	10:00	8.83	11.76
3/22/2019	10:01	8.25	12.34
3/22/2019	10:02	8.85	11.74
3/22/2019	10:03	8.05	12.54
3/22/2019	10:04	8.24	12.35
3/22/2019	10:05	8.02	12.58
3/22/2019	10:06	8.74	11.83
3/22/2019	10:07	8.69	11.88
3/22/2019	10:08	8.79	11.78
3/22/2019	10:09	8.22	12.39
3/22/2019	10:10	8.87	11.69
3/22/2019	10:11	8.64	11.94
3/22/2019	10:12	8.85	11.71
3/22/2019	10:13	8.89	11.70
3/22/2019	10:14	8.22	12.37
3/22/2019	10:15	8.26	12.31
3/22/2019	10:16	8.76	11.80
3/22/2019	10:17	8.39	12.21
3/22/2019	10:18	8.52	12.04
3/22/2019	10:19	8.59	11.99
3/22/2019	10:20	8.11	12.47
3/22/2019	10:21	8.16	12.41

3/22/2019	10:22	7.15	13.44
3/22/2019	10:23	7.35	13.24
3/22/2019	10:24	6.80	13.78
3/22/2019	10:25	6.66	13.90
3/22/2019	10:26	7.96	12.61
3/22/2019	10:27	8.63	11.92
3/22/2019	10:28	8.41	12.18
3/22/2019	10:29	7.97	12.61
3/22/2019	10:30	8.02	12.52
3/22/2019	10:31	8.65	11.91
3/22/2019	10:32	8.71	11.87
3/22/2019	10:33	9.01	11.54
3/22/2019	10:34	9.08	11.49
3/22/2019	10:35	8.88	11.70
3/22/2019	10:36	8.25	12.36
3/22/2019	10:37	8.50	12.11
3/22/2019	10:38	7.23	13.35
3/22/2019	10:39	8.15	12.43
3/22/2019	10:40	8.48	12.09
3/22/2019	10:41	8.77	11.80
3/22/2019	10:42	8.62	11.95
3/22/2019	10:43	8.06	12.52
3/22/2019	10:44	8.27	12.30
3/22/2019	10:45	9.02	11.54
3/22/2019	10:46	8.49	12.06
3/22/2019	10:47	8.64	11.94
3/22/2019	10:48	8.25	12.34
3/22/2019	10:49	8.10	12.43
3/22/2019	10:50	8.77	11.78
3/22/2019	10:51	9.08	11.48
3/22/2019	10:52	8.69	11.88
3/22/2019	10:53	8.74	11.85
3/22/2019	10:54	8.54	12.02
3/22/2019	10:55	8.84	11.71
3/22/2019	10:56	8.69	11.90
3/22/2019	10:57	8.73	11.84
3/22/2019	10:58	8.27	12.31
3/22/2019	10:59	8.47	12.10
3/22/2019	11:00	8.58	11.99
3/22/2019	11:01	8.61	11.94
3/22/2019	11:02	9.01	11.56
3/22/2019	11:03	8.85	11.71
3/22/2019	11:04	8.54	12.03
3/22/2019	11:05	8.26	12.30
3/22/2019	11:06	8.75	11.78
3/22/2019	11:07	8.56	12.00
3/22/2019	11:08	8.56	11.98
3/22/2019	11:09	8.97	11.58
3/22/2019	11:10	8.07	12.52

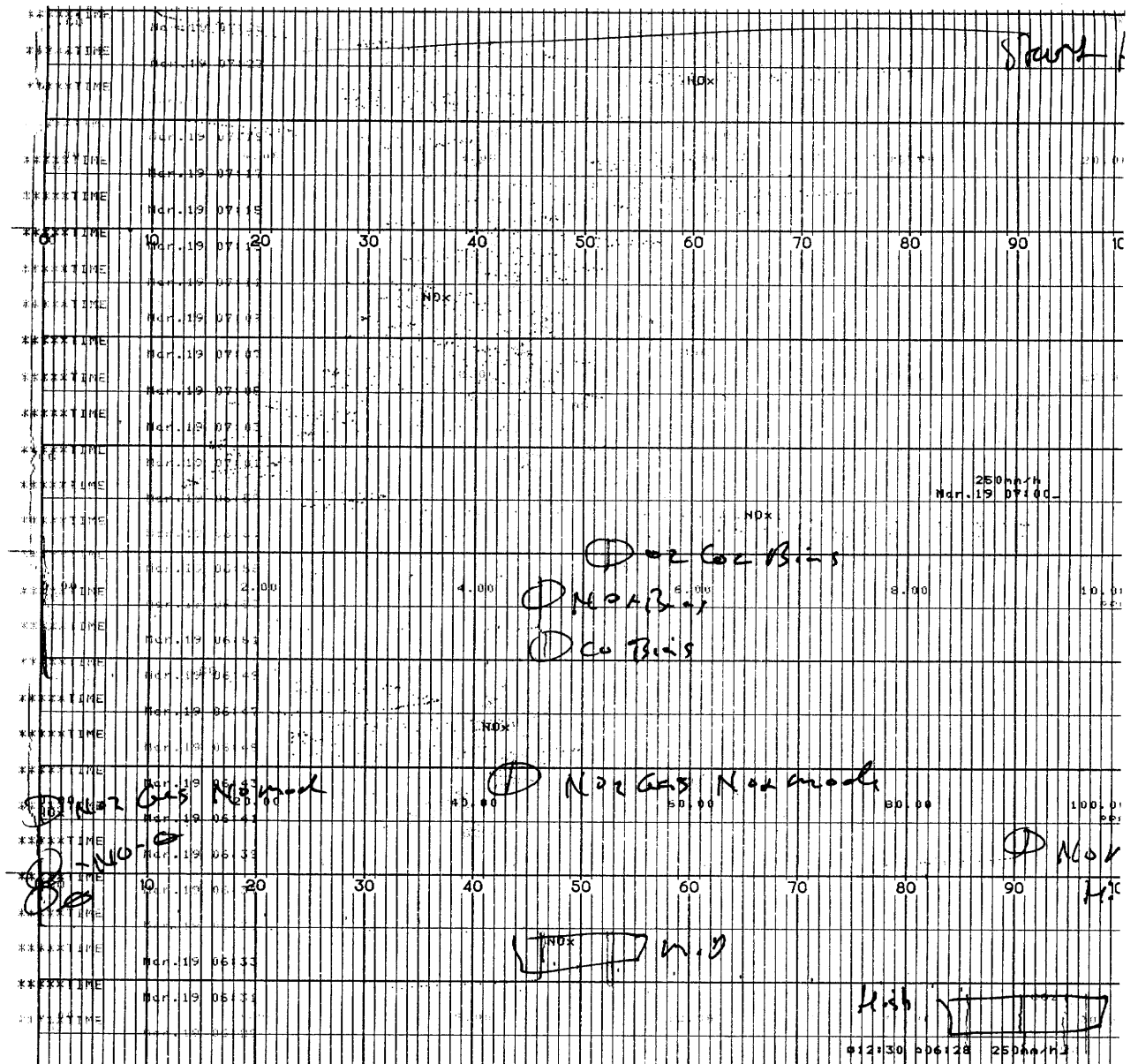
3/22/2019	11:11	8.47	12.08	
2-PM-U1 Average		8.37	12.22	
3/22/2019	11:12	9.48	10.56	
3/22/2019	11:13	10.45	10.54	O2 CO2 Bias
3/22/2019	11:12	9.48	10.56	
3/22/2019	11:13	10.45	10.54	O2 CO2 Bias
3/22/2019	11:14	4.96	4.85	
3/22/2019	11:15	0.01	0.06	Zero Bias
3/22/2019	11:16	0.00	0.04	
3/22/2019	11:17	9.98	9.45	
3/22/2019	11:18	10.49	10.56	Span
3/22/2019	11:19	1.87	2.14	
3/22/2019	11:20	0.00	0.05	
3/22/2019	11:21	4.69	7.22	
3/22/2019	11:22	8.09	12.44	
3/22/2019	11:23	8.70	11.80	
3/22/2019	11:24	8.60	11.97	
3/22/2019	11:25	9.02	11.49	
3/22/2019	11:26	8.39	12.17	
3/22/2019	11:27	7.92	12.61	
3/22/2019	11:28	8.17	12.37	
3/22/2019	11:29	7.95	12.58	
3/22/2019	11:30	7.80	12.74	
3/22/2019	11:31	7.19	13.33	
3/22/2019	11:32	7.78	12.73	
3/22/2019	11:33	8.06	12.43	
3/22/2019	11:34	8.59	11.93	
3/22/2019	11:35	8.61	11.88	
3/22/2019	11:36	8.40	12.12	
3/22/2019	11:37	8.81	11.69	
3/22/2019	11:38	8.69	11.81	
3/22/2019	11:39	8.89	11.63	
3/22/2019	11:40	9.10	11.37	
3/22/2019	11:41	9.98	10.54	
3/22/2019	11:42	9.74	10.79	
3/22/2019	11:43	8.93	11.62	
3/22/2019	11:44	8.46	12.07	
3/22/2019	11:45	8.13	12.40	
3/22/2019	11:46	8.15	12.39	
3/22/2019	11:47	7.28	13.27	
3/22/2019	11:48	7.38	13.14	
3/22/2019	11:49	8.09	12.43	
3/22/2019	11:50	8.05	12.47	
3/22/2019	11:51	8.27	12.25	
3/22/2019	11:52	8.71	11.80	
3/22/2019	11:53	8.28	12.27	
3/22/2019	11:54	8.02	12.51	
3/22/2019	11:55	7.95	12.55	

3/22/2019	11:56	8.05	12.51
3/22/2019	11:57	8.22	12.26
3/22/2019	11:58	8.84	11.66
3/22/2019	11:59	9.59	10.91
3/22/2019	12:00	8.84	11.67
3/22/2019	12:01	8.97	11.59
3/22/2019	12:02	7.98	12.54
3/22/2019	12:03	8.09	12.44
3/22/2019	12:04	8.17	12.35
3/22/2019	12:05	8.26	12.23
3/22/2019	12:06	9.40	11.12
3/22/2019	12:07	8.99	11.52
3/22/2019	12:08	9.12	11.39
3/22/2019	12:09	8.50	12.04
3/22/2019	12:10	7.89	12.66
3/22/2019	12:11	8.05	12.45
3/22/2019	12:12	8.39	12.12
3/22/2019	12:13	8.26	12.23
3/22/2019	12:14	8.48	12.06
3/22/2019	12:15	8.16	12.35
3/22/2019	12:16	7.84	12.69
3/22/2019	12:17	7.50	13.02
3/22/2019	12:18	6.73	13.77
3/22/2019	12:19	8.86	11.59
3/22/2019	12:20	8.62	11.90
3/22/2019	12:21	8.19	12.33
3/22/2019	12:22	8.09	12.38
3/22/2019	12:23	8.56	11.94
3/22/2019	12:24	8.55	11.98
3/22/2019	12:25	8.04	12.47
3/22/2019	12:26	8.32	12.18
3/22/2019	12:27	8.39	12.13
3/22/2019	12:28	8.02	12.50
3/22/2019	12:29	8.61	11.88
3/22/2019	12:30	8.50	12.01
3/22/2019	12:31	8.27	12.27
3/22/2019	12:32	8.14	12.38
3/22/2019	12:33	8.47	12.02
3/22/2019	12:34	8.96	11.52
3/22/2019	12:35	9.03	11.47
3/22/2019	12:36	8.42	12.10
3/22/2019	12:37	8.11	12.38
3/22/2019	12:38	8.44	12.07
3/22/2019	12:39	8.43	12.08
3/22/2019	12:40	8.16	12.36
3/22/2019	12:41	7.86	12.65
3/22/2019	12:42	8.41	12.07
3/22/2019	12:43	8.51	12.01
3/22/2019	12:44	8.14	12.37

3/22/2019	12:45	8.14	12.38
3/22/2019	12:46	6.77	13.76
3/22/2019	12:47	7.18	13.29
3/22/2019	12:48	8.15	12.32
3/22/2019	12:49	8.71	11.79
3/22/2019	12:50	8.21	12.28
3/22/2019	12:51	8.35	12.15
3/22/2019	12:52	8.70	11.81
3/22/2019	12:53	8.27	12.23
3/22/2019	12:54	8.50	11.98
3/22/2019	12:55	8.24	12.26
3/22/2019	12:56	8.87	11.62
3/22/2019	12:57	8.82	11.68
3/22/2019	12:58	8.96	11.54
3/22/2019	12:59	7.91	12.63
3/22/2019	13:00	8.19	12.28
3/22/2019	13:01	8.48	12.02
3/22/2019	13:02	8.49	12.00
3/22/2019	13:03	8.48	12.05
3/22/2019	13:04	7.91	12.59
3/22/2019	13:05	8.79	11.67
3/22/2019	13:06	8.87	11.62
3/22/2019	13:07	8.33	12.18
3/22/2019	13:08	7.94	12.57
3/22/2019	13:09	8.06	12.44
3/22/2019	13:10	8.78	11.68
3/22/2019	13:11	8.62	11.89
3/22/2019	13:12	8.19	12.32
3/22/2019	13:13	8.59	11.86
3/22/2019	13:14	8.82	11.68
3/22/2019	13:15	8.88	11.60
3/22/2019	13:16	8.37	12.13
3/22/2019	13:17	8.41	12.07
3/22/2019	13:18	8.75	11.76
3/22/2019	13:19	8.44	12.05
3/22/2019	13:20	8.16	12.35
3/22/2019	13:21	7.83	12.68
3/22/2019	13:22	8.09	12.40
3/22/2019	13:23	7.35	13.18
3/22/2019	13:24	7.40	13.09
3/22/2019	13:25	7.30	13.19
3/22/2019	13:26	7.75	12.74
3/22/2019	13:27	7.41	13.12
3/22/2019	13:28	7.21	13.22
3/22/2019	13:29	8.07	12.42
3/22/2019	13:30	8.51	11.96
3/22/2019	13:31	8.10	12.40
3/22/2019	13:32	8.22	12.24
3/22/2019	13:33	8.69	11.80

3/22/2019	13:34	8.89	11.61	
3/22/2019	13:35	8.38	12.12	
3/22/2019	13:36	7.71	12.72	
3-PM-U1 Average		8.31	12.20	
3/22/2019	13:37	0.36	0.38	
3/22/2019	13:38	0.02	0.10	Zero Bias
3/22/2019	13:39	9.72	9.92	
3/22/2019	13:40	10.42	10.48	O2 CO2 Bias
3/22/2019	13:41	0.80	1.03	
3/22/2019	13:42	0.00	0.03	Zero
3/22/2019	13:43	1.76	1.47	
3/22/2019	13:44	10.47	10.51	
3/22/2019	13:45	10.47	10.53	Span
3/22/2019	13:46	13.18	12.72	
3/22/2019	13:47	19.32	18.76	
3/22/2019	13:48	19.32	18.77	High

Appendix A.1.3
Unit 1 Instrument Strip Charts



Desert View Power 2019 Source Testing Dave Wonder
Arlene Bell
Patrick Whitman
Ray Madrigal

O2 0-20% Co2 0-20% NOx 0-100 ppm Co 0-10 ppm

O2 - 10.48
Co2 - 10.56 - CC 51569

NOx - 45.7 - DT 048907
NOx - 90.4 - CC 258526

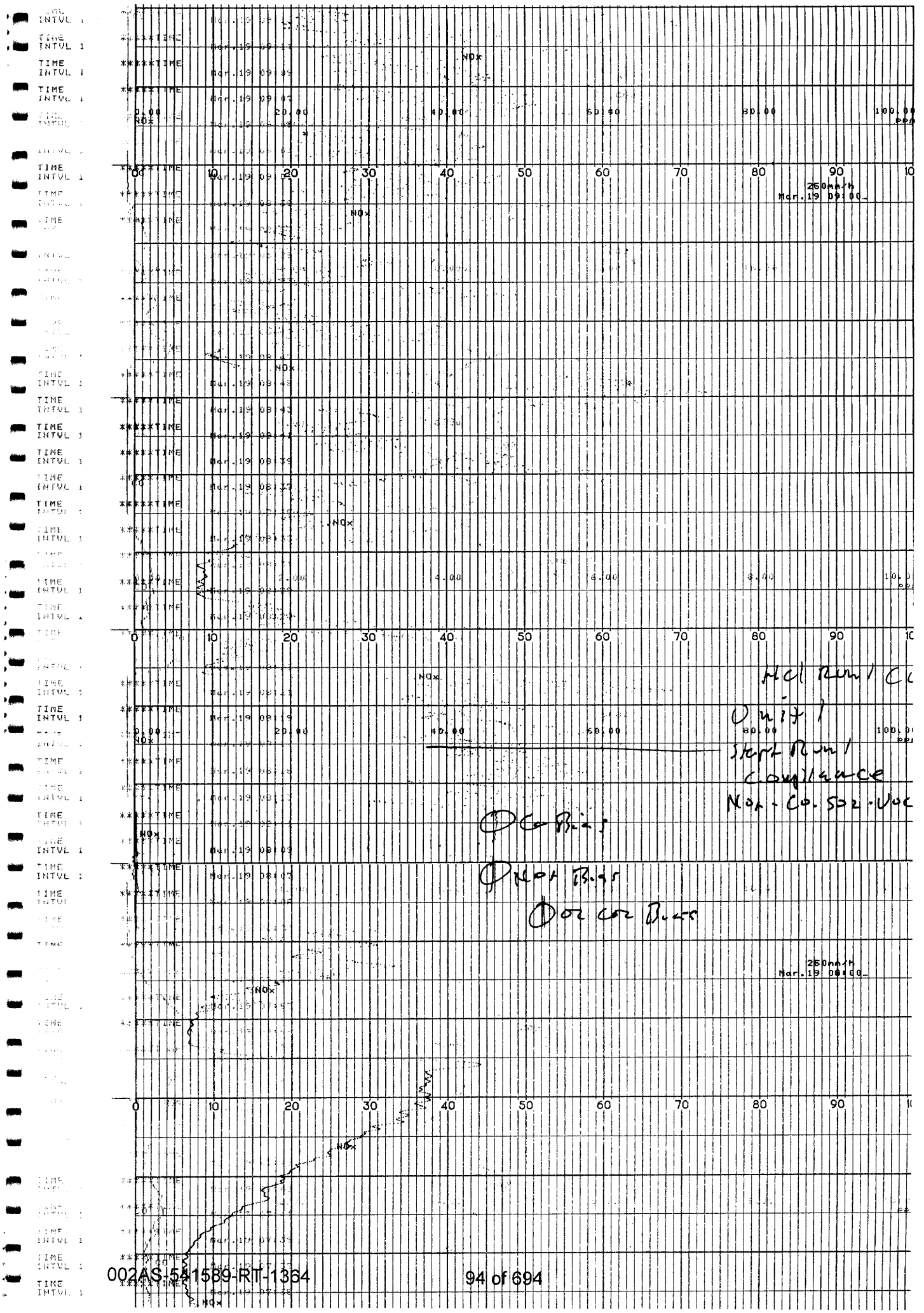
Co - 4.65 - CC 257889
Co - 8.59 - CC 707422

O2 - 19.31
Co2 - 18.91 - DT 020015

NO2 - 43.8 - CC 301477

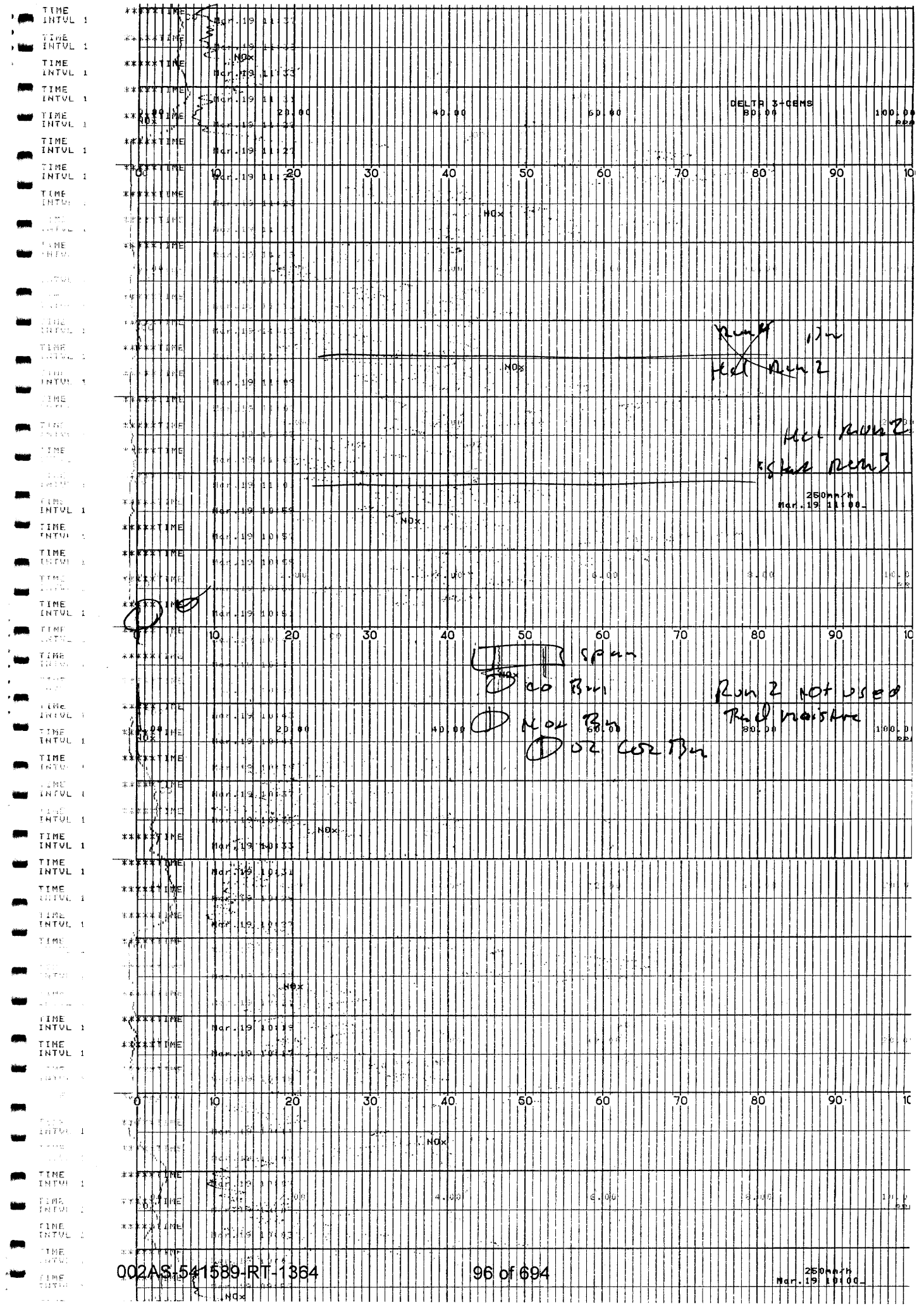
N2 - 99.999 - CB 10100

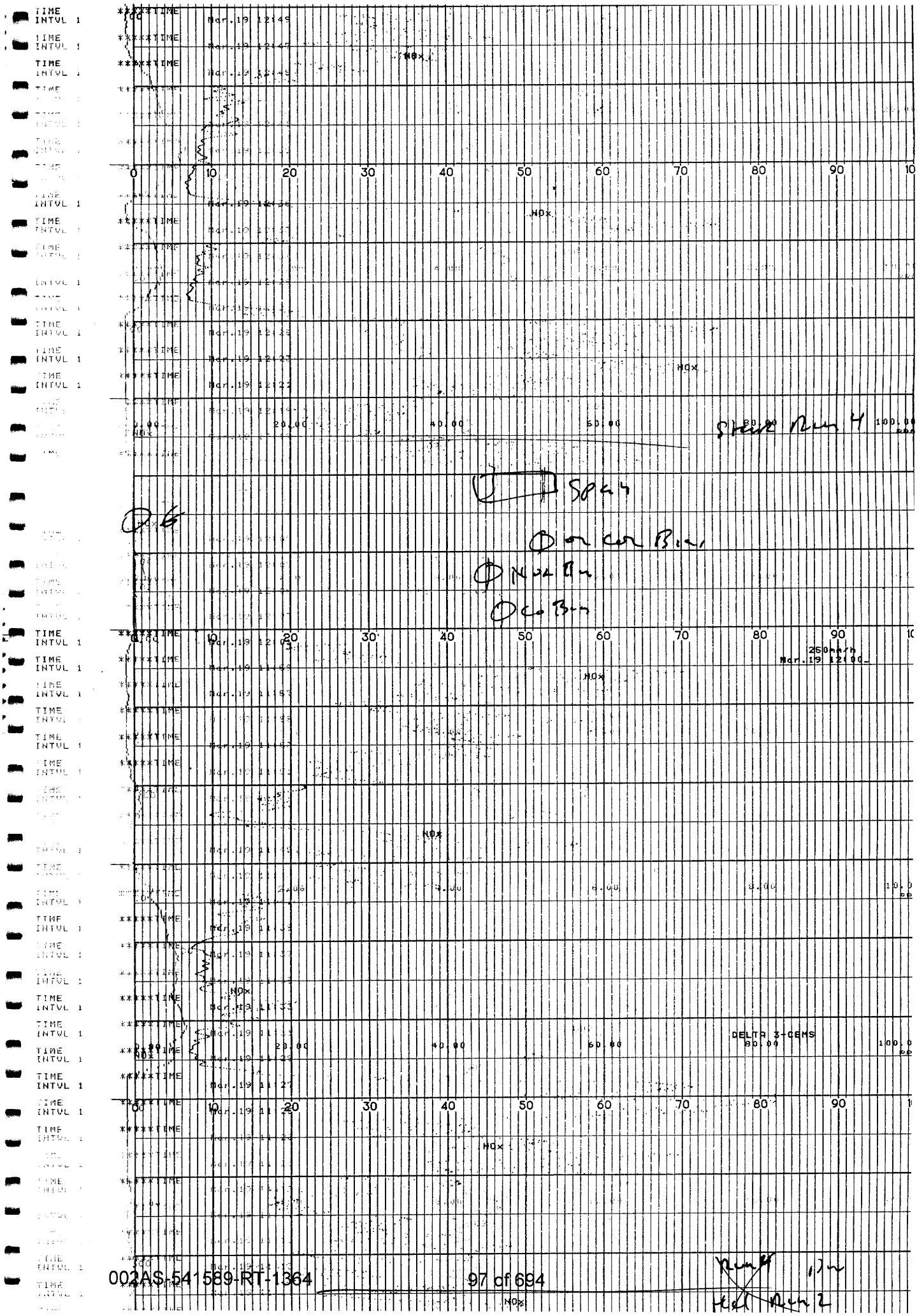
250mm/h
Mar.19 08:00
NOx
Mar.19 07:57
0 10 20 30 40 50 60 70 80 90 100
Mar.19 07:39
Mar.19 07:37
Mar.19 07:35
0.00 20.00 40.00 60.00 80.00 100.00
Mar.19 07:17
Mar.19 07:15
Mar.19 07:09
Mar.19 07:07
Mar.19 07:05
Mar.19 07:03
250mm/h
Mar.19 07:00
2.00 4.00 6.00 8.00 10.0
Mar.19 06:47
Mar.19 06:43
Mar.19 06:41
Mar.19 06:39
Mar.19 06:33
Mar.19 06:31
012:30 006:28 250mm/h

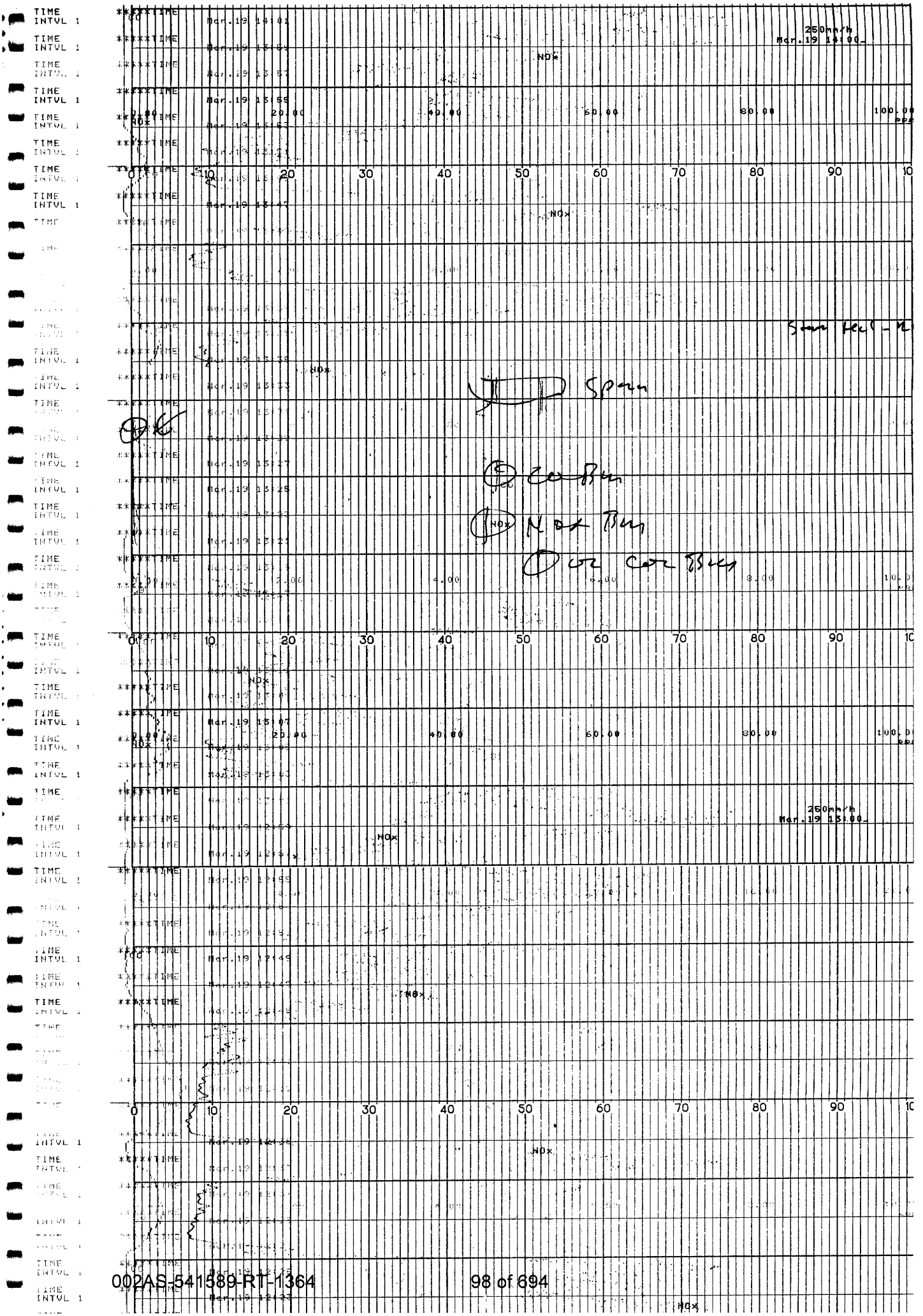


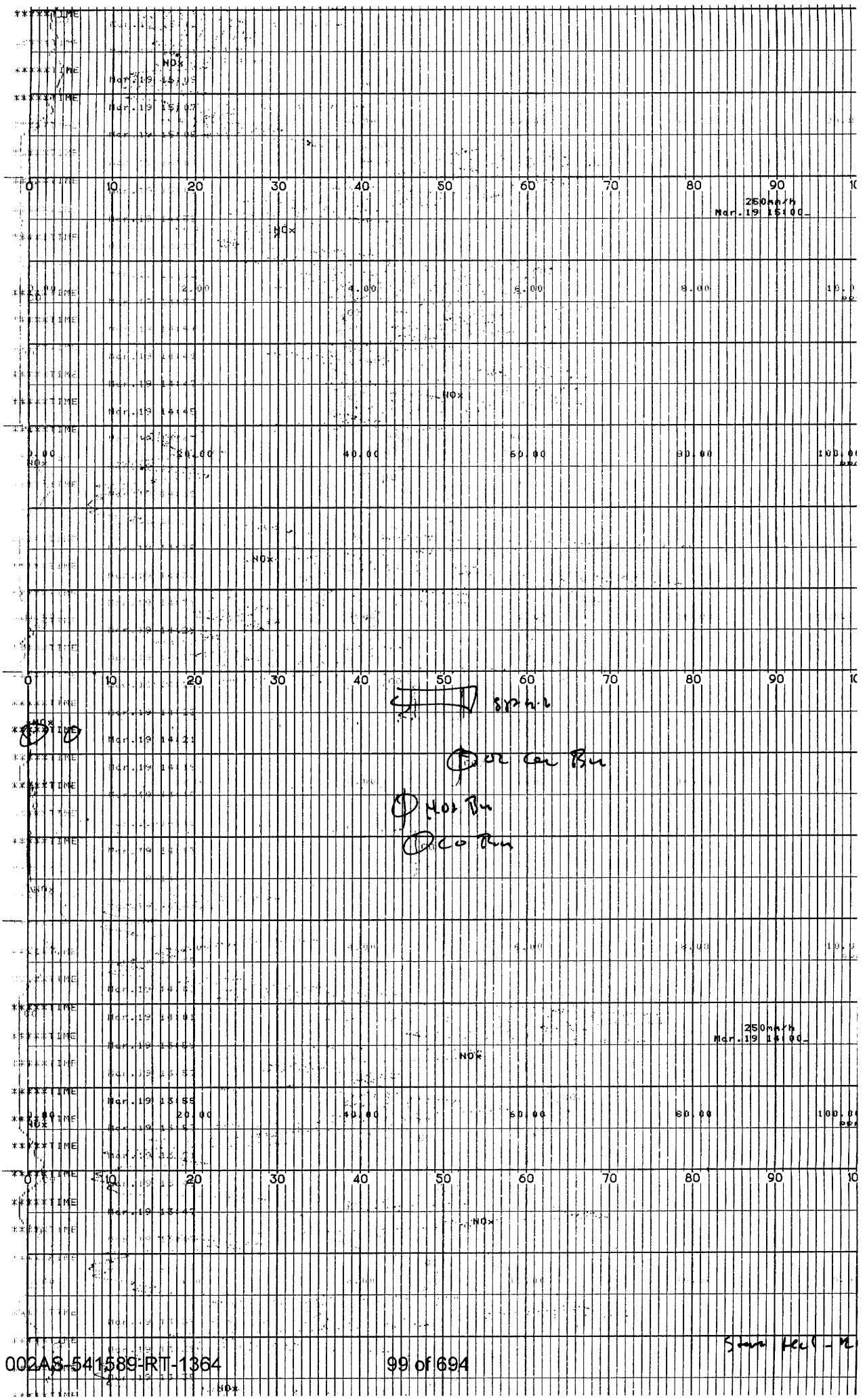
NOx
0.00
20.00
40.00
60.00
80.00
100.00
ppm
0
10
20
30
40
50
60
70
80
90
250mm/h
Mar.19 09:00
2.00
4.00
6.00
8.00
HCl Run 1 Co
Unit 1
Start Run 1
Compliance
NOx - CO. SO2 - VOC
CO Bias
NOx Bias
O2 CO2 Bias

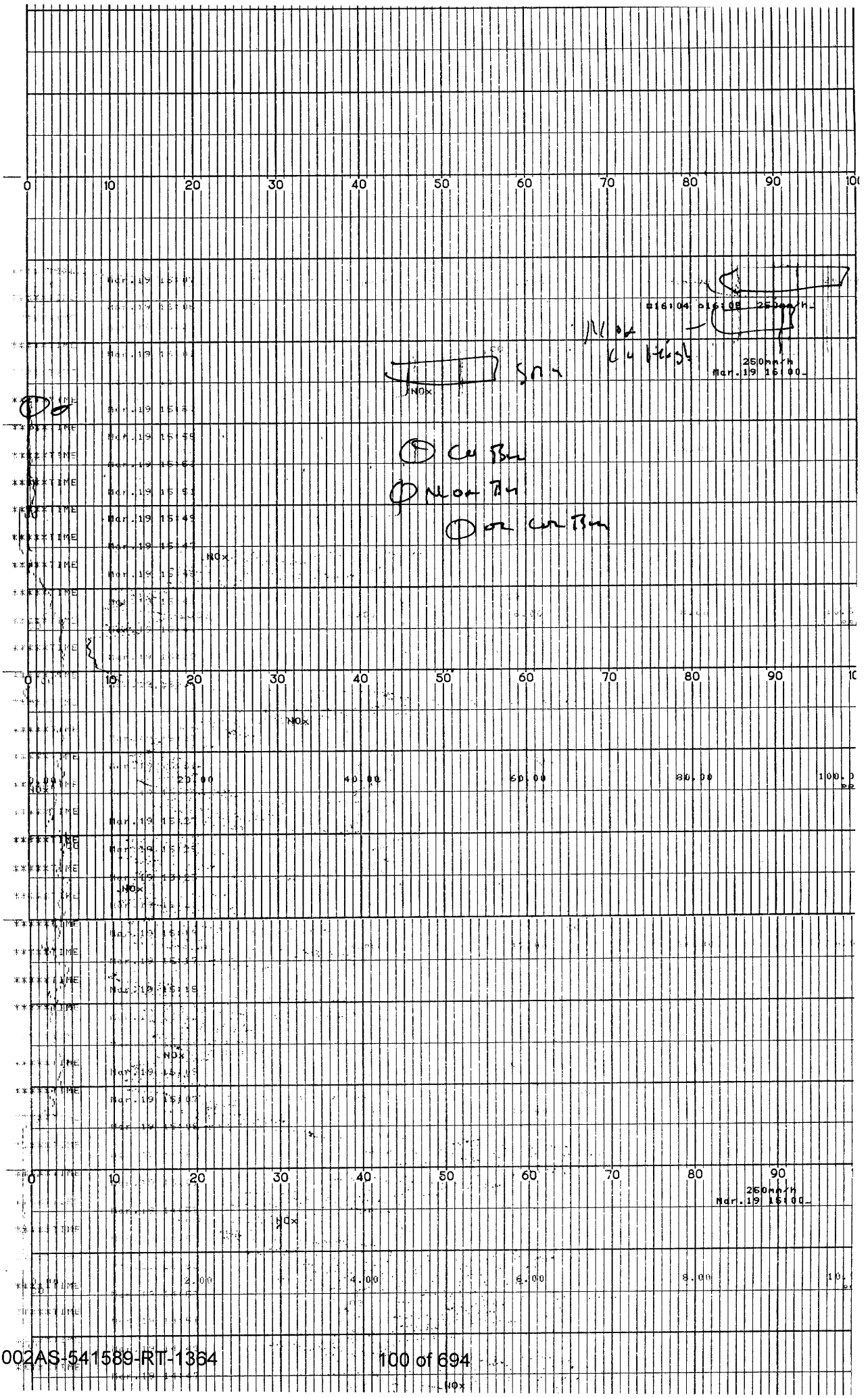
TIME INTVL 1
*****TIME
Mar.19 10:15
Mar.19 10:17
NOx
0 10 20 30 40 50 60 70 80 90
Mar.19 09:55
20.00 40.00 60.00 80.00 100.00
250mm/h
Mar.19 10:00
Mar.19 09:33
Mar.19 09:29
Mar.19 09:27
Mar.19 09:25
Mar.19 09:23
Mar.19 09:21
Mar.19 09:07
Mar.19 09:00
Span
O2 Cal Bias
NOx Bias
CO Bias


DELTA 3-CEMS
NOx
Run 4 Bm
Hcl Run 2
Hcl Run 2
Start Run 3
250mm/h
Mar.19 11:00
Span
Co Bm
Run 2 not used
Real moisture
Nox Bm
O2 Co2 Bm
250mm/h
Mar.19 10:00

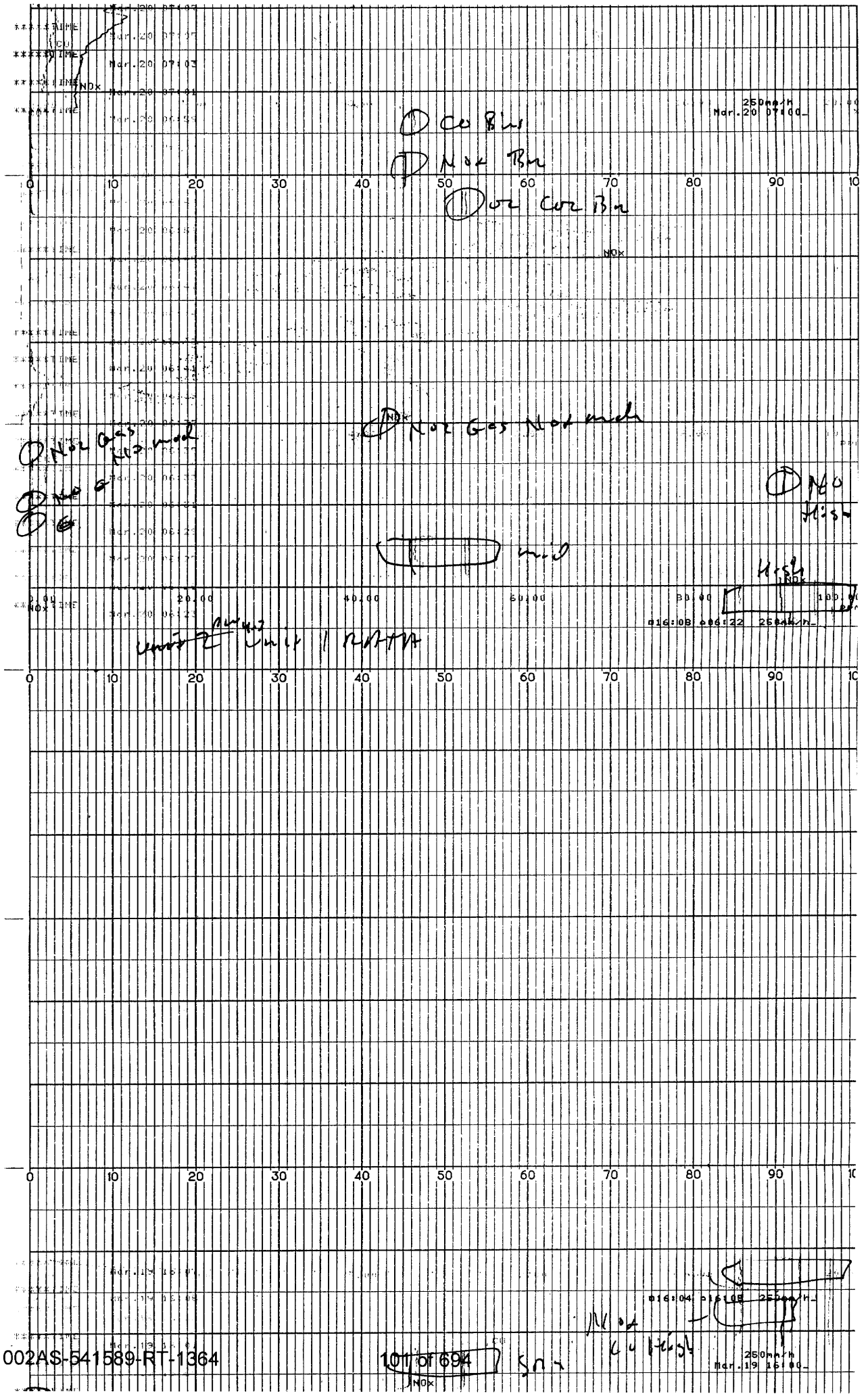

TIME
INTVL 1
Mar.19 12:49
NOx
0
10
20
30
40
50
60
70
80
90
Mar.19 12:26
Mar.19 12:25
Mar.19 12:23
Mar.19 12:21
20.00
40.00
60.00
80.00
100.00
Start Run 4
Span
Q6
Q or Cor Bias
Q Nox Bias
Q Co Bias
250mm/h
Mar.19 12:00
Mar.19 11:59
Mar.19 11:57
Mar.19 11:55
Mar.19 11:53
Mar.19 11:45
2.00
4.00
6.00
8.00
10.0
Mar.19 11:33
Mar.19 11:29
Mar.19 11:27
DELTA 3-CEMS
Run 4
Run 2


TIME
INTVL 1
Mar.19 14:01
250mm/h
Mar.19 14:00
NOx
Mar.19 13:55
20.00
40.00
60.00
80.00
100.00
ppm
0
10
20
30
40
50
60
70
80
90
Mar.19 13:47
Mar.19 13:33
Mar.19 13:27
Mar.19 13:25
Mar.19 13:21
2.00
4.00
6.00
8.00
Mar.19 13:07
Mar.19 12:59
Mar.19 12:55
Mar.19 12:49
Mar.19 12:36
Mar.19 12:33
Span
Co Bus
Nox Bus
Or Cor Bus

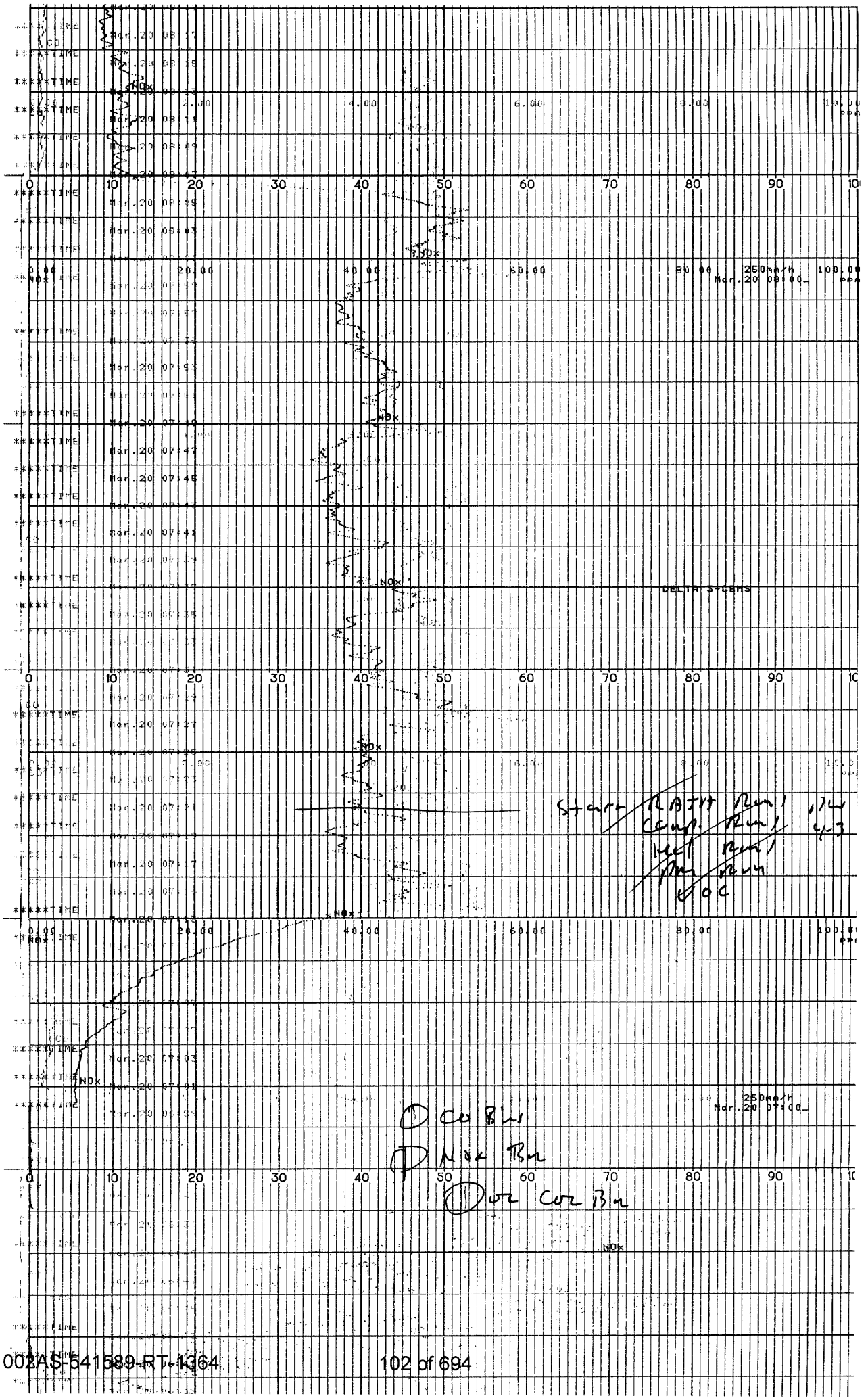

TIME
INTVL 1
NOx
Mar.19 15:07
250mm/h
Mar.19 15:00
2.00
4.00
6.00
8.00
Mar.19 14:45
20.00
40.00
60.00
80.00
100.00
Mar.19 14:21
Mar.19 14:01
Mar.19 13:55
Mar.19 13:47
0
10
20
30
40
50
60
70
80
90

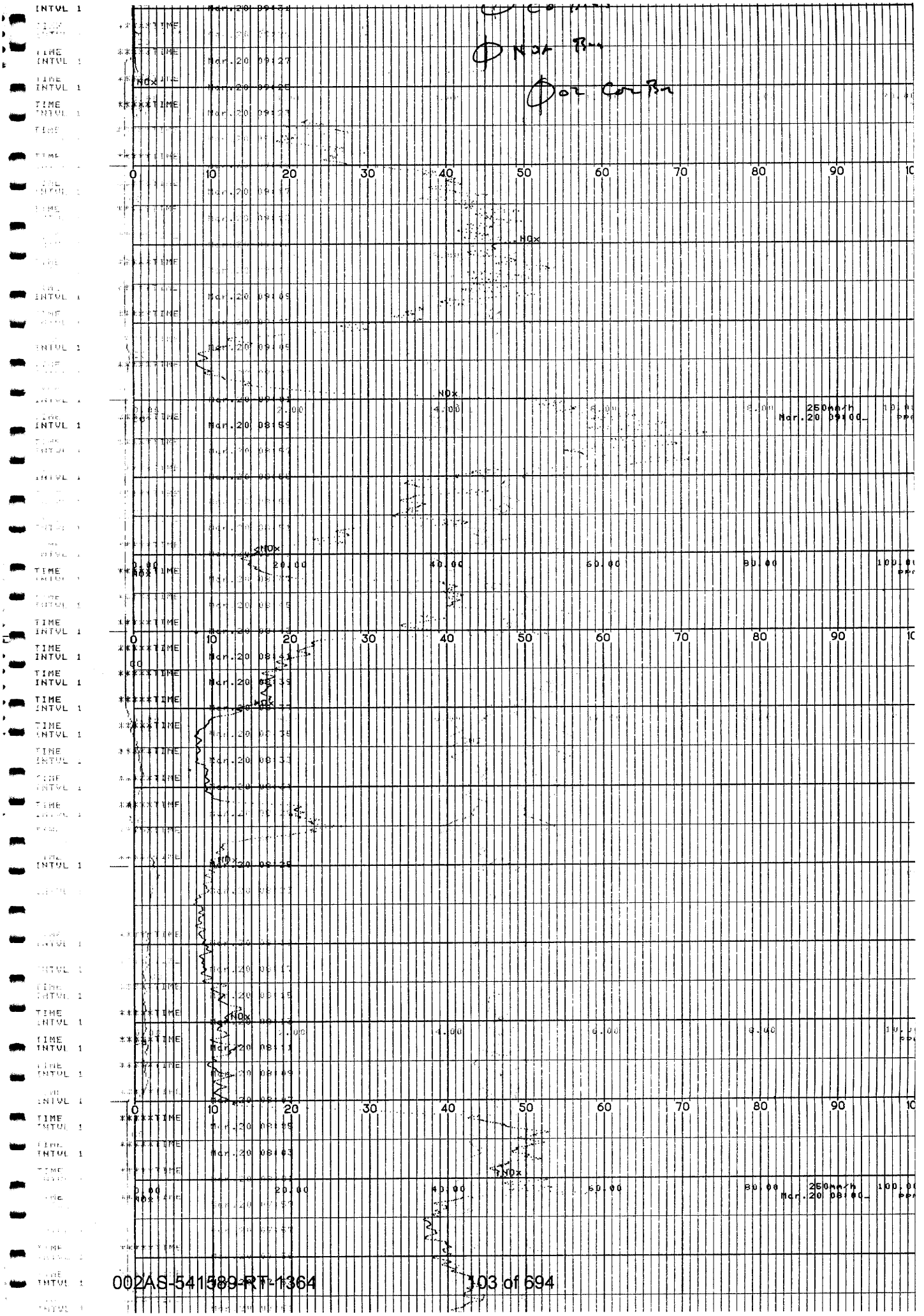


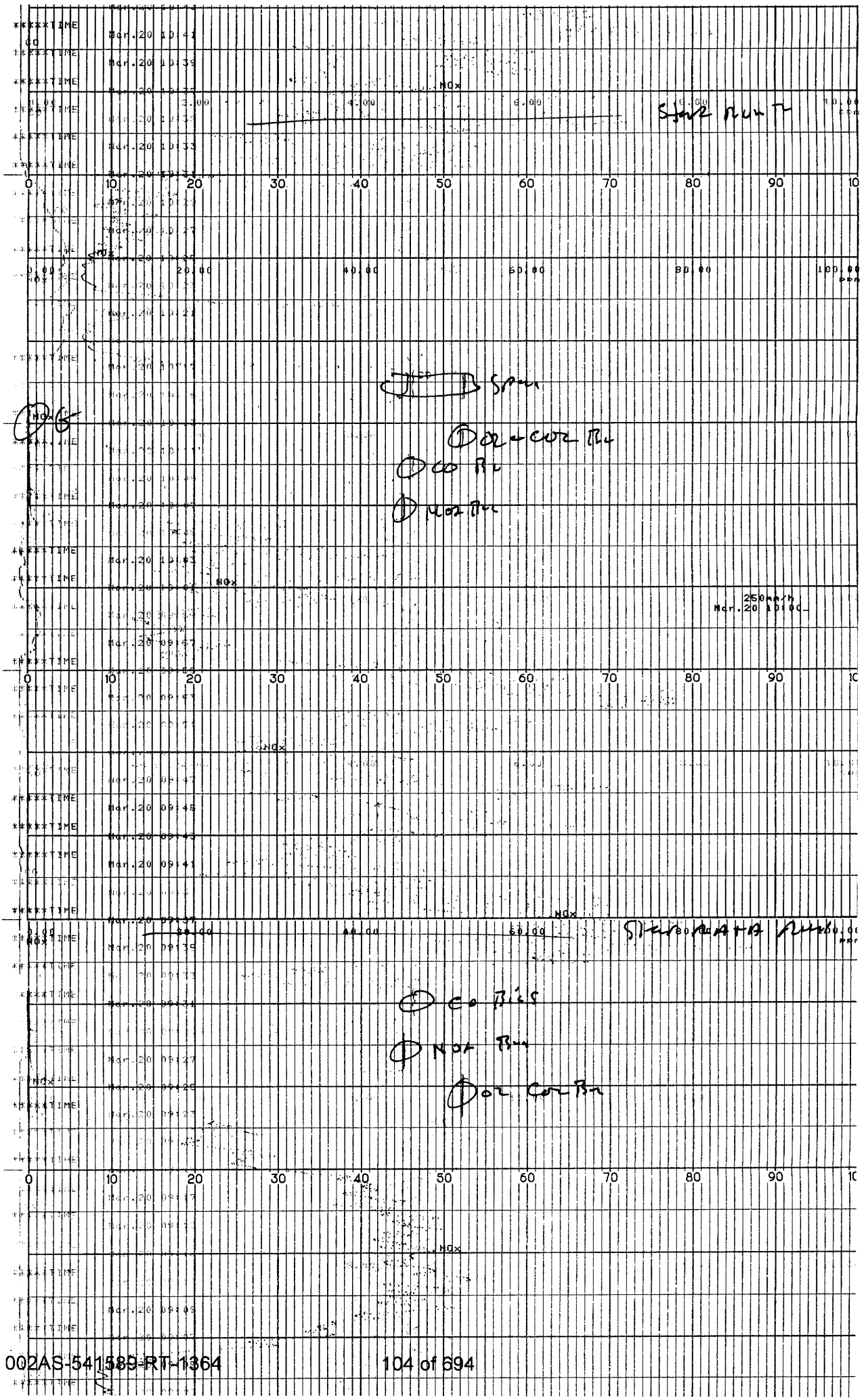
0 10 20 30 40 50 60 70 80 90 100
TIME INTVL 1
Mar.19 15:07
Mar.19 15:05
Mar.19 15:01
Mar.19 15:53
Mar.19 15:55
Mar.19 15:51
Mar.19 15:49
Mar.19 15:47
Mar.19 15:43
Mar.19 15:27
Mar.19 15:25
Mar.19 15:19
Mar.19 15:17
Mar.19 15:15
Mar.19 15:07
Mar.19 15:00
NOx
0.00 20.00 40.00 60.00 80.00 100.0
0 10 20 30 40 50 60 70 80 90
250mm/h
Mar.19 15:00
2.00 4.00 6.00 8.00 10.



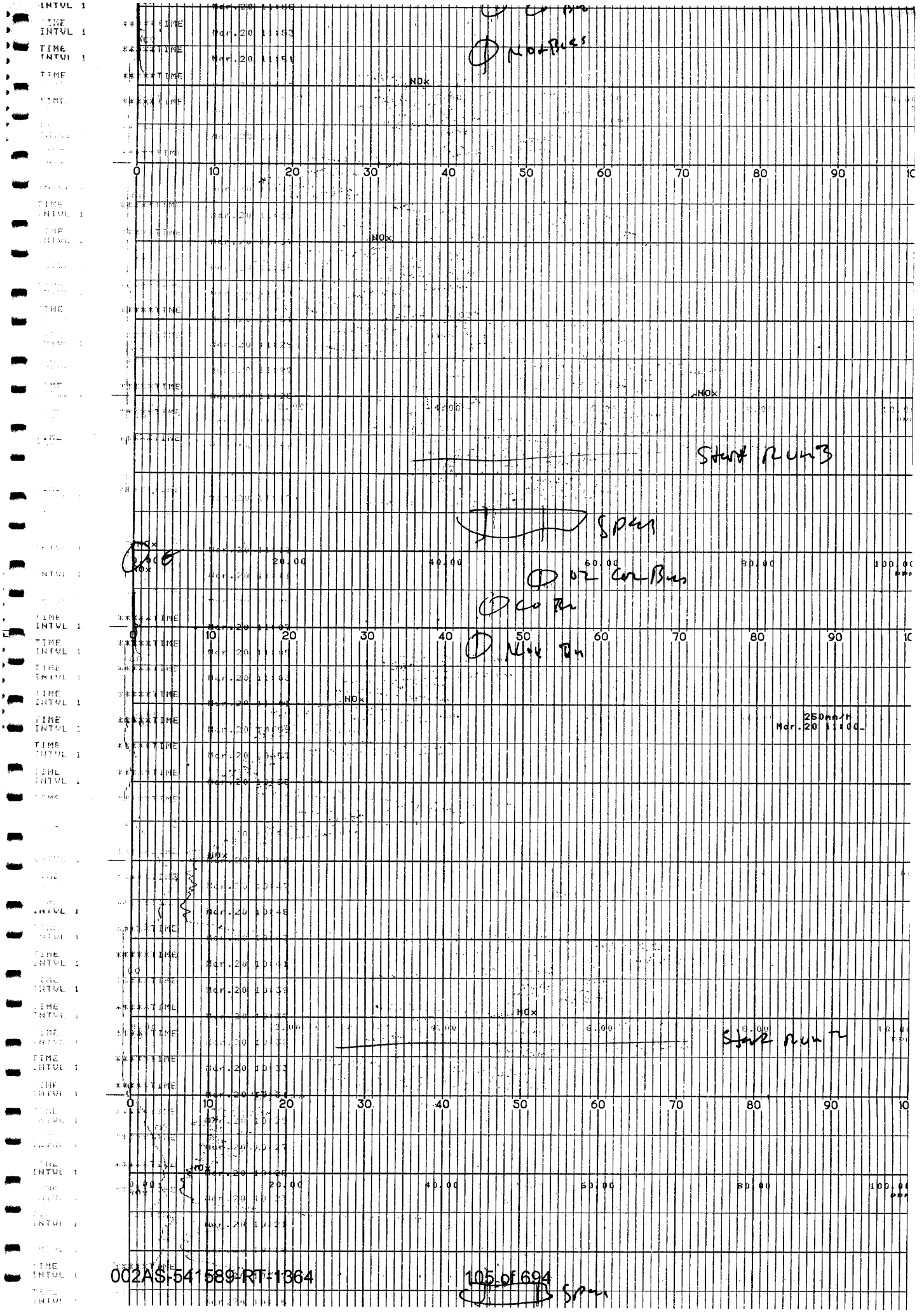
INTVL 1
TIME
Mar.20 07:03
Mar.20 07:01
NOx
250mm/h
Mar.20 07:00
CO Bus
NOx Bu
O2 CO2 Bu
NOx
NOx Gas NO mod
NO G
G
NOx Gas NOx mod
NO
High
mid
High
NOx
0.00
20.00
40.00
60.00
80.00
100.00
Mar.20 06:23
016:08 006:22 250mm/h
Unit 2 Unit 1 RATA
0
10
20
30
40
50
60
70
80
90
Mar.19 16:07
016:04 016:08 250mm/h
NOx
CO High
250mm/h
Mar.19 16:00


CO
NOx
TIME
INTVL 1
Mar.20 08:11
Mar.20 08:10
Mar.20 08:09
Mar.20 08:08
Mar.20 08:07
Mar.20 08:06
Mar.20 08:05
Mar.20 08:04
Mar.20 08:03
Mar.20 08:02
Mar.20 08:01
Mar.20 08:00
Mar.20 07:59
Mar.20 07:58
Mar.20 07:57
Mar.20 07:56
Mar.20 07:55
Mar.20 07:54
Mar.20 07:53
Mar.20 07:52
Mar.20 07:51
Mar.20 07:50
Mar.20 07:49
Mar.20 07:48
Mar.20 07:47
Mar.20 07:46
Mar.20 07:45
Mar.20 07:44
Mar.20 07:43
Mar.20 07:42
Mar.20 07:41
Mar.20 07:40
Mar.20

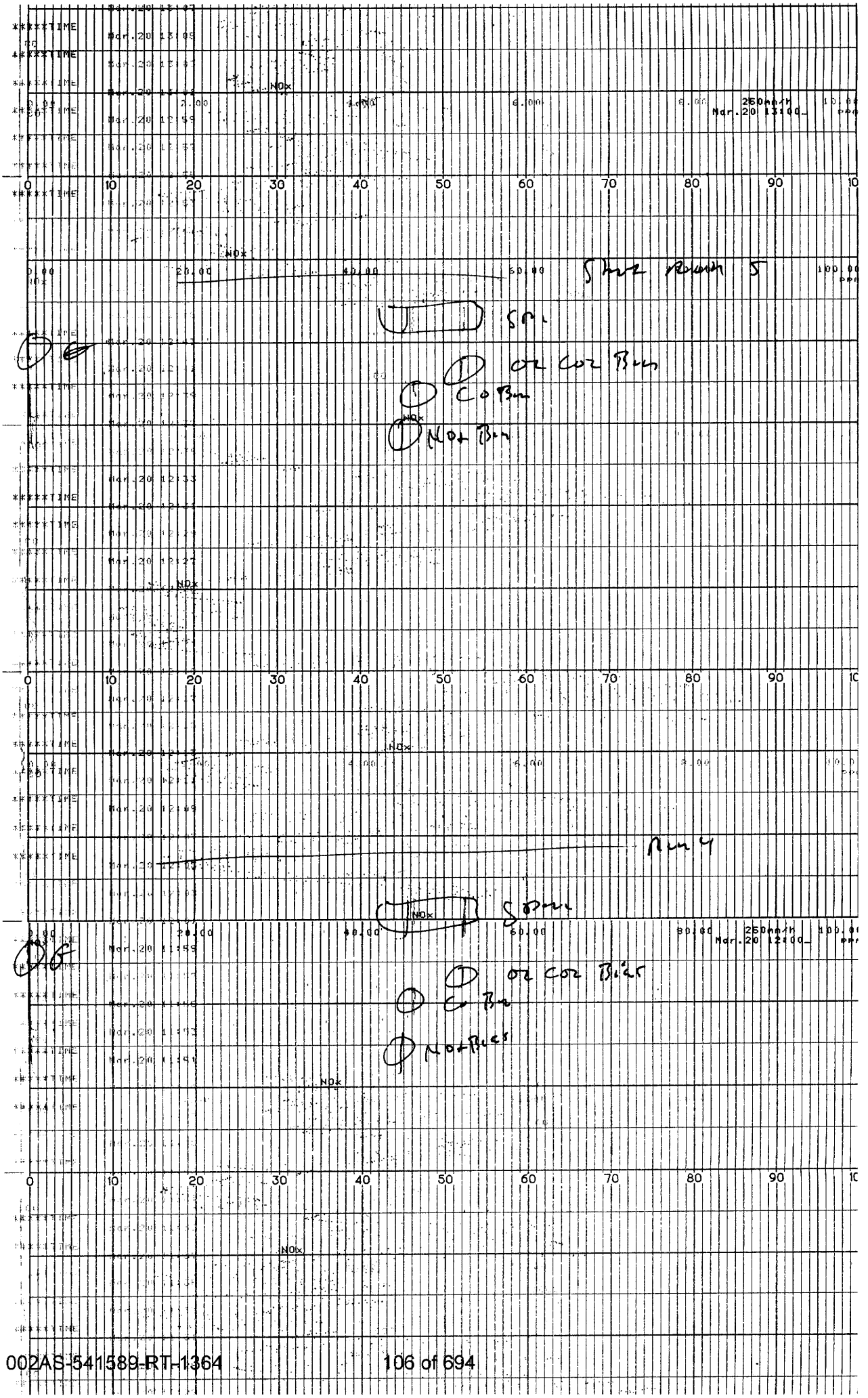

INTVL 1
TIME
NOx
0
10
20
30
40
50
60
70
80
90
2.00
4.00
6.00
8.00
250mm/h
Mar.20 09:00
20.00
40.00
60.00
80.00
100.00
Mar.20 08:59
Mar.20 08:41
Mar.20 08:39
Mar.20 08:35
Mar.20 08:33
Mar.20 08:25
Mar.20 08:17
Mar.20 08:15
Mar.20 08:11
Mar.20 08:09
Mar.20 08:05
Mar.20 08:03
Mar.20 08:00



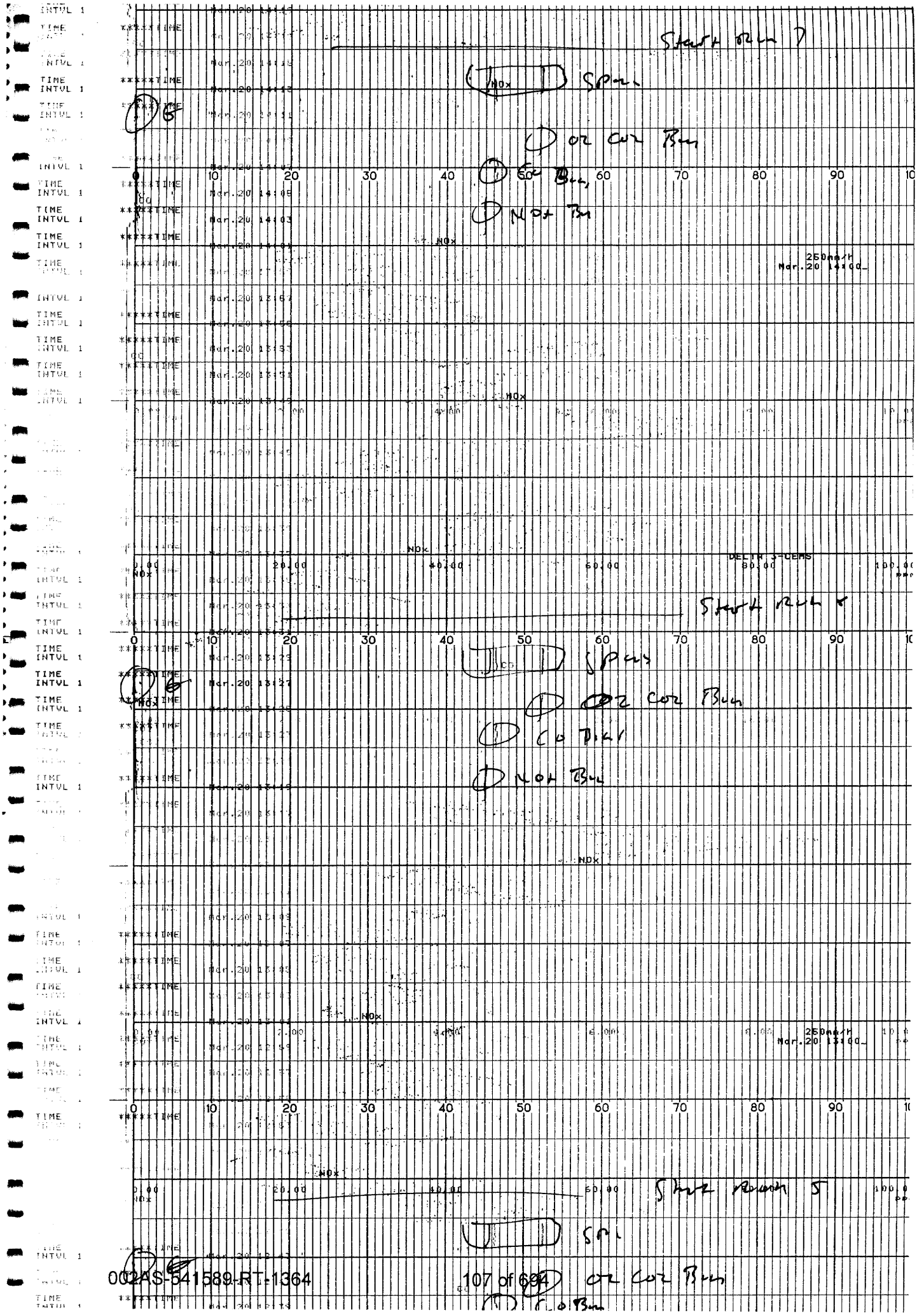
TIME
INTVL 1
Mar.20 10:41
Mar.20 10:39
Mar.20 10:33
Mar.20 10:27
Mar.20 10:21
Mar.20 10:43
Mar.20 09:47
Mar.20 09:45
Mar.20 09:41
Mar.20 09:35
Mar.20 09:31
Mar.20 09:27
Mar.20 09:25
Mar.20 09:23
Mar.20 09:09
NOx
0.00
2.00
4.00
6.00
8.00
10.00
20.00
40.00
60.00
80.00
100.00
ppm
0
10
20
30
40
50
60
70
80
90
250mm/h
Mar.20 10:00

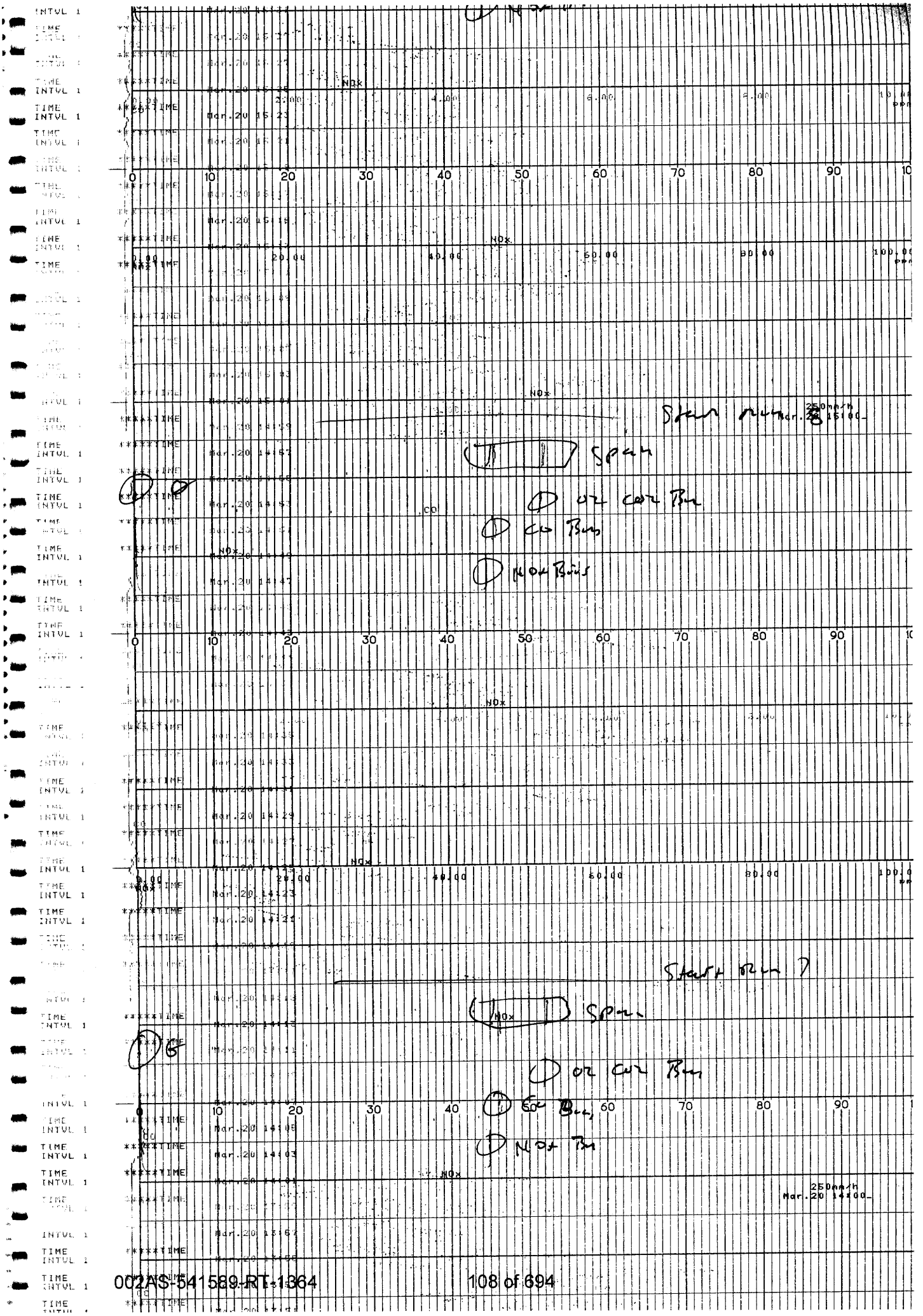


NOx
Start Run 3
Span
O2 Cor Bias
Max Bias
250mm/h
Mar.20 11:00
Start Run 2
Span

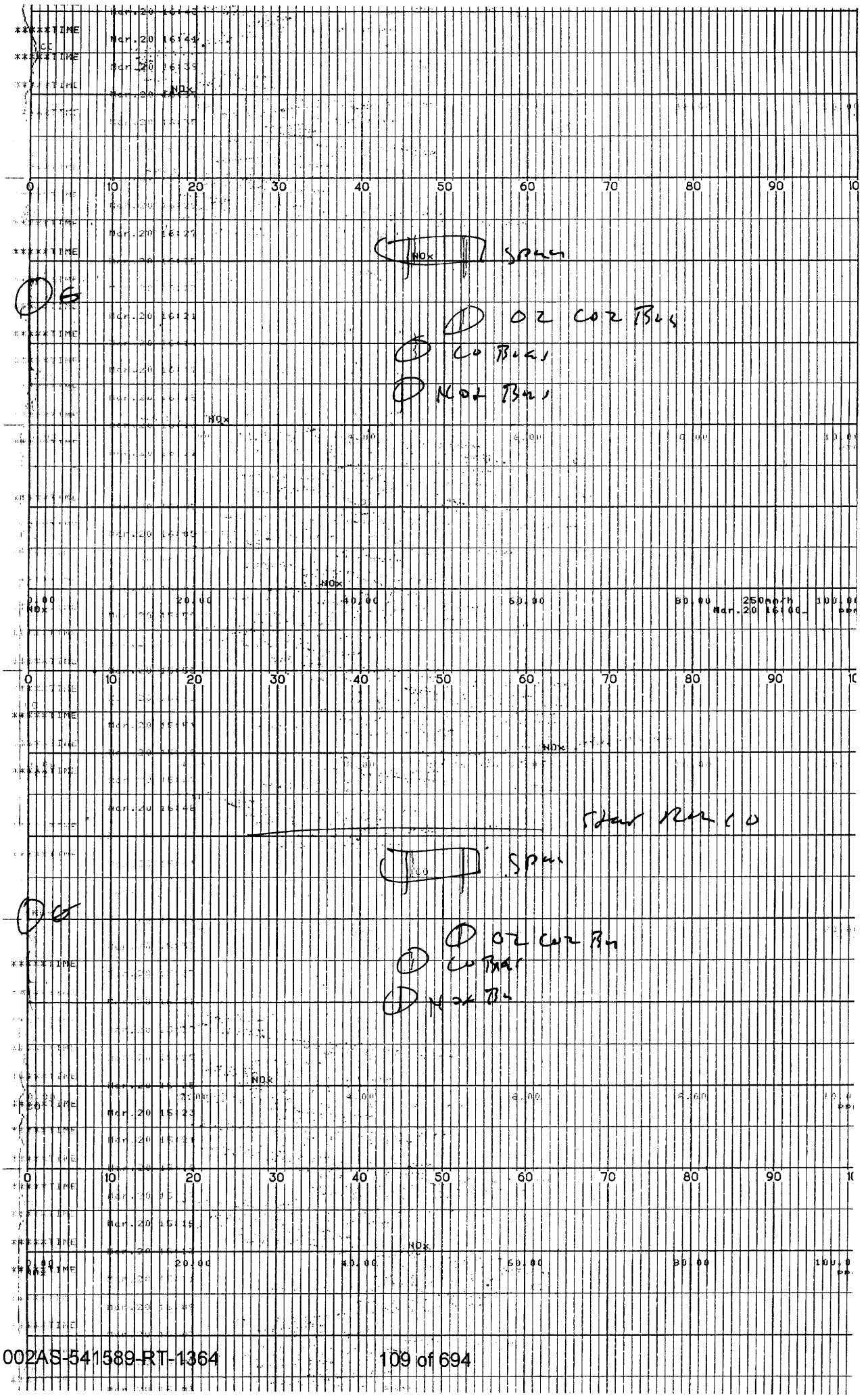


Mar.20 13:09
Mar.20 12:59
Mar.20 12:33
Mar.20 12:27
Mar.20 12:09
Mar.20 11:59
Mar.20 11:51
NOx
250mm/h
Mar.20 13:00
Mar.20 12:00
Start Room 5
Spl
Or Cor Bias
Co Bias
No+ Bias
Run 4
Spl
Or Cor Bias
Co Bias
No+ Bias

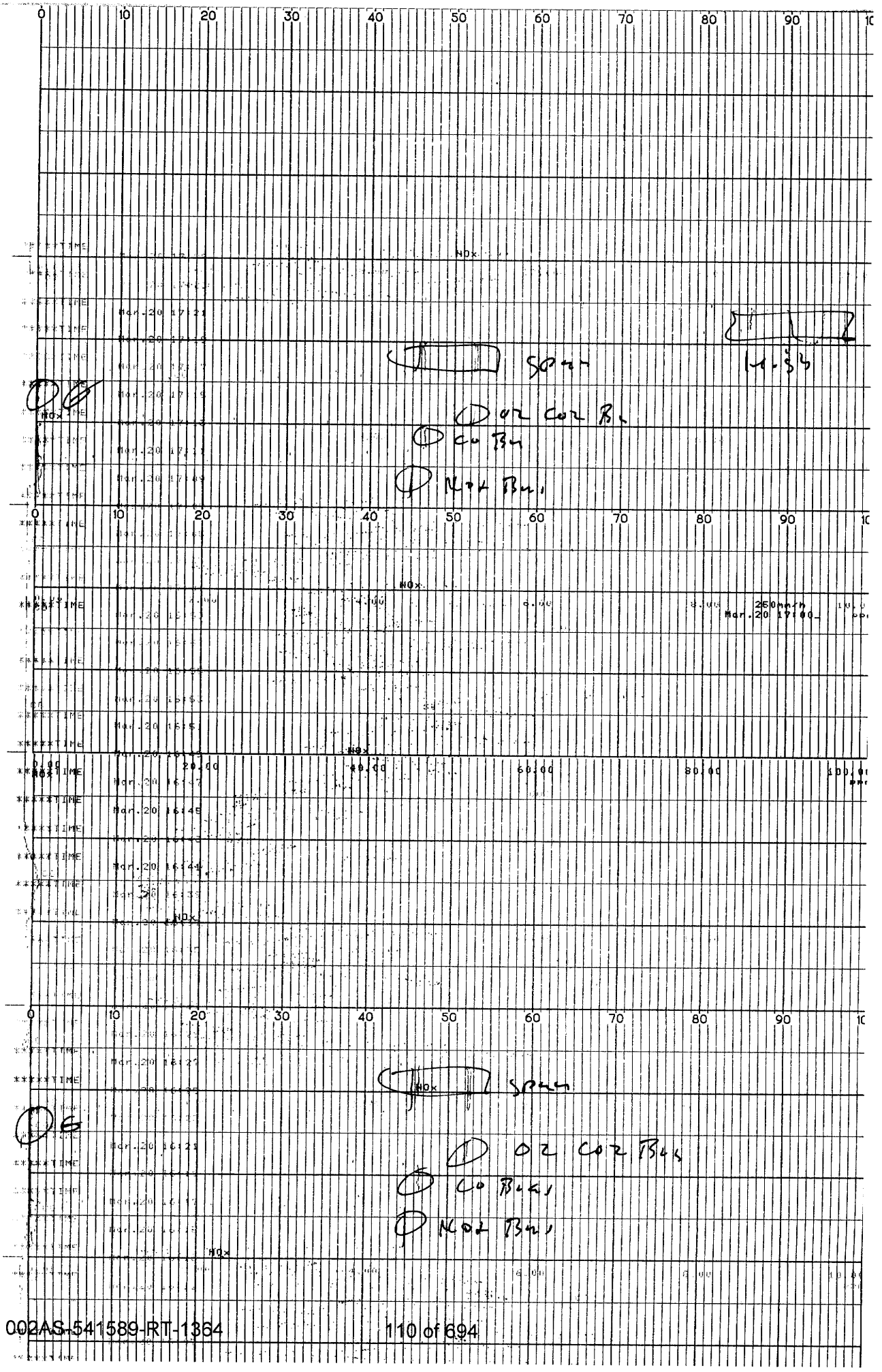

Start Run 7
Span
O2 Cor Bias
Co Bias
NOx Bias
NOx
250mm/h
Mar.20 14:00
DELTA 3-CEMS
Start Run 8
Span
O2 Cor Bias
Co Bias
NOx Bias
NOx
250mm/h
Mar.20 13:00
Start Run 5
Span
O2 Cor Bias
Co Bias



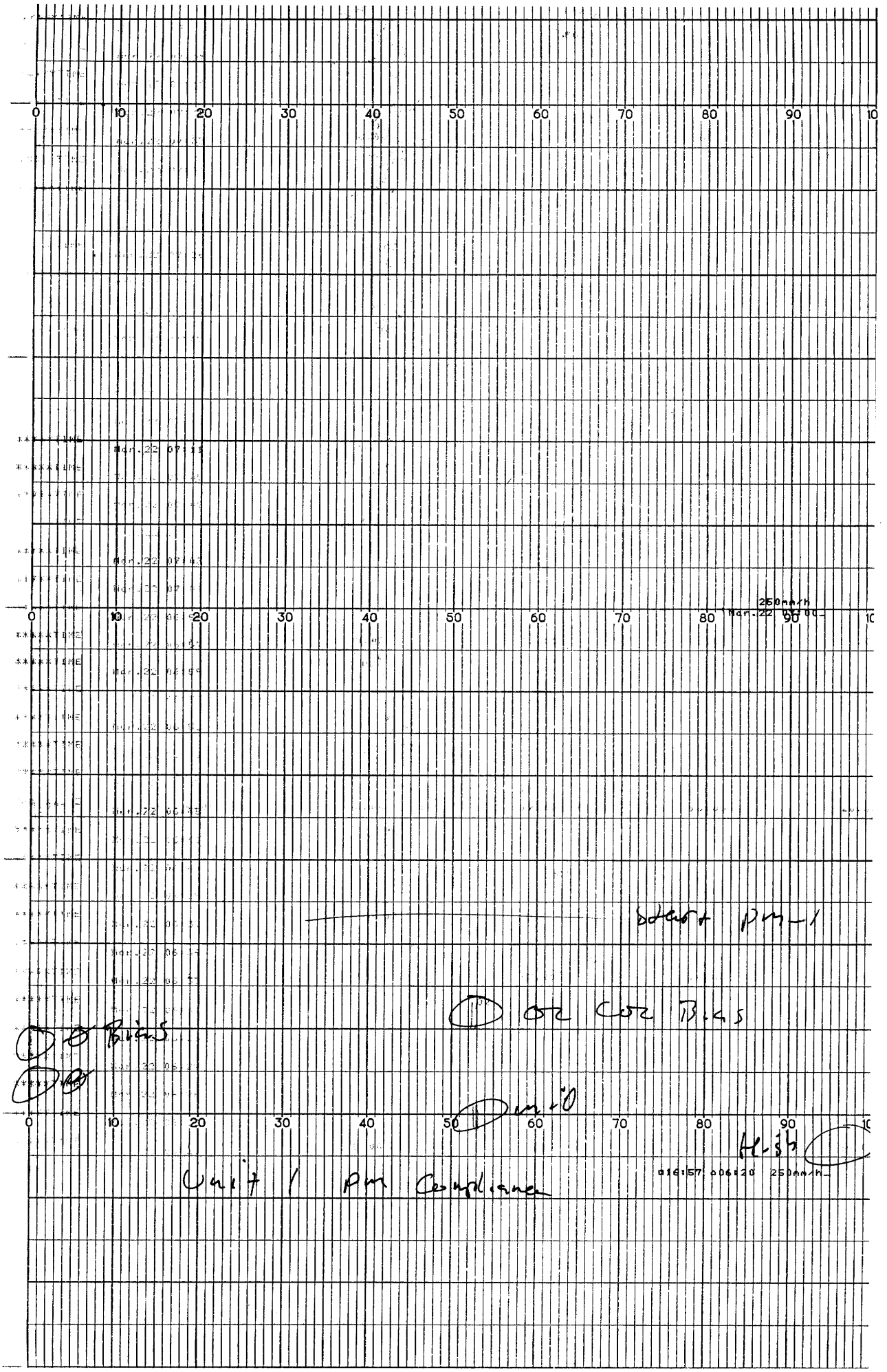
Start Run 8
250mm/h
Mar.20 15:00
Span
O2 CO2 Bus
CO Bus
NOx Bus
Start Run 7
Span
O2 CO2 Bus
CO Bus
NOx Bus
250mm/h
Mar.20 14:00



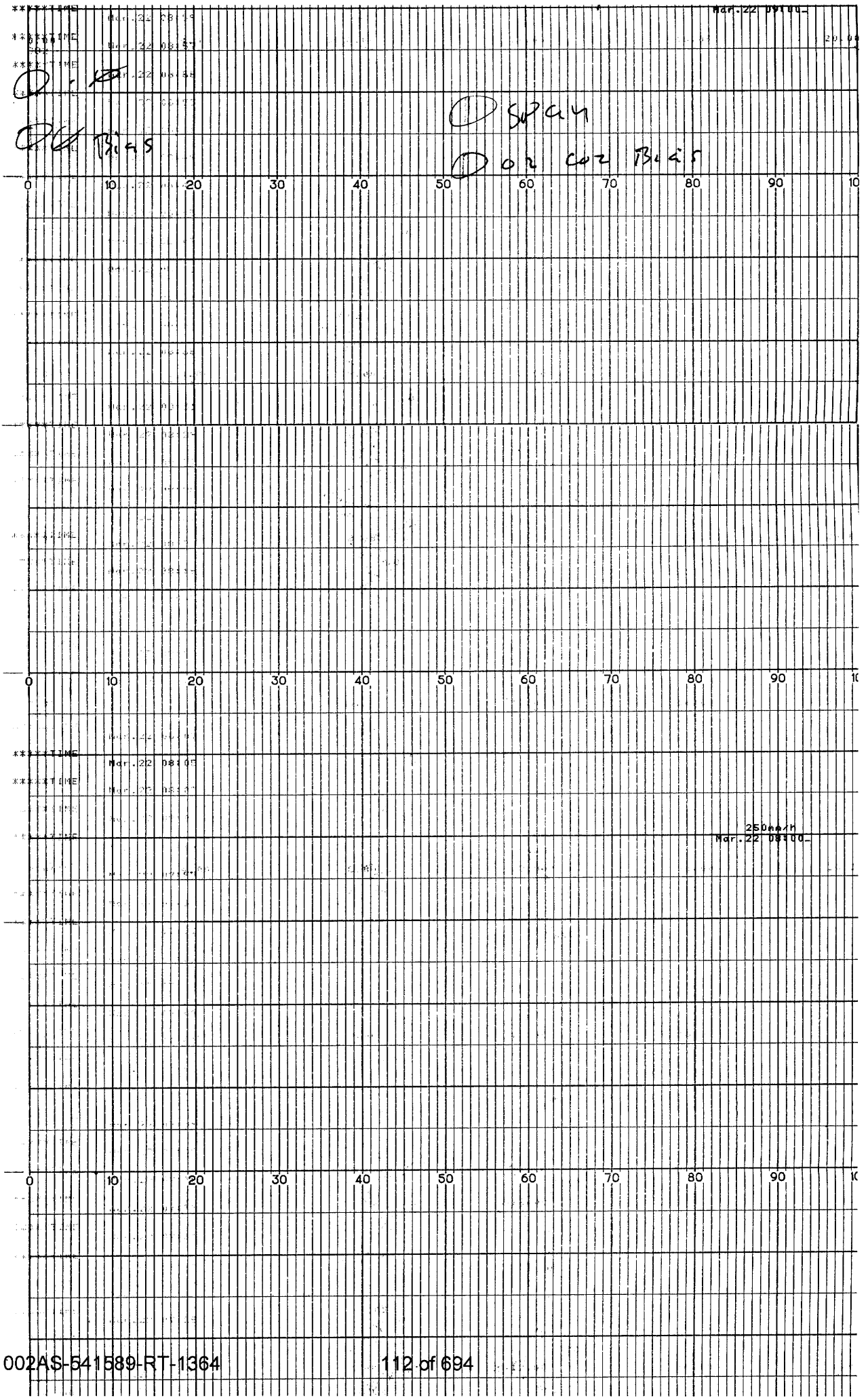
Mar.20 16:41
Mar.20 16:39
Mar.20 16:27
Mar.20 16:21
Mar.20 16:48
Mar.20 15:23
Mar.20 15:19
NOx
0 10 20 30 40 50 60 70 80 90 10
0.00 20.00 40.00 60.00 80.00 100.00
250mm/h
Mar.20 16:00
Span
O2 CO2 Bias
CO Bias
NOx Bias
Start Run 10
Span
O2 CO2 Bias
CO Bias
NOx Bias

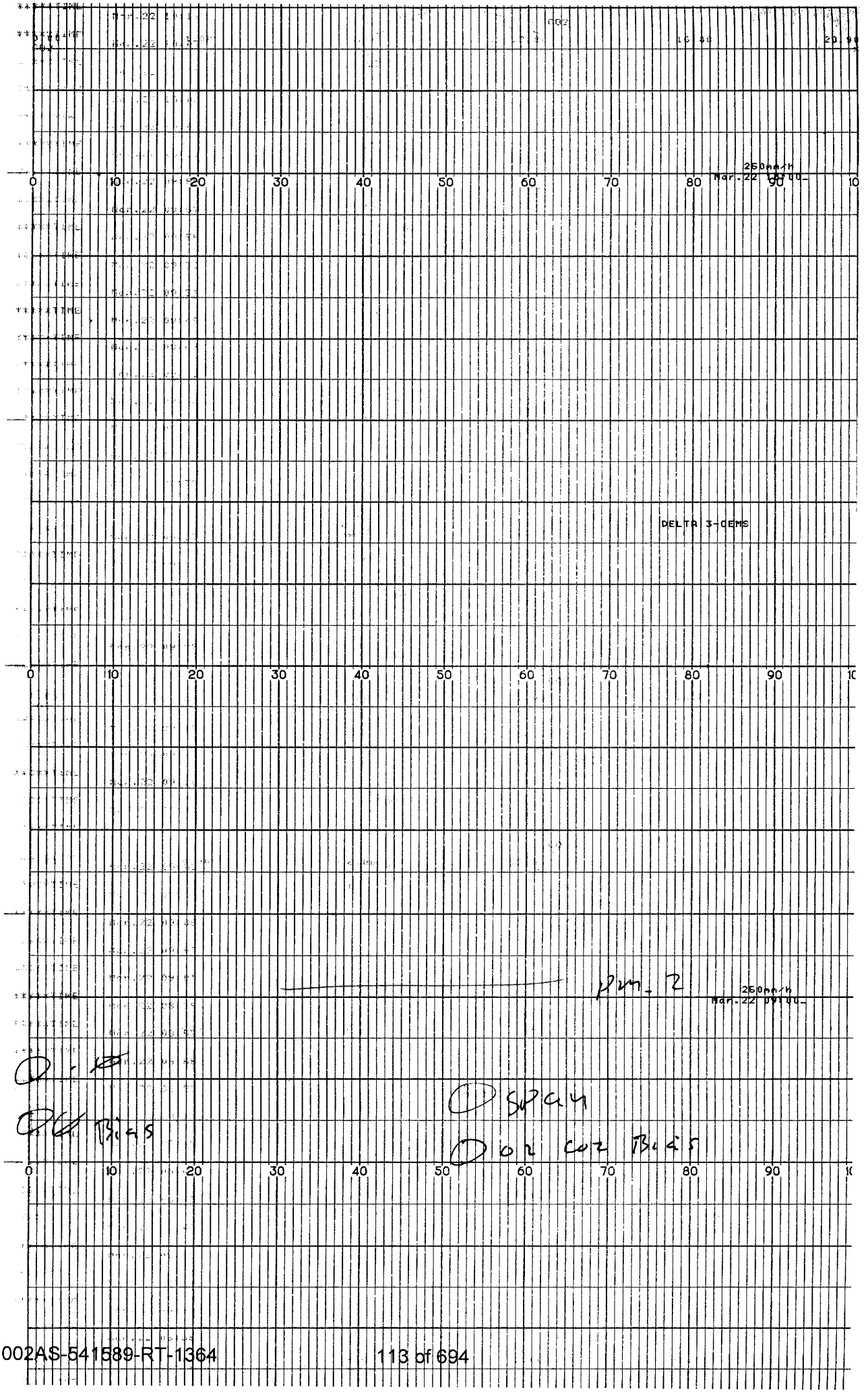


NOx
Mar.20 17:21
Mar.20 17:11
Mar.20 17:49
Span
Mid
O2 CO2 Bu
CO Bu
NOx Bu
250mm/h
Mar.20 17:00
Mar.20 16:47
Mar.20 16:45
Mar.20 16:44
Mar.20 16:21
Span
O2 CO2 Bus
CO Bus
NOx Bus

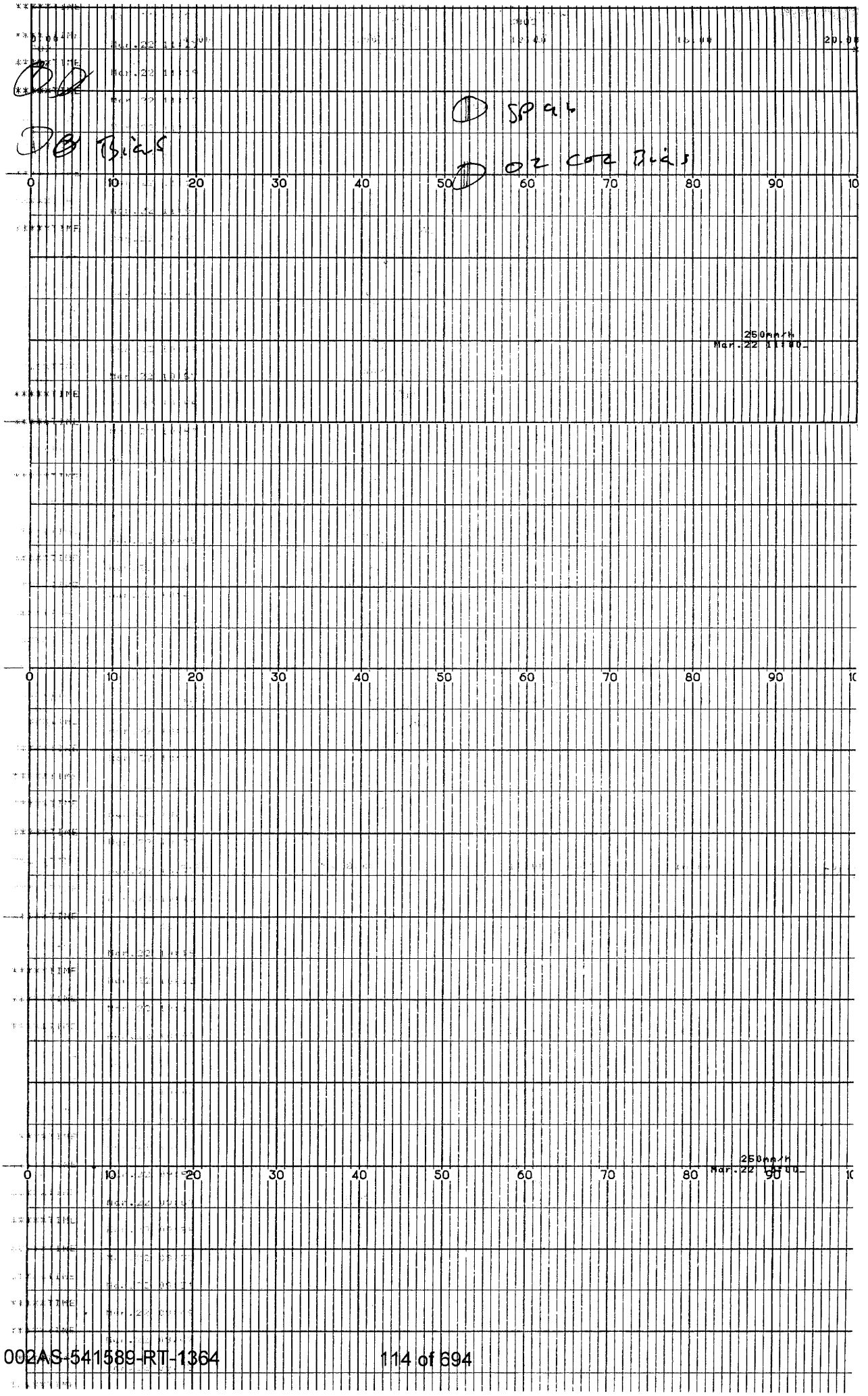


0 10 20 30 40 50 60 70 80 90 10
TIME
INTVL 1
Mar.22 07:11
Mar.22 07:43
250mm/h
Mar.22 07:00
Start PM-1
O2 Cor Bias
Bias
Unit 1 PM Compliance
Hish
016:57 006:20 250mm/h

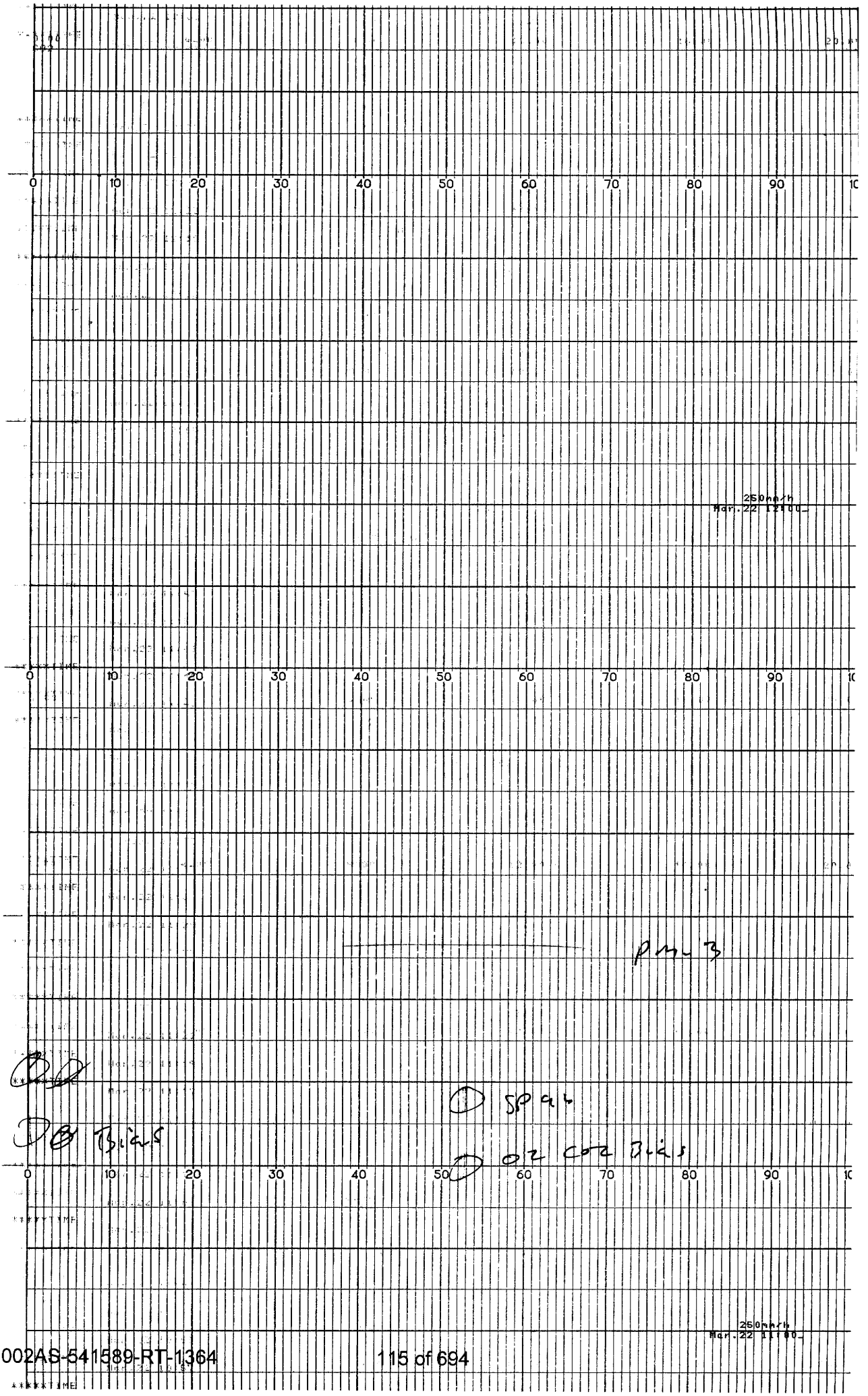

TIME
INTVL
Mar.22 09:00
Span
O2 CO2 Bias
Bias
0
10
20
30
40
50
60
70
80
90
250mm/h
Mar.22 08:00

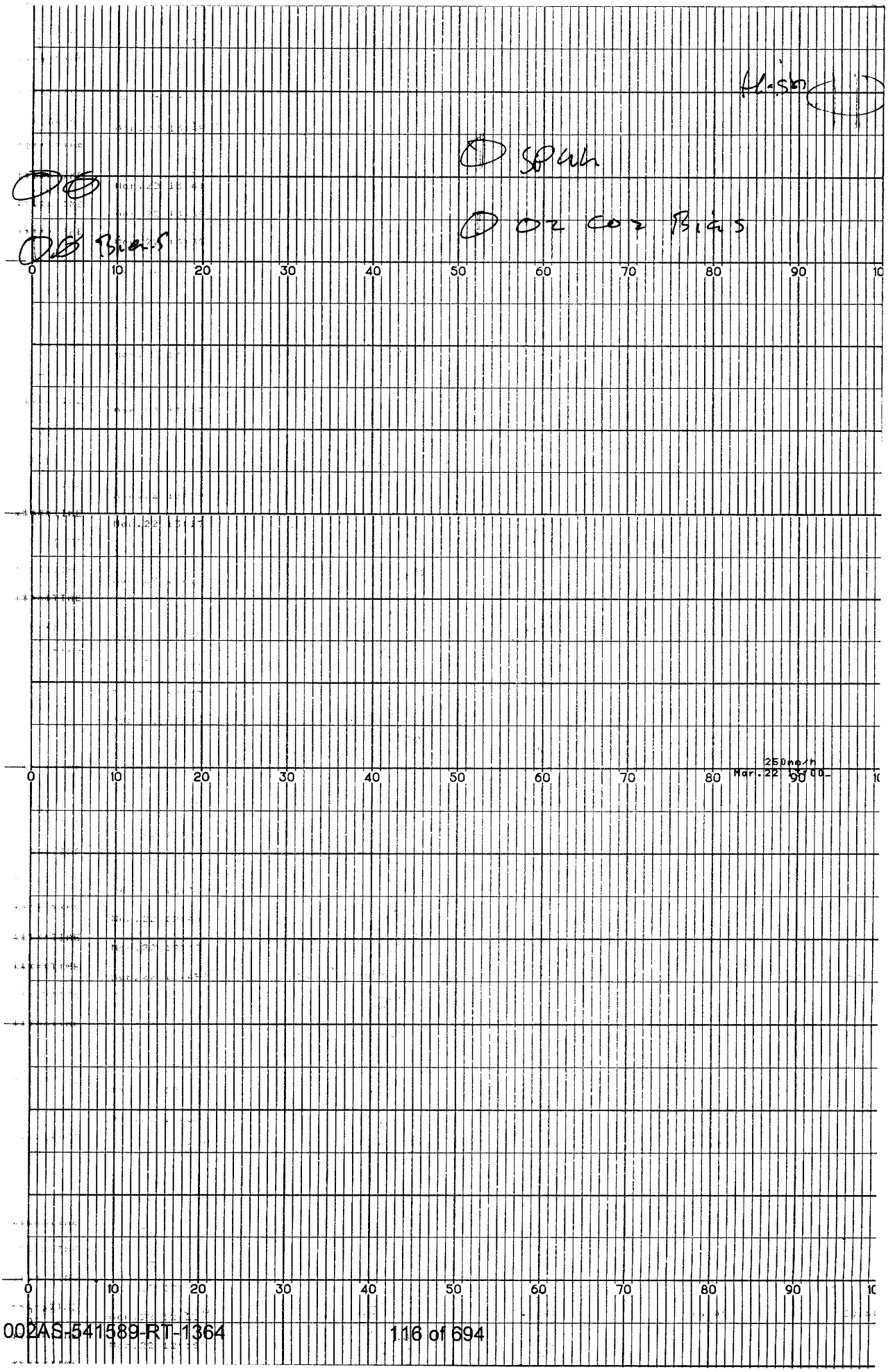


250mm/h
Mar.22 10:00
DELTA 3-CEMS
250mm/h
Mar.22 09:00
pm_2
Span
Bias
O2 CO2 Bias



SP 96
Bias
O2 CO2 Bias
250mm/h
Mar.22 11:00


0 10 20 30 40 50 60 70 80 90
250mm/h
Mar.22 12:00
PM-3
SP 96
Bias
O2 CO2 Bias
0 10 20 30 40 50 60 70 80 90
250mm/h
Mar.22 11:00
TIME


Hisn
SPAN
O2 CO2 Bias
Bias
0 10 20 30 40 50 60 70 80 90 10
250mm/h
Mar.22 13:00

Appendix A.1.4
Unit 1 Hydrogen Chloride Data

HCl

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-19-2019
RUN NO: 1-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 1.8 X ΔP:
Probe Condition, pre/post test: N/N
Silica Gel Expanded, Y/N: N
Filter Condition after Test: ✓ not recovered
Check Weight: 500.0/500.0

AMBIENT TEMPERATURE: 80°
BAROMETRIC PRESSURE: 32.01
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz "
PRE-TEST LEAK RATE: : <0.005 CFM@ 12 in. Hg.
POST-TEST LEAK RATE: : <0.005 CFM@ 12 in. Hg.
PITOT LEAK CHECK - PRE: Good POST: Good
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	O.1N H2SO4	915.6	706.3	209.3
2	O.1N H2SO4	779.8	612.2	167.6
3	Empty	655.0	643.9	11.1
4	Silica gel	872.1	846.3	25.8
			-50	-50 pm
	Rinse		50	-50
	Total:			363.3

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	725	760.1	1.0	1.9	340 352	250	251	59	66	65	6.0		
4	729	763.70	1.3	2.3	341 351	251	252	56	67	64	5.5		
3	733	766.53	1.2	2.2	342	251	249	48	66	65	5.5		
2	737	769.71	.91	1.6	342	251	250	45	69	66	5.5		
1	741	772.57	1.3	2.3	340	250	249	49	70	67	6.0		
0	745	774.881	–	–	–	–	–	–	–	–	–		
5	832	774.881	1.1	2.0	347	251	254	60	79	79	5		
4	836	779.012	1.3	2.3	353	253	250	52	81	78	6.0		
3	840	782.40	1.0	2.0	355	251	253	53	83	79	6.0		
2	844	785.521	1.1	2.2	355	253	253	55	85	79	6.0		
1	848	788.670	.95	1.9	353	252	252	55	87	80	5.5		
0	852	791.730	–	–	–	–	–	–	–	–	–		
5	854	791.730	1.2	2.4	354	249	252	56	87	82	6.0		
4	858	795.131	1.2	2.4	354	250	250	56	88	81	6.0		
3	902	798.580	1.4	2.8	355	253	256	57	90	81	6.5		
2	906	802.300	1.4	2.6	356	253	255	57	91	82	6.5		
1	910	805.590	1.2	2.4	355	250	253	57	92	82	6.0		
Average:	914	809.417											

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Comments: 20

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-19-2019
RUN NO: 1-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 2.0 X ΔP:
Probe Condition, pre/post test:
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 80
BAROMETRIC PRESSURE: 30.01
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : CFM@ in. Hg.
POST-TEST LEAK RATE: <0.005 CFM@ 12 in. Hg.
PITOT LEAK CHECK - PRE: good POST: good
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test - Pre-Test = Difference
1	O.1N H2SO4	
2	O.1N H2SO4	
3	Empty	
4	Silica gel	
	Rinse	50
Total:		

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	936	809.417	1.1	2.2	362	251	256	61	83	82	6		
4	940	812.712	1.0	2.0	363	253	251	54	88	85	6		
3	944	815.830	.90	1.9	363	251	251	54	90	85	5.5		
2	948	818.850	.95	1.9	363	252	253	55	92	86	5.5		
1	952	821.780	.99	2.0	362	251	256	56	92	85	5.5		
0	956	824.752	—	—	—	—	—	—	—	—	—		
5	958	824.752	1.2	2.4	345	250	249	59	89	86	6.5		
4	1002	828.390	1.4	2.8	365	251	256	57	94	87	7.0		
3	1006	831.770	1.4	2.8	364	252	254	57	94	88	7.0		
2	1010	835.471	1.5	3.0	365	251	257	58	98	90	7.5		
1	1014	839.622	1.3	2.6	364	251	257	59	98	90	6.5		
0	1018	843.001	—	—	—	—	—	—	—	—	—		
5	1020	842.001	1.4	2.8	366	252	253	60	96	90	7.0		
4	1024	846.620	1.4	2.8	366	253	250	54	99	91	7.0		
3	1028	850.270	1.3	2.6	366	253	248	55	99	91	6.5		
2	1032	853.950	1.3	2.6	366	251	250	56	99	92	6.5		
1	1036	857.691	1.3	2.6	366	252	251	57	100	92	6.5		
Average:	1040	860.992											

Comments:

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-19-2019
RUN NO: 2-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 2.0 X ΔP:
Probe Condition, pre/post test: ✓ / ✓
Silica Gel Expanded, Y/N: Y
Filter Condition after Test: ✓ rod recovered
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: 84°
BAROMETRIC PRESSURE: 30.01
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : <0.005 CFM@ 15" in. Hg.
POST-TEST LEAK RATE: : ____ CFM@ ____ in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ____
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	O.1N H2SO4	1004.5	763.7	240.8
2	O.1N H2SO4	811.3	656.0	155.3
3	Empty	633.2	623.9	9.3
4	Silica gel	933.3	901.4	31.9
		500.0 g		
	Rinse		50	-50
	Total:			387.3

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1101	862.385	1.4	2.8	369	251	253	55	95	94	6		+.40
4	1105	866.160	1.5	3.0	369	252	250	52	97	95	7		
3	1109	870.241	1.5	3.0	369	252	254	54	98	96	7		
2	1113	874.321	1.3	2.6	369	251	253	54	98	96	6.5		
1	1117	877.814	1.3	2.6	368	250	255	55	99	96	6.5		
0	1121	881.427	—	—	—	—	—	—	—	—	—		
5	1129	881.427	1.3	2.6	365	251	255	56	97	95	6.5		
4	1133	884.869	1.4	2.8	369	253	253	57	99	96	6.5		
3	1137	888.630	1.4	2.8	365	253	259	57	101	96	6.5		
2	1141	892.370	1.5	3.0	369	252	254	58	103	98	7		
1	1145	896.205	1.3	2.6	365	252	251	58	104	98	6		
0	1149	899.882	—	—	—	—	—	—	—	—	—		
5	1151	899.882	1.2	2.4	367	250	253	59	98	96	6		
4	1155	902.998	1.4	2.8	368	251	257	53	101	97	6.5		
3	1159	907.001	1.4	2.8	368	251	251	54	102	98	6.5		
2	1203	911.101	1.0	2.0	366	252	253	55	103	98	6.0		
1	1207	914.205	.97	1.9	365	252	253	56	104	99	6.0		
Average:	1211	916.157											

RM 917.157

Comments: 3/19/19

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MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-19-2019
RUN NO: 2-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 2.0 X ΔP:
Probe Condition, pre/post test:
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 84°
BAROMETRIC PRESSURE: 30.01
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : CFM@ in. Hg.
POST-TEST LEAK RATE: <0.002 CFM@ 12" in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	= Difference
1	O.1N H2SO4			
2	O.1N H2SO4			
3	Empty			
4	Silica gel			
	Rinse		50	
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1217	917.157	1.0	2.0	385	249	251	60	94	93	6.0		
4	1221	920.320	1.2	2.4	386	251	253	57	98	94	6.5		
3	1224	923.100	.97	1.9	387	251	251	57	99	94	6.0		
2	1228	926.150	.90	1.8	384	252	254	58	100	95	6.0		
1	1232	929.560	.91	1.9	380	253	254	58	101	96	6.0		
0	1236	932.995	—	—	—	—	—	—	—	—	—		
5	1239	932.995	1.2	2.4	370	251	253	59	99	96	6.5		
4	1243	936.330	1.1	2.2	369	251	254	57	99	97	6.0		
3	1247	940.001	.92	1.8	370	252	254	57	101	97	6.0		
2	1251	942.900	.85	1.7	370	250	256	58	103	98	6.0		
1	1255	946.298	.89	1.8	366	251	254	58	103	98	6.0		
0	1259	949.751	—	—	—	—	—	—	—	—	—		
5	1302	948.751	1.3	2.6	369	250	255	60	97	95	6.5		
4	1306	952.220	1.0	2.0	369	251	254	57	99	97	6.0		
3	1310	955.387	.87	1.7	369	250	254	56	100	98	6.0		
2	1314	958.990	.85	1.7	369	251	253	57	101	99	6.0		
1	1318	961.820	.80	1.6	368	250	253	57	102	99	6.0		
Average:	1322	963.649											

Comments:

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-19-2019
RUN NO: 3-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓
Silica Gel Expanded, Y/N: N
Filter Condition after Test: ✓ not rec.
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: 84°
BAROMETRIC PRESSURE: 30.01
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: <0.005 CFM@ 16" in. Hg.
POST-TEST LEAK RATE: _____ CFM@ _____ in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: _____
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	O.1N H2SO4	928.9	729.3	199.6
2	O.1N H2SO4	765.4	684.1	81.3
3	Empty	540.4	478.6	~~25.9~~ 61.8
4	Silica gel	912.1	886.2	25.9
		-50	[illegible]	
	Rinse		50	-50
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1337	969.594	1.3	2.6	368	250	253	62	96	95	7		
4	1341	972.224	1.1	2.2	368	252	249	56	99	95	6		
3	1345	976.500	.93	1.9	368	251	250	56	101	96	6		
2	1349	979.650	.89	1.9	369	251	254	57	102	97	6		
1	1353	982.760	.90	1.9	370	250	254	57	102	98	6		
0	1357	986.988	—	—	—	—	—	—	—	—	—		
5	1359	986.988	1.2	2.4	370	251	253	59	98	95	6.5		
4	1403	989.430	1.2	2.4	370	250	251	56	99	96	6.5		
3	1407	992.850	1.0	2.2	370	252	252	56	101	97	6.0		
2	1411	996.160	.89	1.8	368	251	254	57	102	98	6.0		
1	1415	999.624	.78	1.6	366	250	255	57	102	98	6.0		
0	1419	1002.125	—	—	—	—	—	—	—	—	—		
5	1421	1002.125	1.3	2.4	360	251	259	59	99	98	6.5		
4	1425	1004.760	1.1	2.0	369	251	250	57	102	99	6.0		
3	1429	1007.990	1.0	1.8	369	250	259	57	102	99	6.0		
2	1433	1010.998	.92	1.7	368	251	250	58	101	98	6.0		
1	1437	1014.130	.86	1.6	366	251	252	58	101	98	6.0		
Average:	1441	1017.038											

Comments: 1.85

DS834049

Date of last revision 2/14/2017

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MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-19-2019
RUN NO: 3-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 1.85 X ΔP:
Probe Condition, pre/post test:
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 84°
BAROMETRIC PRESSURE: 30.01
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : CFM@ in. Hg.
POST-TEST LEAK RATE: ≤0.005 CFM@ 14' in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	O.1N H2SO4			
2	O.1N H2SO4			
3	Empty			
4	Silica gel			
	Rinse		50	
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
~~1445~~ Run 2 1/19	1443	17.038	1.4	2.6	365	250	259	59	98	97	7		
3	1447	20.230	1.4	2.6	365	251	250	54	99	97	7		
3	1451	24.422	1.0	1.8	363	252	254	55	102	96	6		
2	1455	27.680	.76	1.4	363	251	253	55	102	97	6		
1	1459	30.470	.75	1.4	362	251	250	56	102	98	6		
0	1503	33.254	—	—	—	—	—	—	—	—	—		
5	1505	33.254	1.2	2.2	365	251	253	57	98	96	6.5		
4	1509	36.052	1.2	2.2	365	251	251	57	101	97	6.5		
3	1513	39.650	1.2	2.2	365	251	252	58	101	98	6.5		
2	1517	42.900	1.4	2.6	365	252	254	58	102	98	7		
1	1521	46.380	1.2	2.2	364	251	255	59	102	98	6.5		
0	1525	49.005	—	—	—	—	—	—	—	—	—		
5	1527	49.005	1.5	2.8	367	250	257	60	98	96	7		
4	1531	52.800	1.5	2.8	366	250	252	57	101	97	7		
3	1535	56.500	1.4	2.6	366	252	253	59	102	97	7		
2	1539	60.110	1.4	2.6	366	252	254	59	102	98	7		
1	1543	63.604	1.2	2.2	364	252	253	59	102	98	6.5		
Average:	1547	66.884											

Comments:

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-19-2019
RUN NO: FB-HCL-U1
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓/✓
Silica Gel Expanded, Y/N: N
Filter Condition after Test: ✓ - not recovered
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: NA
BAROMETRIC PRESSURE: NA
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: ≤0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: ≤0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: NA POST: NA
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents		Post-Test - Pre-Test = Difference
_1_	O.1N H2SO4	✓	756.4
_2_	O.1N H2SO4	✓	623.1
_3_	Empty	✓	622.1
_4_	Silica gel	✓	933.3
			-50 blank
___	Rinse		50
	Total:		

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
	1400-1500												
Average:													

Field Blank

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Comments: _____

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Appendix A.1.5
Unit 1 Particulate Data

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-22-2019
RUN NO: 1-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: V/ok
Silica Gel Expanded, Y/N: W
Filter Condition after Test: ok
Check Weight: 500.0 / 500

AMBIENT TEMPERATURE: 55°F
BAROMETRIC PRESSURE: 30.22
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 119 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #103 SS
NOZZLE DIAMETER: 0.247
FILTER NO/TYPE: # 83- 3583 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	DI H2O	943.0	702.5	240.5
2	DI H2O	691.8	593.8	98.0
3	Empty	654.1	653.3	0.8
4	Silica gel	920.5	894.7	25.8
	N/A	~~50 [illegible]~~		~~50~~
		DW	3-22-19	
Total:				365.1

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	0638	144.300	1.3	2.3	349	255	253	40	50	52	7"		+.35
4	0642	147.715	1.1	2.0	348	255	252	39	53	54	6"		
3	0646	150.895	1.1	2.0	348	252	258	39	54	54	6"		
2	0650	153.990	1.2	2.2	347	254	256	38	56	54	7"		
1	0654	157.485	1.3	2.3	347	251	258	39	58	54	7"		
E	0658	160.918											
5	0700	160.918	1.4	2.5	346	255	257	40	58	56	7"		
4	0704	164.575	1.3	2.3	348	257	255	39	59	56	7"		
3	0708	168.010	1.2	2.2	346	252	258	41	63	57	7"		
2	0712	171.560	1.4	2.5	347	253	255	42	64	57	7"		
1	0716	174.815	1.3	2.3	346	252	256	42	64	58	7"		
E	0720	178.272											
5	0722	178.272	1.0	1.8	345	255	257	43	62	59	6"		
4	0726	181.310	1.1	2.0	345	252	257	43	65	59	6"		
3	0730	184.525	.99	1.8	346	253	258	43	65	60	6"		
2	0734	187.650	1.0	1.8	346	254	257	44	67	61	6"		
1	0738	190.685	1.1	2.0	348	258	255	45	68	62	6"		
Average E	0742	193.874											

Comments: Factor @0630=1.8

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Date of last revision 2/14/2017

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WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-22-2019
RUN NO: 1-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: _____
Silica Gel Expanded, Y/N: _____
Filter Condition after Test: _____
Check Weight: _____

AMBIENT TEMPERATURE: 60°F
BAROMETRIC PRESSURE: 30.22
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 119 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #103 SS
NOZZLE DIAMETER: 0.247
FILTER NO/TYPE: # 83- 3583 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	0744	193.874	1.2	2.2	346	252	255	44	67	63	7"		+.38
4	0748	197.290	1.3	2.5	345	256	255	45	65	62	7"		
3	0752	200.795	1.1	2.1	345	250	253	46	67	62	7"		
2	0756	203.995	.98	1.9	346	251	254	47	67	63	6"		
1	0800	208.005	.94	1.8	346	255	257	49	68	63	6"		
E	0804	211.017											
5	0806	211.017	1.0	1.9	345	251	253	48	67	62	6"		
0810/4	~~0806~~	214.185	1.1	2.1	346	251	252	48	67	64	7"		
3	0814	217.650	1.2	2.3	346	253	251	49	67	64	7"		
2	0818	221.135	1.1	2.1	346	255	250	49	68	64	7"		
1	0822	224.140	1.0	1.9	345	256	252	49	68	64	7"		
E	0826	227.316											
5	0828	227.316	1.3	2.5	346	251	257	48	65	65	7"		
4	0832	230.815	1.1	2.1	346	250	258	49	67	64	7"		
3	0836	234.150	1.3	2.5	347	255	253	50	67	64	7"		
2	0840	237.685	1.0	1.9	348	252	253	50	68	64	6"		
1	0844	241.020	1.1	2.1	349	253	250	50	67	63	7"		
Average/E	0848	244.207											

Comments: Factor @ 0746 = 1.9 A = PW 3/22/19

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-22-2019
RUN NO: 2-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: √/
Silica Gel Expanded, Y/N: ok
Filter Condition after Test: ok
Check Weight: 500.0 / 500

AMBIENT TEMPERATURE: 68°F
BAROMETRIC PRESSURE: 30.22
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83- 3584 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 13 in. Hg.
PITOT LEAK CHECK - PRE: √ POST: √
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	DI H2O	967.5	723.5	244.0
2	DI H2O	679.3	581.2	98.1
3	Empty	586.3	584.3	2.0
4	Silica gel	943.3	920.8	22.5
Total:				366.6

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	0901	244.700	~~244.700*~~ 1.2	2.3	349	255	250	44	65	65	7"		.38
4	0905	248.325	1.1	2.1	349	251	253	49	67	65	7"		
3	0909	251.880	1.3	2.5	349	253	254	40	69	66	7"		
2	0913	255.245	1.0	1.9	349	252	257	40	70	66	6"		
1	0917	258.760	1.1	2.1	350	257	258	41	71	67	6"		
P	0921	262.018											
5	0923	262.018	1.0	1.9	349	255	256	46	70	67	6"		
4	0927	265.765	1.1	2.1	350	256	258	42	71	67	7"		
3	0931	268.555	1.2	2.3	351	254	257	42	71	68	7"		
2	0935	272.015	1.0	2.1	350	258	252	43	72	68	7"		
1	0939	275.330	.98	1.9	351	257	254	44	72	68	7"		
P	0943	278.377											
5	0945	278.377	1.3	2.5	351	255	253	43	71	70	7"		
4	0949	282.010	1.4	2.7	350	256	254	42	73	69	8"		
3	0953	285.665	1.0	1.9	352	255	257	40	75	69	6"		
2	0957	288.950	.97	1.8	351	253	252	40	76	70	6"		
1	1001	292.110	.92	1.7	351	256	251	41	76	71	6"		
Average	1005	295.261	1.1187	2.143	351.6				72.1	-			

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Comments: Factor @ 0900 = 1.9
*=PW 3/22/19

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

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CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-22-2019
RUN NO: 2-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 72°F
BAROMETRIC PRESSURE: 30.22
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83- 3584 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1007	295.261	.96	1.8	352	254	253	41	74	71	6"		-.38
4	1011	298.510	1.0	1.9	352	256	258	43	76	71	6"		
3	1015	301.725	.99	1.9	352	257	253	42	77	72	6"		
2	1019	304.840	.97	1.8	351	255	254	43	77	72	6"		
1	1023	308.035	1.1	~~2.9~~ 2.1	352	256	255	44	78	73	6"		
FE	1027	311.182											
5	1029	311.182	1.3	2.5	353	253	257	43	77	73	7"		
4	1033	314.845	1.4	2.7	352	255	252	43	78	74	8"		
3	1037	318.570	1.2	2.3	354	257	253	42	79	74	7"		
2	1041	322.335	1.3	2.5	355	258	256	44	80	75	7"		
1	1045	326.060	1.2	2.3	354	257	252	45	82	76	7"		
FE	1049	329.562											
5	1051	329.562	1.3	2.5	355	253	254	46	81	77	7"		
4	1055	333.020	1.1	2.1	354	256	258	45	82	77	7"		
3	1059	336.415	1.2	2.3	354	257	255	45	81	78	6"		
2	1103	340.080	1.1	2.1	353	258	253	46	81	77	6"		
1	1107	343.430	1.0	1.9	354	257	255	47	82	78	6"		
Average	1111	346.878											

Comments:

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

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CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-22-2019
RUN NO: 3-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: √/
Silica Gel Expanded, Y/N: N O
Filter Condition after Test: Ok
Check Weight: 500.0 / 1000

AMBIENT TEMPERATURE: 80°F
BAROMETRIC PRESSURE: 30.22
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 119 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #103 SS
NOZZLE DIAMETER: 0.247
FILTER NO/TYPE: # 83- 3527 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: √ POST: √
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	DI H2O	944.8	741.8	203.0
2	DI H2O	728.6	608.8	119.8
3	Empty	655.5	653.9	1.6
4	Silica gel	935.6	920.5	15.1
Total:				339.5

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	%O₂ %	P. static in. H₂O
5	1126	346.800	1.3	2.5	354	251	253	41	75	74	7"		1.38
4	1130	350.410	1.1	~~2.3~~ 2.1	354	252	254	46	77	76	7"		
3	1134	353.825	1.0	1.9	355	253	256	47	78	77	6"		
2	1138	358.010	1.2	2.3	354	252	257	45	79	78	7"		
1	1142	360.775	1.3	2.5	355	253	258	49	80	78	7"		
5	1146	364.146											
5	1148	364.148	1.4	2.7	354	253	256	48	80	78	8"		
4	1152	367.940	1.3	~~2.5~~ 2.6	354	256	255	48	83	79	7"		
3	1156	371.655	1.2	~~2.3~~ 2.3	354	255	253	49	83	79	7"		
2	1200	375.190	1.3	2.5	355	256	~~258~~ 253	49	83	79	7"		
1	1204	378.725	1.3	2.5	353	251	~~252~~ 252	48	84	79	7"		
5	1208	382.406											
5	1210	382.406	1.0	1.9	354	256	~~253~~ 253	45	82	77	6"		
4	1214	385.840	1.1	2.1	353	254	258	47	84	81	7"		
3	1218	389.095	.98	1.9	354	258	252	47	86	82	6"		
2	1222	392.470	1.0	1.9	354	257	253	47	87	81	6"		
1	1226	345.655	.99	1.9	353	252	251	48	87	81	6"		
Average	1230	368.801											

Comments: Factor @ 1123 ~~1.84~~ 1.9
A=PW 3/22/19

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MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

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CLIENT: Desert View Power
LOCATION: Unit 1 Stack Breaching
DATE: 3-22-2019
RUN NO: 3-PM-U1
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓
Silica Gel Expanded, Y/N: _____
Filter Condition after Test: _____
Check Weight: _____

AMBIENT TEMPERATURE: 80°F
BAROMETRIC PRESSURE: 30.22
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 119 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #103 SS
NOZZLE DIAMETER: 0.247
FILTER NO/TYPE: # 83- 3527 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1232	398.801	1.2	2.3	353	257	258	49	84	82	6"		-.38
4	1236	402.335	1.3	2.5	354	258	253	48	86	82	7"		
3	1240	406.040	1.0	1.9	354	253	256	50	86	82	6"		
2	1244	409.265	.97	1.8	355	252	258	50	85	82	6"		
1	1248	412.480	.94	1.7	354	253	257	49	85	82	6"		
E	1252	415.542											
5	1254	415.542	1.0	1.9	353	256	253	49	81	80	6"		
1258/4	~~1258~~	416.755	1.1	2.1	354	254	256	49	84	80	6"		
3	1302	422.050	1.2	2.3	354	258	251	48	84	80	7"		
2	1306	425.355	1.1	2.1	356	253	258	49	85	80	6"		
1	1310	428.910	.99	1.9	355	255	254	50	86	80	6"		
E	1314	432.158											
5	1316	432.158	1.3	2.5	354	256	252	51	87	82	7"		
4	1320	435.770	1.1	2.1	356	258	251	50	84	80	6"		
3	1324	439.130	1.3	2.5	355	252	254	49	84	79	7"		
2	1328	442.645	1.0	1.9	356	258	251	47	85	80	6"		
1	1332	446.005	1.0	2.1	355	257	253	49	85	81	6"		
Average	1336	449.362											

Comments: _____

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Appendix A.1.6
Unit 1 SO_2 Data and Velocity Data

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/19/2019
BAR. PRESSURE: 30.01 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 1 **Ps:** 1.40
Start: 820 **Stop:** 920

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.2	352	5	.90	353	5	1.2	354
4	1.4	353	4	.95	354	4	1.3	354
3	.70	353	3	.96	354	3	1.4	354
2	.94	353	2	.94	354	2	1.4	354
1	1.2	352	1	.85	353	1	1.3	353
5	1.4	353	5	1.2	353	5	1.4	354
4	1.3	353	4	1.4	354	4	1.4	354
3	1.0	353	3	1.3	354	3	1.3	354
2	.64	353	2	1.5	355	2	1.3	355
1	.72	352	1	1.4	354	1	1.2	350

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	305	0.5	1			1		
2	305	0.6	2			2		
3	305	0.6	3			3		

MOISTURE DATA FOR TEST RUNS 1 THROUGH 1

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
820	981.11	1.0	69	67	59	2	#1	H_2O_2	897.3	751.7	
840	992.70	1.0	71	72	50	2	#2	H_2O_2	757.7	734.3	
900	1103.405	1.0	76	75	56	2	#3	Empty	602.1	602.5	
920	1115.720						#4	Silica Gel	966.0	958.6	
							Total				

Pre-Test Leak Check: 0.002 CFM @ 12" in. Hg., Post-Test Leak Check: 0.001 CFM @ 6 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/19/2019
BAR. PRESSURE: 30.01 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 2 **Ps:** +a400
Start: 975 **Stop:** 1035

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.2	363	5	1.1	364	5	1.2	364
4	1.3	363	4	1.2	364	4	1.3	364
3	.80	364	3	1.1	364	3	1.4	365
2	.94	364	2	.95	365	2	1.3	365
1	1.2	364	1	.93	364	1	1.2	365
5	1.1	364	5	1.2	364	5	1.4	365
4	1.0	364	4	1.7	364	4	1.4	364
3	.90	365	3	1.5	364	3	1.5	365
2	.94	365	2	1.4	364	2	1.3	365
1	.80	364	1	1.3	364	1	1.2	364

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	305	0.6	1			1		
2	305	0.6	2			2		
3	305	0.7	3			3		

MOISTURE DATA FOR TEST RUNS 2 THROUGH 2

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
0935	416.001	1.0	80	79	60	2	#1	H_2O_2	749.7	756.8	
0955	428.20	1.0	81	83	54	2	#2	H_2O_2	877.2	745.0	
1015	441.721	1.0	92	87	58	2	#3	Empty	612.9	612.8	
1035	452.999						#4	Silica Gel	916.5	908.9	
							Total				

Pre-Test Leak Check: ≤0.005 CFM @ 10" in. Hg., Post-Test Leak Check: ≤0.001 CFM @ 8 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/19/2019
BAR. PRESSURE: 30.01 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 3	Ps: 4.40							
Start: 1101	Stop: 1201							
Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.2	368	5	1.2	367	5	1.1	368
4	1.4	368	4	1.3	367	4	1.0	368
3	1.5	368	3	1.4	368	3	.90	368
2	1.3	368	2	1.5	368	2	.85	369
1	1.3	369	1	1.1	368	1	.84	369
5	1.3	368	5	1.2	368	5	1.2	368
4	1.4	368	4	1.2	369	4	1.0	368
3	1.4	369	3	1.0	369	3	.98	368
2	1.3	368	2	.90	369	2	.94	369
1	1.3	367	1	.82	369	1	.86	368
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	304	0.7	1			1		
2	304	0.7	2			2		
3	307	0.7	3			3		

MOISTURE DATA FOR TEST RUNS 3 THROUGH 3

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data 1153/19/19				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1101	455.131	1.0	90	89	61	2	#1	H_2O_2	849.1	842.1	
1121	467.281	1.0	94	90	63	2	#2	H_2O_2	859.0	853.5	
1149	479.500	1.0	97	92	57	2	#3	Empty	599.4	598.7	
1201 ~~1209~~	487.319						#4	Silica Gel	973.7	966.0	
							Total		50 ml		

Pre-Test Leak Check 0.011 CFM @ 10" in. Hg., Post-Test Leak Check 0.002 CFM @ 10" in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/19/2019
BAR. PRESSURE: 30.0 / | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 4 **Ps:** +.40
Start: _____ **Stop:** _____

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.1	369	5	1.1	369	5	1.3	368
4	1.3	370	4	1.2	369	4	1.4	369
3	.82	370	3	.95	369	3	1.5	370
2	.69	370	2	.90	370	2	1.2	370
1	.82	368	1	.85	368	1	1.1	368
5	1.3	369	5	1.2	368	5	1.3	368
4	1.2	369	4	1.3	368	4	1.4	369
3	.93	370	3	1.2	369	3	1.4	369
2	.91	370	2	1.1	369	2	1.3	369
1	.84	369	1	.97	369	1	1.2	368
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	306	0.8	1			1		
2	307	0.8	2			2		
3	307	0.8	3			3		

MOISTURE DATA FOR TEST RUNS 4 THROUGH 4

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1217	489.221	1.0	96	94	61	3	#1	H_2O_2	896.7	735.6	
1237	502.315	1.0	98	96	54	3	#2	H_2O_2	739.0	724.6	
1257	514.624	1.0	99	96	57	3	#3	Empty	615.1	613.6	
1317	528.634						#4	Silica Gel	927.4	916.5	
							Total				

Pre-Test Leak Check ≤0.005 CFM @ 10 / in. Hg., Post-Test Leak Check ≤0.002 CFM @ 10 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 1-SG	Ps: 4.41							
Start: 0936	Stop: 1006							
Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.4	331	5	1.3	332	5	1.3	334
4	1.3	333	4	1.1	334	4	1.2	335
3	1.2	334	3	.85	335	3	.93	335
2	1.2	335	2	.80	335	2	.64	334
1	1.0	333	1	.75	334	1	.69	332
5	1.2	331	5	.85	334	5	1.3	331
4	1.1	331	4	.83	336	4	.94	332
3	1.1	333	3	.82	335	3	.97	333
2	1.2	332	2	.89	334	2	1.1	332
1	1.3	331	1	.94	333	1	1.0	331
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	309	00.5	1			1		
2	307	00.6	2			2		
3	306	00.5	3			3		

MOISTURE DATA FOR TEST RUNS 1 THROUGH 1

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
0936	585.000	2.5	73	72	55	9	#1	H_2O_2	842.5	830.4	
0946	593.255	2.5	75	74	50	9	#2	H_2O_2	748.3	730.5	
0956	601.970	2.5	77	75	51	9	#3	Empty	637.4	635.9	
1006	610.864						#4	Silica Gel	921.4	911.9	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: ~~3.2~~ | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: ~~3-SQA~~ 3/20/19 2-SQA Ps: 1.41
Start: 1035 Stop: 1105

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.5	340	5	1.3	341	5	1.3	341
4	1.4	341	4	1.0	344	4	1.0	344
3	1.1	342	3	.89	344	3	.95	345
2	1.1	342	2	.83	343	2	.96	344
1	1.0	340	1	.72	342	1	.84	343
5	1.3	336	5	.86	342	5	1.2	342
4	1.1	341	4	.84	344	4	.91	345
3	1.0	343	3	.81	345	3	.94	345
2	1.2	344	2	.90	344	2	1.2	344
1	1.2	342	1	.95	343	1	.98	343

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	302	32.4	1			1		
2	304	07.5	2			2		
3	303	00.6	3			3		

MOISTURE DATA FOR TEST RUNS 2 THROUGH 2

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1035	623.500	2.5	79	77	51	9"	#1	H_2O_2	834.4	693.0	
1045	632.250	2.5	82	80	50	6"	#2	H_2O_2	731.3	728.1	
1055	641.260	2.5	81	79	48	6"	#3	Empty	636.0	636.9	
1105	650.083						#4	Silica Gel	930.5	921.4	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 3506	Ps: 24.11		
Start: 1120	Stop: 1150		

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.2	347	5	.89	347	5	1.3	347
4	.91	348	4	.84	347	4	1.0	348
3	.94	349	3	.82	349	3	1.1	349
2	1.0	349	2	.91	349	2	1.1	348
1	1.1	348	1	.96	347	1	1.2	347
5	1.4	346	5	1.2	346	5	1.4	347
4	1.1	348	4	1.0	347	4	1.2	348
3	.96	349	3	.87	348	3	1.3	349
2	.62	348	2	.81	349	2	1.1	348
1	.65	347	1	.74	347	1	1.0	346

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	306	00.5	1			1		
2	304	00.4	2			2		
3	305	00.5	3			3		

MOISTURE DATA FOR TEST RUNS 1 **THROUGH** 3

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1120	651.500	2.5	77	76	49	9"	#1	H_2O_2	848.9	704.9	
1130	660.645	2.5	81	79	47	9"	#2	H_2O_2	766.5	761.9	
1140	669.655	2.5	87	84	49	9"	#3	Empty	684.9	684.5	
1150	678.593						#4	Silica Gel	990.4	983.9	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 32.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: √ | LEVEL: √ | LEAK CHECK PRE- √ | POST- √

Run #: 4-Sor	Ps: 1.41							
Start: 1205	Stop: 1235							
Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.5	349	5	1.4	347	5	1.3	348
4	1.3	350	4	1.1	348	4	1.1	349
3	1.1	351	3	1.0	349	3	.91	350
2	1.0	350	2	.82	350	2	.63	351
1	.98	348	1	.77	347	1	.64	350
5	1.3	347	5	.91	347	5	1.0	346
4	1.0	349	4	.85	348	4	.92	348
3	1.1	350	3	.81	347	3	.95	349
2	1.2	351	2	.88	349	2	1.2	347
1	1.2	350	1	.92	347	1	1.0	346
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	307	00.6	1			1		
2	306	00.5	2			2		
3	303	00.4	3			3		

MOISTURE DATA FOR TEST RUNS 4 THROUGH 1

METER ID: 1-P&M | METER Yd: 0.992 | BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1205	680.500	1.5	85	82	53	9	#1	H_2O_2	852.5	837.5	
1215	689.620	1.5	87	83	50	9	#2	H_2O_2	777.7	776.8	
1225	698.725	1.5	89	87	51	9	#3	Empty	636.1	635.1	
1235	707.762						#4	Silica Gel	939.4	930.5	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 5-SOL Ps: 1.41								
Start: 1248 Stop: 1318								
Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.4	350	5	1.3	349	5	1.4	350
4	1.2	351	4	1.2	350	4	1.1	351
3	1.3	352	3	.87	351	3	.94	352
2	1.1	352	2	.79	352	2	.60	352
1	1.0	351	1	.76	352	1	.65	350
5	1.3	350	5	.86	347	5	1.2	351
4	1.1	351	4	.84	348	4	.90	352
3	1.2	352	3	.83	349	3	.91	352
2	1.3	352	2	.92	350	2	1.2	353
1	1.1	350	1	.95	351	1	.97	351
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	304	05.5	1			1		
2	305	07.5	2			2		
3	309	07.6	3			3		

MOISTURE DATA FOR TEST RUNS 5 THROUGH 5

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1248	709.500	2.5	86	85	53	9"	#1	H_2O_2	839.3	693.5	
1258	718.055	2.5	85	84	47	9"	#2	H_2O_2	742.8	738.9	
1308	726.445	2.5	86	84	46	9"	#3	Empty	600.2	599.6	
1318	735.648						#4	Silica Gel	996.3	990.4	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ~ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 6-80₂ **Ps:** 1.41
Start: 1332 **Stop:** 1402

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.3	348	5	.88	347	5	1.2	349
4	.95	349	4	.85	349	4	1.0	350
3	.92	350	3	.80	351	3	1.1	351
2	1.0	351	2	.94	351	2	1.3	351
1	1.1	350	1	.91	350	1	1.0	350
5	1.3	347	5	1.3	350	5	1.3	347
4	1.2	348	4	1.1	351	4	1.2	348
3	.84	349	3	.88	352	3	1.2	348
2	.62	349	2	.81	351	2	1.0	349
1	.67	350	1	.77	349	1	1.1	347

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	301	00.7	1			1		
2	306	00.5	2			2		
3			3			3		

MOISTURE DATA FOR TEST RUNS 6 **THROUGH** 6

METER ID: 1-P&M | METER Yd: 0.992 | BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1332	738.010	2.5	86	85	52	9"	#1	H_2O_2	830.5	698.1	
1342	746.845	2.5	88	87	50	9"	#2	H_2O_2	718.1	714.9	
1352	755.580	2.5	90	86	53	9"	#3	Empty	636.4	635.6	
1402	764.358						#4	Silica Gel	947.3	939.4	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: V | LEVEL: V | LEAK CHECK PRE- N | POST- V

Run #: 7-502	Ps: 1.41				
Start: 1416	Stop: 1446				

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.5	347	5	1.4	347	5	1.3	348
4	1.3	348	4	1.0	348	4	1.2	350
3	1.2	349	3	.87	350	3	.90	351
2	1.1	350	2	.80	351	2	.65	351
1	1.0	350	1	.73	350	1	.66	350
5	1.3	351	5	.84	347	5	1.0	347
4	1.0	350	4	.85	348	4	.92	348
3	1.1	351	3	.81	349	3	.97	349
2	1.2	350	2	.90	348	2	1.0	348
1	1.2	348	1	.94	350	1	.98	348

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	310	00.5	1			1		
2	308	00.7	2			2		
3	306	00.4	3			3		

MOISTURE DATA FOR TEST RUNS 7 THROUGH 7

METER ID: 1-P&M | METER Yd: 0.992 | BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1416	766.000	2.5	85	84	51	9"	#1	H_2O_2	823.5	696.6	
1426	775.875	2.5	90	87	50	9"	#2	H_2O_2	743.9	740.5	
1436	784.625	2.5	92	89	54	9"	#3	Empty	599.5	599.2	
1446	793.842						#4	Silica Gel	1001.8	996.3	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power
LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman
TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02
TC READOUT ID: #42
DP INDICATOR ID: CC-2
TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer
PITOT TUBE ID: #058
Cp: 0.84
ZERO: ✓ LEVEL: ✓
LEAK CHECK PRE- ✓ POST- ✓

Run #: 8-502 Ps: F41
Start: 1500 Stop: 1530

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.2	346	5	.87	346	5	1.3	348
4	.91	347	4	.82	347	4	1.0	349
3	.94	348	3	.80	347	3	1.1	347
2	1.1	348	2	.90	347	2	1.1	348
1	1.0	347	1	.93	348	1	1.2	348
5	1.3	345	5	1.3	346	5	1.3	347
4	1.1	348	4	1.0	347	4	1.4	348
3	.96	348	3	.86	346	3	1.0	347
2	.63	347	2	.81	346	2	1.1	348
1	.66	348	1	.77	345	1	.98	346
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	307	00.6	1			1		
2	308	00.5	2			2		
3	306	00.4	3			3		

MOISTURE DATA FOR TEST RUNS 8 THROUGH 8

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1500	796.200	2.5	89	88	53	9"	#1	H_2O_2	846.0	730.4	
1510	805.450	2.5	90	88	50	9"	#2	H_2O_2	740.0	716.0	
1520	814.120	2.5	91	89	52	9"	#3	Empty	637.8	635.7	
1530	823.366						#4	Silica Gel	953.5	947.3	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

MONTROSE AIR QUALITY SERVICES

Date of last revision 2/10/2017

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FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 9-50K	Ps: +.41							
Start: 1544	Stop: 1614							
Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.5	346	5	1.3	348	5	1.4	348
4	1.7	349	4	1.0	349	4	1.1	349
3	1.1	349	3	.87	350	3	.90	350
2	1.2	350	2	.82	351	2	.62	351
1	1.0	349	1	.77	350	1	.63	350
5	1.2	348	5	.86	351	5	1.2	348
4	1.0	349	4	.83	350	4	.91	350
3	1.1	348	3	.81	351	3	.96	351
2	1.0	347	2	.88	350	2	1.0	351
1	1.2	346	1	.95	348	1	1.1	350
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	308	00.6	1			1		
2	309	00.5	2			2		
3	306	00.5	3			3		

MOISTURE DATA FOR TEST RUNS 9 THROUGH 9

METER ID: 1-P&M | METER Yd: 0.992 | BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1544	826.300	2.5	87	84	52	9"	#1	H_2O_2	836.6	695.5	
1554	835.105	2.5	88	86	48	9"	#2	H_2O_2	752.6	599.2	
1604	843.810	2.5	84	82	51	9"	#3	Empty	600.3	599.7	
1614	852.577						#4	Silica Gel	1007.1	1001.8	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 1
PERFORMED BY: Patrick Whitman | TEST DATE: 3/20/2019
BAR. PRESSURE: 30.02 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: √ LEVEL: √ | LEAK CHECK PRE- √ POST- √

Run #: 10-SDL **Ps:** 441
Start: 1638 **Stop:** 1708

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.2	351	5	.84	349	5	1.3	350
4	.90	350	4	.82	350	4	1.0	351
3	.95	350	3	.80	351	3	1.1	351
2	1.0	351	2	.90	350	2	1.2	350
1	.97	350	1	.95	351	1	1.3	349
5	1.4	351	5	1.3	350	5	1.5	350
4	1.1	350	4	1.0	351	4	1.2	351
3	.90	351	3	.85	350	3	1.0	350
2	.61	351	2	.82	351	2	1.1	351
1	.63	350	1	.74	350	1	1.1	348

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	311	00.6	1			1		
2	308	00.5	2			2		
3	306	00.4	3			3		

MOISTURE DATA FOR TEST RUNS 10 **THROUGH** 12

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1638	855.000	2.5	77	76	52	9"	#1	H_2O_2	850.2	700.5	
1649	863.735	2.5	75	74	49	9"	#2	H_2O_2	720.3	718.5	
1658	872.355	2.5	75	73	52	9"	#3	Empty	636.0	635.5	
1708	880.944						#4	Silica Gel	958.7	953.5	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.005 CFM @ 18 in. Hg., Post-Test Leak Check: 0.005 CFM @ 18 in. Hg

Appendix A.1.7
Unit 1 Hydrocarbon Data

SCAQMD METHOD 25.3
EVACUATED CANISTER SAMPLING DATA

Client/Facility: Desert View Power Date: 3/19/2019

Unit/Location: Unit 1 Stack Breaching Performed By: Patrick Whitman

Probe Material SS Probe Length 36"

Connecting Tubing Material Teflon Connecting Tubing Length 12"

Barometric Pressure _____ Ambient Temperature _____

Test No.		1A-VOC-U1		1B-VOC-U1			
Vial ID		M35		M36			
Canister ID		#156		#136			
		Time	Vacuum	Time	Vacuum	Time	Vacuum
Pre-Test Leak Check	Start	0705	29	0705	30		
Pre-Test Leak Check	Stop	0715	29	0715	30		
Sample Collection	Start	0725	30	0725	30		
		0735	25	0735	26		
		0742	21	0742	21		
		0832	21	0832	21		
		0842	17	0842	17		
		0852	14	0852	14		
		0902	11	0902	11		
Sample Collection	Stop	0907	10	0907	10		
Post -Test Leak Check	Start	0910	10	0910	10		
Post-Test Leak Check	Stop	0920	10	0920	10		
Line Rinse Volume							

Comments: _____

Appendix A.1.8
Unit 1 Plant Data

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 9:37	69.3	94.84	46.36	18.36	25.13	17.09	1.82	13.69	4.07	12.75	7.82	5603	2.49	0.74
3/20/2019 9:38	65.71	91.75	42.57	19.72	27.53	17.78	1.76	13.96	3.94	12.47	8.08	5427	2.46	0.69
3/20/2019 9:39	57.36	81.75	36.26	18.16	25.88	15.97	1.73	14.25	3.85	12.21	8.34	5295	2.47	0.67
3/20/2019 9:40	43.88	63.45	27.38	16.31	23.58	14.16	1.73	14.46	3.8	12.04	8.52	5227	2.50	0.66
3/20/2019 9:41	37.14	54.05	23.05	14.92	21.71	12.88	1.78	14.55	3.78	11.98	8.6	5199	2.59	0.67
3/20/2019 9:42	34.23	48.86	21.77	14.27	20.37	12.62	1.87	14.27	3.87	12.23	8.36	5326	2.67	0.72
3/20/2019 9:43	38.34	54.51	24.31	16.01	22.76	14.12	1.8	14.22	3.86	12.27	8.31	5311	2.56	0.69
3/20/2019 9:44	51.35	69.48	34.34	18.34	24.81	17.07	1.88	13.53	4.07	12.9	7.67	5602	2.54	0.77
3/20/2019 9:45	53.13	73.72	34.26	19.76	27.42	17.73	1.9	13.88	3.92	12.55	8	5401	2.64	0.75
3/20/2019 9:46	42.9	61.98	26.43	16.73	24.17	14.34	1.71	14.45	3.75	12.05	8.51	5160	2.47	0.64
3/20/2019 9:47	48	66.76	30.86	17.08	23.76	15.28	1.84	13.91	3.91	12.56	8.03	5385	2.56	0.72
3/20/2019 9:48	40.01	59.68	24.32	15.85	23.64	13.4	1.73	14.92	3.7	11.65	8.9	5091	2.58	0.64
3/20/2019 9:49	32.68	47.48	20.39	13.44	19.53	11.67	1.73	14.53	3.8	12.08	8.58	5227	2.51	0.66
3/20/2019 9:50	31.79	45.45	20.35	14.17	20.26	12.62	1.83	14.3	3.9	12.22	8.38	5362	2.62	0.71
3/20/2019 9:51	41.43	57.05	27.31	16.35	22.51	15	1.82	13.77	4.01	12.7	7.9	5522	2.51	0.73
3/20/2019 9:52	47.71	65.69	30.92	16.46	22.66	14.84	1.82	13.77	3.95	12.69	7.9	5429	2.51	0.72
3/20/2019 9:53	63.37	81.61	44.46	21.09	27.16	20.59	1.77	12.88	4.27	13.58	7	5877	2.28	0.76
3/20/2019 9:54	71.13	97.42	44.84	24.9	34.1	21.84	1.78	13.7	3.84	12.71	7.83	5280	2.44	0.68
3/20/2019 9:55	55.84	78.58	33.95	20.1	28.29	17	1.75	14.07	3.7	12.43	8.18	5092	2.46	0.65
3/20/2019 9:56	43.69	63.12	26.04	19.22	27.77	15.94	1.76	14.45	3.63	12.05	8.51	4992	2.54	0.64
3/20/2019 9:57	22.32	33.57	13.07	14.77	22.22	12.03	1.72	15.04	3.56	11.61	9	4903	2.59	0.61
3/20/2019 9:58	19.27	29.48	11.4	13.34	20.41	10.98	1.6	15.3	3.6	11.45	9.2	4955	2.45	0.58
3/20/2019 9:59	18.73	28.53	11.38	13.76	20.96	11.63	1.77	15.23	3.7	11.48	9.15	5088	2.70	0.65
3/20/2019 10:00	24.33	35.79	15.22	14.83	21.81	12.91	1.62	14.71	3.81	11.93	8.73	5241	2.38	0.62
3/20/2019 10:01	34.39	49.36	22.15	18.11	26	16.23	1.55	14.35	3.92	12.17	8.43	5395	2.22	0.61
3/20/2019 10:02	33.1	47.9	21.35	17.5	25.32	15.7	1.47	14.47	3.93	12.06	8.53	5402	2.13	0.58
3/20/2019 10:03	25.14	38.36	15.1	15.09	23.03	12.61	1.41	15.26	3.66	11.51	9.17	5031	2.15	0.52
3/20/2019 10:04	31.47	45.36	20.32	18.17	26.19	16.32	1.35	14.41	3.93	12.12	8.48	5408	1.95	0.53
3/20/2019 10:05	27.41	41.2	16.95	17.16	25.79	14.76	1.45	15.03	3.76	11.64	8.99	5179	2.18	0.55
3/20/2019 10:06	23.64	35.8	14.7	15.7	23.78	13.59	1.31	15.14	3.79	11.6	9.08	5210	1.98	0.50
Average	**40.96**	**58.09**	**26.06**	**16.99**	**24.29**	**14.96**	**1.70**			**12.19**	**8.41**	**5287.33**	**2.44**	**0.65**

Flow	kdscfh	5287.33
O2	% dry	8.41
CO2	% dry	12.19
NOx	ppm dry	40.96
NOx	ppm @ 3% O2	58.09
NOx	lb/hr	26.06
SO2	ppm dry	16.99
SO2	ppm @ 3% O2	24.29
SO2	lb/hr	14.96
CO	ppm dry	1.70
CO	ppm @ 3% O2	2.44
CO	lb/hr	0.65

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 10:36	43.93	60.4	28.88	12.05	16.57	11.02	0.37	13.75	4	12.7	7.88	5506	0.51	0.15
3/20/2019 10:37	46.38	63.67	30.16	11.54	15.84	10.44	0.56	13.73	3.96	12.73	7.86	5447	0.77	0.22
3/20/2019 10:38	45.93	64.08	29.22	11.93	16.64	10.56	0.46	13.95	3.87	12.51	8.07	5328	0.64	0.18
3/20/2019 10:39	51.6	68.22	35.1	12.94	17.11	12.25	0.59	13.22	4.14	13.23	7.36	5698	0.78	0.24
3/20/2019 10:40	57.55	76.48	38.46	14.22	18.9	13.22	0.54	13.29	4.07	13.12	7.43	5598	0.72	0.22
3/20/2019 10:41	51.04	67.93	33.2	13.43	17.87	12.15	0.5	13.31	3.96	13.17	7.45	5448	0.67	0.20
3/20/2019 10:42	69.13	89.67	46.75	17.23	22.35	16.21	0.55	12.97	4.12	13.42	7.1	5665	0.71	0.23
3/20/2019 10:43	60.79	79.6	40.13	15.29	20.02	14.04	0.51	13.09	4.02	13.29	7.23	5530	0.67	0.20
3/20/2019 10:44	38.25	56.54	23.13	11.04	16.32	9.29	0.59	14.78	3.68	11.71	8.79	5066	0.87	0.22
3/20/2019 10:45	10.45	19.94	5.48	4.85	9.26	3.54	0.27	19.08	3.19	9.21	11.52	4391	0.52	0.09
3/20/2019 10:46	8.64	16.04	5.51	2.7	5.01	2.07	0.34	18.57	3.35	9.51	11.26	4613	0.63	0.11
3/20/2019 10:47	9.56	15.17	6.24	2.32	3.68	2.01	0.65	15.87	3.8	11.07	9.62	5226	1.03	0.25
3/20/2019 10:48	9.5	14.93	6.29	2.21	3.47	1.93	0.72	15.72	3.83	11.1	9.51	5268	1.13	0.28
3/20/2019 10:49	10	15.93	6.23	1.3	2.07	1.13	0.46	15.93	3.79	11	9.66	5221	0.73	0.17
3/20/2019 10:50	10.25	16.38	6.43	0.58	0.93	0.51	0.45	15.98	3.82	10.99	9.7	5254	0.72	0.17
3/20/2019 10:51	14.75	21.19	10.07	0.26	0.37	0.25	0.55	14.37	4.15	12.2	8.44	5717	0.79	0.23
3/20/2019 10:52	25.68	35.09	17.97	0.6	0.82	0.58	0.53	13.66	4.26	12.77	7.8	5862	0.72	0.23
3/20/2019 10:53	32.7	44.89	22.19	1.84	2.53	1.74	0.59	13.73	4.13	12.7	7.86	5683	0.81	0.24
3/20/2019 10:54	38.58	52.96	26.12	3.94	5.41	3.71	0.59	13.73	4.12	12.65	7.86	5670	0.81	0.24
3/20/2019 10:55	25.62	38.28	15.62	4.1	6.13	3.48	0.49	14.94	3.71	11.68	8.92	5108	0.73	0.18
3/20/2019 10:56	20.08	30.91	12.13	2.87	4.42	2.41	0.43	15.39	3.68	11.33	9.27	5058	0.66	0.16
3/20/2019 10:57	17.43	26.2	10.78	1.95	2.93	1.68	0.33	15.03	3.76	11.63	8.99	5180	0.50	0.12
3/20/2019 10:58	29.52	41.64	19.37	2.33	3.29	2.13	0.46	14.11	3.99	12.37	8.21	5495	0.65	0.18
3/20/2019 10:59	27.3	41.66	16.82	3.1	4.73	2.66	0.45	15.26	3.75	11.38	9.17	5161	0.69	0.17
3/20/2019 11:00	26.38	39.38	16.16	2.63	3.93	2.24	0.28	14.93	3.73	11.74	8.91	5132	0.42	0.10
3/20/2019 11:01	32.54	48.46	20.04	3.26	4.85	2.79	0.32	14.89	3.75	11.67	8.88	5158	0.48	0.12
3/20/2019 11:02	32.96	47.5	20.8	3.52	5.07	3.09	0.38	14.41	3.84	12.14	8.48	5286	0.55	0.15
3/20/2019 11:03	35.24	50.26	22.36	3.79	5.41	3.35	0.37	14.26	3.86	12.25	8.35	5315	0.53	0.14
3/20/2019 11:04	42.64	58.98	27.68	4.15	5.74	3.75	0.49	13.83	3.95	12.6	7.96	5437	0.68	0.19
3/20/2019 11:05	42.41	59.03	27.34	4.41	6.14	3.95	0.51	13.92	3.92	12.5	8.04	5399	0.71	0.20
Average	**32.23**	**45.38**	**20.89**	**5.88**	**8.26**	**5.27**	**0.48**			**12.01**	**8.59**	**5330.67**	**0.69**	**0.19**

Flow	kdscfh	5330.67
O2	% dry	8.59
CO2	% dry	12.01
NOx	ppm dry	32.23
NOx	ppm @ 3% O2	45.38
NOx	lb/hr	20.89
SO2	ppm dry	5.88
SO2	ppm @ 3% O2	8.26
SO2	lb/hr	5.27
CO	ppm dry	0.48
CO	ppm @ 3% O2	0.69
CO	lb/hr	0.19

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 11:21	55.86	78.24	33.71	6.74	9.44	5.66	0.61	14.01	3.67	12.45	8.12	5055	0.85	0.22
3/20/2019 11:22	60.97	81.87	39.22	8.67	11.64	7.76	0.6	13.43	3.92	12.96	7.57	5388	0.81	0.23
3/20/2019 11:23	52.65	72.44	32.48	8.71	11.98	7.48	0.6	13.76	3.76	12.66	7.89	5168	0.83	0.23
3/20/2019 11:24	60.08	80.98	38.62	8.72	11.75	7.8	0.8	13.48	3.91	12.87	7.62	5384	1.08	0.31
3/20/2019 11:25	47.21	67.44	27.71	8.13	11.61	6.64	0.61	14.29	3.57	12.23	8.37	4916	0.87	0.22
3/20/2019 11:26	64.02	84.51	42.03	10.51	13.87	9.6	0.8	13.2	4	13.16	7.34	5499	1.06	0.32
3/20/2019 11:27	61.52	81.81	38.96	11.14	14.81	9.81	0.66	13.3	3.85	13.11	7.44	5304	0.88	0.25
3/20/2019 11:28	67.53	90.75	42.32	12.87	17.3	11.22	0.66	13.44	3.81	12.89	7.58	5249	0.89	0.25
3/20/2019 11:29	44.41	62.64	26.38	10.03	14.15	8.29	0.66	14.11	3.62	12.32	8.21	4975	0.93	0.24
3/20/2019 11:30	46.29	63.2	28.93	10.55	14.4	9.17	0.67	13.65	3.8	12.71	7.79	5234	0.91	0.25
3/20/2019 11:31	40.43	56.58	24.45	10.62	14.86	8.93	0.71	14	3.68	12.43	8.11	5065	0.99	0.26
3/20/2019 11:32	35.17	51.27	20.58	10.12	14.75	8.24	0.66	14.58	3.56	11.94	8.62	4902	0.96	0.24
3/20/2019 11:33	26.76	39.23	15.55	9.26	13.58	7.49	0.52	14.66	3.54	11.87	8.69	4868	0.76	0.18
3/20/2019 11:34	36.86	51.55	22.81	11.6	16.22	9.99	0.73	13.98	3.77	12.42	8.1	5183	1.02	0.27
3/20/2019 11:35	34.98	49.77	21.22	11.85	16.86	10	0.55	14.23	3.69	12.23	8.32	5081	0.78	0.20
3/20/2019 11:36	32.83	47.89	19.46	11.48	16.75	9.47	0.63	14.59	3.61	11.92	8.63	4965	0.92	0.23
3/20/2019 11:37	34.68	48.76	21.26	12.28	17.27	10.48	0.66	14.06	3.73	12.39	8.17	5136	0.93	0.25
3/20/2019 11:38	51.54	69.73	32.9	15.42	20.86	13.7	0.78	13.53	3.89	12.87	7.67	5347	1.06	0.30
3/20/2019 11:39	50.93	70.78	31.04	15.06	20.93	12.77	0.64	13.9	3.71	12.54	8.02	5105	0.89	0.24
3/20/2019 11:40	48.51	67.36	29.71	13.96	19.39	11.9	0.61	13.89	3.73	12.52	8.01	5130	0.85	0.23
3/20/2019 11:41	36.83	53.69	21.97	10.99	16.02	9.12	0.61	14.58	3.63	11.91	8.62	4996	0.89	0.22
3/20/2019 11:42	24.13	36.48	13.88	8.59	12.99	6.87	0.66	15.12	3.5	11.54	9.06	4818	1.00	0.23
3/20/2019 11:43	27.15	39.48	16.22	8.01	11.65	6.66	0.65	14.54	3.64	11.97	8.59	5003	0.95	0.24
3/20/2019 11:44	35.41	50.46	21.29	9.47	13.5	7.92	0.68	14.25	3.66	12.23	8.34	5036	0.97	0.25
3/20/2019 11:45	51.11	70.43	31.7	12.83	17.68	11.07	0.63	13.78	3.78	12.64	7.91	5195	0.87	0.24
3/20/2019 11:46	49.16	70.4	29.22	12.99	18.6	10.74	0.49	14.32	3.62	12.12	8.4	4979	0.70	0.18
3/20/2019 11:47	40.5	57.81	24.02	11.33	16.17	9.35	0.63	14.27	3.61	12.22	8.36	4968	0.90	0.23
3/20/2019 11:48	42.98	61.3	25.48	12.48	17.8	10.29	0.74	14.26	3.61	12.17	8.35	4965	1.06	0.27
3/20/2019 11:49	40.69	57.53	24.51	11.41	16.13	9.56	0.64	14.14	3.67	12.32	8.24	5046	0.90	0.23
3/20/2019 11:50	36.97	53.03	21.81	10.59	15.19	8.69	0.57	14.34	3.59	12.16	8.42	4942	0.82	0.20
Average	**44.61**	**62.25**	**27.31**	**10.88**	**15.27**	**9.22**	**0.65**			**12.39**	**8.15**	**5096.73**	**0.91**	**0.24**

Flow	kdscfh	5096.73
O2	% dry	8.15
CO2	% dry	12.39
NOx	ppm dry	44.61
NOx	ppm @ 3% O2	62.25
NOx	lb/hr	27.31
SO2	ppm dry	10.88
SO2	ppm @ 3% O2	15.27
SO2	lb/hr	9.22
CO	ppm dry	0.65
CO	ppm @ 3% O2	0.91
CO	lb/hr	0.24

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Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 12:06	25.25	37.89	14.75	8.34	12.51	6.78	0.29	15	3.56	11.63	8.97	4894	0.44	0.10
3/20/2019 12:07	35.84	50.32	22.55	9.86	13.84	8.63	0.36	14.04	3.83	12.41	8.15	5269	0.51	0.14
3/20/2019 12:08	41.81	57.39	26.98	11.19	15.36	10.05	0.3	13.73	3.93	12.66	7.86	5406	0.41	0.12
3/20/2019 12:09	43.69	60.48	27.59	11.93	16.52	10.48	0.21	13.84	3.84	12.64	7.97	5289	0.29	0.08
3/20/2019 12:10	59.66	81.71	38.52	15.63	21.41	14.04	0.04	13.7	3.93	12.67	7.83	5408	0.05	0.02
3/20/2019 12:11	38.48	57.93	22.6	11.69	17.6	9.55	0.02	15.05	3.57	11.56	9.01	4919	0.03	0.01
3/20/2019 12:12	24.49	36.78	14.7	8.79	13.2	7.34	0.02	15.02	3.65	11.65	8.98	5027	0.03	0.01
3/20/2019 12:13	23.76	34.61	14.61	7.8	11.36	6.68	0	14.56	3.74	12.02	8.61	5152	0.00	0.00
3/20/2019 12:14	37.14	52.93	23.62	8.62	12.28	7.63	0	14.25	3.87	12.24	8.34	5327	0.00	0.00
3/20/2019 12:15	42.86	59.89	27.01	8.26	11.54	7.24	0	13.97	3.84	12.52	8.09	5278	0.00	0.00
3/20/2019 12:16	62.98	84.32	42.82	13.01	17.42	12.31	0	13.39	4.14	13.01	7.53	5695	0.00	0.00
3/20/2019 12:17	60.8	80.74	40.06	16	21.25	14.67	0	13.28	4.01	13.2	7.42	5519	0.00	0.00
3/20/2019 12:18	72.23	93.69	48.95	21.8	28.28	20.56	0	12.97	4.13	13.4	7.1	5677	0.00	0.00
3/20/2019 12:19	66.62	88.66	43.65	18.8	25.02	17.14	0	13.31	3.99	13.11	7.45	5488	0.00	0.00
3/20/2019 12:20	47.71	67.78	28.8	14.96	21.25	12.57	0	14.21	3.67	12.26	8.3	5057	0.00	0.00
3/20/2019 12:21	31.72	48.24	18.33	11.94	18.16	9.6	0	15.21	3.52	11.45	9.13	4840	0.00	0.00
3/20/2019 12:22	18.04	27.62	10.56	8.91	13.64	7.26	0	15.31	3.56	11.41	9.21	4904	0.00	0.00
3/20/2019 12:23	18.71	29.25	11.09	8.76	13.69	7.22	0	15.63	3.61	11.14	9.45	4963	0.00	0.00
3/20/2019 12:24	19.47	30.49	11.45	8.16	12.78	6.67	0	15.66	3.58	11.24	9.47	4924	0.00	0.00
3/20/2019 12:25	21.71	33.13	13.3	10.1	15.41	8.61	0	15.26	3.73	11.43	9.17	5130	0.00	0.00
3/20/2019 12:26	19.78	29.46	12.28	9.18	13.67	7.93	0	14.89	3.78	11.77	8.88	5202	0.00	0.00
3/20/2019 12:27	38.51	54.36	25.34	14.41	20.34	13.19	0	14.12	4.01	12.34	8.22	5512	0.00	0.00
3/20/2019 12:28	44.59	65.05	28.1	16.3	23.78	14.29	0	14.59	3.84	11.93	8.63	5278	0.00	0.00
3/20/2019 12:29	38.37	56.62	23.96	14.9	21.99	12.95	0	14.76	3.8	11.87	8.77	5231	0.00	0.00
3/20/2019 12:30	48.05	67.83	31.26	18.75	26.47	16.97	0	14.12	3.96	12.4	8.22	5450	0.00	0.00
3/20/2019 12:31	54.68	76.05	35.75	22.83	31.75	20.77	0	13.91	3.98	12.56	8.03	5476	0.00	0.00
3/20/2019 12:32	65.04	87.47	44.39	29.49	39.66	28	0	13.45	4.15	12.95	7.59	5717	0.00	0.00
3/20/2019 12:33	57.87	81.56	36.88	25.23	35.56	22.37	0	14.09	3.88	12.34	8.2	5338	0.00	0.00
3/20/2019 12:34	47.36	69.09	29.47	19.84	28.94	17.18	0	14.59	3.79	11.93	8.63	5212	0.00	0.00
3/20/2019 12:35	29.16	44.35	17.73	14.47	22.01	12.24	0	15.21	3.7	11.46	9.13	5094	0.00	0.00
Average	**41.21**	**58.19**	**26.24**	**14.00**	**19.89**	**12.36**	**0.04**			**12.17**	**8.41**	**5255.87**	**0.06**	**0.02**

Flow	kdscfh	5255.87
O2	% dry	8.41
CO2	% dry	12.17
NOx	ppm dry	41.21
NOx	ppm @ 3% O2	58.19
NOx	lb/hr	26.24
SO2	ppm dry	14.00
SO2	ppm @ 3% O2	19.89
SO2	lb/hr	12.36
CO	ppm dry	0.04
CO	ppm @ 3% O2	0.06
CO	lb/hr	0.02

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 12:49	32.17	45.34	19.74	4.72	6.65	4.03	0	14.09	3.74	12.34	8.2	5140	0.00	0.00
3/20/2019 12:50	30.68	42.77	19.45	4.69	6.54	4.14	0	13.94	3.86	12.46	8.06	5310	0.00	0.00
3/20/2019 12:51	21.17	30.98	12.61	4.07	5.96	3.37	0	14.64	3.63	11.9	8.67	4989	0.00	0.00
3/20/2019 12:52	28.12	38.42	18.04	3.29	4.50	2.94	0	13.66	3.91	12.75	7.8	5374	0.00	0.00
3/20/2019 12:53	35.49	50.18	22.05	3.9	5.51	3.37	0	14.14	3.78	12.25	8.24	5203	0.00	0.00
3/20/2019 12:54	24.54	36.94	14.21	3.46	5.21	2.79	0	15.05	3.52	11.58	9.01	4850	0.00	0.00
3/20/2019 12:55	34	47.81	21.27	3.41	4.79	2.97	0	14.06	3.81	12.35	8.17	5241	0.00	0.00
3/20/2019 12:56	35.92	50.43	22.37	3.87	5.43	3.35	0	14.04	3.79	12.38	8.15	5216	0.00	0.00
3/20/2019 12:57	41.89	58.86	26.06	4.02	5.65	3.48	0	14.05	3.79	12.34	8.16	5210	0.00	0.00
3/20/2019 12:58	36.99	52.38	23.07	3.8	5.38	3.3	0	14.16	3.8	12.25	8.26	5225	0.00	0.00
3/20/2019 12:59	35.34	51.02	22.13	3.57	5.15	3.11	0	14.44	3.81	12.03	8.5	5245	0.00	0.00
3/20/2019 13:00	34.32	49.5	21.43	3.52	5.08	3.06	0	14.42	3.8	12.06	8.49	5229	0.00	0.00
3/20/2019 13:01	42.08	60.99	26.66	3.64	5.28	3.21	0	14.49	3.86	11.93	8.55	5307	0.00	0.00
3/20/2019 13:02	30.41	46.29	18.52	3.02	4.60	2.56	0	15.22	3.71	11.43	9.14	5102	0.00	0.00
3/20/2019 13:03	31.66	46.53	20.3	2.93	4.31	2.61	0	14.7	3.9	11.83	8.72	5370	0.00	0.00
3/20/2019 13:04	35.93	52.33	22.93	3.23	4.70	2.87	0	14.56	3.88	11.95	8.61	5346	0.00	0.00
3/20/2019 13:05	39.22	58.26	24.45	3.19	4.74	2.77	0	14.85	3.79	11.68	8.85	5222	0.00	0.00
3/20/2019 13:06	35.69	53.64	22.12	3.24	4.87	2.79	0	15.03	3.77	11.54	8.99	5192	0.00	0.00
3/20/2019 13:07	35.39	51.88	22.46	3.47	5.09	3.06	0	14.66	3.86	11.86	8.69	5315	0.00	0.00
3/20/2019 13:08	32.38	50.01	19.77	3.63	5.61	3.08	0	15.44	3.72	11.28	9.31	5115	0.00	0.00
3/20/2019 13:09	31.16	46.52	19.54	3.26	4.87	2.84	0	14.93	3.82	11.67	8.91	5252	0.00	0.00
3/20/2019 13:10	42.66	59.19	28.29	4.98	6.91	4.6	0	13.88	4.04	12.51	8	5555	0.00	0.00
3/20/2019 13:11	52.16	72.38	34.54	6.57	9.12	6.05	0	13.88	4.03	12.5	8	5546	0.00	
3/20/2019 13:12	44.51	63.74	28.59	6.12	8.76	5.47	0	14.32	3.91	12.09	8.4	5381	0.00	
3/20/2019 13:13	38.25	55.89	23.45	5.75	8.40	4.9	0	14.61	3.73	11.96	8.65	5135	0.00	0.00
3/20/2019 13:14	58.03	76.6	39.96	10.47	13.82	10.03	0	13.2	4.19	13.15	7.34	5768	0.00	0.00
3/20/2019 13:15	72.7	94.16	50.63	18.04	23.37	17.48	0	12.95	4.24	13.4	7.08	5833	0.00	0.00
3/20/2019 13:16	69.73	95.5	44.68	19.73	27.02	17.59	0	13.7	3.9	12.62	7.83	5367	0.00	0.00
3/20/2019 13:17	58.27	81.94	36.4	15.18	21.35	13.19	0	14.06	3.8	12.34	8.17	5232	0.00	0.00
													0.00	0.00
Average	**39.34**	**55.88**	**25.02**	**5.61**	**7.88**	**5.00**	**0.00**			**12.15**	**8.38**	**5285.17**	**0.00**	**0.00**

Flow	kdscfh	5285.17
O2	% dry	8.38
CO2	% dry	12.15
NOx	ppm dry	39.34
NOx	ppm @ 3% O2	55.88
NOx	lb/hr	25.02
SO2	ppm dry	5.61
SO2	ppm @ 3% O2	7.88
SO2	lb/hr	5.00
CO	ppm dry	0.00
CO	ppm @ 3% O2	0.00
CO	lb/hr	0.00

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 13:33	22.31	32.6	14.22	8.19	11.97	7.26	0	14.61	3.88	11.83	8.65	5339	0.00	0.00
3/20/2019 13:34	29.04	41.55	19.12	8.63	12.35	7.91	0	14.31	4.01	12.11	8.39	5516	0.00	0.00
3/20/2019 13:35	23.78	35.71	14.63	7.56	11.35	6.47	0	15.02	3.74	11.62	8.98	5152	0.00	0.00
3/20/2019 13:36	26.65	39.42	16.49	7.03	10.4	6.05	0	14.79	3.77	11.77	8.8	5182	0.00	0.00
3/20/2019 13:37	40.96	58.01	27.1	8.61	12.19	7.93	0	14.16	4.03	12.23	8.26	5542	0.00	0.00
3/20/2019 13:38	39.74	54.97	26.14	8.65	11.97	7.92	0	13.83	4	12.63	7.96	5509	0.00	0.00
3/20/2019 13:39	55.1	74.89	36.99	11.16	15.17	10.42	0	13.59	4.09	12.71	7.73	5623	0.00	0.00
3/20/2019 13:40	54.55	76.4	35.12	10.2	14.29	9.14	0	14.01	3.92	12.34	8.12	5392	0.00	0.00
3/20/2019 13:41	53.18	76.52	33.55	10.19	14.66	8.95	0	14.39	3.84	12	8.46	5285	0.00	0.00
3/20/2019 13:42	32.71	50.47	19.3	7.87	12.14	6.46	0	15.43	3.59	11.31	9.3	4943	0.00	0.00
3/20/2019 13:43	28.42	42.68	17.32	7.01	10.53	5.94	0	15.02	3.71	11.58	8.98	5104	0.00	0.00
3/20/2019 13:44	33.4	49	20.6	6.49	9.52	5.57	0	14.67	3.75	11.84	8.7	5167	0.00	0.00
3/20/2019 13:45	34.11	49.68	21.35	7.08	10.31	6.16	0	14.56	3.81	11.92	8.61	5242	0.00	0.00
3/20/2019 13:46	44.56	61.88	29.22	8.57	11.9	7.82	0	13.89	3.99	12.55	8.01	5493	0.00	0.00
3/20/2019 13:47	64.33	84.05	44.58	13.19	17.23	12.72	0	13.07	4.22	13.29	7.2	5805	0.00	0.00
3/20/2019 13:48	69.2	93.56	45.14	15.85	21.43	14.39	0	13.52	3.97	12.81	7.66	5464	0.00	0.00
3/20/2019 13:49	55.62	78.46	34.46	12.35	17.42	10.65	0	14.11	3.77	12.28	8.21	5190	0.00	0.00
3/20/2019 13:50	44.83	63.04	28.08	10.62	14.93	9.25	0	14.06	3.81	12.35	8.17	5246	0.00	0.00
3/20/2019 13:51	46.42	62.85	29.77	11.04	14.95	9.85	0	13.54	3.9	12.85	7.68	5372	0.00	0.00
3/20/2019 13:52	53.75	72.5	34.21	12.75	17.2	11.29	0	13.49	3.87	12.85	7.63	5331	0.00	0.00
3/20/2019 13:53	50.85	67.67	32.47	11.76	15.65	10.45	0	13.31	3.89	13.06	7.45	5348	0.00	0.00
3/20/2019 13:54	59.48	78.75	38.44	11.74	15.54	10.56	0	13.24	3.93	13.08	7.38	5413	0.00	0.00
3/20/2019 13:55	45.72	65.73	26.76	9.91	14.25	8.07	0	14.38	3.56	12.05	8.45	4903	0.00	0.00
3/20/2019 13:56	38.41	56.22	22.32	8.55	12.51	6.91	0	14.64	3.54	11.86	8.67	4868	0.00	0.00
3/20/2019 13:57	33.81	48.45	20.25	9.12	13.07	7.6	0	14.33	3.65	12.12	8.41	5017	0.00	0.00
3/20/2019 13:58	35.64	52.38	21.01	9.09	13.36	7.45	0	14.7	3.59	11.78	8.72	4937	0.00	0.00
3/20/2019 13:59	36.79	53.54	21.91	8.63	12.56	7.15	0	14.55	3.62	11.93	8.6	4988	0.00	0.00
3/20/2019 14:00	33.02	49.38	19.57	9.09	13.59	7.49	0	14.95	3.61	11.6	8.93	4963	0.00	0.00
3/20/2019 14:01	26.97	39.38	16.23	7.85	11.46	6.57	0	14.6	3.66	11.93	8.64	5041	0.00	0.00
3/20/2019 14:02	41.21	59.25	25.6	8.51	12.24	7.35	0	14.38	3.78	12.02	8.45	5203	0.00	0.00
Average	**41.82**	**58.97**	**26.40**	**9.58**	**13.54**	**8.39**	**0.00**			**12.21**	**8.31**	**5252.60**	**0.00**	**0.00**

Flow	kdscfh	5252.60
O2	% dry	8.31
CO2	% dry	12.21
NOx	ppm dry	41.82
NOx	ppm @ 3% O2	58.97
NOx	lb/hr	26.40
SO2	ppm dry	9.58
SO2	ppm @ 3% O2	13.54
SO2	lb/hr	8.39
CO	ppm dry	0.00
CO	ppm @ 3% O2	0.00
CO	lb/hr	0.00

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 14:17	46.69	68.5	26.8	13.17	19.32	10.52	0	14.67	3.49	11.79	8.7	4808	0.00	0.00
3/20/2019 14:18	24.17	35.96	13.74	8.59	12.78	6.79	0	14.88	3.46	11.71	8.87	4760	0.00	0.00
3/20/2019 14:19	36.95	51.59	22.85	9.9	13.82	8.52	0	13.96	3.76	12.44	8.08	5180	0.00	0.00
3/20/2019 14:20	39.22	53.55	24.75	11.09	15.14	9.74	0	13.65	3.84	12.71	7.79	5286	0.00	0.00
3/20/2019 14:21	42.75	60.54	25.91	12.31	17.43	10.38	0	14.16	3.69	12.17	8.26	5076	0.00	0.00
3/20/2019 14:22	22.72	34.47	13.06	8.94	13.56	7.15	0	15.17	3.5	11.44	9.1	4816	0.00	0.00
3/20/2019 14:23	19.61	28.26	11.97	8.21	11.83	6.97	0	14.41	3.72	12.05	8.48	5114	0.00	0.00
3/20/2019 14:24	24.1	34.93	14.5	9.17	13.29	7.68	0	14.49	3.66	11.98	8.55	5039	0.00	0.00
3/20/2019 14:25	29.99	42.57	18.48	11.48	16.3	9.84	0	14.2	3.75	12.19	8.29	5161	0.00	0.00
3/20/2019 14:26	24.26	35.74	14.61	10.34	15.23	8.66	0	14.73	3.67	11.76	8.75	5044	0.00	0.00
3/20/2019 14:27	23.06	33.18	14.07	9.43	13.57	8.01	0	14.39	3.71	12.1	8.46	5111	0.00	0.00
3/20/2019 14:28	32	45.57	19.82	11.67	16.62	10.06	0	14.24	3.77	12.15	8.33	5188	0.00	0.00
3/20/2019 14:29	30.58	44.43	18.37	10.28	14.94	8.59	0	14.53	3.66	11.94	8.58	5033	0.00	0.00
3/20/2019 14:30	40.07	54.67	25.9	13.58	18.53	12.21	0	13.64	3.93	12.76	7.78	5413	0.00	0.00
3/20/2019 14:31	57.66	78.61	37.15	17.33	23.63	15.54	0	13.63	3.92	12.7	7.77	5397	0.00	0.00
3/20/2019 14:32	37.5	55.11	22.18	13.42	19.72	11.04	0	14.7	3.6	11.84	8.72	4954	0.00	0.00
3/20/2019 14:33	42.31	57.29	27.3	14.05	19.02	12.61	0	13.54	3.93	12.84	7.68	5404	0.00	0.00
3/20/2019 14:34	54.04	72.89	34.25	17.78	23.98	15.68	0	13.49	3.86	12.88	7.63	5308	0.00	0.00
3/20/2019 14:35	62.98	82.29	41.83	19.45	25.41	17.97	0	13.07	4.04	13.27	7.2	5563	0.00	0.00
3/20/2019 14:36	61.42	81.14	39.38	19.95	26.35	17.8	0	13.21	3.9	13.13	7.35	5371	0.00	0.00
3/20/2019 14:37	56.3	77.64	34.31	18.52	25.54	15.7	0	13.79	3.71	12.56	7.92	5104	0.00	0.00
3/20/2019 14:38	38.32	54.4	22.67	14.19	20.14	11.68	0	14.2	3.6	12.21	8.29	4956	0.00	0.00
3/20/2019 14:39	44.8	62.85	27.24	17.47	24.51	14.78	0	14.03	3.7	12.34	8.14	5093	0.00	0.00
3/20/2019 14:40	38.79	54.98	23.56	16.57	23.48	14	0	14.17	3.7	12.23	8.27	5087	0.00	0.00
3/20/2019 14:41	29.65	42.22	17.54	15	21.36	12.35	0	14.24	3.6	12.22	8.33	4956	0.00	0.00
3/20/2019 14:42	57.67	76.18	37.57	22.99	30.37	20.84	0	13.21	3.97	13.12	7.35	5457	0.00	0.00
3/20/2019 14:43	61.14	83.22	38.43	23.48	31.96	20.53	0	13.61	3.83	12.71	7.75	5265	0.00	0.00
3/20/2019 14:44	50.7	71.86	30.59	20.02	28.37	16.81	0	14.17	3.67	12.24	8.27	5054	0.00	0.00
3/20/2019 14:45	41.97	60.05	24.97	18.79	26.89	15.56	0	14.31	3.62	12.15	8.39	4984	0.00	0.00
3/20/2019 14:46	46.92	65.26	28.84	16.72	23.25	14.3	0	13.91	3.74	12.55	8.03	5148	0.00	0.00
Average	**40.61**	**56.67**	**25.09**	**14.46**	**20.21**	**12.41**	**0.00**			**12.34**	**8.17**	**5137.67**	**0.00**	**0.00**

Flow	kdscfh	5137.67
O2	% dry	8.17
CO2	% dry	12.34
NOx	ppm dry	40.61
NOx	ppm @ 3% O2	56.67
NOx	lb/hr	25.09
SO2	ppm dry	14.46
SO2	ppm @ 3% O2	20.21
SO2	lb/hr	12.41
CO	ppm dry	0.00
CO	ppm @ 3% O2	0.00
CO	lb/hr	0.00

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 15:01	46.78	65.83	28.5	17.28	24.32	14.65	0	14.07	3.71	12.3	8.18	5103	0.00	0.00
3/20/2019 15:02	43.34	59.91	26.92	16.06	22.2	13.88	0	13.82	3.78	12.58	7.95	5203	0.00	0.00
3/20/2019 15:03	55.12	73.63	36.08	20.06	26.8	18.27	0	13.36	3.98	12.97	7.5	5482	0.00	0.00
3/20/2019 15:04	43.8	61.06	26.81	17.26	24.06	14.7	0	13.94	3.73	12.43	8.06	5127	0.00	0.00
3/20/2019 15:05	38.33	52.9	23.93	16.44	22.69	14.28	0	13.8	3.8	12.55	7.93	5229	0.00	0.00
3/20/2019 15:06	35.31	49.34	21.43	14.32	20.01	12.09	0	13.97	3.69	12.39	8.09	5084	0.00	0.00
3/20/2019 15:07	45.62	62.62	28.48	16.68	22.9	14.49	0	13.73	3.8	12.63	7.86	5230	0.00	0.00
3/20/2019 15:08	37.29	51.82	22.92	14.1	19.6	12.06	0	13.9	3.74	12.47	8.02	5149	0.00	0.00
3/20/2019 15:09	38.54	52.18	24.28	13.72	18.58	12.03	0	13.54	3.83	12.82	7.68	5277	0.00	0.00
3/20/2019 15:10	51.07	68.07	32.81	16.95	22.59	15.15	0	13.33	3.91	12.99	7.47	5381	0.00	0.00
3/20/2019 15:11	48.14	65.73	29.56	16.04	21.9	13.71	0	13.65	3.74	12.7	7.79	5144	0.00	0.00
3/20/2019 15:12	55.89	74.27	35.77	16.72	22.22	14.89	0	13.29	3.9	13.05	7.43	5361	0.00	0.00
3/20/2019 15:13	50.99	68.63	31.89	12.67	17.05	11.03	0	13.46	3.81	12.87	7.6	5239	0.00	0.00
3/20/2019 15:14	42.09	59.09	25.28	12.19	17.11	10.18	0	14.04	3.66	12.31	8.15	5030	0.00	0.00
3/20/2019 15:15	33.75	47.87	20.25	9.54	13.53	7.96	0	14.18	3.65	12.22	8.28	5025	0.00	0.00
3/20/2019 15:16	34.15	47.42	21.05	8.56	11.89	7.34	0	13.89	3.75	12.48	8.01	5163	0.00	0.00
3/20/2019 15:17	35.57	50.37	21.49	9.99	14.15	8.4	0	14.16	3.68	12.23	8.26	5061	0.00	0.00
3/20/2019 15:18	46.38	62.8	29.5	11.66	15.79	10.32	0	13.54	3.87	12.82	7.68	5328	0.00	0.00
3/20/2019 15:19	49.53	66.76	31.35	13.58	18.3	11.96	0	13.48	3.85	12.84	7.62	5301	0.00	0.00
3/20/2019 15:20	41.76	57.63	25.82	14.8	20.43	12.73	0	13.8	3.76	12.52	7.93	5178	0.00	0.00
3/20/2019 15:21	32.27	44.57	19.74	13.24	18.29	11.27	0	13.81	3.72	12.56	7.94	5123	0.00	0.00
3/20/2019 15:22	41.81	57.35	26.26	14.02	19.23	12.25	0	13.72	3.82	12.58	7.85	5261	0.00	0.00
3/20/2019 15:23	32.68	45.17	20.14	11.09	15.33	9.51	0	13.82	3.75	12.56	7.95	5161	0.00	0.00
3/20/2019 15:24	38.64	53.49	24.03	11.22	15.53	9.71	0	13.84	3.79	12.5	7.97	5209	0.00	0.00
3/20/2019 15:25	30.57	42.99	18.71	10.42	14.65	8.87	0	14.06	3.73	12.3	8.17	5127	0.00	0.00
3/20/2019 15:26	35.59	49.58	22.17	11.92	16.6	10.33	0	13.93	3.79	12.42	8.05	5218	0.00	0.00
3/20/2019 15:27	29.73	40.84	18.49	10.17	13.97	8.8	0	13.74	3.78	12.66	7.87	5208	0.00	0.00
3/20/2019 15:28	43	57.44	27.71	9.69	12.94	8.69	0.03	13.36	3.92	12.95	7.5	5397	0.04	0.01
3/20/2019 15:29	34.89	48.64	21.64	9.5	13.24	8.2	0	13.94	3.77	12.4	8.06	5194	0.00	0.00
3/20/2019 15:30	26.38	37.45	15.88	7.82	11.1	6.55	0	14.2	3.66	12.24	8.29	5043	0.00	0.00
Average	**40.63**	**55.85**	**25.30**	**13.26**	**18.23**	**11.48**	**0.00**			**12.58**	**7.90**	**5201.20**	**0.00**	**0.00**

Flow	kdscfh	5201.20
O2	% dry	7.90
CO2	% dry	12.58
NOx	ppm dry	40.63
NOx	ppm @ 3% O2	55.85
NOx	lb/hr	25.30
SO2	ppm dry	13.26
SO2	ppm @ 3% O2	18.23
SO2	lb/hr	11.48
CO	ppm dry	0.00
CO	ppm @ 3% O2	0.00
CO	lb/hr	0.00

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 15:45	39.17	57.33	24.56	6.12	8.96	5.34	0	14.64	3.82	11.86	8.67	5251		
3/20/2019 15:46	32.38	50.05	19.6	4.89	7.56	4.12	0	15.46	3.68	11.23	9.32	5069	0.00	0.00
3/20/2019 15:47	29.86	43.56	18.96	4.96	7.24	4.38	0.01	14.59	3.86	11.96	8.63	5318	0.01	0.00
3/20/2019 15:48	44.81	62.62	29.71	7.38	10.31	6.81	0.05	13.97	4.04	12.41	8.09	5553	0.07	0.02
3/20/2019 15:49	52	72.38	34.75	9.25	12.88	8.6	0	13.92	4.07	12.46	8.04	5597	0.00	0.00
3/20/2019 15:50	58.86	78.74	39.94	10.62	14.21	10.03	0.07	13.38	4.13	13.03	7.52	5684	0.09	0.03
3/20/2019 15:51	62.85	88.03	40.65	12.6	17.65	11.34	0.07	14.01	3.94	12.32	8.12	5417	0.10	0.03
3/20/2019 15:52	47.91	67.05	30.98	9.09	12.72	8.18	0.07	14	3.94	12.43	8.11	5417	0.10	0.03
3/20/2019 15:53	52.4	73.28	33.79	9.12	12.75	8.18	0.07	13.98	3.92	12.44	8.1	5401	0.10	0.03
3/20/2019 15:54	53.4	73.87	34.79	10.01	13.85	9.07	0.05	13.83	3.97	12.56	7.96	5457	0.07	0.02
3/20/2019 15:55	51.9	72.81	33.27	9.23	12.95	8.23	0.16	14.03	3.9	12.34	8.14	5369	0.22	0.06
3/20/2019 15:56	41.2	58.81	26.1	8.13	11.61	7.17	0.04	14.27	3.86	12.13	8.36	5307	0.06	0.02
3/20/2019 15:57	36.75	53.14	23.25	7.36	10.64	6.48	0	14.46	3.85	11.98	8.52	5299	0.00	0.00
3/20/2019 15:58	32.94	48.97	20.5	6.6	9.81	5.72	0	14.87	3.79	11.66	8.86	5214	0.00	0.00
3/20/2019 15:59	31.87	47.15	19.96	5.84	8.64	5.09	0.01	14.79	3.81	11.74	8.8	5245	0.01	0.00
3/20/2019 16:00	42.03	60.43	27.18	6.21	8.93	5.59	0.07	14.38	3.94	12.05	8.45	5417	0.10	0.03
3/20/2019 16:01	40.47	59.92	25.4	6.04	8.94	5.27	0	14.81	3.82	11.71	8.81	5257	0.00	0.00
3/20/2019 16:02	37.93	55.15	24.28	5.74	8.35	5.11	0	14.54	3.9	11.95	8.59	5362	0.00	0.00
3/20/2019 16:03	38.52	56.01	24.49	6	8.72	5.31	0.06	14.54	3.87	11.92	8.59	5325	0.09	0.02
3/20/2019 16:04	42.84	60.67	28.37	4.85	7.08	4.47	0.23	14.16	4.03	12.22	8.26	5547	0.33	0.09
3/20/2019 16:05	34.92	52.48	21.81	5.33	8.01	4.63	0.05	15.03	3.8	11.55	8.99	5231	0.08	0.02
3/20/2019 16:06	37.59	52.86	24.93	5.17	7.27	4.77	0.14	14.06	4.04	12.39	8.17	5555	0.20	
3/20/2019 16:07	41.93	59.57	27.17	6.9	9.8	6.22	0.12	14.21	3.94	12.2	8.3	5428	0.17	
3/20/2019 16:08	52.99	72.74	35.83	7.59	10.42	7.14	0.26	13.73	4.12	12.63	7.86	5664	0.36	0.11
3/20/2019 16:09	45.25	64.23	28.96	7.3	10.36	6.5	0.25	14.2	3.9	12.21	8.29	5360	0.35	0.10
3/20/2019 16:10	42.09	58.68	27.24	6.32	8.81	5.69	0.2	13.94	3.94	12.44	8.06	5421	0.28	0.08
3/20/2019 16:11	50.45	68.05	34.21	6.3	8.5	5.94	0.27	13.49	4.13	12.82	7.63	5680	0.36	0.11
3/20/2019 16:12	47.85	67.18	30.54	6.49	9.11	5.76	0.26	14.04	3.88	12.33	8.15	5346	0.37	0.10
3/20/2019 16:13	35.97	51.97	22.58	6.23	9	5.44	0.15	14.45	3.82	11.97	8.51	5258	0.22	0.06
3/20/2019 16:14	26.38	38.99	16.31	4.89	7.39	4.21	0.13	14.78	3.76	11.73	8.79	5180	0.19	0.05
Average	**42.85**	**60.89**	**27.67**	**7.09**	**10.08**	**6.36**	**0.09**			**12.16**	**8.36**	**5387.63**	**0.14**	**0.04**

Flow	kdscfh	5387.63
O2	% dry	8.36
CO2	% dry	12.16
NOx	ppm dry	42.85
NOx	ppm @ 3% O2	60.89
NOx	lb/hr	27.67
SO2	ppm dry	7.09
SO2	ppm @ 3% O2	10.08
SO2	lb/hr	6.36
CO	ppm dry	0.09
CO	ppm @ 3% O2	0.14
CO	lb/hr	0.04

CeDAR 1-Minute Data

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) NOx ppm @3% O2 1-Min	(Boiler 1) NOx lb/hr 1-Min Avg	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) SO2 ppm @3% O2 1-Min	(Boiler 1) SO2 lb/hr 1-Min Avg	(Boiler 1) CO ppm 1-Min	(Boiler 1) CO ppm @3% O2 1 Min	(Boiler 1) CO lb/hr 1-Min	(Boiler 1) CO2% 1-Min	(Boiler 1) O2% 1-Min	Stack Flow kdscf/hr 1-Min	Calculated CO @ 3% O2	Calculated CO lb/hr
3/20/2019 16:39	22.2	34.32	13.27	2.49	3.85	2.07	0.2	15.46	3.64	11.21	9.32	5007	0.31	0.07
3/20/2019 16:40	16.06	25.37	9.58	2.14	3.38	1.78	0.27	15.8	3.63	10.98	9.57	4995	0.43	0.10
3/20/2019 16:41	20.07	30.5	12.37	2.25	3.42	1.93	0.26	15.2	3.75	11.42	9.12	5161	0.40	0.10
3/20/2019 16:42	27.31	39.33	17.56	2.58	3.72	2.31	0.47	14.4	3.91	12.02	8.47	5386	0.68	0.18
3/20/2019 16:43	32.67	47.47	20.86	3.18	4.62	2.83	0.38	14.53	3.89	11.89	8.58	5349	0.55	0.15
3/20/2019 16:44	25.84	40.15	15.47	2.52	3.92	2.1	0.16	15.54	3.64	11.16	9.38	5014	0.25	0.06
3/20/2019 16:45	28.37	43.11	17.37	1.82	2.77	1.55	0.19	15.2	3.73	11.42	9.12	5128	0.29	0.07
3/20/2019 16:46	30.41	46.21	18.78	2.16	3.28	1.86	0.2	15.2	3.76	11.38	9.12	5173	0.30	0.08
3/20/2019 16:47	31.29	45.98	19.91	2.16	3.17	1.91	0.19	14.7	3.87	11.81	8.72	5329	0.28	0.07
3/20/2019 16:48	39.7	56.18	25.83	3.46	4.90	3.13	0.43	14.15	3.96	12.27	8.25	5449	0.61	0.17
3/20/2019 16:49	46.73	65.81	30.44	4.81	6.77	4.36	0.29	14.08	3.97	12.27	8.19	5457	0.41	0.12
3/20/2019 16:50	42.75	62.37	26.43	4.47	6.52	3.85	0.39	14.59	3.76	11.88	8.63	5179	0.57	0.15
3/20/2019 16:51	50.67	71.81	32.93	4.74	6.72	4.29	0.49	14.17	3.96	12.18	8.27	5443	0.69	0.19
3/20/2019 16:52	49.57	71.85	30.98	4.75	6.88	4.13	0.37	14.49	3.8	11.93	8.55	5235	0.54	0.14
3/20/2019 16:53	54.03	76.82	34.63	4.97	7.07	4.43	0.35	14.22	3.9	12.14	8.31	5369	0.50	0.14
3/20/2019 16:54	54.72	78.55	34.91	5.27	7.56	4.68	0.39	14.35	3.88	12.04	8.43	5343	0.56	0.15
3/20/2019 16:55	41.4	62.43	25.13	4.41	6.65	3.72	0.4	15.08	3.69	11.47	9.03	5084	0.60	0.15
3/20/2019 16:56	41.8	61.84	25.77	4.48	6.63	3.84	0.29	14.79	3.75	11.69	8.8	5164	0.43	0.11
3/20/2019 16:57	40.04	58.65	24.77	4.47	6.55	3.85	0.48	14.65	3.77	11.81	8.68	5182	0.70	0.18
3/20/2019 16:58	45.13	65.52	27.87	5.25	7.62	4.51	0.44	14.52	3.76	11.92	8.57	5173	0.64	0.17
3/20/2019 16:59	40.01	57.71	24.47	5.24	7.56	4.46	0.53	14.42	3.72	11.97	8.49	5122	0.76	0.20
3/20/2019 17:00	37.36	53.67	22.54	5.23	7.51	4.39	0.44	14.37	3.67	12.07	8.44	5053	0.63	0.16
3/20/2019 17:01	43.38	61.48	26.63	5.82	8.25	4.97	0.51	14.17	3.74	12.16	8.27	5141	0.72	0.19
3/20/2019 17:02	38.35	55.81	23.08	5.35	7.79	4.48	0.45	14.55	3.66	11.86	8.6	5041	0.65	0.16
3/20/2019 17:03	26.87	40.35	15.63	4.15	6.23	3.36	0.38	15.02	3.54	11.56	8.98	4871	0.57	0.13
3/20/2019 17:04	37.47	51.83	23.42	3.82	5.28	3.32	0.51	13.83	3.81	12.58	7.96	5236	0.71	0.19
3/20/2019 17:05	48.57	67.34	30.19	7.57	10.5	6.55	0.76	13.87	3.78	12.41	7.99	5207	1.05	0.29
3/20/2019 17:06	43.37	59.86	26.58	6.77	9.34	5.77	0.62	13.8	3.73	12.56	7.93	5133	0.86	0.23
3/20/2019 17:07	44.28	63.21	26.5	6.8	9.71	5.66	0.68	14.27	3.64	12.07	8.36	5012	0.97	0.25
3/20/2019 17:08	36.31	52.97	21.23	6	8.75	4.88	0.54	14.59	3.56	11.87	8.63	4898	0.79	0.19
Average	**37.89**	**54.95**	**23.50**	**4.30**	**6.23**	**3.70**	**0.40**			**11.87**	**8.63**	**5177.80**	**0.58**	**0.15**

Flow	kdscfh	5177.80
O2	% dry	8.63
CO2	% dry	11.87
NOx	ppm dry	37.89
NOx	ppm @ 3% O2	54.95
NOx	lb/hr	23.50
SO2	ppm dry	4.30
SO2	ppm @ 3% O2	6.23
SO2	lb/hr	3.70
CO	ppm dry	0.40
CO	ppm @ 3% O2	0.58
CO	lb/hr	0.15

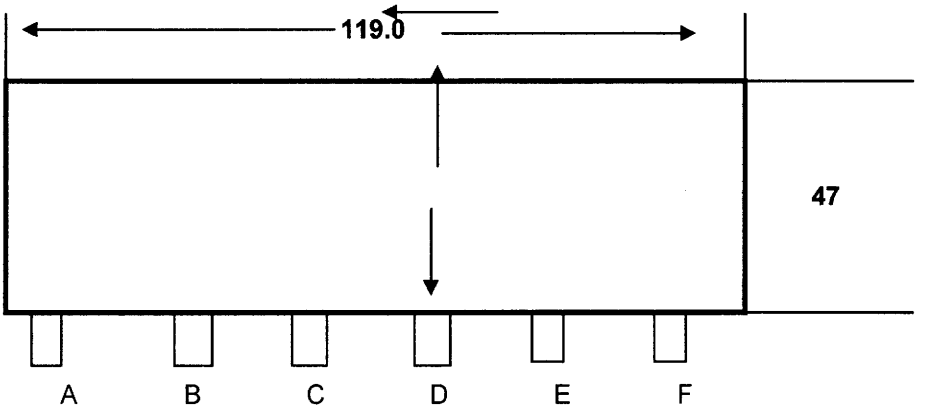
Appendix A.2
Unit 2 Data

Appendix A.2.1
Unit 2 Sample Location

Method 1

Client: Desert View Power Date: 3/21/2019

Sample Location: Unit 1-2 Prepared By: Dave Wonderly



H (in.)	**119.0**
W (in.)	**47.0**
Nipple length	**13.0**
Distance between points	**9.40**
Stack Area (ft^2)	**38.84**

Point No.	Sample Point Inches from nozzle	
1	4.7	17.7
2	14.1	27.1
3	23.5	36.5
4	32.9	45.9
5	42.3	55.3

Appendix A.2.2
Unit 2 CEM Data

Date	Time	O2 %	CO2 %	NOx ppm	CO ppm	
3/21/2019	6:21	14.585	15.045	65.106	2.72	
3/21/2019	6:22	19.399	19.051	89.82	8.477	
3/21/2019	6:23	19.327	18.949	90.134	8.585	
3/21/2019	6:24	19.317	18.934	90.599	8.584	High
3/21/2019	6:25	18.954	18.187	87.34	8.587	
3/21/2019	6:26	10.504	10.594	46.262	6.439	
3/21/2019	6:27	10.467	10.604	46.012	4.654	Mid
3/21/2019	6:28	8.497	8.29	35.677	4.584	
3/21/2019	6:29	-0.006	0.031	0.086	1.269	
3/21/2019	6:30	-0.011	0.024	0.042	0.01	Zero
3/21/2019	6:31	12.968	0.027	0.03	0.047	NO Mode Zero
3/21/2019	6:32	20.831	0.08	68.681	0.312	
3/21/2019	6:33	18.569	2.751	91.365	0.396	NO Mode High
3/21/2019	6:34	7.799	12.686	27.094	0.05	
3/21/2019	6:35	8.061	12.513	0.075	-0.09	NO2 Gas NO Mode
3/21/2019	6:36	7.889	12.676	35.28	-0.074	
3/21/2019	6:37	6.979	13.574	43.25	-0.147	NO2 Gas NOx Mode
3/21/2019	6:38	6.83	13.656	54.542	-0.214	
3/21/2019	6:39	7.236	13.294	46.129	-0.186	
3/21/2019	6:40	7.484	12.999	43.14	-0.18	
3/21/2019	6:41	7.833	12.689	36.811	-0.128	
3/21/2019	6:42	7.877	12.658	35.558	-0.127	
3/21/2019	6:43	7.803	12.769	38.609	-0.117	
3/21/2019	6:44	7.333	13.152	45.769	-0.146	
3/21/2019	6:45	7.504	13.005	41.354	-0.148	
3/21/2019	6:46	7.667	12.853	41.333	-0.127	
3/21/2019	6:47	7.715	12.775	37.604	-0.138	
3/21/2019	6:48	7.823	12.69	38.646	-0.122	
3/21/2019	6:49	6.58	13.953	59.909	-0.145	
3/21/2019	6:50	6.47	13.986	73.477	-0.186	
3/21/2019	6:51	7.092	13.387	59.519	-0.189	
3/21/2019	6:52	7.926	12.486	40.359	-0.174	
3/21/2019	6:53	8.167	12.317	33.463	-0.074	
3/21/2019	6:54	7.931	12.575	39.455	-0.076	
3/21/2019	6:55	7.084	13.473	46.608	-0.082	
3/21/2019	6:56	7.131	13.363	46.246	-0.137	
3/21/2019	6:57	7.137	13.318	51.668	-0.144	
3/21/2019	6:58	7.9	12.519	45.807	-0.136	
3/21/2019	6:59	3.062	3.783	41.528	-0.123	
3/21/2019	7:00	-0.002	0.055	45.427	0.043	
3/21/2019	7:01	-0.005	0.046	45.411	0.086	NOx Bias
3/21/2019	7:02	0.693	1.491	32.934	0.265	
3/21/2019	7:03	1.439	2.405	6.43	3.226	
3/21/2019	7:04	0.503	0.804	2.391	4.122	
3/21/2019	7:05	-0.006	0.04	0.101	4.545	
3/21/2019	7:06	-0.009	0.035	0.112	4.678	CO Bias
3/21/2019	7:07	6.988	7.488	0.178	3.791	
3/21/2019	7:08	10.408	10.512	0.074	-0.12	O2 CO2 Bias
3/21/2019	7:09	8.978	11.93	24.586	-0.386	

3/21/2019	7:10	7.86	12.626	35.954	-0.217
3/21/2019	7:11	7.912	12.635	30.2	-0.105
3/21/2019	7:12	7.344	13.193	35.403	-0.11
3/21/2019	7:13	7.469	13.017	32.048	-0.116
3/21/2019	7:14	8.385	12.14	26.756	-0.107
3/21/2019	7:15	8.4	12.103	23.715	-0.1
3/21/2019	7:16	8.155	12.306	27.943	-0.065
3/21/2019	7:17	8.24	12.348	26.425	-0.045
3/21/2019	7:18	7.715	12.877	32.425	-0.079
3/21/2019	7:19	7.123	13.349	38.712	-0.111
3/21/2019	7:20	7.866	12.52	27.761	-0.121
3/21/2019	7:21	7.79	12.775	26.852	-0.03
3/21/2019	7:22	7.57	12.947	35.29	-0.092
3/21/2019	7:23	8.137	12.318	28.308	-0.126
3/21/2019	7:24	6.93	13.683	45.716	-0.109
3/21/2019	7:25	6.111	14.4	67.515	-0.189
3/21/2019	7:26	6.94	13.496	52.685	-0.206
3/21/2019	7:27	8.141	12.357	28.261	-0.144
3/21/2019	7:28	8.314	12.237	19.25	-0.016
3/21/2019	7:29	6.9	13.707	46.415	-0.06
3/21/2019	7:30	7.657	12.778	40.854	-0.167
3/21/2019	7:31	8.057	12.479	27.761	-0.097
3/21/2019	7:32	7.91	12.699	33.796	-0.086
3/21/2019	7:33	7.11	13.406	47.906	-0.132
3/21/2019	7:34	8.045	12.386	32.698	-0.176
3/21/2019	7:35	8.5	12.017	24.431	-0.098
3/21/2019	7:36	7.71	12.813	35.906	-0.112
3/21/2019	7:37	7.749	12.797	31.599	-0.098
3/21/2019	7:38	7.823	12.697	39.152	-0.134
3/21/2019	7:39	7.338	13.143	44.277	-0.181
3/21/2019	7:40	7.662	12.875	38.622	-0.156
3/21/2019	7:41	6.827	13.671	60.419	-0.182
3/21/2019	7:42	8.287	12.142	33.525	-0.197
3/21/2019	7:43	7.732	12.767	37.393	-0.146
3/21/2019	7:44	8.269	12.239	28.111	-0.112
3/21/2019	7:45	7.488	13.036	40.116	-0.158
3/21/2019	7:46	7.591	12.872	35.389	-0.15
3/21/2019	7:47	8.079	12.453	29.524	-0.114
3/21/2019	7:48	7.778	12.675	38.09	-0.156
3/21/2019	7:49	8.309	12.258	25.616	-0.109
3/21/2019	7:50	8.172	12.299	27.353	-0.121
3/21/2019	7:51	8.27	12.241	27.465	-0.119
3/21/2019	7:52	6.926	13.643	57.503	-0.19
3/21/2019	7:53	6.356	14.102	76.799	-0.266
3/21/2019	7:54	7.321	13.066	72.256	-0.274
3/21/2019	7:55	8.487	12.035	40.403	-0.24
3/21/2019	7:56	7.382	13.174	57.358	-0.22
3/21/2019	7:57	7.01	13.454	58.043	-0.249
3/21/2019	7:58	8.109	12.364	37.952	-0.212
3/21/2019	7:59	7.915	12.606	39.482	-0.171
3/21/2019	8:00	7.997	12.453	34.346	-0.192
3/21/2019	8:01	7.91	12.642	38.12	-0.127

3/21/2019	8:02	7.677	12.773	39.592	-0.181	
3/21/2019	8:03	7.739	12.762	40.057	-0.176	
3/21/2019	8:04	8.472	11.955	23.845	-0.159	
3/21/2019	8:05	8.244	12.283	26.588	-0.068	
3/21/2019	8:06	7.925	12.563	29.168	-0.107	
3/21/2019	8:07	8.226	12.258	29.889	-0.136	
3/21/2019	8:08	7.929	12.565	37.473	-0.137	
3/21/2019	8:09	7.477	12.958	43.185	-0.175	
3/21/2019	8:10	7.613	12.907	39.311	-0.194	
3/21/2019	8:11	7.162	13.284	39.612	-0.171	
3/21/2019	8:12	7.01	13.482	44.093	-0.167	
3/21/2019	8:13	7.125	13.356	47.668	-0.185	
3/21/2019	8:14	6.625	13.827	60.274	-0.24	
3/21/2019	8:15	6.325	14.107	70.408	-0.23	
3/21/2019	8:16	7.694	12.727	43.256	-0.21	
3/21/2019	8:17	7.816	12.654	36.799	-0.178	
3/21/2019	8:18	6.885	13.606	58.123	-0.181	
3/21/2019	8:19	6.747	13.667	62.833	-0.238	
3/21/2019	8:20	7.385	13.048	47.936	-0.245	
3/21/2019	8:21	7.431	12.99	39.819	-0.186	
Run 1 Average		7.61	12.89	41.26	-0.16	
3/21/2019	8:22	2.643	3.525	40.308	-0.156	
3/21/2019	8:23	-0.001	0.064	45.557	0.016	NOx Bias
3/21/2019	8:24	-0.004	0.05	22.638	0.656	
3/21/2019	8:25	-0.007	0.045	0.129	4.385	
3/21/2019	8:26	-0.008	0.041	0.086	4.666	CO Bias
3/21/2019	8:27	6.813	7.21	0.123	3.854	
3/21/2019	8:28	10.407	10.45	0.057	-0.081	O2 CO2 Bias
3/21/2019	8:29	5.068	4.569	0.047	-0.375	
3/21/2019	8:30	-0.01	0.025	0.042	-0.048	
3/21/2019	8:31	-0.012	0.007	0.037	0.042	Zero
3/21/2019	8:32	8.274	8.823	36.83	1.883	
3/21/2019	8:33	10.471	10.499	45.968	4.646	
3/21/2019	8:34	10.476	10.505	46.015	4.667	Span
3/21/2019	8:35	9.523	11.149	35.368	4.3	
3/21/2019	8:36	8.694	11.907	23.422	0.525	
3/21/2019	8:37	8.262	12.085	22.776	-0.139	
3/21/2019	8:38	8.986	11.512	16.391	-0.069	
3/21/2019	8:39	9.063	11.515	15.542	-0.025	
3/21/2019	8:40	7.226	13.351	34.671	-0.074	
3/21/2019	8:41	6.776	13.609	53.108	-0.199	
3/21/2019	8:42	7.781	12.675	43.71	-0.237	
3/21/2019	8:43	7.5	12.936	46.874	-0.234	
3/21/2019	8:44	7.908	12.605	44.321	-0.229	
3/21/2019	8:45	7.685	12.645	46.035	-0.231	
3/21/2019	8:46	7.809	12.848	50.905	-0.231	
3/21/2019	8:47	7.086	13.372	64.149	-0.264	
3/21/2019	8:48	7.428	13.024	58.803	-0.266	
3/21/2019	8:49	6.961	13.557	56.217	-0.247	
3/21/2019	8:50	7.308	13.189	54.92	-0.236	
3/21/2019	8:51	7.499	12.96	47.352	-0.235	

3/21/2019	8:52	7.627	12.885	43.285	-0.197	
3/21/2019	8:53	7.804	12.604	36.368	-0.187	
3/21/2019	8:54	7.82	12.726	32.543	-0.14	
3/21/2019	8:55	7.756	12.734	37.55	-0.156	
3/21/2019	8:56	7.885	12.55	32.606	-0.15	
3/21/2019	8:57	7.977	12.596	34.262	-0.163	
3/21/2019	8:58	7.619	12.842	33.405	-0.15	
3/21/2019	8:59	7.798	12.589	33.461	-0.154	
3/21/2019	9:00	8.074	12.495	29.213	-0.14	
3/21/2019	9:01	7.164	13.433	46.308	-0.165	
3/21/2019	9:02	6.733	13.756	57.102	-0.225	
3/21/2019	9:03	6.206	14.31	74.721	-0.239	
3/21/2019	9:04	6.493	13.867	69.333	-0.249	
3/21/2019	9:05	7.31	13.097	56.651	-0.232	
3/21/2019	9:06	7.291	13.141	51.044	-0.181	
3/21/2019	9:07	7.825	12.68	34.396	-0.154	
3/21/2019	9:08	8.14	12.236	34.068	-0.112	
3/21/2019	9:09	8.148	12.34	31.059	-0.109	
3/21/2019	9:10	7.583	12.862	40.715	-0.143	
3/21/2019	9:11	7.753	12.714	39.04	-0.154	
3/21/2019	9:12	7.881	12.614	35.95	-0.159	
3/21/2019	9:13	7.355	13.062	48.062	-0.174	
3/21/2019	9:14	7.145	13.413	57.931	-0.214	
3/21/2019	9:15	7.054	13.356	49.026	-0.204	
3/21/2019	9:16	7.301	13.128	44.243	-0.196	
3/21/2019	9:17	7.667	12.804	38.606	-0.173	
3/21/2019	9:18	7.881	12.531	35.177	-0.168	
3/21/2019	9:19	7.933	12.541	34.583	-0.147	
3/21/2019	9:20	7.628	12.91	38.974	-0.156	
3/21/2019	9:21	7.623	12.769	38.056	-0.171	
3/21/2019	9:22	7.676	12.781	38.537	-0.139	
3/21/2019	9:23	7.961	12.445	37.292	-0.151	
3/21/2019	9:24	7.368	13.069	53.683	-0.178	
3/21/2019	9:25	8.212	12.279	35.631	-0.175	
3/21/2019	9:26	7.942	12.476	30.857	-0.142	
3/21/2019	9:27	8.225	12.166	25.338	-0.085	
3/21/2019	9:28	7.967	12.535	31.339	-0.08	
3/21/2019	9:29	7.53	13.043	37.898	-0.113	
3/21/2019	9:30	7.208	13.202	49.401	-0.149	
3/21/2019	9:31	6.633	13.8	63.309	-0.204	
3/21/2019	9:32	7.669	12.66	44.303	-0.207	
3/21/2019	9:33	7.853	12.602	35.101	-0.154	
3/21/2019	9:34	7.709	12.785	39.934	-0.158	
3/21/2019	9:35	7.231	13.191	51.707	-0.204	
3/21/2019	9:36	7.64	12.76	40.589	-0.187	
Run 2 Average		7.61	12.85	42.31	-0.17	
3/21/2019	9:37	2.172	1.823	39.859	-0.145	
3/21/2019	9:38	-0.002	0.064	45.421	0.047	
3/21/2019	9:39	-0.005	0.051	45.484	0.081	NOx Bias
3/21/2019	9:40	-0.005	0.047	28.587	0.365	
3/21/2019	9:41	-0.008	0.047	0.12	4.102	
3/21/2019	9:42	-0.009	0.04	0.071	4.671	CO Bias

3/21/2019	9:43	7.033	7.97	0.2	3.624	
3/21/2019	9:44	10.406	10.451	0.058	-0.187	O2 CO2 Bias
3/21/2019	9:45	2.329	1.692	0.033	-0.203	
3/21/2019	9:46	-0.012	0.027	0.013	0.027	Zero
3/21/2019	9:47	7.088	7.672	32.42	1.422	
3/21/2019	9:48	10.474	10.501	46.096	4.61	
3/21/2019	9:49	10.477	10.501	46.052	4.666	Span
3/21/2019	9:50	9.2	11.711	43.46	4.314	
3/21/2019	9:51	7.175	13.363	45.671	0.43	
3/21/2019	9:52	6.908	13.534	51.607	-0.242	
3/21/2019	9:53	7.317	13.141	49.465	-0.241	
3/21/2019	9:54	7.134	13.269	51.949	-0.212	
3/21/2019	9:55	7.204	13.243	49.953	-0.224	
3/21/2019	9:56	7.438	13.009	40.884	-0.226	
3/21/2019	9:57	7.29	13.194	34.736	-0.173	
3/21/2019	9:58	7.251	13.179	38.729	-0.15	
3/21/2019	9:59	7.469	12.962	40.042	-0.188	
3/21/2019	10:00	7.495	12.941	48.36	-0.194	
3/21/2019	10:01	7.715	12.702	39.517	-0.209	
3/21/2019	10:02	8.151	12.339	25.013	-0.12	
3/21/2019	10:03	7.562	12.862	31.432	-0.099	
3/21/2019	10:04	8.065	12.471	32.412	-0.109	
3/21/2019	10:05	7.251	13.168	48.836	-0.153	
3/21/2019	10:06	7.584	12.89	34.664	-0.144	
3/21/2019	10:07	7.616	12.755	32.318	-0.135	
3/21/2019	10:08	7.825	12.665	27.702	-0.082	
3/21/2019	10:09	7.372	12.992	33.808	-0.082	
3/21/2019	10:10	8.108	12.34	27.463	-0.101	
3/21/2019	10:11	8.202	12.153	23.602	-0.081	
3/21/2019	10:12	7.949	12.562	30.694	-0.083	
3/21/2019	10:13	7.174	13.284	50.473	-0.125	
3/21/2019	10:14	6.735	13.624	62.61	-0.197	
3/21/2019	10:15	7.306	13.061	58.815	-0.224	
3/21/2019	10:16	8.272	12.17	39.241	-0.191	
3/21/2019	10:17	8.44	11.88	37.211	-0.164	
3/21/2019	10:18	8.295	12.167	31.946	-0.136	
3/21/2019	10:19	7.897	12.47	37.041	-0.14	
3/21/2019	10:20	8.165	12.323	31.718	-0.118	
3/21/2019	10:21	7.567	12.924	36.266	-0.149	
3/21/2019	10:22	7.251	13.123	40.03	-0.147	
3/21/2019	10:23	7.175	13.191	45.647	-0.146	
3/21/2019	10:24	7.778	12.604	39.316	-0.154	
3/21/2019	10:25	7.878	12.527	40.199	-0.159	
3/21/2019	10:26	7.528	12.609	40.622	-0.136	
3/21/2019	10:27	7.411	12.24	35.222	-0.162	
3/21/2019	10:28	7.489	13.114	49.418	-0.15	
3/21/2019	10:29	6.956	12.919	60.422	-0.171	
3/21/2019	10:30	7.317	13.232	59.381	-0.184	
3/21/2019	10:31	7.046	13.231	60.146	-0.184	
3/21/2019	10:32	7.155	13.152	55.392	-0.185	
3/21/2019	10:33	7.153	12.902	46.517	-0.18	
3/21/2019	10:34	7.443	12.912	47.986	-0.168	

3/21/2019	10:35	7.311	13.004	51.527	-0.171	
3/21/2019	10:36	7.474	12.529	44.115	-0.176	
3/21/2019	10:37	7.857	12.645	42.806	-0.171	
3/21/2019	10:38	7.632	12.514	37.776	-0.189	
3/21/2019	10:39	7.927	12.276	31.608	-0.177	
3/21/2019	10:40	7.96	12.939	43.676	-0.17	
3/21/2019	10:41	7.535	12.363	33.05	-0.163	
3/21/2019	10:42	7.89	12.927	40.26	-0.133	
3/21/2019	10:43	7.472	12.477	33.421	-0.176	
3/21/2019	10:44	7.789	12.958	44.69	-0.169	
3/21/2019	10:45	7.508	12.82	42.419	-0.182	
3/21/2019	10:46	7.501	12.704	37.316	-0.179	
3/21/2019	10:47	7.767	12.337	36.265	-0.168	
3/21/2019	10:48	7.979	12.547	40.009	-0.189	
3/21/2019	10:49	7.723	13.243	51.088	-0.193	
3/21/2019	10:50	7.074	13.075	46.349	-0.218	
3/21/2019	10:51	7.377	12.972	42.927	-0.196	
3/21/2019	10:52	7.376	12.564	41.782	-0.192	
3/21/2019	10:53	7.83	12.609	34.91	-0.183	
3/21/2019	10:54	7.677	12.082	30.268	-0.163	
3/21/2019	10:55	8.28	12.718	38.147	-0.152	
3/21/2019	10:56	7.518	13.241	47.337	-0.169	
3/21/2019	10:57	7.205	13.124	44.124	-0.17	
3/21/2019	10:58	7.275	12.381	35.38	-0.186	
3/21/2019	10:59	7.991	12.363	33.345	-0.18	
3/21/2019	11:00	7.987	12.519	31.374	-0.164	
3/21/2019	11:01	7.79	12.993	41.786	-0.16	
3/21/2019	11:02	7.306	13.079	52.702	-0.194	
3/21/2019	11:03	7.311	13.064	43.512	-0.202	
3/21/2019	11:04	7.368	12.535	34.309	-0.193	
3/21/2019	11:05	7.79	12.818	33.558	-0.184	
3/21/2019	11:06	7.652	12.335	29.481	-0.16	
3/21/2019	11:07	7.943	13.09	44.67	-0.178	
3/21/2019	11:08	7.27	12.89	46.098	-0.212	
3/21/2019	11:09	7.575	12.744	47.428	-0.206	
3/21/2019	11:10	7.532	12.75	52.238	-0.227	
Run 3 Average		7.60	12.74	42.03	-0.17	
3/21/2019	11:11	7.491	13.197	67.124	-0.251	
3/21/2019	11:12	7.219	4.646	43.768	-0.246	
3/21/2019	11:13	1.928	0.135	45.348	-0.187	
3/21/2019	11:14	0.02	0.094	45.476	-0.089	NOx Bias
3/21/2019	11:15	0.001	0.075	45.495	0.005	
3/21/2019	11:16	-0.003	0.072	40.052	0.083	
3/21/2019	11:17	0.006	0.085	0.86	2.154	
3/21/2019	11:18	0.008	0.091	0.359	3.502	
3/21/2019	11:19	0.008	0.083	0.242	4.302	
3/21/2019	11:20	2.415	0.064	0.197	4.244	
3/21/2019	11:21	1.67	10.608	33.36	3.718	
3/21/2019	11:22	6.799	12.564	39.905	1.928	
3/21/2019	11:23	7.533	12.347	39.969	0.696	
3/21/2019	11:24	17.746	2.94	12.782	0.143	
3/21/2019	11:25	8.763	0.36	0.906	0.796	

3/21/2019	11:26	0.066	0.033	0.052	4.366	
3/21/2019	11:27	-0.006	0.036	0.039	4.709	CO Bias
3/21/2019	11:28	9.326	9.523	0.036	3.068	
3/21/2019	11:29	9.486	9.751	0.029	-0.083	
3/21/2019	11:30	5.505	6.519	11.337	0.036	
3/21/2019	11:31	10.401	10.459	0.087	0.047	
3/21/2019	11:32	10.409	10.461	0.024	0.035	O2 CO2 Bias;CO Zero
3/21/2019	11:33	3.859	4.259	3.499	1.685	
3/21/2019	11:34	-0.011	0.03	0.009	4.646	O2 CO2 NOx Zero
3/21/2019	11:35	8.534	8.248	30.133	4.668	CO Span
3/21/2019	11:36	10.461	10.497	45.993	4.465	O2 CO2 NOx Span
3/21/2019	11:37	8.125	12.676	58.549	2.954	
3/21/2019	11:38	7.763	12.637	51.603	0.167	
3/21/2019	11:39	7.644	12.814	52.381	-0.281	
3/21/2019	11:40	7.939	12.489	49.037	-0.273	
3/21/2019	11:41	7.667	12.767	56.808	-0.268	
3/21/2019	11:42	7.827	12.643	46.039	-0.249	
3/21/2019	11:43	6.901	13.549	62.562	-0.254	
3/21/2019	11:44	6.846	13.498	70.283	-0.292	
3/21/2019	11:45	7.736	12.705	48.865	-0.271	
3/21/2019	11:46	7.905	12.547	34.105	-0.228	
3/21/2019	11:47	7.014	13.399	50.376	-0.214	
3/21/2019	11:48	7.261	13.119	50.893	-0.243	
3/21/2019	11:49	7.275	13.19	46.339	-0.226	
3/21/2019	11:50	7.283	13.048	52.659	-0.247	
3/21/2019	11:51	8.17	12.258	45.868	-0.229	
3/21/2019	11:52	7.818	12.627	49.216	-0.2	
3/21/2019	11:53	7.681	12.675	42.364	-0.227	
3/21/2019	11:54	8.032	12.358	40.877	-0.223	
3/21/2019	11:55	7.849	12.593	37.367	-0.194	
3/21/2019	11:56	7.872	12.526	35.502	-0.187	
3/21/2019	11:57	7.228	13.186	43.694	-0.167	
3/21/2019	11:58	7.049	13.383	48.437	-0.201	
3/21/2019	11:59	7.228	13.162	44.318	-0.202	
3/21/2019	12:00	7.269	13.128	48.076	-0.21	
3/21/2019	12:01	7.069	13.317	50.91	-0.212	
3/21/2019	12:02	6.902	13.471	56.475	-0.231	
3/21/2019	12:03	7.703	12.701	43.218	-0.226	
3/21/2019	12:04	8.406	12	32.479	-0.187	
3/21/2019	12:05	6.949	13.494	49.918	-0.195	
3/21/2019	12:06	7.357	12.995	47.318	-0.216	
3/21/2019	12:07	7.722	12.708	38.158	-0.19	
3/21/2019	12:08	7.727	12.658	37.501	-0.19	
Run 4 Average		7.51	12.90	47.07	-0.22	
3/21/2019	12:09	1.303	1.361	42.186	-0.174	
3/21/2019	12:10	-0.004	0.055	45.633	0.053	
3/21/2019	12:11	-0.005	0.046	45.713	0.074	NOx Bias
3/21/2019	12:12	-0.006	0.041	4.936	2.266	
3/21/2019	12:13	-0.008	0.039	0.083	4.666	
3/21/2019	12:14	-0.01	0.045	0.071	4.679	CO Bias
3/21/2019	12:15	9.673	10.039	0.047	2.96	

3/21/2019	12:16	10.408	10.465	0.042	0.087	O2 CO2 Bias
3/21/2019	12:17	1.381	1.596	0.035	0.04	CO Zero
3/21/2019	12:18	-0.012	0.026	0.032	1.601	O2 CO2 NOx Zero
3/21/2019	12:19	9.059	8.833	34.158	4.636	
3/21/2019	12:20	10.457	10.471	45.938	4.678	Span
3/21/2019	12:21	8.031	12.789	48.001	3.077	
3/21/2019	12:22	8.074	12.33	34.567	-0.148	
3/21/2019	12:23	7.501	12.871	43.538	-0.212	
3/21/2019	12:24	7.695	12.687	43.253	-0.223	
3/21/2019	12:25	6.921	13.46	59.644	-0.248	
3/21/2019	12:26	7.318	13.045	56.73	-0.256	
3/21/2019	12:27	7.605	12.71	47.307	-0.249	
3/21/2019	12:28	7.903	12.462	42.505	-0.204	
3/21/2019	12:29	7.476	12.918	54.335	-0.212	
3/21/2019	12:30	7.921	12.423	49.519	-0.253	
3/21/2019	12:31	7.587	12.77	54.65	-0.241	
3/21/2019	12:32	7.779	12.611	53.706	-0.243	
3/21/2019	12:33	7.7	12.677	53.061	-0.256	
3/21/2019	12:34	7.745	12.645	54.52	-0.255	
3/21/2019	12:35	7.24	13.113	52.903	-0.231	
3/21/2019	12:36	6.971	13.391	61.06	-0.237	
3/21/2019	12:37	7.182	13.179	61.113	-0.253	
3/21/2019	12:38	7.6	12.736	53.607	-0.246	
3/21/2019	12:39	7.308	13.073	57.158	-0.237	
3/21/2019	12:40	7.721	12.663	44.467	-0.242	
3/21/2019	12:41	7.607	12.766	43.179	-0.218	
3/21/2019	12:42	7.361	13.019	49.246	-0.208	
3/21/2019	12:43	7.369	12.985	56.096	-0.246	
3/21/2019	12:44	7.881	12.49	47.3	-0.252	
3/21/2019	12:45	7.177	13.2	66.862	-0.249	
3/21/2019	12:46	7.556	12.8	54.705	-0.269	
3/21/2019	12:47	7.548	12.817	45.68	-0.24	
3/21/2019	12:48	7.687	12.656	38.951	-0.202	
3/21/2019	12:49	7.752	12.656	37.919	-0.202	
3/21/2019	12:50	7.09	13.257	47.239	-0.207	
3/21/2019	12:51	7.153	13.151	52.37	-0.201	
3/21/2019	12:52	7.66	12.69	44.59	-0.23	
Run 5 Average		7.50	12.86	50.91	-0.23	
3/21/2019	12:53	1.13	1.186	42.892	-0.106	
3/21/2019	12:54	-0.005	0.05	45.738	0.041	NOx Bias
3/21/2019	12:55	-0.006	0.042	7.969	1.967	
3/21/2019	12:56	-0.007	0.043	0.085	4.661	
3/21/2019	12:57	-0.01	0.035	0.068	4.671	CO Bias
3/21/2019	12:58	1.979	2.069	0.061	4.661	
3/21/2019	12:59	10.395	10.373	0.048	1.604	
3/21/2019	13:00	10.406	10.4	0.043	-0.32	O2 CO2 Bias
3/21/2019	13:01	0.779	1.078	0.027	0.01	
3/21/2019	13:02	-0.012	0.026	0.093	0.052	Zero
3/21/2019	13:03	9.547	10.025	42.954	2.463	
3/21/2019	13:04	10.455	10.439	46.038	4.68	Span
3/21/2019	13:05	8.974	11.752	46.422	4.319	

3/21/2019	13:06	7.418	12.962	53.031	0.43	
3/21/2019	13:07	6.491	13.857	69.378	-0.243	
3/21/2019	13:08	6.452	13.921	70.493	-0.245	
3/21/2019	13:09	6.562	13.774	64.707	-0.236	
3/21/2019	13:10	7.444	12.848	46.376	-0.231	
3/21/2019	13:11	7.362	13.042	42.323	-0.159	
3/21/2019	13:12	7.048	13.302	47.269	-0.183	
3/21/2019	13:13	7.272	13.09	42.816	-0.173	
3/21/2019	13:14	7.283	13.169	43.349	-0.193	
3/21/2019	13:15	7.201	13.102	46.309	-0.21	
3/21/2019	13:16	7.485	12.861	43.685	-0.166	
3/21/2019	13:17	7.786	12.668	37.502	-0.174	
3/21/2019	13:18	6.938	13.37	57.488	-0.192	
3/21/2019	13:19	6.885	13.539	61.265	-0.221	
3/21/2019	13:20	6.78	13.522	58.826	-0.246	
3/21/2019	13:21	7.564	12.748	47.351	-0.216	
3/21/2019	13:22	7.8	12.628	42.709	-0.2	
3/21/2019	13:23	7.163	13.067	48.496	-0.197	
3/21/2019	13:24	7.898	12.435	34.026	-0.163	
3/21/2019	13:25	8.71	11.689	21.065	-0.091	
3/21/2019	13:26	8.579	11.771	17.109	-0.011	
3/21/2019	13:27	8.61	11.754	15.629	0.039	
3/21/2019	13:28	8.321	12.015	19.448	0.023	
3/21/2019	13:29	8.175	12.199	18.669	0.001	
3/21/2019	13:30	7.653	12.781	24.825	0.004	
3/21/2019	13:31	7.179	13.019	34.166	-0.073	
3/21/2019	13:32	7.524	12.903	37.603	-0.118	
3/21/2019	13:33	7.364	12.953	42.42	-0.158	
3/21/2019	13:34	7.345	12.999	40.637	-0.159	
3/21/2019	13:35	7.184	13.156	41.147	-0.138	
3/21/2019	13:36	6.422	13.95	60.335	-0.161	
Run 6 Average		7.42	12.94	42.58	-0.15	
3/21/2019	13:37	1.033	0.877	46.908	-0.139	
3/21/2019	13:38	-0.005	0.048	45.52	0.07	
3/21/2019	13:39	-0.006	0.04	45.544	0.1	NOx Bias
3/21/2019	13:40	-0.008	0.037	21.265	0.788	
3/21/2019	13:41	-0.01	0.034	0.098	4.458	
3/21/2019	13:42	-0.011	0.035	0.063	4.693	CO Bias
3/21/2019	13:43	6.805	7.283	0.044	3.092	
3/21/2019	13:44	10.379	10.374	0.044	0.099	O2 CO2 Bias
3/21/2019	13:45	0.824	0.939	0.028	0.057	CO Zero
3/21/2019	13:46	-0.012	0.023	0.031	1.028	O2 CO2 NOx Zero
3/21/2019	13:47	8.893	8.587	33.011	4.554	
3/21/2019	13:48	10.452	10.417	45.937	4.686	Span
3/21/2019	13:49	8.38	12.163	41.288	3.741	
3/21/2019	13:50	7.753	12.552	35.025	0.077	
3/21/2019	13:51	7.425	12.89	45.322	-0.158	
3/21/2019	13:52	7.628	12.639	43.629	-0.154	
3/21/2019	13:53	7.116	13.155	58.868	-0.165	
3/21/2019	13:54	7.651	12.609	47.796	-0.173	
3/21/2019	13:55	7.817	12.43	40.121	-0.153	

3/21/2019	13:56	8.345	11.95	29.788	-0.104	
3/21/2019	13:57	8.228	12.052	31.289	-0.093	
3/21/2019	13:58	8.511	11.772	32.679	-0.096	
3/21/2019	13:59	8.026	12.25	41.264	-0.133	
3/21/2019	14:00	7.201	13.074	61.518	-0.172	
3/21/2019	14:01	7.365	12.891	57.502	-0.172	
3/21/2019	14:02	7.682	12.615	50.518	-0.173	
3/21/2019	14:03	7.592	12.694	56.171	-0.17	
3/21/2019	14:04	7.308	12.973	58.637	-0.166	
3/21/2019	14:05	7.563	12.7	51.933	-0.156	
3/21/2019	14:06	7.516	12.772	50.495	-0.162	
3/21/2019	14:07	6.89	13.423	54.322	-0.167	
3/21/2019	14:08	6.337	13.935	63.333	-0.166	
3/21/2019	14:09	7.188	13.107	51.312	-0.169	
3/21/2019	14:10	6.945	13.367	59.102	-0.166	
3/21/2019	14:11	6.876	13.45	55.552	-0.173	
3/21/2019	14:12	7.052	13.251	52.902	-0.183	
3/21/2019	14:13	7.469	12.826	46.769	-0.19	
3/21/2019	14:14	7.95	12.36	43.088	-0.16	
3/21/2019	14:15	7.989	12.386	34.223	-0.147	
3/21/2019	14:16	6.94	13.42	53.329	-0.155	
3/21/2019	14:17	6.703	13.618	59.474	-0.212	
3/21/2019	14:18	7.13	13.2	59.807	-0.213	
3/21/2019	14:19	6.929	13.397	54.024	-0.209	
3/21/2019	14:20	8.464	11.811	25.193	-0.149	
Run 7 Average		7.46	12.83	49.00	-0.16	
3/21/2019	14:21	1.679	1.519	38.604	-0.068	
3/21/2019	14:22	-0.003	0.051	45.469	0.061	NOx Bias
3/21/2019	14:23	-0.005	0.042	23.943	0.601	
3/21/2019	14:24	-0.007	0.04	0.098	4.347	
3/21/2019	14:25	-0.01	0.038	0.068	4.687	CO Bias
3/21/2019	14:26	9.075	9.343	0.043	3.151	
3/21/2019	14:27	10.398	10.428	0.043	0.112	O2 CO2 Bias
3/21/2019	14:28	1.57	1.77	0.042	0.051	CO Zero
3/21/2019	14:29	-0.012	0.027	0.039	1.795	O2 CO2 NOx Zero
3/21/2019	14:30	9.386	9.092	35.36	4.657	
3/21/2019	14:31	10.451	10.477	46.05	4.684	Span
3/21/2019	14:32	7.971	12.617	56.288	2.945	
3/21/2019	14:33	7.694	12.725	55.619	-0.205	
3/21/2019	14:34	7.964	12.459	47.799	-0.247	
3/21/2019	14:35	7.343	13.076	45.897	-0.201	
3/21/2019	14:36	6.927	13.485	48.451	-0.203	
3/21/2019	14:37	6.191	14.203	59.653	-0.211	
3/21/2019	14:38	7.062	13.348	55.538	-0.2	
3/21/2019	14:39	8.243	12.165	36.76	-0.212	
3/21/2019	14:40	8.372	12.037	33.644	-0.175	
3/21/2019	14:41	7.425	12.993	46.034	-0.186	
3/21/2019	14:42	7.554	12.865	46.611	-0.215	
3/21/2019	14:43	7.924	12.487	40.31	-0.188	
3/21/2019	14:44	8.425	11.992	28.028	-0.156	
3/21/2019	14:45	8.405	12.003	30.237	-0.128	

3/21/2019	14:46	8.281	12.135	32.53	-0.112	
3/21/2019	14:47	7.26	13.164	50.369	-0.173	
3/21/2019	14:48	6.845	13.567	54.857	-0.208	
3/21/2019	14:49	7.242	13.176	54.931	-0.206	
3/21/2019	14:50	7.845	12.572	44.65	-0.194	
3/21/2019	14:51	7.667	12.761	49.608	-0.194	
3/21/2019	14:52	8.138	12.278	38.966	-0.196	
3/21/2019	14:53	7.348	13.064	53.951	-0.206	
3/21/2019	14:54	7.464	12.952	52.006	-0.215	
3/21/2019	14:55	6.82	13.59	61.207	-0.245	
3/21/2019	14:56	6.398	13.993	65.711	-0.221	
3/21/2019	14:57	6.926	13.474	59.517	-0.216	
3/21/2019	14:58	8.326	12.079	32.693	-0.195	
3/21/2019	14:59	7.493	12.921	37.573	-0.14	
3/21/2019	15:00	7.827	12.591	32.318	-0.128	
3/21/2019	15:01	7.319	13.083	41.04	-0.143	
3/21/2019	15:02	6.555	13.836	57.877	-0.176	
3/21/2019	15:03	6.747	13.655	54.004	-0.192	
3/21/2019	15:04	7.66	12.754	35.905	-0.179	
Run 8 Average		7.47	12.94	46.03	-0.19	
3/21/2019	15:05	0.716	0.948	41.167	-0.084	
3/21/2019	15:06	-0.003	0.054	45.576	0.034	NOx Bias
3/21/2019	15:07	-0.004	0.048	29.131	0.353	
3/21/2019	15:08	-0.005	0.043	0.124	4.136	
3/21/2019	15:09	-0.006	0.04	0.066	4.693	CO Bias
3/21/2019	15:10	6.777	6.654	0.051	3.253	
3/21/2019	15:11	10.4	10.418	0.043	0.109	O2 CO2 Bias, CO zero
3/21/2019	15:12	1.287	3.34	0.042	1.407	
3/21/2019	15:13	-0.011	0.026	0.02	4.624	O2 CO2 NOx Zero,
3/21/2019	15:14	9.48	9.168	35.678	4.691	CO Span
3/21/2019	15:15	10.455	10.474	46.01	4.53	O2 CO2 NOx Span
3/21/2019	15:16	9.061	11.563	35.844	0.878	
3/21/2019	15:17	7.94	12.541	35.615	-0.164	
3/21/2019	15:18	7.51	12.948	46.624	-0.172	
3/21/2019	15:19	7.274	13.162	52.231	-0.196	
3/21/2019	15:20	7.115	13.326	60.279	-0.221	
3/21/2019	15:21	7.422	12.97	55.671	-0.222	
3/21/2019	15:22	7.597	12.868	52.069	-0.221	
3/21/2019	15:23	7.738	12.695	46.148	-0.195	
3/21/2019	15:24	8.536	11.873	34.905	-0.175	
3/21/2019	15:25	8	12.489	38.434	-0.141	
3/21/2019	15:26	7.39	13.038	49.591	-0.176	
3/21/2019	15:27	8.068	12.342	43.224	-0.193	
3/21/2019	15:28	7.194	13.267	53.574	-0.173	
3/21/2019	15:29	7.71	12.716	49.057	-0.192	
3/21/2019	15:30	7.848	12.544	50.465	-0.211	
3/21/2019	15:31	8.503	11.954	40.798	-0.194	
3/21/2019	15:32	7.974	12.45	43.175	-0.186	
3/21/2019	15:33	8.056	12.425	41.908	-0.172	
3/21/2019	15:34	6.644	13.847	67.252	-0.198	
3/21/2019	15:35	6.883	13.53	58.788	-0.222	

3/21/2019	15:36	7.325	13.131	44.427	-0.223	
3/21/2019	15:37	7.301	13.154	41.549	-0.164	
3/21/2019	15:38	7.675	12.82	38.915	-0.184	
3/21/2019	15:39	7.566	12.855	41.755	-0.192	
3/21/2019	15:40	7.742	12.73	39.324	-0.175	
3/21/2019	15:41	7.214	13.276	53.466	-0.209	
3/21/2019	15:42	7.536	12.944	52.1	-0.23	
3/21/2019	15:43	7.55	12.911	52.296	-0.227	
3/21/2019	15:44	7.508	12.94	52.28	-0.217	
3/21/2019	15:45	7.221	13.261	56.98	-0.217	
3/21/2019	15:46	6.787	13.656	59.998	-0.216	
Run 9 Average		7.56	12.89	48.43	-0.20	
3/21/2019	15:47	2.026	3.441	49.999	-0.162	
3/21/2019	15:48	-0.004	0.056	45.466	0.036	
3/21/2019	15:49	-0.005	0.046	45.352	0.088	NOx Bias
3/21/2019	15:50	-0.006	0.044	19.996	0.852	
3/21/2019	15:51	-0.009	0.039	0.095	4.487	
3/21/2019	15:52	-0.01	0.039	0.062	4.692	CO Bias
3/21/2019	15:53	7.046	7.278	0.047	3.342	
3/21/2019	15:54	10.387	10.464	0.042	0.118	O2 CO2 Bias
3/21/2019	15:55	1.444	1.665	0.04	0.043	CO Zero
3/21/2019	15:56	-0.011	0.025	0.032	1.204	O2 CO2 NOx Zero
3/21/2019	15:57	6.992	6.787	24.914	4.591	
3/21/2019	15:58	10.455	10.523	45.997	4.69	Span
3/21/2019	15:59	16.554	15.822	72.938	4.948	
3/21/2019	16:00	19.295	18.744	90.815	8.183	
3/21/2019	16:01	19.294	18.743	90.601	8.646	High
3/21/2019	16:02	18.322	18.127	87.531	8.64	
3/21/2019	16:03	7.167	13.357	39.396	4.404	
3/21/2019	16:04	6.679	13.696	52.801	-0.15	
3/21/2019	16:05	8.296	12.133	33.461	-0.185	
3/21/2019	16:06	7.377	13.071	43.646	-0.135	
3/21/2019	16:07	8.08	12.269	35.281	-0.169	
3/21/2019	16:08	8.781	11.573	23.693	-0.111	
3/21/2019	16:09	7.96	12.501	32.684	-0.084	
3/21/2019	16:10	7.335	13.062	46.869	-0.14	
3/21/2019	16:11	7.513	12.856	47.16	-0.162	
3/21/2019	16:12	7.979	12.388	41.101	-0.148	
3/21/2019	16:13	7.714	12.675	44.204	-0.153	
3/21/2019	16:14	7.342	13.009	47.908	-0.136	
3/21/2019	16:15	6.673	13.718	54.962	-0.152	
3/21/2019	16:16	6.291	14.005	71.051	-0.174	
3/21/2019	16:17	7.765	12.512	45.052	-0.177	
3/21/2019	16:18	8.442	11.963	30.816	-0.118	
3/21/2019	16:19	7.442	12.904	44.647	-0.139	
3/21/2019	16:20	7.577	12.798	42.071	-0.143	
3/21/2019	16:21	7.445	12.9	43.956	-0.135	
3/21/2019	16:22	6.877	13.525	54.176	-0.146	
3/21/2019	16:23	6.499	13.819	62.773	-0.144	
3/21/2019	16:24	6.615	13.696	60.282	-0.16	
3/21/2019	16:25	7.412	12.902	49.931	-0.164	
3/21/2019	16:26	7.938	12.433	35.811	-0.138	

3/21/2019	16:27	7.783	12.561	34.495	-0.086	
3/21/2019	16:28	7.885	12.432	32.01	-0.074	
3/21/2019	16:29	8.091	12.238	27.733	-0.052	
3/21/2019	16:30	8.265	12.057	23.958	-0.052	
3/21/2019	16:31	7.826	12.551	33.948	-0.04	
3/21/2019	16:32	7.628	12.719	38.428	-0.114	
3/21/2019	16:33	7.299	13.018	43.561	-0.109	
3/21/2019	16:34	7.612	12.765	39.701	-0.113	
3/21/2019	16:35	6.758	13.59	60.049	-0.153	
3/21/2019	16:36	6.715	13.568	60.873	-0.172	
Run 10 Average		7.52	12.83	43.64	-0.13	
3/21/2019	16:37	1.213	1.248	42.079	-0.127	
3/21/2019	16:38	-0.004	0.053	45.417	0.052	NOx Bias
3/21/2019	16:39	-0.005	0.046	19.281	1.071	
3/21/2019	16:40	-0.009	0.043	0.128	4.566	
3/21/2019	16:41	-0.009	0.038	0.083	4.702	CO Bias
3/21/2019	16:42	8.267	8.631	0.067	3.421	
3/21/2019	16:43	10.383	10.422	0.061	-0.113	
3/21/2019	16:44	8.313	8.697	0.043	0.048	
3/21/2019	16:45	-0.008	0.032	0.04	0.073	Zero
3/21/2019	16:46	7.032	7.407	31.659	1.451	
3/21/2019	16:47	10.455	10.485	46.063	4.638	
3/21/2019	16:48	10.458	10.486	45.95	4.698	Span
3/21/2019	16:49	15.641	15.117	65.949	4.898	
3/21/2019	16:50	19.291	18.733	90.836	8.112	
3/21/2019	16:51	19.294	18.753	90.734	8.669	High
3/21/2019	16:52	10.499	13.543	49.271	6.482	

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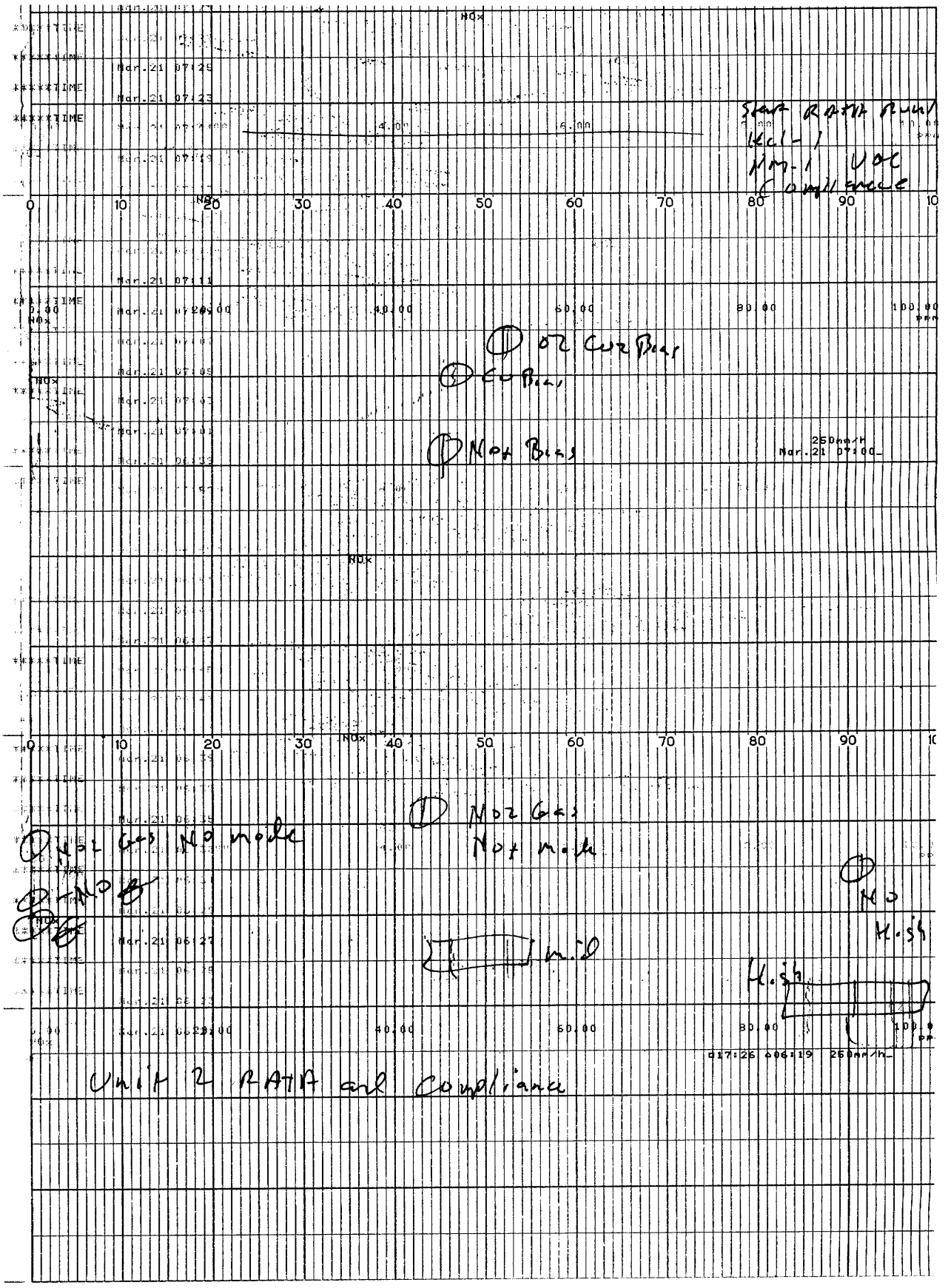
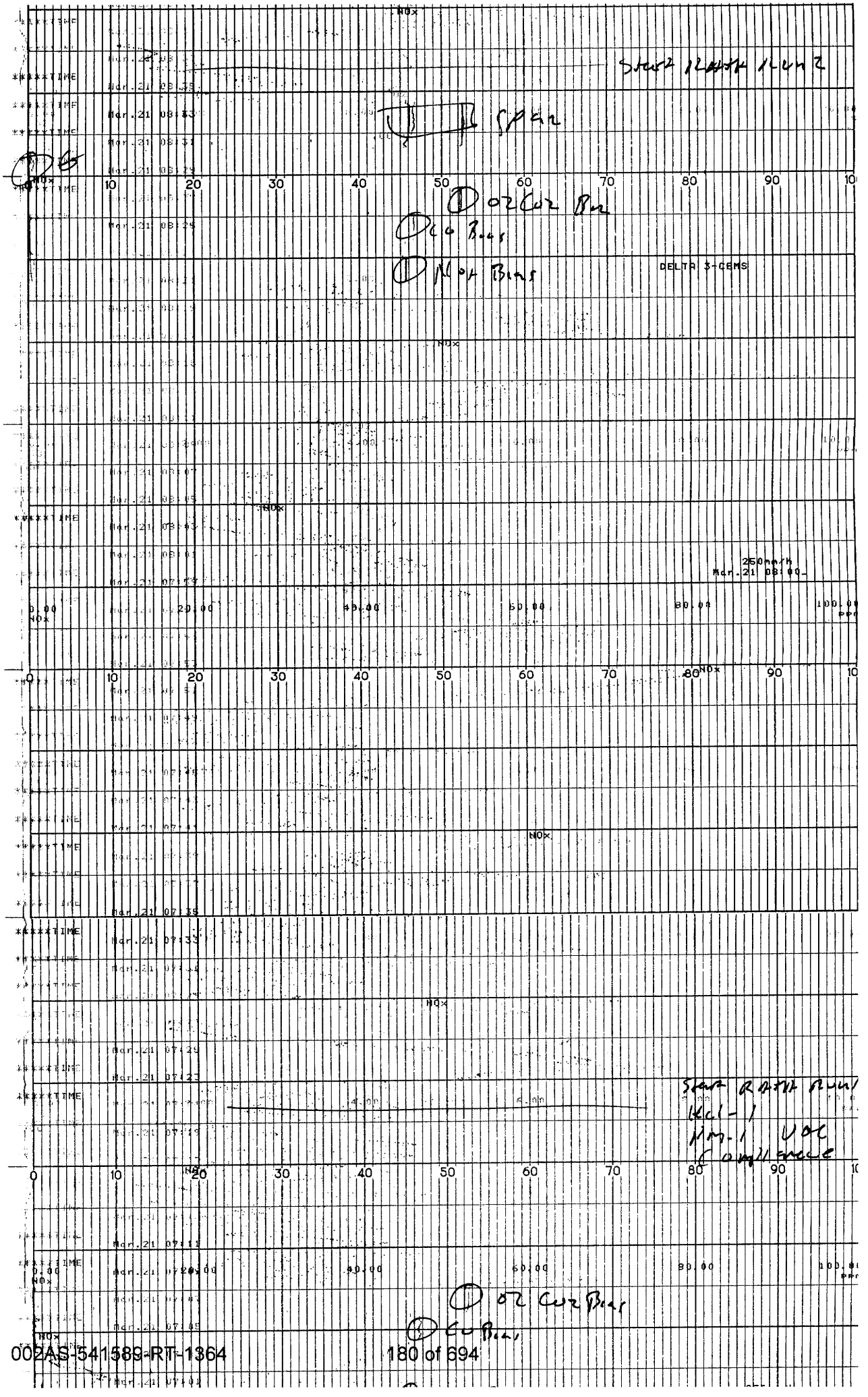
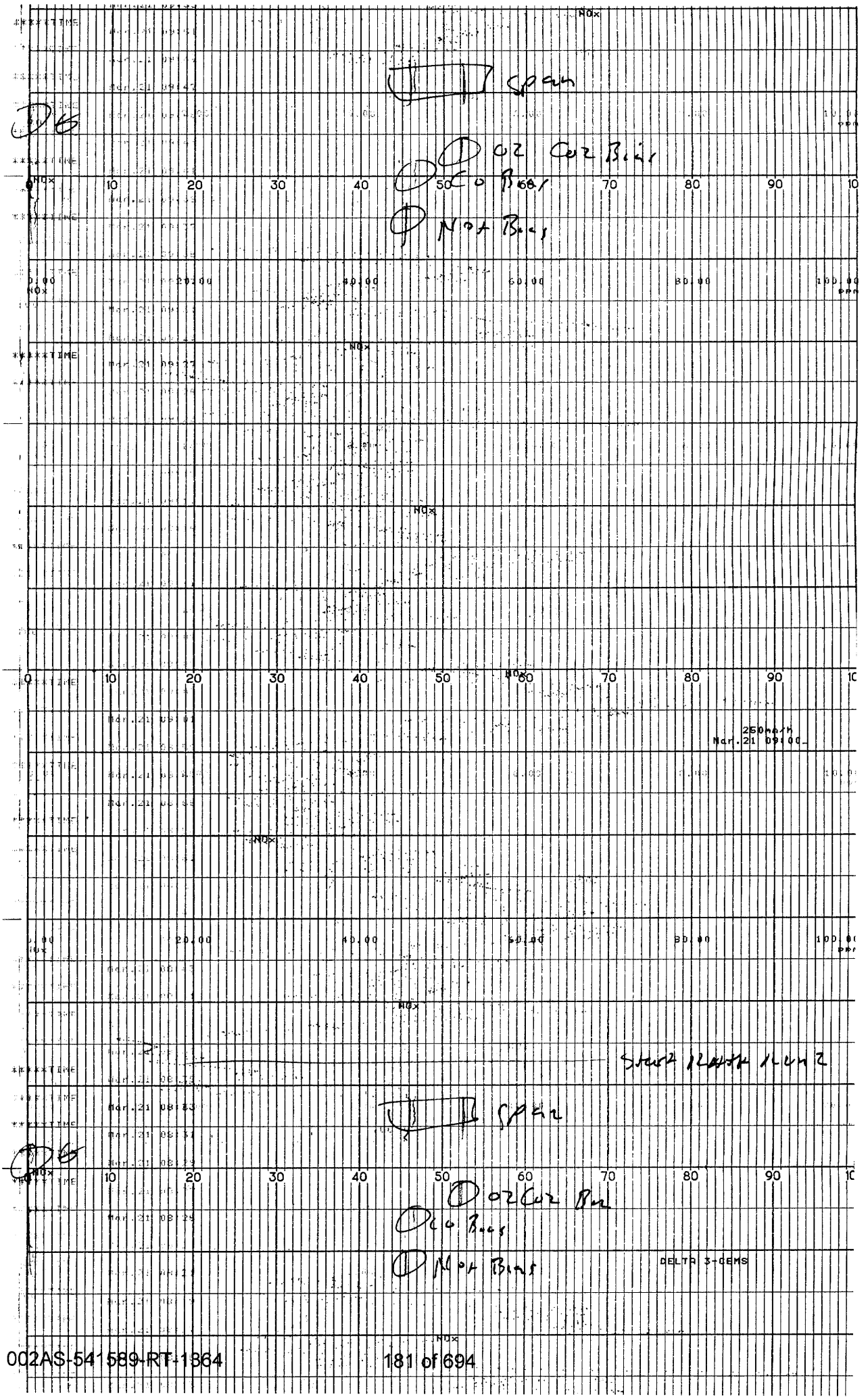
Appendix A.2.3
Unit 2 Instrument Strip Charts

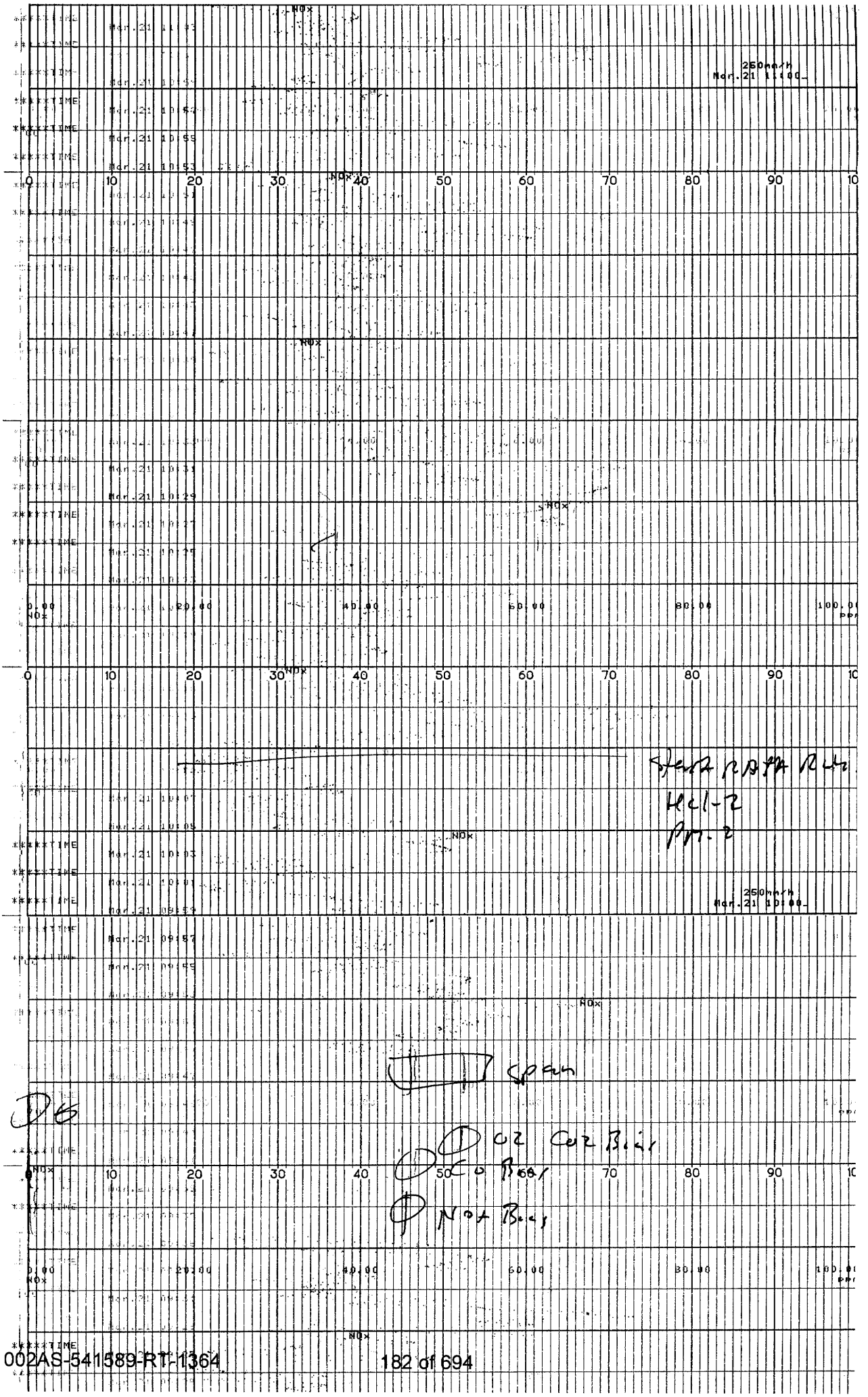

Start RATA Run
Hcl-1
NM-1 VOC
Compliance
NOx
Mar.21 07:29
Mar.21 07:23
Mar.21 07:11
Mar.21 07:05
Mar.21 07:01
Mar.21 06:39
Mar.21 06:27
0 10 20 30 40 50 60 70 80 90 100
0.00 20.00 40.00 60.00 80.00 100.00
250mm/h
Mar.21 07:00
① O2 Cu2 Bias
① Cu Bias
① Nox Bias
① No2 Gas
Nox mode
① No2 Gas NO mode
① NO
① NO
High
mid
High
017:26 006:19 250mm/h
Unit 2 RATA and Compliance

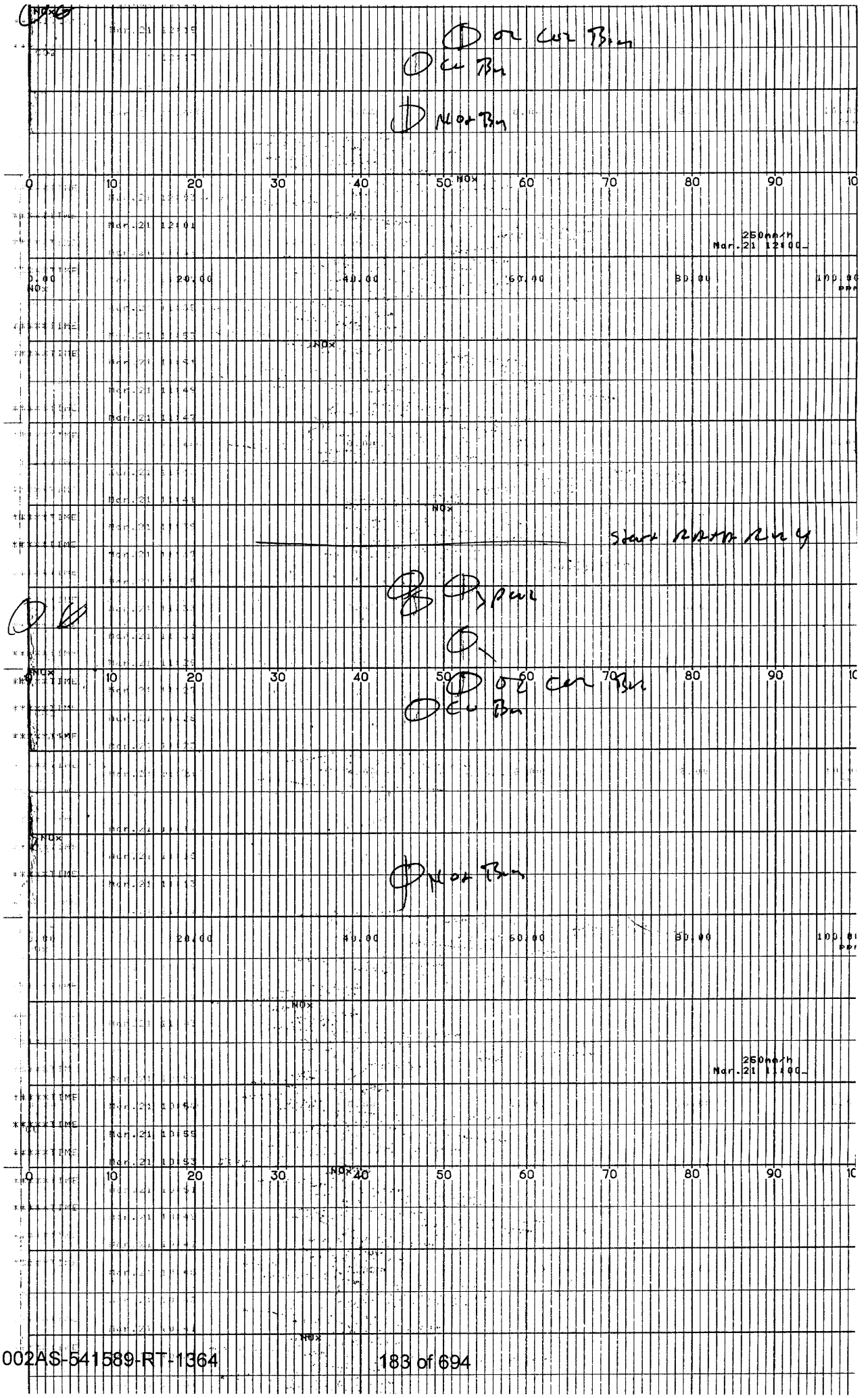


Start Rath Run 2
Span
O2 Co2 Bias
Co Bias
Nox Bias
DELTA 3-CEMS
250mm/h
Mar.21 08:00
Start Rath Run
Kcl-1
Nm-1 VOC
Compliance
O2 Co2 Bias
Co Bias

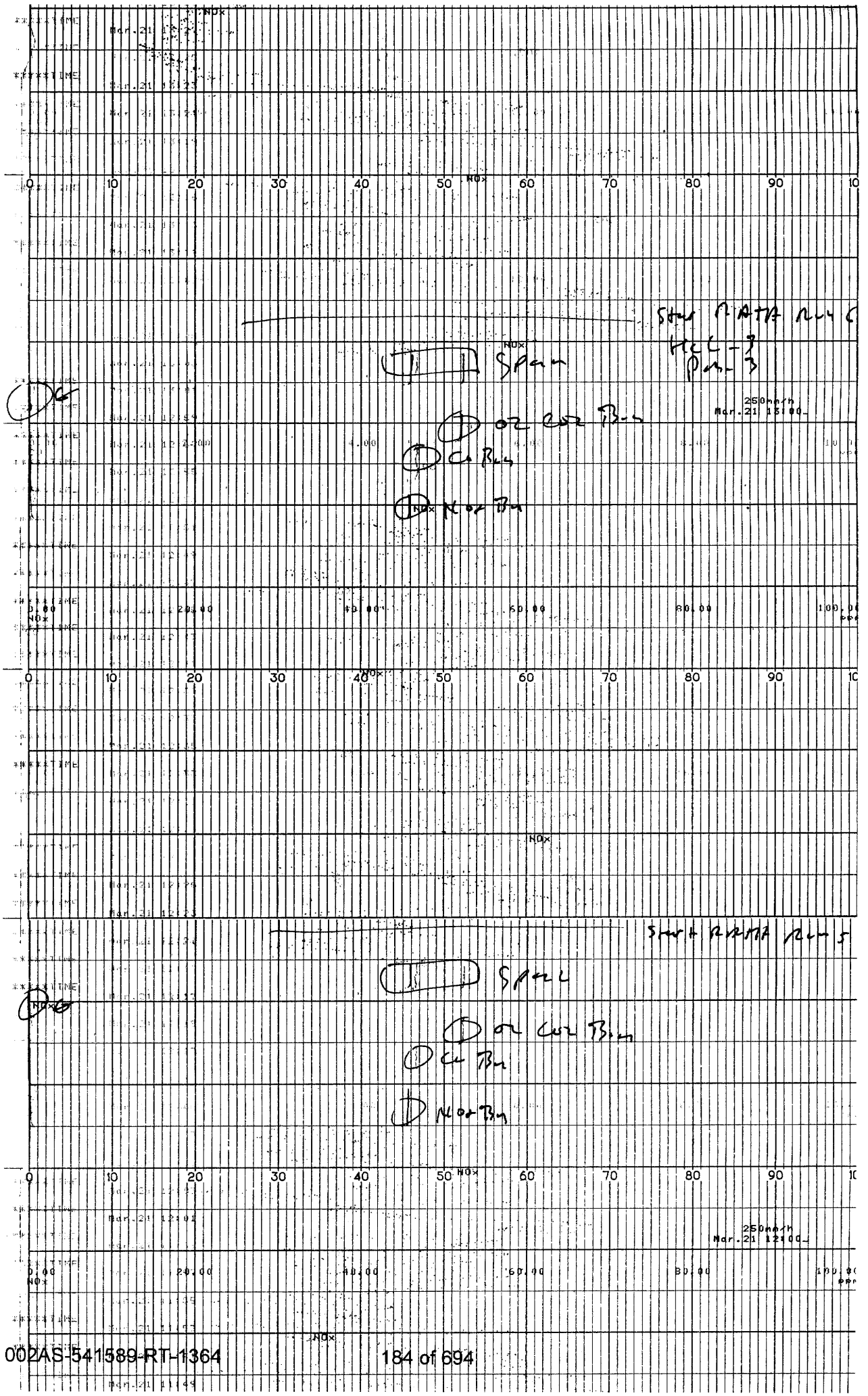


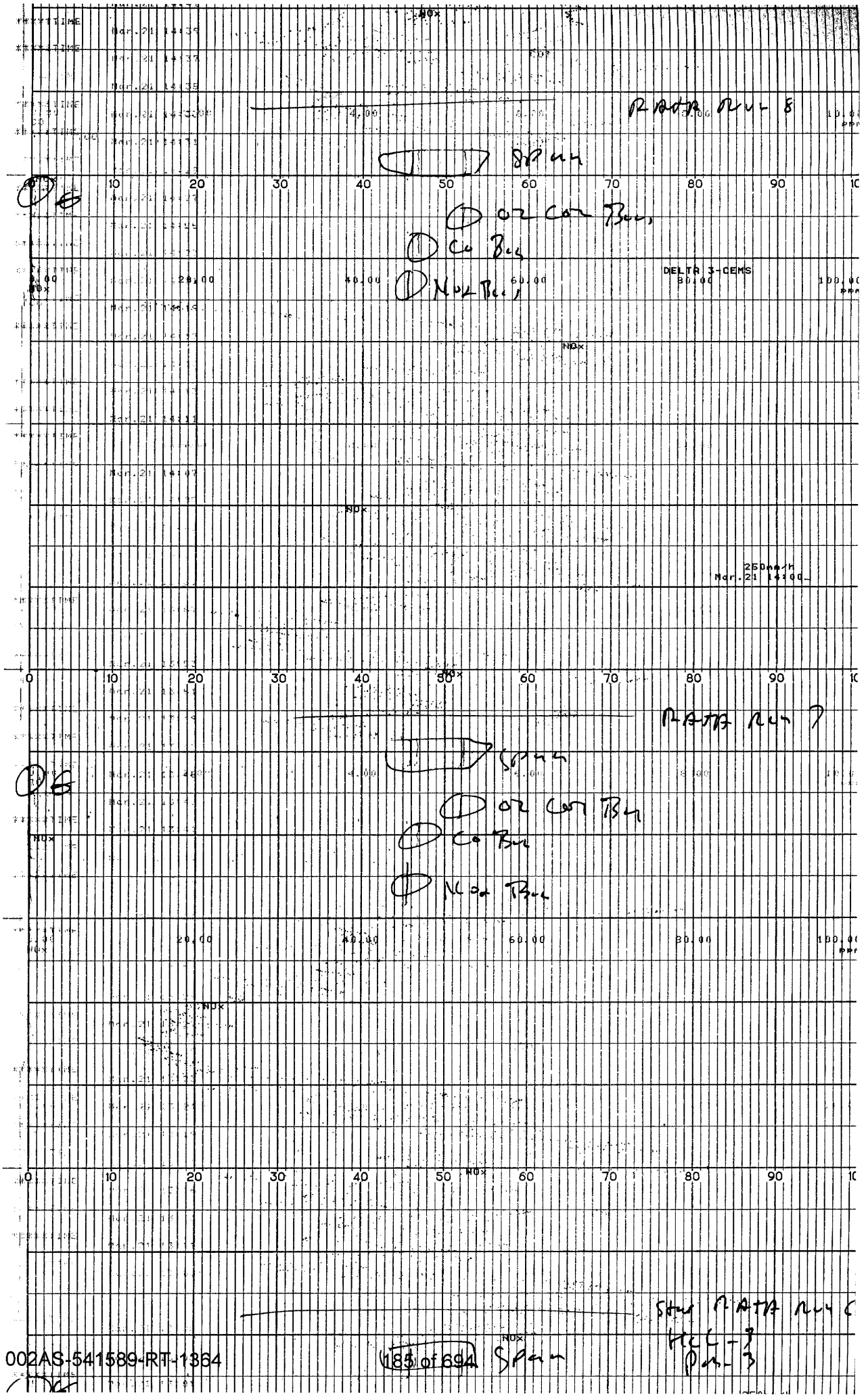
NOx
span
O2 Co2 Bias
Co Bias
Not Bias
0.00
20.00
40.00
60.00
80.00
100.00
ppm
250mm/h
Mar.21 09:00
Start Rath Run 2
span
O2 Co2 Bias
Co Bias
Not Bias
DELTA 3-CEMS


NOx
250mm/h
Mar.21 11:00
Mar.21 10:59
Mar.21 10:53
Mar.21 10:31
Mar.21 10:29
Mar.21 10:07
Mar.21 10:05
Mar.21 10:03
Mar.21 10:01
Mar.21 09:59
Mar.21 09:57
Mar.21 09:55
0 10 20 30 40 50 60 70 80 90 10
0.00 20.00 40.00 60.00 80.00 100.00
Start RATA Run
HCl-2
PM-2
Span
O2 Co2 Bias
Co Bias
Nox Bias

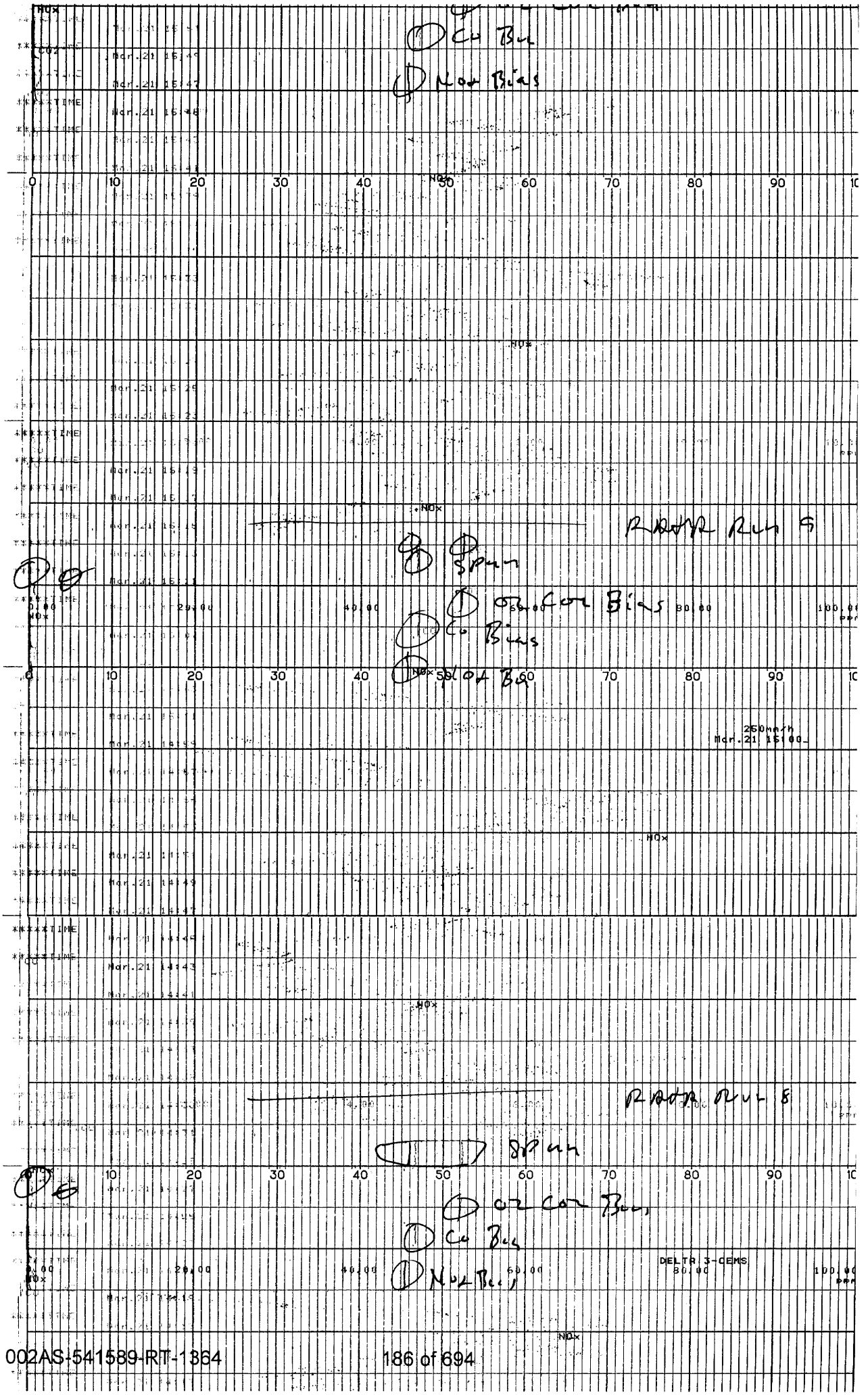


NOx
Mar.21 12:19
Mar.21 12:01
250mm/h
Mar.21 12:00
20.00
40.00
60.00
80.00
100.00
ppm
Mar.21 11:49
Mar.21 11:47
Mar.21 11:41
Start RATA Run 4
Mar.21 11:13
Mar.21 11:00
Mar.21 10:59
Mar.21 10:53
0
10
20
30
40
50
60
70
80
90

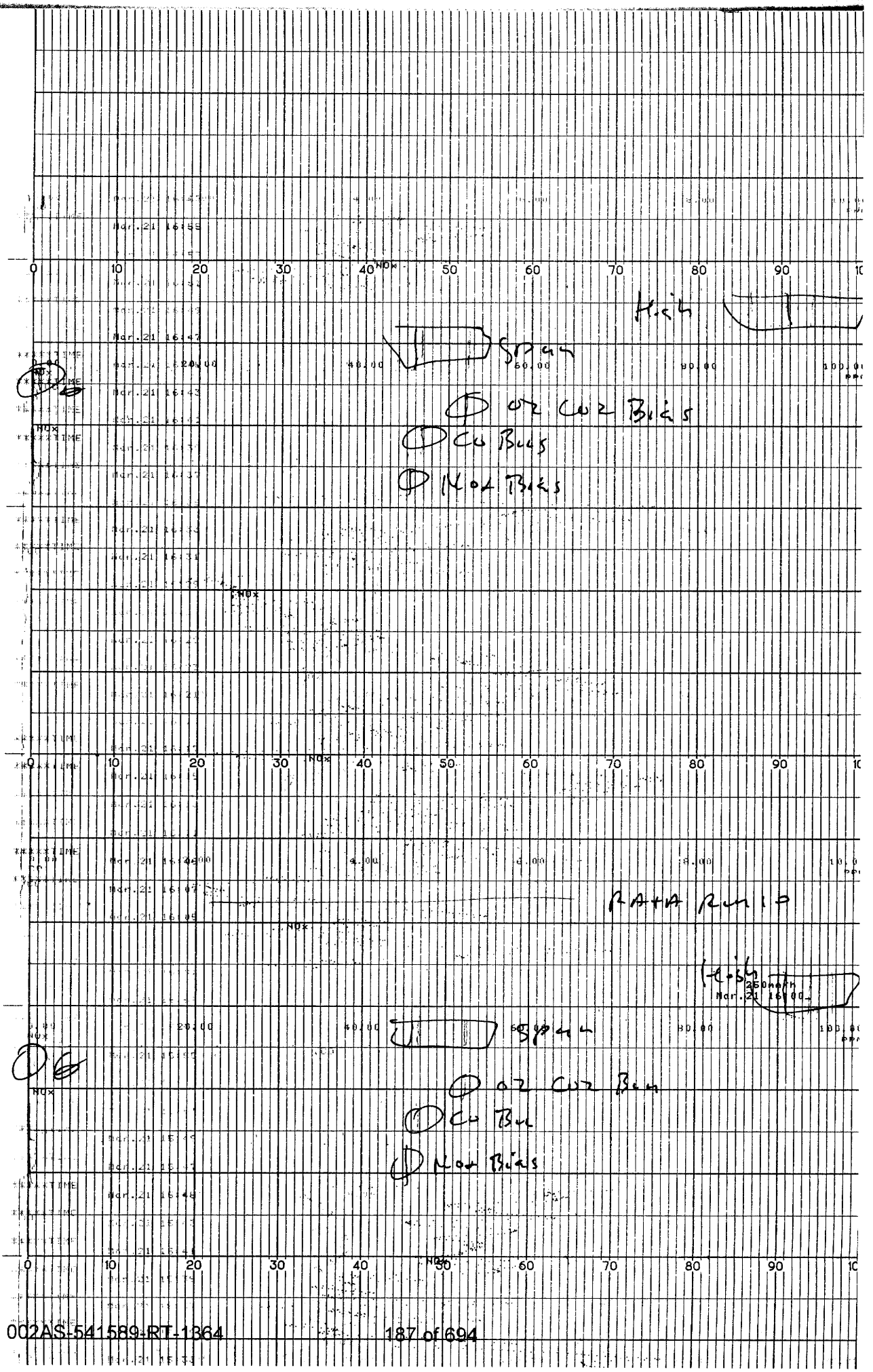

Start RATA Run 6
HCL-3
Span
250mm/h
Mar.21 13:00
Start RATA Run 5
Span
250mm/h
Mar.21 12:00



RATA Run 8
Span
O2 Cor Bias
Co Bias
NOx Bias
DELTA 3-CEMS
250mm/h
Mar.21 14:00
RATA Run 7
Span
O2 Cor Bias
Co Bias
NOx Bias
Start RATA Run 6
HCL-3
Span



Co Bu
Nox Bias
RATR Run 9
Span
Or Cor Bias
Co Bias
Nox Bu
250mm/h
Mar.21 15:00
RATR Run 8
Span
Or Cor Bias
Co Bu
Nox Bias
DELTA 3-CEMS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Mar.21 16:55
NOx
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10
20
30
40
50
60
70
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90
High
Spike
O2 Corr Bias
Cu Bias
Mon Bias
INTVL 1
TIME
Mar.21 16:42
20.00
40.00
60.00
80.00
100.00
INTVL 1
TIME
Mar.21 16:43
INTVL 1
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Mar.21 16:44
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Mar.21 17:05
INTVL 1
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Mar.21 17:06
INTVL 1
TIME
Mar.21 17:07
INTVL 1
TIME
Mar.21

Appendix A.2.4
Unit 2 Hydrogen Chloride Data

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 1-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 1.8 X ΔP:
Probe Condition, pre/post test: ✓/✓
Silica Gel Expanded, Y/N: N
Filter Condition after Test: ✓ - not recovered
Check Weight: 500.0/500.0

AMBIENT TEMPERATURE: 65°
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : <0.005 CFM@ 15" in. Hg.
POST-TEST LEAK RATE: : CFM@ in. Hg. see pg 2
PITOT LEAK CHECK - PRE: good POST:
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	0.1N H2SO4	977.2	750.3	226.9
2	0.1N H2SO4	767.8	680.8	87
3	Empty	482.4	476.9	5.5
4	Silica gel	912.1	892.4	19.7
	Rinse		-50 ml	-50
	Total:			289.1

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Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	721	70.120	1.1	2.0	348	251	250	58	71	68	6		
4	725	72.101	1.2	2.2	349	252	253	50	72	71	6		
3	729	74.100	.75	1.3	350	252	254	50	73	71	6		
2	733	77.450	.70	1.3	352	252	257	46	76	68	5		
1	737	81.500	.65	1.2	351	251	254	46	77	69	5		
741 0	739	83.900	—	—	—	—	—	—	—	—			
5	743	83.900	1.0	1.8	349	249	256	47	77	71	6		
4	747	86.501	.95	1.7	351	249	256	47	82	73	6		
3	751	89.400	.90	1.7	352	250	252	50	83	73	6		
2	755	92.530	.89	1.6	353	251	253	51	83	73	6		
1	759	95.080	.87	1.6	353	251	254	51	83	74	6		
0	803	97.869	—	—	—	—	—	—	—	—	—		
5	805	97.869	.95	1.7	352	251	253	54	80	79	6		
4	809	101.090	.98	1.8	355	252	255	52	81	76	6		
3	903	103.900	.96	1.8	355	251	254	53	83	76	6		
2	907	106.880	.87	1.7	354	250	254	53	84	76	6		
1	911	109.661	.71	1.3	354	251	252	54	85	76	6		
Average:	925	112.554											

Comments: 74.100 Rm 3/20/19 1.9 @ 809

MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3- -2019
RUN NO: 1-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 1.9 X ΔP:
Probe Condition, pre/post test:
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 65°
BAROMETRIC PRESSURE: 30.17
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : CFM@ in. Hg.
POST-TEST LEAK RATE: 0.001 CFM@12" in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	= Difference
1	0.1N H2SO4			
2	0.1N H2SO4			
3	Empty			
4	Silica gel			
	Rinse		50	
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	836	112,554	1.3	2.9	354	251	254	54	78	76	7		
4	840	115.920	1.4	2.1	356	251	252	55	81	77	6.5		
3	844	119.750	.96	1.6	356	252	253	55	83	77	6		
2	848	122.140	.90	1.7	356	251	255	56	83	76	6		
1	852	125.010	.75	1.4	355	251	251	52	85	77	6		
0	856	127.600											
5	858	127.600	1.3	2.5	354	252	256	54	82	74	6		
4	902	130.970	1.1	2.1	356	252	254	51	87	77	6		
3	906	134.560	1.2	2.3	356	250	250	52	88	77	6		
2	910	137.660	1.1	2.1	355	251	255	53	89	77	6		
1	914	140.835	1.1	2.1	354	250	254	54	90	78	6		
0	918	144.181	–	–	–	–	–	–	–	–			
5	920	144.181	1.3	2.5	354	250	250	55	91	78	7		
4	924	147.010	1.2	2.3	355	250	250	56	91	77	6.5		
3	928	151.130	1.2	2.3	355	250	250	56	91	77	6.5		
2	932	154.400	1.2	2.3	354	251	250	56	91	77	6.5		
1	936	157.780	1.1	2.1	354	250	248	56	90	76	6.5		
Average:	940	161.006						56	90	76	6		

Comments: 130.970 RM 3/21/19

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 2-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 1.93 X ΔP:
Probe Condition, pre/post test: //
Silica Gel Expanded, Y/N: N
Filter Condition after Test: √ - not recorded
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: 78°
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : <0.005 CFM@ 15" in. Hg.
POST-TEST LEAK RATE: <0.005 CFM@ 15" in. Hg.
PITOT LEAK CHECK - PRE: good POST: good
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	0.1N H2SO4	988.0	722.6	265.4
2	0.1N H2SO4	749.8	630.0	119.8
3	Empty	660.3	657.8	2.5
4	Silica gel	892.0	870.7	21.3
	Rinse		50	50.2
	Total:			359.0

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1010	162.460	1.3	2.5	356	249	248	54	86	84	6		
4	1014	165.920	1.2	2.3	356	253	250	50	86	84	6		
3	1018	169.361	1.2	2.3	357	252	251	50	87	85	6		
2	1022	172.800	1.1	2.1	356	251	250	52	90	85	6		
1	1026	176.050	1.1	2.1	355	253	250	54	87	85	6		
1030.5	1032	179.284	1.2	2.3	356	249	253	56	89	86	6		
4	1036	182.700	1.2	2.3	357	251	253	56	92	87	6		
3	1040	185.990	1.1	2.1	357	255	250	57	94	87	6		
2	1044	189.230	1.2	2.3	354	252	249	57	94	87	6		
1	1048	192.640	1.1	2.1	354	250	251	58	95	87	6		
0 1052	5 1054	195.888	1.1	2.1	355	251	250	58	87	86	6		
	4 1058	199.380	1.2	2.3	357	251	249	56	91	87	6		
	3 1102	202.500	.94	1.9	357	251	249	56	91	87	6		
	2 1106	205.520	.80	1.5	356	251	250	57	90	86	6		
	1 1110	208.350	.72	1.4	354	251	251	57	89	86	6		
	0 1114	210.934											
Average:													

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Comments:

DS834049

MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

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WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3- -2019
RUN NO: 2-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 1.93 X ΔP:
Probe Condition, pre/post test:
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 78°
BAROMETRIC PRESSURE: 30.17
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: <0.005 CFM@ 15" in. Hg.
POST-TEST LEAK RATE: <0.005 CFM@ 15" in. Hg.
PITOT LEAK CHECK - PRE: good POST: good
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	O.1N H2SO4			
2	O.1N H2SO4			
3	Empty			
4	Silica gel			
	Rinse		50	
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1136	210.934	.97	1.9	356	251	250	54	82	81	6		
4	1142	213.994	.89	1.7	357	251	250	55	85	84	6		
3	1146	216.850	.84	1.6	357	250	249	55	87	85	6		
2	1200	219.620	.76	1.5	354	251	250	56	89	86	6		
1	1204	222.370	.73	1.4	354	250	250	56	87	86	6		
1205 5	1208	225.044	1.0	1.9	356	251	251	59	85	84	6		
4	1214	228.032	1.1	2.1	357	251	254	55	89	87	6		
3	1218	231.370	.89	1.7	357	251	251	56	91	87	6		
2	1212	234.210	.88	1.7	356	250	253	57	91	87	6		
1	1216	237.030	.70	1.4	354	254	253	57	91	96	6		
1220 5	1222	239.548	1.0	1.9	356	250	252	59	86	85	6		
4	1226	241.720	1.1	2.1	357	251	250	59	85	84	6		
3	1230	245.001	.73	1.4	357	250	253	58	87	85	6		
2	1234	247.625	.70	1.4	355	251	251	55	88	86	6		
1	1238	250.220	.62	1.2	356	251	250	59	85	86	6		
0	1242	253.180											
Average:													

Comments:

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3- 21 -2019
RUN NO: 3-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= 1.92 X ΔP:
Probe Condition, pre/post test: ✓/✓
Silica Gel Expanded, Y/N: N
Filter Condition after Test: ✓ - not recovered
Check Weight: 500.0/500.0

AMBIENT TEMPERATURE: 74°
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : ≤0.005 CFM@ 12" in. Hg.
POST-TEST LEAK RATE: : CFM@ in. Hg. orig 2
PITOT LEAK CHECK - PRE: good POST:
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
_1_	O.1N H2SO4	983.4	754.1	229.3
_2_	O.1N H2SO4	849.4	691.0	158.4
_3_	Empty	480.4	479.0	1.4
_4_	Silica gel	928.3	912.1	16.2
___				
___	Rinse		50	-50
	Total:			355.7

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1306	253.776	1.2	2.3	362	250	250	61	87	85	7		
4	1310	257.120	1.0	1.9	364	250	251	54	88	85	7		
3	1314	260.300	.96	1.9	365	253	251	54	88	86	7		
2	1318	263.418	.90	1.7	364	253	251	55	90	87	7		
1	1322	266.220	.83	1.6	365	252	251	55	93	87	6.5		
1326.8	1328	269.245	.96	1.9	362	250	249	54	92	84	7		
4	1332	272.370	.94	1.8	364	251	251	54	93	87	7		
3	1336	275.140	.89	1.7	364	251	250	55	95	89	7		
2	1340	278.050	.74	1.4	365	252	252	56	94	86	6.5		
1	1344	280.800	.71	1.4	364	250	251	56	94	86	6.5		
1348.5	1350	283.710	.92	1.8	364	249	249	57	89	85	7		
4	1354	286.870	.79	1.5	364	249	250	57	90	85	6.5		
3	1358	289.628	.73	1.4	365	251	250	57	89	85	6.5		
2	1402	292.250	.70	1.3	365	252	252	58	86	84	6.0		
1	1406	294.730	.64	1.2	363	253	251	58	83	82	6.0		
0	1410	297.152											
Average:													

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Comments: _____

DS834049

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3- 21 -2019
RUN NO: 3-HCL-U2
OPERATOR: Patrick Whitman
METER BOX NO: 30-WCS
METER ΔH@: 1.802
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test:
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 76°
BAROMETRIC PRESSURE: 30.17
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 74 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: 215 SS
NOZZLE DIAMETER: 0.240
FILTER NO/TYPE: quartz
PRE-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
POST-TEST LEAK RATE: <0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: good POST: good
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	O.1N H2SO4			
2	O.1N H2SO4			
3	Empty			
4	Silica gel			
	Rinse		50	
Total:				

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Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1212	297.152	1.0	1.9	364	251	251	52	82	81	6		
4	1216	299.870	1.1	2.1	364	252	252	52	83	82	6		
3	1220	303.080	.97	1.9	365	252	250	53	83	82	6		
2	1224	306.330	.91	1.7	364	252	251	55	83	82	6		
1	1228	309.165	.79	1.5	364	251	251	55	83	81	6		
1232 5	1234	311.870	1.1	2.1	364	250	249	54	80	79	6		
4	1238	315.265	1.2	2.3	364	250	248	54	82	80	6		
3	1242	318.350	1.2	2.3	365	251	250	54	83	81	6		
2	1246	321.760	1.1	2.1	365	251	251	55	82	81	6		
1	1250	325.100	1.0	1.9	364	251	250	55	82	81	6		
1254 5	1256	328.125	1.1	2.1	363	250	250	54	80	79	6		
4	1300	331.225	1.1	2.1	362	252	250	53	80	78	6		
3	1304	334.290	1.2	2.3	361	251	251	52	81	77	6		
2	1308	337.500	1.1	2.1	360	251	251	53	81	77	6		
1	1312	340.570	1.1	2.1	360	250	252	53	80	76	6		
0	1316	343.664											
Average:													

Comments:

Appendix A.2.5
Unit 2 Particulate Data

MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

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WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 1-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓/
Silica Gel Expanded, Y/N: NO
Filter Condition after Test: OK
Check Weight: 500.0 / 500

AMBIENT TEMPERATURE: 72°F
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83-3564 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	= Difference
1	DI H2O	948.4	709.9	238.5
2	DI H2O	670.7	581.7	89.0
3	Empty	588.8	585.3	3.5
4	Silica gel	952.3	933.0	19.3
Total:				356.3

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	0721	852.155	.95	1.8	352	258	257	54	59	60	6"		1.28
4	0725	855.150	1.0	1.8	351	257	259	39	63	59	6"		
3	0729	858.285	.99	1.8	353	253	255	37	66	60	6"		
2	0733	861.415	.97	1.8	353	252	251	38	68	61	6"		
1	0737	864.530	.93	1.7	353	259	253	40	70	62	6"		
E	0741	867.703											
5	0743	867.703	1.2	2.2	354	258	257	41	68	63	7"		
4	0747	871.010	1.1	2.0	357	257	255	41	71	63	7"		
3	0751	874.270	.75	1.4	352	255	253	41	71	63	6"		
2	0755	877.255	.70	1.3	353	259	255	41	71	65	6"		
1	0759	879.940	.66	1.2	352	258	253	42	71	65	5"		
E	0803	882.636											
5	0805	882.636	.95	1.8	351	252	254	44	70	66	8"		
4	0809	885.725	.91	1.7	353	259	255	41	71	68	6"		
3	0813	888.880	.86	1.6	352	257	254	42	71	66	6"		
2	0817	891.795	.90	1.7	352	253	256	42	71	66	6"		
1	0821	894.940	.87	1.6	353	254	255	42	71	66	6"		
Average	0825	897.968											

Comments: Factor @ 0820 = 185

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 1-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓/
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 75°F
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83-3564 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	0836	897.968	1.3	2.4	355	252	254	45	67	66	7"		±.28
4	0840	901.375	1.1	2.0	354	256	257	41	68	66	6"		
3	0844	904.800	.98	1.8	352	257	253	42	69	66	6"		
2	0848	908.083	.89	1.6	355	259	253	43	71	66	6"		
1	0852	911.270	.73	1.4	355	258	255	46	71	66	5"		
LE	0856	914.146											
5	0858	914.146	.96	1.8	356	257	257	46	72	67	6"		
4	0902	917.170	1.1	2.0	355	256	254	44	75	68	6"		
3	0906	920.410	1.2	2.2	355	255	257	45	74	69	6"		
2	0910	923.855	1.2	2.2	355	257	253	47	75	69	6"		
1	0914	927.270	1.1	2.0	355	254	258	47	77	70	6"		
LE	0918	930.718											
5	0920	930.718	1.4	2.6	355	255	257	48	77	71	7"		
4	0924	934.480	1.1	2.0	356	254	257	47	77	72	6"		
3	0928	938.265	1.3	2.4	356	258	255	47	78	72	6"		
2	0932	941.840	1.2	2.2	356	259	253	47	78	72	6"		
1	0936	945.337	1.1	2.0	356	257	255	47	78	73	6"		
Average	0940	948.661											

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Comments:

DS834049

MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 2-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓ / ✓
Silica Gel Expanded, Y/N: _____
Filter Condition after Test: OK
Check Weight: 500.0 / 500

AMBIENT TEMPERATURE: 75°F
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 119 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #103 SS
NOZZLE DIAMETER: 0.247
FILTER NO/TYPE: # 83- 3499 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: _____
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	= Difference
1	DI H2O	946.0	693.0	253.0
2	DI H2O	664.1	583.7	80.4
3	Empty	654.4	652.7	1.7
4	Silica gel	930.9	911.5	19.4
Total:				354.5

Point	Time	Meter Volume, ft³	ΔP in. H2O	ΔH in. H2O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O2 %	P. static in. H2O
5	1010	950.400	1.2	2.2	356	251	255	49	74	73	6		
4	1014	953.855	1.0	1.9	357	252	256	50	74	73	6		
3	1018	957.150	1.1	2.0	355	256	257	51	75	73	6		
2	1022	960.425	1.2	2.2	355	256	259	51	77	74	6		
1	1026	963.810	1.1	2.0	357	258	258	51	74	73	6		
E	1030	967.144											
5	1032	967.144	1.3	2.4	356	252	257	52	75	73	7		
4	1036	970.825	1.0	1.9	357	258	255	52	78	74	6		
3	1040	974.160	1.2	2.2	356	254	258	51	79	75	6		
2	1044	977.540	1.2	2.2	355	253	251	52	80	75	6		
1	1048	980.915	1.1	2.0	354	256	252	52	80	76	6		
E	1052	984.171											
5	1054	984.171	1.3	2.4	357	258	253	51	80	76	7		
4	1058	987.860	1.0	1.9	357	255	252	51	78	76	6		
3	1102	991.415	.97	1.8	358	257	253	52	78	76	6		
2	1106	994.770	.83	1.6	358	258	256	52	77	75	6		
1	1110	997.855	.75	1.4	358	255	254	54	77	75	6		
Average/E	1114	1000.786											

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Comments: Factor @ 1009 = 1.87

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 2-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓
Silica Gel Expanded, Y/N: ✓
Filter Condition after Test: ✓
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: 80°F
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 119 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #103 SS
NOZZLE DIAMETER: 0.247
FILTER NO/TYPE: # 83- 3499 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 13 in. Hg.
POST-TEST LEAK RATE: 0.005 CFM@ 17 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
1138/3	1146*	1000.786	.96	1.8	358	257	255	50	73	72	6"		
4	1142	1004.015	.90	1.7	357	253	254	49	71	73	6"		
3	1146	1007.080	.87	1.6	358	257	255	47	74	72	6"		
2	1150	1010.110	.91	1.7	356	256	257	48	76	73	6"		
1	1154	1013.165	.85	1.6	357	258	257	48	76	73	6"		
12	1158	1016.217											
5	1200	1016.217	1.3	2.4	360	255	256	49	74	73	7"		
4	1204	1019.623	1.1	2.0	360	254	255	50	77	74	6"		
3	1208	1022.775	.74	1.4	360	255	258	50	78	74	6"		
2	1212	1025.655	.70	1.3	360	257	259	49	79	75	5"		
1	1216	1028.600	.65	1.2	360	258	257	48	80	75	5"		
12	1220	1031.179											
5	1222	1031.179	1.0	1.9	361	257	258	50	79	76	7"		
4	1226	1034.270	.96	1.8	361	258	259	49	80	76	6"		
3	1230	1037.373	1.1	2.0	360	259	258	49	82	77	6"		
2	1234	1040.530	.99	1.9	361	258	259	50	84	78	7"		
1	1238	1043.975	1.0	1.9	364	259	257	49	84	79	6"		
Average	1242	1047.008											

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Comments: *=PW 3/21/19

DS834049

MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 3-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓ / ✓
Silica Gel Expanded, Y/N: N / Y
Filter Condition after Test: ✓
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: 85°F
BAROMETRIC PRESSURE: 32.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83- 3585 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: _____
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	DI H2O	946.7	731.1	215.6
2	DI H2O	727.4	603.8	123.6
3	Empty	587.6	588.8	-1.2
4	Silica gel	965.9 / 946.7	952.3	17.6
		3 / 15		
Total:				357.6

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Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1305	47.310	.99	1.82	367	251	252	82	78	77	6		+.68
4	1310	50.785	1.0	1.8	366	255	254	42	79	78	6		
3	1314	53.780	.98	1.7	364	254	258	43	80	78	6		
2	1318	56.895	.98	1.8	365	255	253	43	81	78	6		
1	1322	60.000	.92	1.7	364	258	252	44	82	78	6		
6	1326	63.287											
5	1328	63.287	1.1	2.0	365	257	253	45	82	79	6		
4	1332	66.635	1.2	2.2	366	258	255	44	83	79	6		
3	1336	69.770	.78	1.4	367	256	254	41	83	79	6		
2	1340	72.845	.70	1.3	368	257	255	42	82	78	6		
1	1344	75.820	.66	1.2	368	252	255	43	82	78	5		
6	1348	78.483											
5	1350	78.483	.95	1.7	370	255	259	44	75	76	6		
4	1354	81.505	.93	1.7	371	254	255	43	76	75	6		
3	1358	84.430	.87	1.6	370	258	257	42	75	74	6		
2	1402	87.510	.92	1.7	371	255	254	43	75	73	6		
1	1406	90.515	.78	1.4	369	254	254	44	72	72	6		
Average	1410	93.338											

Comments: Vector Q 1300/1.84

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 3-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: √/
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 83°F
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83- 3585 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: √ POST: √
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1412	93.338	1.3	2.4	368	254	258	46	70	71	7"		1.28
4	1416	96.725	1.0	1.8	366	257	256	44	71	70	6"		
3	1420	99.980	.98	1.8	367	255	252	43	72	70	6"		
2	1424	103.095	.88	1.6	364	254	255	46	69	68	6"		
1	1428	106.180	.72	1.3	366	257	258	46	70	68	6"		
E	1432	108.887											
5	1434	108.887	1.1	2.2	362	253	257	49	67	67	6"		
4	1438	112.075	1.2	2.2	363	255	258	44	68	67	7"		
3	1442	115.360	1.2	2.2	364	255	257	43	69	67	7"		
2	1446	118.675	1.1	2.0	364	255	255	42	68	66	6"		
1	1450	121.940	1.2	2.2	363	255	257	42	65	65	6"		
E	1454	125.268											
5	1456	125.268	1.3	2.4	362	258	255	44	67	68	7"		
4	1500	128.585	1.2	2.2	364	257	254	42	67	65	6"		
3	1504	131.945	1.1	2.0	366	258	253	43	67	66	6"		
1508/2	~~1510~~ *	135.265	1.2	2.2	365	257	255	43	67	65	6"		
1512/1	~~1514~~ *	138.480	1.2	2.2	366	255	257	46	68	66	6"		
1516 Average	~~1518~~ *	141.777											

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Comments: *=PV 3/21/19

DS834049

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 2-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓
Silica Gel Expanded, Y/N: ✓
Filter Condition after Test: ✓
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: 80°F
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 119 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #103 SS
NOZZLE DIAMETER: 0.247
FILTER NO/TYPE: # 83- 3499 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 13 in. Hg.
POST-TEST LEAK RATE: 0.005 CFM@ 17 in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: ✓
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
1138/3	1146*	1000.786	.96	1.8	358	257	255	50	73	72	6"		
4	1142	1004.015	.90	1.7	357	253	254	49	71	73	6"		
3	1146	1007.080	.87	1.6	358	257	255	47	74	72	6"		
2	1150	1010.110	.91	1.7	356	256	257	48	76	73	6"		
1	1154	1013.165	.85	1.6	357	258	257	48	76	73	6"		
12	1158	1016.217											
5	1200	1016.217	1.3	2.4	360	255	256	49	74	73	7"		
4	1204	1019.623	1.1	2.0	360	254	255	50	77	74	6"		
3	1208	1022.775	.74	1.4	360	255	258	50	78	74	6"		
2	1212	1025.655	.70	1.3	360	257	259	49	79	75	5"		
1	1216	1028.600	.65	1.2	360	258	257	48	80	75	5"		
12	1220	1031.179											
5	1222	1031.179	1.0	1.9	361	257	258	50	79	76	7"		
4	1226	1034.270	.96	1.8	361	258	259	49	80	76	6"		
3	1230	1037.373	1.1	2.0	360	259	258	49	82	77	6"		
2	1234	1040.530	.99	1.9	361	258	259	50	84	78	7"		
1	1238	1043.975	1.0	1.9	364	259	257	49	84	79	6"		
Average	1242	1047.008											

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Comments: *=PW 3/21/19

DS834049

MONTROSE
AIR QUALITY SERVICES

002AS-541589-RT-1364

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 3-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: ✓ / ✓
Silica Gel Expanded, Y/N: N / Y
Filter Condition after Test: ✓
Check Weight: 500.0 / 500.0

AMBIENT TEMPERATURE: 85°F
BAROMETRIC PRESSURE: 32.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83- 3585 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: : _____ CFM@ _____ in. Hg.
PITOT LEAK CHECK - PRE: ✓ POST: _____
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	Pre-Test	Difference
1	DI H2O	946.7	731.1	215.6
2	DI H2O	727.4	603.8	123.6
3	Empty	587.6	588.8	-1.2
4	Silica gel	965.9 / 946.7	952.3	17.6
		3 / 15		
Total:				357.6

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Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1305	47.310	.99	1.82	367	251	252	82	78	77	6		+.68
4	1310	50.785	1.0	1.8	366	255	254	42	79	78	6		
3	1314	53.780	.98	1.7	364	254	258	43	80	78	6		
2	1318	56.895	.98	1.8	365	255	253	43	81	78	6		
1	1322	60.000	.92	1.7	364	258	252	44	82	78	6		
6	1326	63.287											
5	1328	63.287	1.1	2.0	365	257	253	45	82	79	6		
4	1332	66.635	1.2	2.2	366	258	255	44	83	79	6		
3	1336	69.770	.78	1.4	367	256	254	41	83	79	6		
2	1340	72.845	.70	1.3	368	257	255	42	82	78	6		
1	1344	75.820	.66	1.2	368	252	255	43	82	78	5		
6	1348	78.483											
5	1350	78.483	.95	1.7	370	255	259	44	75	76	6		
4	1354	81.505	.93	1.7	371	254	255	43	76	75	6		
3	1358	84.430	.87	1.6	370	258	257	42	75	74	6		
2	1402	87.510	.92	1.7	371	255	254	43	75	73	6		
1	1406	90.515	.78	1.4	369	254	254	44	72	72	6		
Average	1410	93.338											

Comments: Vector Q 1300/1.84

MONTROSE
AIR QUALITY SERVICES

WET CHEMICAL SAMPLING SYSTEM DATA AND WORKSHEET – STANDARD

002AS-541589-RT-1364

CLIENT: Desert View Power
LOCATION: Unit 2 Stack Breaching
DATE: 3-21-2019
RUN NO: 3-PM-U2
OPERATOR: Patrick Whitman
METER BOX NO: 17-WCS
METER ΔH@: 1.499
METER Yd: 0.994
STACK AREA, FT²: 38.8
TRAVERSE POINTS, MIN/POINT: 4x30
ΔH= _____ X ΔP:
Probe Condition, pre/post test: √/
Silica Gel Expanded, Y/N:
Filter Condition after Test:
Check Weight:

AMBIENT TEMPERATURE: 83°F
BAROMETRIC PRESSURE: 30.13
ASSUMED MOISTURE: 12.5
PITOT TUBE COEFF, Cp: 0.84
PROBE ID NO/MATERIAL: 89 Glass
PROBE LENGTH: 6'
NOZZLE ID NO/ MATERIAL: #176 SS
NOZZLE DIAMETER: 0.248
FILTER NO/TYPE: # 83- 3585 FG
PRE-TEST LEAK RATE: : 0.005 CFM@ 15 in. Hg.
POST-TEST LEAK RATE: 0.005 CFM@ 15 in. Hg.
PITOT LEAK CHECK - PRE: √ POST: √
CHAIN OF CUSTODY: SAMPLE CUSTODIAN DW
SAMPLER PW
SAMPLE CUSTODIAN DW

Imp. #	Contents	Post-Test	- Pre-Test	= Difference
1	DI H2O			
2	DI H2O			
3	Empty			
4	Silica gel			
Total:				

Point	Time	Meter Volume, ft³	ΔP in. H₂O	ΔH in. H₂O	Stack Temp, °F	Probe Temp, °F	Filter Temp, °F	Imp. Out Temp, °F	Meter Temp, °F In	Meter Temp, °F Out	Vacuum in. Hg.	O₂ %	P. static in. H₂O
5	1412	93.338	1.3	2.4	368	254	258	46	70	71	7"		1.28
4	1416	96.725	1.0	1.8	366	257	256	44	71	70	6"		
3	1420	99.980	.98	1.8	367	255	252	43	72	70	6"		
2	1424	103.095	.88	1.6	364	254	255	46	69	68	6"		
1	1428	106.180	.72	1.3	366	257	258	46	70	68	6"		
E	1432	108.887											
5	1434	108.887	1.1	2.2	362	253	257	49	67	67	6"		
4	1438	112.075	1.2	2.2	363	255	258	44	68	67	7"		
3	1442	115.360	1.2	2.2	364	255	257	43	69	67	7"		
2	1446	118.675	1.1	2.0	364	255	255	42	68	66	6"		
1	1450	121.940	1.2	2.2	363	255	257	42	65	65	6"		
E	1454	125.268											
5	1456	125.268	1.3	2.4	362	258	255	44	67	68	7"		
4	1500	128.585	1.2	2.2	364	257	254	42	67	65	6"		
3	1504	131.945	1.1	2.0	366	258	253	43	67	66	6"		
1508/2	~~1510~~ *	135.265	1.2	2.2	365	257	255	43	67	65	6"		
1512/1	~~1514~~ *	138.480	1.2	2.2	366	255	257	46	68	66	6"		
1516 Average	~~1518~~ *	141.777											

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Comments: *=PV 3/21/19

DS834049

Appendix A.2.6
Unit 2 SO_2 Data and Velocity Data

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: √ LEVEL: √ | LEAK CHECK PRE- √ POST- √

Run #: 1 **Ps:** +.28
Start: 721 **Stop:** 821

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.0	352	5	.94	355	5	1.3	353
4	.96	353	4	.93	356	4	1.2	355
3	1.1	353	3	.91	356	3	1.2	356
2	.97	354	2	.90	356	2	1.1	356
1	.92	354	1	.84	355	1	1.2	356
					3			
5	1.0	354	5	1.2	354	5	1.3	354
4	1.3	355	4	1.2	354	4	1.3	355
3	.75	356	3	1.0	354	3	1.3	356
2	.70	356	2	.90	355	2	1.2	356
1	.64	356	1	.70	354	1	1.2	354
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	302	0.1	1			1		
2	302	0.1	2			2		
3	302	0.1	3			3		

MOISTURE DATA FOR TEST RUNS 1 **THROUGH** 1

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
721	883.000	1.0	70	68	59	3	#1	H_2O_2	863.0	694.0	
741	894.100	1.0	73	70	53	3	#2	H_2O_2	740.9	734.0	
801	907.539	1.0	76	71	57	3	#3	Empty	600.2	599.3	
821	917.190						#4	Silica Gel	922.2	914.2	
							Total	Line rinse		50	

Pre-Test Leak Check: .005 CFM @ 18 in. Hg., Post-Test Leak Check: .001 CFM @ 8 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ~ ✓

Run #: 2 **Ps:** +.28
Start: 836 **Stop:** 936

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.4	351	5	1.2	354	5	1.0	354
4	1.3	354	4	1.2	354	4	1.3	354
3	1.2	356	3	.98	356	3	.80	354
2	1.2	356	2	.85	356	2	.70	356
1	1.3	354	1	.72	354	1	.64	355
5	1.3	354	5	.98	355	5	1.0	355
4	1.0	356	4	.94	356	4	1.0	356
3	1.0	356	3	.86	356	3	.94	356
2	1.2	356	2	.76	356	2	.96	355
1	1.2	354	1	.85	356	1	.54	355
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	304	0.2	1			1		
2	305	0.3	2			2		
3	305	0.3	3			3		

MOISTURE DATA FOR TEST RUNS 2 **THROUGH** 2

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
836	918.806	1.0	76	72	58	3	#1	H_2O_2	860.0	695.3	
856	931.340	1.0	78	74	54	3	#2	H_2O_2	737.5	719.2	
916	944.150	1.0	80	76	57	3	#3	Empty	636.0	634.9	
936	956.368						#4	Silica Gel	903.4	891.8	
							Total	Line rinse		50	

Pre-Test Leak Check: <0.001 CFM @ 10 in. Hg., Post-Test Leak Check: <0.005 CFM @ 10 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 3 **Ps:** +.28
Start: 1010 **Stop:** 1110

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	.94	356	5	.93	355	5	1.2	356
4	.90	357	4	.87	356	4	1.1	356
3	.87	357	3	.89	356	3	1.1	357
2	.84	357	2	.84	357	2	1.2	357
1	.80	355	1	.88	357	1	1.1	356
5	.96	354	5	1.1	356	5	1.2	354
4	1.0	356	4	1.0	357	4	1.1	354
3	.70	357	3	.94	357	3	1.1	354
2	.67	357	2	.86	357	2	1.0	355
1	.63	354	1	.64	357	1	1.0	354

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	305	0.4	1			1		
2	306	0.5	2			2		
3	306	0.5	3			3		

MOISTURE DATA FOR TEST RUNS 3 **THROUGH** 3

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1010	957.275	1.0	78	77	61	3	#1	H_2O_2	876.3	699.6	
1030	970.341	1.0	81	76	55	3	#2	H_2O_2	787.5	784.7	
1050	982.700	1.0	84	77	52	3	#3	Empty	599.4	599.2	
1110	993.664						#4	Silica Gel	922.9	922.2	
							Total	Line rinse		50	

Pre-Test Leak Check 0.002 CFM @ 10" in. Hg., Post-Test Leak Check 0.001 CFM @ 10" in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 4 **Ps:** +.25
Start: 1138 **Stop:** 1208

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	.96	356	5	.96	354	5	1.1	353
4	.92	357	4	.93	355	4	1.2	357
3	.99	357	3	.81	357	3	1.2	357
2	.97	357	2	.85	357	2	1.1	357
1	.91	354	1	.88	354	1	1.1	356
5	1.0	356	5	1.1	354	5	1.2	357
4	1.1	356	4	1.2	356	4	1.2	357
3	.75	357	3	.90	356	3	1.2	357
2	.70	357	2	.84	356	2	1.1	356
1	.65	356	1	.71	356	1	1.0	355
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	306	0.3	1			1		
2	306	0.4	2			2		
3	306	0.4	3			3		

MOISTURE DATA FOR TEST RUNS 4 **THROUGH** 4

METER ID: 1-P&M | METER Yd: 0.992 | BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T imp	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1138	994.670	2.5	79	77	61	8	#1	H_2O_2	874.2	715.2	
1148	1004.700	2.5	84	79	57	8	#2	H_2O_2	730.0	727.3	
1158	1013.770	2.5	87	81	59	8	#3	Empty	635.5	634.5	
1208	1022.870						#4	Silica Gel	911.5	903.4	
							Total	Line rinse		50	

Pre-Test Leak Check: 0.001 CFM @ 10 in. Hg., Post-Test Leak Check: 0.005 CFM @ 16 in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 3 **Ps:** +.25
Start: 1122 **Stop:** 1252

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.2	357	5	1.2	357	5	1.0	355
4	1.2	357	4	1.0	357	4	1.1	356
3	1.1	357	3	.86	357	3	.64	357
2	1.0	357	2	.77	356	2	.70	357
1	.99	356	1	.80	356	1	.62	357
5	1.3	356	5	.93	356	5	.97	356
4	1.0	356	4	.85	357	4	.99	357
3	1.1	357	3	.90	357	3	.95	357
2	1.1	357	2	.91	357	2	.84	357
1	1.0	354	1	.84	357	1	.87	356

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	306	0.4	1			1		
2	306	0.4	2			2		
3	306	0.5	3			3		

MOISTURE DATA FOR TEST RUNS 3 **THROUGH** 3

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1222	24.360	2.5	82	80	61	8	#1	H_2O_2	843.8	692.0	
1232	33.510	2.5	87	84	57	8	#2	H_2O_2	766.3	761.8	
1242	42.840	2.5	91	87	59	8	#3	Empty	600.6	599.4	
1252	51.700						#4	Silica Gel	936.6	889.9	
							Total	Line rinse		50	

Pre-Test Leak Check: <0.002 CFM @ 10" in. Hg., Post-Test Leak Check: <0.002 CFM @ 6" in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 6 Ps: +.25 Start: 1306 Stop: 1336								
Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	.96	362	5	1.0	366	5	1.2	365
4	.94	365	4	1.2	366	4	1.3	366
3	.92	365	3	.98	366	3	1.1	367
2	.90	365	2	.83	367	2	1.0	367
1	.81	366	1	.75	366	1	1.2	366
5	.99	366	5	1.0	366	5	1.2	366
4	.97	366	4	1.3	367	4	1.2	367
3	.94	366	3	1.0	367	3	1.0	367
2	.85	367	2	1.1	367	2	1.1	367
1	.73	365	1	1.0	365	1	1.2	366
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	308	0.5	1			1		
2	308	0.6	2			2		
3	308	0.6	3			3		

MOISTURE DATA FOR TEST RUNS 6 THROUGH 6

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1306	56.880	2.5	87	85	60	8	#1	H_2O_2	842.5	705.5	
1316	65.420	2.5	96	87	54	8	#2	H_2O_2	720.6	717.0	
1326	75.030	2.5	92	87	56	8	#3	Empty	635.8	635.5	
1336	83.546						#4	Silica Gel	918.9	911.5	
							Total	Line rinse		50	

Pre-Test Leak Check 0.001 CFM @ 8" in. Hg., Post-Test Leak Check 0.005 CFM @ 8" in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 7 **Ps:** 7.28
Start: 1350 **Stop:** 1420

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.1	365	5	1.1	364	5	.83	364
4	1.1	365	4	1.0	365	4	.90	364
3	.97	365	3	.95	365	3	.85	365
2	.94	365	2	.70	364	2	.81	365
1	.97	363	1	.63	364	1	.77	364
5	1.2	364	5	.89	363	5	.79	364
4	1.1	364	4	.85	363	4	.80	364
3	1.0	365	3	.80	364	3	.84	365
2	.97	364	2	.73	365	2	.80	365
1	.94	364	1	.62	364	1	.78	364

	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	304	.4	1			1		
2	304	.4	2			2		
3	304	.4	3			3		

MOISTURE DATA FOR TEST RUNS 7 **THROUGH** 7

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1350	84.506	2.5	86	84	58	8	#1	H_2O_2	839.5	691.2	
1400	93.710	2.5	89	87	52	8	#2	H_2O_2	732.7	729.2	
1410	102.800	2.5	89	87			#3	Empty	600.1	599.4	
1420	111.900						#4	Silica Gel	943.5	936.6	
							Total	Line rinse		50	

Pre-Test Leak Check: ≤0.001 CFM @ 7" in. Hg., Post-Test Leak Check: ≤0.002 CFM @ 10" in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ LEVEL: ✓ | LEAK CHECK PRE- ✓ POST- ✓

Run #: 8	Ps: +.28							
Start: 1434	Stop: 1504							
Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	1.0	363	5	1.0	362	5	.99	360
4	1.1	363	4	.97	362	4	.81	361
3	1.0	364	3	.95	363	3	.75	361
2	.99	363	2	.90	363	2	.64	362
1	.94	362	1	.89	361	1	.62	361
5	1.1	362	5	1.0	361	5	1.0	362
4	1.0	362	4	.99	362	4	.99	362
3	1.1	363	3	.85	362	3	.85	363
2	.95	363	2	.79	362	2	.78	362
1	.80	362	1	.68	361	1	.70	361
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	302	0.4	1			1		
2	302	0.4	2			2		
3	302	0.4	3			3		

MOISTURE DATA FOR TEST RUNS 8 THROUGH 8

METER ID: 1-P&M | METER Yd: 0.992 | BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
234	113.001	2.5	80	79	54	8	#1	H_2O_2	855.9	709.1	
244	121.750	2.5	81	78	54	8	#2	H_2O_2	722.9	720.5	
254	130.584	2.5	80	77	55	8	#3	Empty	636.3	635.2	
304	139.240						#4	Silica Gel	924.5	918.9	
							Total	Line rinse		50	

Pre-Test Leak Check: <0.001 CFM @ 10" in. Hg., Post-Test Leak Check: <0.001 CFM @ 8" in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 9 **Ps:** 7.28
Start: 1516 **Stop:** 1546

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	.96	362	5	.89	361	5	1.1	361
4	.90	363	4	.85	362	4	1.2	362
3	.83	363	3	.80	362	3	1.0	362
2	.72	362	2	.73	361	2	1.0	361
1	.61	361	1	.61	360	1	.99	360
5	.99	362	5	.99	361	5	1.1	360
4	.90	362	4	.97	362	4	1.1	361
3	.87	362	3	.94	362	3	1.0	361
2	.73	362	2	.98	362	2	.98	361
1	.70	361	1	.96	361	1	.95	360
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	301	0.4	1			1		
2	301	0.4	2			2		
3	301	0.4	3			3		

MOISTURE DATA FOR TEST RUNS 9 **THROUGH** 9

METER ID: 1-P&M METER Yd: 0.992 BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1516	140.368	2.5	76	75	52	8	#1	H_2O_2	835.2	689.1	
1526	148.995	2.5	74	73	50	8	#2	H_2O_2	773.5	736.8	
1536	158.150	2.5	74	72	51	8	#3	Empty	602.0	600.1	
1546	166.905						#4	Silica Gel	950.6	945.3	
							Total	Line rinse		50	

Pre-Test Leak Check: <0.001 CFM @ 8 in. Hg., Post-Test Leak Check: <0.001 CFM @ 10" in. Hg

FLUE GAS VELOCITY AND MOISTURE DATA AND WORKSHEET

CLIENT: Desert View Power | LOCATION/UNIT: Unit - 2
PERFORMED BY: Patrick Whitman | TEST DATE: 3/21/2019
BAR. PRESSURE: 30.13 | TC READOUT ID: #42
DP INDICATOR ID: CC-2 | TC ID: #058
DP INDICATOR TYPE: 0-10" Manometer | PITOT TUBE ID: #058 | Cp: 0.84
ZERO: ✓ | LEVEL: ✓ | LEAK CHECK PRE- ✓ | POST- ✓

Run #: 10	Ps: +.29				
Start: 1606	Stop: 1636				

Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F	Sample Point	Velocity Head inches H_2O	Temp, °F
5	.94	360	5	.99	361	5	1.1	361
4	.87	361	4	1.0	362	4	1.2	362
3	.80	361	3	.99	362	3	1.1	362
2	.77	360	2	.97	361	2	1.0	361
1	.68	360	1	.90	361	1	1.1	360
		360 Run						
5	.92		5	1.0	361	5	1.0	361
4	.98	360	4	1.1	361	4	1.1	361
3	.96	361	3	1.0	362	3	1.1	360
2	.90	360	2	.99	362	2	1.1	360
1	.80	360	1	.98	361	1	1.0	360
	Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C		Heated Line Temp. °F	Chiller Temp. °C
1	300	0.2	1			1		
2	300	0.2	2			2		
3	300	0.2	3			3		

MOISTURE DATA FOR TEST RUNS 10 **THROUGH** 10

METER ID: 1-P&M | METER Yd: 0.992 | BALANCE CHECK WEIGHT: 500.0 / 500

Dry Gas Meter							Impinger Data				
Time	Volume	Delta H	Tm (in)	Tm (out)	T_{imp}	Vacuum	No.	Material	End Wt.	Start Wt.	Diff.
1606	167.900	2.5	77	76	56	8	#1	H_2O_2	860.0	738.1	
1616	176.600	2.5	78	76	52	8	#2	H_2O_2	728.1	767.9	
1626	185.307	2.5	78	74	54	8	#3	Empty	638.9	636.6	
1636	194.112						#4	Silica Gel	931.7	924.5	
							Total	Line rinse		50	

Pre-Test Leak Check: ____ CFM @ _____ in. Hg., Post-Test Leak Check: 2.001 CFM @ 10" in. Hg

Appendix A.2.7
Unit 2 Hydrocarbon Data

SCAQMD METHOD 25.3
EVACUATED CANISTER SAMPLING DATA

Client/Facility: Desert View Power Date: 3/21/2019

Unit/Location: Unit 2Stack Breaching Performed By: Patrick Whitman

Probe Material SS Probe Length 36"

Connecting Tubing Material Teflon Connecting Tubing Length 12"

Barometric Pressure 30.13 Ambient Temperature 70°F

Test No.		1A-VOC-U2		1B-VOC-U2			
Vial ID		~~#~~M37		#M38			
Canister ID		272		296			
		Time	Vacuum	Time	Vacuum	Time	Vacuum
Pre-Test Leak Check	Start	0630	30	0630	30		
Pre-Test Leak Check	Stop	0640	28	0640	28		
Sample Collection	Start	0725	30	0725	30		
		0735	27	0735	27		
		0745	23	0745	23		
		0755	19	0755	19		
		0805	15	0805	15		
		0815	12	0815	12		
		0820 PW 3/21/19					
Sample Collection	Stop	0821	10	0821	10		
Post -Test Leak Check	Start	824	10	824	10		
Post-Test Leak Check	Stop	834	10	834	10		
Line Rinse Volume							

Comments:

Appendix A.2.8
Unit 2 Plant Data

CEDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 7:22	37.87	51.79	21.79	10.68	14.60	8.55	2.39	13.67	3.5	12.88	7.81	4820	3.27	0.84
3/21/2019 7:23	31.22	42.95	17.25	8.17	11.24	6.28	2.3	13.76	3.36	12.85	7.89	4627	3.16	0.77
3/21/2019 7:24	62.25	76.27	40.3	15.84	19.41	14.27	2.35	12.25	3.94	14.33	6.29	5422	2.88	0.93
3/21/2019 7:25	67.84	84.15	42.1	20.23	25.09	17.47	2.33	12.4	3.78	14.1	6.47	5198		
3/21/2019 7:26	46.43	63.49	25.25	14.64	20.02	11.08	2.28	13.67	3.31	12.83	7.81	4555	3.12	0.75
3/21/2019 7:27	24.42	35.08	12.83	9.5	13.65	6.94	2.13	14.37	3.2	12.27	8.44	4399	3.06	0.68
3/21/2019 7:28	32.09	42.64	18.1	9.19	12.21	7.21	2.31	13.29	3.43	13.26	7.43	4725	3.07	0.79
3/21/2019 7:29	54.1	70.53	32.02	14.73	19.2	12.13	2.25	13.04	3.6	13.43	7.17	4958	2.93	0.81
3/21/2019 7:30	30.94	43.92	16.28	8.78	12.46	6.43	2.12	14.2	3.2	12.42	8.29	4407	3.01	0.68
3/21/2019 7:31	32.59	45.93	17.51	8.45	11.91	6.32	2.13	14.09	3.27	12.46	8.2	4500	3.00	0.70
3/21/2019 7:32	37.92	50.62	21.45	9.51	12.69	7.48	2.17	13.35	3.44	13.23	7.49	4737	2.90	0.75
3/21/2019 7:33	51.98	70.01	29.51	11.48	15.46	9.07	2.1	13.47	3.46	13.02	7.61	4756	2.83	0.73
3/21/2019 7:34	28.94	42.08	15.05	8.8	12.8	6.37	1.92	14.54	3.17	12.12	8.59	4356	2.79	0.61
3/21/2019 7:35	32.74	45.47	18.07	8.67	12.04	6.66	1.95	13.89	3.36	12.7	8.01	4622	2.71	0.65
3/21/2019 7:36	34.86	48.15	19.35	10.14	14.01	7.83	2.09	13.81	3.38	12.75	7.94	4649	2.69	0.71
3/21/2019 7:37	35.54	49.2	19.56	10.24	14.18	7.84	1.95	13.84	3.35	12.71	7.97	4610	2.70	0.65
3/21/2019 7:38	50.14	65.7	29.81	9.3	12.19	7.69	1.97	13.1	3.62	13.42	7.24	4980	2.58	0.71
3/21/2019 7:39	42.36	58.1	23.35	9.62	13.2	7.38	1.99	13.72	3.36	12.83	7.85	4618	2.73	0.67
3/21/2019 7:40	46.92	61.66	26.81	10.77	14.15	8.56	1.92	13.14	3.48	13.42	7.28	4786	2.52	0.67
3/21/2019 7:41	56.79	77.36	32.14	13.65	18.59	10.75	2.05	13.62	3.45	12.85	7.76	4741	2.79	0.71
3/21/2019 7:42	36.54	50.86	19.84	9.87	13.74	7.46	1.95	13.92	3.31	12.68	8.04	4548	2.71	0.64
3/21/2019 7:43	34.86	49.52	18.72	10.5	14.92	7.84	1.95	14.21	3.27	12.38	8.3	4498	2.77	0.64
3/21/2019 7:44	38.37	52.11	21.71	9.45	12.83	7.44	2.02	13.58	3.44	12.97	7.72	4739	2.74	0.70
3/21/2019 7:45	42.25	56.4	24.35	11.42	15.24	9.16	1.97	13.35	3.51	13.17	7.49	4828	2.63	0.69
3/21/2019 7:46	33.02	46.07	17.95	10.68	14.9	8.08	1.97	13.95	3.31	12.6	8.07	4554	2.75	0.65
3/21/2019 7:47	40.28	55.55	22.21	10.36	14.29	7.95	1.97	13.79	3.36	12.76	7.92	4619	2.72	0.66
3/21/2019 7:48	30.92	44.56	16.15	10.19	14.69	7.41	1.88	14.41	3.18	12.19	8.48	4376	2.71	0.60
3/21/2019 7:49	30.42	42.98	16.5	9.42	13.31	7.11	1.87	14.13	3.3	12.47	8.23	4543	2.64	0.62
3/21/2019 7:50	28.31	40.22	15.52	9.44	13.41	7.2	1.92	14.21	3.34	12.43	8.3	4592	2.73	0.64
3/21/2019 7:51	38.41	51.85	21.9	9.97	13.46	7.91	1.88	13.5	3.47	13.07	7.64	4775	2.54	0.65
3/21/2019 7:52	71.48	88.61	45.07	16.41	20.34	14.39	1.97	12.4	3.84	14.18	6.46	5281	2.44	0.76
3/21/2019 7:53	84.58	106.54	51.19	20.73	26.11	17.45	1.87	12.6	3.68	13.89	6.69	5069	2.36	0.69
3/21/2019 7:54	59.34	85.59	33.06	13.02	18.78	10.09	1.86	14.42	3.39	12.17	8.49	4666	2.68	0.63
3/21/2019 7:55	49.07	68.14	29.54	9.99	13.87	8.37	1.83	13.89	3.66	12.71	8.01	5042	2.54	0.67
3/21/2019 7:56	60.75	78.86	39.35	14.31	18.57	12.9	1.97	12.98	3.94	13.55	7.11	5426	2.56	0.78
3/21/2019 7:57	52.73	72.16	30.83	15.07	20.62	12.26	1.94	13.69	3.56	12.82	7.82	4897	2.65	0.69
3/21/2019 7:58	38.58	54.46	21.63	11.77	16.62	9.18	1.9	14.12	3.41	12.5	8.22	4696	2.68	0.65
3/21/2019 7:59	45.88	62.55	27.25	12.89	17.57	10.65	1.95	13.63	3.62	12.9	7.77	4975	2.66	0.70
3/21/2019 8:00	34.6	48.84	19.55	10.1	14.26	7.94	1.96	14.12	3.44	12.46	8.22	4732	2.77	0.67
3/21/2019 8:01	45.78	61.71	28.33	11.14	15.02	9.59	2.11	13.48	3.77	13.05	7.62	5184	2.84	0.79
3/21/2019 8:02	40.94	56.37	23.49	11.67	16.07	9.32	2.12	13.77	3.49	12.81	7.9	4806	2.92	0.74
3/21/2019 8:03	39.31	55.41	21.9	11.55	16.28	8.95	2	14.09	3.39	12.45	8.2	4667	2.82	0.68
3/21/2019 8:04	23.27	33.97	12.18	8.77	12.80	6.39	1.93	14.6	3.19	12.08	8.64	4384	2.82	0.61
3/21/2019 8:05	31.11	43.34	17.13	9.37	13.05	7.18	2.1	13.93	3.35	12.65	8.05	4613	2.93	0.70
3/21/2019 8:06	33.18	46.51	18.3	9.5	13.32	7.29	2.08	14.02	3.36	12.53	8.13	4620	2.92	0.70
3/21/2019 8:07	34.11	48.69	18.72	9.18	13.1	7.01	2	14.27	3.34	12.32	8.36	4598	2.85	0.67
3/21/2019 8:08	43.28	58.07	25.94	9.9	13.28	8.26	2.02	13.42	3.65	13.15	7.56	5021	2.71	0.74
3/21/2019 8:09	43.89	59.79	25.97	11.43	15.57	9.41	2.15	13.62	3.6	12.9	7.76	4957	2.93	0.77
3/21/2019 8:10	45.48	59.77	28.79	12.07	15.86	10.63	2.09	13.14	3.85	13.38	7.28	5302	2.75	0.81
3/21/2019 8:11	40.5	53.5	25.32	9.16	12.10	7.97	2.1	13.21	3.81	13.3	7.35	5236	2.77	0.80
3/21/2019 8:12	47.9	62.31	30.26	9.71	12.63	8.54	2.04	13.01	3.85	13.51	7.14	5292	2.65	0.78
3/21/2019 8:13	60.54	76.64	37.68	12.39	15.68	10.73	2.1	12.66	3.79	13.86	6.76	5213	2.66	0.80
3/21/2019 8:14	62.79	78.76	38.93	15.05	18.88	12.98	2.13	12.54	3.77	14.02	6.63	5193	2.67	0.80
3/21/2019 8:15	66.43	86.61	39.19	18.59	24.24	15.26	2.14	13.04	3.59	13.39	7.17	4942	2.79	0.77
3/21/2019 8:16	41.87	58.05	22.63	11.31	15.68	8.5	2.03	13.87	3.29	12.68	7.99	4527	2.81	0.67
3/21/2019 8:17	43.32	57.87	24.6	9.17	12.25	7.24	2.14	13.36	3.46	13.21	7.5	4756	2.86	0.74
3/21/2019 8:18	70.84	88.49	45.37	15.29	19.1	13.63	2.28	12.49	3.9	14	6.57	5365	2.85	0.89
3/21/2019 8:19	64.85	84.48	37.67	14.25	18.56	11.52	2.22	13.03	3.54	13.44	7.16	4866	2.89	0.79
3/21/2019 8:20	41.63	56.11	22.27	10.85	14.62	8.07	2.26	13.48	3.26	13.06	7.62	4480	3.05	0.74
3/21/2019 8:21	42.35	57.82	22.56	11.56	15.78	8.57	2.16	13.65	3.24	12.81	7.79	4462	2.95	0.70

Average		**44.20**	**59.42**	**25.63**	**11.50**	**15.51**	**9.24**	**2.06**	**12.97**	**7.70**	**4796.77**	**2.79**	**0.72**
Flow	kdscfh			4796.77									
O2	% dry			7.70									
CO2	% dry			12.97									
NOx	ppm dry			44.20									
NOx	ppm @ 3% O2			59.42									
NOx	lb/hr			25.63									
SO2	ppm dry			11.50									
SO2	ppm @ 3% O2			15.51									
SO2	lb/hr			9.24									
CO	ppm dry			2.06									
CO	ppm @ 3% O2			2.79									
CO	lb/hr			0.72									

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CEDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 8:37	22	32.84	11.05	5.93	8.85	4.14	2.19	14.93	3.06	11.74	8.91	4206	3.27	0.67
3/21/2019 8:38	17.21	26.26	8.47	4.86	7.63	3.33	2.34	15.26	3	11.51	9.17	4124	3.57	0.70
3/21/2019 8:39	22.09	30.87	11.65	4.8	6.99	3.52	2.28	13.97	3.21	12.65	8.09	4418	3.19	0.73
3/21/2019 8:40	45.72	58.58	26.34	8.22	10.53	6.59	2.45	12.81	3.51	13.69	6.93	4825	3.14	0.86
3/21/2019 8:41	55.91	73.97	30.97	9.1	12.04	7.01	2.32	13.23	3.37	13.2	7.37	4640	3.07	0.78
3/21/2019 8:42	46.15	62.87	24.56	6.88	9.37	5.09	2.19	13.62	3.24	12.9	7.76	4457	2.98	0.71
3/21/2019 8:43	48.17	66.84	25.56	6.81	9.45	5.03	2.37	13.88	3.23	12.64	8	4445	3.29	0.77
3/21/2019 8:44	50.47	68.13	28.4	7.27	9.81	5.69	2.25	13.5	3.42	13.01	7.64	4713	3.04	0.77
3/21/2019 8:45	44.59	62.75	24.01	7.02	9.88	5.26	2.25	14.07	3.28	12.48	8.18	4510	3.17	0.74
3/21/2019 8:46	63.35	82.89	37.98	8.19	10.72	6.83	2.41	13.08	3.65	13.4	7.22	5022	3.15	0.88
3/21/2019 8:47	64.85	86.43	38.38	10.52	14.02	8.66	2.37	13.33	3.6	13.15	7.47	4957	3.16	0.85
3/21/2019 8:48	63.97	83.04	39.51	10.78	13.99	9.26	2.35	12.98	3.76	13.52	7.11	5174	3.05	0.88
3/21/2019 8:49	57.9	76.32	34.8	12.75	16.81	10.66	2.4	13.18	3.66	13.29	7.32	5034	3.16	0.88
3/21/2019 8:50	57.47	75.98	33.13	10.63	14.05	8.53	2.46	13.22	3.51	13.25	7.36	4829	3.25	0.86
3/21/2019 8:51	49.39	67.9	27.74	10.96	15.07	8.56	2.42	13.75	3.42	12.75	7.88	4704	3.33	0.83
3/21/2019 8:52	45.73	61.59	26.35	11.31	15.23	9.07	2.44	13.47	3.51	13	7.61	4826	3.29	0.86
3/21/2019 8:53	34.74	48.24	18.72	10.18	14.14	7.63	2.4	13.89	3.28	12.63	8.01	4514	3.33	0.79
3/21/2019 8:54	36.9	50.89	19.68	10.09	13.91	7.49	2.34	13.79	3.25	12.72	7.92	4467	3.23	0.76
3/21/2019 8:55	39.84	55.07	21.17	10.64	14.71	7.87	2.54	13.82	3.23	12.68	7.95	4451	3.51	0.82
3/21/2019 8:56	34.94	48.86	18.48	9.43	13.19	6.94	2.51	13.98	3.22	12.55	8.1	4431	3.51	0.81
3/21/2019 8:57	37.63	51.18	21	9.16	12.46	7.11	2.57	13.6	3.4	12.91	7.74	4675	3.50	0.87
3/21/2019 8:58	37.69	51.66	21.55	7.41	10.16	5.9	2.49	13.71	3.48	12.8	7.84	4790	3.41	0.87
3/21/2019 8:59	32.87	46.22	18.83	6.93	9.74	5.52	2.41	14.06	3.49	12.49	8.17	4798	3.39	0.84
3/21/2019 9:00	37.33	50.58	22.38	7.21	9.77	6.01	2.43	13.55	3.65	12.97	7.69	5021	3.29	0.89
3/21/2019 9:01	56.55	71.89	34.83	11.7	14.87	10.03	2.34	12.71	3.75	13.76	6.82	5159	2.97	0.88
3/21/2019 9:02	64.56	80.87	38.24	13.98	17.51	11.52	2.46	12.53	3.61	13.99	6.61	4961	3.08	0.89
3/21/2019 9:03	80.43	98.74	49.19	18.97	23.29	16.14	2.63	12.28	3.72	14.23	6.32	5123	3.23	0.98
3/21/2019 9:04	68.3	88.72	39.03	17.32	22.5	13.77	2.43	12.99	3.48	13.44	7.12	4787	3.16	0.85
3/21/2019 9:05	55.98	74.61	30.68	14.07	18.75	10.73	2.5	13.33	3.34	13.17	7.47	4590	3.33	0.83
3/21/2019 9:06	48.83	66.32	26.38	12.85	17.45	9.66	2.39	13.58	3.29	12.88	7.72	4525	3.25	0.79
3/21/2019 9:07	39.98	55.61	21.56	11.21	15.59	8.41	2.53	13.91	3.28	12.58	8.03	4517	3.52	0.83
3/21/2019 9:08	35.06	49.69	19.28	9.44	13.38	7.22	2.51	14.17	3.35	12.38	8.27	4605	3.56	0.84
3/21/2019 9:09	37.43	51.58	20.82	9.31	12.83	7.21	2.58	13.78	3.39	12.75	7.91	4660	3.56	0.87
3/21/2019 9:10	42.59	58.11	23.56	10.51	14.34	8.09	2.5	13.64	3.37	12.84	7.78	4633	3.41	0.84
3/21/2019 9:11	40.08	56.05	21.28	10.15	14.19	7.5	2.5	13.98	3.23	12.54	8.1	4448	3.50	0.81
3/21/2019 9:12	44.25	58.98	25.03	10.17	13.55	8	2.48	13.33	3.44	13.16	7.47	4738	3.31	0.85
3/21/2019 9:13	53.24	70.85	29.73	9.08	12.08	7.05	2.51	13.31	3.4	13.17	7.45	4677	3.34	0.85
3/21/2019 9:14	61.71	79.7	36.59	11.66	15.06	9.62	2.51	12.91	3.61	13.55	7.04	4967	3.24	0.91
3/21/2019 9:15	49.62	65.4	29.24	12.66	16.69	10.38	2.52	13.18	3.59	13.29	7.32	4936	3.32	0.90
3/21/2019 9:16	43.39	59.2	23.95	11.5	15.69	8.83	2.57	13.64	3.36	12.84	7.78	4624	3.51	0.86
3/21/2019 9:17	41.18	56.7	22.1	10.29	14.17	7.68	2.56	13.77	3.27	12.73	7.9	4496	3.52	0.84
3/21/2019 9:18	40.15	55.2	21.89	10.43	14.34	7.91	2.55	13.75	3.32	12.75	7.88	4566	3.51	0.85
3/21/2019 9:19	36.4	50.47	19.58	9.6	13.31	7.19	2.36	13.87	3.27	12.68	7.99	4506	3.27	0.77
3/21/2019 9:20	44.54	59.54	25.23	10.7	14.3	8.43	2.42	13.37	3.45	13.1	7.51	4745	3.24	0.83
3/21/2019 9:21	39.46	54.04	22.03	11.56	15.83	8.98	2.51	13.7	3.4	12.8	7.83	4677	3.44	0.85
3/21/2019 9:22	43.95	60.52	24.35	12.09	16.65	9.32	2.5	13.77	3.37	12.72	7.9	4641	3.44	0.84
3/21/2019 9:23	45.46	61.65	25.46	11.58	15.7	9.02	2.51	13.56	3.41	12.95	7.7	4691	3.40	0.86
3/21/2019 9:24	47.51	66.7	24.23	12.55	17.62	8.9	2.46	14.04	3.1	12.47	8.15	4271	3.45	0.76
3/21/2019 9:25	39.63	54.99	19.93	10.78	14.96	7.54	2.56	13.88	3.06	12.63	8	4212	3.55	0.78
3/21/2019 9:26	33.21	46.77	16.28	8.61	12.13	5.87	2.5	14.08	2.98	12.44	8.19	4107	3.52	0.75
3/21/2019 9:27	26.27	37.14	12.6	7.76	10.97	5.18	2.53	14.14	2.92	12.43	8.24	4016	3.58	0.74
3/21/2019 9:28	35.73	49.46	17.36	8.61	11.92	5.82	2.62	13.84	2.96	12.67	7.97	4069	3.63	0.77
3/21/2019 9:29	48.56	63.87	25.13	11.87	15.61	8.55	2.67	13.15	3.15	13.3	7.29	4335	3.51	0.84
3/21/2019 9:30	55.91	71.54	29.1	13.11	16.77	9.49	2.46	12.79	3.17	13.73	6.91	4359	3.15	0.78
3/21/2019 9:31	63.78	84.26	32.62	16.58	21.9	11.8	2.53	13.21	3.11	13.21	7.35	4284	3.34	0.79
3/21/2019 9:32	42.76	59.2	20.9	12.61	17.46	8.58	2.44	13.84	2.98	12.66	7.97	4094	3.38	0.73
3/21/2019 9:33	37.19	51.6	18.53	11.55	16.03	8.01	2.38	13.88	3.03	12.65	8	4174	3.30	0.72
3/21/2019 9:34	49.18	65.16	26.41	13.14	17.41	9.82	2.49	13.25	3.27	13.23	7.39	4498	3.30	0.81
3/21/2019 9:35	51.37	69.35	27.26	14.21	19.18	10.49	2.43	13.5	3.23	12.96	7.64	4445	3.28	0.78
3/21/2019 9:36	40.89	56.78	21.51	10.96	15.22	8.02	2.49	13.89	3.2	12.59	8.01	4406	3.46	0.80

Average		**45.53**	**61.35**	**25.21**	**10.50**	**14.20**	**8.04**	**2.45**	**12.92**	**7.71**	**4592.88**	**3.33**	**0.82**
Flow	kdscfh			4592.88									
O2	% dry			7.71									
CO2	% dry			12.92									
NOx	ppm dry			45.53									
NOx	ppm @ 3% O2			61.35									
NOx	lb/hr			25.21									
SO2	ppm dry			10.50									
SO2	ppm @ 3% O2			14.20									
SO2	lb/hr			8.04									
CO	ppm dry			2.45									
CO	ppm @ 3% O2			3.33									
CO	lb/hr			0.82									

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CEDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 10:11	28.34	39.79	16.14	8.22	11.54	6.51	2.31	14.04	3.47	12.5	8.15	4769	3.24	0.80
3/21/2019 10:12	38.18	51.81	21.98	9.06	12.3	7.26	2.29	13.57	3.5	12.93	7.71	4822	3.11	0.80
3/21/2019 10:13	56.77	73.05	35.81	13.26	17.06	11.64	2.38	12.87	3.84	13.64	6.99	5284	3.06	0.91
3/21/2019 10:14	68.03	88.24	40.69	16.55	21.47	13.77	2.27	12.97	3.64	13.46	7.1	5010	2.94	0.83
3/21/2019 10:15	56.27	78.14	30.36	13.82	19.19	10.37	2.3	13.89	3.28	12.6	8.01	4519	3.19	0.76
3/21/2019 10:16	42.57	61.25	22.12	9.23	13.28	6.67	2.14	14.39	3.16	12.18	8.46	4353	3.08	0.68
3/21/2019 10:17	38.09	55.16	19.67	8.99	13.02	6.46	2.22	14.48	3.14	12.12	8.54	4325	3.22	0.70
3/21/2019 10:18	36.48	51.09	19.47	9.04	12.66	6.71	2.2	14.01	3.25	12.54	8.12	4471	3.08	0.71
3/21/2019 10:19	37.75	53.59	20.24	9.48	13.46	7.07	2.29	14.2	3.26	12.35	8.29	4490	3.25	0.75
3/21/2019 10:20	38.33	52.18	22.4	10.04	13.67	8.16	2.28	13.61	3.56	12.89	7.75	4896	3.10	0.81
3/21/2019 10:21	41.61	55.63	25.39	12.83	17.15	10.89	2.23	13.37	3.71	13.13	7.51	5110	2.98	0.83
3/21/2019 10:22	41.58	55.42	25.17	13.56	18.07	11.42	2.31	13.33	3.68	13.15	7.47	5070	3.08	0.85
3/21/2019 10:23	50.49	67.4	28.25	15.37	20.52	11.97	2.17	13.35	3.41	13.11	7.49	4687	2.90	0.74
3/21/2019 10:24	43.46	60.4	23.24	11.89	16.52	8.85	2.12	13.9	3.26	12.59	8.02	4480	2.95	0.69
3/21/2019 10:25	41.01	56.47	23.01	12.48	17.18	9.74	2	13.77	3.42	12.76	7.9	4700	2.75	0.68
3/21/2019 10:26	55.62	73.21	31.93	15.78	20.77	12.6	2.22	13.16	3.49	13.34	7.3	4808	2.92	0.78
3/21/2019 10:27	58.22	75.85	33.46	17.61	22.94	14.08	2.17	13.03	3.5	13.43	7.16	4814	2.83	0.76
3/21/2019 10:28	66.48	87.44	38.1	18.39	24.19	14.67	2.12	13.15	3.49	13.3	7.29	4801	2.79	0.74
3/21/2019 10:29	66.87	86.49	40.66	18.36	23.75	15.53	2.2	12.93	3.7	13.52	7.06	5093	2.85	0.81
3/21/2019 10:30	54.02	71.52	30.62	15.76	20.87	12.43	2.08	13.24	3.45	13.26	7.38	4748	2.75	0.72
3/21/2019 10:31	57.68	77.05	31.53	15.97	21.33	12.15	2.15	13.36	3.33	13.08	7.5	4579	2.87	0.72
3/21/2019 10:32	53.34	70.41	29.32	11.83	15.62	9.05	2.14	13.2	3.35	13.25	7.34	4604	2.82	0.72
3/21/2019 10:33	51.84	69.25	27.81	12.47	16.66	9.31	2.09	13.36	3.27	13.13	7.5	4494	2.79	0.68
3/21/2019 10:34	52.94	72.62	27.51	10.95	15.02	7.92	2.06	13.72	3.16	12.75	7.85	4352	2.83	0.65
3/21/2019 10:35	42.56	59.24	21.94	10.39	14.46	7.45	1.98	13.92	3.14	12.62	8.04	4318	2.76	0.62
3/21/2019 10:36	45.68	62.37	25.59	11	15.02	8.57	2.12	13.65	3.41	12.83	7.79	4692	2.89	0.72
3/21/2019 10:37	34.54	48.99	19.17	10.26	14.55	7.92	2.05	14.18	3.38	12.35	8.28	4650	2.91	0.69
3/21/2019 10:38	46.69	62.74	27.92	11.57	15.55	9.62	2.11	13.44	3.64	13.03	7.58	5008	2.84	0.77
3/21/2019 10:39	37.06	51.83	19.89	11.68	16.33	8.72	2.01	13.98	3.27	12.53	8.1	4496	2.81	0.66
3/21/2019 10:40	39.98	53.85	22.63	10.17	13.7	8.01	2.17	13.47	3.45	13.02	7.61	4742	2.92	0.75
3/21/2019 10:41	43.61	59.77	23.84	11.16	15.3	8.49	2.08	13.71	3.33	12.75	7.84	4578	2.85	0.69
3/21/2019 10:42	39.83	54.18	21.91	9.67	13.15	7.4	2.04	13.6	3.35	12.9	7.74	4607	2.77	0.68
3/21/2019 10:43	47.48	64.14	26.48	8.88	12	6.89	2.04	13.51	3.4	12.96	7.65	4672	2.76	0.69
3/21/2019 10:44	42.14	57.36	23.15	9.34	12.71	7.14	1.97	13.61	3.34	12.88	7.75	4601	2.68	0.66
3/21/2019 10:45	40.48	56.43	23.02	9.03	12.59	7.14	2	13.94	3.46	12.54	8.06	4763	2.79	0.69
3/21/2019 10:46	41.14	56.65	23.27	9.31	12.82	7.33	2	13.77	3.44	12.72	7.9	4737	2.75	0.69
3/21/2019 10:47	48.84	65	27.56	9.55	12.71	7.5	2.01	13.31	3.43	13.17	7.45	4726	2.68	0.69
3/21/2019 10:48	57.21	75.58	31.77	9.51	12.56	7.35	2.01	13.21	3.38	13.23	7.35	4652	2.66	0.68
3/21/2019 10:49	44.42	58.94	23.99	8.7	11.54	6.54	2	13.27	3.29	13.18	7.41	4524	2.65	0.66
3/21/2019 10:50	46.95	63.72	24.67	9.42	12.78	6.89	2.03	13.57	3.2	12.9	7.71	4402	2.75	0.65
3/21/2019 10:51	38.64	53.87	19.77	8.68	12.1	6.18	1.9	13.94	3.11	12.57	8.06	4285	2.65	0.59
3/21/2019 10:52	38.58	53.49	21.7	8.87	12.3	6.94	1.92	13.87	3.42	12.59	7.99	4711	2.66	0.66
3/21/2019 10:53	35.08	49.02	20.21	7.72	10.79	6.19	1.85	13.97	3.51	12.55	8.09	4826	2.59	0.65
3/21/2019 10:54	50.02	65.35	32.56	9.45	12.35	8.56	1.91	13.07	3.96	13.38	7.2	5452	2.50	0.76
3/21/2019 10:55	43	57.31	25.23	10.22	13.62	8.34	1.96	13.33	3.57	13.16	7.47	4915	2.61	0.70
3/21/2019 10:56	46.49	63.38	24.2	10.1	13.77	7.32	1.97	13.63	3.17	12.77	7.77	4361	2.69	0.62
3/21/2019 10:57	33.79	47.78	16.93	8.19	11.58	5.71	1.86	14.14	3.05	12.38	8.24	4196	2.63	0.57
3/21/2019 10:58	36.51	50.5	19.01	7.75	10.72	5.61	1.82	13.83	3.17	12.64	7.96	4361	2.52	0.58
3/21/2019 10:59	38.63	51.91	20.62	6.42	8.63	4.77	1.89	13.44	3.25	13.02	7.58	4470	2.54	0.61
3/21/2019 11:00	58.39	76.63	32.16	8.05	10.56	6.17	1.83	13.12	3.35	13.29	7.26	4613	2.40	0.61
3/21/2019 11:01	45.32	60.9	23.56	8.75	11.76	6.33	1.8	13.44	3.16	13.06	7.58	4354	2.42	0.57
3/21/2019 11:02	42.4	57.41	22.25	7.97	10.79	5.82	1.94	13.54	3.19	12.88	7.68	4396	2.63	0.62
3/21/2019 11:03	37.99	51.48	19.73	7.69	10.42	5.56	1.88	13.55	3.16	12.93	7.69	4351	2.55	0.59
3/21/2019 11:04	30.24	42.29	15.3	7.4	10.35	5.21	1.79	13.98	3.08	12.51	8.1	4239	2.50	0.55
3/21/2019 11:05	38.1	51.78	19.7	6.13	8.33	4.41	1.85	13.59	3.15	12.91	7.73	4332	2.51	0.58
3/21/2019 11:06	54.34	72	29.61	8.31	11.01	6.3	1.94	13.25	3.32	13.16	7.39	4564	2.57	0.64
3/21/2019 11:07	44.97	61.64	23.03	7.38	10.12	5.26	1.85	13.71	3.12	12.77	7.84	4289	2.54	0.58
3/21/2019 11:08	57.52	77.53	30.32	9.01	12.14	6.61	1.88	13.48	3.21	12.92	7.62	4415	2.53	0.60
3/21/2019 11:09	68.12	89.2	36.92	10.01	13.11	7.55	1.73	13.09	3.3	13.35	7.23	4540	2.27	0.57
3/21/2019 11:10	56.33	76.1	29.29	10.08	13.62	7.29	1.71	13.51	3.16	12.92	7.65	4355	2.31	0.54

Average		**46.15**	**62.40**	**25.56**	**10.65**	**14.40**	**8.24**	**2.04**		**12.91**	**7.70**	**4624.53**	**2.77**	**0.69**
Flow	kdscfh			4624.53										
O2	% dry			7.70										
CO2	% dry			12.91										
NOx	ppm dry			46.15										
NOx	ppm @ 3% O2			62.40										
NOx	lb/hr			25.56										
SO2	ppm dry			10.65										
SO2	ppm @ 3% O2			14.40										
SO2	lb/hr			8.24										
CO	ppm dry			2.04										
CO	ppm @ 3% O2			2.77										
CO	lb/hr			0.69										

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CEDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 11:39	55.4	75.64	28.88	7.4	10.1	5.37	1.37	13.65	3.17	12.77	7.79	4367	1.87	0.43
3/21/2019 11:40	50.91	70.86	25.61	7.48	10.41	5.24	1.2	13.92	3.06	12.56	8.04	4214	1.67	0.37
3/21/2019 11:41	58.91	80.31	31.07	8.72	11.89	6.4	1.36	13.63	3.21	12.78	7.77	4417	1.85	0.44
3/21/2019 11:42	52.19	69.77	27.86	8.48	11.34	6.3	1.28	13.37	3.25	13.07	7.51	4471	1.71	0.42
3/21/2019 11:43	68.28	86.8	38.3	10.81	13.74	8.44	1.35	12.71	3.41	13.71	6.82	4698	1.72	0.46
3/21/2019 11:44	69.93	92.11	37.14	12.38	16.31	9.15	1.34	13.17	3.23	13.16	7.31	4449	1.76	0.43
3/21/2019 11:45	48.07	65.63	24.72	9.63	13.15	6.89	1.16	13.65	3.13	12.78	7.79	4308	1.58	0.36
3/21/2019 11:46	40.8	55.5	20.72	7.59	10.32	5.36	1.16	13.6	3.09	12.84	7.74	4254	1.58	0.36
3/21/2019 11:47	53.04	69.15	28.74	9.42	12.28	7.1	1.25	13.04	3.3	13.36	7.17	4538	1.63	0.41
3/21/2019 11:48	50.72	67.05	26.98	10.1	13.35	7.47	1.13	13.22	3.24	13.2	7.36	4455	1.49	0.37
3/21/2019 11:49	55.69	71.51	30.26	11.22	14.41	8.48	1.15	12.84	3.31	13.56	6.96	4551	1.48	0.38
3/21/2019 11:50	51.21	69.76	26.48	11.52	15.69	8.29	1.11	13.62	3.15	12.76	7.76	4331	1.51	0.35
3/21/2019 11:51	46.98	68.15	22.41	9.23	13.39	6.12	1.14	14.51	2.9	12.03	8.56	3995	1.65	0.33
3/21/2019 11:52	54.13	72.31	29.18	10.54	14.08	7.91	1.14	13.36	3.28	13.04	7.5	4516	1.52	0.37
3/21/2019 11:53	41.78	57.71	21.36	10.28	14.2	7.31	1.06	13.81	3.11	12.64	7.94	4282	1.46	0.33
3/21/2019 11:54	43.34	60.85	21.92	9.06	12.72	6.37	1.1	14.04	3.08	12.39	8.15	4236	1.54	0.34
3/21/2019 11:55	40.69	55.35	21.72	9.45	12.85	7.02	0.95	13.6	3.25	12.82	7.74	4471	1.29	0.31
3/21/2019 11:56	36.48	50.39	18.61	9.34	12.9	6.63	0.96	13.81	3.11	12.65	7.94	4274	1.33	0.30
3/21/2019 11:57	48.43	63	26.86	11.12	14.47	8.58	1.01	13.01	3.38	13.39	7.14	4645	1.31	0.34
3/21/2019 11:58	51.31	66.99	27.52	10.01	13.07	7.47	1.08	13.06	3.26	13.34	7.19	4492	1.41	0.35
3/21/2019 11:59	49.25	65.16	25.44	10.73	14.2	7.71	1.01	13.23	3.14	13.13	7.37	4326	1.34	0.32
3/21/2019 12:00	49.5	65.49	25.44	11.36	15.03	8.12	0.85	13.23	3.13	13.19	7.37	4305	1.12	0.27
3/21/2019 12:01	56.3	71.68	30.18	11.93	15.19	8.9	0.91	12.73	3.26	13.71	6.84	4490	1.16	0.30
3/21/2019 12:02	55.08	73.3	27.66	12.51	16.65	8.74	0.82	13.31	3.06	13.04	7.45	4207	1.09	0.25
3/21/2019 12:03	44.82	61.81	22.31	10.77	14.85	7.46	0.67	13.79	3.03	12.63	7.92	4170	0.92	0.20
3/21/2019 12:04	36.49	50.44	17.77	9.22	12.74	6.25	0.64	13.82	2.96	12.68	7.95	4078	0.88	0.19
3/21/2019 12:05	55.91	72.31	30.06	11.8	15.26	8.83	0.61	12.93	3.27	13.44	7.06	4504	0.79	0.20
3/21/2019 12:06	45.73	62.34	22.76	11.4	15.54	7.89	0.69	13.63	3.03	12.77	7.77	4169	0.94	0.21
3/21/2019 12:07	41.55	56.64	20.82	9.9	13.5	6.9	0.61	13.63	3.05	12.78	7.77	4197	0.83	0.19
3/21/2019 12:08	39.49	53.55	20.11	9.14	12.39	6.48	0.45	13.56	3.1	12.86	7.7	4266	0.61	0.14
3/27/2018 13:25	31.96	47.95	22.17	5.68	8.52	5.48	0.7	15	4.22	11.74	8.97	5810	1.05	0.30
Average	**49.17**	**66.11**	**25.84**	**9.94**	**13.37**	**7.25**	**1.01**			**12.93**	**7.62**	**4402.77**	**1.36**	**0.32**

Flow	kdscfh	4402.77
O2	% dry	7.62
CO2	% dry	12.93
NOx	ppm dry	49.17
NOx	ppm @ 3% O2	66.11
NOx	lb/hr	25.84
SO2	ppm dry	9.94
SO2	ppm @ 3% O2	13.37
SO2	lb/hr	7.25
CO	ppm dry	1.01
CO	ppm @ 3% O2	1.36
CO	lb/hr	0.32

CeDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 12:23	46.01	61.88	24.59	8.73	11.74	6.49	0.43	13.45	3.25	12.94	7.59	4477	0.58	0.14
3/21/2019 12:24	47.61	64.08	24.82	9.65	12.99	7	0.42	13.46	3.17	12.97	7.6	4367	0.57	0.13
3/21/2019 12:25	63.07	81.69	34.88	11.86	15.36	9.13	0.53	12.95	3.37	13.42	7.08	4632	0.69	0.18
3/21/2019 12:26	58.79	78.24	30.76	12.28	16.34	8.94	0.5	13.31	3.19	13.07	7.45	4383	0.67	0.16
3/21/2019 12:27	47.51	65.27	24.1	11.95	16.42	8.43	0.52	13.74	3.09	12.66	7.87	4248	0.71	0.16
3/21/2019 12:28	45.23	62.42	22.84	10.76	14.85	7.56	0.55	13.8	3.07	12.63	7.93	4230	0.76	0.17
3/21/2019 12:29	58.19	78.61	30.66	13.92	18.81	10.21	0.51	13.51	3.21	12.87	7.65	4414	0.69	0.16
3/21/2019 12:30	52.47	72.36	26.94	13.6	18.76	9.72	0.41	13.79	3.13	12.63	7.92	4301	0.57	0.13
3/21/2019 12:31	56.47	76.69	29.75	15.05	20.44	11.03	0.41	13.58	3.21	12.83	7.72	4413	0.56	0.13
3/21/2019 12:32	58.93	80.09	31.05	15.51	21.08	11.37	0.42	13.59	3.21	12.81	7.73	4414	0.57	0.13
3/21/2019 12:33	56.01	76.24	29.86	14.29	19.45	10.6	0.48	13.61	3.25	12.81	7.75	4466	0.65	0.16
3/21/2019 12:34	57.88	78.25	30.6	16.21	21.92	11.92	0.45	13.52	3.22	12.9	7.66	4428	0.61	0.14
3/21/2019 12:35	53.51	70.64	28.68	16.77	22.14	12.51	0.48	13.2	3.26	13.2	7.34	4490	0.63	0.16
3/21/2019 12:36	66.3	85.63	36.88	18.83	24.32	14.57	0.59	12.91	3.39	13.46	7.04	4659	0.76	0.20
3/21/2019 12:37	62.14	82.7	33.05	19.37	25.78	14.33	0.47	13.31	3.24	13.07	7.45	4455	0.63	0.15
3/21/2019 12:38	56.52	76.07	29.15	16.96	22.83	12.17	0.46	13.46	3.14	12.97	7.6	4320	0.62	0.14
3/21/2019 12:39	59.56	79.09	32.13	18.38	24.41	13.8	0.43	13.28	3.28	13.1	7.42	4519	0.57	0.14
3/21/2019 12:40	46.14	63	23.91	15.97	21.8	11.51	0.45	13.65	3.15	12.77	7.79	4340	0.61	0.14
3/21/2019 12:41	46.3	62.64	24.16	14.69	19.88	10.66	0.4	13.53	3.18	12.89	7.67	4370	0.54	0.13
3/21/2019 12:42	54.04	71.44	29.13	14.52	19.2	10.89	0.42	13.22	3.28	13.2	7.36	4515	0.56	0.14
3/21/2019 12:43	56.57	76.14	30.35	17.53	23.59	13.09	0.38	13.46	3.27	12.92	7.6	4494	0.51	0.12
3/21/2019 12:44	54.85	73.6	29.14	15.06	20.21	11.13	0.38	13.42	3.23	13.02	7.56	4450	0.51	0.12
3/21/2019 12:45	68.83	92.08	36.68	20.31	27.17	15.06	0.5	13.38	3.24	13.01	7.52	4464	0.67	0.16
3/21/2019 12:46	54.2	73.61	28.32	17.97	24.41	13.06	0.38	13.58	3.18	12.84	7.72	4377	0.52	0.12
3/21/2019 12:47	42.97	58.63	22.31	16.42	22.4	11.86	0.38	13.64	3.16	12.79	7.78	4348	0.52	0.12
3/21/2019 12:48	41.23	56.29	21.79	13.81	18.86	10.16	0.35	13.65	3.22	12.76	7.79	4427	0.48	0.11
3/21/2019 12:49	43.43	57.97	23.36	14.85	19.82	11.11	0.35	13.35	3.27	13.09	7.49	4506	0.47	0.11
3/21/2019 12:50	49.48	63.9	27.65	18.05	23.31	14.03	0.44	12.91	3.4	13.5	7.04	4680	0.57	0.15
3/21/2019 12:51	53.84	71.97	28.42	18.82	25.16	13.82	0.37	13.37	3.21	13.03	7.51	4422	0.49	0.12
3/21/2019 12:52	45.75	62.7	23.72	16.73	22.93	12.07	0.28	13.71	3.16	12.73	7.84	4343	0.38	0.09
Average	**53.46**	**71.80**	**28.32**	**15.30**	**20.55**	**11.27**	**0.44**			**12.96**	**7.58**	**4431.73**	**0.59**	**0.14**

Flow	kdscfh	4431.73
O2	% dry	7.58
CO2	% dry	12.96
NOx	ppm dry	53.46
NOx	ppm @ 3% O2	71.80
NOx	lb/hr	28.32
SO2	ppm dry	15.30
SO2	ppm @ 3% O2	20.55
SO2	lb/hr	11.27
CO	ppm dry	0.44
CO	ppm @ 3% O2	0.59
CO	lb/hr	0.14

CEDARS 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 13:07	71.37	89.9	39.74	19.06	24.01	14.77	0.27	12.6	3.39	13.82	6.69	4664	0.34	0.09
3/21/2019 13:08	72.12	89.03	40.85	21.07	26.01	16.6	0.29	12.34	3.45	14.13	6.4	4744	0.36	0.10
3/21/2019 13:09	68.78	87.63	37.07	21.15	26.95	15.86	0.2	12.74	3.28	13.65	6.85	4514	0.25	0.07
3/21/2019 13:10	43.91	59.63	21.6	15.58	21.16	10.66	0.02	13.58	2.99	12.87	7.72	4120	0.03	0.01
3/21/2019 13:11	45.17	58.89	23.84	15.44	20.13	11.34	0.12	13.04	3.21	13.42	7.17	4421	0.16	0.04
3/21/2019 13:12	48.25	63.37	25.15	16.53	21.71	11.99	0.07	13.13	3.17	13.29	7.27	4366	0.09	0.02
3/21/2019 13:13	45.59	60.23	23.76	13.04	17.23	9.46	0.05	13.21	3.17	13.23	7.35	4366	0.07	0.02
3/21/2019 13:14	50.01	64.31	27.05	12.95	16.65	9.75	0.13	12.86	3.29	13.58	6.98	4531	0.17	0.04
3/21/2019 13:15	44.91	61.32	22.43	13.53	18.47	9.4	0.03	13.65	3.04	12.78	7.79	4183	0.04	0.01
3/21/2019 13:16	45.91	61.33	24.37	11.82	15.79	8.73	0.07	13.36	3.23	13.09	7.5	4446	0.09	0.02
3/21/2019 13:17	47.11	62.88	24.61	12.62	16.85	9.17	0.08	13.35	3.18	13.11	7.49	4376	0.11	0.03
3/21/2019 13:18	54.09	70.83	28.88	15.43	20.2	11.46	0	13.09	3.25	13.35	7.23	4472	0.00	0.00
3/21/2019 13:19	68.66	86.13	38.72	17.36	21.78	13.62	0.08	12.54	3.43	13.91	6.63	4723	0.10	0.03
3/21/2019 13:20	57.33	75.85	29.64	16.2	21.43	11.65	0.06	13.23	3.15	13.16	7.37	4330	0.08	0.02
3/21/2019 13:21	48.86	66.86	24.74	11.99	16.41	8.45	0	13.69	3.08	12.75	7.82	4241	0.00	0.00
3/21/2019 13:22	48.32	63.5	25.78	11.59	15.23	8.6	0.02	13.14	3.25	13.32	7.28	4469	0.03	0.01
3/21/2019 13:23	45.56	62.21	23.08	12.84	17.53	9.05	0	13.65	3.08	12.77	7.79	4244	0.00	0.00
3/21/2019 13:24	33.63	47.93	16.78	10.35	14.75	7.18	0	14.25	3.04	12.24	8.34	4179	0.00	0.00
3/21/2019 13:25	22.75	33.41	11.14	7.71	11.32	5.25	0	14.68	2.98	11.92	8.71	4100	0.00	0.00
3/21/2019 13:26	17.95	26.29	9.08	6.93	10.15	4.88	0	14.65	3.08	11.95	8.68	4237	0.00	0.00
3/21/2019 13:27	17.47	25.4	8.85	6.57	9.55	4.63	0	14.54	3.08	12.03	8.59	4241	0.00	0.00
3/21/2019 13:28	21.18	29.97	11.2	7.17	10.15	5.28	0	14.15	3.22	12.38	8.25	4431	0.00	0.00
3/21/2019 13:29	20.38	28.63	10.73	6.4	8.99	4.69	0	14.05	3.2	12.45	8.16	4409	0.00	
3/21/2019 13:30	30.14	39.47	17.14	5.49	7.19	4.34	0	13.09	3.46	13.36	7.23	4764	0.00	
3/21/2019 13:31	34.49	46.98	18.36	7.68	10.46	5.69	0	13.62	3.24	12.83	7.76	4458	0.00	0.00
3/21/2019 13:32	42.83	56.83	23.31	8.94	11.86	6.77	0	13.27	3.31	13.16	7.41	4559	0.00	0.00
3/21/2019 13:33	44.24	59.23	23.63	10.47	14.02	7.78	0	13.39	3.25	13.05	7.53	4473	0.00	0.00
3/21/2019 13:34	43.9	57.36	24.15	11.58	15.13	8.86	0	13.07	3.35	13.37	7.2	4608	0.00	0.00
3/21/2019 13:35	46.62	60.17	25.5	12.9	16.65	9.82	0.01	12.91	3.33	13.54	7.03	4582	0.01	
3/21/2019 13:36	66.08	80.46	38.96	18.3	22.28	15.01	0	12.18	3.59	14.33	6.2	4939	0.00	
Average	**44.92**	**59.20**	**24.00**	**12.62**	**16.67**	**9.36**	**0.05**			**13.09**	**7.48**	**4439.67**	**0.06**	**0.02**

Flow	kdscfh	4439.67
O2	% dry	7.48
CO2	% dry	13.09
NOx	ppm dry	44.92
NOx	ppm @ 3% O2	59.20
NOx	lb/hr	24.00
SO2	ppm dry	12.62
SO2	ppm @ 3% O2	16.67
SO2	lb/hr	9.36
CO	ppm dry	0.05
CO	ppm @ 3% O2	0.06
CO	lb/hr	0.02

CeDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 13:51	48.92	65.25	26.16	11.09	14.79	8.25	0	13.34	3.25	13.08	7.48	4479	0.00	0.00
3/21/2019 13:52	45.91	61.74	23.52	10.62	14.28	7.57	0	13.45	3.12	13.02	7.59	4292	0.00	0.00
3/21/2019 13:53	62.99	83.33	33.41	13.21	17.48	9.75	0.11	13.23	3.23	13.15	7.37	4443	0.15	0.04
3/21/2019 13:54	48.74	66.55	24.51	10.13	13.83	7.09	0.01	13.65	3.06	12.81	7.79	4212	0.01	0.00
3/21/2019 13:55	41.59	58.16	20.94	7.94	11.1	5.56	0.06	13.98	3.06	12.44	8.1	4217	0.08	0.02
3/21/2019 13:56	32.56	46.44	16.09	7.38	10.53	5.08	0	14.26	3.01	12.26	8.35	4140	0.00	0.00
3/21/2019 13:57	33.82	48.94	16.87	7.87	11.39	5.46	0	14.47	3.04	12.05	8.53	4178	0.00	0.00
3/21/2019 13:58	37.55	53.56	19.16	7.67	10.94	5.45	0.01	14.26	3.11	12.28	8.35	4274	0.01	0.00
3/21/2019 13:59	48.21	65.67	25.24	9.27	12.63	6.75	0	13.62	3.19	12.87	7.76	4385	0.00	0.00
3/21/2019 14:00	63.41	84.14	34.1	10.55	14	7.89	0.08	13.27	3.27	13.14	7.41	4505	0.11	0.03
3/21/2019 14:01	59.92	80.52	31.5	11.27	15.15	8.24	0.04	13.44	3.2	12.97	7.58	4404	0.05	0.01
3/21/2019 14:02	54.9	75.13	28.18	11.16	15.27	7.97	0.11	13.69	3.12	12.75	7.82	4300	0.15	0.03
3/21/2019 14:03	59.29	80.28	30.76	11.68	15.81	8.43	0.12	13.54	3.16	12.92	7.68	4345	0.16	0.04
3/21/2019 14:04	62.45	81.6	34.21	14.15	18.49	10.79	0.16	13.07	3.33	13.35	7.2	4589	0.21	0.05
3/21/2019 14:05	53.42	73.22	27.05	13.73	18.82	9.67	0.05	13.71	3.08	12.75	7.84	4242	0.07	0.02
3/21/2019 14:06	53.29	70.61	28.27	13.33	17.66	9.84	0.23	13.25	3.23	13.2	7.39	4444	0.30	0.07
3/21/2019 14:07	58.56	74.39	31.92	16.26	20.66	12.33	0.31	12.7	3.32	13.74	6.81	4566	0.39	0.10
3/21/2019 14:08	67.46	84.27	37.92	21.33	26.64	16.68	0.36	12.49	3.42	13.93	6.57	4708	0.45	0.12
3/21/2019 14:09	55.53	72.4	28.65	18.49	24.11	13.27	0.23	13.04	3.14	13.39	7.17	4321	0.30	0.07
3/21/2019 14:10	61.72	80.12	32.64	19.32	25.08	14.22	0.25	12.98	3.22	13.45	7.11	4430	0.32	0.08
3/21/2019 14:11	58.35	75.25	31.49	19.91	25.68	14.95	0.33	12.9	3.28	13.54	7.02	4520	0.43	0.11
3/21/2019 14:12	56.72	73.04	30.74	19.61	25.25	14.79	0.37	12.88	3.3	13.56	7	4540	0.48	0.12
3/21/2019 14:13	49.8	68.68	24.95	18.88	26.04	13.16	0.22	13.79	3.05	12.62	7.92	4196	0.30	0.07
3/21/2019 14:14	43.18	60.67	21.76	15.37	21.6	10.78	0.28	14.05	3.07	12.45	8.16	4221	0.39	0.09
3/21/2019 14:15	40.68	54.83	21.49	12.89	17.37	9.47	0.32	13.48	3.21	12.99	7.62	4424	0.43	0.10
3/21/2019 14:16	58.35	73.92	33.35	17.15	21.73	13.64	0.42	12.67	3.48	13.79	6.77	4787	0.53	0.15
3/21/2019 14:17	62.23	80.37	34.26	21.52	27.79	16.49	0.46	12.91	3.35	13.49	7.04	4612	0.59	0.15
3/21/2019 14:18	64.37	83.01	34.54	21.46	27.68	16.02	0.48	12.9	3.27	13.55	7.02	4494	0.62	0.16
3/21/2019 14:19	52.5	69.82	27.99	21.37	28.42	15.85	0.45	13.3	3.24	13.08	7.44	4465	0.60	0.15
3/21/2019 14:20	24.66	36.97	11.64	12.8	19.19	8.4	0.31	14.99	2.87	11.68	8.96	3953	0.46	0.09
Average	**52.04**	**69.43**	**27.44**	**14.25**	**18.98**	**10.46**	**0.19**			**13.01**	**7.56**	**4389.53**	**0.25**	**0.06**

Flow	kdscfh	4389.53
O2	% dry	7.56
CO2	% dry	13.01
NOx	ppm dry	52.04
NOx	ppm @ 3% O2	69.43
NOx	lb/hr	27.44
SO2	ppm dry	14.25
SO2	ppm @ 3% O2	18.98
SO2	lb/hr	10.46
CO	ppm dry	0.19
CO	ppm @ 3% O2	0.25
CO	lb/hr	0.06

CEMS 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 14:35	51.48	67.21	28.33	17.52	22.87	13.42	0.83	13.06	3.35	13.4	7.19	4610	1.08	0.28
3/21/2019 14:36	54.12	67.89	30.78	19.53	24.5	15.45	0.88	12.54	3.46	13.94	6.63	4764	1.10	0.30
3/21/2019 14:37	66.25	80.67	38.99	25.59	31.16	20.96	0.93	12.18	3.58	14.3	6.2	4930	1.13	0.33
3/21/2019 14:38	50.9	70.19	24.92	15.59	21.5	10.62	0.79	13.79	2.98	12.63	7.92	4101	1.09	0.24
3/21/2019 14:39	39.7	56.49	19.57	10.64	15.14	7.3	0.64	14.23	3	12.27	8.32	4128	0.91	0.19
3/21/2019 14:40	35.62	50.05	17.82	9.66	13.57	6.72	0.63	14.05	3.04	12.5	8.16	4190	0.89	0.19
3/21/2019 14:41	50.17	66.87	26.8	13.77	18.35	10.23	0.8	13.33	3.25	13.13	7.47	4474	1.07	0.26
3/21/2019 14:42	46.67	64.61	23.75	13.5	18.69	9.56	0.86	13.84	3.1	12.62	7.97	4263	1.19	0.27
3/21/2019 14:43	41.44	58.32	21.15	11.08	15.59	7.87	0.76	14.07	3.11	12.41	8.18	4275	1.07	0.24
3/21/2019 14:44	32.21	45.76	16.45	9.74	13.84	6.92	0.84	14.21	3.11	12.32	8.3	4279	1.19	0.26
3/21/2019 14:45	32.14	46.81	16.17	9.81	14.29	6.87	0.83	14.56	3.06	12	8.61	4213	1.21	0.25
3/21/2019 14:46	41.54	56.63	22.52	10.05	13.7	7.58	0.85	13.63	3.3	12.88	7.77	4541	1.16	0.28
3/21/2019 14:47	52.76	69.14	29.27	13.4	17.56	10.34	1	13.1	3.38	13.36	7.24	4647	1.31	0.34
3/21/2019 14:48	58.85	75.79	32.97	13.17	16.96	10.27	1.06	12.88	3.41	13.53	7	4693	1.37	0.36
3/21/2019 14:49	55.75	75.03	29.41	11.83	15.92	8.68	1.08	13.46	3.21	12.98	7.6	4419	1.45	0.35
3/21/2019 14:50	48.11	65.94	24.71	10.52	14.42	7.52	0.9	13.71	3.13	12.77	7.84	4302	1.23	0.28
3/21/2019 14:51	50.4	70.48	25.58	11.1	15.52	7.84	0.95	13.98	3.09	12.49	8.1	4252	1.33	0.29
3/21/2019 14:52	45.19	61.61	23.87	9.9	13.5	7.28	0.97	13.63	3.22	12.82	7.77	4425	1.32	0.31
3/21/2019 14:53	56.53	75.4	30.73	11.36	15.15	8.59	1.04	13.34	3.31	13.1	7.48	4554	1.39	0.34
3/21/2019 14:54	58.5	76.43	32.24	10.14	13.25	7.77	1.03	13.07	3.35	13.39	7.2	4616	1.35	0.35
3/21/2019 14:55	66.86	84.22	37.97	13.08	16.48	10.34	1.11	12.6	3.46	13.87	6.69	4757	1.40	0.38
3/21/2019 14:56	70.14	86.53	40.29	15.78	19.47	12.61	1.2	12.34	3.5	14.14	6.39	4812	1.48	0.42
3/21/2019 14:57	56.49	76.6	29.21	15.55	21.09	11.19	1.12	13.56	3.15	12.81	7.7	4331	1.52	0.35
3/21/2019 14:58	35.93	50.48	17.7	9.82	13.8	6.73	1.08	14.05	3	12.49	8.16	4127	1.52	0.32
3/21/2019 14:59	36.59	50.23	18.93	10.38	14.25	7.47	1.28	13.73	3.15	12.75	7.86	4334	1.76	0.40
3/21/2019 15:00	35.95	49.27	18.76	9.78	13.4	7.1	1.19	13.71	3.18	12.76	7.84	4370	1.63	0.38
3/21/2019 15:01	50.43	64.39	28.39	11.64	14.86	9.12	1.29	12.77	3.43	13.7	6.88	4715	1.65	0.44
3/21/2019 15:02	61.78	77.44	35.13	15.5	19.43	12.26	1.31	12.54	3.46	13.91	6.62	4763	1.64	0.45
3/21/2019 15:03	55.41	71.15	30.34	14.89	19.12	11.34	1.34	12.84	3.33	13.57	6.96	4586	1.72	0.45
3/21/2019 15:04	34.7	48.64	17.16	8.93	12.52	6.14	1.26	14.02	3.01	12.44	8.13	4141	1.77	0.38
Average	**49.09**	**65.34**	**26.33**	**12.78**	**17.00**	**9.54**	**1.00**			**13.04**	**7.54**	**4453.73**	**1.33**	**0.32**

Flow	kdscfh	4453.73
O2	% dry	7.54
CO2	% dry	13.04
NOx	ppm dry	49.09
NOx	ppm @ 3% O2	65.34
NOx	lb/hr	26.33
SO2	ppm dry	12.78
SO2	ppm @ 3% O2	17.00
SO2	lb/hr	9.54
CO	ppm dry	1.00
CO	ppm @ 3% O2	1.33
CO	lb/hr	0.32

CeDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 15:17	40.72	55.56	21.96	7.11	9.7	5.34	1.48	13.64	3.28	12.8	7.78	4518	2.02	
3/21/2019 15:18	51.84	67.88	29.21	8.46	11.08	6.63	1.47	13.09	3.43	13.36	7.23	4720	1.92	
3/21/2019 15:19	57.68	76.48	31.28	7.62	10.1	5.75	1.53	13.26	3.3	13.14	7.4	4543	2.03	0.51
3/21/2019 15:20	63.12	82.53	34.46	7.98	10.43	6.06	1.62	13.08	3.32	13.35	7.21	4573	2.12	0.54
3/21/2019 15:21	57.14	76.73	30.18	8.62	11.58	6.33	1.48	13.43	3.21	13.01	7.57	4424	1.99	0.48
3/21/2019 15:22	55.44	75.12	28.9	8.5	11.52	6.16	1.48	13.55	3.17	12.86	7.69	4366	2.01	0.47
3/21/2019 15:23	47.47	66.64	24.28	8.06	11.32	5.74	1.54	14.04	3.11	12.42	8.15	4284	2.16	0.48
3/21/2019 15:24	36.83	53.21	18.5	6.69	9.67	4.67	1.41	14.45	3.06	12.09	8.51	4207	2.04	0.43
3/21/2019 15:25	46.77	62.06	25.85	6.34	8.41	4.87	1.55	13.27	3.36	13.2	7.41	4629	2.06	0.52
3/21/2019 15:26	53.01	72.16	28.49	8.95	12.18	6.69	1.42	13.61	3.27	12.77	7.75	4502	1.93	0.46
3/21/2019 15:27	44.48	62.35	22.65	7.95	11.14	5.63	1.44	14.02	3.1	12.47	8.13	4266	2.02	0.45
3/21/2019 15:28	56.56	74.99	31.33	9.35	12.4	7.21	1.55	13.26	3.37	13.13	7.4	4640	2.06	0.52
3/21/2019 15:29	55.16	74.02	29.63	9.43	12.65	7.05	1.54	13.42	3.27	13.01	7.56	4499	2.07	0.50
3/21/2019 15:30	49.78	71.46	25.23	8.92	12.8	6.29	1.52	14.35	3.09	12.12	8.43	4246	2.18	0.47
3/21/2019 15:31	45.48	63.6	23.7	7.57	10.59	5.49	1.56	13.98	3.17	12.55	8.1	4365	2.18	0.49
3/21/2019 15:32	45.07	63.52	23.64	8.26	11.64	6.03	1.57	14.09	3.19	12.37	8.2	4393	2.21	0.50
3/21/2019 15:33	48.29	65.34	25.99	7.83	10.59	5.86	1.52	13.53	3.28	12.94	7.67	4508	2.06	0.50
3/21/2019 15:34	72.26	89.64	43.76	10.18	12.63	8.58	1.71	12.4	3.69	14.04	6.47	5072	2.12	0.63
3/21/2019 15:35	59.77	78.49	32.33	10.94	14.37	8.23	1.67	13.13	3.29	13.26	7.27	4530	2.19	0.55
3/21/2019 15:36	43.99	58.98	22.93	9.62	12.9	6.98	1.72	13.41	3.17	13.01	7.55	4367	2.31	0.55
3/21/2019 15:37	45.39	60.09	24.59	9.92	13.13	7.48	1.69	13.24	3.3	13.17	7.38	4538	2.24	0.56
3/21/2019 15:38	44.23	59.35	23.68	9.8	13.15	7.3	1.75	13.42	3.26	12.99	7.56	4484	2.35	0.57
3/21/2019 15:39	41.98	57.67	21.79	9.82	13.49	7.09	1.72	13.74	3.16	12.72	7.87	4348	2.36	0.54
3/21/2019 15:40	45.22	60.91	24	9.51	12.81	7.02	1.67	13.47	3.23	12.97	7.61	4446	2.25	0.54
3/21/2019 15:41	57.96	76.34	32.2	10.46	13.78	8.08	1.81	13.17	3.38	13.22	7.31	4653	2.38	0.61
3/21/2019 15:42	55.92	75.54	29.84	10.4	14.05	7.72	1.72	13.51	3.25	12.92	7.65	4469	2.32	0.56
3/21/2019 15:43	57.05	76.04	30.9	10.88	14.5	8.2	1.74	13.33	3.3	13.11	7.47	4537	2.32	0.57
3/21/2019 15:44	56.56	76.52	30.07	11.68	15.8	8.64	1.68	13.53	3.24	12.89	7.67	4453	2.27	0.54
3/21/2019 15:45	59.39	77.2	33.01	12.37	16.08	9.56	1.64	13	3.38	13.43	7.13	4655	2.13	0.55
3/21/2019 15:46	66.74	84.07	38.17	15.25	19.21	12.13	1.83	12.6	3.48	13.83	6.69	4790	2.31	0.64
Average	**52.04**	**69.82**	**28.09**	**9.28**	**12.46**	**6.96**	**1.60**			**12.97**	**7.59**	**4500.83**	**2.15**	**0.53**

Flow	kdscfh	4500.83
O2	% dry	7.59
CO2	% dry	12.97
NOx	ppm dry	52.04
NOx	ppm @ 3% O2	69.82
NOx	lb/hr	28.09
SO2	ppm dry	9.28
SO2	ppm @ 3% O2	12.46
SO2	lb/hr	6.96
CO	ppm dry	1.60
CO	ppm @ 3% O2	2.15
CO	lb/hr	0.53

CEDAR 1-Minute Data

Timestamp	(Boiler 2) NOx ppm 1-Min	(Boiler 2) NOx ppm @3% O2 1-Min	(Boiler 2) NOx lb/hr 1-Min Avg	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) SO2 ppm @3% O2 1-Min	(Boiler 2) SO2 lb/hr 1-Min Avg	(Boiler 2) CO ppm 1-Min	(Boiler 2) CO ppm @3% O2 1 Min	(Boiler 2) CO lb/hr 1-Min	(Boiler 2) CO2% 1-Min	(Boiler 2) O2% 1-Min	Stack Flow kdscf/hr 1-Min		
3/21/2019 16:07	33.11	48.38	16.52	6.54	9.56	4.54	1.83	14.61 <56>	3.04 <56>	11.92	8.65	4178	2.67	0.56
3/21/2019 16:08	25.1	37.13	12.51	5.18	7.66	3.59	1.73	14.79 <56>	3.03 <56>	11.82	8.8	4176	2.56	0.53
3/21/2019 16:09	40.08	54.06	22.38	5.12	6.91	3.98	1.86	13.49 <56>	3.40 <56>	12.95	7.63	4677	2.51	0.63
3/21/2019 16:10	52.83	69.69	29.92	7.28	9.6	5.74	1.94	13.19 <56>	3.45 <56>	13.19	7.33	4743	2.56	0.67
3/21/2019 16:11	49.71	67.1	27.37	7.86	10.61	6.02	1.86	13.50 <56>	3.35 <56>	12.89	7.64	4612	2.51	0.62
3/21/2019 16:12	45.17	63.51	23.5	7.18	10.1	5.2	1.8	14.06 <56>	3.17 <56>	12.42	8.17	4357	2.53	0.57
3/21/2019 16:13	46.7	62.8	25.64	6.89	9.27	5.26	1.9	13.45 <56>	3.34 <56>	12.97	7.59	4599	2.56	0.64
3/21/2019 16:14	52.63	68.66	29.59	7.47	9.75	5.84	1.93	13.05 <56>	3.42 <56>	13.36	7.18	4710	2.52	0.66
3/21/2019 16:15	63.83	78.91	37.75	11.19	13.83	9.21	1.97	12.36 <56>	3.60 <56>	14.11	6.42	4954	2.44	0.71
3/21/2019 16:16	70.37	89.84	39.39	13.92	17.77	10.84	1.99	12.77 <56>	3.41 <56>	13.57	6.88	4689	2.54	0.68
3/21/2019 16:17	42.2	60.43	20.85	9.81	14.05	6.74	1.83	14.32 <56>	3.01 <56>	12.13	8.4	4139	2.62	0.55
3/21/2019 16:18	41.24	56.44	21.66	8.03	10.99	5.87	1.86	13.69 <56>	3.20 <56>	12.77	7.82	4400		
3/21/2019 16:19	45.39	61.41	24.4	9.6	12.99	7.18	1.95	13.53 <56>	3.27 <56>	12.87	7.67	4502		
3/21/2019 16:20	46.8	62.28	25.73	9.75	12.98	7.46	1.98	13.31 <56>	3.35 <56>	13.1	7.45	4605	2.64	0.66
3/21/2019 16:21	47.91	64.14	25.66	10.57	14.15	7.88	1.86	13.39 <56>	3.26 <56>	13.01	7.53	4487	2.49	0.61
3/21/2019 16:22	61.61	77.39	35.78	13.27	16.67	10.72	2.03	12.56 <56>	3.53 <56>	13.86	6.65	4864	2.55	0.72
3/21/2019 16:23	66.04	82.67	37.61	14.92	18.68	11.82	2.04	12.52 <56>	3.47 <56>	13.89	6.6	4770	2.55	0.71
3/21/2019 16:24	61.9	79.94	33.36	11.26	14.54	8.44	2.03	12.91 <56>	3.28 <56>	13.45	7.04	4514	2.62	0.67
3/21/2019 16:25	48.92	66.9	24.95	10.06	13.76	7.14	1.94	13.67 <56>	3.10 <56>	12.71	7.81	4272	2.65	0.60
3/21/2019 16:26	39.97	54.91	20.65	8.42	11.57	6.05	1.82	13.74 <56>	3.14 <56>	12.67	7.87	4327	2.50	0.57
3/21/2019 16:27	38.18	52.29	20.05	8.58	11.75	6.27	1.93	13.70 <56>	3.20 <56>	12.72	7.83	4399	2.64	0.62
3/21/2019 16:28	32.58	45.67	16.72	8.98	12.59	6.41	1.87	14.02 <56>	3.12 <56>	12.43	8.13	4298	2.62	0.58
3/21/2019 16:29	29.68	41.93	15.42	8.84	12.49	6.39	1.84	14.13 <56>	3.16 <56>	12.32	8.23	4351	2.60	0.58
3/21/2019 16:30	25.61	36.73	12.98	8.03	11.52	5.66	1.92	14.34 <56>	3.08 <56>	12.16	8.42	4244	2.75	0.59
3/21/2019 16:31	41.9	56.26	23.13	8.33	11.19	6.4	1.94	13.43 <56>	3.36 <56>	12.97	7.57	4623	2.61	0.65
3/21/2019 16:32	42.08	56.46	22.65	9.74	13.07	7.29	2.06	13.42 <56>	3.28 <56>	12.98	7.56	4508	2.76	0.67
3/21/2019 16:33	46.34	61.81	25.39	11.03	14.71	8.41	2.02	13.34 <56>	3.34 <56>	13.04	7.48	4590	2.69	0.67
3/21/2019 16:34	47.43	62.61	25.61	11.01	14.53	8.27	1.97	13.20 <56>	3.29 <56>	13.22	7.34	4523	2.60	0.65
3/21/2019 16:35	66.12	83.52	37.34	14.88	18.8	11.69	2.03	12.63 <56>	3.44 <56>	13.76	6.73	4730	2.56	0.70
3/21/2019 16:36	59.09	78.47	31.51	14.65	19.45	10.87	2.06	13.28 <56>	3.25 <56>	13.04	7.42	4466	2.74	0.67
Average	**47.02**	**62.74**	**25.53**	**9.61**	**12.85**	**7.24**	**1.93**			**12.94**	**7.59**	**4510.23**	**2.59**	**0.63**

Flow	kdscfh	4510.23
O2	% dry	7.59
CO2	% dry	12.94
NOx	ppm dry	47.02
NOx	ppm @ 3% O2	62.74
NOx	lb/hr	25.53
SO2	ppm dry	9.61
SO2	ppm @ 3% O2	12.85
SO2	lb/hr	7.24
CO	ppm dry	1.93
CO	ppm @ 3% O2	2.59
CO	lb/hr	0.63

Appendix A.3
Calibration Data

NO2 to NO Converter Efficiency Test

				Cylinder #
Analyzer Manufacturer:	CAI	NO Cal Gas Value:	90.4	CC258526
Analyzer Model:	600 Series	NO2 Cal Gas Value:	43.8	CC301497
Analyzer Serial Number:	D05005	Performed By:	DW	
Date:	3/19/2019	CEMS ID#:	3-CEMS	

GAS	ANALYZER MODE	ANALYZER RESPONSE	CAL CORRECTED	LABEL
Zero	NOx	0.1	--	--
Zero	NO	0.0	--	--
NO	NO	90.9	--	--
NO	NOx	90.5	--	--
NO2	NO	0.1	0.1	C_1
NO2	NOx	43.4	43.3	C_2

			Label	Requirement
Abs. Value C_o-C_1:	43.7		D_1	--
Abs. Value C_2-C_1:	43.2		D_2	--
C_1/C_2	0%		D_3	< 5%
CE = D_2/D_1 * 100%:	98.9%	--		> 90%

Montrose AQS
SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 1

DATE: 3/19/2019
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO	CB10100	99.999		
O_2	CC81569	10.48	DT0020015	19.31
CO_2	CC81569	10.56	DT0020015	18.91
NO_x	DT0018907	45.3	CC258526	90.4
CO	CC257884	4.68	CC707422	8.59

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Range	20	20	100	10		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.01	0.03	0.05	0.02		--
Error (% of scale)	0.0%	0.1%	0.1%	0.2%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.30	18.94	90.54	8.61		--
Error (% of scale)	0.0%	0.1%	0.1%	0.2%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.47	10.57	46.26	4.66		--
Error (% of scale)	-0.1%	0.0%	1.0%	-0.2%		PASS
Linearity at Mid Point	0.0%	-0.1%	0.9%	-0.35%		

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Range	20	20	100	10		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.008	0.029	0.01	0.022		--
Error (% of scale)	0.0%	0.1%	0.0%	0.2%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.279	18.549	90.787	8.612		--
Error (% of scale)	-0.2%	-1.8%	0.4%	0.2%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.453	10.403	45.839	4.669		--
Error (% of scale)	-0.1%	-0.8%	0.5%	-0.1%		PASS
Linearity at Mid Point	0.0%	0.2%	0.3%	-0.3%		

% ERROR CALCULATION:
(AS FOUND - ACTUAL VALUE OF SPAN)/RANGE * 100%
ALLOWABLE DEVIATION IS 2% OF FULL SCALE (2 SQUARES ON STRIPCHART)

Montrose AQS
EPA SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power

DATE: 3/19/2019

BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	CC81569	10.48	DT0020015	19.31
CO_2	CC81569	10.56	DT0020015	18.91
NO_x	DT0018907	45.3	CC258526	90.4
CO	CC257884	4.68	CC707422	8.59

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.31	18.91	90.4	8.59		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.007	0.029	0.052	0.022		--
Error (% of cal span)	0.0%	0.2%	0.1%	0.3%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.301	18.935	90.544	8.606		--
Error (% of cal span)	0.0%	0.1%	0.2%	0.2%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.467	10.565	46.257	4.664		--
Error (% of cal span)	-0.1%	0.0%	1.1%	-0.2%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.31	18.91	90.4	8.59		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.008	0.029	0.01	0.022		--
Error (% of cal span)	0.0%	0.2%	0.0%	0.3%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.279	18.549	90.787	8.612		--
Error (% of cal span)	-0.2%	-1.9%	0.4%	0.3%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.453	10.403	45.839	4.669		--
Error (% of cal span)	-0.1%	-0.8%	0.6%	-0.1%		PASS

% ERROR CALCULATION:
(AS FOUND - ACTUAL VALUE)/HIGH SPAN * 100%
ALLOWABLE DEVIATION IS 2% OF HIGH SPAN

NO2 to NO Converter Efficiency Test

				Cylinder #
Analyzer Manufacturer:	CAI	NO Cal Gas Value:	90.4	CC258526
Analyzer Model:	600 Series	NO2 Cal Gas Value:	43.8	CC301497
Analyzer Serial Number:	D05005	Performed By:	DW	
Date:	3/20/2019	CEMS ID#:	3-CEMS	

GAS	ANALYZER MODE	ANALYZER RESPONSE	CAL CORRECTED	LABEL
Zero	NOx	0.1	--	--
Zero	NO	0.0	--	--
NO	NO	90.9	--	--
NO	NOx	90.4	--	--
NO2	NO	0.1	0.1	C_1
NO2	NOx	42.4	42.3	C_2

		Label	Requirement
Abs. Value C_o-C_1:	43.7	D_1	--
Abs. Value C_2-C_1:	42.3	D_2	--
C_1/C_2	0%	D_3	< 5%
CE = D_2/D_1 * 100%:	96.7%	--	> 90%

Montrose AQS
SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 1

DATE: 3/20/2019
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO	CB10100	99.999		
O_2	CC81569	10.48	DT0020015	19.31
CO_2	CC81569	10.56	DT0020015	18.91
NO_x	DT0018907	45.3	CC258526	90.4
CO	CC257884	4.68	CC707422	8.59

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Range	20	20	100	10		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	0.00	0.03	0.06	0.01		--
Error (% of scale)	0.0%	0.2%	0.1%	0.1%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.34	18.93	90.42	8.59		--
Error (% of scale)	0.1%	0.1%	0.0%	0.0%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.48	10.59	45.80	4.66		--
Error (% of scale)	0.0%	0.2%	0.5%	-0.2%		PASS
Linearity at Mid Point	-0.1%	0.0%	0.5%	-0.29%		

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Range	20	20	100	10		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.011	0.026	0.041	0.003		--
Error (% of scale)	-0.1%	0.1%	0.0%	0.0%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.312	18.786	90.022	8.572		--
Error (% of scale)	0.0%	-0.6%	-0.4%	-0.2%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.464	10.521	45.681	4.648		--
Error (% of scale)	-0.1%	-0.2%	0.4%	-0.3%		PASS
Linearity at Mid Point	-0.1%	0.1%	0.5%	-0.2%		

% ERROR CALCULATION:
(AS FOUND - ACTUAL VALUE OF SPAN)/RANGE * 100%
ALLOWABLE DEVIATION IS 2% OF FULL SCALE (2 SQUARES ON STRIPCHART)

Montrose AQS
EPA SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power

DATE: 3/20/2019
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	CC81569	10.48	DT0020015	19.31
CO_2	CC81569	10.56	DT0020015	18.91
NO_x	DT0018907	45.3	CC258526	90.4
CO	CC257884	4.68	CC707422	8.59

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.31	18.91	90.4	8.59		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.001	0.031	0.056	0.008		--
Error (% of cal span)	0.0%	0.2%	0.1%	0.1%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.337	18.926	90.418	8.592		--
Error (% of cal span)	0.1%	0.1%	0.0%	0.0%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.482	10.592	45.801	4.656		--
Error (% of cal span)	0.0%	0.2%	0.6%	-0.3%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.31	18.91	90.4	8.59		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.011	0.026	0.041	0.003		--
Error (% of cal span)	-0.1%	0.1%	0.0%	0.0%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.312	18.786	90.022	8.572		--
Error (% of cal span)	0.0%	-0.7%	-0.4%	-0.2%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.464	10.521	45.681	4.648		--
Error (% of cal span)	-0.1%	-0.2%	0.4%	-0.4%		PASS

% ERROR CALCULATION:
(AS FOUND - ACTUAL VALUE)/HIGH SPAN * 100%
ALLOWABLE DEVIATION IS 2% OF HIGH SPAN

NO2 to NO Converter Efficiency Test

				Cylinder #
Analyzer Manufacturer:	CAI	NO Cal Gas Value:	90.4	CC151542
Analyzer Model:	600 Series	NO2 Cal Gas Value:	43.8	CC301497
Analyzer Serial Number:	S03003	Performed By:	DW	
Date:	3/21/2019	CEMS ID#:	3-CEMS	

GAS	ANALYZER MODE	ANALYZER RESPONSE	CAL CORRECTED	LABEL
Zero	NOx	0.0	--	--
Zero	NO	0.0	--	--
NO	NO	91.4	--	--
NO	NOx	90.6	--	--
NO2	NO	0.1	0.0	C_1
NO2	NOx	43.3	43.1	C_2

		Label	Requirement
Abs. Value C_o-C_1:	43.8	D_1	--
Abs. Value C_2-C_1:	43.1	D_2	--
C_1/C_2	0%	D_3	< 5%
CE = D_2/D_1 * 100%:	98.5%	--	> 90%

Montrose
SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 2

DATE: 3/21/2019
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO	CB10100	99.999		
O_2	CC81569	10.48	DT0020015	19.31
CO_2	CC81569	10.56	DT0020015	18.91
NO_x	DT0018907	45.3	CC258526	90.4
CO	CC257884	4.68	CC707422	8.59

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Range	20	20	100	10		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.01	0.02	0.04	0.01		--
Error (% of scale)	-0.1%	0.1%	0.0%	0.1%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.32	18.93	90.60	8.58		--
Error (% of scale)	0.0%	0.1%	0.2%	-0.1%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.47	10.60	46.01	4.65		--
Error (% of scale)	-0.1%	0.2%	0.7%	-0.3%		PASS
Linearity at Mid Point	-0.1%	0.1%	0.6%	-0.27%		

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Range	20	20	100	10		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.01	0.03	0.04	0.07		--
Error (% of scale)	0.0%	0.2%	0.0%	0.7%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.29	18.75	90.73	8.67		--
Error (% of scale)	-0.1%	-0.8%	0.3%	0.8%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.46	10.49	45.95	4.70		--
Error (% of scale)	-0.1%	-0.4%	0.7%	0.2%		PASS
Linearity at Mid Point	0.0%	0.0%	0.5%	-0.6%		

% ERROR CALCULATION:
(AS FOUND - ACTUAL VALUE OF SPAN)/RANGE * 100%
ALLOWABLE DEVIATION IS 2% OF FULL SCALE (2 SQUARES ON STRIPCHART)

Montrose

EPA SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 2

DATE: 3/21/2019
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999		
O_2	CC81569	10.48	DT0020015	19.31
CO_2	CC81569	10.56	DT0020015	18.91
NO_x	DT0018907	45.3	CC258526	90.4
CO	CC257884	4.68	CC707422	8.59

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.31	18.91	90.4	8.59		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.011	0.024	0.042	0.01		--
Error (% of cal span)	-0.1%	0.1%	0.0%	0.1%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.317	18.934	90.599	8.584		--
Error (% of cal span)	0.0%	0.1%	0.2%	-0.1%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.467	10.604	46.012	4.654		--
Error (% of cal span)	-0.1%	0.2%	0.8%	-0.3%		PASS

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					STATUS
	O_2	CO_2	NO_x	CO		
Analyzer Span	19.31	18.91	90.4	8.59		
Zero Gas Value	0	0	0	0		--
Analyzer Reads	-0.008	0.032	0.04	0.073		--
Error (% of cal span)	0.0%	0.2%	0.0%	0.8%		PASS
High Gas Value	19.31	18.91	90.4	8.59		--
Analyzer Reads	19.294	18.753	90.734	8.669		--
Error (% of cal span)	-0.1%	-0.8%	0.4%	0.9%		PASS
Mid Gas Value	10.48	10.56	45.3	4.68		--
Analyzer Reads	10.458	10.486	45.95	4.698		--
Error (% of cal span)	-0.1%	-0.4%	0.7%	0.2%		PASS

% ERROR CALCULATION:
(AS FOUND - ACTUAL VALUE)/HIGH SPAN * 100%
ALLOWABLE DEVIATION IS 2% OF HIGH SPAN

SPAN GAS RECORD

CLIENT/LOCATION: Desert View Power
Unit 1

DATE: 3/22/2019
BY: DW

	MID SPAN CYLINDER		HIGH SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO				
O_2	CC81569	10.48	DT0020015	19.31
CO_2	CC81569	10.56	DT0020015	18.91

PRE-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					
	O_2	CO_2				STATUS
Analyzer Range	20	20				
Zero Gas Value	0.0	0.0				--
Analyzer Reads	0.00	0.02				--
Error (% of scale)	0.0%	0.1%				PASS
High Gas Value	19.31	18.91				--
Analyzer Reads	19.35	18.95				--
Error (% of scale)	0.2%	0.2%				PASS
Mid Gas Value	10.48	10.56				--
Analyzer Reads	10.50	10.61				--
Error (% of scale)	0.1%	0.2%				PASS
Linearity at Mid Point	0.0%	0.1%				

POST-TEST INSTRUMENT CALIBRATION ERROR

	ANALYZER					
	O_2	CO_2				STATUS
Analyzer Range	20	20				
Zero Gas Value	0.0	0.0				--
Analyzer Reads	0.00	0.03				--
Error (% of scale)	0.0%	0.2%				PASS
High Gas Value	19.31	18.91				--
Analyzer Reads	19.32	18.77				--
Error (% of scale)	0.0%	-0.7%				PASS
Mid Gas Value	10.48	10.56				--
Analyzer Reads	10.47	10.53				--
Error (% of scale)	0.0%	-0.2%				PASS
Linearity at Mid Point	0.0%	0.2%				

% ERROR CALCULATION:
(AS FOUND - ACTUAL VALUE OF SPAN)/RANGE * 100%
ALLOWABLE DEVIATION IS 2% OF FULL SCALE (2 SQUARES ON STRIPCHART)

PRAXAIR
Making our planet more productive

Praxair Distribution, Inc.
5700 S. Alameda Street
Los Angeles, CA 90058
Tel: 323-585-2154
Fax: 714-542-6689

MONTROSE

Certificate Modification Date: **12/11/2018**

Certification Date: **12/11/2018**
Lot Number: **N70086834401**
Part Number: **NI 5.5CE-AS**

DocNumber: **23830**

Montrose Air Quality Services, LLC 2250 LA PATA
631 E. St. Andrew Pl.
Santa Ana, CA 92705
Praxair Order Number: **70813559**

N_2
CB10100
D. 12/10/18

CERTIFICATE OF ANALYSIS

Nitrogen, 5.5 Continuous Emission Monitoring Zero

Analytes	Specification	Analytical Results	Analytical Reference	Analytical Uncertainty
Nitrogen	**99.9995 %**	**99.9995 %**	**3**	**------**
Carbon Dioxide	**≤ 1 ppm**	**≤ 0.2 ppm**	**4**	**± 10%**
Carbon Monoxide	**≤ 0.5 ppm**	**≤ 0.1 ppm**	**4**	**± 15%**
Total Hydrocarbons	**≤ 0.1 ppm**	**≤ 0.01 ppm**	**4**	**± 15%**
Oxides of Nitrogen	**≤ 0.1 ppm**	**≤ 0.001 ppm**	**2**	**± 15%**
Oxygen	**≤ 0.5 ppm**	**≤ 0.5 ppm**	**1**	**± 15%**
Sulfur Dioxide	**≤ 0.1 ppm**	**≤ 0.001 ppm**	**5**	**± 15%**
Water	**≤ 2 ppm**	**≤ 0.2 ppm**	**6**	**± 10%**

Cylinder Style: **AS**
Cylinder Pressure @ 70 F: **2000 psig**
Cylinder Volume: **142 ft3**
Valve Outlet Connection: **CGA 580**
Cylinder Number(s): **CC122662, CB10100, CC28299**
Analyzed Cylinder Number(s): **CC122662**

Fill Date: **12/10/2018**
Analysis Date: **12/10/2018**

Filling Method: **Pressure/Temperature**

Analyst: **Jenna Lockman**

Approved Signer: **Ying Yu**

Key to Analytical Techniques:

Reference	Analytical Instrument - Analytical Principle
1	Delta F DF-550 Nanotrace - Electrolytic Cell/Electrochemical
2	Horiba Instruments Inc. APNA-360CE - Chemiluminescence
3	N/A - By Difference of Typical Impurities
4	Peak Performer 1 - Gas Chromatography with FID
5	Thermo 43I-AKSCA S/N 1420962322 - UV Spectrometry
6	Tiger Optics MTO-1000 - Cavity Ring-down Spectroscopy

This analysis of the product described herein was prepared by Praxair Distribution, Inc. using instruments whose calibration is certified using Praxair Distribution, Inc. Reference Materials which are either prepared by weights traceable to the National Institute of Standards and Technology (NIST), Measurement Canada, or by using NIST Standard Reference Materials where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted. Analytical uncertainty is expressed as a Relative % unless otherwise noted.

IMPORTANT
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PNJ 3-7-19

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Making our planet more productive

DocNumber: 230648

Praxair Distribution, Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22018

OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Certificate Modification Date: 12/13/2018
Praxair Order Number: 66503224
Part Number: NI CD10.506E-AS
Customer PO Number: MIKE MILLER

Fill Date: 12/04/2018
Lot Number: 70086833812
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure and Volume: 2000 psig 140 ft3

O2-10.48
CO2-10.56
CC81569
12/12/26
F22018

Certified Concentration

Expiration Date:	12/12/2026	NIST Traceable
Cylinder Number:	CC81569	Expanded Uncertainty
10.56 %	Carbon dioxide	± 0.3 %
10.48 %	Oxygen	± 0.4 %
Balance	Nitrogen	

ProSpec EZ Cert

Certification Information:

Certification Date: 12/12/2018 *Term:* 96 Months *Expiration Date:* 12/12/2026

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.

CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. ***Component:*** **Carbon dioxide**

Requested Concentration: 10.5 %
Certified Concentration: 10.56 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 11/26/2018

First Analysis Data:						Date	12/12/2018
Z:	0	R:	14.02	C:	10.56	Conc:	10.56
R:	14.02	Z:	0	C:	10.55	Conc:	10.55
Z:	0	C:	10.57	R:	14.02	Conc:	10.57
UOM:	%			Mean Test Assay:			10.56 %

Reference Standard: Type / Cylinder #: GMIS / CC141375
Concentration / Uncertainty: 14.02 % ±0.3%
Expiration Date: 06/11/2026
Traceable to: SRM # / Sample # / Cylinder #: SRM 1675b / 6-F-51 / CAL014538
SRM Concentration / Uncertainty: 13.963% / ±0.034%
SRM Expiration Date: 05/16/2022

Second Analysis Data:						Date	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			%

2. ***Component:*** **Oxygen**

Requested Concentration: 10.5 %
Certified Concentration: 10.48 %
Instrument Used: OXYMAT 5E
Analytical Method: Paramagnetic
Last Multipoint Calibration: 12/05/2018

First Analysis Data:						Date	12/12/2018
Z:	0	R:	9.88	C:	10.49	Conc:	10.48
R:	9.88	Z:	0	C:	10.5	Conc:	10.49
Z:	0	C:	10.48	R:	9.88	Conc:	10.47
UOM:	%			Mean Test Assay:			10.48 %

Reference Standard: Type / Cylinder #: NTRM / DT0010384
Concentration / Uncertainty: 9.875 % ±0.4%
Expiration Date: 11/18/2022
Traceable to: SRM # / Sample # / Cylinder #: NTRM / 170701 / NTRM DT0010384
SRM Concentration / Uncertainty: 9.875% / ±0.040%
SRM Expiration Date: 11/18/2022

Second Analysis Data:						Date	
Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0
UOM:	%			Mean Test Assay:			%

Analyzed By: Danielle Burns

Certified By: Jose Vasquez

RH
1-18-19

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR
Making our planet more productive

DocNumber: 224471

Praxair Distribution, Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22018

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Certificate Modification Date: 09/13/2018
Praxair Order Number: 70710636
Part Number: NI CD19O2E-AS

Fill Date: 09/07/2018
Lot Number: 70086825001
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure and Volume 2000 psig 140 ft3

O2 - 19.31
CO2 - 18.91
DT0020015
9/13/26
F22018

Certified Concentration

Expiration Date:	09/13/2026	NIST Traceable
Cylinder Number:	DT0020015	Expanded Uncertainty
18.91 %	Carbon dioxide	± 0.3 %
19.31 %	Oxygen	± 0.2 %
Balance	Nitrogen	

ProSpec EZ Cert

Certification Information:

Certification Date: 09/13/2018 *Term:* 96 Months *Expiration Date:* 09/13/2026

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

CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. ***Component:*** **Carbon dioxide**

Requested Concentration: 19 %
Certified Concentration: 18.91 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 08/20/2018

First Analysis Data:					Date	09/13/2018
Z: 0	R: 20.1	C: 18.91			Conc:	18.91
R: 20.1	Z: 0	C: 18.91			Conc:	18.91
Z: 0	C: 18.93	R: 20.11			Conc:	18.93
UOM: %			Mean Test Assay:			18.91 %

Reference Standard: Type / Cylinder #: GMIS / CC187238
Concentration / Uncertainty: 20.10 % ±0.24%
Expiration Date: 06/07/2026
Traceable to: SRM # / Sample # / Cylinder #: RGM#CC193512 / N/A / RGM#CC193512
SRM Concentration / Uncertainty: 26.99% / ±0.05%
SRM Expiration Date: 05/15/2023

Second Analysis Data:					Date	
Z: 0	R: 0	C: 0			Conc:	0
R: 0	Z: 0	C: 0			Conc:	0
Z: 0	C: 0	R: 0			Conc:	0
UOM: %			Mean Test Assay:			%

2. ***Component:*** **Oxygen**

Requested Concentration: 19 %
Certified Concentration: 19.31 %
Instrument Used: OXYMAT 5E
Analytical Method: Paramagnetic
Last Multipoint Calibration: 09/04/2018

First Analysis Data:					Date	09/13/2018
Z: 0	R: 20.86	C: 19.31			Conc:	19.3
R: 20.86	Z: 0	C: 19.32			Conc:	19.31
Z: 0	C: 19.32	R: 20.86			Conc:	19.31
UOM: %			Mean Test Assay:			19.31 %

Reference Standard: Type / Cylinder #: GMIS / CC75874
Concentration / Uncertainty: 20.86 % ±0.111%
Expiration Date: 11/07/2025
Traceable to: SRM # / Sample # / Cylinder #: SRM 2659a / 71-E-19 / FF22331
SRM Concentration / Uncertainty: 20.863% / ±0.021%
SRM Expiration Date: 08/23/2021

Second Analysis Data:					Date	
Z: 0	R: 0	C: 0			Conc:	0
R: 0	Z: 0	C: 0			Conc:	0
Z: 0	C: 0	R: 0			Conc:	0
UOM: %			Mean Test Assay:			%

Analyzed By: Jose Vasquez

Certified By: Danielle Burns

RH
10-3-18

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22018

DocNumber: 000125417

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

MONTROSE

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70613842
Customer P. O. Number:
Customer Reference Number:

Fill Date: 5/22/2018
Part Number: NI NO45MZE-AS
Lot Number: 70086814212
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

NOx 45.3
DT 0018907
Exp. 6/11/2021
F22018

Certified Concentration:

Cylinder Number:	6/11/2021 DT0018907	NIST Traceable Analytical Uncertainty:
45.3 ppm	NITRIC OXIDE (as NOx)	± 0.7 %
Balance	NITROGEN	

NO = 45.0 ppm

NO for Reference Only

Certifcation Information: *Certification Date:* 6/11/2018 *Term:* 36 Months *Expiration Date:* 6/11/2021

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: NITRIC OXIDE (as NOx)**

Requested Concentration: 45 ppm
Certified Concentration: 45.3 ppm
Instrument Used: Thermo Electron 42i-LS S/N 1030645077
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 5/24/2018

First Analysis Data:						Date: 6/4/2018
Z: 0	R: 51.2	C: 45.7	Conc: 45.524			
R: 51.1	Z: 0	C: 45.6	Conc: 45.425			
Z: 0	C: 45.7	R: 51.2	Conc: 45.524			
UOM: ppm		Mean Test Assay: 45.491 ppm				

Analyzed by: Amalia Real

Reference Standard Type: SRM
Ref. Std. Cylinder # : CC362456
Ref. Std. Conc: 50.97 ppm
Ref. Std. Traceable to SRM # : 1683b
SRM Sample # : 45-V-37
SRM Cylinder # : CAL017868

Second Analysis Data:						Date: 6/11/2018
Z: 0	R: 50.9	C: 45	Conc: 45.003			
R: 51	Z: 0	C: 45.1	Conc: 45.103			
Z: 0	C: 45.1	R: 51	Conc: 45.103			
UOM: ppm		Mean Test Assay: 45.07 ppm				

Certified by: Henry Koung

RH
7/11/18

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

Praxair
5700 South Alameda Street
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Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22018

DocNumber: 000126135

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

MONTROSE

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70638890
Customer P. O. Number:
Customer Reference Number:

Fill Date: 6/18/2018
Part Number: NI NO90MZ2E-AS
Lot Number: 70086816907
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

NOx 90.4
CC258526
6/29/26
F22018

Certified Concentration:

Cylinder Number:	CC258526	6/29/2026	NIST Traceable Analytical Uncertainty:
90.4	ppm	NITRIC OXIDE (as NOx)	± 0.8 %
Balance		NITROGEN	

NO = 89.5 ppm **NO for Reference Only**

Certifcation Information: *Certification Date:* 6/29/2018 *Term:* 96 Months *Expiration Date:* 6/29/2026

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: NITRIC OXIDE (as NOx)**

Requested Concentration: 90 ppm
Certified Concentration: 90.4 ppm
Instrument Used: Thermo Electron 42i S/N 072602432C
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 6/15/2018

First Analysis Data: **Date:** 6/22/2018

Z: 0	R: 101.3	C: 90.6	Conc:	90.6	
R: 101.3	Z: 0	C: 90.7	Conc:	90.7	
Z: 0	C: 90.6	R: 101.3	Conc:	90.6	
UOM: ppm		Mean Test Assay:		90.633 ppm	

Analyzed by: Quinn Hailes

Reference Standard Type: NTRM
Ref. Std. Cylinder #: CC336493
Ref. Std. Conc: 101.3 ppm
Ref. Std. Traceable to SRM #: 1684b
SRM Sample #: 44-T-83
SRM Cylinder #: FF9258

Second Analysis Data: **Date:** 6/29/2018

Z: 0	R: 101.5	C: 90.5	Conc:	90.381	
R: 101.4	Z: 0	C: 90.4	Conc:	90.281	
Z: 0	C: 90.2	R: 101.4	Conc:	90.081	
UOM: ppm		Mean Test Assay:		90.248 ppm	

Certified by: Leeanna Rodriguez

RH
7/19/18

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information con tained herein exceed the fee established for providing such information.

PRAXAIR

Praxair
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Los Angeles, CA 90058
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PGVPID: F22017

DocNumber: 000112467

E OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
631 E. St. Andrew Pl.
Santa Ana, CA 92705

NOx- 43.8
Exp-7/21/20
CC301497
F22017

Praxair Order Number: 70297908
Customer P. O. Number:
Customer Reference Number:

Fill Date: 6/26/2017
Part Number: AI NX45MZ1E-AS
Lot Number: 70086717708
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**7/21/2020**		NIST Traceable
Cylinder Number:	**CC301497**		Analytical Uncertainty:
43.8	**ppm**	**NITROGEN DIOXIDE (as NOx)**	± 1 %
	Balance	**AIR**	

Certifcation Information: *Certification Date:* 7/21/2017 *Term:* 36 Months *Expiration Date:* 7/21/2020

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.

The above certified concentration of Total Oxides of Nitrogen (NOx) excludes HNO3. [HNO3]= 1.8 ppm (for reference only).

Analytical Data: *(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)*

1. **Component:** NITROGEN DIOXIDE (as NOx)

Requested Concentration: 45 ppm
Certified Concentration: 43.8 ppm
Instrument Used: Thermo Env. 42i-HL
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 6/26/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC308835
Ref. Std. Conc: 97.5 ppm
Ref. Std. Traceable to SRM # : 2660a
SRM Sample # : 2660-C-45
SRM Cylinder # : CAL016162

First Analysis Data:						**Date:** 7/14/2017
Z: 0	R: 97.4	C: 43.7	Conc: 43.7			
R: 97.6	Z: 0	C: 44	Conc: 44			
Z: 0	C: 43.9	R: 97.5	Conc: 43.9			
UOM: ppm			**Mean Test Assay:** 43.867 ppm			

Second Analysis Data:						**Date:** 7/21/2017
Z: 0	R: 97.5	C: 43.6	Conc: 43.6			
R: 97.4	Z: 0	C: 43.8	Conc: 43.8			
Z: 0	C: 43.7	R: 97.6	Conc: 43.7			
UOM: ppm			**Mean Test Assay:** 43.7 ppm			

Analyzed by: Henry Koung

Certified by: Amalia Real

AD 11-26-18

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information con tained herein exceed the fee established for providing such information.

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DocNumber: 226576

MONTROSE

Montrose Air Quality Services, LLC
631 E. St. Andrew Pl.
Santa Ana, CA 92705

-CO- 4.68
-CC257884
-Exp- 10/9/26
-F22018

Praxair Distribution, Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22018

E OF ANALYSIS / EPA PROTOCOL GAS

Certificate Modification Date: 10/10/2018
Praxair Order Number: 84609148
Part Number: NI CO4.7ME-AS
Customer PO Number: VERBAL

Fill Date: 10/05/2018
Lot Number: 70086827805
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure and Volume: 2000 psig 140 ft3

Certified Concentration

Expiration Date:	10/09/2026	NIST Traceable
Cylinder Number:	CC257884	Expanded Uncertainty
4.68 ppm	Carbon monoxide	± 0.6 %
Balance	Nitrogen	

ProSpec EZ Cert

Certification Information:

Certification Date: 10/09/2018 *Term:* 96 Months *Expiration Date:* 10/09/2026

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:*** **Carbon monoxide**

Requested Concentration: 4.7 ppm
Certified Concentration: 4.68 ppm
Instrument Used: MKS Multigas 2031 FTIR
Analytical Method: FTIR
Last Multipoint Calibration: 09/20/2018

First Analysis Data: **Date** 10/09/2018

Z: 0	R: 4.669	C: 4.377	Conc: 4.69		
R: 4.67	Z: 0	C: 4.368	Conc: 4.68		
Z: 0	C: 4.371	R: 4.66	Conc: 4.68		
UOM: ppm		Mean Test Assay:	4.68	ppm	

Reference Standard: Type / Cylinder #: GMIS / CC15356
Concentration / Uncertainty: 4.995 ppm ±0.589%
Expiration Date: 08/10/2025
Traceable to: SRM # / Sample # / Cylinder #: SRM 1677c / 5-J-42 / CAL015337
SRM Concentration / Uncertainty: 9.825 PPM / ±0.047 PPM
SRM Expiration Date: 06/24/2024

Second Analysis Data: **Date**

Z: 0	R: 0	C: 0	Conc: 0		
R: 0	Z: 0	C: 0	Conc: 0		
Z: 0	C: 0	R: 0	Conc: 0		
UOM: ppm		Mean Test Assay:		ppm	

Analyzed By **Jose Vasquez**

Certified By **Danielle Burns**

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

BR 10/25/18

PRAXAIR

Praxair
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Los Angeles, CA 90058
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PGVPID: F22018

DocNumber: 000120877

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

CO - 8.59
CC707422
EXP - 2-21-26
F22018

Praxair Order Number: 70515396
Customer P. O. Number:
Customer Reference Number:

Fill Date: 2/16/2018
Part Number: NI CO8.5ME-AS
Lot Number: 70086804711
Cylinder Style & Outlet: AS CGA 350
Cylinder Pressure & Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	**2/21/2026**		NIST Traceable
Cylinder Number:	**CC707422**		Analytical Uncertainty:
8.59	**ppm**	**CARBON MONOXIDE**	± 0.5 %
	Balance	**NITROGEN**	

Certifcation Information: *Certification Date:* 2/21/2018 *Term:* 96 Months *Expiration Date:* 2/21/2026

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: CARBON MONOXIDE**

Requested Concentration: 8.5 ppm
Certified Concentration: 8.59 ppm
Instrument Used: MKS Multigas 2031 FTIR
Analytical Method: Fourier Transform infrared
Last Multipoint Calibration: 2/10/2018

First Analysis Data: **Date:** 2/21/2018

Z:	0	R:	9.633	C:	8.326	Conc:	8.591
R:	9.632	Z:	0	C:	8.324	Conc:	8.589
Z:	0	C:	8.323	R:	9.632	Conc:	8.588

UOM: ppm **Mean Test Assay:** 8.589 ppm

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC341074
Ref. Std. Conc: 9.939 ppm
Ref. Std. Traceable to SRM # : 1677c
SRM Sample # : 5-J-42
SRM Cylinder # : CAL015337

Second Analysis Data: **Date:**

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: ppm **Mean Test Assay:** 0 ppm

Analyzed by: Danielle Burns
Danielle Burns

Certified by:
Jose Vasquez

AC
4-12-18

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information con tained herein exceed the fee established for providing such information.

SEMI-ANNUAL DRY GAS METER/ORIFICE CALIBRATION

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: C:\Users\Dave Wonderly\Information\Calibrations\Dry Gas Meters\17-wcs\2018\[Semi-Annual Meter Cal 11-2-18 WCS-17.xls
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

Model #: C5000
ID #: 17WCS
Date: 11/2/2018
Bar. Pressure: 30.07 (in. Hg)
Performed By: R. Howard

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
		Volume	Volume	Volume	Initial Temps.		Final Temps.		Orifice	K' Orifice	Actual	Ambient Temperature		
dH (in H2O)	Time (min)	Initial (cu ft)	Final (cu ft)	Total (cu ft)	Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)	Serial# (number)	Coefficient (see above)	Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.11	26.00	868.900	874.273	5.373	67.0	64.0	66.0	66.0	33	0.1551	18.0	60.0	60.0	60.0
0.11	26.00	874.273	879.641	5.368	66.0	66.0	67.0	66.0	33	0.1551	18.0	60.0	60.0	60.0
0.11	26.00	879.641	885.016	5.375	67.0	66.0	67.0	67.0	33	0.1551	18.0	60.0	60.0	60.0
0.49	12.00	890.800	896.111	5.311	67.0	67.0	71.0	68.0	48	0.3345	15.0	60.0	60.0	60.0
0.49	12.00	896.111	901.429	5.318	71.0	68.0	71.0	69.0	48	0.3345	15.0	60.0	64.0	62.0
0.49	12.00	901.429	906.743	5.314	71.0	69.0	71.0	69.0	48	0.3345	15.0	60.0	64.0	62.0
1.60	7.00	907.700	913.107	5.407	71.0	68.0	74.0	67.0	63	0.5915	13.0	61.0	61.0	61.0
1.60	7.00	913.107	918.505	5.398	74.0	67.0	74.0	68.0	63	0.5915	13.0	61.0	61.0	61.0
1.60	7.00	918.505	923.900	5.395	74.0	68.0	75.0	70.0	63	0.5915	13.0	61.0	61.0	61.0
2.90	5.00	925.700	930.799	5.099	76.0	70.0	80.0	73.0	73	0.7678	11.0	61.0	61.0	61.0
2.90	5.00	930.799	935.893	5.094	80.0	73.0	79.0	74.0	73	0.7678	11.0	61.0	61.0	61.0
2.90	5.00	935.893	940.996	5.103	79.0	74.0	76.0	70.0	73	0.7678	11.0	61.0	61.0	61.0

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR	ORIFICE CALIBRATION FACTOR	Individual Run	Individual Orifice	Orifice Average	Orifice Average
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	Y Value (number)	dH@ Value (in H2O)	0.95 < Y < 1.05?	Ymax - Ymin < 0.010?	0.98 < Y/Yd < 1.02?	dH@ - dH@ av < 0.155?
5.422	153.6	5.319	150.6	5.215	0.981	1.494	**Pass**			
5.412	153.3	5.319	150.6	5.215	0.983	1.491	**Pass**			
5.414	153.3	5.319	150.6	5.215	0.982	1.490	**Pass**			
				Average	**0.982**	**1.492**		**Pass**	**Pass**	**Pass**
5.339	151.2	5.292	149.9	5.188	0.991	1.425	**Pass**			
5.331	151.0	5.282	149.6	5.198	0.991	1.428	**Pass**			
5.325	150.8	5.282	149.6	5.198	0.992	1.427	**Pass**			
				Average	**0.991**	**1.427**		**Pass**	**Pass**	**Pass**
5.433	153.9	5.455	154.5	5.358	1.004	1.491	**Pass**			
5.416	153.4	5.455	154.5	5.358	1.007	1.491	**Pass**			
5.403	153.0	5.455	154.5	5.358	1.010	1.487	**Pass**			
				Average	**1.007**	**1.490**		**Pass**	**Pass**	**Pass**
5.094	144.3	5.058	143.2	4.968	0.993	1.592	**Pass**			
5.072	143.6	5.058	143.2	4.968	0.997	1.586	**Pass**			
5.098	144.4	5.058	143.2	4.968	0.992	1.590	**Pass**			
				Average	**0.994**	**1.589**		**Pass**	**Pass**	**Pass**

Average Yd: 0.994 **dH@: 1.499**

Q @ dH = 1: 0.613

SIGNED: Signature on file Date: 11/2/2018

BI-MONTHLY DRY GAS METER CALIBRATION CHECK

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: C:\Users\Dave Wonderly\Information\Calibrations\Dry Gas Meters\17-wcs\2019\[17-WCS bimonthly cal 3-8-19.xls]WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 3/21/2002

Model #: c5000
ID #: 17-wcs
Date: 3/8/2019
Bar. Pressure: 30.03 (in. Hg)
Performed By: R. Howard
Yd from previous semi-annual calibration: 0.994

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
					Initial Temps.		Final Temps.					Ambient Temperature		
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.51	12.00	622.600	627.903	5.303	59.0	57.0	59.0	57.0	48	0.3345	16.0	53.0	53.0	53.0
0.51	12.00	627.903	633.216	5.313	59.0	57.0	59.0	58.0	48	0.3345	16.0	59.0	59.0	59.0
0.51	12.00	633.216	638.525	5.309	59.0	58.0	59.0	58.0	48	0.3345	16.0	59.0	59.0	59.0
1.60	7.00	603.800	609.175	5.375	59.0	56.0	58.0	56.0	63	0.5915	13.0	51.0	51.0	51.0
1.60	7.00	609.105	614.452	5.347	58.0	56.0	59.0	56.0	63	0.5915	13.0	51.0	51.0	51.0
1.60	7.00	614.452	619.825	5.373	59.0	56.0	62.0	56.0	63	0.5915	13.0	52.0	52.0	52.0

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR	ORIFICE CALIBRATION FACTOR
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	Y Value (number)	dH@ Value (in H2O)
5.430	153.8	5.321	150.7	5.153	0.980	1.495
5.437	154.0	5.290	149.8	5.183	0.973	1.511
5.431	153.8	5.290	149.8	5.183	0.974	1.510
				Average	**0.976**	**1.506**
5.526	156.5	5.500	155.8	5.306	0.995	1.497
5.497	155.7	5.500	155.8	5.306	1.001	1.497
5.514	156.1	5.495	155.6	5.311	0.997	1.500
				Average	**0.998**	**1.498**

Average Yd: 0.987 dH@: 1.502

Pass Q @ dH = 1: 0.612

The Average Yd must be within +/- 2% of the most recent semi-annual calibration Yd. If not, perform 4-point calibration.

SIGNED: Signature on File Date: 3/8/2019

SEMI-ANNUAL DRY GAS METER/ORIFICE CALIBRATION

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: C:\Users\Dave Wonderly\Information\Calibrations\Dry Gas Meters\30-wcs\2019\[semi annual cal 30wcs 3-4-19.xlsx]WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

c-5000
ID #: 30-wcs
Date: 3/4/2019
Bar. Pressure: 30.08 (in. Hg)
Performed By: R. Howard
Meter Serial #:

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
					Initial Temps.		Final Temps.					Ambiert Temperature		
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.14	26.00	687.200	692.474	5.274	66.0	66.0	67.0	67.0	33	0.1551	16.0	65.0	65.0	65.0
0.14	26.00	692.474	697.721	5.247	67.0	67.0	69.0	68.0	33	0.1551	16.0	64.0	64.0	64.0
0.14	26.00	697.721	702.977	5.256	69.0	68.0	69.0	69.0	33	0.1551	16.0	63.0	63.0	63.0
0.63	12.00	743.300	748.583	5.283	71.0	72.0	72.0	72.0	48	0.3345	14.5	67.0	67.0	67.0
0.63	12.00	748.583	753.867	5.284	72.0	72.0	72.0	72.0	48	0.3345	14.5	67.0	67.0	67.0
0.63	12.00	753.867	759.149	5.282	73.0	71.0	74.0	71.0	48	0.3345	14.5	67.0	67.0	67.0
1.80	7.00	726.200	731.638	5.438	72.0	71.0	73.0	70.0	63	0.5915	12.0	67.0	67.0	67.0
1.80	7.00	731.638	737.076	5.438	73.0	70.0	74.0	71.0	63	0.5915	12.0	67.0	67.0	67.0
1.80	7.00	737.076	742.515	5.439	74.0	71.0	74.0	71.0	63	0.5915	12.0	67.0	67.0	67.0
3.20	5.00	706.300	711.394	5.094	73.0	70.0	73.0	70.0	73	0.7678	11.0	64.0	64.0	64.0
3.20	5.00	711.394	716.488	5.094	73.0	70.0	72.0	70.0	73	0.7678	11.0	65.0	65.0	65.0
3.20	5.00	716.488	721.582	5.094	73.0	70.0	73.0	70.0	73	0.7678	11.0	65.0	65.0	65.0

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR	ORIFICE CALIBRATION FACTOR	Individual Run	Individual Orifice	Orifice Average	Orifice Average
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)	Y Value (number)	dH@ Value (in H2O)	0.95 < Y < 1.05?	Ymax - Ymin < 0.010?	0.98 < Y/Yd < 1.02?	dH@ - dH@ av < 0.155?
5.317	150.6	5.296	150.0	5.240	0.996	1.914	**Pass**			
5.277	149.5	5.301	150.1	5.235	1.004	1.907	**Pass**			
5.276	149.4	5.306	150.3	5.230	1.006	1.899	**Pass**			
				Average	**1.002**	**1.907**		**Pass**	**Pass**	**Pass**
5.280	149.5	5.259	148.9	5.223	0.996	1.841	**Pass**			
5.278	149.5	5.259	148.9	5.223	0.996	1.841	**Pass**			
5.274	149.4	5.259	148.9	5.223	0.997	1.845	**Pass**			
				Average	**0.997**	**1.842**		**Pass**	**Pass**	**Pass**
5.453	154.4	5.425	153.6	5.388	0.995	1.687	**Pass**			
5.448	154.3	5.425	153.6	5.388	0.996	1.687	**Pass**			
5.444	154.2	5.425	153.6	5.388	0.997	1.685	**Pass**			
				Average	**0.996**	**1.686**		**Pass**	**Pass**	**Pass**
5.125	145.1	5.045	142.9	4.982	0.984	1.771	**Pass**			
5.128	145.2	5.040	142.7	4.987	0.983	1.774	**Pass**			
5.125	145.1	5.040	142.7	4.987	0.983	1.774	**Pass**			
				Average	**0.984**	**1.773**		**Pass**	**Pass**	**Pass**

Average Yd: 0.994 **dH@: 1.802**

Q @ dH = 1: 0.559

SIGNED: Signature on File Date: 3/4/2019

BI-MONTHLY DRY GAS METER CALIBRATION CHECK

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: C:\Users\Dave Wonderly\Information\Calibrations\Dry Gas Meters\1-P&M\2019\[1p-m 3-8-19 Bimonthly Meter Cal.xls]WCS
File Modified From: APEX 522 Series Meter box Calibration
Revised: 3/21/2002

Model #:
ID #: 1 P&M
Date: 3/8/2019
Bar. Pressure: 30.03 (in. Hg)
Performed By: R. Howard
Yd from previous semi-annual calibration: 0.992

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
		Volume	Volume	Volume	Initial Temps.		Final Temps.		Orifice	K' Orifice	Actual	Ambient Temperature		
dH	Time	Initial	Final	Total	Inlet	Outlet	Inlet	Outlet	Serial#	Coefficient	Vacuum	Initial	Final	Average
(in H2O)	(min)	(cu ft)	(cu ft)	(cu ft)	(deg F)	(deg F)	(deg F)		(number)	(see above)	(in Hg)	(deg F)	(deg F)	(deg F)
0.54	12.00	97.900	103.302	5.402	66.0	63.0	65.0	64.0	48	0.3345	18.0	60.0	60.0	60.0
0.54	12.00	103.302	108.700	5.398	65.0	64.0	66.0	64.0	48	0.3345	18.0	60.0	60.0	60.0
0.54	12.00	108.700	114.106	5.406	66.0	64.0	66.0	65.0	48	0.3345	18.0	60.0	60.0	60.0
1.80	7.00	77.200	82.591	5.391	63.0	61.0	64.0	62.0	63	0.5915	13.0	59.0	59.0	59.0
1.80	7.00	82.591	87.964	5.373	64.0	62.0	66.0	64.0	63	0.5915	13.0	59.0	59.0	59.0
1.80	7.00	87.964	93.355	5.391	66.0	64.0	66.0	64.0	63	0.5915	13.0	60.0	60.0	60.0

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR	ORIFICE CALIBRATION FACTOR
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)		Y Value (number)	dH@ Value (in H2O)
5.463	154.7	5.285	149.7	5.188		0.967	1.585
5.456	154.5	5.285	149.7	5.188		0.969	1.583
5.459	154.6	5.285	149.7	5.188		0.968	1.582
					Average	**0.968**	**1.583**
5.490	155.5	5.458	154.6	5.347		0.994	1.692
5.456	154.5	5.458	154.6	5.347		1.000	1.688
5.464	154.7	5.453	154.4	5.353		0.998	1.688
					Average	**0.998**	**1.689**

Average Yd: 0.983 dH@: 1.636

Pass Q @ dH = 1: 0.586

The Average Yd must be within +/- 2% of the most recent semi-annual calibration Yd. If not, perform 4-point calibration.

SIGNED: Signature on File Date: 3/8/2019

SEMI-ANNUAL DRY GAS METER/ORIFICE CALIBRATION

Orifice Method - Triplicate Runs/Four Calibration Points
English Meter Box Units, English K' Factor
Filename: C:\Users\Dave Wonderly\Information\Calibrations\Dry Gas Meters\1-P&M\2018\[Semi-Annual Meter Cal 1-pm 11-2-18.xls]W(
File Modified From: APEX 522 Series Meter box Calibration
Revised: 4/8/2005

Model #:
ID #: 1 p&m
Date: 11/2/2018
Bar. Pressure: 30.07 (in. Hg)
Performed By: R. Howard
Meter Serial #: 8520465.00

DRY GAS METER READINGS									CRITICAL ORIFICE READINGS					
					Initial Temps.		Final Temps.					Ambient Temperature		
dH (in H2O)	Time (min)	Volume Initial (cu ft)	Volume Final (cu ft)	Volume Total (cu ft)	Inlet (deg F)	Outlet (deg F)	Inlet (deg F)	Outlet (deg F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in Hg)	Initial (deg F)	Final (deg F)	Average (deg F)
0.14	26.00	895.200	900.610	5.410	68.0	67.0	69.0	68.0	33	0.1551	20.0	58.0	58.0	58.0
0.14	26.00	900.610	906.011	5.401	69.0	68.0	70.0	68.0	33	0.1551	20.0	59.0	59.0	59.0
0.14	26.00	906.002	911.411	5.409	70.0	68.0	70.0	69.0	33	0.1551	20.0	60.0	60.0	60.0
0.62	12.00	871.200	876.544	5.344	71.0	69.0	72.0	70.0	48	0.3345	18.0	57.0	57.0	57.0
0.62	12.00	876.544	881.902	5.358	72.0	70.0	73.0	72.0	48	0.3345	18.0	57.0	57.0	57.0
0.62	12.00	881.902	887.281	5.379	73.0	72.0	74.0	71.0	48	0.3345	18.0	57.0	57.0	57.0
1.80	7.00	888.800	894.281	5.481	70.0	68.0	72.0	69.0	63	0.5915	15.0	59.0	59.0	59.0
1.80	7.00	894.281	899.757	5.476	72.0	66.0	72.0	68.0	63	0.5915	15.0	59.0	59.0	59.0
1.80	7.00	899.757	905.237	5.480	72.0	68.0	72.0	69.0	63	0.5915	15.0	59.0	59.0	59.0
3.10	5.00	912.900	917.903	5.003	71.0	68.0	71.0	69.0	73	0.7678	13.0	59.0	59.0	59.0
3.10	5.00	917.903	922.905	5.002	71.0	69.0	71.0	68.0	73	0.7678	13.0	60.0	60.0	60.0
3.10	5.00	922.905	927.900	4.995	71.0	68.0	71.0	69.0	73	0.7678	13.0	60.0	60.0	60.0

DRY GAS METER		ORIFICE			DRY GAS METER CALIBRATION FACTOR	ORIFICE CALIBRATION FACTOR	Individual Run	Individual Orifice	Orifice Average	Orifice Average
VOLUME CORRECTED Vm(std) (cu ft)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (cu ft)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (cu ft)		Y Value (number)	dH@ Value (in H2O)	0.95 < Y < 1.05?	Ymax - Ymin < 0.010?	0.98 < Y/Yd < 1.02?	dH@ - dH@ av < 0.155?
5.437	154.0	5.330	150.9	5.205		0.980	1.885	**Pass**			
5.420	153.5	5.324	150.8	5.210		0.982	1.887	**Pass**			
5.423	153.6	5.319	150.6	5.215		0.981	1.889	**Pass**			
					Average	**0.981**	**1.887**		**Pass**	**Pass**	**Pass**
5.351	151.6	5.308	150.3	5.173		0.992	1.786	**Pass**			
5.353	151.6	5.308	150.3	5.173		0.992	1.781	**Pass**			
5.366	152.0	5.308	150.3	5.173		0.989	1.780	**Pass**			
					Average	**0.991**	**1.783**		**Pass**	**Pass**	**Pass**
5.512	156.1	5.465	154.8	5.347		0.991	1.668	**Pass**			
5.510	156.0	5.465	154.8	5.347		0.992	1.672	**Pass**			
5.506	155.9	5.465	154.8	5.347		0.993	1.668	**Pass**			
					Average	**0.992**	**1.669**		**Pass**	**Pass**	**Pass**
5.047	142.9	5.067	143.5	4.958		1.004	1.705	**Pass**			
5.046	142.9	5.063	143.4	4.963		1.003	1.708	**Pass**			
5.039	142.7	5.063	143.4	4.963		1.005	1.708	**Pass**			
					Average	**1.004**	**1.707**		**Pass**	**Pass**	**Pass**

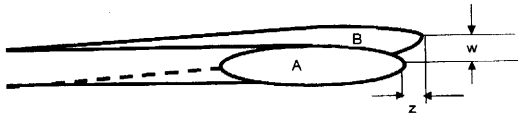
Average Yd: 0.992 **dH@: 1.761**

Q @ dH = 1: 0.565

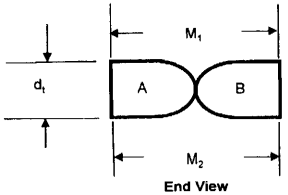
SIGNED: Signature on File Date: 11/2/2018

MONTROSE AIR QUALITY SERVICES

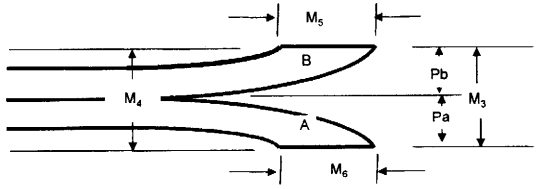
S Type Pitot Tube Dimensional Calibration Record



Side View



End View



Top View

Acceptability Criteria			z < 1/8"	w < 1/32"	Yes	"3/16" < Dt < 3/8"	n/a	n/a	n/a	n/a	n/a	n/a	10 degrees	5 degrees	1.05 Dt < P < 1.5 Dt	
Pitot ID	Date	Calibrated By	Side View, Impact openings Properly aligned, z < 1/8"	Side View, Impact openings Properly aligned, w < 1/32"	Pa = Pb	Tubing Diameter, dt	M1	M2	M3	M4	M5	M6	Average Face Opening Plane Angle, offset from perpendicular to transverse axis	Average Face Opening Plane Frontal Angle from parallel to Longitudinal Axis	Ratio of P/Dt	Status
119	12/31/18	RH	Y	Y	Y	0.375	0.935	0.956	0.937	0.933	0.418	0.433	-1.6	0.3	1.3	Pass
074	12/31/18	RH	Y	Y	Y	0.374	0.866	0.866	0.872	0.868	0.436	0.437	0.0	0.3	1.2	Pass
089	12/31/18	RH	Y	Y	Y	0.371	0.921	0.926	0.944	0.930	0.435	0.444	-0.4	0.9	1.2	Pass
042	12/31/18	RH	Y	Y	Y	0.374	0.833	0.829	0.834	0.839	0.424	0.476	0.3	-0.3	1.1	Pass

Notes: Reference "A Type-S Pitot Tube Calibration Study", Robert F. Vollaro, October 15, 1975
If tube is not visibly deformed it is assumed that Pa = Pb = .5 x avg. of M1 & M2, and that average face opening plane angles represent individual angles to tube axis

MONTROSE
AIR QUALITY SERVICES

DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: PTC-42
Readout Description: Handheld
Date: 12/31/2018
Performed By: JG/DA/RH/JS

Calibrated Thermocouple ID: TC-CAL
T1 Reference Thermometer ID: 242196
T2 Reference Thermometer ID: 242196
T3 Reference Thermometer ID: 242167

T/C I.D. **TC-CAL**	Readout I.D.	T/C - Readout °F				Reference Thermometer °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	PTC-42	365	365	365	365	370	370	370	370	5.0	0.6%	Pass
T2 (Boiling H_2O)	PTC-42	211	211	211	211	212	212	212	212	1.0	0.1%	Pass
T1 (Ice/Water)	PTC-42	31	31	31	31	32	32	32	32	1.0	0.2%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

Thermocouple Source Readings

	T/C Source S/N	T/C - Readout °F				T/C Source °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T4 (~650 F)	S/N 106970	650	650	650	650	650	650	650	650	0.0	0.0%	Pass
T3 (~370 F)	S/N 106970	364	364	364	364	365	365	365	365	1.0	0.1%	Pass
T2 (~212 F)	S/N 106970	211	211	211	211	212	212	212	212	1.0	0.1%	Pass
T1 (~32 F)	S/N 106970	31	31	31	31	32	32	32	32	1.0	0.2%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

MONTROSE
AIR QUALITY SERVICES

DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: 17-WCS
Readout Description: Control Box
Date: 12/31/2018
Performed By: JG/DA/RH/JS

Calibrated Thermocouple ID: TC-CAL
T1 Reference Thermometer ID: 242196
T2 Reference Thermometer ID: 242196
T3 Reference Thermometer ID: 242167

T/C I.D. **TC-CAL**	Readout I.D.	T/C - Readout °F				Reference Thermometer °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	17-WCS	354	354	354	354	358	358	358	358	4.0	0.5%	Pass
T2 (Boiling H_2O)	17-WCS	208	208	208	208	212	212	212	212	4.0	0.6%	Pass
T1 (Ice/Water)	17-WCS	28	28	28	28	32	32	32	32	4.0	0.8%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

Thermocouple Source Readings

	T/C Source S/N	T/C - Readout °F				T/C Source °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T4 (~650 F)	S/N 106970	648	648	648	648	650	650	650	650	2.0	0.2%	Pass
T3 (~370 F)	S/N 106970	361	361	361	361	365	365	365	365	4.0	0.5%	Pass
T2 (~212 F)	S/N 106970	209	209	209	209	212	212	212	212	3.0	0.4%	Pass
T1 (~32 F)	S/N 106970	28	28	28	28	32	32	32	32	4.0	0.8%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

MONTROSE
AIR QUALITY SERVICES

DIGITAL TEMPERATURE READOUT CALIBRATION

Digital Temperature Readout ID: 30-WCS
Readout Description: Control Box
Date: 12/31/2018
Performed By: JG/DA/RH/JS

Calibrated Thermocouple ID: TC-CAL
T1 Reference Thermometer ID: 242196
T2 Reference Thermometer ID: 242196
T3 Reference Thermometer ID: 242167

T/C I.D.	Readout	T/C - Readout °F				Reference Thermometer °F				Difference		
TC-CAL	I.D.	Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	30-WCS	358	358	358	358	358	358	358	358	0.0	0.0%	Pass
T2 (Boiling H_2O)	30-WCS	219	219	219	219	212	212	212	212	7.0	1.0%	Pass
T1 (Ice/Water)	30-WCS	38	38	38	38	32	32	32	32	6.0	1.2%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

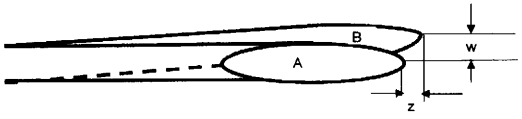
Thermocouple Source Readings

	T/C Source	T/C - Readout °F				T/C Source °F				Difference		
	S/N	Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T4 (~650 F)	S/N 106970	656	656	656	656	650	650	650	650	6.0	0.5%	Pass
T3 (~370 F)	S/N 106970	370	370	370	370	365	365	365	365	5.0	0.6%	Pass
T2 (~212 F)	S/N 106970	218	218	218	218	212	212	212	212	6.0	0.9%	Pass
T1 (~32 F)	S/N 106970	39	39	39	39	32	32	32	32	7.0	1.4%	Pass

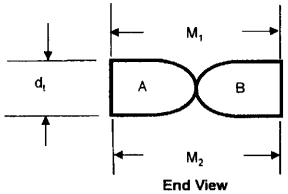
1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

MONTROSE
AIR QUALITY SERVICES

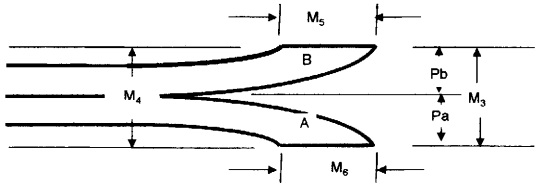
S Type Pitot Tube Dimensional Calibration Record



Side View



End View



Top View

Acceptability Criteria			z < 1/8"	w < 1/32"	Yes	"3/16" < Dt < 3/8"	n/a	n/a	n/a	n/a	n/a	n/a	10 degrees	5 degrees	1.05 Dt < P < 1.5 Dt	
Pitot ID	Date	Calibrated By	Side View, Impact openings Properly aligned, z < 1/8"	Side View, Impact openings Properly aligned, w < 1/32"	Pa = Pb	Tubing Diameter, dt	M1	M2	M3	M4	M5	M6	Average Face Opening Plane Angle, offset from perpendicular to transverse axis	Average Face Opening Plane Frontal Angle from parallel to Longitudinal Axis	Ratio of P/Dt	Status
119	12/31/18	RH	Y	Y	Y	0.375	0.935	0.956	0.937	0.933	0.418	0.433	-1.6	0.3	1.3	Pass
074	12/31/18	RH	Y	Y	Y	0.374	0.866	0.866	0.872	0.868	0.436	0.437	0.0	0.3	1.2	Pass
089	12/31/18	RH	Y	Y	Y	0.371	0.921	0.926	0.944	0.930	0.435	0.444	-0.4	0.9	1.2	Pass
058	12/31/18	RH	Y	Y	Y	0.372	0.834	0.839	0.848	0.831	0.448	0.437	-0.4	1.1	1.1	Pass

Notes: Reference "A Type-S Pitot Tube Calibration Study", Robert F. Vollaro, October 15, 1975
If tube is not visibly deformed it is assumed that Pa = Pb = .5 x avg. of M1 & M2, and that average face opening plane angles represent individual angles to tube axis

MONTROSE
AIR QUALITY SERVICES

NOZZLE CALIBRATION

Nozzle #	Date	Performed By	D_1	D_2	D_3	Average D_n	Status
215	1/12/18	JG	0.240	0.240	0.240	0.240	Pass
176	1/12/18	JG	0.248	0.248	0.247	0.248	Pass
103	1/12/18	JG	0.247	0.247	0.247	0.247	Pass
5X	1/12/18	JG	0.240	0.242	0.243	0.242	Pass

MONTROSE
AIR QUALITY SERVICES

THERMOCOUPLE CALIBRATION

Thermocouple ID: 119
Date: 12/31/2018
Performed By: JG/RH/DA/JS

Calibrated Digital Temperature Readout ID: PTC-67
T1 Reference Thermometer ID: 242196
T2 Reference Thermometer ID: 242196
T3 Reference Thermometer ID: 242167

T/C I.D.	Readout	T/C - Readout °F				Reference Thermometer °F				Difference		
119	I.D.	Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	PTC-67	352	352	355	353	358	358	358	358	5.0	0.6%	Pass
T2 (Boiling H_2O)	PTC-67	215	215	215	215	212	212	212	212	3.0	0.4%	Pass
T1 (Ice/Water)	PTC-67	34	33	33	33	32	32	32	32	1.3	0.3%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

MONTROSE
AIR QUALITY SERVICES

THERMOCOUPLE CALIBRATION

Thermocouple ID: 74
Date: 12/31/2018
Performed By: JG/RH/DA/JS

Calibrated Digital Temperature Readout ID: PTC-67
T1 Reference Thermometer ID: 242196
T2 Reference Thermometer ID: 242196
T3 Reference Thermometer ID: 242167

T/C I.D.	Readout	T/C - Readout °F				Reference Thermometer °F				Difference		
74	I.D.	Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	PTC-67	353	353	353	353	365	365	365	365	12.0	1.5%	Pass
T2 (Boiling H_2O)	PTC-67	208	208	208	208	212	212	212	212	4.0	0.6%	Pass
T1 (Ice/Water)	PTC-67	38	38	37	38	32	32	32	32	5.7	1.2%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

MONTROSE
AIR QUALITY SERVICES

THERMOCOUPLE CALIBRATION

Thermocouple ID: 89
Date: 12/31/2018
Performed By: JG/RH/DA/JS

Calibrated Digital Temperature Readout ID: PTC-67
T1 Reference Thermometer ID: 242196
T2 Reference Thermometer ID: 242196
T3 Reference Thermometer ID: 242167

T/C I.D. **89**	Readout I.D.	T/C - Readout °F				Reference Thermometer °F				Difference		
		Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	PTC-67	365	364	365	365	358	358	358	358	6.7	0.8%	Pass
T2 (Boiling H_2O)	PTC-67	216	216	216	216	212	212	212	212	4.0	0.6%	Pass
T1 (Ice/Water)	PTC-67	34	34	34	34	32	32	32	32	2.0	0.4%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

MONTROSE
AIR QUALITY SERVICES

THERMOCOUPLE CALIBRATION

Thermocouple ID: 58
Date: 12/31/2018
Performed By: JG/RH/DA/JS

Calibrated Digital Temperature Readout ID: PTC-67
T1 Reference Thermometer ID: 242196
T2 Reference Thermometer ID: 242196
T3 Reference Thermometer ID: 242167

T/C I.D.	Readout	T/C - Readout °F				Reference Thermometer °F				Difference		
58	I.D.	Reading 1	Reading 2	Reading 3	Average	Reading 1	Reading 2	Reading 3	Average	°F	%, (°R)	
T3 (OIL)	PTC-67	368	367	368	368	365	365	365	365	2.7	0.3%	Pass
T2 (Boiling H_2O)	PTC-67	211	211	211	211	212	212	212	212	1.0	0.1%	Pass
T1 (Ice/Water)	PTC-67	37	37	37	37	32	32	32	32	4.8	1.0%	Pass

1) Difference % (°R) = Difference (°F) / (Average Tref + 460)
2) Pass if all Differences are less than 1.5% (°R)

APPENDIX B
LABORATORY REPORTS

Appendix B.1
Hydrogen Chloride Laboratory Data

Atmospheric Analysis & Consulting, Inc.

Client	: Montrose Air Quality Services
Client Project Name	: Desert View Power
Client Project No.	: 002AS-541589
AAC Project No.	: 190417
Reporting Date	: 04/01/2019

On March 25, 2019, Atmospheric Analysis & Consulting, Inc. received nine (9) liquid samples for HCl analysis by EPA Method 26A. Upon receipt each sample was assigned a unique Laboratory ID number as follows:

Client Sample ID	AAC Sample ID	Client Sample ID	AAC Sample ID
1-HCL-Unit-1	190417-117148	3-HCL-Unit-2	190417-117153
2-HCL-Unit-1	190417-117149	Reagent Blank-HCL DI H_2O	190417-117154
3-HCL-Unit-1	190417-117150	Reagent Blank-HCL 0.1N H_2SO_4	190417-117155
1-HCL-Unit-2	190417-117151	Field Blank	190417-117156
2-HCL-Unit-2	190417-117152		

This analysis is performed in accordance with AAC's Quality Manual. For detailed information pertaining to specific EPA, NCASI, ASTM and SCAQMD accreditations (Methods & Analytes), please visit our website at www.aaclab.com.

I certify that this data is technically accurate, complete, and in compliance with the terms and conditions of the contract. No problems were encountered during receiving, preparation, and/or analysis of these samples. The Technical Director or his/her designee, as verified by the following signature, has authorized release of the data contained in this hardcopy report.

If you have any questions or require further explanation of data results, please contact the undersigned.

Sucha Parmar
Technical Director

This report consists of 37 pages.

Atmospheric Analysis & Consulting, Inc.

SAMPLE RECEIPT / LOG-IN REPORT

AAC Project No: 190417 **Received By: W.Schneider**

Sample Receipt Date	Project Desc	Clients ID	Matrix	Sampling Date/Time	Sampled By	Sample #	Analysis Requested
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	1-HCL-Unit-1	Liquid	03/19/2019 0725-0940	Client	117148	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	2-HCL-Unit-1	Liquid	03/19/2019 1101-1322	Client	117149	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	3-HCL-Unit-1	Liquid	03/19/2019 1337-1547	Client	117150	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	1-HCL-Unit-2	Liquid	03/21/2019 0721-0940	Client	117151	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	2-HCL-Unit-2	Liquid	03/21/2019 1010-1242	Client	117152	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	3-HCL-Unit-2	Liquid	03/21/2019 1306-1518	Client	117153	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	Reagent Blank-HCl (100ML, DI H2O)	Liquid	03/19/2019	Client	117154	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	Reagent Blank-HCl (200 ml 0.1 N, H2SO4)	Liquid	03/19/2019	Client	117155	EPA 26A
03/25/2019 0945	Montrose AQS Desert View Power 002AS-541589	Field Blank	Liquid	03/19/2019	Client	117156	EPA 26A

TURN AROUND TIME: Normal (10days)

Lab Due Date: 04/01/2019 Total Samples: 9

REMARKS:

HCl by EPA Method 26A report as mg/sample. Record total volume of each sample."

Page 2

#190417

CHAIN OF CUSTODY

CLIENT: Desert View Power PROJECT NO: 002AS-541589 TEST DATE(S): 3/19/2019 & 3/21/2019

LOCATION: Unit 1 and Unit 2 SAMPLER(S): Patrick Whitman

SAMPLE LOCATION: Stack Breaching PROJECT MANAGER: Dave Wonderly

TEST METHOD(S): EPA 26A DATE DUE:

OUTSIDE LAB REQUIRED?: Yes COMPLIANCE TEST? Yes

DATE	TIME	TEST #	SAMPLE DESCRIPTION	CONTAINERS	SAMPLER	COMMENTS
3/19/2019	725/940	1-HCL-Unit-1	Impinger contents and Line rinse	1	PW	117148
3/19/2019	1101/1322	2-HCL-Unit-1	Impinger contents and Line rinse	1	PW	117149
3/19/2019	1337/1547	3-HCL-Unit-1	Impinger contents and Line rinse	1	PW	117150
3/21/2019	721/940	1-HCL-Unit-2	Impinger contents and Line rinse	1	PW	117151
3/21/2019	1010/1242	2-HCL-Unit-2	Impinger contents and Line rinse	1	PW	117152
3/21/2019	1306/1518	3-HCL-Unit-2	Impinger contents and Line rinse	1	PW	117153
3/19/2019		Reagent Blank-HCL	100 ML, DI H_2O	1	DW	117154
3/19/2019		Reagent Blank-HCL	200 ml 0.1 N, H_2SO_4	1		117155
3/19/2019		Field Blank	Impinger contents and Line rinse	1	PW	117156

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Ray Madeny	3/22/19 1510 in lab	[illegible] MYSIS	3/25/19 600
[illegible] MYSIS	3/28/19 9:45	[illegible]	3/25/19 0945

ANALYSIS REQUIRED: HCl by EPA Method 26A report as mg/sample. Record total volume of each sample.

MYSIS

MONTROSE AIR QUALITY SERVICES

DS834001

Date of last revision – 2/14/2017

Master Document Storage\Forms\Datasheets\Lab Forms

Results

Atmospheric Analysis & Consulting, Inc.

Laboratory Analysis Report

Anion Analysis by IC

Client	: Montrose Air Quality Services	Sampling Dates	: 03/19,21/2019
Client Project Name	: Desert View Power	Receiving Date	: 03/25/2019
AAC Project No.	: 190417	Analysis Date	: 03/29/2019
Analyst	: JZ/JD	Reporting Date	: 04/01/2019

HCl Analysis by EPA Method 26A

Client Sample ID	AAC Sample ID	Sample Volume (mL)	Analysis DF	HCl (ug/ml)	HCl (mg/sample)	SRL (mg/sample)
1-HCL-Unit-1	190417-117148	790	10	56.6	46.0	0.812
2-HCL-Unit-1	190417-117149	707	10	69.9	50.8	0.727
3-HCL-Unit-1	190417-117150	650	10	72.9	48.7	0.668
1-HCL-Unit-2	190417-117151	700	10	56.3	40.5	0.720
2-HCL-Unit-2	190417-117152	698	10	87.0	62.5	0.718
3-HCL-Unit-2	190417-117153	758	10	86.4	67.3	0.780
Reagent Blank-HCL DI H2O	190417-117154	106	5	<SRL	<SRL	0.055
Reagent Blank-HCL 0.1N H2SO4	190417-117155	205	5	<SRL	<SRL	0.105
Field Blank	190417-117156	409	5	<SRL	<SRL	0.210

<SRL-compound was analyzed for but not detected at or above the SRL (Sample Reporting Limit)

SRL (ug/sample) =Method Reporting Limit (MRL) (0.100 ug/mL) x Sample Volume (mL) x Analysis Dilution Factor x Method Dilution Factor

Sucha Parmar, PhD
Technical Director

QA/QC Summary

Quality Control/Quality Assurance Report

EPA Method 26A

Analysis Date : 03/29/2019
Analyst : JZ/JD

Instrument ID : DIONEX IC

Calibration Verification of the 10/03/2018 Calibration

Sample ID	Analyte	Target Concentration (ug/mL)	Actual Concentration (ug/mL)	Percent Recovery (%)*
Opening CV	Chloride	25.0	24.1	96.5
Continuing CV	Chloride	25.0	24.7	98.7
Closing CV	Chloride	25.0	24.1	96.4
Second Source	Chloride	25.0	23.3	93.0

* Must be 85-115%

Sucha Parmar, PhD

Technical Director

QUALITY CONTROL/ASSURANCE REPORT

EPA Method 26A

Analysis Date : 03/29/2019
Analyst : JZ/JD

Instrument ID : DIONEX IC

Method Blank Analysis

Analyte	Concentration (ug/mL)	Reporting Limit (ug/mL)
Chloride	<RL	0.100

Laboratory Control Spike Analysis

Analyte	Target Sample Concentration (ug/mL)	Target Spike Concentration (ug/mL)	Lab Spike Concentration (ug/mL)	Duplicate Lab Spike Concentration (ug/mL)	Spike Recovery (%)**	Duplicate Spike Recovery (%)**	% RPD****
Chloride	0.000	12.5	12.2	12.2	98.0	97.9	0.0

Matrix Spike Analysis (Sample 190417-117148x10)

Analyte	Target Sample Concentration (ug/mL)	Target Spike Concentration (ug/mL)	Matrix Spike Concentration (ug/mL)	Duplicate Matrix Spike Concentration (ug/mL)	Spike Recovery (%)***	Duplicate Spike Recovery (%)***	% RPD****
Chloride	2.83	12.5	15.6	15.6	102	102	0.1

Duplicate Sample Analysis

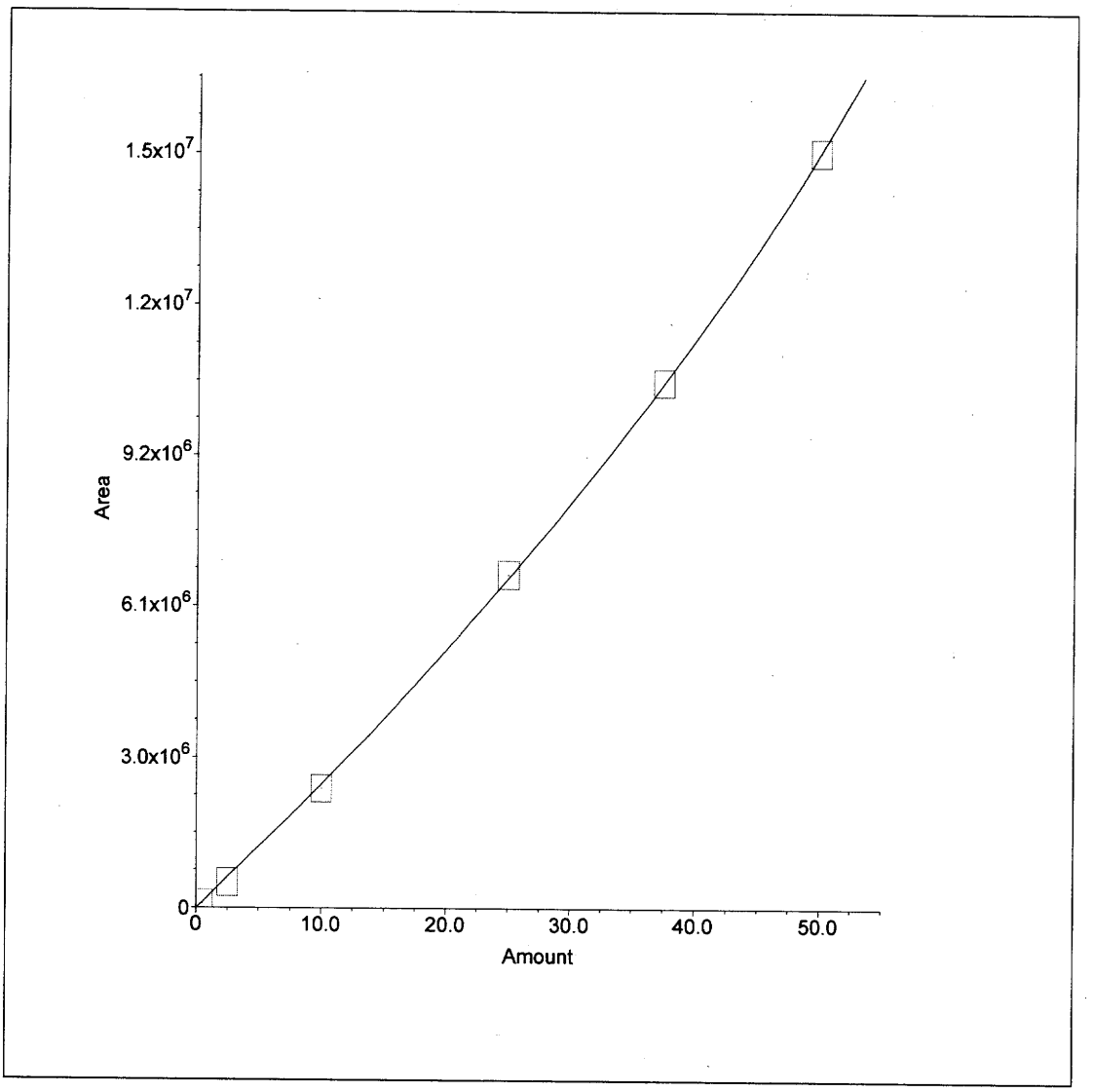
Sample ID	Analyte	Result (ug/mL)	Duplicate Result (ug/mL)	%RPD *	DF
190417-117148	Chloride	56.6	56.7	0.3	10
190417-117150	Chloride	72.9	72.8	0.1	10

* Must be <10%
** Must be 85-115%
*** Must be 75-125%
**** Must be < 25%

Sucha Parmar, PhD
Technical Director

Calibration Summary

2. Component:Chloride
Standard:External Fit Type:Quadratic
Origin:Force Calibration:Area
r^2=0.999851
Amt=-5.534420e-014*Resp^2+
4.105339e-006*Resp+0



Raw Data

Sample Analysis Report

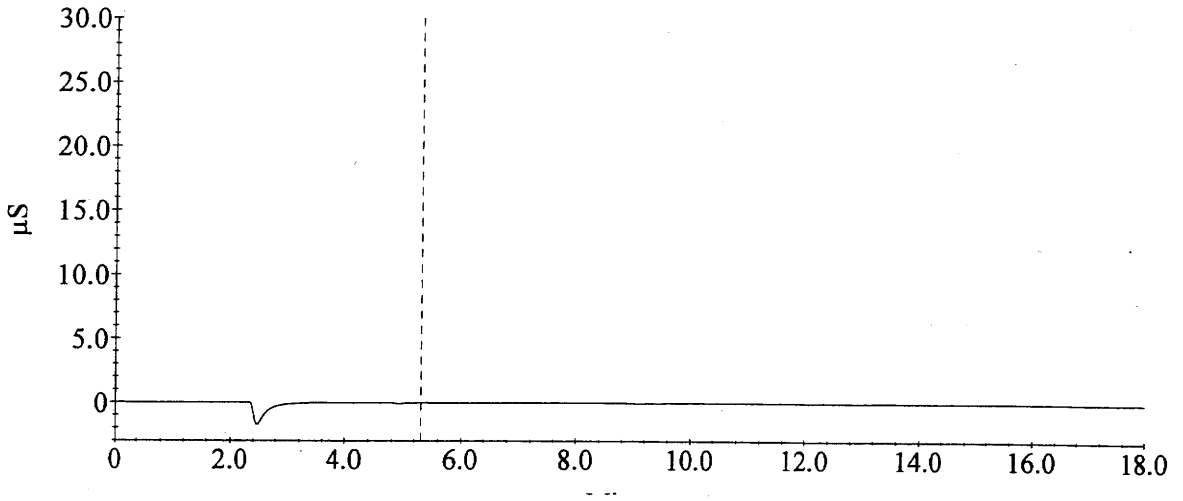
Sample Name : DI Water
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_001.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 11:41:19 AM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height

DI Water



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03/24/19

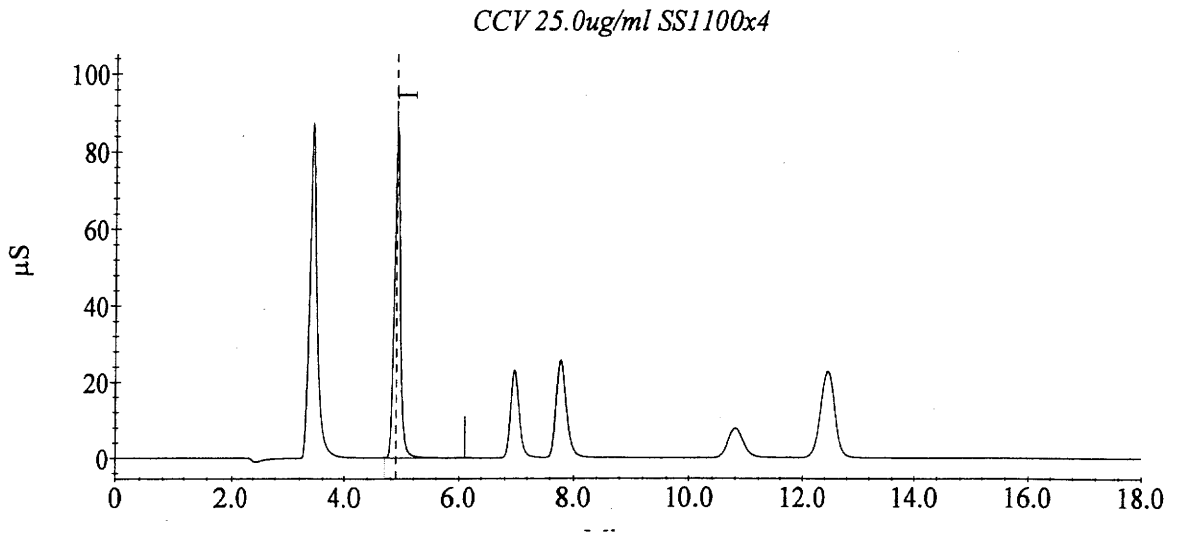
Sample Analysis Report

Sample Name : CCV 25.0ug/ml SS1100x4
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_002.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 11:59:23 AM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.90	24.126	6435034	826088



03/29/19

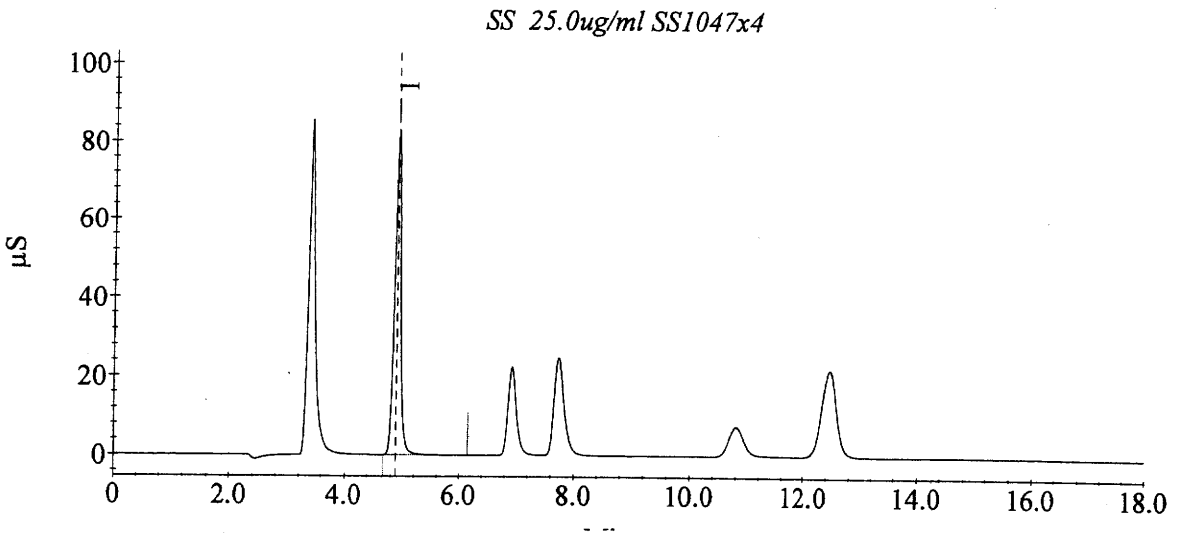
Sample Analysis Report

Sample Name : SS 25.0ug/ml SS1047x4
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_003.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 12:17:29 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.88	23.262	6181383	827022



03129/19

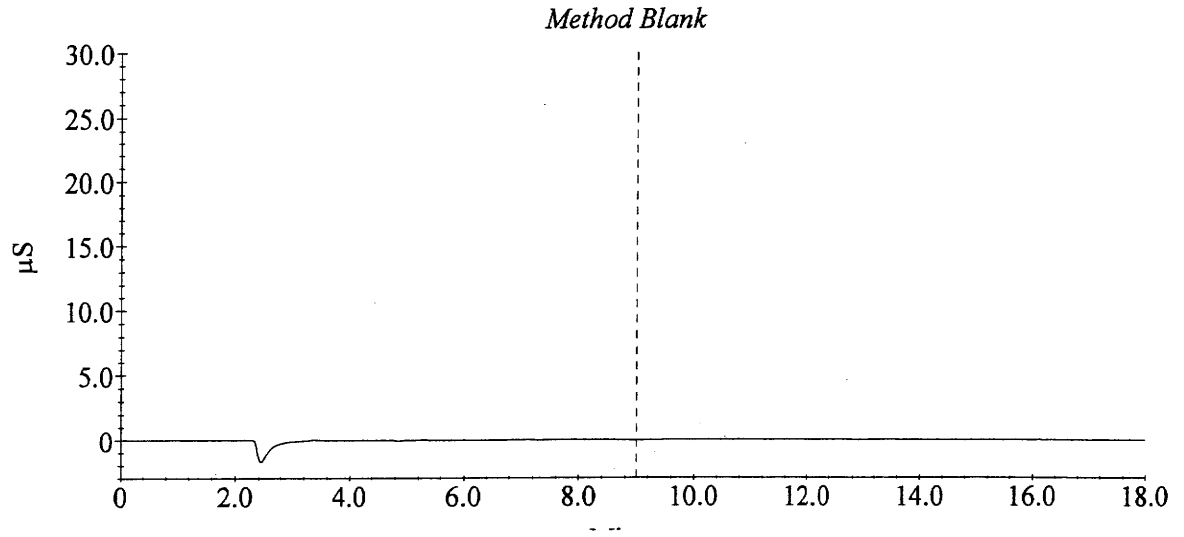
Sample Analysis Report

Sample Name : Method Blank
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_004.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 12:35:29 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



03/29/19

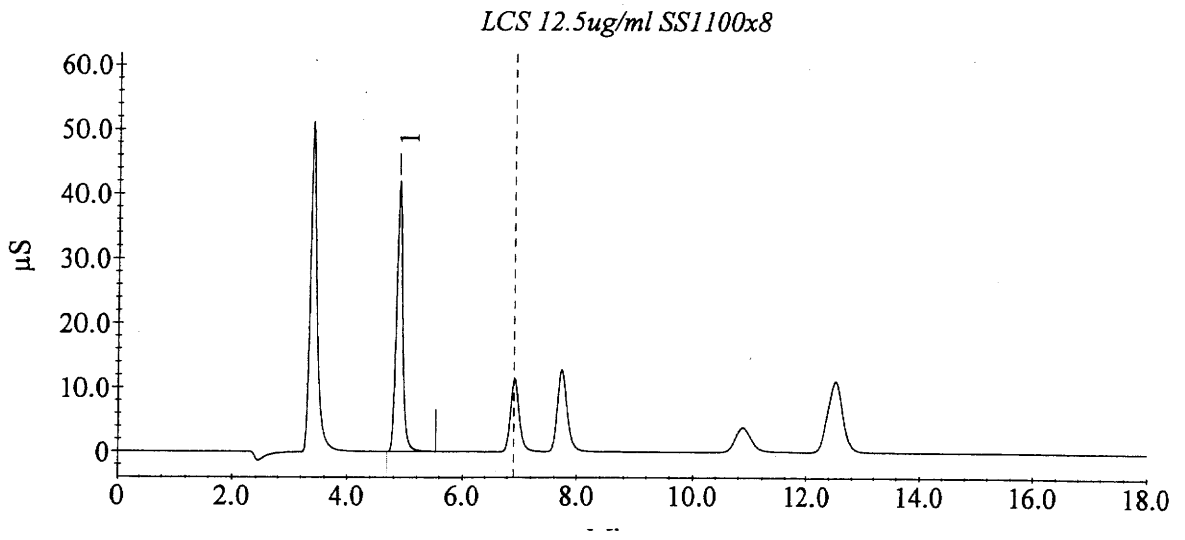
Sample Analysis Report

Sample Name : LCS 12.5ug/ml SS1100x8
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_005.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 12:53:35 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.87	12.249	3114334	415536



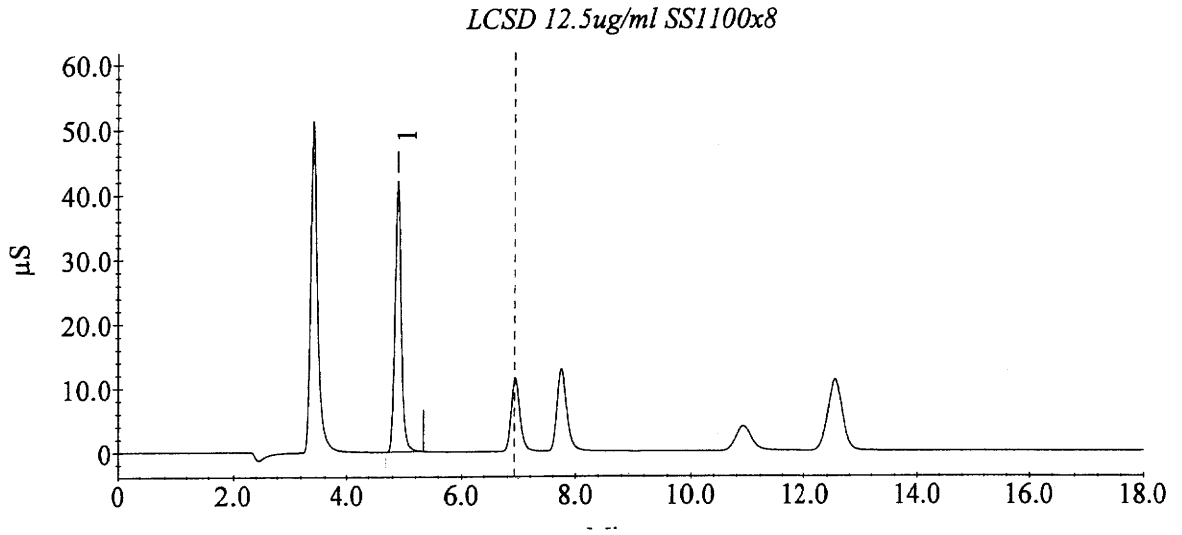
Sample Analysis Report

Sample Name : LCSD 12.5ug/ml SS1100x8
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_006.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 1:11:41 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.88	12.243	3112921	419574



03/29/19

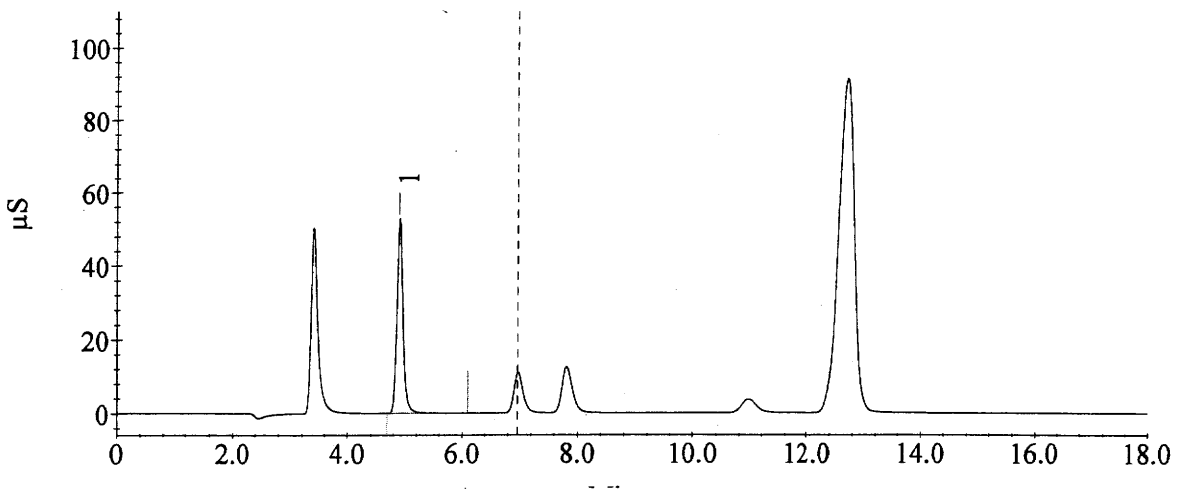
Sample Analysis Report

Sample Name : MS 12.5 ug/ml 190417-117148x10
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_007.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 1:29:47 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.90	15.562	4007209	517978



gal 03/29/19

Sample Analysis Report

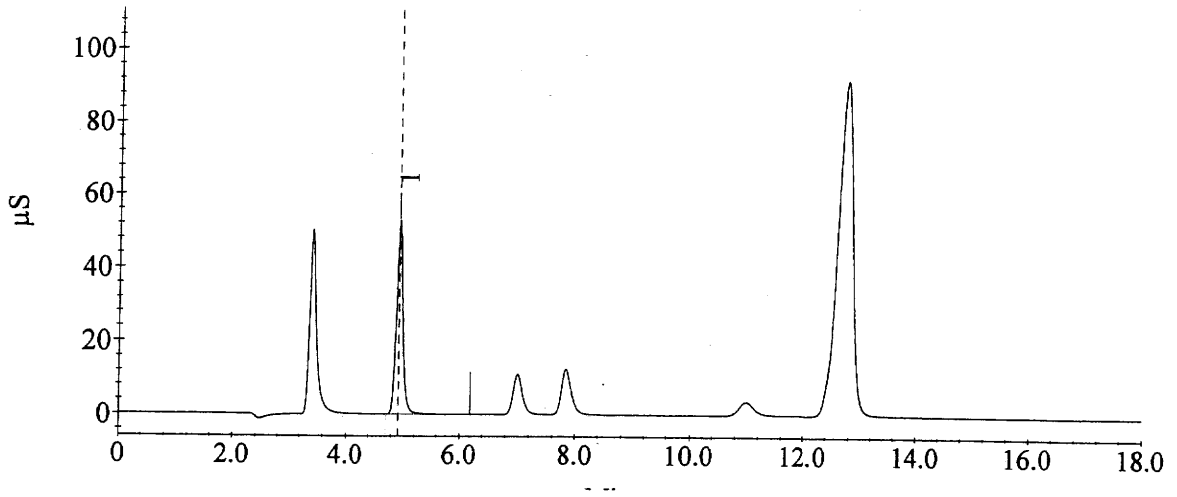
Sample Name : MSD 12.5 ug/ml 190417-117148x1
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_008.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 1:47:48 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.92	15.569	4008954	521366

MSD 12.5 ug/ml 190417-117148x1



03/29/19

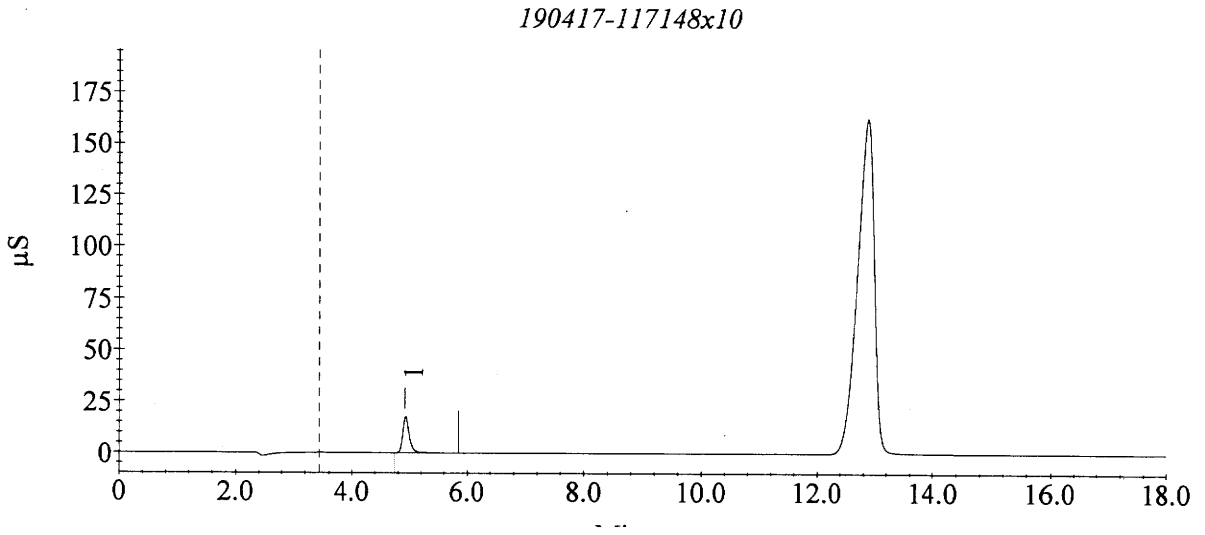
Sample Analysis Report

Sample Name : 190417-117148x10
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_009.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 2:05:53 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.92	56.578	1404754	172658



03/29/19

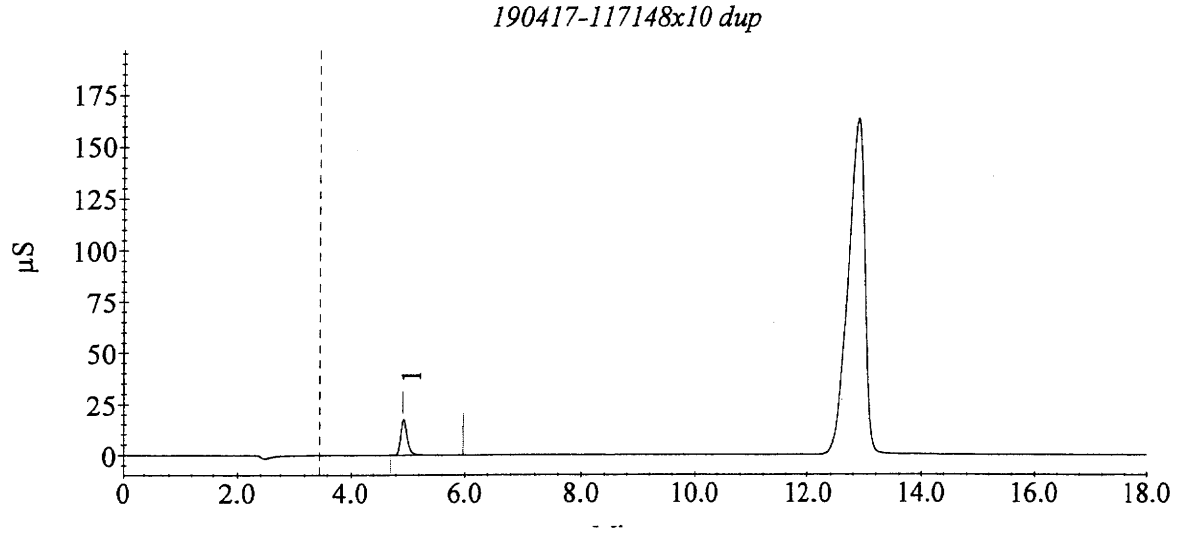
Sample Analysis Report

Sample Name : 190417-117148x10 dup
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_010.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 2:23:59 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.92	56.749	1409099	167541



03/29/19

Sample Analysis Report

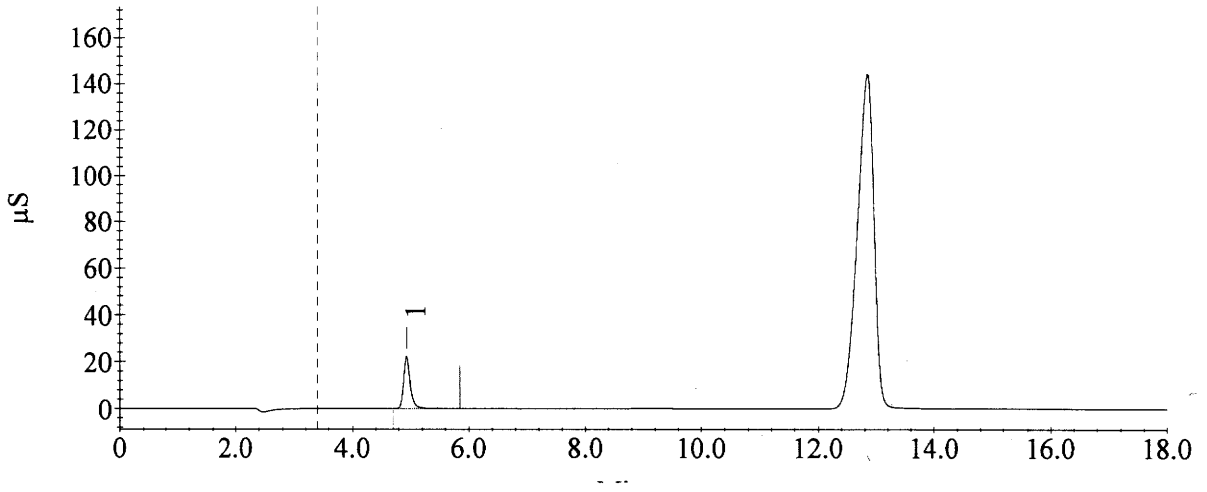
Sample Name : 190417-117149x10
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_011.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 2:42:06 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.93	69.850	1742364	220718

190417-117149x10



03/29/19

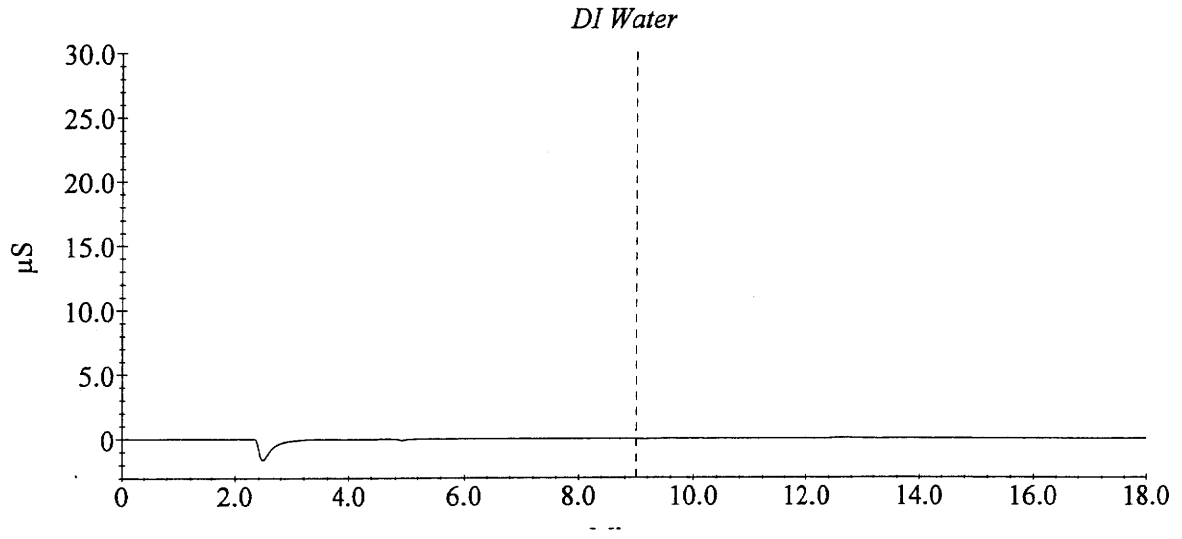
Sample Analysis Report

Sample Name : DI Water
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_012.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 3:00:12 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



03/29/19

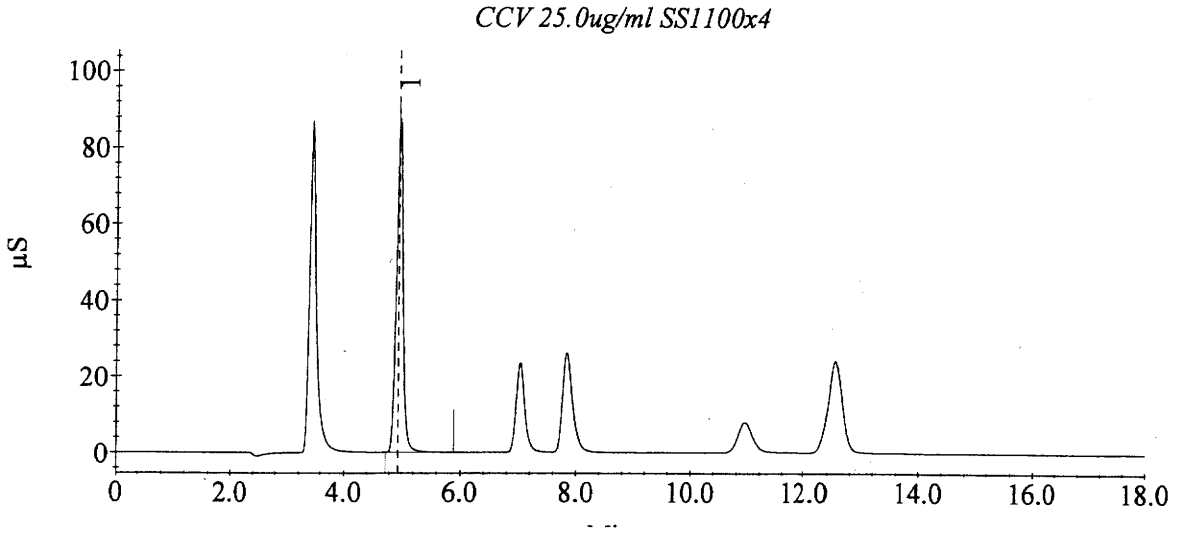
Sample Analysis Report

Sample Name : CCV 25.0ug/ml SS1100x4
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_013.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 3:18:17 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.95	24.686	6600328	850010



03/29/19

Sample Analysis Report

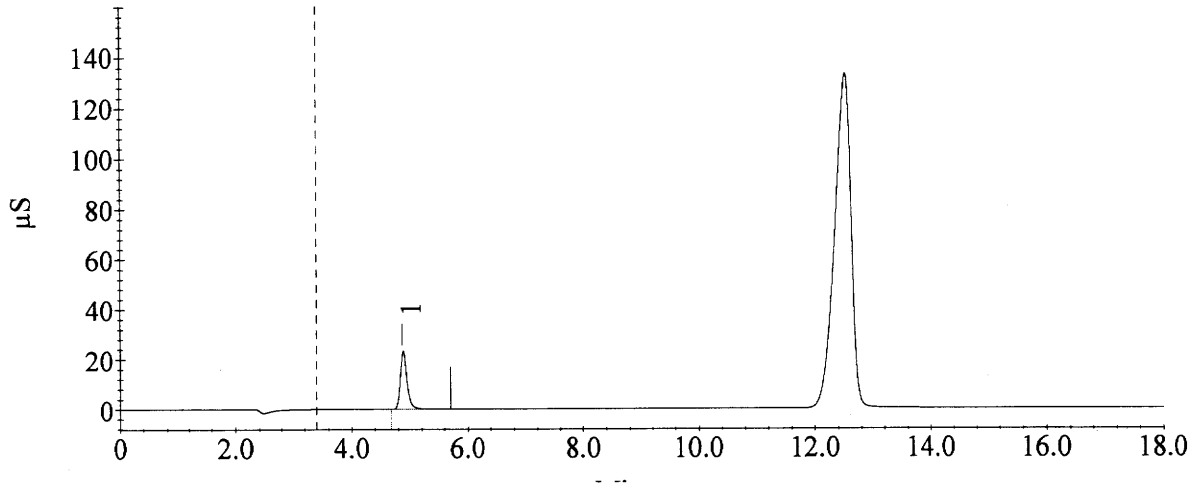
Sample Name : 190417-117150x10
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_014.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 3:36:23 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.87	72.854	1819229	222141

190417-117150x10



03/29/19

Sample Analysis Report

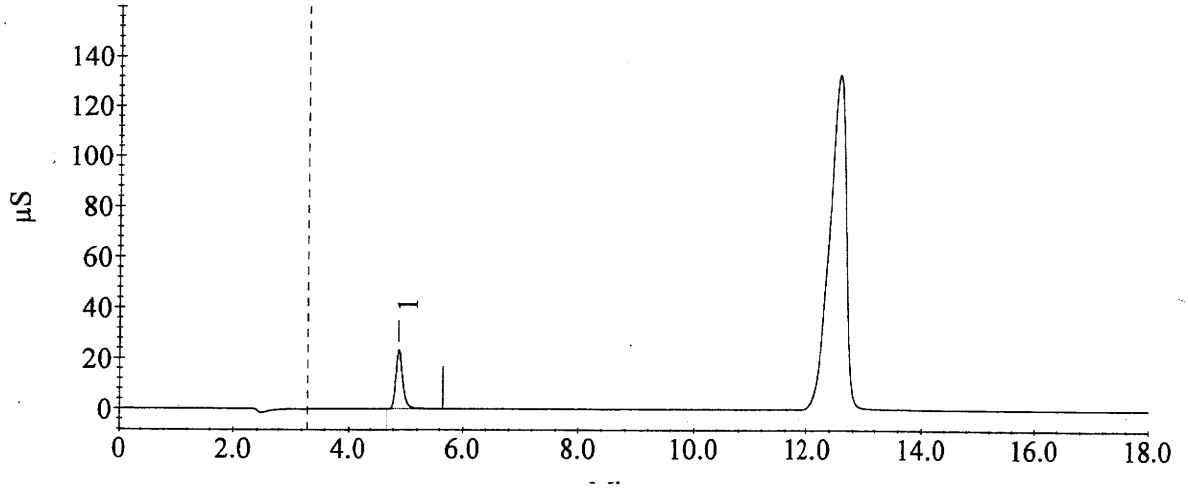
Sample Name : 190417-117150x10 dup
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_015.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 3:54:29 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.88	72.772	1817120	231704

190417-117150x10 dup



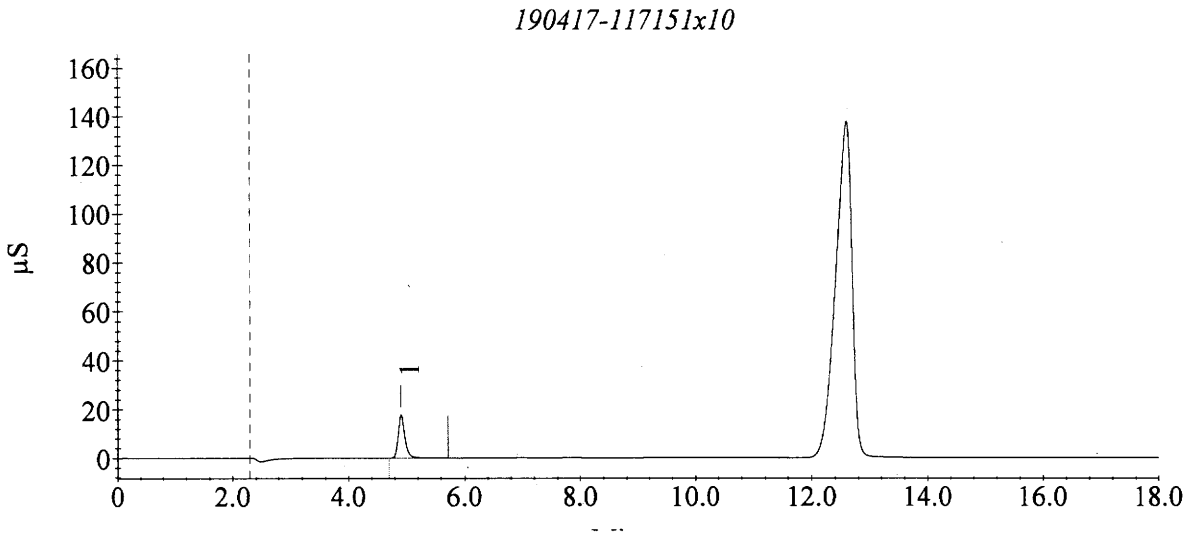
Sample Analysis Report

Sample Name : 190417-117151x10
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_016.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 4:12:36 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.90	56.285	1397340	175593



05/29/19

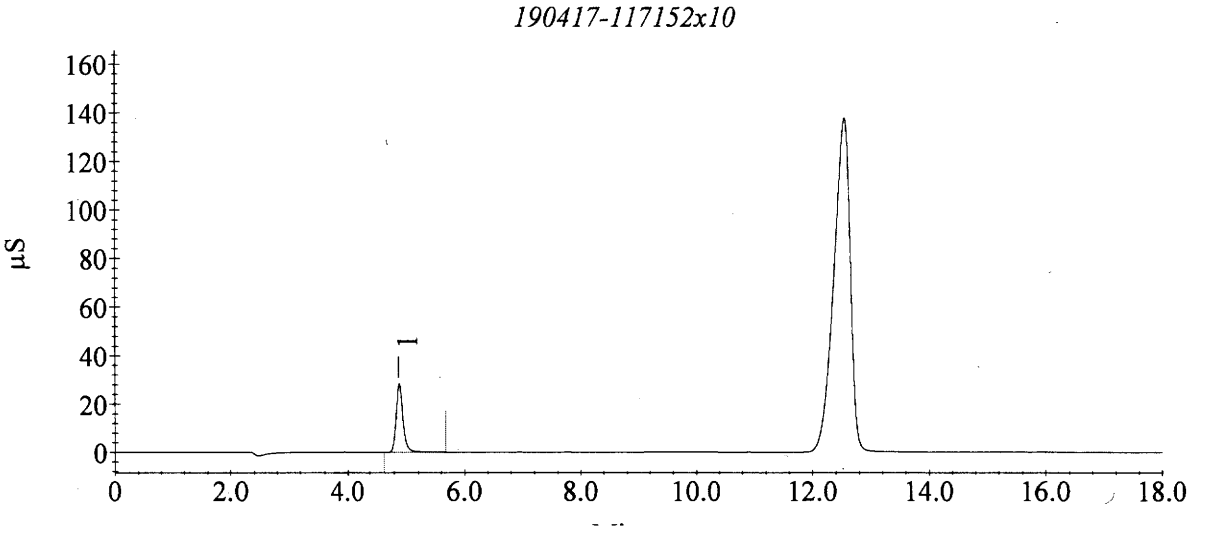
Sample Analysis Report

Sample Name : 190417-117152x10
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_017.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 4:30:36 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.87	86.998	2183417	272737



05/01/19

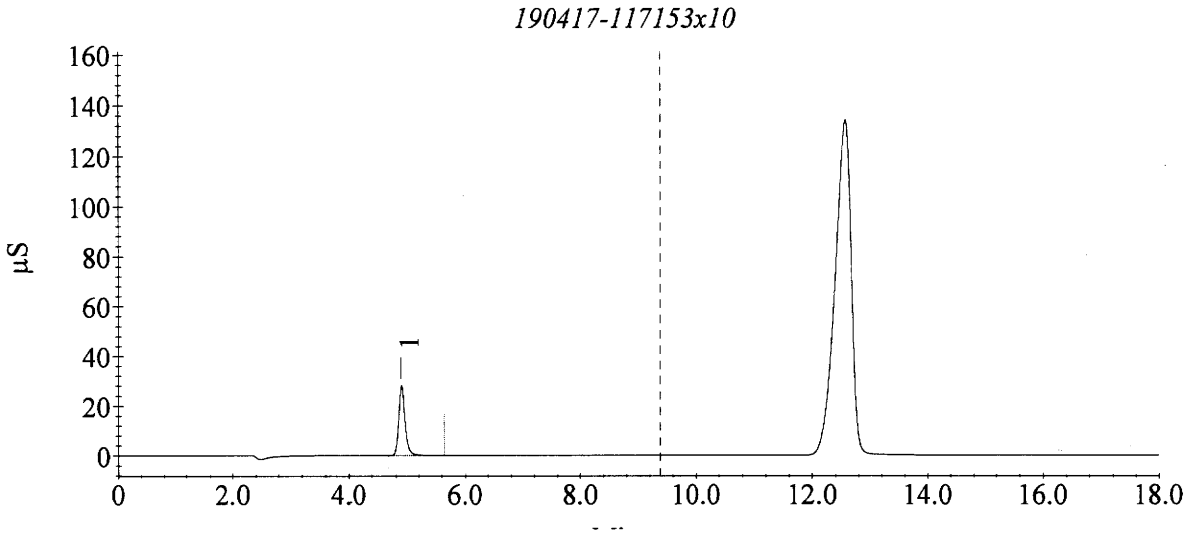
Sample Analysis Report

Sample Name : 190417-117153x10
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_018.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 4:48:43 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.88	86.359	2166878	274117



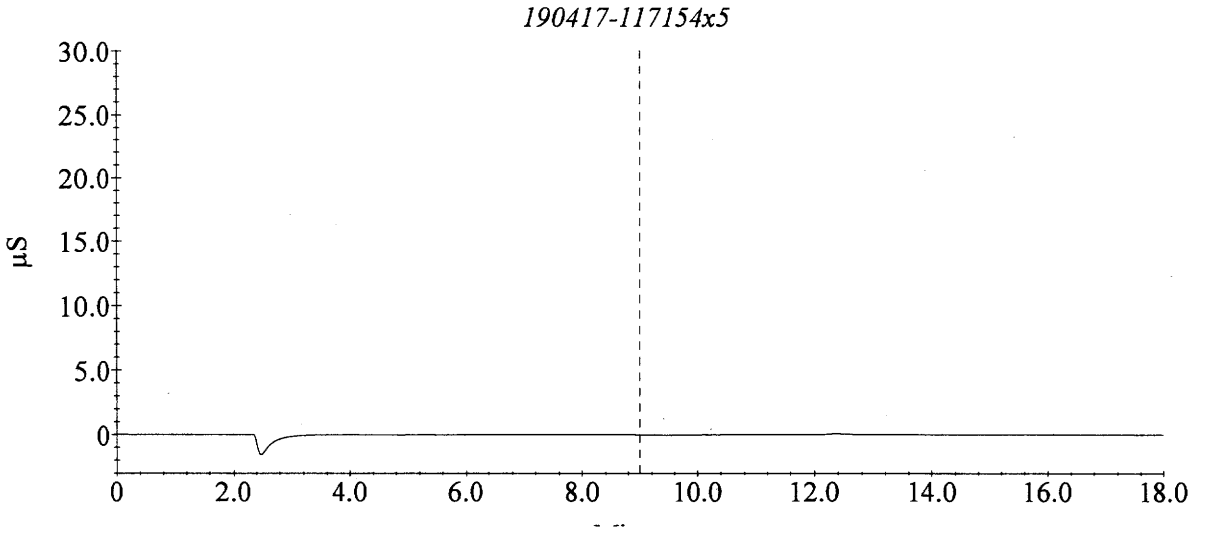
Sample Analysis Report

Sample Name : 190417-117154x5
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_019.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 5:06:49 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



04/01/19

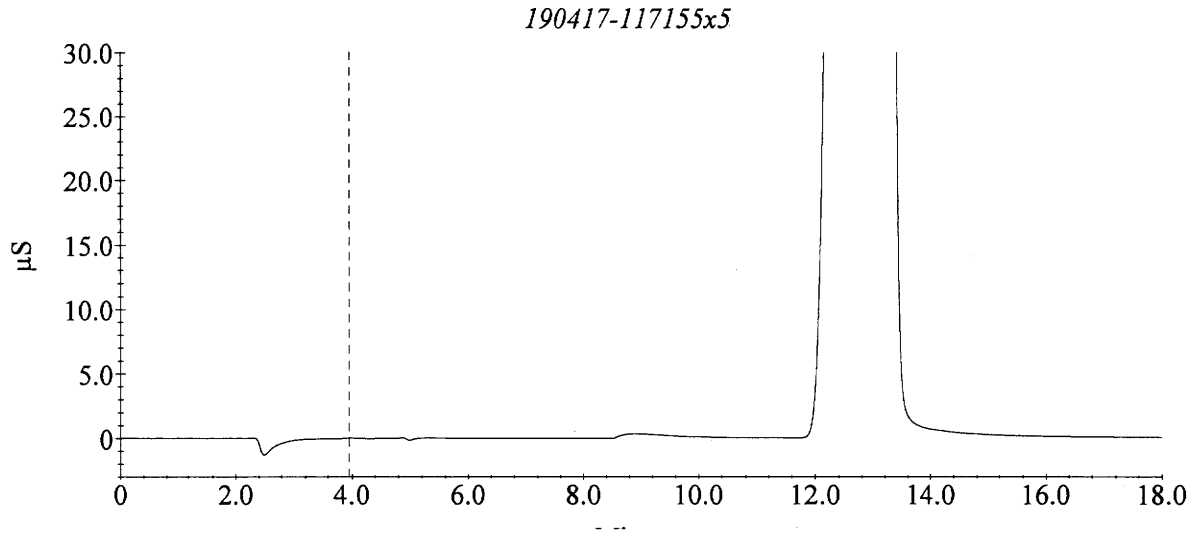
Sample Analysis Report

Sample Name : 190417-117155x5
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_020.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 5:24:55 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



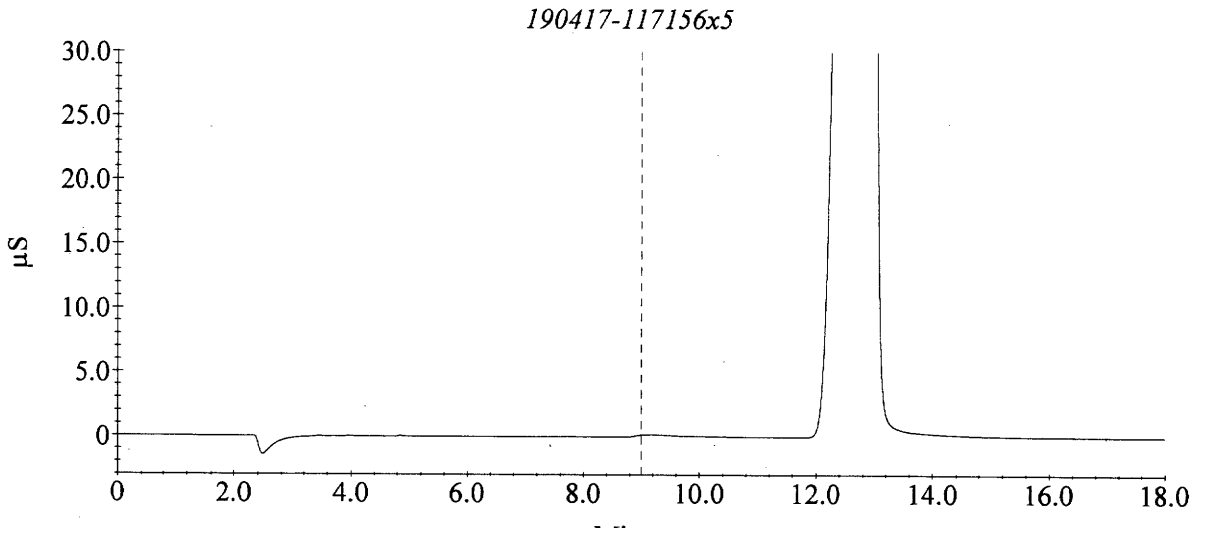
Sample Analysis Report

Sample Name : 190417-117156x5
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_021.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 5:43:01 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



04/01/19

Sample Analysis Report

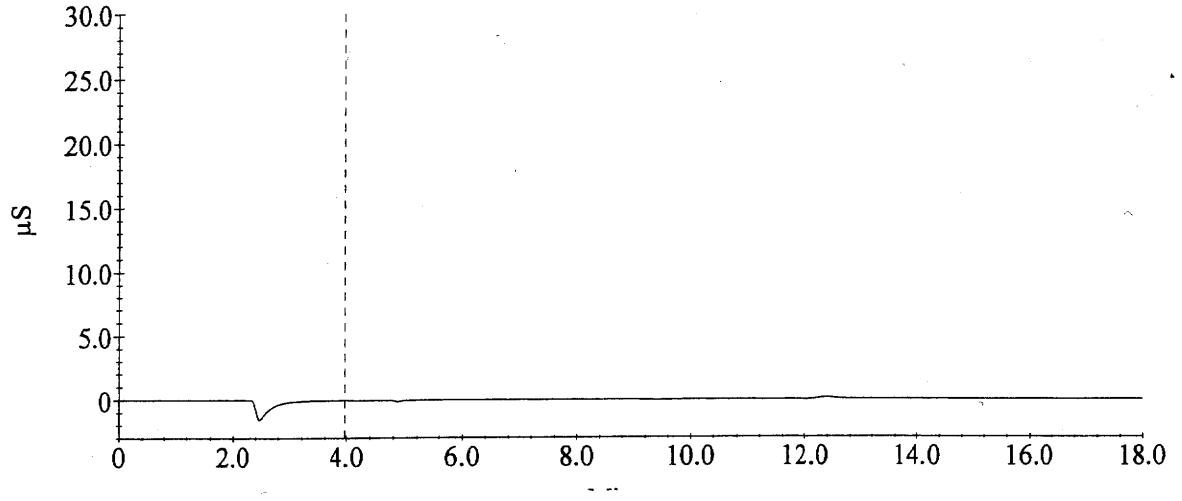
Sample Name : DI Water
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_022.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 6:01:06 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height

DI Water



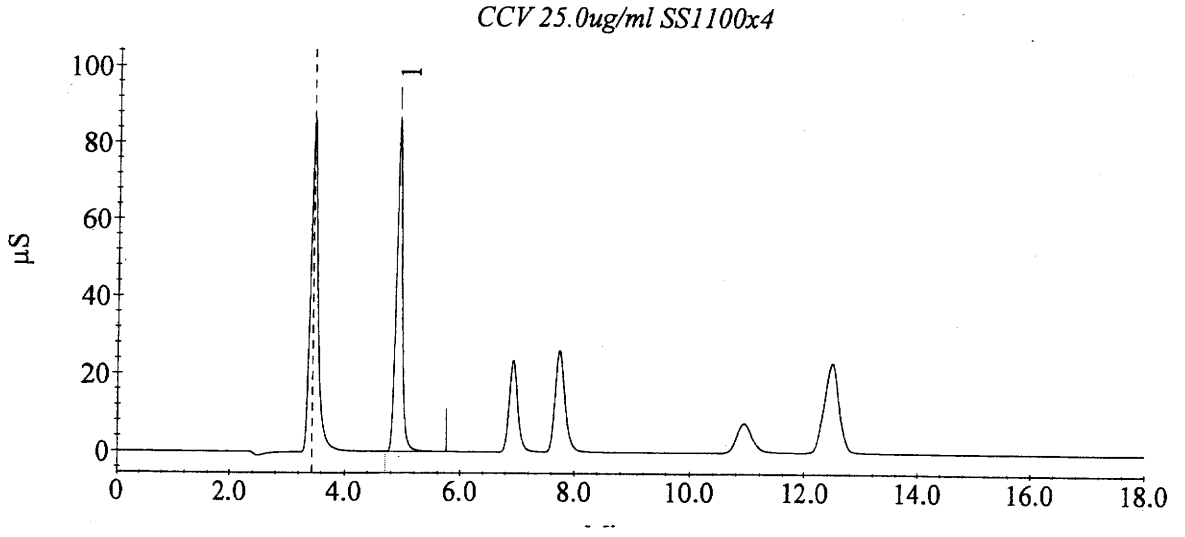
Sample Analysis Report

Sample Name : CCV 25.0ug/ml SS1100x4
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_023.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 6:19:12 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
1	Chloride	4.92	24.102	6427776	867767



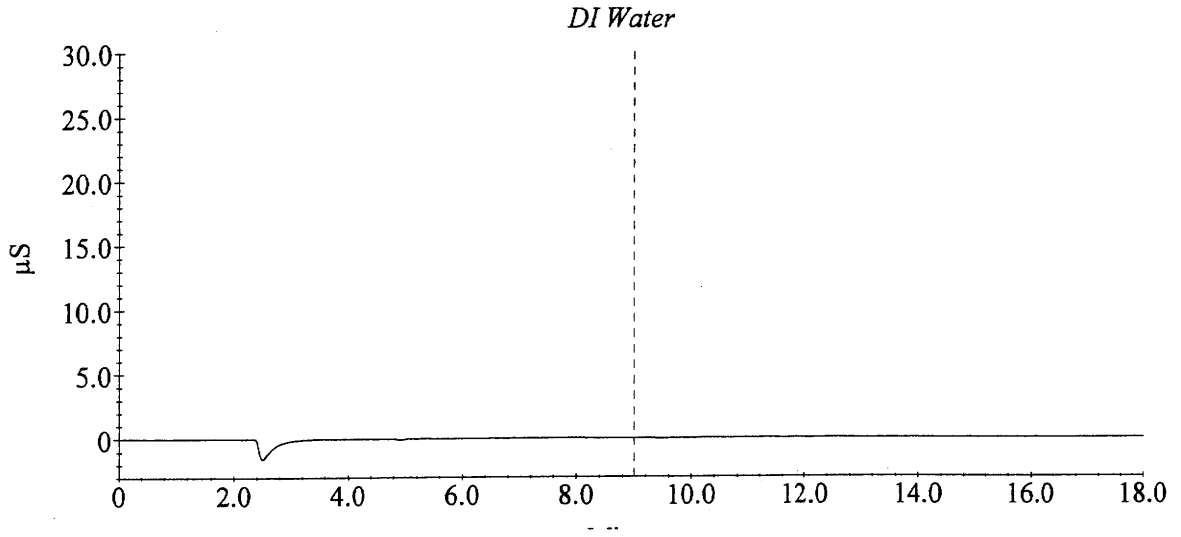
Sample Analysis Report

Sample Name : DI Water
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_024.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 3/29/2019 6:37:18 PM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height



4/1/19

Sample Analysis Report

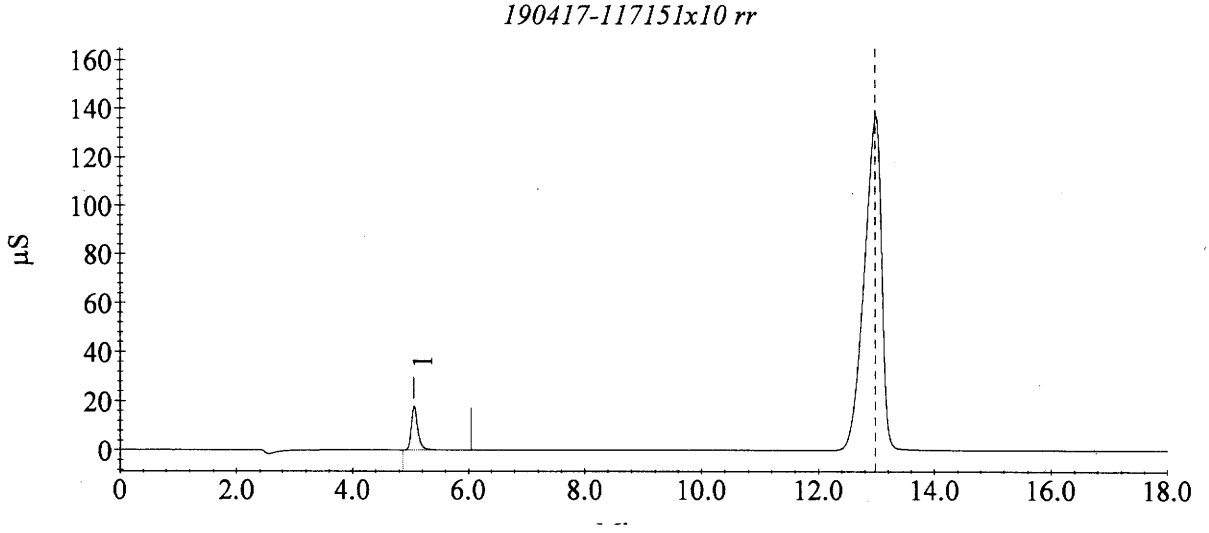
Sample Name : 190417-117151x10 rr
Data File Name : C:\PEAKNET\DATA\2019\032919ANIONS\A_025.DXD

Method File Name : c:\peaknet\method\2018\anions100318.met
Date Time Collected : 4/1/2019 8:24:02 AM
System Operator : JZ/JD

Peak Information : All Peaks

Peak #	Component Name	Retention Time	Amount	Peak Area	Peak Height
~~1~~	~~Chloride~~	~~5.05~~	~~57.509~~	~~1428333~~	~~175860~~

Data not reported
Sample re-ran for confirmation



04/01/19

e	Sample	Sample Type	Method
	DI Water	Sample	anions100318.met
	CCV 25.0ug/ml SS1100x4	Sample	anions100318.met
	SS 25.0ug/ml SS1047x4	Sample	anions100318.met
	Method Blank	Sample	anions100318.met
	LCS 12.5ug/ml SS1100x8	Sample	anions100318.met
	LCSD 12.5ug/ml SS1100x8	Sample	anions100318.met
	MS 12.5 ug/ml 190417-117148x10	Sample	anions100318.met
	MSD 12.5 ug/ml 190417-117148x1	Sample	anions100318.met
	190417-117148x10	Sample	anions100318.met
	190417-117148x10 dup	Sample	anions100318.met
	190417-117149x10	Sample	anions100318.met
	DI Water	Sample	anions100318.met
	CCV 25.0ug/ml SS1100x4	Sample	anions100318.met
	190417-117150x10	Sample	anions100318.met
	190417-117150x10 dup	Sample	anions100318.met
	190417-117151x10	Sample	anions100318.met
	190417-117152x10	Sample	anions100318.met
	190417-117153x10	Sample	anions100318.met
	190417-117154x5	Sample	anions100318.met
	190417-117155x5	Sample	anions100318.met
	190417-117156x5	Sample	anions100318.met
	DI Water	Sample	anions100318.met
	CCV 25.0ug/ml SS1100x4	Sample	anions100318.met
	DI Water	Sample	anions100318.met
	190417-117151x10 rr	Sample	anions100318.met
	DI Water	Sample	anions100318.met
	End	Sample	c:\peaknet\method\2017\anionstop.met

00244 4/1/2019 301 of 694

Schedule File: C:\PeakNet\Schedule\DX-120 2019\032919anions.SCH

Line	Data File	Dilution
1	c:\peaknet\data\2019\032919anions\a_001.dxd	1
2	c:\peaknet\data\2019\032919anions\a_002.dxd	1
3	c:\peaknet\data\2019\032919anions\a_003.dxd	1
4	c:\peaknet\data\2019\032919anions\a_004.dxd	1
5	c:\peaknet\data\2019\032919anions\a_005.dxd	1
6	c:\peaknet\data\2019\032919anions\a_006.dxd	1
7	c:\peaknet\data\2019\032919anions\a_007.dxd	1
8	c:\peaknet\data\2019\032919anions\a_008.dxd	1
9	c:\peaknet\data\2019\032919anions\a_009.dxd	10
10	c:\peaknet\data\2019\032919anions\a_010.dxd	10
11	c:\peaknet\data\2019\032919anions\a_011.dxd	10
12	c:\peaknet\data\2019\032919anions\a_012.dxd	1
13	c:\peaknet\data\2019\032919anions\a_013.dxd	1
14	c:\peaknet\data\2019\032919anions\a_014.dxd	10
15	c:\peaknet\data\2019\032919anions\a_015.dxd	10
16	c:\peaknet\data\2019\032919anions\a_016.dxd	10
17	c:\peaknet\data\2019\032919anions\a_017.dxd	10
18	c:\peaknet\data\2019\032919anions\a_018.dxd	10
19	c:\peaknet\data\2019\032919anions\a_019.dxd	5
20	c:\peaknet\data\2019\032919anions\a_020.dxd	5
21	c:\peaknet\data\2019\032919anions\a_021.dxd	5
22	c:\peaknet\data\2019\032919anions\a_022.dxd	1
23	c:\peaknet\data\2019\032919anions\a_023.dxd	1
24	c:\peaknet\data\2019\032919anions\a_024.dxd	1
25	c:\peaknet\data\2019\032919anions\a_025.dxd	10
26	c:\peaknet\data\2019\032919anions\a_026.dxd	1
27	a	1

Default Method Path: C:\PEAKNET\METHOD\2018
Default Data Path: C:\PEAKNET\DATA\2018\102318ANIONS
Comment:

Appendix B.2
Particulate Laboratory Data

MONTROSE

PARTICULATE
EPA METHOD 5

Project # 002AS-541589
Client/Location Desert View
Sample Location Unit 2
Test # 1-PM-U2

Acetone Blank mg/ml 0.023

Sample Date 3/20/19
Data Analysis Date 3/26/19
Analyst Initials NS

Item	Number	Final Weight (g)	Tare Weight (g)	Gain Weight (mg)	Blank Correction (mg)	Aliquot Correction (ml/ml)	Net Gain (mg/Sample)
1. Glass Fiber Filter	83-3564	0.35310	0.3525	1.1	–	–	1.1
2. Probe and Nozzle Wash (Acetone)	4134	29.0481	29.0478	0.3	2.1	90.8 / 90.8	0.0
Acetone Blank	4135	29.4810	29.4768	4.2	–	183.1 / 183.1	
			NS 3/27/19				

Total Particulate = 1.1 mg

Method of Sample Prep/Notes

MONTROSE

PARTICULATE
EPA METHOD 5

Project # 002AS-541589
Client/Location Desert View
Sample Location Unit 2
Test # 2-PM-U2

Acetone Blank mg/ml 0.023

Sample Date 3/20/19
Data Analysis Date 3/26/19
Analyst Initials NS

Item	Number	Final Weight (g)	Tare Weight (g)	Gain Weight (mg)	Blank Correction (mg)	Aliquot Correction (ml/ml)	Net Gain (mg/Sample)
1. Glass Fiber Filter	83-3586	0.3509	0.3499	1.0	—	—	1.0
2. Probe and Nozzle Wash (Acetone)	41360	29.5620	29.5613	0.7	2.0	85.6 / 85.6	0.0
			NS 3/27/19				

Total Particulate = 1.0 mg

Method of Sample Prep/Notes

MONTROSE

PARTICULATE
EPA METHOD 5

Project # 002AS-541589
Client/Location Desert View
Sample Location Unit 2
Test # 3-PM-U2

Acetone Blank mg/ml 0.023

Sample Date 3/20/19
Data Analysis Date 3/26/19
Analyst Initials HS

Item	Number	Final Weight (g)	Tare Weight (g)	Gain Weight (mg)	Blank Correction (mg)	Aliquot Correction (ml/ml)	Net Gain (mg/Sample)
1. Glass Fiber Filter	83-3585	0.3493	0.3487	6.0	–	–	6.0
2. Probe and Nozzle Wash (Acetone)	4137	29.3149	29.3140	0.9	2.1	93.3 / 93.3	0.0

HS 3/27/19

Total Particulate = 6.0 mg

Method of Sample Prep/Notes

MONTROSE

PARTICULATE
EPA METHOD 5

Project # 002AS-541589
Client/Location Desert View
Sample Location Unit 1
Test # 1-PM-U1

Acetone Blank mg/ml 0.023

Sample Date 3/22/19
Data Analysis Date 3/26/19
Analyst Initials HS

Item	Number	Final Weight (g)	Tare Weight (g)	Gain Weight (mg)	Blank Correction (mg)	Aliquot Correction (ml/ml)	Net Gain (mg/Sample)
1. Glass Fiber Filter	83-3583	0.3568	0.3516	5.2	-	-	5.2
2. Probe and Nozzle Wash (Acetone)	4138	29.4713	29.4706	0.7	2.4	104.3 / 104.3	0.0
				HS 3/27/19			

Total Particulate = 5.2 mg

Method of Sample Prep/Notes

MONTROSE

PARTICULATE
EPA METHOD 5

Project # 002AS-541589
Client/Location Desert View
Sample Location Unit 1
Test # 2-PM-U1

Acetone Blank mg/ml 0.023

Sample Date 3/22/19
Data Analysis Date 3/26/19
Analyst Initials HS

Item	Number	Final Weight (g)	Tare Weight (g)	Gain Weight (mg)	Blank Correction (mg)	Aliquot Correction (ml/ml)	Net Gain (mg/Sample)
1. Glass Fiber Filter	83-3584	0.3564	0.3491	7.3	—	—	7.3
2. Probe and Nozzle Wash (Acetone)	4139	29.5033	29.5013	2.0	1.9	83.7 / 83.7	0.1

HS 3/27/19

Total Particulate = 7.4 mg

Method of Sample Prep/Notes

MONTROSE

PARTICULATE
EPA METHOD 5

Project # 002AS-541589
Client/Location Desert View
Sample Location Unit 1
Test # 3-PM-U1

Acetone Blank mg/ml 0.023

Sample Date 3/22/19
Data Analysis Date 3/26/19
Analyst Initials HS

Item	Number	Final Weight (g)	Tare Weight (g)	Gain Weight (mg)	Blank Correction (mg)	Aliquot Correction (ml/ml)	Net Gain (mg/Sample)
1. Glass Fiber Filter	83-3527 ~~3584~~ *	0.3371	0.3324	4.7	—	—	4.7
2. Probe and Nozzle Wash (Acetone)	4140	29.4660	29.4638	2.2	2.4	105.5/105.5	0 0
			HS 3/27/19				

Total Particulate = 4.7 mg

Method of Sample Prep/Notes
* HS 3/25/19

Appendix B.3
SO_x Laboratory Data

MONTROSE

SULFATE TITRATION

Project #
Client/Location Desert View Power
Sample Location Unit 1
Titrant Used 0.01 N $BaCl_2$

Sample Date 3/19/19
Analysis Date 3/19/19
Analyst Initials

Test Number	Sample Description	Total Vol (ml) (TV)	V_{recon}	V_{evap}	Aliquot Vol (ml) (Va)	Titrant Volume (ml) (Vt)	X-Blank Vol (ml)	Comments	mg/Sample
Blank (V_b): 20 mL 3% H_2O_2 + 80 mL IPA					20 ml	0.07 / 0.08	0.08		
Blank (V_b): 20 mL DI H_2O + 80 mL IPA					20 ml	0.08 / 0.07	0.08	subtracted from Std N = (0.02*Va)/Vt	
Standardization: 15 ml DI H_2O + 5 ml 0.0200 N H_2SO_4 + 80 mL IPA					5 ml	10.42 / 10.41	10.34	N= 0.0096712	
Audit Sample: 5 ml 1000 ppm SO_4+ 15 DI H_2O + 80 mL IPA 5 mg add					5 ml	10.38 / 10.39	10.31	95.72 % recovery	4.86/5.0mg
1-SCx	Fly Ash	510			20 ml	1.50 / 1.51	1.43		
2-SCx	Fly Ash	460			20 ml	1.23 / 1.25	1.16		
3-SCx	Fly Ash	471			20 ml	1.49 / 1.48	1.41		
4-SCx	Fly Ash	483			20 ml	2.31 / 2.35	2.25		
5-SCx	Fly Ash	434			20 ml	2.33 / 2.36	2.27		
6-SCx	Fly Ash	448			20 ml	2.36 / 2.39	2.30		
					mg $H_2SO_4 \cdot 2H_2O$ = (Vt-Vbl) (N) (67) (TV/V_{evap}) (V_{recon}/Va)				

Method of Sample Prep/Analysis Notes

MONTROSE

SULFATE TITRATION

Project # _____
Client/Location Desert View Power
Sample Location Unit 1
Titrant Used 0.01 N $BaCl_2$

Sample Date 3/20/19
Analysis Date 3/20/19
Analyst Initials [illegible]

set up 3/19/19

Test Number	Sample Description	Total Vol (ml) (TV)	V_{recon}	V_{evap}	Aliquot Vol (ml) (Va)	Titrant Volume (ml) (Vt)	X-Blank Vol (ml)	Comments	mg/Sample
Blank (V_b): 20 mL 3% H_2O_2 + 80 mL IPA					20 ml	0.07 / 0.08	0.08		
Blank (V_b): 20 mL DI H_2O + 80 mL IPA					20 ml	0.08 / 0.07	0.08	subtract from sdd N = (0.02*Va)/Vt	
Standardization: 15 ml DI H_2O + 5 ml 0.0200 N H_2SO_4 + 80 mL IPA					5 ml	10.42 / 10.41	10.34	N= 0.0096712	
Audit Sample: 5 ml 1000 ppm SO_4 + 15 DI H_2O + 80 mL IPA					5 ml	10.38 / 10.39	10.31	95.72	4.86/5.0 mg % recovery
1-SOx	Ing Catch	515			20 ml	4.38 / 4.34	4.28		
2-SOx	Ing Catch	448			20 ml	2.05 / 2.03	1.96		
3-SOx	Ing Catch	537			20 ml	2.47 / 2.50	2.41		
4-SOx	Ing Catch	485			20 ml	3.52 / 3.55	3.46		
5-SOx	Ing Catch	475			20 ml	1.74 / 1.74	1.66		
6-SOx	Ing Catch	455			20 ml	2.45 / 2.44	2.37		
7-SOx	Ing Catch	433			20 ml	2.95 / 2.92	2.86		
8-SOx	Ing Catch	479			20 ml	2.88 / 2.92	2.82		
9-SOx	Ing Catch	487			20 ml	1.65 / 1.64	1.57		
10-SOx	Ing Catch	446			20 ml	1.32 / 1.34	1.25		
					mg $H_2SO_4 \cdot 2H_2O$ = (Vt-Vbl) (N) (67) (TV/V_{evap}) (V_{recon}/Va)				

Method of Sample Prep/Analysis Notes

MONTROSE

SULFATE TITRATION

Project #
Client/Location DVP
Sample Location Unit 2
Titrant Used 0.01 N $BaCl_2$

Sample Date 3/21/19
Analysis Date 3/21/19
Analyst Initials

Test Number	Sample Description	Total Vol (ml) (TV)	V_{recon}	V_{evap}	Aliquot Vol (ml) (Va)	Titrant Volume (ml) (Vt)	X-Blank Vol (ml)	Comments	mg/Sample
Blank (V_b): 20 mL 3% H_2O_2 + 80 mL IPA						0.08 0.08	0.08		
Blank (V_b): 20 mL DI H_2O + 80 mL IPA						0.07 0.08	0.08	use N=(0.02*Va)/Vt	
Standardization: 15 ml DI H_2O + 5 ml 0.0200 N H_2SO_4 + 80 mL IPA					5ml	10.32 10.30	10.23	N= 0.0097752	
Audit Sample: 5 ml 1000 ppm SO_4 + 15 DI H_2O + 80 mL IPA					5ml	10.28 10.28	10.20	95.8 % recovery	4.79/5.0
1-SOx	Inj Cocktail	477			20ml	3.69 3.72	3.63		
2-SOx	Inj Cocktail	477			20ml	3.64 3.62	3.55		
3-SOx	Inj Cocktail	508			20ml	3.25 3.28	3.19		
4-SOx	Inj Cocktail	462			20ml	2.74 2.71	2.65		
5-SOx	Inj Cocktail	472			20ml	3.79 3.82	3.73		
6-SOx	Inj Cocktail	445			20ml	2.80 2.82	2.73		
7-SOx	Inj Cocktail	438			20ml	3.65 3.68	3.59		
8-SOx	Inj Cocktail	449			20ml	2.98 2.95	2.89		
9-SOx	Inj Cocktail	451			20ml	2.30 2.31	2.23		
10-SOx	Inj Cocktail	458			20ml	2.25 2.26	2.14		
					mg $H_2SO_4 \cdot 2H_2O$ = (Vt-Vbl) (N) (67) (TV/V_{evap}) (V_{recon}/Va)				

Method of Sample Prep/Analysis Notes

Appendix B.4
Hydrocarbon Laboratory Report

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services
atmaa.com

April 3, 2019

LTR/080/19

Dave Wonderly
Montrose Air Quality Services, LLC
1631 E. Saint Andrew Place
Santa Ana, CA 92705

Re: Desert View Power

Dear Dave:

Please find enclosed the laboratory analysis report, quality assurance summary, and the original chain of custody form for four M25.3 SUMMA canister and water impinger samples received on March 25, 2019.

The SUMMA canisters were analyzed for methane and TGNMO by Method 25.3 including O2 and CO2. The water impingers were analyzed for TOC.

Sincerely,

AtmAA, Inc.

Michael S. Porter
Senior Analyst

AtmAA Inc.
23917 Craftsman Rd., Calabasas, CA 91302 • (818) 223-3277 • FAX (818) 223-8250

environmental consultants
laboratory services
atmaa.com

LABORATORY ANALYSIS REPORT

Organic Carbon Analysis in Water Impinger and Methane & TGNMO Analysis in SUMMA Canister Samples from Impinger/Canister Train Sample Collection

Report Date: April 3, 2019
Client: Montrose Air Quality Services
Project No.: 002AS2-541589
Source Location : Desert View Power
Source ID: Unit 1 / Unit 2

Date Received: March 25, 2019
Date Analyzed: March 25, - 27, 2019

Methane, ethane and total gaseous non-methane organics were measured by flame ionization detection/total combustion analysis (FID/TCA). Organic carbon in water vial samples were measured by Dohrman total organic carbon analyzer, water FID/TCA.

Lab No.	ID	Canister Methane	Canister Ethane	Canister TGNMO	Impinger Carbon	Impinger Volume	Canister Oxygen	Canister Carbon Dioxide	P_1	P2
	Unit 1		(concentration, ppmv)			(ml)	(%v)	(%v)		
10859-7	1A-VOC-U1 (156)	<1	<1	1.63	---	---	9.16	10.2	526	825
	Impinger M35	---	---	---	0.64	1.52	---	---	--	--
10859-8	1B-VOC-U1 (159)	<1	<1	1.09	---	---	9.34	10.2	581	826
	Impinger M36	---	---	---	10.3	1.90	---	---	--	--
	Unit 2									
10859-9	1A-VOC-U2 (272)	<1	<1	1.11	---	---	7.74	11.9	550	824
	Impinger M37	---	---	---	0.60	3.10	---	---	--	--
10859-10	1B-VOC-U2 (296)	<1	<1	1.07	---	---	7.76	11.9	579	822
	Impinger M38	---	---	---	0.59	2.51	---	---	--	--

TGNMO is total gaseous non-methane organics (excluding ethane), reported as ppmvC.
Ethane is reported as ppmvC.
** Note - Impinger sample results are not field blank corrected. The field blank (impinger M39) contained 0.73 ug carbon, corresponding to 0.33 ppm carbon for a 4.54 liter sample.*
P_1 and P_2 are initial and final pressures measured in mm Hg.

Michael S. Porter
Senior Analyst

QUALITY ASSURANCE SUMMARY
(Repeat Analysis)

Source Location : Desert View Power
Date Received: March 25, 2019
Date Analyzed: March 25, - 27, 2019

Components	Sample ID	Repeat Analysis Run #1	Repeat Analysis Run #2	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)			
Methane	1A-VOC-U1 (156)	<1	<1	---	---
	1B-VOC-U1 (159)	<1	<1	---	---
	1A-VOC-U2 (272)	<1	<1	---	---
	1B-VOC-U2 (296)	<1	<1	---	---
Ethane	1A-VOC-U1 (156)	<1	<1	---	---
	1B-VOC-U1 (159)	<1	<1	---	---
	1A-VOC-U2 (272)	<1	<1	---	---
	1B-VOC-U2 (296)	<1	<1	---	---
TGNMO	1A-VOC-U1 (156)	1.60	1.65	1.63	1.5
	1B-VOC-U1 (159)	1.08	1.10	1.09	1.3
	1A-VOC-U2 (272)	1.11	1.12	1.11	0.83
	1B-VOC-U2 (296)	1.06	1.07	1.07	0.34
		(Concentration in %v)			
Oxygen	1A-VOC-U1 (156)	9.28	9.05	9.16	1.28
Carbon Dioxide	1A-VOC-U1 (156)	10.2	10.3	10.2	0.48

		Repeat Analysis Run #1	Repeat Analysis Run #2	Repeat Analysis Run #3	Mean Conc.	% Diff. From Mean
		(Concentration in ppmv)				
Impinger TOC	Impinger M35	0.64	0.62	0.66	0.64	3.1
	Impinger M36	10.2	10.4	10.2	10.3	0.45
	Impinger M37	0.68	0.47	0.66	0.60	9.4
	Impinger M38	0.60	0.56	0.60	0.59	2.3

A set of 4 SUMMA canister/impinger samples, laboratory number 10859-(7 - 10), were analyzed for methane, ethane, total gaseous non-methane organics (TGNMO), TOC, O2, and CO2. Agreement between repeat analysis is a measure of precision and is shown in the column "% Difference from Mean". The average % Difference from Mean for 10 repeat measurements from the sample set of 4 SUMMA canister/impinger samples is 2.1%.

Date: April 3, 2019

AtmAA, Inc.

Laboratory Analysis Data Package

Client:	Montrose Air Quality Services.
Project:	Desert View Power
Project No.:	002AS2-541589
Sample Location:	Unit 1 & 2 / Stack Breaching
Date Received:	March 25, 2019
Date Analyzed:	March 25, - 27, 2019
Lab No.:	10859 - (7 - 10)
	M25.3

Presheet

CLIENT: Montrose

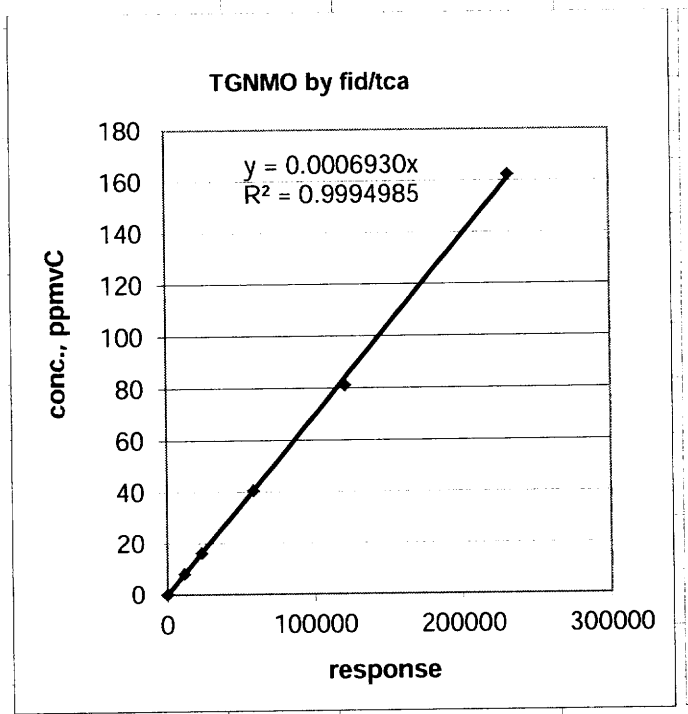
DATE: 3/25/19

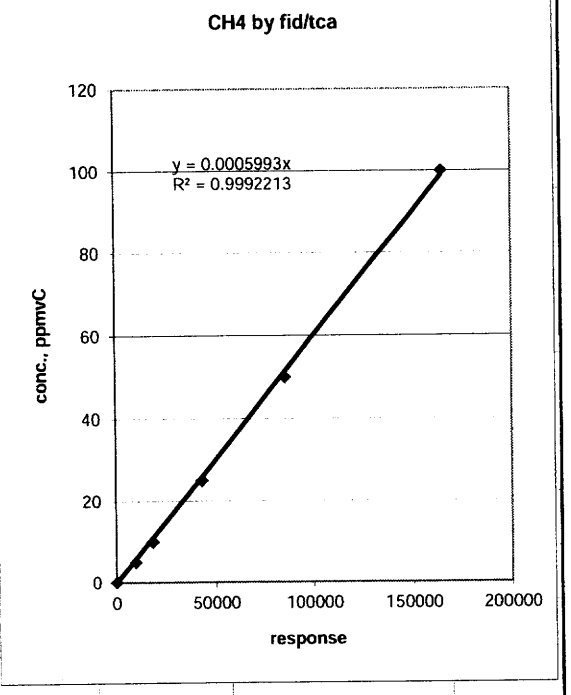
LAB #	SAMPLE ID	CAN/TANK	Trap	P1	P2
10859-7	U1	156	M35	526	825
-8	1	159	M36	581	826
-9	U2	272	M37	550	824
-10	1	296	M38	579	822
-11	blk				

P atm = 740

Samples Pressurized with: N_2

1/16/19		n2 bkg			1010 avg bkg	b1	b2				
	chart										
ALM033827			20x		10x			4x		2x	
co	163735	101	10936	5.05	19661	10.1	44163	25.3	85945	50.5	
ch4	164987	100	9627	5.00	18331	10.0	43155	25.0	85827	50.0	
co2	663904	394	41870	19.7	76655	39.4	203002	98.5	344516	197	
tgnmo	233175	162.3	12515	8.12	24293	16.2	59484	40.6	122071	81.2	
c2	134638	80.9	7127	4.05	14793	8.09	35206	20.2	70342	40.5	
FF9241		low prax	2x								
co											
ch4		4.01		2.01							
co2											
tgnmo		3.00		1.50							
c2		4.00		2.00							
tgnmo	0	ch4									
0	0	0	0								
11505	8.115	9627	5								
23283	16.23	18331	10								
58474	40.575	43155	25								
121061	81.15	85827	50								
232165	162.3	164987	100								





	A	B	C	D	E	F	G	H	I	J
1			Date:	3/26/2019						
2		co2 %		3.62						
3		area co2	bkg	1363	1387					
4							bkg avg	1375		
5			Client:	Montrose						
6				Direct TGNMO						
7										CO2 bkg
8				N2 bkg	959	959				3.62
9						avg	959			1375
10				tgnmo	rf	ch4	rf			
11				162.3		100				from
12		alm033827		232363	0.000699	165900	0.000602			CO2 bkg
13				234018		166480				
14							ch4	% co2	co2 bkg	tgnmo
15	dil	p1	p2	lab#	ch4	tgnmo	ppm			ppm
16	1.8	526	825	10859-7	275	2183	0.47	3.61	1371	1.60
17	1.8	526	825	10859-7	273	2208	0.46	3.61	1371	1.65
18	2.0	581	826	10859-8	225	1909	0.38	3.60	1367	1.08
19	2.0	581	826	10859-8	253	1923	0.43	3.60	1367	1.10
20	2.2	550	824	10859-9	157	1855	0.31	3.62	1375	1.11
21	2.2	550	824	10859-9	177	1863	0.35	3.62	1375	1.12
22	2.4	579	822	10859-10	0	1779	0.00	3.51	1333	1.06
23	2.4	579	822	10859-10	0	1782	0.00	3.51	1333	1.07

following are calculation formulas using sample 10859-7 as an example:

		FOR 25.3 CANISTER
CO	=	E31*E33*C33/B33*A33
CH4	=	G12*E16*C16/B16*A16
TGNMO	=	E12*(F16-I16)*C16/B16*A16
Ethane	=	F29*G33*C33/B33*A33
CO2 bkg	=	J9*H16/J8

low level recovery

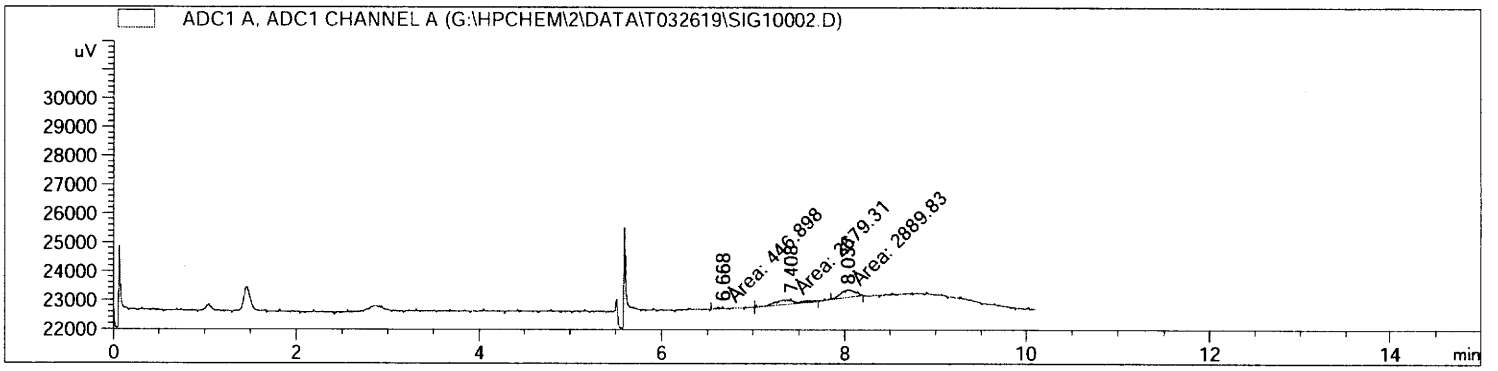
	date	3/26/2019	3/26/2019
	time	8:58:59	14:16:09
	3-point		
	rf tgnmo	0.0006930	
area	n2 bkg	959	959
area	FF9241/2	3126	3143
area	net	2167	2184
ppmv	conc	1.50	1.51
ppmv	theo	1.50	1.50
recovery	%R	100	101
	ethane		
area	net	2890	2838
ppmv	conc	2.00	1.97
ppmv	theo	2.00	2.00
recovery	%R	100	98

QC run before after

	BEFORE	AFTER
date:	3/26/2019	3/26/2019
time:	8:58:59	14:16:09
tgnmo		
ff49942/2		
theoretical	1.50	1.50
actual	1.50	1.51
% difference	0.0	0.7
ethane		
theoretical	2.00	2.00
actual	2.00	1.97
% difference	0.0	1.5

ıta File G:\HPCHEM\2\DATA\T032619\SIG10002.D
Sample Name: audit std

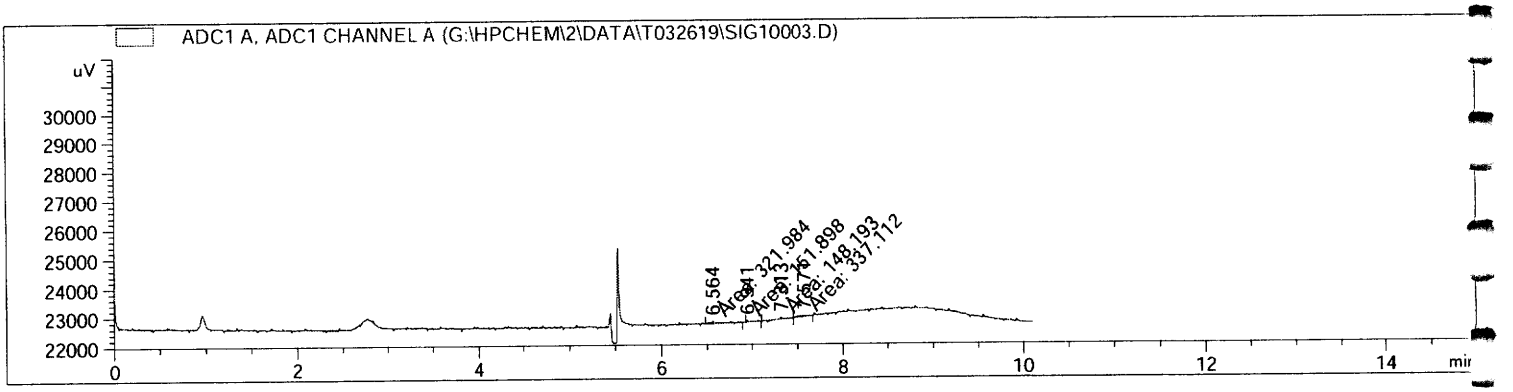
```
==========================================================================
Acq. Operator    :
Acq. Instrument  : TCA #1                          Location : Vial 1
Injection Date   : 3/26/2019 8:58:59 AM
                                                   Inj Volume : Manually
Acq. Method      : G:\4\METHODS\TCA2S.M
Last changed     : 3/26/2019 7:43:26 AM
                   (modified after loading)
Analysis Method  : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed     : 4/3/2019 1:00:02 PM
                   (modified after loading)
Method Info      : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   6.668 MM    0.1031  446.89819   72.22446  7.42845
   2   7.408 MM    0.2633 2679.30518  169.61548 44.53605
   3   8.037 MM    0.1917 2889.83325  251.24159 48.03550

Totals :                  6016.03662  493.08153

==========================================================================
                          *** End of Report ***
```

Data File G:\HPCHEM\2\DATA\T032619\SIG10003.D
Sample Name: n2

```
==========================================================================
Acq. Operator    :
Acq. Instrument  : TCA #1                          Location : Vial 1
Injection Date   : 3/26/2019 9:11:48 AM
                                                   Inj Volume : Manually
Acq. Method      : G:\4\METHODS\TCA2S.M
Last changed     : 3/26/2019 7:43:26 AM
                   (modified after loading)
Analysis Method  : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed     : 4/2/2019 11:25:59 AM
                   (modified after loading)
Method Info      : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   6.564 MM    0.0689  321.98352   77.93585 33.56841
   2   6.941 MM    0.0359  151.89772   70.49413 15.83611
   3   7.313 MM    0.0418  148.19281   59.14359 15.44985
   4   7.571 MM    0.1276  337.11197   44.01886 35.14563

Totals :                   959.18602  251.59243

==========================================================================
                          *** End of Report ***
```

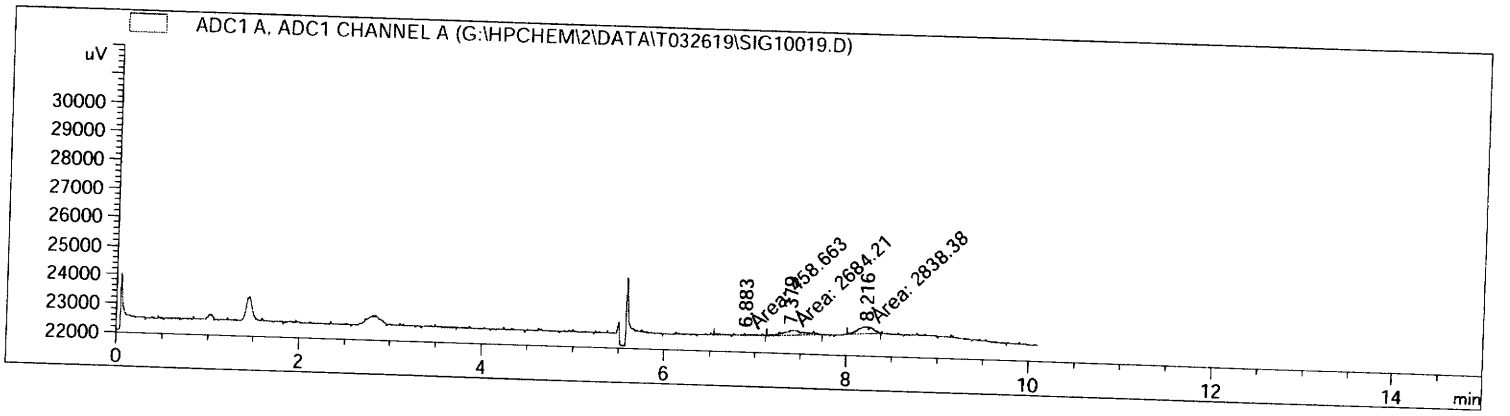
ata File G:\HPCHEM\2\DATA\T032619\SIG10019.D
Sample Name: audit std

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 2:16:09 PM

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2S.M
Last changed : 3/26/2019 2:13:27 PM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/3/2019 1:00:02 PM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	6.883	MM	0.0978	458.66251	78.18000	7.66834
2	7.379	MM	0.2694	2684.21143	166.06151	44.87709
3	8.216	MM	0.1978	2838.37769	239.10536	47.45458

Totals : 5981.25162 483.34687

==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T032619\SIG10020.D
Sample Name: n2

Acq. Operator :
Acq. Instrument : TCA #1
Injection Date : 3/26/2019 2:30:13 PM

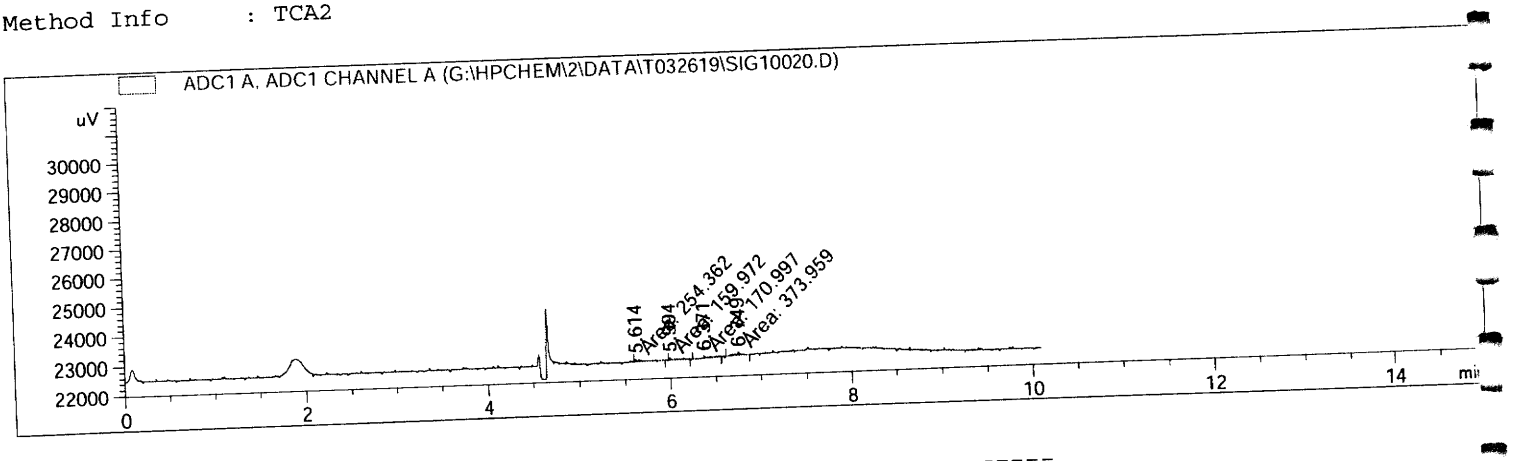
Location : Vial 1

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2S.M
Last changed : 3/26/2019 2:13:27 PM
(modified after loading)

Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)

Method Info : TCA2



Area Percent Report

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	5.614	MM	0.0645	254.36194	65.69952	26.51565
2	5.994	MM	0.0437	159.97232	60.94945	16.67612
3	6.371	MM	0.0420	170.99672	67.78106	17.82534
4	6.749	MM	0.0582	373.95898	107.00152	38.98289
Totals :				959.28996	301.43154	

*** End of Report ***

3/26/2019		PRECISION			
repeat injection precision					
TCA1			N2 bkg		
alm033827			959		
	TGNMO				
Inj. #	conc.	area	rf	%diff from mean	
1	162.3	232363	0.000701	0.36	
2	162.3	234018	0.000696	0.36	
		mean	0.0006989		

Date: March 26, 2019

AtmAA, Inc.

Laboratory Analysis Data Package

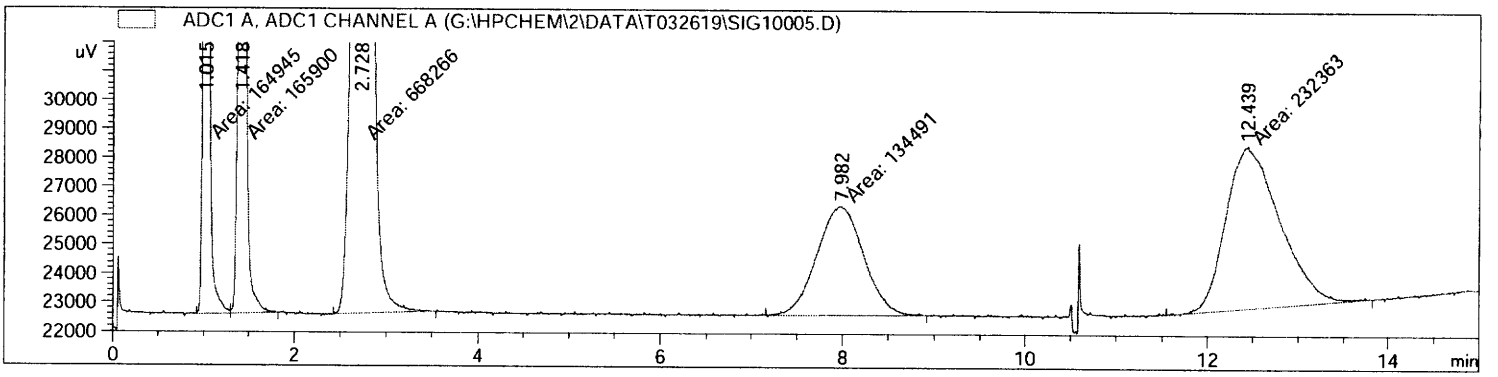
Client: Montrose Air Quality Services
Site: Desert View Power
Project No.: 002AS - 541589
Sample Location: Unit 1 & 2 / Stack Breaching

CANISTER ANALYSIS
CHROMATOGRAMS:
M25.3

ıta File G:\HPCHEM\2\DATA\T032619\SIG10005.D
Sample Name: std

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 9:42:09 AM
Inj Volume : Manually
Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/1/2019 2:17:37 PM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.015	MF	0.0588	1.64945e5	4.67655e4	12.07533
2	1.418	FM	0.0796	1.65900e5	3.47558e4	12.14523
3	2.728	MM	0.1843	6.68266e5	6.04329e4	48.92267
4	7.982	MM	0.5947	1.34491e5	3769.13794	9.84588
5	12.439	MM	0.6886	2.32363e5	5624.25439	17.01088
Totals :				1.36596e6	1.51348e5	

==========

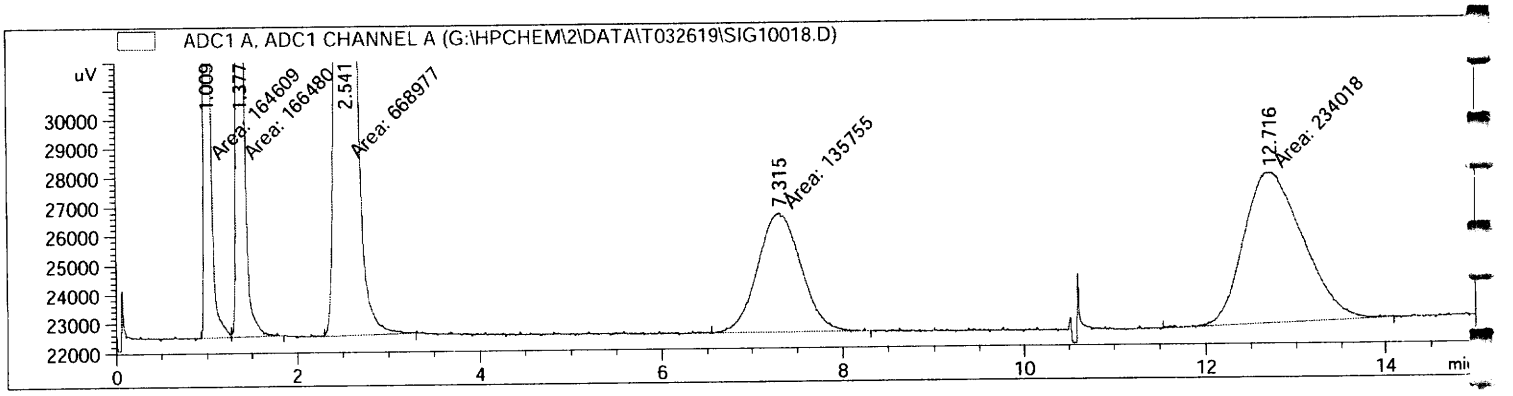
*** End of Report ***

Data File G:\HPCHEM\2\DATA\T032619\SIG10018.D
Sample Name: std

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 1:56:15 PM
Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.009	MF	0.0586	1.64609e5	4.68526e4	12.01668
2	1.377	FM	0.0780	1.66480e5	3.55951e4	12.15323
3	2.541	MM	0.1713	6.68977e5	6.51052e4	48.83618
4	7.315	MM	0.5542	1.35755e5	4082.32202	9.91029
5	12.716	MM	0.7601	2.34018e5	5131.07861	17.08361
Totals :				1.36984e6	1.56766e5	

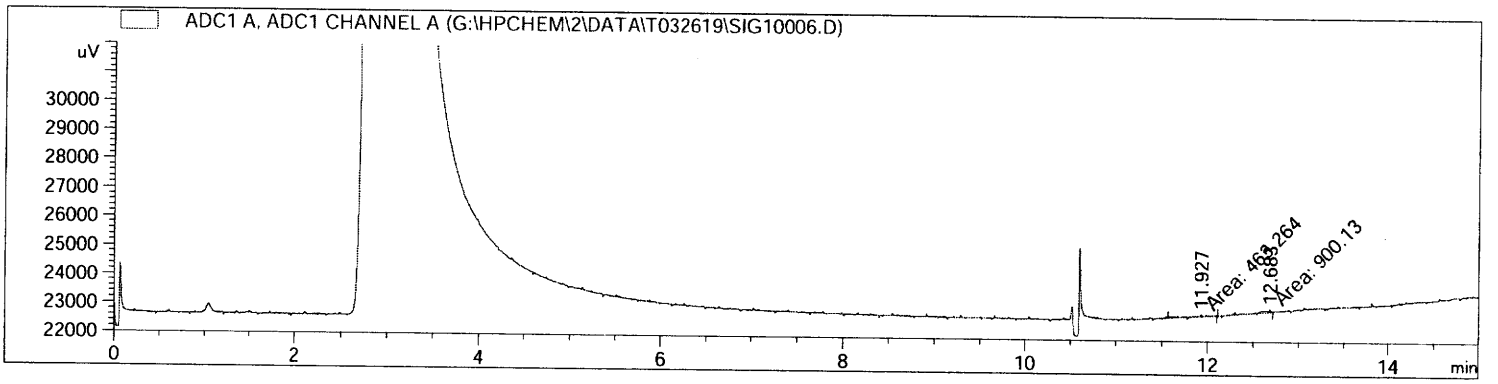
==========

*** End of Report ***

ata File G:\HPCHEM\2\DATA\T032619\SIG10006.D
Sample Name: 3.62% co2bkg

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 10:03:33 AM
Inj Volume : Manually
Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	11.927	MM	0.0773	463.26437	75.43021	33.97876
2	12.683	MM	0.1759	900.12976	85.29755	66.02124
Totals :				1363.39413	160.72776	

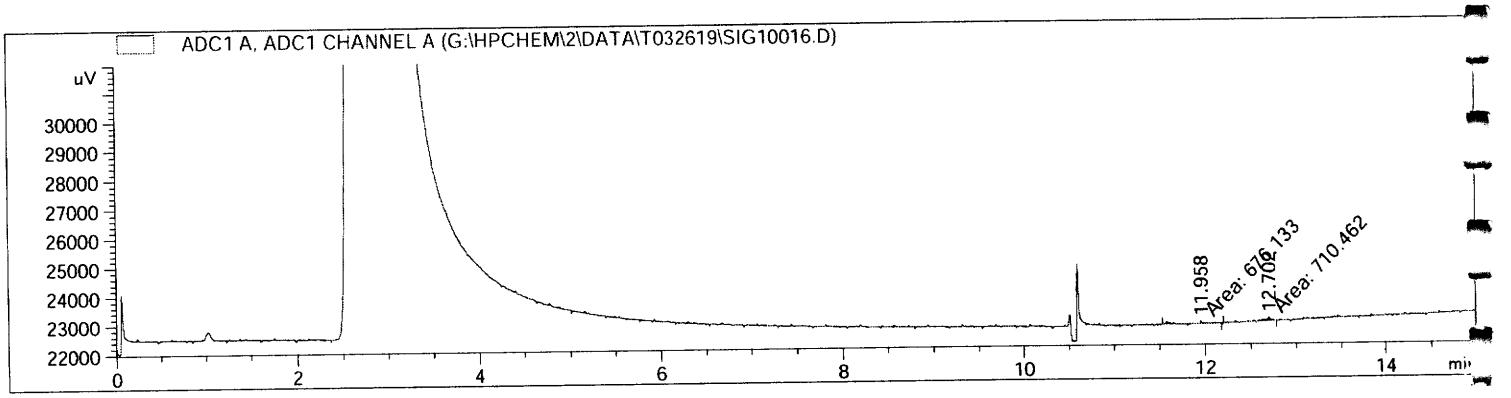
==========

*** End of Report ***

Data File G:\HPCHEM\2\DATA\T032619\SIG10016.D
Sample Name: 3.62% co2bkg

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 1:18:53 PM
Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



Area Percent Report

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

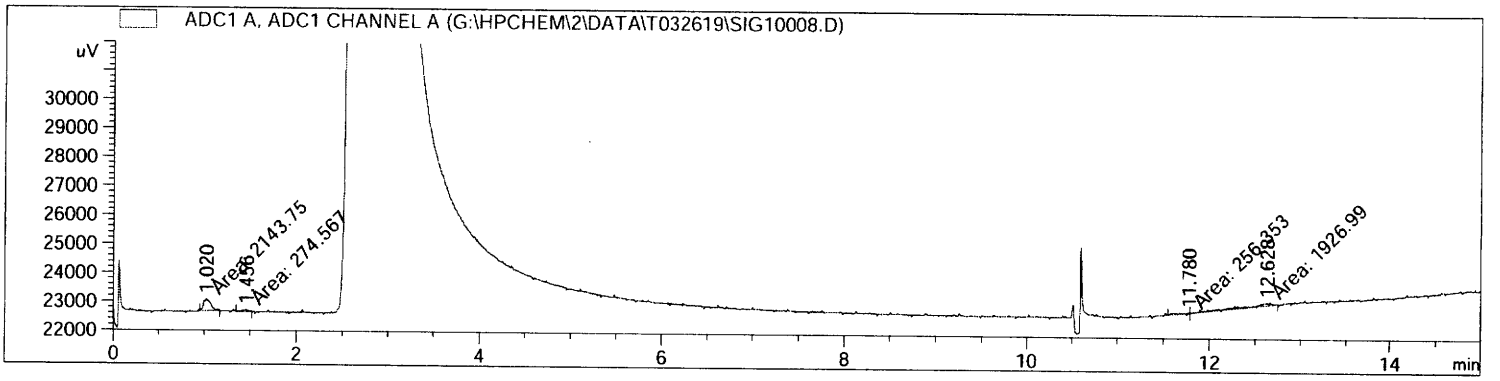
Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	11.958	MM	0.0885	676.13312	96.66479	48.76211
2	12.702	MM	0.1021	710.46204	115.93130	51.23789
Totals :				1386.59515	212.59609	

*** End of Report ***

ıta File G:\HPCHEM\2\DATA\T032619\SIG10008.D
ample Name: 3.62% co2bkg

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 10:43:15 AM
Inj Volume : Manually
Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.020	MM	0.0878	2143.75244	406.77597	46.58651
2	1.456	MM	0.0563	274.56729	81.34135	5.96670
3	11.780	MM	0.2488	256.35321	17.17266	5.57089
4	12.628	MM	0.3585	1926.98621	89.58031	41.87590

Totals : 4601.65915 594.87029

==========

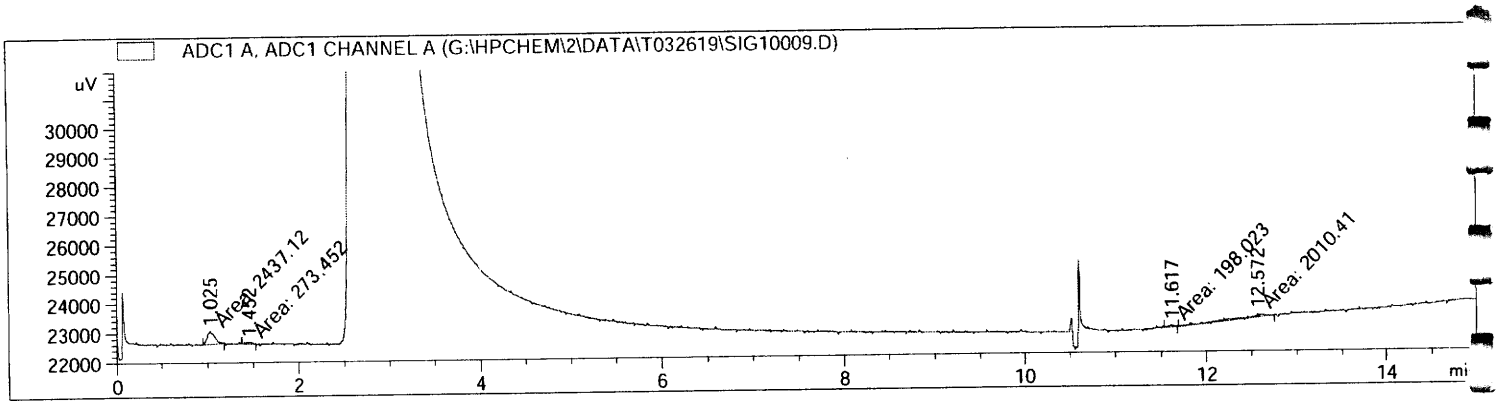
*** End of Report ***

Data File G:\HPCHEM\2\DATA\T032619\SIG10009.D
Sample Name: 3.62% co2bkg

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 11:02:30 AM
Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.025	MM	0.0939	2437.12134	432.37427	49.54498
2	1.452	MM	0.0861	273.45184	52.92614	5.55909
3	11.617	MM	0.0584	198.02269	56.55377	4.02566
4	12.572	MM	0.2012	2010.41150	121.40475	40.87027
Totals :				4919.00737	663.25893	

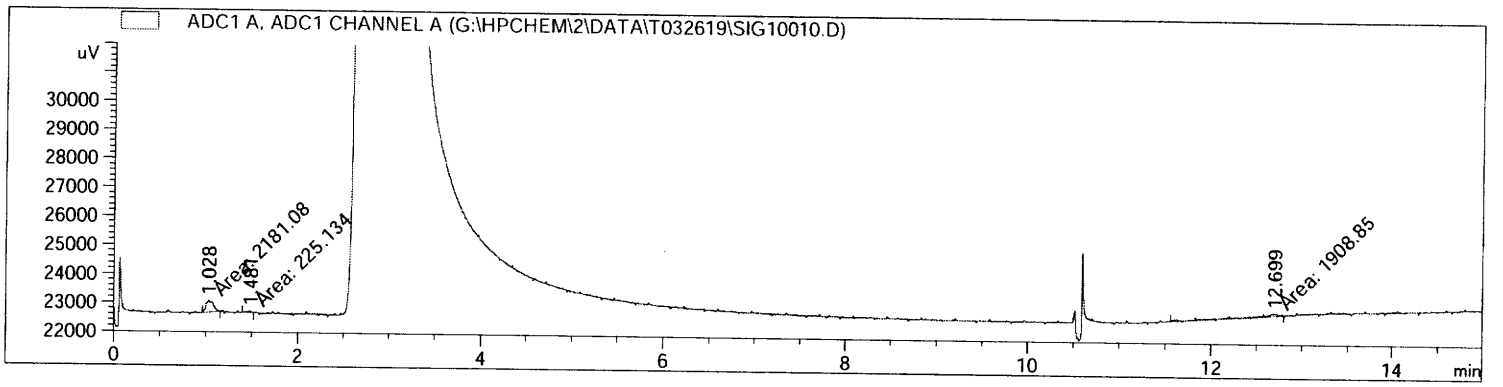
==========

*** End of Report ***

ata File G:\HPCHEM\2\DATA\T032619\SIG10010.D
ample Name: 10809-8

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 11:22:22 AM
Inj Volume : Manually
Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.028	MM	0.0894	2181.07593	406.61792	50.54570
2	1.481	MM	0.0543	225.13382	69.12694	5.21740
3	12.699	MM	0.3844	1908.84741	82.76088	44.23690
Totals :				4315.05716	558.50574	

==========

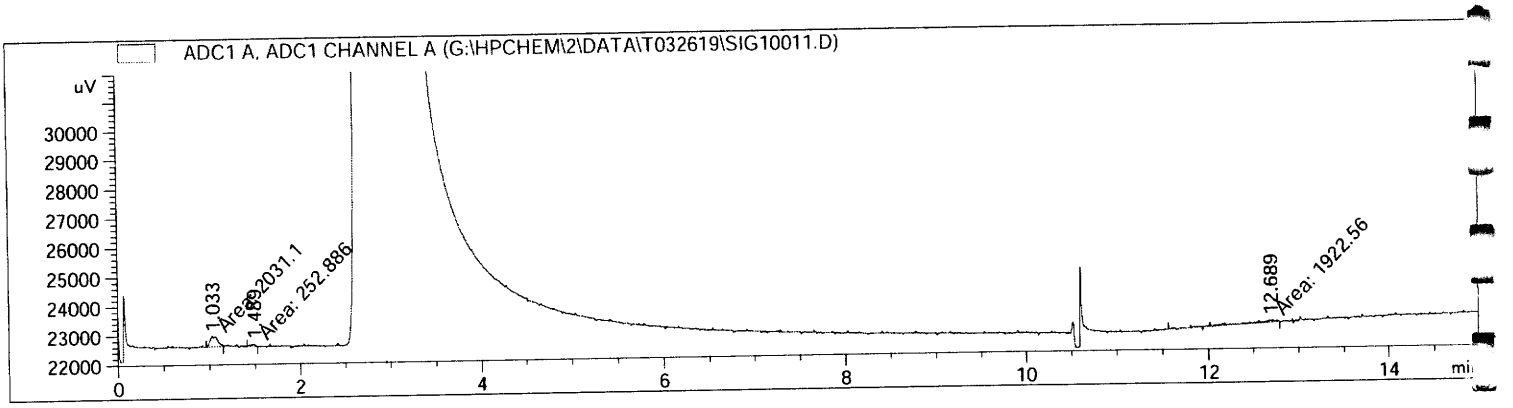
*** End of Report ***

Data File G:\HPCHEM\2\DATA\T032619\SIG10011.D
Sample Name: 10809-8

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 11:41:52 AM Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/3/2019 12:23:11 PM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.033	MM	0.0955	2031.09631	354.50372	48.28428
2	1.489	MM	0.0536	252.88588	78.65780	6.01173
3	12.689	MM	0.3812	1922.55566	69.28616	45.70399
Totals :				4206.53786	502.44768	

==========

*** End of Report ***

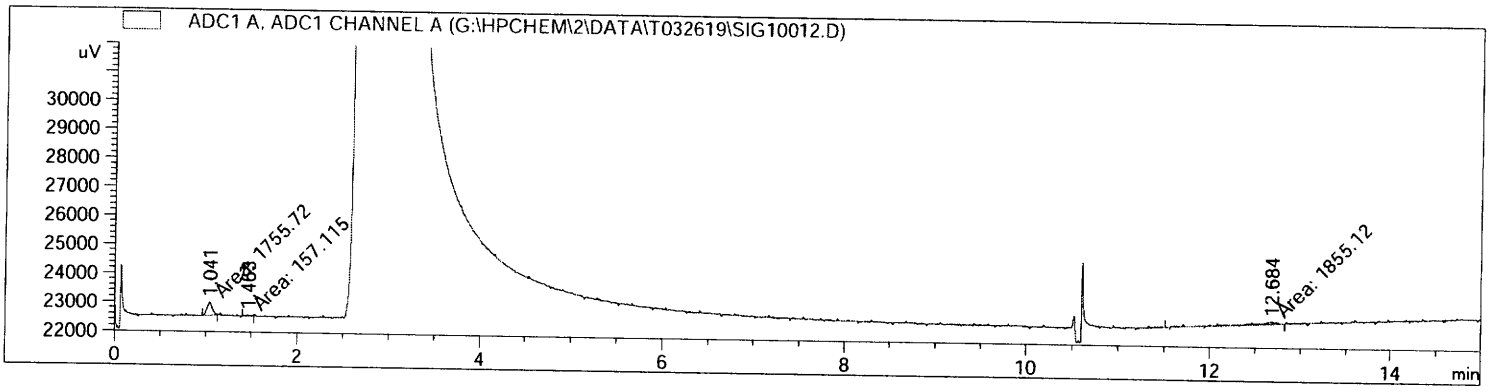
ata File G:\HPCHEM\2\DATA\T032619\SIG10012.D
Sample Name: 10809-9

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 12:01:35 PM

Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.041	MM	0.0655	1755.71680	446.49643	46.59603
2	1.463	MM	0.0649	157.11485	40.34209	4.16977
3	12.684	MM	0.4170	1855.12195	74.14659	49.23420

Totals : 3767.95360 560.98511

==========

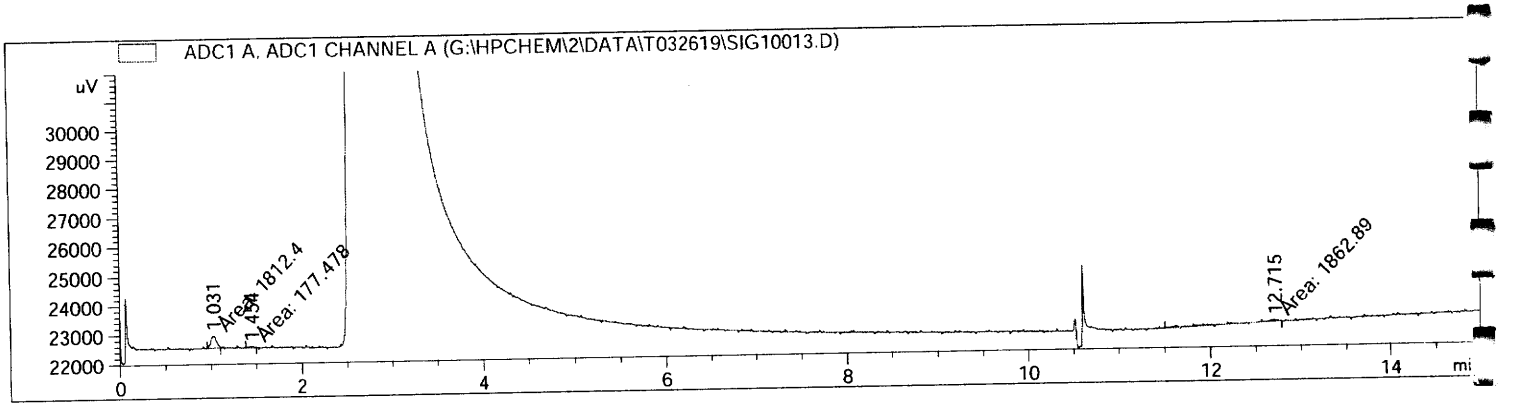
*** End of Report ***

Data File G:\HPCHEM\2\DATA\T032619\SIG10013.D
Sample Name: 10809-9

==========

Acq. Operator :
Acq. Instrument : TCA #1 Location : Vial 1
Injection Date : 3/26/2019 12:20:20 PM Inj Volume : Manually

Acq. Method : G:\4\METHODS\TCA2L.M
Last changed : 3/26/2019 9:23:01 AM
(modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed : 4/2/2019 11:25:59 AM
(modified after loading)
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

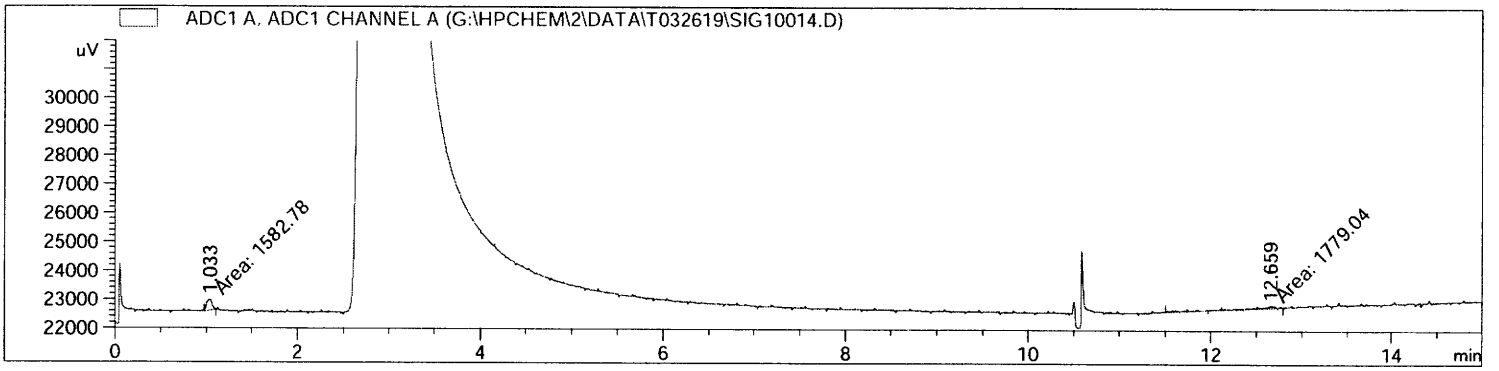
Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	1.031	MM	0.0724	1812.40332	417.25873	47.04153
2	1.454	MM	0.0718	177.47769	41.18505	4.60649
3	12.715	MM	0.5319	1862.89185	58.36868	48.35198
Totals :				3852.77286	516.81246	

==========

*** End of Report ***

ata File G:\HPCHEM\2\DATA\T032619\SIG10014.D
ample Name: 10809-10

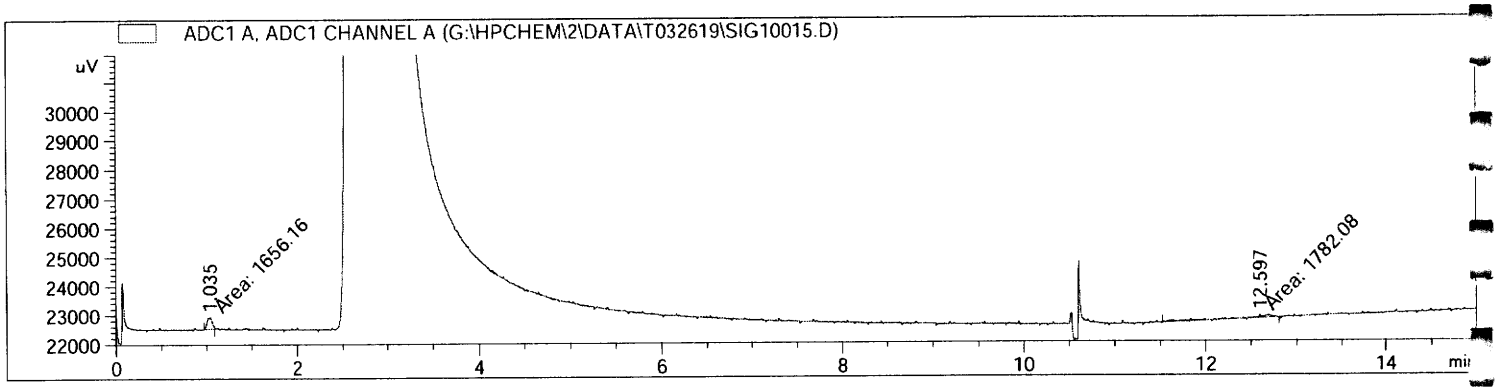
```
==========================================================================
Acq. Operator   :
Acq. Instrument : TCA #1                          Location : Vial 1
Injection Date  : 3/26/2019 12:40:49 PM
                                                  Inj Volume : Manually
Acq. Method     : G:\4\METHODS\TCA2L.M
Last changed    : 3/26/2019 9:23:01 AM
                  (modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed    : 4/3/2019 12:11:07 PM
                  (modified after loading)
Method Info     : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   1.033 MM    0.0668 1582.77832  394.95935 47.08096
   2  12.659 MM    0.4273 1779.04407   69.39893 52.91904

Totals :                  3361.82239  464.35828


==========================================================================
                          *** End of Report ***
```

Data File G:\HPCHEM\2\DATA\T032619\SIG10015.D
Sample Name: 10809-10

```
==========================================================================
Acq. Operator   :
Acq. Instrument : TCA #1                          Location : Vial 1
Injection Date  : 3/26/2019 12:59:42 PM
                                                  Inj Volume : Manually
Acq. Method     : G:\4\METHODS\TCA2L.M
Last changed    : 3/26/2019 9:23:01 AM
                  (modified after loading)
Analysis Method : G:\HPCHEM\4\METHODS\TCA2L.M
Last changed    : 4/2/2019 11:25:59 AM
                  (modified after loading)
Method Info     : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   1.035 MM    0.0692 1656.16406  399.10236 48.16890
   2  12.597 MM    0.2937 1782.07959  101.14198 51.83110

Totals :                  3438.24365  500.24434


==========================================================================
                          *** End of Report ***
```

		date	3/25/2019				
		client	Montrose	PERMS			
					rf		AVG
			ch4	39.39	0.000474	0.000475	0.000474
			co2	40.14	0.000328	0.000326	0.000327
			o2	21.9	#DIV/0!	#DIV/0!	#DIV/0!
			n2	78.1	#DIV/0!	#DIV/0!	#DIV/0!
		STD	ch4	co2	o2	n2	
			83032	122463			
		lab no.	83000	123274			
	1.00	10859-7		19867			
	1.00	10859-7		20060			
	1.00	10859-8		22013			
	1.00	10859-9		24381			
	1.00	10859-10		25749			
	1.00						
	1.00						
	1.00						
	1.00						
	1.00						
	1.00						
	1.00						
	1.00						
				uncorr to			
				p2/p1	%	Dil	
				conc.			
sample vol	total vol		ch4	co2	conc	factor	
20	36	10859-7	0.000	6.49	3.61	1.80	
20	36	10859-7	0.000	6.55	3.64	1.80	
20	40	10859-8	0.000	7.19	3.60	2.00	
20	44	10859-9	0.000	7.97	3.62	2.20	
20	48	10859-10	0.000	8.41	3.51	2.40	

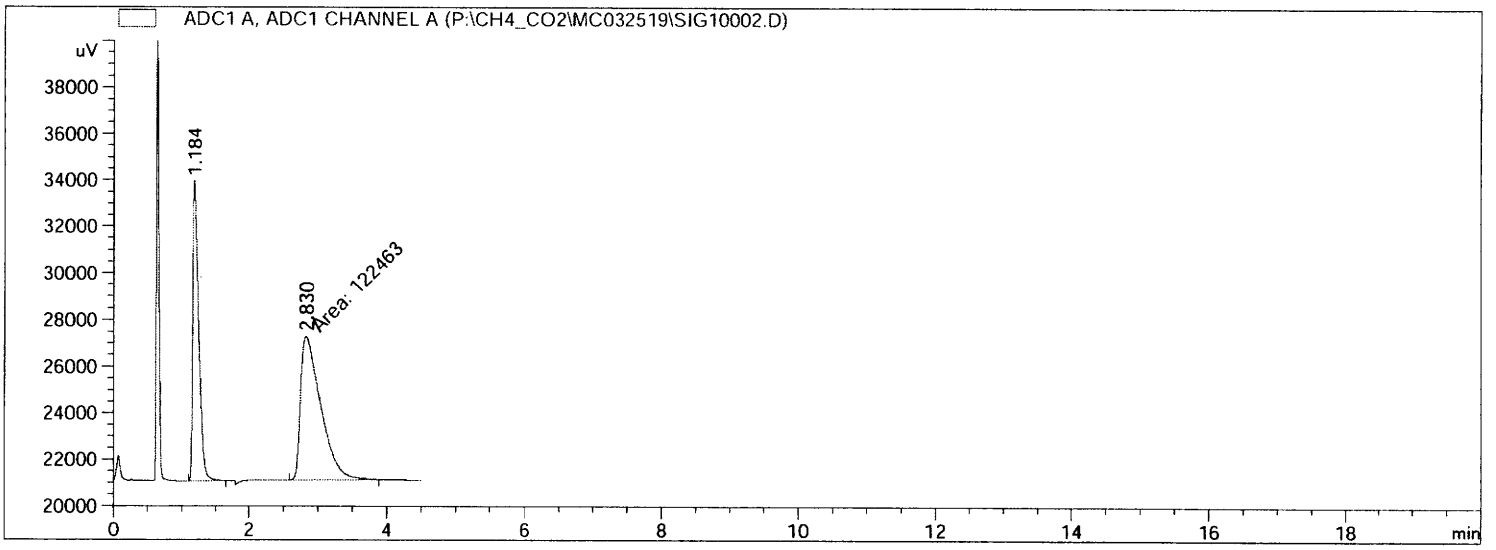
			date	3/25/2019				
			client	Montrose	PERMS			
				avg area		rf		AVG
				ch4	39.39	0.000474	0.000475	0.000474
				co2	40.14	0.000328	0.000326	0.000327
				o2	21.9	0.001324	0.00131	0.001317
				n2	78.1	#DIV/0!	#DIV/0!	#DIV/0!
			STD	ch4	co2	o2	n2	
				83032	122463	16545		
p1	p2		lab no.	83000	123274	16716		
526	825	1.57	10859-7	0	19867	4944		
526	825	1.57	10859-7	0	20060	4830		
581	826	1.42	10859-8	0	22013	5484		
550	824	1.50	10859-9	0	24381	4396		
579	822	1.42	10859-10	0	25749	4648		
		######	0	0	0			
		######	0	0	0			
		######	0	0	0			
		######	0	0	0			
		######	0	0	0			
		######	0					
		######						
		1.00						
		1.00						
		1.00						
		1.00						
					corr to	see		
					p2/p1	Ar/O2		
						sheet		
					conc.			
				ch4	co2	o2	n2	
			10859-7	0.000	10.18	10.21	#DIV/0!	
			10859-7	0.000	10.28	9.98	#DIV/0!	
			10859-8	0.000	10.22	10.27	#DIV/0!	
			10859-9	0.000	11.93	8.67	#DIV/0!	
			10859-10	0.000	11.94	8.69	#DIV/0!	

Oxygen calculation from reported (measured) values:						
1) selection of: dilution by a third substance, assumes O2 and argon are at the same relative proportion as in ambient air.						
2) selection of: consumption - combustion, assumes O2 is consumed, argon is not.						
					Assumption	
					dilution	consumption
o2	ar	sum				combustion
20.95	0.93	21.88				by
	%ar	4.250457			dilution	subtraction
	%o2	95.74954			by relative	of argon
	sum	100			fraction	in air
		21.88*x=20.95				-0.93
		x=20.95/21.88		O2 + Argon	O2	O2
relative fraction		x=	0.957495	measured	calculated	calculated
				%	%	%
		10859-7		10.21	9.78	9.28
		10859-7		9.98	9.55	9.05
		10859-8		10.27	9.83	9.34
		10859-9		8.67	8.30	7.74
		10859-10		8.69	8.32	7.76

Carbon Dioxide by TCD/GC

Data File P:\CH4_CO2\MC032519\SIG10002.D
Sample Name: std

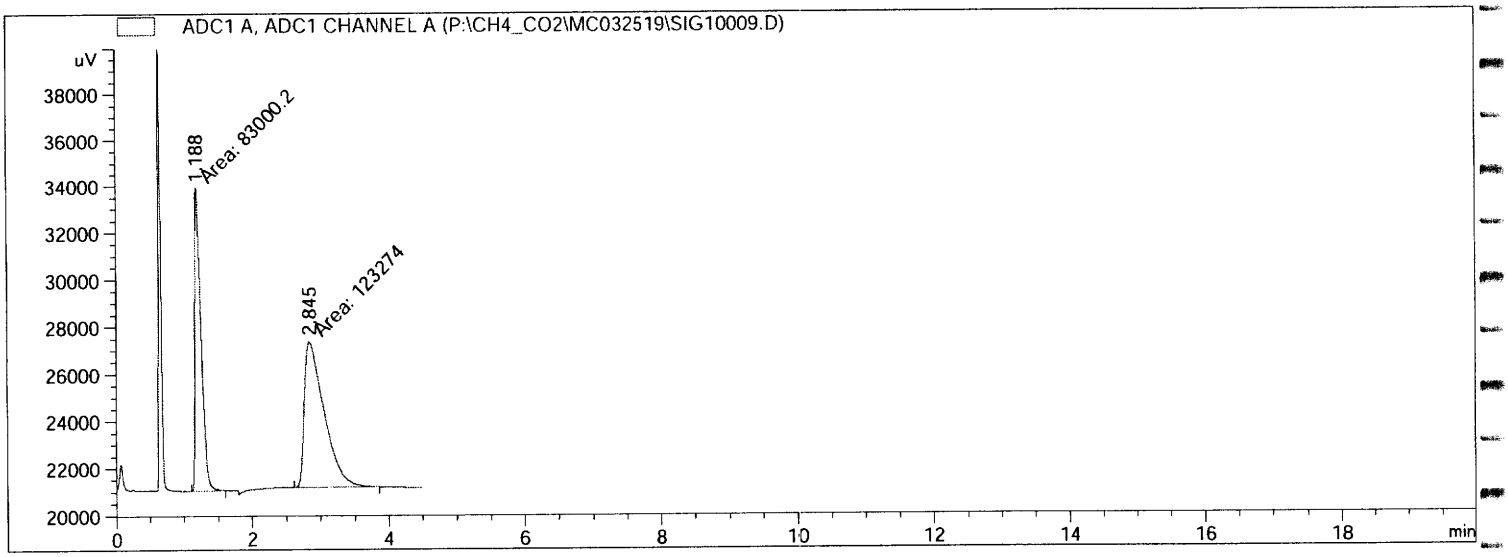
```
==========================================================================
Acq. Operator    :
Acq. Instrument  : CH4CO2                          Location : Vial 1
Injection Date   : 3/25/2019 11:52:59 AM
                                                   Inj Volume : Manually
Acq. Method      : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed     : 2/7/2019 11:23:26 AM
Analysis Method  : G:\HPCHEM\4\METHODS\TCA2SP1.M
Last changed     : 2/26/2019 9:09:12 AM
Method Info      : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   1.184 BB    0.0972 8.30323e4  1.28824e4  40.40595
   2   2.830 MM    0.3301 1.22463e5  6182.92725 59.59405

Totals :                  2.05495e5  1.90653e4


==========================================================================
                          *** End of Report ***
```

Data File P:\CH4_CO2\MC032519\SIG10009.D
Sample Name: std

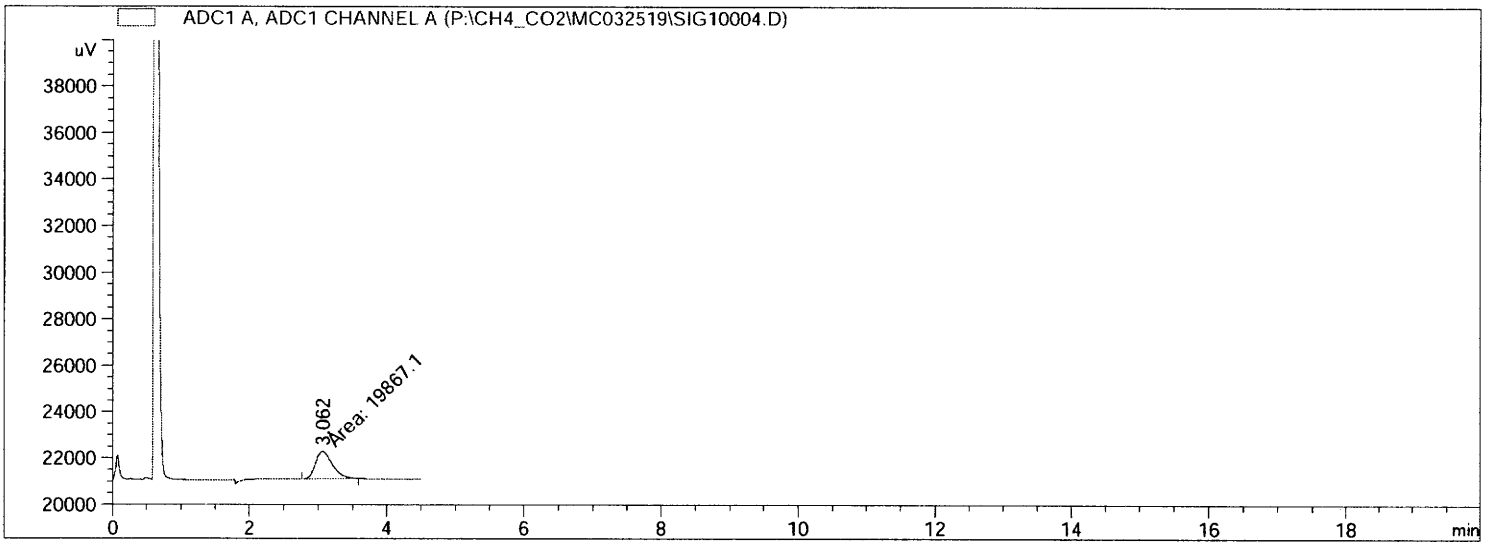
```
==========================================================================
Acq. Operator    :
Acq. Instrument  : CH4CO2                          Location : Vial 1
Injection Date   : 3/25/2019 12:51:30 PM
                                                   Inj Volume : Manually
Acq. Method      : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed     : 2/7/2019 11:23:26 AM
Analysis Method  : G:\HPCHEM\4\METHODS\TCA2SP1.M
Last changed     : 2/26/2019 9:09:12 AM
Method Info      : TCA2
```




```
==========================================================================
                        Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   1.188 MM    0.1073 8.30002e4  1.28952e4  40.23778
   2   2.845 MM    0.3316 1.23274e5  6196.21484 59.76222

Totals :                   2.06274e5  1.90914e4

==========================================================================
                        *** End of Report ***
```

ata File P:\CH4_CO2\MC032519\SIG10004.D
ample Name: 10859-7

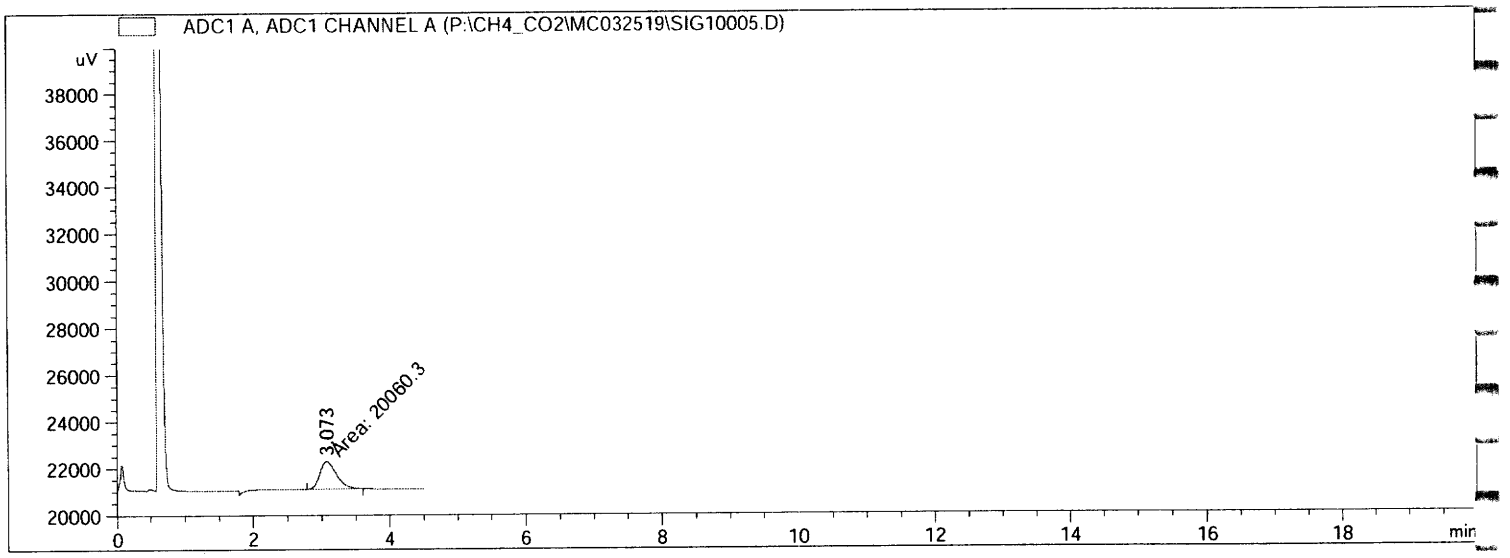
```
======================================================================
Acq. Operator   :
Acq. Instrument : CH4CO2                          Location : Vial 1
Injection Date  : 3/25/2019 12:08:45 PM
                                                  Inj Volume : Manually
Acq. Method     : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed    : 2/7/2019 11:23:26 AM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP1.M
Last changed    : 2/26/2019 9:09:12 AM
Method Info     : TCA2
```




```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [uV*s]      [uV]        %
----|-------|----|-------|----------|----------|--------|
   1   3.062 MM    0.2818 1.98671e4  1175.07739 1.000e2

Totals :                  1.98671e4  1175.07739

======================================================================
                        *** End of Report ***
```

Data File P:\CH4_CO2\MC032519\SIG10005.D
Sample Name: 10859-7

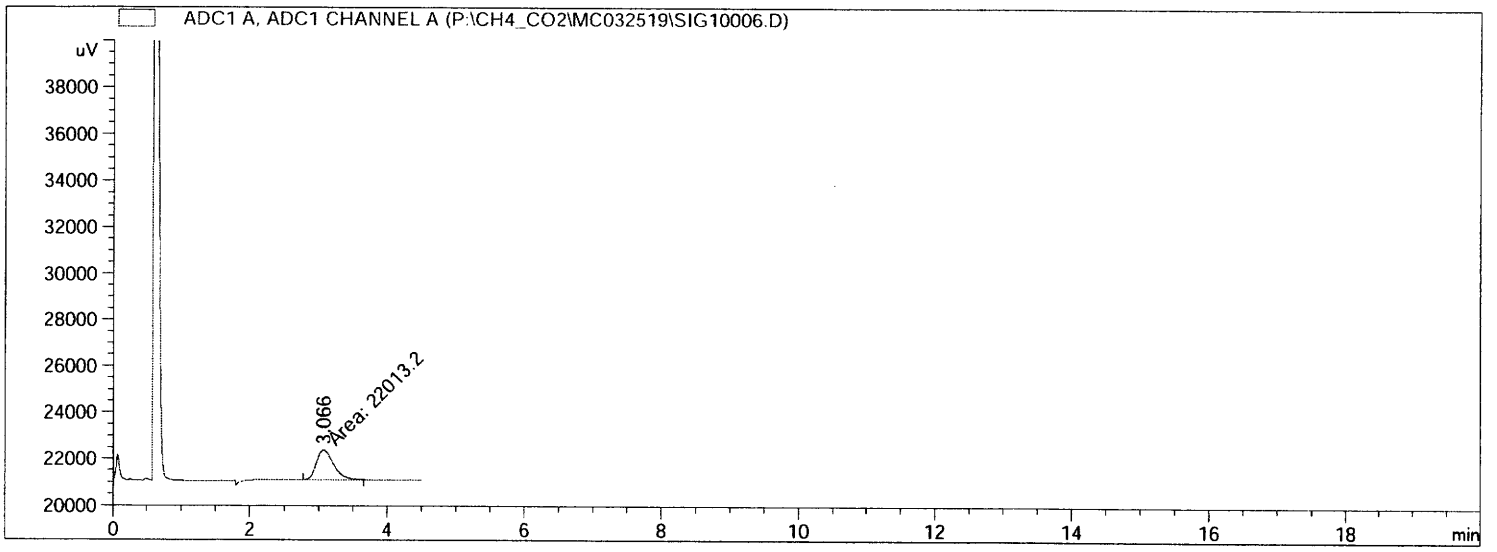
```
=====================================================================
Acq. Operator    :
Acq. Instrument  : CH4CO2                          Location : Vial 1
Injection Date   : 3/25/2019 12:16:22 PM
                                                   Inj Volume : Manually
Acq. Method      : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed     : 2/7/2019 11:23:26 AM
Analysis Method  : G:\HPCHEM\4\METHODS\TCA2SP1.M
Last changed     : 2/26/2019 9:09:12 AM
Method Info      : TCA2
```




```
=====================================================================
                        Area Percent Report
=====================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   3.073 MM    0.2849 2.00603e4  1173.68823 1.000e2

Totals :                   2.00603e4  1173.68823

=====================================================================
                        *** End of Report ***
```

Data File P:\CH4_CO2\MC032519\SIG10006.D
Sample Name: 10859-8

```
======================================================================
Acq. Operator   :
Acq. Instrument : CH4CO2                          Location : Vial 1
Injection Date  : 3/25/2019 12:24:40 PM
                                                  Inj Volume : Manually
Acq. Method     : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed    : 2/7/2019 11:23:26 AM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP1.M
Last changed    : 2/26/2019 9:09:12 AM
Method Info     : TCA2
```

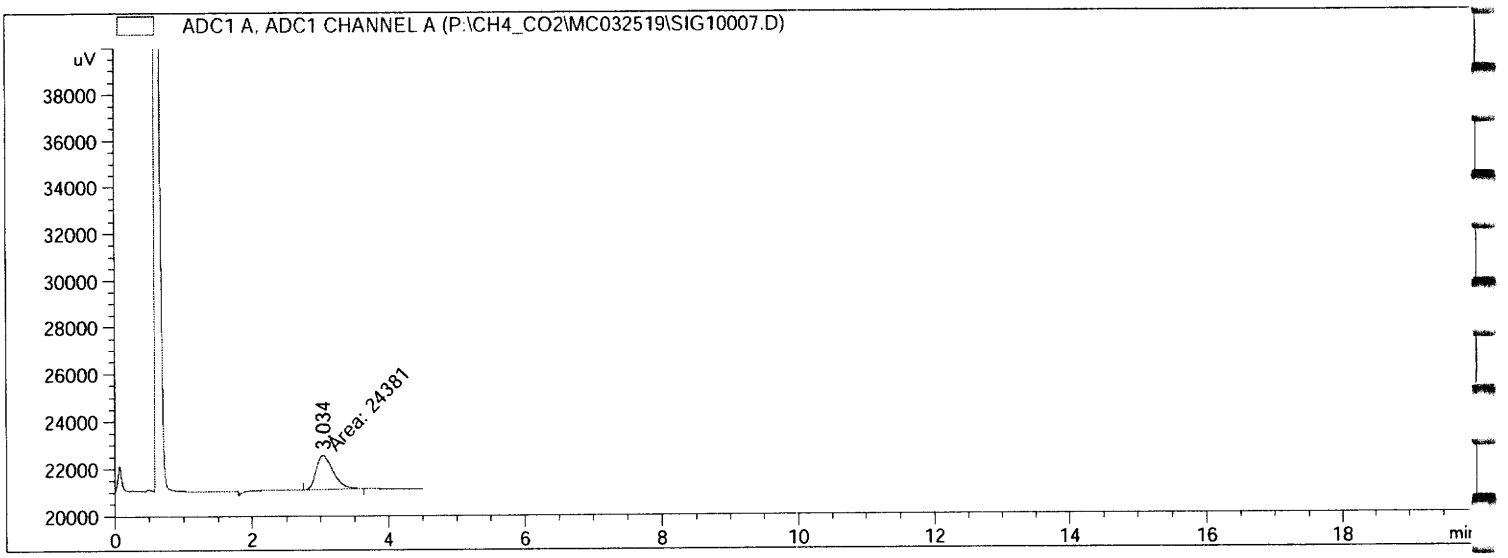



```
======================================================================
                        Area Percent Report
======================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   3.066 MM    0.2847 2.20132e4  1288.60828 1.000e2

Totals :                   2.20132e4  1288.60828

======================================================================
                        *** End of Report ***
```

Data File P:\CH4_CO2\MC032519\SIG10007.D
Sample Name: 10859-9

==========

Acq. Operator :
Acq. Instrument : CH4CO2 Location : Vial 1
Injection Date : 3/25/2019 12:33:19 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed : 2/7/2019 11:23:26 AM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP1.M
Last changed : 2/26/2019 9:09:12 AM
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 A, ADC1 CHANNEL A

Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	3.034	MM	0.2828	2.43810e4	1437.08667	1.000e2

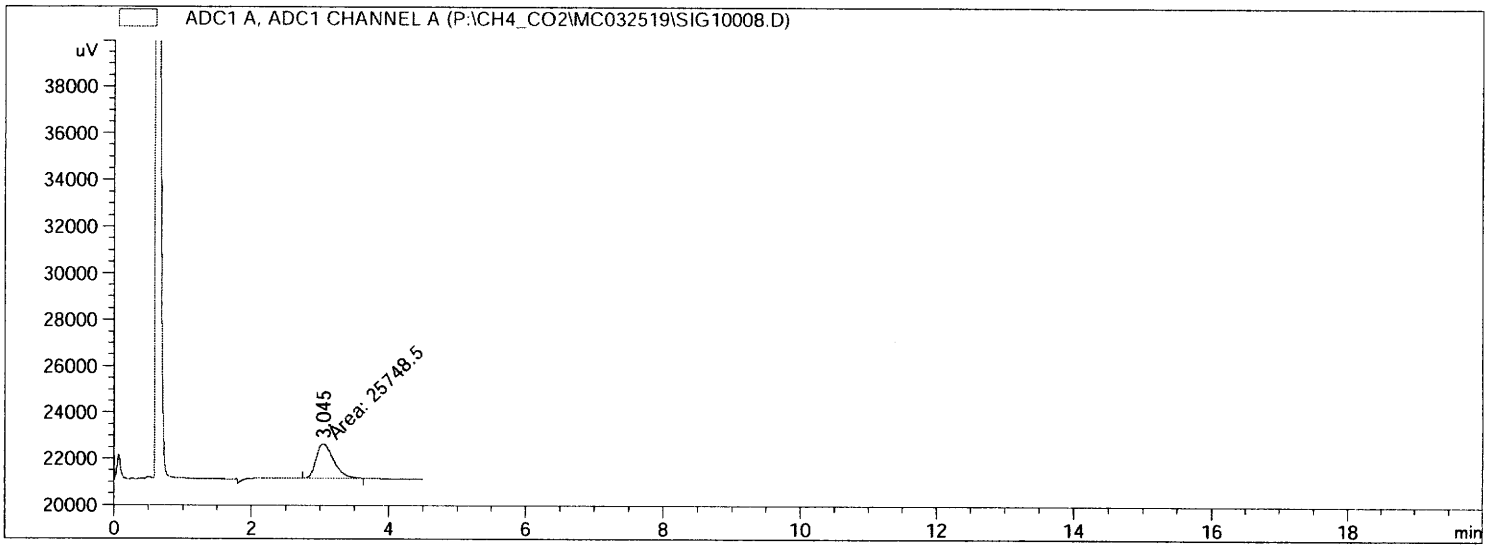
Totals : 2.43810e4 1437.08667

==========

*** End of Report ***

ata File P:\CH4_CO2\MC032519\SIG10008.D
ample Name: 10859-10

```
==========================================================================
Acq. Operator   :
Acq. Instrument : CH4CO2                              Location : Vial 1
Injection Date  : 3/25/2019 12:43:21 PM
                                                    Inj Volume : Manually
Acq. Method     : C:\HPCHEM\1\METHODS\CH4-TCD.M
Last changed    : 2/7/2019 11:23:26 AM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP1.M
Last changed    : 2/26/2019 9:09:12 AM
Method Info     : TCA2
```



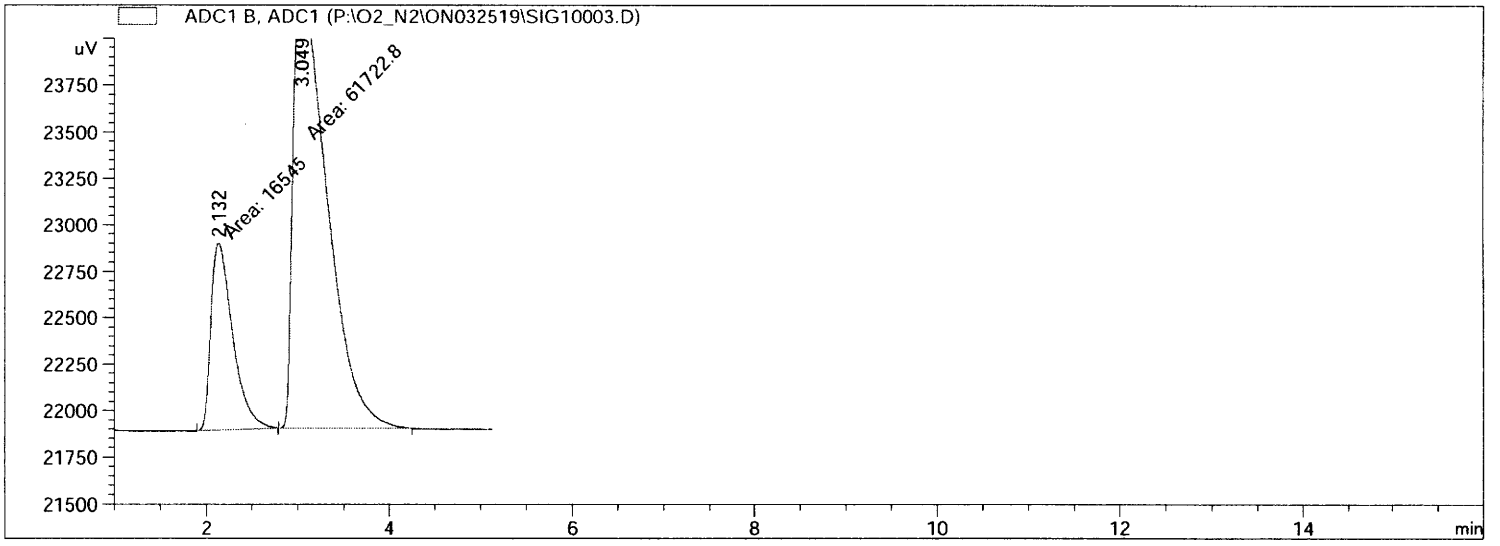

```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 A, ADC1 CHANNEL A

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]   [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   3.045 MM    0.2848 2.57485e4  1506.58276 1.000e2

Totals :                   2.57485e4  1506.58276

==========================================================================
                          *** End of Report ***
```

Oxygen by TCD/GC

Data File P:\O2_N2\ON032519\SIG10003.D
Sample Name: std

==========

Acq. Operator :
Acq. Instrument : O2N2 Location : Vial 1
Injection Date : 3/25/2019 12:02:04 PM
Inj Volume : Manually
Acq. Method : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed : 2/1/2019 1:21:50 PM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP.M
Last changed : 2/26/2019 9:08:33 AM
Method Info : TCA2



==========

Area Percent Report

==========

Sorted By : Signal
Multiplier: : 1.0000
Dilution: : 1.0000
Use Multiplier & Dilution Factor with ISTDs

Signal 1: ADC1 B, ADC1

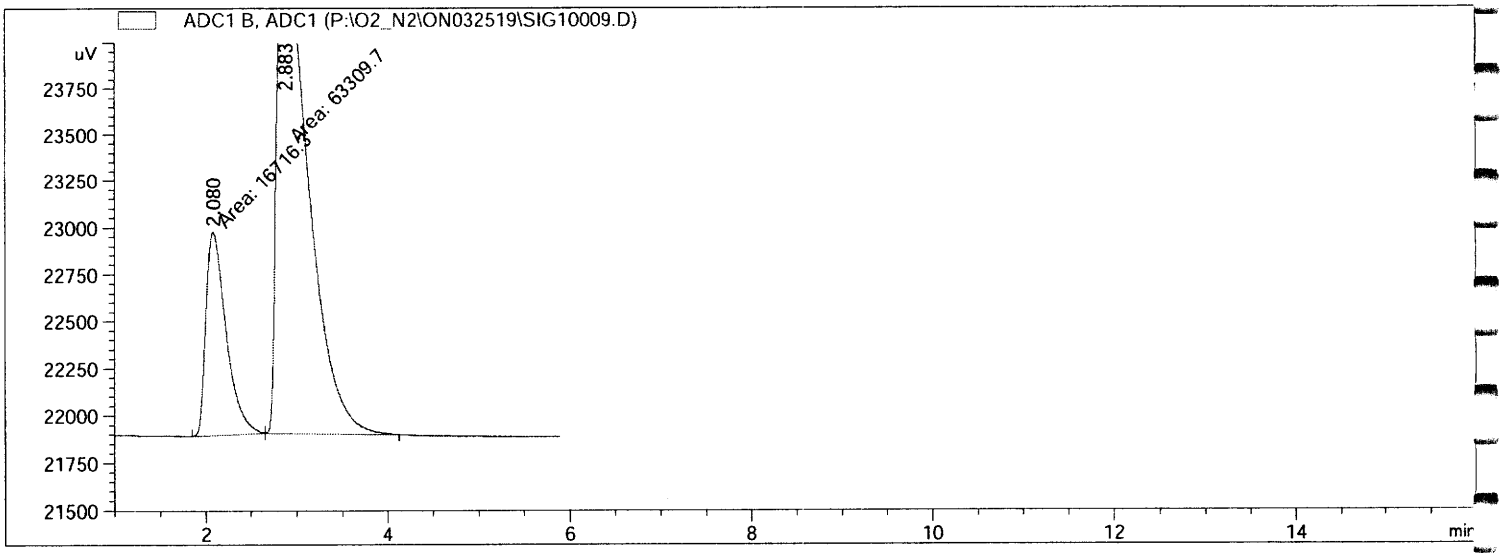
Peak #	RetTime [min]	Type	Width [min]	Area [uV*s]	Height [uV]	Area %
1	2.132	MM	0.2738	1.65450e4	1007.01245	21.13895
2	3.049	MM	0.4287	6.17227e4	2399.76416	78.86105
Totals :				7.82677e4	3406.77661	

==========

*** End of Report ***

Data File P:\O2_N2\ON032519\SIG10009.D
Sample Name: std

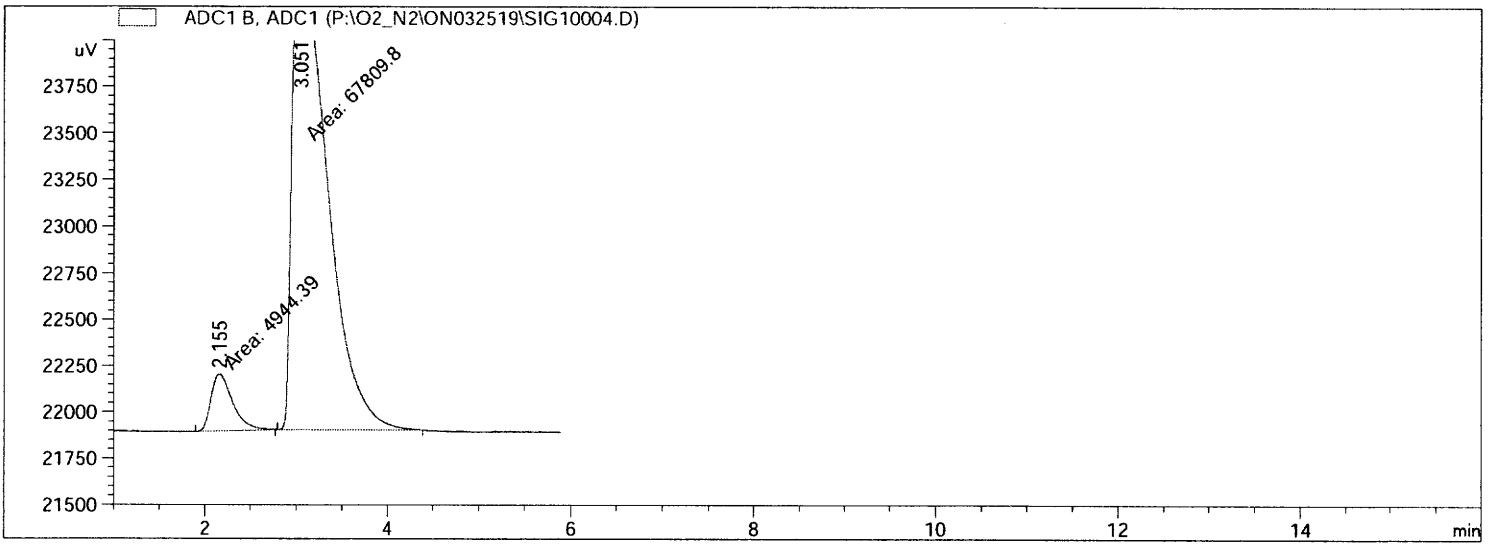
```
==========================================================================
Acq. Operator   :
Acq. Instrument : O2N2                          Location : Vial 1
Injection Date  : 3/25/2019 12:51:14 PM
                                                Inj Volume : Manually
Acq. Method     : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed    : 2/1/2019 1:21:50 PM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP.M
Last changed    : 2/26/2019 9:08:33 AM
Method Info     : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 B, ADC1

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   2.080 MM    0.2577 1.67163e4  1080.92542 20.88858
   2   2.883 MM    0.4056 6.33097e4  2601.19604 79.11142

Totals :                   8.00260e4  3682.12146

==========================================================================
                          *** End of Report ***
```

ata File P:\O2_N2\ON032519\SIG10004.D
Sample Name: 10859-7

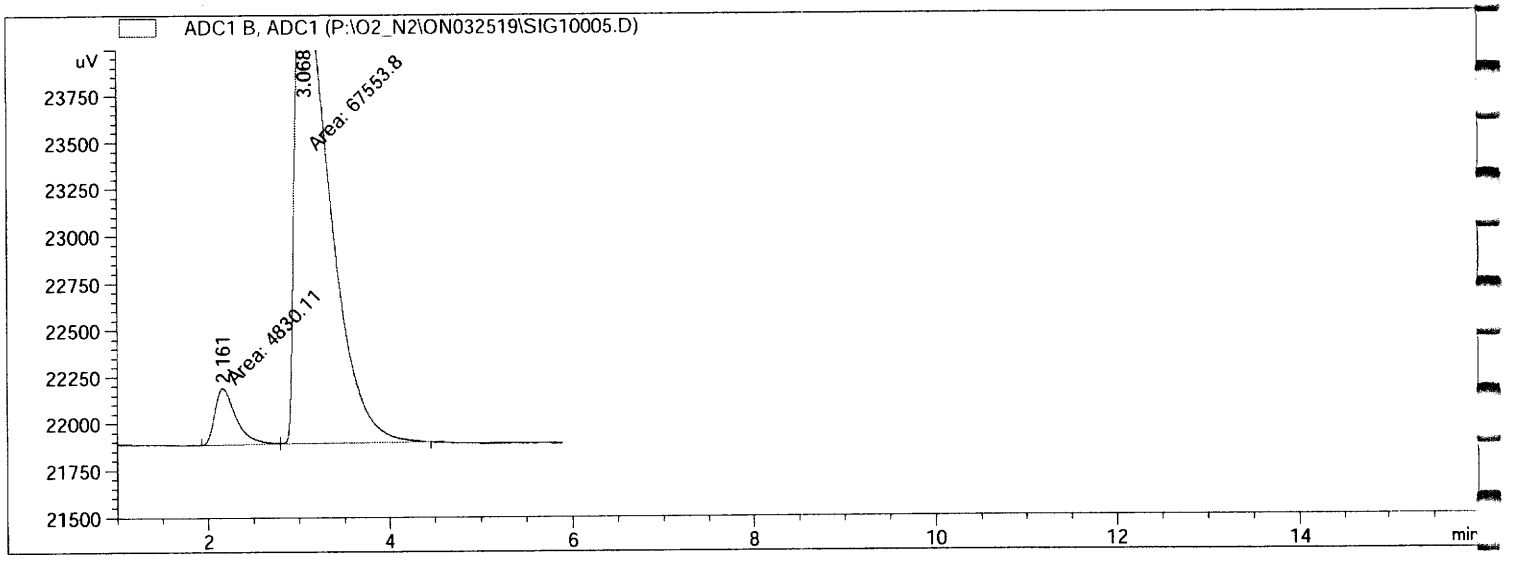
```
==========================================================================
Acq. Operator   :
Acq. Instrument : O2N2                              Location : Vial 1
Injection Date  : 3/25/2019 12:08:27 PM
                                                   Inj Volume : Manually
Acq. Method     : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed    : 2/1/2019 1:21:50 PM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP.M
Last changed    : 2/26/2019 9:08:33 AM
Method Info     : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 B, ADC1

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   2.155 MM    0.2688 4944.39355  306.58606  6.79603
   2   3.051 MM    0.4357 6.78097e4  2593.80664 93.20397

Totals :                  7.27541e4  2900.39270

==========================================================================
                          *** End of Report ***
```

Data File P:\O2_N2\ON032519\SIG10005.D
Sample Name: 10859-7

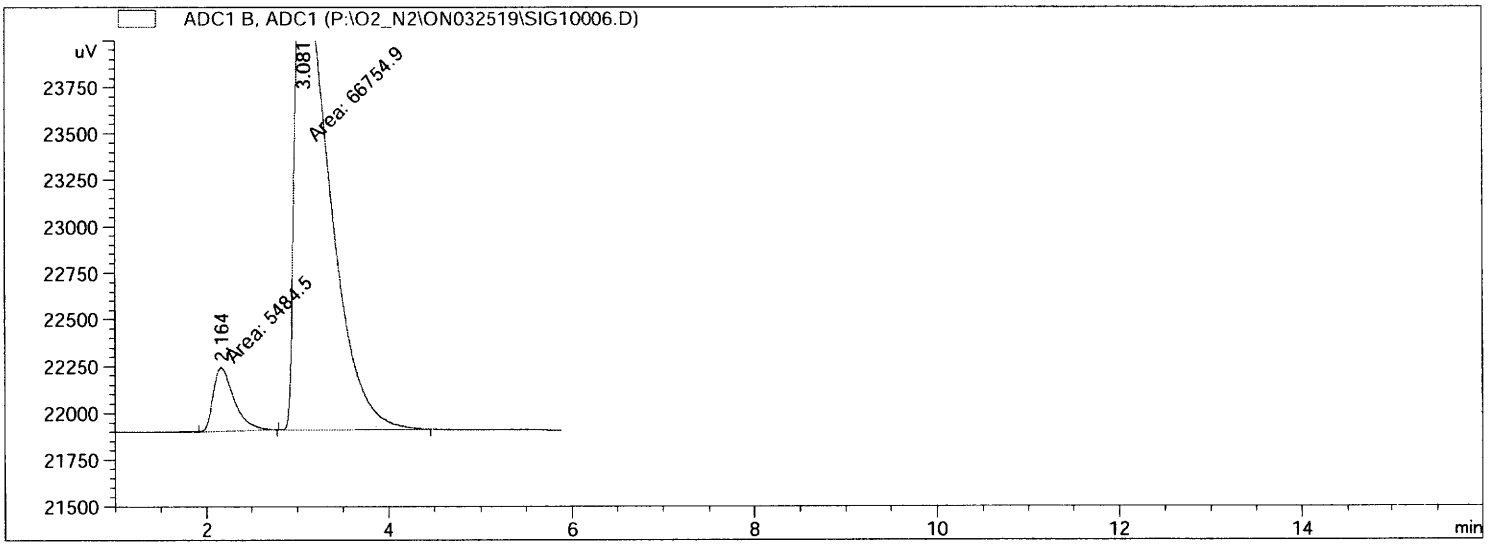
```
==========================================================================
Acq. Operator    :
Acq. Instrument  : O2N2                              Location : Vial 1
Injection Date   : 3/25/2019 12:16:00 PM
                                                     Inj Volume : Manually
Acq. Method      : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed     : 2/1/2019 1:21:50 PM
Analysis Method  : G:\HPCHEM\4\METHODS\TCA2SP.M
Last changed     : 2/26/2019 9:08:33 AM
Method Info      : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 B, ADC1

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   2.161 MM    0.2672 4830.11182  301.33395  6.67291
   2   3.068 MM    0.4376 6.75538e4  2572.83887 93.32709

Totals :                  7.23839e4  2874.17282

==========================================================================
                          *** End of Report ***
```

ata File P:\O2_N2\ON032519\SIG10006.D
ample Name: 10859-8

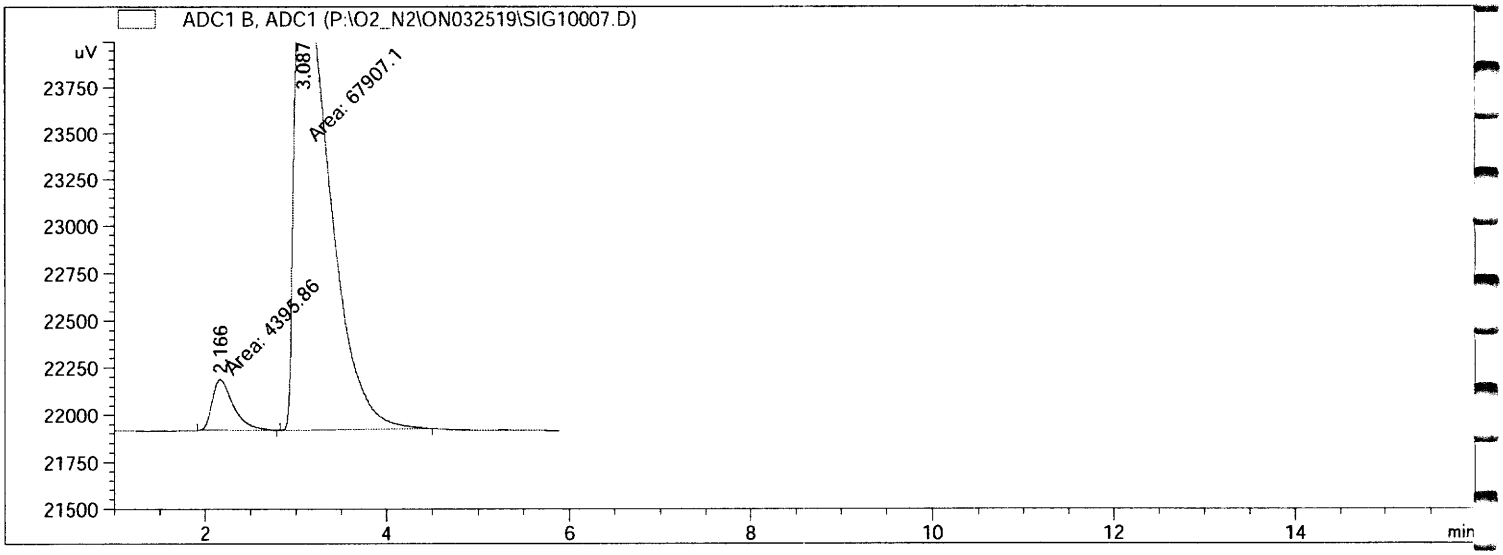
```
==========================================================================
Acq. Operator   :
Acq. Instrument : O2N2                              Location : Vial 1
Injection Date  : 3/25/2019 12:24:24 PM
                                                   Inj Volume : Manually
Acq. Method     : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed    : 2/1/2019 1:21:50 PM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP.M
Last changed    : 2/26/2019 9:08:33 AM
Method Info     : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 B, ADC1

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   2.164 MM    0.2694 5484.49512  339.26797  7.59212
   2   3.081 MM    0.4387 6.67549e4  2536.18359 92.40788

Totals :                  7.22393e4  2875.45157

==========================================================================
                          *** End of Report ***
```

Data File P:\O2_N2\ON032519\SIG10007.D
Sample Name: 10859-9

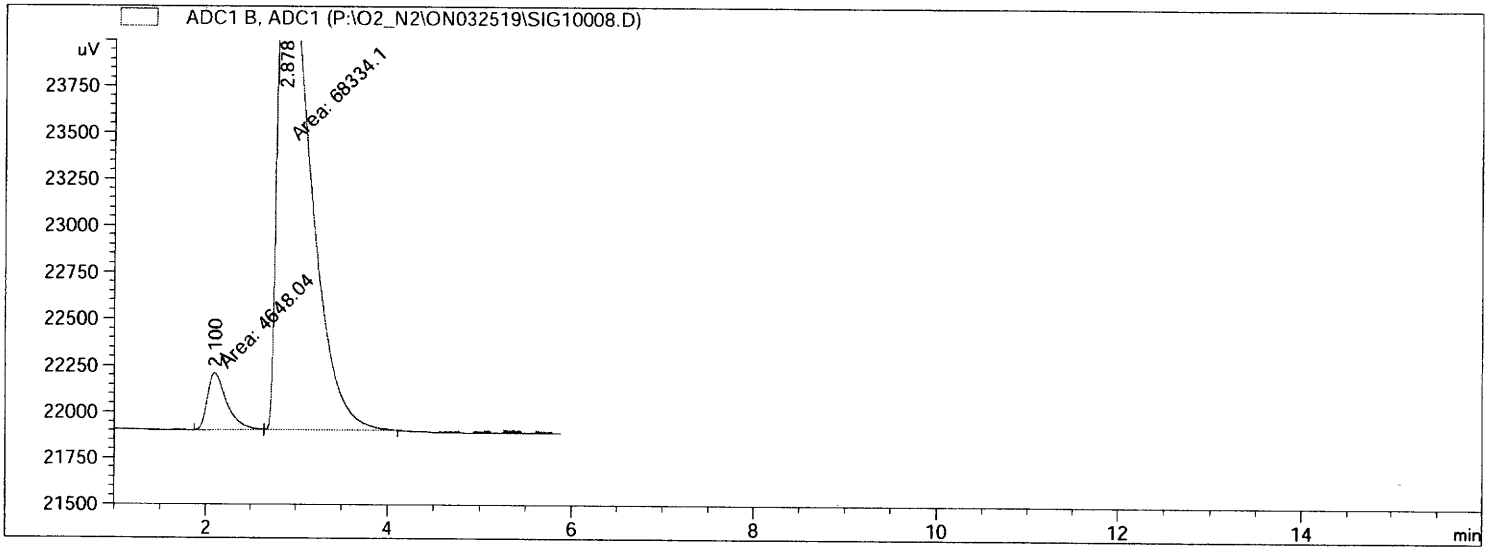
```
==========================================================================
Acq. Operator    :
Acq. Instrument  : O2N2                              Location : Vial 1
Injection Date   : 3/25/2019 12:33:03 PM
                                                     Inj Volume : Manually
Acq. Method      : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed     : 2/1/2019 1:21:50 PM
Analysis Method  : G:\HPCHEM\4\METHODS\TCA2SP.M
Last changed     : 2/26/2019 9:08:33 AM
Method Info      : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 B, ADC1

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   2.166 MM    0.2710 4395.86328  270.34644  6.07979
   2   3.087 MM    0.4439 6.79071e4  2549.86890 93.92021

Totals :                  7.23029e4  2820.21533


==========================================================================
                          *** End of Report ***
```

ata File P:\O2_N2\ON032519\SIG10008.D
Sample Name: 10859-10

```
==========================================================================
Acq. Operator   :
Acq. Instrument : O2N2                              Location : Vial 1
Injection Date  : 3/25/2019 12:43:04 PM
                                                    Inj Volume : Manually
Acq. Method     : C:\HPCHEM\2\METHODS\O2-N2.M
Last changed    : 2/1/2019 1:21:50 PM
Analysis Method : G:\HPCHEM\4\METHODS\TCA2SP.M
Last changed    : 2/26/2019 9:08:33 AM
Method Info     : TCA2
```




```
==========================================================================
                          Area Percent Report
==========================================================================

Sorted By             :      Signal
Multiplier:                   :      1.0000
Dilution:                     :      1.0000
Use Multiplier & Dilution Factor with ISTDs


Signal 1: ADC1 B, ADC1

Peak RetTime Type  Width     Area      Height     Area
  #   [min]        [min]    [uV*s]      [uV]       %
----|-------|----|-------|----------|----------|--------|
   1   2.100 MM    0.2506 4648.04053  309.14734  6.36874
   2   2.878 MM    0.4083 6.83341e4  2789.05054 93.63126

Totals :                  7.29821e4  3098.19788


==========================================================================
                          *** End of Report ***
```

TOC in WATER ANALYSIS
CHROMATOGRAMS
for M25.3 samples

MTRS0325.XLS

Water Vial TGNMO — **ppmV, (C) = [(Axd-B) x slope) x V / L] / 12 x 24.45**

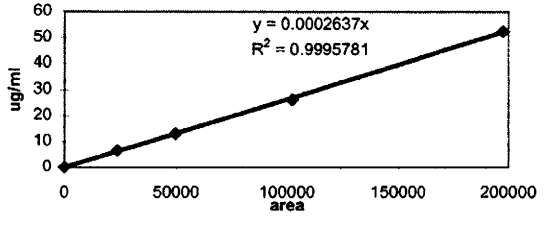
A	d		L					C						V
								Not blank-corr.						
Area	dil fac	mmHg Can P1	Can vol. in L	Air Vol in L	OC ug/ml C	Lab # 10859	Vial No.	ug carbon OC	ug/L OC as C	ppmV** OC as C	ppmV Mean	Std Dev.	%CV	Sample ml
8082	1	526	6.24	4.32	0.90	7	M35	1.37	0.32	0.64	**0.64**	0.02	**3.18**	***1.52***
7954	1	526	6.24	4.32	0.86	7		1.31	0.30	0.62				***1.52***
8168	1	526	6.24	4.32	0.92	7		1.40	0.32	0.66				***1.52***
52145	1	581	6.24	4.77	12.53	8	M36	23.84	5.00	10.18	**10.27**	0.12	**1.16**	**1.90**
53180	1	581	6.24	4.77	12.80	8		24.36	5.11	10.40				**1.90**
52324	1	581	6.24	4.77	12.58	8		23.93	5.02	10.22				**1.90**
6515	1	550	6.24	4.52	0.48	9	M37	1.50	0.33	0.68	**0.60**	0.11	**18.36**	***3.10***
5972	1	550	6.24	4.52	0.34	9		1.05	0.23	0.47				***3.10***
6462	1	550	6.24	4.52	0.47	9		1.45	0.32	0.66				***3.10***
6797	1	579	6.24	4.75	0.56	10	M38	1.40	0.29	0.60	**0.59**	0.02	**3.29**	**2.51**
6673	1	579	6.24	4.75	0.52	10		1.32	0.28	0.56				**2.51**
6783	1	579	6.24	4.75	0.55	10		1.39	0.29	0.60				**2.51**
5675	1			4.54	0.26	11	M39	0.73	0.16	0.33	**0.33**			**2.78**

Standard Injections

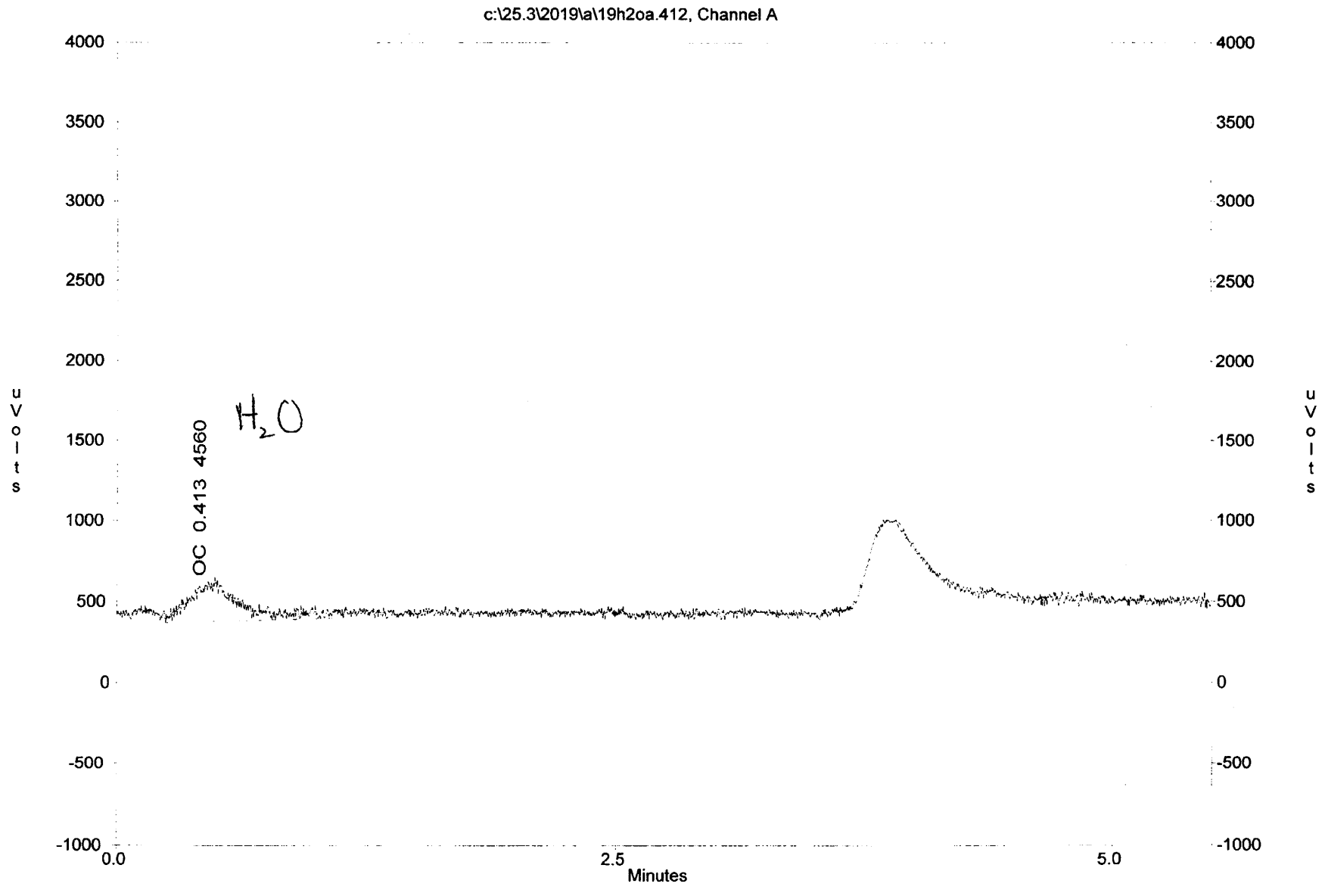
H2O		Original Calibration		currently	calc.	Recovery
4686	B	Area	ug/ml C	Measured	ug/ml C	%
4560		0	0		-	-
4730		23772	6.56			
4784		49739	13.12			
4669		102260	26.24			
		197695	52.47			
5035			28.93	107049	28.26	97.69
5222			28.93	111778	29.51	102.00
4470		End	28.93	112618	29.73	102.77
5069						

Avg. RF
2.64E-04

Calibration



Water Vial Analysis, Method 25.3				Date: 3/25/19
Client	Impinger No.	Received Wt. g	Vial Wt., g	Remarks
Montrose	M35	7.0723	5.5493	
	M36	7.4844	5.5818	
	M37	8.8273	5.7288	
	M38	8.1074	5.5989	
	M39 (13)	7.5279	4.7499	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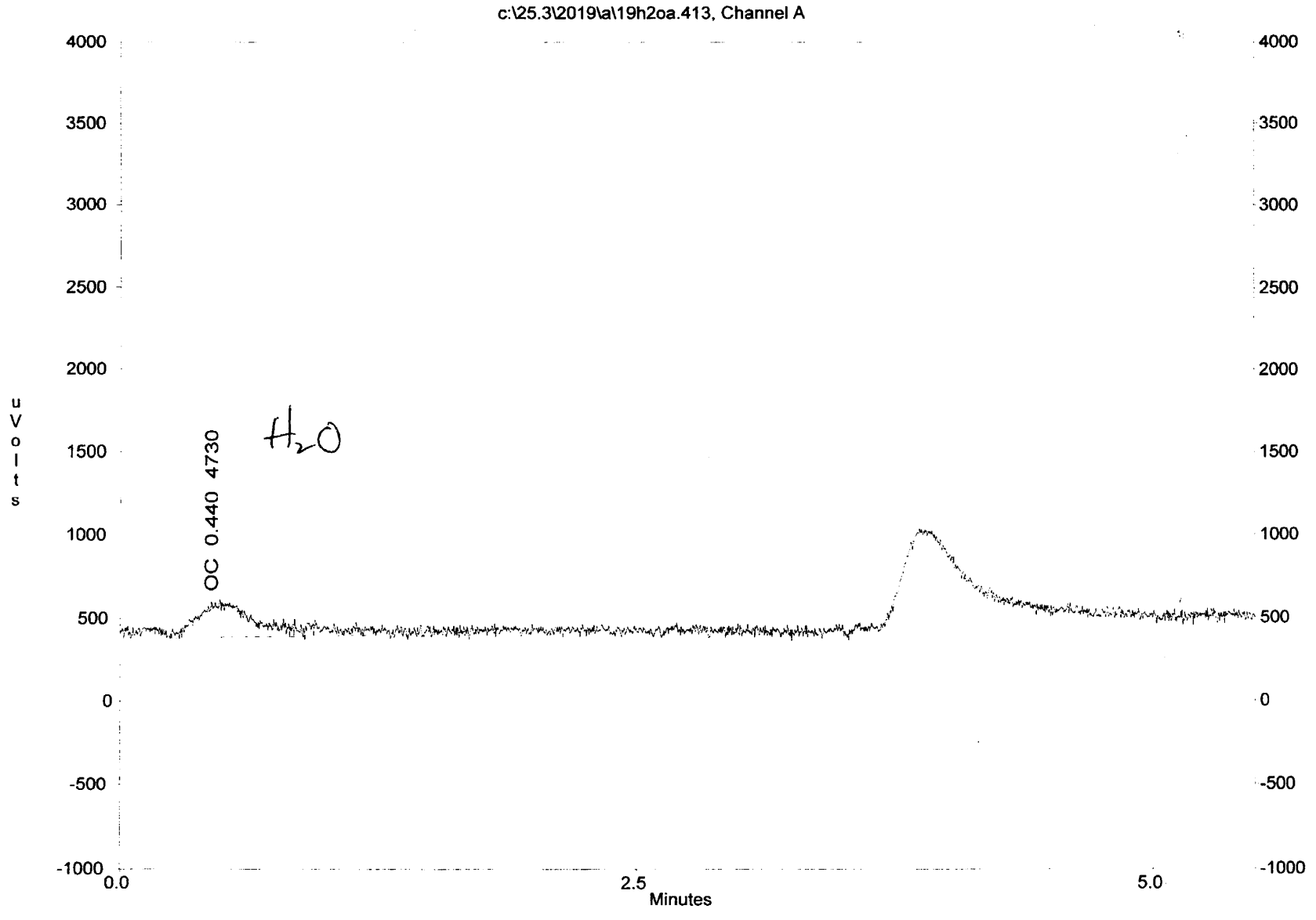
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.413 4560
H2O
0.0
2.5
5.0
Minutes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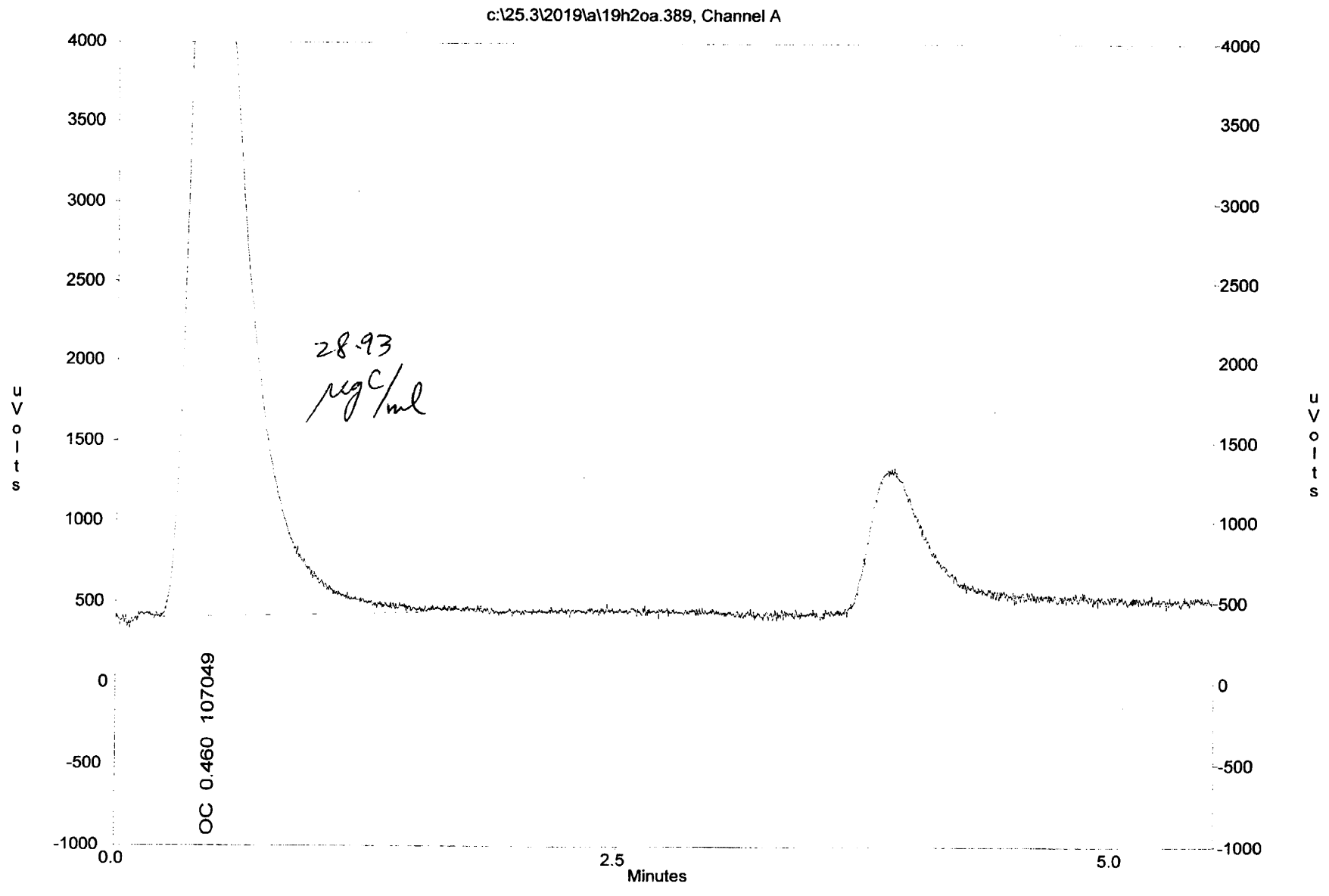
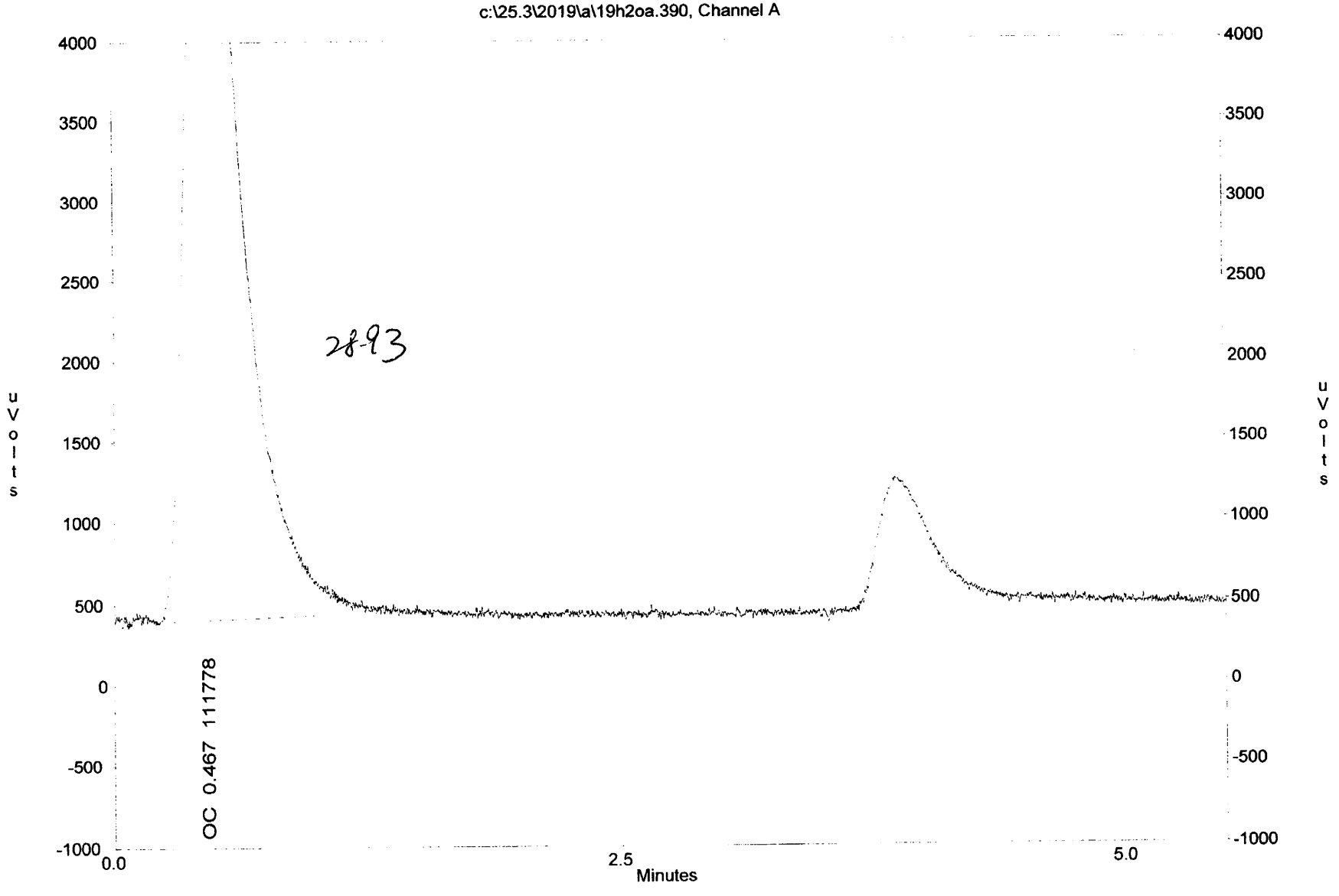
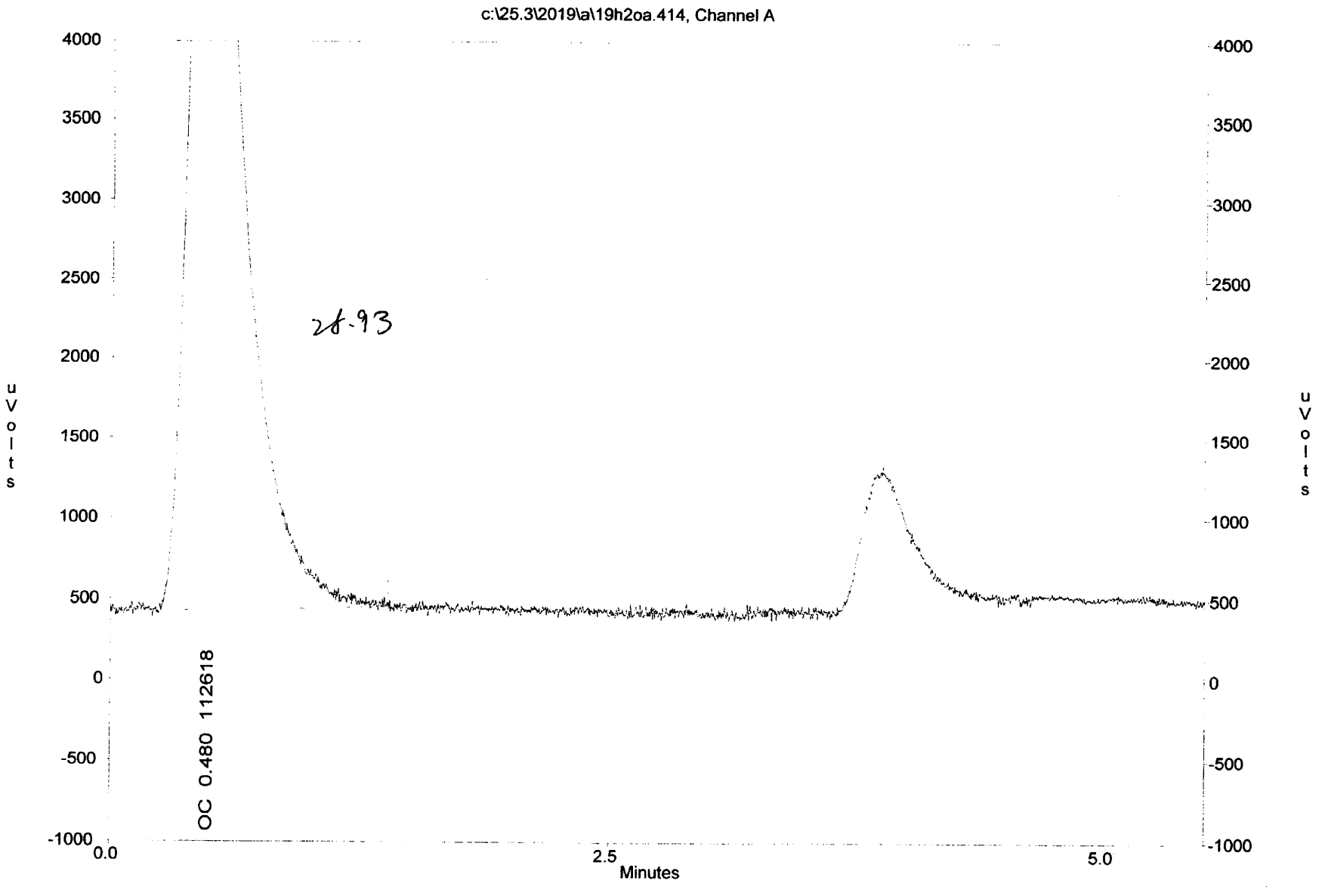
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.440 4730
H2O
0.0
2.5
5.0
Minutes

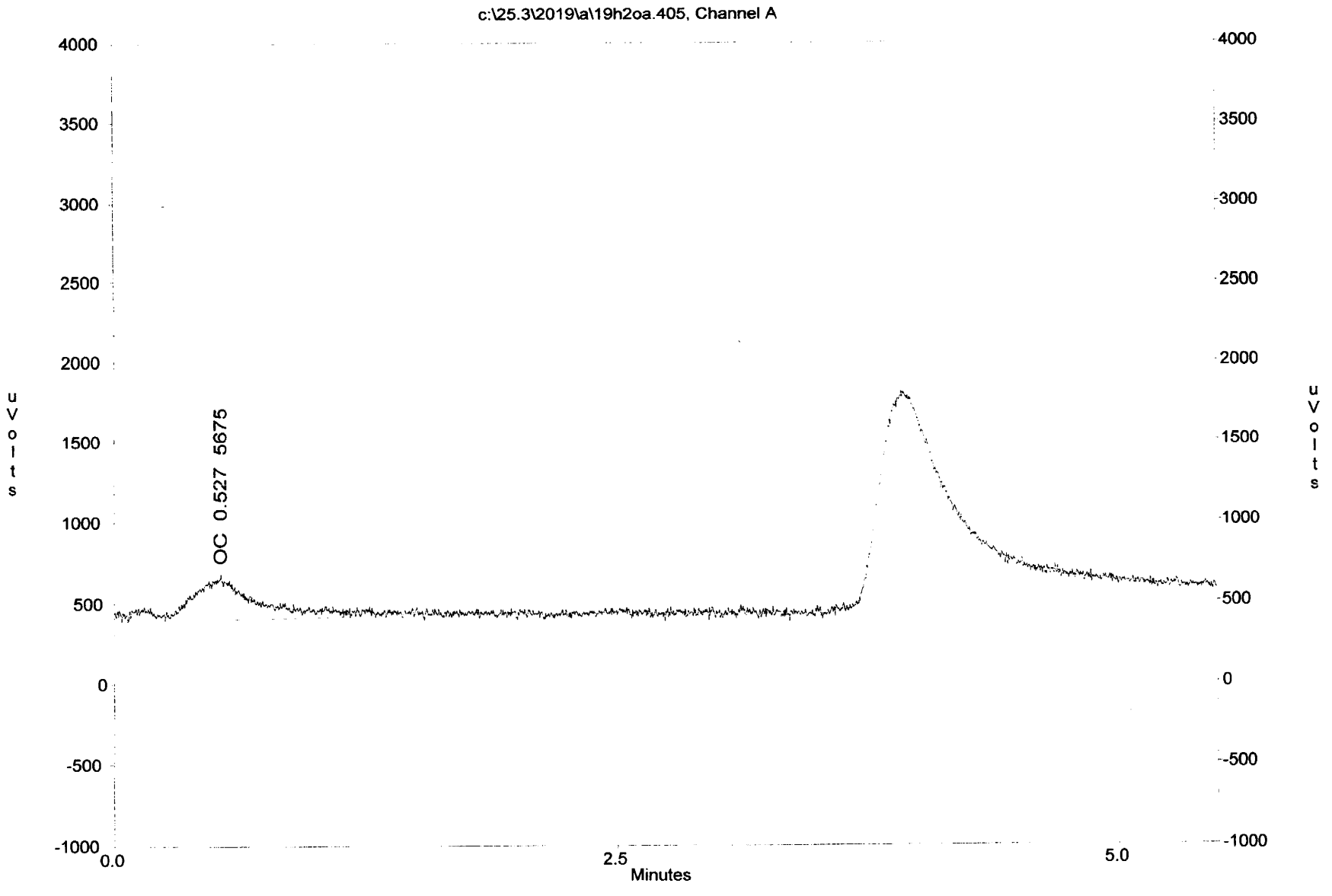

c:\25.3\2019\a\19h2oa.389, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
28.93
ugC/ml
OC 0.460 107049
0.0
2.5
5.0
Minutes


c:\25.3\2019\a\19h2oa.390, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
2893
OC 0.467 111778
0.0
2.5
5.0
Minutes

002AS-541589-RT-1364

368 of 694

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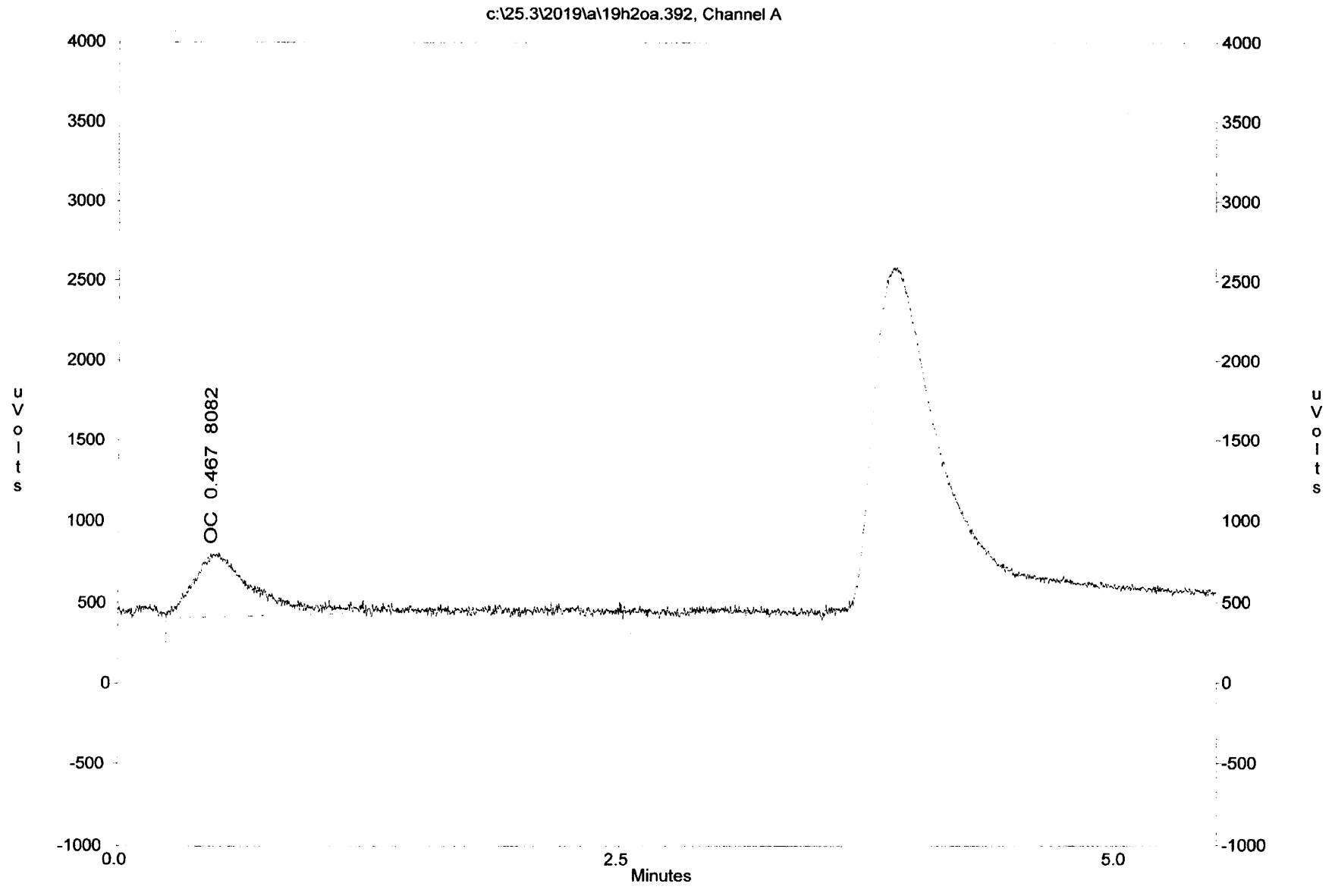
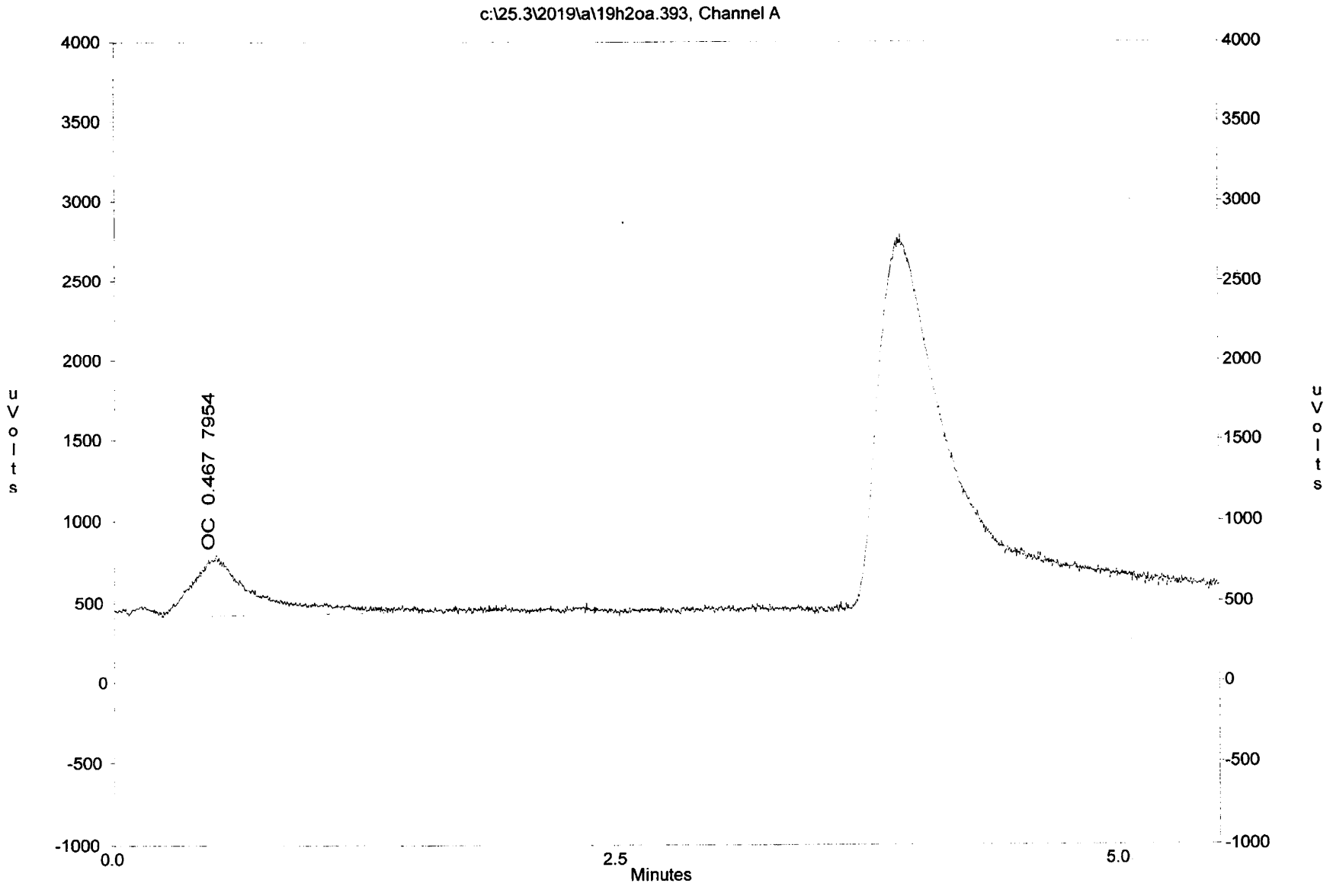
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.527 5675
0.0
2.5
5.0
Minutes

002AS-541589-RT-1364

370 of 694

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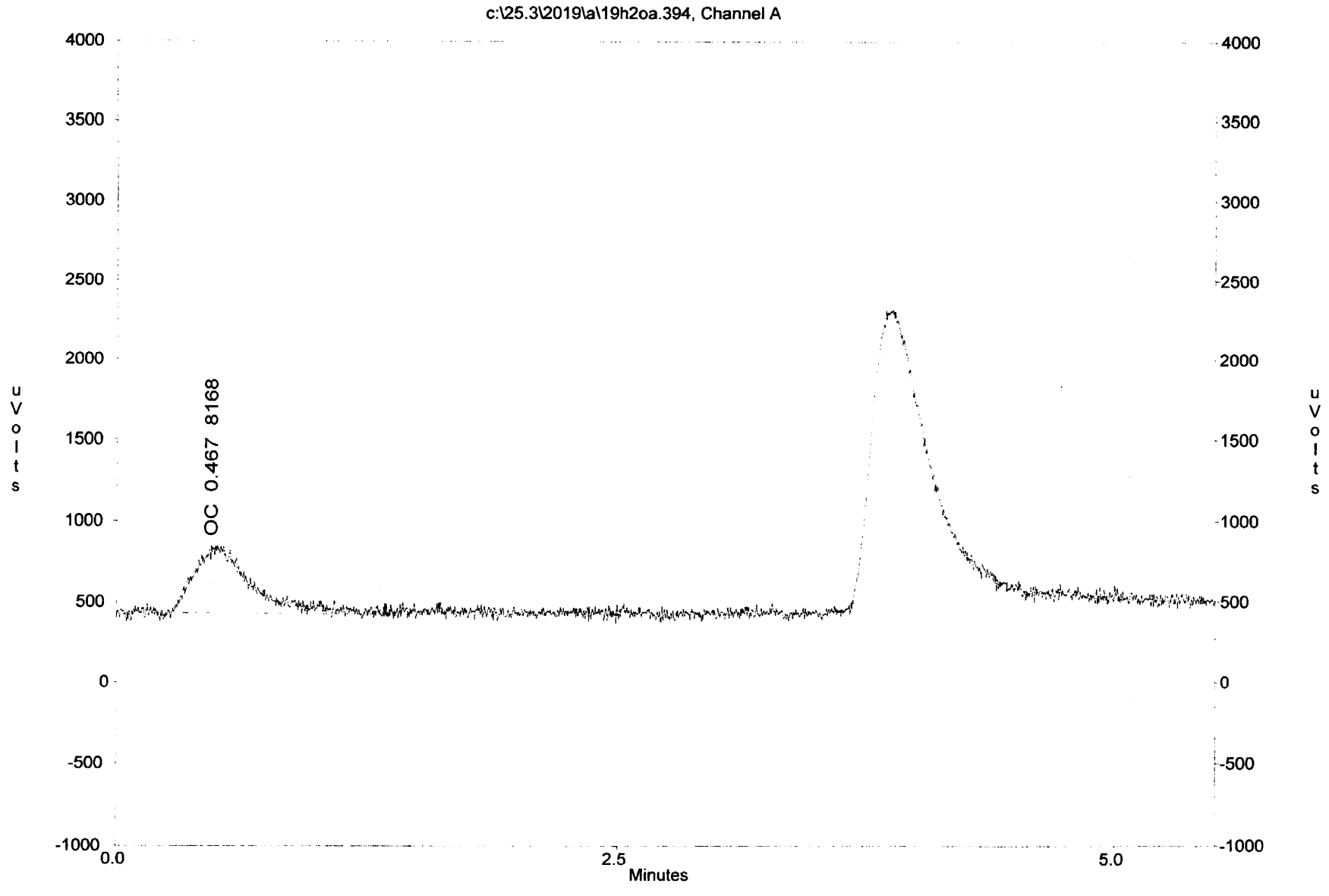
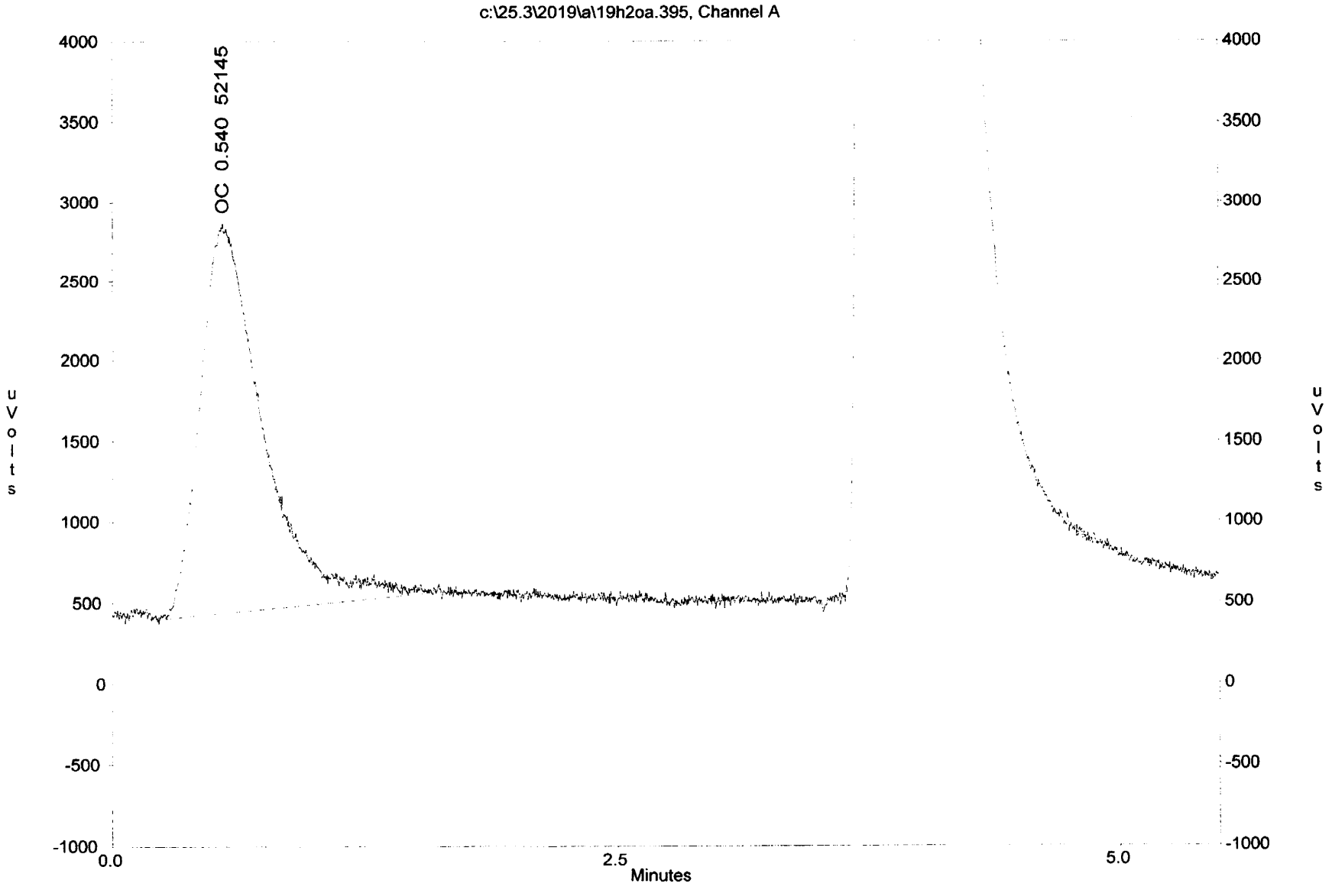
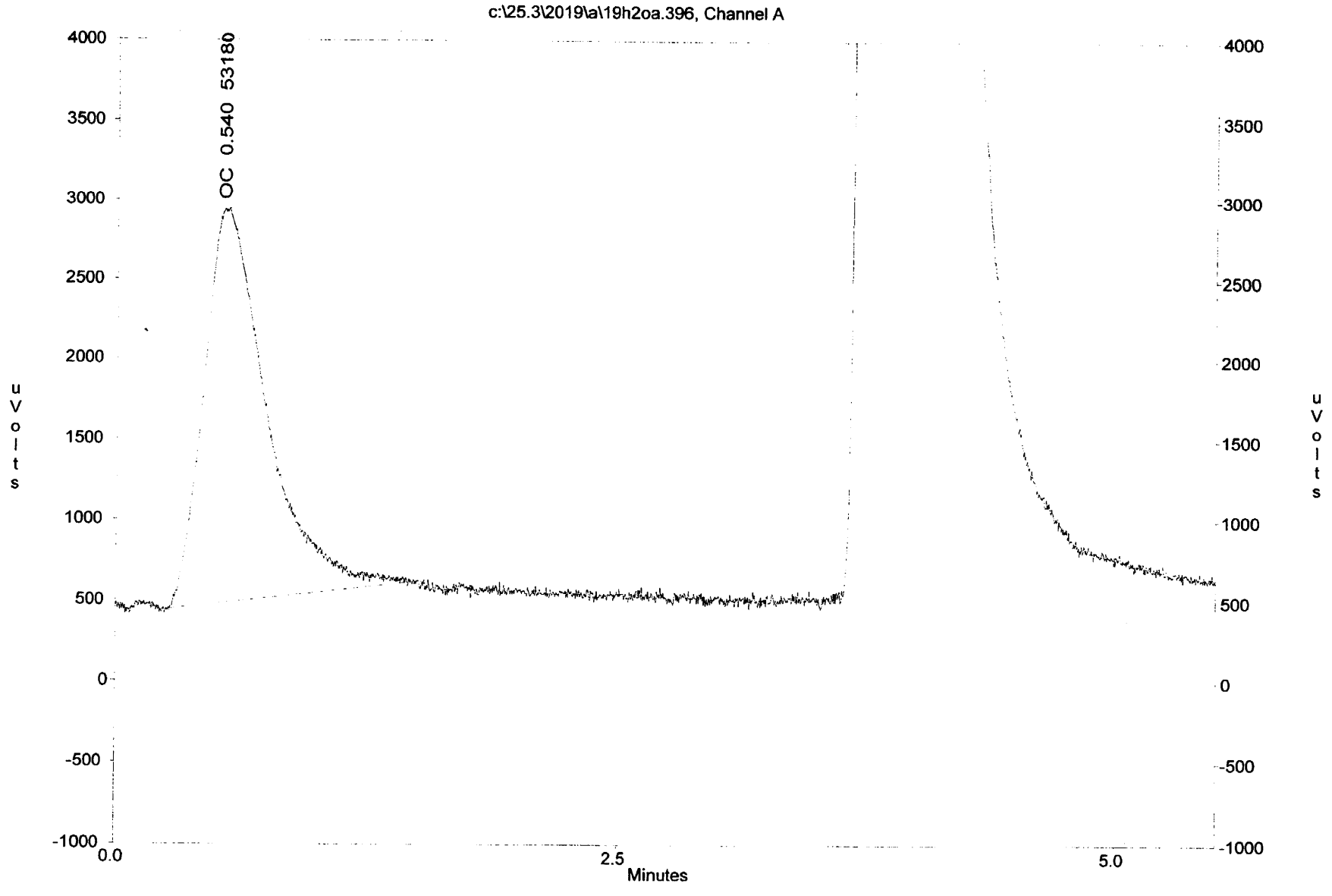
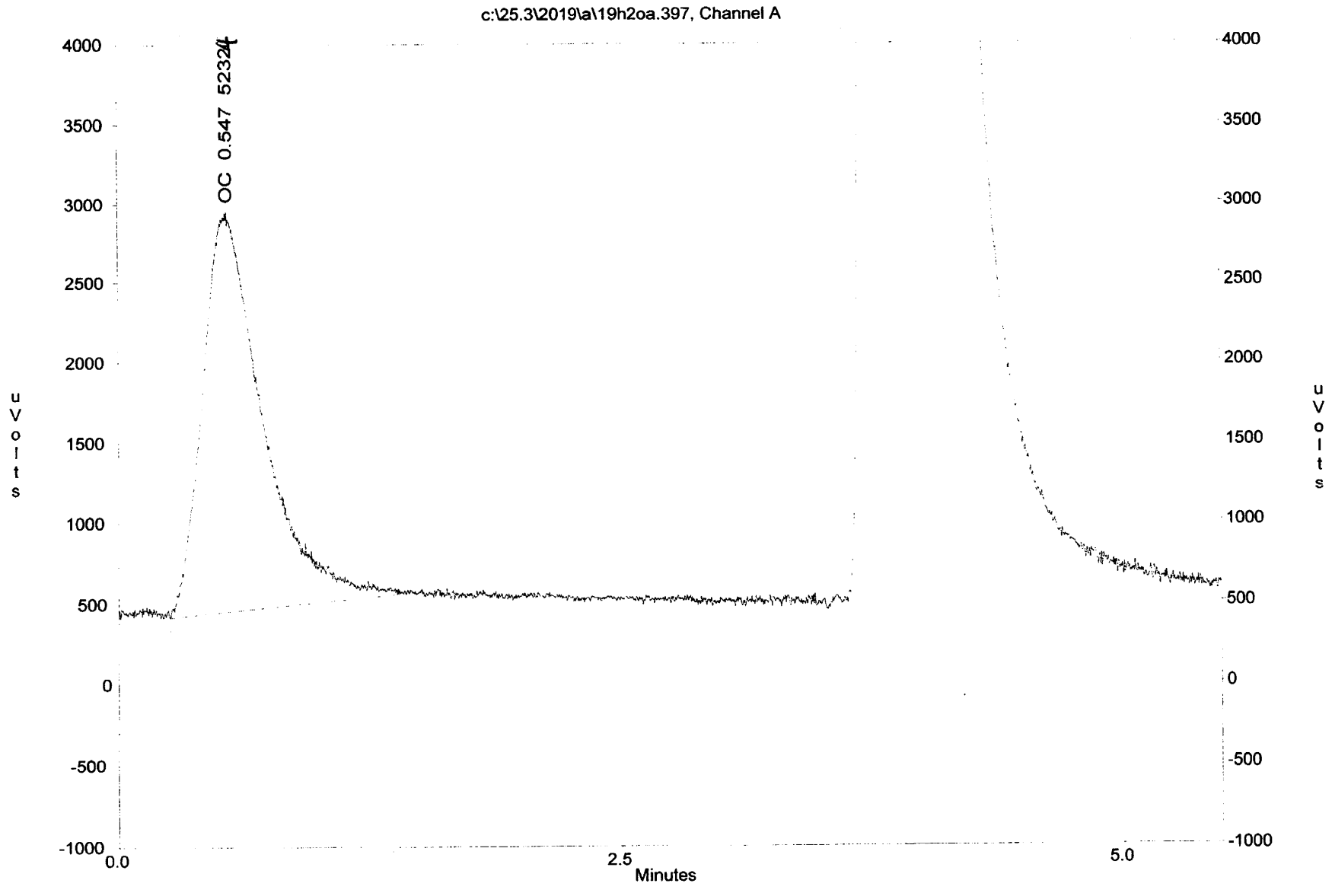
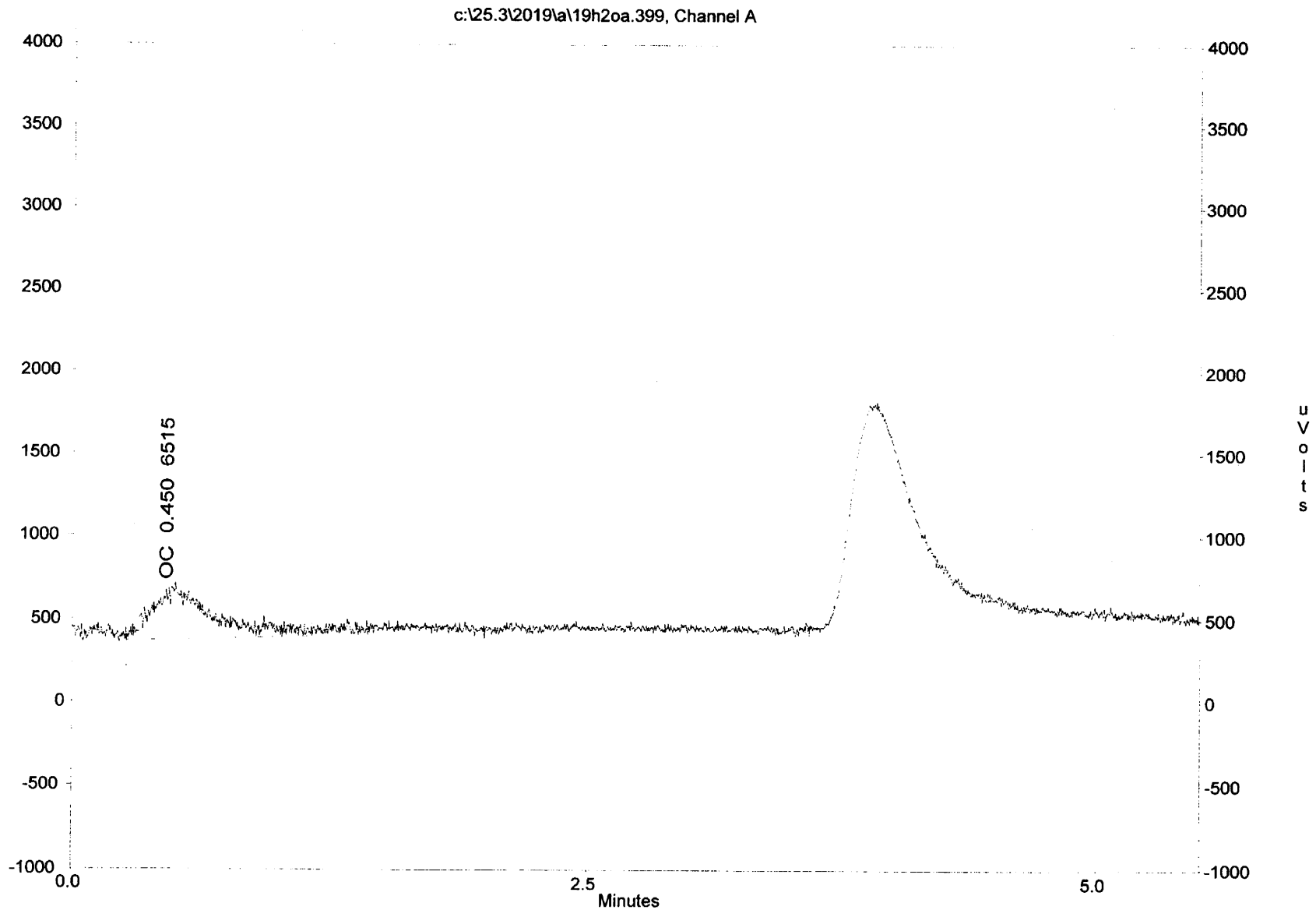
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
u V o l t s
OC 0.467 7954
0.0
2.5
5.0
Minutes

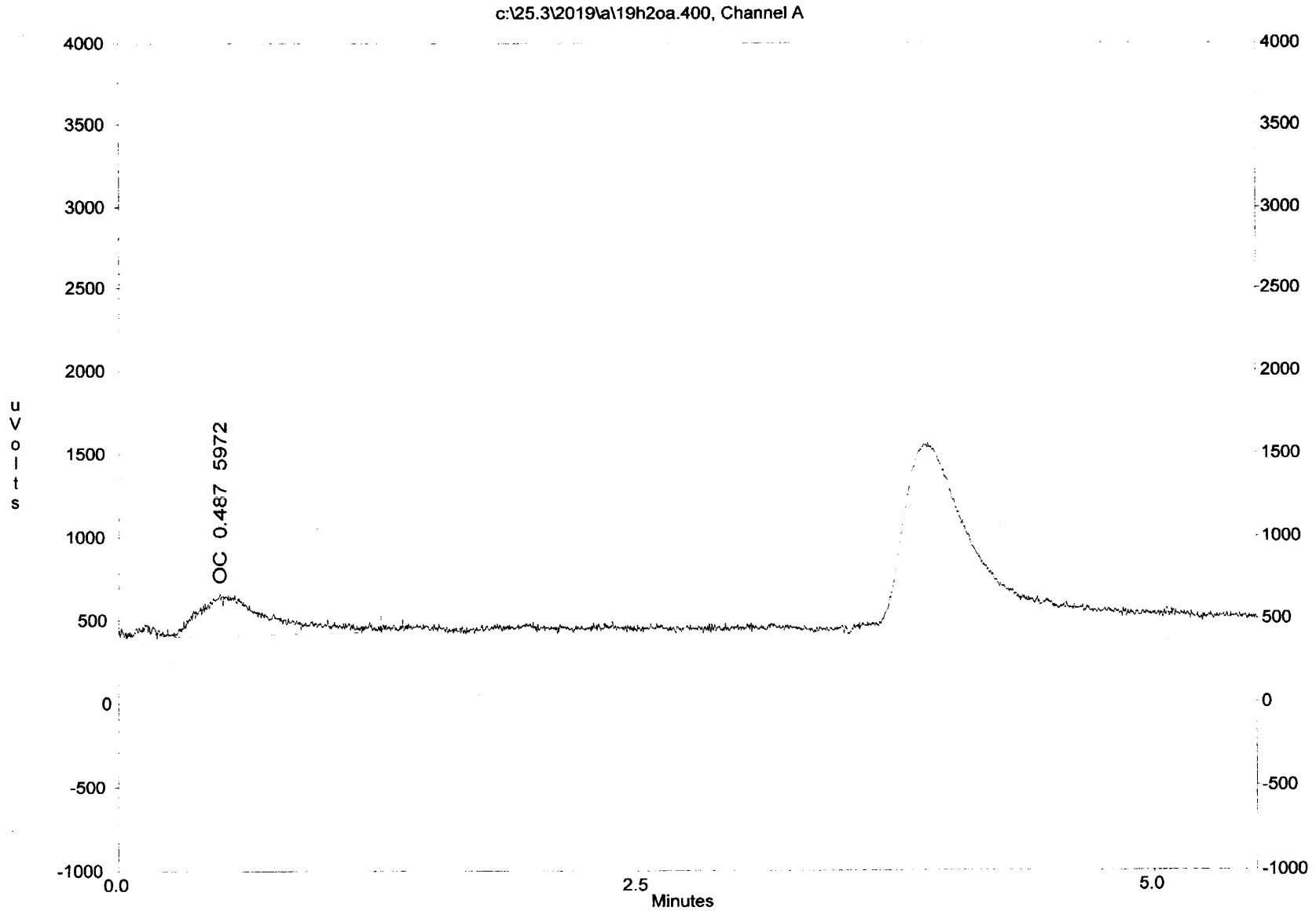

c:\25.3\2019\a\19h2oa.394, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.467 8168
0.0
2.5
5.0
Minutes

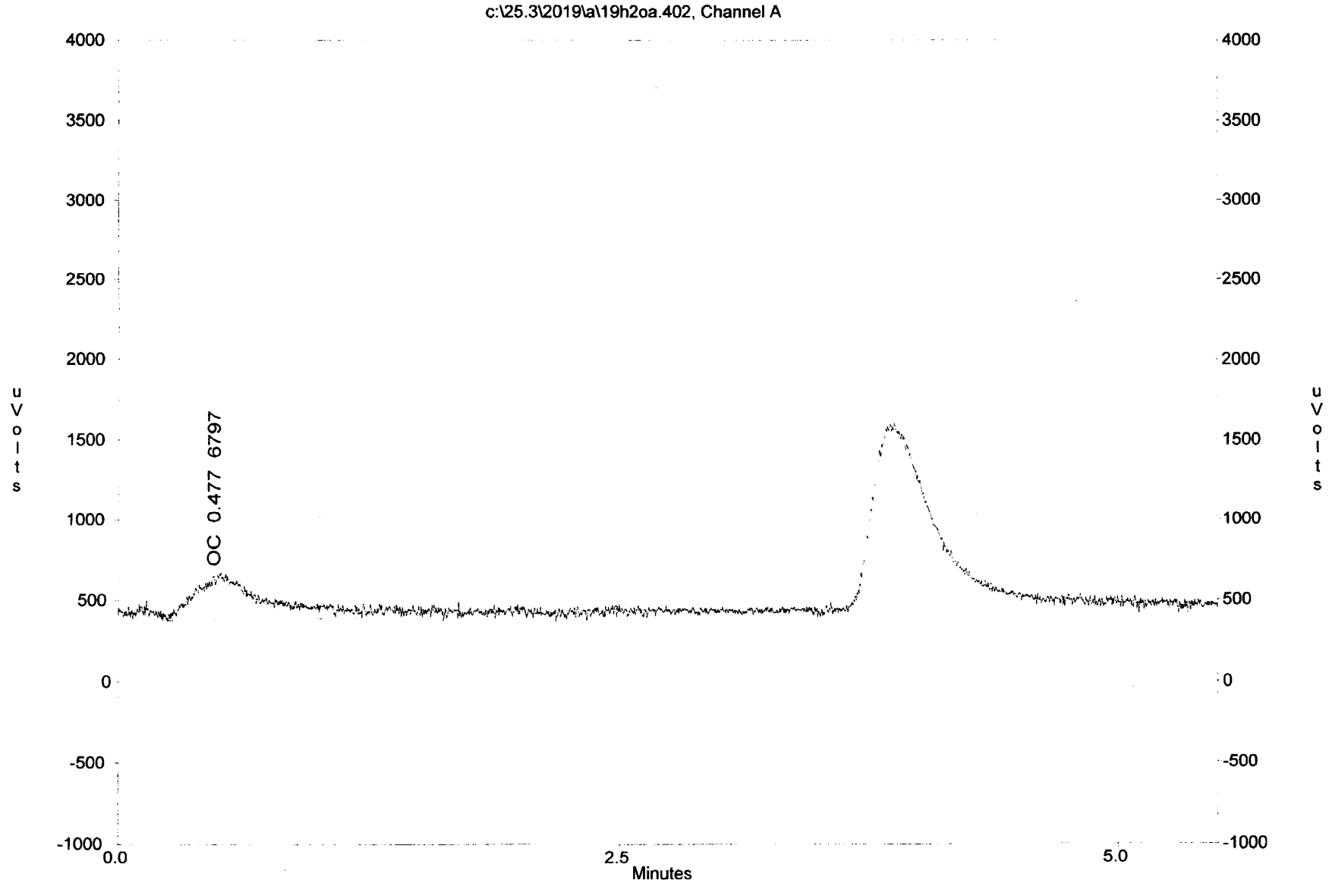

c:\25.3\2019\a\19h2oa.395, Channel A
OC 0.540 52145
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
0.0
2.5
5.0
Minutes

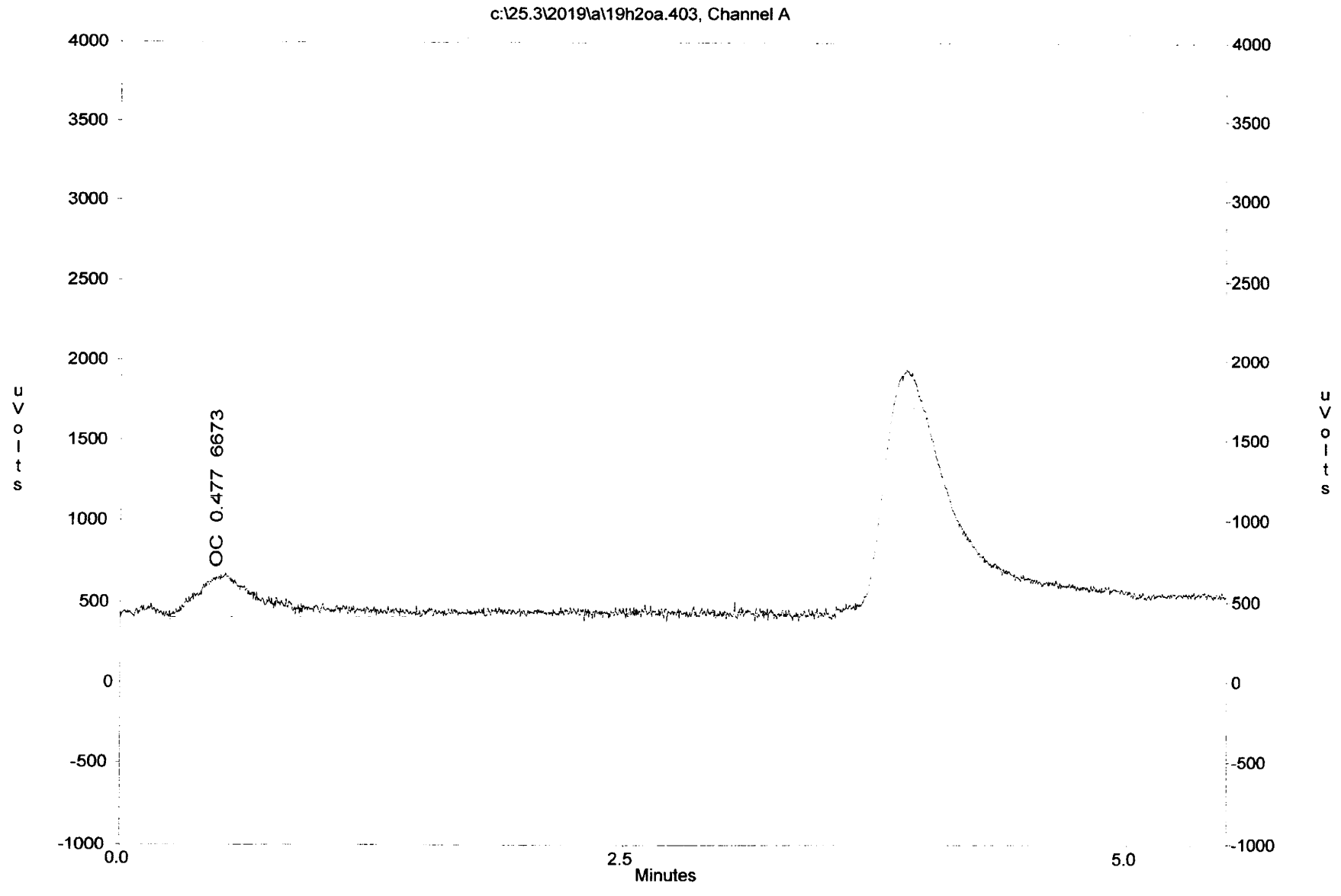

c:\25.3\2019\a\19h2oa.396, Channel A
OC 0.540 53180
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
0.0
2.5
5.0
Minutes

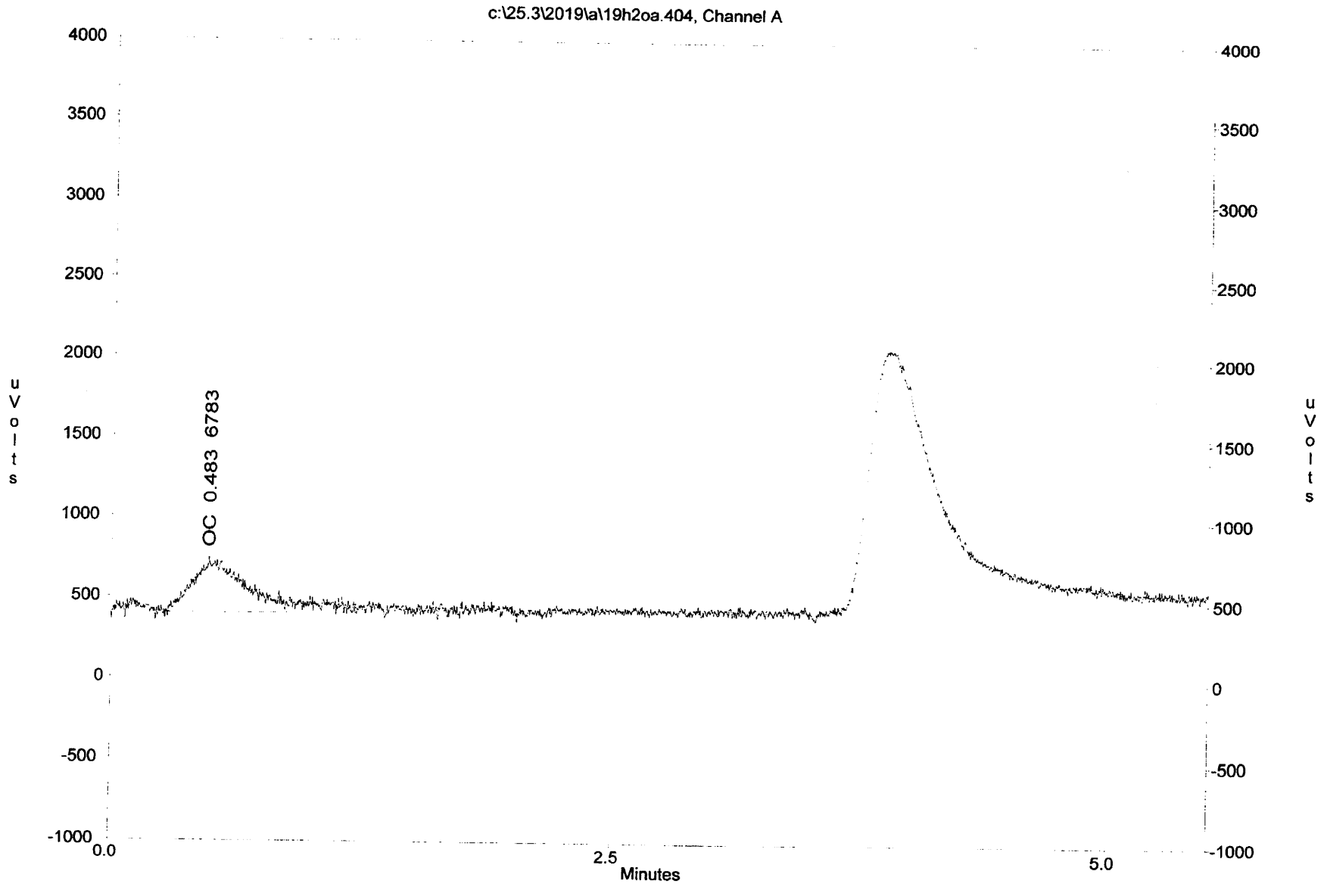

c:\25.3\2019\a\19h2oa.397, Channel A
OC 0.547 52324
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
0.0
2.5
5.0
Minutes


c:\25.3\2019\a\19h2oa.399, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.450 6515
0.0
2.5
5.0
Minutes


c:\25.3\2019\a\19h2oa.400, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.487 5972
0.0
2.5
5.0
Minutes


c:\25.3\2019\a\19h2oa.402, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.477 6797
0.0
2.5
5.0
Minutes


c:\25.3\2019\a\19h2oa.403, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.477 6673
0.0
2.5
5.0
Minutes


c:\25.3\2019\a\19h2oa.404, Channel A
4000
3500
3000
2500
2000
1500
1000
500
0
-500
-1000
uVolts
OC 0.483 6783
0.0
2.5
5.0
Minutes

Appendix B.5
Fuel Analysis Data

EXCELCHEM
Laboratories, Inc.
A Silver State Analytical Company
1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449

ELAP Certificate No. : 2119

29 April 2019

Russell Huffman

Desert View Power

62300 Gene Welmas

Mecca, CA 92254

RE: MACT

Work order number:1904011

Enclosed are the results of analyses for samples received by the laboratory on 04/02/19 13:24. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Joshua Cox, Lab Director

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MACT DVP	1904011-01	Wood	03/20/19 07:00	04/02/19 13:24
MACT DVP	1904011-02	Wood	03/20/19 08:00	04/02/19 13:24
MACT DVP	1904011-03	Wood	03/20/19 09:00	04/02/19 13:24
MACT DVP	1904011-04	Wood	03/20/19 10:00	04/02/19 13:24
MACT DVP	1904011-05	Wood	03/20/19 11:00	04/02/19 13:24
MACT DVP	1904011-06	Wood	03/20/19 12:00	04/02/19 13:24
MACT DVP	1904011-07	Wood	03/20/19 13:00	04/02/19 13:24
MACT DVP	1904011-08	Wood	03/20/19 14:00	04/02/19 13:24
MACT DVP	1904011-09	Wood	03/20/19 15:00	04/02/19 13:24
MACT DVP	1904011-10	Wood	03/20/19 16:00	04/02/19 13:24
MACT DVP	1904011-11	Wood	03/20/19 17:00	04/02/19 13:24

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP

1904011-01 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**7470**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8000**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.03**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.027**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**904**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**161**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**6.71**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**3.57**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**6.71**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**3.57**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**48.1**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.06**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-02 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5780**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8030**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.10**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.229**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**2100**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**596**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**28.0**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**11.2**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**28.0**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**11.2**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**52.4**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.16**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-03 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6430**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7920**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.026**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1650**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**495**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**18.9**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**4.84**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**18.9**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**4.84**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**53.5**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.13**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-04 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6060**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7740**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**894**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**454**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**21.7**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**7.69**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**21.7**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**7.69**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**48.0**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.12**	0.01	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-05 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6530**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7600**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.05**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.022**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1500**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**525**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**14.2**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**5.86**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**14.2**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**5.86**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**44.3**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.11**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-06 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5840**	40.0	BTU/Lb	AJD0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7150**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.28**	0.03	%	AJD0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.016**	0.016	mg/kg	AJD0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**2130**	20.0	"	AJD0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**597**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**18.3**	0.100	%	AJD0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**5.76**	0.0100	%	AJD0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**18.3**	0.100	%	AJD0111	"	04/12/19	ASTM E870-82	
Ash	**5.76**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.8**	1.00	"	AJD0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.12**	0.009	"	AJD0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-07 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6000**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7080**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.017**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1420**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**561**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**15.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**8.01**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**15.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**8.01**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.0**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.09**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP

1904011-08 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6140**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7270**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1790**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**679**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**15.6**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**6.15**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**15.6**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**6.15**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**45.9**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.16**	0.01	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-09 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6640**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7270**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.11**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.093**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**2140**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**630**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**8.72**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**5.96**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**8.72**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**5.96**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.5**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.16**	0.01	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-10 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6910**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7650**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.024**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2050**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**774**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**9.68**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**4.23**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**9.68**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**4.23**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**69.2**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.10**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

MACT DVP
1904011-11 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**4630**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**6100**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.026**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1780**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**505**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**24.0**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**9.27**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**24.0**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**9.27**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**48.8**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.11**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.16	0.03	%		0.15			3.97	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.03	0.03	%		0.03			1.56	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.10	0.03	%		0.10			0.0793	30	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0062 - EPA 6010B										
Blank (A]D0062-BLK1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	ND	20.0	mg/kg							
Sodium	ND	20.0	"							
LCS (A]D0062-BS1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	950	20.0	mg/kg	1000		95.0	80-120			
Sodium	101	20.0	"	100		101	80-120			
LCS Dup (A]D0062-BSD1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	978	20.0	mg/kg	1000		97.8	80-120	2.93	25	
Sodium	102	20.0	"	100		102	80-120	0.394	25	
Matrix Spike (A]D0062-MS1)		**Source: 1904010-04**		Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	2550	20.0	mg/kg	1000	1980	57.3	75-125			QM-01
Sodium	538	20.0	"	100	573	NR	75-125			QM-01
Matrix Spike Dup (A]D0062-MSD1)		**Source: 1904010-04**		Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	2560	20.0	mg/kg	1000	1980	58.2	75-125	0.352	25	QM-01
Sodium	549	20.0	"	100	573	NR	75-125	2.08	25	QM-01
Batch A]D0086 - EPA 7471A										
Blank (A]D0086-BLK1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	ND	0.016	mg/kg							
LCS (A]D0086-BS1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.218	0.016	mg/kg	0.200		109	80-120			

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0086 - EPA 7471A										
LCS Dup (A]D0086-BSD1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.224	0.016	mg/kg	0.200		112	80-120	2.53	20	
Matrix Spike (A]D0086-MS1)		**Source: 1904012-03**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.193	0.016	mg/kg	0.200	0.0128	90.0	75-125			
Matrix Spike Dup (A]D0086-MSD1)		**Source: 1904012-03**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.208	0.016	mg/kg	0.200	0.0128	97.6	75-125	7.58	20	
Batch A]D0087 - EPA 7471A										
Blank (A]D0087-BLK1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	ND	0.016	mg/kg							
LCS (A]D0087-BS1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.202	0.016	mg/kg	0.200		101	80-120			
LCS Dup (A]D0087-BSD1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.182	0.016	mg/kg	0.200		90.8	80-120	10.8	20	
Matrix Spike (A]D0087-MS1)		**Source: 1904010-06**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.197	0.016	mg/kg	0.200	0.0122	92.3	75-125			
Matrix Spike Dup (A]D0087-MSD1)		**Source: 1904010-06**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.185	0.016	mg/kg	0.200	0.0122	86.3	75-125	6.29	20	
Batch A]D0096 - EPA 6010B										
Blank (A]D0096-BLK1)				Prepared & Analyzed: 04/10/19						
Potassium	ND	20.0	mg/kg							
Sodium	21.2	20.0	"							QB-01

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0096 - EPA 6010B										
LCS (A]D0096-BS1)				Prepared & Analyzed: 04/10/19						
Potassium	922	20.0	mg/kg	1000		92.2	80-120			
Sodium	102	20.0	"	100		102	80-120			
LCS Dup (A]D0096-BSD1)				Prepared & Analyzed: 04/10/19						
Potassium	921	20.0	mg/kg	1000		92.1	80-120	0.0977	25	
Sodium	100	20.0	"	100		100	80-120	1.88	25	
Matrix Spike (A]D0096-MS1)		**Source: 1904012-02**		Prepared & Analyzed: 04/10/19						
Potassium	2680	20.0	mg/kg	1000	1980	70.4	75-125			QM-01
Sodium	717	20.0	"	100	728	NR	75-125			QM-01
Matrix Spike Dup (A]D0096-MSD1)		**Source: 1904012-02**		Prepared & Analyzed: 04/10/19						
Potassium	2720	20.0	mg/kg	1000	1980	74.3	75-125	1.45	25	QM-01
Sodium	787	20.0	"	100	728	58.9	75-125	9.27	25	QM-01

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

ASTM E871-82 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E871-82										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	17.9	0.100	%		16.8			6.30	20	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	6.66	0.100	%		6.71			0.868	20	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	25.5	0.100	%		24.4			4.40	20	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

ASTM E1755-01 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	6.20	0.0100	%		6.77			8.70	30	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	4.09	0.0100	%		3.57			13.7	30	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	3.42	0.0100	%		4.54			28.0	30	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			0.336	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.06	0.009	%		0.06			0.776	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			1.18	30	
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	6.20	0.0100	%		6.77			8.70	30	
Moisture	17.9	0.100	"		16.8			6.30	20	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	4.09	0.0100	%		3.57			13.7	30	
Moisture	6.66	0.100	"		6.71			0.868	20	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	3.42	0.0100	%		4.54			28.0	30	
Moisture	25.5	0.100	"		24.4			4.40	20	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Notes and Definitions

QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.

QB-01 The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.

ND Analyte not detected at reporting limit.

NR Not reported

Excelchem Laboratories, Inc.

Desert View Power
62300 Gene Welmas
Mecca, CA 92254

Project: MACT
Project Number: [none]
Project Manager: Russell Huffman

Date Reported: 04/29/19 15:26

Excelchem Environmental Labs

CHAIN OF CUSTODY

1135 W. Sunset Blvd. Suite A
Rocklin, CA 95765
Ph: 916-543-4445 Fx: 916-543-4449

Project Manager: Russell Huffman
Email Address for Reporting:
Email Address for Reporting:
Company Name & Address: Desert View Power
Billing Address: 62300 Gene Welmas, Mecca, CA 92254

Phone #: 760-262-1653
Cell #:
Fax #:
P.O# / Project Name: MACT
Project Location: MECCA
Sampler Name:
Sampler Signature:

REPORTING REQUIREMENTS BELOW:

PDF / Standard Format
Geotracker / EDF / Provide Global ID
EDD / Equis / Data Table
MDL Format
Data to be reported to State's Database ? Yes___ No___
EDT / CDPH - Provide Source Codes / PWS ID:
page _ of _

Matrix Table:
S = Soil / Sludge / Solid (circle one)
A = Air
DW = Drinking Water
MW = Monitoring Wells
GW = Groundwater
TW = Treated Water
WW = Waste Water

Preserved ? (Mark yes and no if both available)
Yes
No

ANALYSIS REQUST

SAMPLE ID:	Source Codes	SAMPLING DATE	SAMPLING TIME	Matrix (See Matrix Table)	Summa #	Tedlar / Summa	Coliform Tube	250ml plastic	500ml plastic	1000ml plastic	1 Gallon plastic	1 Liter Amber	40ml Voa - Clear	40ml Voa - Amber	250ml Amber	500ml Amber	Soil Jar	BAG	Metals Silo	Metals Total	ASH	CHLORIDE IC	GCV	GCV DRY	MERCURY	% MOISTURE	KNA TTLC	ULTIMATE ANALYSIS
Mact DVP	LISTED	PER BAG 3/20		W														X			X	X	X	X	X	X	X	X
				W														X			X	X	X	X	X	X	X	X

INDIVIDUAL TEST FOR EA BAG

1904011
BIN Dept. 11

Relinquished by:	DATE	TIME	Received by:
Operations	3/27/19	8A	SW
Relinquished by: Steve W	3/29/19	9	Received by Laboratory: UPS

Remarks

4/2/19 13:24

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Excelchem Environmental Lab.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:26

Sample Integrity

WORK ORDER: 1904011

Date Received: 4/02/2019

Section 1 – Sample Arrival Info.

Sample Transport: **UPS** Transported In: **Box**

Describe type of packing materials: **N/A**

Has chilling process begun? **No** Samples Received: **Ambient**

Temperature of Samples (°C): **19.0** Ice Chest Temperature(s) (°C): **N/A**

Section 2 – Bottle/Analysis Info.	Yes	No	N/A	Comments
Did all bottles arrive unbroken and intact?	X			-
Did all bottle labels agree with COC?	X			-
Were correct containers used for the tests requested?	X			-
Were correct preservations used for the tests requested?	X			-
Was a sufficient amount of sample sent for tests indicated?	X			-
Were bubbles present in VOA Vials?: **(Volatile Methods Only)**			X	-

Section 3 – Summa/Flow regulator Info.

N/A

Used Summa#:	
Unused Summa#:	
Cleaning Summa#:	
Regulator#:	
Was there any visual damage to summa canisters or flow regulators? **Explain.**	

Section 4 – COC Info.

	Completed Yes	Completed No	Info From Comment		Completed Yes	Completed No	Comments
Was COC Received	X		-	Analysis Requested	X		-
Date Sampled	X		-	Samples arrived within holding time	X		-
Time Sampled		X	-	Any hold times less than 72 hrs.		X	-
Sample ID	X		-	Client Name	X		-
Rush TAT		X	-	Address/Telephone #	X		-

Section 5 – Comments / Discrepancies

Was Client notified of discrepancies: N/A Notified by:

Explanations / Comments:

Samples Labeled by:	**RL**
BIN:	Dept. 11
COC Scanned/Attached by:	**RL**
Sample labels reviewed by:	**RL**

Filled out by: Rachele Lang **Date:** 4/2/2019 **Time:** 16:39

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

002AS-541589-RT-1364

Laboratory Representative

Excelchem
Environmental Labs
1135 W. Sunset Blvd. Suite A
Rocklin, CA 95765
Ph: 916-543-4445 Fx: 916-543-4449

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Courtney McDonald
Phone #: AS ABOVE
Company/Address: AS ABOVE
Fax #: AS ABOVE
Project Number/P.O#: 1904011 (Please reference when invoicing)
Project Name: 1904011
Project Location:
Sampler Signature:

Electronic Data Deliverables Request:
[X] PDF
[ ] Geotracker (Global ID) ____
[ ] Other (please specify) ____

Email Address: courtneym@excelchem.net

ANALYSIS REQUEST

Page 1 of 1

Blvd:
Due Date:
Work Order:

Sample ID	Sampling Date	Sampling Time	Container: Ziploc Bag	Method Preserved: NONE/ ICE	Matrix: Woodchips	Matrix: Ash	Carbon	Hydrogen	Nitrogen	Requested TAT Standard	LAB USE ONLY
1904011-01	3/20/2019	7:00	2	X	X		X	X	X	X	
1904011-02	3/20/2019	8:00	2	X	X		X	X	X	X	
1904011-03	3/20/2019	9:00	2	X	X		X	X	X	X	
1904011-04	3/20/2019	10:00	2	X	X		X	X	X	X	
1904011-05	3/20/2019	11:00	2	X	X		X	X	X	X	
1904011-06	3/20/2019	12:00	2	X	X		X	X	X	X	
1904011-07	3/20/2019	13:00	2	X	X		X	X	X	X	
1904011-08	3/20/2019	14:00	2	X	X		X	X	X	X	
1904011-09	3/20/2019	15:00	2	X	X		X	X	X	X	
1904011-10	3/20/2019	16:00	2	X	X		X	X	X	X	
1904011-11	3/20/2019	17:00	2	X	X		X	X	X	X	

Relinquished by:	Date	Time	Received by:
Courtney McDonald	4/10/19	1442	Valerie Sizzetto
Relinquished by:	Date	Time	Received by Laboratory:
	4/11/19	10:30	Midwest Microlab

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250

Bill To: Excelchem Environmental Laboratories
Address on top of COC

002AS541589-RT-1364
406 of 514

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	Courtneym@excelchem.net

1904011-01

SAMPLE IDENTIFICATION

Invoice email:	denkes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		42.40		
H		5.51		
N		0.38		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

RECEIVED APR 11 2019

We appreciate your business.

Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011-02

SAMPLE IDENTIFICATION

Invoice email:	denise@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		31.72		
H		3.80		
N		0.74		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp: ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
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Indianapolis, IN 46250
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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011-03

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rialto, CA 92376
PO#	

Analysis	Theory	% Found		
C		36.33		
H		4.79		
N		0.45		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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Indianapolis, IN 46250
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Fax: 317-849-8534
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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011-04

SAMPLE IDENTIFICATION

Invoice email:	dennes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.11		
H		4.83		
N		0.28		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7712 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

Completed: April 11, 2019

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	Courtneym@excelchem.net

1904011-05

SAMPLE IDENTIFICATION

Invoice email:	denise@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		43.82		
H		5.58		
N		0.34		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestmicro.com

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	Courtneym@excelchem.net

1904011-06

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		41.33		
H		5.49		
N		0.47		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7222 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011-07

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rancho, CA 95765
PO#	

Analysis	Theory	% Found		
C		40.46		
H		5.17		
N		0.26		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

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7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011-08

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rocklin, CA 95765
PO#	

Analysis	Theory	% Found		
C		42.46		
H		5.14		
N		0.17		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	—
M.P. / B.P.	—
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____°C Time ____H ____M
Sample Return: Yes ☐ No ☒	Shipping Address: —

Comments: _____

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7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
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Completed: April 11, 2019
002AS-541589-RT-1364

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011-09

SAMPLE IDENTIFICATION

Invoice email:	denes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rankin, CA 95765
PO#	

Analysis	Theory	% Found		
C		41.64		
H		5.02		
N		0.69		

Single ☒ Duplicate ☐ Triplicate ☐	
Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011-10

SAMPLE IDENTIFICATION

Invoice email:	denkers@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rocklin, CA 95765
PO#	

Analysis	Theory	% Found		
C		23.46		
H		2.78		
N		0.19		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestmicrolab.com

RECEIVED APR 11 2019 *We appreciate your business*

Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904011 - 11

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		37.01		
H		4.53		
N		0.29		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7217 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

RECEIVED APR 11 2019

We appreciate your business

Completed: April 11, 2019

EXCELCHEM
Laboratories, Inc.
A Silver State Analytical Company
1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449

ELAP Certificate No. : 2119

29 April 2019

Russell Huffman

Desert View Power

62300 Gene Welmas

Mecca, CA 92254

RE: MACT

Work order number:1904012

Enclosed are the results of analyses for samples received by the laboratory on 04/02/19 13:24. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Joshua Cox, Lab Director

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MACT DVP	1904012-01	Wood	03/21/19 07:00	04/02/19 13:24
MACT DVP	1904012-02	Wood	03/21/19 08:00	04/02/19 13:24
MACT DVP	1904012-03	Wood	03/21/19 09:00	04/02/19 13:24
MACT DVP	1904012-04	Wood	03/21/19 10:00	04/02/19 13:24
MACT DVP	1904012-05	Wood	03/21/19 11:00	04/02/19 13:24
MACT DVP	1904012-06	Wood	03/21/19 12:00	04/02/19 13:24
MACT DVP	1904012-07	Wood	03/21/19 13:00	04/02/19 13:24
MACT DVP	1904012-08	Wood	03/21/19 14:00	04/02/19 13:24
MACT DVP	1904012-09	Wood	03/21/19 15:00	04/02/19 13:24
MACT DVP	1904012-10	Wood	03/21/19 16:00	04/02/19 13:24
MACT DVP	1904012-11	Wood	03/21/19 17:00	04/02/19 13:24

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-01 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6170**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8230**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.10**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.021**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2750**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**843**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**25.1**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**9.50**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**25.1**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**9.50**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**42.7**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.12**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-02 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6910**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7930**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.038**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1980**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**728**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**12.8**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**3.52**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**12.8**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**3.52**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**47.2**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.07**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-03 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**4940**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**6240**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2320**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**829**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**20.9**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**9.37**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**20.9**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**9.37**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.1**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.14**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

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Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-04 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6570**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8190**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.030**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2030**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**583**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.7**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**5.52**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**19.7**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**5.52**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.6**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.12**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-05 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6720**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8140**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.033**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2280**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**805**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**17.4**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**6.66**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**17.4**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**6.66**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**45.5**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.10**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

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Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-06 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6090**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7740**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1320**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**661**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**21.4**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**8.72**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**21.4**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**8.72**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**49.3**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.10**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

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Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-07 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5900**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7700**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1620**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**495**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**23.4**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**8.02**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**23.4**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**8.02**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**52.4**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.07**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-08 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**7880**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**9530**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.10**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1810**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**1480**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**17.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**8.31**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**17.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**8.31**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**49.7**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.13**	0.01	"	A]D0105	"	04/11/19	EPA 300.0	

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Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-09 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6440**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7780**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1080**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**431**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**17.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**3.79**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**17.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**3.79**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**50.9**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.11**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-10 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5870**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7700**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.046**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1050**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**412**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**23.7**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**5.42**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**23.7**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**5.42**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**53.9**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.09**	0.01	"	A]D0105	"	04/11/19	EPA 300.0	

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Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

MACT DVP
1904012-11 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5270**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**6530**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.025**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**910**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**518**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**3.82**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**19.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**3.82**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**47.4**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.11**	0.01	"	A]D0105	"	04/11/19	EPA 300.0	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.16	0.03	%		0.15			3.97	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.03	0.03	%		0.03			1.56	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.10	0.03	%		0.10			0.0793	30	

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0086 - EPA 7471A										
Blank (A]D0086-BLK1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	ND	0.016	mg/kg							
LCS (A]D0086-BS1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.218	0.016	mg/kg	0.200		109	80-120			
LCS Dup (A]D0086-BSD1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.224	0.016	mg/kg	0.200		112	80-120	2.53	20	
Matrix Spike (A]D0086-MS1)		**Source: 1904012-03**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.193	0.016	mg/kg	0.200	0.0128	90.0	75-125			
Matrix Spike Dup (A]D0086-MSD1)		**Source: 1904012-03**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.208	0.016	mg/kg	0.200	0.0128	97.6	75-125	7.58	20	
Batch A]D0096 - EPA 6010B										
Blank (A]D0096-BLK1)				Prepared & Analyzed: 04/10/19						
Potassium	ND	20.0	mg/kg							
Sodium	21.2	20.0	"							QB-01
LCS (A]D0096-BS1)				Prepared & Analyzed: 04/10/19						
Potassium	922	20.0	mg/kg	1000		92.2	80-120			
Sodium	102	20.0	"	100		102	80-120			
LCS Dup (A]D0096-BSD1)				Prepared & Analyzed: 04/10/19						
Potassium	921	20.0	mg/kg	1000		92.1	80-120	0.0977	25	
Sodium	100	20.0	"	100		100	80-120	1.88	25	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0096 - EPA 6010B										
Matrix Spike (A]D0096-MS1)		**Source: 1904012-02**		Prepared & Analyzed: 04/10/19						
Potassium	2680	20.0	mg/kg	1000	1980	70.4	75-125			QM-01
Sodium	717	20.0	"	100	728	NR	75-125			QM-01
Matrix Spike Dup (A]D0096-MSD1)		**Source: 1904012-02**		Prepared & Analyzed: 04/10/19						
Potassium	2720	20.0	mg/kg	1000	1980	74.3	75-125	1.45	25	QM-01
Sodium	787	20.0	"	100	728	58.9	75-125	9.27	25	QM-01

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

ASTM E871-82 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E871-82										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	17.9	0.100	%		16.8			6.30	20	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	6.66	0.100	%		6.71			0.868	20	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	25.5	0.100	%		24.4			4.40	20	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

ASTM E1755-01 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	6.20	0.0100	%		6.77			8.70	30	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	4.09	0.0100	%		3.57			13.7	30	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	3.42	0.0100	%		4.54			28.0	30	

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			0.336	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.06	0.009	%		0.06			0.776	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			1.18	30	
Batch A]D0111 - ASTM E870-82										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	17.9	0.100	%		16.8			6.30	20	
Ash	6.20	0.0100	"		6.77			8.70	30	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	4.09	0.0100	%		3.57			13.7	30	
Moisture	6.66	0.100	"		6.71			0.868	20	

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	3.42	0.0100	%		4.54			28.0	30	
Moisture	25.5	0.100	"		24.4			4.40	20	

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

Notes and Definitions

QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.

QB-01 The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.

ND Analyte not detected at reporting limit.

NR Not reported

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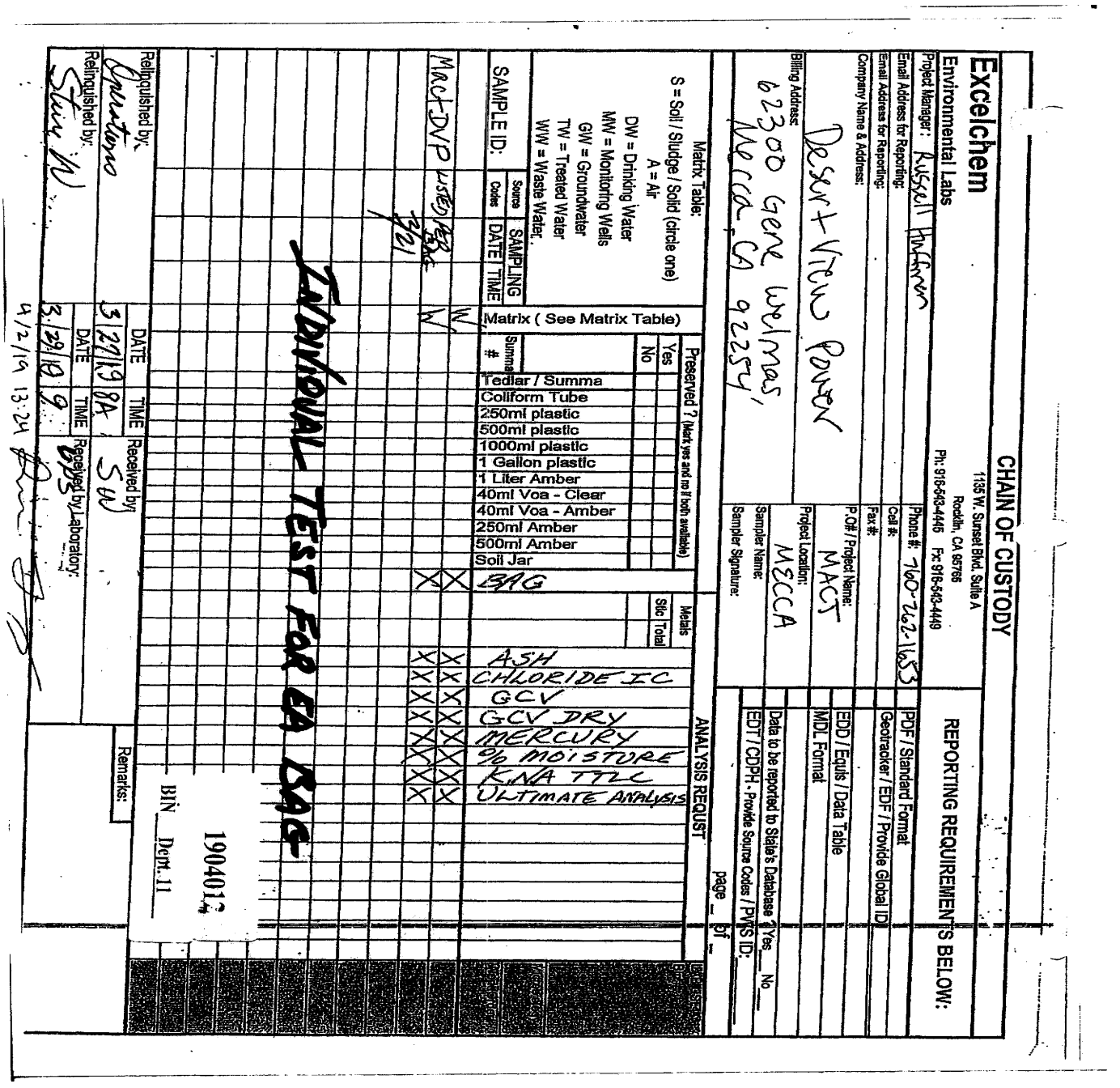
Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29



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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:29

Sample Integrity **WORK ORDER: 1904012**

Date Received: 4/02/2019

Section 1 – Sample Arrival Info.

Sample Transport: **UPS** Transported In: **Box**

Describe type of packing materials: **N/A**

Has chilling process begun? **No** Samples Received: **Ambient**

Temperature of Samples (°C): **19.0** Ice Chest Temperature(s) (°C): **N/A**

Section 2 – Bottle/Analysis Info.

	Yes	No	N/A	Comments
Did all bottles arrive unbroken and intact?	X			-
Did all bottle labels agree with COC?	X			-
Were correct containers used for the tests requested?	X			-
Were correct preservations used for the tests requested?	X			-
Was a sufficient amount of sample sent for tests indicated?	X			-
Were bubbles present in VOA Vials?: **(Volatile Methods Only)**			X	-

Section 3 – Summa/Flow regulator Info.

Used Summa#:	N/A
Unused Summa#:	
Cleaning Summa#:	
Regulator#:	

Was there any visual damage to summa canisters or flow regulators? **Explain.**

Section 4 – COC Info.

	Completed Yes	Info From No	Comment		Completed Yes	No	Comments
Was COC Received	X		-	Analysis Requested	X		-
Date Sampled	X		-	Samples arrived within holding time	X		-
Time Sampled		X	-	Any hold times less than 72 hrs.		X	-
Sample ID	X		-	Client Name	X		-
Rush TAT		X	-	Address/Telephone #	X		-

Section 5 – Comments / Discrepancies

Was Client notified of discrepancies: N/A Notified by:

Explanations / Comments:

Samples Labeled by:	**RL**
BIN:	Dept. 11
COC Scanned/Attached by:	**RL**
Sample labels reviewed by:	**RL**

Filled out by: Rachele Lang **Date:** 4/2/2019 **Time:** 16:39

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem
Environmental Labs

1135 W. Sunset Blvd. Suite A
Rocklin, CA 95765
Ph: 916-543-4445 Fx: 916-543-4449

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Courtney McDonald | Phone #: AS ABOVE

Company/Address: AS ABOVE | Fax #: AS ABOVE

Project Number/P.O#: 1904012 (Please reference when invoicing) | Project Name: 1904012

Project Location | Sampler Signature:

Electronic Data Deliverables Request:
- [X] PDF
- [ ] Geotracker (Global ID: _____)
- [ ] Other (please specify: _____)

Email Address: courtneym@excelchem.net

ANALYSIS REQUEST Page 1 of 1

Sample ID	Sampling Date	Sampling Time	Container: Ziploc Bag	Method Preserved: NONE/ICE	Matrix: Wastechips	Matrix: Ash	Carbon	Hydrogen	Nitrogen	Requested TAT: Standard	Blank	Due Date	Work Order	LAB USE ONLY
1904012-01	3/21/2019	7:00	2	X	X		X	X	X	X				
1904012-02	3/21/2019	8:00	2	X	X		X	X	X	X				
1904012-03	3/21/2019	9:00	2	X	X		X	X	X	X				
1904012-04	3/21/2019	10:00	2	X	X		X	X	X	X				
1904012-05	3/21/2019	11:00	2	X	X		X	X	X	X				
1904012-06	3/21/2019	12:00	2	X	X		X	X	X	X				
1904012-07	3/21/2019	13:00	2	X	X		X	X	X	X				
1904012-08	3/21/2019	14:00	2	X	X		X	X	X	X				
1904012-09	3/21/2019	15:00	2	X	X		X	X	X	X				
1904012-10	3/21/2019	16:00	2	X	X		X	X	X	X				
1904012-11	3/21/2019	17:00	2	X	X		X	X	X	X				

Relinquished by: Courtney McDonald | Date: 4/10/19 | Time: 1942 | Received by:

Relinquished by: | Date: 4/11/19 | Time: 0852 | Received by Laboratory:

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250

Bill To: Excelchem Environmental Laboratories
Address on top of COC

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-01

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rancho, CA 95765
PO#	

Analysis	Theory	% Found		
C		42.01		
H		5.23		
N		0.43		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-02

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		43.62		
H		5.37		
N		0.24		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
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Received: April 11, 2019

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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-03

SAMPLE IDENTIFICATION

Invoice email:	denkes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.98		
H		3.75		
N		0.68		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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Indianapolis, IN 46250
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Fax: 317-849-8534
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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-04

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rancho, CA 95765
PO#	

Analysis	Theory	% Found		
C		41.61		
H		5.55		
N		0.61		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

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Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-05

SAMPLE IDENTIFICATION

Invoice email:	denkes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		41.31		
H		5.96		
N		0.44		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-06

SAMPLE IDENTIFICATION

Invoice email:	dennes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		36.31		
H		4.91		
N		0.70		

Single ☑ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-07

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		34.55		
H		4.23		
N		0.72		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ___ °C Time ___ H ___ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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Fax: 317-849-8534
Website: http://midwestlab.com

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Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-08

SAMPLE IDENTIFICATION

Invoice email:	denkes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		36.62		
H		4.70		
N		0.56		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp: ____°C Time ____H ____M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

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7212 N. Shadeland Ave., Suite 110
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Fax: 317-849-8534
Website: http://midwestlab.com

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Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-09

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rocklin, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.93		
H		4.88		
N		0.43		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	Courtneym@excelchem.net

1904012-10

SAMPLE IDENTIFICATION

Invoice email:	denise@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rocklin, CA 95765
PO#	

Analysis	Theory	% Found		
C		35.87		
H		4.28		
N		0.47		

Single ☑ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6600
Fax: 317-849-8534
Website: http://midwestlab.com

We appreciate your business.

RECEIVED APR 11 2019

Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904012-11

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		43.16		
H		5.18		
N		0.29		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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Completed: April 11, 2019

EXCELCHEM
Laboratories, Inc.
A Silver State Analytical Company
1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449

ELAP Certificate No. : 2119

29 April 2019

Russell Huffman

Desert View Power

62300 Gene Welmas

Mecca, CA 92254

RE: MACT

Work order number:1904010

Enclosed are the results of analyses for samples received by the laboratory on 04/02/19 13:24. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Joshua Cox, Lab Director

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MACT DVP	1904010-01	Wood	03/19/19 07:00	04/02/19 13:24
MACT DVP	1904010-02	Wood	03/19/19 08:00	04/02/19 13:24
MACT DVP	1904010-03	Wood	03/19/19 09:00	04/02/19 13:24
MACT DVP	1904010-04	Wood	03/19/19 10:00	04/02/19 13:24
MACT DVP	1904010-05	Wood	03/19/19 11:00	04/02/19 13:24
MACT DVP	1904010-06	Wood	03/19/19 12:00	04/02/19 13:24
MACT DVP	1904010-07	Wood	03/19/19 13:00	04/02/19 13:24
MACT DVP	1904010-08	Wood	03/19/19 14:00	04/02/19 13:24
MACT DVP	1904010-09	Wood	03/19/19 15:00	04/02/19 13:24
MACT DVP	1904010-10	Wood	03/19/19 16:00	04/02/19 13:24
MACT DVP	1904010-11	Wood	03/19/19 17:00	04/02/19 13:24

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-01 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6030**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8180**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.15**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1180**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**444**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**26.4**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**5.72**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**26.4**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**5.72**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**55.6**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.12**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-02 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6020**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7660**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.16**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**2260**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**653**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**21.1**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**7.89**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**21.1**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**7.89**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**47.8**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.08**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-03 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6150**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7880**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.01	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.025**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**2130**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**481**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**21.9**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**8.32**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**21.9**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**8.32**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.0**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.05**	0.004	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-04 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5990**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7460**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.14**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.026**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1980**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**573**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**19.7**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**20.2**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**19.7**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**20.2**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**33.6**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.15**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-05 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6020**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7870**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.12**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.020**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1730**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**585**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**23.6**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**8.78**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**23.6**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**8.78**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**47.7**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.12**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-06 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5760**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7760**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.12**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1560**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**776**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**25.7**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**7.19**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**25.7**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**7.19**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**47.9**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.13**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-07 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6020**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7550**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1080**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**286**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**20.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**9.81**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**20.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**9.81**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**44.8**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.08**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-08 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6590**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7870**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.15**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.019**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1970**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**729**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**16.2**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**6.43**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**16.2**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**6.43**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**45.7**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.16**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power 62300 Gene Welmas Mecca, CA 92254	Project: Project Number: Project Manager:	MACT [none] Russell Huffman	Date Reported: 04/29/19 15:21

MACT DVP
1904010-09 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5920**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7660**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.15**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.021**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**2080**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**955**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**22.7**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**6.42**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**22.7**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**6.42**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**47.9**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.17**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-10 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6070**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7620**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.029**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**1900**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**520**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**20.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**9.04**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**20.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**9.04**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**47.3**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.14**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

MACT DVP
1904010-11 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6200**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7450**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.08**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.028**	0.016	mg/kg	A]D0087	04/08/19	04/09/19	EPA 7471A	
Potassium	**2280**	20.0	"	A]D0062	04/05/19	04/08/19	EPA 6010B	
Sodium	**609**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**16.8**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**6.77**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**16.8**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**6.77**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**48.1**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.09**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.16	0.03	%		0.15			3.97	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.03	0.03	%		0.03			1.56	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.10	0.03	%		0.10			0.0793	30	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0062 - EPA 6010B										
Blank (A]D0062-BLK1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	ND	20.0	mg/kg							
Sodium	ND	20.0	"							
LCS (A]D0062-BS1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	950	20.0	mg/kg	1000		95.0	80-120			
Sodium	101	20.0	"	100		101	80-120			
LCS Dup (A]D0062-BSD1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	978	20.0	mg/kg	1000		97.8	80-120	2.93	25	
Sodium	102	20.0	"	100		102	80-120	0.394	25	
Matrix Spike (A]D0062-MS1)		**Source: 1904010-04**		Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	2550	20.0	mg/kg	1000	1980	57.3	75-125			QM-01
Sodium	538	20.0	"	100	573	NR	75-125			QM-01
Matrix Spike Dup (A]D0062-MSD1)		**Source: 1904010-04**		Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	2560	20.0	mg/kg	1000	1980	58.2	75-125	0.352	25	QM-01
Sodium	549	20.0	"	100	573	NR	75-125	2.08	25	QM-01
Batch A]D0087 - EPA 7471A										
Blank (A]D0087-BLK1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	ND	0.016	mg/kg							
LCS (A]D0087-BS1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.202	0.016	mg/kg	0.200		101	80-120			

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0087 - EPA 7471A										
LCS Dup (A]D0087-BSD1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.182	0.016	mg/kg	0.200		90.8	80-120	10.8	20	
Matrix Spike (A]D0087-MS1)		**Source: 1904010-06**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.197	0.016	mg/kg	0.200	0.0122	92.3	75-125			
Matrix Spike Dup (A]D0087-MSD1)		**Source: 1904010-06**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.185	0.016	mg/kg	0.200	0.0122	86.3	75-125	6.29	20	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

ASTM E871-82 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E871-82										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	17.9	0.100	%		16.8			6.30	20	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	6.66	0.100	%		6.71			0.868	20	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	25.5	0.100	%		24.4			4.40	20	

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

ASTM E1755-01 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	6.20	0.0100	%		6.77			8.70	30	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	4.09	0.0100	%		3.57			13.7	30	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	3.42	0.0100	%		4.54			28.0	30	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			0.336	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.06	0.009	%		0.06			0.776	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			1.18	30	
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	6.20	0.0100	%		6.77			8.70	30	
Moisture	17.9	0.100	"		16.8			6.30	20	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	6.66	0.100	%		6.71			0.868	20	
Ash	4.09	0.0100	"		3.57			13.7	30	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E870-82										
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	25.5	0.100	%		24.4			4.40	20	
Ash	3.42	0.0100	"		4.54			28.0	30	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

Notes and Definitions

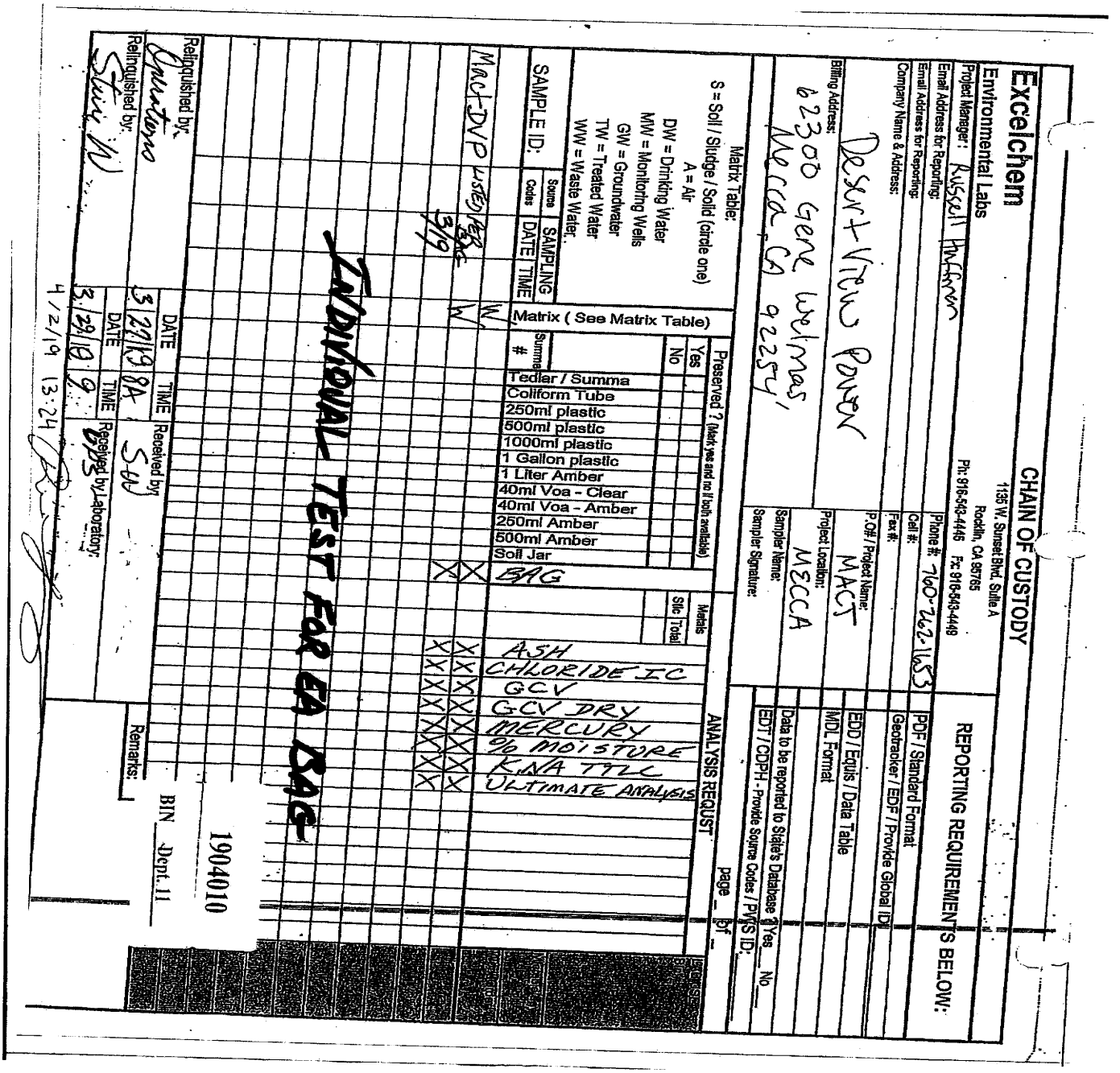
QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.

ND Analyte not detected at reporting limit.

NR Not reported

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21



Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:21

Sample Integrity

WORK ORDER: 1904010

Date Received: 4/02/2019

Section 1 – Sample Arrival Info.

Sample Transport: **UPS** Transported In: **Box**

Describe type of packing materials: **N/A**

Has chilling process begun? **No** Samples Received: **Ambient**

Temperature of Samples (°C): **19.0** Ice Chest Temperature(s) (°C): **N/A**

Section 2 – Bottle/Analysis Info.

	Yes	No	N/A	Comments
Did all bottles arrive unbroken and intact?	X			-
Did all bottle labels agree with COC?	X			-
Were correct containers used for the tests requested?	X			-
Were correct preservations used for the tests requested?	X			-
Was a sufficient amount of sample sent for tests indicated?	X			-
Were bubbles present in VOA Vials?: **(Volatile Methods Only)**			X	-

Section 3 – Summa/Flow regulator Info.

Used Summa#:	N/A
Unused Summa#:	
Cleaning Summa#:	
Regulator#:	

Was there any visual damage to summa canisters or flow regulators? **Explain.**

Section 4 – COC Info.

	Completed Yes	Info From No	Comment		Completed Yes	No	Comments
Was COC Received	X		-	Analysis Requested	X		-
Date Sampled	X		-	Samples arrived within holding time	X		-
Time Sampled		X	-	Any hold times less than 72 hrs.		X	-
Sample ID	X		-	Client Name	X		-
Rush TAT		X	-	Address/Telephone #	X		-

Section 5 – Comments / Discrepancies

Was Client notified of discrepancies: N/A Notified by:

Explanations / Comments:

Samples Labeled by:	**RL**
BIN:	Dept. 11
COC Scanned/Attached by:	**RL**
Sample labels reviewed by:	**RL**

Filled out by: Rachele Lang **Date:** 4/2/2019 **Time:** 16:39

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem
Environmental Labs

1135 W. Sunset Blvd. Suite A
Rocklin, CA 95765
Ph: 916-543-4445 Fx: 916-543-4449

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Courtney McDonald | Phone #: AS ABOVE

Company/Address: AS ABOVE | Fax #: AS ABOVE

Electronic Data Deliverables Request:
- [X] PDF
- [ ] Geotracker (Global ID): _____
- [ ] Other (please specify): _____

Email Address: courtneym@excelchem.net

Project Number/P.O#: 1904010 (Please reference when invoicing) | Project Name: 1904010

Project Location: | Sampler Signature:

ANALYSIS REQUEST Page 1 of 1

Sample ID	Sampling Date	Sampling Time	Container: Ziploc Bag	Method Preserved: NONE/ICE	Matrix: Wood chips	Matrix: Ash	Carbon	Hydrogen	Nitrogen	Requested TAT: Standard	Blank	Due Date:	Work Order:	LAB USE ONLY
1904010-01	3/19/2019	7:00	2	X	X		X	X	X	X				
1904010-02	3/19/2019	8:00	2	X	X		X	X	X	X				
1904010-03	3/19/2019	9:00	2	X	X		X	X	X	X				
1904010-04	3/19/2019	10:00	2	X	X		X	X	X	X				
1904010-05	3/19/2019	11:00	2	X	X		X	X	X	X				
1904010-06	3/19/2019	12:00	2	X	X		X	X	X	X				
1904010-07	3/19/2019	13:00	2	X	X		X	X	X	X				
1904010-08	3/19/2019	14:00	2	X	X		X	X	X	X				
1904010-09	3/19/2019	15:00	2	X	X		X	X	X	X				
1904010-10	3/19/2019	16:00	2	X	X		X	X	X	X				
1904010-11	3/19/2019	17:00	2	X	X		X	X	X	X				

Relinquished by	Date	Time	Received by
Courtney McDonald	4/10/19	1442	[illegible]
Relinquished by:	Date	Time	Received by Laboratory
	4/11/19	9:30	Midwest Microlab

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250

Bill To: Excelchem Environmental Laboratories
Address on top of COC

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-01

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rocklin, CA 95765
PO#	

Analysis	Theory	% Found		
C		33.15		
H		4.73		
N		0.74		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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We appreciate your business.

Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-02

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rancho, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.16		
H		4.57		
N		0.48		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☒	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestmicro.com

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-03

SAMPLE IDENTIFICATION

Invoice email:	denkes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rocklin, CA 95765
PO#	

Analysis	Theory	% Found		
C		40.21		
H		4.92		
N		0.47		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904810 - 04

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		40.52		
H		4.86		
N		0.65		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying Yes ☐ No ☒	Temp ____ °C Time ____ H ____ M
Sample Return Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-05

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		37.88		
H		4.74		
N		0.77		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-06

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rialto, CA 92765
PO#	

Analysis	Theory	% Found		
C		35.75		
H		4.10		
N		0.70		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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Completed: April 11, 2019

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-07

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rancho, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.98		
H		4.69		
N		0.68		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com/

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Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-08

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		42.36		
H		4.92		
N		0.44		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive	Yes ☐ No ☒
Explosive	Yes ☐ No ☒
Hazardous	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestmicrolab.com/

RECEIVED APR 11 2019

We appreciate your business.

Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	Courtneym@excelchem.net

1904010-09

SAMPLE IDENTIFICATION

Invoice email:	denes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		40.42		
H		4.62		
N		0.47		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☑
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☑	Temp. ____ °C Time ____ H ____ M
Sample Return Yes ☐ No ☑	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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We appreciate your business.

Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-10

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		37.85		
H		5.01		
N		0.64		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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Completed: April 11, 2019

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904010-11

SAMPLE IDENTIFICATION

Invoice email:	denaes@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rocklin, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.55		
H		4.86		
N		0.65		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestmicrolab.com

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Completed: April 11, 2019

EXCELCHEM
Laboratories, Inc.
A Silver State Analytical Company
1135 W Sunset Boulevard
Suite A
Rocklin, CA 95765
Phone# 916-543-4445
Fax# 916-543-4449

ELAP Certificate No. : 2119

29 April 2019

Russell Huffman

Desert View Power

62300 Gene Welmas

Mecca, CA 92254

RE: MACT

Work order number:1904013

Enclosed are the results of analyses for samples received by the laboratory on 04/02/19 13:24. All Quality Control results are within acceptable limits except where noted as a case narrative. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

Joshua Cox, Lab Director

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MACT DVP	1904013-01	Wood	03/22/19 08:00	04/02/19 13:24
MACT DVP	1904013-02	Wood	03/22/19 09:00	04/02/19 13:24
MACT DVP	1904013-03	Wood	03/22/19 10:00	04/02/19 13:24
MACT DVP	1904013-04	Wood	03/22/19 11:00	04/02/19 13:24
MACT DVP	1904013-05	Wood	03/22/19 12:00	04/02/19 13:24
MACT DVP	1904013-06	Wood	03/22/19 13:00	04/02/19 13:24
MACT DVP	1904013-07	Wood	03/22/19 14:00	04/02/19 13:24
MACT DVP	1904013-08	Wood	03/22/19 15:00	04/02/19 13:24

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-01 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6730**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8230**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.026**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2660**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**1110**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**18.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**9.44**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**18.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**9.44**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**42.7**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.15**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-02 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6670**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7930**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.13**	0.02	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.052**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**970**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**449**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**15.9**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**49.2**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**15.9**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**49.2**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**4.03**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.13**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-03 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**4920**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**6240**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.089**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1240**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**980**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**21.1**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**9.02**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**21.1**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**9.02**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**40.2**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.14**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-04 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6150**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8190**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.13**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.031**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1700**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**666**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**24.4**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**4.54**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**24.4**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**4.54**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**55.6**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.13**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-05 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**6240**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**8140**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.049**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2080**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**774**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**23.4**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**30.4**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**23.4**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**30.4**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**25.6**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.12**	0.008	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-06 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**3490**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**4520**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.07**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.048**	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**1990**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**694**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**22.9**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**11.2**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**22.9**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**11.2**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**43.5**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.11**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-07 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**5750**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**7700**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.06**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	ND	0.016	mg/kg	A]D0086	04/08/19	04/09/19	EPA 7471A	
Potassium	**2050**	20.0	"	A]D0096	04/10/19	04/10/19	EPA 6010B	
Sodium	**1050**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**25.3**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**0.612**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**25.3**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**0.612**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**53.1**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.06**	0.01	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

MACT DVP
1904013-08 (Wood)

Analyte	Result	Reporting Limit	Units	Batch	Date Prepared	Date Analyzed	Method	Notes
***** DEFAULT GENERAL METHOD *****								
Gross Calorific Value	**4320**	40.0	BTU/Lb	A]D0114	04/11/19	04/12/19	ASTM E870-82	
Gross Calorific Value (dry)	**5930**	40.0	"	"	"	"	"	
Ion Chromatography								
Chloride	**0.09**	0.03	%	A]D0105	"	04/11/19	EPA 300.0	
Total Recoverable Metals								
Mercury	**0.039**	0.016	mg/kg	A]D0085	04/08/19	04/09/19	EPA 7471A	
Potassium	**1300**	20.0	"	A]D0064	04/05/19	04/08/19	EPA 6010B	
Sodium	**735**	20.0	"	"	"	"	"	
ASTM E871-82								
Moisture	**27.1**	0.100	%	A]D0111	04/09/19	04/12/19	ASTM E871-82	
ASTM E1755-01								
Ash	**5.63**	0.0100	%	A]D0111	"	04/12/19	ASTM E1755-01	
Ultimate Analysis								
Moisture	**27.1**	0.100	%	A]D0111	"	04/12/19	ASTM E870-82	
Ash	**5.63**	0.0100	"	"	"	"	ASTM E1755-01	
Oxygen	**46.0**	1.00	"	A]D0114	04/11/19	04/12/19	Oxygen by Difference	
Sulfur	**0.09**	0.009	"	A]D0105	"	04/11/19	EPA 300.0	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Ion Chromatography - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Chloride	ND	0.03	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.16	0.03	%		0.15			3.97	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.03	0.03	%		0.03			1.56	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Chloride	0.10	0.03	%		0.10			0.0793	30	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0064 - EPA 6010B										
Blank (A]D0064-BLK1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	ND	20.0	mg/kg							
Sodium	ND	20.0	"							
LCS (A]D0064-BS1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	942	20.0	mg/kg	1000		94.2	80-120			
Sodium	97.1	20.0	"	100		97.1	80-120			
LCS Dup (A]D0064-BSD1)				Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	943	20.0	mg/kg	1000		94.3	80-120	0.127	25	
Sodium	98.0	20.0	"	100		98.0	80-120	0.943	25	
Matrix Spike (A]D0064-MS1)		**Source: 1904013-08**		Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	2330	20.0	mg/kg	1000	1300	104	75-125			
Sodium	727	20.0	"	100	735	NR	75-125			QM-01
Matrix Spike Dup (A]D0064-MSD1)		**Source: 1904013-08**		Prepared: 04/05/19 Analyzed: 04/08/19						
Potassium	2320	20.0	mg/kg	1000	1300	102	75-125	0.732	25	
Sodium	724	20.0	"	100	735	NR	75-125	0.510	25	QM-01
Batch A]D0085 - EPA 7471A										
Blank (A]D0085-BLK1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	ND	0.016	mg/kg							
LCS (A]D0085-BS1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.221	0.016	mg/kg	0.200		110	80-120			

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0085 - EPA 7471A										
LCS Dup (A]D0085-BSD1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.214	0.016	mg/kg	0.200		107	80-120	2.94	20	
Matrix Spike (A]D0085-MS1)		**Source: 1904027-01**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.226	0.016	mg/kg	0.200	0.0102	108	75-125			
Matrix Spike Dup (A]D0085-MSD1)		**Source: 1904027-01**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.234	0.016	mg/kg	0.200	0.0102	112	75-125	3.13	20	
Batch A]D0086 - EPA 7471A										
Blank (A]D0086-BLK1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	ND	0.016	mg/kg							
LCS (A]D0086-BS1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.218	0.016	mg/kg	0.200		109	80-120			
LCS Dup (A]D0086-BSD1)				Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.224	0.016	mg/kg	0.200		112	80-120	2.53	20	
Matrix Spike (A]D0086-MS1)		**Source: 1904012-03**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.193	0.016	mg/kg	0.200	0.0128	90.0	75-125			
Matrix Spike Dup (A]D0086-MSD1)		**Source: 1904012-03**		Prepared: 04/08/19 Analyzed: 04/09/19						
Mercury	0.208	0.016	mg/kg	0.200	0.0128	97.6	75-125	7.58	20	
Batch A]D0096 - EPA 6010B										
Blank (A]D0096-BLK1)				Prepared & Analyzed: 04/10/19						
Potassium	ND	20.0	mg/kg							
Sodium	21.2	20.0	"							QB-01

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Total Recoverable Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0096 - EPA 6010B										
LCS (A]D0096-BS1)				Prepared & Analyzed: 04/10/19						
Potassium	922	20.0	mg/kg	1000		92.2	80-120			
Sodium	102	20.0	"	100		102	80-120			
LCS Dup (A]D0096-BSD1)				Prepared & Analyzed: 04/10/19						
Potassium	921	20.0	mg/kg	1000		92.1	80-120	0.0977	25	
Sodium	100	20.0	"	100		100	80-120	1.88	25	
Matrix Spike (A]D0096-MS1)		**Source: 1904012-02**		Prepared & Analyzed: 04/10/19						
Potassium	2680	20.0	mg/kg	1000	1980	70.4	75-125			QM-01
Sodium	717	20.0	"	100	728	NR	75-125			QM-01
Matrix Spike Dup (A]D0096-MSD1)		**Source: 1904012-02**		Prepared & Analyzed: 04/10/19						
Potassium	2720	20.0	mg/kg	1000	1980	74.3	75-125	1.45	25	QM-01
Sodium	787	20.0	"	100	728	58.9	75-125	9.27	25	QM-01

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

ASTM E871-82 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E871-82										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	17.9	0.100	%		16.8			6.30	20	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	6.66	0.100	%		6.71			0.868	20	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Moisture	25.5	0.100	%		24.4			4.40	20	

Excelchem Environmental Lab.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

ASTM E1755-01 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	6.20	0.0100	%		6.77			8.70	30	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	4.09	0.0100	%		3.57			13.7	30	
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	3.42	0.0100	%		4.54			28.0	30	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0105 - EPA 300.0										
Blank (A]D0105-BLK1)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK2)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Blank (A]D0105-BLK3)				Prepared & Analyzed: 04/11/19						
Sulfur	ND	0.01	%							
Duplicate (A]D0105-DUP1)		**Source: 1904010-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			0.336	30	
Duplicate (A]D0105-DUP2)		**Source: 1904011-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.06	0.009	%		0.06			0.776	30	
Duplicate (A]D0105-DUP3)		**Source: 1904012-01**		Prepared & Analyzed: 04/11/19						
Sulfur	0.12	0.009	%		0.12			1.18	30	
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP1)		**Source: 1904010-11**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	6.20	0.0100	%		6.77			8.70	30	
Moisture	17.9	0.100	"		16.8			6.30	20	
Duplicate (A]D0111-DUP2)		**Source: 1904011-01**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	4.09	0.0100	%		3.57			13.7	30	
Moisture	6.66	0.100	"		6.71			0.868	20	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Ultimate Analysis - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch A]D0111 - ASTM E1755-01										
Duplicate (A]D0111-DUP3)		**Source: 1904013-04**		Prepared: 04/09/19 Analyzed: 04/12/19						
Ash	3.42	0.0100	%		4.54			28.0	30	
Moisture	25.5	0.100	"		24.4			4.40	20	

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Notes and Definitions

QM-01 The spike recovery for this QC sample is outside of established control limits due to sample matrix interference.

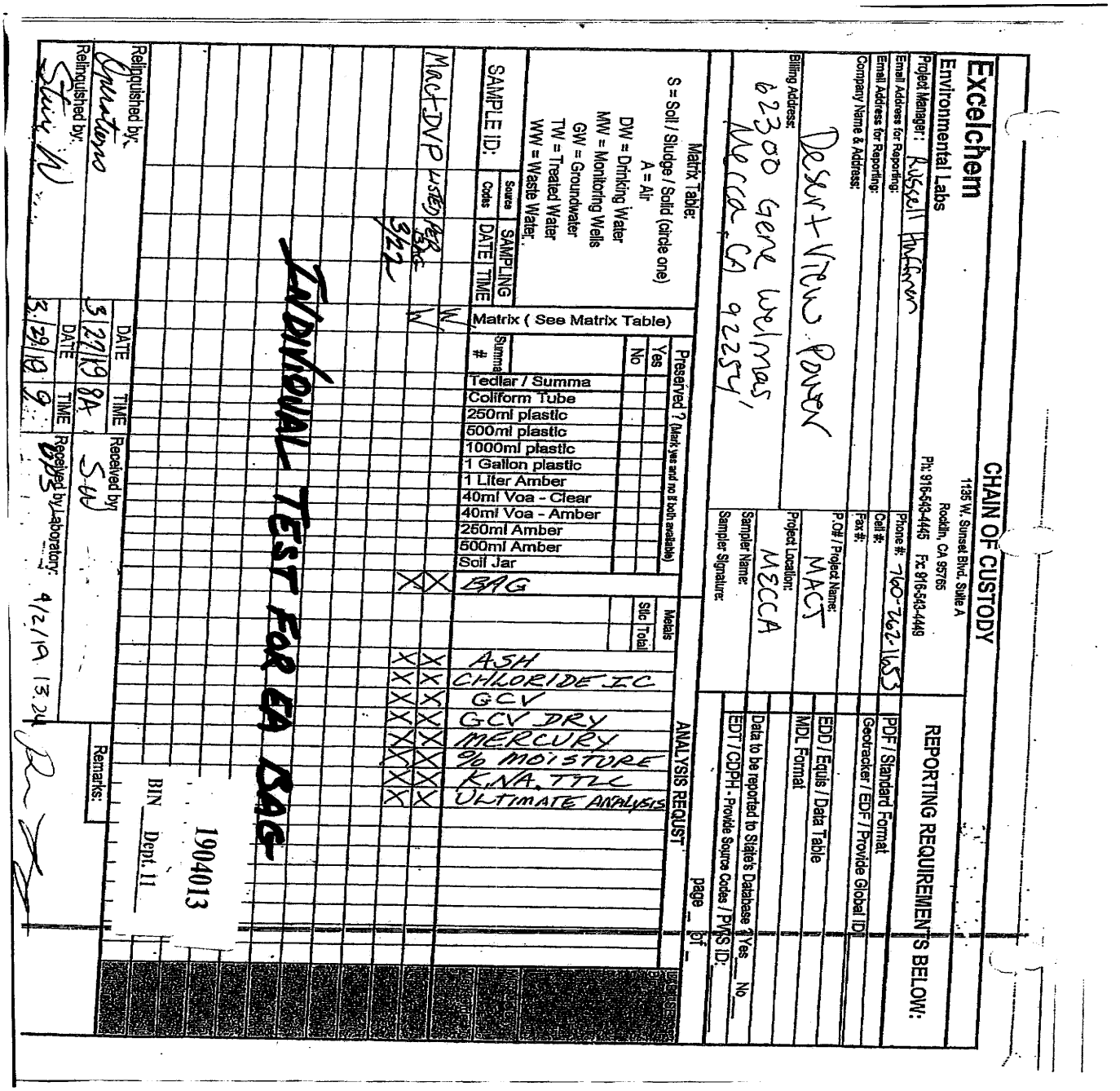
QB-01 The method blank contains analyte at a concentration above the MRL; however, concentration is less than 10% of the sample result, which is negligible according to method criteria.

ND Analyte not detected at reporting limit.

NR Not reported

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33



Excelchem Environmental Lab.

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Laboratory Representative

Excelchem Laboratories, Inc.

Desert View Power	Project:	MACT	
62300 Gene Welmas	Project Number:	[none]	Date Reported:
Mecca, CA 92254	Project Manager:	Russell Huffman	04/29/19 15:33

Sample Integrity **WORK ORDER: 1904013**

Date Received: 4/02/2019

Section 1 – Sample Arrival Info.

Sample Transport: **UPS** Transported In: **Box**

Describe type of packing materials: **N/A**

Has chilling process begun? **No** Samples Received: **Ambient**

Temperature of Samples (°C): **19.0** Ice Chest Temperature(s) (°C): **N/A**

Section 2 – Bottle/Analysis Info.

	Yes	No	N/A	Comments
Did all bottles arrive unbroken and intact?	X			-
Did all bottle labels agree with COC?	X			-
Were correct containers used for the tests requested?	X			-
Were correct preservations used for the tests requested?	X			-
Was a sufficient amount of sample sent for tests indicated?	X			-
Were bubbles present in VOA Vials?: **(Volatile Methods Only)**			X	-

Section 3 – Summa/Flow regulator Info.

Used Summa#:	N/A
Unused Summa#:	
Cleaning Summa#:	
Regulator#:	

Was there any visual damage to summa canisters or flow regulators? **Explain.**

Section 4 – COC Info.

	Completed Yes	Info From No	Comment		Completed Yes	No	Comments
Was COC Received	X		-	Analysis Requested	X		-
Date Sampled	X		-	Samples arrived within holding time	X		-
Time Sampled		X	-	Any hold times less than 72 hrs.		X	-
Sample ID	X		-	Client Name	X		-
Rush TAT		X	-	Address/Telephone #	X		-

Section 5 – Comments / Discrepancies

Was Client notified of discrepancies: N/A Notified by:

Explanations / Comments:

Samples Labeled by:	**RL**
BIN:	Dept. 11
COC Scanned/Attached by:	**RL**
Sample labels reviewed by:	**RL**

Filled out by: Rachele Lang **Date:** 4/2/2019 **Time:** 16:39

Excelchem Environmental Lab.

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Laboratory Representative

Excelchem
Environmental Labs

1135 W. Sunset Blvd. Suite A
Rocklin, CA 95765
Ph: 916-543-4445 Fx: 916-543-4449

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Courtney McDonald | Phone # AS ABOVE

Company/Address: AS ABOVE | Fax # AS ABOVE

Project Number/P.O.#: 1904013 (Please reference when invoicing) | Project Name: 1904013

Project Location: | Sampler Signature:

Electronic Data Deliverables Request:
- [X] PDF
- [ ] Geotracker (Check to)
- [ ] Other (please specify)

Email Address: courtneym@excelchem.net

ANALYSIS REQUEST Page 1 of 1

Sample ID	Sampling Date	Sampling Time	Container: Ziploc Bag	Method Preserved: NONE/ICE	Matrix: Woodchips	Matrix: Ash	Carbon	Hydrogen	Nitrogen	Requested TAT: Standard	SCM	Due Date:	Work Order	LAB USE ONLY
1904013-01	3/22/2019	8:00	2	X	X		X	X	X	X				
1904013-02	3/22/2019	9:00	2	X	X		X	X	X	X				
1904013-03	3/22/2019	10:00	2	X	X		X	X	X	X				
1904013-04	3/22/2019	11:00	2	X	X		X	X	X	X				
1904013-05	3/22/2019	12:00	2	X	X		X	X	X	X				
1904013-06	3/22/2019	13:00	2	X	X		X	X	X	X				
1904013-07	3/22/2019	14:00	2	X	X		X	X	X	X				
1904013-08	3/22/2019	15:00	2	X	X		X	X	X	X				

Relinquished by	Date	Time	Received by
Courtney McDonald	4/10/19	1442	Valerie Huynh
Relinquished by	Date	Time	Received by Laboratory
	4/11/19	10:34	Midwest Microlab

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250

Bill To: Excelchem Environmental Laboratories
Address on top of COC

MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904013-01

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rialto, CA 92376
PO#	

Analysis	Theory	% Found		
C		42.27		
H		5.21		
N		0.22		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestlab.com

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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904013-02

SAMPLE IDENTIFICATION

Invoice email:	denees@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rialto, CA 92376
PO#	

Analysis	Theory	% Found		
C		40.78		
H		5.22		
N		0.60		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
Website: http://midwestmicrolab.com

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Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904013-03

SAMPLE IDENTIFICATION

Invoice email:	denise@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		44.70		
H		5.77		
N		0.14		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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7712 N. Shadeland Ave., Suite 110
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Fax: 317-849-8534
Website: http://midwestlab.com

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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904013-04

SAMPLE IDENTIFICATION

Invoice email:	denas@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		34.66		
H		4.39		
N		0.72		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
7212 N. Shadeland Ave., Suite 110
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Phone: 317-849-6606
Fax: 317-849-8534
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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

19040137-5

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rancho, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.44		
H		4.66		
N		0.79		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____ °C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

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Fax: 317-849-8534
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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904013-06

SAMPLE IDENTIFICATION

Invoice email:	denise@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rankin, CA 95765
PO#	

Analysis	Theory	% Found		
C		39.59		
H		5.04		
N		0.56		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☒	Temp ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

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Phone: 317-849-6606
Fax: 317-849-8534
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MIDWESTMICRO lab

SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1901013-07

SAMPLE IDENTIFICATION

Invoice email:	denkers@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rawlins, CA 95765
PO#	

Analysis	Theory	% Found		
C		40.81		
H		4.95		
N		0.44		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☑
Hazardous:	Yes ☐ No ☑
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☑	Shipping Address: /

Comments: _____

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7212 N. Shadeland Ave., Suite 110
Indianapolis, IN 46250
Phone: 317-849-6606
Fax: 317-849-8534
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SUBMISSION FORM

Name:	Courtney McDonald
Institution:	Excelchem Laboratories
Lab Group:	
Results email:	courtneym@excelchem.net

1904013-08

SAMPLE IDENTIFICATION

Invoice email:	denises@excelchem.net
Invoice Address:	1135 W Sunset Blvd Suite A Rialto, CA 92376
PO#	

Analysis	Theory	% Found		
C		42.51		
H		5.49		
N		0.31		

Single ☒ Duplicate ☐ Triplicate ☐

Molecular Formula:	/
M.P. / B.P.	/
Air Sensitive:	Yes ☐ No ☒
Explosive:	Yes ☐ No ☒
Hazardous:	Yes ☐ No ☒
Drying: Yes ☐ No ☒	Temp. ____°C Time ____ H ____ M
Sample Return: Yes ☐ No ☒	Shipping Address: /

Comments: _____

Midwest Microlab
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Fax: 317-849-8534
Website: http://www.midwestmicro.com

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Appendix B.6
Sample Chain of Custody

CHAIN OF CUSTODY

CLIENT: Desert View Power PROJECT NO: 002AS-541589 TEST DATE(S): 3/19/2019 & 3/21/2019

LOCATION: Unit 1 and Unit 2 SAMPLER(S): Patrick Whitman

SAMPLE LOCATION: Stack Breaching PROJECT MANAGER: Dave Wonderly

TEST METHOD(S): SCAQMD 25.3 DATE DUE:

OUTSIDE LAB REQUIRED?: Yes COMPLIANCE TEST? Yes

DATE	TIME	TEST #	SAMPLE DESCRIPTION	CONTAINERS	SAMPLER	COMMENTS
3/19/2019	725/907	1A-VOC-U1	Tank # 156 Vial #M35	1	PW	10859-7
3/19/2019	725/907	1B-VOC-U1	Tank # 159 Vial #M36	1	PW	-8
3/21/2019	725/821	1A-VOC-U2	Tank # 272 Vial #M37	1	PW	-9
3/21/2019	725/821	1B-VOC-U2	Tank # 296 Vial #M38	1	PW	-10
3/21/2019		Blank	Vial M39			-11

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
[signature]	3/22/19 3510 in Lab	[signature]	3/25/19 6:00
[signature] MYSIS	3/25/19 9:06	[signature]	3/25/19 09:06
		[signature]	3-25-19 9:00

ANALYSIS REQUIRED: Total TGNMO By SCAQMD Method 25.3 Include O2, CO2

MONTROSE AIR QUALITY SERVICES

DS834001

Date of last revision – 2/14/2017

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002AS-541589-RT-1364

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CHAIN OF CUSTODY

CLIENT: Desert View Power PROJECT NO: 002AS-541589 TEST DATE(S): March 20 and 22, 2019

LOCATION: Unit 1 and Unit 2 SAMPLER(S): Patrick Whitman

SAMPLE LOCATION: Stack Breaching PROJECT MANAGER: Dave Wonderly

TEST METHOD(S): EPA 5 DATE DUE:

OUTSIDE LAB REQUIRED?: Yes COMPLIANCE TEST? Yes

DATE	TIME	TEST #	SAMPLE DESCRIPTION	CONTAINERS	SAMPLER	COMMENTS
3/20/2019	721/940	1-PM-Unit-2	Front 1/2 rinse, Filter # 83-3564	2	PW	
3/20/2019	1010/1242	2-PM-Unit-2	Front 1/2 rinse, Filter # 83-3586	2	PW	
3/20/2019	1306/1518	3-PM-Unit-2	Front 1/2 rinse, Filter # 83-3585	2	PW	
					PW	
		HS 3/25/19				
3/22/2019	638/848	1 2-PM-Unit-1	Front 1/2 rinse, Filter # 83-3583	2	PW	
3/22/2019	901/1111	2 3-PM-Unit-1	Front 1/2 rinse, Filter # 83-3584	2	PW	
3/22/2019	1126/1336	3 4-PM-Unit-1	Front 1/2 rinse, Filter # 83-3527	2	PW	

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
(LAB)	3/24/19 1215		3/25/19 0710

ANALYSIS REQUIRED: Particulate By EPA Method 5.

#190417

CHAIN OF CUSTODY

$159

CLIENT: Desert View Power PROJECT NO: 002AS-541589 TEST DATE(S): 3/19/2019 & 3/21/2019

LOCATION: Unit 1 and Unit 2 SAMPLER(S): Patrick Whitman

SAMPLE LOCATION: Stack Breaching PROJECT MANAGER: Dave Wonderly

TEST METHOD(S): EPA 26A DATE DUE:

OUTSIDE LAB REQUIRED?: Yes COMPLIANCE TEST? Yes

DATE	TIME	TEST #	SAMPLE DESCRIPTION	CONTAINERS	SAMPLER	COMMENTS
3/19/2019	725/940	1-HCL-Unit-1	Impinger contents and Line rinse	1	PW	117148
3/19/2019	1101/1322	2-HCL-Unit-1	Impinger contents and Line rinse	1	PW	117149
3/19/2019	1337/1547	3-HCL-Unit-1	Impinger contents and Line rinse	1	PW	117150
3/21/2019	721/940	1-HCL-Unit-2	Impinger contents and Line rinse	1	PW	117151
3/21/2019	1010/1242	2-HCL-Unit-2	Impinger contents and Line rinse	1	PW	117152
3/21/2019	1306/1518	3-HCL-Unit-2	Impinger contents and Line rinse	1	PW	117153
3/19/2019		Reagent Blank-HCL	100 ML, DI H_2O	1	DW	117154
3/19/2019		Reagent Blank-HCL	200 ml 0.1 N, H_2SO_4	1		117155
3/19/2019		Field Blank	Impinger contents and Line rinse	1	PW	117156

RELEASED BY	DATE/TIME	RECEIVED BY	DATE/TIME
Ray Mackey	3/22/19 1510 in lab	[illegible] MYSIS	3/25/19 600
[illegible] MYSIS	3/28/19 9:45	[illegible]	3/25/19 0945

ANALYSIS REQUIRED: HCl by EPA Method 26A report as mg/sample. Record total volume of each sample.

MYSIS

MONTROSE AIR QUALITY SERVICES

DS834001

Date of last revision – 2/14/2017

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APPENDIX C
CALCULATIONS

Appendix C.1
General Emissions Calculations

GENERAL EMISSION CALCULATIONS

I. Stack Gas Velocity

A. Stack gas molecular weight, lb/lb-mole

$$MW_{dry} = 0.44 * \%CO_2 + 0.32 * \%O_2 + 0.28 * \%N_2$$

$$MW_{wet} = MW_{dry} * (1 - B_{wo}) + 18 * B_{wo}$$

B. Absolute stack pressure, iwg

$$Ps = Pbar + \frac{Psg}{13.6}$$

C. Stack gas velocity, ft/sec

$$V_s = 2.9 * C_p * \sqrt{\Delta P} * \sqrt{T_s} * \sqrt{\frac{29.92 * 28.95}{P_s * MW_{wet}}}$$

II. Moisture

A. Sample gas volume, dscf

$$V_{mstd} = 0.03342 * V_m * (P_{bar} + \frac{\Delta H}{13.6}) * \frac{T_{ref}}{T_m} * Y_d$$

B. Water vapor volume, scf

$$V_{wstd} = 0.0472 * V_{lc} * \frac{T_{ref}}{528\ ^\circ R}$$

C. Moisture content, dimensionless

$$B_{wo} = \frac{V_{wstd}}{(V_{mstd} + V_{wstd})}$$

III. Stack gas volumetric flow rate

A. Actual stack gas volumetric flow rate, wacfm

$$Q = V_s * A_s * 60$$

B. Standard stack gas flow rate, dscfm

$$Q_{sd} = Q * (1 - B_{wo}) * \frac{T_{ref}}{T_s} * \frac{P_s}{29.92}$$

IV. Gaseous Mass Emission Rates, lb/hr

$$M = \frac{ppm * MW_i * Q_{sd} * 60}{SV * 10^6}$$

V. Emission Rates, lb/MMBtu

$$\frac{lb}{MMBtu} = \frac{ppm * MW_i * F}{SV * 10^6} * \frac{20.9}{20.9 - \%O_2}$$

VI. Percent Isokinetic

$$I = \frac{17.32 \times T_s \, (V_m std)}{(1\text{-}Bwo)\ 0 \times Vs \times Ps \times Dn2} \times \frac{520°R}{T_{ref}}$$

VII. Particulate emissions

(a) Grain loading, gr/dscf
$C = 0.01543 \, (M_n/V_{m\ std})$

(b) Grain loading at 12% CO_2, gr/dscf
$C_{12\%}\ CO_2 = C \, (12/\%\ CO_2)$

(c) Mass emissions, lb/hr
$M = C \times Qsd \times (60\ min/hr)/(7000\ gr/lb)$

(d) Particulate emission factor

$$lb/10^6\ Btu = Cx \frac{1\ lb}{7000\ gr} \times F \times \frac{20.9}{20.9 - \%\ O_2}$$

Nomenclature:

A_s	= stack area, ft^2
B_{wo}	= flue gas moisture content, dimensionless
$C_{12\%CO2}$	= particulate grain loading, gr/dscf corrected to 12% CO_2
C	= particulate grain loading, gr/dscf
C_p	= pitot calibration factor, dimensionless
Dn	= nozzle diameter, in.
F	= fuel F-Factor, dscf/MMBtu @ 0% O_2
H	= orifice differential pressure, iwg
I	= % isokinetics
M_n	= mass of collected particulate, mg
M_i	= mass emission rate of specie i, lb/hr
MW	= molecular weight of flue gas, lb/lb-mole
M_{wi}	= molecular weight of specie i: SO_2: 64 NO_x: 46 CO: 28 HC: 16
0	= sample time, min.
ΔP	= average velocity head, iwg = $(\sqrt{\Delta P})^2$
P_{bar}	= barometric pressure, inches Hg
P_s	= stack absolute pressure, inches Hg
P_{sg}	= stack static pressure, iwb
Q	= wet stack flow rate at actual conditions, wacfm
Q_{sd}	= dry standard stack flow rate, dscfm
SV	= specific molar volume of an ideal gas at standard conditions, ft^3/lb-mole
T_m	= meter temperature, °R
T_{ref}	= reference temperature, °R
T_s	= stack temperature, °R
V_s	= stack gas velocity, ft/sec
V_{lc}	= volume of liquid collected in impingers, ml
V_m	= uncorrected dry meter volume, dcf
V_{mstd}	= dry meter volume at standard conditions, dscf
V_{wstd}	= volume of water vapor at standard conditions, scf
Y_d	= meter calibration coefficient

RATA SPECIFIC EMISSION CALCULATIONS

The following equations are used for Relative Accuracy Test Audit (RATA) Computational Procedures:

1. Stack Gas Corrected Concentration

   a. $$C_{gas} = (\overline{C} - C_o)\frac{C_{ma}}{C_m - C_o}$$

2. Relative Accuracy Calculations

   a. Average Difference

   $$\overline{d} = \frac{1}{n}\sum_{i=1}^{n} d_i$$

   b. Standard Deviation

   $$S_d = \left[\frac{\sum_{i=1}^{n} d_i^{\,2} - \frac{\left(\sum_{i=1}^{n} d_i\right)^2}{n}}{n-1}\right]^{1/2}$$

   c. Confidence Coefficient

   $$CC = t_{0.975}\frac{S_d}{\sqrt{n}}$$

   d. Relative Accuracy

   $$RA = \frac{|\overline{d}| + |cc|}{\overline{RM}} x100$$

   e. Reference Method Average

   $$\overline{RM} = \frac{1}{n}\sum_{i=1}^{n} RM_i$$

3. Bias Adjustment Factor

a. $$BAF = 1 + \frac{|\bar{d}|}{CEM}$$

4. Nomenclature

C_{gas}	=	Corrected Stack Gas Concentration, ppm dry
$\bar{C}$	=	Average Gas Concentration, ppm dry
C_o	=	Average of the Initial and Final Zero Bias Check
C_m	=	Average of the Initial and Final Upscale Bias Check
C_{ma}	=	Actual Value of Upscale Calibration Gas Concentration
$\bar{d}$	=	Arithmetic Mean
S_d	=	Standard Deviation
N	=	Number of Tests
CC	=	Confidence Coefficient
RA	=	Relative Accuracy
RM	=	Reference Method
$t_{0.975}$	=	t Value
$\|d\|$	=	Absolute Value of the Mean Difference

Appendix C.2
Unit 1 Calculations

Appendix C.2.1
Unit 1 RATA and Gaseous Calculations

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	1-RA-U1
Date:	3/19/2019
Start Time:	8:20
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.01	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.40	iwg
Pstack:	30.04	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	897.3	751.3	146.0
2/H2O	757.7	734.3	23.4
3/Empty	602.1	602.5	-0.4
4/S.G.	966.0	958.6	7.4
Rinse		50.0	-50.0
Total			126.4

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	381.110	69	67
		74	72
Stop	415.720	78	79
Total	34.610		73.2

Summary

Sample Volume:	34.306	dscf
H_2O Volume :	5.966	scf
Moisture Content:	14.8	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.20	1.0954	352	76.54
4	1.40	1.1832	353	82.72
3	0.70	0.8367	353	58.49
2	0.94	0.9695	353	67.78
1	1.20	1.0954	352	76.54
5	1.40	1.1832	353	82.72
4	1.30	1.1402	353	79.71
3	1.00	1.0000	353	69.91
2	0.64	0.8000	353	55.93
1	0.72	0.8485	352	59.28
5	0.90	0.9487	353	66.32
4	0.90	0.9487	354	66.36
3	0.96	0.9798	354	68.54
2	0.94	0.9695	354	67.82
1	0.85	0.9220	353	64.45
5	1.20	1.0954	353	76.58
4	1.40	1.1832	354	82.77
3	1.30	1.1402	354	79.76
2	1.50	1.2247	355	85.73
1	1.40	1.1832	354	82.77
5	1.20	1.0954	354	76.63
4	1.30	1.1402	354	79.76
3	1.40	1.1832	354	82.77
2	1.40	1.1832	354	82.77
1	1.30	1.1402	353	79.71
5	1.40	1.1832	354	82.77
4	1.40	1.1832	354	82.77
3	1.30	1.1402	354	79.76
2	1.30	1.1402	355	79.81
1	1.20	1.0954	356	76.72
Average	1.1543	1.0744	353.6	75.14

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.05	0.02
Pre Test Span Direct	10.47	10.57	46.26	4.66
Pre-test Zero	0.00	0.05	0.07	-0.02
Pre-test Span	10.43	10.48	45.82	4.63
0-30 min	8.32	12.06	28.98	-0.04
Post-test Zero	0.00	0.05	0.05	-0.04
Post-test Span	10.41	10.41	45.57	4.61
Post Test Zero Direct	-0.01	0.03	0.05	-0.07
Post Test Span Direct	10.48	10.49	46.04	4.60
Average	8.32	12.06	28.98	-0.04
Corr. Results	8.37	12.20	28.71	-0.01
	Cal Error <2%, Bias <5%, Drift <3%			
Calibrtion Error	-0.1%	0.0%	1.1%	-0.2%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	-0.4%
Pre-Test Span Bias	-0.2%	-0.4%	-0.5%	-0.4%
Post-Test Zero Bias	0.0%	0.1%	0.0%	0.3%
Post-Test Span Bias	-0.3%	-0.4%	-0.5%	0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.3%
Span Drift	-0.1%	-0.4%	-0.3%	-0.3%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.371	% dry
	7.131	% wet
CO_2:	12.195	% dry
	10.388	% wet
NO_x:	28.710	ppm dry
	24.457	ppm wet
	19.987	lb/hr
SO_2:	4.3639618	ppm dry
SO2:	4.227	lb/hr
CO:	-0.01	ppm dry
	-0.01	ppm wet
	-0.004	lb/hr
H_2O:	14.8	%
MW:	28.47	lb/lb-mole
Flow:	175,107	wacfm
	97.18	mdscfm
	5831.06	kdscfh

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	510	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	1.43	

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5831.06	5476.32	354.74	6.1%
O_2	% dry	8.37	8.4	-0.01	-0.1%
CO_2	% dry	12.20	12.2	0.02	0.2%
NO_x	ppm dry	28.71	31.3	-2.59	-9.0%
NO_x	ppm @ 3% O_2	41.02	44.4	-3.41	-8.3%
NO_x	lb/hr	19.99	20.63	-0.64	-3.2%
SO_2	ppm dry	4.36	4.55	-0.19	-4.3%
SO_2	ppm @ 3% O_2	6.23	6.44	-0.21	-3.3%
SO_2	lb/hr	4.23	4.157	0.070	1.7%
CO	ppm dry	-0.01	2.88	-2.88	
CO	ppm @ 3% O_2	-0.01	4.12	-4.13	
CO	lb/hr	-0.004	1.145	-1.15	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	2-RA-U1
Date:	3/19/2019
Start Time:	9:35
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.01	"Hg
Meter No.	1-P&M	
Meter Y_d:	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.40	iwg
Pstack:	30.04	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	873.0	756.8	116.2
2/H2O	749.7	749.0	0.7
3/Empty	612.9	612.8	0.1
4/S.G.	916.5	908.9	7.6
Rinse		50.0	-50.0
Total			74.6

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	416.001	80	79
		89	83
Stop	452.990	92	87
Total	36.989		85.0

Summary

Sample Volume:	35.868	dscf
H_2O Volume :	3.521	scf
Moisture Content:	8.9	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	363	76.07
4	1.300	1.1402	363	79.17
3	0.800	0.8944	364	62.15
2	0.940	0.9695	364	67.36
1	1.200	1.0954	364	76.11
5	1.100	1.0488	364	72.87
4	1.000	1.0000	364	69.48
3	0.900	0.9487	365	65.96
2	0.940	0.9695	365	67.41
1	0.800	0.8944	364	62.15
5	1.100	1.0488	364	72.87
4	1.200	1.0954	364	76.11
3	1.100	1.0488	364	72.87
2	0.950	0.9747	365	67.76
1	0.930	0.9644	364	67.01
5	1.200	1.0954	364	76.11
4	1.300	1.1402	364	79.22
3	1.500	1.2247	364	85.10
2	1.400	1.1832	364	82.21
1	1.300	1.1402	364	79.22
5	1.200	1.0954	364	76.11
4	1.300	1.1402	364	79.22
3	1.400	1.1832	365	82.26
2	1.300	1.1402	365	79.27
1	1.200	1.0954	365	76.16
5	1.400	1.1832	365	82.26
4	1.400	1.1832	366	82.31
3	1.300	1.1402	365	79.27
2	1.300	1.1402	365	79.27
1	1.200	1.0954	364	76.11
Average	1.1642	1.0790	364.3	74.98

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.05	-0.07
Pre Test Span Direct	10.48	10.49	46.04	4.60
Pre-test Zero	0.00	0.05	0.05	-0.04
Pre-test Span	10.41	10.41	45.57	4.61
0-30 min	8.16	12.19	29.39	-0.02
Post-test Zero	0.01	0.07	0.05	-0.04
Post-test Span	10.38	10.41	45.36	4.65
Post Test Zero Direct	-0.01	0.01	0.00	0.01
Post Test Span Direct	10.48	10.44	45.93	4.67
Average	8.16	12.19	29.39	-0.02
Corr. Results	8.22	12.37	29.27	0.03
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	0.0%	-0.4%	0.8%	-1.0%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	0.3%
Pre-Test Span Bias	-0.3%	-0.4%	-0.5%	0.1%
Post-Test Zero Bias	0.1%	0.3%	0.1%	-0.6%
Post-Test Span Bias	-0.5%	-0.2%	-0.6%	-0.2%
Zero Drift	0.0%	0.1%	0.0%	0.0%
Span Drift	-0.1%	0.0%	-0.2%	0.5%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.224	% dry
	7.489	% wet
CO_2:	12.373	% dry
	11.267	% wet
NO_x:	29.269	ppm dry
	26.652	ppm wet
	21.452	lb/hr
SO_2:	3.053888	ppm dry
	3.114	lb/hr
CO:	0.03	ppm dry
	0.02	ppm wet
	0.011	lb/hr
H_2O:	8.9	%
MW:	29.21	lb/lb-mole
Flow:	174,739	wacfm
	102.319	mdscfm
	6139.14	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	6139.14	5406.98	732.16	11.9%
O_2	% dry	8.22	8.2	-0.01	-0.1%
CO_2	% dry	12.37	12.3	0.08	0.7%
NO_x	ppm dry	29.27	31.4	-2.09	-7.1%
NO_x	ppm @ 3% O_2	41.33	43.6	-2.28	-5.5%
NO_x	lb/hr	21.45	20.6	0.87	4.1%
SO_2	ppm dry	3.05	6.60	-3.54	-116.1%
SO_2	ppm @ 3% O_2	4.31	9.24	-4.93	-114.3%
SO_2	lb/hr	3.114	5.973	-2.859	-91.8%
CO	ppm dry	0.03	2.11	-2.08	
CO	ppm @ 3% O_2	0.04	2.99	-2.95	
CO	lb/hr	0.011	0.828		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	460	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	1.16	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	3-RA-U1
Date:	3/19/2019
Start Time:	11:01
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.01	"Hg
Meter No.	1-P&M	
Meter Y_d:	0.9920	
Meter Pressure:	2.5	iwg
Pstack:		iwg
Pstack:	30.01	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft²

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	849.1	702.1	147.0
2/H2O	759.0	737.5	21.5
3/Empty	599.4	598.7	0.7
4/S.G.	973.7	966.0	7.7
Rinse		50.0	-50.0
Total			126.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	455.131	90	89
		94	90
Stop	487.319	97	92
Total	32.188		92.0

Summary

Sample Volume:	30.816	dscf
H_2O Volume :	5.990	scf
Moisture Content:	16.3	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	368	77.57
4	1.400	1.1832	368	83.78
3	1.500	1.2247	368	86.72
2	1.500	1.2247	368	86.72
1	1.300	1.1402	369	80.78
5	1.300	1.1402	368	80.74
4	1.400	1.1832	368	83.78
3	1.400	1.1832	368	83.78
2	1.300	1.1402	368	80.74
1	1.300	1.1402	367	80.69
5	1.200	1.0954	367	77.52
4	1.300	1.1402	367	80.69
3	1.400	1.1832	368	83.78
2	1.300	1.1402	368	80.74
1	1.100	1.0488	368	74.27
5	1.200	1.0954	368	77.57
4	1.200	1.0954	369	77.61
3	1.000	1.0000	369	70.85
2	0.900	0.9487	369	67.22
1	0.820	0.9055	369	64.16
5	1.100	1.0488	368	74.27
4	1.000	1.0000	368	70.81
3	0.900	0.9487	368	67.18
2	0.850	0.9220	369	65.32
1	0.840	0.9165	369	64.94
5	1.200	1.0954	365	77.43
4	1.000	1.0000	368	70.81
3	0.980	0.9899	365	69.97
2	0.940	0.9695	369	68.69
1	0.860	0.9274	368	65.67
Average	1.1468	1.0709	368.0	75.83

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.01	0.00	0.01
Pre Test Span Direct	10.48	10.44	45.93	4.67
Pre-test Zero	0.01	0.07	0.05	-0.04
Pre-test Span	10.38	10.41	45.36	4.65
0-30 min	8.28	12.01	30.91	0.04
Post-test Zero	0.00	0.05	0.03	0.12
Post-test Span	10.40	10.39	45.35	4.72
Post Test Zero Direct	-0.01	0.03	0.01	0.00
Post Test Span Direct	10.48	10.42	45.92	4.66
Average	8.28	12.01	30.91	0.04
Corr. Results	8.35	12.20	30.86	0.00
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	0.0%	-0.6%	0.7%	-0.2%
Pre-Test Zero Bias	0.1%	0.3%	0.1%	-0.6%
Pre-Test Span Bias	-0.5%	-0.2%	-0.6%	-0.2%
Post-Test Zero Bias	0.0%	0.1%	0.0%	1.4%
Post-Test Span Bias	-0.4%	-0.2%	-0.6%	0.7%
Zero Drift	0.0%	-0.1%	0.0%	1.9%
Span Drift	0.1%	-0.1%	0.0%	0.8%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.351	% dry
	6.992	% wet
CO_2:	12.205	% dry
	10.219	% wet
NO_x:	30.862	ppm dry
	25.839	ppm wet
	20.918	lb/hr
SO_2:	4.4238302	ppm dry
	4.172	lb/hr
CO:	0.00	ppm dry
	0.00	ppm wet
	0.001	lb/hr
H_2O:	16.3	%
MW:	28.29	lb/lb-mole
Flow:	176,706	wacfm
	94.62	mdscfm
	5677.37	kdscfh

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	471	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	1.41	

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5677.37	5376	301.37	5.3%
O_2	% dry	8.35	8.4	-0.04	-0.4%
CO_2	% dry	12.20	12.1	0.09	0.7%
NO_x	ppm dry	30.86	32.9	-2.08	-6.7%
NO_x	ppm @ 3% O_2	44.02	46.3	-2.28	-5.2%
NO_x	lb/hr	20.92	21.43	-0.51	-2.4%
SO_2	ppm dry	4.42	5.95	-1.53	-34.5%
SO_2	ppm @ 3% O_2	6.31	8.39	-2.08	-33.0%
SO_2	lb/hr	4.172	5.343	-1.172	-28.1%
CO	ppm dry	0.00	1.18	-1.18	
CO	ppm @ 3% O_2	0.00	1.70	-1.70	
CO	lb/hr	0.001	0.465	-0.46	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	4-RA-U1
Date:	3/19/2019
Start Time:	12:17
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.01	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.40	iwg
Pstack:	30.04	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft²

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	896.7	735.6	161.1
2/H2O	739.0	724.6	14.4
3/Empty	615.1	613.6	1.5
4/S.G.	927.4	916.5	10.9
Rinse		50.0	-50.0
Total			137.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	489.221	96	94
		98	96
Stop	528.634	99	96
Total	39.413		96.5

Summary

Sample Volume:	37.428	dscf
H_2O Volume :	6.509	scf
Moisture Content:	14.8	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	369	74.03
4	1.300	1.1402	370	80.52
3	0.820	0.9055	370	63.95
2	0.690	0.8307	370	58.66
1	0.820	0.9055	368	63.88
5	1.300	1.1402	369	80.47
4	1.200	1.0954	369	77.32
3	0.930	0.9644	370	68.11
2	0.910	0.9539	370	67.37
1	0.840	0.9165	369	64.69
5	1.100	1.0488	369	74.03
4	1.200	1.0954	369	77.32
3	0.950	0.9747	369	68.79
2	0.900	0.9487	370	67.00
1	0.850	0.9220	368	65.03
5	1.200	1.0954	368	77.27
4	1.000	1.0000	368	70.54
3	1.200	1.0954	369	77.32
2	1.100	1.0488	369	74.03
1	0.970	0.9849	369	69.51
5	1.300	1.1402	368	80.43
4	1.400	1.1832	369	83.51
3	1.500	1.2247	370	86.50
2	1.200	1.0954	370	77.36
1	1.100	1.0488	368	73.98
5	1.300	1.1402	368	80.43
4	1.400	1.1832	369	83.51
3	1.400	1.1832	369	83.51
2	1.300	1.1402	369	80.47
1	1.200	1.0954	369	77.32
Average	1.1060	1.0517	369.0	74.23

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.01	0.00
Pre Test Span Direct	10.48	10.42	45.92	4.66
Pre-test Zero	0.00	0.05	0.03	0.12
Pre-test Span	10.40	10.39	45.35	4.72
0-60 min	8.20	12.07	30.27	0.06
Post-test Zero	0.00	0.05	0.04	0.06
Post-test Span	10.36	10.36	45.23	**4.67**
Post Test Zero Direct	-0.01	0.03	0.01	0.02
Post Test Span Direct	10.47	10.42	46.08	4.66
Average	8.20	12.07	30.27	0.06
Corr. Results	8.28	12.30	30.27	-0.03
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	0.0%	-0.8%	0.7%	-0.3%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	1.4%
Pre-Test Span Bias	-0.4%	-0.2%	-0.6%	0.7%
Post-Test Zero Bias	0.1%	0.1%	0.0%	0.5%
Post-Test Span Bias	-0.5%	-0.3%	-0.9%	0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.7%
Span Drift	-0.2%	-0.2%	-0.1%	-0.6%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.278	% dry
	7.051	% wet
CO_2:	12.300	% dry
	10.478	% wet
NO_x:	30.269	ppm dry
	25.785	ppm wet
	20.428	lb/hr
SO_2:	5.9603075	ppm dry
	5.597	lb/hr
CO:	-0.03	ppm dry
	-0.02	ppm wet
	-0.012	lb/hr
H_2O:	14.8	%
MW:	28.48	lb/lb-mole
Flow:	172,983	wacfm
	94.22	mdscfm
	5652.91	kdscfh

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	483	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	2.25	

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5652.91	5417.28	235.63	4.2%
O_2	% dry	8.28	8.3	-0.01	-0.1%
CO_2	% dry	12.30	12.2	0.12	1.0%
NO_x	ppm dry	30.27	32.7	-2.42	-8.0%
NO_x	ppm @ 3% O_2	42.93	45.2	-2.29	-5.3%
NO_x	lb/hr	20.43	21.6010	-1.17	-5.7%
SO_2	ppm dry	5.96	8.07	-2.11	-35.4%
SO_2	ppm @ 3% O_2	8.45	11.25	-2.80	-33.1%
SO_2	lb/hr	5.597	7.369	-1.772	-31.7%
CO	ppm dry	-0.03	1.30	-1.33	
CO	ppm @ 3% O_2	-0.04	1.86	-1.90	
CO	lb/hr	-0.012	0.514		

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	1-RA-U1
Date:	3/20/2019
Start Time:	9:36
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	842.5	730.4	112.1
2/H2O	748.3	730.5	17.8
3/Empty	637.4	635.9	1.5
4/S.G.	921.4	911.9	9.5
Rinse		50.0	-50.0
Total			90.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	585.000	73	72
		75	74
Stop	610.864	77	75
Total	25.864		74.3

Summary

Sample Volume:	25.589	dscf
H_2O Volume :	4.290	scf
Moisture Content:	14.4	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.40	1.1832	331	81.48
4	1.30	1.1402	333	78.62
3	1.20	1.0954	334	75.58
2	1.20	1.0954	335	75.63
1	1.00	1.0000	333	68.95
5	1.20	1.0954	331	75.44
4	1.10	1.0488	331	72.23
3	1.10	1.0488	333	72.32
2	1.20	1.0954	332	75.48
1	1.30	1.1402	331	78.52
5	1.30	1.1402	332	78.57
4	1.10	1.0488	334	72.36
3	0.85	0.9220	335	63.65
2	0.80	0.8944	335	61.75
1	0.75	0.8660	334	59.75
5	0.85	0.9220	334	63.61
4	0.83	0.9110	336	62.94
3	0.82	0.9055	335	62.52
2	0.89	0.9434	334	65.09
1	0.94	0.9695	333	66.85
5	1.30	1.1402	334	78.67
4	1.20	1.0954	335	75.63
3	0.93	0.9644	335	66.58
2	0.64	0.8000	334	55.20
1	0.69	0.8307	332	57.24
5	1.30	1.1402	331	78.52
4	0.94	0.9695	332	66.81
3	0.97	0.9849	333	67.91
2	1.10	1.0488	332	72.27
1	1.00	1.0000	331	68.86
Average	1.0295	1.0147	333.2	69.97

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	0.00	0.03	0.06	0.01
Pre Test Span Direct	10.48	10.59	45.80	4.66
Pre-test Zero	0.00	0.05	0.04	0.00
Pre-test Span	10.44	10.45	45.25	4.64
0-30 min	8.33	12.11	38.90	-0.13
Post Test Zero Direct	-0.01	0.02	0.03	-0.02
Post Test Span Direct	10.49	10.48	45.64	4.64
Post-test Zero	0.01	0.06	0.07	0.05
Post-test Span	10.44	10.40	45.23	4.64
Average	8.33	12.11	38.90	-0.13
Corr. Results	8.36	12.28	38.95	-0.15
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	0.0%	0.2%	0.6%	-0.3%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	-0.1%
Pre-Test Span Bias	-0.2%	-0.7%	-0.6%	-0.2%
Post-Test Zero Bias	0.1%	0.2%	0.0%	0.8%
Post-Test Span Bias	-0.3%	-0.4%	-0.5%	0.0%
Zero Drift	0.0%	0.1%	0.0%	0.5%
Span Drift	0.0%	-0.3%	0.0%	0.0%
CALIBRATION	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.362	% dry
	7.161	% wet
CO_2:	12.279	% dry
	10.516	% wet
NO_x:	38.948	ppm dry
	33.356	ppm wet
	26.045	lb/hr
SO_2:	17.682232	ppm dry
SO2:	16.451	lb/hr
CO:	-0.15	ppm dry
	-0.13	ppm wet
	-0.063	lb/hr
H_2O:	14.4	%
MW:	28.53	lb/lb-mole
Flow:	163,052	wacfm
	93.35	mdscfm
	5601.03	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5601.03	5287.33	313.70	5.6%
O_2	% dry	8.36	8.4	-0.04	-0.5%
CO_2	% dry	12.28	12.2	0.09	0.7%
NO_x	ppm dry	38.95	41.0	-2.01	-5.2%
NO_x	ppm @ 3% O_2	55.60	58.1	-2.48	-4.5%
NO_x	lb/hr	26.04	26.06	-0.02	-0.1%
SO_2	ppm dry	17.68	16.99	0.69	3.9%
SO_2	ppm @ 3% O_2	25.24	24.29	0.96	3.8%
SO_2	lb/hr	16.45	14.957	1.494	9.1%
CO	ppm dry	-0.15	1.70	-1.86	
CO	ppm @ 3% O_2	-0.22	2.44	-2.66	
CO	lb/hr	-0.063	0.655	-0.72	

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	515	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	4.28	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	2-RA-U1
Date:	3/20/2019
Start Time:	10:35
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft²

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	834.4	693.0	141.4
2/H2O	731.3	728.1	3.2
3/Empty	636.0	636.9	-0.9
4/S.G.	930.5	921.4	9.1
Rinse		50.0	-50.0
Total			102.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	623.500	79	77
		82	80
Stop	650.083	81	79
Total	26.583		79.7

Summary

Sample Volume:	26.040	dscf
H_2O Volume :	4.852	scf
Moisture Content:	15.7	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.500	1.2247	340	85.10
4	1.400	1.1832	341	82.26
3	1.100	1.0488	342	72.96
2	1.100	1.0488	342	72.96
1	1.000	1.0000	340	69.48
5	1.300	1.1402	339	79.17
4	1.100	1.0488	341	72.92
3	1.000	1.0000	343	69.61
2	1.200	1.0954	344	76.30
1	1.200	1.0954	342	76.21
5	1.300	1.1402	341	79.27
4	1.000	1.0000	344	69.65
3	0.890	0.9434	344	65.71
2	0.830	0.9110	343	63.42
1	0.720	0.8485	342	59.03
5	0.860	0.9274	342	64.51
4	0.840	0.9165	344	63.84
3	0.810	0.9000	345	62.73
2	0.900	0.9487	344	66.08
1	0.950	0.9747	343	67.85
5	1.300	1.1402	341	79.27
4	1.000	1.0000	344	69.65
3	0.950	0.9747	345	67.93
2	0.660	0.8124	344	56.59
1	0.640	0.8000	343	55.69
5	1.200	1.0954	342	76.21
4	0.910	0.9539	345	66.49
3	0.940	0.9695	345	67.57
2	1.200	1.0954	344	76.30
1	0.980	0.9899	343	68.91
Average	1.0152	1.0076	342.7	70.12

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.02	0.03	-0.02
Pre Test Span Direct	10.49	10.48	45.64	4.64
Pre-test Zero	0.01	0.06	0.07	0.05
Pre-test Span	10.44	10.40	45.23	4.64
0-30 min	8.48	11.92	29.67	0.00
Post Test Zero Direct	-0.01	0.03	0.01	-0.04
Post Test Span Direct	10.48	10.50	45.19	4.64
Post-test Zero	0.00	0.07	0.06	-0.02
Post-test Span	10.40	10.45	44.11	4.63
Average	8.48	11.92	29.67	0.00
Corr. Results	8.53	12.09	30.07	-0.02
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	0.1%	-0.4%	0.4%	-0.5%
Pre-Test Zero Bias	0.1%	0.2%	0.0%	0.8%
Pre-Test Span Bias	-0.3%	-0.4%	-0.5%	0.0%
Post-Test Zero Bias	0.1%	0.2%	0.1%	0.3%
Post-Test Span Bias	-0.4%	-0.3%	-1.2%	-0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.7%
Span Drift	-0.2%	0.3%	-1.2%	-0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.533	% dry
	7.192	% wet
CO_2:	12.089	% dry
	10.190	% wet
NO_x:	30.069	ppm dry
	25.346	ppm wet
	19.598	lb/hr
SO_2:	6.921898	ppm dry
	6.277	lb/hr
CO:	-0.02	ppm dry
	-0.02	ppm wet
	-0.009	lb/hr
H_2O:	15.7	%
MW:	28.35	lb/lb-mole
Flow:	163,417	wacfm
	90.990	mdscfm
	5459.42	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5459.42	5330.67	128.75	2.4%
O_2	% dry	8.53	8.6	-0.05	-0.6%
CO_2	% dry	12.09	12.0	0.08	0.6%
NO_x	ppm dry	30.07	32.2	-2.16	-7.2%
NO_x	ppm @ 3% O_2	43.52	45.4	-1.86	-4.3%
NO_x	lb/hr	19.60	20.9	-1.29	-6.6%
SO_2	ppm dry	6.92	5.88	1.04	15.1%
SO_2	ppm @ 3% O_2	10.02	8.26	1.76	17.6%
SO_2	lb/hr	6.277	5.273	1.004	16.0%
CO	ppm dry	-0.02	0.48	-0.50	
CO	ppm @ 3% O_2	-0.03	0.69	-0.72	
CO	lb/hr	-0.009	0.186		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	448	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	1.96	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	3-RA-U1
Date:	3/20/2019
Start Time:	11:20
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	848.9	704.9	144.0
2/H2O	766.5	761.9	4.6
3/Empty	684.9	684.5	0.4
4/S.G.	990.4	983.9	6.5
Rinse		50.0	-50.0
Total			105.5

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	651.500	77	76
		81	79
Stop	678.593	87	84
Total	27.093		80.7

Summary

Sample Volume:	26.491	dscf
H_2O Volume :	4.980	scf
Moisture Content:	15.8	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.01	-0.04
Pre Test Span Direct	10.48	10.50	45.19	4.64
Pre-test Zero	0.00	0.07	0.06	-0.02
Pre-test Span	10.40	10.45	44.11	4.63
0-30 min	8.05	12.34	41.66	-0.19
Post Test Zero Direct	-0.01	0.03	0.02	-0.01
Post Test Span Direct	10.48	10.47	45.54	4.64
Post-test Zero	0.00	0.06	0.07	0.02
Post-test Span	10.42	10.41	44.79	4.64
Average	8.05	12.34	41.66	-0.19
Corr. Results	8.11	12.51	42.45	-0.19
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	0.0%	-0.3%	-0.1%	-0.5%
Pre-Test Zero Bias	0.1%	0.2%	0.1%	0.3%
Pre-Test Span Bias	-0.4%	-0.3%	-1.2%	-0.1%
Post-Test Zero Bias	0.0%	0.2%	0.1%	0.4%
Post-Test Span Bias	-0.3%	-0.3%	-0.8%	0.0%
Zero Drift	0.0%	-0.1%	0.0%	0.5%
Span Drift	0.1%	-0.2%	0.8%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	347	76.41
4	0.910	0.9539	348	66.58
3	0.940	0.9695	349	67.71
2	1.000	1.0000	349	69.84
1	1.100	1.0488	348	73.20
5	1.400	1.1832	346	82.48
4	1.100	1.0488	348	73.20
3	0.960	0.9798	349	68.43
2	0.620	0.7874	348	54.96
1	0.650	0.8062	347	56.23
5	0.890	0.9434	347	65.80
4	0.840	0.9165	347	63.93
3	0.820	0.9055	349	63.24
2	0.910	0.9539	349	66.62
1	0.960	0.9798	347	68.34
5	1.200	1.0954	346	76.36
4	1.000	1.0000	347	69.75
3	0.870	0.9327	348	65.10
2	0.810	0.9000	349	62.85
1	0.740	0.8602	347	60.00
5	1.300	1.1402	347	79.53
4	1.000	1.0000	348	69.79
3	1.100	1.0488	349	73.25
2	1.100	1.0488	348	73.20
1	1.200	1.0954	347	76.41
5	1.400	1.1832	347	82.53
4	1.200	1.0954	348	76.45
3	1.300	1.1402	349	79.63
2	1.100	1.0488	348	73.20
1	1.000	1.0000	346	69.71
Average	1.0108	1.0054	347.7	70.16

TEST SUMMARY

O_2:	8.108	% dry
	6.825	% wet
CO_2:	12.511	% dry
	10.531	% wet
NO_x:	42.452	ppm dry
	35.735	ppm wet
	27.474	lb/hr
SO_2:	10.028439	ppm dry
	9.030	lb/hr
CO:	-0.19	ppm dry
	-0.16	ppm wet
	-0.076	lb/hr
H_2O:	15.8	%
MW:	28.38	lb/lb-mole
Flow:	163,495	wacfm
	90.35	mdscfm
	5420.70	kdscfh

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	537	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	2.41	

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5420.70	5097	323.97	6.0%
O_2	% dry	8.11	8.2	-0.04	-0.5%
CO_2	% dry	12.51	12.4	0.12	0.9%
NO_x	ppm dry	42.45	44.6	-2.15	-5.1%
NO_x	ppm @ 3% O_2	59.40	62.2	-2.84	-4.8%
NO_x	lb/hr	27.47	27.31	0.16	0.6%
SO_2	ppm dry	10.03	10.88	-0.85	-8.5%
SO_2	ppm @ 3% O_2	14.03	15.27	-1.24	-8.8%
SO_2	lb/hr	9.030	9.222	-0.193	-2.1%
CO	ppm dry	-0.19	0.65	-0.84	
CO	ppm @ 3% O_2	-0.27	0.91	-1.18	
CO	lb/hr	-0.076	0.241	-0.32	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	4-RA-U1
Date:	3/20/2019
Start Time:	12:05
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	852.5	737.5	115.0
2/H2O	737.7	716.8	20.9
3/Empty	636.1	635.1	1.0
4/S.G.	939.4	930.5	8.9
Rinse		50.0	-50.0
Total			95.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	682.500	85	82
		87	83
Stop	707.762	89	87
Total	25.262		85.5

Summary

Sample Volume:	24.482	dscf
H_2O Volume :	4.522	scf
Moisture Content:	15.6	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.500	1.2247	349	85.52
4	1.300	1.1402	350	79.67
3	1.100	1.0488	351	73.33
2	1.000	1.0000	350	69.87
1	0.980	0.9899	348	69.08
5	1.300	1.1402	347	79.52
4	1.000	1.0000	349	69.83
3	1.100	1.0488	350	73.28
2	1.200	1.0954	351	76.59
1	1.200	1.0954	350	76.54
5	1.400	1.1832	347	82.52
4	1.100	1.0488	348	73.19
3	1.000	1.0000	349	69.83
2	0.820	0.9055	350	63.27
1	0.770	0.8775	347	61.20
5	0.910	0.9539	347	66.53
4	0.850	0.9220	348	64.34
3	0.810	0.9000	347	62.77
2	0.880	0.9381	349	65.50
1	0.920	0.9592	347	66.89
5	1.300	1.1402	348	79.57
4	1.100	1.0488	349	73.24
3	0.910	0.9539	350	66.65
2	0.630	0.7937	351	55.49
1	0.640	0.8000	350	55.90
5	1.000	1.0000	346	69.70
4	0.920	0.9592	348	66.94
3	0.950	0.9747	349	68.06
2	1.200	1.0954	347	76.40
1	1.000	1.0000	346	69.70
Average	1.0159	1.0079	348.6	70.36

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.02	-0.01
Pre Test Span Direct	10.48	10.47	45.54	4.64
Pre-test Zero	0.00	0.06	0.07	0.02
Pre-test Span	10.42	10.41	44.79	4.64
0-30 min	8.32	12.10	38.84	-0.16
Post Test Zero Direct	-0.01	0.03	0.04	0.00
Post Test Span Direct	10.47	10.50	45.61	4.65
Post-test Zero	0.01	0.08	0.09	-0.02
Post-test Span	10.40	10.42	44.96	4.66
Average	8.32	12.10	38.84	-0.16
Corr. Results	8.38	12.28	39.20	-0.17
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	0.0%	-0.5%	0.3%	-0.4%
Pre-Test Zero Bias	0.0%	0.2%	0.1%	0.4%
Pre-Test Span Bias	-0.3%	-0.3%	-0.8%	0.0%
Post-Test Zero Bias	0.1%	0.3%	0.1%	-0.2%
Post-Test Span Bias	-0.3%	-0.4%	-0.7%	0.2%
Zero Drift	0.0%	0.1%	0.0%	-0.5%
Span Drift	-0.1%	0.1%	0.2%	0.2%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.381	% dry
	7.074	% wet
CO_2:	12.279	% dry
	10.365	% wet
NO_x:	39.198	ppm dry
	33.087	ppm wet
	25.485	lb/hr
SO_2:	14.070657	ppm dry
	12.728	lb/hr
CO:	-0.17	ppm dry
	-0.14	ppm wet
	-0.065	lb/hr
H_2O:	15.6	%
MW:	28.38	lb/lb-mole
Flow:	163,976	wacfm
	90.76	mdscfm
	5445.86	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5445.86	5255.87	189.99	3.5%
O_2	% dry	8.38	8.4	-0.03	-0.4%
CO_2	% dry	12.28	12.2	0.11	0.9%
NO_x	ppm dry	39.20	41.2	-2.01	-5.1%
NO_x	ppm @ 3% O_2	56.05	58.2	-2.14	-3.8%
NO_x	lb/hr	25.49	26.2367	-0.75	-2.9%
SO_2	ppm dry	14.07	14.00	0.07	0.5%
SO_2	ppm @ 3% O_2	20.12	19.89	0.23	1.1%
SO_2	lb/hr	12.728	12.364	0.364	2.9%
CO	ppm dry	-0.17	0.04	-0.21	
CO	ppm @ 3% O_2	-0.24	0.06	-0.29	
CO	lb/hr	-0.065	0.016		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	485	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	3.46	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	5-RA-U1
Date:	3/20/2019
Start Time:	12:48
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	839.3	693.5	145.8
2/H2O	742.8	738.9	3.9
3/Empty	600.2	599.6	0.6
4/S.G.	996.3	990.4	5.9
Rinse		50.0	-50.0
Total			106.2

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	709.500	86	85
		85	84
Stop	735.648	86	84
Total	26.148		85.0

Summary

Sample Volume:	25.364	dscf
H_2O Volume :	5.013	scf
Moisture Content:	16.5	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.400	1.1832	350	82.83
4	1.200	1.0954	351	76.73
3	1.300	1.1402	352	79.92
2	1.100	1.0488	352	73.51
1	1.000	1.0000	351	70.05
5	1.300	1.1402	350	79.82
4	1.000	1.0000	351	70.05
3	1.200	1.0954	352	76.78
2	1.300	1.1402	352	79.92
1	1.100	1.0488	350	73.42
5	1.300	1.1402	349	79.77
4	1.200	1.0954	350	76.69
3	0.870	0.9327	351	65.34
2	0.790	0.8888	352	62.30
1	0.760	0.8718	352	61.10
5	0.860	0.9274	347	64.80
4	0.840	0.9165	348	64.08
3	0.830	0.9110	349	63.74
2	0.920	0.9592	350	67.15
1	0.950	0.9747	351	68.27
5	1.400	1.1832	350	82.83
4	1.100	1.0488	351	73.47
3	0.940	0.9695	352	67.96
2	0.600	0.7746	352	54.29
1	0.650	0.8062	350	56.44
5	1.200	1.0954	351	76.73
4	0.900	0.9487	352	66.49
3	0.910	0.9539	352	66.86
2	1.200	1.0954	353	76.83
1	0.970	0.9849	351	68.99
Average	1.0249	1.0124	350.8	70.91

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.04	0.00
Pre Test Span Direct	10.47	10.50	45.61	4.65
Pre-test Zero	0.01	0.08	0.09	-0.02
Pre-test Span	10.40	10.42	44.96	4.66
0-30 min	8.26	12.15	37.23	-0.21
Post Test Zero Direct	-0.01	0.03	0.03	0.00
Post Test Span Direct	10.46	10.49	45.65	4.65
Post-test Zero	-0.01	0.06	0.07	0.03
Post-test Span	10.40	10.43	45.05	4.65
Average	8.26	12.15	37.23	-0.21
Corr. Results	8.32	12.32	37.46	-0.22
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	-0.1%	-0.3%	0.3%	-0.4%
Pre-Test Zero Bias	0.1%	0.3%	0.1%	-0.2%
Pre-Test Span Bias	-0.3%	-0.4%	-0.7%	0.2%
Post-Test Zero Bias	0.0%	0.2%	0.1%	0.3%
Post-Test Span Bias	-0.3%	-0.3%	-0.7%	0.0%
Zero Drift	-0.1%	-0.1%	0.0%	0.5%
Span Drift	0.0%	0.0%	0.1%	-0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.320	% dry
	6.947	% wet
CO_2:	12.321	% dry
	10.288	% wet
NO_x:	37.460	ppm dry
	31.278	ppm wet
	24.212	lb/hr
SO_2:	6.381595	ppm dry
	5.739	lb/hr
CO:	-0.22	ppm dry
	-0.18	ppm wet
	-0.086	lb/hr
H_2O:	16.5	%
MW:	28.27	lb/lb-mole
Flow:	165,240	wacfm
	90.23	mdscfm
	5413.83	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5413.83	5285.17	128.66	2.4%
O_2	% dry	8.32	8.4	-0.06	-0.7%
CO_2	% dry	12.32	12.2	0.17	1.4%
NO_x	ppm dry	37.46	39.3	-1.83	-5.0%
NO_x	ppm @ 3% O_2	53.30	55.9	-2.58	-4.8%
NO_x	lb/hr	24.21	25.0248	-0.81	-3.4%
SO_2	ppm dry	6.38	5.61	0.77	12.0%
SO_2	ppm @ 3% O_2	9.08	7.88	1.20	13.2%
SO_2	lb/hr	5.739	5.000	0.738	12.9%
CO	ppm dry	-0.22	0.00	-0.22	
CO	ppm @ 3% O_2	-0.31	0.00	-0.31	
CO	lb/hr	-0.086	0.000	-0.09	

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	475	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	1.66	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	6-RA-U1
Date:	3/20/2019
Start Time:	13:32
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	830.5	698.1	132.4
2/H2O	718.1	714.9	3.2
3/Empty	636.4	635.6	0.8
4/S.G.	947.3	939.4	7.9
Rinse		50.0	-50.0
Total			94.3

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	738.000	86	85
		89	87
Stop	764.358	90	86
Total	26.358		87.2

Summary

Sample Volume:	25.466	dscf
H_2O Volume :	4.451	scf
Moisture Content:	14.9	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.300	1.1402	348	79.43
4	0.950	0.9747	349	67.94
3	0.920	0.9592	350	66.90
2	1.000	1.0000	351	69.80
1	1.100	1.0488	350	73.16
5	1.300	1.1402	347	79.38
4	1.200	1.0954	348	76.32
3	0.890	0.9434	349	65.76
2	0.620	0.7874	349	54.89
1	0.670	0.8185	350	57.09
5	0.880	0.9381	347	65.31
4	0.850	0.9220	349	64.27
3	0.800	0.8944	351	62.43
2	0.940	0.9695	351	67.67
1	0.910	0.9539	350	66.54
5	1.300	1.1402	350	79.53
4	1.100	1.0488	351	73.20
3	0.880	0.9381	352	65.51
2	0.810	0.9000	351	62.82
1	0.770	0.8775	349	61.17
5	1.200	1.0954	349	76.36
4	1.000	1.0000	350	69.75
3	1.100	1.0488	351	73.20
2	1.300	1.1402	351	79.58
1	1.000	1.0000	350	69.75
5	1.300	1.1402	347	79.38
4	1.200	1.0954	348	76.32
3	1.200	1.0954	348	76.32
2	1.000	1.0000	349	69.71
1	1.100	1.0488	347	73.02
Average	1.0103	1.0052	349.4	70.08

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.03	0.00
Pre Test Span Direct	10.46	10.49	45.65	4.65
Pre-test Zero	-0.01	0.06	0.07	0.03
Pre-test Span	10.40	10.43	45.05	4.65
0-30 min	8.20	12.20	39.21	-0.23
Post Test Zero Direct	-0.01	0.02	0.04	0.00
Post Test Span Direct	10.45	10.47	45.48	4.65
Post-test Zero	0.00	0.05	0.08	0.03
Post-test Span	10.39	10.41	44.91	4.65
Average	8.20	12.20	39.21	-0.23
Corr. Results	8.27	12.37	39.48	-0.27
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	-0.1%	-0.4%	0.4%	-0.3%
Pre-Test Zero Bias	0.0%	0.2%	0.1%	0.3%
Pre-Test Span Bias	-0.3%	-0.3%	-0.7%	0.0%
Post-Test Zero Bias	0.1%	0.2%	0.0%	0.4%
Post-Test Span Bias	-0.3%	-0.3%	-0.6%	0.0%
Zero Drift	0.0%	0.0%	0.0%	0.1%
Span Drift	-0.1%	-0.1%	-0.2%	0.0%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.270	% dry
	7.040	% wet
CO_2:	12.373	% dry
	10.532	% wet
NO_x:	39.475	ppm dry
	33.602	ppm wet
	25.754	lb/hr
SO_2:	8.6923346	ppm dry
	7.890	lb/hr
CO:	-0.27	ppm dry
	-0.23	ppm wet
	-0.106	lb/hr
H_2O:	14.9	%
MW:	28.48	lb/lb-mole
Flow:	163,325	wacfm
	91.08	mdscfh
	5464.64	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5464.64	5252.60	212.04	3.9%
O_2	% dry	8.27	8.3	-0.04	-0.4%
CO_2	% dry	12.37	12.2	0.16	1.3%
NO_x	ppm dry	39.48	41.8	-2.34	-5.9%
NO_x	ppm @ 3% O_2	55.95	59.0	-3.02	-5.4%
NO_x	lb/hr	25.75	26.3983	-0.64	-2.5%
SO_2	ppm dry	8.69	9.58	-0.88	-10.2%
SO_2	ppm @ 3% O_2	12.32	13.54	-1.22	-9.9%
SO_2	lb/hr	7.890	8.392	-0.502	-6.4%
CO	ppm dry	-0.27	0.00	-0.27	
CO	ppm @ 3% O_2	-0.38	0.00	-0.38	
CO	lb/hr	-0.106	0.000		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	455	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	2.37	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	7-RA-U1
Date:	3/20/2019
Start Time:	14:16
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:	30.02	psi "Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	823.5	696.6	126.9
2/H2O	743.9	740.5	3.4
3/Empty	599.5	599.2	0.3
4/S.G.	1001.8	996.3	5.5
Rinse		50.0	-50.0
Total			86.1

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	766.000	85	84
		90	87
Stop	793.842	92	89
Total	27.842		87.8

Summary

Sample Volume:	26.867	dscf
H_2O Volume :	4.064	scf
Moisture Content:	13.1	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.300	1.1402	347	79.07
4	1.300	1.1402	348	79.12
3	1.200	1.0954	349	76.06
2	1.100	1.0488	350	72.87
1	1.000	1.0000	350	69.48
5	1.300	1.1402	351	79.26
4	1.000	1.0000	350	69.48
3	1.100	1.0488	351	72.91
2	1.200	1.0954	350	76.11
1	1.200	1.0954	348	76.01
5	1.400	1.1832	347	82.05
4	1.000	1.0000	348	69.39
3	0.870	0.9327	350	64.80
2	0.800	0.8944	351	62.18
1	0.730	0.8544	350	59.36
5	0.840	0.9165	347	63.56
4	0.850	0.9220	348	63.97
3	0.810	0.9000	349	62.49
2	0.900	0.9487	348	65.83
1	0.940	0.9695	350	67.36
5	1.300	1.1402	348	79.12
4	1.200	1.0954	350	76.11
3	0.900	0.9487	351	65.95
2	0.650	0.8062	351	56.05
1	0.660	0.8124	350	56.44
5	1.000	1.0000	347	69.35
4	0.920	0.9592	348	66.56
3	0.970	0.9849	349	68.38
2	1.000	1.0000	348	69.39
1	0.980	0.9899	346	68.61
Average	1.0042	1.0021	349.0	69.58

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.02	0.04	0.00
Pre Test Span Direct	10.45	10.47	45.48	4.65
Pre-test Zero	0.00	0.05	0.08	0.03
Pre-test Span	10.39	10.41	44.91	4.65
0-30 min	8.08	12.31	38.47	-0.17
Post Test Zero Direct	-0.01	0.03	0.04	-0.03
Post Test Span Direct	10.45	10.49	45.59	4.63
Post-test Zero	0.00	0.06	0.09	0.01
Post-test Span	10.38	10.41	45.03	4.64
Average	8.08	12.31	38.47	-0.17
Corr. Results	8.15	12.50	38.73	-0.19
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	-0.2%	-0.5%	0.2%	-0.4%
Pre-Test Zero Bias	0.1%	0.2%	0.0%	0.4%
Pre-Test Span Bias	-0.3%	-0.3%	-0.6%	0.0%
Post-Test Zero Bias	0.1%	0.2%	0.1%	0.4%
Post-Test Span Bias	-0.4%	-0.4%	-0.6%	0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.3%
Span Drift	0.0%	0.0%	0.1%	-0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.155	% dry
	7.083	% wet
CO_2:	12.501	% dry
	10.858	% wet
NO_x:	38.732	ppm dry
	33.643	ppm wet
	25.611	lb/hr
SO_2:	9.46175	ppm dry
	8.705	lb/hr
CO:	-0.19	ppm dry
	-0.17	ppm wet
	-0.077	lb/hr
H_2O:	13.1	%
MW:	28.71	lb/lb-mole
Flow:	162,142	wacfm
	92.31	mdscfm
	5538.60	kdscfh

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	433	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	2.86	

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5538.60	5137.67	400.93	7.2%
O_2	% dry	8.15	8.2	-0.02	-0.2%
CO_2	% dry	12.50	12.3	0.16	1.3%
NO_x	ppm dry	38.73	40.6	-1.88	-4.9%
NO_x	ppm @ 3% O_2	54.40	56.7	-2.27	-4.2%
NO_x	lb/hr	25.61	25.0880	0.52	2.0%
SO_2	ppm dry	9.46	14.46	-5.00	-52.9%
SO_2	ppm @ 3% O_2	13.29	20.21	-6.92	-52.1%
SO_2	lb/hr	8.705	12.410	-3.706	-42.6%
CO	ppm dry	-0.19	0.00	-0.19	
CO	ppm @ 3% O_2	-0.27	0.00	-0.27	
CO	lb/hr	-0.077	0.000		

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	8-RA-U1
Date:	3/20/2019
Start Time:	15:00
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	846.0	732.4	113.6
2/H2O	740.0	716.0	24.0
3/Empty	637.8	635.7	2.1
4/S.G.	953.5	947.3	6.2
Rinse		50.0	-50.0
Total			95.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	796.200	89	88
		90	88
Stop	823.866	91	89
Total	27.666		89.2

Summary

Sample Volume:	26.633	dscf
H_2O Volume :	4.526	scf
Moisture Content:	14.5	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	346	76.11
4	0.910	0.9539	347	66.32
3	0.940	0.9695	348	67.44
2	1.100	1.0488	348	72.96
1	1.000	1.0000	347	69.52
5	1.300	1.1402	345	79.17
4	1.100	1.0488	348	72.96
3	0.960	0.9798	348	68.16
2	0.630	0.7937	347	55.18
1	0.660	0.8124	348	56.51
5	0.870	0.9327	346	64.80
4	0.820	0.9055	347	62.95
3	0.800	0.8944	347	62.18
2	0.900	0.9487	347	65.95
1	0.930	0.9644	348	67.08
5	1.300	1.1402	346	79.21
4	1.000	1.0000	347	69.52
3	0.860	0.9274	346	64.43
2	0.810	0.9000	346	62.53
1	0.770	0.8775	345	60.93
5	1.300	1.1402	348	79.31
4	1.000	1.0000	349	69.61
3	1.100	1.0488	347	72.91
2	1.100	1.0488	348	72.96
1	1.200	1.0954	348	76.20
5	1.300	1.1402	347	79.26
4	1.400	1.1832	348	82.31
3	1.000	1.0000	347	69.52
2	1.100	1.0488	348	72.96
1	0.980	0.9899	346	68.78
Average	1.0019	1.0010	347.1	69.59

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.04	-0.03
Pre Test Span Direct	10.45	10.49	45.59	4.63
Pre-test Zero	0.00	0.06	0.09	0.01
Pre-test Span	10.38	10.41	45.03	4.64
0-30 min	7.81	12.60	38.36	-0.16
Post Test Zero Direct	-0.01	0.03	0.03	-0.01
Post Test Span Direct	10.46	10.49	45.62	4.65
Post-test Zero	0.01	0.09	0.08	-0.01
Post-test Span	10.38	10.44	44.89	4.65
Average	7.81	12.60	38.36	-0.16
Corr. Results	7.88	12.78	38.64	-0.16
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	-0.2%	-0.4%	0.3%	-0.6%
Pre-Test Zero Bias	0.1%	0.2%	0.1%	0.4%
Pre-Test Span Bias	-0.4%	-0.4%	-0.6%	0.1%
Post-Test Zero Bias	0.1%	0.4%	0.1%	0.0%
Post-Test Span Bias	-0.4%	-0.2%	-0.8%	0.0%
Zero Drift	0.0%	0.2%	0.0%	-0.2%
Span Drift	0.0%	0.2%	-0.2%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	7.885	% dry
	6.739	% wet
CO_2:	12.779	% dry
	10.923	% wet
NO_x:	38.642	ppm dry
	33.028	ppm wet
	25.207	lb/hr
SO_2:	10.411467	ppm dry
	9.449	lb/hr
CO:	-0.16	ppm dry
	-0.14	ppm wet
	-0.063	lb/hr
H_2O:	14.5	%
MW:	28.56	lb/lb-mole
Flow:	162,175	wacfm
	91.07	mdscfm
	5464.03	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5464.03	5201.20	262.83	4.8%
O_2	% dry	7.88	7.9	-0.02	-0.3%
CO_2	% dry	12.78	12.6	0.20	1.6%
NO_x	ppm dry	38.64	40.6	-1.99	-5.2%
NO_x	ppm @ 3% O_2	53.14	55.8	-2.70	-5.1%
NO_x	lb/hr	25.21	25.2963	-0.09	-0.4%
SO_2	ppm dry	10.41	13.26	-2.85	-27.3%
SO_2	ppm @ 3% O_2	14.32	18.23	-3.91	-27.3%
SO_2	lb/hr	9.449	11.477	-2.027	-21.5%
CO	ppm dry	-0.16	0.00	-0.16	
CO	ppm @ 3% O_2	-0.22	0.00	-0.22	
CO	lb/hr	-0.063	0.000		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	479	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	2.82	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION
GENERAL

Test:	9-RA-U1
Date:	3/20/2019
Start Time:	15:44
Station:	Desert View Power
Unit:	#1
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:	30.02	psi "Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	836.6	695.5	141.1
2/H2O	752.6	749.2	3.4
3/Empty	600.3	599.7	0.6
4/S.G.	1007.1	1001.8	5.3
Rinse		50.0	-50.0
Total			100.4

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	826.300	87	84
		88	86
Stop	852.522	84	82
Total	26.222		85.2

Summary

Sample Volume:	25.428	dscf
H_2O Volume :	4.739	scf
Moisture Content:	15.7	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.500	1.2247	348	85.49
4	1.300	1.1402	349	79.63
3	1.100	1.0488	349	73.25
2	1.200	1.0954	350	76.56
1	1.000	1.0000	349	69.84
5	1.200	1.0954	348	76.46
4	1.000	1.0000	349	69.84
3	1.100	1.0488	348	73.21
2	1.000	1.0000	347	69.76
1	1.200	1.0954	346	76.37
5	1.300	1.1402	348	79.58
4	1.000	1.0000	349	69.84
3	0.870	0.9327	350	65.19
2	0.820	0.9055	351	63.32
1	0.770	0.8775	350	61.32
5	0.860	0.9274	351	64.85
4	0.830	0.9110	350	63.67
3	0.810	0.9000	351	62.94
2	0.880	0.9381	350	65.56
1	0.950	0.9747	348	68.03
5	1.400	1.1832	348	82.59
4	1.100	1.0488	349	73.25
3	0.900	0.9487	350	66.30
2	0.620	0.7874	351	55.06
1	0.630	0.7937	350	55.47
5	1.200	1.0954	348	76.46
4	0.910	0.9539	350	66.67
3	0.960	0.9798	351	68.52
2	1.000	1.0000	351	69.93
1	1.100	1.0488	350	73.30
Average	1.0064	1.0032	349.3	70.08

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.03	-0.01
Pre Test Span Direct	10.46	10.49	45.62	4.65
Pre-test Zero	0.01	0.09	0.08	-0.01
Pre-test Span	10.38	10.44	44.89	4.65
0-30 min	8.22	12.18	40.44	-0.16
Post Test Zero Direct				
Post Test Span Direct	10.46	10.53	45.69	4.66
Post-test Zero	0.00	0.02	0.07	0.09
Post-test Span	10.38	10.46	44.98	4.67
Average	8.22	12.18	40.44	-0.16
Corr. Results	8.30	12.32	40.76	-0.20
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	-0.1%	-0.4%	0.3%	-0.4%
Pre-Test Zero Bias	0.1%	0.4%	0.1%	0.0%
Pre-Test Span Bias	-0.4%	-0.2%	-0.8%	0.0%
Post-Test Zero Bias	0.0%	0.1%	0.1%	1.0%
Post-Test Span Bias	-0.4%	-0.4%	-0.8%	0.1%
Zero Drift	-0.1%	-0.4%	0.0%	1.2%
Span Drift	0.0%	0.1%	0.1%	0.3%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	8.298	% dry
	6.995	% wet
CO_2:	12.320	% dry
	10.385	% wet
NO_x:	40.760	ppm dry
	34.357	ppm wet
	26.332	lb/hr
SO_2:	6.1725072	ppm dry
	5.548	lb/hr
CO:	-0.20	ppm dry
	-0.17	ppm wet
	-0.078	lb/hr
H_2O:	15.7	%
MW:	28.37	lb/lb-mole
Flow:	163,304	wacfm
	90.19	mdscfm
	5411.23	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5411.23	5387.63	23.60	0.4%
O_2	% dry	8.30	8.4	-0.06	-0.7%
CO_2	% dry	12.32	12.2	0.16	1.3%
NO_x	ppm dry	40.76	42.9	-2.09	-5.1%
NO_x	ppm @ 3% O_2	57.90	60.9	-2.99	-5.2%
NO_x	lb/hr	26.33	27.67	-1.34	-5.1%
SO_2	ppm dry	6.17	7.09	-0.91	-14.8%
SO_2	ppm @ 3% O_2	8.77	10.08	-1.31	-15.0%
SO_2	lb/hr	5.548	6.360	-0.812	-14.6%
CO	ppm dry	-0.20	0.09	-0.29	
CO	ppm @ 3% O_2	-0.28	0.14	-0.42	
CO	lb/hr	-0.078	0.037		

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	487	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	1.57	

Montrose AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 1

PRE-TEST INFORMATION

GENERAL

Test:	10-RA-U1	
Date:	3/20/2019	
Start Time:	16:38	
Station:	Desert View Power	
Unit:	#1	
Test Condition:	Full Load	
Performed By:	DW	

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.02	"Hg
Meter No.	1-P&M	
Meter Y_d:	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.41	iwg
Pstack:	30.05	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	0.00	0.00	0.00	0.00
Pre Test Span Direct	10.46	10.53	45.69	4.66
Pre-test Zero	0.00	0.02	0.07	0.09
Pre-test Span	10.38	10.46	44.98	4.67
0-30 min	8.38	12.01	35.45	-0.12
Post-test Zero	-0.01	0.03	0.04	0.00
Post-test Span	10.46	10.52	45.68	4.65
Post Test Zero Direct	0.00	0.06	0.09	0.03
Post Test Span Direct	10.38	10.45	44.83	4.66
Average	8.38	12.01	35.45	-0.12
Corr. Results	8.43	12.09	35.41	-0.17
	Cal Error <2%, Bias <5%; Drift <3%			
Calibrtion Error	-0.1%	-0.2%	0.4%	-0.2%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	1.0%
Pre-Test Span Bias	-0.4%	-0.4%	-0.8%	0.1%
Post-Test Zero Bias	-0.1%	-0.2%	0.0%	-0.3%
Post-Test Span Bias	0.5%	0.4%	0.9%	-0.2%
Zero Drift	0.0%	0.0%	0.0%	-1.0%
Span Drift	0.4%	0.3%	0.8%	-0.2%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 4 DATA

Impingers

#/Matl.	End	Start	Diff.
1/H2O	850.2	700.5	149.7
2/H2O	720.3	718.5	1.8
3/Empty	636.0	635.5	0.5
4/S.G.	958.7	953.5	5.2
Rinse		50.0	-50.0
Total			107.2

Dry Gas Meter

	Time	Vol.	Tm(in)	Tm(out)
Start		855.000	77	76
			75	74
Stop		880.944	75	73
Total		25.944		75.0

Summary

Sample Volume:	25.636	dscf
H_2O Volume :	5.060	scf
Moisture Content:	16.5	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	351	76.77
4	0.900	0.9487	350	66.44
3	0.950	0.9747	350	68.26
2	1.000	1.0000	351	70.08
1	0.970	0.9849	350	68.98
5	1.400	1.1832	351	82.92
4	1.100	1.0488	350	73.45
3	0.900	0.9487	351	66.48
2	0.610	0.7810	351	54.73
1	0.630	0.7937	350	55.59
5	0.840	0.9165	349	64.15
4	0.820	0.9055	350	63.42
3	0.800	0.8944	351	62.68
2	0.900	0.9487	350	66.44
1	0.950	0.9747	351	68.30
5	1.300	1.1402	350	79.85
4	1.000	1.0000	351	70.08
3	0.850	0.9220	350	64.57
2	0.820	0.9055	351	63.46
1	0.740	0.8602	350	60.25
5	1.300	1.1402	350	79.85
4	1.000	1.0000	351	70.08
3	1.100	1.0488	351	73.50
2	1.200	1.0954	350	76.72
1	1.300	1.1402	349	79.80
5	1.500	1.2247	350	85.78
4	1.200	1.0954	351	76.77
3	1.000	1.0000	350	70.04
2	1.100	1.0488	351	73.50
1	1.100	1.0488	348	73.36
Average	1.0046	1.0023	350.3	70.21

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5365.20	5177.80	187.40	3.5%
O_2	% dry	8.43	8.6	-0.20	-2.4%
CO_2	% dry	12.09	11.9	0.23	1.9%
NO_x	ppm dry	35.41	37.9	-2.48	-7.0%
NO_x	ppm @ 3% O_2	50.82	55.0	-4.13	-8.1%
NO_x	lb/hr	22.68	23.50	-0.82	-3.6%
SO_2	ppm dry	4.46	4.30	0.16	3.6%
SO_2	ppm @ 3% O_2	6.41	6.23	0.18	2.7%
SO_2	lb/hr	3.978	3.699	0.279	7.0%
CO	ppm dry	-0.17	0.40	-0.57	
CO	ppm @ 3% O_2	-0.25	0.58	-0.83	
CO	lb/hr	-0.067	0.151		

TEST SUMMARY

O_2:	8.427	% dry
	7.038	% wet
CO_2:	12.095	% dry
	10.101	% wet
NO_x:	35.411	ppm dry
	29.574	ppm wet
	22.682	lb/hr
SO_2:	4.4640724	ppm dry
	3.978	lb/hr
CO:	-0.17	ppm dry
	-0.14	ppm wet
	-0.067	lb/hr
H_2O:	16.5	%
MW:	28.25	lb/lb-mole
Flow:	163,619	wacfm
	89.42	mdscfm
	5365.20	kdscfh

SOx Titration Summary

	B1/2	Probe
N BaCl2	0.0096712	
Total VOL (ml)	446	
Aliquot VOL (ml)	20	
Titrant VOL (ml)	1.25	

Appendix C.2.2
Unit 1 Hydrogen Chloride Calculations

EPA METHOD 26A SOURCE TEST

DATA AND WORKSHEET

Client	Desert View Power Parameter			Full Load
Loaction	Mecca	Fuel		Biomass
Unit	1	Data By		DW
Test Number	1-HCL-U1	2-HCL-U1	3-HCL-U1	Average
Reference Temperature, F	68	68	68	
Test Date	3/19/2019	3/19/2019	3/19/2019	
Sample Train	30-WCS	30-WCS	30-WCS	-
Pitot Factor	0.840	0.840	0.840	-
Meter Calibration Factor	0.995	0.995	0.995	-
Stack Area (sq ft)	38.84	38.84	38.84	-
Sample Time (Min)	120	120	120	120
Barometric Pressure (in Hg)	30.01	30.01	30.01	30.01
Nozzle Diam (in)	0.240	0.240	0.240	0.240
Start/Stop Time	725/1040	1101/1322	1337/1547	-
Stack Pressure (iwg)	0.40	0.40	0.40	0.40
Delta P (iwg)	1.193	1.144	1.119	1.1521
Meter Pressure (iwg)	2.35	2.31	2.15	2.269
Stack Temperature (F)	356.9	371.3	367.0	365.1
Meter Temperature (F)	84.4	98.2	98.9	93.8
Meter Volume (acf)	100.892	101.264	102.290	101.482
Liquid Volume (ml)	363.8	387.3	318.6	356.6
Stack O2 (%)	8.85	8.34	8.40	8.5
Stack CO2 (%)	11.77	12.24	12.21	12.1
Standard Sample Volume (SCF	98.204	96.125	96.933	97.087
Moisture Fraction	0.149	0.160	0.134	0.148
Molecular Weight (wet)	28.42	28.33	28.64	28.46
Stack Gas Velocity (ft/sec)	76.63	75.82	74.36	75.60
Stack Flow Rate (wacfm)	178,572	176,685	173,289	176,182
Stack Flow Rate (dscfm)	98,598	94,633	96,126	96,452
Isokinetic Ratio (%)	102.58	104.62	103.86	103.68

HYDROCHLORIC ACID TEST RESULTS
Unit 1

Test Number	1-HCL-U1	2-HCL-U1	3-HCL-U1	**Average**
Date	03/19/19	03/19/19	03/19/19	
Start/Stop Time	725/1040	1101/1322	1337/1547	
Stack Flow Rate, dscfm[(1)]	98,598	94,633	96,126	96,452
Sample Volume, dscf	98.204	96.125	96.933	97.087
O_2, %	8.85	8.34	8.40	8.53
CO_2, %	11.77	12.24	12.21	12.08
mg/sample	46.0	50.8	48.7	48.5
mg/dscm	16.54	18.66	17.74	17.65
ppm (as HCl)	10.90	12.30	11.69	11.63
lb/hr (as HCl)	6.10	6.61	6.38	6.37
MMBtu/Hr	373	373	373	373
Lb/MMBtu	0.016	0.018	0.017	0.0171

1-HCL-U1							2-HCL-U1							3-HCL-U1						
	dP	(dP)^.5	dH	Ts	Tm			dP	(dP)^.5	dH	Ts	Tm			dP	(dP)^.5	dH	Ts	Tm	
5	1.00	1.000	1.9	340	66	65	5	1.40	1.183	2.80	369	95	94	5	1.30	1.140	2.60	368	96	95
4	1.30	1.140	2.3	341	67	64	4	1.50	1.225	3.00	369	97	95	4	1.10	1.049	2.20	368	99	95
3	1.20	1.095	2.2	342	68	65	3	1.50	1.225	3.00	369	98	96	3	0.93	0.964	1.90	368	101	96
2	0.91	0.954	1.6	342	69	66	2	1.30	1.140	2.60	369	98	96	2	0.89	0.943	1.90	369	102	97
1	1.30	1.140	2.3	340	70	67	1	1.30	1.140	2.60	368	99	96	1	0.90	0.949	1.90	370	102	98
5	1.10	1.049	2.0	347	79	78	5	1.30	1.140	2.60	369	97	95	5	1.20	1.095	2.40	370	98	95
4	1.30	1.140	2.3	353	81	78	4	1.40	1.183	2.80	369	99	96	4	1.20	1.095	2.40	370	99	96
3	1.00	1.000	2.0	355	83	79	3	1.40	1.183	2.80	369	101	96	3	1.00	1.000	2.20	370	101	97
2	1.10	1.049	2.2	355	85	79	2	1.50	1.225	3.00	369	103	98	2	0.89	0.943	1.80	368	102	98
1	0.95	0.975	1.9	353	87	80	1	1.30	1.140	2.60	368	104	98	1	0.78	0.883	1.60	366	102	98
5	1.20	1.095	2.4	354	87	82	5	1.20	1.095	2.40	367	98	96	5	1.30	1.140	2.40	368	99	98
4	1.20	1.095	2.4	354	88	81	4	1.40	1.183	2.80	368	101	97	4	1.10	1.049	2.00	369	102	99
3	1.40	1.183	2.8	355	90	81	3	1.40	1.183	2.80	368	102	98	3	1.00	1.000	1.80	369	102	99
2	1.40	1.183	2.8	356	91	82	2	1.00	1.000	2.00	368	103	99	2	0.92	0.959	1.70	368	101	98
1	1.20	1.095	2.4	355	92	82	1	0.97	0.985	1.90	368	104	99	1	0.86	0.927	1.60	366	101	98
5	1.10	1.049	2.2	362	83	82	5	1.00	1.000	2.00	385	94	93	5	1.40	1.183	2.60	365	98	97
4	1.00	1.000	2.0	363	88	85	4	1.20	1.095	2.40	386	98	94	4	1.40	1.183	2.60	365	99	97
3	0.90	0.949	1.8	363	90	85	3	0.97	0.985	1.90	387	99	94	3	1.00	1.000	1.80	363	102	96
2	0.95	0.975	1.9	363	92	86	2	0.90	0.949	1.80	384	100	95	2	0.78	0.883	1.40	363	102	97
1	0.98	0.990	2.0	362	92	85	1	0.97	0.985	1.90	380	101	96	1	0.75	0.866	1.40	362	102	98
5	1.20	1.095	2.4	365	89	86	5	1.20	1.095	2.40	370	98	96	5	1.20	1.095	2.20	365	98	96
4	1.40	1.183	2.8	365	94	87	4	1.10	1.049	2.20	369	99	97	4	1.20	1.095	2.20	365	101	97
3	1.40	1.183	2.8	364	94	88	3	0.92	0.959	1.80	370	101	97	3	1.20	1.095	2.20	365	101	98
2	1.50	1.225	3.0	365	98	90	2	0.85	0.922	1.70	370	103	98	2	1.40	1.183	2.60	365	102	98
1	1.30	1.140	2.6	364	98	90	1	0.89	0.943	1.80	368	103	98	1	1.20	1.095	2.20	366	102	98
5	1.40	1.183	2.8	366	96	90	5	1.30	1.140	2.60	369	97	95	5	1.50	1.225	2.80	367	98	96
4	1.40	1.183	2.8	366	99	91	4	1.00	1.000	2.00	369	99	97	4	1.50	1.225	2.80	368	101	97
3	1.30	1.140	2.6	366	99	91	3	0.87	0.933	1.70	369	100	98	3	1.40	1.183	2.60	368	102	97
2	1.30	1.140	2.6	366	99	92	2	0.83	0.911	1.70	369	101	99	2	1.40	1.183	2.60	368	102	98
1	1.30	1.140	2.6	366	100	92	1	0.80	0.894	1.60	368	102	99	1	1.20	1.095	2.20	369	102	98
Average		1.1933	2.347	356.9	84.4		Average		1.1444	2.307	371.3	98.2		Average		1.1187	2.153	367.0	98.9	

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.193	760.1	915.6	706.3	209.3
Meter Pressure (iwg)	2.347	860.992	779.8	612.2	167.6
Stack Temperature (F)	356.933	100.892	655.0	643.9	11.1
Meter Temperature (F)	84.383		872.1	846.3	25.8
Meter Volume (acf)	100.892			50	-50.0
Liquid Volume (ml)	363.800				363.8

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.144	862.385	1004.5	763.7	240.8
Meter Pressure (iwg)	2.307	963.649	811.3	656	155.3
Stack Temperature (F	371.333	101.264	633.2	623.9	9.3
Meter Temperature (F)	98.150		933.3	901.4	31.9
Meter Volume (acf)	101.264			50	-50.0
Liquid Volume (ml)	387.300				387.3

		Meter Vol	Imp	Imp	
Delta P (iwg)	1.119	964.594	928.9	729.3	199.6
Meter Pressure (iwg)	2.153	1066.884	765.4	684.1	81.3
Stack Temperature (F	367.033	102.290	540.4	478.6	61.8
Meter Temperature (F	98.900		912.1	886.2	25.9
Meter Volume (acf)	102.290			50	-50.0
Liquid Volume (ml)	318.6				318.6

Appendix C.2.3
Unit 1 Particulate Calculations

EPA METHOD 5 SOURCE TEST

DATA AND WORKSHEET

Client	Desert View Power Parameter			Full Load
Loaction	Mecca	Fuel		Biomass
Unit	1	Data By		DW
Test Number	1-PM-U1	2-PM-U1	3-PM-U1	Average
Reference Temperature, F	68	68	68	
Test Date	3/22/2019	3/22/2019	3/22/2019	
Sample Train	17-WCS	17-WCS	17-WCS	-
Pitot Factor	0.840	0.840	0.840	-
Meter Calibration Factor	0.994	0.994	0.994	-
Stack Area (sq ft)	38.84	38.84	38.84	-
Sample Time (Min)	120	120	120	120
Barometric Pressure (in Hg)	30.22	30.22	30.22	30.22
Nozzle Diam (in)	0.247	0.248	0.247	0.247
Start/Stop Time	638/848	901/1111	1126/1336	-
Stack Pressure (iwg)	0.35	0.38	0.38	0.37
Delta P (iwg)	1.147	1.1187	1.1284	1.1312
Meter Pressure (iwg)	2.130	2.143	2.157	2.143
Stack Temperature (F)	346.5	351.6	354.3	350.8
Meter Temperature (F)	62.0	73.1	81.5	72.2
Meter Volume (acf)	99.907	101.878	102.562	101.449
Liquid Volume (ml)	365.1	366.6	339.5	357.1
Stack O2 (%)	8.39	8.00	8.34	8.2
Stack CO2 (%)	12.23	12.00	12.26	12.2
Standard Sample Volume (SCF	101.968	101.808	100.911	101.562
Moisture Fraction	0.145	0.145	0.137	0.142
Molecular Weight (wet)	28.52	28.46	28.61	28.53
Stack Gas Velocity (ft/sec)	74.24	73.64	73.88	73.92
Stack Flow Rate (wacfm)	173,022	171,612	172,178	172,270
Stack Flow Rate (dscfm)	97,926	96,438	97,372	97,245
Isokinetic Ratio (%)	101.25	101.82	100.77	101.28
Analysis				
Filter mg	5.20	7.30	4.70	5.73
Probe/Nozzle mg	0.00	0.10	0.00	0.03
Particulate Catch, mg	5.20	7.40	4.70	5.77
Particulate Emissions				
Grain Loading gr/dscf	0.00079	0.00112	0.00072	0.0009
Grain Loading @ 12% CO2	0.00077	0.00112	0.00070	0.0009
Part emission lb/hr	0.660	0.927	0.600	0.73

1-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	1.30	1.140	2.30	349	50	52
4	1.10	1.049	2.00	348	53	54
3	1.10	1.049	2.00	348	54	54
2	1.20	1.095	2.20	347	56	54
1	1.30	1.140	2.30	347	58	54
5	1.40	1.183	2.50	346	58	56
4	1.30	1.140	2.30	348	59	56
3	1.20	1.095	2.20	346	63	57
2	1.40	1.183	2.50	347	64	57
1	1.30	1.140	2.30	346	64	58
5	1.00	1.000	1.80	345	62	59
4	1.10	1.049	2.00	345	65	59
3	0.99	0.995	1.80	346	65	60
2	1.00	1.000	1.80	346	67	61
1	1.10	1.049	2.00	348	68	62
5	1.20	1.095	2.20	346	67	63
4	1.30	1.140	2.50	345	65	62
3	1.10	1.049	2.10	345	67	62
2	0.98	0.990	1.90	346	67	63
1	0.94	0.970	1.80	346	68	63
5	1.00	1.000	1.90	345	67	62
4	1.10	1.049	2.10	346	67	64
3	1.20	1.095	2.30	346	67	64
2	1.10	1.049	2.10	346	68	64
1	1.00	1.000	1.90	345	68	64
5	1.30	1.140	2.50	346	69	65
4	1.10	1.049	2.10	346	67	64
3	1.30	1.140	2.50	347	67	64
2	1.00	1.000	1.90	348	68	64
1	1.10	1.049	2.10	349	67	63

Average		1.1466	2.130	346.5	62.0	
			Meter Vol	Imp	Imp	
Delta P (iwg)		1.147	144.300	943.0	702.5	240.5
Meter Pressure (iwg)		2.130	244.207	691.8	593.8	98.0
Stack Temperature (F)		346.467	99.907	654.1	653.3	0.8
Meter Temperature (F)		61.983		920.5	894.7	25.8
Meter Volume (acf)		99.907				0.0
Liquid Volume (ml)		365.100				365.1

2-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	1.20	1.095	2.30	349	65	65
4	1.10	1.049	2.10	349	67	65
3	1.30	1.140	2.30	349	69	66
2	1.00	1.000	1.90	349	70	66
1	1.10	1.049	2.10	350	71	67
5	1.00	1.000	1.90	349	70	67
4	1.10	1.049	2.10	350	71	67
3	1.20	1.095	2.30	351	71	68
2	1.00	1.000	2.10	350	72	68
1	0.98	0.990	1.90	351	72	68
5	1.30	1.140	2.50	351	71	70
4	1.40	1.183	2.70	350	73	69
3	1.00	1.000	1.90	352	75	69
2	0.97	0.985	1.80	351	76	70
1	0.92	0.959	1.70	351	76	71
5	0.96	0.980	1.80	352	74	71
4	1.00	1.000	1.90	352	76	71
3	0.99	0.995	1.90	352	77	72
2	0.97	0.985	1.80	351	77	72
1	1.10	1.049	2.10	352	78	73
5	1.30	1.140	2.50	353	77	73
4	1.40	1.183	2.70	352	78	74
3	1.20	1.095	2.30	354	79	74
2	1.30	1.140	2.50	355	80	75
1	1.20	1.095	2.30	354	82	76
5	1.30	1.140	2.50	355	81	77
4	1.10	1.049	2.10	354	82	77
3	1.20	1.095	2.30	354	81	78
2	1.10	1.049	2.10	353	81	77
1	1.00	1.000	1.90	354	82	78

Average		1.1187	2.143	351.6	73.1	
			Meter Vol	Imp	Imp	
Delta P (iwg)		1.119	244.7	967.5	723.5	244.0
Meter Pressure (iwg)		2.143	346.578	679.3	581.2	98.1
Stack Temperature (F		351.633	101.878	586.3	584.3	2.0
Meter Temperature (F)		73.133		943.3	920.8	22.5
Meter Volume (acf)		101.878				0.0
Liquid Volume (ml)		366.600				366.6

3-PM-U1

	dP	(dP)^.5	dH	Ts	Tm	
5	1.30	1.140	2.50	354	75	74
4	1.10	1.049	2.10	354	77	76
3	1.00	1.000	1.90	355	78	77
2	1.20	1.095	2.30	354	79	78
1	1.30	1.140	2.50	355	80	78
5	1.40	1.183	2.70	354	80	78
4	1.30	1.140	2.50	354	83	79
3	1.20	1.095	2.30	354	83	79
2	1.30	1.140	2.50	355	83	79
1	1.30	1.140	2.50	353	84	79
5	1.00	1.000	1.90	354	82	77
4	1.10	1.049	2.10	353	84	81
3	0.98	0.990	1.90	354	86	82
2	1.00	1.000	1.90	354	87	81
1	0.99	0.995	1.90	353	87	81
5	1.20	1.095	2.30	353	84	82
4	1.30	1.140	2.50	354	86	82
3	1.00	1.000	1.90	354	86	82
2	0.97	0.985	1.80	355	85	82
1	0.90	0.949	1.70	354	85	82
5	1.00	1.000	1.90	353	81	80
4	1.10	1.049	2.10	354	84	80
3	1.20	1.095	2.30	354	84	80
2	1.10	1.049	2.10	356	85	80
1	0.94	0.970	1.90	355	86	80
5	1.30	1.140	2.30	354	87	82
4	1.10	1.049	2.10	356	84	80
3	1.30	1.140	2.30	355	84	79
2	1.00	1.000	1.90	356	85	80
1	1.10	1.049	2.10	355	85	81

Average		1.1284	2.157	354.3	81.5	
			Meter Vo	Imp	Imp	
Delta P (iwg)		1.128	346.8	944.8	741.8	203.0
Meter Pressure (iwg)		2.157	449.362	728.6	608.8	119.8
Stack Temperature (F		354.267	102.562	655.5	653.9	1.6
Meter Temperature (F		81.500		935.6	920.5	15.1
Meter Volume (acf)		102.562				0.0
Liquid Volume (ml)		339.5				339.5

Appendix C.2.4
Unit 1 Hydrocarbon Calculations

SCAQMD 25.3 SOURCE TEST
DATA AND WORKSHEET

Client.....	Desert View Powe	Parameter.....	>90%
Loaction.....	Mecca	Fuel.....	Biomass/coke
Unit	1	Data By.....	DW
Test Number.....	1A-HC-U1	1B-HC-U1	Average
Reference Temperature, F.....	68	68	
Test Date.....	3/19/2019	3/19/2019	
Sample Time (Min).....	~60	~60	~60
Barometric Pressure (in Hg).....	30.01	30.01	30.01
Start/Stop Time.....	946/1033	946/1033	
Stack O2 (%).....	8.85	8.85	8.9
Stack CO2 (%).....	11.77	11.77	11.8
Stack H2O (%).....	14.9%	14.9%	14.9%
Stack Flow Rate (wacfm).....	178,572	178,572	178,572
Stack Flow Rate (dscfm).....	98,598	98,598	98,598
Laboraotory Results			
Vial-Organic Carbon as Methane..	0.64	10.30	5.47
SC-TGNMO ppm.....	1.63	1.09	1.36
TGNMO EPA Correction Factor...	1.086	1.086	
TGNMO ppm.....	2.5	12.4	7.42
TGNMO ppm @ 3% O2.....	3.66	18.38	11.02
TGNMO lb/hr.....	0.61	3.04	1.82

Appendix C.2.5
Unit 1 MMBtu/hr Calculations

2018 Annual Average MMBtu/Hr Calculation

Period Hours	17,520		
Boiler #1 Operating Hours	7,701		
Boiler #2 Operating Hours	7,798		
Total Operating Hours	15,499		
Gross Generation	383,443		
Net Generation	329,671		
Hazen Fuel Analysis	7,516	HHV Btu	
Hazen Fuel Analysis		LHV Btu	
2017 Fuel Records	356,998	tons purchased	
	6,913	System loss	
	4,858	Net change in inventory (final - initial)	
	345,227	tons consumed	
	0.90	tons/MWh	Gross
	1.05	**tons/MWh**	**Net**
	690,454,984	pounds consumed	
	5,189,239,972,528	Btu wood	HHV
	0	Btu wood	LHV
	5,189,240	MMBtu wood	HHV
	0	MMBtu wood	LHV
	56,376	MMBtu gas	1.09%
	15,499	operating hours	
Annual avg, Units 1 & 2	338	MMBtu/hr	HHV
Annual avg, Units 1 & 2	4	MMBtu/hr	LHV

UNIT 1

Average MMBtu/Hr Calculation

Stack test date: 3/20/2019

Avg daily steam production, Unit 1	203	kpph	
Avg daily steam production, Unit 2	194	kpph	
Burn rate during stack test (annual)	1.05		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,065	MWh	
Fuel Analysis	7,437	HHV Btu	
Fuel Analysis	0	LHV Btu	
Tested Unit	203	kpph	
Fuel consumption	1,115	tons consumed total	
Fuel consumption, tested unit	570	tons consumed total	
	8,482,492,222	Btu wood	HHV
	0	Btu wood	LHV
	8,482	MMBtu wood	HHV
	0	MMBtu wood	LHV
	0	MMBtu gas	0.00%
	24	operating hours	
Heat input during test (tested unit)	353	MMBtu/hr	HHV
Heat input during test (tested unit)	0	MMBtu/hr	LHV

UNIT 1

Average MMBtu/Hr Calculation

Stack test date: 3/19/2019

Avg daily steam production, Unit 1	208	kpph	
Avg daily steam production, Unit 2	191	kpph	
Burn rate during stack test (annual)	1.05		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,063	MWh	
Fuel Analysis	7,724	HHV Btu	
Fuel Analysis	0	HHV Btu	
Tested Unit	208	kpph	
Fuel consumption	1,113	tons consumed total	
Fuel consumption, tested unit	580	tons consumed total	
	8,963,964,874	Btu wood	HHV
	0	Btu wood	HHV
	8,964	MMBtu wood	HHV
	0	MMBtu wood	HHV
	0	MMBtu gas	0.00%
	24	operating hours	
Heat input during test (tested unit)	**373**	**MMBtu/hr**	**HHV**
Heat input during test (tested unit)	0	MMBtu/hr	HHV

UNIT 1

Average MMBtu/Hr Calculation

Stack test date: 3/22/2019

Avg daily steam production, Unit 1	206	kpph	
Avg daily steam production, Unit 2	206	kpph	
Burn rate during stack test	1.05		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,102	MWh	
Fuel Analysis	7,110	HHV Btu	
Fuel Analysis	0	LHV Btu	
Tested Unit	206	kpph	
Fuel consumption	1,154	tons consumed total	
Fuel consumption, tested unit	577	tons consumed total	
	8,204,947,816	Btu wood	HHV
	0	Btu wood	LHV
	8,205	MMBtu wood	HHV
	0	MMBtu wood	LHV
	3	MMBtu gas	0.04%
	24	operating hours	
Heat input during test (tested unit)	**342**	**MMBtu/hr**	**HHV**
Heat input during test (tested unit)	0	MMBtu/hr	LHV

Appendix C.3
Unit 2 Calculations

Appendix C.3.1
Unit 2 RATA and Gaseous Calculations

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	1-RA-U2
Date:	3/21/2019
Start Time:	7:21
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	1.0	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	863.0	694.0	169.0
2/H2O	740.9	734.0	6.9
3/Empty	600.2	599.3	0.9
4/S.G.	922.2	914.2	8.0
Rinse		50.0	-50.0
Total			134.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	883.000	70	68
		73	70
Stop	917.190	76	71
Total	34.190		71.3

Summary

Sample Volume:	34.017	dscf
H_2O Volume :	6.363	scf
Moisture Content:	15.8	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.02	0.04	0.01
Pre Test Span Direct	10.47	10.60	46.01	4.65
Pre-test Zero	-0.01	0.05	0.11	0.09
Pre-test Span	10.41	10.51	45.41	4.68
0-60 min	7.61	12.89	41.26	-0.16
Post Test Zero Direct	-0.01	0.01	0.04	0.04
Post Test Span Direct	10.48	10.51	46.02	4.67
Post-test Zero	0.00	0.06	0.09	0.02
Post-test Span	10.41	10.45	45.56	4.67
Average	7.61	12.89	41.26	-0.16
Corr. Results	7.66	13.00	41.08	-0.21
Cal Error <2%, Bias <5%; Drift <3%				
Calibration Error	-0.1%	0.2%	0.8%	-0.3%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.9%
Pre-Test Span Bias	-0.3%	-0.5%	-0.7%	0.3%
Post-Test Zero Bias	0.1%	0.3%	0.1%	-0.3%
Post-Test Span Bias	-0.4%	-0.3%	-0.5%	0.0%
Zero Drift	0.0%	0.1%	0.0%	-0.8%
Span Drift	0.0%	-0.3%	0.2%	-0.1%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.000	1.0000	352	69.78
4	0.980	0.9899	353	69.12
3	1.100	1.0488	353	73.23
2	0.970	0.9849	354	68.81
1	0.920	0.9592	354	67.01
5	1.000	1.0000	354	69.86
4	1.300	1.1402	355	79.71
3	0.750	0.8660	356	60.58
2	0.700	0.8367	356	58.52
1	0.640	0.8000	356	55.96
5	0.940	0.9695	355	67.78
4	0.930	0.9644	356	67.46
3	0.910	0.9539	356	66.73
2	0.900	0.9487	356	66.36
1	0.840	0.9165	355	64.07
5	1.200	1.0954	354	76.53
4	1.200	1.0954	354	76.53
3	1.000	1.0000	354	69.86
2	0.900	0.9487	355	66.32
1	0.700	0.8367	354	58.45
5	1.300	1.1402	353	79.61
4	1.200	1.0954	355	76.58
3	1.200	1.0954	356	76.63
2	1.100	1.0488	356	73.36
1	1.200	1.0954	356	76.63
5	1.300	1.1402	354	79.66
4	1.300	1.1402	355	79.71
3	1.300	1.1402	356	79.75
2	1.200	1.0954	356	76.63
1	1.200	1.0954	354	76.53
Average	1.0297	1.0147	354.8	70.92

TEST SUMMARY

O_2:	7.659	% dry
CO_2:	12.997	% dry
NO_x:	41.084	ppm dry
	26.757	lb/hr
SO_2:	10.561169	ppm dry
SO2:	9.570	lb/hr
CO:	-0.21	ppm dry
	-0.085	lb/hr
H_2O:	15.8	%
MW:	28.43	lb/lb-mole
Flow:	165,283	wacfm
	90.92	mdscfm
	5455.13	kdscfh

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	477
Aliquot VOL (ml)	20
Titrant VOL (ml)	3.63

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5455.13	4796.77	658.37	12.1%
O_2	% dry	7.66	7.7	-0.04	-0.5%
CO_2	% dry	13.00	13.0	0.02	0.2%
NO_x	ppm dry	41.08	44.2	-3.11	-7.6%
NO_x	ppm @ 3% O_2	55.54	59.4	-3.88	-7.0%
NO_x	lb/hr	26.76	25.63	1.12	4.2%
SO_2	ppm dry	10.56	11.50	-0.94	-8.9%
SO_2	ppm @ 3% O_2	14.28	15.51	-1.23	-8.6%
SO_2	lb/hr	9.57	9.236	0.334	3.5%
CO	ppm dry	-0.21	2.06	-2.27	
CO	ppm @ 3% O_2	-0.29	2.79	-3.08	
CO	lb/hr	-0.085	0.716		

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	2-RA-U2
Date:	3/21/2019
Start Time:	8:36
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	1-P&M	
Meter Y_d:	0.9920	
Meter Pressure:	1.0	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	860.0	693.3	166.7
2/H2O	737.5	719.2	18.3
3/Empty	636.0	634.9	1.1
4/S.G.	903.4	891.8	11.6
Rinse		50.0	-50.0
Total			147.7

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	918.806	76	72
		78	74
Stop	956.368	80	76
Total	37.562		76.0

Summary

Sample Volume:	37.047	dscf
H_2O Volume :	6.971	scf
Moisture Content:	15.8	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Analyzer Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.01	0.04	0.04
Pre Test Span Direct	10.48	10.51	46.02	4.67
Pre-test Zero	0.00	0.06	0.09	0.02
Pre-test Span	10.41	10.45	45.56	4.67
0-60 min	7.61	12.85	42.31	-0.17
Post Test Zero Direct	-0.01	0.03	0.01	0.03
Post Test Span Direct	10.48	10.50	46.05	4.67
Post-test Zero	-0.01	0.05	0.07	0.08
Post-test Span	10.41	10.45	45.48	4.67
Average	7.61	12.85	42.31	-0.17
Corr. Results	7.66	13.00	42.10	-0.22
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.0%	-0.3%	0.8%	-0.2%
Pre-Test Zero Bias	0.1%	0.3%	0.1%	-0.3%
Pre-Test Span Bias	-0.4%	-0.3%	-0.5%	0.0%
Post-Test Zero Bias	0.0%	0.1%	0.1%	0.6%
Post-Test Span Bias	-0.4%	-0.3%	-0.6%	0.1%
Zero Drift	0.0%	-0.1%	0.0%	0.8%
Span Drift	0.0%	0.0%	-0.1%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.400	1.1832	351	82.52
4	1.300	1.1402	354	79.67
3	1.200	1.0954	356	76.64
2	1.200	1.0954	356	76.64
1	1.300	1.1402	354	79.67
5	1.300	1.1402	354	79.67
4	1.000	1.0000	356	69.96
3	1.000	1.0000	356	69.96
2	1.200	1.0954	356	76.64
1	1.200	1.0954	354	76.54
5	1.200	1.0954	354	76.54
4	1.200	1.0954	354	76.54
3	0.980	0.9899	356	69.26
2	0.850	0.9220	356	64.50
1	0.720	0.8485	354	59.29
5	0.980	0.9899	355	69.21
4	0.940	0.9695	356	67.83
3	0.800	0.8944	356	62.57
2	0.780	0.8832	356	61.79
1	0.850	0.9220	356	64.50
5	1.000	1.0000	354	69.87
4	1.300	1.1402	354	79.67
3	0.800	0.8944	354	62.50
2	0.700	0.8367	356	58.53
1	0.640	0.8000	355	55.93
5	1.000	1.0000	355	69.92
4	1.000	1.0000	356	69.96
3	0.940	0.9695	356	67.83
2	0.960	0.9798	355	68.50
1	0.540	0.7348	355	51.38
Average	0.9968	0.9984	355.0	69.80

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5362.08	4592.88	769.20	14.3%
O_2	% dry	7.66	7.7	-0.04	-0.6%
CO_2	% dry	13.00	12.9	0.08	0.6%
NO_x	ppm dry	42.10	45.5	-3.44	-8.2%
NO_x	ppm @ 3% O_2	56.93	61.4	-4.42	-7.8%
NO_x	lb/hr	26.95	25.2	1.74	6.5%
SO_2	ppm dry	9.48	10.50	-1.02	-10.8%
SO_2	ppm @ 3% O_2	12.83	14.20	-1.37	-10.7%
SO_2	lb/hr	8.447	8.041	0.406	4.8%
CO	ppm dry	-0.22	2.45	-2.68	
CO	ppm @ 3% O_2	-0.30	3.33	-3.63	
CO	lb/hr	-0.088	0.818		

TEST SUMMARY

O_2:	7.664	% dry
CO_2:	13.002	% dry
NO_x:	42.097	ppm dry
	26.949	lb/hr
SO_2:	9.483788	ppm dry
	8.447	lb/hr
CO:	-0.22	ppm dry
	-0.088	lb/hr
H_2O:	15.8	%
MW:	28.43	lb/lb-mole
Flow:	162,666	wacfm
	89.37	mdscfm
	5362.08	kdscfh

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	477
Aliquot VOL (ml)	20
Titrant VOL (ml)	3.55

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	3-RA-U2
Date:	3/21/2019
Start Time:	10:10
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	1.0	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	876.3	699.6	176.7
2/H2O	757.5	754.7	2.8
3/Empty	599.4	599.2	0.2
4/S.G.	929.9	922.2	7.7
Rinse		50.0	-50.0
Total			137.4

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	957.275	78	77
		81	76
Stop	993.614	84	77
Total	36.339		78.8

Summary

Sample Volume:	35.652	dscf
H_2O Volume :	6.485	scf
Moisture Content:	15.4	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.01	0.03
Pre Test Span Direct	10.48	10.50	46.05	4.67
Pre-test Zero	-0.01	0.05	0.07	0.08
Pre-test Span	10.41	10.45	45.48	4.67
0-60 min	7.60	12.74	42.03	-0.17
Post Test Zero Direct	-0.01	0.03	0.01	0.04
Post Test Span Direct	10.46	10.50	45.99	4.67
Post-test Zero	0.02	0.09	0.04	-0.09
Post-test Span	10.41	10.46	45.48	4.71
Average	7.60	12.74	42.03	-0.17
Corr. Results	7.65	12.89	41.86	-0.17
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	0.0%	-0.3%	0.8%	-0.2%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	0.6%
Pre-Test Span Bias	-0.4%	-0.3%	-0.6%	0.1%
Post-Test Zero Bias	0.2%	0.3%	0.0%	-1.4%
Post-Test Span Bias	-0.3%	-0.2%	-0.6%	0.5%
Zero Drift	0.1%	0.2%	0.0%	-2.0%
Span Drift	0.0%	0.1%	0.0%	0.4%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	0.940	0.9695	356	67.78
4	0.900	0.9487	357	66.36
3	0.870	0.9327	357	65.25
2	0.840	0.9165	357	64.11
1	0.800	0.8944	355	62.49
5	0.980	0.9899	354	69.12
4	1.000	1.0000	356	69.91
3	0.700	0.8367	357	58.53
2	0.670	0.8185	357	57.26
1	0.630	0.7937	354	55.42
5	0.930	0.9644	355	67.38
4	0.870	0.9327	356	65.21
3	0.890	0.9434	356	65.95
2	0.840	0.9165	357	64.11
1	0.880	0.9381	357	65.62
5	1.100	1.0488	356	73.32
4	1.000	1.0000	357	69.95
3	0.940	0.9695	357	67.82
2	0.860	0.9274	357	64.87
1	0.640	0.8000	357	55.96
5	1.200	1.0954	356	76.58
4	1.100	1.0488	356	73.32
3	1.100	1.0488	357	73.37
2	1.200	1.0954	357	76.63
1	1.100	1.0488	356	73.32
5	1.200	1.0954	354	76.49
4	1.100	1.0488	354	73.23
3	1.100	1.0488	354	73.23
2	1.000	1.0000	355	69.87
1	1.000	1.0000	354	69.83
Average	0.9391	0.9691	355.9	67.75

TEST SUMMARY

O_2:	7.651	% dry
CO_2:	12.886	% dry
NO_x:	41.857	ppm dry
	26.114	lb/hr
SO_2:	9.4309384	ppm dry
	8.186	lb/hr
CO:	-0.17	ppm dry
	-0.063	lb/hr
H_2O:	15.4	%
MW:	28.46	lb/lb-mole
Flow:	157,875	wacfm
	87.10	mdscfm
	5225.79	kdscfh

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	508
Aliquot VOL (ml)	20
Titrant VOL (ml)	3.19

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5225.79	4624.53	601.25	11.5%
O_2	% dry	7.65	7.7	-0.05	-0.7%
CO_2	% dry	12.89	12.9	-0.02	-0.2%
NO_x	ppm dry	41.86	46.2	-4.29	-10.3%
NO_x	ppm @ 3% O_2	56.55	62.4	-5.84	-10.3%
NO_x	lb/hr	26.11	25.5630	0.55	2.1%
SO_2	ppm dry	9.43	10.65	-1.22	-12.9%
SO_2	ppm @ 3% O_2	12.74	14.40	-1.66	-13.0%
SO_2	lb/hr	8.186	8.239	-0.052	-0.6%
CO	ppm dry	-0.17	2.04	-2.21	
CO	ppm @ 3% O_2	-0.22	2.77	-3.00	
CO	lb/hr	-0.063	0.688	-0.75	

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	4-RA-U2
Date:	3/21/2019
Start Time:	11:38
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	871.2	715.2	156.0
2/H2O	730.0	727.3	2.7
3/Empty	635.5	634.5	1.0
4/S.G.	911.5	903.4	8.1
Rinse		50.0	-50.0
Total			117.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	994.670	79	77
		84	79
Stop	1022.870	87	81
Total	28.200		81.2

Summary

Sample Volume:	27.648	dscf
H_2O Volume :	5.560	scf
Moisture Content:	16.7	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.01	0.04
Pre Test Span Direct	10.46	10.50	45.99	4.67
Pre-test Zero	0.02	0.09	0.04	-0.09
Pre-test Span	10.41	10.46	45.48	4.71
0-30 min	7.51	12.90	47.07	-0.22
Post Test Zero Direct	-0.01	0.03	0.03	0.04
Post Test Span Direct	10.46	10.47	45.94	4.68
Post-test Zero	-0.01	0.05	0.07	0.07
Post-test Span	10.41	10.47	45.71	4.68
Average	7.51	12.90	47.07	-0.22
Corr. Results	7.56	13.04	46.77	-0.22
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.1%	-0.3%	0.8%	-0.1%
Pre-Test Zero Bias	0.2%	0.3%	0.0%	-1.4%
Pre-Test Span Bias	-0.3%	-0.2%	-0.6%	0.5%
Post-Test Zero Bias	0.0%	0.1%	0.0%	0.4%
Post-Test Span Bias	-0.3%	0.0%	-0.2%	0.0%
Zero Drift	-0.1%	-0.3%	0.0%	1.9%
Span Drift	0.0%	0.0%	0.3%	-0.3%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	0.960	0.9798	356	68.68
4	0.920	0.9592	357	67.28
3	0.990	0.9950	357	69.79
2	0.970	0.9849	357	69.08
1	0.910	0.9539	354	66.79
5	1.000	1.0000	356	70.10
4	1.100	1.0488	356	73.52
3	0.750	0.8660	357	60.74
2	0.700	0.8367	357	58.68
1	0.680	0.8246	356	57.80
5	0.960	0.9798	354	68.60
4	0.930	0.9644	355	67.56
3	0.810	0.9000	357	63.13
2	0.850	0.9220	357	64.67
1	0.880	0.9381	354	65.68
5	1.100	1.0488	354	73.43
4	1.200	1.0954	356	76.79
3	0.900	0.9487	356	66.50
2	0.840	0.9165	356	64.25
1	0.710	0.8426	356	59.06
5	1.100	1.0488	355	73.47
4	1.200	1.0954	357	76.83
3	1.200	1.0954	357	76.83
2	1.100	1.0488	357	73.56
1	1.100	1.0488	356	73.52
5	1.200	1.0954	357	76.83
4	1.200	1.0954	357	76.83
3	1.200	1.0954	357	76.83
2	1.100	1.0488	356	73.52
1	1.000	1.0000	355	70.05
Average	0.9786	0.9893	356.1	69.35

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5262.97	4402.77	860.19	16.3%
O_2	% dry	7.56	7.6	-0.06	-0.8%
CO_2	% dry	13.04	12.9	0.11	0.8%
NO_x	ppm dry	46.77	49.2	-2.41	-5.1%
NO_x	ppm @ 3% O_2	62.75	66.1	-3.36	-5.4%
NO_x	lb/hr	29.38	25.8406	3.54	12.1%
SO_2	ppm dry	9.19	9.94	-0.75	-8.2%
SO_2	ppm @ 3% O_2	12.33	13.37	-1.04	-8.5%
SO_2	lb/hr	8.032	7.247	0.785	9.8%
CO	ppm dry	-0.22	1.01	-1.22	
CO	ppm @ 3% O_2	-0.29	1.36	-1.65	
CO	lb/hr	-0.083	0.323		

TEST SUMMARY

O_2:	7.560	% dry
CO_2:	13.036	% dry
NO_x:	46.766	ppm dry
	29.384	lb/hr
SO_2:	9.1876751	ppm dry
	8.032	lb/hr
CO:	-0.22	ppm dry
	-0.083	lb/hr
H_2O:	16.7	%
MW:	28.31	lb/lb-mole
Flow:	161,607	wacfm
	87.72	mdscfm
	5262.97	kdscfh

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	462
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.65

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	5-RA-U2
Date:	3/21/2019
Start Time:	12:22
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	843.8	692.0	151.8
2/H2O	766.3	761.8	4.5
3/Empty	600.6	599.4	1.2
4/S.G.	936.6	929.9	6.7
Rinse		50.0	-50.0
Total			114.2

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	24.360	82	80
		87	84
Stop	51.700	91	87
Total	27.340		85.2

Summary

Sample Volume:	26.608	dscf
H_2O Volume :	5.390	scf
Moisture Content:	16.8	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.200	1.0954	357	76.85
4	1.200	1.0954	357	76.85
3	1.100	1.0488	357	73.58
2	1.000	1.0000	357	70.16
1	0.990	0.9950	356	69.76
5	1.300	1.1402	356	79.94
4	1.000	1.0000	356	70.11
3	1.100	1.0488	357	73.58
2	1.100	1.0488	357	73.58
1	1.000	1.0000	354	70.03
5	1.200	1.0954	357	76.85
4	1.000	1.0000	357	70.16
3	0.860	0.9274	357	65.06
2	0.770	0.8775	356	61.52
1	0.800	0.8944	356	62.71
5	0.930	0.9644	356	67.62
4	0.850	0.9220	357	64.68
3	0.900	0.9487	357	66.56
2	0.910	0.9539	357	66.93
1	0.840	0.9165	357	64.30
5	1.000	1.0000	355	70.07
4	1.100	1.0488	356	73.54
3	0.640	0.8000	357	56.13
2	0.700	0.8367	357	58.70
1	0.620	0.7874	357	55.24
5	0.970	0.9849	356	69.05
4	0.990	0.9950	357	69.80
3	0.950	0.9747	357	68.38
2	0.840	0.9165	357	64.30
1	0.870	0.9327	356	65.40
Average	0.9506	0.9750	356.5	68.38

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.03	0.04
Pre Test Span Direct	10.46	10.47	45.94	4.68
Pre-test Zero	-0.01	0.05	0.07	0.07
Pre-test Span	10.41	10.47	45.71	4.68
0-30 min	7.50	12.86	50.91	-0.23
Post Test Zero Direct	-0.01	0.03	0.09	0.05
Post Test Span Direct	10.46	10.44	46.04	4.68
Post-test Zero	-0.01	0.05	0.07	0.04
Post-test Span	10.41	10.40	45.74	4.67
Average	7.50	12.86	50.91	-0.23
Corr. Results	7.55	13.03	50.44	-0.30
Cal Error <2%, Bias <5%; Drift <3%				
Calibration Error	-0.1%	-0.5%	0.7%	0.0%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	0.4%
Pre-Test Span Bias	-0.3%	0.0%	-0.2%	0.0%
Post-Test Zero Bias	0.0%	0.1%	0.0%	-0.1%
Post-Test Span Bias	-0.3%	-0.2%	-0.3%	-0.1%
Zero Drift	0.0%	0.0%	0.0%	-0.4%
Span Drift	0.0%	-0.3%	0.0%	-0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	7.554	% dry
CO_2:	13.033	% dry
NO_x:	50.441	ppm dry
	31.196	lb/hr
SO_2:	13.728322	ppm dry
	11.813	lb/hr
CO:	-0.30	ppm dry
	-0.111	lb/hr
H_2O:	16.8	%
MW:	28.30	lb/lb-mole
Flow:	159,357	wacfm
	86.34	mdscfm
	5180.37	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5180.37	4431.73	748.63	14.5%
O_2	% dry	7.55	7.6	-0.03	-0.4%
CO_2	% dry	13.03	13.0	0.07	0.5%
NO_x	ppm dry	50.44	53.5	-3.02	-6.0%
NO_x	ppm @ 3% O_2	67.65	71.8	-4.14	-6.1%
NO_x	lb/hr	31.20	28.3227	2.87	9.2%
SO_2	ppm dry	13.73	15.30	-1.57	-11.4%
SO_2	ppm @ 3% O_2	18.41	20.55	-2.13	-11.6%
SO_2	lb/hr	11.813	11.274	0.539	4.6%
CO	ppm dry	-0.30	0.44	-0.73	
CO	ppm @ 3% O_2	-0.40	0.59	-0.98	
CO	lb/hr	-0.111	0.141	-0.25	

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	472
Aliquot VOL (ml)	20
Titrant VOL (ml)	3.73

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION

GENERAL

Test:	6-RA-U2
Date:	3/21/2019
Start Time:	13:06
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	1-P&M	
Meter Y_d:	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft²

METHOD 4 DATA

Impingers

#/Matl.	End	Start	Diff.
1/H2O	842.5	705.5	137.0
2/H2O	720.6	717.0	3.6
3/Empty	635.8	635.5	0.3
4/S.G.	918.9	911.5	7.4
Rinse		50.0	-50.0
Total			98.3

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	56.880	87	85
		90	87
Stop	83.546	92	87
Total	26.666		88.0

Summary

Sample Volume:	25.818	dscf
H_2O Volume :	4.640	scf
Moisture Content:	15.2	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.09	0.05
Pre Test Span Direct	10.46	10.44	46.04	4.68
Pre-test Zero	-0.01	0.05	0.07	0.04
Pre-test Span	10.41	10.40	45.74	4.67
0-30 min	7.42	12.94	42.58	-0.15
Post Test Zero Direct	-0.01	0.02	0.03	0.06
Post Test Span Direct	10.45	10.42	45.94	4.69
Post-test Zero	-0.01	0.04	0.06	0.10
Post-test Span	10.38	10.37	45.54	4.69
Average	7.42	12.94	42.58	-0.15
Corr. Results	7.48	13.16	42.26	-0.22
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.1%	-0.6%	0.8%	0.0%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	-0.1%
Pre-Test Span Bias	-0.3%	-0.2%	-0.3%	-0.1%
Post-Test Zero Bias	0.0%	0.1%	0.0%	0.5%
Post-Test Span Bias	-0.4%	-0.2%	-0.4%	0.1%
Zero Drift	0.0%	-0.1%	0.0%	0.7%
Span Drift	-0.1%	-0.1%	-0.2%	0.3%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	0.960	0.9798	362	68.69
4	0.940	0.9695	365	68.09
3	0.920	0.9592	365	67.37
2	0.900	0.9487	365	66.63
1	0.810	0.9000	366	63.25
5	0.990	0.9950	366	69.92
4	0.930	0.9644	366	67.77
3	0.940	0.9695	366	68.13
2	0.850	0.9220	367	64.83
1	0.730	0.8544	365	60.01
5	1.000	1.0000	366	70.28
4	1.200	1.0954	366	76.98
3	0.980	0.9899	366	69.57
2	0.830	0.9110	367	64.06
1	0.730	0.8544	366	60.04
5	1.000	1.0000	366	70.28
4	1.300	1.1402	367	80.17
3	1.000	1.0000	367	70.32
2	1.100	1.0488	367	73.75
1	1.000	1.0000	365	70.23
5	1.200	1.0954	365	76.94
4	1.300	1.1402	366	80.13
3	1.100	1.0488	367	73.75
2	1.000	1.0000	367	70.32
1	1.200	1.0954	366	76.98
5	1.200	1.0954	366	76.98
4	1.200	1.0954	367	77.03
3	1.000	1.0000	367	70.32
2	1.100	1.0488	367	73.75
1	1.200	1.0954	366	76.98
Average	1.0145	1.0072	366.0	70.79

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5403.77	4439.67	964.10	17.8%
O_2	% dry	7.48	7.5	0.00	0.0%
CO_2	% dry	13.16	13.1	0.07	0.5%
NO_x	ppm dry	42.26	44.9	-2.66	-6.3%
NO_x	ppm @ 3% O_2	56.37	59.2	-2.84	-5.0%
NO_x	lb/hr	27.26	24.0047	3.26	12.0%
SO_2	ppm dry	9.72	12.62	-2.90	-29.9%
SO_2	ppm @ 3% O_2	12.96	16.67	-3.70	-28.6%
SO_2	lb/hr	8.724	9.358	-0.634	-7.3%
CO	ppm dry	-0.22	0.05	-0.27	
CO	ppm @ 3% O_2	-0.30	0.06	-0.36	
CO	lb/hr	-0.088	0.019		

TEST SUMMARY

O_2:	7.480	% dry
CO_2:	13.165	% dry
NO_x:	42.258	ppm dry
	27.263	lb/hr
SO_2:	9.7190744	ppm dry
	8.724	lb/hr
CO:	-0.22	ppm dry
	-0.088	lb/hr
H_2O:	15.2	%
MW:	28.52	lb/lb-mole
Flow:	164,959	wacfm
	90.06	mdscfm
	5403.77	kdscfh

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	443
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.73

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	7-RA-U2
Date:	3/21/2019
Start Time:	13:50
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	1-P&M	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft²

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	839.5	691.2	148.3
2/H2O	732.7	729.2	3.5
3/Empty	600.1	599.4	0.7
4/S.G.	943.5	936.6	6.9
Rinse		50.0	-50.0
Total			109.4

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	84.506	86	84
		89	87
Stop	111.900	89	87
Total	27.394		87.0

Summary

Sample Volume:	26.572	dscf
H_2O Volume :	5.164	scf
Moisture Content:	16.3	%

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.02	0.03	0.06
Pre Test Span Direct	10.45	10.42	45.94	4.69
Pre-test Zero	-0.01	0.04	0.06	0.10
Pre-test Span	10.38	10.37	45.54	4.69
0-30 min	7.46	12.83	49.00	-0.16
Post Test Zero Direct	-0.01	0.03	0.04	0.05
Post Test Span Direct	10.45	10.48	46.05	4.68
Post-test Zero	0.00	0.05	0.07	0.06
Post-test Span	10.40	10.43	45.47	4.69
Average	7.46	12.83	49.00	-0.16
Corr. Results	7.53	13.04	48.78	-0.25
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.1%	-0.8%	0.7%	0.1%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	0.5%
Pre-Test Span Bias	-0.4%	-0.2%	-0.4%	0.1%
Post-Test Zero Bias	0.0%	0.1%	0.0%	0.1%
Post-Test Span Bias	-0.3%	-0.3%	-0.6%	0.0%
Zero Drift	0.0%	0.1%	0.0%	-0.5%
Span Drift	0.1%	0.3%	-0.1%	-0.1%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.100	1.0488	365	73.85
4	1.100	1.0488	365	73.85
3	0.970	0.9849	365	69.35
2	0.940	0.9695	365	68.27
1	0.970	0.9849	363	69.26
5	1.200	1.0954	364	77.08
4	1.100	1.0488	364	73.80
3	1.000	1.0000	365	70.41
2	0.970	0.9849	364	69.30
1	0.940	0.9695	364	68.22
5	1.100	1.0488	364	73.80
4	1.000	1.0000	365	70.41
3	0.990	0.9950	365	70.06
2	0.700	0.8367	364	58.87
1	0.630	0.7937	364	55.85
5	0.890	0.9434	363	66.34
4	0.850	0.9220	363	64.84
3	0.800	0.8944	364	62.94
2	0.730	0.8544	365	60.16
1	0.620	0.7874	364	55.41
5	0.830	0.9110	364	64.11
4	0.900	0.9487	364	66.76
3	0.850	0.9220	365	64.92
2	0.810	0.9000	365	63.37
1	0.770	0.8775	364	61.75
5	0.790	0.8888	364	62.54
4	0.800	0.8944	364	62.94
3	0.840	0.9165	365	64.53
2	0.800	0.8944	365	62.98
1	0.780	0.8832	364	62.15
Average	0.8866	0.9416	364.3	66.27

TEST SUMMARY

O_2:	7.528	% dry
CO_2:	13.041	% dry
NO_x:	48.781	ppm dry
	29.163	lb/hr
SO_2:	12.278245	ppm dry
	10.213	lb/hr
CO:	-0.25	ppm dry
	-0.090	lb/hr
H_2O:	16.3	%
MW:	28.37	lb/lb-mole
Flow:	154,438	wacfm
	83.46	mdscfm
	5007.49	kdscfh

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	438
Aliquot VOL (ml)	20
Titrant VOL (ml)	3.59

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5007.49	4389.53	617.96	12.3%
O_2	% dry	7.53	7.6	-0.03	-0.4%
CO_2	% dry	13.04	13.0	0.03	0.2%
NO_x	ppm dry	48.78	52.0	-3.25	-6.7%
NO_x	ppm @ 3% O_2	65.30	69.4	-4.13	-6.3%
NO_x	lb/hr	29.16	27.4437	1.72	5.9%
SO_2	ppm dry	12.28	14.25	-1.97	-16.0%
SO_2	ppm @ 3% O_2	16.44	18.98	-2.54	-15.5%
SO_2	lb/hr	10.213	10.461	-0.249	-2.4%
CO	ppm dry	-0.25	0.19	-0.44	
CO	ppm @ 3% O_2	-0.33	0.25	-0.58	
CO	lb/hr	-0.090	0.062		

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	8-RA-U2
Date:	3/21/2019
Start Time:	14:34
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	17-WCS	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	855.9	709.1	146.8
2/H2O	722.9	720.5	2.4
3/Empty	636.3	635.2	1.1
4/S.G.	924.5	918.9	5.6
Rinse		50.0	-50.0
Total			105.9

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	113.001	80	79
		81	78
Stop	139.260	80	77
Total	26.259		79.2

Summary

Sample Volume:	25.841	dscf
H_2O Volume :	4.998	scf
Moisture Content:	16.2	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	1.000	1.0000	363	70.30
4	1.100	1.0488	363	73.73
3	1.000	1.0000	364	70.34
2	0.990	0.9950	363	69.95
1	0.940	0.9695	362	68.12
5	1.100	1.0488	362	73.69
4	1.000	1.0000	362	70.26
3	1.100	1.0488	363	73.73
2	0.950	0.9747	363	68.52
1	0.800	0.8944	362	62.84
5	1.000	1.0000	362	70.26
4	0.970	0.9849	362	69.20
3	0.950	0.9747	363	68.52
2	0.900	0.9487	363	66.69
1	0.890	0.9434	361	66.24
5	1.000	1.0000	361	70.22
4	0.990	0.9950	362	69.91
3	0.850	0.9220	362	64.78
2	0.790	0.8888	362	62.45
1	0.680	0.8246	361	57.90
5	0.990	0.9950	360	69.82
4	0.810	0.9000	361	63.19
3	0.750	0.8660	361	60.81
2	0.640	0.8000	362	56.21
1	0.620	0.7874	361	55.29
5	1.000	1.0000	362	70.26
4	0.990	0.9950	362	69.91
3	0.850	0.9220	363	64.81
2	0.780	0.8832	362	62.05
1	0.700	0.8367	361	58.75
Average	0.8992	0.9482	362.0	66.62

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.04	0.05
Pre Test Span Direct	10.45	10.48	46.05	4.68
Pre-test Zero	0.00	0.05	0.07	0.06
Pre-test Span	10.40	10.43	45.47	4.69
0-30 min	7.47	12.94	46.03	-0.19
Post Test Zero Direct	-0.01	0.03	0.02	0.11
Post Test Span Direct	10.46	10.47	46.01	4.69
Post-test Zero	0.00	0.05	0.07	0.03
Post-test Span	10.40	10.42	45.58	4.69
Average	7.47	12.94	46.03	-0.19
Corr. Results	7.53	13.13	45.80	-0.24
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.2%	-0.4%	0.8%	0.0%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	0.1%
Pre-Test Span Bias	-0.3%	-0.3%	-0.6%	0.0%
Post-Test Zero Bias	0.0%	0.1%	0.1%	-0.9%
Post-Test Span Bias	-0.3%	-0.3%	-0.5%	0.0%
Zero Drift	0.0%	0.0%	0.0%	-0.3%
Span Drift	0.0%	-0.1%	0.1%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	7.527	% dry
CO_2:	13.126	% dry
NO_x:	45.805	ppm dry
	27.627	lb/hr
SO_2:	10.418972	ppm dry
	8.743	lb/hr
CO:	-0.24	ppm dry
	-0.087	lb/hr
H_2O:	16.2	%
MW:	28.39	lb/lb-mole
Flow:	155,263	wacfm
	84.20	mdscfm
	5051.93	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5051.93	4453.73	598.20	11.8%
O_2	% dry	7.53	7.5	-0.01	-0.2%
CO_2	% dry	13.13	13.0	0.08	0.6%
NO_x	ppm dry	45.80	49.1	-3.28	-7.2%
NO_x	ppm @ 3% O_2	61.31	65.3	-4.03	-6.6%
NO_x	lb/hr	27.63	26.3303	1.30	4.7%
SO_2	ppm dry	10.42	12.78	-2.36	-22.6%
SO_2	ppm @ 3% O_2	13.95	17.00	-3.05	-21.9%
SO_2	lb/hr	8.743	9.536	-0.793	-9.1%
CO	ppm dry	-0.24	1.00	-1.23	
CO	ppm @ 3% O_2	-0.32	1.33	-1.65	
CO	lb/hr	-0.087	0.323		

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	449
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.89

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION
GENERAL

Test:	9-RA-U2
Date:	3/21/2019
Start Time:	15:16
Station:	Desert View Power
Unit:	Unit 2
Test Condition:	Full Load
Performed By:	DW

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	17-WCS	
Meter Y_d	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 4 DATA
Impingers

#/Matl.	End	Start	Diff.
1/H2O	835.2	689.1	146.1
2/H2O	739.5	736.8	2.7
3/Empty	602.0	600.1	1.9
4/S.G.	950.6	943.5	7.1
Rinse		50.0	-50.0
Total			107.8

Dry Gas Meter

Time	Vol.	Tm(in)	Tm(out)
Start	140.368	76	75
		74	73
Stop	166.905	74	72
Total	26.537		74.0

Summary

Sample Volume:	26.367	dscf
H_2O Volume :	5.088	scf
Moisture Content:	16.2	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	0.960	0.9798	362	68.84
4	0.900	0.9487	363	66.70
3	0.830	0.9110	363	64.05
2	0.720	0.8485	362	59.62
1	0.610	0.7810	361	54.84
5	0.990	0.9950	362	69.91
4	0.900	0.9487	362	66.66
3	0.870	0.9327	362	65.54
2	0.730	0.8544	362	60.03
1	0.700	0.8367	361	58.75
5	0.890	0.9434	361	66.25
4	0.850	0.9220	362	64.78
3	0.800	0.8944	362	62.84
2	0.730	0.8544	361	60.00
1	0.610	0.7810	360	54.81
5	0.990	0.9950	361	69.87
4	0.970	0.9849	362	69.20
3	0.940	0.9695	362	68.12
2	0.980	0.9899	362	69.56
1	0.960	0.9798	361	68.80
5	1.100	1.0488	361	73.65
4	1.200	1.0954	362	76.97
3	1.000	1.0000	362	70.26
2	1.000	1.0000	361	70.22
1	0.990	0.9950	360	69.83
5	1.100	1.0488	360	73.60
4	1.100	1.0488	361	73.65
3	1.000	1.0000	361	70.22
2	0.980	0.9899	361	69.51
1	0.950	0.9747	360	68.40
Average	0.9058	0.9517	361.4	66.85

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.02	0.11
Pre Test Span Direct	10.46	10.47	46.01	4.69
Pre-test Zero	0.00	0.05	0.07	0.03
Pre-test Span	10.40	10.42	45.58	4.69
0-30 min	7.56	12.89	48.43	-0.20
Post Test Zero Direct	-0.01	0.03	0.03	0.04
Post Test Span Direct	10.46	10.52	46.00	4.69
Post-test Zero	-0.01	0.05	0.06	0.09
Post-test Span	10.39	10.46	45.35	4.69
Average	7.56	12.89	48.43	-0.20
Corr. Results	7.62	13.05	48.26	-0.26
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.1%	-0.5%	0.8%	0.1%
Pre-Test Zero Bias	0.0%	0.1%	0.1%	-0.9%
Pre-Test Span Bias	-0.3%	-0.3%	-0.5%	0.0%
Post-Test Zero Bias	0.0%	0.1%	0.0%	0.5%
Post-Test Span Bias	-0.4%	-0.3%	-0.7%	0.0%
Zero Drift	0.0%	0.0%	0.0%	0.6%
Span Drift	-0.1%	0.2%	-0.2%	0.0%
CAL STATUS	PASS	PASS	PASS	PASS

TEST SUMMARY

O_2:	7.625	% dry
CO_2:	13.048	% dry
NO_x:	48.259	ppm dry
	29.238	lb/hr
SO_2:	7.9141939	ppm dry
	6.671	lb/hr
CO:	-0.26	ppm dry
	-0.096	lb/hr
H_2O:	16.2	%
MW:	28.39	lb/lb-mole
Flow:	155,786	wacfm
	84.58	mdscfm
	5074.60	kdscfh

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5074.60	4500.83	573.77	11.3%
O_2	% dry	7.62	7.6	0.03	0.4%
CO_2	% dry	13.05	13.0	0.08	0.6%
NO_x	ppm dry	48.26	52.0	-3.78	-7.8%
NO_x	ppm @ 3% O_2	65.07	69.8	-4.74	-7.3%
NO_x	lb/hr	29.24	28.09	1.15	3.9%
SO_2	ppm dry	7.91	9.28	-1.37	-17.3%
SO_2	ppm @ 3% O_2	10.67	12.46	-1.79	-16.7%
SO_2	lb/hr	6.671	6.960	-0.289	-4.3%
CO	ppm dry	-0.26	1.60	-1.86	
CO	ppm @ 3% O_2	-0.35	2.15	-2.50	
CO	lb/hr	-0.096	0.526		

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	451
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.23

MONTROSE AQS
RELATIVE ACCURACY TEST AUDIT
DATA AND WORKSHEET
Desert View Power UNIT 2

PRE-TEST INFORMATION

GENERAL

Test:	10-RA-U2	
Date:	3/21/2019	
Start Time:	16:06	
Station:	Desert View Power	
Unit:	Unit 2	
Test Condition:	Full Load	
Performed By:	DW	

PRE-TEST INFORMATION
SAMPLE TRAIN

Barom. Pressure:		psi
	30.13	"Hg
Meter No.	17-WCS	
Meter Y_d:	0.9920	
Meter Pressure:	2.5	iwg
Pstack:	0.28	iwg
Pstack:	30.15	"Hg
Cp:	0.84	
Tref:	68	°F
Stack Area:	38.84	ft^2

METHOD 3A, 6C, 7E DATA

	O_2	CO_2	NO_x	CO
Span	19.31	18.91	90.40	8.59
Actual Span Value	10.48	10.56	45.3	4.68
Pre Test Zero Direct	-0.01	0.03	0.03	0.04
Pre Test Span Direct	10.46	10.52	46.00	4.69
Pre-test Zero	-0.01	0.05	0.06	0.09
Pre-test Span	10.39	10.46	45.35	4.69
0-30 min	7.52	12.83	43.64	-0.13
Post Test Zero Direct	-0.01	0.03	0.04	0.07
Post Test Span Direct	10.46	10.49	45.95	4.70
Post-test Zero	0.00	0.05	0.08	0.05
Post-test Span	10.38	10.42	45.42	4.70
Average	7.52	12.83	43.64	-0.13
Corr. Results	7.59	12.99	43.56	-0.20
Cal Error <2%, Bias <5%; Drift <3%				
Calibrtion Error	-0.1%	-0.2%	0.8%	0.1%
Pre-Test Zero Bias	0.0%	0.1%	0.0%	0.5%
Pre-Test Span Bias	-0.4%	-0.3%	-0.7%	0.0%
Post-Test Zero Bias	0.0%	0.1%	0.0%	-0.2%
Post-Test Span Bias	-0.4%	-0.3%	-0.6%	0.0%
Zero Drift	0.0%	0.0%	0.0%	-0.4%
Span Drift	0.0%	-0.2%	0.1%	0.1%
CAL STATUS	PASS	PASS	PASS	PASS

METHOD 4 DATA

Impingers

	#/Matl.	End	Start	Diff.
	1/H2O	860.0	738.1	121.9
	2/H2O	728.1	712.9	15.2
	3/Empty	638.9	636.6	2.3
	4/S.G.	931.7	924.5	7.2
	Rinse		50.0	-50.0
	Total			96.6

Dry Gas Meter

	Time	Vol.	Tm(in)	Tm(out)
	Start	167.900	77	76
			78	76
	Stop	194.112	78	76
	Total	26.212		76.8

Summary

Sample Volume:	25.907	dscf
H_2O Volume :	4.560	scf
Moisture Content:	15.0	%

METHOD 2 DATA

Point	dP (in. H_2O)	dP^2 (in. H_2O^2)	Temp (°F)	Velocity (fps)
5	0.940	0.9695	360	67.87
4	0.870	0.9327	361	65.34
3	0.800	0.8944	361	62.65
2	0.770	0.8775	360	61.43
1	0.680	0.8246	360	57.73
5	0.920	0.9592	360	67.15
4	0.980	0.9899	360	69.30
3	0.960	0.9798	361	68.63
2	0.900	0.9487	360	66.41
1	0.800	0.8944	360	62.61
5	0.990	0.9950	361	69.70
4	1.000	1.0000	362	70.09
3	0.990	0.9950	362	69.74
2	0.970	0.9849	361	68.99
1	0.900	0.9487	361	66.45
5	1.000	1.0000	361	70.05
4	1.100	1.0488	361	73.47
3	1.000	1.0000	362	70.09
2	0.990	0.9950	362	69.74
1	0.980	0.9899	361	69.34
5	1.100	1.0488	361	73.47
4	1.200	1.0954	362	76.78
3	1.100	1.0488	362	73.51
2	1.000	1.0000	361	70.05
1	1.100	1.0488	360	73.42
5	1.000	1.0000	361	70.05
4	1.100	1.0488	361	73.47
3	1.100	1.0488	360	73.42
2	1.100	1.0488	360	73.42
1	1.000	1.0000	360	70.00
Average	0.9746	0.9872	360.8	69.14

RELATIVE ACCURACY DATA

Parameter	Units	Ref. Meth	CEMS	Diff.	Diff. %
Flow	kdscfh	5328.51	4510.23	818.28	15.4%
O_2	% dry	7.59	7.6	-0.01	-0.1%
CO_2	% dry	12.99	12.9	0.05	0.4%
NO_x	ppm dry	43.56	47.0	-3.46	-7.9%
NO_x	ppm @ 3% O_2	58.57	62.7	-4.18	-7.1%
NO_x	lb/hr	27.71	25.53	2.17	7.8%
SO_2	ppm dry	7.85	9.61	-1.76	-22.5%
SO_2	ppm @ 3% O_2	10.56	12.85	-2.30	-21.8%
SO_2	lb/hr	6.948	7.239	-0.292	-4.2%
CO	ppm dry	-0.20	1.93	-2.13	
CO	ppm @ 3% O_2	-0.27	2.59	-2.86	
CO	lb/hr	-0.078	0.633		

TEST SUMMARY

O_2:	7.588	% dry
CO_2:	12.989	% dry
NO_x:	43.555	ppm dry
	27.708	lb/hr
SO_2:	7.8497246	ppm dry
	6.948	lb/hr
CO:	-0.20	ppm dry
	-0.078	lb/hr
H_2O:	15.0	%
MW:	28.53	lb/lb-mole
Flow:	161,136	wacfm
	88.81	mdscfm
	5328.51	kdscfh

SOx Titration Summary

	B1/2
N BaCl2	0.0097752
Total VOL (ml)	458
Aliquot VOL (ml)	20
Titrant VOL (ml)	2.14

Appendix C.3.2
Unit 2 Hydrogen Chloride Calculations

EPA METHOD 26A SOURCE TEST

DATA AND WORKSHEET

Client	Desert View Power Parameter			Full Load
Loaction	Mecca	Fuel		Biomass
Unit	Unit 2	Data By		DW
Test Number	1-HCL-U2	2-HCL-U2	3-HCL-U2	Average
Reference Temperature, F	68	68	68	
Test Date	3/21/2019	3/21/2019	3/21/2019	
Sample Train	18-WCS	18-WCS	18-WCS	-
Pitot Factor	0.840	0.840	0.840	-
Meter Calibration Factor	0.994	0.994	0.994	-
Stack Area (sq ft)	38.84	38.84	38.84	-
Sample Time (Min)	120	120	120	120
Barometric Pressure (in Hg)	30.13	30.13	30.17	30.14
Nozzle Diam (in)	0.240	0.240	0.240	0.240
Start/Stop Time	721/940	1010/1242	1306/1518	-
Stack Pressure (iwg)	0.28	0.28	0.28	0.28
Delta P (iwg)	1.001	0.969	0.956	0.9752
Meter Pressure (iwg)	1.89	1.88	1.84	1.872
Stack Temperature (F)	353.4	356.0	363.5	357.6
Meter Temperature (F)	78.9	87.2	84.3	83.5
Meter Volume (acf)	90.886	90.720	89.868	90.491
Liquid Volume (ml)	289.1	359.0	355.3	334.5
Stack O2 (%)	7.66	7.61	8.42	7.9
Stack CO2 (%)	12.98	13.00	12.22	12.7
Standard Sample Volume (SCF	89.534	88.014	87.764	88.437
Moisture Fraction	0.132	0.161	0.160	0.151
Molecular Weight (wet)	28.75	28.38	28.32	28.48
Stack Gas Velocity (ft/sec)	69.50	68.93	68.78	69.07
Stack Flow Rate (wacfm)	161,956	160,634	160,297	160,963
Stack Flow Rate (dscfm)	91,901	87,807	87,054	88,921
Isokinetic Ratio (%)	100.34	103.23	103.83	102.47

HYDROCHLORIC ACID TEST RESULTS
Unit 2

Test Number	1-HCL-U2	2-HCL-U2	3-HCL-U2	**Average**
Date	3/21/2019	3/21/2019	3/21/2019	
Start/Stop Time	721/940	1010/1242	1306/1518	
Stack Flow Rate, dscfm[(1)]	91,901	87,807	87,054	88,921
Sample Volume, dscf	89.534	88.014	87.764	88.437
O_2, %	7.66	7.61	8.42	7.90
CO_2, %	12.98	13.00	12.22	12.73
mg/sample	40.5	62.5	67.3	56.8
mg/dscm	15.97	25.07	27.08	22.71
ppm (as HCl)	10.53	16.53	17.85	14.97
lb/hr (as HCl)	5.49	8.24	8.82	7.52
MMBtu/Hr	379	379	379	379
Lb/MMBtu	0.014	0.022	0.023	0.0198

	1-HCL-U2						2-HCL-U2						3-HCL-U2					
	dP	(dP)^.5	dH	Ts	Tm			dP	(dP)^.5	dH	Ts	Tm			dP	(dP)^.5	dH	Ts	Tm	
5	1.10	1.049	2.0	348	71	68	5	1.30	1.140	2.5	356	86	84	5	1.20	1.095	2.3	362	87	85
4	1.20	1.095	2.2	349	72	71	4	1.20	1.095	2.3	356	86	84	4	1.00	1.000	1.9	364	88	85
3	0.75	0.866	1.3	350	73	71	3	1.20	1.095	2.3	357	87	85	3	0.96	0.980	1.9	365	88	86
2	0.70	0.837	1.3	352	76	68	2	1.10	1.049	2.1	356	90	85	2	0.90	0.949	1.7	364	90	87
1	0.65	0.806	1.2	351	77	69	1	1.10	1.049	2.1	355	87	85	1	0.83	0.911	1.6	363	93	87
5	1.00	1.000	1.8	349	77	71	5	1.20	1.095	2.3	356	89	86	5	0.96	0.980	1.9	362	92	86
4	0.95	0.975	1.7	351	82	73	4	1.20	1.095	2.3	357	92	87	4	0.94	0.970	1.8	364	95	87
3	0.90	0.949	1.7	352	83	73	3	1.10	1.049	2.1	357	94	87	3	0.89	0.943	1.7	364	95	87
2	0.89	0.943	1.6	353	83	73	2	1.20	1.095	2.3	354	94	87	2	0.74	0.860	1.4	365	94	86
1	0.87	0.933	1.6	353	83	74	1	1.10	1.049	2.1	354	95	87	1	0.71	0.843	1.4	364	94	86
5	0.95	0.975	1.7	352	80	79	5	1.10	1.049	2.1	355	87	86	5	0.92	0.959	1.8	364	89	85
4	0.98	0.990	1.8	355	81	76	4	1.20	1.095	2.3	357	91	87	4	0.79	0.889	1.5	364	90	85
3	0.96	0.980	1.8	355	83	76	3	0.94	0.970	1.8	357	91	87	3	0.73	0.854	1.4	365	89	85
2	0.87	0.933	1.7	354	84	76	2	0.80	0.894	1.5	356	90	86	2	0.70	0.837	1.3	365	86	84
1	0.71	0.843	1.3	354	85	76	1	0.72	0.849	1.4	354	89	86	1	0.64	0.800	1.2	363	83	82
5	1.30	1.140	2.5	354	78	76	5	0.97	0.985	1.9	356	82	81	5	1.00	1.000	1.9	364	82	81
4	1.10	1.049	2.1	356	81	77	4	0.89	0.943	1.7	357	85	84	4	1.10	1.049	2.1	364	83	82
3	0.96	0.980	1.8	356	83	77	3	0.84	0.917	1.6	357	87	85	3	0.97	0.985	1.9	365	83	82
2	0.90	0.949	1.7	356	83	76	2	0.76	0.872	1.5	354	89	86	2	0.91	0.954	1.7	364	83	82
1	0.75	0.866	1.4	355	85	77	1	0.73	0.854	1.4	354	89	86	1	0.79	0.889	1.5	364	83	81
5	1.30	1.140	2.5	354	82	74	5	1.00	1.000	1.9	356	85	84	5	1.10	1.049	2.1	364	80	79
4	1.10	1.049	2.1	356	87	77	4	1.10	1.049	2.1	357	89	87	4	1.20	1.095	2.3	364	82	80
3	1.20	1.095	2.3	356	88	77	3	0.89	0.943	1.7	357	91	87	3	1.20	1.095	2.3	365	83	81
2	1.10	1.049	2.1	355	89	77	2	0.88	0.938	1.7	356	91	87	2	1.10	1.049	2.1	363	82	81
1	1.10	1.049	2.1	354	90	78	1	0.70	0.837	1.4	354	91	86	1	1.00	1.000	1.9	364	82	81
5	1.30	1.140	2.5	354	91	78	5	1.00	1.000	1.9	356	86	85	5	1.10	1.049	2.1	362	80	79
4	1.20	1.095	2.3	355	91	77	4	1.10	1.049	2.1	357	85	84	4	1.10	1.049	2.1	362	80	78
3	1.20	1.095	2.3	355	91	77	3	0.73	0.854	1.4	357	87	85	3	1.20	1.095	2.3	361	81	77
2	1.20	1.095	2.3	354	90	76	2	0.70	0.837	1.4	358	88	86	2	1.10	1.049	2.1	360	81	77
1	1.10	1.049	2.1	354	90	76	1	0.62	0.787	1.2	356	89	86	1	1.10	1.049	2.1	360	80	76
Average		1.0009	1.893	353.4	78.9		Average		0.9692	1.880	356.0	87.2		Average		0.9555	1.843	363.5	84.3	

		Meter Vol	Imp	Imp				Meter Vol	Imp	Imp				Meter Vo	Imp	Imp	
Delta P (iwg)	1.001	70.120	977.2	750.3	226.9	Delta P (iwg)	0.969	162.46	988.0	722.6	265.4	Delta P (iwg)	0.956	253.796	983.4	754.1	229.3
Meter Pressure (iwg)	1.893	161.006	767.8	680.8	87.0	Meter Pressure (iwg)	1.880	253.180	749.8	630	119.8	Meter Pressure (iwg)	1.843	343.664	849.4	691	158.4
Stack Temperature (F)	353.400	90.886	482.4	476.9	5.5	Stack Temperature (F	355.967	90.720	660.3	657.8	2.5	Stack Temperature (F	363.467	89.868	480.4	479	1.4
Meter Temperature (F)	78.883		912.1	892.4	19.7	Meter Temperature (F)	87.167		892.0	870.7	21.3	Meter Temperature (F	84.300		928.3	912.1	16.2
Meter Volume (acf)	90.886			50	-50.0	Meter Volume (acf)	90.720			50	-50.0	Meter Volume (acf)	89.868			50	-50.0
Liquid Volume (ml)	289.100				289.1	Liquid Volume (ml)	359.000				359.0	Liquid Volume (ml)	355.3				355.3

Appendix C.3.3
Unit 2 Particulate Calculations

EPA METHOD 5 SOURCE TEST

DATA AND WORKSHEET

Client	Desert View Power Parameter			Full Load
Loaction	Mecca	Fuel		Biomass
Unit	Unit 2	Data By		DW
Test Number	1-PM-U2	2-PM-U2	3-PM-U2	Average
Reference Temperature, F	68	68	68	
Test Date	3/21/2019	3/21/2019	3/28/2018	
Sample Train	17-WCS	17-WCS	17-WCS	-
Pitot Factor	0.840	0.840	0.840	-
Meter Calibration Factor	0.994	0.994	0.994	-
Stack Area (sq ft)	38.84	38.84	38.84	-
Sample Time (Min)	120	120	120	120
Barometric Pressure (in Hg)	30.13	30.13	30.13	30.13
Nozzle Diam (in)	0.248	0.247	0.248	0.248
Start/Stop Time	721/940	1010/1242	1306/1518	-
Stack Pressure (iwg)	0.28	0.28	0.28	0.28
Delta P (iwg)	1.005	1.0016	1.0057	1.0041
Meter Pressure (iwg)	1.867	1.877	1.851	1.865
Stack Temperature (F)	353.7	358.0	366.0	359.3
Meter Temperature (F)	68.8	76.0	72.8	72.5
Meter Volume (acf)	96.506	96.608	94.667	95.927
Liquid Volume (ml)	350.3	354.5	351.6	352.1
Stack O2 (%)	7.66	7.61	8.42	7.9
Stack CO2 (%)	12.98	13.00	12.22	12.7
Standard Sample Volume (SCF	96.886	95.679	94.308	95.624
Moisture Fraction	0.146	0.149	0.150	0.148
Molecular Weight (wet)	28.58	28.54	28.45	28.52
Stack Gas Velocity (ft/sec)	69.86	69.97	70.56	70.13
Stack Flow Rate (wacfm)	162,809	163,052	164,441	163,434
Stack Flow Rate (dscfm)	90,907	90,239	90,043	90,396
Isokinetic Ratio (%)	102.80	103.10	101.02	102.31
Analysis				
Filter mg	1.10	1.00	6.00	2.70
Probe/Nozzle mg	0.00	0.00	0.00	0.00
Particulate Catch, mg	1.10	1.00	6.00	2.70
Particulate Emissions				
Grain Loading gr/dscf	0.00018	0.00016	0.00098	0.0004
Grain Loading @ 12% CO2	0.00016	0.00015	0.00096	0.0004
Part emission lb/hr	0.137	0.125	0.758	0.34

	1-PM-U1						2-PM-U1						3-PM-U1					
	dP	(dP)^.5	dH	Ts	Tm		dP	(dP)^.5	dH	Ts	Tm		dP	(dP)^.5	dH	Ts	Tm	
5	0.95	0.975	1.8	352	59	60	1.20	1.095	2.20	356	74	73	0.99	0.995	1.8	367	78	77
4	1.00	1.000	1.8	351	63	59	1.00	1.000	1.90	357	74	73	1.00	1.000	1.8	366	79	78
3	0.99	0.995	1.8	353	66	60	1.10	1.049	2.00	355	75	73	0.95	0.975	1.7	364	80	78
2	0.97	0.985	1.8	353	68	61	1.20	1.095	2.20	355	77	74	0.98	0.990	1.8	365	81	78
1	0.93	0.964	1.7	353	70	62	1.10	1.049	2.00	357	74	73	0.92	0.959	1.7	364	82	78
5	1.20	1.095	2.2	354	68	63	1.30	1.140	2.40	356	75	73	1.10	1.049	2.0	365	82	78
4	1.10	1.049	2.0	353	71	63	1.00	1.000	1.90	357	78	74	1.20	1.095	2.2	366	83	79
3	0.75	0.866	1.4	352	71	63	1.20	1.095	2.20	356	79	75	0.78	0.883	1.4	367	83	79
2	0.70	0.837	1.3	353	71	65	1.20	1.095	2.20	355	80	75	0.70	0.837	1.3	368	82	78
1	0.66	0.812	1.2	352	71	65	1.10	1.049	2.00	354	80	76	0.66	0.812	1.2	368	82	78
5	0.95	0.975	1.8	351	70	66	1.30	1.140	2.40	357	80	76	0.95	0.975	1.7	370	75	76
4	0.91	0.954	1.7	353	71	68	1.00	1.000	1.90	357	78	76	0.93	0.964	1.7	371	76	75
3	0.86	0.927	1.6	352	71	66	0.97	0.985	1.80	358	78	76	0.87	0.933	1.6	370	75	74
2	0.90	0.949	1.7	352	71	66	0.83	0.911	1.60	358	77	75	0.92	0.959	1.7	371	75	73
1	0.87	0.933	1.6	353	71	66	0.75	0.866	1.40	358	77	75	0.78	0.883	1.4	369	72	72
5	1.30	1.140	2.4	355	67	66	0.96	0.980	1.80	358	73	72	1.30	1.140	2.4	368	70	71
4	1.10	1.049	2.0	354	68	66	0.90	0.949	1.70	357	71	73	1.00	1.000	1.8	366	71	70
3	0.98	0.990	1.8	352	69	66	0.87	0.933	1.60	358	74	72	0.98	0.990	1.8	367	72	70
2	0.89	0.943	1.6	355	71	66	0.91	0.954	1.70	358	76	73	0.88	0.938	1.6	364	69	68
1	0.73	0.854	1.4	355	71	66	0.85	0.922	1.60	357	76	73	0.72	0.849	1.3	366	70	68
5	0.96	0.980	1.8	355	72	67	1.30	1.140	2.40	360	74	73	1.10	1.049	2.0	362	67	67
4	1.10	1.049	2.0	355	75	68	1.10	1.049	2.00	360	77	74	1.20	1.095	2.2	363	68	67
3	1.20	1.095	2.2	355	74	69	0.74	0.860	1.40	360	78	74	1.20	1.095	2.2	364	68	67
2	1.20	1.095	2.2	355	75	69	0.70	0.837	1.30	360	79	75	1.10	1.049	2.0	364	68	66
1	1.10	1.049	2.0	355	77	70	0.65	0.806	1.20	360	80	75	1.20	1.095	2.2	363	68	65
5	1.40	1.183	2.6	355	77	71	1.00	1.000	1.90	361	79	76	1.30	1.140	2.4	362	67	66
4	1.10	1.049	2.0	356	77	72	0.96	0.980	1.80	361	80	76	1.20	1.095	2.2	364	67	65
3	1.30	1.140	2.4	356	78	72	1.10	1.049	2.00	360	82	77	1.10	1.049	2.0	366	67	66
2	1.20	1.095	2.2	356	78	72	0.99	0.995	1.90	361	84	78	1.20	1.095	2.2	365	67	65
1	1.10	1.049	2.0	356	78	73	1.00	1.000	1.90	364	84	79	1.20	1.095	2.2	366	68	66

Average	1.0052	1.867	353.7	68.8			Average	1.0016	1.877	358.0	76.0		Average	1.0057	1.851	366.0	72.8	
		Meter Vol	Imp	Imp					Meter Vol	Imp	Imp				Meter Vo	Imp	Imp	
Delta P (iwg)	1.005	852.155	948.4	709.9	238.5		Delta P (iwg)	1.002	950.4	946.0	693	253.0	Delta P (iwg)	1.006	47.31	946.7	731.1	215.6
Meter Pressure (iwg)	1.867	948.661	670.7	581.7	89.0		Meter Pressure (iwg)	1.877	1047.008	664.1	583.7	80.4	Meter Pressure (iwg)	1.851	141.977	727.4	603.8	123.6
Stack Temperature (F)	353.733	96.506	588.8	585.3	3.5		Stack Temperature (F	358.033	96.608	654.4	652.7	1.7	Stack Temperature (F	366.033	94.667	587.6	588.8	-1.2
Meter Temperature (F)	68.750		952.3	933	19.3		Meter Temperature (F)	76.000		930.9	911.5	19.4	Meter Temperature (F	72.833		965.9	952.3	13.6
Meter Volume (acf)	96.506				0.0		Meter Volume (acf)	96.608				0.0	Meter Volume (acf)	94.667				0.0
Liquid Volume (ml)	350.300				350.3		Liquid Volume (ml)	354.500				354.5	Liquid Volume (ml)	351.6				351.6

Appendix C.3.4
Unit 2 Hydrocarbon Calculations

SCAQMD 25.3 SOURCE TEST

DATA AND WORKSHEET

Client	Desert View Powe	Parameter	>90%
Loaction	Mecca	Fuel	Biomass/coke
Unit	Unit 2	Data By	DW
Test Number	1A-HC-U2	1B-HC-U2	Average
Reference Temperature, F	68	68	
Test Date	3/21/2019	3/21/2019	
Sample Time (Min)	~60	~60	~60
Barometric Pressure (in Hg)	30.13	30.13	30.13
Start/Stop Time	954/1037	954/1037	
Stack O2 (%)	7.66	7.66	7.7
Stack CO2 (%)	12.98	12.98	13.0
Stack H2O (%)	14.6%	14.6%	14.6%
Stack Flow Rate (wacfm)	162,809	162,809	162,809
Stack Flow Rate (dscfm)	90,907	90,907	90,907
Laboraotory Results			
Vial-Organic Carbon as Methane	0.60	0.59	0.60
SC-TGNMO ppm	1.11	1.07	1.09
TGNMO EPA Correction Factor	1.086	1.086	
TGNMO ppm	1.86	1.80	1.83
TGNMO ppm @ 3% O2	2.51	2.44	2.47
TGNMO lb/hr	0.42	0.41	0.41

Appendix C.3.5
Unit 2 MMBtu/hr Calculations

2018 Annual Average MMBtu/Hr Calculation

Period Hours	17,520		
Boiler #1 Operating Hours	7,701		
Boiler #2 Operating Hours	7,798		
Total Operating Hours	15,499		
Gross Generation	383,443		
Net Generation	329,671		
Hazen Fuel Analysis	7,516	HHV Btu	
Hazen Fuel Analysis		LHV Btu	
2017 Fuel Records	356,998	tons purchased	
	6,913	System loss	
	4,858	Net change in inventory (final - initial)	
	345,227	tons consumed	
	0.90	tons/MWh	Gross
	1.05	**tons/MWh**	**Net**
	690,454,984	pounds consumed	
	5,189,239,972,528	Btu wood	HHV
	0	Btu wood	LHV
	5,189,240	MMBtu wood	HHV
	0	MMBtu wood	LHV
	56,376	MMBtu gas	1.09%
	15,499	operating hours	
Annual avg, Units 1 & 2	338	MMBtu/hr	HHV
Annual avg, Units 1 & 2	4	MMBtu/hr	LHV

UNIT 2

Average MMBtu/Hr Calculation

Stack test date: 3/21/2019

Avg daily steam production, Unit 1	195	kpph	
Avg daily steam production, Unit 2	208	kpph	
Burn rate during stack test	1.05		
Boiler #1 Operating Hours	24		
Boiler #2 Operating Hours	24		
Net Generation	1,081	MWh	
Fuel Analysis	7,792	HHV Btu	
Fuel Analysis	0	HHV Btu	
Tested Unit	208	kpph	
Fuel consumption	1,132	tons consumed total	
Fuel consumption, tested unit	584	tons consumed total	
	9,104,946,880	Btu wood	HHV
	0	Btu wood	HHV
	9,105	MMBtu wood	HHV
	0	MMBtu wood	HHV
	0	MMBtu gas	0.00%
	24	operating hours	
Heat input during test (tested unit)	379	**MMBtu/hr**	**HHV**
Heat input during test (tested unit)	0	MMBtu/hr	HHV

APPENDIX D
QUALITY ASSURANCE

Appendix D.1
Quality Assurance Program Summary

QUALITY ASSURANCE PROGRAM SUMMARY

As part of Montrose Air Quality Services, LLC (MAQS) ASTM D7036-04 certification, MAQS is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. MAQS quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: MAQS has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: MAQS has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of MAQS QA efforts. The manual is revised upon periodic review and as MAQS adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. MAQS training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the MAQS QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of MAQS emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: MAQS maintains current copies of EPA, ARB, and SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: MAQS maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to MAQS source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to MAQS office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

Montrose is qualified to conduct this test program and has established a quality management system that led to accreditation with ASTM Standard D7036-04 (Standard Practice for Competence of Air Emission Testing Bodies). Montrose participates in annual functional assessments for conformance with D7036-04 which are conducted by the American Association for Laboratory Accreditation (A2LA). All testing performed by Montrose is supervised on site by at least one Qualified Individual (QI) as defined in D7036-04 Section 8.3.2. Data quality objectives for estimating measurement uncertainty within the documented limits in the test methods are met by using approved test protocols for each project as defined in D7036-04 Sections 7.2.1 and 12.10. Additional quality assurance information is presented in the report appendices.

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, will be present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)

The following safety measures will be followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

TABLE 1
EQUIPMENT MAINTENANCE SCHEDULE

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero span gas	As recommended by manufacturer	As recommended by manufacturer
Integrated Sampling Tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobil Van Sampling System	1. Absence of leaks	Depends on nature of use	1. Chang filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry

TABLE 2
MAJOR SAMPLING EQUIPMENT CALIBRATION REQUIREMENTS

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	< 2% of analyzer range
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	< 5% of analyzer range
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	< 3% of analyzer range
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO_x Analyzer	Daily	NO_2 -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	+/- 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	+/- 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	+/- 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	+/- 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	+/- 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for $\Delta H@$	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	+/- 1.5%

Note: Calibration requirements will be used that meet applicable regulatory agency requirements.

Appendix D.2
CARB, SCAQMD, and STAC Certifications

State of California

Air Resources Board

Approved Independent Contractor

Montrose Air Quality Services, LLC

This is to certify that the company listed above has been approved by the California Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, through June 30, 2020, for those test methods listed below:

CARB Source Test Methods:
1, 2, 3, 4, 5, 6, 8, 17, 20
100 (CO, CO_2, NO_x, O_2, SO_2, THC)

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

State of California

Air Resources Board

Approved Independent Contractor

Montrose Air Quality Services, LLC

This is to certify that the company listed above has been approved by the California Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, through June 30, 2020, for those test methods listed below:

U.S. EPA Source Test Methods 201A, 202 and 205
Visible Emissions Evaluation

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

October 30, 2018

Mr. John Peterson
Montrose Air Quality Services, LLC
1631 E. Saint Andrew Place
Santa Ana, CA 92705

Subject: LAP Approval Notice
Reference # 96LA1220

Dear Mr. Peterson:

We have reviewed your renewal letter under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning October 30, 2018, and ending September 30, 2019 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 10.1 and 100.1	SCAQMD Methods 25.1 and 25.3 (Sampling)
USEPA CTM-030 and ASTM D6522-00	SCAQMD Rule 1121/ 1146.2 Protocol
SCAQMD Rule 1420/1420.1/1420.2 – (Lead) Source and Ambient Sampling	

Your LAP approval to perform nitrogen oxide emissions compliance testing for SCAQMD Rule 1121/ 1146.2 Protocols includes satellite facilities located at:

McKenna Boiler 1510 North Spring Street Los Angeles, CA 90012	Noritz America Corp. 11160 Grace Avenue Fountain Valley, CA 92708	Ajax Boiler, Inc. 2701 S. Harbor Blvd. Santa Ana, CA 92704

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

D. Sarkar

Dipankar Sarkar
Program Supervisor
Source Test Engineering

DS:GK/gk

Attachment

181030 LapRenewalRev.doc

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 5th day of March 2018.

President and CEO
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2020

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

MONTROSE AIR QUALITY SERVICES

Appendix D.3
Individual QI Certifications

CERTIFICATE OF COMPLETION

Dave Wonderly

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 1: *EPA Manual Gas Volume and Flow Measurements and Isokinetic Particulate Sampling Methods*

Certificate Number: 002-2018-66

Tate Strickler, Accreditation Director

DATE OF ISSUE: 11/29/18

DATE OF EXPIRATION: 11/29/23

MONTROSE ENVIRONMENTAL

CERTIFICATE OF COMPLETION

Dave Wonderly

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 2: *EPA Manual Gaseous Pollutants Source Sampling Methods*

Certificate Number: 002-2018-67

Tate Strickler, Accreditation Director

DATE OF ISSUE: 11/29/18

DATE OF EXPIRATION: 11/29/23

MONTROSE ENVIRONMENTAL

CERTIFICATE OF COMPLETION

Dave Wonderly

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

Source Evaluation Society Group 3: *EPA Gaseous Pollutants Instrumental Methods*

Certificate Number: 002-2018-60

Tate Strickler, Accreditation Director

DATE OF ISSUE: 9/28/18

DATE OF EXPIRATION: 9/28/23

MONTROSE ENVIRONMENTAL

CERTIFICATE OF COMPLETION

Dave Wonderly

This document certifies that this individual has passed a comprehensive examination and is now a Qualified Individual (QI) as defined in Section 8.3 of ASTM D7036-04 for the following method(s):

SCAQMD Methods 25.1, 25.3 & 307-91

Certificate Number: 002-2016-32

Tate Strickler

Tate Strickler, Accreditation Director

DATE OF ISSUE: 12/9/16

DATE OF EXPIRATION: 12/9/21

MONTROSE ENVIRONMENTAL

APPENDIX E
TEST PLAN

MONTROSE
AIR QUALITY SERVICES

TEST PLAN FOR 2019 EMISSIONS PERFORMANCE TESTING AT THE DESERT VIEW POWER PLANT

Prepared For:

Desert View Power
62-300 Gene Welmas Dr.
Mecca, California 92254-0758

For Submittal To:

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, California 91765-4178

Prepared By:

Montrose Air Quality Services, LLC
1631 E. St. Andrew PL.
Santa Ana, California 92705
(714) 279-6777

Dave Wonderly

Production Date: **February 12, 2019**
Document Number: **002AS-541589-PP-169**

STAC

ACCREDITED
TO ASTM D7036 ONLY
CERT #3925.01

MONTROSE
AIR QUALITY SERVICES

CONFIDENTIALITY STATEMENT

Except as otherwise required by law or regulation, this information contained in this communication is intended exclusively for the individual or entity to which it is addressed. This communication may contain information that is proprietary, privileged or confidential or otherwise legally exempt from disclosure. If you are not the named addressee, you are not authorized to read, print, retain, copy, or disseminate this message or any part of it.

REVIEW AND CERTIFICATION

I certify that, to the best of my knowledge, the information contained in this document is complete and accurate and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: _____ Date: 2/12/2019

Name: Dave Wonderly Title: Client Project Manager

I have reviewed, technically and editorially, details and other appropriate written materials contained herein. I hereby certify that to the best of my knowledge the presented material is authentic and accurate and conforms to the requirements of the Montrose Quality Management System and ASTM D7036-04.

Signature: _____ Date: 2/12/2019

Name: Matt McCune Title: Regional Vice President

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1.0 INTRODUCTION

Montrose Air Quality Services, LLC (MAQS) has been contracted by Desert View Power to conduct annual emissions compliance testing on two Fluid Bed Boilers, and a relative accuracy test audit (RATA) of the continuous emissions monitoring system (CEMS) at the Desert View Power Plant located in Mecca, California. MAQS will conduct testing to comply with U.S. Environmental Protection Agency Operating Permit NSR 4-4-11;SE 87-01 including amendments through August 14, 2003: 7th Amendment Title V permit to operate CB-OP 99-01 dated 8/1/2000 and 40 CFR 60, Appendix F. This test plan presents the testing procedures, a description of the sample locations and a summary of quality assurance procedures.

David Wonderly will coordinate the testing for MAQS and can be reached at (714) 279-6777. The on-site test team will consist of a Project Manager whose responsibilities include interfacing with facility personnel, operating the mobile emission measurement laboratory, and performing data entry as well as Technician(s) responsible for all stack responsibilities. A Qualified Individual, as defined in ASTM D7036-04, will be on-site for all methods performed.

Emissions tests will be performed on each Biomass fired boiler as specified in the permit for:

- Particulate
- NO_x, CO and SO_2
- Hydrocarbons
- Hydrogen Chloride (HCl)
- Method 19 F-Factor Using ASTM D6323 and ASTM E711 for Fuel BTU/lb
- Volumetric Flow Rate
- Oxygen and Carbon Dioxide concentration
- Flue gas moisture content

A relative accuracy test audit will be performed to satisfy the requirements of 40 CFR 60, Appendix F, as part of the quarterly CEMS testing. The Continuous Emissions Monitoring System (CEMS) Relative Accuracy Test Audit includes NO_x, CO and SO_2.

2.0 UNIT DESCRIPTION

The Desert View Power Plant consists of two 297 MMBtu/hour, circulating bed, biomass-fired boilers, and combined unit are designed to produce 47 MW of net electrical output. Each unit is equipped with the following pollution control systems:

- An ammonia injection system for control of NO_x emissions;
- Cyclonic mixing of injected ammonia with flue gas to provide for a minimum amount of ammonia slip (emission);
- A limestone injection system to limit emissions of SO_2;
- A hydrated lime injection system to limit emissions of HCL;
- A reverse air baghouse to restrict opacity and emissions of sulfates and particulate to very low levels.

The plant CEM system for each unit includes measurements of NO_x, CO, O_2, O_2 wet, SO_2, CO_2, flow and opacity. It is an extractive system with a heated line extending from the probe to the CEM unit. Table 2-1 presents the current CEMS configuration.

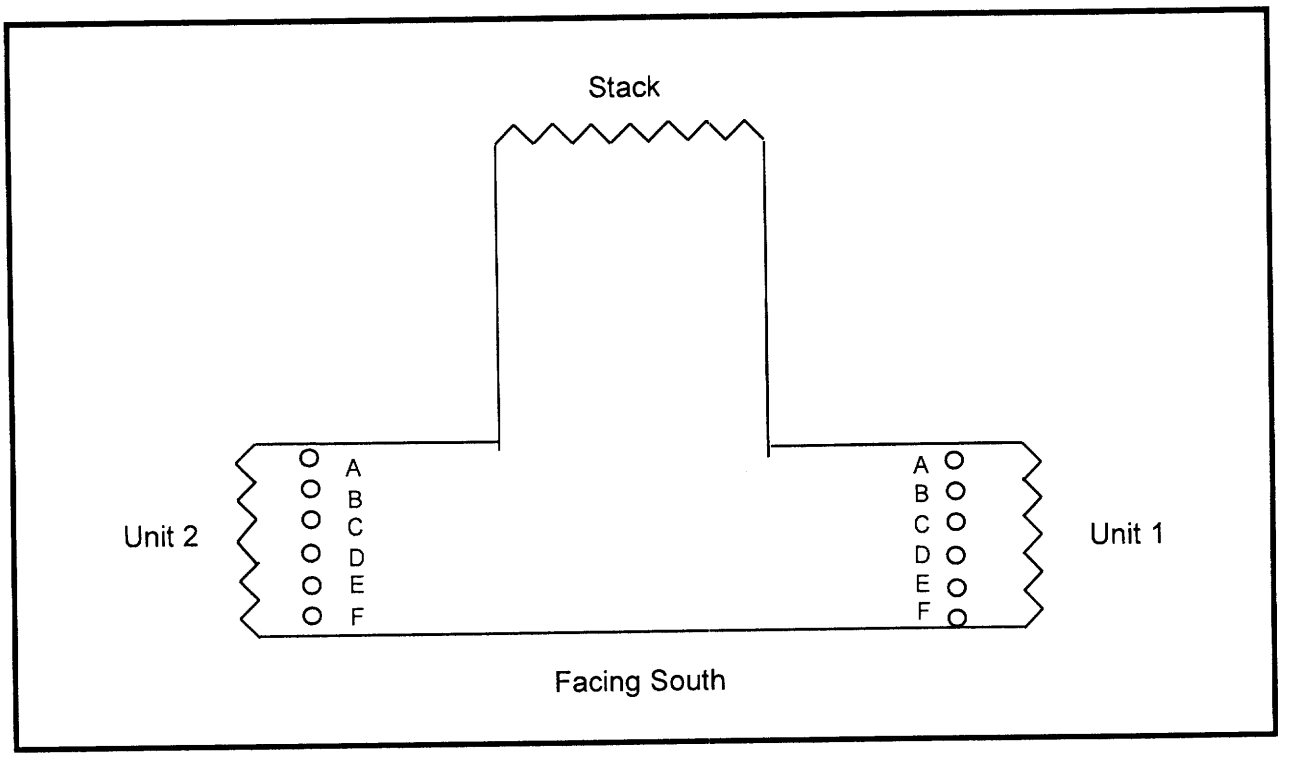
TABLE 2-1
CONTINUOUS EMISSION MONITOR SYSTEM
DESERT VIEW POWER PLANT

Species	Manufacturer	Model	Range
NO_x	CAI	ZRE-5 Multi Component Analyzer	100 and 500 ppm
CO	CAI	ZRE-5 Multi Component Analyzer	100 and 500 ppm
O_2 Dry	CAI	ZRE-5 Multi Component Analyzer	25%
SO_2	CAI	ZRE-5 Multi Component Analyzer	50 and 500 ppm
CO_2	CAI	ZRE-5 Multi Component Analyzer	20%
O_2 Wet	AMETEK	Thermox 2000	25%
Flow	Diet Greg Standard	--	Msdcfh
Opacity	Monitor Labs	Lighthawk 560	100%

2.1 SAMPLE LOCATIONS

Samples will be collected from the transition ducts to the stack. Carnot Technical Services, Inc. conducted three dimensional flow testing and stratification testing on the transition exhaust ducts on each unit. This testing was conducted in accordance to SCAQMD chapter X section 1 and 13 and will be presented in the report titled "Stack Gas Stratification and Absence of Flow Disturbance Testing at Desert View Power Mecca Project" (R106E622.T) submitted to SCAQMD in October of 1994. The sample locations met all the requirements. Copies of the results from that report can be found in Appendix B .All testing for both Unit 1 and 2 will be done at the sample location presented in Figure 2-1.

FIGURE 2-1
DESERT VIEW POWER SAMPLE LOCATION



2.2 UNIT OPERATION

The tests will be conducted at or near maximum steady state unit load conditions. Limestone injection rate, fuel combustion rate, ammonia injection rate, ash handling operations, excess air level, combustion air distribution, and combustion temperature will all be set to maintain stable unit operation. Pertinent operating conditions will be recorded by Desert View Power personnel during the tests. Full load will be defined as greater than 267 MMBtu/hr of total (biomass and natural gas) heat input to the boiler.

3.0 TEST PROCEDURES

The test procedures to be used are listed in Table 3-1. Part of the gaseous plant emissions performance testing data will be used for CEMS RATA determinations. A minimum of nine reference method tests are required for all gaseous species relative accuracy (RA) determinations.

TABLE 3-1
PROPOSED TEST MATRIX PER UNIT
DESERT VIEW POWER MECCA PROJECT

Parameter	No. of Tests	Measurement Principle	Reference Method	Duration per Test
NO_x	9(1)	Chemiluminescence	EPA 7E	60/30 minutes
CO	9(1)	Non-Dispersive Infrared	EPA 10	60/30 minutes
O_2/CO_2	9(1)	Non-Dispersive Infrared	EPA 3A	60/30 minutes
PM	3	Gravimetric	EPA 5	90 minutes
SO_2	9(1)	Barium Thorin Titration	EPA 6	60/30 minutes
Hydrocarbons	2	GC/FID	SCAQMD 25.3	60 minute composite
HCL	3	Ion Chromatography	EPA 26A	120 minutes, minimum of 2 DSCM of sample volume
Fuel Sampling	Daily		ASTM D6323	Composite hourly samples
Fuel Btu/lb	Daily		ASTM E711	Composite hourly samples
Fuel Moisture	Daily		ASTM D3173	Composite hourly samples
Fuel Chlorine	Daily		ASTM E776	Composite hourly samples
Stack Gas Flow Rate	--	S-Type Pitot Traverse	EPA 2	--
Moisture	--	Condensation/Gravimetric	EPA 4	--

(1) Includes compliance and RATA test runs.

3.1 CONTINUOUS GASEOUS MEASUREMENTS

NO_x, O_2, CO_2 and CO will be measured according to EPA reference methods using MAQS continuous emissions monitoring system (CEM). NO_x, O_2, CO_2 and CO concentrations will be determined using MAQS mobile emission measurement laboratory. The laboratory is housed in an 18 foot trailer outfitted to provide a clean, quiet, environmentally controlled base for the testing operations. The laboratory has lighting, electrical distribution, air conditioning and heating to support the test instruments and provide for optimal test performance.

Concentrations of these gaseous species are measured using an extractive sampling system consisting of a heated stainless steel probe to minimize reactions, a heat traced Teflon sample line connected to a thermo-electrically cooled sample dryer. Following the dryer, the sample is drawn into a Teflon lined pump where it is pressurized and then filtered for delivery to the gas analysis portion of the system. Gaseous samples will be collected at a single point. Three minimum 60-minute compliance tests will be performed.

NO_x concentration is determined using a California Analytical Instruments (CAI) chemiluminescence analyzer (model 600 Series). The analyzer has full scale ranges from 2.5 to 10,000 ppm. The analyzer is equipped with a vitreous carbon NO_2 - NO converter for the determination of total nitrogen oxides without interference from other nitrogen containing compounds.

Oxygen concentration is determined using a AMI electro-chemical cell analyzer (model # 201). The analyzer has three full scale ranges; 0-5%, 10%, and 25%. The cell contains an electrolytic fluid that reacts with oxygen to generate an electrical signal proportional to the concentration.

CO_2 is measured using a non-dispersive infrared analyzer manufactured by CAI (model # 100 Series). The analyzer has full scale ranges of 0-5%, 10%, 20% and 40%.

CO is measured using a non-dispersive infrared/gas filter correlation analyzer manufactured by TECO (model # 48i). The analyzer has user definable full scale ranges from of 0-10 to 0-10,000 ppm.

The analyzers and sampling system are subjected to a variety of calibration and quality assurance procedures including leak checks, linearity and calibration error determinations before sampling, and system bias and drift determinations as part of each test run. Data are corrected for any observed bias or drift in accordance with the reference methods.

3.2 PARTICULATE MEASUREMENTS

EPA method 5 sampling system will be used to measure the particulate emissions from both Desert View Power units. The sampling system consists of a nozzle, glass probe, 250°F heated filter, two impingers containing DI water, a third empty impinger and a fourth impinger containing silica gel.

The analysis for particulate is summarized in Table 3-2. Gravimetric Analysis will be performed on the probe/nozzle wash and filter.

TABLE 3-2
EPA METHOD 5 ANALYSES

Sample Component	Analysis Procedure
Probe and Nozzle (Front 1/2)	Evaporation/gravimetric
Heated Filter (83 mm)	Bake/gravimetric

3.3 SULFUR DIOXIDE

Sulfur dioxide will be measured according to EPA Method 6. The first three runs will be 60 minutes and will be used to demonstrate compliance and as RATA runs. Subsequent RATA runs will consist of 30 minute tests per the Methods. A barium thorin titration of the hydrogen peroxide impinger samples will yield SO_2 concentrations for nine relative accuracy test runs. The sample system will consist of a heated glass probe connected to the impinger train with an un-heated Teflon sample line. All the unheated portion of the sample train will be recovered and analyzed. Prior to the titrimetric analysis, all SO_x samples will pass through an ion exchange resin. This removes interference associated with ammonium (NH_4^+). The Method 6 train will not include the IPA impinger, which is provided in the method as an option. The H_2O_2 will absorb both SO_2 and SO_3 (if any). SO_3 will be counted as SO_2.

3.4 HYDROCARBON

Samples for hydrocarbon analysis will be collected in clean 6-L Summa Canister and mini water impingers and analyzed according to SCAQMD 25.3. The samples will be analyzed by AtmAA Inc. in Calabasas, CA using TCA/FID or other qualified laboratory. Results will be reported as total non-methane hydrocarbons as carbon.

3.5 HYDROGEN CHLORIDE MEASUREMENTS

Triplicate hydrogen chloride (HCl), samples will be collected using EPA Method 26A. Sampling and analysis for HF and Cl2 which is included in EPA Method 26A will not be performed. The sampling train consists of:

- A glass nozzle and heated glass probe heated to between 248°F and 273°F
- A Teflon Mat or quartz out-of-stack filter in a glass filter holder heated to 248°F ± 25°F
- Two impingers containing 100 ml of 0.1 N H_2SO_4 for collection of HCl
- One empty impinger
- An impinger containing silica gel

Samples are withdrawn isokinetically from the stack. The Teflon Mat or quartz-fiber filter collects particulate matter. The acidic absorbing solution collect gaseous HCl and is analyzed for HCl by ion chromatography.

The samples are recovered in the following sample fractions:

1. Back half of filter holder, H_2SO_4 Impinger Catch – Weighed for moisture content and recovered with DI water into pre-cleaned HDPE bottle.
2. The filter and probe wash will not be recovered for this test program.

Quality assurance samples collected in the field are:

- A field blank
- A reagent blank: 200 ml of 0.1 N H_2SO_4
- A reagent blank: 200 ml of DI water

The samples will be analyzed by ion chromatography by AAC in Ventura or other qualified laboratory.

3.6 VELOCITY AND MOISTURE

Stack gas velocity and moisture content will be determined by EPA Methods 2 and 4 during the particulate test. Velocity traverses will be performed during each set of compliance tests (NO_x, CO, SO_2 and hydrocarbons) and for each RATA run.

3.7 FUEL ANALYSIS

Daily fuel samples will be collected by Desert View Power personnel. Hourly samples will be taken and composited by the lab prior to analysis. Sampling will be consistent with ASTM D6323 sample collection methodology. MAQS will send the samples out to be analyzed for higher heating value for heat rate calculations, for Btu/lb for calculating the HCL emissions in lb/MMBtu using ASTM E711, for moisture content using ASTM D3173 and for chlorine content using ASTM E776. Copies of the analysis will be included with the final report.

3.8 RELATIVE ACCURACY TEST AUDIT

Relative Accuracy tests will be performed for NO_x, SO_2, CO and O_2 on sub systems of each unit's CEMS. Relative accuracy is determined by comparing the CEMS data to the corresponding reference method (RM) data over nine to twelve test runs. Nine 30-minute minimum tests will be performed for the NO_x, SO_2, CO, and O_2 relative accuracy. Relative accuracy is expressed in terms of the absolute value of the mean of the difference between the monitor value and the reference method value. It is reported in terms of a percentage of the mean reference method value. The computational procedure is summarized by the following equations:

$$\overline{RM} = \frac{1}{n} \sum_{i=1}^{n} RM_1$$

$$\overline{d} = \sum_{i=1}^{n} d_i$$

$$S_d = \left[\frac{\sum_{i=1}^{n} d_i^2 - \frac{\left(\sum_{i=1}^{n} d_i\right)^2}{n}}{n-1} \right]^{\frac{1}{2}}$$

$$CC = t_{0.975} \frac{S_d}{\sqrt{n}} 1$$

$$RA = \frac{|\overline{d}| + |cc|}{\overline{RM}} x100$$

The RA will be determined for the monitoring systems in parts per million dry (ppm) and lb/hr.

3.9 TEST SCHEDULE

The scheduled test dates have been set for March 19 – March 22, 2019 for compliance and RATA testing. A proposed test schedule for on-site testing activities is shown in Table 3-3. This schedule is based on the number of tests and the required sample times.

Date	Unit No.	Test No.	Type of Test
3/18/2019	1	--	Set-up
3/19/2019	1	1-3 PM, 1-3 HCL 1-3 Comp RATA testing	Particulate Tests 1-3, HCL Tests 1-3 CEMS RATA and Compliance NO_x, SO_2, CO &VOC Tests 1-3 Fuel Samples
3/20/2019	1	RATA testing Continued	CEMS RATA
3/21/2019	2	1-3 PM, 1-3 HCL 1-3 Comp RATA testing	Particulate Tests 1-3, HCL Tests 1-3 CEMS RATA and Compliance NO_x, SO_2, CO &VOC Tests 1-3 Fuel Samples
3/22/2019	2	RATA testing Continued	CEMS RATA

4.0 REPORTING

MAQS will prepare a comprehensive emissions report that includes all raw data and calculations for the test program. The test format is presented in Table 4-1. The test report will be submitted within 45 days from completion of testing.

TABLE 4-1
REPORT FORMAT

Title page
Report Title
Prepared For
For Submittal To:
Author and reviewer names
Test Dates and Report Issue Date
Report Number

Review Page
Signatures of person who prepared the report and signature of person who reviewed the report

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Introduction and Summary
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APPENDIX A
QUALITY ASSURANCE AND CERTIFICATIONS

QUALITY ASSURANCE PROGRAM SUMMARY

As part of Montrose Air Quality Services, LLC (MAQS) ASTM D7036-04 certification, MAQS is committed to providing emission related data which is complete, precise, accurate, representative, and comparable. MAQS quality assurance program and procedures are designed to ensure that the data meet or exceed the requirements of each test method for each of these items. The quality assurance program consists of the following items:

- Assignment of an Internal QA Officer
- Development and use of an internal QA Manual
- Personnel training
- Equipment maintenance and calibration
- Knowledge of current test methods
- Chain-of-custody
- QA reviews of test programs

Assignment of an Internal QA Officer: MAQS has assigned an internal QA Officer who is responsible for administering all aspects of the QA program.

Internal Quality Assurance Manual: MAQS has prepared a QA Manual according to the requirements of ASTM D7036-04 and guidelines issued by EPA. The manual documents and formalizes all of MAQS QA efforts. The manual is revised upon periodic review and as MAQS adds capabilities. The QA manual provides details on the items provided in this summary.

Personnel Testing and Training: Personnel testing and training is essential to the production of high quality test results. MAQS training programs include:

- A requirement for all technical personnel to read and understand the test methods performed
- A requirement for all technical personnel to read and understand the MAQS QA manual
- In-house testing and training
- Quality Assurance meetings
- Third party testing where available
- Maintenance of training records.

Equipment Maintenance and Calibration: All laboratory and field equipment used as a part of MAQS emission measurement programs is maintained according to manufacturer's recommendations. A summary of the major equipment maintenance schedules is summarized in Table 1. In addition to routine maintenance, calibrations are performed on all sampling equipment according to the procedures outlined in the applicable test method. The calibration intervals and techniques for major equipment components is summarized in Table 2. The calibration technique may vary to meet regulatory agency requirements.

Knowledge of Current Test Methods: MAQS maintains current copies of EPA, ARB, and SCAQMD Source Test Manuals and Rules and Regulations.

Chain-of-Custody: MAQS maintains chain-of-custody documentation on all data sheets and samples. Samples are stored in a locked area accessible only to MAQS source test personnel. Data sheets are kept in the custody of the originator, program manager, or in locked storage until return to MAQS office. Electronic field data is duplicated for backup on secure storage media. The original data sheets are used for report preparation and any additions are initialed and dated.

QA Reviews: Periodic field, laboratory, and report reviews are performed by the in-house QA coordinator. Periodically, test plans are reviewed to ensure proper test methods are selected and reports are reviewed to ensure that the methods were followed and any deviations from the methods are justified and documented.

ASTM D7036-04 Required Information

Uncertainty Statement

"Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, Montrose Air Quality Services, LLC (MAQS) personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, MAQS personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04. The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report."

Performance Data

Performance data are available for review.

Qualified Personnel

A qualified individual (QI), defined by performance on a third party or internal test on the test methods, will be present on each test event.

Plant Entry and Safety Requirements

Plant Entry

All test personnel are required to check in with the guard at the entrance gate or other designated area. Specific details are provided by the facility and project manager.

Safety Requirements

All personnel shall have the following personal protective equipment (PPE) and wear them where designated:

- Hard Hat
- Safety Glasses
- Steel Toe Boots
- Hearing Protection
- Gloves
- High Temperature Gloves (if required)

The following safety measures will be followed:

- Good housekeeping
- SDS for all on-site hazardous materials
- Confine selves to necessary areas (stack platform, mobile laboratory, CEMS data acquisition system, control room, administrative areas)
- Knowledge of evacuation procedures

Each facility will provide plant specific safety training.

TABLE 1
EQUIPMENT MAINTENANCE SCHEDULE

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pumps	1. Absence of leaks 2. Ability to draw manufacturers required vacuum and flow	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Replace parts 4. Leak check
Flow Meters	1. Free mechanical movement	As recommended by manufacturer	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero span gas	As recommended by manufacturer	As recommended by manufacturer
Integrated Sampling Tanks	1. Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobil Van Sampling System	1. Absence of leaks	Depends on nature of use	1. Chang filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling lines	1. Sample degradation less than 2%	After each test series	1. Blow dry, inert gas through line until dry

TABLE 2
MAJOR SAMPLING EQUIPMENT CALIBRATION REQUIREMENTS

Sampling Equipment	Calibration Frequency	Calibration Procedure	Acceptable Calibration Criteria
Continuous Analyzers	Before and After Each Test Day	3-point calibration error test	< 2% of analyzer range
Continuous Analyzers	Before and After Each Test Run	2-point sample system bias check	< 5% of analyzer range
Continuous Analyzers	After Each Test Run	2-point analyzer drift determination	< 3% of analyzer range
CEMS System	Beginning of Each Day	leak check	< 1 in. Hg decrease in 5 min. at > 20 in. Hg
Continuous Analyzers	Semi-Annually	3-point linearity	< 1% of analyzer range
NO_x Analyzer	Daily	NO_2 -> NO converter efficiency	> 90%
Differential Pressure Gauges (except for manometers)	Semi-Annually	Correction factor based on 5-point comparison to standard	+/- 5%
Differential Pressure Gauges (except for manometers)	Bi-Monthly	3-point comparison to standard, no correction factor	+/- 5%
Barometer	Semi-Annually	Adjusted to mercury-in-glass or National Weather Service Station	+/- 0.1 inches Hg
Dry Gas Meter	Semi-Annually	Calibration check at 4 flow rates using a NIST traceable standard	+/- 2%
Dry Gas Meter	Bi-Monthly	Calibration check at 2 flow rates using a NIST traceable standard	+/- 2% of semi-annual factor
Dry Gas Meter Orifice	Annually	4-point calibration for ΔH@	--
Temperature Sensors	Semi-Annually	3-point calibration vs. NIST traceable standard	+/- 1.5%

Note: Calibration requirements will be used that meet applicable regulatory agency requirements.

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

October 30, 2018

Mr. John Peterson
Montrose Air Quality Services, LLC
1631 E. Saint Andrew Place
Santa Ana, CA 92705

Subject: LAP Approval Notice
Reference # 96LA1220

Dear Mr. Peterson:

We have reviewed your renewal letter under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning October 30, 2018, and ending September 30, 2019 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Methods 5.1, 5.2, 5.3, 6.1
SCAQMD Methods 10.1 and 100.1	SCAQMD Methods 25.1 and 25.3 (Sampling)
USEPA CTM-030 and ASTM D6522-00	SCAQMD Rule 1121/ 1146.2 Protocol
SCAQMD Rule 1420/1420.1/1420.2 – (Lead)	Source and Ambient Sampling

Your LAP approval to perform nitrogen oxide emissions compliance testing for SCAQMD Rule 1121/ 1146.2 Protocols includes satellite facilities located at:

McKenna Boiler 1510 North Spring Street Los Angeles, CA 90012	Noritz America Corp. 11160 Grace Avenue Fountain Valley, CA 92708	Ajax Boiler, Inc. 2701 S. Harbor Blvd. Santa Ana, CA 92704

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

D. Sarkar

Dipankar Sarkar
Program Supervisor
Source Test Engineering

DS:GK/gk

Attachment

181030 LapRenewalRev.doc

State of California

Air Resources Board

Approved Independent Contractor

Montrose Air Quality Services, LLC

This is to certify that the company listed above has been approved by the California Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, through June 30, 2020, for those test methods listed below:

CARB Source Test Methods:
1, 2, 3, 4, 5, 6, 8, 17, 20
100 (CO, CO_2, NO_x, O_2, SO_2, THC)

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

State of California

Air Resources Board

Approved Independent Contractor

Montrose Air Quality Services, LLC

This is to certify that the company listed above has been approved by the California Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, title 17, section 91207, through June 30, 2020, for those test methods listed below:

U.S. EPA Source Test Methods 201A, 202 and 205
Visible Emissions Evaluation

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 5th day of March 2018.

President and CEO
For the Accreditation Council
Certificate Number 3925.01
Valid to February 29, 2020

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

MONTROSE AIR QUALITY SERVICES

APPENDIX B
SAMPLE LOCATION VERIFICATION DATA

STACK GAS STRATIFICATION AND ABSENCE OF FLOW DISTURBANCE TESTING AT COLMAC MECCA PROJECT

Prepared For:

UC Operating Service
Mecca, California

For Submittal To:

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
Diamond Bar, California

Prepared By:

Edward J. Filadelfia

CARNOT
Tustin, California

JULY 1994

REVIEW AND CERTIFICATION

All work, calculations, and other activities and tasks performed and documented in this report were carried out under my direction and supervision.

Edward J. Filadelfia
Senior Engineer

Date 10/14/94

I have reviewed, technically and editorially, details, calculations, results, conclusions and other appropriate written material contained herein, and hereby certify that the presented material is authentic and accurate.

Edward J. Filadelfia
Senior Engineer

Date 10/14/94

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SECTION 1.0

INTRODUCTION

Carnot was contracted by UC Operating Service (UCOS) to determine the suitability of the alternate sample location accessible from the stack inlet duct. Tests were conducted to determine the level of stack gas stratification and flow disturbance. The tests were performed at this location to satisfy the requirements of alternate sample location CFR 40 Appendix A Method 1. The tests were performed using the standard methods in Chapter X of the SCAQMD's Source Test Manual.

The flow disturbance and gaseous stratification tests were performed on June 27-28, 1994. The test program was coordinated by Greg Deedon of UCOS and Edward Filadelfia of Carnot. The Carnot test team consisted of Edward Filadelfia, Dave Wonderly, and Chris Hone. Unit operation was established and maintained by UCOS personnel.

The results of the tests are summarized in Tables 1-1 and 1-2. These results show that the sample location meets the requirements of the SCAQMD and EPA by demonstrating that the stack gas stratification is less than 10% and the average resultant flow angle is less than 20 degrees with a standard deviation of less than 10 degrees.

A description of the unit is presented in Section 2.0. Test procedures and locations are presented in Section 3.0. Test results are presented in Section 4.0. Tests procedure descriptions, field data sheets, calculations, and control room data are included in the Appendices.

TABLE 1-1
SUMMARY OF GASEOUS STRATIFICATION
COLMAC ENERGY PROJECT
JULY 1994

Parameter	Unit 1 % Stratification	Unit 2 % Stratification	SCAQMD Limit, %
O_2, %	0.4%	1.0%	≤10

TABLE 1-2
SUMMARY OF FLOW DISTURBANCE MEASUREMENTS
COLMAC ENERGY PROJECT
JULY 1994

Parameter	Unit 1 Measured	Unit 2 Measured	SCAQMD Limit, %	EPA Limit, %
Average Resultant Angle, Degrees	5.6°	5.9°	≤20	≤20
Standard Deviation, Degrees	3.3°	4.0°	≤10	N/A

SECTION 2.0

UNIT DESCRIPTION

The Colmac Energy Plant consists of two 297 MMBtu/hour, circulating bed boilers, the combined units are designed to produce 47 MW of net electrical output. Each unit is equipped with the following pollution control systems:

1. An ammonia injection system for control of NO_x emissions.

2. Cyclonic mixing of injected ammonia with flue gas to provide for a minimum amount of ammonia slip (emission).

3. A limestone injection system to limit emissions of SO_2.

4. A reverse air baghouse to restrict opacity and emissions of sulfates and particulate to very low levels.

SECTION 3.0

TEST DESCRIPTION

3.1 TEST CONDITIONS

All tests were performed with the unit operating at full load. Tests were conducted while the unit was firing bio mass and operating under normal conditions. Unit operations were established by UCOS operators.

3.2 SAMPLE LOCATION

Measurements were made from Units 1 and 2 inlet ducts to the stack. A schematic of the Sample location is shown in Figure 3-1. Chapter X sampling consisted of 40 point traverse for stratification, and a 42 point traverse for flow disturbances.

3.3 TEST PROCEDURES

Tests were performed using methods from the SCAQMD's Source Test Manual. These methods are contained in Chapter X - Section 1 for disturbed flow and Section 13 for gaseous stratification. Table 3-1 presents the test methods used in this program. O_2 concentrations were measured using Carnot's mobile emission monitoring system. Flow angles were measured using a United Sensor 3D probe. A description of the Carnot's Continuous Emissions Monitoring System and the standard measurement procedures are presented in Appendix A. A summary of the procedures used for gaseous stratification and disturbed flow are presented below.

3.3.1 Gaseous Stratification

Chapter X (Non-Standard Methods and Techniques), Chapter 13 of the SCAQMD Source Test Manual defines gaseous stratification as the presence of a difference, in excess of 10 percent, between any two points in the same cross sectional plane. Stratification can be determined for either pollutant gases (e.g., NO_x) or diluent gases (e.g., O_2, CO_2) in units of concentration. For this test program, the O_2 concentration was used to measure the level of stack gas stratification.

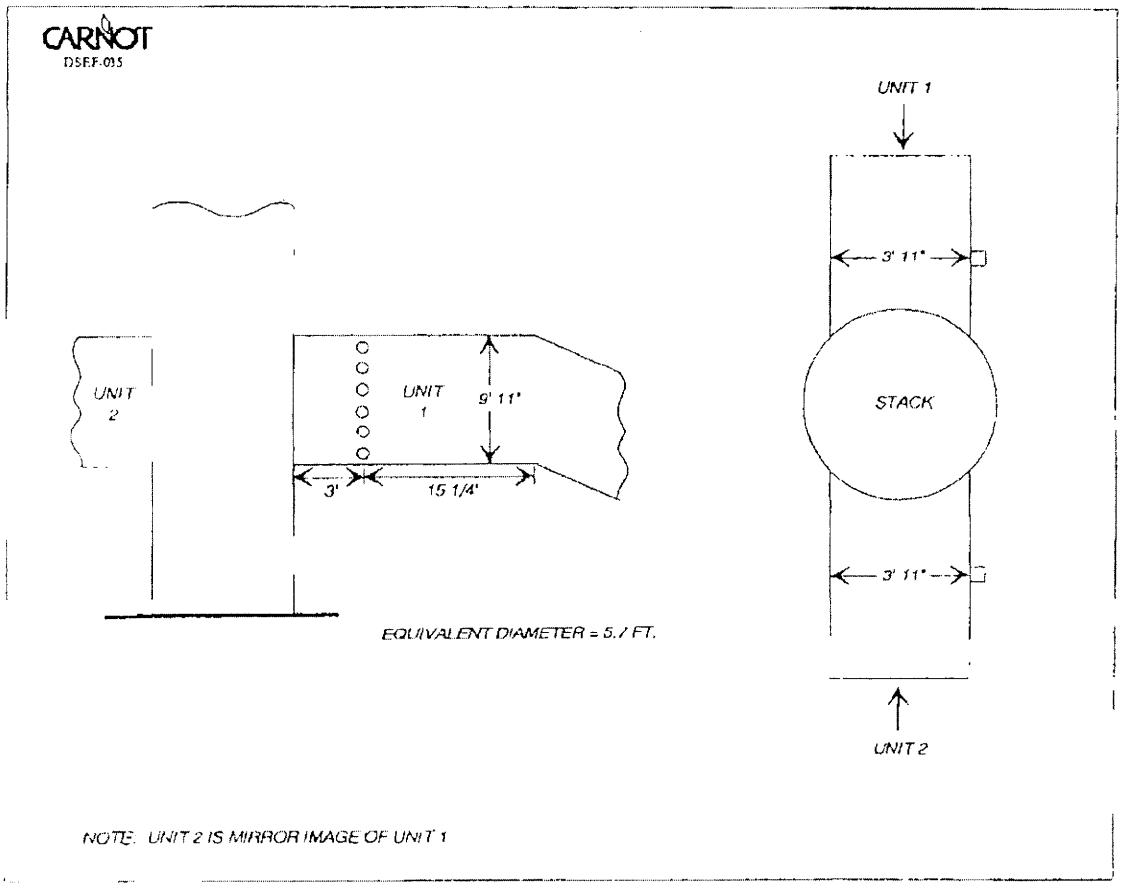


Figure 3-1. UCOS - Duct Sample Locations

Due to variations in process O_2 concentrations, two O_2 analyzers were used. The first O_2 analyzer was used as a reference point and located at the center of the duct. The second was located at 40 traverse points during the test. Gases were monitored for three minutes at each traverse point.

TABLE 3-1
TEST PROCEDURES
COLMAC ENERGY PROJECT
JULY 1994

Parameter	Units	Measurement Principle	Reference Method	Comments
O_2	%	Electrochemical Call	EPA 3A	40 point traverse for gaseous stratification according to Chapter X, Section 13
Flow Angle	Degrees	3D probe for pitch and yaw	1.1	42 point traverse for disturbed flow according to Chapter X, Section 1

SECTION 4.0

RESULTS

4.1 GASEOUS STRATIFICATION

The results of the gaseous stratification tests are summarized in Table 4-1. The results show that the O_2 concentration stratification levels for both sample locations were below the limit of 10%.

TABLE 4-1
GASEOUS STRATIFICATION
COLMAC ENERGY PROJECT
JULY 1994

Parameter	Percent Stratification
Unit 1 O_2, %	0.4%
Unit 2 O_2, %	1.0%

4.2 FLOW DISTURBANCE

The results of the flow disturbance measurements made with the 3-dimensional velocity probe are presented in Table 4-2. The results of these tests show that the average resultant flow angle was below the limit of 20 degrees with a standard deviation of less than 10 degrees for both sample locations.

TABLE 4-2
FLOW DISTURBANCE RESULTS
COLMAC ENERGY PROJECT
JULY 1994

Parameter	Unit 1 3D Probe	Unit 2 3D Probe
Avg. Yaw Angle, degrees	2.0	4.4
Avg. Pitch Angle, degrees	-0.4	-1.0
Avg. Resultant Angle, degrees	5.6	5.9
Standard Deviation, degrees	3.3	4.0

APPENDIX A
MEASUREMENT PROCEDURES

Continuous Emissions Monitoring System

Oxygen (O_2) by Continuous Analyzer

Three-Dimensional Velocity Testing

Continuous Emissions Monitoring System

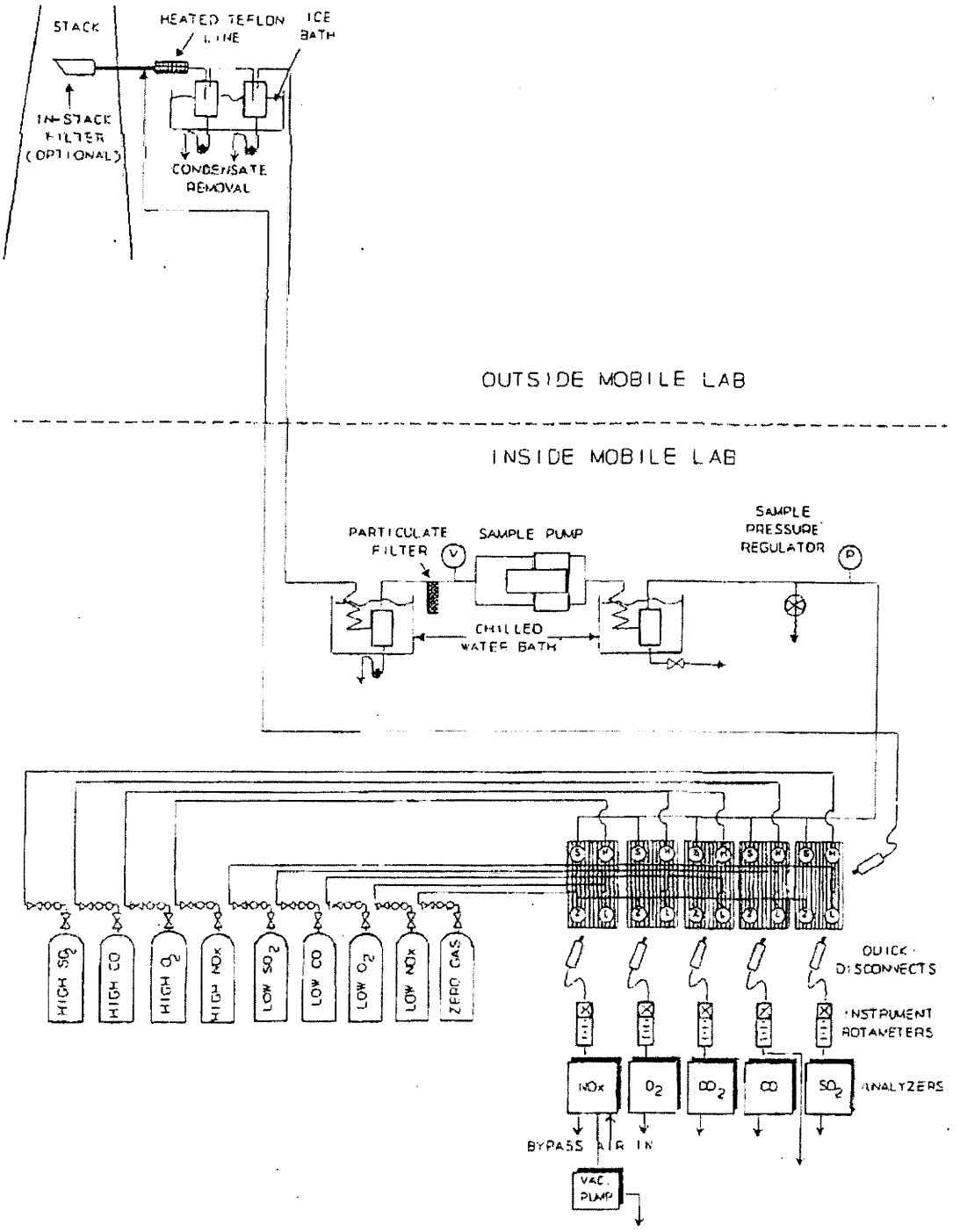
O_2, CO, CO_2, NO, NO_x and SO_2 are measured using an extractive continuous emissions monitoring (CEM) package, shown in the following figure. This package is comprised of three basic subsystems. They are: (1) the sample acquisition and conditioning system, (2) the calibration gas system, and (3) the analyzers themselves. This section presents a description of the sampling and calibration systems. Descriptions of the analyzers used in this program and the corresponding reference test methods follow. Information regarding quality assurance information on the system, including calibration routines and system performance data follows.

The sample acquisition and conditioning system contains components to extract a representative sample from the stack or flue, transport the sample to the analyzers, and remove moisture and particulate material from the sample. In addition to performing the tasks above, the system must preserve the measured species and deliver the sample for analysis intact. The sample acquisition system extracts the sample through a stainless steel probe. The probe is insulated or heated as necessary to avoid condensation. If the particulate loading in the stack is high, a sintered stainless steel filter is used on the end of the probe.

Where water soluble NO_2 and/or SO_2 are to be measured, the sample is drawn from the probe through a heated teflon sample line into an on-stack cooled (approximately 35-40°F) water removal trap. The trap consists of stainless steel flasks in a bath of ice and water. This design removes the water vapor by condensation. The contact between the sample and liquid water is minimized and the soluble NO_2 and SO_2 are conserved. This system meets the requirements of EPA Method 20. The sample is then drawn through a teflon transport line, particulate filter, secondary water removal and into the sample pump. The pump is a dual head, diaphragm pump. All sample-wetted components of the pump are stainless steel or teflon. The pressurized sample leaving the pump flows through a third condensate trap in a refrigerated water bath (≈38°F) for final moisture removal. A drain line and valve are provided to constantly expel any condensed moisture from the dryer at this point. After the dryer, the sample is directed into a distribution manifold. Excess sample is vented through a back-pressure regulator, maintaining a constant pressure of 5-6 psig to the analyzer rotameters.

The calibration system is comprised of two parts: the analyzer calibration, and the system bias check (dynamic calibration). The analyzer calibration equipment includes pressurized cylinders of certified span gas. The gases used are, as a minimum, certified to 1% by the manufacturer. Where necessary to comply with reference method requirements EPA Protocol 1 gases are used. The cylinders are equipped with pressure regulators which supply the calibration gas to the analyzers at the same pressure and flow rate as the sample. The selection of zero, span, or sample gas directed to each analyzer is accomplished by operation of the sample/calibration selector fittings.

The system bias check is accomplished by transporting the same gases used to zero and span the analyzers to the sample system as close as practical to the probe inlet. This is done either by attaching the calibration gas supply line to the probe top with flexible tubing or by actuation of a solenoid valve located at the sample conditioner inlet (probe exit). The span gas is exposed to the same elements as the sample and the system response is documented. The analyzer indications for the system calibration check must agree within 5% of the analyzer calibration. Values are adjusted and changes/repairs are made to the system to compensate for any difference in analyzer readings. Specific information on the analytical equipment and test methods used is provided in the following pages.



Schematic of CEM System

Method:	Oxygen (O_2) by Continuous Analyzer
Applicable Reference Methods:	EPA 3A, EPA 20, ARB 100, BA ST-14, SCAQMD 100.1
Principle:	A sample is continuously drawn from the flue gas stream, conditioned, and conveyed to the instrument for direct readout of O_2 concentration.
Analyzer:	Teledyne Model 326A
Measurement Principle:	Electrochemical cell
Ranges:	0-5, 0-10, 0-25 % O_2
Accuracy:	1 % of full scale
Output:	0-100 mV, linear
Interferences:	Halogens and halogenated compounds will cause a positive interference. Acid gases will consume the fuel cell and cause a slow calibration drift.
Response Time:	90% $<$7 seconds
Sampling Procedure:	A representative flue gas sample is collected and conditioned using the CEM system described previously. If Method 20 is used, that method's specific procedures for selecting sample points are used. Otherwise, stratification checks are performed at the start of a test program to select single or multiple-point sample locations.
Analytical Procedure:	An electrochemical cell is used to measure O_2 concentration. Oxygen in the flue gas diffuses through a Teflon membrane and is reduced on the surface of the cathode. A corresponding oxidation occurs at the anode internally, and an electric current is produced that is proportional to the concentration of oxygen. This current is measured and conditioned by the instrument's electronic circuitry to give an output in percent O_2 by volume.
Special Calibration Procedure:	The measurement cells used with the O_2 instrument have to be replaced on a regular basis. After extended use, the cell tend to produce a nonlinear response. Therefore, a three-point calibration is performed at the start of each test day to check for linearity. If the response is not linear ($\pm$ 2% of scale), the cell is replaced.

Method:	Three-Dimensional Velocity Testing
Applicable Ref. Method:	EPA Method 1, ANSI ASME PTC 11 - 1984
Applicability of Method:	When a sample location to be used for velocity or particulate tests does not meet the traditional Method 1 criteria of being at least two duct diameters downstream and one-half diameter upstream of any flow disturbance, this alternate method is used to evaluate the suitability of the location. A three-dimensional velocity probe is used to measure pitch and yaw angle at a minimum of 40 traverse points for round ducts and 42 points for rectangular ducts. If the average resultant angle is less than 20° and the standard deviation is less than 10°, the sample location is deemed acceptable. Velocity and particulate traverses are then performed at the same traverse points using standard Method 2 and 5 equipment and procedures.
Principle:	The instrument measures yaw and pitch angles of fluid flow, as well as total and static pressures.
Analyzer:	United Sensor Three-Dimensional Directional Probe
Sampling Procedure:	Each probe has five measuring holes in its tip. A centrally located pressure hole measures pressure P1, while two lateral pressure holes measure pressures P2 and P3. If the probe is rotated manually until P2 and P3 are identical as a readout on the manometer, the yaw angle of flow is then indicated by the number of degrees rotated. When the yaw angle has been determined, an additional differential pressure P4 - P5 is measured by pressure holes located above and below the total pressure (P1) hole. Pitch angle is determined by calculating (P4 - P5)/(P1 - P2) and using the calibration data for the individual probe and interpolating between the bracketing data. At any particular pitch angle, the velocity pressure coefficient (Pt - Ps)/(P1 -P2) can also be interpolated from the calibration data and Pt - Ps and Ps calculated. Note that this probe also allows for very accurate gas flow measurements, in addition to the EPA Method 1 procedures that allow it to be used for determination of flow angle.

Definitions:

P_1 = Total Pressure
P_2 = Static Pressure
P_3 = Static Pressure
P_4 = Pitch Pressure
P_5 = Pitch Pressure

$P_1 - P_2$ = Velocity Head Pressure

$\frac{P_4 - P_5}{P_1 - P_2}$ = Pitch angle calculated on calibration curve

Calculations:

Velocity (fps) in direction of flow

$$V_s = 2.90\ C_P \sqrt{\Delta P\ T_s}\ \sqrt{\left(\frac{29.92}{P_S}\right)\left(\frac{28.95}{MW_{wet}}\right)}$$

where:
C_P = Pitot Calibration factor
ΔP = Average velocity, head, iwg $(\overline{\sqrt{\Delta P}})^2$
T_S = Stack Temperature, °R
P_S = Stack Pressure (iwg)
MW_{wet} = Molecular weight, wet

Resultant angle:

$$R = \left| \frac{\cos^{-1}\left(\cos\phi_{Y,R}\ \cos\phi_{P,R}\right)}{0.0175} \right|$$

where:
$\phi_{Y,R}$ = Yaw Angle in Radians
$\phi_{P,R}$ = Pitch Angle in Radians
R = Resultant Angle in Degrees

Pitch Angle Curve Fit Equation (Degrees)

$$\phi_P = A_1\left(\frac{P_4-P_5}{P_1-P_2}\right) + A_2\left(\frac{P_4-P_5}{P_1-P_2}\right)^2 - A_3\left(\frac{P_4-P_5}{P_1-P_2}\right)^3 - A_4\left(\frac{P_4-P_5}{P_1-P_2}\right)^4 + A_5\left(\frac{P_4-P_3}{P_1-P_2}\right)^5 + A_6\left(\frac{P_4-P_5}{P_1-P_2}\right)^6$$

Pitot coefficient curve fit equation (used to calculate corrected axial velocities)

$$\frac{P_1-P_s}{P_1-P_2} = B_1 + B_2\,\phi_P + B_3 + \phi_P + B_4\,\phi_P^3 + B_5\,\phi_P^4 + B_6\,\phi_P^5 + B_7\,\phi_P^6$$

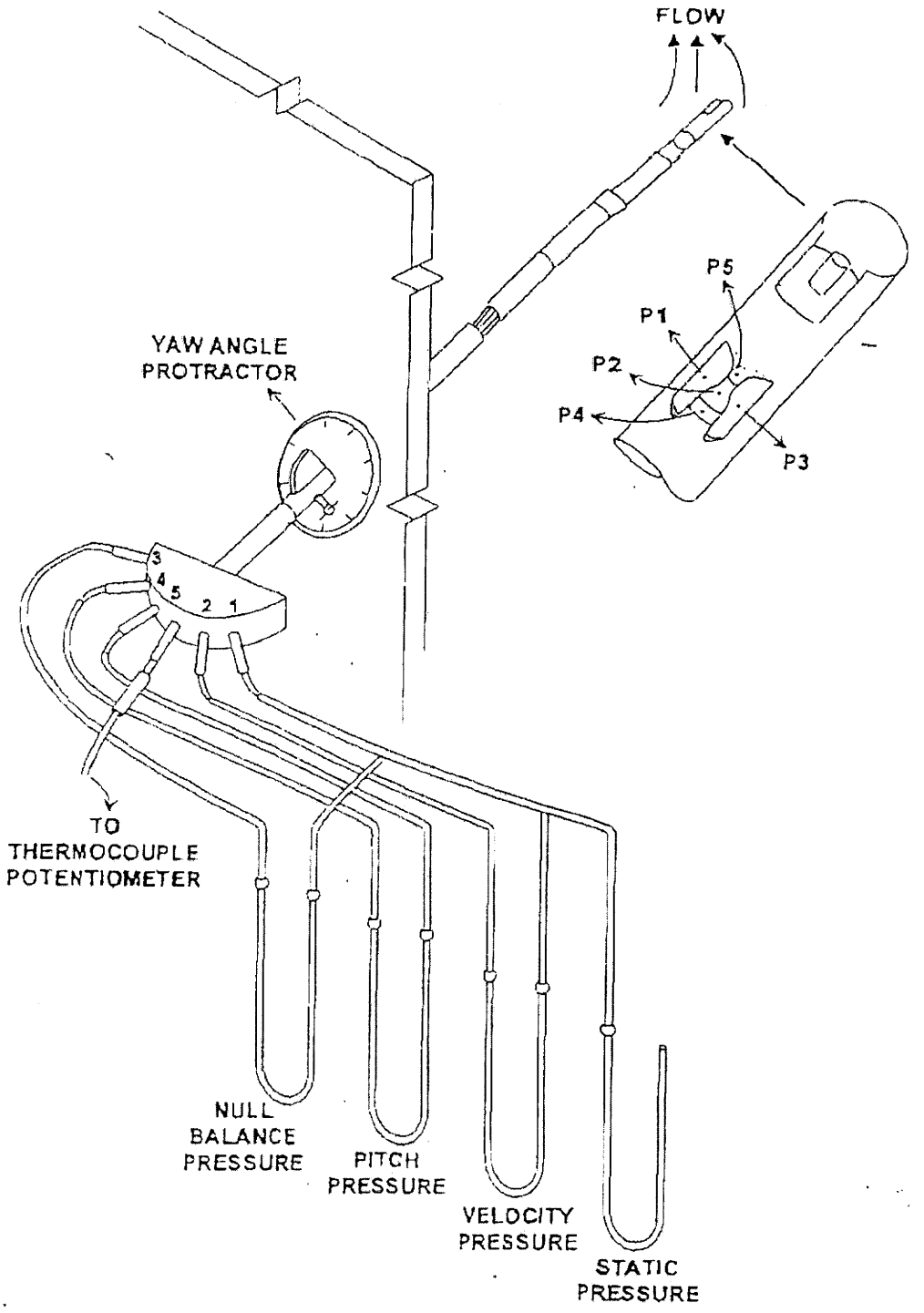


Figure Five Hole Probe

3-DIMENSIONAL VELOCITY PROBE CALIBRATION FACTORS

Probe	B-2455
A_1	63.09
A_2	23.69
A_3	24.505
A_4	33.312
A_5	7.5203
A_6	11.669
B_1	0.997
B_2	7×10^{-3}
B_3	3×10^{-5}
B_4	8×10^{-7}
B_5	1×10^{-9}
B_6	3×10^{-10}
B_7	3×10^{-2}

APPENDIX B
QUALITY ASSURANCE

Appendix B.1

Quality Assurance Program Summary

QUALITY ASSURANCE PROGRAM SUMMARY AND ARB CERTIFICATION

Carnot ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA Officer and encompasses seven major areas:

1. Development and use of an internal QA manual.
2. QA reviews of reports, laboratory work, and field testing.
3. Equipment calibration and maintenance.
4. Chain of custody.
5. Training.
6. Knowledge of current test methods.
7. Agency certification.

Each of these areas is discussed individually below.

Quality Assurance Manual. Carnot has prepared a QA Manual according to EPA guidelines. The manual serves to document and formalize all of Carnot's QA efforts. The manual is constantly updated, and each member of the Source Test Division is required to read and understand its contents. The manual includes details on the other six QA areas discussed below.

QA Reviews. Carnot's review procedure includes review of each source test report by the QA Officer, and spot check reviews of laboratory and field work.

The most important review is the one that takes place before a test program begins. The QA Officer works closely with Source Test Division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of any interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

Equipment Calibration and Maintenance. The equipment used to conduct the emissions measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the California Air Resources Board (CARB). The schedule for maintenance and calibrations are given in Tables B-1 and B-2. Quality control checks are also conducted in the field for each test program. The following is a partial list of checks made as part of each CEM system test series.

- Sample acquisition and conditioning system leak check.
- 2-point analyzer calibrations (all analyzers)
- 3-point analyzer calibrations (analyzers with potential for linearity errors).
- Complete system calibration check ("dynamic calibration" through entire sample system).

- Periodic analyzer calibration checks (once per hour) are conducted at the start and end of each test run. Any change between pre- and post-test readings are recorded.

- All calibrations are conducted using gases certified by the manufacturer to be + 1% of label value (NBS traceable).

Calibration and CEM performance data are fully documented, and are included in each source test report.

Chain of Custody. Carnot maintains full chain of custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Carnot documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.).

Samples are stored in a locked area to which only Source Test Division personnel have access. Neither other Carnot employees nor cleaning crews have keys to this area.

Data sheets are copied immediately upon return from the field, and this first generation copy is placed in locked storage. Any notes made on original sheets are initialed and dated.

Training. Personnel training is essential to ensure quality testing. Carnot has formal and informal training programs which include:

1. Attendance at EPA-sponsored training courses.
2. Enrollment in EPA correspondence courses.
3. A requirement for all technicians to read and understand Carnot's QA Manual.
4. In-house training and QA meetings on a regular basis.
5. Maintenance of training records.

Knowledge of Current Test Methods. With the constant updating of standard test methods and the wide variety of emerging test methods, it is essential that any qualified source tester keep abreast of new developments. Carnot subscribes to services which provide updates on EPA and CARB reference methods, and on EPA, CARB and SCAQMD rules and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Carnot personnel maintain membership in the Air and Waste Management Association, the Source Evaluation Society, and the ASME Environmental Control Division.

AGENCY CERTIFICATION

Carnot is certified by the CARB as an independent source test contractor for gaseous and particulate measurements. Carnot is certified by the SCAQMD as an independent source test contractor for gaseous and particulate measurements using SCAQMD Methods 1, 2, 3, 4, 5, 6, 7 and 100.1. Carnot also participates in EPA QA audit programs for Methods 5, 6 and 7.

TABLE B-1
SAMPLING INSTRUMENTS AND EQUIPMENT CALIBRATION SCHEDULE
As Specified by the CARB

Instrument Type	Frequency of Calibration	Standard of Comparison or Method of Calibration	Acceptance Limits
Orifice Meter (large)	12 months	Calibrated dry test meter	± 2% of volume measured
Dry Gas Meter	12 months or when repaired	Calibrated dry test meter	± 2% of volume measured
S-Type Pitot (for use with EPA-type sampling train	6 months	EPA Method 2	Cp constant (+5%) over working range; difference between average Cp for each leg must be less than 2%
Vacuum Gauges Pressure Gauges	6 months	Manometer	± 3%
Field Barometer	6 months	Mercury barometer	± 0.2" Hg
Temperature Measurement	6 months	NBS mercury thermometer or NBS calibrated platinum RTD	± 4°F for <400°F ± 1.5% for >400°F
Temperature Readout Devices	6 months	Precision potentiometer	± 2% full scale reading
Analytical Balance	12 months (check prior to each use)	Should be performed by manufacturer or qualified laboratory	± 0.3 mg of stated weight
Probe Nozzles	12 Months	Nozzle diameter check micrometer	Range < ± 0.10 mm for three measurements
Continuous Analyzers	Depends upon use, frequency and performance	As specified by manufacturers operating manuals, EPA NBS gases and/or reference methods	Satisfy all limits specified in operating specifications

TABLE B-2
EQUIPMENT MAINTENANCE SCHEDULE
Based on Manufacturer's Specifications and Carnot Experience

Equipment	Performance Requirement	Maintenance Interval	Corrective Action
Pumps	1. Absence of leaks 2. Ability to draw manufacturer required vacuum and flow	Every 500 hours of operation or 6 months, whichever is less	1. Visual inspection 2. Clean 3. Replace worn parts 4. Leak check
Flow Measuring Device	1. Free mechanical movement 2. Absence of malfunction	Every 500 hours of operation or 6 months, whichever is less After each test, if used in H_2S sampling or other corrosive atmospheres	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instruments	1. Absence of malfunction 2. Proper response to zero, span gas	As required by the manufacturer	As recommended by manufacturer
Integrated Sampling Tanks	Absence of leaks	Depends on nature of use	1. Steam clean 2. Leak check
Mobile Van Sampling Systems	Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling Lines	Sample degradation less than 2%	After each test or test series	Blow filtered air through line until dry

Appendix B.2

ARB Certification

State of California
AIR RESOURCES BOARD

Executive Order G-94-028

Approval to Carnot
To Conduct Testing as an Independent Contractor

WHEREAS, the Air Resources Board (ARB), pursuant to Section 41512 of the California Health and Safety Code, has established the procedures contained in Section 91200-91220, Title 17, California Code of Regulations, to allow the use of independent testers for compliance tests required by the ARB; and

WHEREAS, pursuant to Sections 91200-91220, Title 17, California Code of Regulations, the Executive Officer has determined that Carnot meets the requirements of the ARB for conducting ARB Test Methods 1, 2, 3, 4, 5, 6, 8, 10, and 100 (NOx, O2) when the following conditions are met:

1. Carnot conducts ARB Test Method 100 for O2 using a Teledyne 326 analyzer with either a A5 or a B1 sensor, or a paramagnetic analyzer.

NOW, THEREFORE, BE IT ORDERED that Carnot is granted an approval, from the date of execution of this order, until June 30, 1995 to conduct the tests listed above, subject to compliance with Section 91200-91220, Title 17, California Code of Regulations.

BE IT FURTHER ORDERED that during the approved period the Executive Officer or his or her authorized representative may field audit one or more tests conducted pursuant to this order for each type of testing listed above.

Executed this 29TH day of JUNE 1994, at Sacramento, California.

James J. Morgester, Chief
Compliance Division

STATE OF CALIFORNIA
AIR RESOURCES BOARD
2020 L STREET
P O BOX 2815
SACRAMENTO, CA 95812

RECEIVED
JUL 13 1994
CARNOT

PETE WILSON, Governor

July 8, 1994

Mr. Michael L. Schmitt
Carnot
15991 Red Hill Avenue, Suite 110
Tustin, California 92680

Dear Mr. Schmitt:

Testing Approval

We are pleased to inform you that we have renewed your approval to conduct the types of testing listed in the enclosed Executive Order. This approval is valid until June 30, 1995 during which time a field audit of your company's testing ability may be conducted. We have also enclosed a certificate of approval.

Should you have any questions or need further assistance, please contact Ms. Kathryn Gugeler at (916) 327-1521 or Mr. David Tribble at (916) 323-2217. All correspondence should be addressed to me at the post office box above.

Sincerely,

James J. Morgester, Chief
Compliance Division

Enclosures

cc: Mr. Ed Jeung
Department of Health Services
Air and Industrial Hygiene Laboratory
2151 Berkeley Way
Berkeley, California 94704

State of California

Air Resources Board

Approved Independent Contractor

Carnot

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to Section 91207, Title 17, California Code of Regulations, until June 30, 1995, for those test methods listed below:

ARB Source Test Methods:
1, 2, 3, 4, 5, 6, 8, 10, 100(NOx, O2)

James J. Morgester, Chief
Compliance Division

Laura McKinney, Manager
Certification and Investigation Section

Appendix B.3

Calibration Data

CARNOT
SPAN GAS RECORD

CLIENT/LOCATION: UCOS - Colmac DATE: 6/27/96

BY: GS

GAS	SPAN CYLINDER		AUX. SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO		99.999 %		
NOx	AAL3583	88.54	AAL1240	47.51
O_2	ALM045927	8.937	ALM05739	12.45
CO				
CO_2	ALM045927	22.03	ALM05739	15.16
SO_2				

CARNOT
INSTRUMENT LINEARITY

	ANALYZER				
	O_2	CO_2	CO	NOx	SO_2
ANALYZER RANGE	0-25	-	-	0-100	-
SET TO HIGH STD (80-90% OF RANGE)	20.9	-	-	88.5	-
ACTUAL VALUE OF LOW STD	12.45	-	-	47.51	-
AS-FOUND LOW STD (50-60% OF RANGE)	12.33	-	-	48.9	-
DIFFERENCE IN % OF FULL SCALE	0.5	-	-	+1.3	-

% ERROR CALCULATION:

$$\frac{(\text{AS FOUND} - \text{ACTUAL VALUE OF SPAN})}{\text{RANGE}} \times 100$$

ALLOWABLE DEVIATION IS 2% OF FULL SCALE (2 SQUARES ON STRIP CHART).

PIMF-009

CARNOT

CARNOT
SPAN GAS RECORD

CLIENT/LOCATION: UCOS Colmac DATE: 6-28-94

BY: D.W.

GAS	SPAN CYLINDER		AUX. SPAN CYLINDER	
	CYLINDER NO.	CONCENTRATION	CYLINDER NO.	CONCENTRATION
ZERO				
NOx	AAL3583	88.54	AAL12400	47.51
O_2	ALM-045927	8.937	ALM-739	12.45
CO				
CO_2				
SO_2				

CARNOT
INSTRUMENT LINEARITY

	ANALYZER				
	O_2	CO_2	CO	NOx	SO_2
ANALYZER RANGE	0-25			0-100	
SET TO HIGH STD (80-90% OF RANGE)	20.74			88.5	
ACTUAL VALUE OF LOW STD	12.45			47.51	
AS-FOUND LOW STD (50-60% OF RANGE)	12.55			47.00	
DIFFERENCE IN % OF FULL SCALE	.5%			.5%	

% ERROR CALCULATION:

$$\frac{(\text{AS FOUND} - \text{ACTUAL VALUE OF SPAN})}{\text{RANGE}} \times 100$$

ALLOWABLE DEVIATION IS 2% OF FULL SCALE (2 SQUARES ON STRIP CHART).

PMF-0-09

CARNOT

CARNOT
CEM PERFORMANCE DATA

CLIENT/LOCATION: UCCS-Colmac DATE: 6/28/94

BY: [illegible]

SYSTEM CONFIGURATION F600				
ANALYZERS IN SERVICE				
ANALYZERS:	O_2	CO_2	CO	NOx
MODEL:	Teledyne	PIR 2000	48	10S
SERIAL NO.:				

PROBE	MAIN	AUX	SAMPLE CONDITIONER	
LENGTH:	6'	4'	CONDENSER-VACUUM SIDE (CHECK FLOW):	✓
LINER MATERIAL:	SS	SS	CONDENSER-PRESSURE SIDE (CHECK FLOW):	✓
HEATED PROBE (Y/N):	NO	NO	CONDENSER TEMPERATURE:	40
HEATED LINE (Y/N):	Yes	Yes	FILTER CONDITION (COND. OR DATE LAST CHANGED):	SD 4/94

SAMPLE LINE			SYSTEM LEAK CHECK	MAIN	AX
LENGTH:	50'	50'	PRE-TEST (cfh):	0.0	0.0
LINER MATERIAL:	teflon	teflon	POST-TEST (cfh):		
SYSTEM BIAS LINE:	teflon	teflon	LEAK RATE (%) = $\frac{\text{POST-TEST (cfh)}}{\text{SYSTEM FLOW RATE (cfm)} \times 60} \times 100 =$ ____ %		

ON-STACK CONDITIONER		NOx CONVERSION EFFICIENCY	
IN SERVICE (Y/N):	Yes	HIGH CAL NOx	
KNOCK-OUT CONDITION (CHECK FLOW):	✓	HIGH CAL NO (AS FOUND)	/
COOLANT:	ICE	LOW CAL NOx	
		LOW CAL NO (AS FOUND)	/

OPERATING CONDITIONS	
SAMPLE PRESSURE:	SYSTEM RESPONSE TIME CHECK
SAMPLE VACUUM:	UPSCALE: ____ sec.
NOx VACUUM:	DOWNSCALE: ____ sec.

CARNOT

PMF-011

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
CARNOT
RICK MADRIGAL
15991 RED HILL AVE
TUSTIN, CA 92680

Assay Laboratory
Scott Specialty Gases
2600 Cajon Boulevard
San Bernardino, CA 92411

Purchase Order 1818
Project # 30380 003

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards; Procedure G1; September 1993.

Cylinder Number ALM045739 Certification Date 03-15-94 Exp. Date 03-15-97
Cylinder Pressure+ 2000 PSIG

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(CARBON DIOXIDE)	15.16 %	± 1 % NIST Traceable
(OXYGEN)	12.45 %	
(Nitrogen)	Balance Gas	

+Do not use when cylinder pressure is below 150 psig.
*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type/Sample No.	Expiration Date	Cylinder Number	Concentration
GMIS	06-94	A018082	18.97 % CO2 IN N2
GMIS	06-94	A6513	12.45 % O2 IN N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO2:Horiba / OPE-135C / 56553902	02-22-94	NDIR
O2:Horiba / OPE-335 / 850557042	02-25-94	Magnetopneumatic

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Carbon Dioxide

First Triad Analysis

Date: 03-15-94 Response Units: mv

Z1= 0.00	R1= 97.0	T1= 85.9
R2= 97.0	Z2= 0.00	T2= 85.8
Z3= 0.00	T3= 85.8	R3= 97.0

Avg. Conc. of Cust Cyl. 15.16 %

Second Triad Analysis

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=

Avg. Conc. of Cust Cyl.

Calibration Curve

Concentration= Ax^3+Bx^2+Cx+D
A =0.000007985
B =0.0002062
C =0.1000
D =0.0001333

Components: Oxygen

First Triad Analysis

Date: 03-15-94 Response Units: mv

Z1= 0.00	R1= 94.1	T1= 49.8
R2= 94.1	Z2= 0.00	T2= 49.8
Z3= 0.00	T3= 49.8	R3= 94.1

Avg. Conc. of Cust Cyl. 12.45 %

Second Triad Analysis

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=

Avg. Conc. of Cust Cyl.

Calibration Curve

Concentration= Ax + B
A =0.2500
B =-0.004586

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=

Avg. Conc. of Cust Cyl.

Date: Response Units: mv

Z1=	R1=	T1=
R2=	Z2=	T2=
Z3=	T3=	R3=

Avg. Conc. of Cust Cyl.

Concentration=

Special Notes:

ANALYST

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
CARNOT
RICK MADRIGAL
15991 RED HILL AVE
SUITE 110
TUSTIN, CA 92680

Assay Laboratory
Scott Specialty Gases
2600 Cajon Boulevard
San Bernardino, CA 92411

Purchase Order 1914
Project # 30667 (09

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay and Certification of Gaseous Calibration Standards, Procedure G1, September 1993.

Cylinder Number ALM045927 Certification Date 03-30-94 Exp. Date 03-30-97
Cylinder Pressure+ 1900 PSIG

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
(CARBON DIOXIDE)	22.43 %	± 1 % NIST Traceable
(OXYGEN)	8.937 %	
(Nitrogen)	Balance Gas	

+Do not use when cylinder pressure is below 150 psig.
*Analytical uncertainty is inclusive of many known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type/Sample No.	Expiration Date	Cylinder Number	Concentration
CRM1675	06-94	ALM001136	14.08 % CO2/N2
GMIS	06-94	A10868	9.520 % O2/N2

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
CO2:PIR2000-ACUBLEND	03-24-94	NDIR
O2:Horiba / OPE-335 / 850557042	03-30-94	Magnetopneumatic

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components: Carbon Dioxide

First Triad Analysis

Date: 03-30-94 Response Units: mv

Z1=	0.00	R1=	72.9	T1=	92.2
R2=	72.9	Z2=	0.00	T2=	92.2
Z3=	0.00	T3=	92.2	R3=	72.9

Avg. Conc. of Cust Cyl. 22.43 %

Second Triad Analysis

Date: Response Units: mv

Z1=		R1=		T3=	
R2=		Z2=		T2=	
Z3=		T3=		R3=	

Avg. Conc. of Cust Cyl.

Calibration Curve

Concentration= $Ax^4+Bx^3+Cx^2+Dx+E$

A =0.0000001942
B =-0.0000191975
C =0.001882
D =0.08535
E =0.002942

Components: Oxygen

First Triad Analysis

Date: 03-30-94 Response Units: mv

Z1=	0.00	R1=	95.3	T1=	89.4
R2=	95.3	Z2=	0.00	T2=	89.4
Z3=	0.00	T3=	89.3	R3=	95.3

Avg. Conc. of Cust Cyl. 8.937 %

Second Triad Analysis

Date: Response Units: mv

Z1=		R1=		T1=	
R2=		Z2=		T2=	
Z3=		T3=		R3=	

Avg. Conc. of Cust Cyl.

Calibration Curve

Concentration= Ax + B

A =0.09999
B =-0.0004275

Date: Response Units: mv

Z1=	R1=	T1=	
R2=	Z2=	T2=	
Z3=	T3=	R3=	

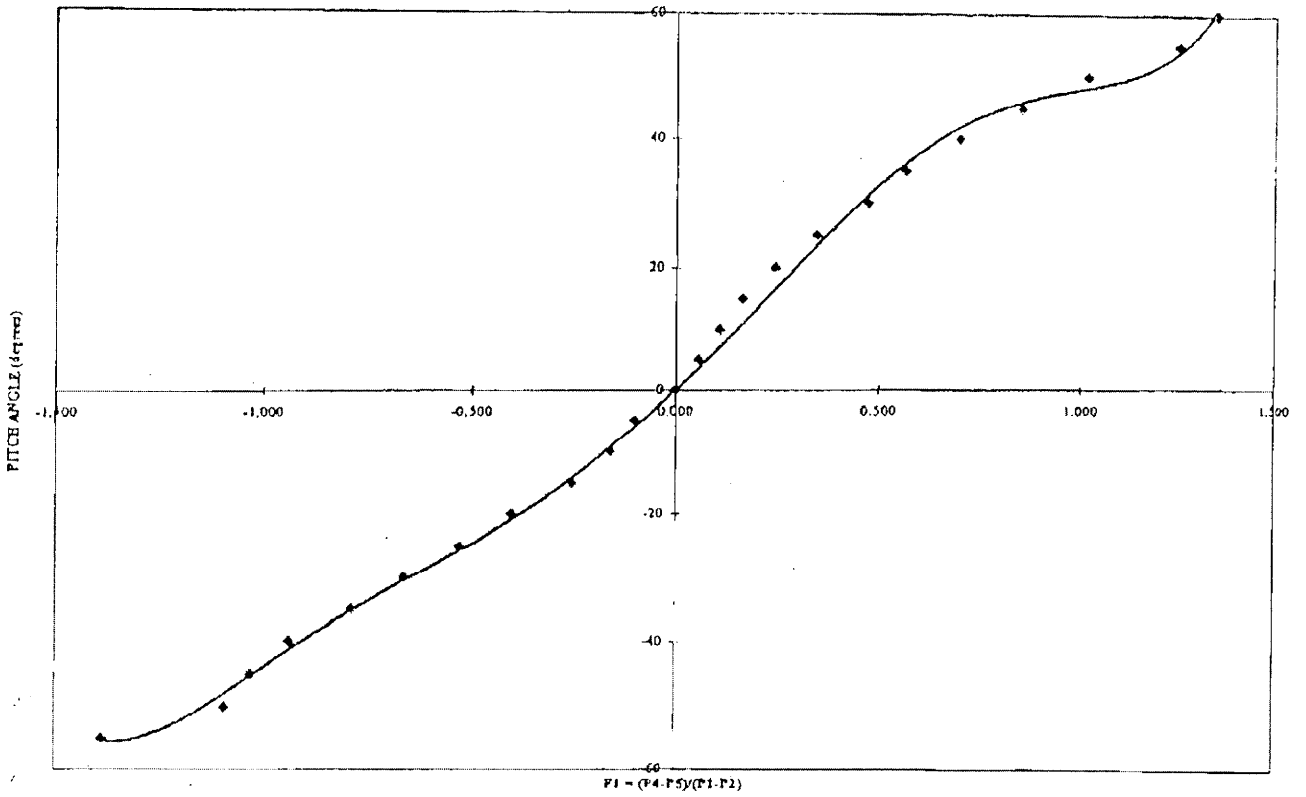
Date: Response Units: mv

Z1=	R1=	T1=	
R2=	Z2=	T2=	
Z3=	T3=	R3=	

Concentration=

Analyst: [signature]

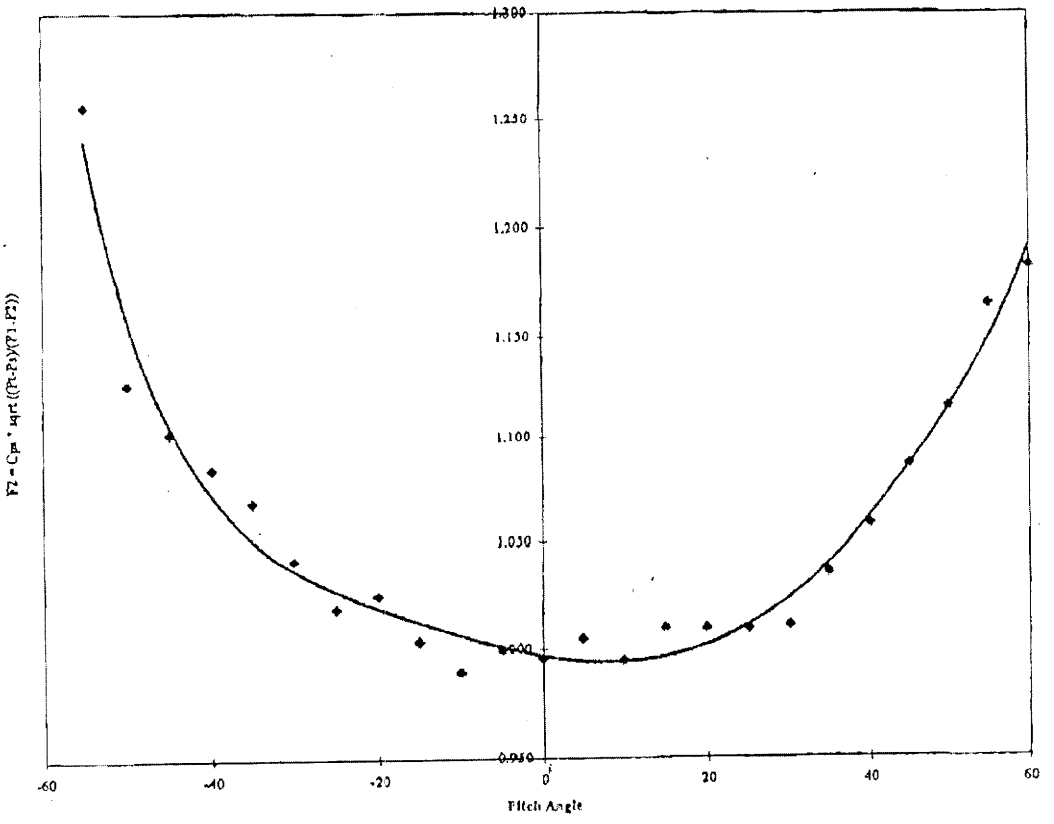
CARNOT
3-DIMENSIONAL VELOCITY PROBE CALIBRATION
PITCH ANGLE vs. F1
PROBE ID: B-2455



Pitch Angle = 63.09X + 23.69X^2 - 24.505X^3 - 33.312X^4 + 7.5203X^5 + 11.669X^0

Performed By: MM/RM
Date: 5/18/94

CARNOT
3-DIMENSIONAL VELOCITY PROBE CALIBRATION
F2 vs. PITCH ANGLE
PROBE ID: B-2455



$F2 = 0.997 - 0.0007X + 3E\text{-}5X^2 + 8E\text{-}7X^3 + 1E\text{-}8X^4 - 3E\text{-}10X^5 + 3E\text{-}12X^6$

Performed By: MM/RM
Date: 5/18/94

APPENDIX C
DATA SHEETS

Appendix C.1

Sample Locations

CARNOT

SAMPLING POINT LOCATION DATA - EPA METHOD 1

PLANT: UCES - Colmac DATA BY: EF

DATE: 6/27/94

TEST LOCATION: Unit 2 Duct

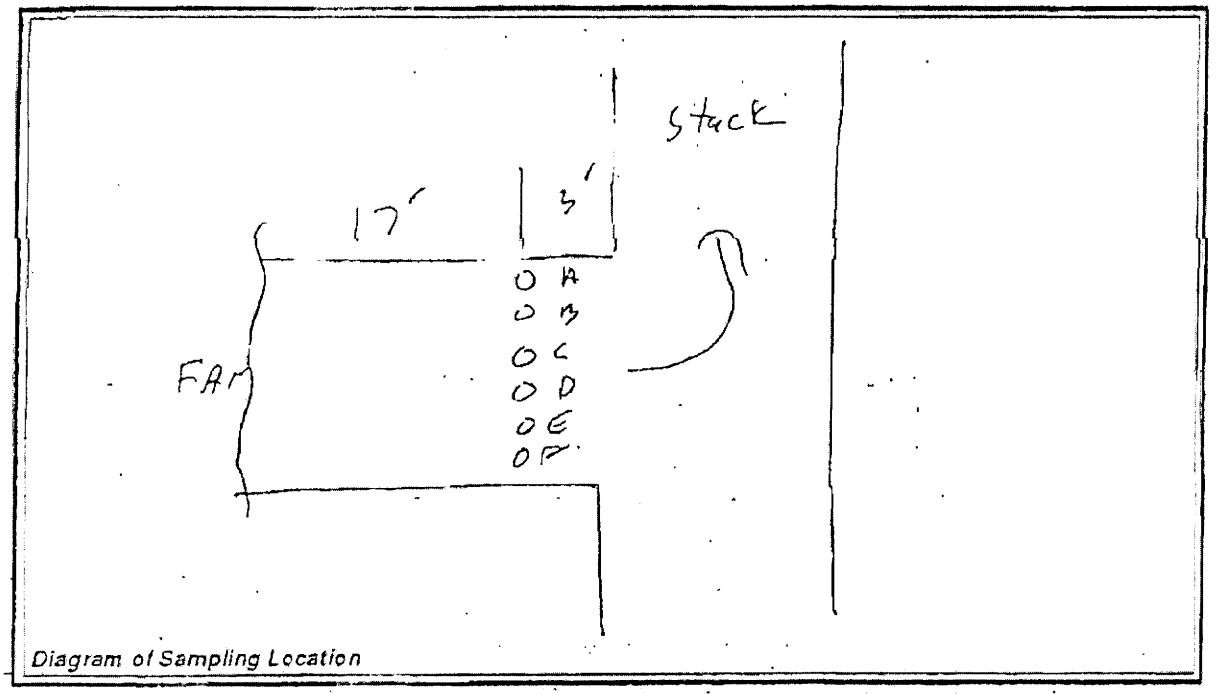


Diagram of Sampling Location

UPSTREAM DIST./DIA.: 17/

DOWNSTREAM DIST./DIA.: 3/

COUPLING LENGTH: 8"

NO. OF SAMPLING PTS.: 42

STACK DIMENSION: 47" x 119"

STACK AREA, FT²: 38.8

SAMPLE POINT	% OF DIAMETER	IN. FROM NEAR WALL	IN. FROM NOZZLE*
1		3.4	11.42
2		10.3	18.3
3		17.14	25.14
4		24.	32
5		30.86	38.86
6		37.7	45.71
7		44.5	52.57

*INCHES FROM WALL PLUS COUPLING LENGTH

PMF-002

CARNOT

Appendix C.2

CEM Data

(1)

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UCOT - Colmac
DATE: 6/28/94
OPERATOR: EP
TEST LOCATION: Unit 1 Outlet
TEST NUMBERS: 1-1- Start

AMBIENT TEMP., DB/WB: ~115
BAROMETRIC PRESSURE: 29.80
DUCT STATIC PRESSURE: -0.7
FUEL: Bo Mass

TEST NO.	SAMPLE TIME	SAMPLE POINT/ CONDITION	DRY, UNCORRECTED Ref							CORRECTED TO ___% ___, DRY		
			O_2	O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
		zero / span	.3/12.2	.1/12.4								
1-1	1218/1221	A5	6.9	6.9								
	1221/1224	A4	7.2	7.1								
	1224/1227	A3	6.7	6.7								
	1227/1230	A2	7.0	7.2								
*	1230/1233	A1	7.1	8.0								
	1236/1239	B5	6.5	6.5								
	1239/1242	B4	6.7	6.7								
	1242/1245	B3	6.9	6.6								
	1245/1248	B2	6.3	6.2								
	1248/1251	B1	6.5	6.5								

COMMENTS:

CARNOT

PMF-013

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UCOS - Column
DATE: 6/28/94
OPERATOR: EP
TEST LOCATION: Unit 1
TEST NUMBERS: 1-1 Start

AMBIENT TEMP., DB/WB:
BAROMETRIC PRESSURE:
DUCT STATIC PRESSURE:
FUEL: No Mat

TEST NO.	SAMPLE TIME	SAMPLE POINT/ CONDITION	Ref — DRY, UNCORRECTED							CORRECTED TO ___% ___ DRY		
			O_2	O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
	1254/1257	C5	6.6	6.5								
	1257/1300	C4	6.3	6.2								
	1300/1303	C3	6.4	6.4								
	1305/1306	C2	6.9	6.8								
	1306/1309	C1	6.7	6.7								
	1312/1315	D5	6.7	6.6								
	1315/1318	D4	6.9	6.8								
	1318/1321	D3	6.7	6.7								
	1321/1324	D2	6.6	6.6								
	1324/1327	D1	6.7	6.7								

COMMENTS:

CARNOT

PMF-013

(3)

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UOP-Colmac
DATE: 6/28/94
OPERATOR: SG
TEST LOCATION: Unit 2 Outlet
TEST NUMBERS: 1-1- Straw

AMBIENT TEMP., DB/WB:
BAROMETRIC PRESSURE:
DUCT STATIC PRESSURE:
FUEL:

TEST NO.	SAMPLE TIME	SAMPLE POINT/ CONDITION	Rob DRY, UNCORRECTED							CORRECTED TO ___% ___, DRY		
			O_2	O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
1-1	1330 / 1332	E-5	7.0	6.9								
	1337 / 1339	E-4	6.6	6.6								
	1336 / 1339	E-3	6.6	6.6								
	1334 / 1342	E-2	6.9	6.8								
	1342 / 1345	E-1	6.9	6.6								
	1348 / 1351	F-5	6.5	6.5								
	1351 / 1354	F-4	6.2	6.2								
	1354 / 1357	F-3	6.8	6.8								
	1357 / 1400	F-2	6.8	6.8								
	1400 / 1403	F-1	6.8	6.8								
	1420 / 1409	A-1	6.5	6.5								
	SYS	ZERO / SPAN	.1 / 12.1	.1 / 12.1								

COMMENTS:

CARNOT

PMF-013

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UCOS- Gilroy

DATE: 6/28/94

OPERATOR: EF

TEST LOCATION: 2-2-CEM

TEST NUMBERS:

AMBIENT TEMP., DB/WB:

BAROMETRIC PRESSURE:

DUCT STATIC PRESSURE:

FUEL:

TEST NO.	SAMPLE TIME	SAMPLE POINT/ CONDITION	DRY, UNCORRECTED							CORRECTED TO ____% ____, DRY		
			REF O_2	O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
	SYS	ZERO / SPAN	.3 / 12.2	.1 / 12.4								
	933 / 936	F5	7.0	7.0								
	936 / 939	F4	6.4	6.5								
	939 / 942	F3	7.3	7.4								
	942 / 945	F2	7.0	7.0								
	945 / 948	F1	6.7	6.7								
	951 / 954	E5	6.5	6.5								
	954 / 957	E4	6.7	6.8								
	957 / 1000	E3	7.1	7.1								
	1000 / 1003	E2	6.9	7.0								
	1003 / 1006	E1	6.7	6.8								

COMMENTS:

CARNOT

PMF-013

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: UCOS - Colmac
DATE: 6/28/94
OPERATOR: EC
TEST LOCATION:
TEST NUMBERS:

AMBIENT TEMP., DB/WB:
BAROMETRIC PRESSURE:
DUCT STATIC PRESSURE:
FUEL:

TEST NO.	SAMPLE TIME	SAMPLE POINT/ CONDITION	DRY, UNCORRECTED							CORRECTED TO ___% ___, DRY		
			Ref O_2	O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
2-2	1004/1012	D-5	6.9	7.0								
	1013/1015	D-4	6.3	6.4								
	1015/1018	D-3	7.2	7.2								
	1018/1021	D-2	7.7	7.7								
	1021/1024	D-1	7.0	7.0								
	1033/1036	C-5	6.5	6.4								
	1036/1039	C-4	6.6	6.6								
	1039/1042	C-3	6.5	6.6								
	1042/1045	C-2	6.4	6.4								
	1095/1098	C-1	7.4	7.5								

COMMENTS:

CARNOT

PMF-013

CARNOT
CONTINUOUS EMISSIONS MEASUREMENTS

CLIENT: VCOS - Colmac
DATE: 6/28/96
OPERATOR: GG
TEST LOCATION: Unit #2
TEST NUMBERS: 2-2-ST

AMBIENT TEMP., DB/WB: 105
BAROMETRIC PRESSURE: 29.92
DUCT STATIC PRESSURE:
FUEL: No Mass

TEST NO.	SAMPLE TIME	SAMPLE POINT/ CONDITION	DRY, UNCORRECTED							CORRECTED TO ___% ___ DRY		
			O_2 Ref	O_2	CO	NOx	NO	NO_2	SO_2	CO	NOx	SO_2
	1051/1054	B-5	6.0	6.1								
	1054/1057	B-4	6.2	6.3								
	1057/1100	B-3	6.5	6.6								
	1100/1103	B-2	6.7	6.8								
	1103/1106	B-1	6.6	6.7								
	1109/1112	A-5	7.1	7.3								
	1112/1115	A-4	6.7	6.9								
	1115/1118	A-3	7.4	7.5								
	1118/1121	A-2	6.7	6.8								
	1121/1124	A-1	6.4	6.6								
	GAS	Zero/Span	.3/12.2	.1/12.4								

COMMENTS:

CARNOT

PMF-013

Appendix C.3

3D Flow Data

CARNOT

3-DIMENSIONAL VELOCITY DATA

Client/Location: UCOS Colmac | Date: 6-28-94

Sample Location: Unit 1 outlet | Data Taken By: Dave Womley

Unit No: 1 | Test Description: 3-D traverse

Test No: 1-3-BD-traverse | Pitot I.D. No.:

Barometric Pressure (in Hg): | Pre-Test Leak Check: 0.4

Static Pressure in Stack (inwg): | Post-Test Leak Check: 0.4

Time	Port	Point	Yaw Angle (Degrees)	Velocity (P1-P2)	Pitch (P4-P5)	Temperature (F)
	D	7	-10	.415	0	413
		6	-6	.417	0	413
		5	-5	.413	+.01	414
1215		4	0	.410	+.01	414
		3	-1	.379	+.01	416
		2	0	.394	+0	416
		1	0	.391	+.01	415
	BC	7	-10	.4	-.04	415
	BC	6	-10	.395	-.02	416
		5	-5	.397	-.00	416
		4	0	.375	0	417
		3	+5	.411	+.01	417
		2	+8	.4	+.02	417
		1	+10	.393	+.03	417
	B	7	-5	.356	0	416
		6	-10	.357	0	417
		5	-6	.348	0	417
		4	-8	.334	-.02	417
		3	0	.326	+.03	417
		2	+7	.326	+.03	417
		1	+8	.328	+.01	417

Note: Clockwise rotation of the probe corresponds to a positive yaw angle: > 0 or > 90 degrees

3D_DATA.XLS
2/14/94
8:03 PM

CARNOT

3-DIMENSIONAL VELOCITY DATA

Client/Location: UCOS Colmac Date: 6-28

Sample Location: Unit 1 outlet Data Taken By: Dave W.

Unit No: 1 Test Description: 3-D traverse

Test No: 1-7-3D-traverse Pitot I.D. No.:

Barometric Pressure (in Hg): 29.80 Pre-Test Leak Check:

Static Pressure in Stack (iwg): Post-Test Leak Check:

Time	Port	Point	Yaw Angle (Degrees)	Velocity (P1-P2)	Pitch (P4-P5)	Temperature (F)
	A	7	-10	.59	-.07	415
		6	-8	.48	-.03	416
		5	-6	.48	-.03	418
		4	0	.5	-.05	418
		3	-0	.57	-.04	419
		2	0	.6	-.05	419
		1	0	.6	-.07	419
	E	7	~~-5~~	.57	.0	419
		6	-8	.55	0	420
		5	0	.56	0	420
		4	0	.6	0	420
		3	-3	.58	0	420
		2	-2	.6	-.03	420
		1	-2	.58	-.02	420
	S	7	-4	.5	-.01	418
		6	0	.6	-.03	418
		5	+2	.55	-.04	419
		4	00	.52	-.04	419
		3	0	.62	-.04	419
		2	0	.62	-.04	419
		1	0	.60	-.03	419

Note: Clockwise rotation of the probe corresponds to a positive yaw angle: > 0 or > 90 degrees.

3D_DATA.XLS
2/14/94
8:03 PM

CARNOT

3-DIMENSIONAL VELOCITY DATA

Client/Location: UCCS

Sample Location: Unit 2 outlet

Unit No: 2

Test No: 2-2-3D

Barometric Pressure (in Hg): _____

Static Pressure in Stack (inwg): -0.75

Date: 8-28-95

Data Taken By: D. W

Test Description: 3-D

Pitot I.D. No.: _____

Pre-Test Leak Check: _____

Post-Test Leak Check: _____

Time	Port	Point	Yaw Angle (Degrees)	Velocity (P1-P2)	Pitch (P4-P5)	Temperature (F)
1035	A	7	-6	.55	-.05	439
		6	-9	.45	-.05	439
		5	-12	.45	-.05	439
		4	-3	.5	-.05	439
		3	-9	.6	-.04	439
		2	-8	.6	-.05	439
		1	-8	.55	-.00	440
	B	7	+5	.7	-.00	439
		6	-7	.65	0	439
		5	0	.57	0	439
		4	-1	.48	0	439
		3	-2	.32	0	439
		2	-3	.25	0	438
		1	-18	.27	-.02	438
	C	7	0	.41	-.01	437
		6	0	.42	-.02	436
		5	0	.37	-.01	437
		4	-2	.37	+.01	437
		3	-6	.36	+.02	437
		2	-7	.4	+.02	437
		1	-9	.36	+.02	437

Note: Clockwise rotation of the probe corresponds to a positive yaw angle: > 0 or > 90 degrees.

3D_DATA.XLS
2/14/94
8:03 PM

CARNOT

3-DIMENSIONAL VELOCITY DATA

Client/Location: UCOS Colmac

Sample Location: Outlet

Unit No: 2

Test No: 2-2-3D-Vel

Barometric Pressure (in Hg): 29.32

Static Pressure in Stack (inwg):

Date: 6-27-94

Data Taken By: Dave Wonders

Test Description: 3-D

Pitot I.D. No.:

Pre-Test Leak Check: O.K.

Post-Test Leak Check: O.K.

Time	Port	Point	Yaw Angle (Degrees)	Velocity (P1-P2)	Pitch (P4-P5)	Temperature (F)
	F	7	-7°	.55	-.05	
		6	-7°	.57	-.04	446
		5	-7°	.50	-.06	441
		4	-6°	.59	-.03	443
		3	-1	.66	-.03	441
		2	-8°	.60	0	442
		1	-10	.52	+.07	445
	E	7	-9°	.52	0	441
		6	-10°	.52	+.01	442
		5	-5°	.54	+.02	442
		4	-7°	.55	0	442
		3	-3°	.53	0	441
		2	-9°	.53	0	441
		1	-10°	.55	+.02	440
	D	7	0	.49	0	440
		6	+1	.45	+.02	438
		5	-2	.42	+.02	437
		4	0	.39	+.01	437
		3	0	.36	0	437
		2	-3°	.30	-.01	437
		1	-12	.25	0	437

Note: Clockwise rotation of the probe corresponds to a positive yaw angle: > 0 or > 90 degrees.

3D_DATA.XLS
2/14/94
8:03 PM

APPENDIX D
CALCULATIONS

3D VELOCITY - DATA AND WORKSHEET

Client:	UCOS COLMAC	Date:	
Unit:	#1	Data By:	EF
Sample Location:	Outlet duct	Barm. Pressure, In Hg.:	29.90
Test No.:	1-1-3d	Static Pressure, In WG:	-0.78
Probe ID No.:	B-2131	Abs. Pressure, In Hg.:	29.84
Unit Load:		Average O2, % dry:	6.70
Test Date:	6/28/94	Average CO2, % dry:	12.00
Time (Start/Stop):	0950/1145	Moisture Content, %:	15.00
		Molecular Weight, wet:	28.36

Sample Point		Yaw Angle deg.	Pitch P4-P5 In WG	Total P1-P2 In WG	Stack Temp. F	P4-P5/ P1-P2 In WG	Pitch Angle deg.	Pt-Ps/ P1-P2 In WG	Pt-Ps In WG	Result Angle deg.	Velocity uncorr.* fps	Velocity Axial fps
A	7	-10	-0.03	0.58	415	-0.05	-3.2	1.00	0.58	10.5	66.1	65.0
A	6	-8	-0.03	0.48	416	-0.06	-3.8	1.00	0.48	8.9	60.2	59.4
A	5	-6	-0.03	0.48	418	-0.06	-3.8	1.00	0.48	7.1	60.2	59.8
A	4	0	-0.05	0.50	418	-0.10	-6.1	1.00	0.50	6.1	61.5	61.2
A	3	0	-0.04	0.57	419	-0.07	-4.3	1.00	0.57	4.3	65.7	65.5
A	2	0	-0.05	0.60	419	-0.08	-5.1	1.00	0.60	5.1	67.4	67.2
A	1	0	-0.03	0.60	419	-0.05	-3.1	1.00	0.60	3.1	67.4	67.3
E	7	-5	0.00	0.53	419	0.00	0.0	1.00	0.53	5.0	63.2	63.0
E	6	-8	0.00	0.55	420	0.00	0.0	1.00	0.55	8.0	64.4	63.8
E	5	0	0.00	0.56	420	0.00	0.0	1.00	0.56	0.0	65.0	65.0
E	4	0	0.00	0.60	420	0.00	0.0	1.00	0.60	0.0	67.3	67.3
E	3	-3	0.00	0.58	420	0.00	0.0	1.00	0.58	3.0	66.2	66.1
E	2	-2	0.03	0.60	420	0.05	3.2	1.00	0.60	3.8	67.2	67.1
E	1	-2	0.02	0.58	420	0.03	2.2	1.00	0.58	3.0	66.1	66.0
F	7	-4	-0.01	0.50	418	-0.02	-1.3	1.00	0.50	4.2	61.4	61.2
F	6	0	-0.03	0.60	418	-0.05	-3.1	1.00	0.60	3.1	67.3	67.2
F	5	2	-0.04	0.55	419	-0.07	-4.5	1.00	0.55	4.9	64.5	64.3
F	4	0	-0.04	0.52	419	-0.08	-4.7	1.00	0.52	4.7	62.8	62.5
F	3	0	-0.04	0.62	419	-0.06	-4.0	1.00	0.62	4.0	68.5	68.3
F	2	0	-0.04	0.62	419	-0.06	-4.0	1.00	0.62	4.0	68.5	68.3
F	1	0	-0.03	0.60	419	-0.05	-3.1	1.00	0.60	3.1	67.4	67.3
D	7	-10	0.00	0.45	413	0.00	0.0	1.00	0.45	10.0	58.1	57.2
D	6	-6	0.01	0.47	413	0.02	1.4	1.00	0.47	6.2	59.3	59.0
D	5	-5	0.01	0.43	414	0.02	1.5	1.00	0.43	5.2	56.8	56.5
D	4	0	0.01	0.40	414	0.03	1.6	1.00	0.40	1.6	54.7	54.7
D	3	1	0.01	0.39	416	0.03	1.6	1.00	0.39	1.9	54.1	54.1
D	2	0	0.00	0.34	416	0.00	0.0	1.00	0.34	0.0	50.6	50.6
D	1	0	0.01	0.31	415	0.03	2.1	1.00	0.31	2.1	48.2	48.2
C	7	-10	-0.04	0.40	415	-0.10	-6.1	1.00	0.40	11.7	54.9	53.8
C	6	-10	-0.02	0.35	416	-0.06	-3.5	1.00	0.35	10.6	51.4	50.5
C	5	-5	0.00	0.37	416	0.00	0.0	1.00	0.37	5.0	52.7	52.5
C	4	0	0.00	0.35	417	0.00	0.0	1.00	0.35	0.0	51.3	51.3
C	3	5	0.01	0.41	417	0.02	1.6	1.00	0.41	5.2	55.5	55.3
C	2	8	0.02	0.40	417	0.05	3.2	1.00	0.40	8.6	54.8	54.2
C	1	10	0.03	0.33	417	0.09	5.9	0.99	0.33	11.6	49.8	48.7
B	7	-9	0.00	0.58	416	0.00	0.0	1.00	0.58	9.0	66.0	65.2
B	6	-10	0.00	0.57	417	0.00	0.0	1.00	0.57	10.0	65.5	64.5
B	5	-6	0.00	0.48	417	0.00	0.0	1.00	0.48	6.0	60.1	59.8
B	4	-8	0.02	0.34	417	0.06	3.8	0.99	0.34	8.8	50.5	49.9
B	3	0	0.03	0.26	417	0.12	7.6	0.99	0.26	7.6	44.2	43.8
B	2	7	0.03	0.26	417	0.12	7.6	0.99	0.26	10.3	44.2	43.5
B	1	8	0.01	0.28	417	0.04	2.3	1.00	0.28	8.3	45.9	45.4

RESULTS

0.48

Yaw Angle:	2.0 degrees	Stack Temperature:	417 F
Pitch Angle:	-0.4 degrees	Velocity*:	59.45 fps (feet per sec.)
Resultant Angle:	5.6 degrees	Axial Velocity:	58.08 fps
Standard Deviation:	3.3 degrees		

*velocity in the direction of flow

CARNOT
15991 Red Hill Ave., Suite 110
714-259-9520
FAX 714-259-0372

STRATIFICATION CHECK

Client: UCOS COLMAC
Project #: 1409-40950
Unit No: 1.0
Date: 6/28/94

Point	O_2 pt	Ref O_2	% Diff	Point	O_2 pt	Ref O_2	% Diff
A5	6.9	6.9	0.0%	D5	6.5	6.4	-1.6%
A4	7.2	7.1	-1.4%	D4	6.6	6.6	0.0%
A3	6.7	6.7	0.0%	D3	6.7	6.7	0.0%
A2	7.0	7.2	2.8%	D2	6.6	6.6	0.0%
A1	6.5	6.5	0.0%	D1	6.7	6.7	0.0%
B5	6.5	6.5	0.0%	E5	7.0	6.9	-1.4%
B4	6.7	6.7	0.0%	E4	6.6	6.6	0.0%
B3	6.7	6.6	-1.5%	E3	6.6	6.6	0.0%
B2	6.3	6.2	-1.6%	E2	6.9	6.8	-1.5%
B1	6.5	6.5	0.0%	E1	6.7	6.6	-1.5%
C5	6.6	6.5	-1.5%	F5	6.5	6.5	0.0%
C4	6.3	6.2	-1.6%	F4	6.2	6.2	0.0%
C3	6.4	6.4	0.0%	F3	6.8	6.8	0.0%
C2	6.9	6.8	-1.5%	F2	6.8	6.8	0.0%
C1	6.7	6.7	0.0%	F1	6.8	6.8	0.0%

O2 Stratification= -0.4%

CARNOT
15991 Red Hill Ave. Suite 110
Tustin, California 92680
714-259-9520
FAX 714-259-0372

3D VELOCITY - DATA AND WORKSHEET

Client:	UCOS COLMAC	Date:	
Unit:	# 2	Data By:	EF
Sample Location:	Outlet duct	Baro. Pressure, in Hg.:	29.90
Test No.:	2-2-3d	Static Pressure, in WC:	-0.78
Probe ID No.:	B-2131	Abs. Pressure, in Hg.:	29.84
Unit Load:		Average O2, % dry:	6.70
Test Date:	6/28/94	Average CO2, % dry:	12.00
Time (Start/Stop):	0950/1145	Moisture Content, %:	15.00
		Molecular Weight, wet:	28.36

Sample Point		Yaw Angle deg.	Pitch P4-P5 in WG	Total P1-P2 in WG	Stack Temp F	P4-P5/ P1-P2 in WG	Pitch Angle deg.	Pt-Ps/ P1-P2 in WG	Pt-Ps in WG	Result Angle deg.	Velocity uncorr.* fps	Axial fps
A	7	-6	-0.05	0.55	439	-0.09	-5.5	1.00	0.55	8.1	65.3	64.6
A	6	-9	-0.05	0.45	439	-0.11	-6.7	1.00	0.45	11.2	59.1	58.0
A	5	-12	-0.05	0.45	439	-0.11	-6.7	1.00	0.45	13.7	59.1	57.4
A	4	-3	-0.05	0.50	439	-0.10	-6.1	1.00	0.50	6.8	62.3	61.8
A	3	-9	-0.04	0.60	439	-0.07	-4.1	1.00	0.60	9.9	68.1	67.1
A	2	-8	-0.05	0.60	439	-0.08	-5.1	1.00	0.60	9.5	68.2	67.3
A	1	-8	0.00	0.55	440	0.00	0.0	1.00	0.55	8.0	65.2	64.5
B	7	5	0.00	0.70	439	0.00	0.0	1.00	0.70	5.0	73.5	73.2
B	6	-3	0.00	0.65	439	0.00	0.0	1.00	0.65	3.0	70.8	70.7
B	5	0	0.00	0.57	439	0.00	0.0	1.00	0.57	0.0	66.3	66.3
B	4	-1	0.00	0.48	439	0.00	0.0	1.00	0.48	1.0	60.9	60.8
B	3	-2	0.00	0.32	439	0.00	0.0	1.00	0.32	2.0	49.7	49.7
B	2	-3	0.00	0.25	438	0.00	0.0	1.00	0.25	3.0	43.9	43.8
B	1	-15	-0.02	0.27	438	-0.07	-4.5	1.00	0.27	15.7	45.7	44.0
C	7	0	-0.01	0.41	437	-0.02	-1.5	1.00	0.41	1.5	56.2	56.2
C	6	0	-0.02	0.42	436	-0.05	-2.9	1.00	0.42	2.9	56.9	56.8
C	5	0	-0.02	0.37	437	-0.05	-3.3	1.00	0.37	3.3	53.4	53.3
C	4	-2	-0.01	0.37	437	-0.03	-1.7	1.00	0.37	2.6	53.4	53.3
C	3	-6	0.02	0.36	437	0.06	3.6	0.99	0.36	7.0	52.6	52.2
C	2	-3	0.02	0.40	437	0.05	3.2	1.00	0.40	4.4	55.4	55.3
C	1	-9	0.02	0.36	437	0.06	3.6	0.99	0.36	9.7	52.6	51.8
F	7	-7	-0.05	0.55	440	-0.09	-5.5	1.00	0.55	8.9	65.3	64.5
F	6	-3	-0.04	0.53	440	-0.08	-4.6	1.00	0.53	5.5	64.1	63.8
F	5	-6	-0.06	0.50	441	-0.12	-7.2	1.00	0.50	9.4	62.4	61.5
F	4	-1	-0.03	0.59	443	-0.05	-3.1	1.00	0.59	3.3	67.7	67.6
F	3	-8	-0.03	0.66	441	-0.05	-2.8	1.00	0.66	8.5	71.5	70.7
F	2	-10	0.00	0.60	442	0.00	0.0	1.00	0.60	10.0	68.1	67.1
F	1	-9	0.07	0.52	445	0.13	8.9	0.99	0.52	12.6	63.4	61.9
E	7	-10	0.00	0.52	441	0.00	0.0	1.00	0.52	10.0	63.4	62.4
E	6	-5	0.01	0.52	442	0.02	1.2	1.00	0.52	5.1	63.4	63.2
E	5	-7	0.02	0.54	442	0.04	2.4	1.00	0.54	7.4	64.6	64.1
E	4	-3	0.00	0.55	441	0.00	0.0	1.00	0.55	3.0	65.2	65.1
E	3	-9	0.00	0.53	441	0.00	0.0	1.00	0.53	9.0	64.0	63.2
E	2	-10	0.00	0.53	441	0.00	0.0	1.00	0.53	10.0	64.0	63.0
E	1	0	0.02	0.55	440	0.04	2.3	1.00	0.55	2.3	65.1	65.1
D	7	1	0.00	0.49	440	0.00	0.0	1.00	0.49	1.0	61.5	61.5
D	6	-2	0.02	0.45	438	0.04	2.8	1.00	0.45	3.5	58.8	58.7
D	5	0	0.02	0.42	437	0.05	3.1	1.00	0.42	3.1	56.8	56.7
D	4	0	0.01	0.39	437	0.03	1.6	1.00	0.39	1.6	54.8	54.7
D	3	0	0.00	0.36	437	0.00	0.0	1.00	0.36	0.0	52.6	52.6
D	2	-3	-0.01	0.30	437	-0.03	-2.1	1.00	0.30	3.6	48.1	48.0
D	1	2	0.00	0.25	437	0.00	0.0	1.00	0.25	2.0	43.9	43.8

RESULTS

Yaw Angle:	4.4 degrees	Stack Temperature:	439 F
Pitch Angle:	-1.0 degrees	Velocity*:	60.18 fps (feet per sec.)
Resultant Angle:	5.9 degrees	Axial Velocity:	59.71 fps
Standard Deviation:	4.0 degrees		

*velocity in the direction of flow

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STRATIFICATION CHECK

Client: UCOS COLMAC
Project #: 1409-40985
Unit No: 2
Date: 6/28/94

Point	O_2 pt	Ref O_2	% Diff	Point	O_2 pt	Ref O_2	% Diff
F5	7.0	7.0	0.0%	C5	6.5	6.4	-1.6%
F4	6.4	6.5	1.5%	C4	6.6	6.6	0.0%
F3	7.3	7.4	1.4%	C3	6.5	6.6	1.5%
F2	7.0	7.0	0.0%	C2	6.4	6.4	0.0%
F1	6.7	6.7	0.0%	C1	7.4	7.5	1.3%
E5	6.5	6.5	0.0%	B5	6.0	6.1	1.6%
E4	6.7	6.8	1.5%	B4	6.2	6.3	1.6%
E3	7.1	7.1	0.0%	B3	6.5	6.6	1.5%
E2	6.9	7.0	1.4%	B2	6.7	6.8	1.5%
E1	6.7	6.8	1.5%	B1	6.6	6.7	1.5%
D5	6.9	7.0	1.4%	A5	7.1	7.3	2.7%
D4	6.3	6.4	1.6%	A4	6.7	6.9	2.9%
D3	7.2	7.2	0.0%	A3	7.4	7.5	1.3%
D2	7.7	7.7	0.0%	A2	6.7	6.8	1.5%
D1	7.0	7.0	0.0%	A1	6.4	6.6	3.0%

O2 Stratification= 1.0%

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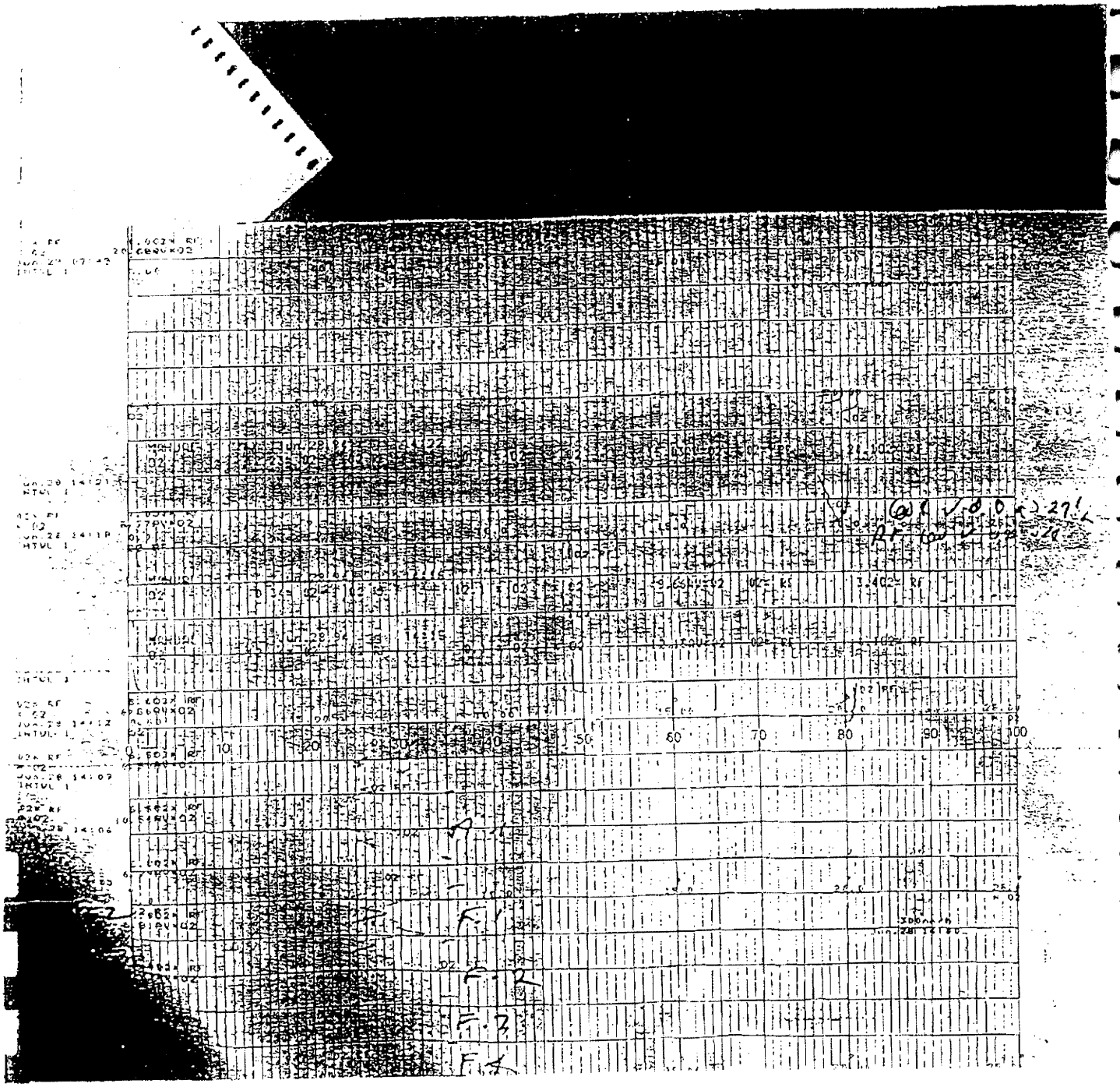
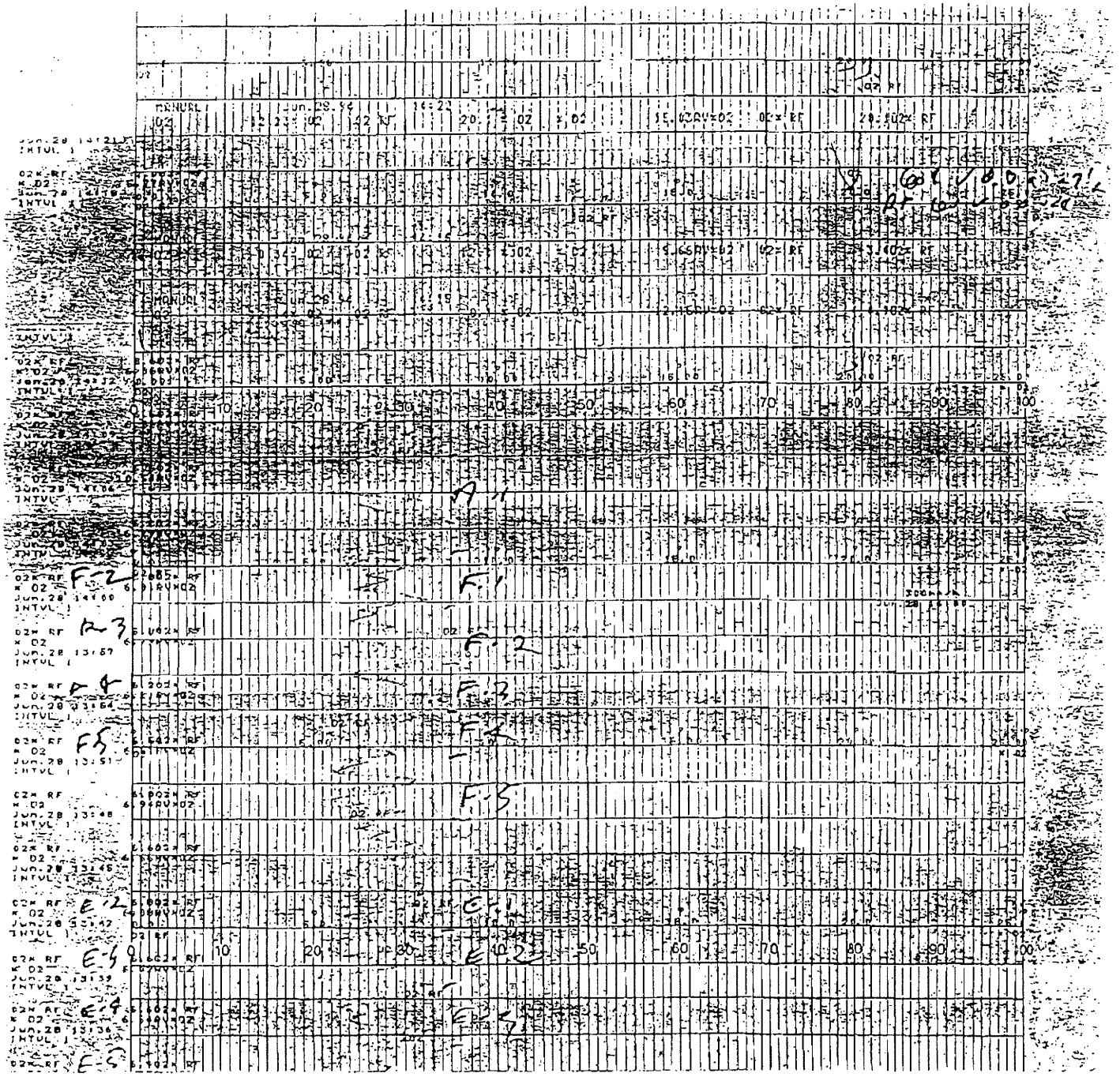
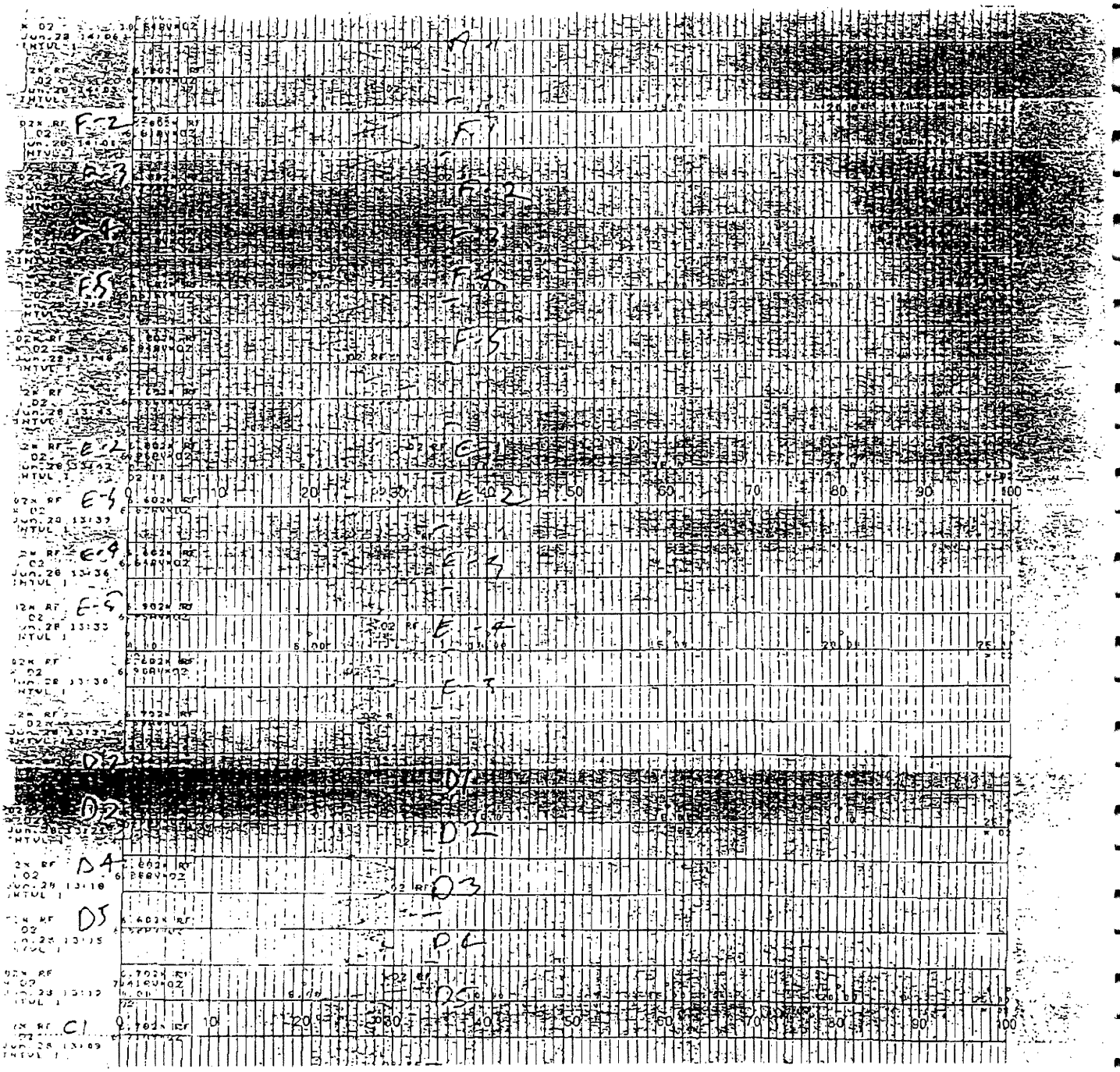
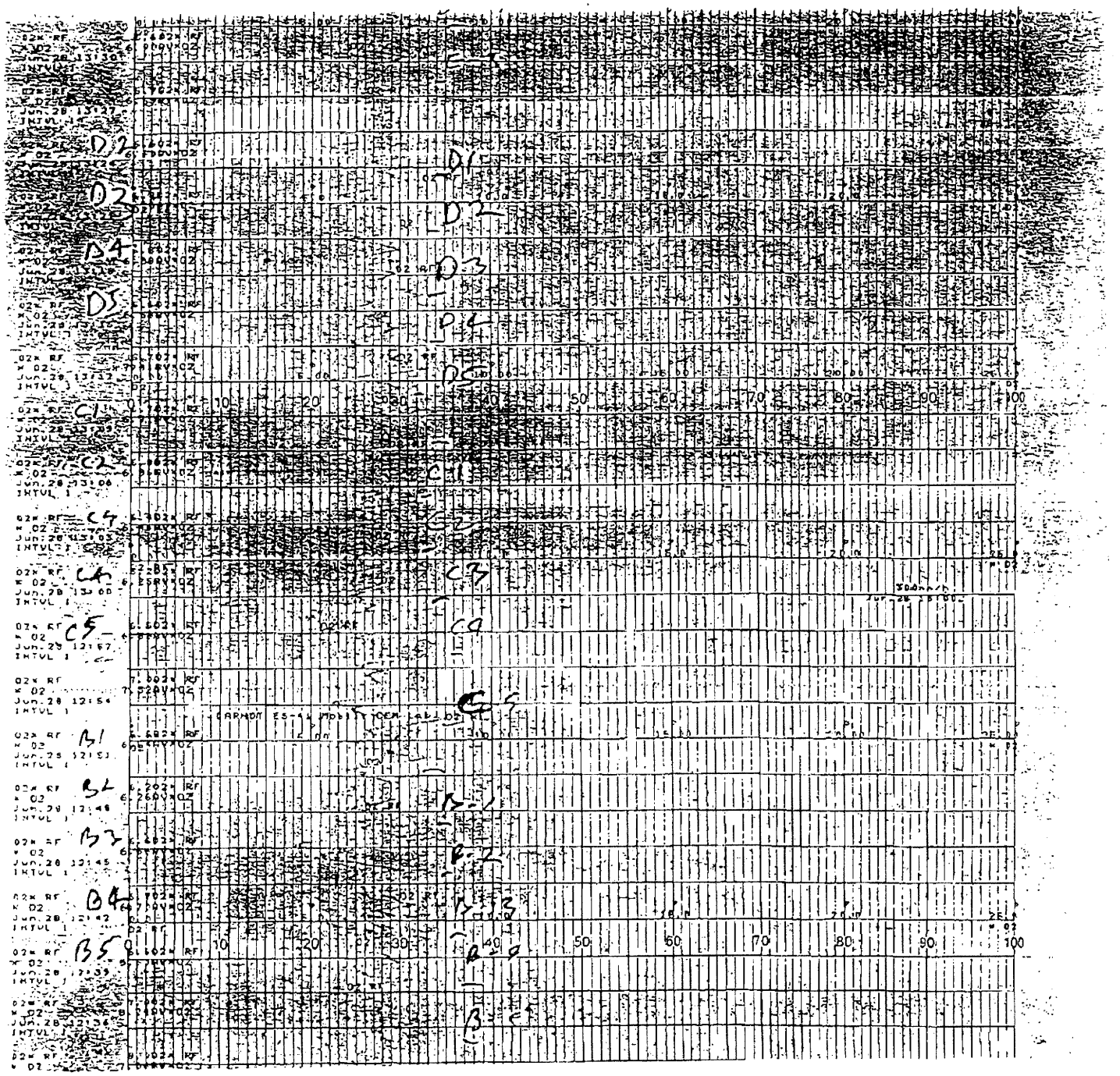
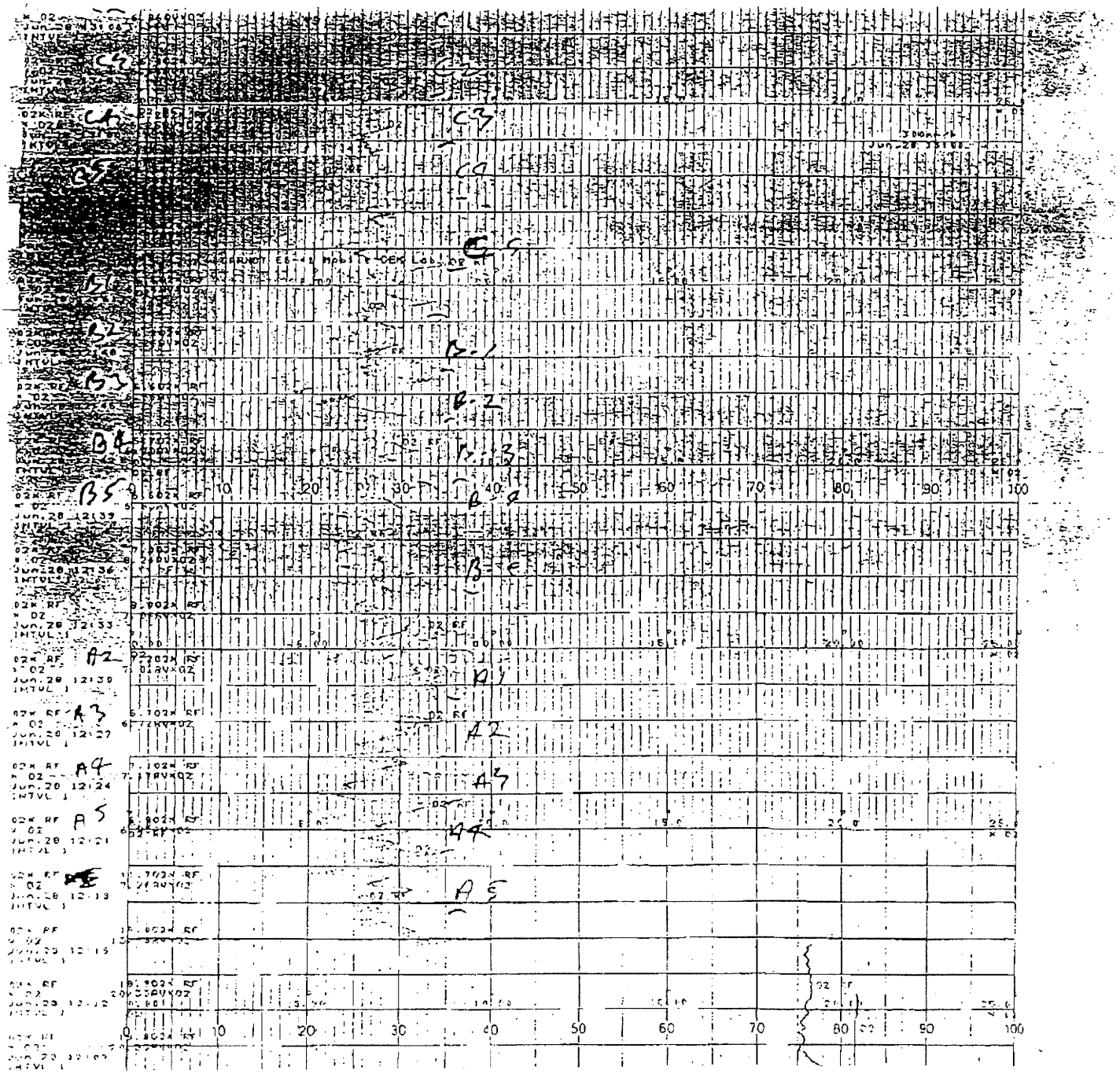
APPENDIX E
STRIP CHARTS

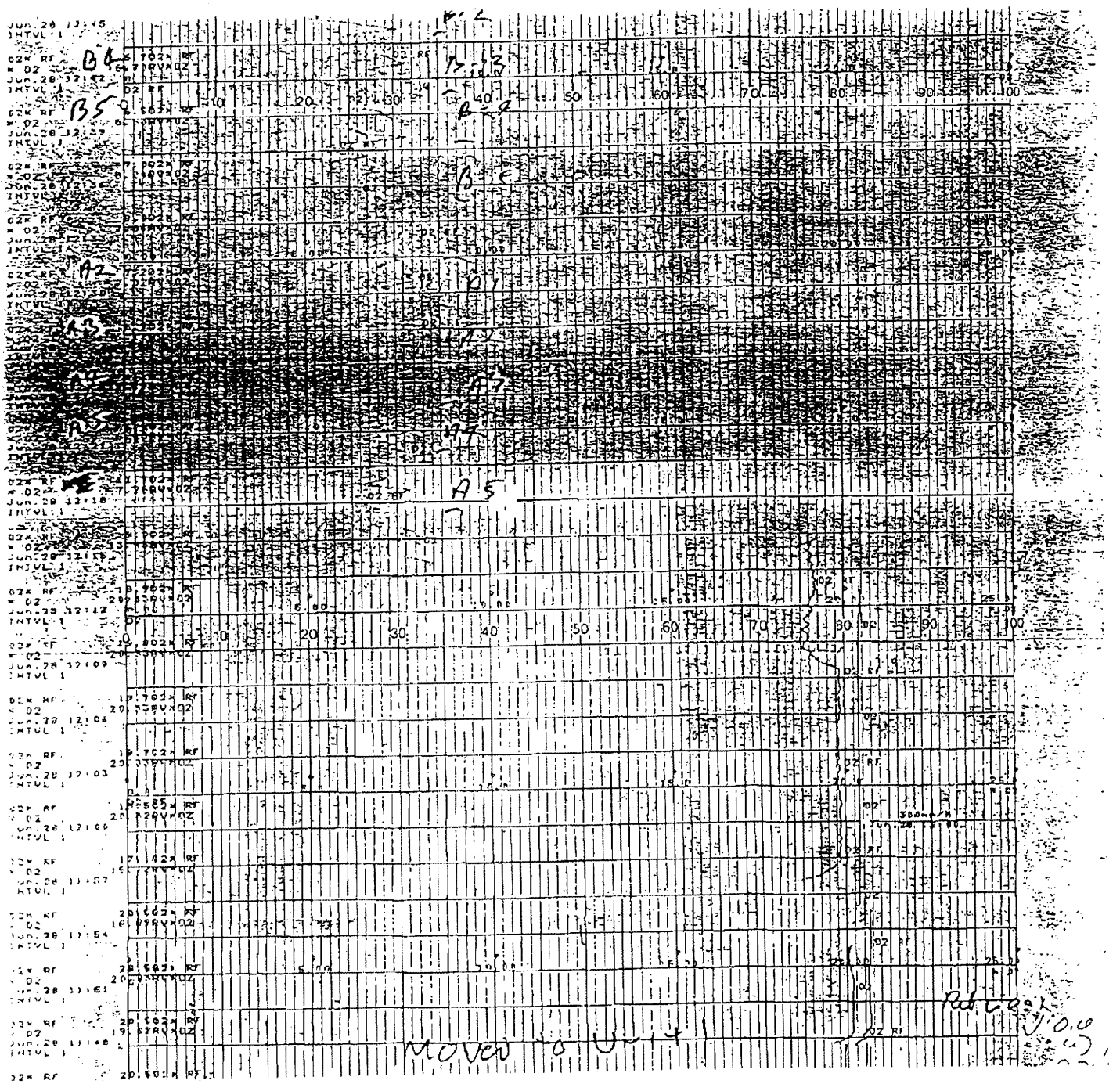


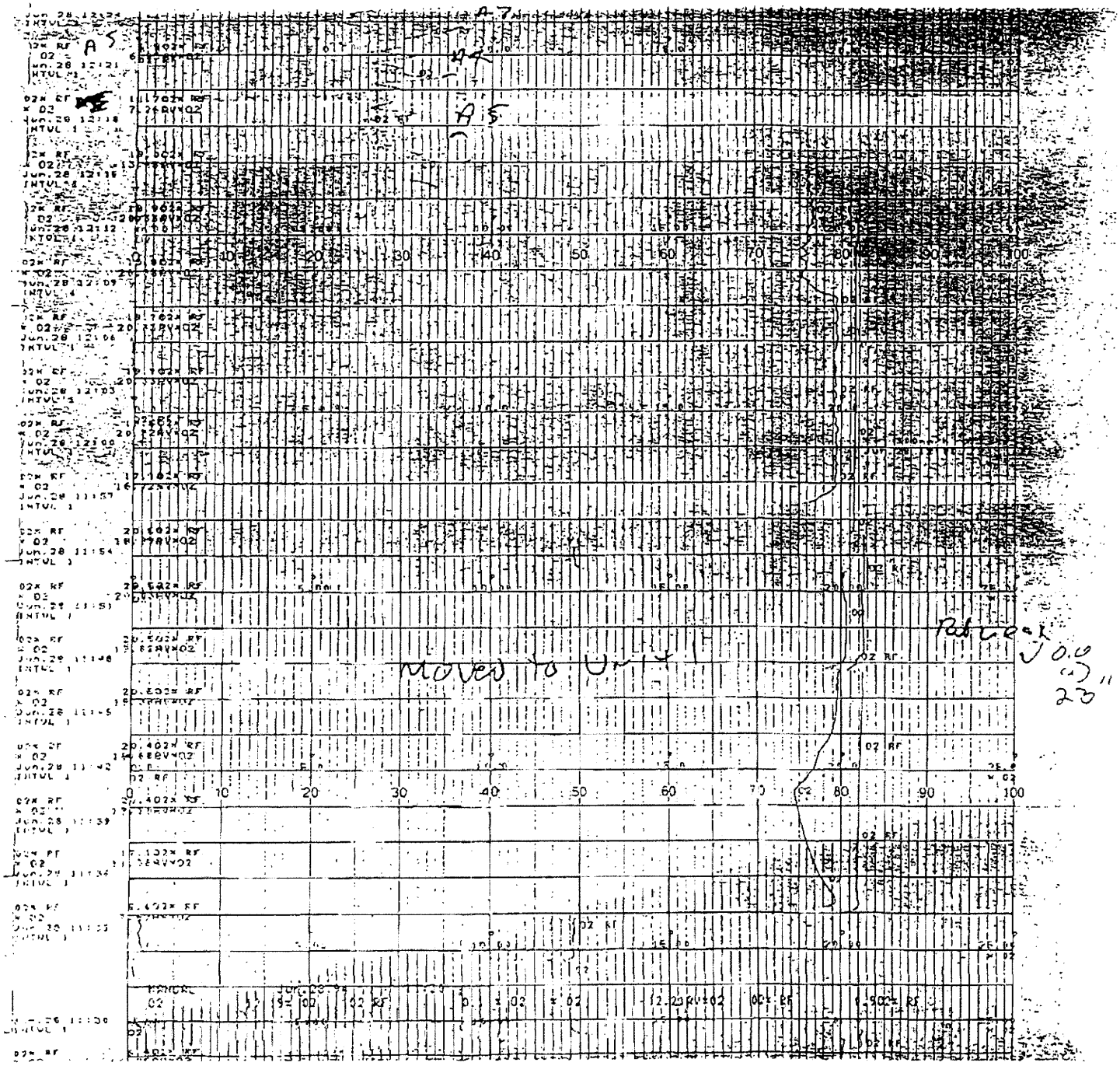


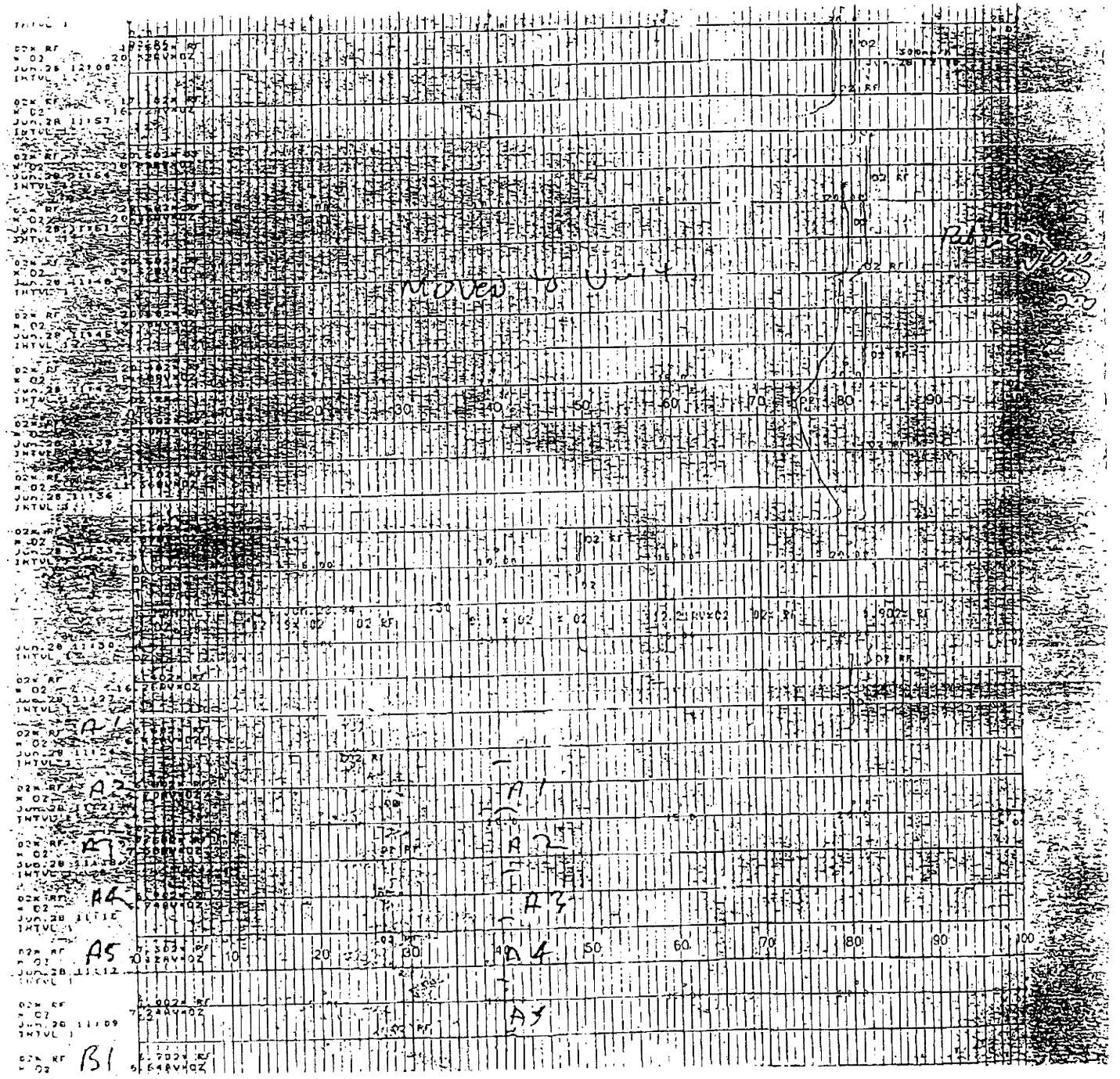


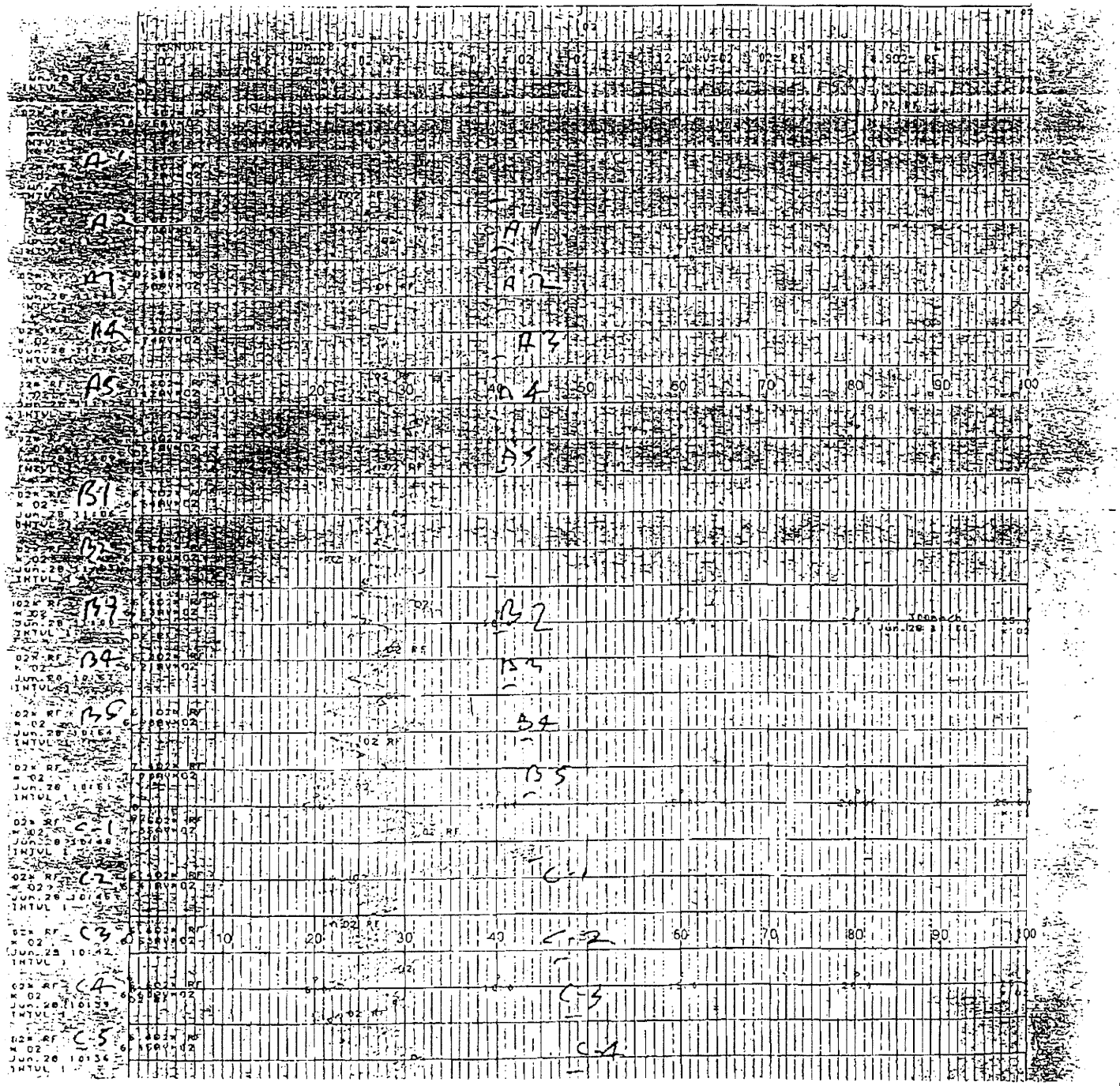


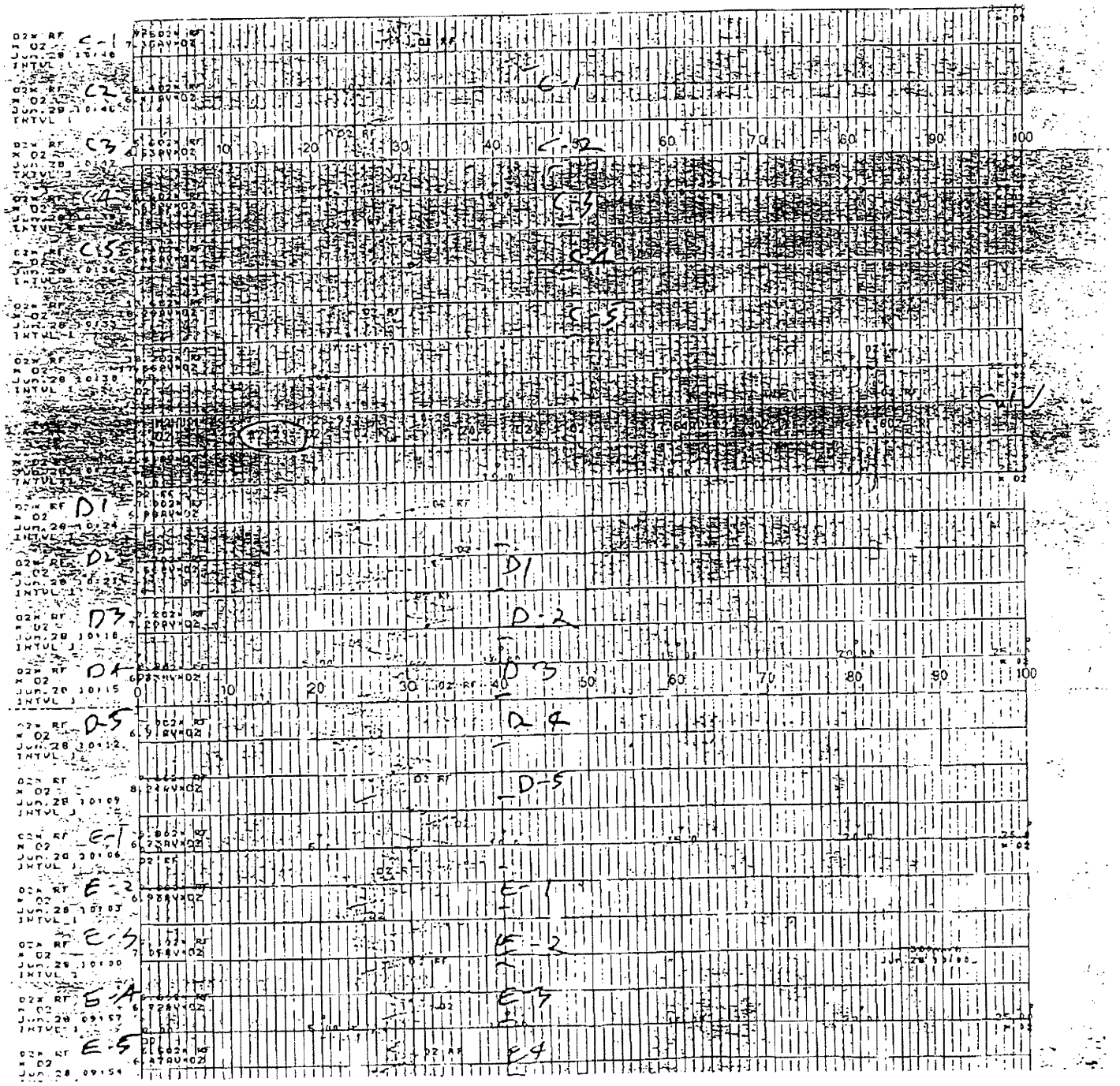


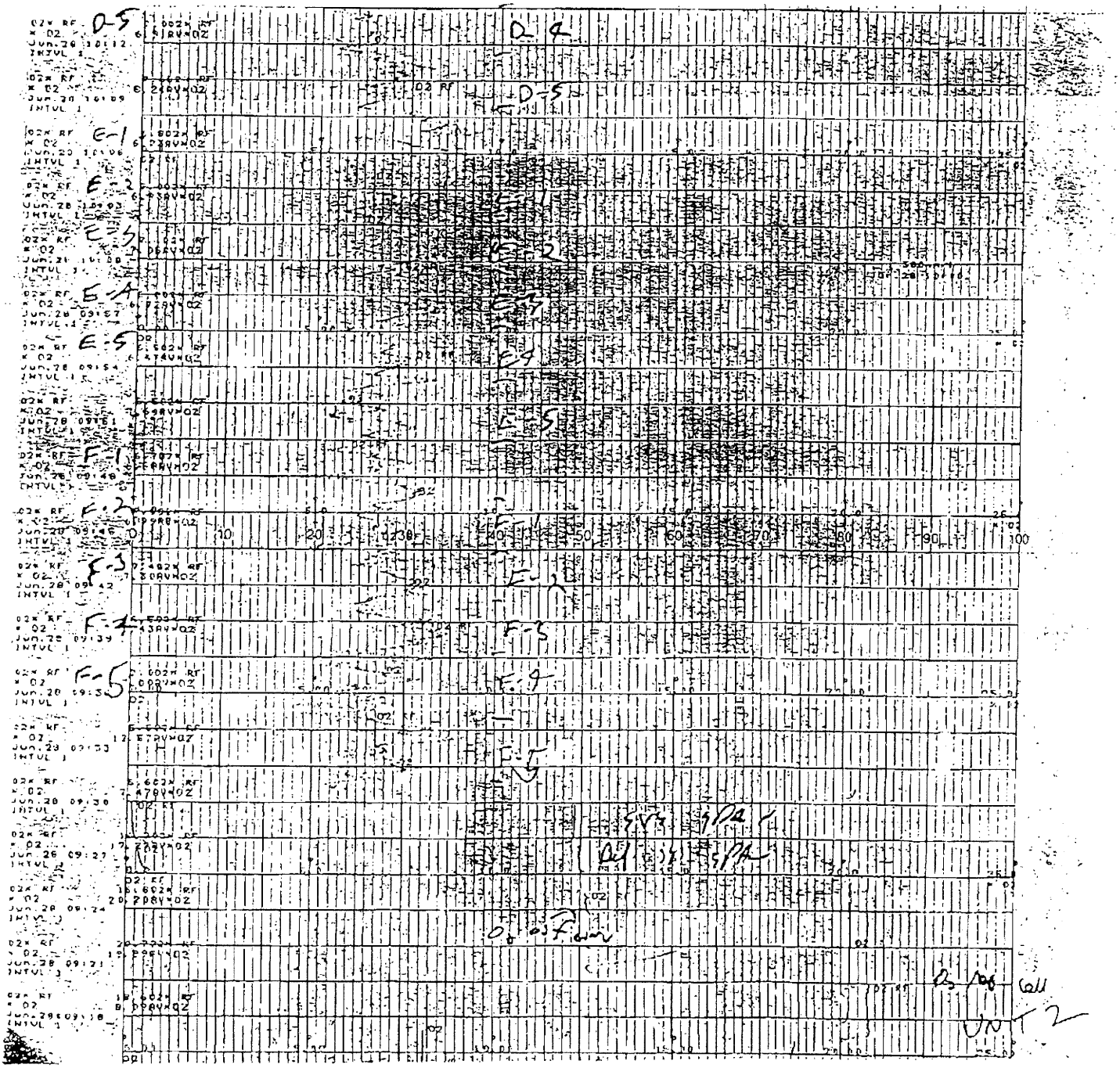

B4
B5
A2
A5
Moved to Unit


A5
A7
A4
A5
Moved to Unit
Rad Leak
0.0
23"


A1
A2
A3
A4
A5
B1







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